

VHS Stereo Video Cassette Recorder

SLV-70HF

Operating Instructions

Before operating the unit, please read this manual thoroughly, and retain it for future reference.

Owner's Record

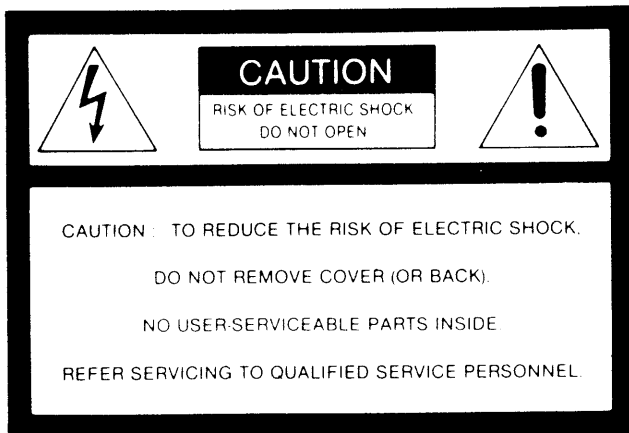
The model number is located at the rear.
The serial number is located on the top of the panel.
Record the serial number in the space provided below.
Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. SLV-70HF Serial No. _____



WARNING

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



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



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

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.

Precautions

On safety

- Operate the unit only on 120V AC, 60Hz.
- Should any thing into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall outlet if it will not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

On installation

- Allow adequate air circulation to prevent internal heat build-up.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, as for example a microwave oven or a large loudspeaker.
- Do not place any heavy object on the unit.

On operation

- When the unit is not in use, turn the power off to conserve energy and to extend its useful life.
- Remove and store video cassettes after recording or playback.
- Store the cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.

On cleaning

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

On repacking

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

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

Features

Distinguished Editing Functions

Edit monitor functions

You can know the editing process at a glance as both the picture being played back and the one being recorded are simultaneously displayed on the connected TV or monitor.

Input connectors located on the front

This allows you to use a video camera recorder easily.

Flying erase head

Color streaks and blurs which were conventionally caused by continuous recording or insert editing are eliminated with this head.

Synchronized editing with a Sony VCR equipped a control terminal

You can control this unit and the connected VCR simultaneously during editing.

CONTROL S input/output jacks and CONTROL L jack

You can remotely control the tape transport of another Sony video unit by using this unit.

Display Functions

Auto (automatic play) menu

You can select the various tape running modes with the auto menu.

Program list

You can see the TV programs set for timer-activated recording at a glance.

P in P (picture in picture)

You can watch a small TV picture inset in a VCR playback picture and vice versa.

Tape transport information displayed

You can see the information of the tape counter, tape speed and remained tape length on the TV monitor as the data screen.

Blue background function *

The VCR automatically paints the background in blue when the following items are displayed on the data screen so that you can read the data easily.

- EDIT MONITOR screen
- Program list
- Auto menu
- Timer title

Convenient Functions

Multi-function wireless commander with the liquid-crystal display

You can control timer recordings easily with this commander.

Timer recordings of eight TV programs over a month

You can preset eight recordings of TV programs as much as one month in advance.

Index search and index scan

You can locate a desired program easily by marking the beginning of the program with an INDEX signal.

High-quality Picture

This VCR provides sharp, finely detailed pictures through High Quality (HQ) picture technology.

HQ The Video Cassette Recorder (VCR) with this marking

incorporates VHS high-quality picture technology and is compatible with any Video Cassette Recorders bearing the VHS mark.

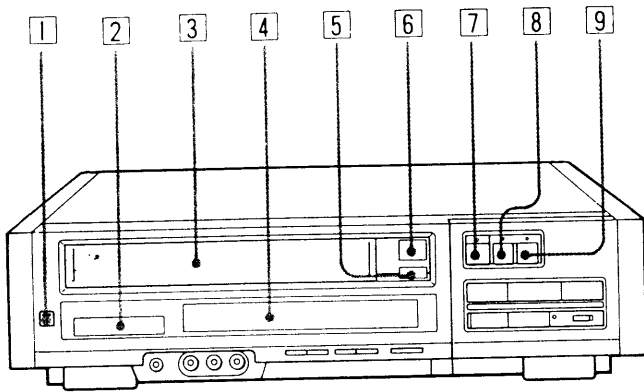
* The background becomes blue in the following situations:

- When you select a channel not pre-set
- When a unrecorded tape or a tape portion without a CTL signal is played back
- When an antenna is not connected
- When the TV signal is weak
- When no TV programs are being broadcast
- When you select the input signal from the LINE IN 1 or 2 jack when no any equipment is connected there.
- When snow and noise appear on the picture

Location and Function of Parts and Controls

A1

Front



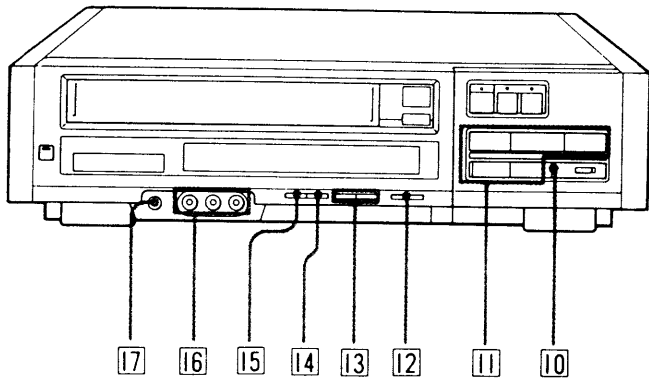
For details on the use of each control, refer to the pages indicated in the black circles (●).

A1

- 1 **POWER switch and indicator**
- 2 **PEAK PROGRAM METER**
Shows the peak input level of the right and left channels during recording.
- 3 **Cassette compartment**
- 4 **Display window**
- 5 **EJECT button**
Press to eject the cassette.
This button does not function during recording.
- 6 **Remote sensor**
- 7 **EDIT MONITOR button and lamp** ●
Press to display simultaneously the picture selected with INPUT SELECT and the picture that will be recorded or insert edited.
- 8 **SYNC (synchronized) EDIT button and lamp**
Press to perform synchronized editing.
- 9 **INSERT button and lamp**
Press to perform insert editing.

A2

Front



A2

10 RECORD switch and lamp

Slide to the right to start recording.

11 Tape transport buttons and indicators

- ◀ REW (rewind) button and indicator,
- ▶ PLAY button and indicator,
- ▶▶ FF (fast-forward) button and indicator,
- STOP button,
- ||/▶ PAUSE/STILL button and indicator

12 INPUT SELECT button

To select the program to be recorded, press so that the desired input mode indicator appears in the display window.

TUNER: For recording TV programs

LINE: For recording the signals from the LINE IN 1 or 2 jacks. L1 or L2 is displayed in the channel number indicator position of the display window depending on the jack used.

13 CHANNEL +/- buttons

Press to select the channels. And press + to advance and - to go back.

14 COUNTER RESET button

Press to reset the tape counter to "0H00M00S" and "0:00:00" on the data screen.

15 TV/VTR button

Press so that the VTR indicator lights up (VTR mode) to watch the program selected on the VCR. To watch a different program selected on the TV, press this button again so that the indicator goes off.

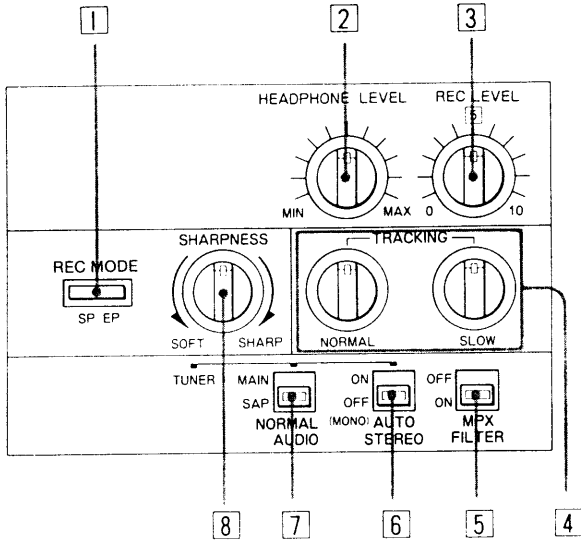
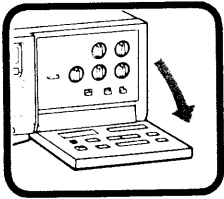
16 VIDEO/L/R (line in 2 audio and video) jacks (phono type)

17 HEADPHONES jack (stereo mini type)

Location and Function of Parts and Controls

A3

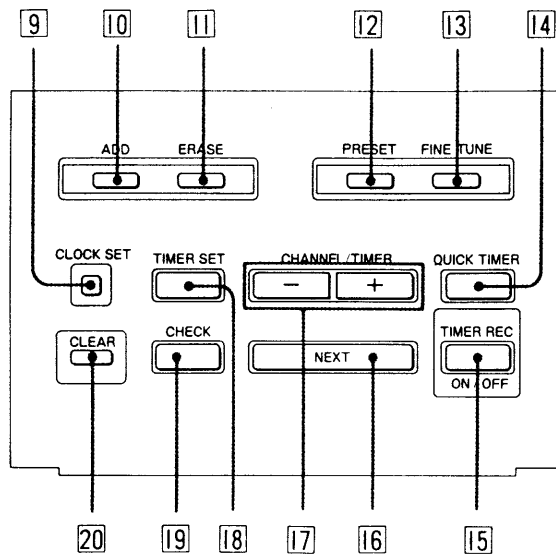
Inside the Front Panel



A3

- 1 **REC MODE button**
Press this button to select the tape speed for a recording time: SP or EP.
 - 2 **HEADPHONE LEVEL control**
Adjusts the level of the audio output from the HEADPHONES jack.
 - 3 **REC LEVEL control**
Adjusts the audio recording level. Normally keep this control at the center detent position.
 - 4 **TRACKING controls**
Normally keep these controls at the center position. Turning either of these controls may help clear possible streaks on the screen, especially when playing back tapes recorded on another VCR.
NORMAL: For normal and double speed playback.
SLOW: For slow speed playback and freeze pictures.
 - 5 **MPX FILTER switch**
When making a recording other than regular TV recordings, set the switch as follows:
OFF: For recording the sound from a record player or a compact disc player.
ON: For recording FM radio broadcast programs (If your FM tuner is provided with an MPX filter, set this switch to ON.)
- Note**
Regardless of the setting of this selector, TV programs are automatically recorded in MPX FILTER OFF mode.
- 6 **AUTO STEREO switch**
Normally set to ON. When the signal is weak on a particular channel, set to OFF.
 - 7 **NORMAL AUDIO switch**
Use to select the sound to be recorded on the normal audio track.
MAIN: Main (Monaural) sound
SAP: SAP
 - 8 **SHARPNESS control**
Use to adjust the sharpness of the picture if necessary. Normally set the control at the center detent position.

A4



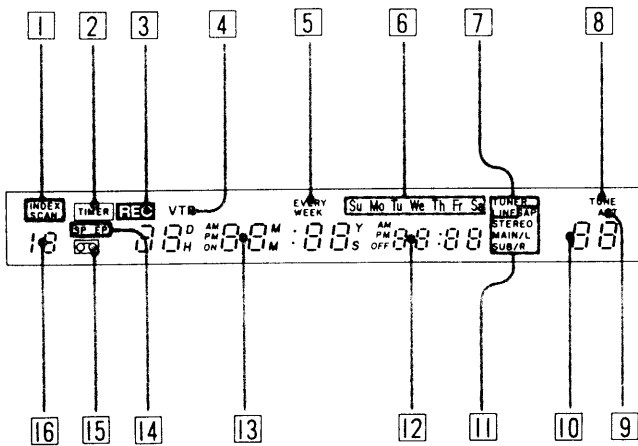
A4

- 9 CLOCK SET button**
Press to start the setting of the date and clock.
- 10 ADD button ㉔**
Use to replace the channels removed by the ERASE button 11.
- 11 ERASE button ㉔**
Use to erase certain preset channels, for example inactive channels in your area.
- 12 PRESET button ㉔**
Use to receive UHF channels which have not been preset.
- 13 FINE TUNE button**
Use to fine-tune a weak station.
- 14 QUICK TIMER button ㉔**
Press to start a quick timer recording.
- 15 TIMER REC ON/OFF button ㉔**
Press to activate the timer recording.
- 16 NEXT button**
Press to advance to the next item to be set during date, clock or timer setting.
- 17 CHANNEL/TIMER +/- buttons**
Press to set the timer and channel for timer-activated recording.
- 18 TIMER SET button**
Press to start the setting or resetting of timer programs.
- 19 CHECK button**
Press to check the contents of the preset timer programs.
- 20 CLEAR button ㉔**
Press to clear the timer setting.

Location and Function of Parts and Controls

A5

Display Window



A5

1 INDEX SCAN indicator

2 TIMER indicator

This indicator appears while you are setting or checking data for timer-recording or while the VCR is performing timer-recording, is waiting for the turn-on time of timer-recording, or is performing quick timer recording.

3 REC indicator

This indicator appears while the VCR is performing timer-recording, is waiting for the turn-on time of timer-recording, or is performing quick timer recording.

4 VTR indicator

5 EVERY WEEK indicator

6 Day indicator

7 Input mode indicators

8 TUNE (tuning) indicator

9 AFT (automatic fine tuning) indicator

10 Channel number indicator

11 Stereo program/SAP indicator

12 Current time, timer recording end time, or clock setting indicator

13 Linear time counter, date, timer recording start time, or calendar setting indicator

14 Tape speed indicator

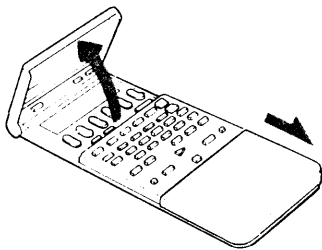
15 Cassette indicator

16 Timer program number for timer recording, index number for index searching or scanning

Location and Function of Parts and Controls

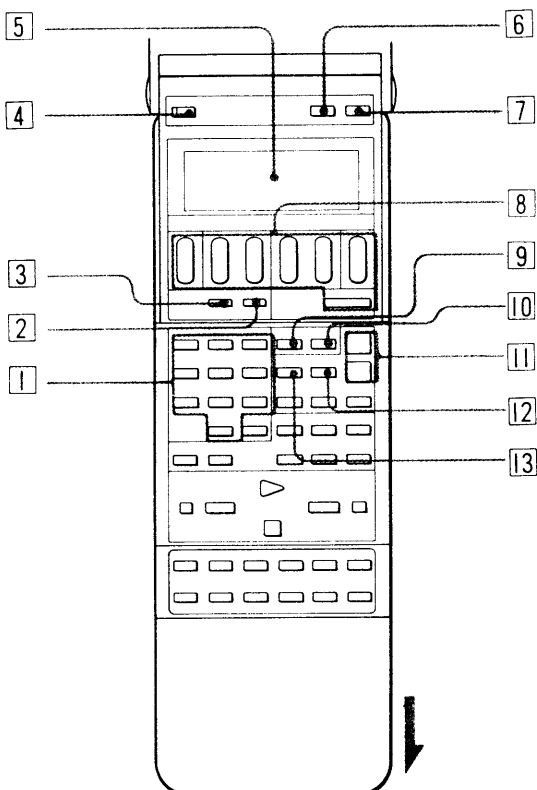
A7

Wireless Commander RMT-256



The buttons without explanation have the same function as the buttons on the VCR with the similar name or mark. Operate this commander without opening the upper cover except when setting data for timer recording.

A8



A7

Before using the commander

Set the COMMAND MODE selector of the commander to the same position as that of the COMMAND MODE selector of the VCR.

A8

1 Channel number buttons

2 MEMORY button

Press to store data for timer recording in the memory.

3 CLOCK SET button

4 COMMAND MODE selector

5 Liquid-crystal display

6 ANT TV/VTR (Antenna TV/VTR) button

7 POWER switch

8 Timer recording setting buttons

Date/clock/turning-on time/turning-off time/channel/enter (transmit)

9 INPUT SELECT button

10 REC MODE button

11 CHANNEL +/- buttons

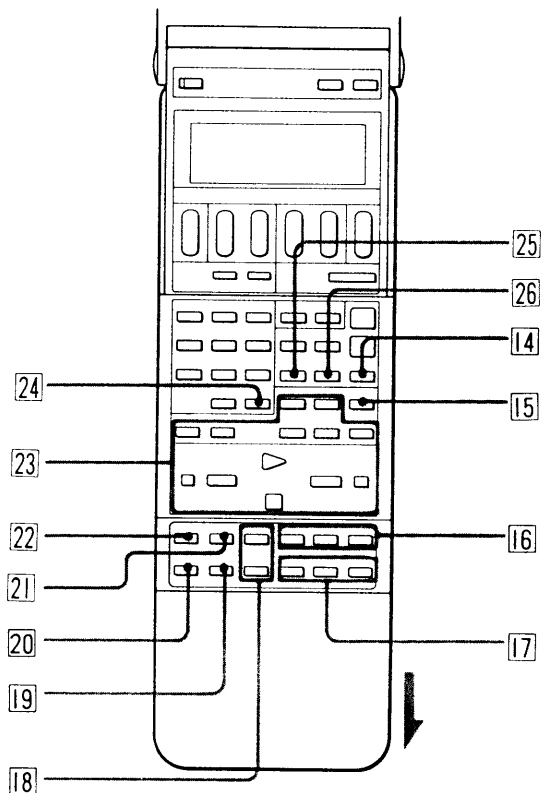
12 TIMER DISPLAY button

Display for checking timer-recording programs is superimposed on the TV or monitor.

13 EDIT MONITOR button **43** **77**

INPUT SELECT and REC MODE buttons

When the upper cover is opened, you can set the data for timer-activated recording. When the upper cover is closed, you can change the data of the current setting.

**14 INDEX button****15 DATA SCREEN button**

The channel number, tape operation mode, remaining tape length, selected video input, and tape counter are superimposed on the TV or monitor as the data screen. To turn off this data screen, press this button. To resume the display, press it again.

The data screen is not displayed during playback pause or slow playback. The remaining tape length is not displayed during fast-forwarding or rewinding.

16 Auto menu buttons

Use to select the automatic tape operation listed in the auto menu displayed when pressing AUTO MENU.

AUTO MENU,
SELECT,
EXECUTE

17 Timer recording buttons

TIMER CHECK,
CLEAR,
TIMER REC ON/OFF

18 INDEX MARK and ERASE buttons**19 DIGITAL OFF button****20 TV SCAN button****21 SHIFT button****22 P in P (picture in picture) button****23 Tape transport buttons**

- ⏸ PAUSE
- REC and the recording auxiliary button (right side)
- ⏪▶ (frame)
- SLOW + / -
- x2
- ⏪▶ SEARCH (Forward/reverse)
- ▶ PLAY
- ⏪ REW (rewind)
- ▶ FF (fast-forward)
- STOP

24 ENTER button**25 AUDIO MONITOR button** **26 COUNTER RESET button****When the data screen or edit monitor is displayed**

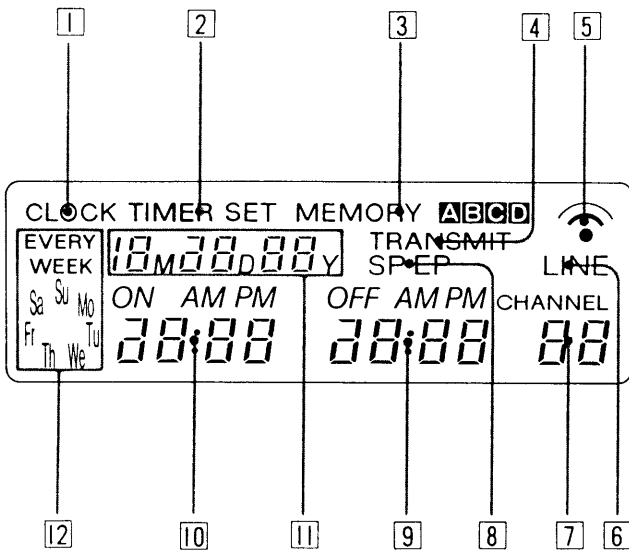
During slow playback or while playing back a commercially available recorded tape, noise may appear over the picture in the data screen or edit monitor.

In this case, check the information on the display window of the VCR instead.

Location and Function of Parts and Controls

A10

Liquid-crystal display

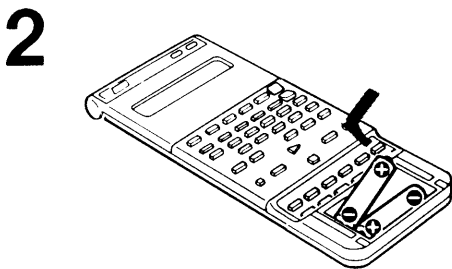
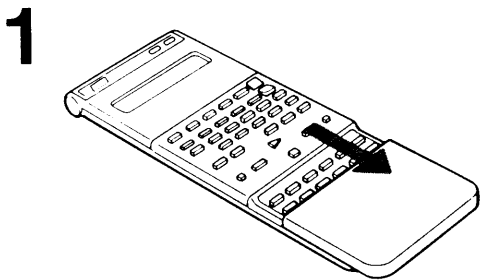


A10

- 1 Current time indicator
- 2 Timer setting indicator
- 3 Memory indicator
- 4 Data transmit prompt indicator
Indicates that the necessary data have been set and calls upon the person to press TRANSMIT.
- 5 (data transmit) indicator
Indicates that the set data are being transmitted.
- 6 External input indicator
- 7 Channel for timer recording or line indicator
- 8 Tape speed indicator
- 9 End time of a timer recording indicator
- 10 Current time and start time of a timer recording indicator
- 11 Current date and date for timer recording indicator
- 12 Every week and day indicators

A11

Battery insertion



A11

- 1 Open the lid.
- 2 Insert two size AA (R6) batteries with correct polarity.
- 3 Slide and close the lid.

