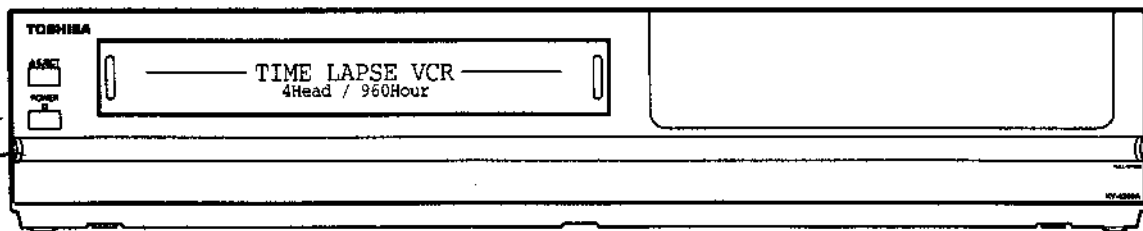


# TOSHIBA

# Instruction Manual

## TIME LAPSE VCR KV-6200A



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RECORDING  
OPERATION 20

PLAYBACK  
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# PLEASE READ

## CAUTION

RISK OF ELECTRIC SHOCK  
DO NOT OPEN

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.



The 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 appliance.

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

**NOTE:** 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

In the spaces provided below, record the Model and Serial No. located at the rear of your video cassette recorder.

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

Retain this information for future reference.

## IMPORTANT PRECAUTIONS

Only cassettes marked **VHS** can be used with the VCR.

This VCR is not compatible with ordinary **VHS** VCRs.

### Save Original Packing Materials

The original shipping carton and packing materials will come in handy if you ever have to ship your VCR. For maximum protection, repack the set as it was originally packed at the factory.

### Surface Damage

This VCR is covered with a clear plastic, to protect the top cover surface during shipping and handling. Daily wear may result in dents or cracks in the plastic which appear as white marks or other kinds of apparent surface damage. This does not mean that your VCR itself is damaged. If damage to this coating is extensive, simply peel it off.

### Dew Condensation

Never operate this unit immediately after moving it from a cold location to a warm location. When the VCR is exposed to such a change in temperature, dew condensation may occur on the cylinder inside it, one of its most crucial internal parts. The unit is equipped with an automatic dew condensation prevention circuit designed to cope with this problem. It takes about TWO HOURS for this circuit to work with the power cord plugged in. Please do not use the VCR during this time.

### Daily Maintenance

Before beginning the day's operation, rewind the cassette tape recorded on the previous day a few counts and play it back to check for proper recording.

**Copyright:** To record video tapes and other material only in the event that third party copyrights and other rights are not violated.

# INTRODUCTION

## FEATURES

- **Possible to record over periods as long as 960 hours.**  
With use of T-120 tape it is possible to record over periods of A2, A12, A24, 24, 48, 72, 120, 168, 240, 480, 720 and 960 hours as well as to carry out One-shot recording.
- **Internal time-date generator.**  
The unit includes an internal time-date generator, a must for observation purposes.
- **Mode setting with monitor screen.**  
Menu screens are used for setting the various function modes including the timer setting and alarm recording modes.
- **Timer recording possible.**  
It is possible to set one program for each day of the week as well as one daily program for a total of 8 programs.
- **One-shot recording possible.**  
External trigger input makes it possible to record from 1 to 32 fields and Manual mode.
- **Possible to display remaining tape time.**  
It is possible during both recording and playback to check the average time remaining until tape end.
- **Alarm record function.**  
Input of an alarm signal when an abnormality occurs makes it possible to automatically switch over to a time mode set for recording.
- **Alarm memory function.**  
This unit includes a handy alarm memory function for finding the alarm recording section.
- **Repeat recording possible.**  
Repeat recording function makes it possible to automatically return to the beginning of tape and repeat recording when the tape is finished.
- **Recording mode lock function, power failure restart recording possible.**  
This unit includes a recording mode lock function in order

to insure proper function when operating over long periods for surveillance and observation. There is also a power failure restart function for automatically going to the recording mode following restoration of power after a power failure.

- **Wide choice of playback functions.**  
A wide variety of playback functions realizes quick and efficient checks of recorded contents. They include picture search, field feed playback, reverse playback, reverse field playback, still playback and etc.
- **Clean slow and clean still.**  
Clean slow playback and clean still picture free of noise and flutter are possible in the time-lapse mode. These are useful for determining recorded material.
- **Includes head cleaning function.**  
Head cleaning is carried out at the end of timer recording and at tape end in order to prevent head jamming. There is also head cleaning once every two hours when operating in time modes of 48 hours or more.
- **Wired remote control function**  
The wired remote control allows the following VCR functions.
  - Fast Forward
  - REWIND
  - PAUSE
  - Field advance (forward, reverse)
  - Play
  - Play back time
  - Forward picture search
  - Reverse picture search
  - STILL
  - STOP
- When the option I/F (Interface Board) is added, the information from the ATM (Automatic Teller Machine) or the cash register is superimposed on a picture and the picture can be recorded.

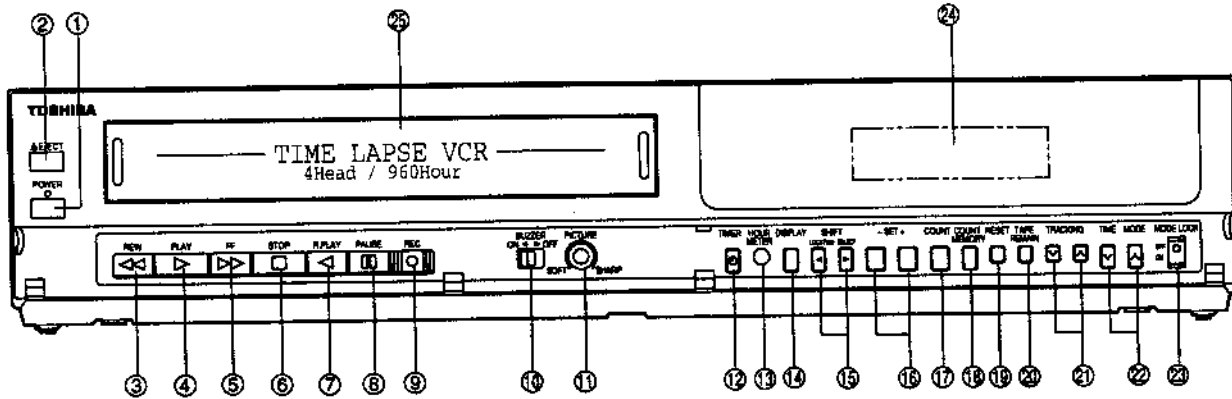
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# INSTRUCTIONS IN BRIEF

## Front Panel



**① POWER button**

Press to turn the power ON and OFF.

**② EJECT button**

Press to eject the cassette automatically from the cassette compartment.

**③ REW button**

- Press to rewind the tape when the tape is stopped.
- Press during playback to play back the picture at 5 times the normal speed in the reverse direction.
- Press during still picture playback to advance (reverse) the picture by one field.

**④ PLAY button**

Press to start the playback mode.

**⑤ FF button**

- Press to make fast-forward tape running when the tape is stopped.
- Press during playback to play back the picture at 5 times the normal speed in the forward direction.
- Press during still picture playback to advance (reverse) the picture by one field.

**⑥ STOP button**

Press to stop tape running.

**⑦ R.PLAY (Reverse Playback) button**

Press during playback to play back in the reverse direction.

**⑧ PAUSE button**

- Press during recording to stop the tape running and recording.
- Press during playback to stop the tape running and display a still picture.

**⑨ REC button**

Press to start recording in the mode selected.

**⑩ BUZZER switch**

This switch is the on/off switch for the buzzer. The buzzer will sound in different ways depending on conditions of the VCR. When condensation occurs in the heads (DEW), the buzzer will sound continuously. When the tape reaches its end in the record mode, the buzzer will sound continuously. The buzzer may be cancelled by setting (off) this switch. The buzzer will beep five times if the recording is performed with the record protect tab removed and when the timer button is pressed.

**⑪ PICTURE control**

Adjust to soften or sharpen the picture during playback.

**⑫ TIMER button**

Press to set timer recording.

⑬ **HOUR METER button**

The time that the equipment has been used is displayed in the counter display.

When this button is pressed, the total usage time is displayed for five seconds. Next, the usage time since the last maintenance is displayed for five seconds. Following this, the display returns to the counter display.

Total time:                    Max. 9999 hours × 10 (99990)  
                                      (approximate value)

Time since the last maintenance:  
                                      Max. 999 hours × 10 (9990)  
                                      (approximate value)

The time display is useful for maintenance and checks.

⑭ **DISPLAY button**

Press to display a menu on the screen. Use this button when you wish to change.

⑮ **SHIFT button**

Used to set a mode and times on the menu screen.

⑯ **SET button**

Used to make settings on the menu screen or set times. Press either the + or the – button and adjust to the numerical value or item that you want to set.

⑰ **COUNT. button**

Press to display the tape counter or the alarm counter on the VCR DISPLAY.

⑱ **COUNT. MEMORY button**

- Press once to appear the "COUNT. M" (counter memory) on the VCR display. When the tape is fast-forwarded or rewound during this mode, the tape will stop at a count of "0000".
- Press twice to appear the "ALARM M" (alarm memory) on the VCR display. When the tape is fast-forwarded or rewound during this mode, the tape will stop automatically at the beginning of an alarm and this VCR enters the STILL, PLAYBACK mode.
- Press three times to cancel this function.

⑲ **RESET button**

- Press to reset the tape counter to "0000" during the tape counter mode.
- Press to reset the alarm counter to "A-00" during the alarm counter mode.

⑳ **TAPE REMAIN button**

As long as this button is depressed, the remaining tape time is displayed in the counter display. The remaining time is the approximate time to tape end when used in the A2-hour mode.

㉑ **TRACKING buttons ( √ / ^ )**

Adjust to eliminate noise from your picture during playback.

㉒ **TIME MODE buttons ( √ / ^ )**

Used to set the recording and playback time modes. Press either the ^ button or √ button and adjust for the time mode you wish to set.

㉓ **MODE LOCK switch**

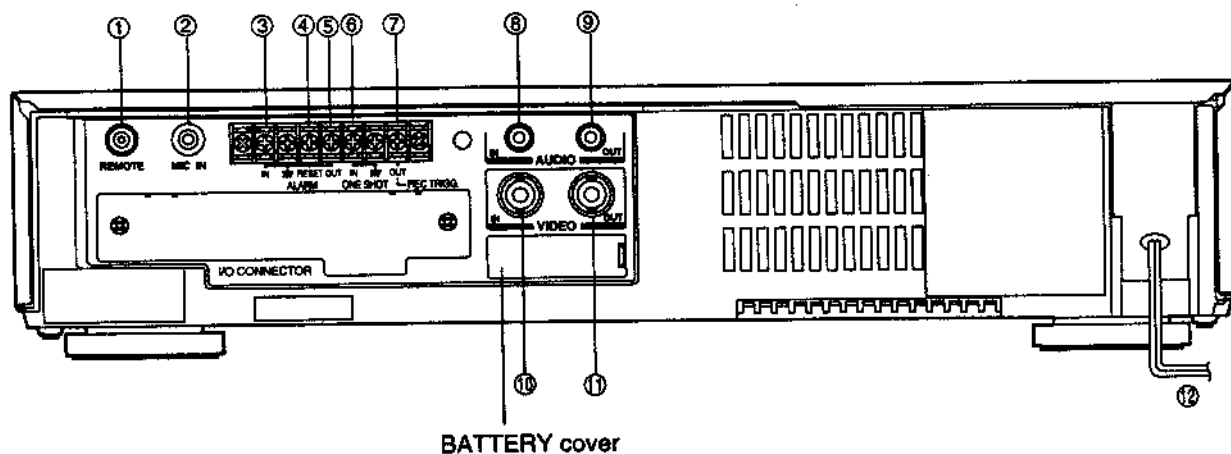
- OFF: Used for normal operation.
- ON: Operations buttons will not operate.

