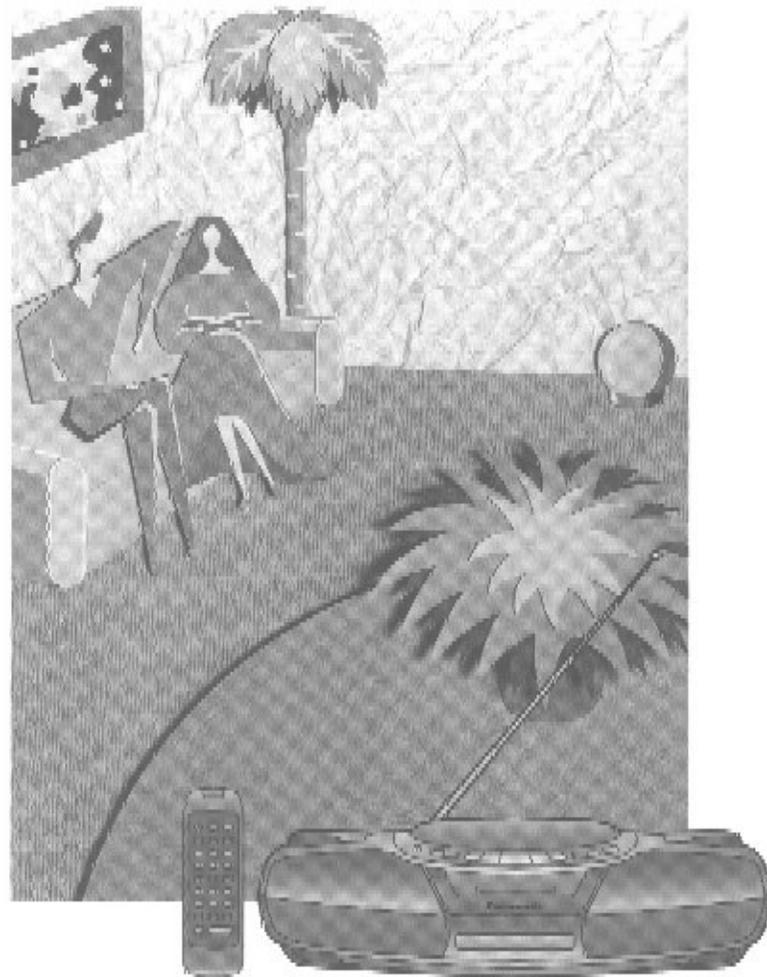


Panasonic[®]

Portable Stereo CD System RX-ED90

Operating Instructions



Before connecting, operating or adjusting this product, please read these instructions completely. Please save this manual.

COMPACT
CD
DIGITAL AUDIO

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Precautions

Before using this unit please read these operating instructions carefully. Take special care to follow the warnings indicated on the unit itself as well as the safety suggestions listed below. Afterwards keep them handy for future reference.

Safety

- 1. Power Source**—The unit should be connected to power supply only of the type described in the operating instructions or as marked on the unit.
- 2. Polarization**—If the unit is equipped with a polarized AC power plug (a plug having one blade wider than the other), that plug will fit into the AC outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
- 3. Power Cord Protection**—AC power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Never take hold of the plug or cord if your hand is wet, and always grasp the plug body when connecting or disconnecting it.
- 4. Nonuse Periods**—When the unit is not used, turn the power off. When left unused for a long period of time, the unit should be unplugged from the household AC outlet.

Installation

Environment

- 1. Water and Moisture**—Do not use this unit near water—for example, near a bathtub, washbowl, swimming pool, or the like. Damp basements should also be avoided.
- 2. Condensation**—Moisture may form on the lens in the following conditions...
 - immediately after a heater has been turned on.
 - in a steamy or very humid room.
 - when the unit is suddenly moved from a cold environment to a warm one.If moisture forms inside this unit, it may not operate properly. To correct this problem, turn on the power and wait about one hour for the moisture to evaporate.
- 3. Heat**—The unit should be situated away from heat sources such as radiators and the like. It also should not be placed in temperatures less than 5°C (41°F) or greater than 35°C (95°F).

Placement

- 1. Ventilation**—The unit should be situated so that its location or position does not interfere with its proper ventilation. Allow 10 cm (4") clearance from the rear of the unit.
- 2. Foreign Material**—Care should be taken so that objects do not fall into and liquids are not spilled into the unit. Do not subject this unit to excessive smoke, dust, mechanical vibration, or shock.
- 3. Magnetism**—The unit should be situated away from equipment or devices that generate strong magnetic fields.
- 4. Stacking**—Do not place heavy objects, other than system components, on top of the unit.
- 5. Surface**—Place the unit on a flat, level surface.
- 6. Carts and Stands**—The unit should be used only with a cart or stand that is recommended by the manufacturer. The unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the unit and cart combination to overturn.
- 7. Wall or Ceiling Mounting**—The unit should not be mounted to a wall or ceiling, unless specified in this operating instructions.



Maintenance

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 benzene.

Service

- 1. Damage Requiring Service**—The unit should be serviced by qualified service personnel when:
 - (a) The AC power supply cord or the plug has been damaged; or
 - (b) Objects have fallen or liquid has been spilled into the unit; or
 - (c) The unit has been exposed to rain; or
 - (d) The unit does not appear to operate normally or exhibits a marked change in performance; or
 - (e) The unit has been dropped, or the enclosure damaged.
- 2. Servicing**—The user should not attempt to service the unit beyond that described in the operating instructions. All other servicing should be referred to an authorized service personnel.
(Only for U.S.A.)
Call 1-800-545-2672 for the address of an authorized factory servicenter.

Supplied Accessories

Listening caution



Selecting fine audio equipment such as the unit you've just purchased is only the start of your musical enjoyment. Now it's time to consider how you can maximize the fun and excitement your equipment offers. This manufacturer and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion—and, most importantly, without affecting your sensitive hearing.

We recommend you to avoid prolonged exposure to excessive noise.

Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound. So what sounds "normal" can actually be loud and harmful to your hearing.

Guard against this by setting your equipment at a safe level BEFORE your hearing adapts.

To establish a safe level:

- Start your volume control at a low setting.
- Slowly increase the sound until you can hear it comfortably and clearly, and without distortion.

Once you have established a comfortable sound level:

- Set the dial and leave it there.

Taking a minute to do this now will help to prevent hearing damage or loss in the future. After all, we want you listening for a lifetime.

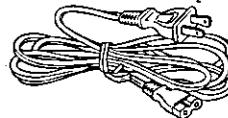
Use of batteries

- Do not mix old and new batteries, or batteries of different types (manganese and alkaline, etc.).
- Always remove old, weak or worn-out batteries promptly and dispose of them properly.
- Never subject batteries to excessive heat or flame; do not attempt to disassemble them, and be sure they are not short-circuited.
- If this unit is not to be used for a long period of time or is used only from an AC power source, remove the batteries and store them in a cool, dark place.
- If a battery leaks, remove all batteries and dispose of them properly.
- Thoroughly clean the battery compartment before inserting new batteries.
- If the electrolyte comes into contact with skin or clothes, flush with water immediately.
- Keep batteries out of reach of children.
- Do not use rechargeable type batteries.
- Do not attempt to recharge alkaline or manganese batteries.
- Batteries installed with incorrect polarities may leak and damage the unit.



Please check and identify the supplied accessories.

AC power cord 1 pc.
(SJA172)



Remote control transmitter
(RAK-RX416WH) 1 pc.



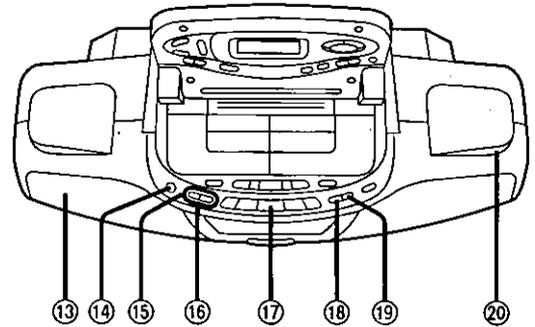
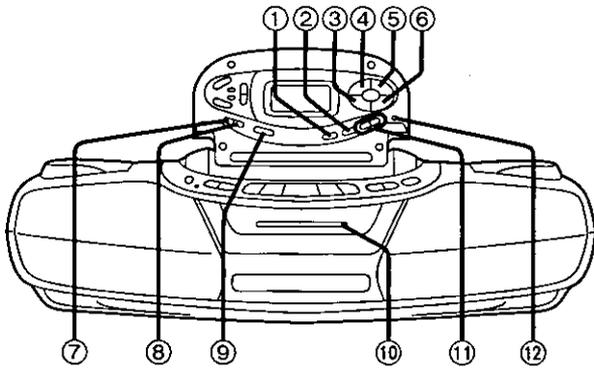
(Only for U.S.A.)

To order accessories call MSC Accessory Dept. 1-800-332-5368.

Use numbers indicated in parentheses when asking for replacement parts.

Location of Controls

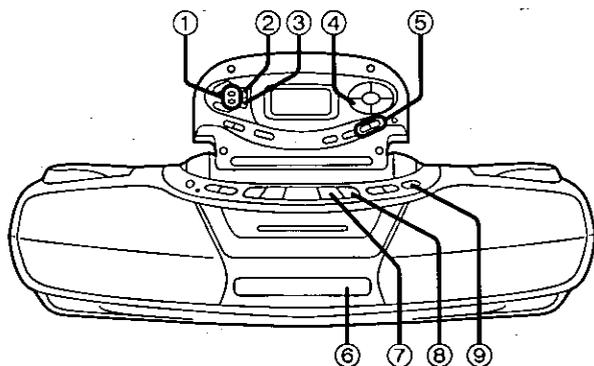
Basic/Tuner controls



No.	Name	Ref. page
①	Auxiliary input button (AUX)	34
②	Timer button (TIMER)	29, 31
③	Memory button [MEMORY (TUNER/CD)]	20
④	Timer time adjust button (TIMER ADJUST)	29, 30
⑤	Clock time adjust button (CLOCK ADJUST)	11
⑥	Tuning mode button (TUNE MODE)	20
⑦	Preset equalizer button (PRESET EQ)	21
⑧	S-XBS button (S-XBS)	21
⑨	Spatializer/Sound LED Demo button (• SPATIALIZER/∞ DEMO)	10, 22
⑩	Sound LEDs	10
⑪	Time set/Tuning buttons (CD/TUNE/TIME SET ◀◀/−, ▶▶/++)	11, 18, 20
⑫	Preset tuning indicator (PRESET TUNE)	20

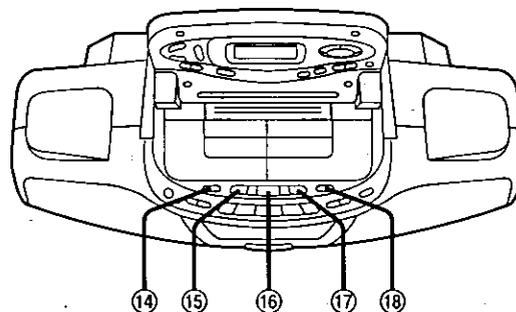
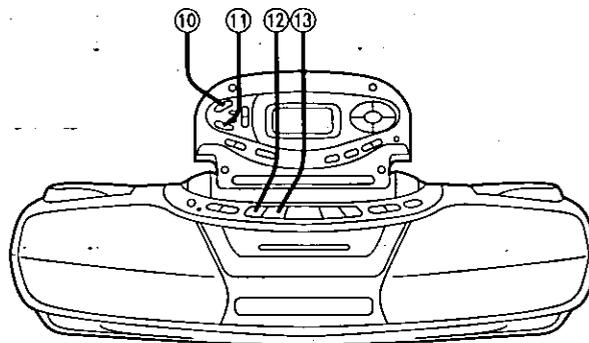
No.	Name	Ref. page
⑬	Speakers (Woofer/Tweeter)	
⑭	Power switch (POWER/BATT)	
⑮	Power/battery check indicator (POWER/BATT)	8
⑯	Volume control buttons (VOLUME +, −)	12, 15, 18
⑰	Band select button (BAND)	18
⑱	Top panel close button (CLOSE)	9
⑲	Top panel open button (OPEN)	9
⑳	Shoulder-top speaker	22

CD controls



No.	Name	Ref. page
①	CD recording mode indicator (AUTO, 1 TRAC)	25, 26
②	CD recording mode select button (CD REC MODE)	25, 26
③	CD recording level select button (CD REC LEVEL)	23
④	Program button [MEMORY (TUNER/CD)]	14
⑤	Skip/Search buttons (CD/TUNE/TIME SET ◀◀/-, ▶▶/++)	12
⑥	CD tray	12
⑦	Play/pause button (▶/)	12
⑧	Stop/clear button (■/CLEAR)	12
⑨	CD tray open/close button (▲ CD OPEN/CLOSE)	12

Cassette deck controls

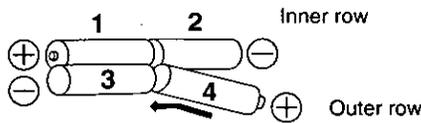
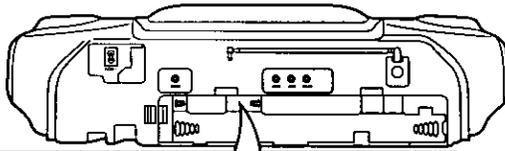


No.	Name	Ref. page
⑩	Rec/rec pause button (●/● REC/REC PAUSE)	23, 28
⑪	Tape edit button (TAPE EDIT)	27
⑫	Tape stop button (■)	15
⑬	Tape play/direction button (◀ ▶)	15
⑭	Deck 1 tape eject button (DECK 1 ▲)	27
⑮	Rewind/TPS button (REW [TPS])	16
⑯	Deck select button (DECK 1/2)	17
⑰	Fast forward/TPS button (FF [TPS])	16
⑱	Deck 2 tape eject button (DECK 2 ▲)	15

Memory Back-up Batteries

It is recommended that the memory back-up batteries (not included) be installed first to prevent the memory contents from being lost when the power fails, the power cable has been disconnected or the batteries have become flat.