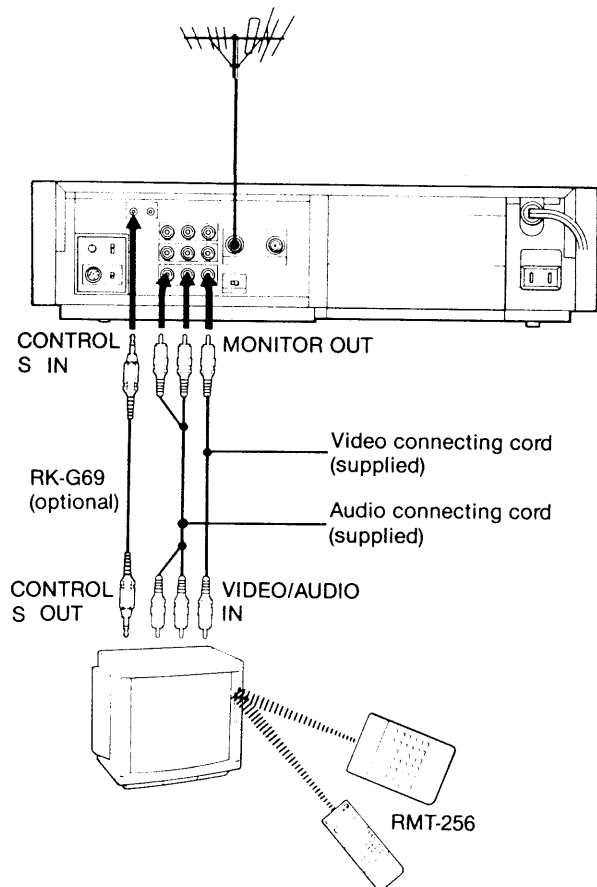
Battery life

In normal operation, batteries will last for six months.

If the wireless commander will not be used for a long period of time

Remove the batteries to avoid possible damage from battery leakage.

Remote Control Operation



For owners of other Sony video equipment or TVs

You can operate the VCR by pointing this commander at your TV or TV tuner if it is equipped with the CONTROL S output jack. This is convenient when the VCR is located far away from the TV.

Remotely controlling the video equipment without the COMMAND MODE selector

Set COMMAND MODE on the commander as follows:

VTR1: for Sony Betamax infrared remote control VCRs

VTR2: for Sony 8mm format VCRs

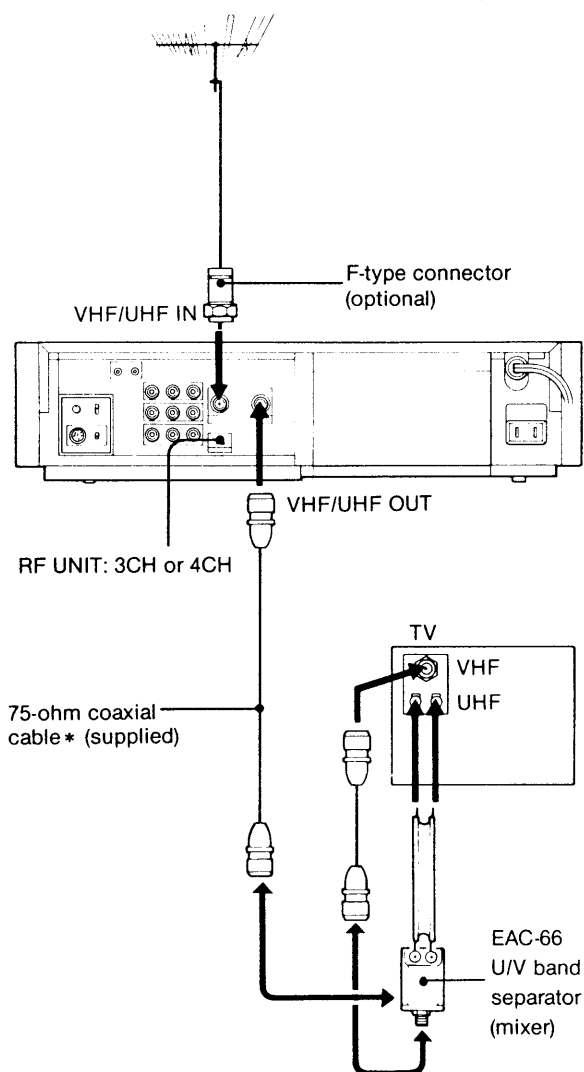
VTR3: for Sony VHS infrared remote control VCRs

Avoiding having this VCR and the other equipment functioning simultaneously

Set COMMAND MODE of this VCR to a different position from the command mode selector of the other equipment. Simply by switching COMMAND MODE, you can control two VCRs separately.

Antenna/cable and TV Connection

B1



If you need a separator or a complete antenna system, consult your Sony dealer or a qualified technician.

Caution

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

Before making connections

- Turn off all equipment.
- Do not connect the AC power cord to a wall outlet until all the connections of the VCR and the TV have been completed.
- Make connections firmly. Loose connections may cause a distorted picture.

B1

Connecting an Antenna

Disconnect the TV antenna cable from the TV receiver and connect them to the VCR. Then connect the VCR and the TV.

Refer to page 20 for attachment of an F-type connector, an antenna connector and an EAC-66 U/V band separator.

Combination VHF/UHF antenna

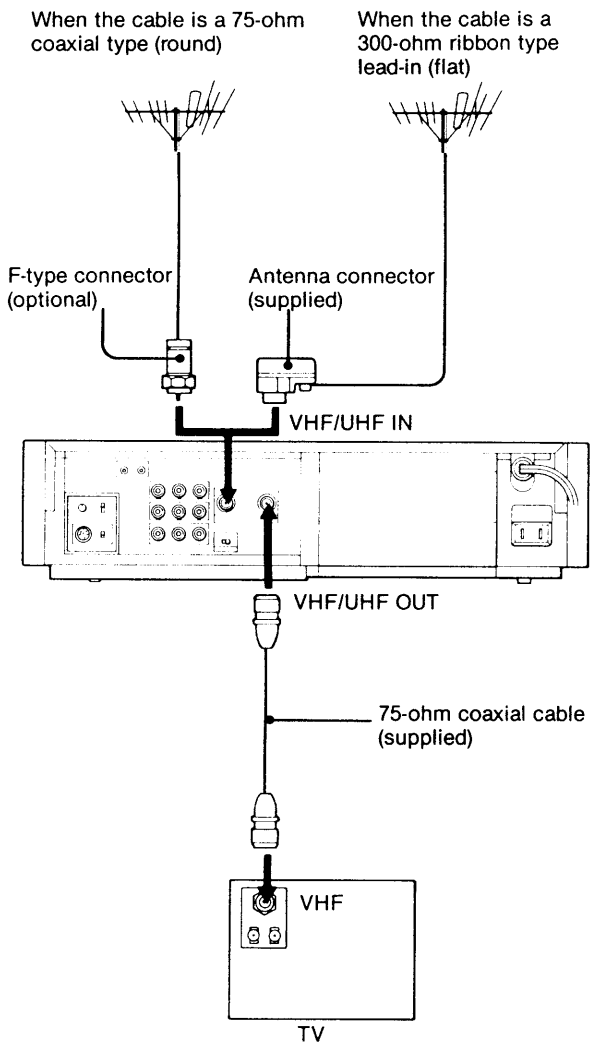
Most combination antennas are equipped with a U/V band separator (signal splitter). Take off the separator and connect the cable directly to the VCR.

Use the removed separator to connect the VCR and the TV.

* Use an optional RFC-8 extension cable, 8m (25 ft) long, if the supplied 75-ohm coaxial cable is not long enough.

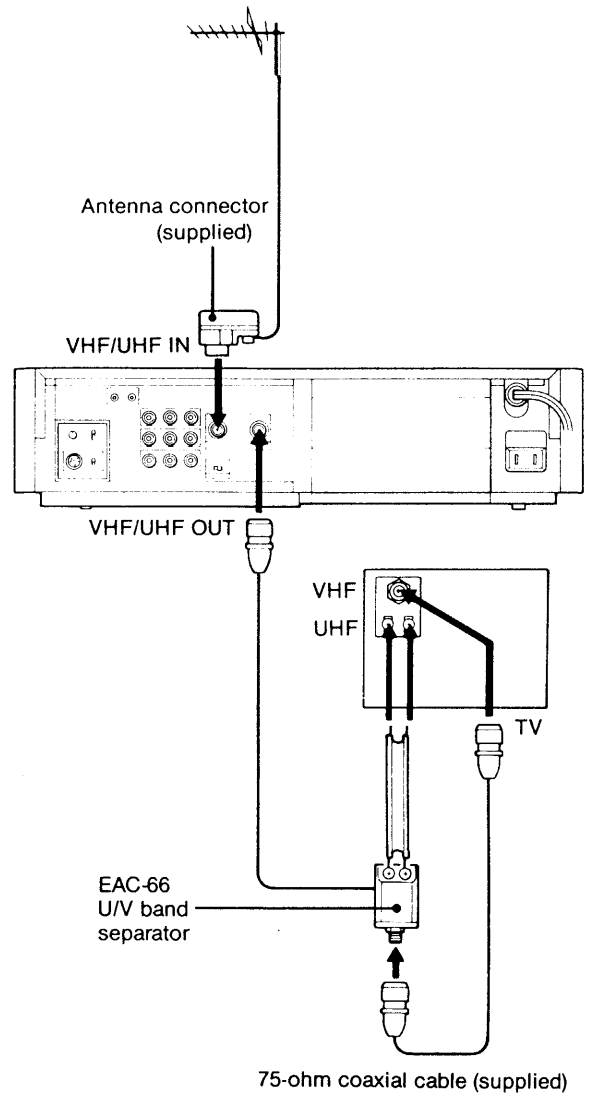
B2

VHF antenna only



B3

UHF antenna only

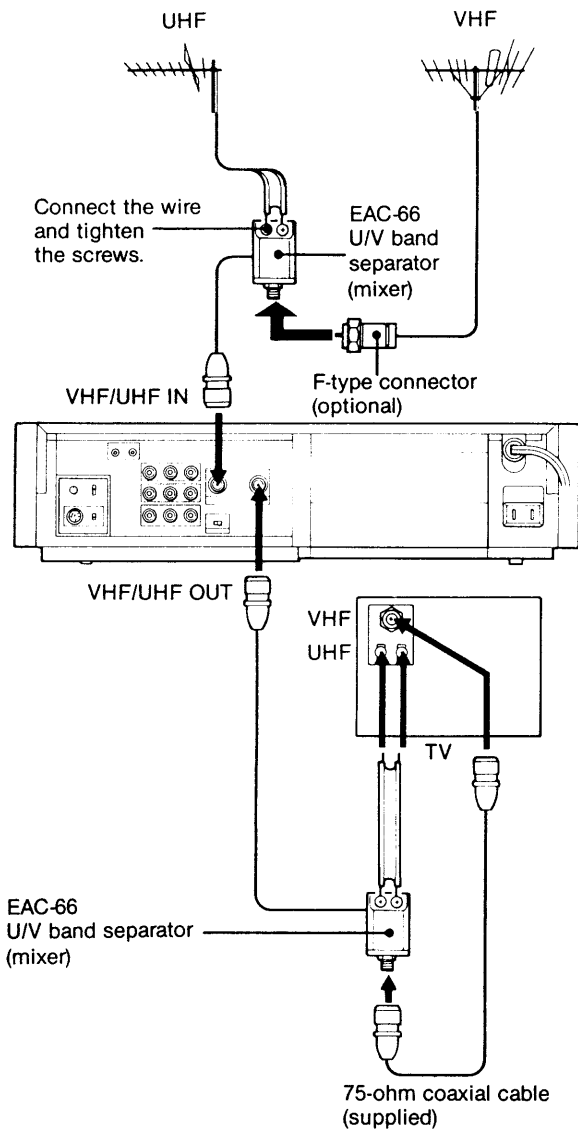


- 1 Attach an optional EAC-66 U/V band separator to the VHF/UHF OUT connector of the VCR.
- 2 Connect the separator to the VHF and UHF antenna terminals of the TV.

Antenna/cable and TV Connection

B4

When both VHF and UHF antennas are connected



B4

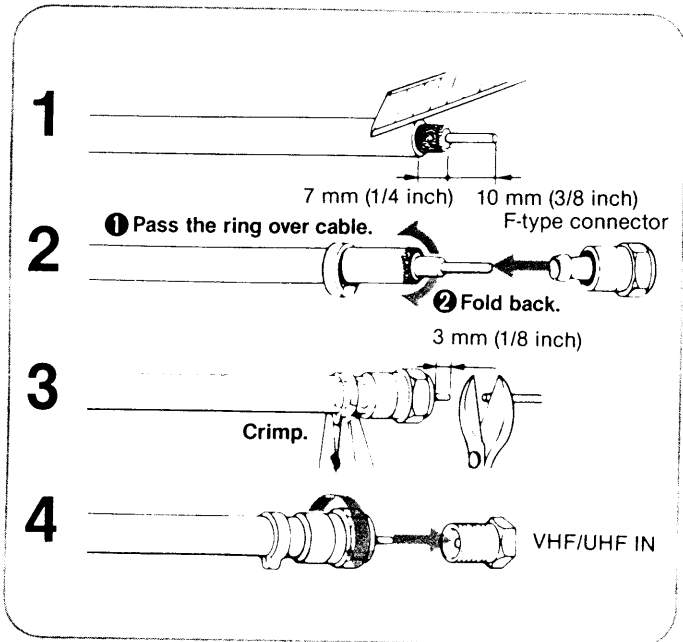
Once the connections explained above have been made, the antenna TV signals, as well as the signal from the VCR, will be fed to the TV and you can view TV programs in the usual way.

If the display or sound is affected

Move the VCR away from the TV.

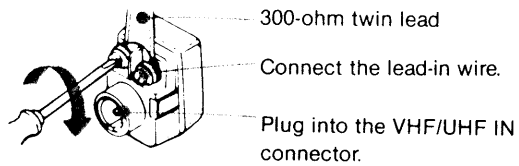
B5

How to attach an F-type connector



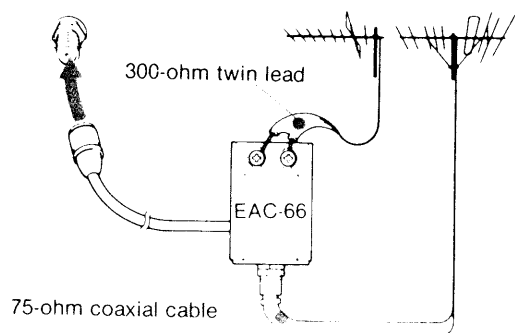
B6

How to attach an antenna connector



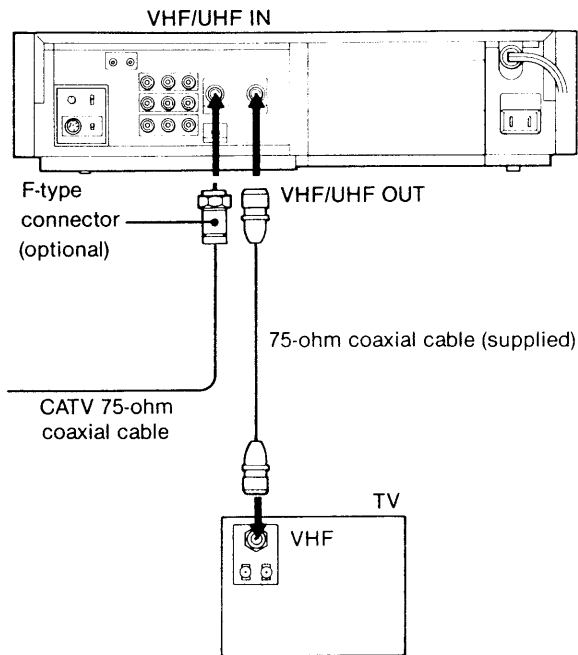
B7

How to attach an EAC-66 U/V band separator (mixer)



Antenna/cable and TV Connection

B8



Connecting a CATV cable B8

We recommend that you consult your cable company to make sure that the cable is properly connected.

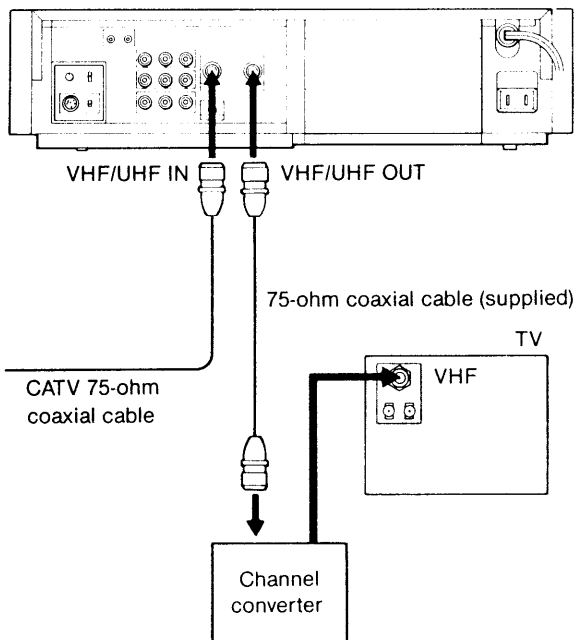
Note to CATV system installer in the U.S.A

This reminder is provided to call the cable TV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

When your TV is not cable TV compatible type B9

Connect the cable TV channel converter between the VCR and the TV so that you can watch another cable TV program while recording one cable TV program.

B9



Connecting a TV Equipped with Video/Audio Input Jacks or Color Monitor B10

For a high-quality picture, connect a color monitor or a TV equipped with video/audio input jacks.

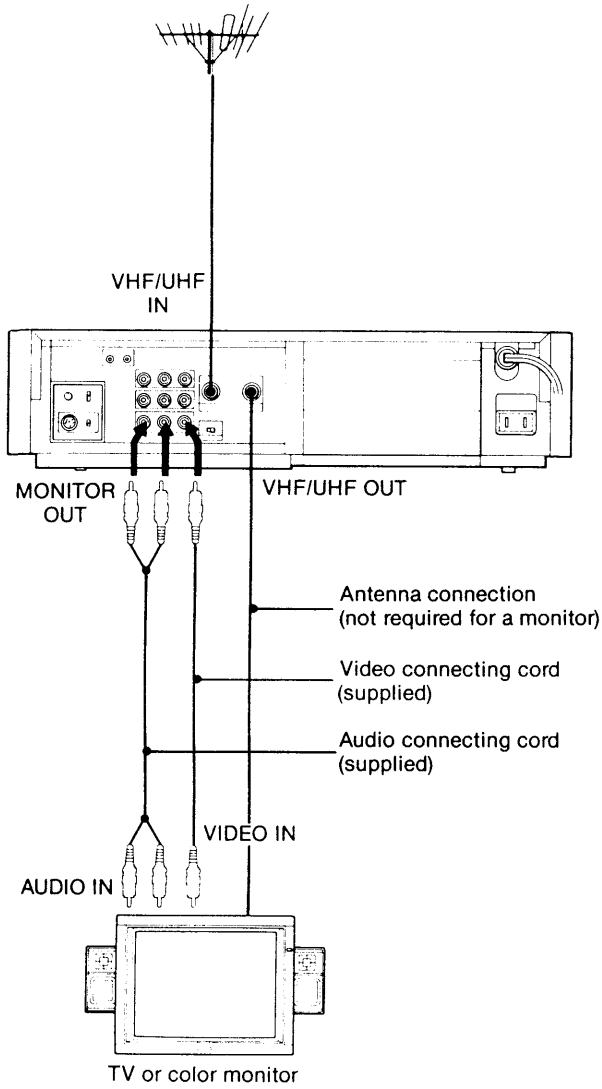
When you connect a color monitor

You cannot view a TV program while recording another program. If you want to do so, use a component TV tuner together with the monitor. Make the same connection as in the case of the VCR and the conventional TV receiver described on page 16 to 19.

For details on the connection of the TV tuner and the monitor, refer to the instruction manual of the TV tuner.

To view the playback picture

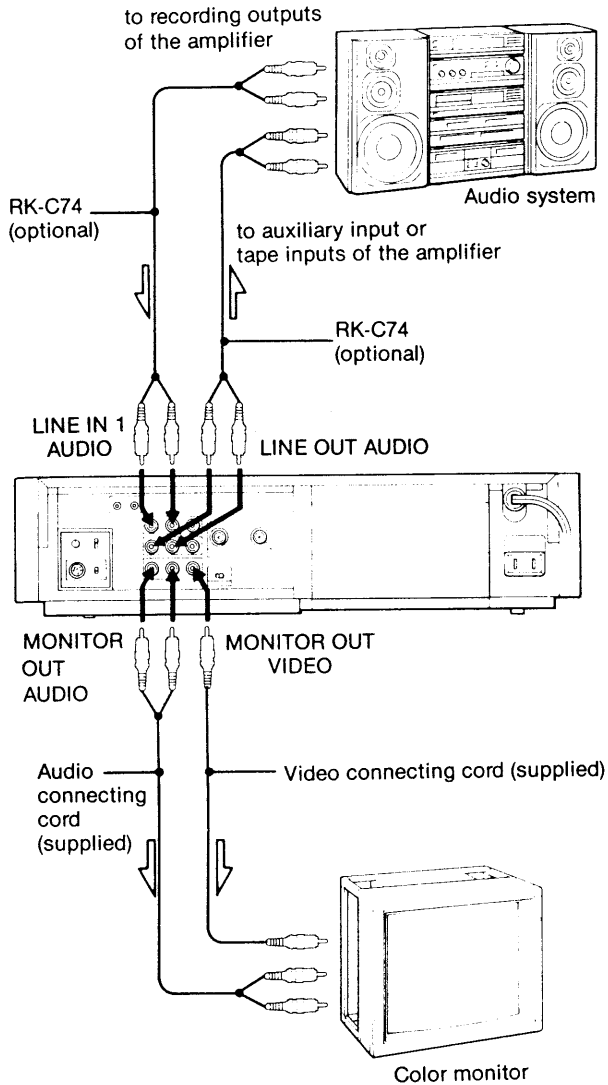
Set the TV/VIDEO input selector on the TV or monitor to VIDEO.



With this type of connection, you do not need to determine a channel for the VCR.

Audio System Connection

C1



C1

You can enjoy tapes recorded with hi-fi stereo when the VCR is connected to your audio system.

Notes

- If the VCR is installed near a tuner or a radio, noise may be heard in AM reception. In this case, move the VCR away from the tuner or the radio, adjust the AM antenna for minimum noise, or connect an external AM antenna to the tuner.
- Since a hi-fi recorded tape has a wide dynamic range, turn down the volume on the amplifier before playing back a tape to avoid damaging the speakers.
- Before connecting or disconnecting the power cord of the VCR, be sure to turn off the connected amplifier.
- The picture may be distorted when the VCR is near the TV. In this case, move the VCR away from the TV.

Sound selection

You can select the speaker connected to a monitor when watching a newscast and select the speaker of an audio system when watching a music program.