㉔ **VCR DISPLAY**

㉕ **CASSETTE COMPARTMENT**

When a cassette is inserted into the cassette compartment, the mechanism will automatically load the tape into this VCR.

## Rear Panel



- ① **REMOTE jack**  
Accepts the plug from the remote control.
- ② **MIC IN jack**  
Accepts audio signals from a microphone. In this case the RCA jack input will be switched off.
- ③ **ALARM IN terminal**  
Signal input terminal to start alarm recording. The VCR goes to alarm recording mode when the terminal is connected to the ground terminal during recording.
- ④ **ALARM RESET terminal**  
Signal input terminal to release alarm recording. Alarm recording is released when the terminal is connected to the ground terminal during alarm recording.
- ⑤ **ALARM OUT terminal**  
Output terminal to transmit the alarm signal to an external equipment. A voltage of DC +5V is output during alarm recording.
- ⑥ **ONE SHOT IN terminal**  
Used for One-shot recording.
- ⑦ **REC TRIGGER OUT terminal**  
Signal output terminal to control the switching timing of the camera when connected with the sequential switcher.
- ⑧ **AUDIO IN jack (RCA type)**  
Used to record external audio signals by connecting to the audio output jack of an external audio source.
- ⑨ **AUDIO OUT jack (RCA type)**  
Used to connect to the audio input jack of external audio equipment.

- ⑩ **VIDEO IN connector (BNC)**  
Used to record external video signals by connecting to the video output jack of an external video source such as a camera, etc.
- ⑪ **VIDEO OUT connector (BNC)**  
Used to connect to a monitor TV.
- ⑫ **POWER CORD**  
Insert to an 120V AC outlet.

**Note:**

This VCR allows recording of characters and numerical information sent from the ATM (Automatic Teller Machine), Cash Register and superimposed on the screen by connecting the specified I/F (Interface Board) to the I/O connector on rear of the unit.

When you wish to obtain the I/F Board, please consult TOSHIBA AMERICA C.P. INC. (See MANUAL Back cover) The mounting of the I/F Board is allowed only by a qualified service man.

For details on the mounting, refer to the Instruction Manual supplied with the I/F Board.

## A Word on the Exclusive 3N-100AAS Battery Pack

The TOSHIBA nickel-cadmium battery pack (3N-100AAS) is used for power source of the built-in clock and memory circuit.

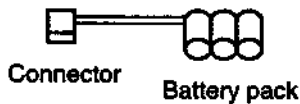
### Charging the Battery Pack

1. Turn on the VCR.
2. The battery pack in the VCR is charged.

### Battery Installation

#### Removal:

1. Remove the battery cover.
2. Disconnect the connector in the VCR.



#### Installation:

1. Install the battery pack, connect the connector on the battery pack to this VCR.  
Make sure the polarities (+) and (-) are correct.
2. Close the battery cover.

#### Note:

If the Battery Pack is removed, the memory data will be erased. In such a case, perform the setting from the first step.

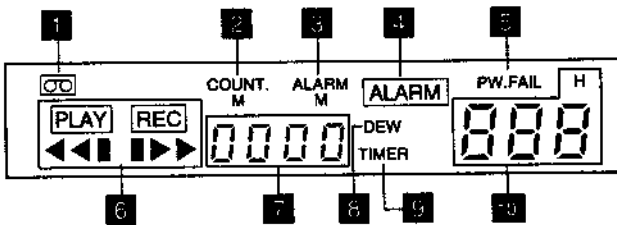
## Specification of Battery

- Temperature
  - For charging : 0°C to 80°C
  - For operating : -20°C to 80°C
  - For storing : -30°C to 80°C
- Charging time : more than 48 hours

#### Notes:

- Use only for this VCR.
- Do not dispose of the batteries into fire.
- Do not short circuit the terminals.
- Do not modify or disassemble.
- Avoid dropping, unnecessary shocks.

# VCR DISPLAY

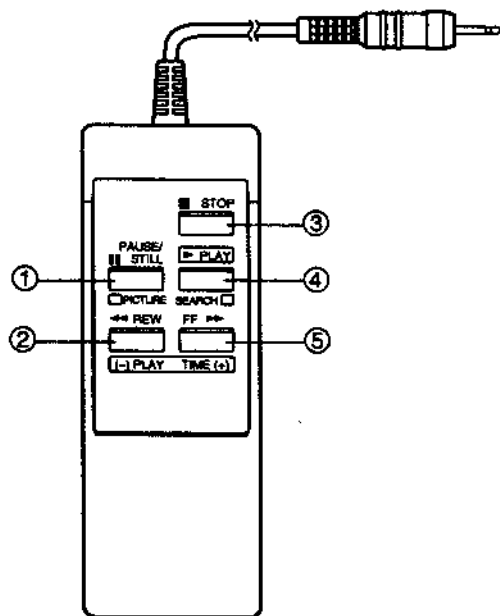


- 1** **Cassette indicator**  
Lights when a tape is inserted.
- 2** **Counter memory indicator**  
Lights when the counter memory is operated.
- 3** **Alarm Memory indicator**  
Lights when the alarm memory is operated.
- 4** **Alarm indicator**  
Lights during alarm recording and blinks when the alarm recording completes.
- 5** **PW.FAIL (Power Failure) Indicator**  
Blinks when a power failure occurs.
- 6** **TAPE Footage indicator**  
Displays as shown below, depending on operational modes.

- 7** **Counter/Alarm Counter/Remaining Tape/Time Used/Error Message indicator**
  - Press the **COUNT.** button to display the alarm counter.
  - Press the **TAPE REMAIN** button to display the remaining tape time.
  - Press the **HOUR METER** button to display the total usage time.
  - Press this button twice to display the usage time since maintenance.
  - Press this button three times to cancel this function.
  - When an abnormality occurs during operation, the error code is displayed.
    - E-1: Abnormality on reel rotation during tape running.
    - E-3: Abnormality on cylinder rotation during recording and playback.
    - E-4: Abnormality on tape loading mechanism.
    - E-5: Video tape is cut.
    - E-6: Head clog.
    - E-8: Dew condensation.
- 8** **Dew indicator**  
Blinks when condensation has developed inside the video unit.
- 9** **Timer indicator**  
Lights when the timer recording button is pressed.
- Record/Playback Time indicator**
- 10** Displays record/playback time mode.

Playback		Other than playback	
Playback		Record	
Still		Pause	
Slow		Time-lapse	
Field Advance		One Shot Recording	
Reverse Playback		Field Advance	
Forward Picture Search		Fast Forward	
Reverse Picture Search		Rewind	
Reverse Field Advance			





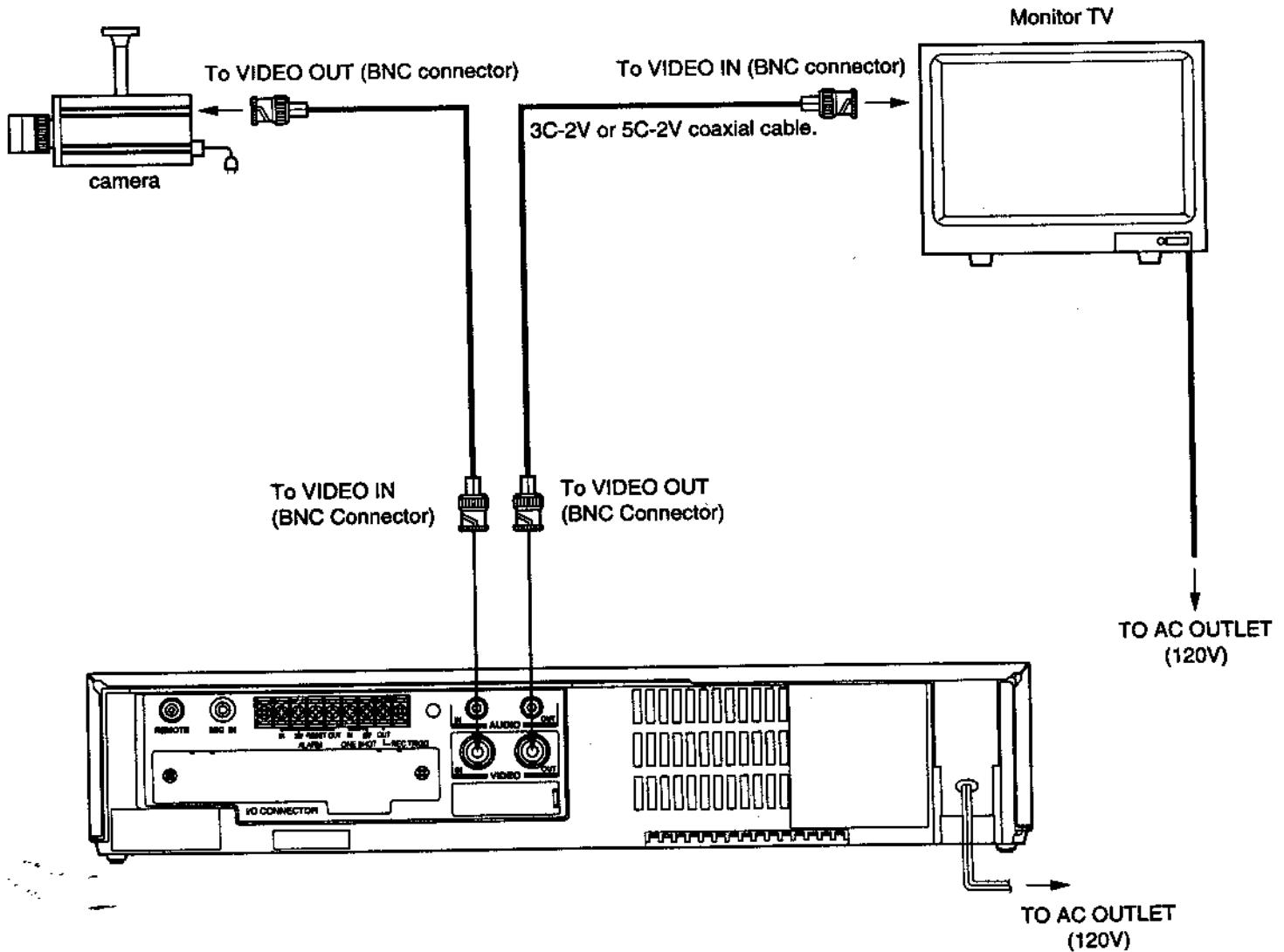
- ① **PAUSE/STILL button**
  - Press during recording to pause the recording.
  - Press during playback to play back a still picture.
- ② **REW/Reverse Picture Search button**
  - Press to rewind the tape.
  - Press during playback for reverse picture search. To release the reverse picture search mode, press the **PLAY** button.
  - Press the **REW** button while pressing the **PLAY** button and the time mode can be selected.
  - Press the **REW** button during still playback mode and the Reverse Field Advance playback will be carried out.
- ③ **STOP button**
  - Press to stop tape running.
- ④ **PLAY button**
  - Press to start play back.
- ⑤ **FF/Fast Forward/Forward Picture Search button**
  - Press for fast forward mode.
  - Press during playback for forward picture search mode. To release this mode, press the **PLAY** button.
  - Press the **FF** button while pressing the **PLAY** button and the Time mode can be selected.
  - Press the **FF** button during still playback mode and the Reverse Field Advance playback will be carried out.