Battery installation



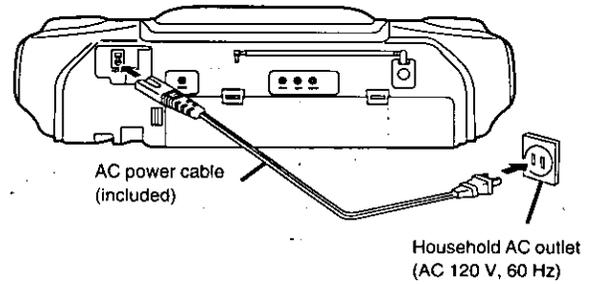
AA size (R6/LR6, UM-3) batteries (not included)

Battery life

- The service life of these batteries is approximately one year. To preserve the memory contents, connect the power cable to the household AC outlet before replacing all the back-up batteries with new ones.
- When disconnecting the power cable, first turn the unit off by pressing POWER. The service life of the memory back-up batteries is reduced if the power cable is disconnected from the household AC outlet with the power still supplied.

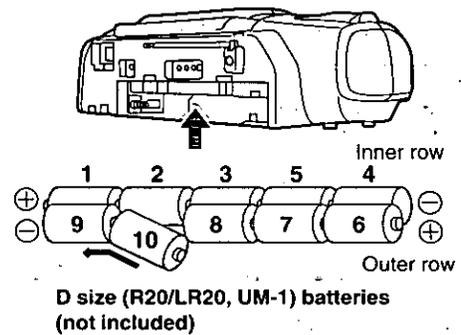
Power Sources

To operate on AC power

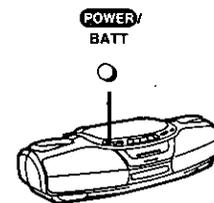


To operate on battery power

Battery installation



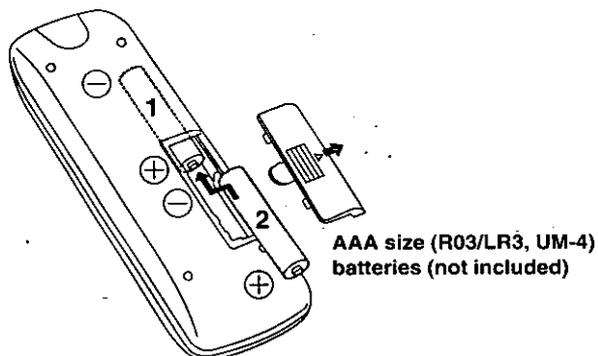
Battery life



When the power/battery check indicator goes off (or dims) during play, replace all the batteries with new ones.

Concerning the Remote Control

Battery installation



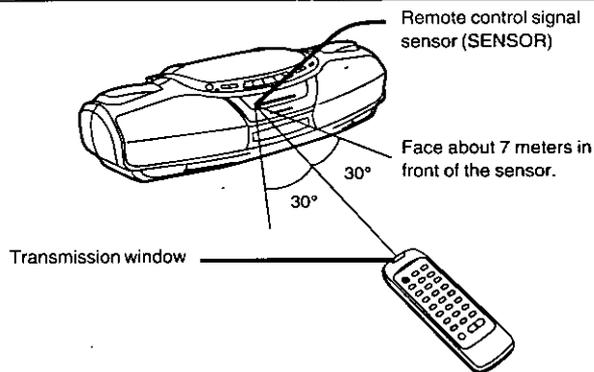
To remove the batteries, pull out the ⊕ side of battery No. 2.

Battery life

The battery life is about one year. Although the battery life varies depending on how often the device is used, the batteries should be replaced about once every year on the average.

The batteries should be replaced if commands from the remote control transmitter do not operate the unit even when the transmitter is held close to the front panel.

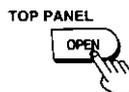
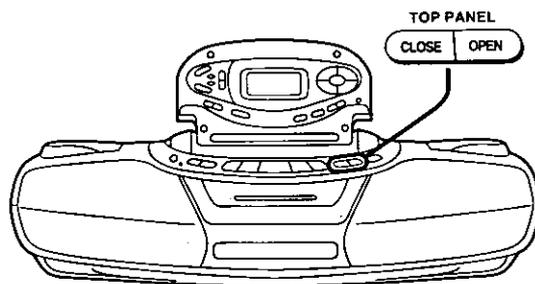
Correct method of use



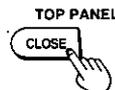
Operation notes

- Do not place obstacles between the remote control signal sensor and remote control unit.
- Do not expose the remote control signal sensor to direct sunlight or to the bright light of an inverter fluorescent light.
- Take care to keep the remote control signal sensor and end of the remote control unit free from dust.

Opening/Closing the Top Panel



Press **TOP PANEL OPEN** to open the panel.



Press **TOP PANEL CLOSE** to close the panel.

When this unit is operated on battery power, the panel cannot be opened or closed by pressing OPEN or CLOSE on the remote control in the unit off mode. Turn the unit on first by pressing POWER on the main unit before opening or closing the panel.

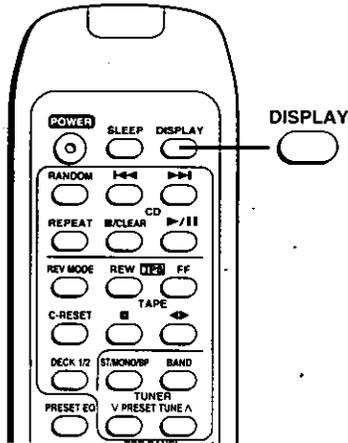
Note

To prevent damage to the unit, do not place objects on top panel where they could fall inside the unit.

Selecting the Display

(Available only from the remote control)

This operation comes in handy to check the present time during play or the tape counter display during recording.

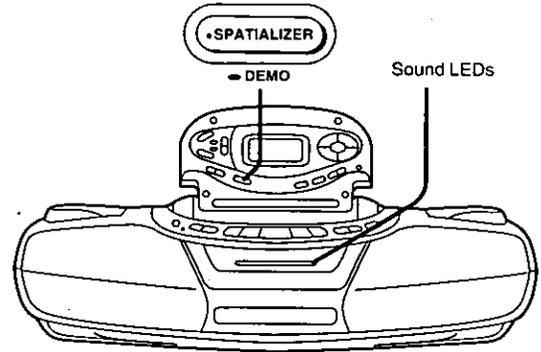


DISPLAY Press DISPLAY.



Play status → Present time → Tape counter
(CD/Radio)

(The display changes each time the button is pressed.)
"-----" appears on the tape counter display when a tape has not been loaded.



Sound LEDs

These LEDs light and flash in various ways according to the operation of this unit and in conjunction with the music.

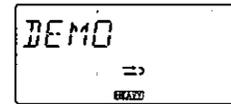
Using the demo display function

(Main unit only)



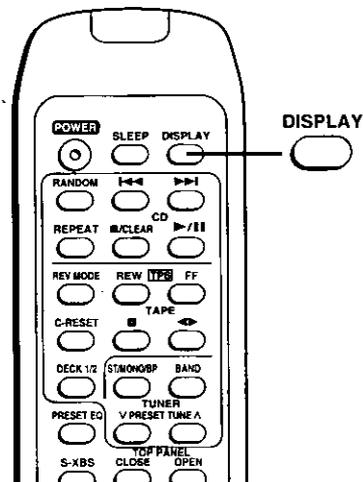
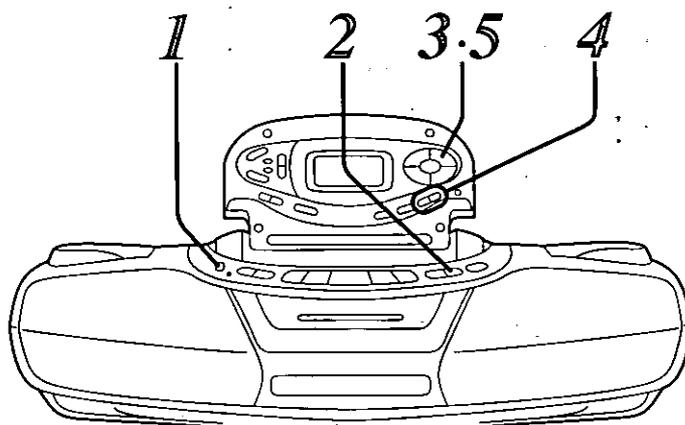
Press **• SPATIALIZER/** **DEMO** for at least two seconds, and then release once "DEMO" is displayed.

Press any button to turn off the demo display function.



Setting the Clock

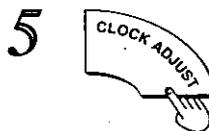
The clock has a 12-hour display.



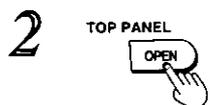
Example: Setting the clock to 4:20 P.M.:



Press POWER.
(This turns the unit on.)



While the time display is flashing;
Press CLOCK ADJUST.
(The clock now starts operating, and the display returns to its original status.)



Press TOP PANEL OPEN to open top panel.

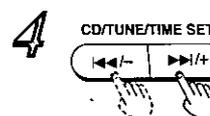
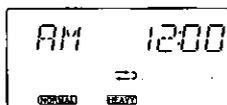
To display the clock (when the unit is on):
(Available only from the remote control)



Press DISPLAY.

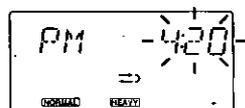


Press CLOCK ADJUST.

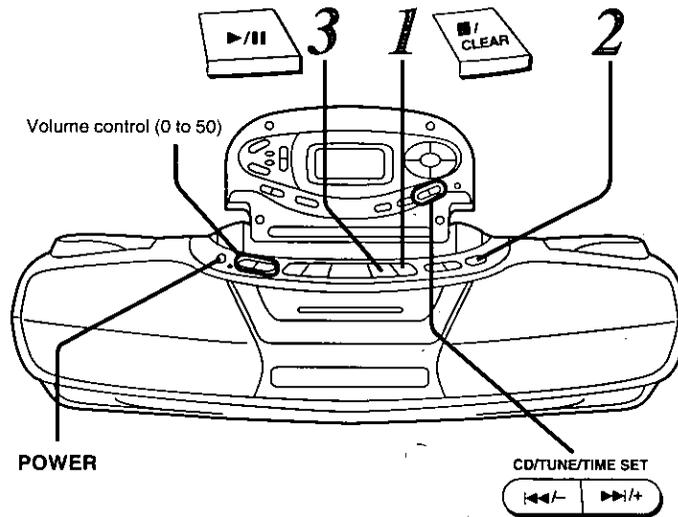


Press >>|/+ or <<|/- to show desired time.

The time display can be changed in one minute units by tapping the buttons, and quickly by holding down the buttons.



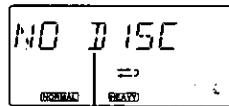
Listening to CDs



Press POWER.
(Only when the batteries are used for the power supply)



Press ■/CLEAR to switch to CD mode.



Indicates that there is no disc loaded.

To stop play:

Press ■/CLEAR.



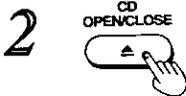
To stop temporarily, press ►/||.
To resume play, press ►/|| again.

Notes

- Interference may affect radio or TV reception when CD is played close to a radio or TV set. If this occurs, place the unit as far away from the radio or TV.
- When the batteries are used for the power supply, pressing POWER on the remote control can not turn the unit on.

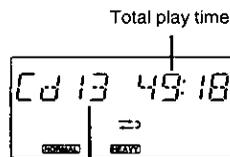
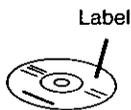
Hint

If a CD is loaded, pressing ►/|| will automatically turn the unit on and start play (only when AC power is supplied).



Press ▲, insert a CD and press ▲ again.

Insert the CD with its label surface facing up.



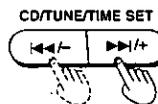
Total number of tracks

To skip tracks

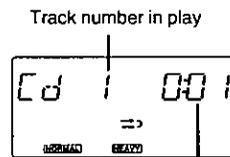
Press ►►/+/+ to skip to the start of the next track.

Press ◀◀/-/- to skip to the start of the present track.

Press the button repeatedly to skip tracks in the number that corresponds to the number of times you press the button.



Press ►/||.
Play starts from track 1 and continues to the last track, after which it automatically stops.



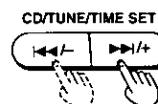
Elapsed play time of track in play

To search forward or backward

During play:
Continuously press ►►/+/+ to search forward.

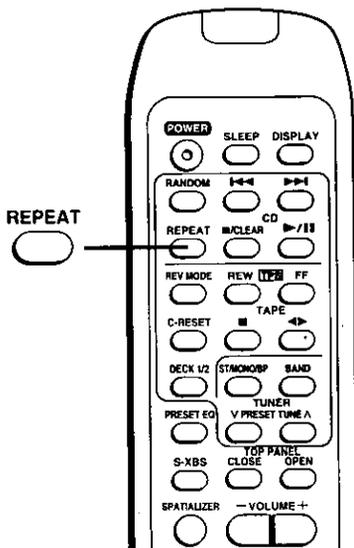
Continuously press ◀◀/-/- to search backward.

Release the button at the desired position.

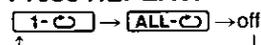


To repeat tracks

(Available only from the remote control)



Press **REPEAT**.

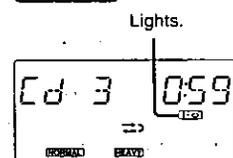


(The display changes each time the button is pressed.)

To repeat only one track



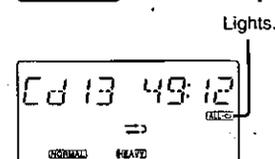
Press **REPEAT** to turn **1-CD** on the display.



To repeat all tracks on the CD



Press **REPEAT** to turn **ALL-CD** on the display.