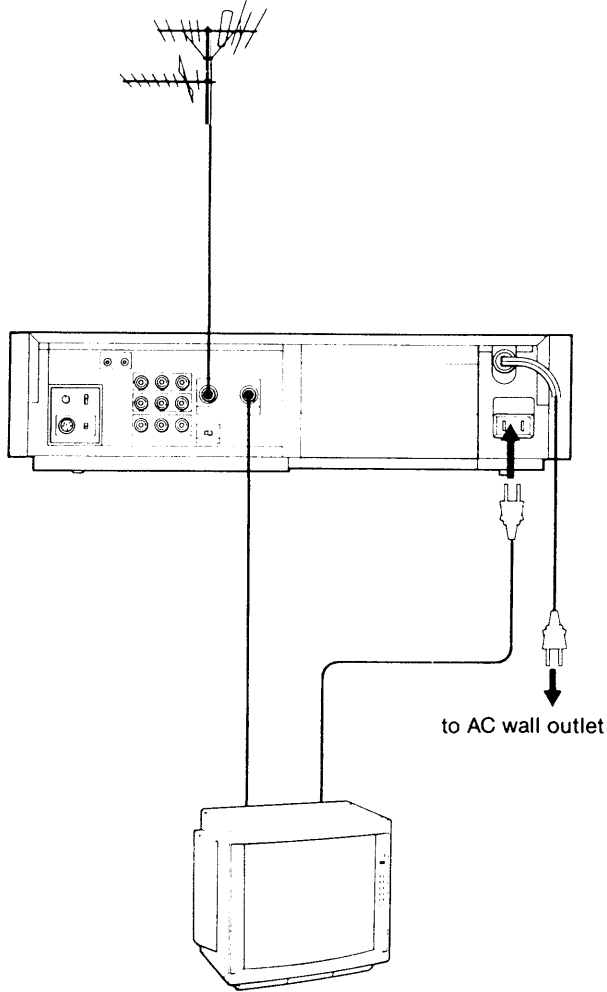
Power Connection

D1

D1

The AC OUTLET on the rear panel provides a convenient AC power source for other video or audio equipment with power consumption up to 400 watts.

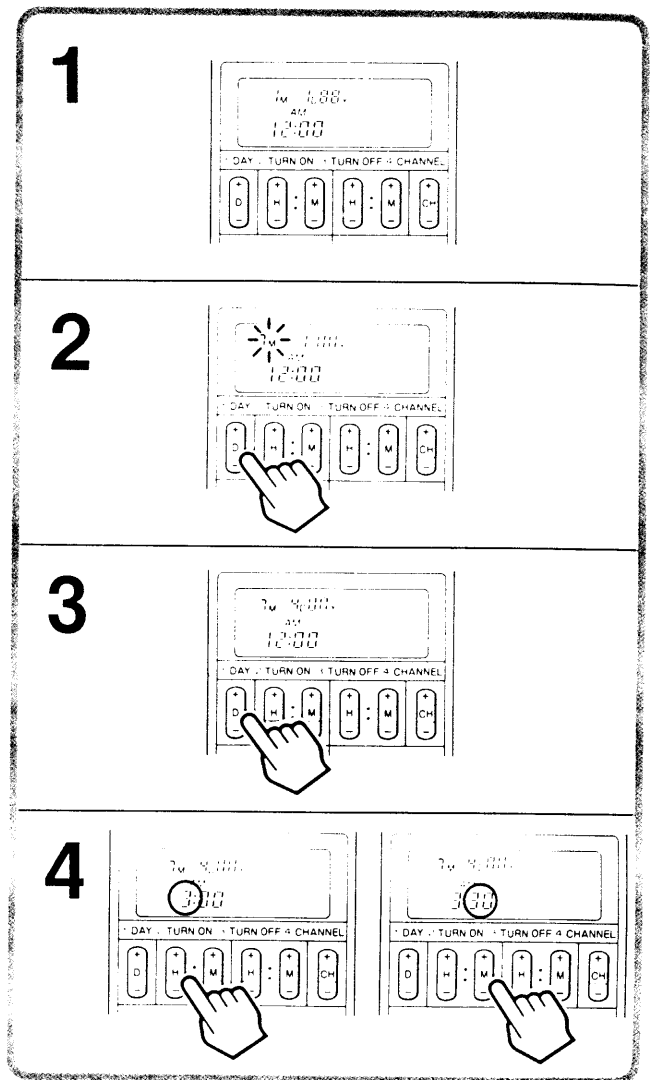
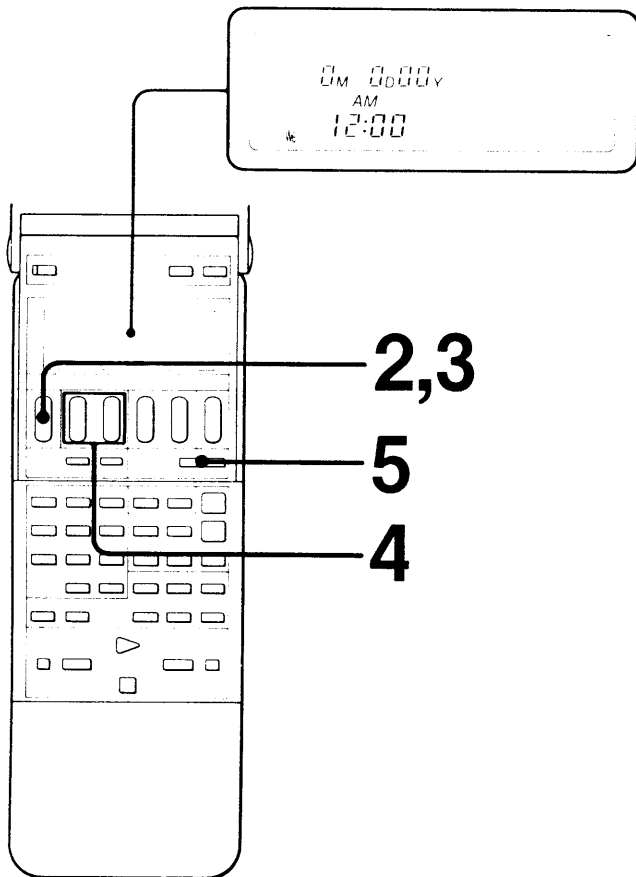
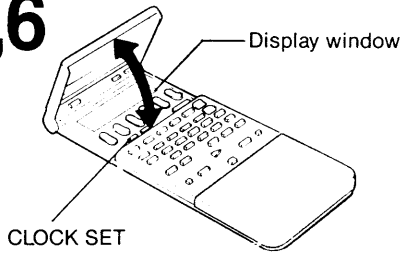
After you have completed all connections including this power connection, you can watch TV without turning on the VCR.



Date and Clock Setting

E1

1,6



When you replaced exhausted batteries with new ones
Repeat this setting from step 1.

If short beep sounds repeatedly during transmission

The VCR is during:

- Timer-activated recording
- Quick timer recording
- Being set the clock with the buttons on the VCR
- Being set the data for timer-activated recording with the buttons on the VCR

When the power is turned off

The clock operates unless you disconnect the power cord. The clock continues to work for 3 hours after the power cord is disconnected or a power interruption occurs.

When "AM12:00" blinks on the display window

There has been a power interruption for more than 3 hours or the power cord has been disconnected for more than 3 hours. In this case, readjust the clock.

The clock indicates the time using AM and PM.

AM 12:00 = midnight

PM 12:00 = noon

You can set the calendar between the year 1988 and 2003.

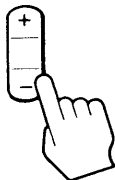
You can set the date and clock by using the wireless commander or by using the buttons on the inside front panel of the VCR.

Setting with the Wireless Commander **E1**

Example: to set the date/clock to 3:30 p.m., July 4th, 1988.

- 1** Open the cover of the commander, and press **CLOCK SET**.
- 2** Set the year and month.
Keep the **D** button pressed until the appropriate year and month is indicated, then release it.
The day numbers advance from 1 to 31 (depending on the month), and then the month indication changes to the next month.
- 3** Press the **D** button again and again until the appropriate day is indicated.
The day of the week is automatically displayed when the year, month and day are registered.
- 4** Press the **H** and **M** buttons in the **TURN ON** section to set the hour and minute.
- 5** Press **TRANSMIT** with pointing the commander at the **VCR at the same time as an announced time signal**.
The clock now starts, and the clock on the display window of the VCR indicates the correct time.
- 6** Close the cover of the commander.

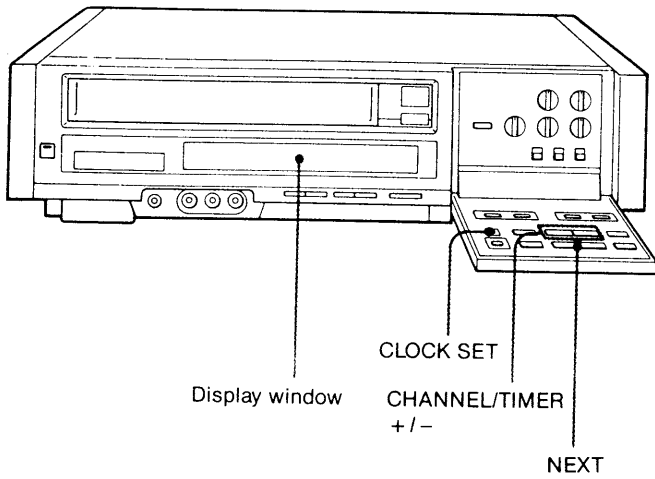
If you go past the correct number of the date or time
Press the lower half of the button to go back.



Readjusting the clock on the VCR

Open the upper cover of the commander and press **CLOCK SET** and **TIMER SET**. You can readjust the clock of the VCR.

E2



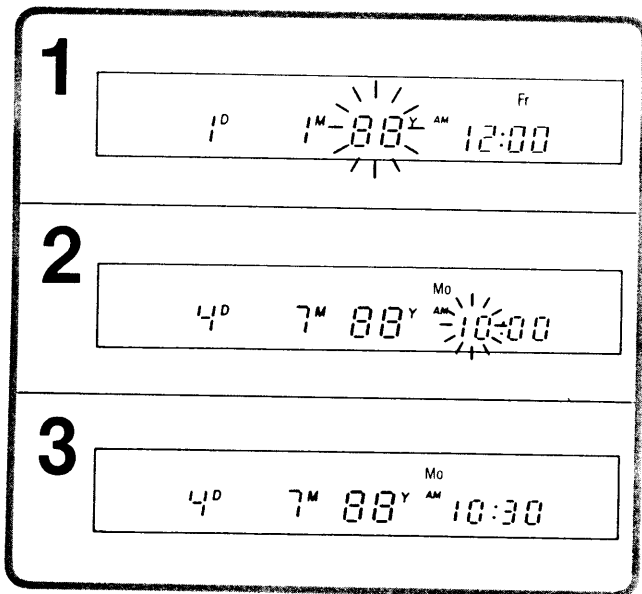
Setting with the Buttons of the VCR

You can set the date/clock even when the power is turned off.

Use CHANNEL/TIMER +/- . Every time you press this, the number or the day of the week changes by one. When you keep this button pressed, they change more so quickly.

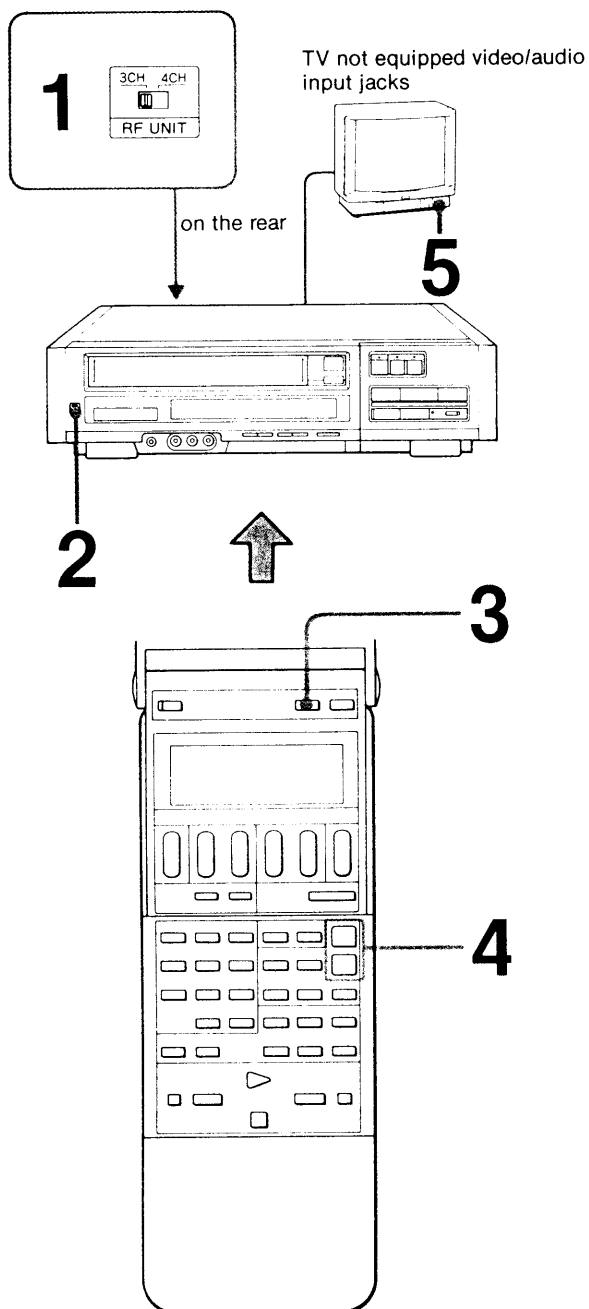
E2

- 1 Press CLOCK SET.
- 2 Set the year, month, day and hour in sequence by pressing CHANNEL/TIMER +/- at the blinking item and pressing NEXT. The day of the week is automatically displayed.
- 3 Set the minute with CHANNEL/TIMER +/. Press NEXT at the same time as an announced time signal. The clock now starts and the date indicator disappears.



Adjusting the TV

F1



F1

Your TV must be adjusted to receive the signal from this VCR. If you connect a monitor or a TV equipped with video/audio input jacks, this adjustment is not necessary.

- 1 Set RF UNIT located on the rear to 3 CH or 4CH whichever channel is not active in your area.
- 2 Press POWER.
The indicator lights.
- 3 Press TV/VTR so that the VTR indicator lights.
- 4 Check that the TUNER indicator appears in the display window, then select an active channel in your area by pressing CHANNEL +/-.
- 5 Turn on the TV and set the TV to either VHF channel 3 or 4 to correspond to the RF UNIT setting.
The TV program selected on the VCR is displayed on the TV screen.

Your TV is now tuned to the VCR. Whenever you use the VCR, set the TV to the channel selected above.

Check!

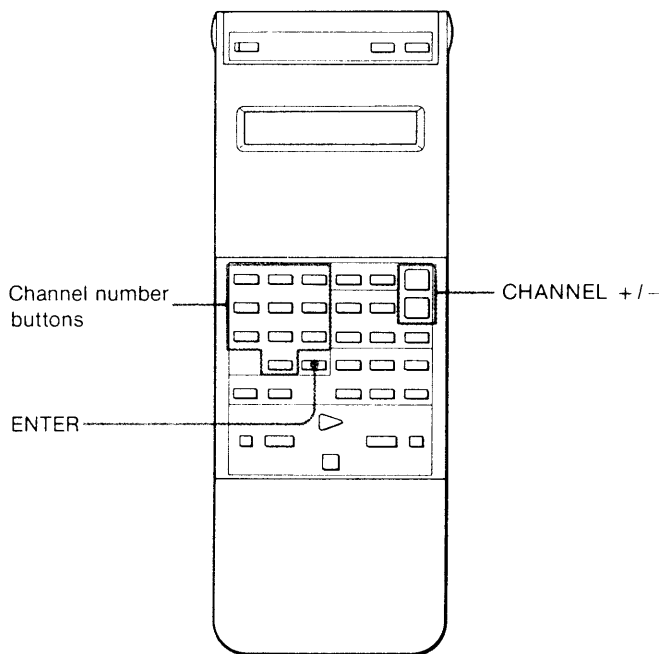
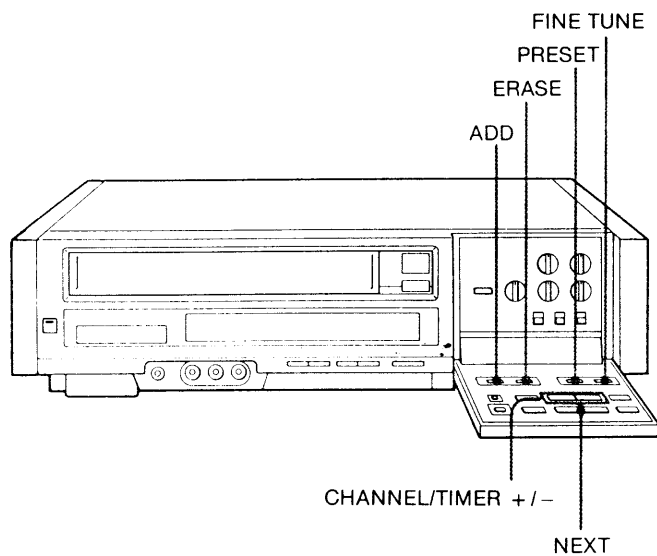
Check that the program displayed on the screen changes when a different channel is selected on the VCR. If the program does not change, repeat the preceding steps.

If a picture does not appear on the TV screen or if the display is not clear
Fine-tune the channel on the TV.

For details about TV channel adjustment
See the instruction manual of the TV.

Presetting the Active Channels in Your Area

G1



G1

Your VCR is capable of receiving VHF channels 2 — 13, UHF channels 14 — 69 and cable TV channels A1, A2, A to W.

See cable TV channel chart on page 31.

Before selecting or presetting TV channels

- Turn on the VCR and the TV.
Make sure that the TV is set to the correct channel (channel 3 or 4) for the VCR.
- Press TV/VTR to display the VTR indicator.
- Press INPUT SELECT so that the TUNER indicator and channel number appear in the display window.

Selecting TV Channels

The VCR is preset at the factory to receive certain channels.

There are two ways to select the channels.

- Press the channel number button(s) and then ENTER on the commander.
- Press CHANNEL/TIMER +/- on the VCR or CHANNEL +/- on the commander.
For lower-numbered channels, press “-”, and for higher-numbered channels, press “+”.

If the picture of the desired channel does not appear in the above procedure, preset the channel as in “Presetting New Channels for UHF”.

Erasing Channels

You can preset the VCR so that only the desired channels will appear in sequence when you select a channel with CHANNEL +/-.

- 1 Press PRESET.
- 2 Select the channel to be erased with CHANNEL/TIMER +/-.
- 3 Press ERASE on the VCR.
The displayed channel has been erased.

Repeat steps 1 to 3 for other channels to be erased.

Adding Channels

You can put back the channels removed by ERASE and add channels for new broadcasting stations.

- 1 Press PRESET.
- 2 Select the channel to be put back or added with CHANNEL/TIMER +/-.
- 3 Press ADD.
The displayed channel has been put back or added.

Repeat steps 1 and 2 for other channels.

Fine-tuning a weak station

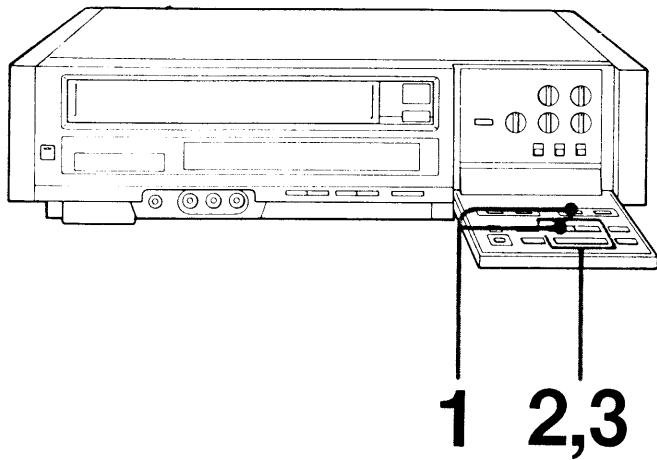
Normally keep the AFT indicator displayed.

If the picture of a particular channel is not acceptable, press FINE TUNE on the inside front panel and press CHANNEL/TIMER +/- until the picture becomes clearer. Lastly press NEXT.

The automatic fine-tuning function cannot work again for a channel after the fine-tuning operation. If you want to use the automatic fine-tuning function again, preset the channel.

Presetting the Active Channels in Your Area

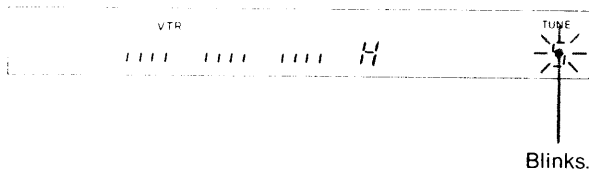
G2



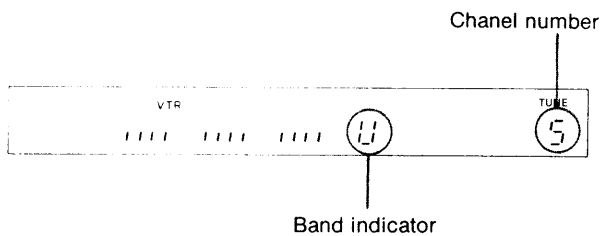
Presetting New Channels for UHF G2

- 1 Press PRESET.
 - 2 Press CHANNEL/TIMER +/- until the desired channel number appears on the display window. Then, press NEXT. G3
 - 3 Press CHANNEL/TIMER +/- until the desired channel appears on the TV. Then press NEXT. G4
The band indicator such as U appears to indicate the band of the channel to be scanned later.
- Note**
Even if the desired channel already appears on the TV or monitor, press +/-.
- 4 Repeat steps 1 to 3 for other channels to be preset. The newly preset channels will appear in the proper sequence when CHANNEL +/- is pressed.

G3



G4



Cable TV channel chart*

Cable TV systems use letters or numbers to designate channels. To tune in a channel, refer to this chart.

Check with your local cable TV company for more complete information on the available channels.

Note
Pay cable TV systems use scrambled or encoded signals and require special converters (decoders) in addition to the normal cable connection.

Number on this TV	1	95	96	97	98	99	14					
Corresponding CATV channel	A-8	A-5	A-4	A-3	A-2	A-1	A					
15	16	17	18	19	20	21	22	23	24	25	26	27
B	C	D	E	F	G	H	I	J	K	L	M	N
28	29	30	31	32	33	34	35	36				
O	P	Q	R	S	T	U	V	W				

Channel allocation chart

Frequency (MHz)	50	100	150	200	250	300	400	500	600	700	800	
VHF/UHF channels	VHF 2-6	95-99.14	VHF 7-13					UHF 14-69				
CATV channels	15-22		23-36		66-94		100-125					
Band indicator	L	H		U								

When CHANNEL/TIMER + is pressed, the above channels will be scanned from the lowest frequency to highest in sequence. By pressing -, the channels will be scanned in reverse.