# PREPARATION

## CONNECTIONS

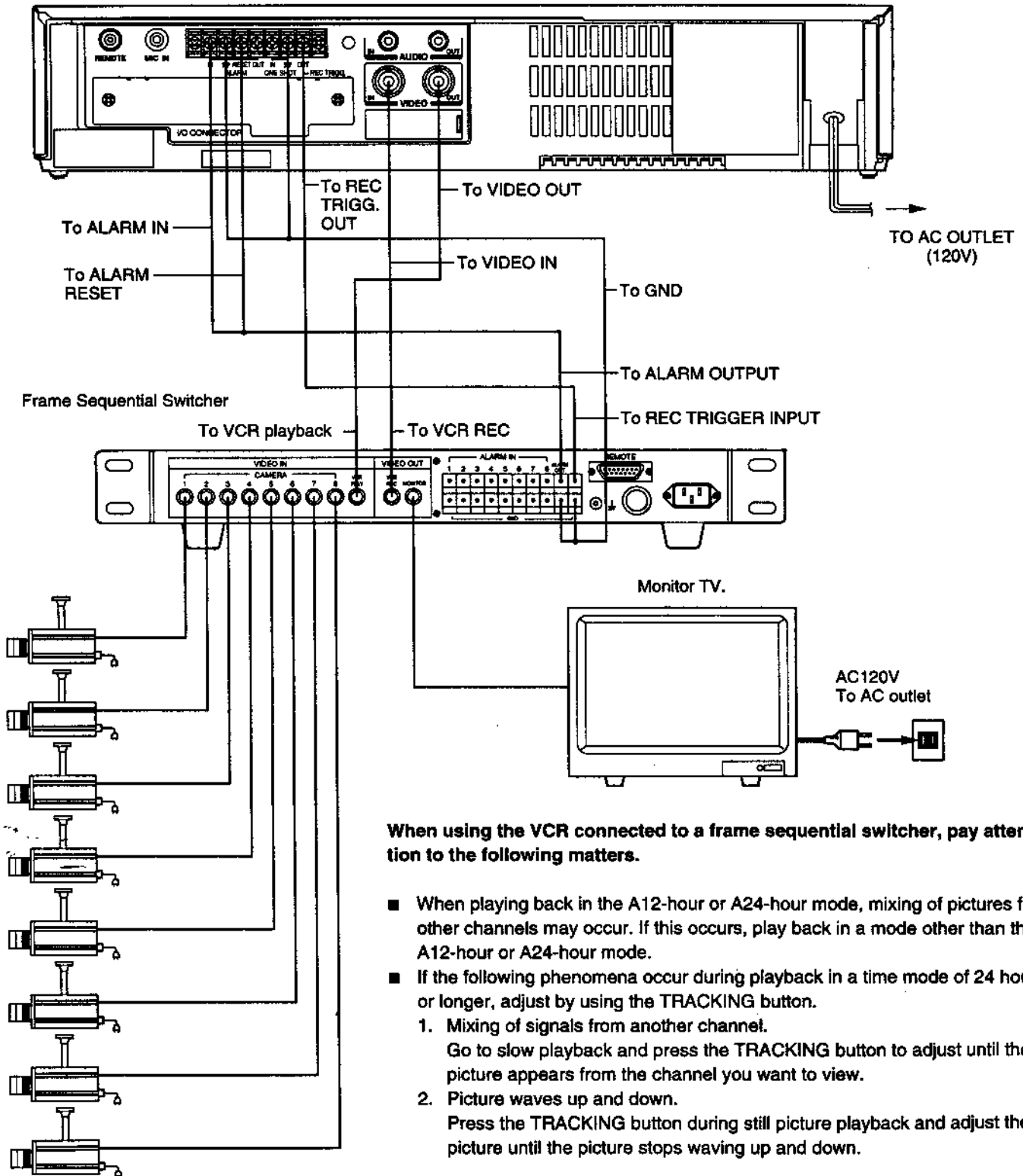
### Connection to Camera

Example:



## EXAMPLES OF CONNECTION WITH THE FIELD SEQUENTIAL SWITCHER

For further details, consult the instruction manuals of the devices for connection.  
When connected to the switcher, set the Alarm Recording of this unit to CONT.



When using the VCR connected to a frame sequential switcher, pay attention to the following matters.

- When playing back in the A12-hour or A24-hour mode, mixing of pictures from other channels may occur. If this occurs, play back in a mode other than the A12-hour or A24-hour mode.
- If the following phenomena occur during playback in a time mode of 24 hours or longer, adjust by using the TRACKING button.
  1. Mixing of signals from another channel.  
Go to slow playback and press the TRACKING button to adjust until the picture appears from the channel you want to view.
  2. Picture waves up and down.  
Press the TRACKING button during still picture playback and adjust the picture until the picture stops waving up and down.

PREPARATION

# CONTENTS OF SCREEN DISPLAY

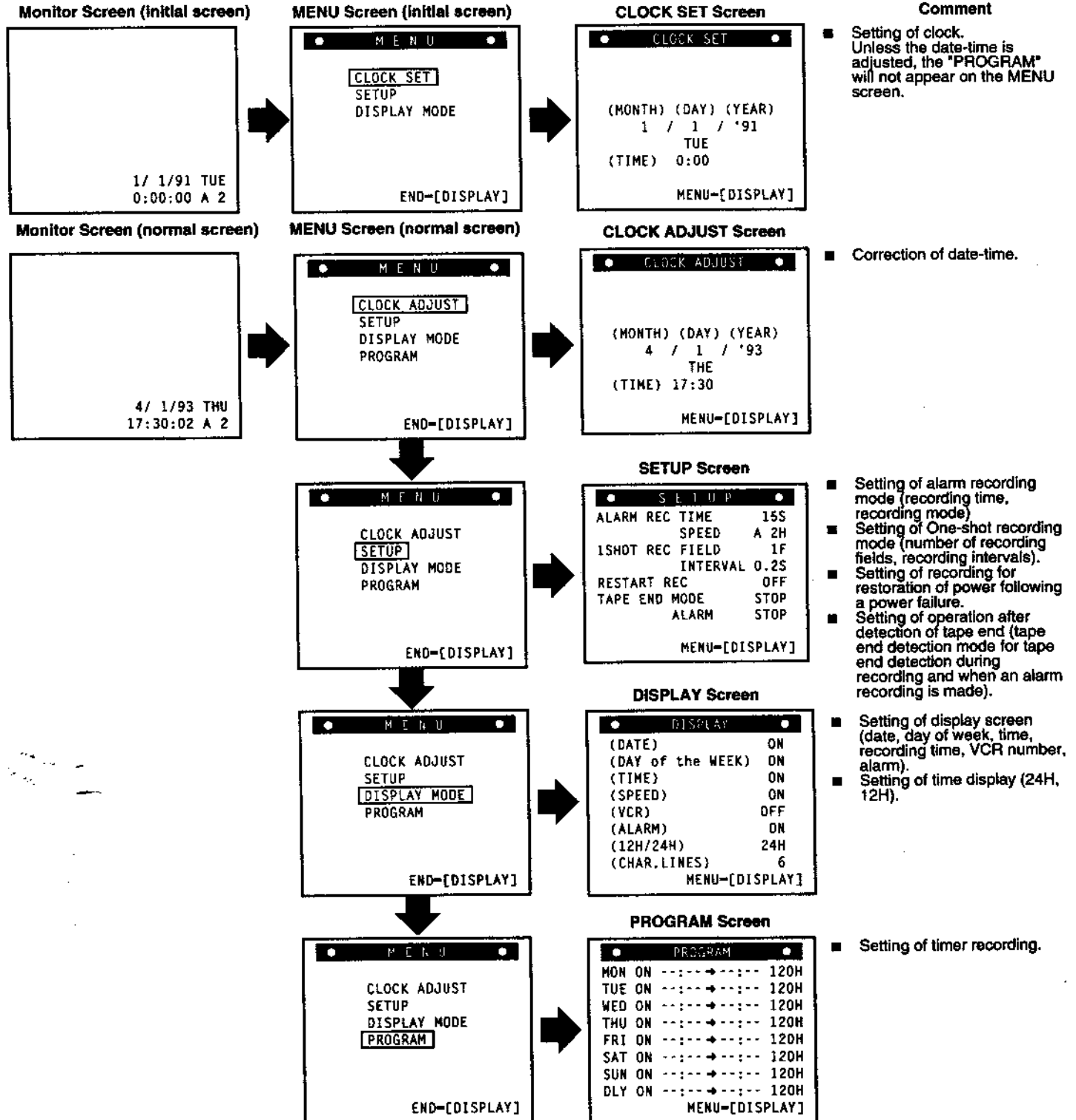
The settings such as date-time display are set in four screens.

The menus and the setting items are listed below.

Press the **DISPLAY** button and use the **SHIFT** button to cause the menu to blink. Then press the **SET** button.

To return to the initial screen press the **DISPLAY** button.

PREPARATION



# SETTING THE CLOCK

An internal time-date generator is provided in this unit for overlapping of date, time etc.

When the power is turned ON for the connected devices and this unit, the date and time modes are displayed on the monitor screen (normal screen).

## Operation

For example, when setting to 5:30 PM, Thursday, April 1, 1993.

**1** Press the **DISPLAY** button.

M E N U

CLOCK SET  
SETUP  
DISPLAY MODE

END-[DISPLAY]

**2** Press the **+ SET** button.

CLOCK SET

(MONTH) (DAY) (YEAR)  
1 / 1 / '91  
TUE  
(TIME) 0:00

MENU-[DISPLAY]

**3** Press the **+ SET** button and set the month to "4".

CLOCK SET

(MONTH) (DAY) (YEAR)  
4 / 1 / '91  
MON  
(TIME) 0:00

MENU-[DISPLAY]

**4** Press the **SHIFT** button to make Day blink and press the **+ SET** button to set to "1".

CLOCK SET

(MONTH) (DAY) (YEAR)  
4 / 1 / '91  
MON  
(TIME) 0:00

MENU-[DISPLAY]

**5** Press the **SHIFT** button to make Year blink and press the **+ SET** button to set to "93".

CLOCK SET

(MONTH) (DAY) (YEAR)  
4 / 1 / 93  
THU  
(TIME) 0:00

MENU-[DISPLAY]

**6** Press the **SHIFT** button to make Time in hours blink and press the **+ SET** button to set to "17".

CLOCK SET

(MONTH) (DAY) (YEAR)  
4 / 1 / '93  
THU  
(TIME) 17:00

MENU-[DISPLAY]

**7** Press the **SHIFT** button to make Time in minutes blink and press the **+ SET** button to set to "30".

CLOCK SET

(MONTH) (DAY) (YEAR)  
4 / 1 / '93  
THU  
(TIME) 17:30

MENU-[DISPLAY]

**8** Press the **DISPLAY** button to start display of the set date and time.

M E N U

CLOCK ADJUST  
SETUP  
DISPLAY MODE  
PROGRAM

END-[DISPLAY]

**9** Press the **DISPLAY** button to return to the normal screen.

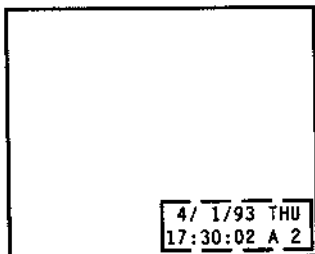
4 / 1/93 THU  
17:30:02 A 2

PREPARATION

# ON-SCREEN FUNCTIONS

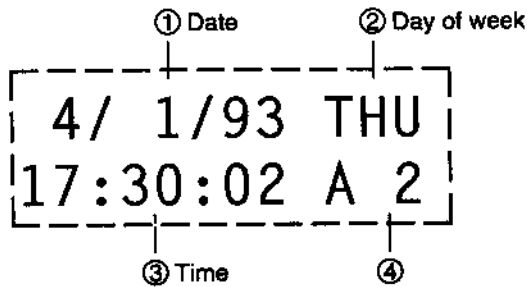
With this unit, when the power is turned ON for the connected devices, the date-time mode display screen is normally displayed on the monitor screen. This is not displayed when no video input signal is supplied.