To repeat program tracks

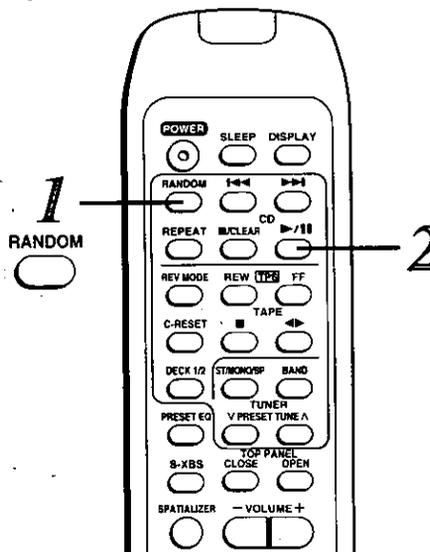
- ① Program desired tracks (see steps 1 to 4 on page 14).
- ② Press **REPEAT** to turn **ALL-CD** on the display.
- ③ Press **▶/||** to start.

To release the repeat function:

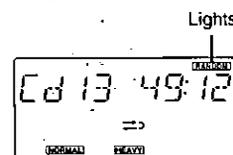
Press **REPEAT** to turn off both **1-CD** and **ALL-CD**.

Random play

(Available only from the remote control)

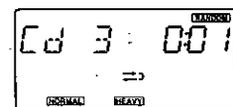


Press **RANDOM** in the stop mode.



Press **▶/||** to start.

All the tracks are played at random, and play automatically stops.



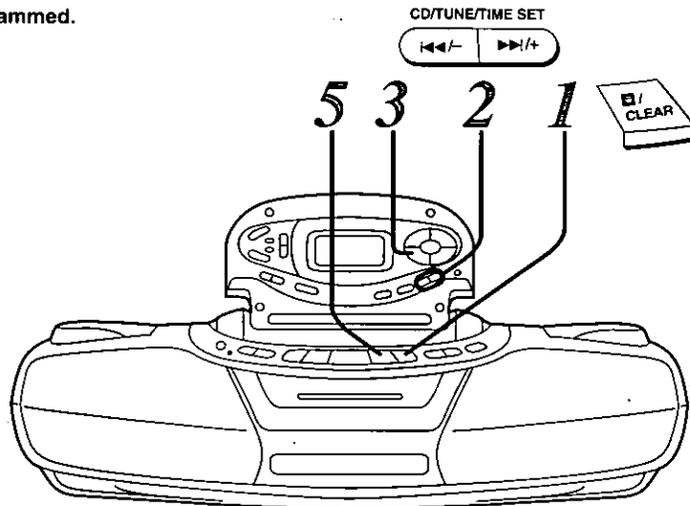
To clear random play:

Press **RANDOM** to turn off the **RANDOM** indicator.

- Random play cannot be used in combination with program play.
- Skipping is not possible to track which have been played (see page 12).
- Search (see page 12) is possible only within the track in play.

Selecting and listening to your favorite tracks (Program play)

Up to 36 tracks can be programmed.



1 Press /CLEAR to switch to CD mode.
Press RANDOM on the remote control if **RANDOM** indicator is on.

2 Press to select desired track.
Track number

Play time

3 Press **MEMORY (main unit only)**.
Programmed track

Play sequence

4 Repeat steps 2 and 3.
Lights.

Total play time of programmed track

5 Press .

The programmed tracks are played in the programmed sequence, and play stops automatically.

To clear program play:

Press in the stop mode.
"CLEAR" appears on the display and all the programmed contents will be cleared.

When "---:--" appears:

This means that the total play time of the programmed tracks has exceeded 120 minutes. Tracks can still be programmed and played.

When "FULL" appears:

This means that the total number of the programmed tracks has exceeded 36. No more tracks can be programmed.

Memory retention of programmed tracks

The programming of the tracks will be retained in the memory even if play is stopped at any time or the unit is turned off.
"P" appears on the display indicating that programmed memory remains.

Indicates programmed memory remains.



The programmed memory will be canceled in the following cases:

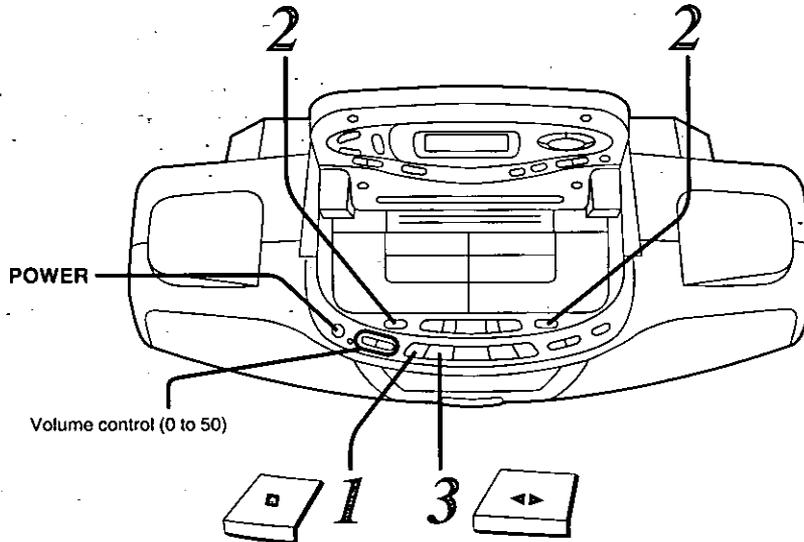
- When CD OPEN/CLOSE is pressed
- When you disconnect the power cord without installing the memory back-up batteries

To check what has been programmed:

While "P" is on the display, press or in the stop mode. Each time these buttons are pressed, a track number and its play sequence can be checked.

Listening to Tapes

Normal, high position and metal tapes can be used.
Tapes can be played back in either deck 1 or deck 2.

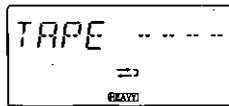


Press POWER.

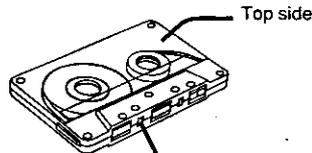
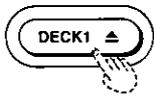
(Only when the batteries are used for the power supply)



Press to switch to the tape mode.



Press DECK 1 or DECK 2 , load the tape and close the lid. The direction is automatically set to play the top side (is displayed).



Insert the tape with the exposed tape facing you.

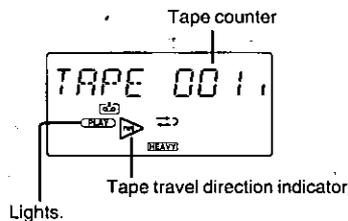


Press .

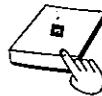
Playback now starts.

: The side which is facing up is played back.

: The reverse side is played back.

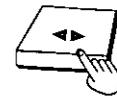


To stop play:



Press .

To listen to the other side of the tape:



Press during playback.

Note

When the batteries are used for the power supply, pressing POWER on the remote control can not turn the unit on.

Hint

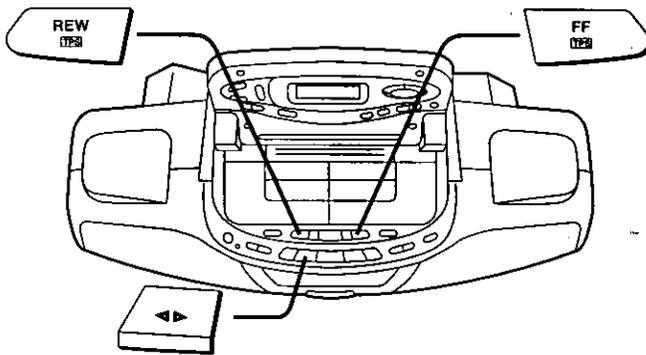
If a tape is loaded, pressing will automatically turn the unit on and start playback (only when AC power is supplied).

Type of tape which can be played on this unit:

The unit automatically identifies the type of tape.

Normal position/TYPE I	<input type="radio"/>
High position/TYPE II	<input type="radio"/>
Metal position/TYPE IV	<input type="radio"/>

Fast forwarding and rewinding a tape



In the stop mode, press FF [TPS] or REW [TPS].

The tape is fast forwarded or rewound in the direction of the arrows (▶▶ or ◀◀) on the display.

High-speed rewinds/fast-forwards:

The deck rewind/fast-forward the tape with high-speed when:

The deck rewinds from around the end of the tape

The deck fast-forwards from around the beginning of the tape

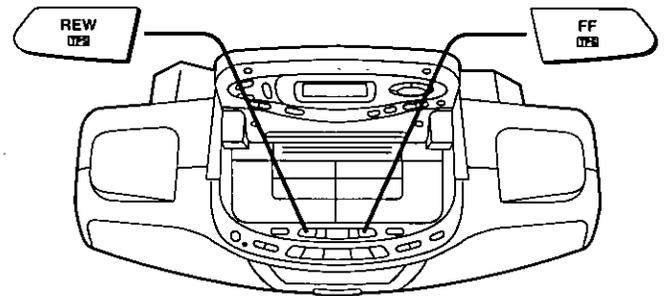
When you press FF [TPS] or REW [TPS] while the high-speed rewind/fast-forward is activated, the deck resumes the normal-speed rewind/fast-forward.

Notes

- When you press ◀ ▶ to start playback on one deck during fast forwarding or rewinding on another deck, fast forwarding or rewinding will be stopped.
- When you press FF [TPS] or REW [TPS] on one deck during playback on another deck, playback will be stopped.

To find the beginning of a track (TPS: Tape Program Sensor)

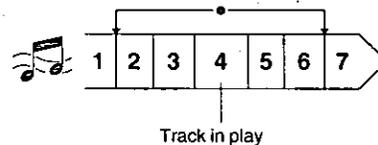
During play, the number of programs corresponding to the number of times the button was pressed will be skipped, and the desired program is located (up to 9 programs before or after the program now heard).



Example:

When REW [TPS] was pressed 3 times

When FF [TPS] was pressed 3 times



Press FF [TPS] or REW [TPS] while the tape is playing.

FF [TPS]: Skips forward by the number of tracks corresponding to the number of times the button was pressed.

REW [TPS]: Skips backward by the number of tracks corresponding to the number of times the button was pressed.

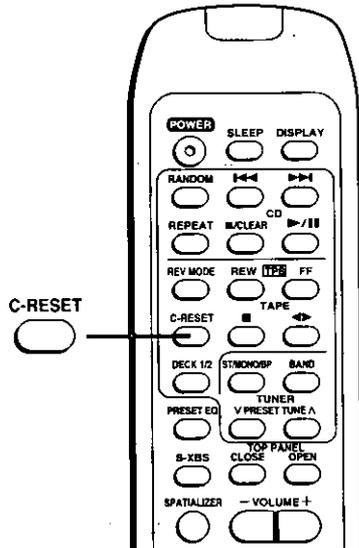
Note

Since the blank spaces between tracks are used for locating the beginning of each track, the TPS function may not operate in the following cases:

- When the blank spaces are 4 seconds or less.
- When there are no blank spaces on the tape (such as when the recording has been made from a microphone, etc.).
- When there are parts of a track which have been recorded at a particularly low level or which have not been recorded at all (such as with classical music).
- When 10 or fewer seconds have elapsed since the beginning of a track or when there are 10 or fewer seconds until beginning of the next track.
- When a tape is recorded with fade-ins or fade-outs.

To reset the tape counter to "000"

(Available only from the remote control)



C-RESET



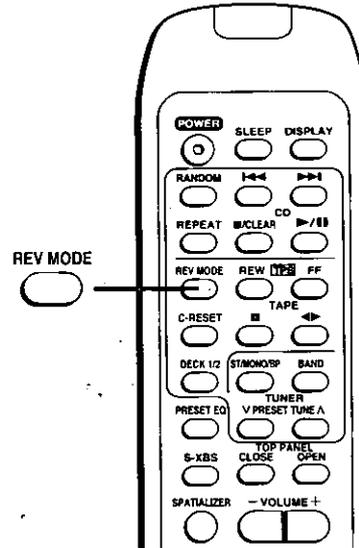
Press C-RESET.

Tape counter



Selecting the reverse mode

(Available only from the remote control)

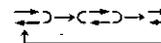


REV MODE

REV MODE



Press REV MODE to select the mode.

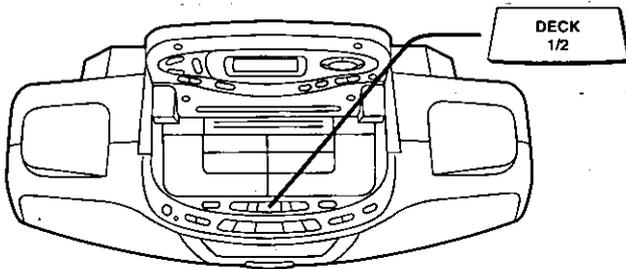


(The display changes each time the button is pressed.)

Reverse mode



When tapes have been loaded in both decks



DECK 1/2



Press DECK 1/2 to select the deck to be used.



The deck corresponding to the lighted deck indicator (1 or 2) can be operated.

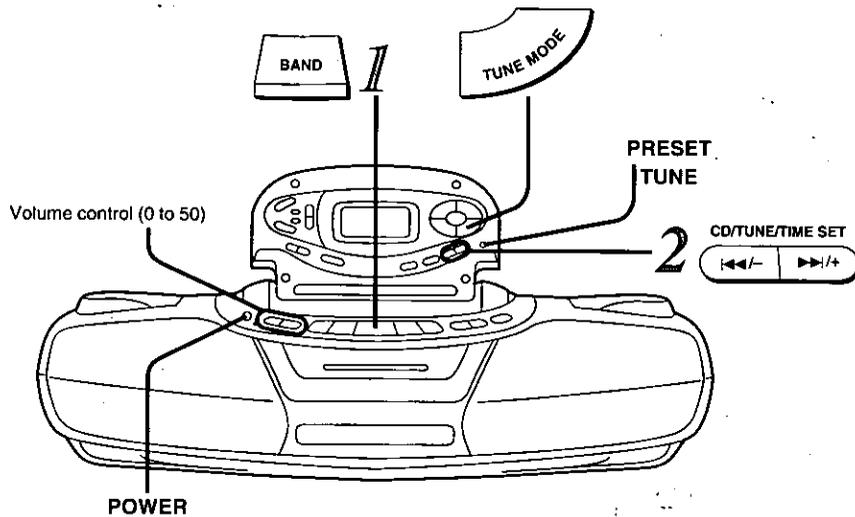
- : The tape plays from the side facing up to the reverse side, and then it stops automatically.
- : The tape plays repeatedly until (STOP) is pressed.
- : Only one side of the tape is played, and then the tape stops automatically.