Passing over the channels

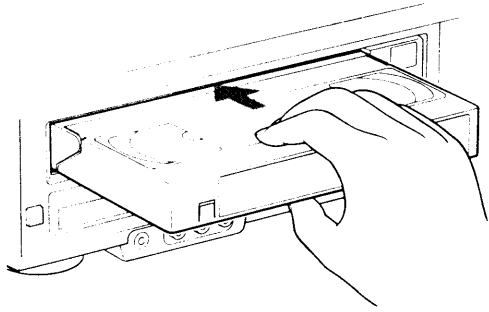
Using CHANNEL/TIMER +/-, you can pass over the channels at which no picture appear. For example, you can have Channel 8, instead of 7, appear after Channel 6.

- 1 Select the channel number at which no picture appears with CHANNEL/TIMER +/-.
- 2 Press PRESET.
- 3 Press CLEAR.

* The designation of the cable TV channels conforms to the EIA/NCTA recommendation.

Handling Video Cassettes

H1



Inserting a Cassette H1

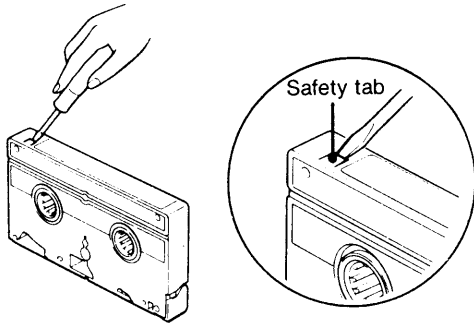
Insert a cassette.
The power will be turned on automatically.

Ejecting a Cassette

Press EJECT.
When the power is off and EJECT is pressed, the VCR turns on automatically and the cassette is ejected. After which, the power is turned off automatically.

Note
While the VCR is in recording mode or performing an insert edit, press STOP to stop recording and then press EJECT.

H2



Avoiding accidental erasing
Break off the safety tab.

Avoiding Erasing a Recorded Tape H2

When a new recording is made on a previously recorded cassette, the old recording will be erased automatically.

To re-record a cassette whose safety tab is broken off
Cover the slot where the safety tab used to be located with cellophane tape.

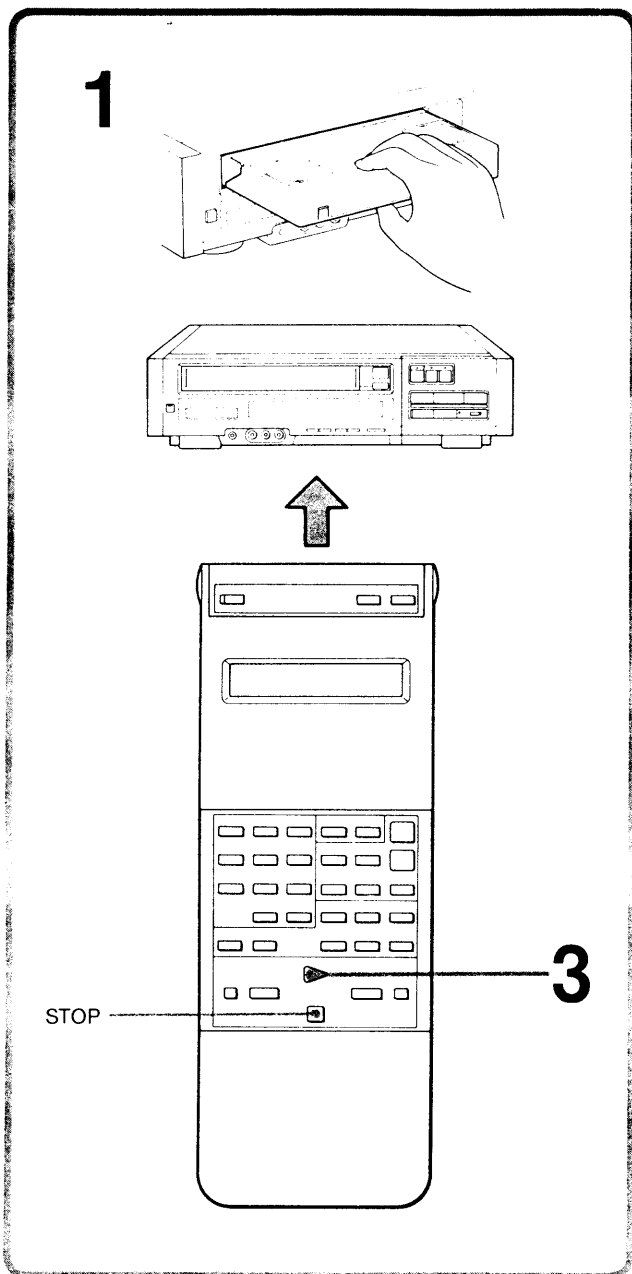
Maximum Recording Time of a Tape

Select the tape speed with REC MODE on the VCR before recording.
During playback, the tape speed automatically changes according to the inserted cassette.

REC MODE setting	Cassette tape			
	T-160	T-120	T-60	T-30
SP (standard)	2 hr. 40 min.	2 hr.	1 hr.	30 min.
EP	8 hr.	6 hr.	3 hr.	1 hr. 30 min.

An SP tape runs three times as fast as an EP tape does.

11



Playing Back a Tape 11

- 1 Insert a cassette.**
The power is turned on automatically (Auto power on).*
- 2 Turn on the TV and select the channel for the VCR (3 or 4) or select the input for the VCR.**
- 3 Press PLAY.**
Playback begins.

Stopping playback

Press STOP.

If the data screen does not appear

The data screen disappears during slow motion playback or playback pause.

The data screen does not appear when you press DATA SCREEN.

The remaining tape length indicator disappears during fast-forwarding or rewinding.

When the tape is played back to the end

The tape is automatically rewound to the beginning (Auto rewind). The power remains on.

* If you insert a cassette whose safety tab is broken off during the standby mode, the VCR will start playing back automatically.

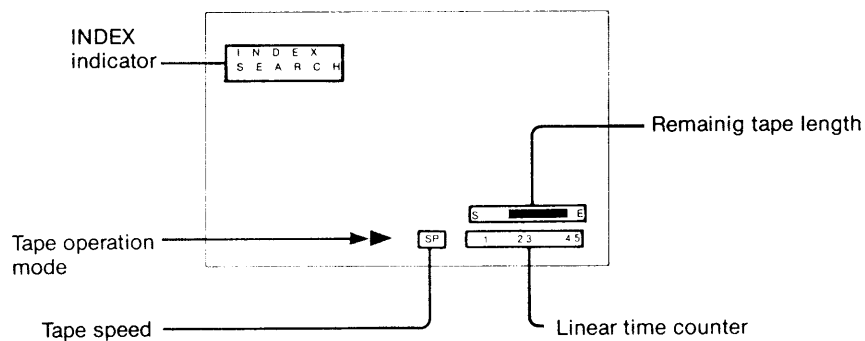
Running the tape at a fast speed

Press ►► FF.

Rewinding the tape

Press ◀◀ REW.

What does the data screen indicate?



Remaining tape length indicator

The displayed remaining tape length is not precise. Therefore, use it as an approximate reference. When you insert a short tape such as T-20, T-30, or a nonstandardized commercially available tape, this indicator may malfunction.

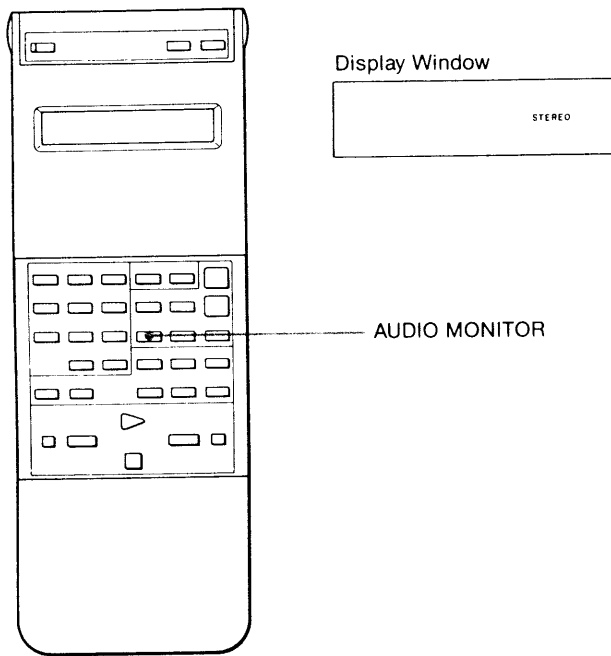
Getting a sharper picture

Turn the SHARPNESS control toward SHARP.

Getting a softer picture

Turn the SHARPNESS control toward SOFT.

Erasing the data screen from the display
Press DATA SCREEN.

**Selecting the Monitor Sound 12**

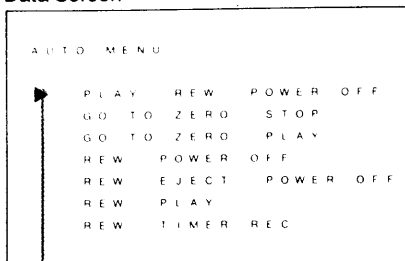
Press AUDIO MONITOR located on the commander to change the indicator displayed on the display window: STEREO, MAIN/L and SUB/R. When no indicator appears, the sound recorded on the conventional audio track is selected depending the playback tape: Main, SAP or Dub audio.

Note

When you play back a tape recorded on a VCR which has no hi-fi audio recording function, the sound will be monaural regardless of the AUDIO MONITOR setting.

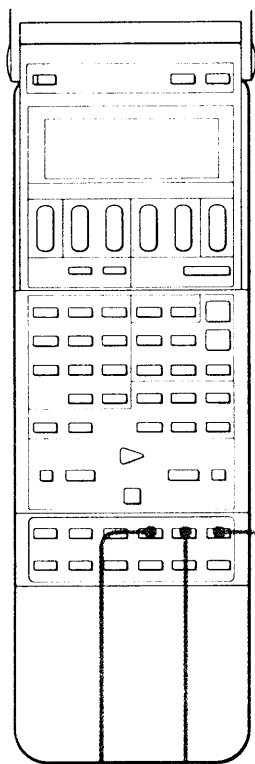
13

Data Screen



Cursor

You can select the operation displayed in the auto menu.



1 2 3

Auto Play — Pre-setting the VCR's Operation

13

- 1 Press **AUTO MENU** when the tape stops.
The auto menu is displayed on the data screen.
- 2 Move the cursor by pressing **SELECT**.
- 3 Press **EXECUTE**.
The selected operation begins.

What does each operation indicator mean?

PLAY — REW — POWER OFF

The tape is played back to its end and rewound to its beginning. Then the power is turned off.

GO TO ZERO — STOP

The tape is fast-forwarded/rewound to the zero counter position, and stops. See "Tape Return/Tape Return Play" for detailed operation.

GO TO ZERO — PLAY

The tape is fast-forwarded/rewound to the zero counter position, and is played back. See "Tape Return/Tape Return Play" for detailed operation.

REW — POWER OFF

The tape is rewound to its beginning and the power is turned off.

REW — EJECT — POWER OFF

The tape is rewound to its beginning and the cassette is ejected. Then the power is turned off.

REW — PLAY

The tape is rewound to its beginning and is played back.

REW — TIMER REC

The tape is rewound to its beginning and the VCR enters to the standby mode for timer-activated recording.

Notes on the auto play operation

- You can pre-set the auto play operation only when the tape is stopped.
- The cassette with a broken off safety tab is ejected when you select REW — TIMER REC.

Recalling the previous screen without selecting the auto menu

Press **AUTO MENU**.

When the power is turned off

The VCR retains the selected cursor position.

Various Playback Modes

Use the buttons on the VCR or the commander.

Freeze picture (playback pause)

Press **|| / ▶ PAUSE/STILL** on the VCR or **|| PAUSE** on the commander during normal playback or various playback modes.

Stop-action Advance Picture

Press **|| ▶ (frame)** on the commander in freeze picture mode.

Various speed playback

Press the desired speed button during playback or in the various playback mode.

Press **SLOW +/-** on the commander for slow motion pictures (1/5 to 1/30). +/- determines how slow the tape runs.

Press **x2** on the commander for double speed pictures. To change the playback speed, simply press the desired speed button.

Locked picture search

— **Viewing the picture while fast-forwarding or rewinding.**

Press **SEARCH ◀◀** or **▶▶** on the commander during normal playback or various playback modes.

Picture search

Press **◀◀ (REW)** or **▶▶ (FF)** on the VCR or commander during playback. You can see the fast-forwarded or rewind picture while you are pressing the button. When you release the button, the VCR resumes normal playback.

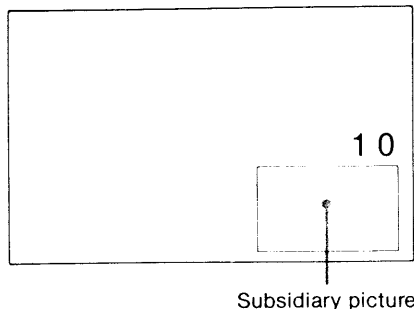
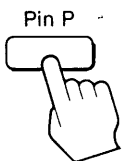
Resuming the normal playback

Press **PLAY** on the commander or the VCR.

If streaks or noise bands appear in a slow motion picture
Adjust the **TRACKING SLOW** control on the inside front panel of the VCR.

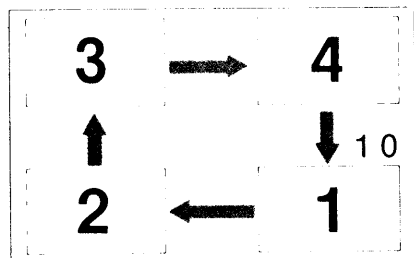
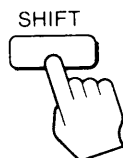
If the picture appears to shake in the slow motion, freeze, or double speed (x2) mode
After pressing **|| PAUSE**, turn **STILL ADJ** on the rear of the VCR until the picture stabilizes.

14

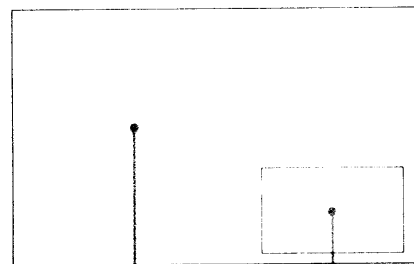
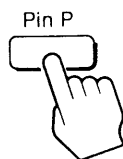


Subsidiary picture

15

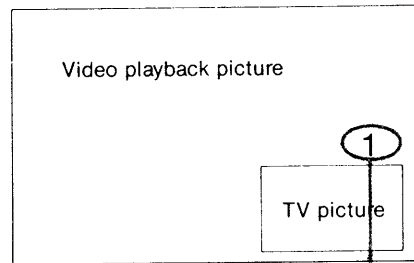


16



TV picture Subsidiary picture (video playback picture)

17



Channel number

Inserting a Small TV Picture in the VCR Playback Picture — P in P 14

- 1 Press INPUT SELECT to display the TUNER indicator.
- 2 Press P in P during playback.
A moving TV picture (subsidiary picture) appears in the lower right of the screen.*

Changing the position of the subsidiary picture Press SHIFT on the commander. 15

The position of the subsidiary picture changes cyclically 1 to 4 in order.

Inverting the position of the subsidiary picture Press P in P again. 16

The TV sound is heard.

Resuming the playback picture Press DIGITAL OFF.

Watching a TV program channel by channel in succession — TV scan 17

You can watch a few seconds of TV programs in the pre-set order.

Press TV SCAN on the commander.

When all the programs broadcasted on the pre-set channels have been displayed, the program displayed first appears again.

When INPUT SELECT is set to L1 or L2

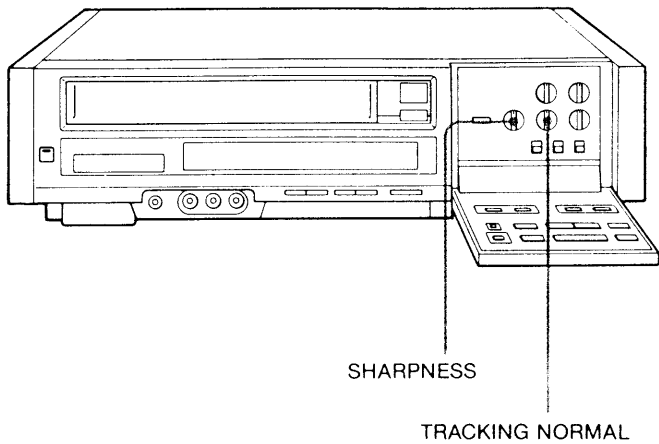
You can watch the picture from the LINE IN 1 or LINE IN 2 jack instead of the TV picture.

*The VCR retains the selected subsidiary position after power-off.

Monitor sound during P in P operation

You can monitor the sound from the main picture. The main sound and picture are output from the LINE OUT jack on the rear of the VCR.

18



Playing Back a Tape Recorded on Another VCR 18

You may have to make some adjustments when playing back a tape recorded on another VCR.

Getting a sharper picture

Turn the SHARPNESS control toward SHARP.

Getting a softer picture

Turn the SHARPNESS control toward SOFT.

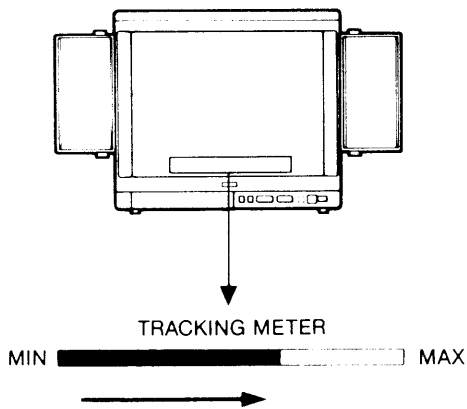
When streaks or snow appears 18 19

Adjust the TRACKING NORMAL control for the best possible picture while observing the tracking meter displayed on the data screen*.

When you turn the TRACKING NORMAL control, the tracking meter appears on the data screen for several seconds.

Return the control to the center position after viewing that tape.

19

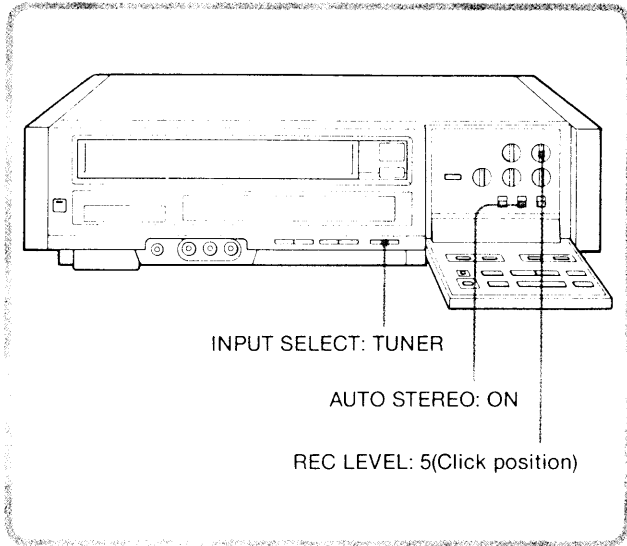


* When the EP tape is inserted, the tracking meter seldom change.

When the tracking meter does not appear

- Hi-fi stereo sound is not recorded on the tape.
 - You have pressed DATA SCREEN on the commander and the data screen cannot be displayed.
 - The recording quality setting of the tape is bad.
- In this case, adjust TRACKING NORMAL while observing the picture.

110

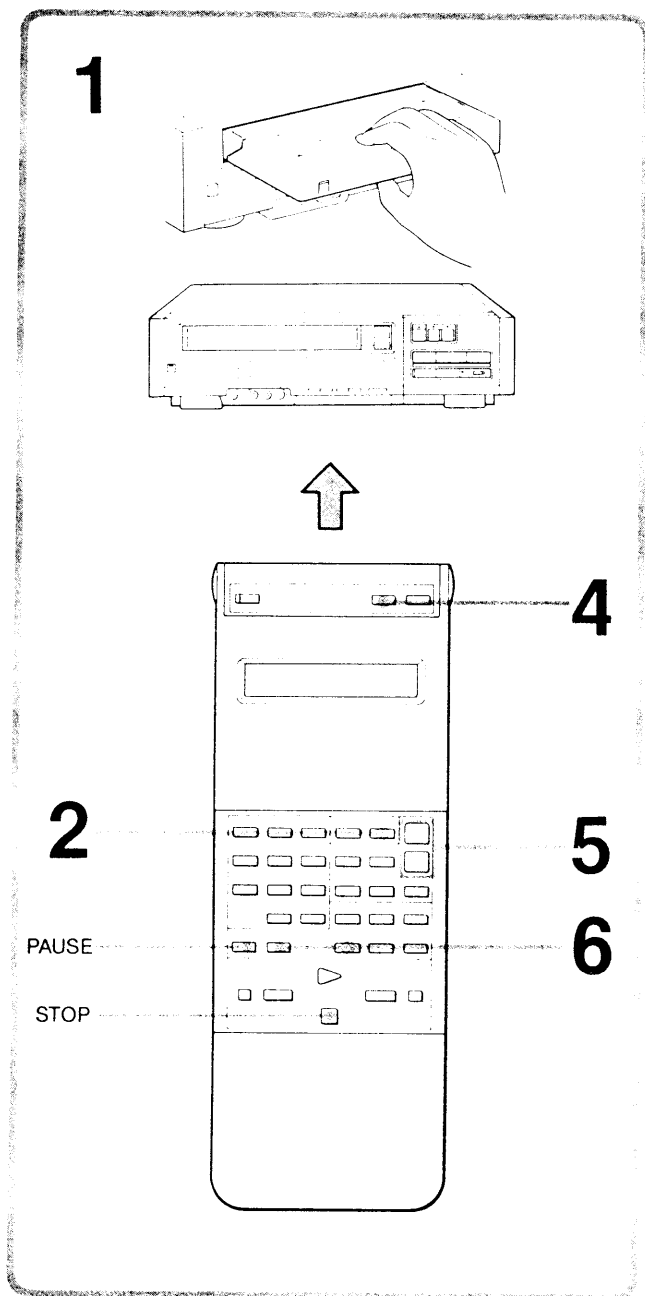


Before Recording 110

Caution

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or program owner.

- Make sure that you have finished all the connections and adjustments on pages 16 through 34.
- Check the positions of the selectors.



- 1 Insert a cassette.**
The unit is automatically turned on (**Auto power on**).
- 2 Select the recording speed, SP or EP, with REC MODE.**
- 3 Turn on the TV and select the channel for the VCR(3 or 4).**
If your TV has audio/video inputs, select the VCR input on the TV.
- 4 Press ANT TV/VTR so that the VTR indicator lights.**
- 5 Select the channel to be recorded with CHANNEL +/-.**
- 6 Press the recording auxiliary button while pressing ● REC.**
Recording begins.