## Date-Time Display



Monitor screen

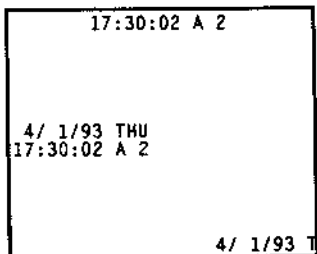
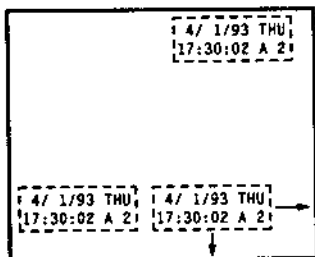
## VCR display



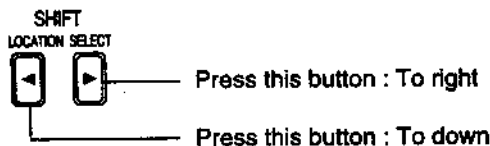
Playback/Recording time

- ① Date : Displayed with the month-day-year.
- ② Day of the week : Automatically set to the correct day of the week when the date is set.
- ③ Time : Set to 24-hour cycle at factory.  
It is possible to modify to 12-hour (AM/PM) cycle display.
- ④ Playback/Recording Time : Playback or Recording time display

## On-Screen Position



The **SHIFT LOCATION SELECT** button can be used to move the display position.

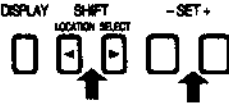
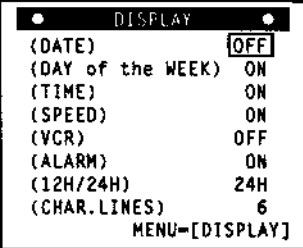
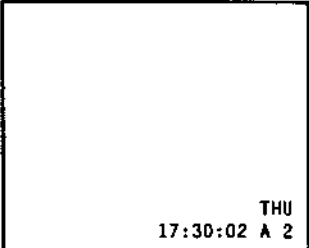
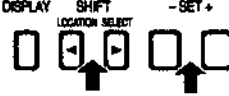
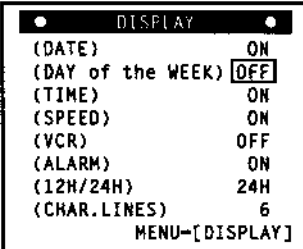
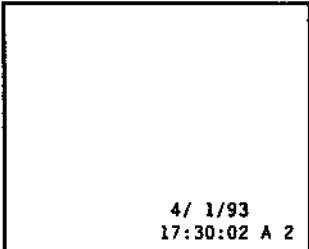
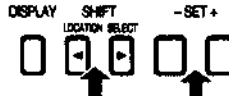
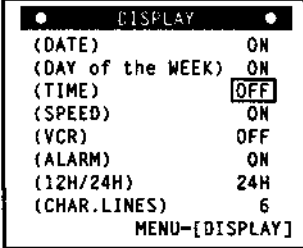
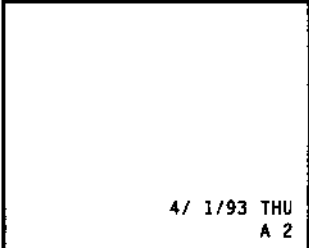

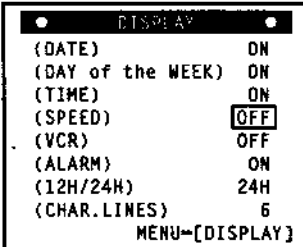
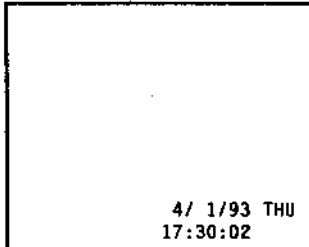


The display moves in the direction shown by the arrows. However, during the date-time display screen, pay attention to the following when setting the date and time display positions:  
When the display is set to an extreme position on the monitor screen as shown in the figure, synchronization may be disturbed depending on a TV you use. It can also lead to faulty operation such as flickering of colors.

For selection of on-screen display contents and setting VCR number display.  
 Before operation, set the MENU screen to DISPLAY screen (See page 11.).

**Note:**

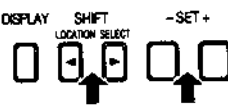
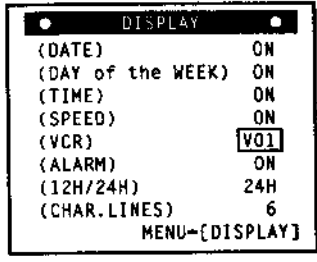
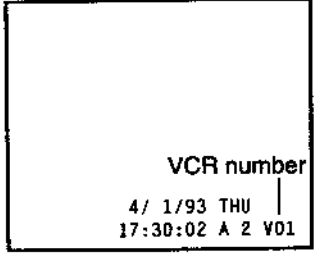

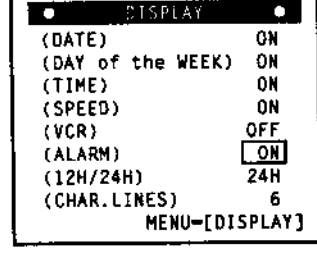
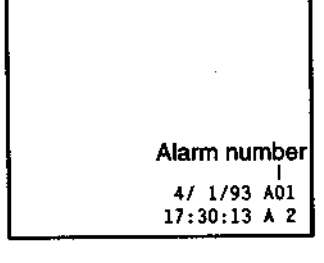

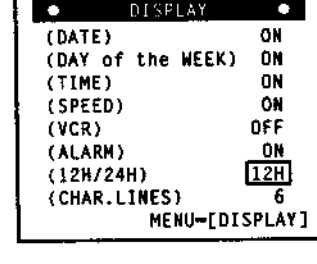
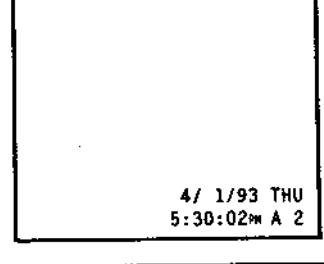
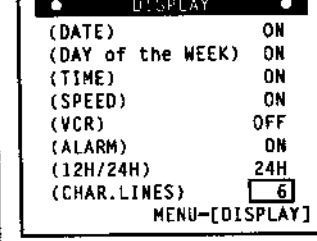
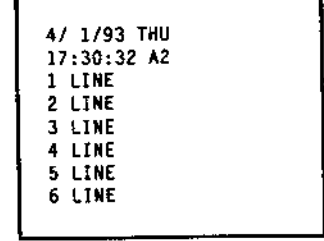
Press the **DISPLAY** button twice to return from the display screen to the monitor screen.

Operation	Display Screen	Monitor Screen
<p>Erasing the date display.</p> <p>Press the ◀ or ▶ <b>SHIFT</b> button to make <b>DATE</b> blink and press the + or - <b>SET</b> button to go to OFF.</p>  <p>Changes between OFF and ON each time the + or - <b>SET</b> button is pressed.</p>		
<p>Erasing the day of the week display.</p> <p>Press the ◀ or ▶ <b>SHIFT</b> button to make <b>DAY OF THE WEEK</b> blink and press the + or - <b>SET</b> button to go to OFF.</p>  <p>Changes between OFF and ON each time the <b>SET</b> button is pressed.</p>		
<p>Erasing the time display.</p> <p>Press the ◀ or ▶ <b>SHIFT</b> button to make <b>TIME</b> blink and press the + or - <b>SET</b> button to go to OFF.</p>  <p>Changes between OFF and ON each time the + or - <b>SET</b> button is pressed.</p>		
<p>Erasing the speed display.</p> <p>Press the ◀ or ▶ <b>SHIFT</b> button to make <b>SPEED</b> blink and press the + or - <b>SET</b> button to go to OFF.</p>  <p>Changes between OFF and ON each time the + or - <b>SET</b> button is pressed.</p>		

OPERATION

**Note:**

Press the **DISPLAY** button twice to return from the display screen to the monitor screen.

Operation	Display Screen	Monitor Screen
<p>Displaying the VCR number.</p> <p>Press the ◀ or ▶ <b>SHIFT</b> button to make VCR blink and press the + or - <b>SET</b> button to set the VCR number.</p> <p>Changes as shown below each time the <b>SET</b> button is pressed.</p> <p>OFF → V01 → V02 → V03 → V04 → V05 → V06 → V07 → V08 → OFF</p> 		
<p>Displaying the number of alarms.</p> <p>Press the ◀ or ▶ <b>SHIFT</b> button to make ALARM blink and press the + or - <b>SET</b> button to go to OFF.</p> <p>Changes between OFF and ON each time the + or - <b>SET</b> button is pressed. When an alarm is input, the day of the week display changes to the alarm number.</p> 		
<p>Displaying the hour display.</p> <p>Press the ◀ or ▶ <b>SHIFT</b> button to make (12H/24H) blink and press the + or - <b>SET</b> button to go to 12H.</p> <p>Changes between 12H and 24H each time the + or - <b>SET</b> button is pressed.</p> 		
<p>This function enables to indicate and record information from cash register or ATM using optional interface board.</p> <ol style="list-style-type: none"> <li>Press the ◀ or ▶ <b>SHIFT</b> button to make CHAR.LINES blink and the + or - <b>SET</b> button to go to "6".</li> <li>Press the + or - <b>SET</b> button to select the characters of line number. Each time pressing the + or - <b>SET</b> button, the display changes as follows:</li> </ol> <ul style="list-style-type: none"> <li>If you selected [DATE] ON : } 6 → 1 → 2 → 3 → 4 → 5</li> <li>If you selected [TIME] ON : }</li> <li>If you selected [DATE] OFF : } 6 → 7 → 8 → 1 → 2 → 3 → 4 → 5</li> <li>If you selected [TIME] OFF : }</li> </ul>		

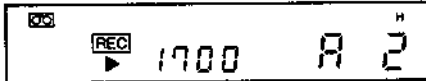


# COUNTER DISPLAY

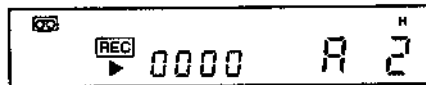
## Counter Memory

When the counter is set to "0000" at a location that you want to see again during recording and playback, the tape will stop in the vicinity of "0000" during rewind and fast forward.

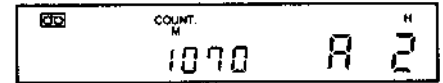
- 1** Set the display to the counter display.



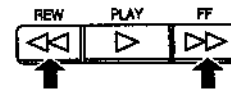
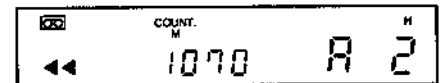
- 2** Press the **RESET** button at the location you want to see.



- 3** Press the **COUNT. MEMORY** button to make "COUNT.M" (Counter Memory) to light.



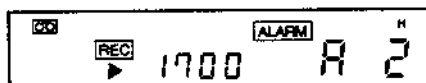
- 4** Make rewind or fast forward when recording or playback is finished.



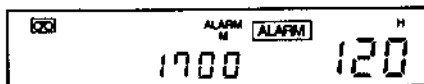
## Alarm Memory

When you want to view the location where alarm recording was performed.