To listen continuously to two tapes in succession:

The tapes will be played continuously until (STOP) is pressed.

1. Load tapes into deck 1 and deck 2.
2. Select the reverse mode ().
3. Select which deck is to start tape play by pressing DECK 1/2.
4. Press to start the tape play.

Listening to the Radio



Press POWER.

(Only when the batteries are used for the power supply)

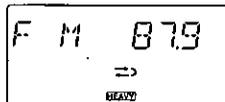


Press BAND to display "AM" or "FM".

AM → FM
↑

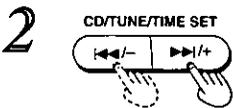
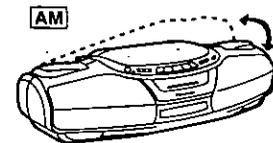
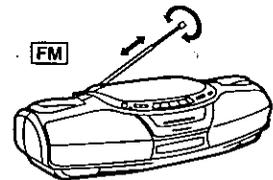
(The display changes each time the button is pressed.)

- If PRESET TUNE indicator is on, press TUNE MODE button to turn the indicator off.



3

Adjust the antenna.



Press >>|/+ or <<|/- to select the station.

>>|/+ : The frequency is increased.

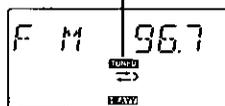
<<|/- : The frequency is reduced.

Automatic tuning:

Keep >>|/+ or <<|/- depressed until the frequency display starts to change. A station with good reception is automatically selected and the selection process then stops.

To stop automatic tuning, press >>|/+ or <<|/- again.

Lights when a station is tuned in properly.



Note

When the batteries are used for the power supply, pressing POWER on the remote control can not turn the unit on.

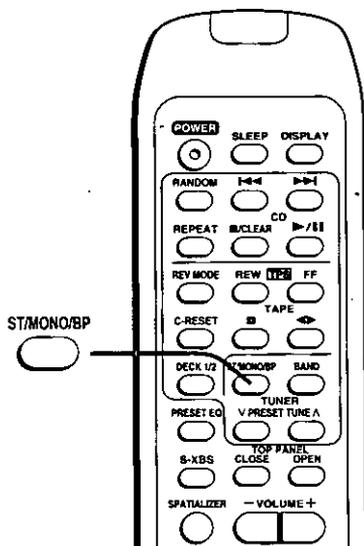
Hint

- Pressing BAND will automatically turn the unit on and receive the broadcast which was previously tuned (only AC power is supplied).
- The automatic tuning may stop without a station having been tuned in when interference is encountered on neighboring airwaves. In such a case, tune in a station by tapping >>|/+ or <<|/-.
- Radio broadcasts may be hard to receive in a building or moving vehicle because their signals are weak. In such cases, use the unit near a window.

When FM stereo reception is too noisy

(Available only from the remote control)

Set the sound to the monaural mode to reduce the noise.



ST/MONO/BP



Press ST/MONO/BP.

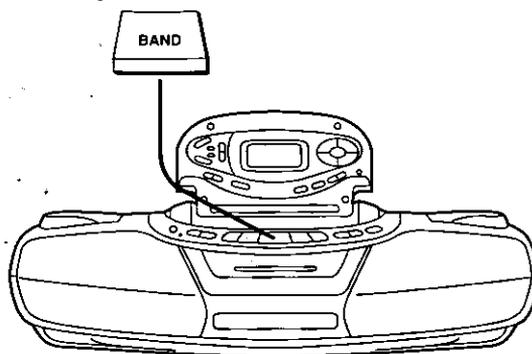
The **MONO** display appears.

To return to stereo sound, press ST/MONO/BP again to turn off the **MONO** display.

To change FM allocation (frequency display steps)

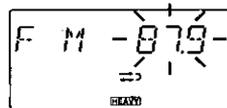
(Available only from the main unit)

By adjusting the allocation, you can enable this unit to receive FM broadcasts allocated in 100 kHz steps.

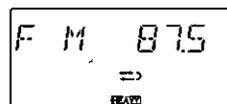


- ① Press **BAND** to select AM.
- ② Press and hold **BAND** for approximately 5 seconds.

The frequency display will be returned to the minimum frequency of the FM band and the display will begin to flash. Keep holding the button for approximately 5 more seconds.



- ③ When the display stops flashing and indicates a different frequency number, release **BAND**.



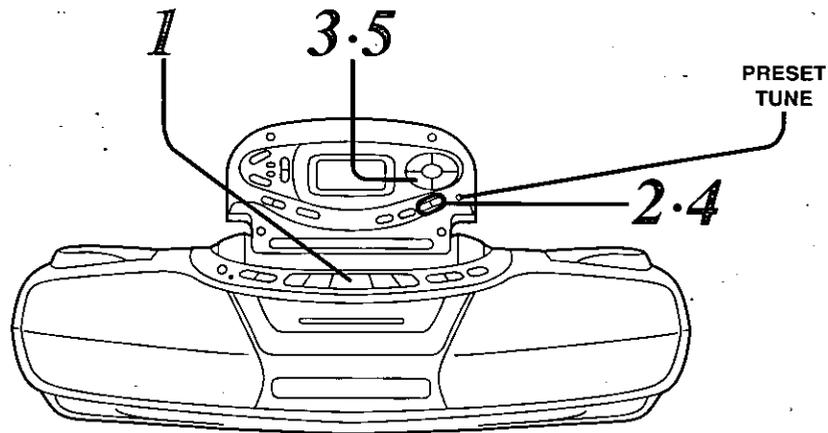
To return to the original frequency, repeat steps 1 to 3 above.

Note

After changing the "allocation" setting, the frequencies you previously preset into the memory (see page 20.) will be cleared.

Preset tuning

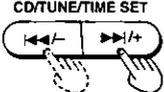
Once broadcast stations have been programmed, they can easily be tuned in. Up to ten FM and AM each can be programmed.



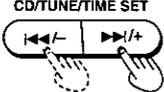
Programming broadcast stations

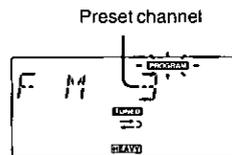
(Available only from the main unit)

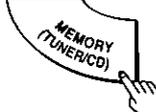
1  Press **BAND** to display "AM" or "FM".
AM→FM
(The display changes each time the button is pressed.)
• If PRESET TUNE indicator is on, press TUNE MODE button to turn the indicator off.

2  Press **▶▶|/+** or **◀◀|/-** to select the station.

3  Press **MEMORY**.

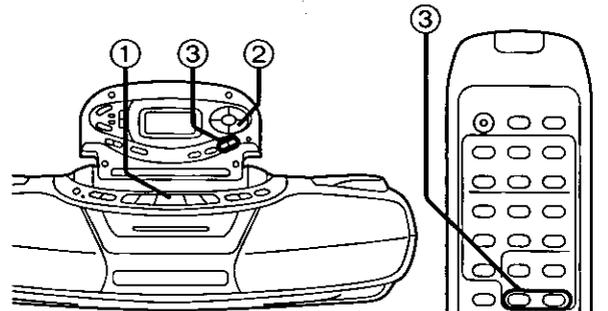
4  While **PROGRAM** is flashing, Press **▶▶|/+** or **◀◀|/-** to display the preset channel to be programmed.



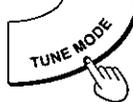
5  While **PROGRAM** is flashing, Press **MEMORY**.

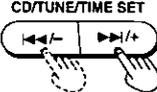
6 Repeat steps 2 to 5 to program other stations.

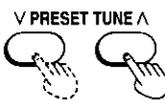
Selecting the preset channel



1  Press **BAND** to display "AM" or "FM".

2  Press **TUNE MODE** to turn PRESET TUNE indicator on.
If you are using the remote control, skip this step.

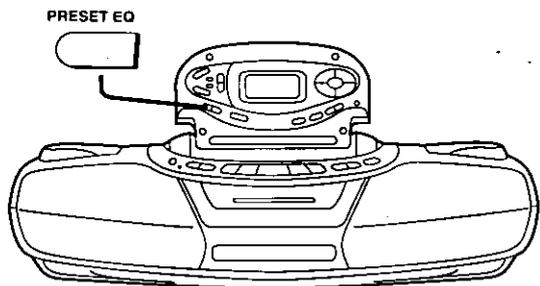
3  [Using the main unit] Press **▶▶|/+** or **◀◀|/-** to select the station.
The station is changed each time the button is pressed.

 [Using the remote control] Press **PRESET TUNE** ∇ or \wedge to select the station.

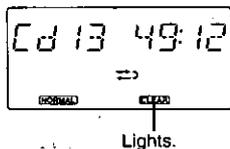
Changing the Sound Quality

Selecting the equalizer effects

Four different sound quality effects (heavy, clear, soft and vocal) are preset in this unit.



Press PRESET EQ to select the desired sound quality effect.



HEAVY → CLEAR → SOFT → VOCAL → EQ-OFF

(The display changes each time the button is pressed.)

Types of preset sound quality effects

HEAVY:

This gives an added punch to rock music, etc.

CLEAR:

This boosts the treble range of music.

SOFT:

This produces a soft, background music effect.

VOCAL:

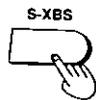
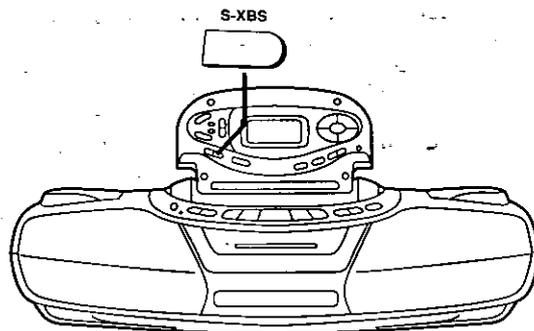
This enhances vocals.

To cancel the sound quality effect

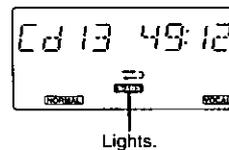
(To return the sound quality to its original setting):

Press PRESET EQ to clear the indication.

Adjusting the extra bass (S-XBS)



To emphasize the extra bass:
Press S-XBS so that "S-XBS" lights.

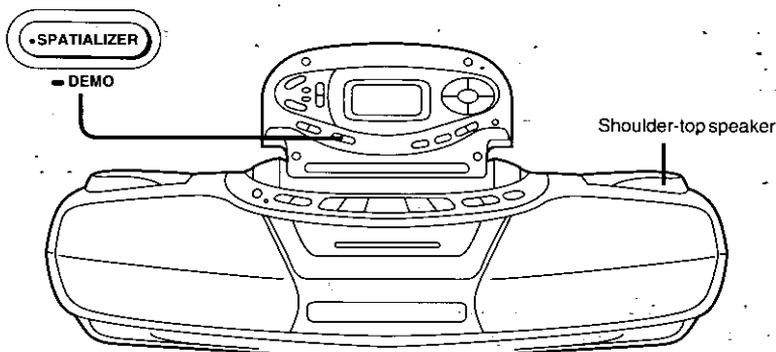


To return to normal sound:

Press S-XBS so that "S-XBS" turns off.

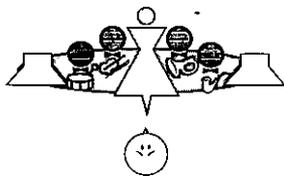
Using sound-space effects (SPATIALIZER)

With its shoulder-top speakers, this unit allows you to listen to music with a three-dimensional feel. Using the SPATIALIZER allows you to give the music an even greater depth and breadth. Compared to conventional surround sound, this system provides greater stability in the midrange (vocals and instruments). The SPATIALIZER sound can also be recorded on tape.



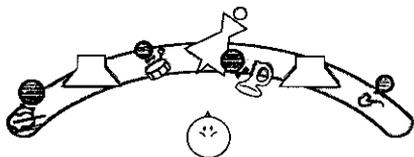
The SPATIALIZER effect

Normal stereo



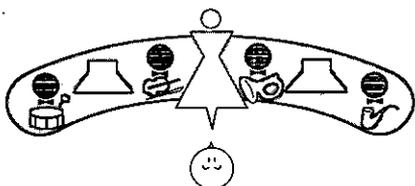
Conventional surround sound

Although the sound is broader, the sound positioning is not stable.



SPATIALIZER

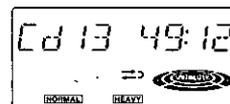
The sound has a broad feel, and the positions of the vocals, instruments, etc., are very stable.



SPATIALIZER playback and recording



Press •SPATIALIZER so that the  indicator lights, and then begin playback and recording.



Turning off the SPATIALIZER effect

Press •SPATIALIZER so that the  indicator turns off.