To stop the tape momentarily

Press **|| PAUSE**. The TV program can still be seen on the TV, but the picture will not be recorded.
To resume recording, press **|| PAUSE** again.

To stop recording

Press **STOP**.

When the tape reaches its end

The tape will be rewound to the beginning and the power of the unit remains on.

Recording TV Programs

Useful information

When you want to record a program without watching the TV

Turn off the power of a TV or color monitor.
Recording takes place as normal.

What does the VTR indicator displayed on the display window indicate?

Make the VTR indicator light to watch or record the channel selected by the VCR.

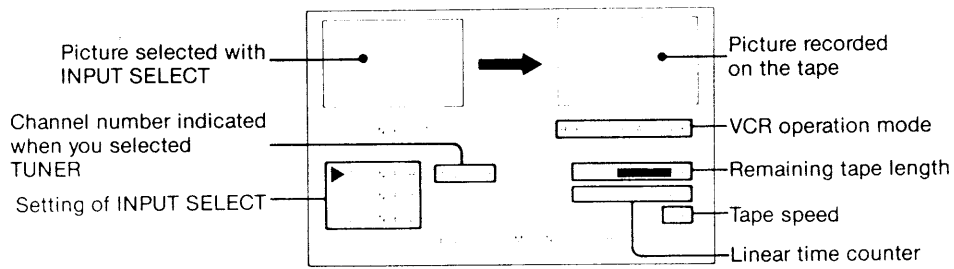
VTR indicator	What you watch
Lit	Channel selected by the VCR
Unlit	Channel selected by a TV
Automatically lit	Playback picture

When the connected TV is equipped audio/video jacks

You do not need to select the channel for the VCR (3 or 4). You can watch the picture from the VCR automatically when you select the VCR input on the TV.

M2

Press EDIT MONITOR on the commander or the VCR.



Displaying a picture (left side) selected with INPUT SELECT

You can see the picture selected with INPUT SELECT. When you press the recording auxiliary button while pressing ●REC, the picture displayed on the left side will be recorded. During playback or various playback mode, no picture appears on the left side.

Displaying a moving picture (right side) recorded on the tape

The picture recorded on the tape is displayed on the right side during recording. A playback picture appears during playback or various playback mode.

Displaying moving pictures on both sides

You can see moving pictures on both sides when you are recording or performing an insert edit.

Erasing the display above.

Press EDIT MONITOR again.

* This function is also useful during recording.

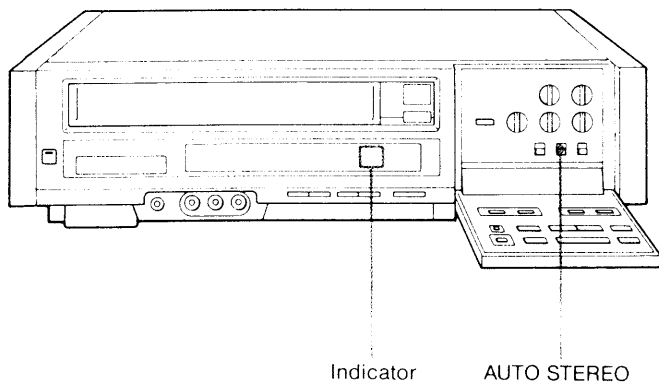
Temporarily Stopping Recording at a Particular Point

You can stop recording when unwanted pictures appear and make the VCR enter the recording pause.

- 1 Press II PAUSE to temporarily stop the recording.**
Recording stops and the VCR enters the pause.
- 2 Press II PAUSE at the desired point to release the pause.**

When an unwanted scene has started being recorded

- 1 Set the VCR to the recording pause.**
- 2 Press PLAY.**
The VCR enters the playback pause.
- 3 Locate the desired point where you wish to continue the recording by rewinding the tape.**
- 4 Press the recording auxiliary button while pressing ● REC.**
The VCR will enter the recording pause.
- 5 Press PAUSE at the desired point.**
Recording begins again.



Recording Multichannel TV Sound (MTS) Broadcasts (Sterecasts) 113

Recording a stereo broadcast

Set AUTO STEREO to ON to automatically record a program in stereo.
If a stereo program is noisy, set AUTO STEREO to OFF. The noise is reduced, however, the program will be recorded in monaural.

Recording a SAP (Second Audio Program) broadcast

Set NORMAL AUDIO inside the front panel to SAP. The SAP sound is recorded on the normal audio track.*

Which sound can you hear?

When NORMAL AUDIO is set to MAIN, you can hear only the main sound, and you cannot operate AUDIO MONITOR.

When NORMAL AUDIO is set to SAP, press AUDIO MONITOR on the commander and change the indicator displayed on the display window.

STEREO: Stereo sound

SAP: SAP sound

No indicator: monaural

Note

If you do not use the LINE OUT AUDIO jacks to connect the TV to the VCR, you cannot hear the program in stereo sound unless the VCR is connected to an audio system.

Viewing One TV Program While Recording Another

1 Press ANT TV/VTR so that the VTR indicator goes off.

2 Select the channel you want to view on the TV.

Note

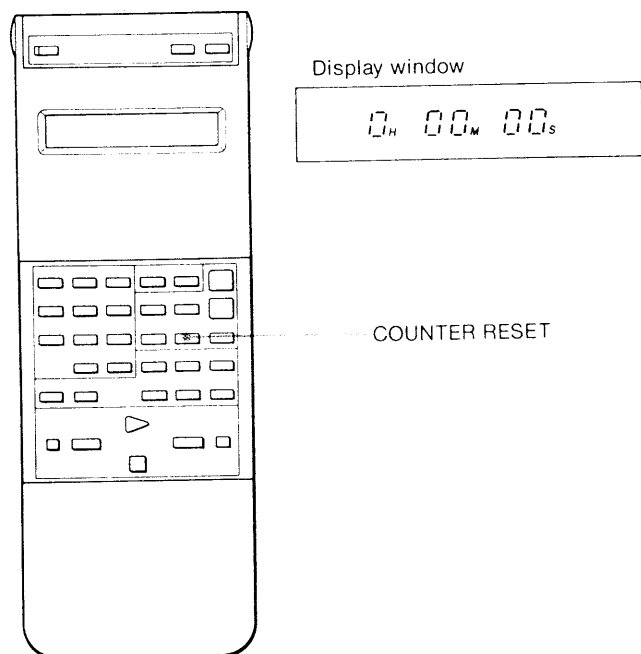
If you use a color monitor, you cannot watch another program during recording unless the monitor has an internal TV tuner.

Enjoying the stereo sound

If your TV has no function to receive MTS broadcasts, you can enjoy the stereo sound by connecting headphones or an audio system.

*When the SAP sound is not broadcasted, no sound is recorded on the normal audio track.

J1

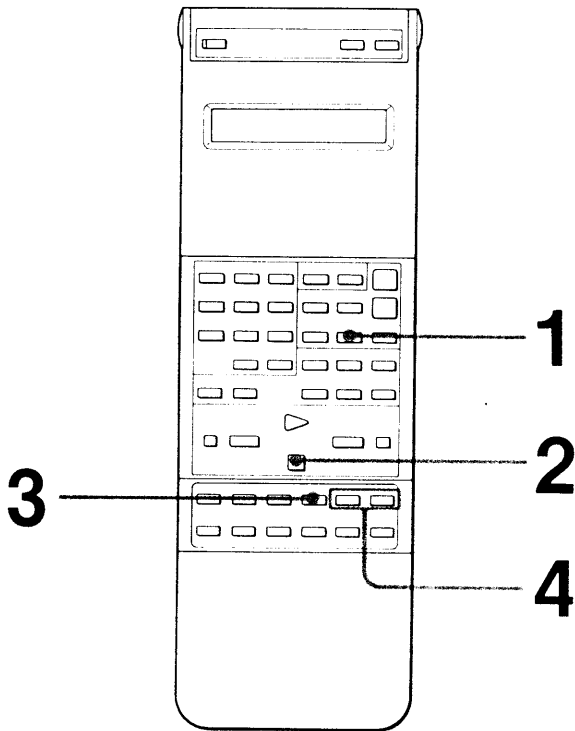


Indexing the Tape Contents J1

Before starting recording or playback, press COUNTER RESET to set the counter to zero. By noting the counter reading at the desired point, you can easily find that point later by referring to the counter. Use the label on the cassette to list the programs and their counter readings.

Note on counter reading

Even after the cassette is ejected, the counter reading is retained. When the cassette is inserted again, the counter returns to "0H00M00S".

**Tape return**

— To stop the tape at a particular point or play back from a particular point

- 1 During recording or playback, press COUNTER RESET at the point you want to locate later.
The time counter indicates "0H00M00S".
- 2 When recording or playback is finished, press STOP.
- 3 Press AUTO MENU.
The auto menu is displayed.
- 4 Press SELECT to move the cursor to the line "GO-TO ZERO — STOP", and then press EXECUTE.
The tape is rewound or advanced close to the counter zero point, and stops.

Tape return play

— To start playback automatically from the counter zero point

The operation is almost the same as above except for selecting "GO-TO ZERO — PLAY" in step 4. The tape is rewound or advanced close to the counter zero point, and playback starts.

Note

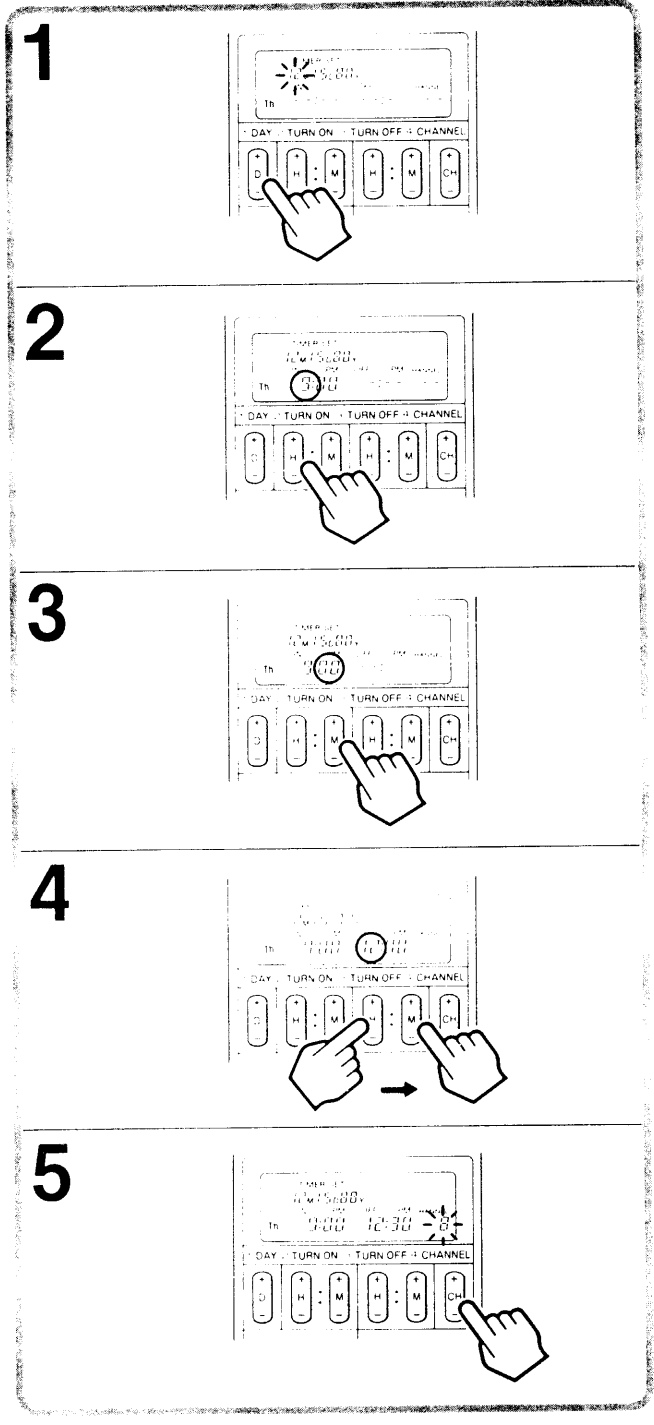
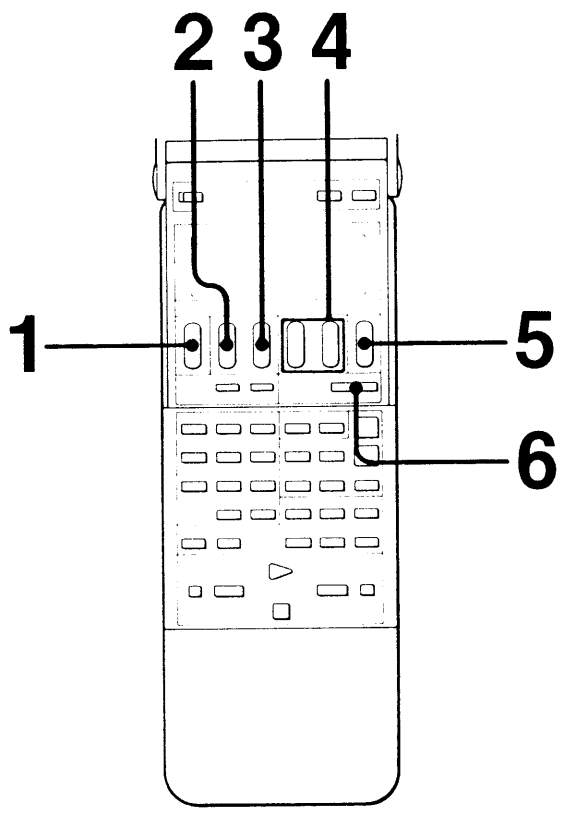
Tape return and tape return play cannot be done within + / - 30 seconds of the counter zero point.

The tape counter does not work when the inserted tape has no recordings.

The counter does not advance during any portion of a tape that is blank or unrecorded.

Timer-Activated Recording

K1



You can preset up to eight recordings as much as one month in advance.

Check before setting the timer

- The date and clock must be set correctly on the commander. (See page 24.)
- Make sure the cassette tape is long enough to record all the programs.
- Be sure that the safety tab of the cassette is not broken off.
- Set the REC LEVEL control to [5].
- You can preset the timer without turning on the unit.

Timer Setting by Using a Wireless Commander K1

Suppose you want to make a recording of channel 8 from 9:00 P.M. to 11:45 P.M. on Thursday, December 15th.

1 Open the cover of the commander and set the date with the D button.

The date is set from the day to the month, further to the year. The day of the week is then automatically set.

2 Set the hour of the start time with the H button.

AM and PM settings are automatically set according to increment or decrement of a hour.

3 Set the minute with the M button.

4 Set the end time with the H and M buttons, referring to steps 2 and 3.

5 Set the channel to be recorded with the CH button.

The TRANSMIT indicator starts blinking.

6 Press TRANSMIT and close the cover of the commander.

When you can set the timer correctly, the beep sounds, and the power, if it has been turned on, is turned off automatically, and the unit waits for the time to record.

To preset another program, repeat Steps 1 to 6. Up to 8 programs can be preset.

If necessary, change the INPUT SELECT and/or REC MODE button setting in steps 1 and 5.

After setting, make sure to close the upper cover until you can hear "click".

Automatic power on

The unit is automatically turned on when the set time comes and starts recording. When it completes recording, the power is automatically turned off.

Recording from today to one month later

If today is August 31st, you can set the timer to record a program broadcasted between today and September 30 (for 31 days).

If today is January 31st, you can set the timer to record a program broadcasted between today and February 28 (for 29 days). A leap year is automatically considered.

If the safety tab is broken off

If you insert the cassette whose safety tab is broken off, the cassette is automatically ejected when TRANSMIT or TIMER REC ON/OFF is pressed.

If a short beep sounds when you press TRANSMIT

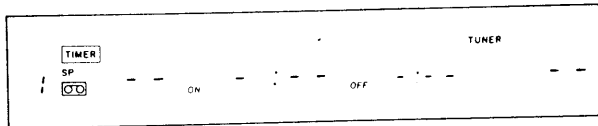
The unit indicates that either of the following has occurred:

- Timer-activated operation failed.
- The unit is in an operation mode other than power-off, stop or timer-activated recording.

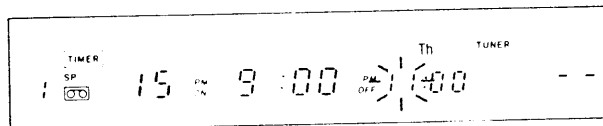
Timer-Activated Recording

Timer Setting by Using Buttons Inside the Front Panel

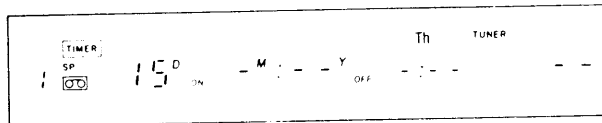
- 1** Press **TIMER SET**.
The unit is turned on.



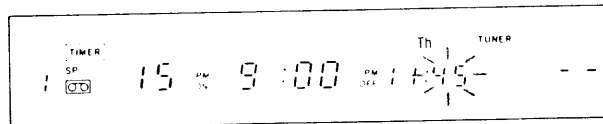
- 5** Set the turn-off hour with **CHANNEL/TIMER +/-**.
Then press **NEXT**.



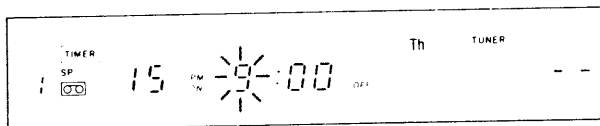
- 2** Set the date with **CHANNEL/TIMER +/-**.
Then press **NEXT**.



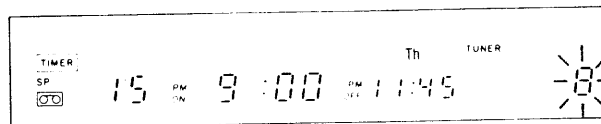
- 6** Set the minute with **CHANNEL/TIMER +/-**.
Then press **NEXT**.



- 3** Set the turn-on hour with **CHANNEL/TIMER +/-**.
Then press **NEXT**.

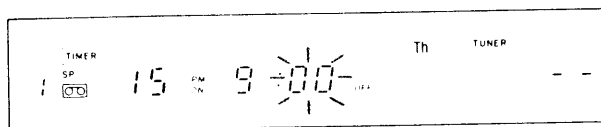


- 7** Set the channel to be recorded with **CHANNEL/TIMER +/-**.
Then press **NEXT**.



To preset another program, repeat sets 1 to 7. Up to 8 programs can be preset.

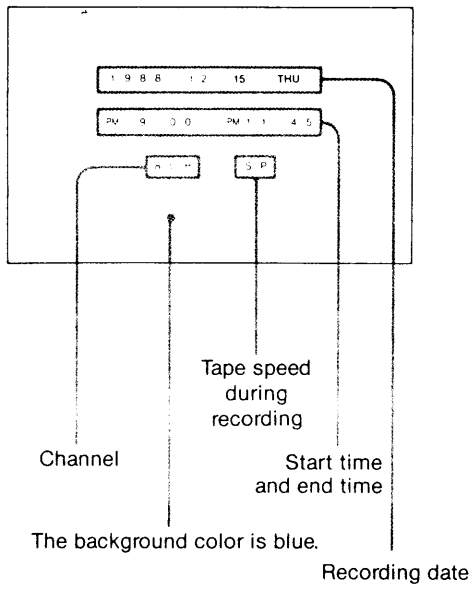
- 4** Set the minute with **CHANNEL/TIMER +/-**.
Then press **NEXT**.



- 8** Press **TIMER REC**.
The power is turned off and the unit enters the standby mode.
None of the buttons except **TIMER CHECK** can operate.

If necessary, change the **INPUT SELECT** and/or **REC MODE** button setting in steps 1 and 6.

K2



**Superimposing the title over the blue background —
Timer title **K2****

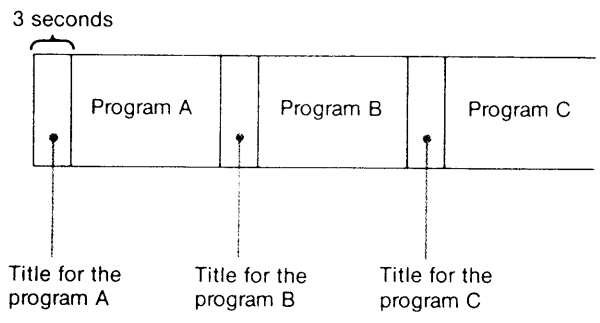
You will automatically record the timer title for 3 seconds as the beginning of recording.

30 seconds before the timer-activated recording starts, the power is automatically turned on and the title such as on the left side is recorded for 3 seconds. After that, the VCR enters the standby mode and start recording at the start time.

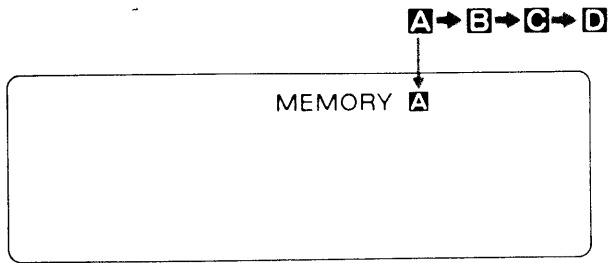
K3

This function is convenient to search for a certain program on the tape where many programs were recorded.

K3



K4



Storing the Date and Time for Recording in the Commander's Memory

Normally the data for timer-activated recording, such as the date and the start time is cleared after the recording is completed. However, you can store the data for up to four kinds of recording in the commander's memory by using MEMORY on the commander.

Memory storing K4

- 1 Press MEMORY to indicate A.
Every time you press MEMORY, the indicator changes in alphabetical order.
- 2 Set the channel, date, start time and end time by referring to page 48 through 51.

Repeat these steps to store the recording data in the memory B, C and D.

Recalling the data stored in the memory

- 1 Press MEMORY to select the memory: A, B, C or D.
- 2 Press TRANSMIT on the commander.
When the data is transmitted correctly, a beep sounds and the VCR enters the standby mode.
Recording starts at the set time.
If it fails, a short beep sounds.

Memory function can make video taping easily

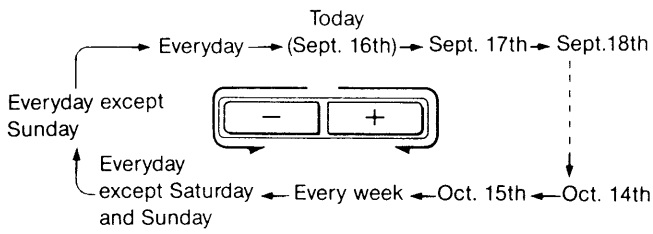
If you watch a certain weekly program, this function is useful to record only the program broadcasted in the desired week because your favorite actor or singer will appear. The contents stored in the memory is not cleared after the start time to record, and the date is automatically renewed.