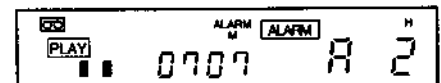
- 1** Press the **STOP** button.



- 2** Press the **COUNT. MEMORY** button twice to make **ALARM MEMORY** to light.



- 3** Make rewind or fast forward.



When the tape reaches the alarm recorded position, The VCR automatically enters the still picture mode.

- 4** Press the **PLAY** button.



### Note:

In order that the Alarm Memory function can operate normally, it is necessary that alarm recording takes place for at least 2 seconds in the A2-hour mode. Thus, when the recording for less than 15 seconds in the A12-hour mode or for less than 30 seconds in A24-hour mode is performed, the alarm memory function will not operate normally. Also, in order to carry out tape search at high speed, an interval of about 5 seconds is necessary during alarm recording. Otherwise the unit will skip that section during search.

PREPARATION

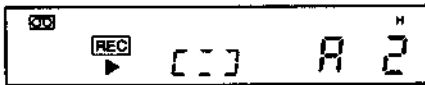
## Tape Remain

When the **TAPE REMAIN** button is depressed during recording or playback, the counter display changes to the remaining tape display. The remaining time is the approximate time to tape end when operating the unit in the A2-hour mode.



- The remaining time is the approximate remaining time.
- Displays the remaining tape time in the A2-hour mode.

During computation of the remaining time, the following display appears.



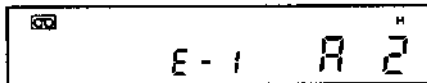
- When the unit has been used in the recording mode over a long period, it may take considerable time for computation. When operating at fast speed in the A2-hour mode, the computation is faster.

### Note:

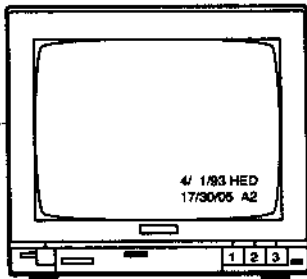
It is possible to compute the remaining time for T-120, T-90, T-60 and T-30 tape. The display will not be correct for other kinds of tape.

## Error Message

When an abnormality occurs during operation, the error code is displayed. At the same time, a signal is output to the buzzer output terminal.

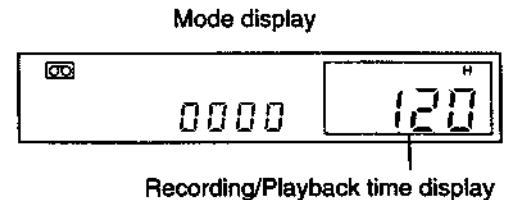
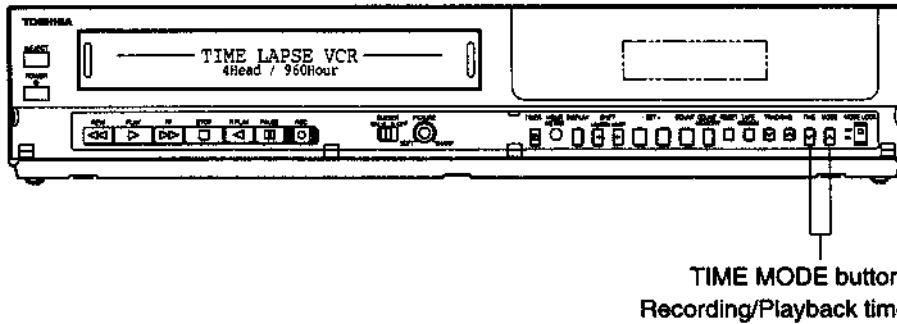


Code Number	Condition of Abnormality
E-1	Abnormality on reel rotation during tape running.
E-3	Abnormality on cylinder rotation during recording and playback.
E-4	Abnormality on tape loading mechanism.
E-5	Video tape is broken.
E-6	Video heads are clogged.
E-8	Dew condensation.



- When the error code "E-1" to "E-4" are displayed, consult with your dealer.
- When the error code "E-5" is displayed, the tape is broken. Replace with a new tape.
- Regarding the error code "E-6" Display  
When recording in time mode between 48 and 960 hours or in the One-shot mode, video head clog detection is automatically carried out once for every three minutes. When the video head clog is found, head cleaning is carried out for approximately 10 times. When cleaning is still not possible, "E-6" is displayed and the HED display blinks on the monitor although recording continues. In such a case, cleaning of the video heads is required.

- Before carrying out time lapse recording/playback, it is necessary to set the time mode.
- This equipment is designed for use with T-120 video tape as the standard. We therefore recommend use of T-120 video tapes.



- Consult the following chart to select a correct time for your purpose.

Mode display	Record Available Time (when using T-120)	Play Available Time (when using T-120)	Recording interval	Audio record	Tape running
A 2	2 hours	2 hours	1/60 seconds	Possible	Continuous
A 12	14 hours	14 hours	0.12 seconds	Possible	Continuous
A 24	26 hours	26 hours	0.21 seconds	Possible	Continuous
24	24 hours	24 hours	0.20 seconds	Impossible	Intermittent
48	48 hours	48 hours	0.40 seconds	Impossible	Intermittent
72	72 hours	72 hours	0.60 seconds	Impossible	Intermittent
120	120 hours	120 hours	1.0 seconds	Impossible	Intermittent
168	168 hours	168 hours	1.4 seconds	Impossible	Intermittent
240	240 hours	240 hours	2.0 seconds	Impossible	Intermittent
480	480 hours	480 hours	4.0 seconds	Impossible	Intermittent
720	720 hours	720 hours	6.0 seconds	Impossible	Intermittent
960	960 hours	960 hours	8.0 seconds	Impossible	Intermittent
L01 (2 field/ 1 min.)	3,600 hours		60 seconds	Impossible	Intermittent
L02 (2 field/ 2 min.)	7,200 hours		120 seconds	Impossible	Intermittent
L03 (2 field/ 3 min.)	10,800 hours		180 seconds	Impossible	Intermittent

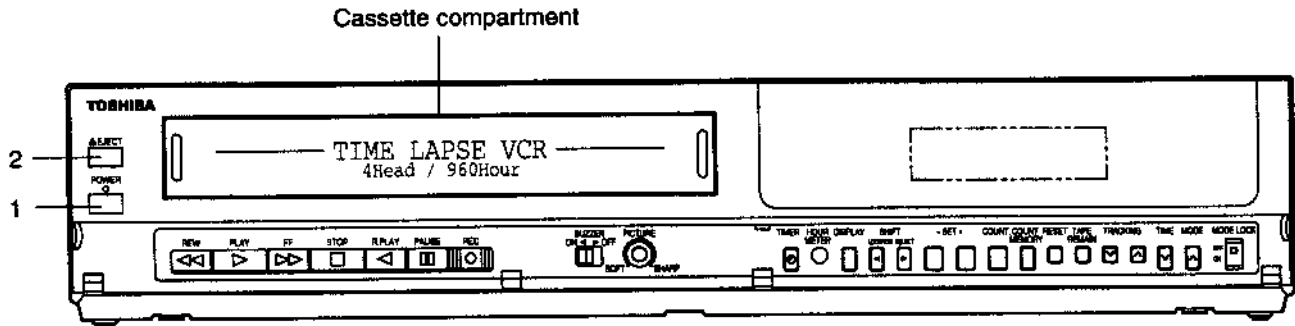
\*1: For One-shot recording, set to one of the following time intervals: L01, L02, L03.

- The possible recording time depends on the type of video tape used.
- Audio recording is possible in the A2, A12 and A24 hour modes.
- The A12, A24, 24, 48, 72, 120, 168, 240, 480, 720 and 960 hour modes as well as the One-shot recording mode are time lapse modes.

PREPARATION

# LOADING AND UNLOADING A VIDEO CASSETTE

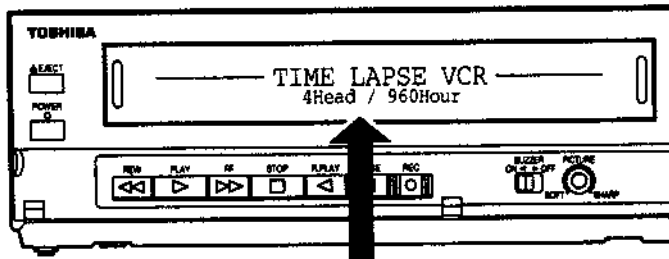
PREPARATION



## Loading a cassette

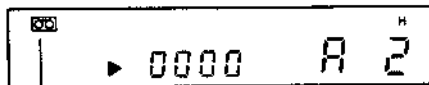
Insert a cassette in the Cassette Compartment.

- Power goes on automatically and the cassette indicator lights.



## Cassette Indicator

- Blinks when inserting or removing a cassette.
- Remains lighted when a cassette is inserted even if the power is turned OFF.



Cassette indicator

## Unloading a Cassette

- Turn the power ON.

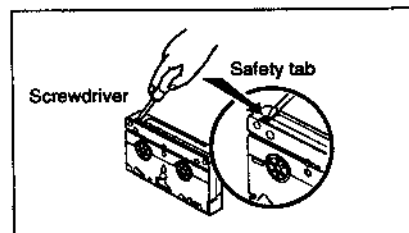


- Press the EJECT button.

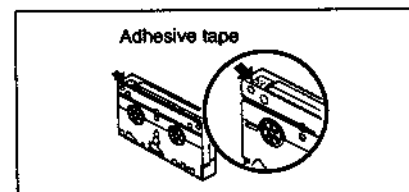


## Safety Tab

- A video cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording cannot be performed.



- If you wish to record on a cassette with the tab removed, use adhesive tape to cover the hole.



# RECORDING OPERATION

- 1 Turn on the power for this unit as well as associated devices of the surveillance system including the video camera and monitor TV.

- 2 Adjust the monitor TV so that the picture from the video camera is displayed properly.

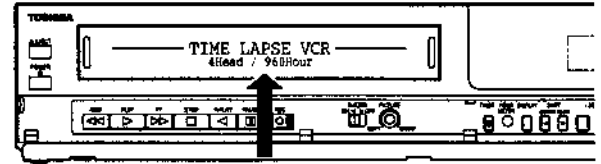


- 3 Check that the date time display on the monitor TV is correctly displayed.

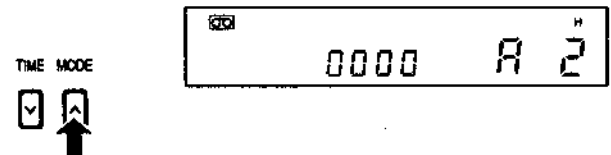


- 4 Set the various functions such as timer recording, alarm recording, restart recording, tape end, etc.

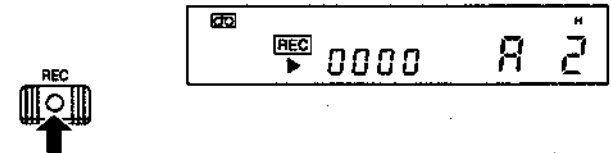
- 5 Insert a video cassette to this unit.
  - Check that the safety tab on the video cassette has not been removed.



- 6 Select the recording time mode.



- 7 Press the REC button.



## Notes:

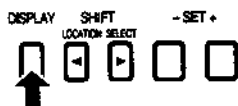
- When the **PAUSE** button is pressed during recording, the unit goes to the pause mode. To release, press either the **PAUSE** button again or the **REC** button. When the pause mode continues for 10 minutes the unit goes to the stop mode.
- Repeat recording, restart recording, alarm recording, etc. also operate during recording.
- When the unit is stopped during recording or the recording time is changed, the pictures may be disturbed at that location.
- In case of power failure restart recording, if a power failure should occur and it is within approximately 10 days in length, it is possible to resume recording in the same time mode after power failure is recovered.
- During repeat recording, pay attention to the following points.
  - Timer recording and alarm recording is not possible during automatic rewind.
  - The buzzer does not sound even at tape end.
  - When an operation button is pressed during automatic rewind, the repeat recording function does not operate. Reset to the recording mode.
- The button is not accepted during alarm recording or timer recording.
- When carrying out repeat recording or timer recording, be sure to carry out daily checks.

