



# TIME LAPSE VCR OWNER'S MANUAL

MODEL: TL-AT130P

Before connecting, operating, or adjusting this product, please read this instruction booklet carefully and completely.

INTRODUCTION

PREPARATION

PLAYBACK

RECORDING

ADDITIONAL INFORMATION






# IMPORTANT SAFETY INSTRUCTIONS



**CAUTION: PLEASE READ AND OBSERVE ALL WARNINGS AND INSTRUCTIONS IN THIS INSTALLATION AND OPERATING GUIDE AND THOSE MARKED ON THE UNIT. RETAIN THIS GUIDE FOR FUTURE REFERENCE.**


This set has been designed and manufactured to assure personal safety. Improper use can result in electric shock or fire hazard. The safeguards incorporated in this unit will protect you if you observe the following procedures for installation, use, and servicing. This unit does not contain any parts that can be repaired by the user.


**DO NOT REMOVE THE CABINET COVER, OR YOU MAY BE EXPOSED TO DANGEROUS VOLTAGE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.**

- 1. Read these instructions.** - All these safety and operating instructions should be read before the product is operated.
  - 2. Keep these instructions.** - The safety, operating and use instructions should be retained for future reference.
  - 3. Heed all warnings.** - All warnings on the product and in the operating instructions should be adhered to.
  - 4. Follow all instructions.** - All operating and use instructions should be followed.
  - 5. Do not use this apparatus near water.** - For example: near a bath tub, wash bowl, kitchen sink, laundry tub, in a wet basement; near a swimming pool; etc.
  - 6. Clean only with dry cloth.** - Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners.
  - 7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.** - Slots and openings in the cabinet are provided for ventilation, to ensure reliable operation of the product, and to protect it from over- heating. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided and the manufacturer's instructions have been adhered to.
  - 8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.**
  - 9. Do not defeat the safety purpose of the polarized or grounding-type plug.** A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
  - 10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.**
  - 11. Only use attachments/accessories specified by the manufacturer.**
- 
- 12. Use only the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.**
  - 13. Unplug this apparatus during lightning storms or when unused for long periods of time.**
  - 14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.**

**WARNING : TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,  
DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.**

	<b>CAUTION</b> RISK OF ELECTRIC SHOCK DO NOT OPEN	
<p>CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK); NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>		

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

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

**WARNING:** Do not install this equipment in a confined space such as a bookcase or similar unit.

**CAUTION:** The apparatus should not be exposed to water (dripping or splashing) and no objects filled with liquids, such as vases, should be placed on the apparatus.

**CAUTION :** TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE PLUG CAN BE FULLY INSERTED WITHOUT EXPOSING ANY PARTS OF THE BLADES.

Wiring methods shall be in accordance with the National Electric Code, ANSI/NFPA 70.

**IMPORTANT COPYRIGHT INFORMATION:** Many television programs and films are copyrighted. In certain circumstances, copyright law may apply to private in-home video taping of copyrighted materials.

### MOISTURE CONDENSATION

If you pour a cold liquid into a glass, water vapor in the air will condense on the surface of the glass. This is moisture condensation. Moisture condensation on the head drum, one of the most crucial parts of the unit, will cause damage to the tape.

When the VCR is exposed to a rapid temperature change from cold to warm, some condensation will occur. Under this condition, connect the power cord to the AC line, press **POWER** button on and allow at least two hours for the VCR to dry out.

The serial number is found on the back of this unit. This number is unique to this unit and not available to others. You should record requested information here and retain this guide as a permanent record of your purchase.

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

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

### Regulatory Notices For U.S.A

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

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

**Warning:** This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.



## FEATURES

- Time Lapse VCR Function
- Trigger Function
- Buzzer Function
- Auto Switcher Functionality
- Tape Compatibility
- Elapsed Time Display
- Series Recording Function
- Alarm Recording Function

## CONTENTS

### INTRODUCTION

Features/Contents . . . . .5

### PREPARATION

Control Names and Locations . . . . .6-8

Installation &

VCR to Monitor and CCD Camera Connection . . . . .9

Multiplexer/Matrix Switcher Connections . . . . .10-11

Alarm Record Connection . . . . .12

Series Record Connection . . . . .12

Setting the On Screen Display . . . . .13

Setting the Setup Menu . . . . .14

Setting the Set Time . . . . .15

Video Cassette Tapes . . . . .16

### PLAYBACK

Normal Playback . . . . .17

Special Effects Playback . . . . .18-19

Tape Counter Memory Feature . . . . .20

### RECORDING

Normal Recording . . . . .21

Repeat Recording . . . . .22

Timer Recording . . . . .23

Series Recording . . . . .24

Alarm Recording . . . . .25-26

### ADDITIONAL INFORMATION

Check the Alarm Record Information . . . . .27

Recording Time Table Information . . . . .27

Check the Power Fail Recall . . . . .28

Use to Lock On/Off Switch . . . . .28

Self-Diagnosis . . . . .29

Service Guide Table . . . . .30

VIDEO Head Cleaning . . . . .30

Troubleshooting . . . . .31

Specifications . . . . .32

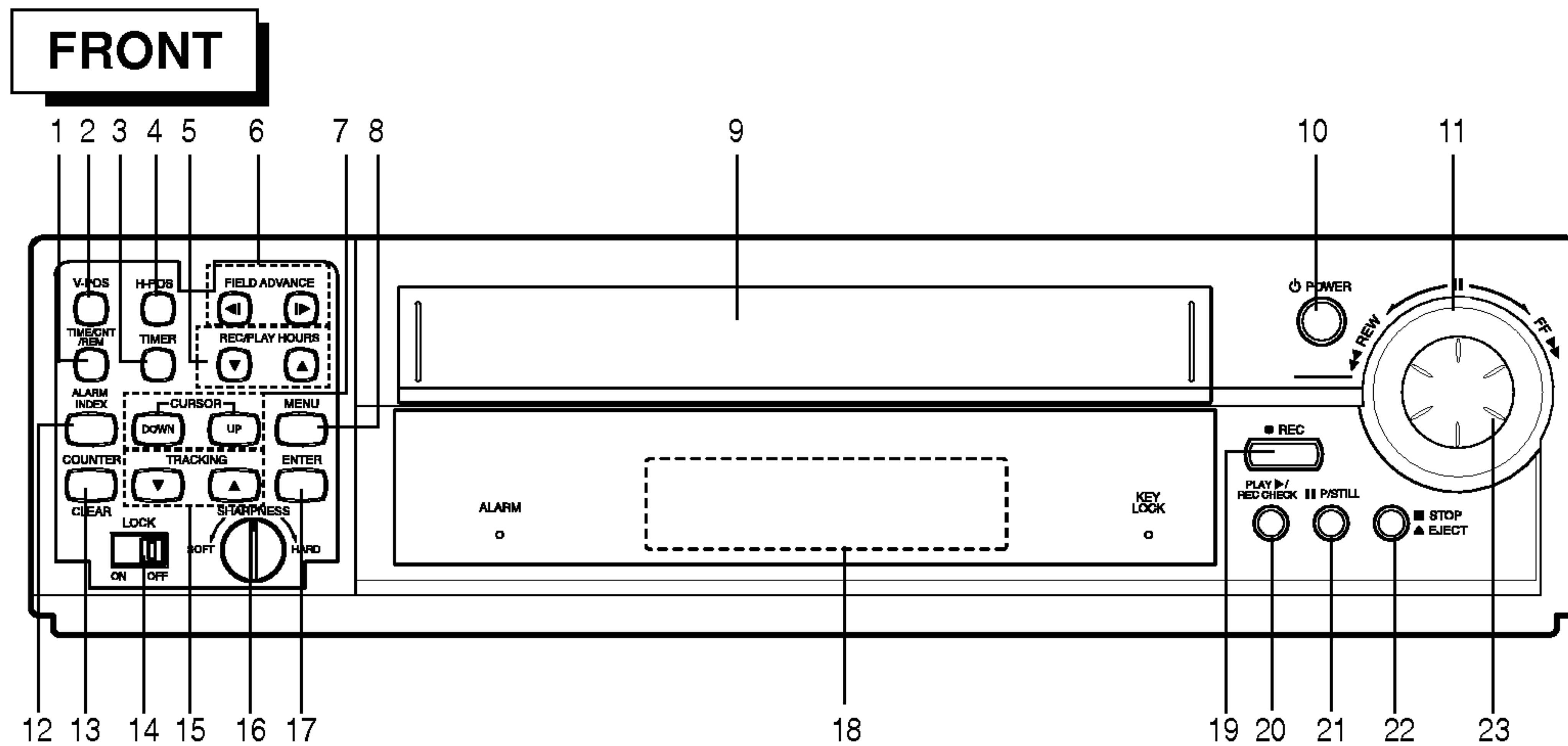
RS-232C Protocol . . . . .33-46

Remote Control . . . . .47

Accessories . . . . .47

**Warning** : The battery used in this device may present a fire or chemical burn hazard if mis-treated. Do not recharge, disassemble, incinerate, or heat above 212°F (100°C). Replace the battery with Matsushita Elec. Ind., Co., Ltd. (Panasonic) part no. VL2330 only. Use of another battery may present a risk of fire or explosion. Dispose of used batteries. Keep away from children. Do not disassemble or dispose of in fire.

# CONTROL NAMES AND LOCATIONS

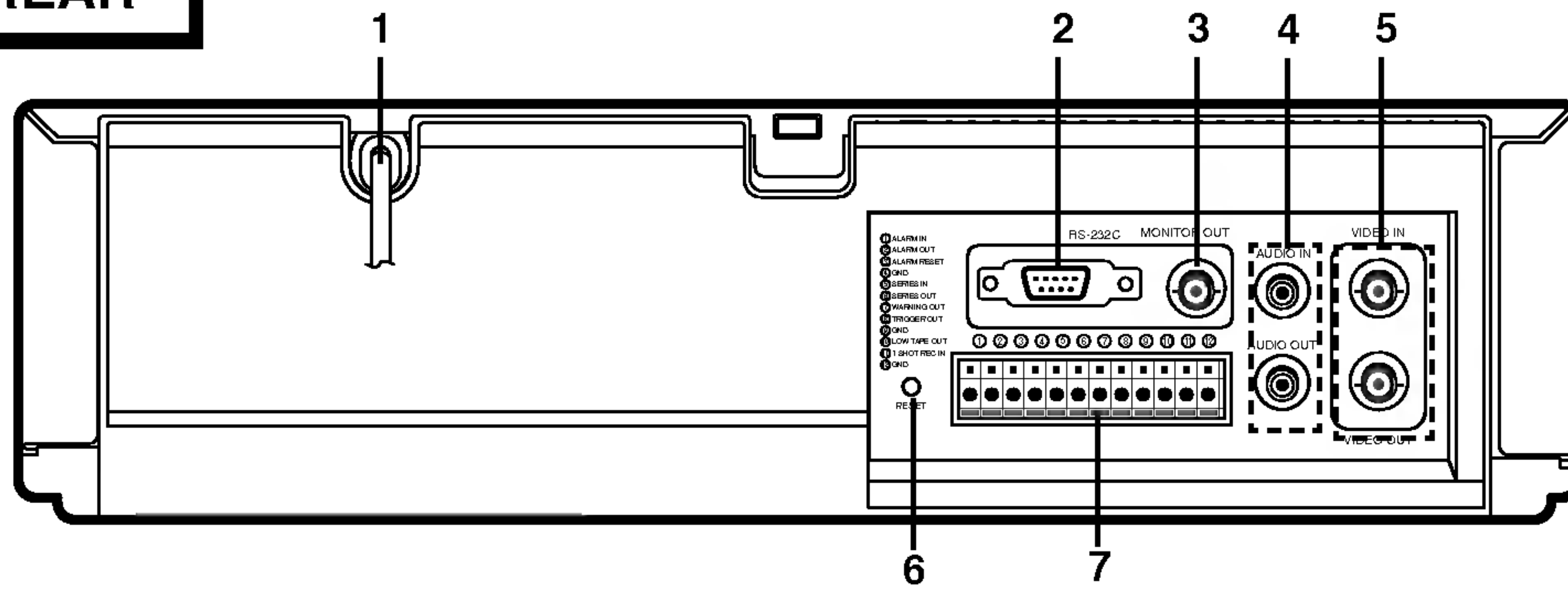


1. **TIME/CNT/REM BUTTON**  
To switch among the clock, tape counter and tape remaining time.
2. **V-POS BUTTON**  
To move the position of the Time/Date display in the vertical direction.
3. **TIMER BUTTON**  
To set timer recording.
4. **H-POS BUTTON**  
To move the position of the Time/Date display in the horizontal direction.
5. **REC/PLAY HOURS BUTTON**  
To change the Play or Record speed to a lower or higher value.
6. **FIELD ADVANCE BUTTONS**  
Press to advance or reverse advance video picture while viewing as still picture.
7. **CURSOR (UP/DOWN) BUTTONS**  
To select the item on the menu.
8. **MENU BUTTON**  
Displays the programming menu on the monitor or TV screen.
9. **CASSETTE COMPARTMENT**  
Where the video cassette is inserted.
10. **POWER BUTTON**  
To turn the VCR on and off.
11. **SHUTTLE RING**  
To fast forward or rewind the tape.
12. **ALARM INDEX**  
To active and deactivate (toggle) the alarm index function.
13. **COUNTER CLEAR BUTTON**  
To set the counter to zero or erase the information on the menu screen.
14. **LOCK ON/OFF SWITCH**  
To switch lock and unlock.
15. **TRACKING (▼/▲) BUTTON**  
To adjust the manual tracking.
16. **SHARPNESS CONTROL**  
To adjust the playback quality.
17. **ENTER BUTTON**  
To select items on the menu screen.
18. **VCR FUNCTION INDICATOR PANEL**  
Details are on page 8.
19. **RECORD BUTTON**  
To record video.
20. **PLAY/REC CHECK BUTTON**  
To playback a recorded tape and used for the Record Check function.
21. **P/STILL(PAUSE STILL) BUTTON**  
To still playback or to pause recording.
22. **STOP/EJECT BUTTON**  
To stop the tape, or eject a stopped cassette.
23. **JOG DIAL**  
Rotate to advance or reverse advance video picture while viewing as still picture.



## CONTROL NAMES AND LOCATIONS (cont'd)

**REAR**



- |   |  |
|---|--|
| <p><b>1. POWER CORD</b><br/>Connect only to an AC 100-240V, 50/60Hz outlet.</p> <p><b>2. RS-232C CONNECTOR</b><br/>Connect a personal computer for controlling the VCR.</p> <p><b>3. MONITOR OUT JACK</b><br/>Connect to another monitor.</p> | <p><b>4. AUDIO IN/OUT JACK</b><br/>Connect the audio input and output terminal.</p> <p><b>5. VIDEO IN/OUT JACK</b><br/>Connect the video input and output terminal.</p> <p><b>6. RESET BUTTON</b><br/>Use this button to reset the VCR.</p> <p><b>7. 12-PIN TERMINAL BLOCK</b><br/>Connect external signals.</p> |
|---|--|

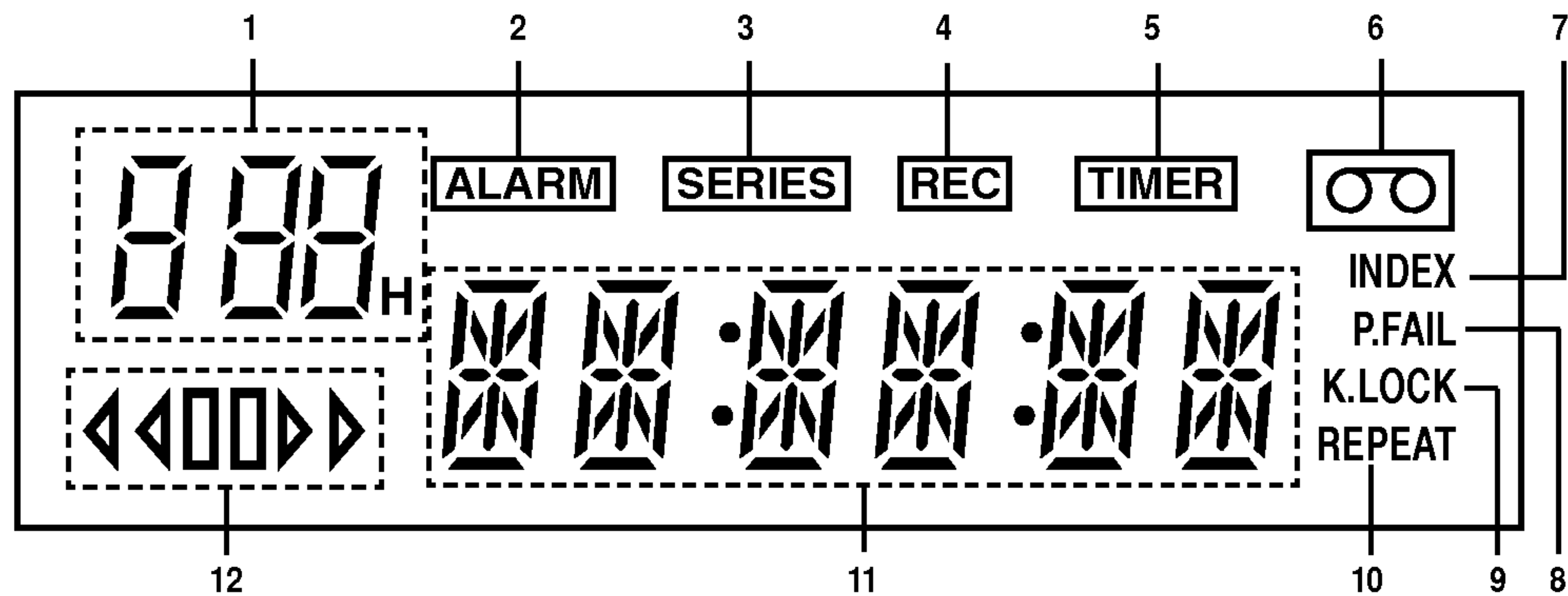
PREPARATION

### Terminal Signal Levels

TERMINAL	SIGNAL LEVEL		IN/OUT
1. ALARM IN		VIH: 4~5V, VIL: 0~0.6V T: above 250msec	INPUT
2. ALARM OUT		VOH: 4~5V, VOL: 0~0.6V T: ALARM REC STATE	OUTPUT
3. ALARM RESET		VIH: 4~5V, VIL: 0~0.6V T: above 250msec	INPUT
5. SERIES IN		VIH: 4~5V, VIL: 0~0.6V T: above 250msec	INPUT
6. SERIES OUT		VOH: 4~5V, VOL: 0~0.6V T: above 250msec	OUTPUT
7. WARNING OUT		VOH: 4~5V, VOL: 0~0.6V T: until any key is pressed	OUTPUT
8. TRIGGER OUT		VOH: 4~5V, VOL: 0~0.6V T: above 8~10msec	OUTPUT
10. LOW TAPE OUT		VOH: 4~5V, VOL: 0~0.6V T: below 5 min, end of tape	OUTPUT
11. 1-SHOT REC IN		VIH: 4~5V, VIL: 0~0.6V T: above 250msec	INPUT
4, 9, 12. GND	-	0V	COMMON

## CONTROL NAMES AND LOCATIONS (cont'd)

### INDICATOR PANEL



PREPARATION

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. TIME LAPSE VCR TIME Indication</li> <li>2. ALARM Indication<br/>(ALARM REC ON indication)</li> <li>3. SERIES Indication</li> <li>4. RECORD Indication</li> <li>5. TIMER Indication</li> <li>6. CASSETTE Indication</li> </ol> | <ol style="list-style-type: none"> <li>7. INDEX Indication</li> <li>8. POWER FAILURE Indication</li> <li>9. KEY LOCK indication</li> <li>10. REPEAT Indication</li> <li>11. FUNCTION Indication<br/>(CLOCK, TAPE COUNTER, ERROR)</li> <li>12. VCR FUNCTION Indication</li> </ol> |
|---|--|

### VCR FUNCTION Indication

PLAYBACK INDICATION		RECORDING INDICATION	
PLAYBACK	▶	RECORDING	▶ <b>REC</b>
PAUSE STILL	□□	TIMER RECORDING	▶ <b>REC</b> <b>TIMER</b>
FAST FORWARD	▶▶	ALARM INDEX	☀ INDEX
REWIND	◀◀	ALARM RECORDING	☀ ALARM
FORWARD SLOW PICTURE/ FORWARD FIELD ADVANCE	◻▶	SERIES RECORDING	<b>SERIES</b>
REVERSE SLOW PICTURE/ REVERSE FIELD ADVANCE	◀◻		
CUE	▶▶☀		
REVIEW	☀◀◀		