Erasing the data stored in the memory

You cannot clear the data stored in the memory, but you can change the stored data.

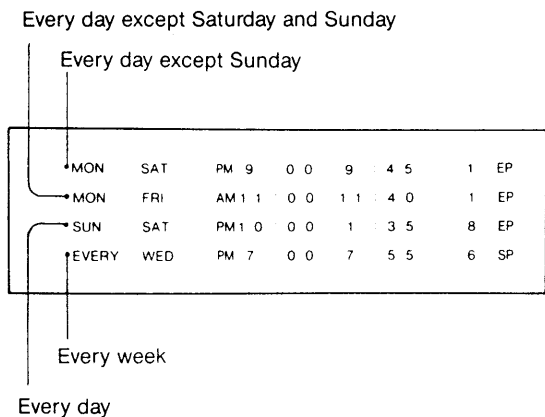
Every week recording and every day recording

Keep pressing D on the commander or CHANNEL/TIMER +/- on the VCR to display the following indicator in the following order. You can set the timer-activated recording for the same time every day or on the same day.



The day(s) you want the recording(s) made	Liquid-crystal display	Display window
At the same time on the same day every week	TIMER SET EVERY WEEK 9 16:00 Y	EVERY WEEK Su
At the same time every day from Monday to Friday		EVERY WEEK Mo Tu We Th Fr
At the same time every day from Monday to Saturday		EVERY WEEK Mo Tu We Th Fr Sa
At the same time every day		EVERY WEEK Su Mo Tu We Th Fr Sa

In the program list



When the presettings of your timer-activated recordings overlap **K5**

The recording of program 2 will begin before program 1 is finished.

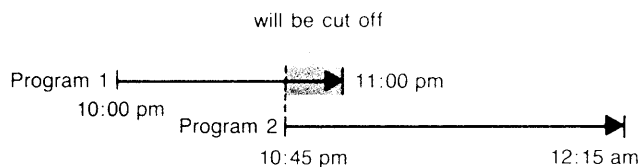
If the turn-on time of two programs are the same

The recording of the program having the lower program number will be made. The memory of the program having the higher number will be cleared.

Troubles when TIMER REC ON/OFF is set to ON

The cassette is ejected automatically.	The safety tab of the inserted cassette is broken off.
The TIMER indicator does not appear.	<ul style="list-style-type: none"> No cassette is inserted. The tape is at its end. The turn-on time is set for a time before the current time.

K5



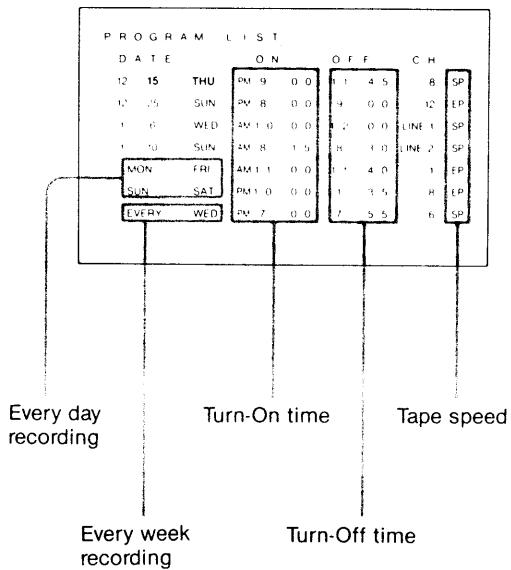
Information about timer-activated recording

- When the recording is completed, the memory of the program is erased if it is for only one day and the timer program numbers advance one by one.
- When the tape is at its end before the turn-off time, recording stops and the power is turned off.
- The tape is not automatically rewound when it is at its end.

If a power-interruption occurs

- If a power interruption lasts less than approx. three hours while the VTR is waiting for the preset time, the VCR enters the standby mode for timer-recording again. (If a power interruption occurs before a timer recording, the memory is cleared. Set the date and time to preset the data for timer-activated recordings.)
- If a power interruption lasts less than three hours during timer recording, the VCR starts recording again and the tape counter indicates "0H 00M 00S". (If a power interruption occurs during a time recording, recording stops and the power is turned off.)

K6



Checking Timer Setting K6

Press **TIMER DISPLAY** on the commander to check the timer settings.

The program list like the left is displayed in the data screen.

Erasing the program list

Press **TIMER DISPLAY** again.

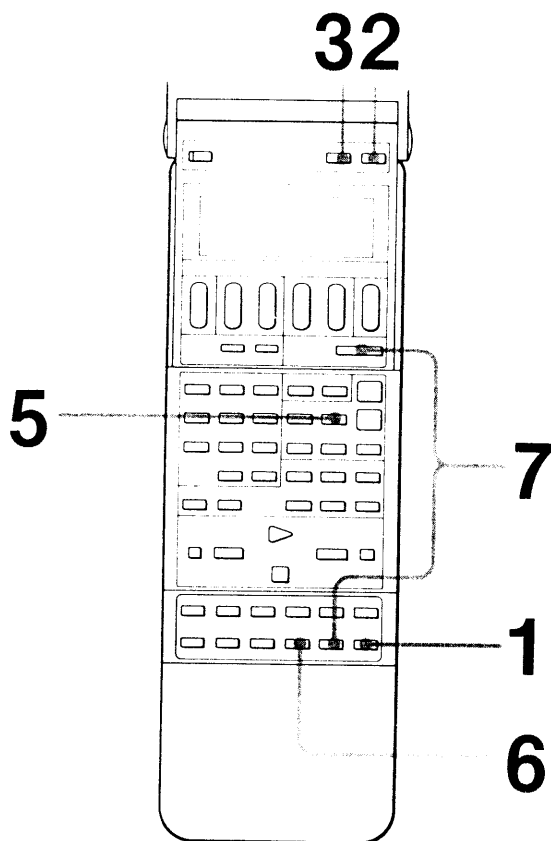
Cancelling/Changing the Timer Settings

You can cancel/change the timer settings by using the commander or by using the buttons on the VCR.

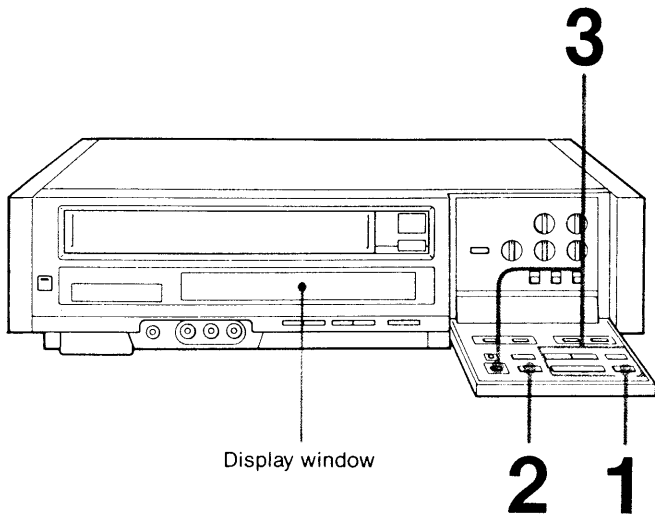
Using the commander K7

- 1 Press **TIMER REC ON/OFF**.
The **TIMER REC** indicator disappears on the display window.
- 2 Turn on the VCR.
- 3 Press **ANT TV/VTR** to display the **VTR** indicator.
- 4 Set the TV channel for the VCR: **CH 3** or **CH 4**.
- 5 Press **TIMER DISPLAY**.
The program list appears.
- 6 Press **TIMER CHECK** and move the cursor by pressing **TIMER CHECK** to the setting you want to cancel/change.
- 7 To cancel the setting, press **CLEAR**.
To change the setting, preset the data for the new recording while observing the liquid-crystal display, and press **TRANSMIT**.
The VCR enters to the standby mode.

K7



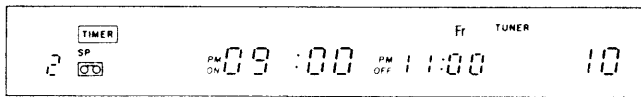
K8



Using the buttons on the VCR K8

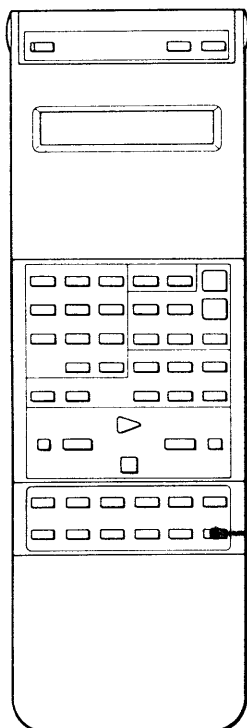
- 1 Press TIMER REC ON/OFF.**
The TIMER REC indicator disappears on the display window.
- 2 Press CHECK again and again until the desired program number appears.**
- 3 To cancel the setting, press CLEAR.**
To change the setting,
 - 1 Press TIMER SET.
 - 2 Press NEXT again and again until the desired setting blinks.
 - 3 Change the setting with CHANNEL/TIMER + / -.
 - 4 Press NEXT again and again until the channel indicator blinks.
 - 5 Press NEXT again.
 - 6 Press TIMER REC ON/OFF.

Display window



Notes on timer setting

- REC MODE and INPUT SELECT can be set any time during timer setting.
- When changing the setting to make a timer recording of a program from the equipment connected to the LINE IN 1 or LINE IN 2 jack, press INPUT SELECT to display the L1 or L2 indicator. (The channel indicator should not blink.) Then press NEXT.



1, 4

Using the VCR Before Timer-Activated Recording Starts **K9**

- 1 Press **TIMER REC ON/OFF** so that the **TIMER REC** indicator in the display window disappears.
- 2 Turn on the power of the VCR.
- 3 Operate the VCR.
- 4 Press **TIMER REC ON/OFF** again so that the **TIMER REC** indicator appears.

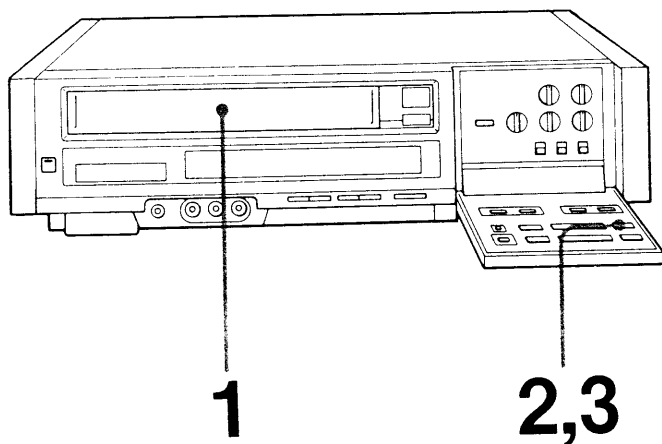
Stopping a timer-activated recording after starting recording

Press **TIMER REC ON/OFF**.
The tape stops and the power is turned off.

The buttons which can operate during timer recording

TIMER CHECK, **COUNTER RESET**, **ANT TV/VTR**, **AUDIO MONITOR**, **EDIT MONITOR**, **TIMER DISPLAY** are operable. When you press **ANT TV/VTR**, you can watch another program.

L1



Why do you use this function?

Use this function when you want to begin recording a program immediately and do something else. The recording duration can be set for up to 8 hours by 30-minute interval.

Before operation

Make sure of the following:

- INPUT SELECT is set to TUNER (i.e. TUNER indicator appears.)
- The tape speed is set to SP or EP with REC MODE.
- REC LEVEL is set to [5]

Operation

L1

If you are recording now, perform only step 3.

1 Insert a cassette.

2 Press QUICK TIMER.

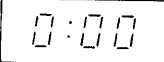

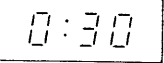

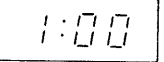

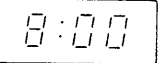
You can change the channel with CHANNEL/TIMER + / - while the channel indicator is blinking.

3 Press QUICK TIMER so that the recording starts. Now decide the recording duration.

Every time you press QUICK TIMER, the recording duration displayed increases by 30 minutes up to 8 hours.

You can go out or sleep after turning off the TV. The power of the VCR is turned off automatically at the preset time.

L2

	The power will be turned off 30 seconds after. The current time will be displayed on the display window.
 	30 minutes
 	One hour
 • • 	Eight hours

Recording duration indication L2

Every time you press QUICK TIMER, the recording duration indication changes as the left side:

You can change the recording duration with QUICK TIMER even while quick timer recording. During recording, the displayed recording duration decreases minute by minute.

Quick Timer Recording

Operable buttons during quick timer recording

PAUSE	to stop quick timer recording momentarily
TIMER REC ON/OFF	to stop quick timer recording
QUICK TIMER	to change recording duration
TIMER DISPLAY	to check timer programs preset
TIMER CHECK	to check timer programs preset
COUNTER RESET	to reset the tape counter to zero
INDEX MARK	to record an index signal
EDIT MONITOR	to check the VCR
ANT TV/VTR	to watch the picture broadcasted on another channel

While the VCR is in the standby mode for timer-activated recording

QUICK TIMER cannot operate when the TIMER REC indicator is displayed. Press TIMER REC ON/OFF to make this indicator disappear, and then press QUICK TIMER.

When the tape reaches its end during quick timer operation

Recording stops and the power is turned off. The tape is not be rewound automatically.

When you insert the cassette whose safety tab is broken off

The cassette is ejected automatically when you press QUICK TIMER.

When a power interruption occurs during quick timer recording

Recording stops and the power is turned off. If power interruption lasts less than three hours and is recovered within quick timer setting time, recording starts again.

Index Function

The desired program can be easily located by the index signal marked on the tape.

Marking Index Signals

Automatic marking during recording

An index signal is automatically marked on the tape when ● REC and the recording auxiliary button are pressed together or when a timer recording starts.

The INDEX indicator blinks on the display window while an index signal is being marked.

Marking index signals manually

Index signals can be marked at any desired point on the tape during recording, timer recording, normal playback or performing insert editing.

Press INDEX MARK at the point where an index signal is to be marked.

The INDEX indicator blinks on the display window while an index signal is being marked.

Notes

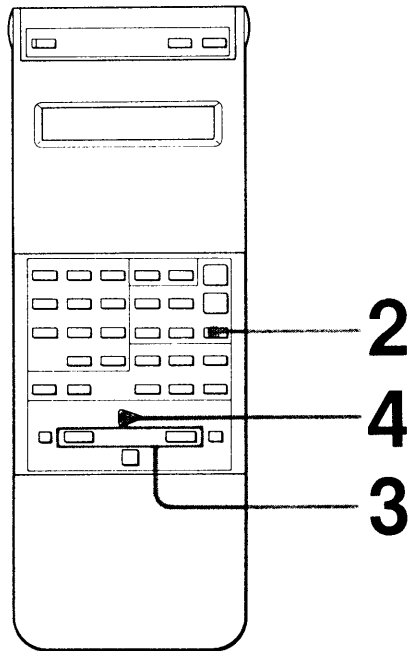
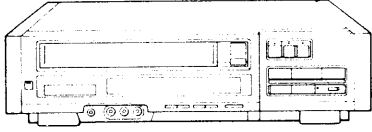
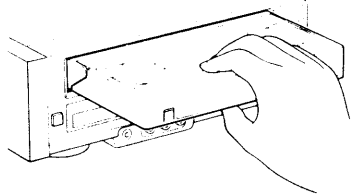
- Mark an index signal more 4 to 5 minutes after the previous index signal so that the VCR can detect it correctly.
- While an index signal is being marked during playback, the recorded sound is not heard, but it is not erased.

When you cannot mark an index signal

- Index signals cannot be marked on the cassette tapes whose safety tab is broken off.
- Index signals cannot be marked on the unrecorded portion of the tape.
- Index signals may not be marked immediately before a point on the tape where the tape speed (EP or SP) changes.

M1

1

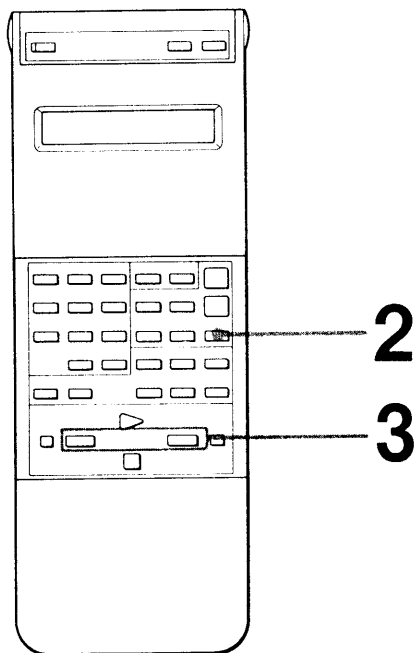
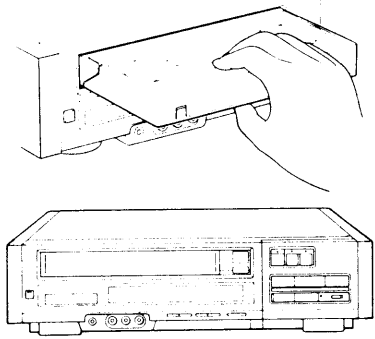


Playing Back the Beginning of Each Program in Sequence — Index Scan

M1

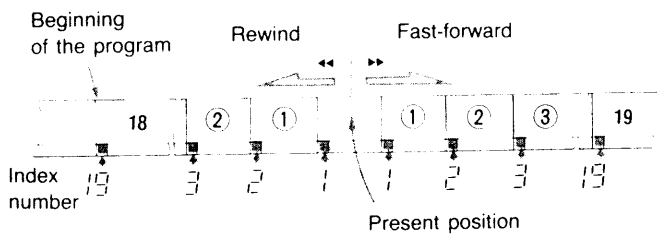
- 1 Insert a cassette that has index signals marked.
The INDEX indicator blinks on the display window.
- 2 Press INDEX once.
The INDEX SCAN indicator blink simultaneously during scanning.
The tape will be rewind or rapidly advanced to the next index signal marked.
The tape will be played back for approximately 10 seconds, and then rewind or advanced to the next index signal.
Every time an index signal is detected and playback begins, the displayed index number increases up to 19.
- 3 To scan the previous programs, press ◀◀ REW.
To scan the programs ahead, press ▶▶ FF.
- 4 At the desired program, press PLAY.
Normal playback of that program will begin.

1

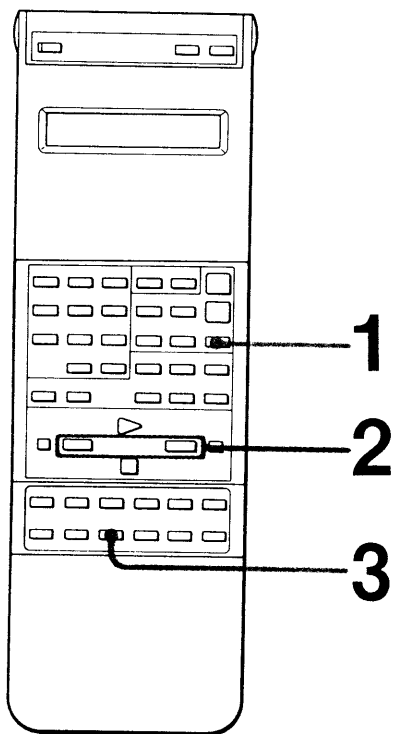


You can locate the desired program and play it back automatically by designating the number of its index signal. Up to 19th index signal from the preset position on the tape can be located.

- 1 Insert a cassette that has index signals marked.
- 2 Press INDEX several times until the index number of the desired program is displayed.
The INDEX indicator and the INDEX SEARCH number light up on the display window.
- 3 To locate a previous program on the tape, press ◀◀ REW.
To locate a program ahead, press ▶▶ FF.
The tape will be rewound or rapidly advanced. Every time an index signal is detected, the INDEX SEARCH number will decrease. When the number reaches 0, playback of your desired program will begin.



M3



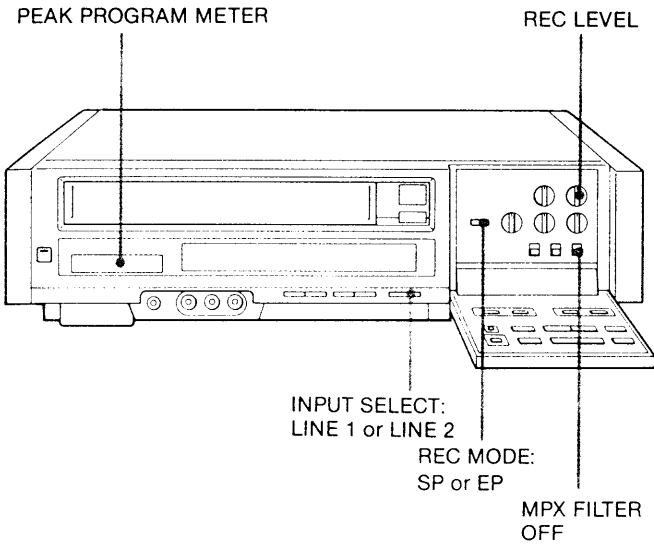
Erasing Index Signals M3

You can erase unnecessary index signals.

- 1 Press INDEX once.**
- 2 Press ◀◀ REW or ▶▶ FF.**
The tape is rewound or rapidly advanced. Every time an index signal is detected, the tape is played back and then rewound or advanced to the next index signal.
- 3 Press ERASE within approx. 10 seconds after you have made sure of the playback picture.**
The index signal is erased, and then index scan resume.
While an index signal is being erased, the recorded sound is not heard, but it is not erased.

Hi-Fi Audio Recording

N1



N1

To connect the VCR to your audio system, see page 22. Set the switches as shown below.

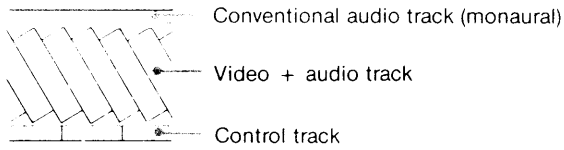
PEAK PROGRAM METER and REC LEVEL

Manually adjust REC LEVEL while observing the PEAK PROGRAM METER when the sound to be recorded is played back. Adjust so that the right most red element does not remain lit all the time.

Hi-fi recording pattern on the video tape N2

This VCR automatically performs hi-fi recording and the conventional audio recording at the same time, so that these tapes can also be played back on any ordinary VCR without a hi-fi system.