# RESTART RECORDING

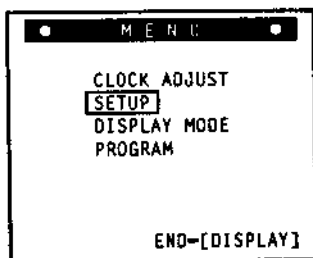
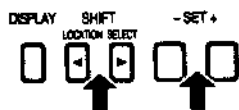
## Setting the Restart Recording

On the SETUP screen set RESTART REC to ON. If a power failure (10 days or less) occurs, the unit also returns to recording when the power is recovered.

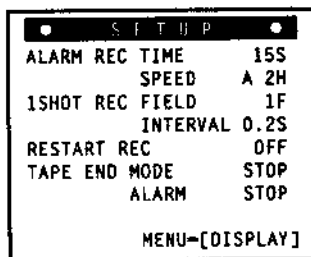
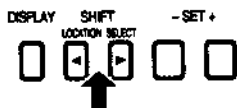
- 1** Press the **DISPLAY** button. The **MENU** screen appears on the monitor screen.



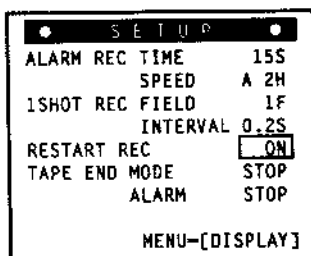
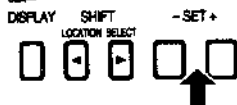
- 2** Press the **<** or **>** **SHIFT** button to make **SETUP** blink and press the **+** or **- SET** button.



- 3** Press the **<** or **>** **SHIFT** button to make **RESTART REC** blink.



- 4** Press the **+** or **- SET** button to go to **ON**.



### Note:

- When a power failure occurs during recording, the recording is started automatically after the power is recovered regardless of whether "RESTART REC" is ON or OFF.
- When the power is recovered after more than 10 days have passed, the tape remains at the position where it stopped when the power failure occurred.

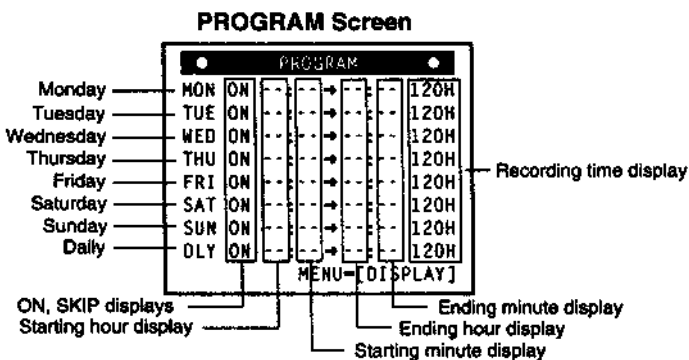
# TIMER RECORDING

There are two ways of timer recording.

One is daily recording at the same time and for the same length (daily timer). The other is weekly recording at a certain time and for a certain length on different days (weekly timer).

- With the weekly timer it is possible to create 1 program for each days of the week.
- When the weekly timer and daily timer are set to SKIP, recording will not be carried out even when a time is set.
- The contents of a timer setting are maintained in the event of a power failure if the power failure ends within 10 days.
- Before setting times, make sure that the present time is correct. (See page 12.)

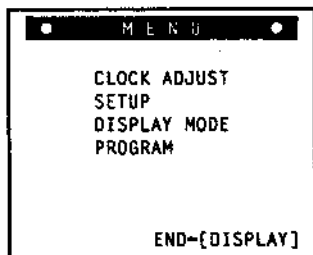
## Setting the Timer Programme



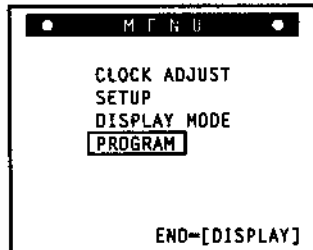
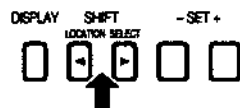
## Daily Timer Recording

For example, when you want to set for a total period of 480 hours for recording starting every day from 8:30 to 17:00;

**1** Press the **DISPLAY** button. The **MENU** screen appears on the monitor screen.



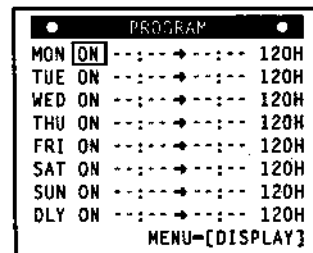
**2** Press the **◀** or **▶** **SHIFT** button to make **PROGRAM** blink.



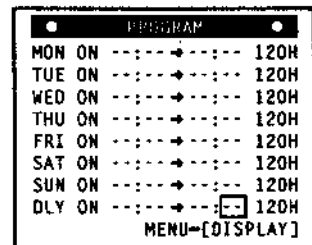
**3** Press the **+ or - SET** button.



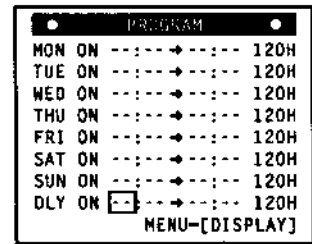
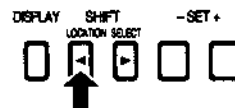
- Changes to Program Screen.
- ON of the MON line blinks.



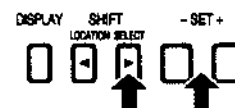
**4** Press the **◀ SHIFT** button. The ending minute blinks.



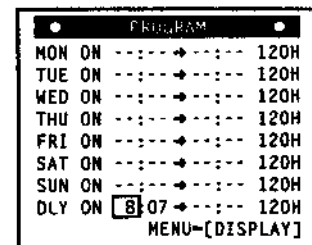
**5** Press the **◀ SHIFT** button to make the starting time blink.



**6** Press the **+ or - SET** button to set the starting time to 8 and press the **▶ SHIFT** button.

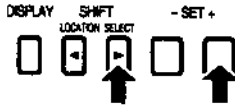


- The present time is displayed at first.



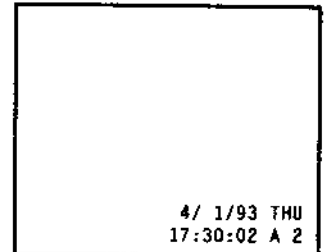
RECORDING OPERATION

**7** Press the + SET button to set the starting minute to 30 and press the ► SHIFT button.

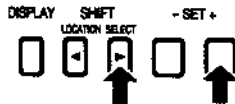


PROGRAM		
MON ON	----->	120H
TUE ON	----->	120H
WED ON	----->	120H
THU ON	----->	120H
FRI ON	----->	120H
SAT ON	----->	120H
SUN ON	----->	120H
DLY ON	8:30->	120H
MENU-[DISPLAY]		

**11** Press the DISPLAY button twice to erase the display.



**8** Press the + SET button to set the ending hour to 17 and press the ► SHIFT button.



■ The initial starting time is displayed.

PROGRAM		
MON ON	----->	120H
TUE ON	----->	120H
WED ON	----->	120H
THU ON	----->	120H
FRI ON	----->	120H
SAT ON	----->	120H
SUN ON	----->	120H
DLY ON	8:30->17:30	120H
MENU-[DISPLAY]		

**12** Press the TIMER button.



**9** Press the + SET button to set the ending minute to 00.



PROGRAM		
MON ON	----->	120H
TUE ON	----->	120H
WED ON	----->	120H
THU ON	----->	120H
FRI ON	----->	120H
SAT ON	----->	120H
SUN ON	----->	120H
DLY ON	8:30->17:00	120H
MENU-[DISPLAY]		

- The power goes off and the TIMER display lights in the VCR display.
- Recording starts at the time set.
- At the starting time, recording starts without the power going off, if the starting time set has been passed at that point.

To release the timer mode, press either the POWER button or the TIMER button.

**10** Press the ^ TIME MODE button to set to 480.



PROGRAM		
MON ON	----->	120H
TUE ON	----->	120H
WED ON	----->	120H
THU ON	----->	120H
FRI ON	----->	120H
SAT ON	----->	120H
SUN ON	----->	120H
DLY ON	8:30->17:00	480H
MENU-[DISPLAY]		

- Each time pressing the ^ TIME MODE button, the display changes as follows.  
120 → 168 → 240 → 480 → 720 → 960 → L01 → L02 → L03 → A2 → A6 → A12 → A24 → 24 → 48 → 72 → 120
- Each time pressing the v TIME MODE button, the display changes in the reverse direction.

**IF A POWER FAILURE SHOULD OCCUR**

- If a power failure occurs, the PW.FAIL display appears in the VCR display. To erase this display press one of the operations buttons.
- If the power failure is within 10 days in length, the data in the date/time timer will remain in the memory (in the condition that 20 hours continuous charging is performed in the normal temperature).

**Notes:**

- Setting of the recording time can be done anywhere.
- The timer will operate if there is a difference of at least 1 minute between the starting time and ending time.
- The accuracy of the time display will vary according to conditions for use and the environment. Carry out daily checks and set to the proper time.

During the 12 hour display, the display appears as follows.

PROGRAM		
MON ON	----->	120H
TUE ON	----->	120H
WED ON	----->	120H
THU ON	----->	120H
FRI ON	----->	120H
SAT ON	----->	120H
SUN ON	----->	120H
DLY ON	8:30AM->5:00PM	480H
MENU-[DISPLAY]		

RECORDING OPERATION



## Weekly Timer Recording

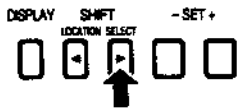
For example, when you want to set for a total of 720 hours for recording taking place from 8:00 to 19:00 on weekdays and from 9:00 to 17:00 on Saturday and Sunday.

- 1** Press the **DISPLAY** button.



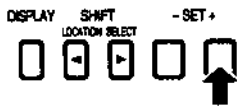
MENU	
CLOCK ADJUST	
SETUP	
DISPLAY MODE	
PROGRAM	
END=[DISPLAY]	

- 2** Press the **SHIFT** button to make **PROGRAM** blink.



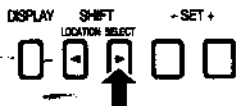
MENU	
CLOCK ADJUST	
SETUP	
DISPLAY MODE	
<b>PROGRAM</b>	
END=[DISPLAY]	

- 3** Press the **+ SET** button.



PROGRAM	
MON ON	---:--:-- 120H
TUE ON	---:--:-- 120H
WED ON	---:--:-- 120H
THU ON	---:--:-- 120H
FRI ON	---:--:-- 120H
SAT ON	---:--:-- 120H
SUN ON	---:--:-- 120H
DLY ON	8:30 → 17:00 480H
MENU=[DISPLAY]	

- 4** Press the **SHIFT** button to make the **MON** starting time blink.



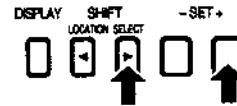
PROGRAM	
MON ON	<b>00</b> ---:--:-- 120H
TUE ON	---:--:-- 120H
WED ON	---:--:-- 120H
THU ON	---:--:-- 120H
FRI ON	---:--:-- 120H
SAT ON	---:--:-- 120H
SUN ON	---:--:-- 120H
DLY ON	8:30 → 17:00 480H
MENU=[DISPLAY]	

- 5** Press the **+ SET** button to set the starting hour to **8** and press the **SHIFT** button.