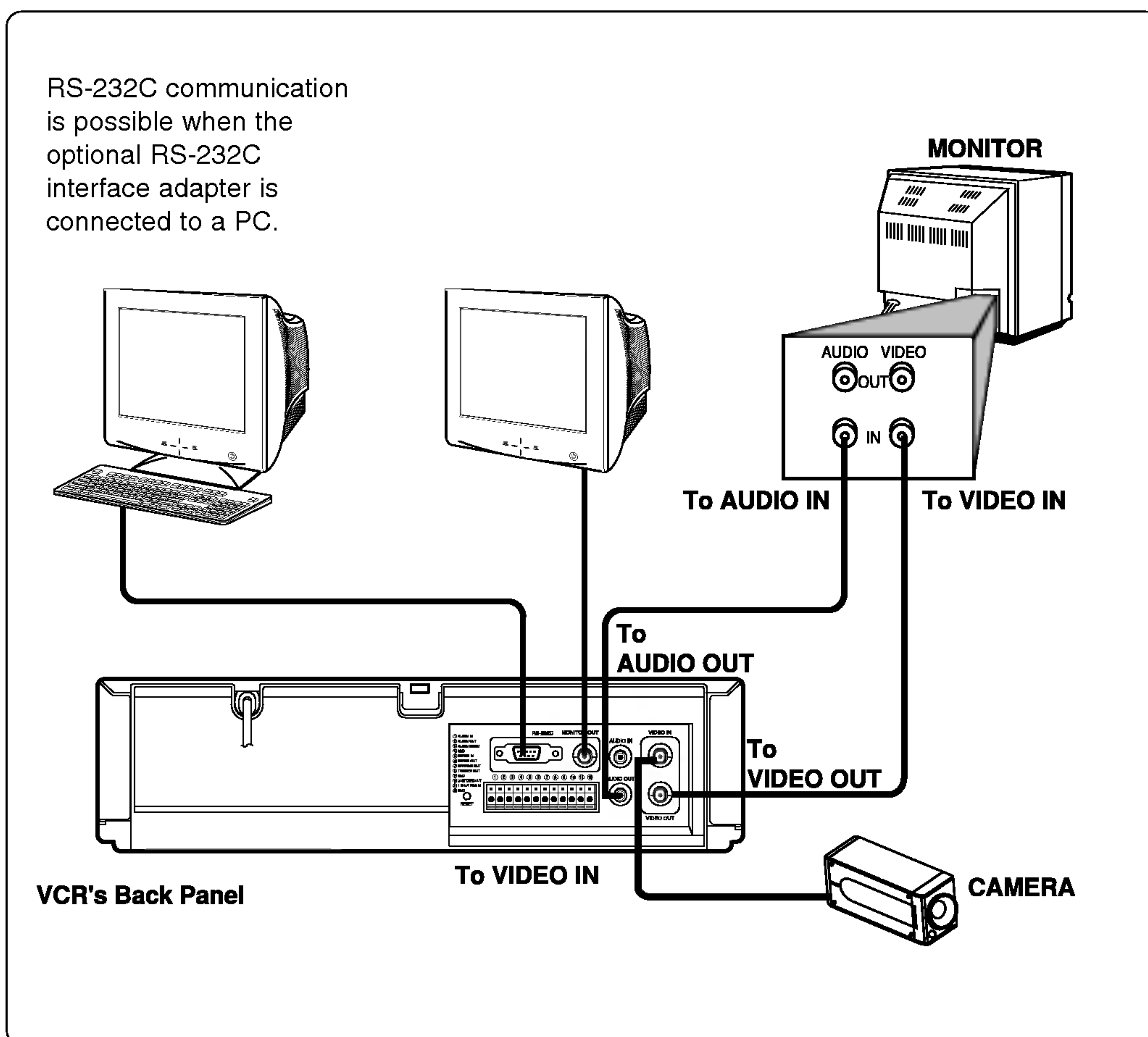


## INSTALLATION

- Connect your VCR's AUDIO/VIDEO output jacks to the A/V input jacks on back of your monitor.  
If your monitor does not have A/V input jacks, exchange the monitor or TV for one with A/V input jacks.
- Connect the CCD camera to VCR's VIDEO input jack.

**NOTE:** The MONITOR OUT BNC port does not support video when power is OFF (unplugged) to the VCR.

### VCR TO MONITOR AND CCD CAMERA CONNECTION

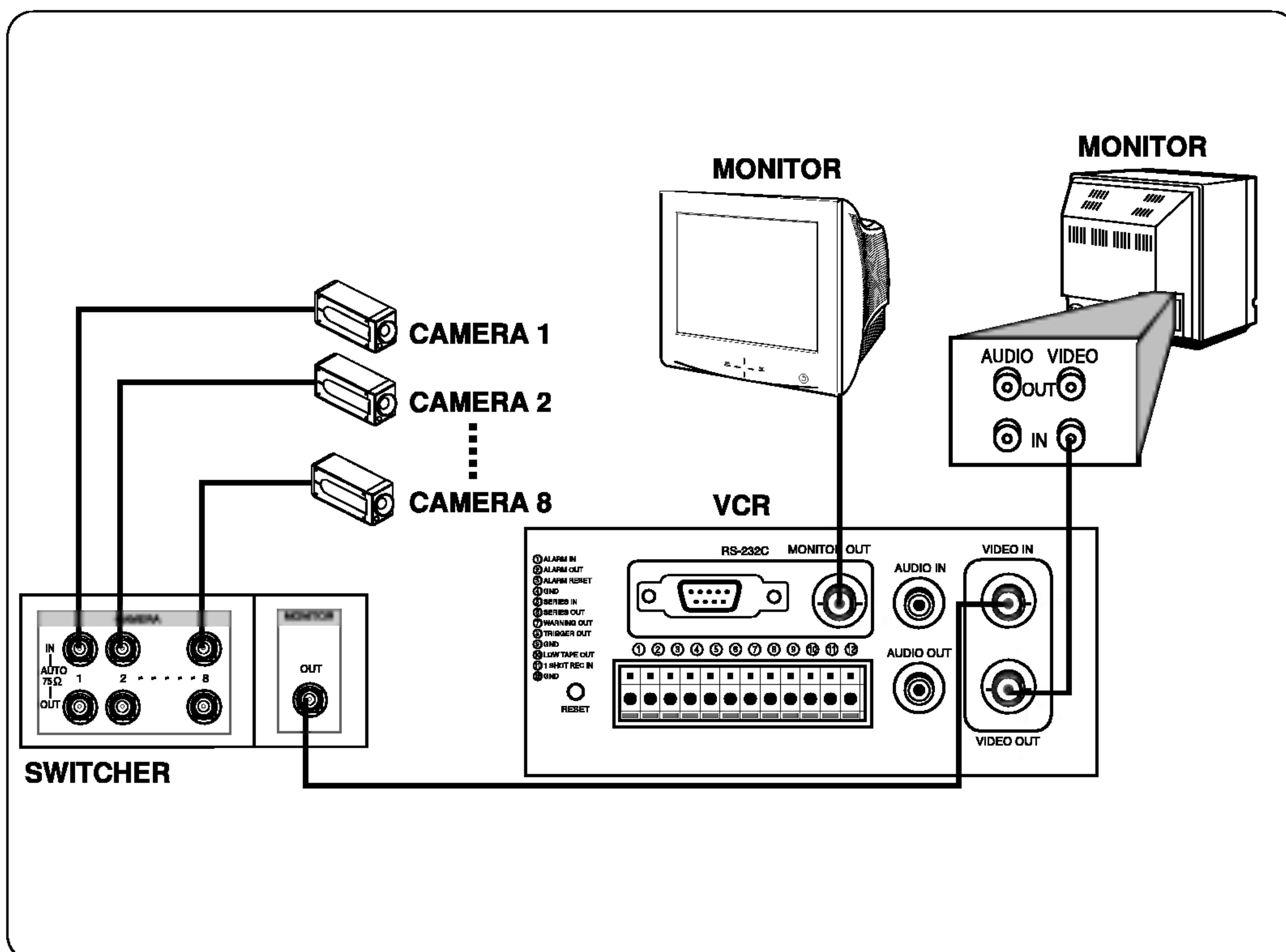


- The cables for audio and video connection are not provided with your VCR.
- "RS-232C" is an interface standard for data terminals and data communications equipment employing serial binary data exchange as stipulated under the RS-232 standard. Using the RS-232C interface, this VCR can be controlled by a personal computer.



# MATRIX SWITCHER CONNECTIONS

## HOW TO CONNECT SWITCHER WITHOUT TRIGGER INPUT TERMINAL

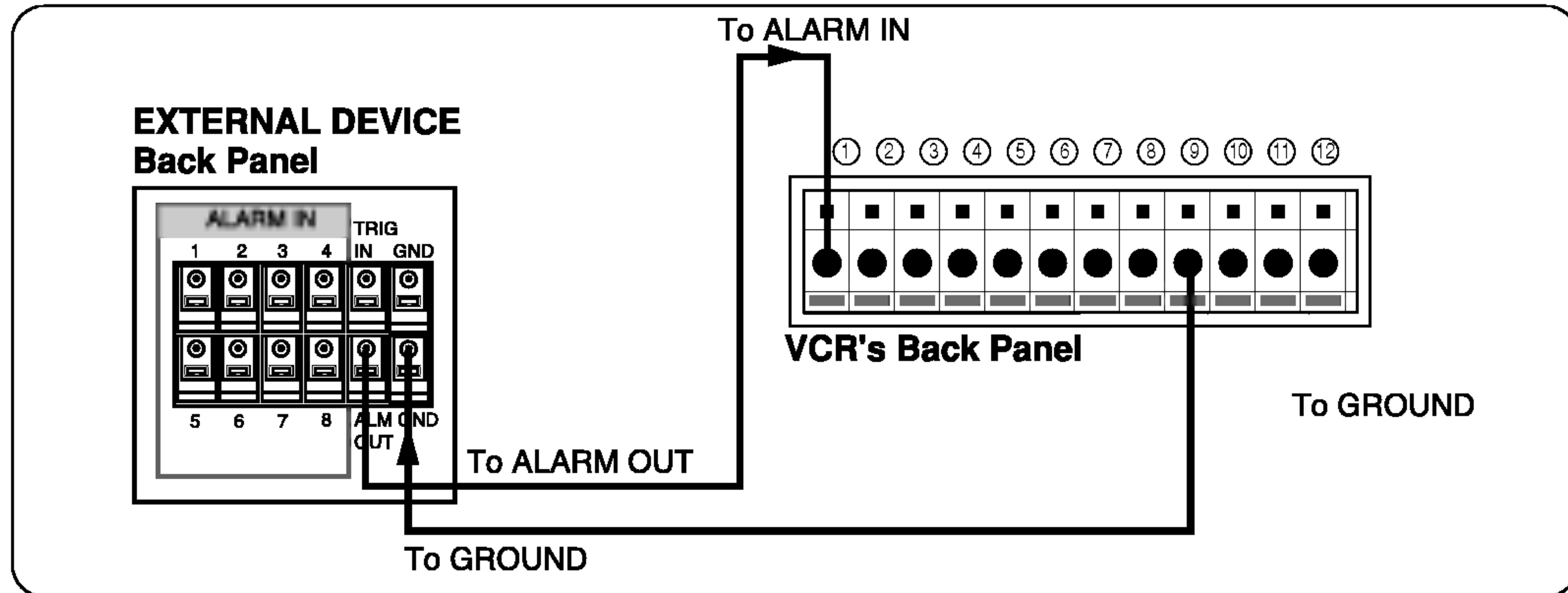


PREPARATION



## ALARM RECORD CONNECTION

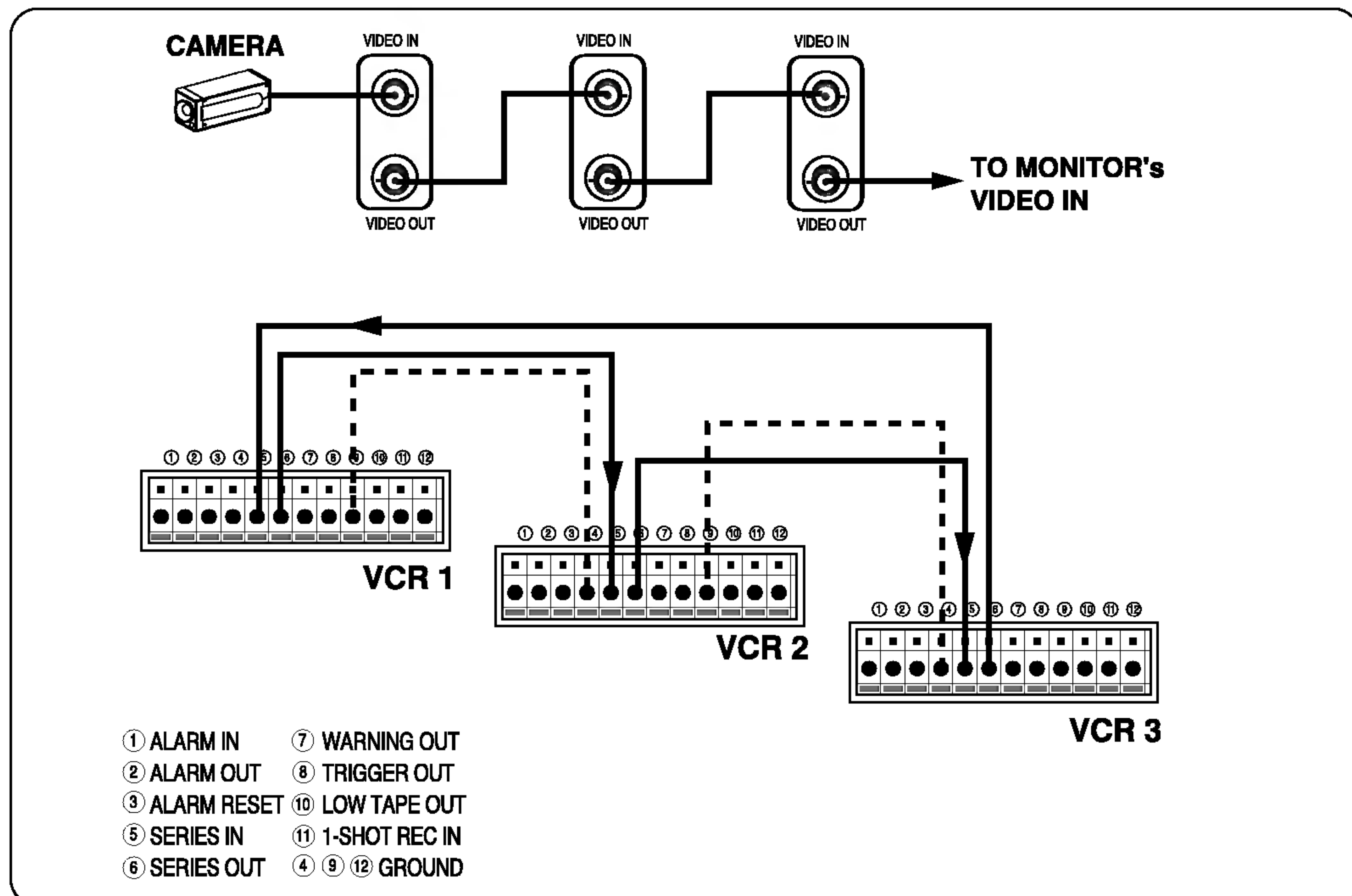
Connect alarm output of external device to alarm input of VCR, and then connect alarm out GND of device to alarm input GND of VCR.



## SERIES RECORD CONNECTION

Make all connections to the first VCR before making any connections to the other VCRs in the series.

After connecting, turn on the VCRs and then select the ON: SERIES mode in REC MODE menu. (Refer to the page 24)



# SETTING THE ON SCREEN DISPLAY

The following pages describe the on screen selections to be set.

## PREPARATION

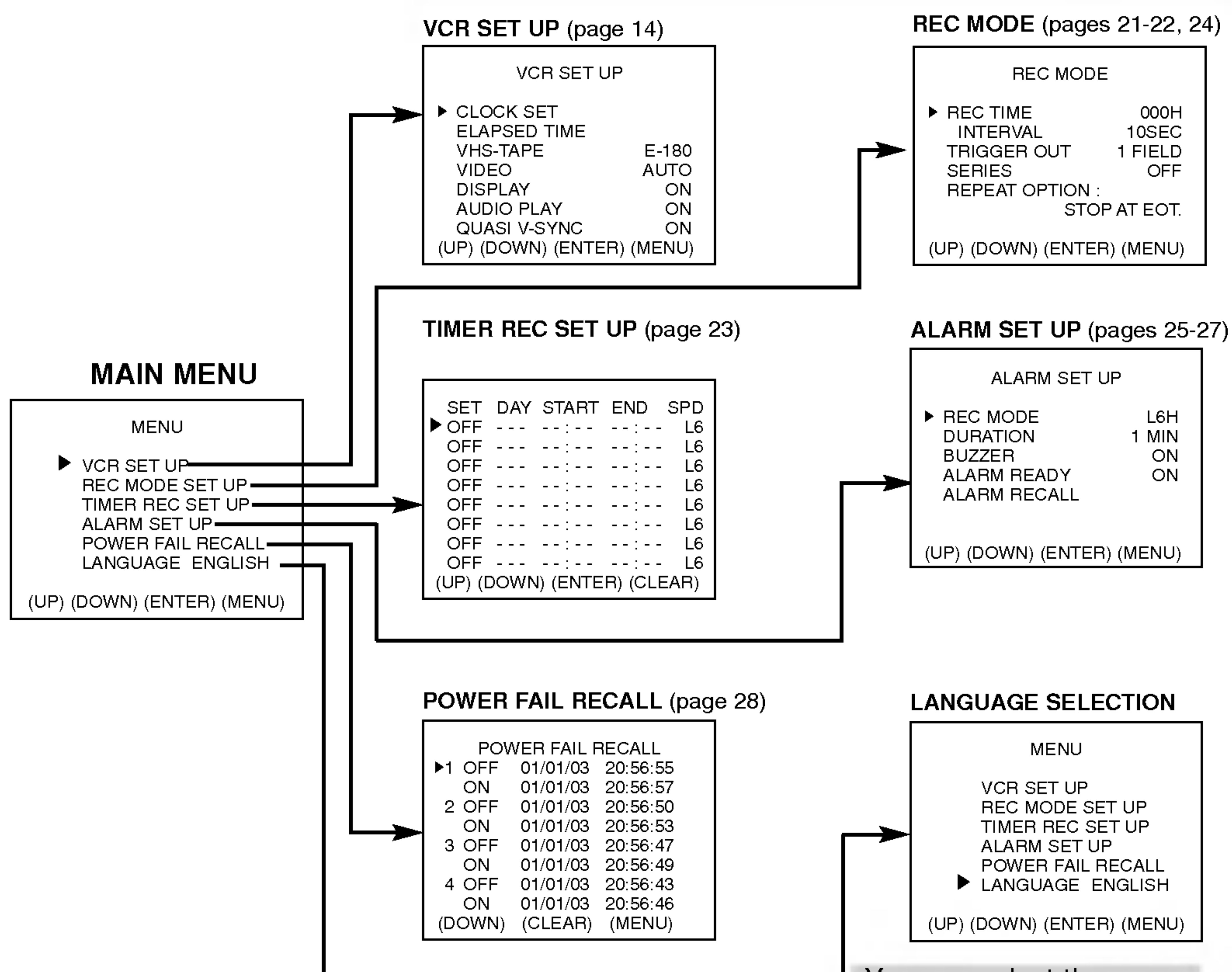
- Turn on the power of both the VCR and the monitor.
- If you have a TV instead of monitor, turn on the power of TV and then set the TV's source selector to VIDEO.

## MENU SELECTION

Your VCR allows adjustment of several features.

**1** Press **MENU** button and the main menu will appear.

**2** Select the desired menu with the **UP** or **DOWN** button and then press the **ENTER** button.



You can select the language among ENGLISH, FRANCAIS, DEUTSCH, ITALIANO, ESPAÑOL, POLSKI and ニホンゴ .

PREPARATION

# SETTING THE SETUP MENU

## MAIN MENU

```

MENU
▶ VCR SET UP
  REC MODE SET UP
  TIMER REC SET UP
  ALARM SET UP
  POWER FAIL RECALL
  LANGUAGE ENGLISH
(UP) (DOWN) (ENTER) (MENU)
    
```

## SETUP MENU

```

VCR SET UP
▶ CLOCK SET
  ELAPSED TIME
  VHS-TAPE      E-180
  VIDEO         AUTO
  DISPLAY       ON
  AUDIO PLAY    ON
  QUASI V-SYNC  ON
(UP) (DOWN) (ENTER) (MENU)
    
```

Press **UP** or **DOWN** to choose a desired item on the SETUP menu.

	tape type			
	E-180	E-240	E-260	E-300
Recording time mode displayed on OSD & FLD	L6H	L8H	L8H	L10H
	L18H	L24H	L25H	L30H
	L30H	L40H	L43H	L50H
	72H	104H	112H	130H
	96H	136H	146H	170H
	120H	168H	181H	210H
	168H	232H	250H	290H
	240H	328H	354H	410H
	480H	648H	699H	810H
	960H	1288H	1391H	1610H
	000H	000H	000H	000H

```

ELAPSED TIME
DATE OF FIRST USE:
  01/01/03
PERIOD IN USE:
  00004 HOURS
(MENU)
    
```

```

VCR SET UP
CLOCK SET
ELAPSED TIME
▶ VHS-TAPE      E-300
  VIDEO         AUTO
  DISPLAY       ON
  AUDIO PLAY    ON
  QUASI V-SYNC  OFF
(UP) (DOWN) (ENTER) (MENU)
    
```

## PREPARATION

- Turn on the power of both the VCR and the monitor.
- If you have a TV instead of monitor, turn on the power of TV and then set the TV's source selector to VIDEO.

**1** Press **MENU** button. The main menu will appear. Press **DOWN** or **UP** to choose VCR SET UP.

**2** Press **ENTER** button. The VCR SET UP menu will appear.

### 1. CLOCK SET

Details are on page 15.

### 2. ELAPSED TIME

Check the used time of head by pressing **ENTER**.