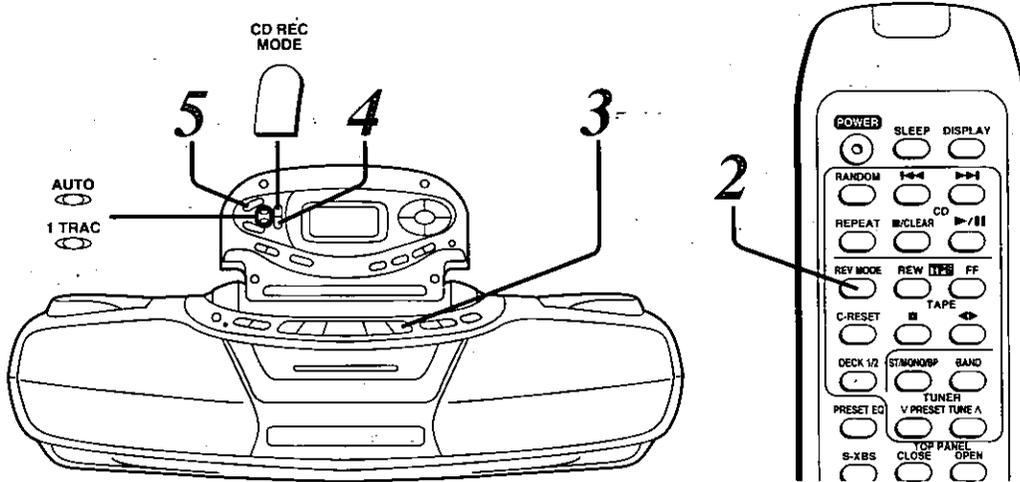
Notes

- Recording monaural audio
If the SPATIALIZER is turned on, the sound may be off balance to either the right or the left. Turn the SPATIALIZER off.
- Dubbing tapes
The SPATIALIZER effect cannot be turned on while dubbing tapes.
- Turning on the SPATIALIZER effect while playing back a tape that was already recorded with the SPATIALIZER effect
- This will emphasize the effect. If the effect is too strong, turn it off.
- When listening through headphones.
The SPATIALIZER effect will be less pronounced than when listening through speakers.

PORTIONS OF THIS PRODUCT MANUFACTURED UNDER A LICENSE FROM DESPER PRODUCTS, INC. SPATIALIZER® AND THE CIRCLE-IN-SQUARE DEVICE  ARE TRADEMARKS OWNED BY DESPER PRODUCTS, INC.

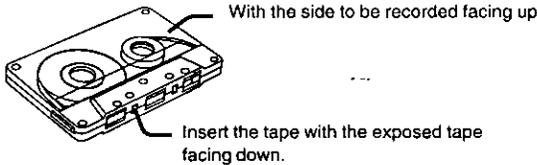
Recording from CD (Deck 2 only)

Recording and CD play start at the same time automatically.
Normal and high position tapes can be used.



1 Load the tape in deck 2 with the side to be recorded first facing up.

- Find the position on the tape where the recording is to start.
- When recording from the start of side A or B, have the leader tape wound up before proceeding.



4 Press **CD REC LEVEL** to select the recording level.
NORMAL → HIGH → LOW

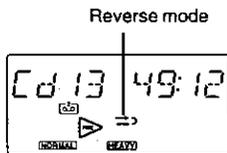
(The display cycles through the above levels each time the button is pressed.)

If you want to...	Recording level
Record at normal level	NORMAL (Normal)
Record at a slightly higher level	HIGH (High)
Record at a slightly lower level	LOW (Low)

2 Select the mode with **REV MODE** on the remote control.

↔ ↔: Sound is recorded on the side facing up and then the reverse side, and the tape stops automatically.

⇄: Sound is recorded on only one side of the tape, and then the tape stops automatically.

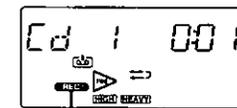


3 Insert the CD and press **■/CLEAR**.
If **AUTO** or **1 TRAC** indicator illuminates, press **CD REC MODE** to turn it off.



5 Press **REC/REC PAUSE** **||** **REC/REC PAUSE**.
Recording now starts.
After recording is over, both CD play and recording on the deck stop automatically.

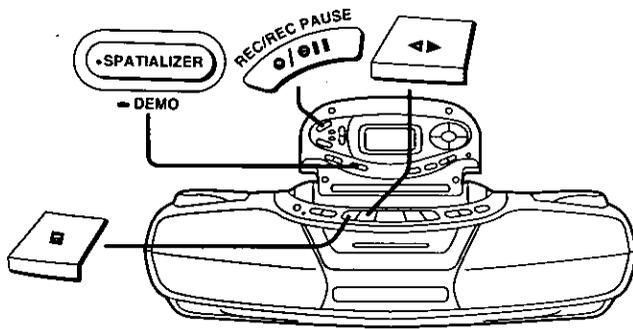
▶: Recording starts from the side facing up.
◀: Recording starts from the reverse side.



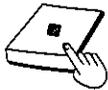
Note

You cannot operate deck 1 during recording.
"E" is displayed when you attempt to operate deck 1.

Recording from CD



To stop recording:



Press **REC/REC PAUSE**.

To stop recording temporarily:

Press **REC/REC PAUSE**.

To resume recording, press **REC/REC PAUSE**.

Turning on sound-space effects (SPATIALIZER) for recording

Sound-space effects can also be used with easy CD recording (see page 25) and one-track recording (see page 26).

Before starting to record, press **•SPATIALIZER** so that the **SPATIALIZER** indicator in the display lights.

Recording your favorite tracks

After completing step 3 on page 23, program your favorite tracks (see steps 2 to 4 on page 14).

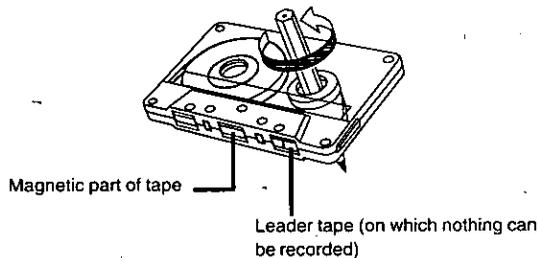
To switch the tape direction during recording (Forward to backward)

This function is available only when **▶** is displayed.

Press **◀ ▶** during recording.

The direction can not be switched when **◀** is displayed.

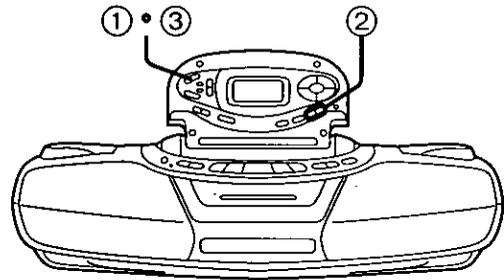
To wind up the leader tape:



Notes

- You cannot operate deck 1 during recording.
- If the unit is brought near a TV set during recording, noise may be recorded due to the effects of the signals from the TV set. Maintain a distance of at least 1.5 meters between the unit and the TV set.

To skip tracks which you do not want to record

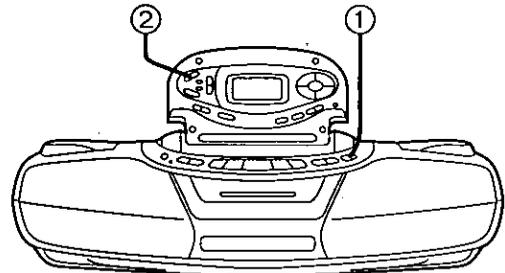


- ① During recording, press **REC/REC PAUSE**.
CD also pauses.
- ② Press **▶|/+** or **◀|/-** to display the track number which is to be recorded next.
- ③ Press **REC/REC PAUSE** to resume recording.

After the recording is over

When CD play is finished, the tape stops simultaneously.

To record another CD in succession:



- ① Press **▲ CD OPEN/CLOSE** and replace the CD.
- ② Press **REC/REC PAUSE**.

For your reference:

- In order to prevent trouble caused by flat batteries, it is recommended that you either supply power to the unit from the household AC outlet or replace all the batteries with new ones when you are recording something which is important to you.
- Any change made to the volume or sound quality during recording will not affect the recording.
- Even if you change the recording level, the volume level monitored through the speakers is not changed.

Type of tape which can be used for recording:

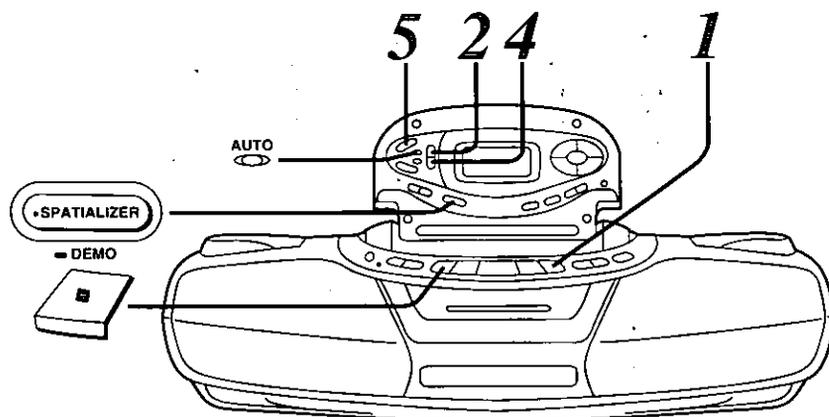
Normal position/TYPE I	○
High position/TYPE II	○
Metal position/TYPE IV	×

This unit can not make a recording or erasing correctly, if metal position tapes are used.

Easy CD Recording (AUTO)

All the tracks are recorded in their original sequence onto a single tape. (The reverse mode is set to \Rightarrow .)

Recording of a track may be interrupted at the end of the top side. This track will be re-recorded in its entirety at the beginning of the reverse side.



Preparation: Insert the CD.

1 Press **■/CLEAR** to switch to CD mode.

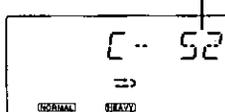


2 Press **CD REC MODE** to display "AUTO".
AUTO → 1-REC → OFF



(The display changes each time the button is pressed.)
AUTO indicator illuminates.

Length of the tape required to record all tracks



When "C---" appears:
You cannot make easy CD recording.
Follow the steps on page 23.

3 Load the tape in deck 2 which is longer than the length indicated in step 2.

The direction is automatically set to record on the side facing up (" \triangleright " display lights).

4 Press **CD REC LEVEL** to select the recording level.

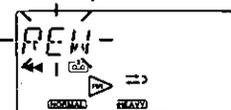


5 Press **●/● || REC/REC PAUSE** to start recording.



The tape is automatically rewound, and after recording no signal for 10 seconds, recording starts from the first track.

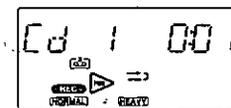
① Tape now rewinding



② 10-second blank now being recorded



③ Recording starts



To stop recording:

Press **■**.
CD play also stops at the same time.

Recording your favorite tracks

After completing step 1, program your favorite tracks (see steps 2 to 4 on page 14).

Turning on sound-space effects (SPATIALIZER) for recording

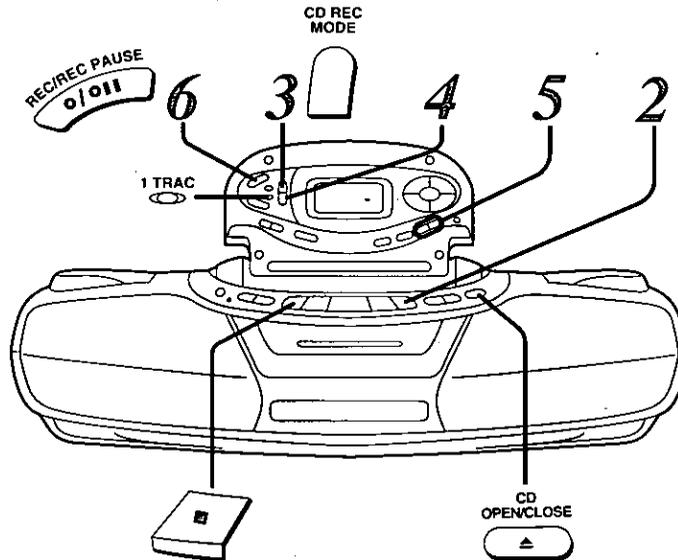
Before starting to record, press **•SPATIALIZER** so that the **SPATIALIZER** indicator in the display lights.

Note

Easy CD recording can not be used in combination with the random play (see page 13).

One track recording (1 TRACK)

The unit will record only one track you selected, and stops automatically.



Preparation: Insert the CD.

1 Load the tape in deck 2 with the side to be recorded facing up.

- Find the position on the tape where the recording is to start.
- The direction is automatically set to record on the side facing up (▶ display lights).

2 Press / CLEAR to switch to CD mode.

3 Press CD REC MODE to display "1-REC".

AUTO → 1-REC → OFF

(The display changes each time the button is pressed.)

1 TRAC indicator illuminates.

4 Press CD REC LEVEL to select the recording level.

5 Press /+ or /- to select desired track.

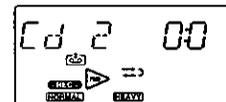
If you are going to record first track on the CD, skip this step.

6 Press REC/REC PAUSE.

CD play and recording starts at the same time.

Recording stops automatically after the selected track is finished.

Recording of a track may be interrupted at the end of the top side. This track will be re-recorded in its entirety at the beginning of the reverse side.



To record another CD in succession:

Press CD OPEN/CLOSE and replace the CD, then follow steps 5 and 6.

To stop recording:

Press .

CD play also stops at the same time.

Turning on sound-space effects (SPATIALIZER) for recording

Before starting to record, press SPATIALIZER so that the indicator in the display lights.