N2



*MPX FILTER switch

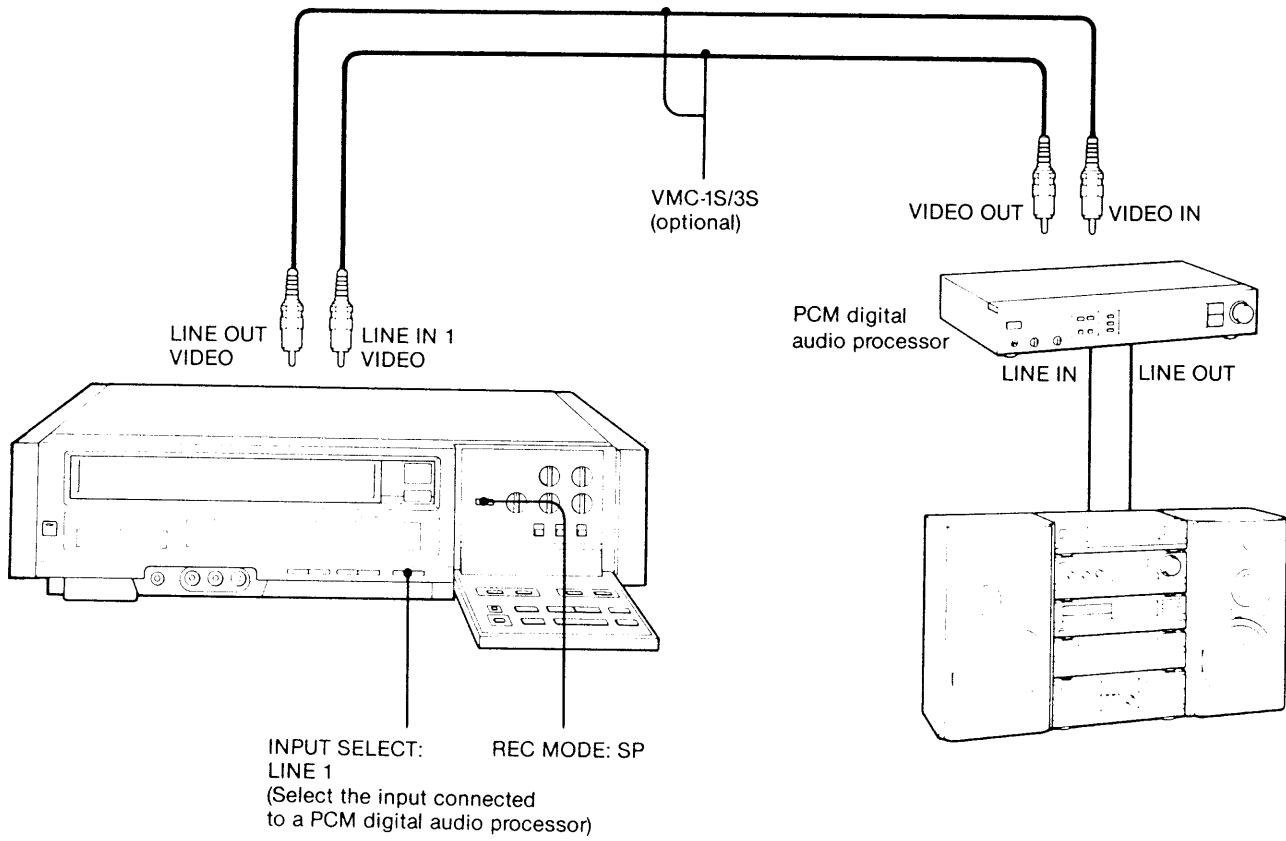
Set to ON when you connect the FM tuner which is not equipped with an MPX filter. Noise will be greatly reduced.

What is Hi-Fi Recording?

In conventional recording, audio signals are recorded on the audio track and video signals on the video track. In hi-fi recording, audio signals are recorded in the same manner as that of a video signal using 2 rotary video heads.

PCM Recording and Playback

Connect a PCM digital audio processor as shown below.



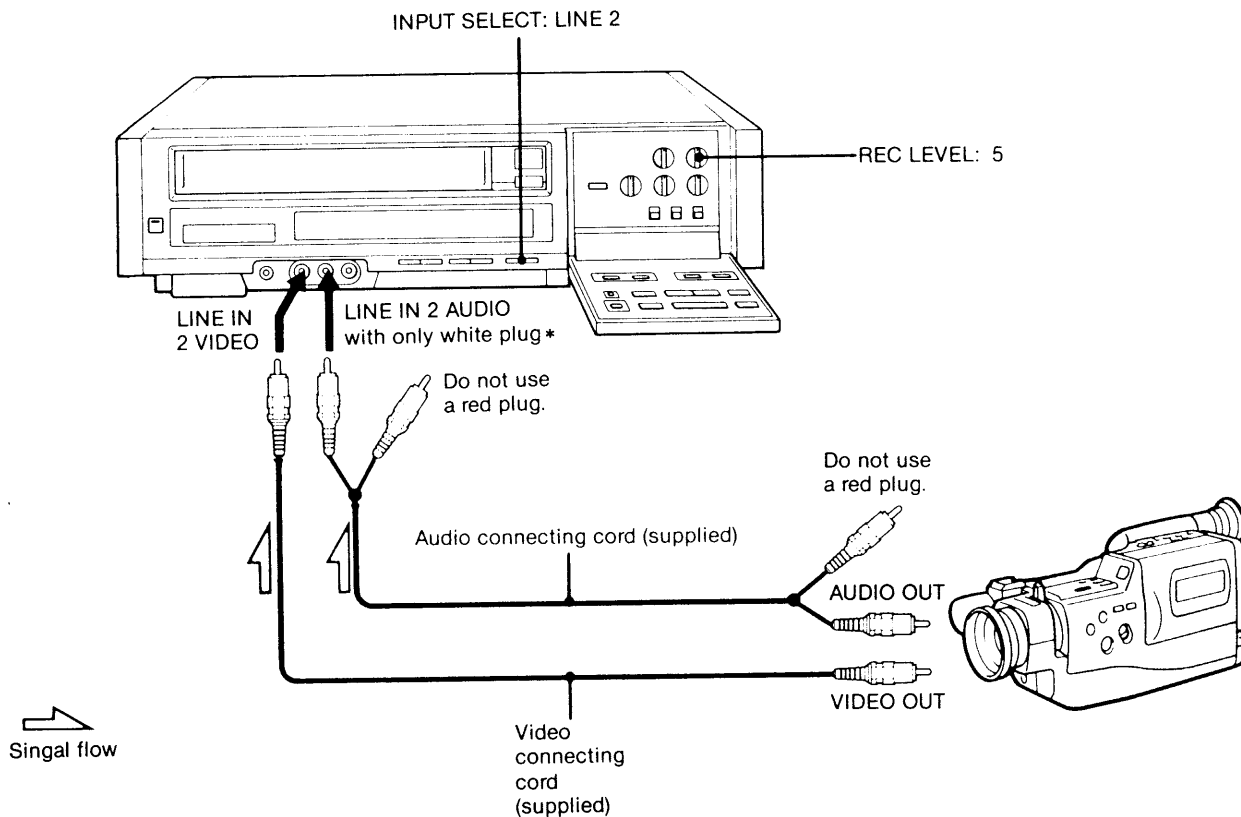
For details, refer to the instruction manual furnished with the digital audio processor.

To edit a home movie tape, you need two video cassette recorders.

If your other VCR is a Sony VCR equipped with control terminals, see page 69 for further systematic operations.

Editing a Home Movie Tape from Another VCR to This VCR

Example: From an 8mm VCR to this VCR



1 Insert a recorded cassette into the 8mm VCR and start playback.

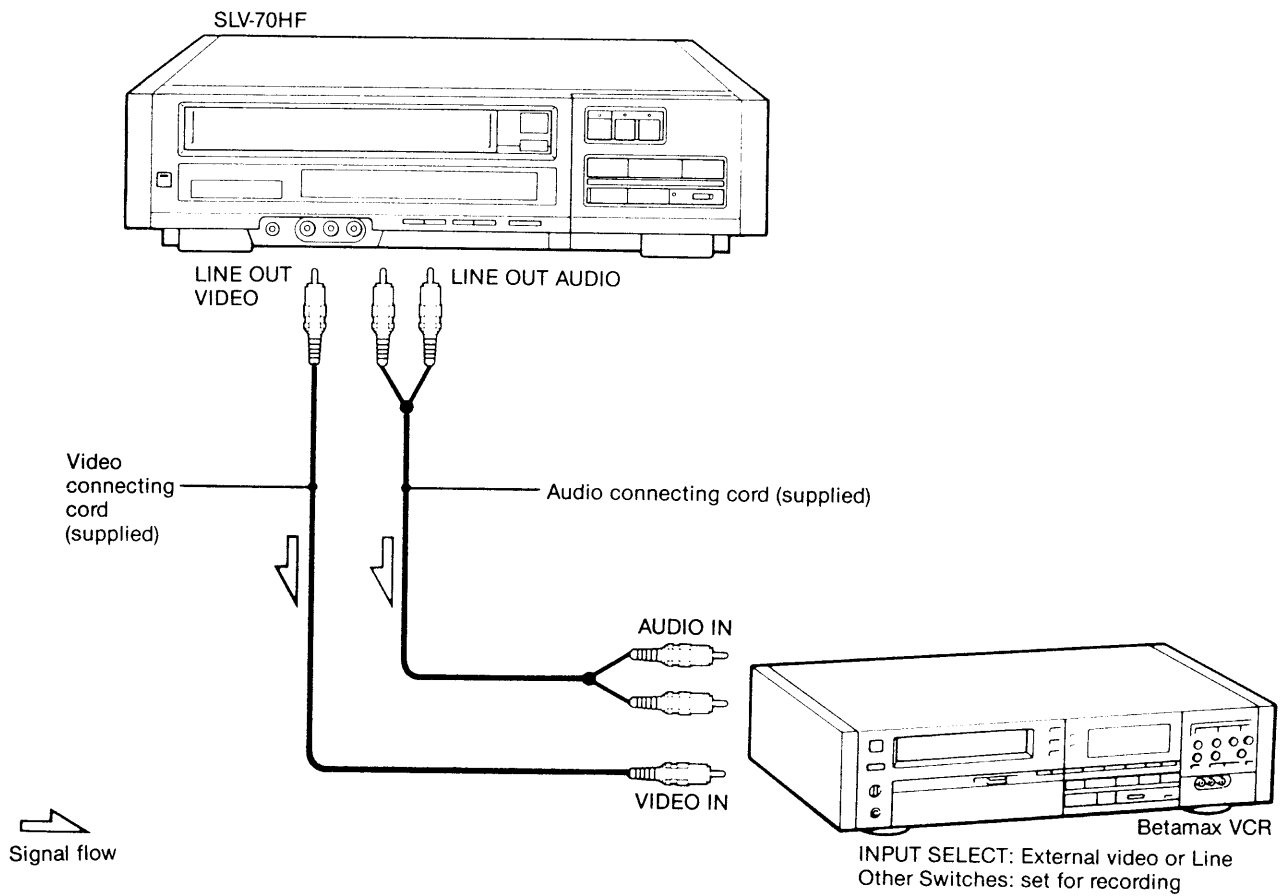
2 Start recording with this VCR.

This VCR's flying erase head allows continuous recordings without disturbance. When editing with another VCR, use this VCR for editing and the other VCR for playback.

* As illustrated above, use LINE IN AUDIO L when the connected VCR can record/play back only the monaural sound because the sound can be separated to CH L and R. Do not use LINE IN AUDIO R.

Editing a Home Movie Tape from This VCR to Another VCR

Example: From this VCR to a Sony Betamax VCR



Note

Do not connect the same VCR to both the LINE IN and LINE OUT jacks of this VCR. This may cause hum noise.

If the connected VCR's recording sound is monaural

- Use the RK-C72 connecting cable instead of the supplied audio connecting cord.
- Clear the indicator such as MAIN with AUDIO MONITOR on the commander to play back the cassette tape which MTS broadcasts are recorded.

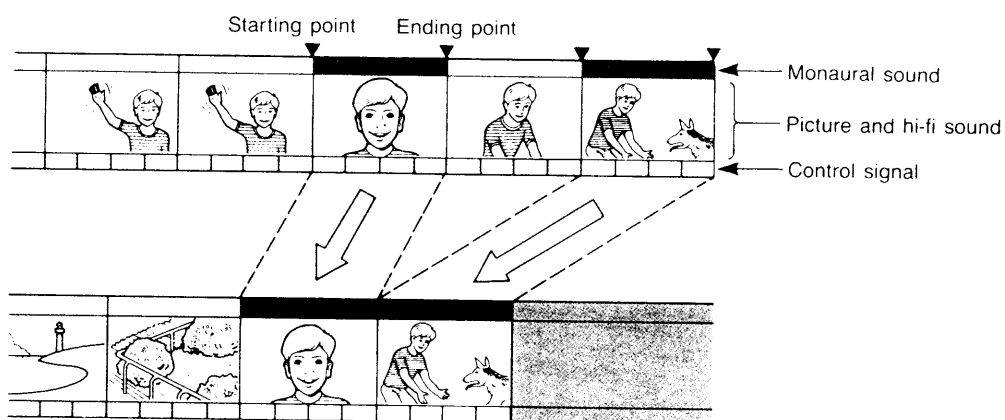
Editing with a Sony VCR Equipped with a Control Terminal — Synchronized Editing

If you have another Sony VCR equipped with control terminals, such as a control S or L jack, connect the control terminals of the other VCR and this VCR in addition to the video and audio connections. With this connection, you can start playback, momentarily stop (playback/recording pause), start recording the tape at the particular point selected by the other VCR simultaneously.

Assemble editing

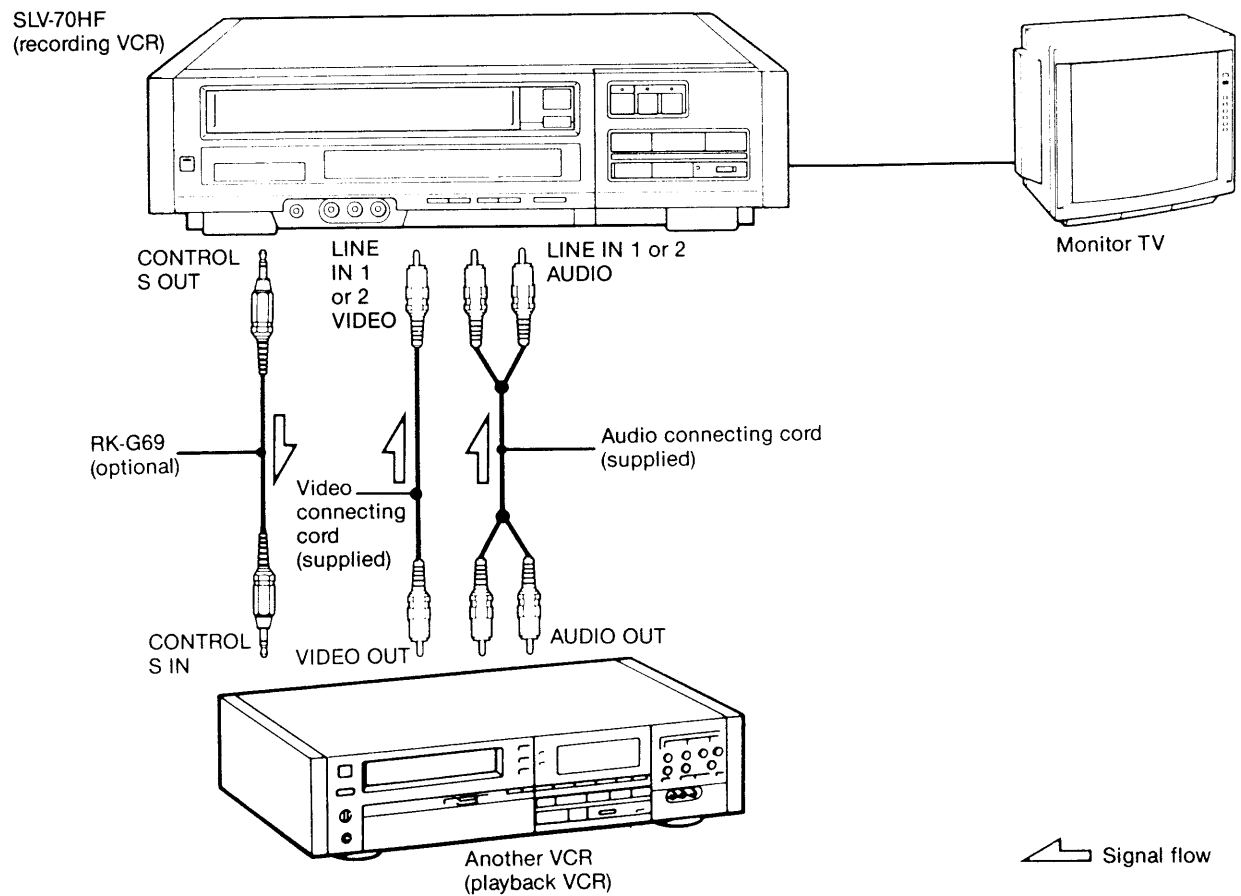
The desired scenes of the original tape can be "assembled" (recorded) onto another tape successively. The video, audio and control signals are edited together. This kind of editing is convenient for editing with a VCR with a control terminal. You can cut, for example, the portion where the ground was unexpectedly recorded or the same scene continued to be recorded for a long time.

Original tape (in the playback VCR)



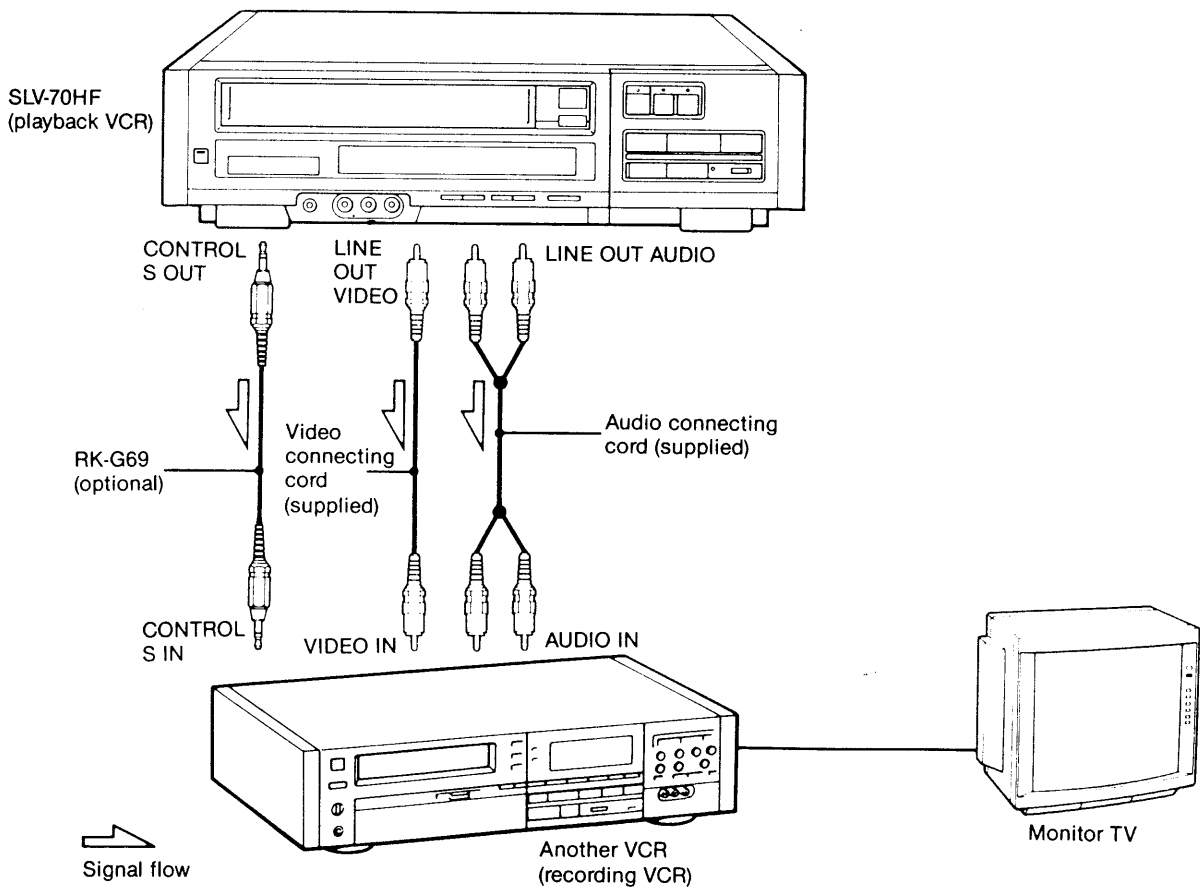
Connecting a VCR Equipped with a Control S Jack

Editing from the other VCR to this VCR



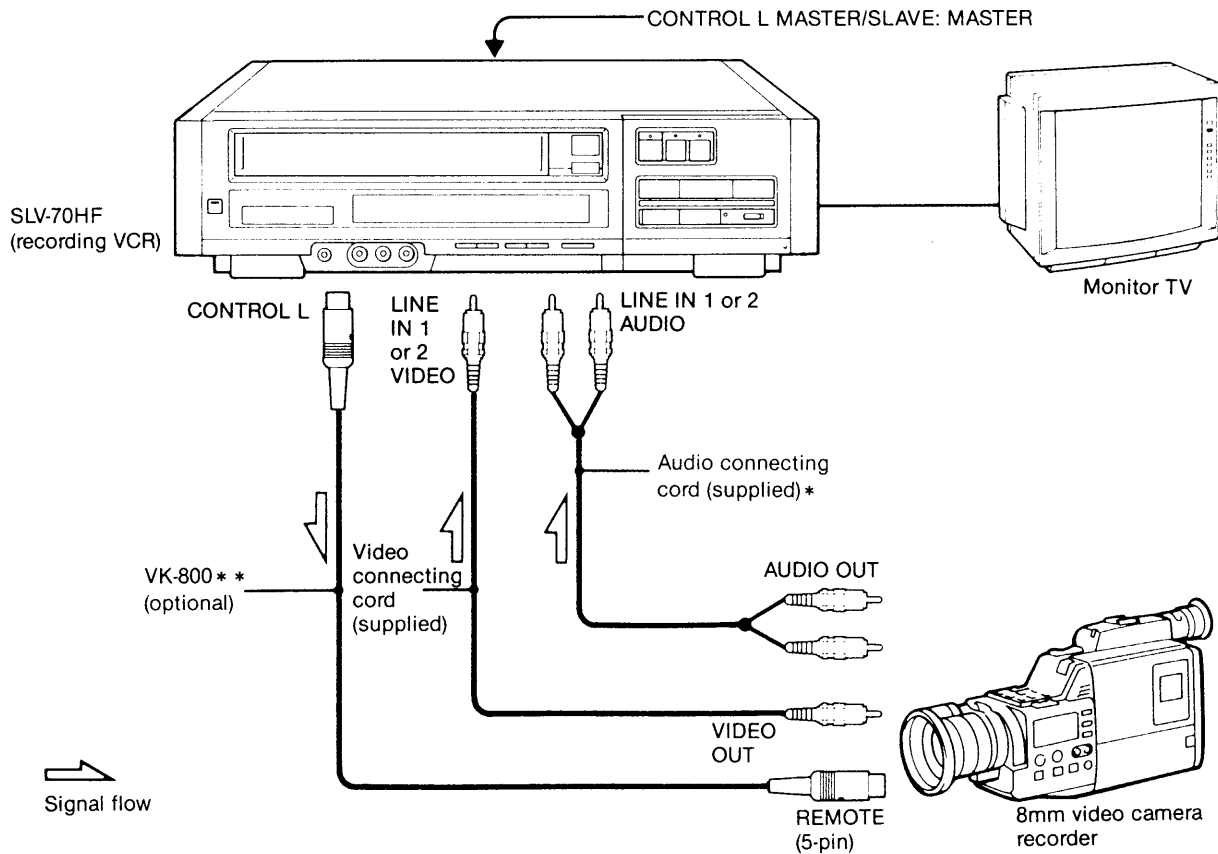
As illustrated above, use LINE IN 2 AUDIO L on the front when the connected VCR can record/play back only the monaural sound. Do not use LINE IN 2 AUDIO R.
If you use LINE IN 1 AUDIO connectors on the rear in this case, use the RK-C72 (optional), connect the red plug of the RK-C72 to LINE IN 1 AUDIO R, and connect the white plug to LINE IN 1 AUDIO L.