### 3. VHS-TAPE

Choose the tape type used (E-180, E-240, E-260, E-300) by pressing **ENTER**.

Recording time mode on OSD & FLD is changed by selecting the tape type.

Refer to the recording time table on the left. (\*L : Linear Mode) For the purposes of this manual, tape type is assumed to be E-180.

### 4. VIDEO

Choose the camera's color type (B/W, AUTO, COLOR) by pressing **ENTER**.

### 5. DISPLAY

The time/date DISPLAY is switched between ON and OFF by pressing **ENTER**.

### 6. AUDIO PLAY

The audio is switched between ON and OFF during playback by pressing **ENTER**.

### 7. QUASI V-SYNC

The quasi-sync is switched between ON and OFF during playback by pressing **ENTER**.



# SETTING THE SET TIME

## MAIN MENU

```
MENU
▶ VCR SET UP
  REC MODE SET UP
  TIMER REC SET UP
  ALARM SET UP
  POWER FAIL RECALL
  LANGUAGE ENGLISH
(UP) (DOWN) (ENTER) (MENU)
```

## VCR SET UP MENU

```
VCR SET UP
▶ CLOCK SET
  ELAPSED TIME
  VHS-TAPE      E-180
  VIDEO        AUTO
  DISPLAY      ON
  AUDIO PLAY   ON
  QUASI-V-SYNC ON
(UP) (DOWN) (ENTER) (MENU)
```

## CLOCK SET UP MENU

```
CLOCK SET UP
▶ DATE  DD/MM//YY
        23 / 05 / 03  FRI
        HH/MM/SS
  TIME  17 / 30 / 00
(UP) (DOWN) (ENTER) (MENU)
```

```
L12H
17:30:00
23/05/03
```

(TV screen/monitor)

## Things to know before starting

- The clock uses the 24-hour system.
- The initial SET DAY Setting is **JANUARY 1, 2003**.

## PREPARATION

- Turn on the power of both the VCR and the monitor.
- If you have a TV instead of monitor, turn on the power of TV and then set the TV's source selector to VIDEO.

**1** Press **MENU** button. The main menu will appear.

**2** Press **DOWN** or **UP** to select the SET UP item and then press **ENTER**. The SET UP menu will appear.

**3** Press **DOWN** or **UP** to select the CLOCK SET item and then press **ENTER**. The CLOCK SET UP menu will appear.

**Example: May 23, 2003 ; 17:30**

**4** Press **ENTER** and then **DOWN** or **UP** to set a day and then press **ENTER** to move to month item.

**5** Repeat step 4 to select the month, year and time.

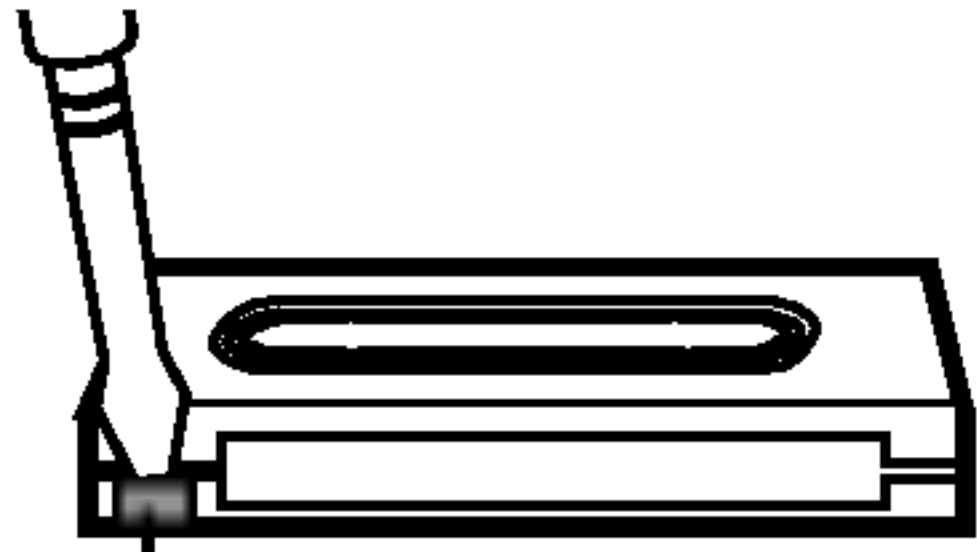
The day of the week will display automatically.

**6** Press **MENU** button when finished.

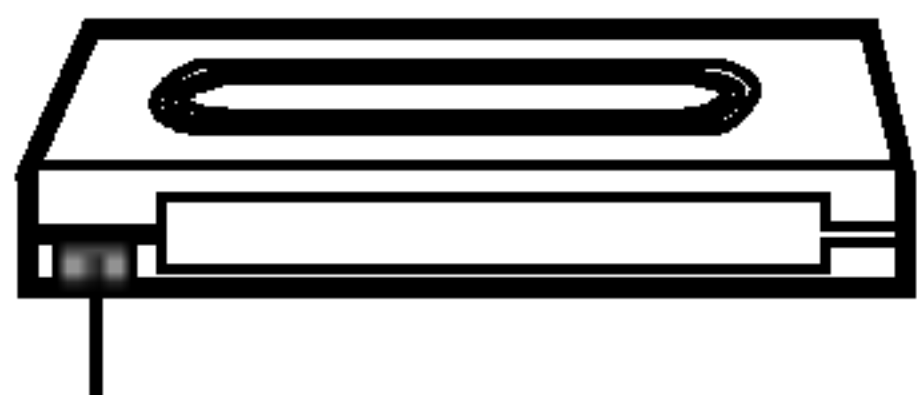
PREPARATION

## VIDEO CASSETTE TAPES

### SAFETY TAB

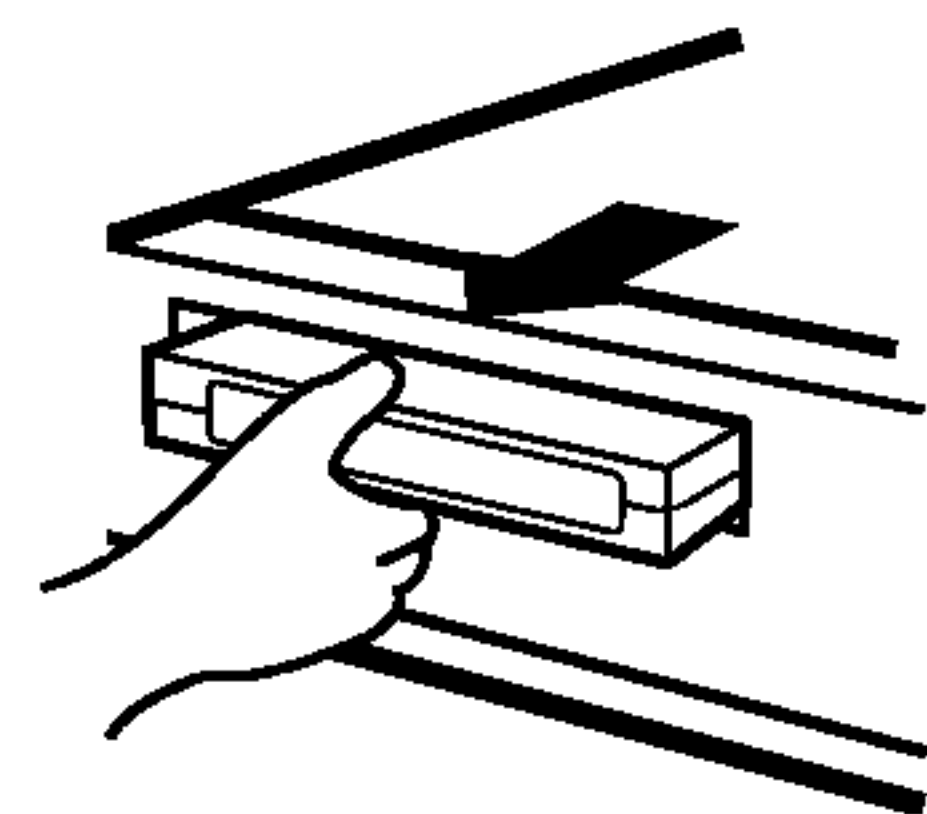
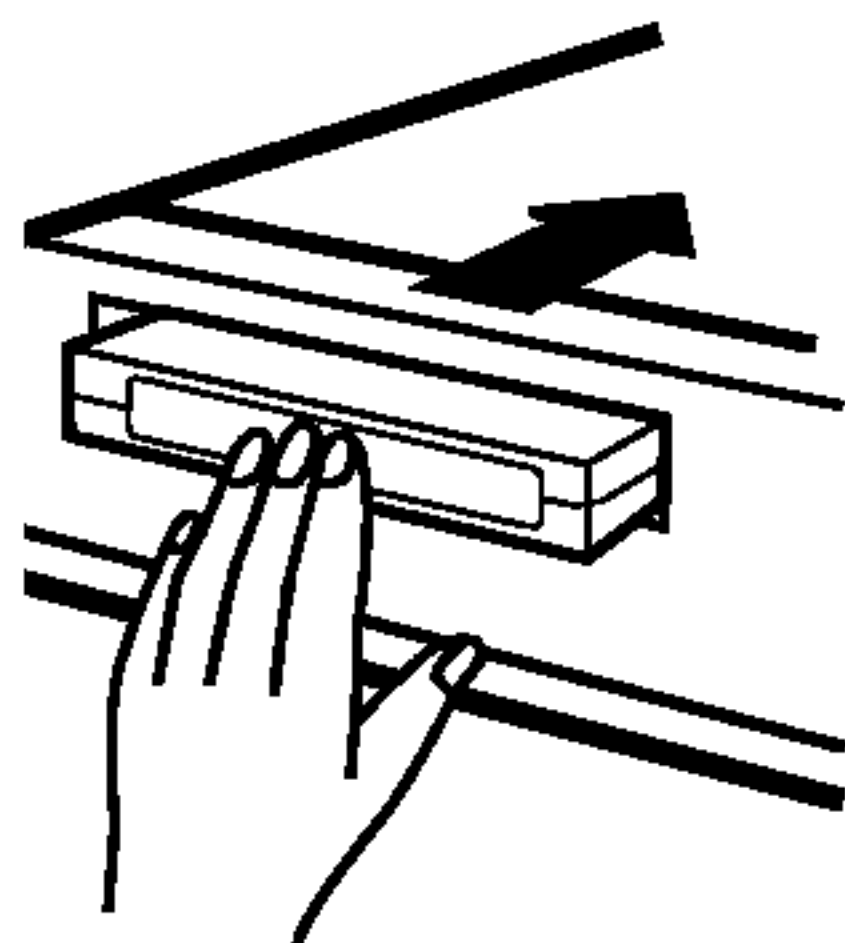


To prevent accidental erasure, remove the tab after recording.



To record again, cover the hole with vinyl tape.

PREPARATION



### WHEN HANDLING VIDEO CASSETTES

- Do not expose video cassettes to extreme heat, high humidity, or strong magnetic fields.
- Do not tamper with the cassette mechanism.
- Do not touch the tape with your fingers.
- Always store an unused cassette in its case.

### LOADING

Hold the cassette with the arrow side up (top). Insert the cassette gently into the slot in the direction of the arrow (on the cassette) until the loading mechanism automatically pulls the cassette into the unit. Make certain that the cassette is inserted correctly.

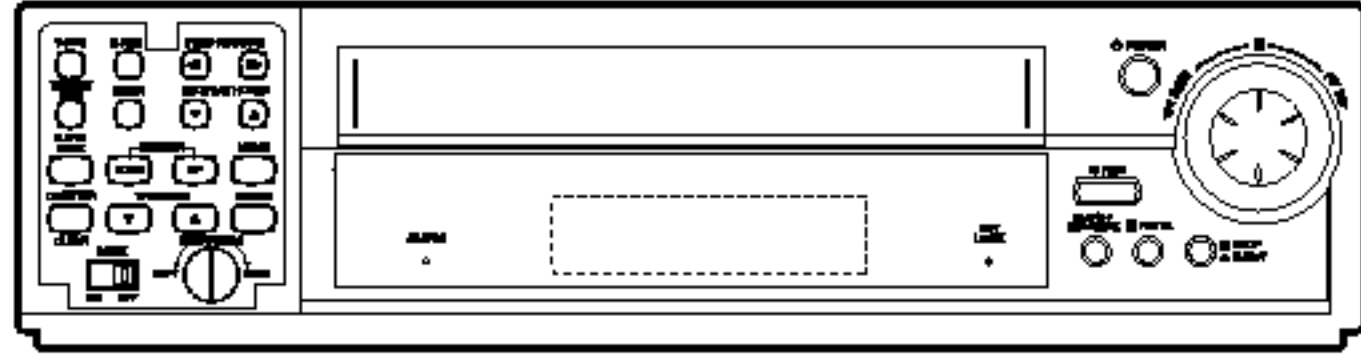
- If the cassette is not loaded correctly, the VCR will eject the cassette automatically after approximately 3 seconds.

### UNLOADING

Press the **STOP/EJECT** button twice. The cassette will be ejected automatically. After the cassette is visible in the tape slot, pull it out to remove it.

- Unloading the cassette is possible only when the power cord is connected to the wall outlet.
- The cassette can be ejected when the **STOP/EJECT** button is pressed, even if the VCR's power is OFF.

# NORMAL PLAYBACK




## PREPARATION

- Turn on the power of both the VCR and the monitor.
- If you have a TV instead of monitor, turn on the power of TV and then set the TV's source selector to VIDEO.

## NORMAL PLAYBACK

### 1 Insert a prerecorded video cassette.

The  indicator will light and the VCR will power-up automatically.

- If a tape without a record protect tab is inserted, the unit will start the playback automatically.

### 2 Press the PLAY button.

Press **REC/PLAY HOURS** ▼ or ▲ button to choose the desired time mode.

The select time is displayed in the VCR indicator panel.

Select the time while the tape is stopped or being played back.

L6H → L18H → L30H → 72H → 96H → 120H → 168H → 240H → 480H → 960H



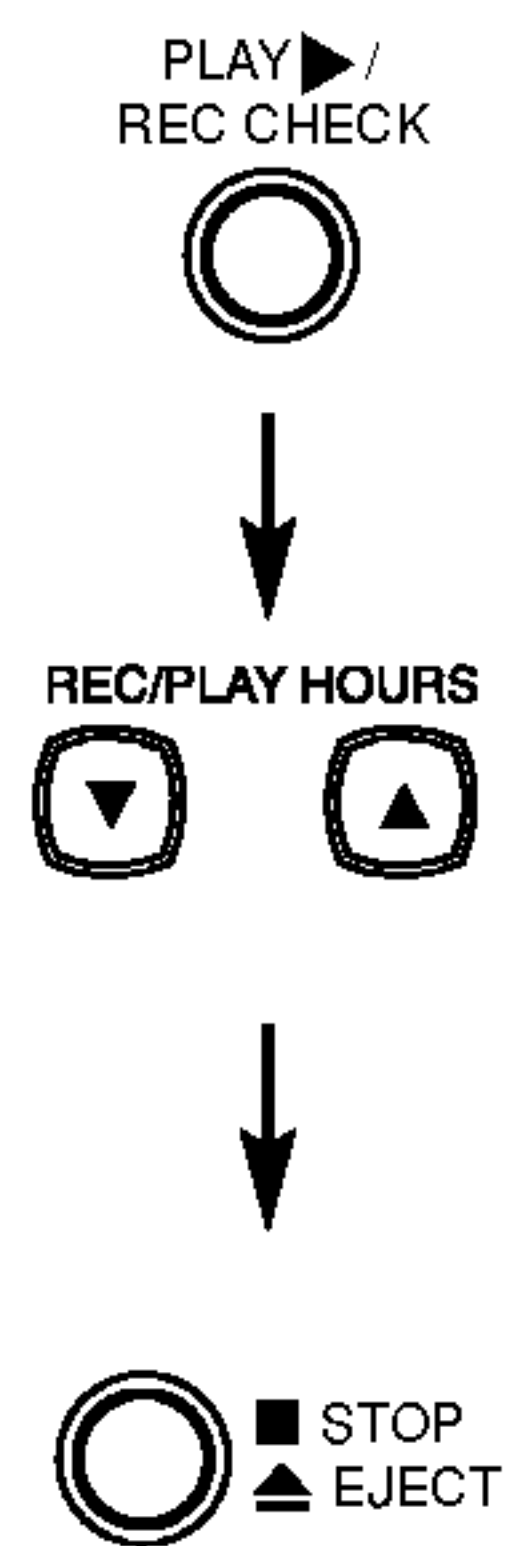
- The time mode can not be changed while the tape is playing back in L3H.
- If the tape reaches the end before STOP is pressed, the VCR will automatically stop and rewind.

### 3 Press the STOP button to stop playback.

## TRACKING CONTROL

If noise appears on the screen during playback, press either **TRACKING** (▲/▼) buttons until the noise on the screen is reduced.

- In case of vertical jitter, adjust these controls very carefully.
- Tracking is automatically reset to normal when the tape is ejected.

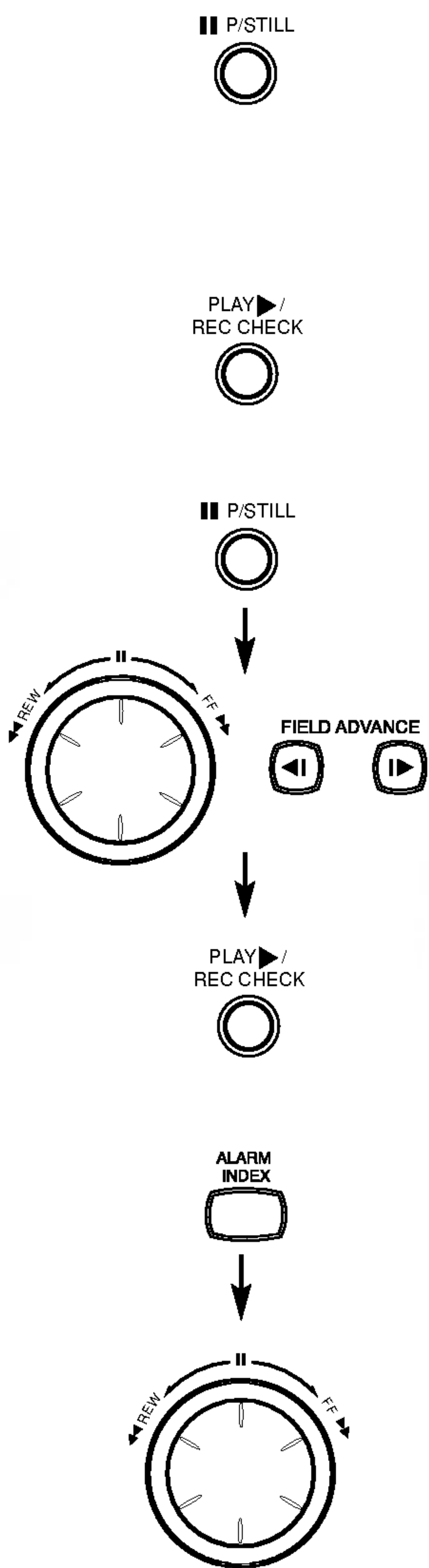


### NOTES:

- Ensure that the selected tape recording and playback times match one another.
- A picture may vibrate vertically, but this is normal.
- A distortion may appear on the top of the screen, but this is normal.
- A sound may be muted during playback, but this is normal.
- If the recording hour and playback hour are different, the sound may not play back normally. (Set the AUDIO PLAY on the SETUP menu to OFF mode.)



## SPECIAL EFFECTS PLAYBACK



### TO WATCH A STILL PICTURE

During **PLAYBACK** mode...

**1** Press the **P/STILL** button.

Still picture will appear on the monitor.

- If a still picture vibrates vertically, stabilize it by pressing the **TRACKING**(▲/▼) buttons.
- If the VCR is left in the **STILL** mode for more than 5 minutes, the VCR will automatically enter the **STOP** mode to protect the tape and video heads.

**2** To continue normal playback, press the **PLAY** button.

### TO WATCH A FIELD ADVANCE PICTURE

During **PLAYBACK** mode...

**1** Press the **P/STILL** button.

**2** Rotate the **JOG** dial to forward / reverse or press **Field Advanced** button.

The picture will slowly advance to forward or reverse field by field.