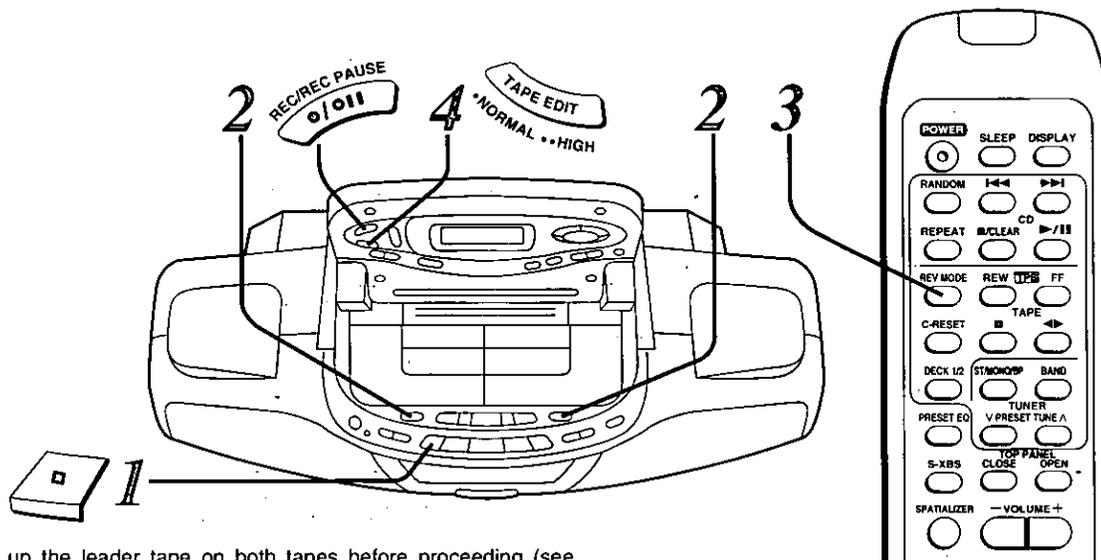
Try this:

Begin recording after hearing how a track sounds.

Press CD REC MODE so that the "1-TRAC" indicator is on.

If you hear a track on the CD that you like while it is playing, press REC/REC PAUSE to record the track, starting over from the beginning.

Recording Tape to Tape



- Take up the leader tape on both tapes before proceeding (see page 24).
- Normal, high position and metal tapes can be used for playback.
- Normal and high position tapes can be used for recording.
- Recording at high speed is not possible.
- You can not use SPATIALIZER.

1  Press  to switch to the tape mode.

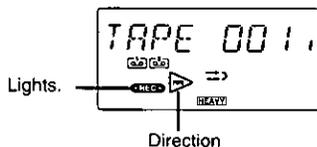
2  Press DECK1  and, Load the tape for playback with the side to be played facing up.

 Press DECK2  and, Load the tape for recording with the side to be recorded facing up.

3  Press REV MODE on the remote control to select the reverse mode. (See page 23.)

4  Start the recording. To record at the normal speed: Press TAPE EDIT once (recording starts after the "NORMAL" display appears).

To record at high speed (approx. 1.7 times normal speed): Press TAPE EDIT twice in succession (recording starts after the "HIGH" display appears).



To stop recording:
Press .

To temporarily stop recording:
Press  REC/REC PAUSE.
To resume recording, press TAPE EDIT.

For your reference:

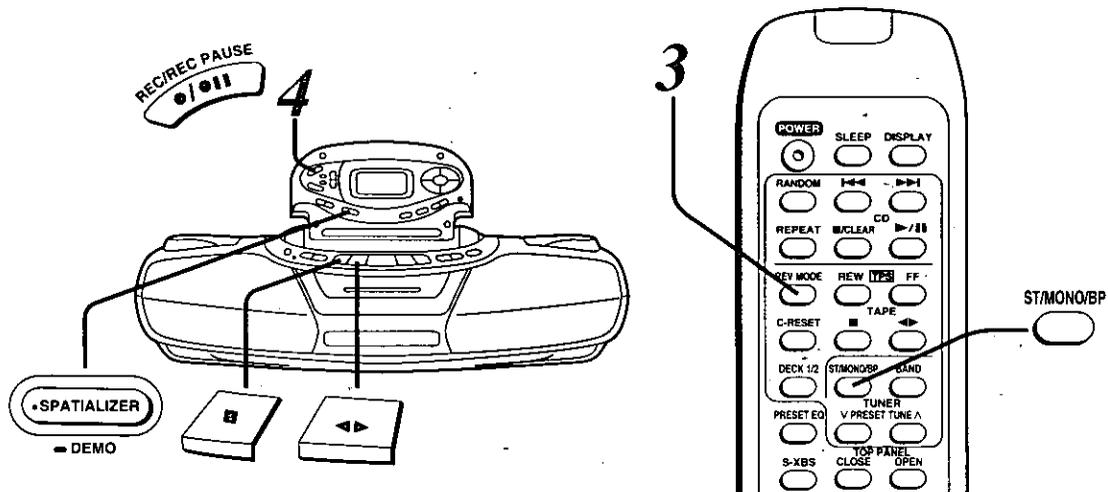
- You can set different types of tapes on the decks for editing and playback.
- Any change made to the volume or sound quality during recording will not affect the recording.
- The playback tape is recorded with its original level unchanged.

Type of tape which can be used:

	Deck 1	Deck 2
Normal position/TYPE I	○	○
High position/TYPE II	○	○
Metal position/TYPE IV	○	×

This unit can not make a recording or erase correctly, if metal position tapes are used.

Recording Radio Programs (Deck 2 only)



Normal and high position tapes can be used.

1

Load the tape in deck 2 with the side to be recorded facing up.

- Find the position on the tape where the recording is to start.
- When recording from the start of side A or B, have the leader tape wound up before proceeding. (See page 24.)

2

Select the desired station.
(See pages 18 to 20.)

3

REV MODE



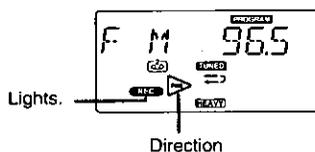
Press REV MODE to select the mode.
(See page 23.)

4



Press REC/REC PAUSE.

- : Recording starts from the side facing up.
- : Recording starts from the reverse side.



Turning on sound-space effects (SPATIALIZER) for recording

Before starting to record, press **•SPATIALIZER** so that the indicator in the display lights.

To switch the tape direction (Forward to backward)

This function is available only when is displayed.

Press during recording.

The direction can not be switched when is displayed.

When there is too much interference during AM recording

(Available only from the remote control)

ST/MONO/BP



Press ST/MONO/BP.

Select "bP1" or "bP2" whichever yields less noise.

Note

You cannot operate deck 1 during recording.

For your reference:

- The recording level is set automatically.
- Any change made to the volume or sound quality during recording will not affect the recording.

To stop recording:

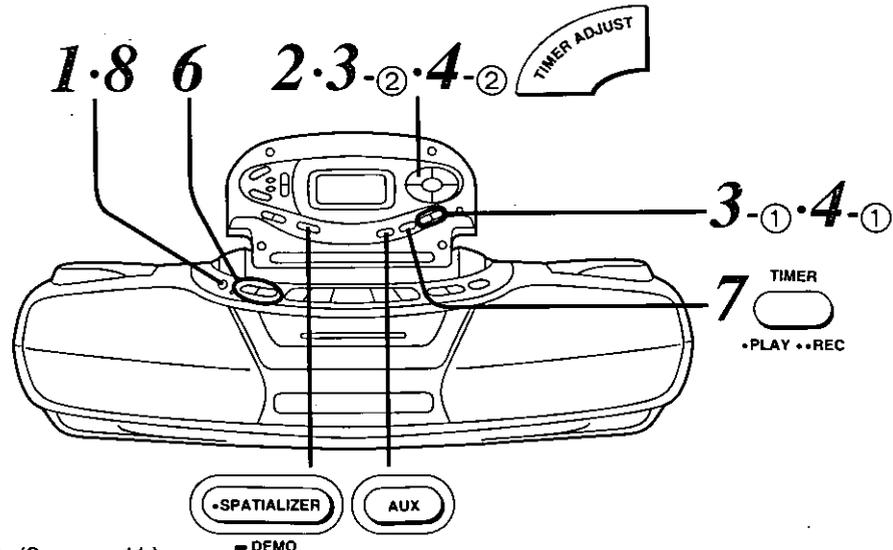
Press .

To stop recording temporarily:

Press REC/REC PAUSE.

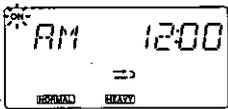
To resume recording, press REC/REC PAUSE.

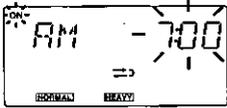
Using Play Timer



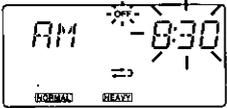
Make sure that you have set the clock. (See page 11.)
Example: Setting the timer to play a CD from 7:00 to 8:30 a.m.

- 1** **Press POWER.**
- 2** **Press TIMER ADJUST.**


- 3** **Press >>|/+ or <<|/- to show the time to start playing.**



2 **Press TIMER ADJUST to set the time.**
 (The OFF time starts flashing.)
- 4** **Press >>|/+ or <<|/- to show the time to finish playing.**

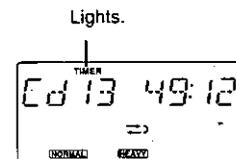


2 **Press TIMER ADJUST to set the time.**

- 5** **Get the music source ready.**
Listening to tapes:
 See pages 15 to 17.
Listening to CD:
 See pages 12 to 14.
Listening to the radio:
 See pages 18 to 20.
Listening to an external component:
 Press AUX so that "AUX" is displayed.

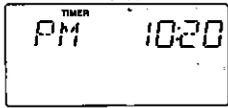
- 6** **Press VOLUME to adjust the volume which will be heard during play.**
 To turn on sound-space effects (SPATIALIZER), press •SPATIALIZER so that the indicator in the display lights.

- 7** **Press TIMER to display "ON".**
 ON → REC → OFF
 (The display changes each time the button is pressed.)

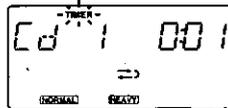


"E" appears in the following cases;
 "Setting the Clock" (see page 11) has not been completed.
 Ending (OFF) time is set the same as the starting (ON) time.
 (See steps 2 to 4.)

- 8** **Press POWER to turn the unit off.**



"TIMER" flashes during the programmed time.



Using Play Timer

To release the timer function:

(only when the unit is on)

Press **TIMER** to turn "OFF" display on.

The timer will operate on the time you have set, if you press **TIMER** again so that the "TIMER" indicator lights.

To check what has been programmed:

Press **TIMER ADJUST** when the unit is off.

The display changes automatically as follows:

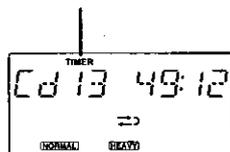
1. Programmed time to start
2. Programmed time to finish
3. Programmed source
4. Programmed volume level
5. Original display

To enjoy play after programming: (after step 7)

1. Start playing the desired sound source.
 2. After play, turn the unit off before timer play starts.
- Even if you change the volume level or sound source, whatever was programmed is restored at the play time.

Using the timer at the same time every day:

First check that "TIMER" appears on the display and then turn the unit off.



To change the source and volume for the timer function:

Press **TIMER** to turn off the "TIMER" display, and then perform steps 5 to 8 on page 29.

To stop the timer in mid-operation:

Turn the unit off.

Note

The timer will not operate if the unit is on.

Using Recording Timer

You can record a desired radio broadcast at a set time.

Make sure that you have set the clock (see page 11).

Example: Setting the timer to record an FM program from 1:00 to 2:30 p.m.

1

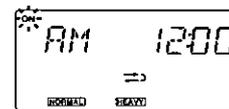


Press **POWER**.

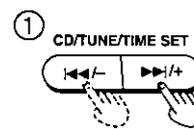
2



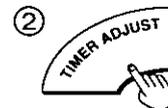
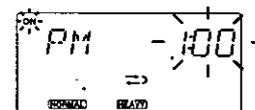
Press **TIMER ADJUST**.



3

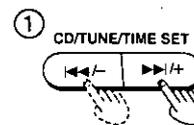


① Press **▶▶|/+** or **◀◀|/-** to show the time to start recording.

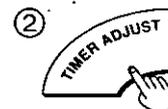


② Press **TIMER ADJUST** to set the time.
(The OFF time starts flashing.)

4



① Press **▶▶|/+** or **◀◀|/-** to show the time to finish recording.



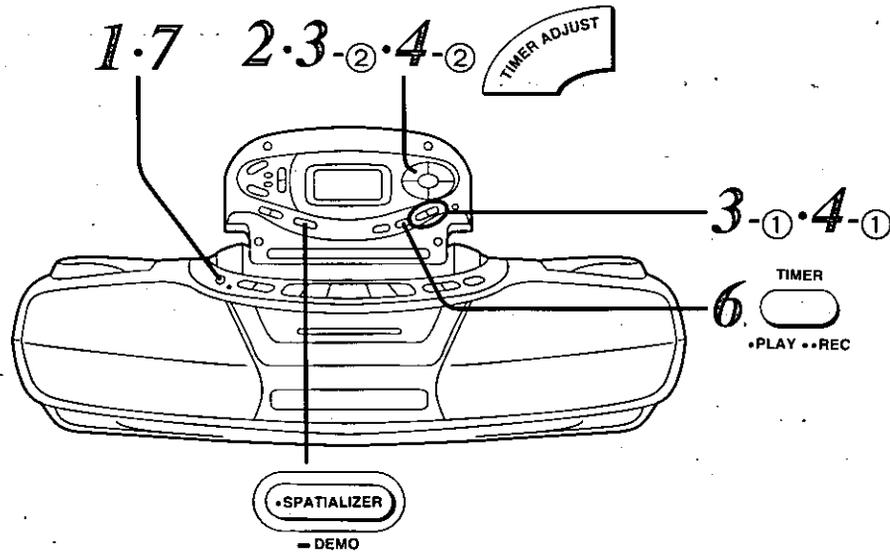
② Press **TIMER ADJUST** to set the time.

5

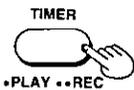
Prepare for recording.

1. Load the tape with the side on which the recording will start facing up.
2. Select the broadcast station.
(See pages 18 to 20.)
3. Press **REV MODE** to select the reverse mode (see page 23).

- If you do not want to hear any sound while recording, turn down the volume. (This will not affect the recording level.)
- To turn on sound-space effects (**SPATIALIZER**), press **•SPATIALIZER** so that the  indicator in the display lights.



6



Press TIMER to display "REC".

ON → REC → OFF

(The display changes each time the button is pressed.)