PROGRAM	
MON ON	<b>8</b> :15 → ---:-- 120H
TUE ON	---:--:-- 120H
WED ON	---:--:-- 120H
THU ON	---:--:-- 120H
FRI ON	---:--:-- 120H
SAT ON	---:--:-- 120H
SUN ON	---:--:-- 120H
DLY ON	8:30 → 17:00 480H
MENU=[DISPLAY]	

- 6** Press the **+ SET** button to set the starting minute to **00** and press the **SHIFT** button.



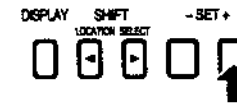
PROGRAM	
MON ON	8:00 → ---:-- 120H
TUE ON	---:--:-- 120H
WED ON	---:--:-- 120H
THU ON	---:--:-- 120H
FRI ON	---:--:-- 120H
SAT ON	---:--:-- 120H
SUN ON	---:--:-- 120H
DLY ON	8:30 → 17:00 480H
MENU=[DISPLAY]	

- 7** Press the **+ SET** button to set the ending hour to **19** and press the **SHIFT** button.



PROGRAM	
MON ON	8:00 → <b>19</b> :00 120H
TUE ON	---:--:-- 120H
WED ON	---:--:-- 120H
THU ON	---:--:-- 120H
FRI ON	---:--:-- 120H
SAT ON	---:--:-- 120H
SUN ON	---:--:-- 120H
DLY ON	8:30 → 17:00 480H
MENU=[DISPLAY]	

- 8** Press the **+ SET** button to set the ending minute to **00**.



PROGRAM	
MON ON	8:00 → 19:00 120H
TUE ON	---:--:-- 120H
WED ON	---:--:-- 120H
THU ON	---:--:-- 120H
FRI ON	---:--:-- 120H
SAT ON	---:--:-- 120H
SUN ON	---:--:-- 120H
DLY ON	8:30 → 17:00 480H
MENU=[DISPLAY]	

**9** Press the **▲ TIME MODE** button to set to 720.

TIME MODE



The ending minute of the MON line blinks.

PROGRAM		
MON ON	8:00 → 19:00	720H
TUE ON	---:---:---:---	120H
WED ON	---:---:---:---	120H
THU ON	---:---:---:---	120H
FRI ON	---:---:---:---	120H
SAT ON	---:---:---:---	120H
SUN ON	---:---:---:---	120H
DLY ON	8:30 → 17:00	480H
MENU-[DISPLAY]		

**12** Press the **▶ SHIFT** button to make the On of DLY blink. Press the **+** SET button to set to SKIP.



PROGRAM		
MON ON	8:00 → 19:00	720H
TUE ON	8:00 → 19:00	720H
WED ON	8:00 → 19:00	720H
THU ON	8:00 → 19:00	720H
FRI ON	8:00 → 19:00	720H
SAT ON	9:00 → 17:00	720H
SUN ON	9:00 → 17:00	720H
DLY ON	8:30 → 17:00	480H
MENU-[DISPLAY]		

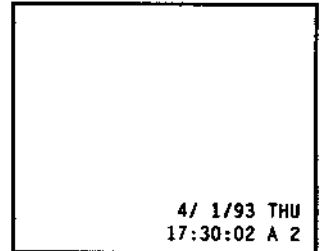
**10** Continue to press the **▶ SHIFT** button to make the TUE starting time blink. Repeat steps 5 to 9.

DISPLAY SHIFT LOCATION SELECT -SET+



PROGRAM		
MON ON	8:00 → 19:00	720H
TUE ON	□:---:---:---	120H
WED ON	---:---:---:---	120H
THU ON	---:---:---:---	120H
FRI ON	---:---:---:---	120H
SAT ON	---:---:---:---	120H
SUN ON	---:---:---:---	120H
DLY ON	8:30 → 17:00	480H
MENU-[DISPLAY]		

**13** Press the **DISPLAY** button twice.



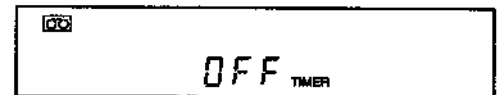
**11** Set to WED, THU, FRI, SAT and SUN following the steps 4 to 10.

DISPLAY SHIFT LOCATION SELECT -SET+



PROGRAM		
MON ON	8:00 → 19:00	720H
TUE ON	8:00 → 19:00	720H
WED ON	8:00 → 19:00	720H
THU ON	8:00 → 19:00	720H
FRI ON	8:00 → 19:00	720H
SAT ON	9:00 → 17:00	720H
SUN ON	9:00 → 17:00	720H
DLY ON	8:30 → 17:00	480H
MENU-[DISPLAY]		

**14** Press the **TIMER** button.

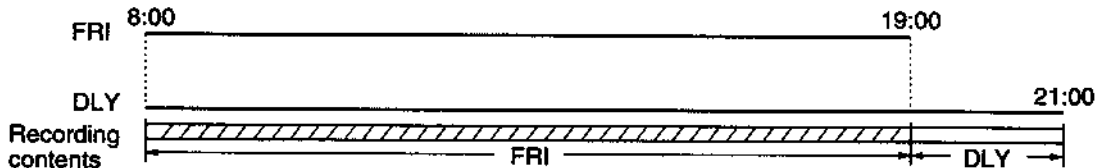


RECORDING OPERATION

### Overlapping Programs

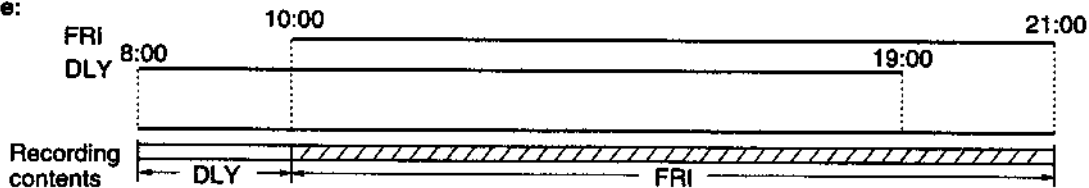
- When the setting times 1 for the day of the week and the daily times overlap, recording will be made as shown below.

Example:

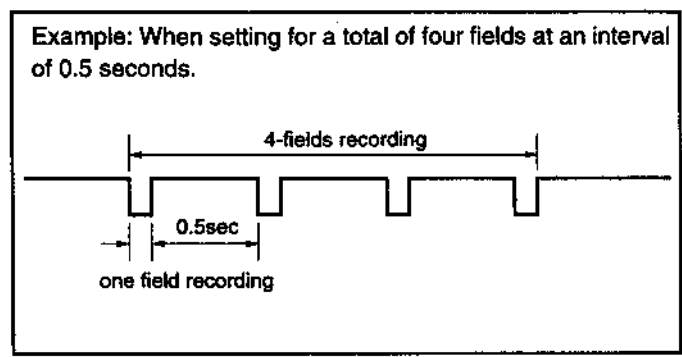
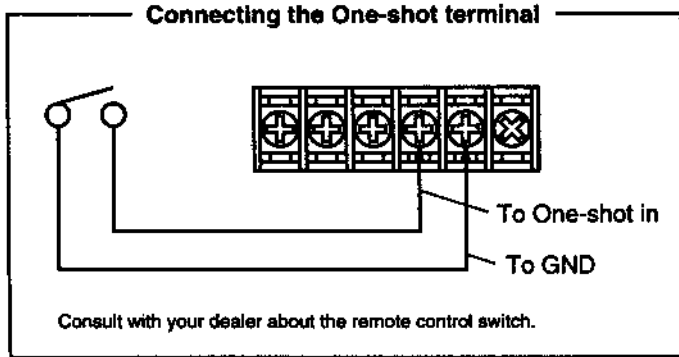


- If, as shown below, the timer recording button is pressed after 10:00, FRI is recorded and DLY is not implemented. (The order of priority for recordings in case of overlapping is FRI, DLY).

Example:

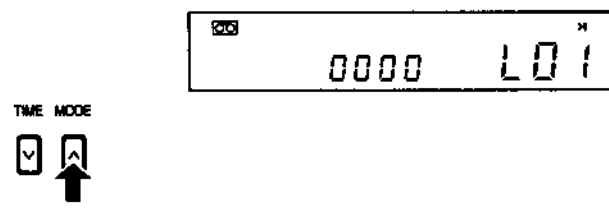


It is possible with this unit to carry out One-shot recording to record only when there is a trigger input from outside or for use as a data file. If a trigger is input to the One-shot input on the back, there will be recording for the field numbers set at the time interval set.

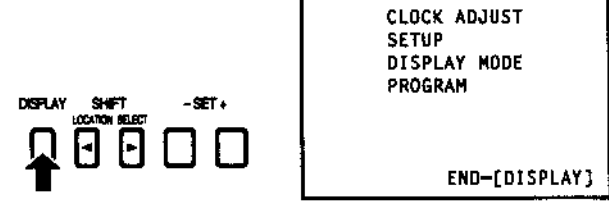


**Operation of One-shot Recording**

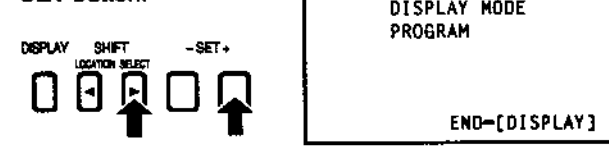
**1** Press the **▲ TIME MODE** button to select L01, L02 or L03.



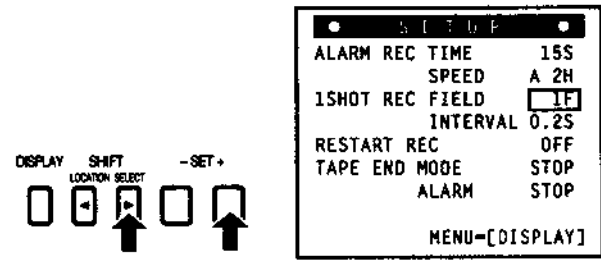
**2** Press the **DISPLAY** button.



**3** Press the **▶ SHIFT** button to make **SETUP** blink and press the **+ SET** button.



**4** Press the **▶ SHIFT** button to make 1 SHOT REC FIELD blink and press the **+ SET** button to set the number of recording fields.



- Each time pressing the **+ SET** button the display changes as follows.  
1F → 2F → 4F → 8F → 16F → 32F → MANUAL
- Each time pressing the **- SET** button, the display changes in the reverse direction.

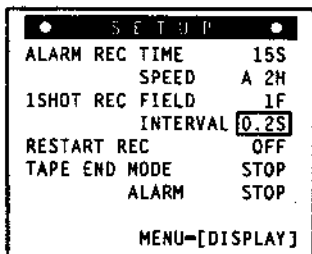
Display	Recording fields
1F	1 field
2F	2 fields
4F	4 fields
8F	8 fields
16F	16fields
32F	32 fields
MANUAL	Accepting the one-shot input.

**Note:**

- Because the head is constantly tracing the same location, it can cause damage to the head and tape. For this reason, if there is no One-shot input when the time mode is set to L01, L02 or L03 the unit automatically records 2 fields every 1, 2 or 3 minutes to protect the tape and heads. Choose the time mode suited to your particular purpose.

OPERATION

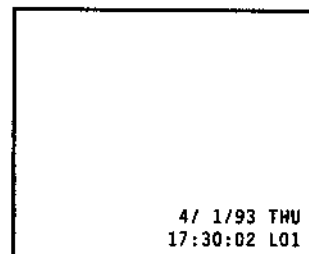
- 5** Press the ► **SHIFT** button to make **INTERVAL** blink. Press the + **SET** button to set the time interval between the individual recording fields.