**3** To continue normal playback, press the **PLAY** button.

### TO SEARCH ALARM RECORDING

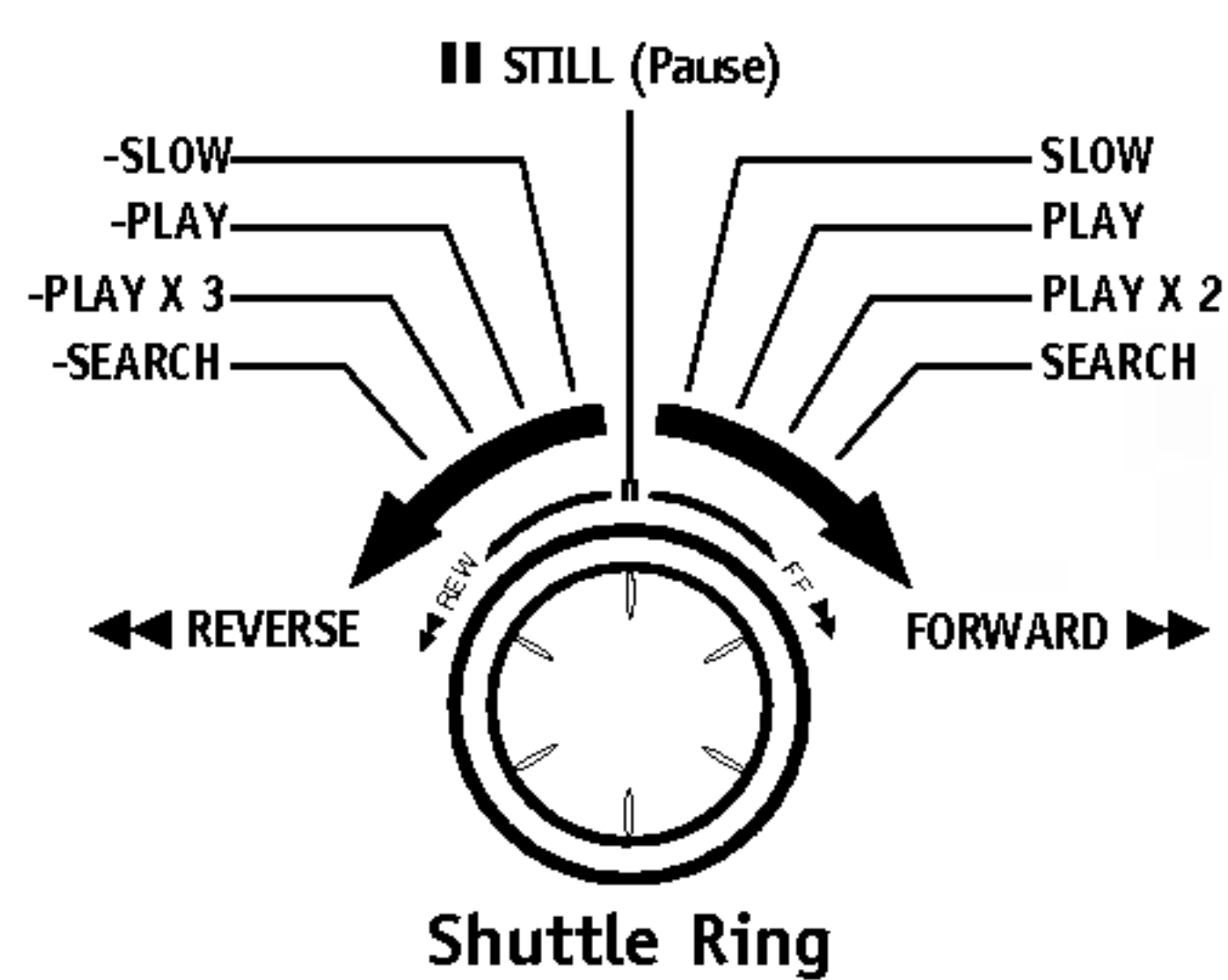
During **STOP** mode...

**1** Press the **ALARM INDEX** button.

**2** Rotate the **SHUTTLE** ring to forward or reverse.

The **INDEX** indicator will appear in the VCR indicator panel. Alarm video will play for 5 seconds and then search to the next alarm recording.

## SPECIAL EFFECTS PLAYBACK (cont'd)



### SHUTTLE RING

During Still mode...

1 Rotate the **Shuttle Ring** to forward or reverse.

2 Rotate **Shuttle Ring** toward FF to advance the tape, or toward REW to reverse the tape. How far you rotate and hold the shuttle ring determines the speed at which the tape moves.

Rotate **Shuttle Ring** for variable speed adjust from Slow to Search in the direction chosen.

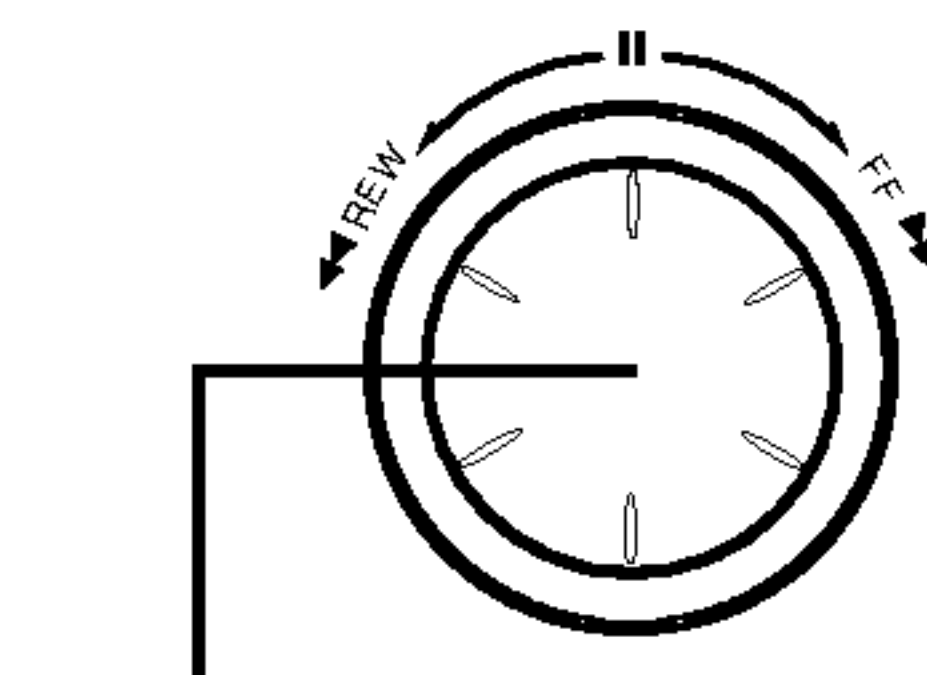
3 Release the **Shuttle Ring** to return to STILL mode.

4 Press **PLAY** to return to normal playback speed.

#### NOTES:

- During STOP mode, rotate and release the Shuttle ring to rewind or fast forward the tape.
- If the Shuttle Ring is used during the normal playback, the playback mode is changed between the double speed play and forward search on the forward direction, and among the reverse play, reverse triple-speed play, and reverse search on the reverse direction. Releasing the ring resumes a normal playback mode.

PLAYBACK



### Jog Dial

Move Jog Dial for frame-by-frame tape playback forward or reverse.

### JOG DIAL

During Still mode...

1 Move **Jog Dial** with finger toward FF to advance tape frame-by-frame, or toward REW to reverse tape frame-by-frame. Movement of the **Jog Dial** one "click" moves the tape by one frame. How "fast" you move the **Jog Dial** determines how fast the frame-by-frame movement occurs.

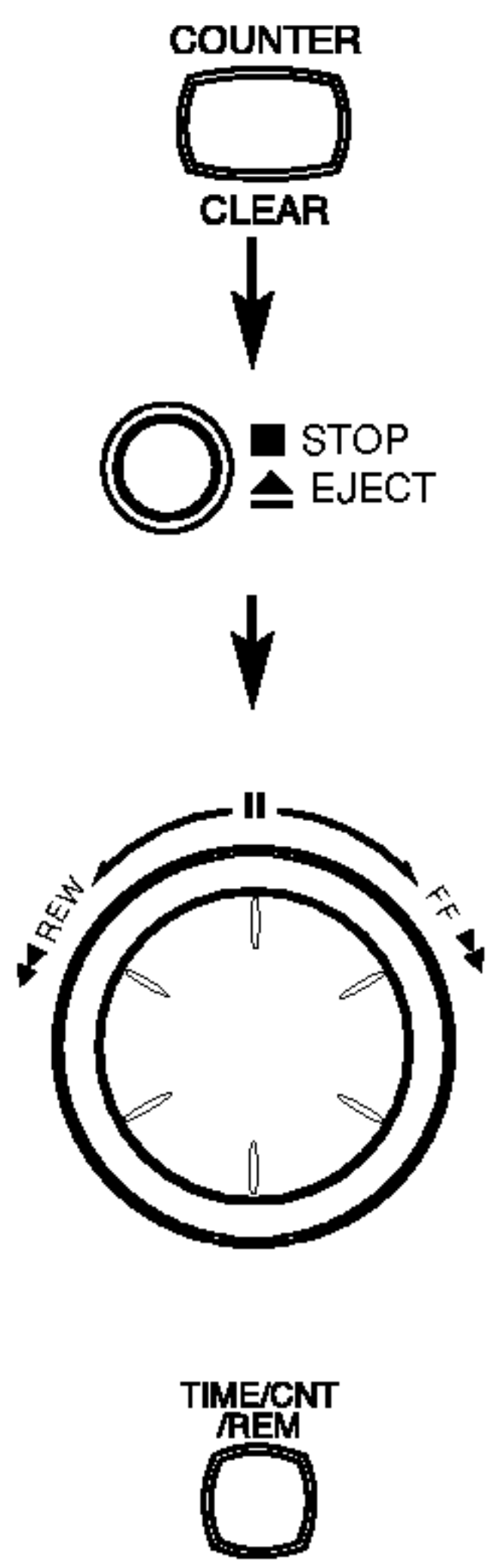
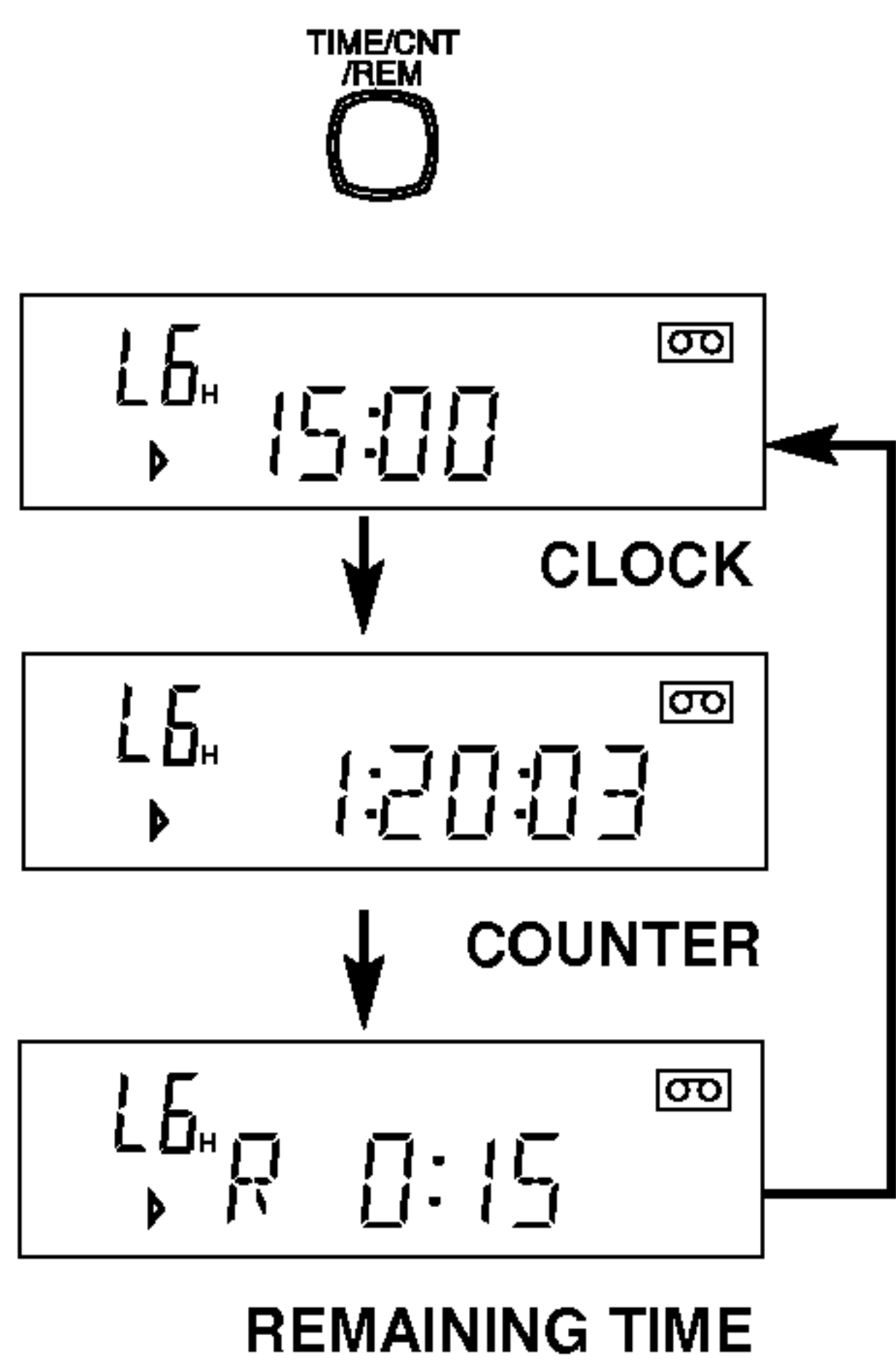
2 Press **PLAY** to return to normal playback speed.

#### NOTES:

- Horizontal lines (noise bars) will appear on the monitor screen, but this is normal.
- The audio is automatically muted during special effect modes, so there is no sound during search.
- During the high-speed picture search modes, a short period is needed to stabilize tape speed when re-entering the PLAY mode. Slight interference may be observed during this period.

# TAPE COUNTER MEMORY FEATURE

PLAYBACK



## REAL TIME COUNTER

During **PLAYBACK** or **RECORDING** mode...

Press the **TIME/CNT/REM** button.

Whenever you press the **TIME/CNT/REM** button, time and counter are displayed alternately in the VCR indicator panel.

**When the COUNTER is displayed...**

- Counter changes to **TIME** when the cassette is ejected.
- The real-time counter does not operate when nothing is recorded on the tape.

## COUNTER MEMORY FUNCTION

This function is only provided when **COUNTER** is displayed in the VCR indicator panel.

**1** Begin recording or playing a tape.

Continue to play or record.

**2** At the point where you want playback to begin, reset the real-time counter to 0:00:00 by pressing the **COUNTER CLEAR** button.

**3** Press the **STOP** button when recording or playback finishes.

**4** Rotate and release the **SHUTTLE** ring to reverse.

The VCR will stop at the **COUNTER** position 0:00:00.

## TAPE REMAINING

This function allows the time of the remaining tape to be displayed during recording or playback.

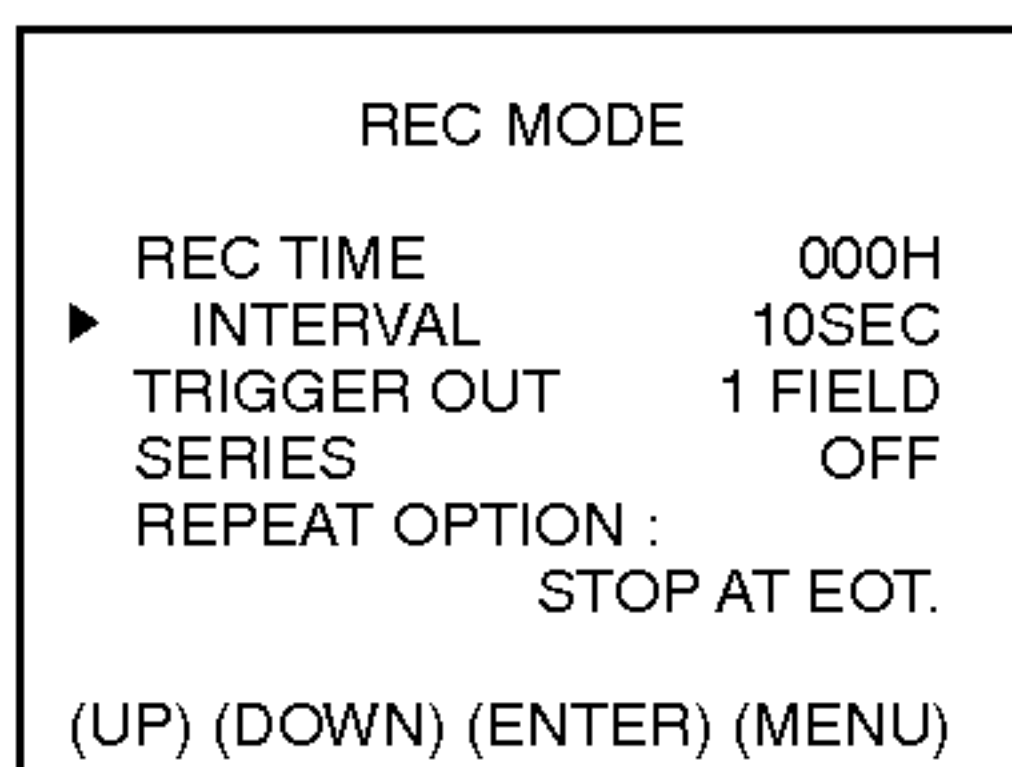
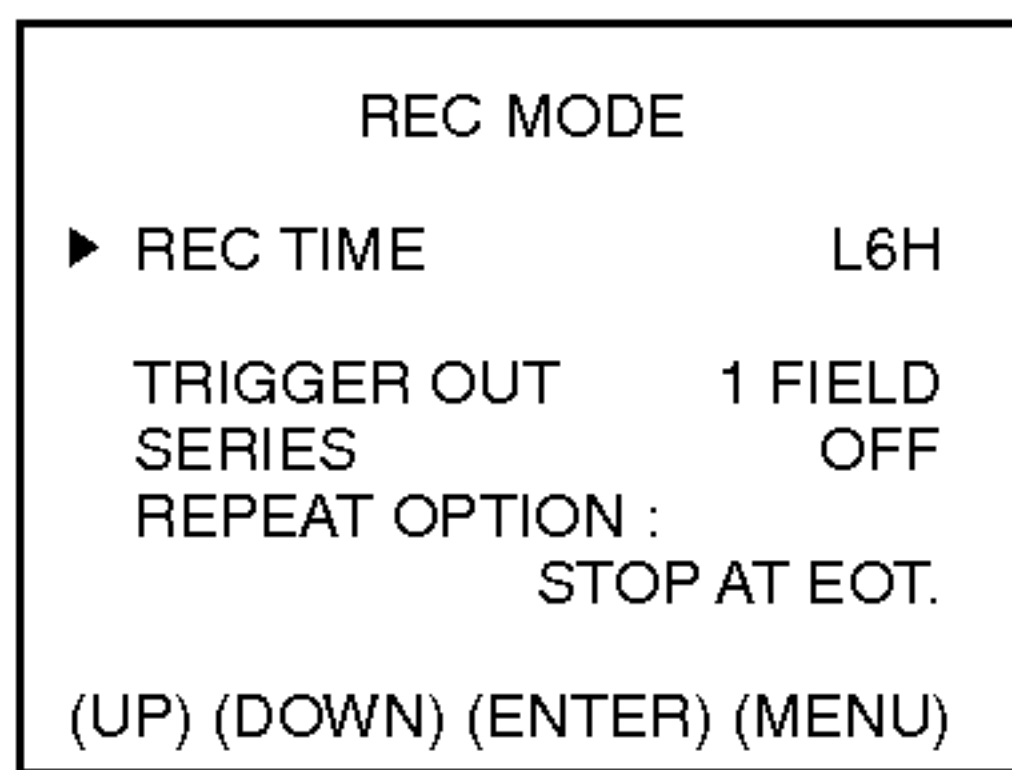
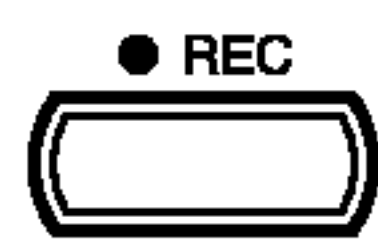
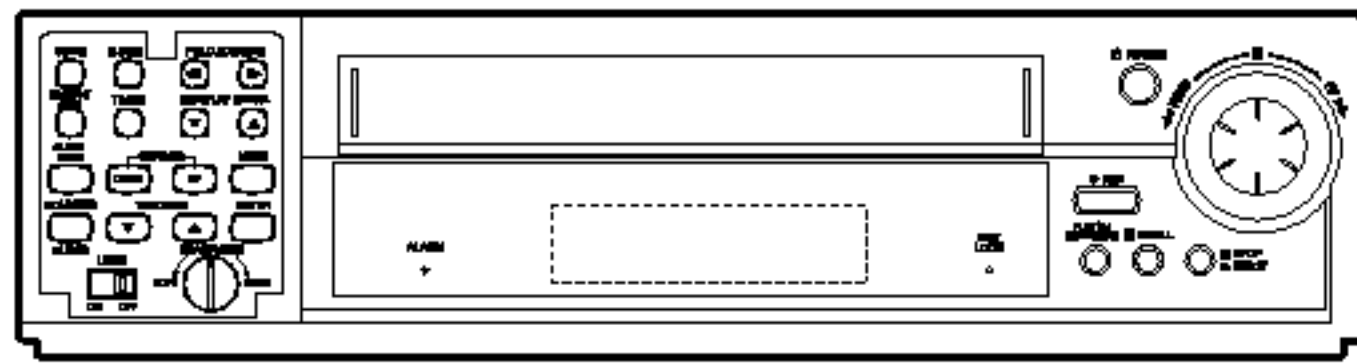
**1** Press the **TIME/CNT/REM** button until the remaining time displays on the VCR indicator panel.

**2** Start recording or playback.

- The remaining time is not display during more than "72H" recording mode.



# NORMAL RECORDING



## PREPARATION

- Turn on the power of both the VCR and the monitor.
- If you have a TV instead of monitor, turn on the power of TV and then set the TV's source selector to VIDEO.