Lights:



"E" appears in the following cases:

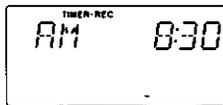
"Setting the Clock" (see page 11) has not been completed.

Ending (OFF) time is set the same as the starting (ON) time.
(See steps 2 to 4.)

7



Press POWER to turn the unit off.



"TIMER-REC" flashes during the programmed time.



To release the timer function:

(only when the unit is on)

Press TIMER to turn "OFF" display on.

The timer will operate on the time you have set, if you press TIMER again so that the "TIMER-REC" indicator lights.

To check what has been programmed:

Press TIMER ADJUST when the unit is off.

The display changes automatically as follows:

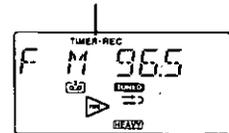
1. Programmed time to start
2. Programmed time to finish
3. Programmed station
4. Programmed volume level
5. Original display

To enjoy play after programming: (after step 6)

1. Start playing the desired sound source.
2. After play, turn the unit off before timer recording starts.
 - Be sure to turn tape direction indicator toward desired direction before you turn the unit off.
 - Even if you change the volume level or sound source, whatever was programmed is restored at the recording time.

Using the timer at the same time every day:

First check that "TIMER-REC" appears on the display and then turn the unit off.



To change the station to be recorded:

Press TIMER to turn off the "TIMER-REC" display, and then perform steps 5 to 7.

To stop the timer in mid-operation:

Turn the unit off.

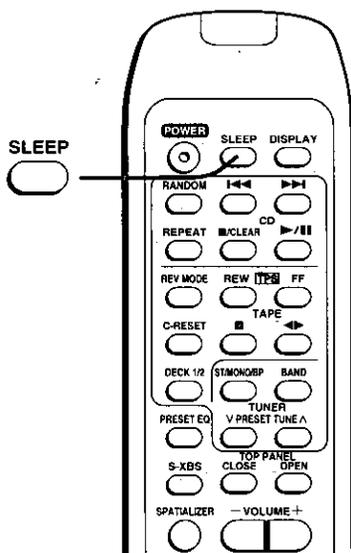
Note:

The timer will not operate if the unit is on.

Using the Sleep Timer

(Available only from the remote control)

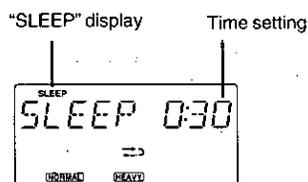
The unit off time can be set up to two hours ahead of the present time.



Press SLEEP to select the desired time.

0:30 → 1:00 → 1:30 → 2:00 → OFF

(The display changes each time the button is pressed.)



The unit is turned off after the time set has elapsed.

To release the timer function:

Press SLEEP to select "SLEEP OFF".

To check the time remaining during operation:

Press SLEEP.

To change the time remaining during operation:

Press SLEEP to show the remaining time then press SLEEP to select the desired time.

Hint

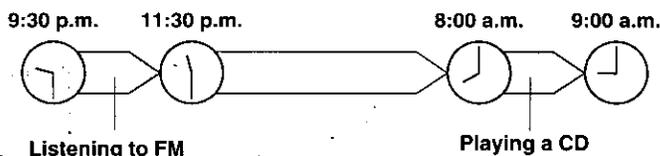
Pressing SLEEP can turn the unit on (only when AC power is supplied).

Using Two Timer Functions

Using the sleep timer in combination with the play timer

Example:

Falling asleep while listening to an FM program and waking up the next morning listening to a CD.



1. Program the CD play using the play timer. (See page 29.)
2. Select the broadcast station. (See pages 18 to 20.)
3. Operate the sleep timer. (See to the left.)

Note

When listening to a CD using both the sleep and play timers; If tracks are programmed then the selection will be played at both times.

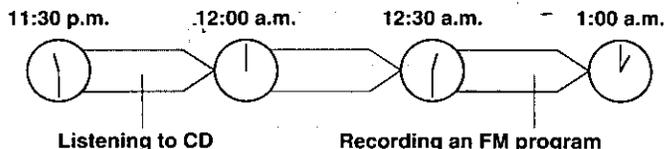
For your reference:

Even if the volume level is changed when the sleep timer was operating, the volume during the play timer operation will be at the level selected during programming.

Using the sleep timer in combination with the recording timer

Example:

Falling asleep while listening to CD play and recording a late-night program on FM.



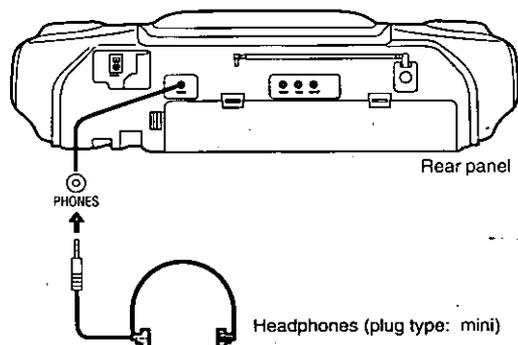
1. Program the recording timer. (See pages 30 and 31.)
2. Play the CD. (See pages 12 to 14.)
3. Operate the sleep timer. (See to the left.) (Set the sleep timer to turn the unit off before recording is due to start.)

Note

You cannot use play timer in combination with the recording timer.

Using an External Unit

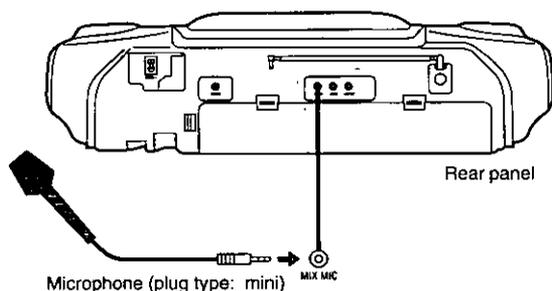
Using headphones



Lower the volume and connect the headphones (not included).

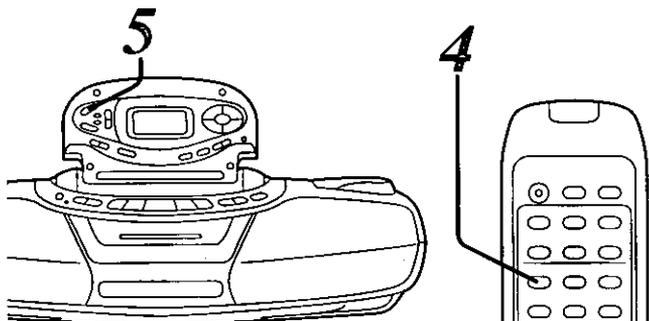
Using microphone

Karaoke



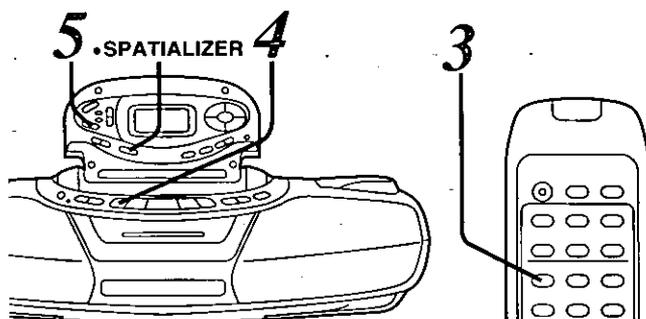
1. Lower the volume and connect the microphone (not included).
2. Start playing a CD or tape, or turn on the radio.
3. Start karaoke singing and adjust the volume.

Recording karaoke sound with accompaniment from a CD



1. Lower the volume and connect the microphone.
2. Insert the CD and program desired track.
(See page 14.)
3. Load the tape in deck 2.
4. Select the mode using REV MODE on the remote control.
(See page 23.)
5. Press **REC/REC PAUSE**.
Play and recording start.

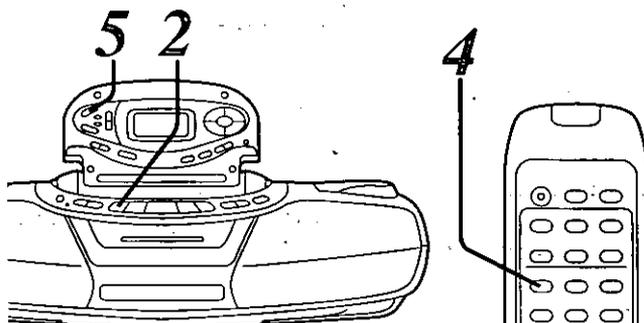
Recording karaoke sound with accompaniment from a tape



1. Lower the volume and connect the microphone.
2. Load the karaoke tape in deck 1 and the recording tape in deck 2.
3. Select the mode using REV MODE on the remote control.
(See page 23.)
4. Press **SPATIALIZER**.
5. Press **TAPE EDIT**.
Playback and recording start.

Turning on sound-space effects (SPATIALIZER) for recording:
Before starting to record, press **SPATIALIZER** so that the  indicator in the display lights.

Recording the sound through the microphone



1. Lower the volume and connect the microphone.
2. Press **REC/REC PAUSE**.
3. Load the tape in deck 2.
4. Select the mode using REV MODE on the remote control.
(See page 23.)
5. Press **REC/REC PAUSE**.
Recording starts.

Note:

When karaoke singing with accompaniment from a CD, sound is heard only while the CD is playing. No sound is heard in the stop or pause mode.

Using an External Unit

For details, refer to the operating instructions of the units which are to be connected.

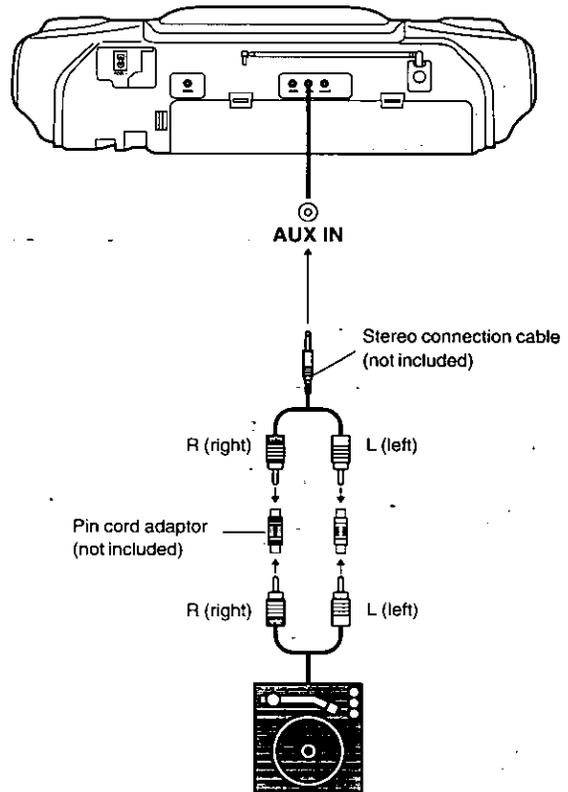
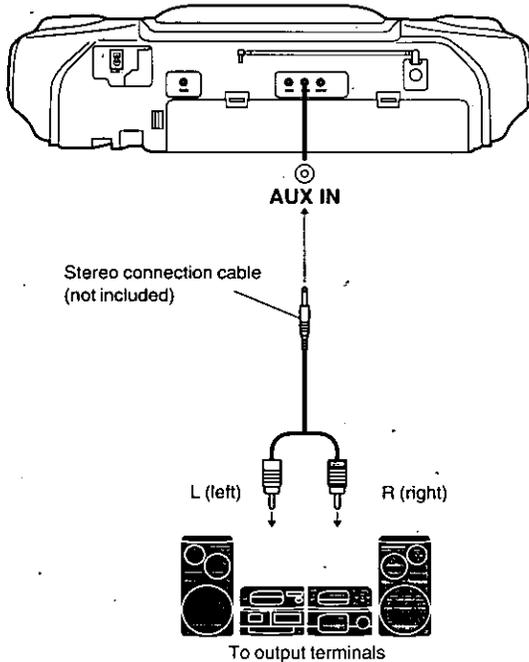
Listening to an external source

You can connect your equipment such as VCR, TV or analog turntable etc. and enjoy listening through the speakers in this unit.

Connections

To connect an analog turntable:

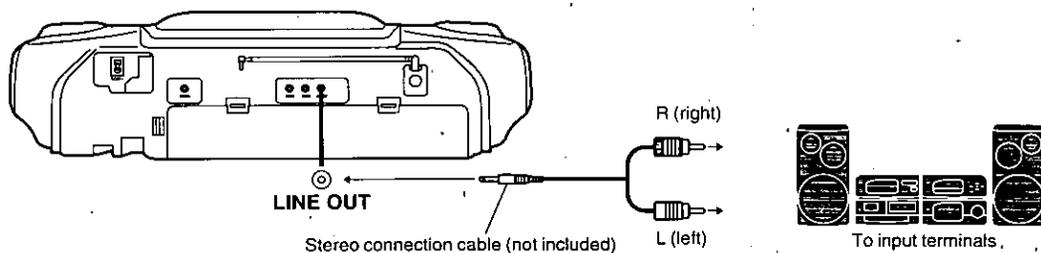
Only an analog turntable with a built-in phono equalizer can be connected.



Enjoying playback/recording

1. Press **AUX** on this unit.
2. Start playback on your equipment.
3. To make a recording, load the tape in deck 2 then press **⏸/⏹** **REC/REC PAUSE**.

Listening through an external unit



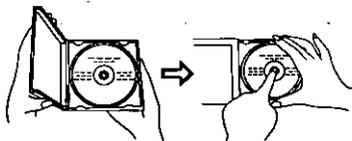
Concerning Compact Discs

Only compact discs having this mark can be used with this unit.



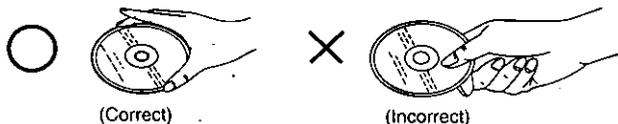
To remove a disc from its case

Press the center holder and lift the disc holding by the edges.