Editing from this VCR to another VCR



Connecting a VCR Equipped with a Control L Jack

You can edit the tape played back with the 8mm video camera recorder equipped with a 5-pin remote terminal.



* If the audio output from the 8mm video camera recorder is monaural, use only white plugs of the audio cord and only the L jack of LINE IN AUDIO.

** If the REMOTE connector of the connected 8mm VCR is a stereo mini jack, use VK-810.

System expansion

If you connect an RM-E100V editing controller (optional) and two VCRs, up to 8 desired scenes of the original tape can be automatically assembled.

CONTROL L MASTER/SLAVE switch setting

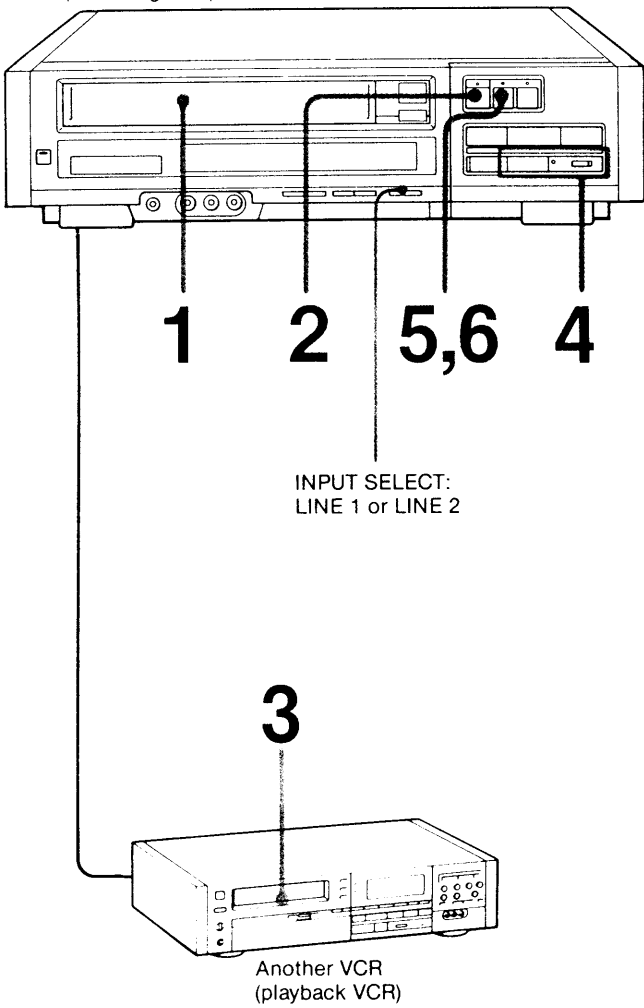
When you connect the optional RM-E100VA editing controller or RM-94/RM-84 remote controller, make sure to set CONTROL L MASTER/SLAVE to SLAVE.

Use this VCR as the recorder

It is recommended to use this VCR as the recorder because this VCR is equipped with a flying erase head to produce clear editing.

01

SLV-70HF
(recording VCR)



Synchronized Editing — From Another VCR to This VCR

See page 70 and 72 for connections.

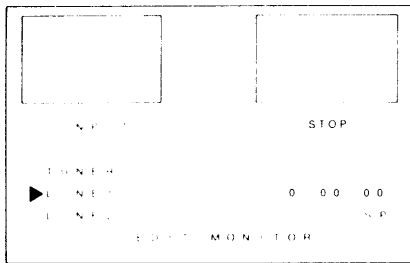
- 1 Insert a cassette.**
The power is turned on automatically.
- 2 Press EDIT MONITOR.**
The following display appears on the TV or monitor. **02**
- 3 Play back the tape of the other VCR to find the desired scene and set the VCR in the playback pause.**
- 4 Slide ● RECORD to the right while pressing || / ► PAUSE/STILL on this VCR at the start point to edit.**
- 5 Press SYNC EDIT.**
Both VCRs exit from the pause and editing starts.
- 6 Press SYNC EDIT again at the end point.**
This VCR is set in the recording pause, and another VCR is set in the playback pause.

For other scenes, repeat steps 3, 5 and 6.
To finish editing, press STOP on both VCRs.

Note

This VCR can record pictures played back at variable speeds so you can make a tape with scenes in slow motion or double-speed during editing (while the SYNC EDIT button lights up).

02



Synchronized Editing — From This VCR to Another VCR

See page 71 and 72 for connections.

- 1** Insert a cassette into the both VCRs.
- 2** Locate the desired scene on this VCR while observing the playback picture, and then set this VCR in the playback pause.
- 3** Locate the starting point to edit on another VCR, and set the VCR in the recording pause.
- 4** Press SYNC EDIT.
- 5** Press SYNC EDIT at the ending point.

For other scenes, repeat steps 2, 4 and 5.
To finish editing, press STOP on both VCRs.

Note

Do not operate the buttons on either this VCR, the other one, or the wireless commander during editing. Otherwise, a malfunction may occur.

If you use the synchronized editing function of another Sony VCR

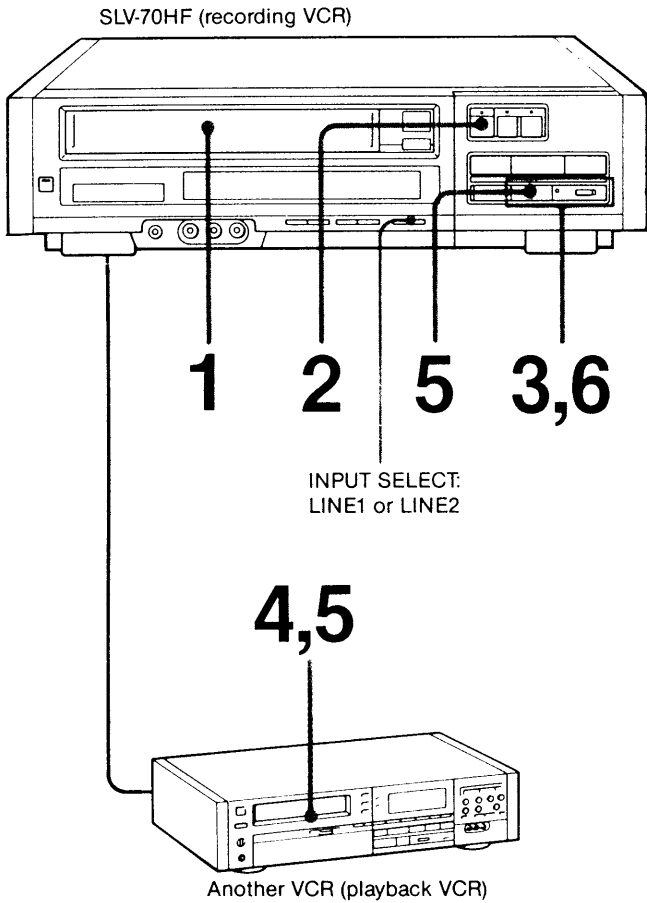
When you connect another VCR through the CONTROL S jack, set COMMAND MODE of this VCR to VTR1 or VTR2. Otherwise, this VCR cannot operate.

Pre-recorded tape

If you try to insert a scene into a pre-recorded tape, the picture inserted will be distorted. To insert a scene, perform insert editing.

To lessen the distortion of the picture at the edit points
Press SYNC EDIT (its lamp lights)

P1

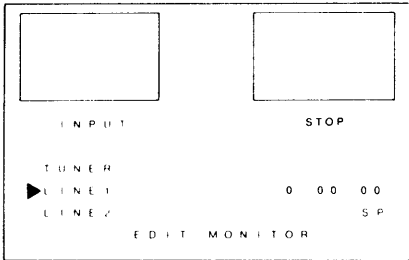


P1

- 1 **Insert a cassette.**
The power is turned on automatically.
- 2 **Press EDIT MONITOR.**
The edit monitor appears on the TV or monitor. P2
- 3 **Slide ● RECORD to the right while pressing II / ► PAUSE/STILL simultaneously on this VCR.**
- 4 **Locate the desired scene on the other VCR and set it in the playback pause.**
- 5 **Release the playback and recording pause modes of both VCRs by pressing II / ► PAUSE/STILL (or pause button) simultaneously.**
Editing starts.
- 6 **Press II / ► PAUSE/STILL of this VCR at the ending point.**

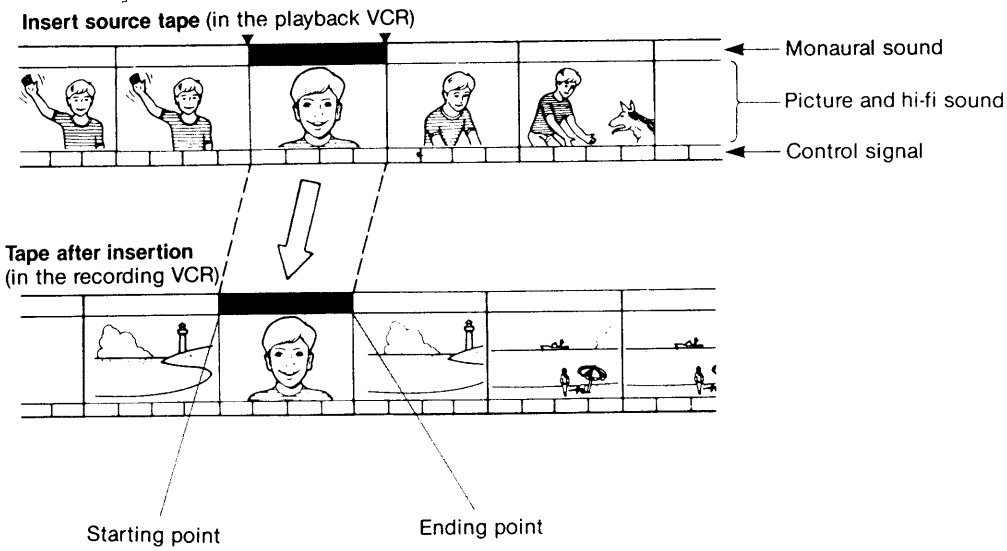
For other scenes, repeat steps 4 to 6.
To finish editing, press STOP on both VCRs.

P2

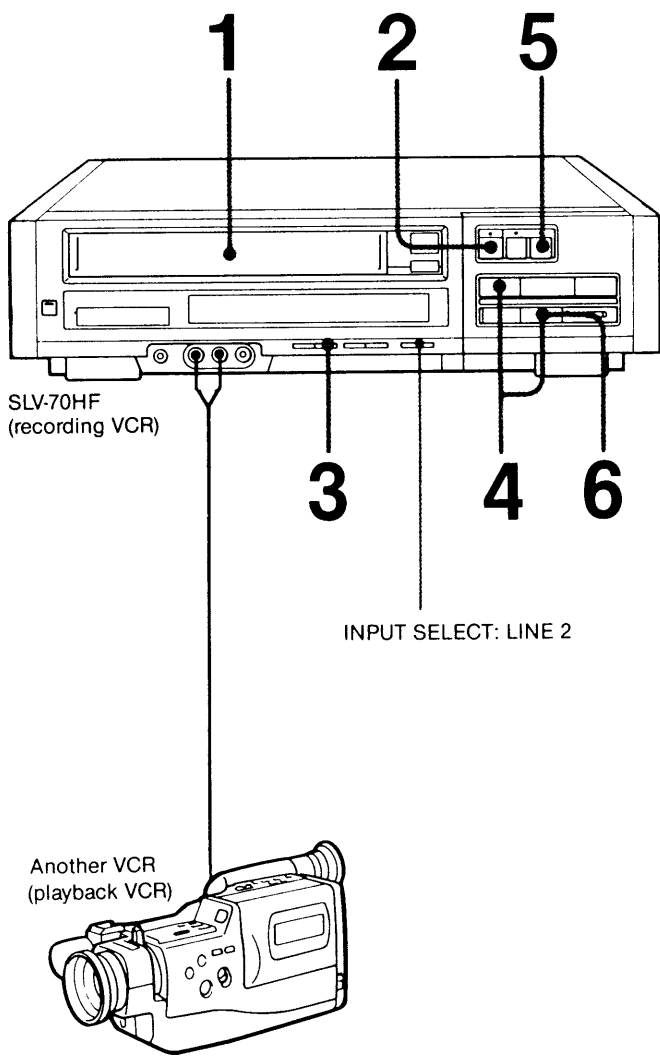


Inserting New Scene onto a Pre-recorded Tape — Insert Editing

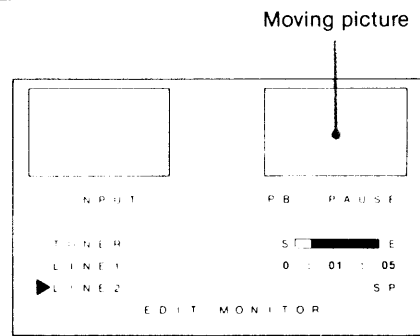
Q1



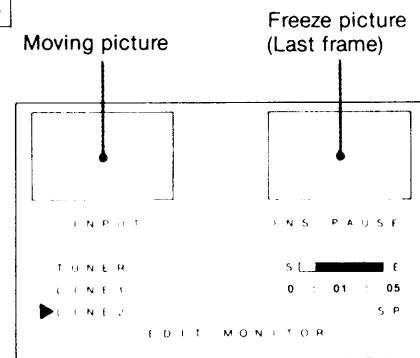
Q2



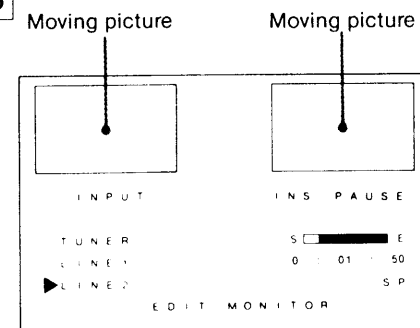
Q3



Q4



Q5



Insert editing **Q1**

You can easily insert (re-record) a new scene onto a pre-recorded tape.

This editing is useful to replace an unnecessary scene with another scene.

Assign the editing points on the recording VCR.

You can select the scenes to be inserted from among the TV and the equipment connected through LINE IN1 or 2 with INPUT SELECT.

Insert Editing **Q2**

1 Insert a cassette.

The power is turned on automatically.

2 Press EDIT MONITOR.

3 With observing the right picture, locate the ending point and press COUNTER RESET.

The time counter is reset to "0H00M00S" and the ending point is stored in the memory.

4 Rewind the tape to find the starting point and press

II / ◀ PAUSE/STILL. **Q3**

5 Press INSERT.

The last frame of picture remains in the right picture.

Q4

6 With observing the left picture, locate the scene to be inserted on the other VCR and set it in the playback pause.

7 Release the playback and recording pause of the VCRs. **Q5**

Insert editing starts and finishes at the end point "0H00M00S". The playback VCR continues playing back.

System		MONITOR OUT	VIDEO OUT (phono jack) (1)
Video recording system	Rotary two-head helical scanning FM system		Output signal: 1Vp-p, 75 ohms, unbalanced, sync negative
Audio recording system	Rotary two-head hi-fi system (Recording on the conventional audio track is monaural.)		AUDIO OUT (phono jack) (2)
Video signal	EIA standard, NTSC color	CONTROL S IN	Standard output: -10 dBs at load impedance 47 kilohms
Tape speed	SP: 33.35 mm (1 3/8 inches)/second	CONTROL S OUT	Output impedance: less than 10 kilohms
	EP: 11.11 mm (7/16 inches)/second	CONTROL L	Minijack (1)
		HEADPHONES jack	Minijack (1)
Maximum recording/playback time	8 hours		5-pin connector (1)
Fast-forward and rewind time	Approx. 4 min. (T-120)		Stereo minijack (1)
Audio frequency response	20 - 20,000 Hz		Output impedance: more than 8 ohms
Dynamic range	More than 90 dB		Output level: 45mW at load impedance 8 ohms
Wow and flutter	Less than 0.005% WRMS		
Tuner section		Timer section	
Tuner system (audio)	Split carrier system	Clock	Quartz locked
Channel coverage	VHF channels 2 to 13	Time indication	12-hour cycle
	UHF channels 14 to 69	Timer setting	Only for recording 8 programs one month at max.
	CATV channels A1, A2, A to W		
Antenna	75 ohm antenna terminal for VHF/UHF	Power back up	Build-in self-charging battery
			Back-up duration: Up to 3 hours at one time
Inputs and outputs		General	
LINE IN 1 and 2	VIDEO IN (phono jack) (1)	Power requirements	120V AC, 60 Hz
	Input signal: 1Vp-p, 75 ohms, unbalanced, sync negative	Power consumption	44W
	AUDIO IN (phono jack) (2 each)	AC outlet	Max. 400W (unswitched)
	Input level: -10 dBs (0 dBs = 0.775Vrms)	Operating temperature	5° C to 40° C (41° F to 104° F)
	Input impedance: more than 47kilohms	Storage temperature	-20° C to 60° C (-4° F to 140° F)
LINE OUT	VIDEO OUT (phono jack) (1)	Dimensions	385 x 93 x 345 mm (w/h/d) (15 1/4 x 3 3/4 x 13 5/8 inches)
	Output signal: 1Vp-p, 75 ohms, unbalanced, sync negative	Weight	7.3 kg (16 lb 15 oz)
	AUDIO OUT (phono jack) (2)		
	Standard output: -10 dBs at load impedance 47 kilohms	Wireless commander RMT-256	
	Output impedance: less than 10 kilohms	Remote control system	Infrared control
		Power requirements	3 V DC, 2 size AA batteries (IEC designation R6)
		Dimensions	82 x 20 x 225 mm (w/h/d) (3 1/4 x 13/16 x 8 7/8 inches)
		Weight	120g (4 oz) (excluding batteries)

Accessories supplied

- Wireless commander, RMT-256 with two size AA batteries (1)
- 75-ohm coaxial cable with F-type connectors (1)
- Audio connecting cord (2 phono to 2 phono) (1)
- Video connecting cord (Phono to phono) (1)
- Antenna connector (1)

Design and specifications are subject to change without notice.

Trouble Checks

If any difficulty should arise during operation, first check the power cord connection, then go through the following list.

Should the difficulty persist, unplug the unit and contact your Sony dealer or local authorized Sony service facility.

	Symptom	Possible causes
Power	The POWER switch does not function.	<ul style="list-style-type: none"> •The power cord is disconnected. •The VCR is in the timer standby mode.
	The power is turned on, but the unit does not operate.	The safety device on the unit has activated. Turn the power off, disconnect the power cord from the wall outlet and leave the unit for more than one minute.
CLOCK AND TIMER	The clock has stopped and "AM 12:00" is blinking.	There has been a power interruption. Reset the date, clock time and timer setting.
TV RECEPTION	TV program is not clearly displayed on the TV screen.	<ul style="list-style-type: none"> •The channel for VCR is not correctly tuned on the TV receiver. •The TV signal is weak. Adjust the direction of the antenna. •The AC power cord of the VCR is disconnected.
RECORDING AND PLAYBACK	Noisy picture during recording	<ul style="list-style-type: none"> •The TV's channel is not set to that preset for the VCR. •The TV signal is weak. Adjust the direction of the antenna.
	No picture on the TV screen	<ul style="list-style-type: none"> •Press TV/VTR so that the VTR indicator appears in the display window. •The TV's channel is not set to 3CH or 4CH, or the video input has not been selected at the monitor.
	Recording cannot be made.	<ul style="list-style-type: none"> •No cassette is inserted. •The tape is at its end. •INPUT SELECT is not set correctly.
	The playback picture is not clear.	<ul style="list-style-type: none"> •The channel for VCR is not correctly tuned on the TV receiver. •The tape recorded by another VCR is played back. •The video heads are contaminated. •If you use a commercially available wet-type cleaning cassette, it may damage the video heads. •The video heads are rubbed off. •Adjust SHARPNESS. •Adjust TRACKING.
	The picture moves vertically during picture search mode.	Adjust the vertical hold control on the TV or color monitor.
	Distorted or noisy sound	Recording level was not properly adjusted.

	Sympton	Possible causes
RECORDING AND PLAYBACK	Sound drop-outs	The tape is defective. Use a new video cassette tape.
	Stereo recording cannot be made.	AUTO STEREO is set to OFF (MONO).
	Both main and SAP sounds are heard during playing back the tape MTS broadcasts were recorded.	Press AUDIO MONITOR.
TIMER RECORDING	Timer setting cannot be made.	The current time has not been preset.
	The TIMER indicator disappears even though you pressed TIMER REC ON/OFF.	<ul style="list-style-type: none"> •No cassette is inserted. •The tape is at its end.
	The cassette is ejected when you press TIMER REC ON/OFF.	The safety tab of the cassette was broken off.
	Timer recording could not be made.	<ul style="list-style-type: none"> •There has been a 3 or more hours power interruption. •TIMER REC ON/OFF was not pressed.
DATA SCREEN	The data screen disappear.	<ul style="list-style-type: none"> •Press DATA SCREEN. •The TV or color monitor is connected through the LINE OUT jack.
Others	Cassette cannot be inserted.	Another cassette has been inserted.
	The commander cannot operate.	<ul style="list-style-type: none"> •The COMMAND MODE switch has not been set correctly. •The batteries are exhausted.