**1** Insert the VIDEO CASSETTE that has the safety tab in place.

**2** Press **REC/PLAY HOURS** to choose the desired recording mode.

The selected time is displayed in the VCR indicator panel.

L6H → L18H → L30H → 72H → 96H → 120H →  
 168H → 240H → 480H → 960H → 000H

- If you select the "000H" REC TIME, the INTERVAL time mode is changed on the REC MODE SET UP menu as below, to the second unit.

10 SEC → 20 SEC → 30 SEC → 1 MIN → 2 MIN → 3 MIN → AUTO

- If you select AUTO, this unit records when the external 1-SHOT REC signal is input.

**3** Press the **REC** button.

Recording will start.

(The REC indicator will appear in the VCR indicator panel.)

**4** Press the **STOP** button to stop recording.

## To PAUSE the recording

During the **RECORDING** mode...

**1** Press the **P/STILL** button to pause the tape.

**2** When you want to continue recording, press the **P/STILL** button again.

- After 5 minutes in pause mode, the tape will be stopped automatically to protect the tape and the video heads.

## To Record Check

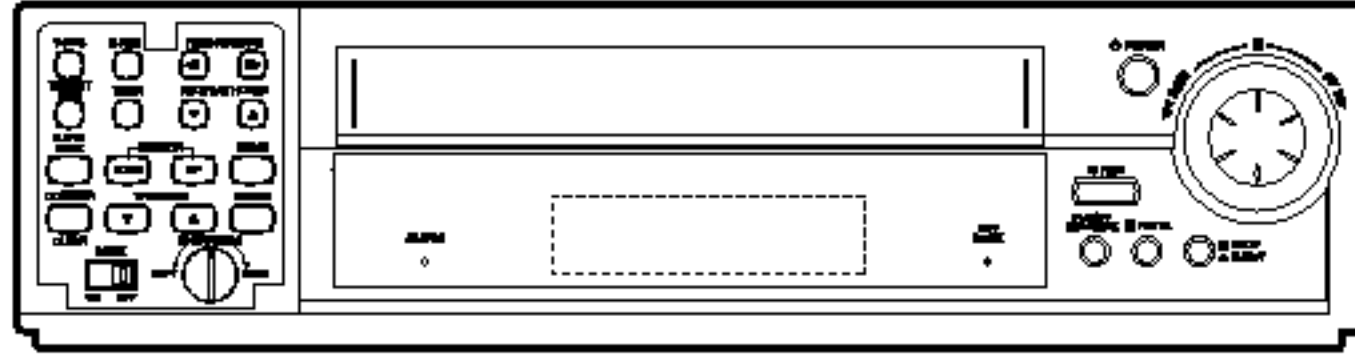
When in record mode, pressing the **REC CHECK** should cause the unit to reproduce recently recorded video.

During the **RECORDING** mode...

Press **REC CHECK** to reproduce recently recorded video. During the Record Check, the unit can't record at all. After the Record Check, the unit returns to the original recording mode.

RECORDING

## REPEAT RECORDING

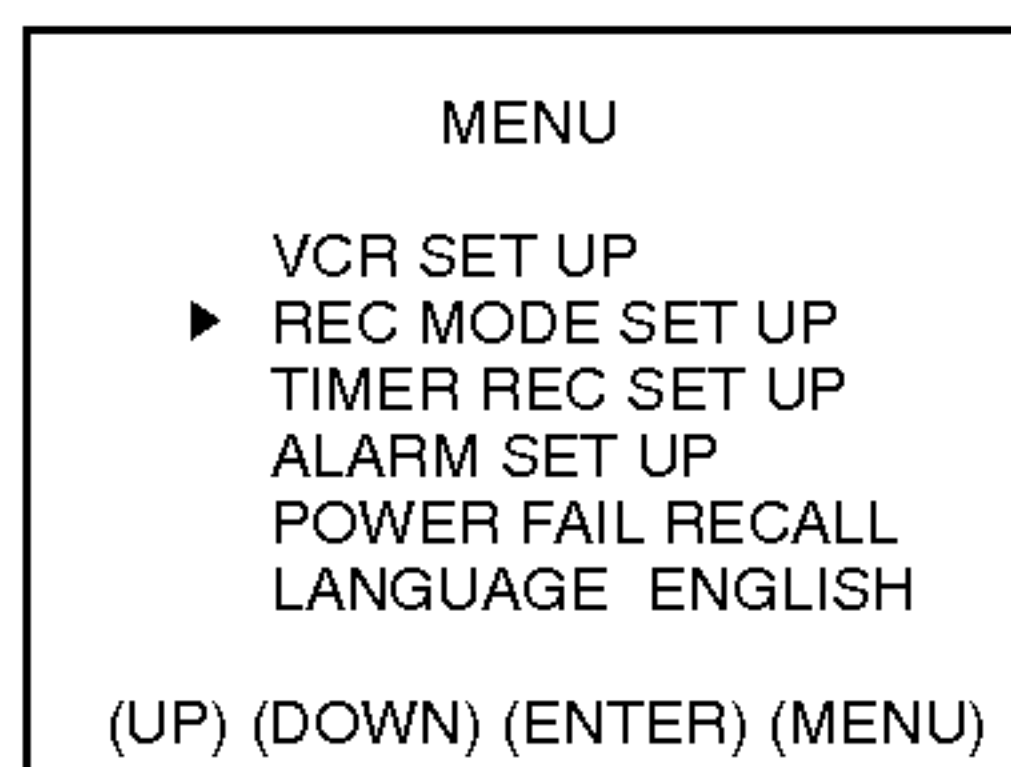


This function is used to select various options before starting a recording.

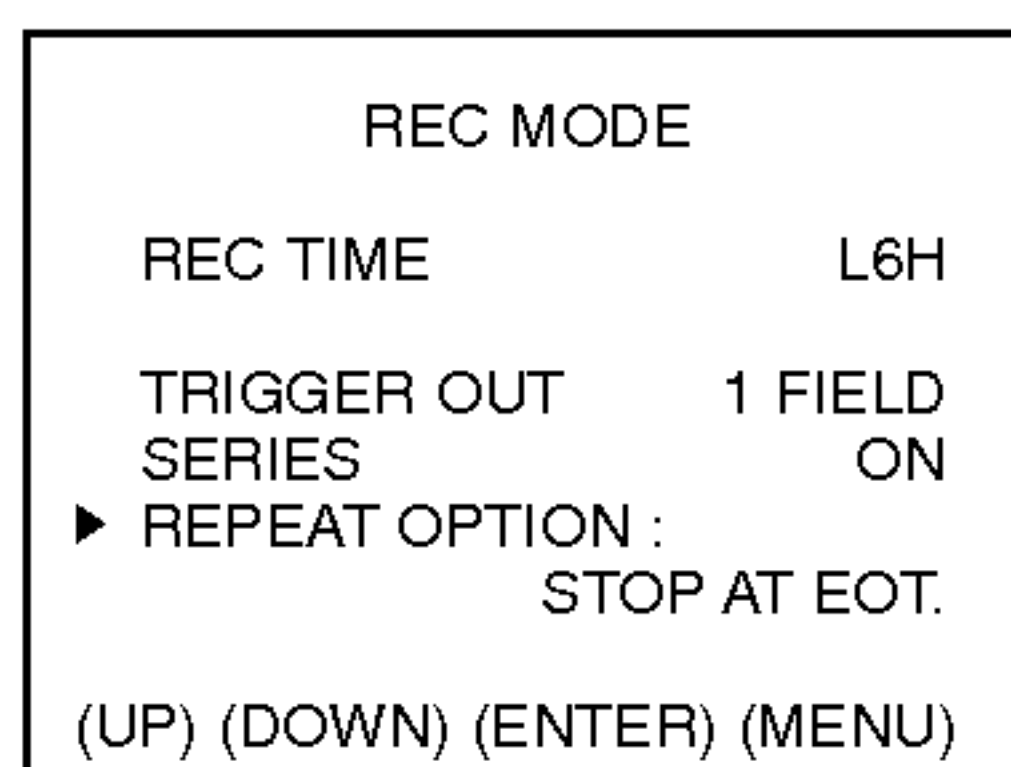
### Things to know before starting

- Make sure a tape is in the each VCR and the safety tab is in place otherwise, the tape will be automatically ejected.
- Turn on the power of both the VCR and the monitor.

### MAIN MENU



### REC MODE MENU



**1** Press **MENU** button and the main menu will appear.

**2** Press the **DOWN** or **UP** to select REC MODE SET UP. Press **ENTER**. The REC MODE menu will display.

**3** Press **DOWN** or **UP** to choose the REPEAT OPTION item. Press **ENTER** repeatedly to choose options.

- **STOP AT EOT:** Goes into STOP mode when it reaches end of tape in RECORD mode.
- **RE-REC EVEN IF ALARM:** Rewinds tape and enters RECORD mode at beginning of tape even if there has been alarm.
- **REWIND, STOP:** Rewinds tape and then enters STOP mode.
- **STOP IF ALARM:** If there has been alarm, it goes into stop mode when it reaches end of tape in record mode. Otherwise it operates same as RE-REC even if alarm mode.

**4** Press **MENU** when finished. Press **MENU** repeatedly to exit menu screen.

**5** Press **REC** button.  
The VCR will start recording.

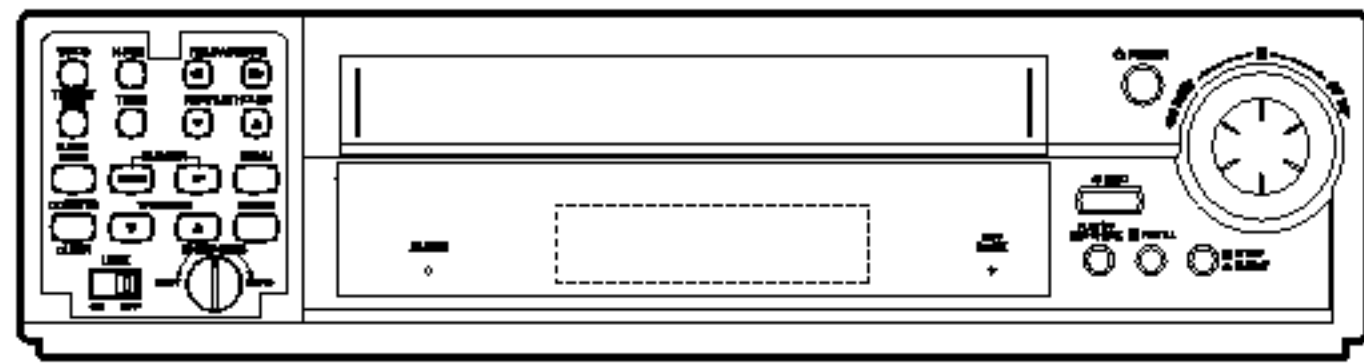
- We do not recommend repeat recording for security applications.

RECORDING





# TIMER RECORDING



This VCR can be programmed to record up to 8 programs. For programmed recording, the timer must be set for the starting and ending times.

## MAIN MENU

```

MENU
VCR SET UP
REC MODE SET UP
▶ TIMER REC SET UP
ALARM SET UP
POWER FAIL RECALL
LANGUAGE ENGLISH
(UP) (DOWN) (ENTER) (MENU)
    
```

## TIMER REC MODE MENU

```

SET DAY START END SPD
▶ OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
(UP) (DOWN) (ENTER) (CLEAR)
    
```

```

SET DAY START END SPD
▶ OFF SUN 10:30 11:30 L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
OFF ---:---:---:--- L6
(UP) (DOWN) (ENTER) (MENU)
    
```

### NOTES:

- If you want to stop recording during the **Time recording**, press **STOP** button more than 3 seconds.
- If you press **TIMER** button, the Time Lapse's power is turned off. After finishing **Time recording**, the Time Lapse's power is turned off again.

## PREPARATION

- Make sure a tape is in the VCR and the safety tab is in place otherwise the tape will be automatically ejected.
- Turn on the power of both the VCR and the monitor.
- If you have a TV instead of monitor, turn on the power of TV and then set the TV's source selector to VIDEO.

**1** Press **MENU** and the main menu will appear.

**2** Press the **DOWN** or **UP** to choose the **TIMER REC SET UP** item.

**3** Press **ENTER** to enter the **TIMER REC SET UP** menu.

The **TIMER REC SET UP** menu will appear.

**4** Press **ENTER** to select the **SET** item then press **DOWN** or **UP** to choose **ON** or **OFF**. Activated **Timer Recording** only when the **SET** item set to "ON".

**5** Press **ENTER** to move to next item and then set the next items (day, start time, end time recording hour) by using **UP**, **DOWN** and **ENTER** buttons.

### DAY option

SUN~SAT: Same time once a week.

M-F or S-S: Same time during Monday ~ Friday or Saturday ~ Sunday

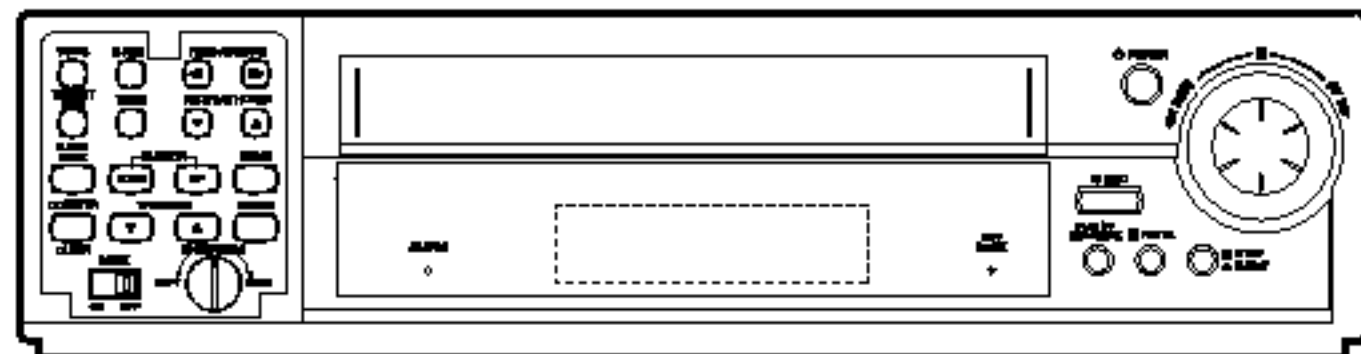
DLY: Same time(s) every day

**6** Press **MENU** when finished. Press **MENU** repeatedly to exit menu screen.

If you are finished programming and you want to set the VCR to record the programs you have entered. **A) MAKE SURE YOU HAVE INSERTED A TAPE INTO THE VCR. B) YOU MUST PRESS TIMER BUTTON BEFORE IT WILL RECORD ANY TIMER PROGRAMS (TIMER appears).** The VCR is now set to record the preset programs.



# SERIES RECORDING

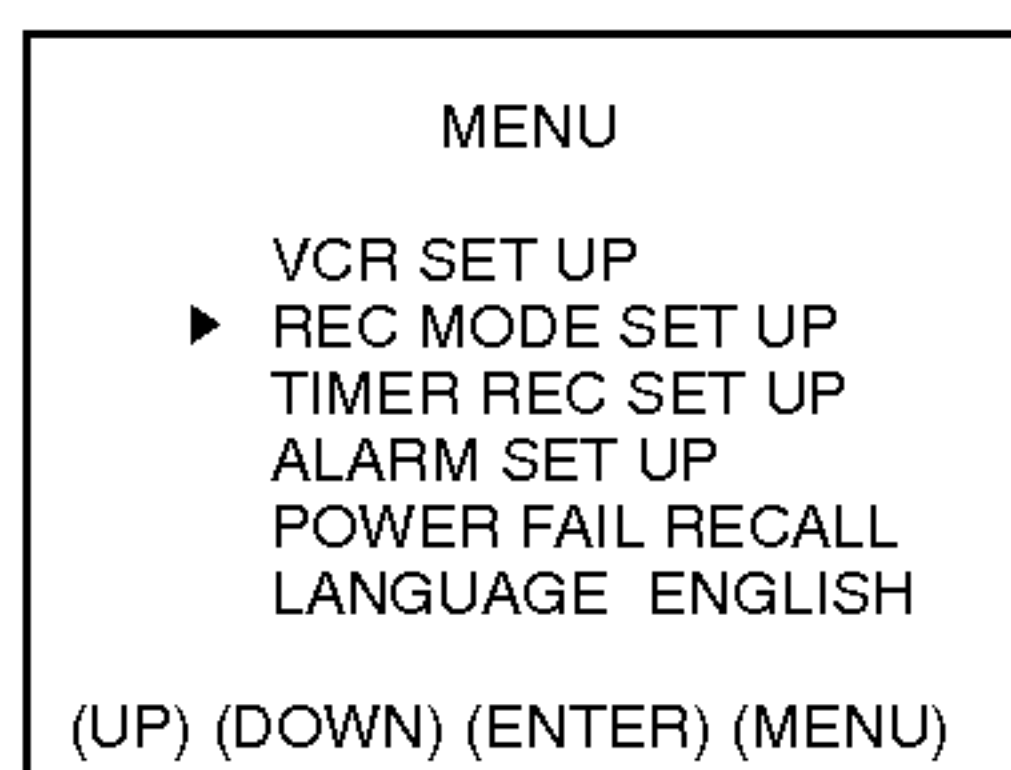


Series Recording mode is convenient when it is necessary to record with two or more VCRs. If you have two VCRs in series recording mode, the second VCR will start to record automatically at the end of the first VCR recording.

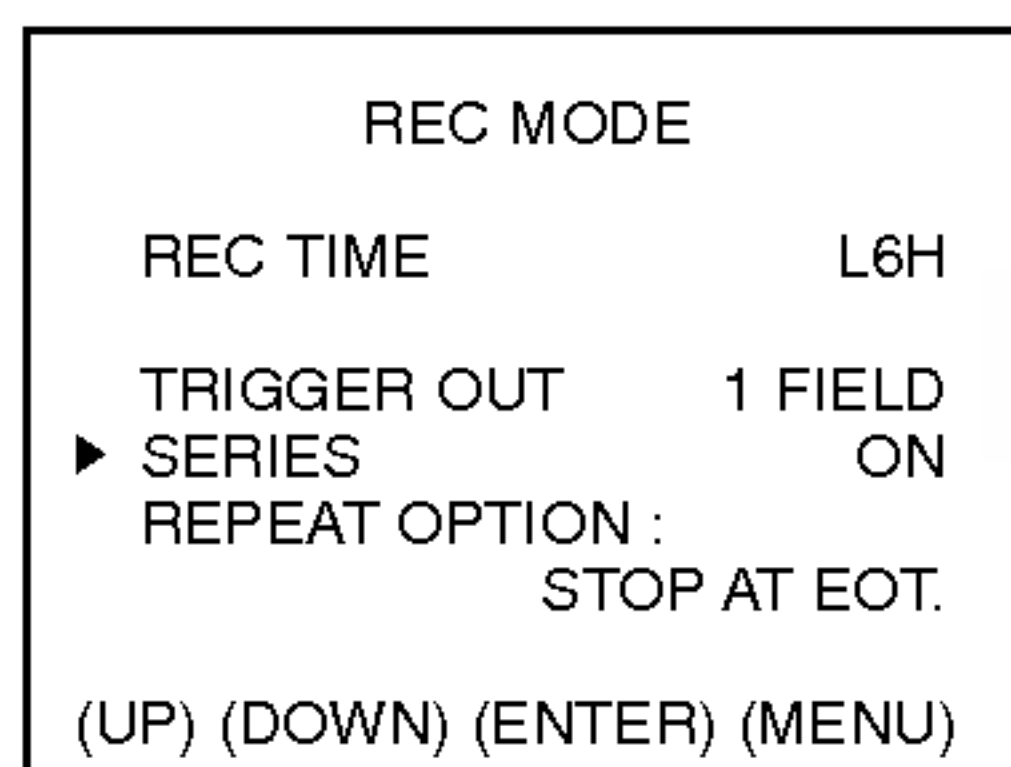
## Things to know before starting

- Before series recording, refer to page 12 for Series Record connection.
- Make sure a tape is in the each VCR and the safety tab is in place.
- SERIES recording is not available when the Timer recording is in standby mode.
- SERIES and REPEAT OPTION on the REC MODE menu can not be set to ON mode simultaneously.

## MAIN MENU



## REC MODE MENU



**1** Press **MENU** button and the main menu will appear.

**2** Press **DOWN** or **UP** to choose the REC MODE SET UP item and then press **ENTER**.

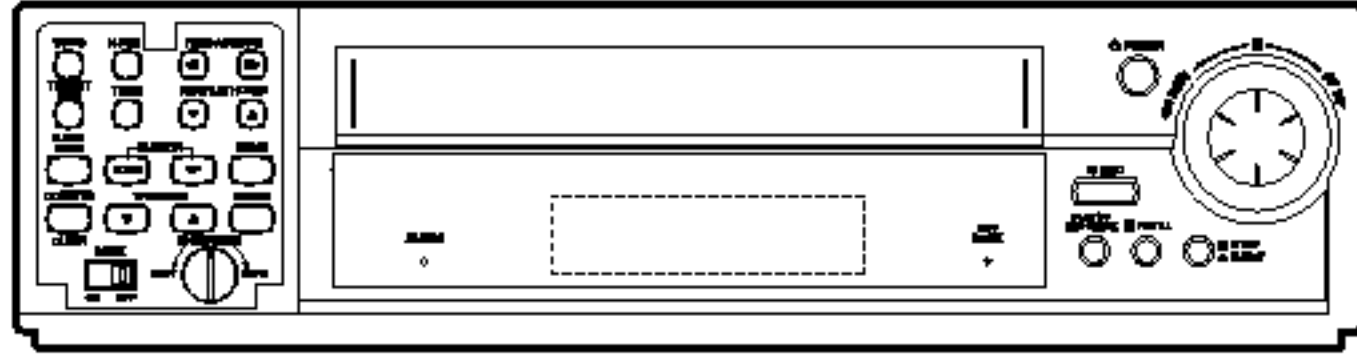
The REC MODE SET UP menu will appear.