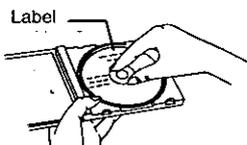


To hold the disc

Hold the disc by the edges so the surface is not soiled with fingerprints. Fingerprints, dirt and scratches can cause skipping and distortion.



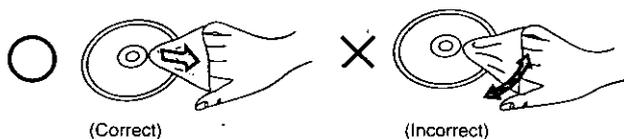
To store a disc in its case



Insert the disc with label facing upwards and press downward at the center.

If the surface is soiled

Wipe gently with a soft, damp (water only) cloth.



If the disc is brought from a cold to a warm environment, moisture may form on the disc

Wipe this moisture off with a soft, dry, lint-free cloth before using the disc.

Improper disc storage:

You can damage discs if you store them in the following places;

- Areas exposed to direct sunlight
- Humid or dusty areas
- Areas directly exposed to a heat outlet or heating appliance

Handling precautions:

- Do not write on the label side with a ball-point pen or other writing utensils.
- Do not use record cleaning sprays, benzene, thinner, static electricity prevention liquids or any other solvent.
- Do not soil with fingerprints.

Concerning Cassette Tapes

Selection of cassette tapes

Cassette tapes of 100 minutes or longer:

These tapes are handy for their long playback and recording time but be careful about repeatedly stopping and starting, rewinding and fast forwarding these tapes in short intervals as they are thin, tend to stretch and may become entangled in the deck mechanism.

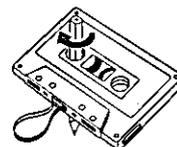
Endless tapes:

Failure to operate these tapes correctly may cause the tape to wind around the revolving parts.

For this unit, it is recommended to use the tape which is appropriate to the auto reverse mechanism.

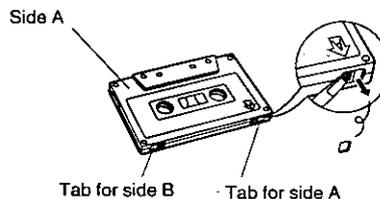
If the tape loosens, take up the slack

Tape slack may cause the tape to break.

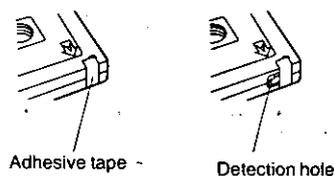


To prevent erasure of recorded sounds

Remove the tabs with a screwdriver or a similar object.



To re-record on a protected cassette, cover the slot with adhesive tape.



Do not cover the detection holes on high-position tapes.

Improper tape storage:

You can damage tapes if you store them in the following places;

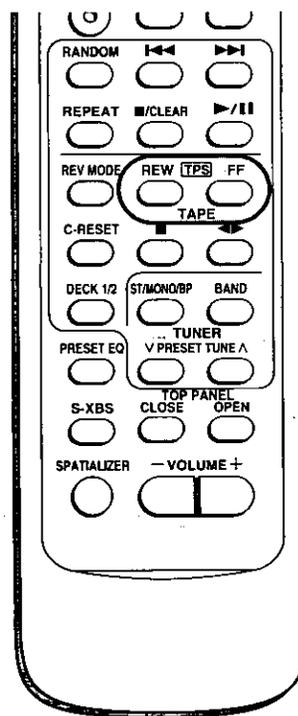
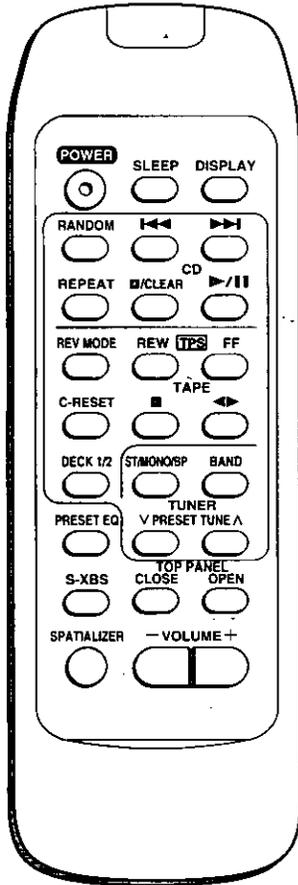
- In high temperature [35°C (95°F) or higher] or high humidity (80% or higher) areas
- In a strong magnetic field (near a speaker, on top of a TV, etc.) This can erase a recording.
- Areas exposed to direct sunlight

To erase sound previously recorded on a tape:

Disconnect the microphone.

1. Load the tape in deck 2.
2. Press
3. Press REC/REC PAUSE.

Quick Reference of Remote Control Operations



Common operations

Turn the unit on and off
(When using the battery power, you can only turn off.)

POWER



To open the top panel

OPEN



To close the top panel

CLOSE



Selecting the equalizer effect

PRESET EQ



To turn on sound-space effects
(SPATIALIZER)

SPATIALIZER

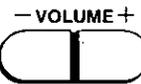


To emphasize the extra bass (S-XBS)

S-XBS



Adjusting the volume



Selecting the display

DISPLAY



One touch play



Setting/releasing the sleep timer

SLEEP

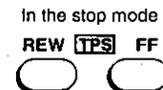


Cassette deck operations

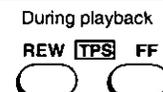
Starting playback/
Changing the direction



Rewinding/Fast forwarding



Finding the beginning of a track (TPS)



Stopping the tape



Selecting the reverse mode

REV MODE



Resetting the tape counter to "000"

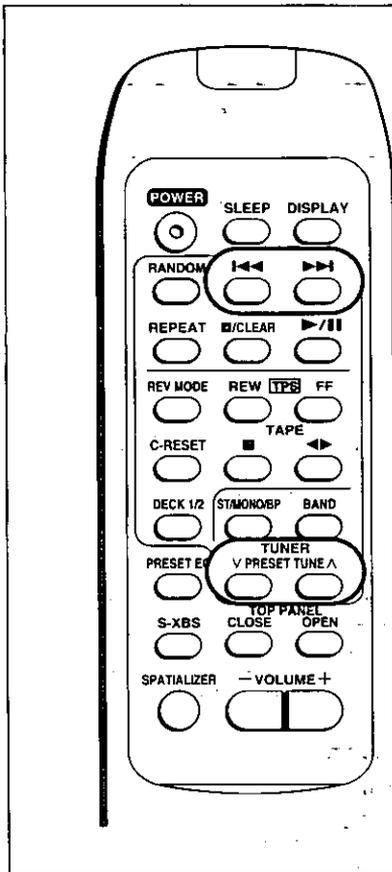
C-RESET



Selecting deck 1/2

DECK 1/2





Tuner/CD operations

Listening to a programmed radio station	BAND → TUNER V PRESET TUNE ▲
Selecting FM reception in stereo or mono	ST/MONO/BP
Reducing noise during the recording of AM programs	ST/MONO/BP
Starting play/ Temporarily stopping play	▶/
Stopping play/ To clear program play	■/CLEAR
To skip tracks	◀◀ ▶▶
To search forward or backward	Keep pressing ◀◀ ▶▶
Listening to track(s) repeatedly	REPEAT
Listening to tracks at random	RANDOM

Maintenance

Maintenance of external surfaces

To clean this unit, use a soft or dry cloth. If the surfaces are extremely dirty, use a soft cloth dipped in a soap and water solution or a weak detergent solution.

Wring the cloth well before wiping the unit.

Wipe once again with a soft or dry cloth.

Never use alcohol, paint thinner, benzine, or chemically treated cloths to clean this unit. Such chemicals may damage the finish of your unit.

Head demagnetization

In order to maintain good sound quality, it is recommended that the head assembly be demagnetized when distortion or poor sound quality persists after cleaning the head. If the head assembly becomes magnetized, it could create loss of high end frequency response.

Several types of head demagnetizers are available and may be purchased separately at local electronics supply stores. Follow the instructions that are supplied with the device.

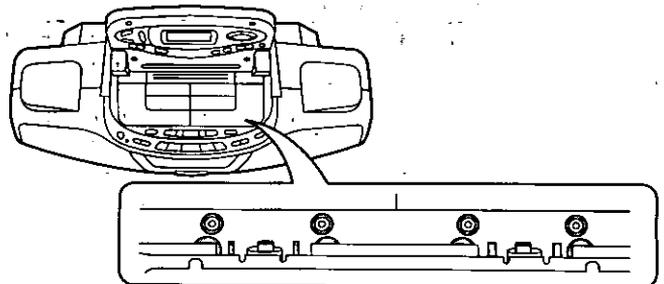
Do not bring any type of metal objects or tools, such as magnetic screwdrivers, in contact with the head assembly.

Tape head care

To assure sound quality for recording and playback, be sure to clean the tape heads after approximately every 10 hours of use.

1. Open the cassette compartment cover by pressing DECK 1 ▲ and DECK 2 ▲.
2. Clean the portions which contact the tape (the shaded portions in the figure below) with a cotton swab.

Do not use any solution other than alcohol for head cleaning.



Troubleshooting Guide

Before requesting service for this unit, check the chart below for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation. If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the directory of Authorized Service Centers (enclosed with this unit) to locate a convenient service center, or consult your dealer for instructions. (In U.S.A. consult MSC Authorized Servicenters for detailed instructions or call 1-800-545-2672 for the address of an authorized factory servicerenter.)

Problem	Probable cause(s)	Suggested remedy	Page
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Common problems

No operation. (When batteries are used as the power source)	Is the AC power cable still connected to the unit while batteries are being used?	Disconnect the AC power cable.	8
	Are the batteries flat?	Replace them with new ones. Alternatively, use a household AC outlet as the power source.	8
	Have the batteries been installed incorrectly with their (+) and (-) polarities reversed?	Align the (+) and (-) polarities correctly.	8
"E" appears.	Have you made a mistake in operation?	Read the operating instructions and try again.	
"U01" appears.	The batteries are flat.	Replace them with new ones. Alternatively, use a household AC outlet as the power source.	8
"U02" appears.	The power is not supplied to the unit.	Install the batteries or connect the power cable.	8

While listening to CDs

Play does not start. No display of track numbers, etc.	Has the CD been installed upside down?	Install the CD with the label side facing up.	12
	Has condensation formed on the unit's CD section?	Turn the unit on and leave it on for about an hour before further operation.	
Certain sections are not played properly.	Is the CD soiled?	Wipe with a soft cloth.	35
	Is the CD scratched?	Replace with a new CD.	

While listening to tapes

No recording.	Have the tape's accidental erasure prevention tabs been broken out?	Cover the holes with adhesive tape.	35
Sound is low, intermittent, or poor quality, noisy, scratchy, or unsteady.	Are the heads soiled?	Clean them.	37
	Have the heads been magnetized?	Demagnetize them using a head eraser available from an audio store.	37

While listening to the radio

Stations cannot be tuned in well. Noise heard during AM reception.	Has the antenna been adjusted properly?	Try changing its direction.	18
	Are you using a remote control of other appliances near the unit?	Use the remote control at a distance.	
	Are you operating the unit and a TV set at the same time?	Place the unit at a distance from the TV. Alternatively, turn the TV off.	

While using the timer

No timer operation at the programmed time.	Is the unit turned on (when the play timer and the recording timer are being used)?	Turn the unit off upon completion of the settings.	29
			31
	Has the programmed timer indicator (TIMER, TIMER-REC or SLEEP) lighted?	Operate again so that the display lights up.	29
			31
			32

Problem	Probable cause(s)	Suggested remedy	Page
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While using the remote control

No operation.	Are the batteries flat?	Replace them with new ones.	9
	Have the batteries been installed incorrectly with their (+) and (-) polarities reversed?	Align the (+) and (-) polarities correctly.	9
	Is the remote control's transmitter pointed at the unit's sensor?	Check whether anything is obstructing the path between the two and point the remote control squarely at the unit's sensor and operate.	9
	Is the unit's sensor exposed to direct sunlight or strong fluorescent light?	Shield the sensor from strong sources of light.	9

Technical Specifications

Radio

Frequency range

FM 87.9–107.9 MHz (200 kHz steps)

87.5–108.0 MHz (100 kHz steps)

AM 520–1710 kHz (10 kHz steps)

CD player

Sampling frequency 44.1 kHz

Decoding 16 bit linear

Beam source Semiconductor laser (wavelength: 780 nm)

No. of channels 2 channel, stereo

Wow and flutter Less than possible measurement data

D/A converter MASH (1 bit DAC)

Tape recorder

Track system 4 track, 2 channel, stereo

Monitor system Variable sound monitor

Recording system AC bias

Erasing system AC erase

Frequency range

Normal position 30–16000 Hz

High position 30–17000 Hz

General

Power requirement

AC 120 V, 60 Hz,

Power consumption: 86 W

Battery 15 V (Ten "D" size, R20/LR20 batteries)

Do not use rechargeable type batteries.

Memory back-up for computer/clock

6 V (Four "AA" size, R6/LR6 batteries)

Do not use rechargeable type batteries.

Output power

40 W

Speakers 10 cm×2 (Woofer)

8 cm×2 (Mid range)

2 cm×2 (Tweeter)

Jacks

Output PHONES: M3, 32Ω

LINE OUT: M3, 4.7kΩ

Input MIX MIC: 5 mV (200–600Ω)

AUX IN: M3, 47kΩ

Dimensions (W×H×D)

650×187×292 mm

(25⁹/₁₆"×7¹/₂"×11¹/₂"

(Top panel closed)

Weight 7.0 kg (15 lb 7 oz)

without batteries

Note:

Specifications are subject to change without notice.

Weight and dimensions are approximate.

MASH is a trademark of NTT.

Product Service

Do not attempt to remove the cover(s) or repair the unit yourself.
Refer servicing to qualified personnel only.

Product information

For product service, product information or assistance with product operation, refer to the servicenter directory.

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