**3** Press the **DOWN** or **UP** to choose the SERIES item. Press **ENTER** to choose ON.

**4** Press **MENU** when finished. Press **MENU** repeatedly to exit menu screen.

**5** Press **REC** button.  
The first VCR will start recording.

# ALARM RECORDING



Alarm recording will start when the external alarm signal is input. This function is available when the VCR is connected to an external device having an alarm output terminal.

## Things to know before starting

- Before alarm recording, refer to page 12 for alarm record connection.
- Make sure a tape is in the VCR and the safety tab is in place.

### MAIN MENU

```

MENU
VCR SET UP
REC MODE SET UP
TIMER REC SET UP
▶ ALARM SET UP
POWER FAIL RECALL
LANGUAGE ENGLISH
(UP) (DOWN) (ENTER) (MENU)
    
```

### ALARM SET UP

```

ALARM SET UP
▶ REC MODE          L6H
DURATION            1 MIN
BUZZER              ON
ALARM READY         ON
ALARM RECALL
(UP) (DOWN) (ENTER) (MENU)
    
```

**1** Press **MENU** and the main menu will appear

**2** Press the **DOWN** or **UP** to choose the **ALARM SET UP** item and then press **ENTER**.

The **ALARM SET UP** menu will appear.

**3** Press the **DOWN** or **UP** to choose the **REC MODE** item. Press **ENTER** repeatedly to choose recording hours.

The recording mode is changed as below.

OFF → L6H → L18H → L30H



**4** Press **DOWN** to choose the **DURATION** item. Press **ENTER** repeatedly to choose the desired duration of recording.

The duration of recording is changed as below.

30 SEC → 1 MIN → 3 MIN → 5 MIN → 10 MIN → T.END → AUTO



- If you choose the **T.END**, alarm recording continues until tape ends.
- If you choose the **AUTO**, alarm recording continues until the alarm reset signal is input.

RECORDING

## ALARM RECORDING (cont'd)

### ALARM SET UP

```

ALARM SET UP
REC MODE          L6H
DURATION          1 MIN
▶ BUZZER          ON
ALARM READY      ON
ALARM RECALL
(UP) (DOWN) (ENTER) (MENU)
    
```

```

ALARM SET UP
REC MODE          L6H
DURATION          1 MIN
BUZZER           ON
▶ ALARM READY    ON
ALARM RECALL
(UP) (DOWN) (ENTER) (MENU)
    
```

**5** Press **DOWN** to choose the BUZZER item. Press **ENTER** repeatedly to switch buzzer function during alarm recording.

- While the alarm is in process, the buzzer will ring. If you want to stop buzzer, press any button.

**6** Press **DOWN** to choose the ALARM READY item. Press **ENTER** repeatedly to switch alarm ready function.

- When selected "ON" and the alarm input is triggered, the unit will go to alarm record mode from either STOP, POWER OFF or RECORD modes.
- When selected "OFF" and the alarm input is triggered, the unit will go to alarm record mode only from the RECORD mode (including Timer Record). If the unit is in STOP or POWER OFF mode, it will ignore the alarm input command.

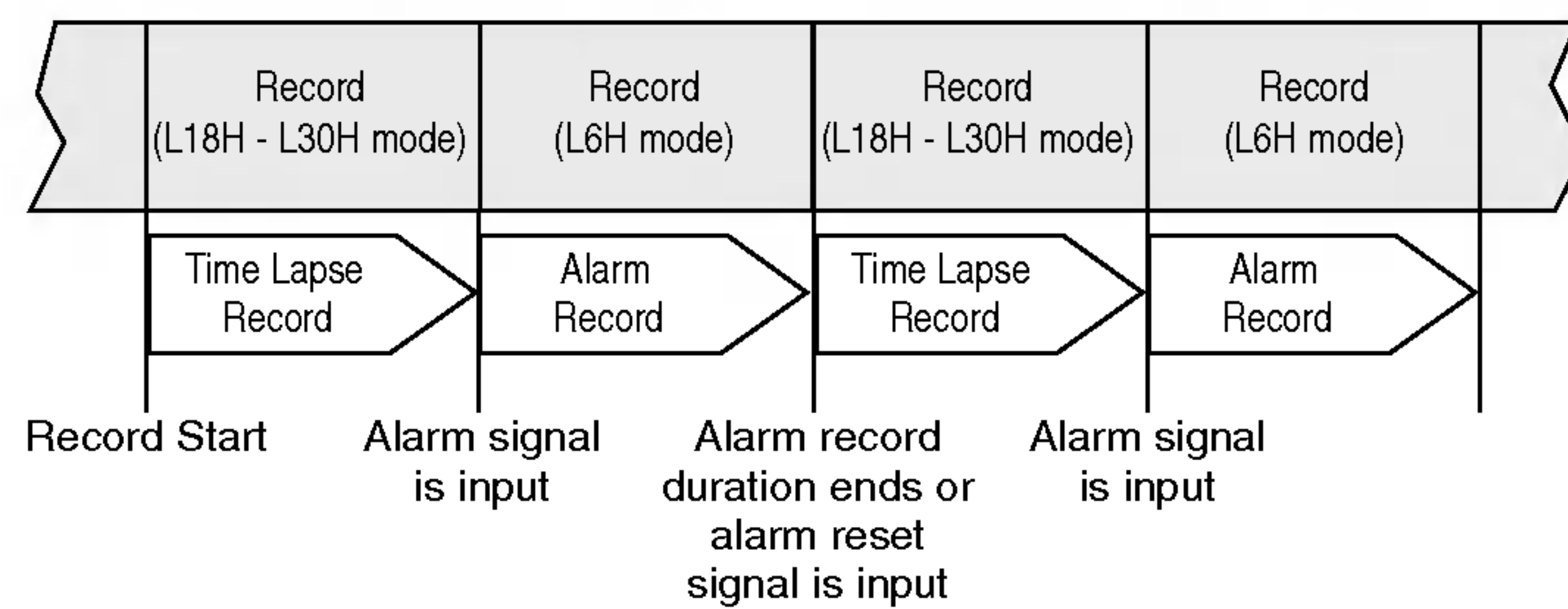
**7** Press **MENU** when finished. Press **MENU** repeatedly to exit menu screen.

- *ALARM indicator in VCR indicator panel blinks when alarm recording is proceeding.*

#### NOTES:

- When you select ALARM REC MODE ON (L6H, L18H, L30H), the ALARM indicator will light in VCR indicator panel.
- You can not stop during ALARM REC MODE.

**For example: When the Alarm REC MODE is set to L6H**





## CHECK THE ALARM RECORD INFORMATION

### MAIN MENU

MENU
VCR SET UP
REC MODE SET UP
TIMER REC SET UP
▶ ALARM SET UP
POWER FAIL RECALL
LANGUAGE ENGLISH
(UP) (DOWN) (ENTER) (MENU)

### ALARM REC MODE MENU

ALARM SET UP
REC MODE L6H
DURATION 1 MIN
BUZZER ON
ALARM READY ON
▶ ALARM RECALL
(UP) (DOWN) (ENTER) (MENU)

ALARM RECALL
1 01/01/03 00:21:13
▶ 2 01/02/03 04:07:37
3 01/03/03 03:59:36
4 --/--/-- --:--:--
5 --/--/-- --:--:--
6 --/--/-- --:--:--
7 --/--/-- --:--:--
8 --/--/-- --:--:--
(UP) (DOWN) (CLEAR) (MENU)

To check or cancel the Alarm Record Information, use the ALARM RECALL function.

**1** Press **MENU** button and the main menu will appear.

**2** Press **DOWN** or **UP** to choose the ALARM SET UP item and then press **ENTER**.

ALARM SET UP menu will appear.

**3** Press **DOWN** or **UP** to choose the ALARM RECALL item and then press **ENTER**.

ALARM RECALL menu will appear.

### To erase the alarm record inform

If you want to erase the alarm record information, press the **CLEAR** button.

**4** Press **MENU** when finished. Press **MENU** repeatedly to exit menu screen.

#### NOTES:

- Alarm recall can memorize up to 16 alarms, but only 8 can be displayed on the monitor. Press **DOWN** repeatedly to see the next page.

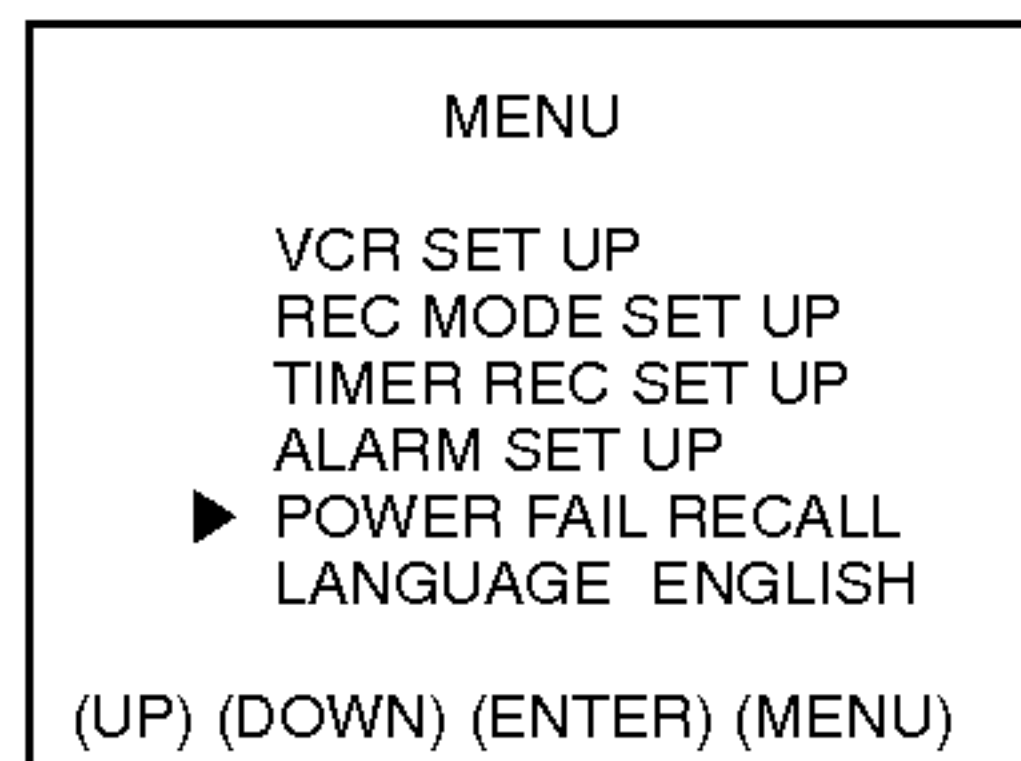
## RECORDING TIME TABLE INFORMATION

Recording Time	Field / sec
L6H	50
L18H	16.67
L30H	10
72H	3.85
96H	2.94
120H	2.38
168H	1.72
240H	1.22
480H	0.62
960H	0.31

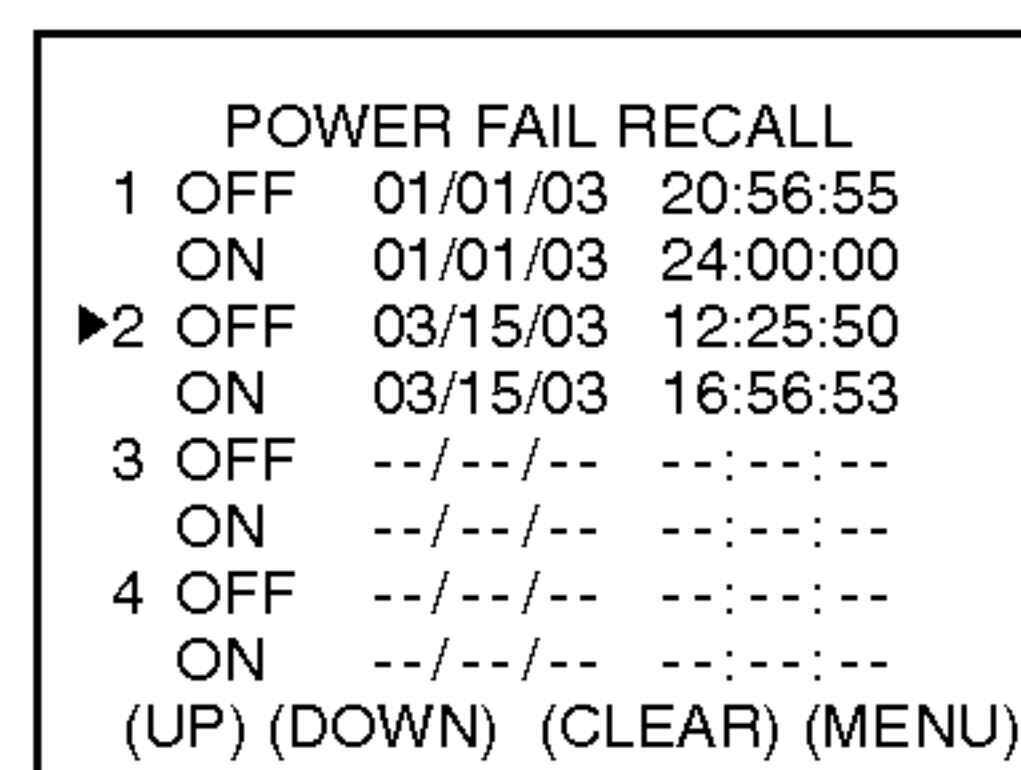
## CHECK THE POWER FAIL RECALL

To check or cancel the POWER FAIL RECALL while you are recording, use the POWER FAIL RECALL function.

### MAIN MENU



### POWER FAIL INFORM MENU



**1** Press **MENU** and the main menu will appear.

**2** Press **DOWN** or **UP** button to choose the POWER FAIL RECALL item.

**3** Press **ENTER** to enter the POWER FAIL RECALL menu. POWER FAIL RECALL menu will appear.

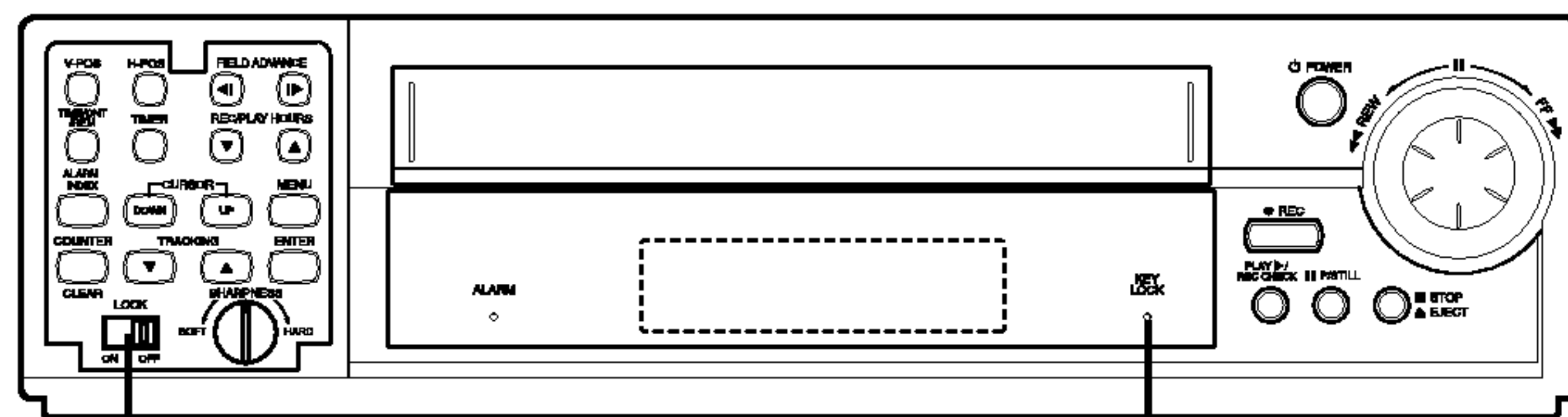
- Power fail information will display up to 8 occurrences.

### To erase the power fail recall

If you want to erase the power fail recall, select a power fail recall item to erase and then press the **CLEAR** button. The power fail recall is erased.

**4** Press **MENU** when finished. Press **MENU** repeatedly to exit menu screen.

## USE TO LOCK ON/OFF SWITCH



LOCK ON/OFF switch

LOCK indicator

- To protect unauthorized persons using the VCR, select **LOCK** switch to ON. Other buttons do not operate.
- Switch **LOCK** switch to OFF to reactivate VCR buttons.

## SELF-DIAGNOSIS

This function informs you of error messages to help solve problems more easily.

When the VCR malfunctions, an error code is displayed in the VCR indicator panel.

### ERROR CODE TABLE

DISPLAY	DESCRIPTION	INPUT SIGNAL	CIRCUIT STATUS	SERVICE POINTS
E-1	Loading Motor Error	<ul style="list-style-type: none"> <li>• Mode Switch S1,S2,S3,S4</li> <li>• Load Motor +, -</li> </ul>	<ul style="list-style-type: none"> <li>• Mode Switch Position not changed within 6 seconds after cassette loading attempt.</li> </ul>	<ul style="list-style-type: none"> <li>• Loading Motor Drive IC</li> <li>• Loading Motor</li> <li>• Mode Switch</li> </ul>
E-2	Tape Loading Error	<ul style="list-style-type: none"> <li>• Mode Switch S1,S2,S3,S4</li> <li>• Load Motor +, -</li> </ul>	<ul style="list-style-type: none"> <li>• Mode Switch Position not changed within 6 seconds after cassette loading attempt.</li> </ul>	<ul style="list-style-type: none"> <li>• Mode Switch contacts</li> </ul>
E-3	Tape Eject Error	<ul style="list-style-type: none"> <li>• Mode Switch S1,S2,S3,S4</li> <li>• CST IN Switch</li> <li>• Load Motor +, -</li> </ul>	<ul style="list-style-type: none"> <li>• CST Switch must be activated within 3 seconds, otherwise unit shut down will occur.</li> </ul>	<ul style="list-style-type: none"> <li>• CST IN Switch contacts</li> </ul>
E-4	Reel Rotational Error	<ul style="list-style-type: none"> <li>• Supply/Take-up Reel Pulses</li> <li>• CFG</li> </ul>	<ul style="list-style-type: none"> <li>• CFG Signal present, but take-up pulses are missing. (Capstan motor running.)</li> </ul>	<ul style="list-style-type: none"> <li>• Capstan belt</li> <li>• Idler and reel gears damaged</li> </ul>
E-5	Drum Motor Error	<ul style="list-style-type: none"> <li>• DFG Switch</li> <li>• DPF</li> </ul>	<ul style="list-style-type: none"> <li>• Drum Motor (Slow Start)</li> <li>• Motor must be up to speed within 3 seconds of operation.</li> </ul>	<ul style="list-style-type: none"> <li>• Drum Motor and Control Circuits</li> </ul>

- When a malfunction occurs in the VCR, press the **POWER** button on the front of VCR to operate normally.
- An error message (Err) appears in the display continuously when any button is pressed; contact your dealer or service center.



## SERVICE GUIDE TABLE

Unit is Hour.

NO.	DESCRIPTION	1500	3000	5000	6000	7500	9000	10000	12000
1	DRUM ASSY	●	●	◆	●	●	●	◆	●
2	MOTOR CAPSTAN (D-35)	●	●	●	◆	●	●	●	◆
3	BELT CAPSTAN								◆
4	BASE ASSY A/C	●	●	●	●	●	●	●	◆
5	HEAD F/E	●	●	●	●	●	●	●	◆
6	ARM ASSY IDLER							◆	
7	HOLDER ASSY PINCH				◆				◆
8	BAND ASSY TENSION								◆
9	HOUSING ASSY	▲	▲	▲	▲	▲	▲	▲	◆
10	CAPSTAN SOFT BRAKE				◆				◆

Reference:

◆: Changing ●: Cleaning ▲: Checking





**Notes:**

- Check the running path adjustment when you change items 1, 2, 4, 5 and 10.
- Check the back tension when you change Band Assy Tension.

## VIDEO HEAD CLEANING

- Dirt accumulating on the head after a long period of time can cause the playback picture to become blurred or broken up. High quality video cassette tapes will not normally deposit dirt onto the video head, but old or damaged tapes might. Clean the video heads with a commercially available video heads cleaning tape.

## TROUBLESHOOTING

SYMPTOM	CHECK POINT & CORRECTION
Cassette cannot be inserted.	<ul style="list-style-type: none"> <li>• Load cassette in direction indicated by arrow on cassette.</li> <li>• A cassette is already in the VCR.</li> <li>• Check if power indicator is lit on the VCR indicator panel. If not, make sure power cord is plugged in.</li> <li>• If the  indicator flashes, press the <b>POWER</b> button again.</li> </ul>
The VCR will not go into the recording mode, even when <b>REC</b> button is pressed.	<ul style="list-style-type: none"> <li>• The cassette has had the erase prevention tab removed. Stick a piece of cellophane tape over the erase prevention tab hole or select a different cassette.</li> </ul>
No picture appears on monitor screen when <b>PLAY</b> button is pressed.	<ul style="list-style-type: none"> <li>• Try a different cassette tape.</li> <li>• Try to confirm that the system is connected correctly.</li> </ul>
No picture, but audio is clear.	<ul style="list-style-type: none"> <li>• The heads may require cleaning.</li> <li>• Take VCR to a qualified Service Center for service.</li> </ul>
Interference on playback picture.	<ul style="list-style-type: none"> <li>• Adjust fine tuning knob on monitor to obtain best picture.</li> <li>• Adjust <b>TRACKING</b> (/) control button.</li> <li>• Take VCR to Service Center for service.</li> </ul>
VCR does not start at preset record starting time.	<ul style="list-style-type: none"> <li>• Setup recording time according to instructions.</li> </ul>
The tape is ejected in the timer or alarm recording mode.	<ul style="list-style-type: none"> <li>• The cassette has had the erase prevention tab removed. Stick a piece of cellophane tape over the erase prevention tab hole or select a different cassette.</li> </ul>
 indication flashes.	<ul style="list-style-type: none"> <li>• Insert a cassette.</li> </ul>

### Using the **RESET** button (located at the rear panel of VCR)

This button is used to solve the problems exhibited by the following symptoms :

- When the power cannot be turned on, even if the power cord is connected to the outlet.
  - When the VCR's display does not display.
  - When the VCR does not operate normally.
- Use a pencil or ballpoint pen to press the **RESET** button.

### NOTES:

- If the RESET button is pressed, present time is cleared, then set the clock again.

# SPECIFICATIONS

## GENERAL

<b>Head System</b>	Four head helical scan azimuth system
<b>Power Source</b>	AC 100-240V, 50/60Hz
<b>Power Consumption</b>	Approx. 15 Watts
<b>Back up time (clock)</b>	30 days
<b>Dimensions (WxHxD)</b>	14.2" x 3.7" x 10.7" (360 x 94 x 273 mm)
<b>Operating Temperature</b>	41 °F~105 °F (5 °C~40 °C)
<b>Operating Humidity</b>	Less than 80% RH
<b>Timer</b>	24-hour display type
<b>Weight</b>	Approx. 8.4 lb (3.8 kg)
<b>Tape Speed</b>	11.12 mm/sec (L6H) , 3.70 mm/sec (L18H), 2.22 mm/sec (L30H), 72H ~ 960H
<b>Maximum Recording Time</b>	6 hours (E-180, L6H), 18 hours (E-180, L18H), 30 hours (E-180, L30H), 72H ~ 960H
<b>Tape Width</b>	0.5 in. (12.7 mm)
<b>Rewind Time</b>	About 65 seconds (E-180)
<b>Video Signal System</b>	CCIR Standard (625 lines, 50 fields) PAL type color signal
<b>Video Input</b>	1.0 Vp-p 75 ohms unbalanced
<b>Video Output</b>	1.0 Vp-p 75 ohms unbalanced
<b>Signal to Noise Ratio</b>	More than 43 dB (L6H mode)
<b>Conventional audio</b>	
<b>Input (LINE)</b>	-6.0 dBm more than 47 kohms
<b>Output (LINE)</b>	-6.0 dBm less than 1.5 kohms
<b>S/N Ratio</b>	More than 43 dB (L6H mode)
<b>Frequency Range</b>	200 Hz to 10kHz (L6H mode)

\* Designs and specifications are subject to change without notice.

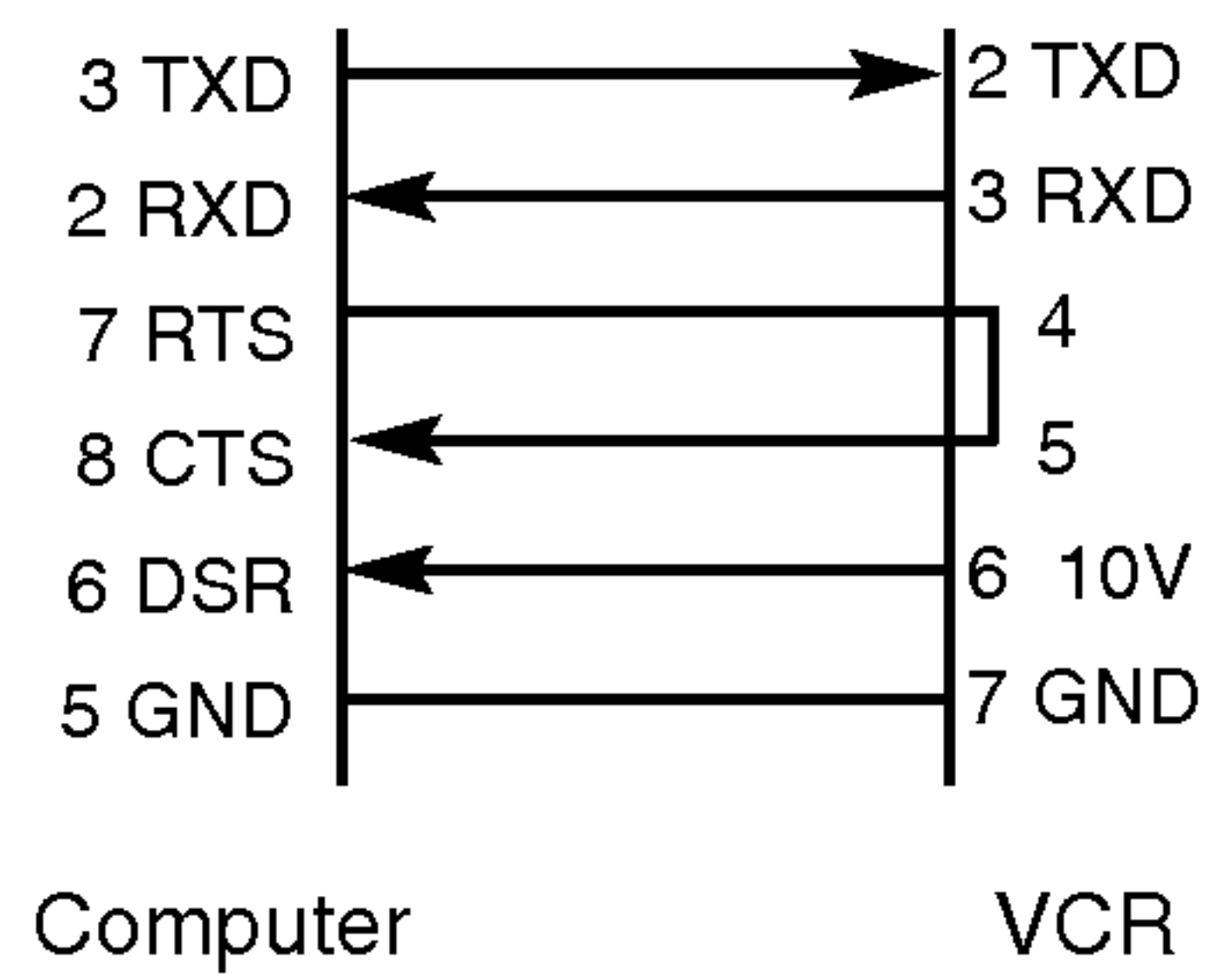
\* Weight and dimensions shown are approximate.



# **RS-232C PROTOCOL**

# RS-232C INTERFACE

## PIN CONNECTION



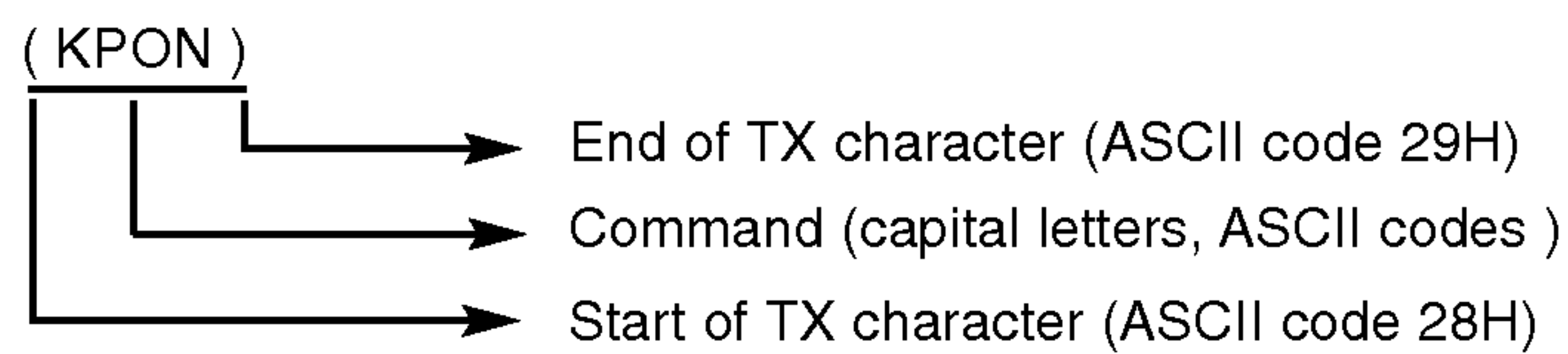
## Data Communication Format

MODE	Asynchronous half duplex
BAUD RATE	9600, 2400(Optional)
DATA LENGTH	8 bits
PARITY	NONE
STOP BIT	2 bits

It takes about 100ms to process the received command, so do not send command again for about 100ms, **minimum**.

If you send another command before 100ms, VCR may not answer the command.

## Communication Protocol



Example) Power on command : (KPON)

→ Transmit ASCII code sequence : 28H, 4BH, 50H, 4FH, 4EH, 29H

## ■ ERROR CODES

Error code number	description
1(31H)	Undefined Command
2(32H)	Parity Error
3(33H)	Frame Error
4(34H)	Overrun Error
5(35H)	No Service

Error code number 5(no service) means VCR received the command correctly, but VCR did not service the received command because of VCR's internal status or mode.

## ■ NOTICE

- 1** This manual shows all the communication commands between time lapse VCR and Personal Computer with a RS-232C.
- 2** Notation.  
'#' represents a data; this data is ASCII code converted from corresponding HEX data (ASCII code '0'(30h) means HEX data 0(0h), ASCII code 'F'(46h) means HEX data F(fh) ) '-' represents a number, this number is ASCII code.  
( ASCII code '0'(30h) means a number 0)
- 3** All commands consist of capital letters. (All commands are case-sensitive)
- 4** All setting commands (including clear command) do not function when VCR is in alarm record, Timer Record or OSD menu mode.
- 5** Time lapse VCR can return an error codes; see **ERROR CODES** for detailed information.
- 6** The contents of this manual may change without notice.

## ■ Key (K) Operation

Function	(PC → VCR)	(VCR → PC)	Description
STOP	(KSTP)	(KSTP)	Does the same function as "STOP" button. (Stops the tape.)
REWIND	(KREW)	(KREW)	Does the same function as "REW" button. (Rewinds the tape.)
FORWARD	(KFWD)	(KFWD)	Does the same function as "FF" button. (Fast forwards the tape.)
PLAY	(KPLY)	(KPLY)	Does the same function as "PLAY" button. (Plays the tape.)
RECORD	(KREC)	(KREC)	Does the same function as "REC" button. (Starts VCR recording.)
PAUSE	(KPAU)	(KPAU)	Does the same function as "PAUSE/STILL" button. (Pauses playback or recording.)
EJECT	(KEJT)	(KEJT)	Does the same function as "EJECT" button. (Ejects the tape.)
FIELD ADVANCE	(KFAD)	(KFAD)	Plays one field with forward direction.
REVERSE FIELD ADVANCE	(KRAD)	(KRAD)	Plays one field with reverse direction.
REVERSE PLAY	(KBPL)	(KBPL)	Does the same function as "REV PLAY" button. (Reverse plays the tape.)
POWER ON	(KPON)	(KPON)	Does the same function as "POWER" button when VCR turned off. (Turns on the VCR.)
POWER OFF	(KPOF)	(KPOF)	Does the same function as "POWER" button when VCR turned on. (Turns off the VCR.)
TIMER	(KTMR)	(KTMR)	Does the same function as "TIMER" button. (Set the VCR as a TIMER mode)
H.POSITION	(KHPS)	(KHPS)	Does the same function as "H.POS" button. (Adjusts F.OSD display position in horizontal direction.)
V.POSITION	(KVPS)	(KVPS)	Does the same function as "V.POS" button. (Adjusts F.OSD display position in vertical direc tion.)
CLOCK / COUNTER / REMAIN FPD	(KCCR)	(KCCR)	Does the same function as "TIME/CNT/REM" button when VCR turned on. (Changes displayed information on the front of VCR with a sequence of CLOCK, COUNTER, REMAIN)
INDEX SEARCH (FORWARD)	(KIFW)	(KIFW)	Does Index Search with forward direction.
INDEX SEARCH (REVERSE)	(KIRV)	(KIRV)	Does Index Search with reverse direction.
BUZZER SOUND OFF	(KBOF)	(KBOF)	Stops the sound of buzzer when alarm record occurs.



## ■ Query (Q) VCR Status Operation

Function	PC → VCR	VCR → PC	Description
VCR STATUS	(QVCR)	(QVCR##)	Query VCR's current status. 1 byte data '##' represents VCR STATUS ▶ VCR STATUS DATA TABLE
			BIT7   POWER ON/OFF(ON→1, OFF→0)
			BIT6   SAFETY ON/OFF(ON→1,OFF→0)
			BIT5   ASSETTE IN/OUT (IN→1,OUT→0)
			BIT4~0   DECK STATUS 00001 → EJECT 00010 → STOP 00011 → REWIND 00100 → FAST FORWARD 00101 → PLAY 00110 → RESERVED 00111 → RECORD 01000 → REVERSE PLAY 01001 → RECORD PAUSE 01010 → FIELD ADVANCE 01011 → CUE 01100 → REVIEW 01101 → STILL 01110 → RESERVED 01111 → RESERVED 10000 → DECK ERROR 10001 → RESERVED 10010 → RECORD CHECK 10011 → REVERSE FIELD ADVANCE 10100 → ALARM RECORD 10101 → TIMER RECORD 10110 → INDEX SEARCH(FORWARD) 10111 → INDEX SEARCH (REVERSE) 11000 → INDEX PLAY
VCR INFORMATION	(QINF)	(QINF##)	Query informations appear in the FPD(Front Panel Display) on the VCR. 1 byte data '##' represents VCR STATUS information ▶ VCR STATUS INFORMATION DATA TABLE
			BIT7   Quasi V-Sync Information 1 → ON / 0 → OFF
			BIT6   REPEAT indicator information, 1 → ON / 0 → OFF
			BIT5   K.LOCK indicator information, 1 → ON / 0 → OFF
			BIT4   P.FAIL indicator information, 1 → ON / 0 → OFF

## ■ Query (Q) VCR Status Operation

Function	PC → VCR	VCR → PC	Description
			BIT3 INDEX indicator information, 1 → ON / 0 → OFF
			BIT2 TIMER indicator information, 1 → ON / 0 → OFF
			BIT1 SERIES indicator information, 1 → ON / 0 → OFF
			BIT0 ALARM indicator information, 1 → ON / 0 → OFF
COUNTER	(QCNT)	(QCNT±-----)	Query VCR's current counter value. counter : 01.10.10 → (QCNT+011010) counter : -12.01.05 → (QCNT-120105)
REMAIN	(QREM)	(QREM----)	Query VCR's current remain time. remain time : 05H 25M → (QREM0525)
CURRENT TIME	(QCTM)	(QCTM-----)	Query VCR's current time. 23H 30M 45S → (QCTM233045)
CURRENT DATE	(QCDT)	(QCDT-----)	Query VCR's current date. 31th Jan. 2003 → (QCDT013103)
ELAPSED TIME	(QELP)	(QELP-----) or (QELP>99999)	Query current ELAPSED TIME HOURS If Elapsed Time Hours : 12345 hours → (QELP12345) If Elapsed Time Hours > 99999 hours → (QELP>99999)
VHS-TAPE SETTING	(QVHS)	(QVHS---)	Query current VHS-TAPE setting. If E-180 → (QVHS180), If E-240 → (QVHS240) If E-260 → (QVHS260), If E-300 → (QVHS300)
VIDEO OPTION SETTING	(QVID)	(QVIDC) (QVIDA) (QVIDB)	Query current VIDEO option setting. If VIDEO option is COLOR → (QVIDC) If VIDEO option is AUTO → (QVIDA) If VIDEO option is BLACK/WHITE → (QVIDB)
DISPLAY OPTION SETTING	(QDSP)	(QDSPON) (QDSPOFF)	Query current DISPLAY ON/OFF option. If DISPLAY option is ON → (QDSPON) If DISPLAY option is OFF → (QDSPOFF)
AUDIO PLAY OPTION SETTING	(QAUD)	(QAUDON) (QAUDOFF)	Query current AUDIO PLAY ON/OFF option. If AUDIO PLAY option is ON → (QAUDON) If AUDIO PLAY option is OFF → (QAUDOFF)
SPEED	(QSPD)	(QSPD--H)	Query SPEED option for VV mode. If 06Hours → (QSPD06H), If 18Hours → (QSPD18H), If 30Hours → (QSPD30H), If 72 Hours → (QSPD72H), If 96Hours → (QSPD96H), If 120Hours → (QSPD20H), If 168Hours → (QSPD68H), If 240 Hours → (QSPD40H), If 480Hours → (QSPD80H), If 960Hours → (QSPD60H)

## ■ Set (S) VCR Status Operation

Function	PC → VCR	VCR → PC	Description
RESET COUNTER	(SRCT)	(SRCT)	Resets time counter to 0.
CURRENT TIME	(SCTM-----)	(SCTM-----)	Set VCR's current time. 23H 30M 45S → (SCTM233045)
CURRENT DATE	(SCDT-----)	(SCDT-----)	Set VCR's current date. 31th Jan. 2003 → (SCDT013103)
VHS-TAPE SETTING	(SVHS---)	(SVHS---)	Set current VHS-TAPE setting. If E-180 → (SVHS180), If E-240 → (SVHS240) If E-260 → (SVHS260), If E-300 → (SVHS300)
VIDEO OPTION SETTING	(SVIDC) (SVIDA) (SVIDB)	(SVIDC) (SVIDA) (SVIDB)	Set current VIDEO option setting. If VIDEO option is COLOR → (SVIDC) If VIDEO option is AUTO → (SVIDA) If VIDEO option is BLACK/WHITE → (SVIDB)
DISPLAY OPTION SETTING	(SDSPON) (SDSPOFF)	(SDSPON) (SDSPOFF)	Set current DISPLAY ON/OFF option. If DISPLAY option is ON → (SDSPON) If DISPLAY option is OFF → (SDSPOFF)
AUDIO PLAY OPTION SETTING	(SAUDON) (SAUDOFF)	(SAUDON) (SAUDOFF)	Set current AUDIO PLAY ON/OFF option. If AUDIO PLAY option is ON → (SAUDON) If AUDIO PLAY option is OFF → (SAUDOFF)
QUASI VSYNC OPTION SETTING	(SVSYON) (SVSYOFF)	(SVSYON) (SVSYOFF)	Set QUASI VSYNC option. If QUASI VSYNC option is ON → (SVSYON) If QUASI VSYNC option is OFF → (SVSYOFF)
SPEED	(SSPD02H) (SSPD12H)	(SSPD--H)	Set SPEED option of VV mode. If 06Hours → (SSPD06H), If 18Hours → (SSPD18H), If 30Hours → (SSPD30H), If 72Hours → (SSPD72H), If 96Hours → (SSPD96H), If 120Hours → (SSPD20H), If 168Hours → (SSPD68H), If 240Hours → (SSPD40H), If 480Hours → (SSPD80H), If 960Hours → (SSPD60H)

## ■ Record Mode (R) Operation

Function	PC → VCR	VCR → PC	Description
QUERY REC TIME	(RQTM)	(RQTM--H)  (RQTM--S)  (RQTM--M)  (RQTMAUT)	Query Rec Time option If 06Hours → (RQTM06H) If 18Hours → (RQTM18H) If 30Hours → (RQTM30H) If 00H10Sec → (RQTM10S) If 00H20Sec → (RQTM20S) If 00H30Sec → (RQTM30S) If 00H01Min → (RQTM01M) If 00H02Min → (RQTM02M) If 00H03Min → (RQTM03M) If AUTO → (RQTMAUT)
QUERY TRIGGER OUT	(RQTR)	(RQTR--)	Query Trigger Out option If 1 Field → (RQTR01) If 2 Field → (RQTR02) If 5 Field → (RQTR05) If 10 Field → (RQTR10) If 30 Field → (RQTR30) If 60 Field → (RQTR60)
QUERY SERIES	(RQSR)	(RQSRON) (RQSROFF)	Query Series option If Series option is ON → (RQSRON) If Series option is OFF → (RQSROFF)
QUERY RECYCLE OPTION	(RQRE)	(RQREREW) (RQRESTA) (RQREEOT) (RQREREC)	Query Recycle option When Rewind & Stop → (RQREREW) When Stop if Alarm → (RQRESTA) When Stop at End of Tape → (RQREEOT) When Re-rec Even If alarm → (RQREREC)
SET REC TIME	(RSTM--H)  (RSTM--S)  (RSTM--M)  (RSTMAUT)	(RSTM--H)  (RSTM--S)  (RSTM--M)  (RSTMAUT)	Set Rec Time option If 06Hours → (RSTM06H) If 18Hours → (RSTM18H) If 30Hours → (RSTM30H) If 72Hours → (RSTM72H) If 96Hours → (RSTM96H) If 120Hours → (RSTM20H) If 168Hours → (RSTM68H) If 240Hours → (RSTM40H) If 480Hours → (RSTM80H) If 960Hours → (RSTM60H) If 00H10 Sec → (RSTM10S) If 00H20 Sec → (RSTM20S) If 00H30 Sec → (RSTM30S) If 00H01Min → (RSTM01M) If 00H02 Min → (RSTM02M) If 00H03 Min → (RSTM03M) If AUTO → (RSTMAUT)



## ■ Record Mode (R) Operation

Function	PC → VCR	VCR → PC	Description
SET TRIGGER OUT	(RSTR--)	(RSTR--)	Set Trigger Out If 1Field → (RSTR01) If 02Field → (RSTR02) If 5Field → (RSTR05) If 10Field → (RSTR10) If 30Field → (RSTR30), If 60Field → (RSTR60)
SET SERIES	(RSSRON) (RSSROFF)	(RSSRON) (RSSROFF)	Set Series option If Series option is ON → (RSSRON) If Series option is OFF → (RSSROFF)
SET REPEAT OPTION	(RSREREW) (RSRESTA) (RSREEOT) (RSREREC)	(RSREREW) (RSRESTA) (RSREEOT) (RSREREC)	Set Repeat option When Rewind & Stop → (RSREREW) When Stop if Alarm → (RSRESTA) When Stop at End of Tape → (RSREEOT) When Re-rec Even If alarm → (RSREREC)

## ■ Timer Rec (T) Operation

Function	PC → VCR	VCR → PC	Description																					
QUERY TIMER REC ENTRY	(TQTR-)	(TQTR----- ----)	<p>Query '-'th Timer Record Entry. ('-' is entry number) ▶ '-' description</p> <table border="1"> <thead> <tr> <th>BYTE</th> <th>NAME</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ENTRY</td> <td>Entry number to Query (from 1 to 8)</td> </tr> <tr> <td>2</td> <td>SET</td> <td>0 → OFF 1 → ON</td> </tr> <tr> <td>3</td> <td>DAY</td> <td>0 → SUN 1 → MON 2 → TUE 3 → WED 4 → THU 5 → FRI 6 → SAT 7 → M~F 8 → S~S 9 → DLY</td> </tr> <tr> <td>4 ~ 7</td> <td>Start Time</td> <td>HH:MM</td> </tr> <tr> <td>8 ~ 11</td> <td>End Time</td> <td>HH:MM</td> </tr> <tr> <td>12 ~ 13</td> <td>Speed</td> <td>06 → 6Hours 18 → 18Hours 30 → 30Hours 72 → 72Hours 96 → 96Hours 20 → 120Hours 68 → 168Hours 40 → 240Hours 80 → 480Hours 60 → 960Hours</td> </tr> </tbody> </table> <p>Ex) When Timer Record 3th Entry data was set to ON, SUN, 6:00 ~ 21:30, 18Hour Speed, Rx→(TQTR3) Tx→(TQTR3100600213018)</p> <p>(TQTR-EMPTY) If Timer Record of '-' entry has no data, then return (TQTR-EMPTY)</p> <p>(TQTRALLEMPTY) If Timer Record has no data through all entry, then return (TQTRALLEMPTY)</p>	BYTE	NAME	DESCRIPTION	1	ENTRY	Entry number to Query (from 1 to 8)	2	SET	0 → OFF 1 → ON	3	DAY	0 → SUN 1 → MON 2 → TUE 3 → WED 4 → THU 5 → FRI 6 → SAT 7 → M~F 8 → S~S 9 → DLY	4 ~ 7	Start Time	HH:MM	8 ~ 11	End Time	HH:MM	12 ~ 13	Speed	06 → 6Hours 18 → 18Hours 30 → 30Hours 72 → 72Hours 96 → 96Hours 20 → 120Hours 68 → 168Hours 40 → 240Hours 80 → 480Hours 60 → 960Hours
BYTE	NAME	DESCRIPTION																						
1	ENTRY	Entry number to Query (from 1 to 8)																						
2	SET	0 → OFF 1 → ON																						
3	DAY	0 → SUN 1 → MON 2 → TUE 3 → WED 4 → THU 5 → FRI 6 → SAT 7 → M~F 8 → S~S 9 → DLY																						
4 ~ 7	Start Time	HH:MM																						
8 ~ 11	End Time	HH:MM																						
12 ~ 13	Speed	06 → 6Hours 18 → 18Hours 30 → 30Hours 72 → 72Hours 96 → 96Hours 20 → 120Hours 68 → 168Hours 40 → 240Hours 80 → 480Hours 60 → 960Hours																						

## ■ Timer Rec (T) Operation

Function	PC → VCR	VCR → PC	Description																					
SET TIMER REC ENTRY	(TSTR-----)	(TSTR-)	<p>Set '-'th Timer Record Entry.                      ('-' is entry number)                      ▶ '-' description</p> <table border="1"> <thead> <tr> <th>BYTE</th> <th>NAME</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ENTRY</td> <td>Entry number to Query (from 1 to 8)</td> </tr> <tr> <td>2</td> <td>SET</td> <td>0 → OFF    1 → ON</td> </tr> <tr> <td>3</td> <td>DAY</td> <td>0 → SUN    1 → MON 2 → TUE    3 → WED 4 → THU    5 → FRI 6 → SAT    7 → M~F 8 → S~S    9 → DLY</td> </tr> <tr> <td>4 ~ 7</td> <td>Start Time</td> <td>HH:MM</td> </tr> <tr> <td>8 ~ 11</td> <td>End Time</td> <td>HH:MM</td> </tr> <tr> <td>12 ~ 13</td> <td>Speed</td> <td>06 → 6Hours, 18 → 18Hours, 30 → 30Hours, 72 → 72Hours, 96 → 96Hours, 20 → 120Hours, 68 → 168Hours, 40 → 240Hours, 80 → 480Hours, 60 → 960Hours</td> </tr> </tbody> </table> <p>Ex) When Timer Record 3th Entry data was set to ON,                      SUN, 6:00 ~ 21:30, 18Hours Speed,                      Tx→(TSTR3100600213018), Rx→(TSTR3)                      If Timer Record of '-'th entry has data, then                      return (TSTR-NOTEMPTY).                      Please use (TCTR-) to clear entry.</p>	BYTE	NAME	DESCRIPTION	1	ENTRY	Entry number to Query (from 1 to 8)	2	SET	0 → OFF    1 → ON	3	DAY	0 → SUN    1 → MON 2 → TUE    3 → WED 4 → THU    5 → FRI 6 → SAT    7 → M~F 8 → S~S    9 → DLY	4 ~ 7	Start Time	HH:MM	8 ~ 11	End Time	HH:MM	12 ~ 13	Speed	06 → 6Hours, 18 → 18Hours, 30 → 30Hours, 72 → 72Hours, 96 → 96Hours, 20 → 120Hours, 68 → 168Hours, 40 → 240Hours, 80 → 480Hours, 60 → 960Hours
BYTE	NAME	DESCRIPTION																						
1	ENTRY	Entry number to Query (from 1 to 8)																						
2	SET	0 → OFF    1 → ON																						
3	DAY	0 → SUN    1 → MON 2 → TUE    3 → WED 4 → THU    5 → FRI 6 → SAT    7 → M~F 8 → S~S    9 → DLY																						
4 ~ 7	Start Time	HH:MM																						
8 ~ 11	End Time	HH:MM																						
12 ~ 13	Speed	06 → 6Hours, 18 → 18Hours, 30 → 30Hours, 72 → 72Hours, 96 → 96Hours, 20 → 120Hours, 68 → 168Hours, 40 → 240Hours, 80 → 480Hours, 60 → 960Hours																						
CLEAR TIMER REC ENTRY	(TCTR-)	(TCTR-)	<p>Clear '-'th Timer Record Entry.                      Ex) When clear 3th Time Record entry → (TCTR3)</p>																					

## ■ Alarm Setup (A) Operation

Function	PC → VCR	VCR → PC	Description
QUERY REC MODE	(AQRM)	(AQRMOF) (AQRM--)	Query Rec Mode option If OFF → (AQRMOF) If 06Hours → (AQRM06), If 18Hours → (AQRM18), If 30Hours → (AQRM30) ※ In case of PAL model, use 03Hours instead of 02Hours.
QUERY DURATION	(AQDU)	(AQDU30S) (AQDU--M) (AQDUEOT) (AQDUAUT)	Query Duration option If 30Sec → (AQDU30S). If 01Min → (AQDU01M), If 03Min → (AQDU03M) If 05Min → (AQDU05M), If 10Min → (AQDU10M) If End of Tape → (AQDUEOT) If Auto → (AQDUAUT)
QUERY BUZZER	(AQBZ)	(AQBZON) (AQBZOFF)	Query Buzzer option If Buzzer option is ON → (AQBZON) If Buzzer option is OFF → (AQBZOFF)
QUERY ALARM READY	(AQRV)	(AQRVON) (AQRVOFF)	Query Alarm Ready Option If Alarm Ready option is ON → (AQRVON) If Alarm Ready option is OFF → (AQRVOFF)
SET REC MODE	(ASRMOF) (ASRM--)	(ASRMOF) (ASRM--)	Query Rec Mode option If OFF → (ASRMOF) If 02Hours → (ASRM02), If 12Hours → (ASRM12), If 24Hours → (ASRM24) ※ In case of PAL model, use 03Hours instead of 02Hours.
SET DURATION	(ASDU30S) (ASDU--M)	(ASDU30S) (ASDU--M)	Set Duration option If 30Sec → (ASDU30S). If 01Min → (ASDU01M), If 03Min → (ASDU03M), If 05Min → (ASDU05M), If 10Min → (ASDU10M) If End of Tape → (ASDUEOT) If Auto → (ASDUAUT)
SET BUZZER	(ASBZON) (ASBZOFF)	(ASBZON) (ASBZOFF)	Set Buzzer option If Buzzer option is ON → (ASBZON) If Buzzer option is OFF → (ASBZOFF)
SET ALARM READY	(ASRYON) (ASRYOFF)	(ASRYON) (ASRYOFF)	Set Alarm Ready Option If Alarm Ready option is ON → (ASRYON) If Alarm Ready option is OFF → (ASRYOFF)

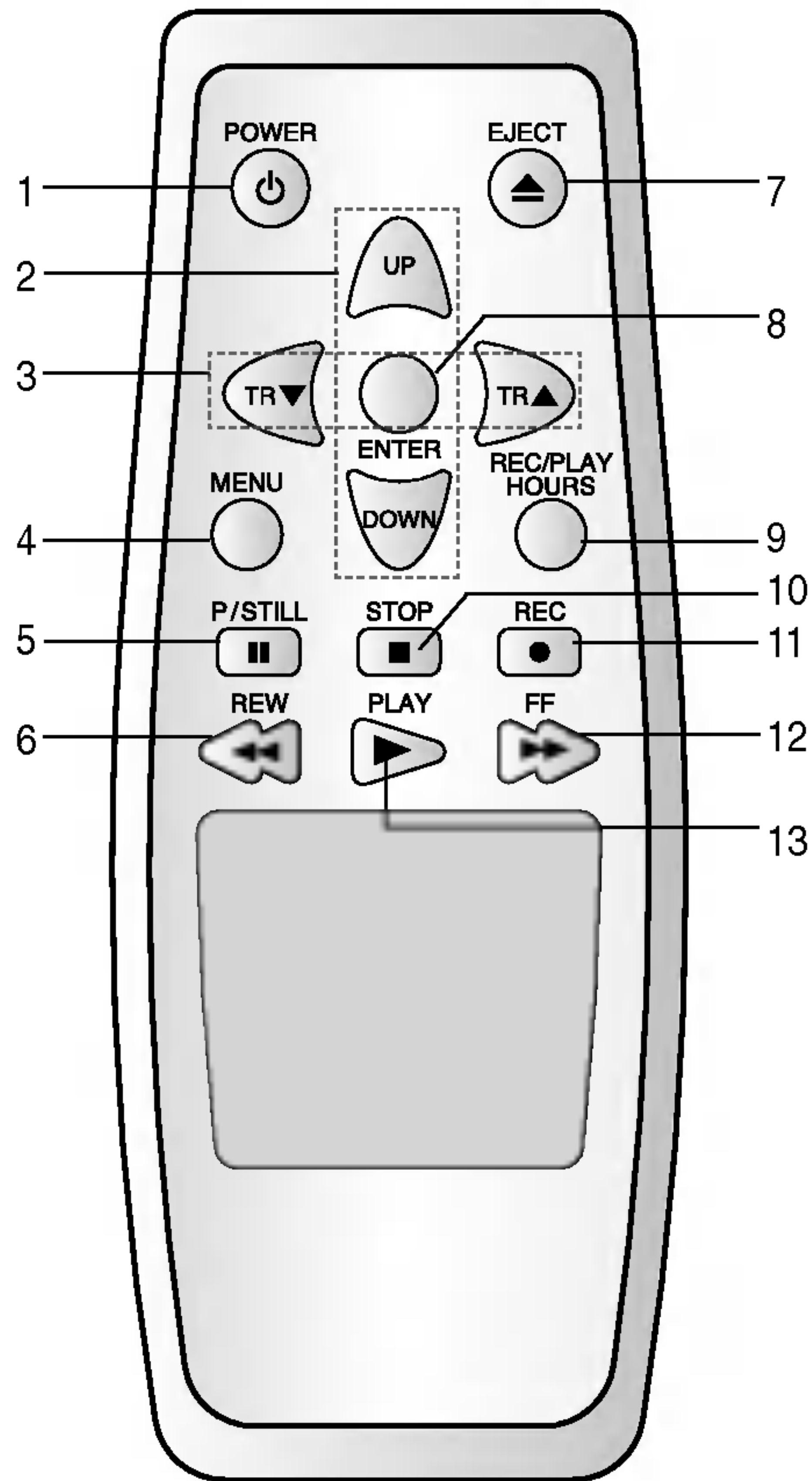


## ■ Alarm Setup (A) Operation

Function	PC → VCR	VCR → PC	Description												
QUERY ALARM RECALL	(AQAR--)	(AQAR----- ---)	<p>Query '--'th Alarm Recall. ( '--' is alarm recall entry number) ▶ '-' description</p> <table border="1"> <thead> <tr> <th>BYTE</th> <th>NAME</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1 ~ 2</td> <td>ENTRY</td> <td>Entry number to Query ( from 1 to 16 )</td> </tr> <tr> <td>3 ~ 8</td> <td>Date</td> <td>MM:DD:YY</td> </tr> <tr> <td>9 ~ 14</td> <td>Time</td> <td>HH:MM:SS</td> </tr> </tbody> </table> <p>Ex) When 16th alarm recall entry is 25th Feb. 2000 16:40:30 Tx→(AQAR16), Rx→ (AQ16022500164030)</p> <p>(AQAR--EMPTY) If Alarm Recall of '--'th entry has no data, then return(AQAR--EMPTY)</p> <p>(AQARALLEMPY) If Alarm Recall has no data through all entry, then return (AQAR--EMPTY)</p>	BYTE	NAME	DESCRIPTION	1 ~ 2	ENTRY	Entry number to Query ( from 1 to 16 )	3 ~ 8	Date	MM:DD:YY	9 ~ 14	Time	HH:MM:SS
BYTE	NAME	DESCRIPTION													
1 ~ 2	ENTRY	Entry number to Query ( from 1 to 16 )													
3 ~ 8	Date	MM:DD:YY													
9 ~ 14	Time	HH:MM:SS													
CLEAR ALARM RECALL	(ACAR--)	(ACAR--)  (ACARALLEMPY)	<p>Clear '--'th Alarm Recall data. ( '--' is alarm recall entry number) If '--'th Alarm Recall data was cleared → (ACAR--)</p> <p>If Alarm Recall has no data through all entry, then return (AQARALLEMPY)</p>												

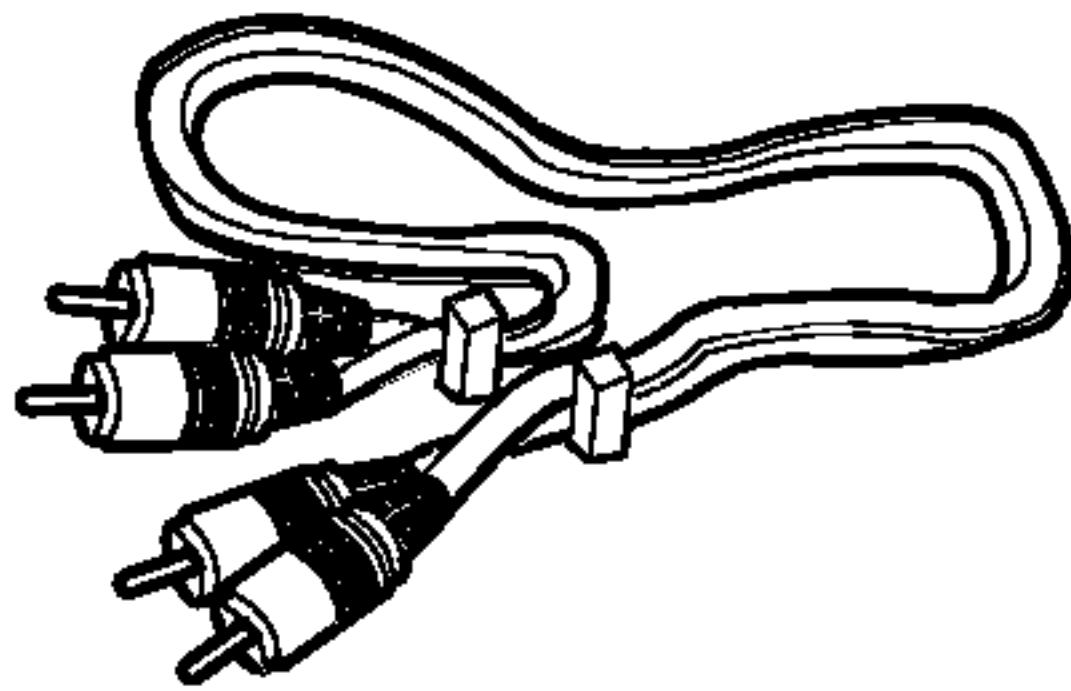


## REMOTE CONTROL

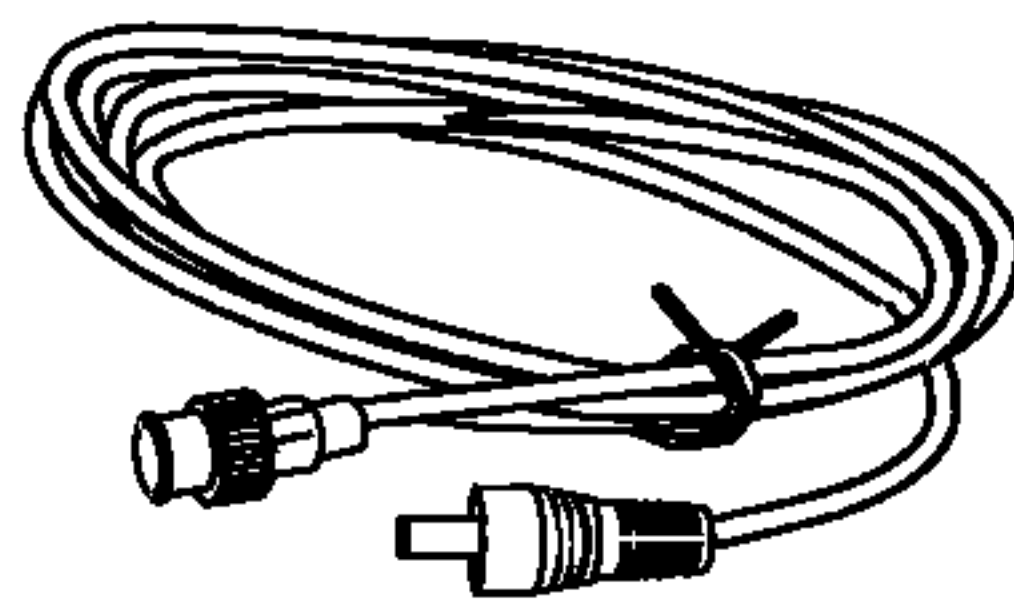


1. **POWER BUTTON**  
To turn the VCR on and off.
2. **CURSOR (UP/DOWN) BUTTONS**  
To select the item of menu.
3. **TRACKING (▼/▲) BUTTON**  
To adjust the manual tracking.
4. **MENU BUTTON**  
Displays the programming menu on the monitor or TV screen.
5. **P/STILL (PAUSE STILL) BUTTON**  
To still playback or to pause recording.
6. **REWIND BUTTONS**  
To rewind the tape.
7. **EJECT BUTTON**  
To eject a cassette tape.
8. **ENTER BUTTON**  
To select items on the menu screen.
9. **REC/PLAY HOURS BUTTON**  
To change the Play or Record speed to a lower or higher value.
10. **STOP BUTTON**  
To stop the cassette tape.
11. **RECORD BUTTON**  
Starts recording.
12. **FAST FORWARD BUTTONS**  
To fast forward the tape.
13. **PLAY BUTTON**  
To playback a recorded tape.

## ACCESSARIES



RCA CABLE



BNC TO RCA CABLE (2EA)



ALARM CABLE





P/NO : 3834RS0073E