- Each time pressing the + **SET** button, the display changes as follows.  
0.2s → 0.5s → 1.0s → 2.0s
- Each time pressing the - **SET** button, the display changes in the reverse order.

Display	Time interval
0.2s	1 field per 0.2 seconds
0.5s	1 field per 0.5 seconds
1.0s	1 field per 1.0 seconds
2.0s	1 field per 2.0 seconds

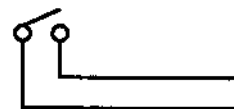
- 6** Press the **DISPLAY** button twice to erase the display.



- 7** Press the **REC** button.



- 8** Input from the remote control switch.



Remote control switch

### To release the One-shot Recording mode

Press the ▼ or ▲ **TIME MODE** button to change the time display on the VCR display to a display other than L01, L02 and L03.

**Note:**

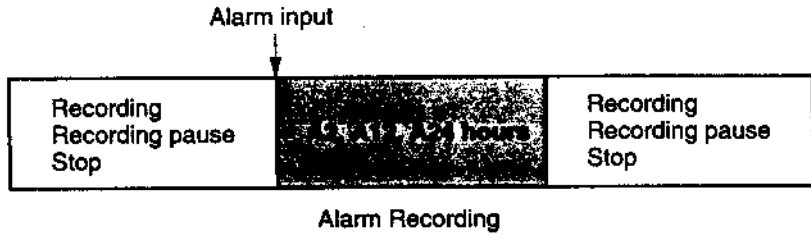
- One-shot input is not accepted during recording pause.

# ALARM RECORDING

If an abnormality occurs during a long period of recording, the alarm function operates.

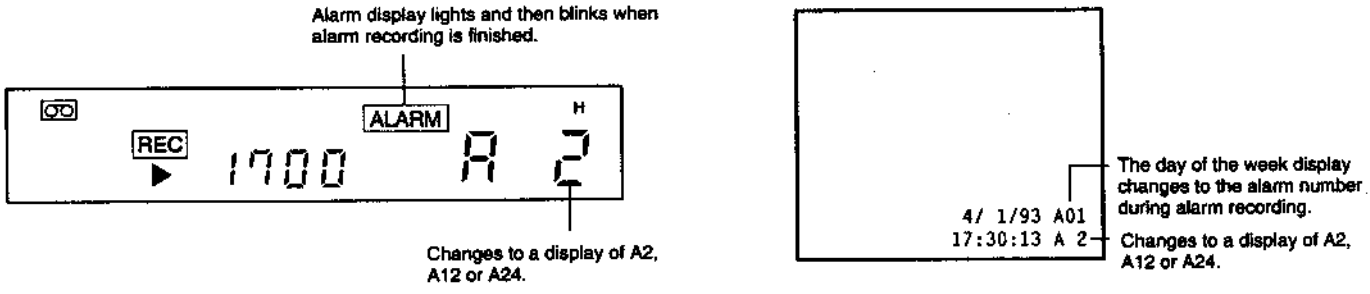
## Operation at Alarm Input

When there is an alarm input during recording, recording pause or stop, the unit changes to the set time mode (A2, A12, A24 hours) and carries out detailed recording of the abnormality during the set time period.



## Warning at Alarm Recording

When an alarm signal is input, the buzzer sounds and the alarm display on the VCR display lights.

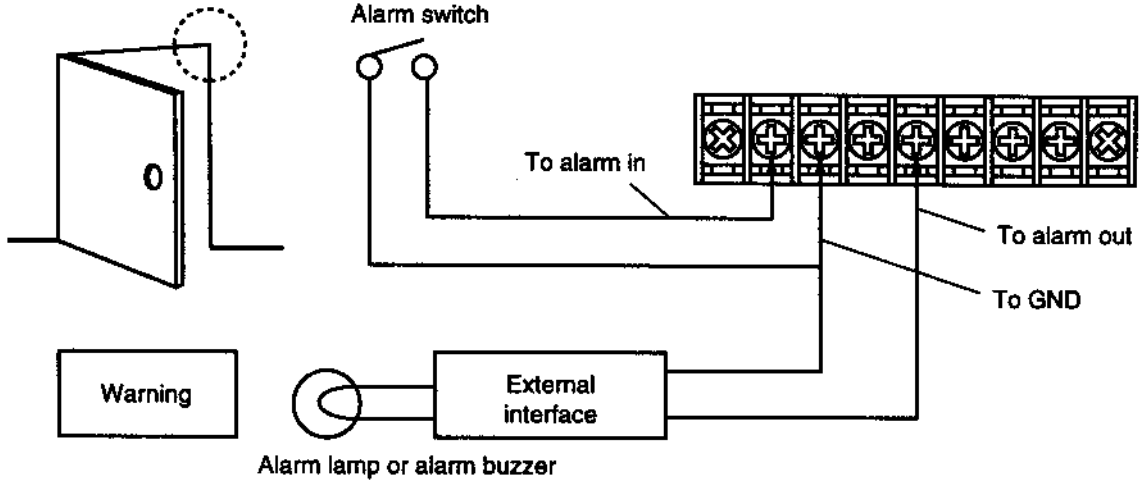


- Turn off the BUZZER switch to stop the buzzer.
- To make the alarm display stop blinking, press the COUNT. button to change the counter display to the alarm counter and then press the RESET button.

RECORDING OPERATION

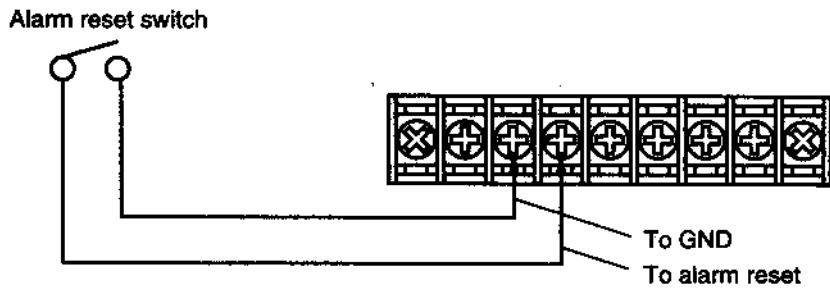
## Connecting the Alarm Terminals

### ■ Connecting the ALARM IN/OUT terminals



- When the alarm switch is ON, an alarm recording starts. It is possible to confirm the warning from outside by connecting a lamp or a buzzer to the alarm output.

### ■ Connecting alarm reset input



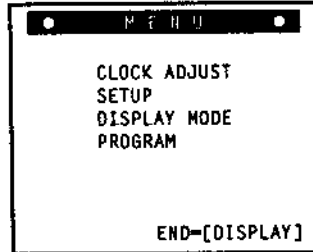
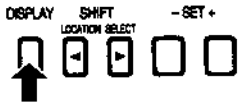
- When the alarm switch is ON, the alarm recording starts. However, when the alarm reset switch is turned ON after starting, the alarm recording is released and the unit returns to the original condition of time-lapse recording.

### Note:

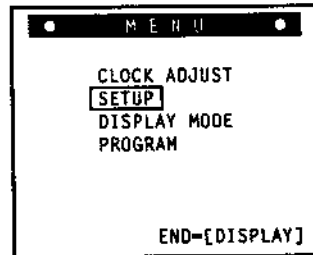
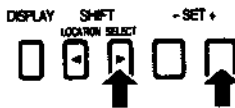
- When simultaneously connecting alarm input and alarm reset input, be sure to carefully check the voltage levels of them.

## Setting the Alarm Recording

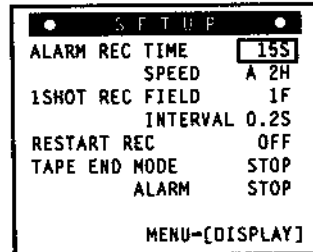
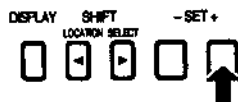
- 1** Press the **DISPLAY** button.



- 2** Press the **▶ SHIFT** button to make **SETUP** blink and press the **+ SET** button.



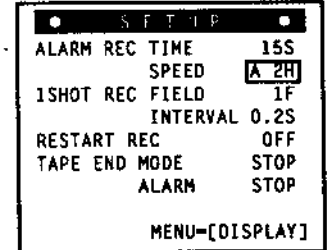
- 3** Press the **+ SET** button to set the alarm recording time.



- Pressing the **+ SET** button changes the display as follows.  
15S → 30S → 1M00S → 1M30S → 2M00S → 2M30S → 3M00S → 6M00S → CONT. → MANUAL → 5S → 15S
- Each time pressing the **- SET** button changes the display in the reverse direction.

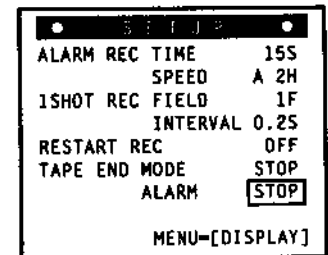
Display	Recording time
5S	5 seconds recording
15S	15 seconds recording
30S	30 seconds recording
1M00S	1 minute recording
1M30S	1 minute and 30 seconds recording
2M00S	2 hours recoding
2M30S	2 minutes and 30 seconds recording
3M00S	3 minutes recording
6M00S	6 minutes recording
CONT.	Recording to tape end
MANUAL	Recording during alarm input

- 4** Press the **▶ SHIFT** button to make **SPEED** blink and press the **+ SET** button to set the recording time mode.



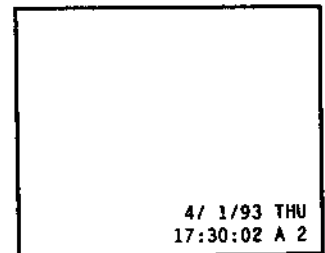
- Each time pressing the **+ SET** button, the display changes as follows.  
A2H → A12H → A24H → A2H
- Each time pressing the **- SET** button, the display changes in the reverse order.

- 5** Press the **▶ SHIFT** button to make **TAPE END ALARM** blink and press the **+ SET** button to set operation after detection of tape end.



- Each time pressing the **+ SET** button the display changes as follows.  
STOP → CONT.
- STOP ... Stops at tape end when alarm recording is set.
- CONT ... Performs an operation when tape end is detected.

- 6** Press the **DISPLAY** button twice to erase the display.

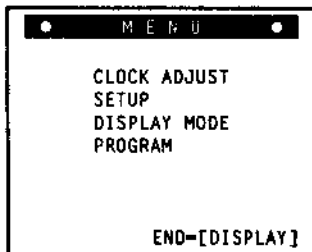
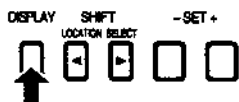


# SETTING OF OPERATIONAL MODE

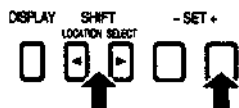
Operations that will be made after tape reaches its end can be selected as follows.

## How to Set

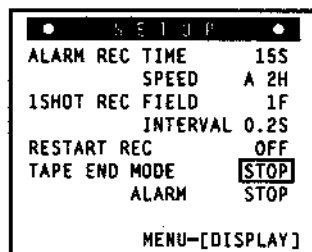
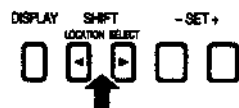
**1** Press the **DISPLAY** button.



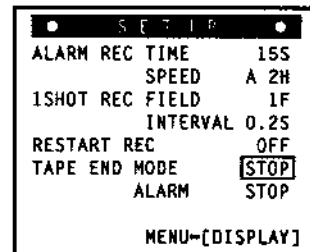
**2** Press the **◀** or **▶** **SHIFT** button to make **SETUP** blink and press the **+ SET** button.



**3** Press the **◀** or **▶** **SHIFT** button to make **TAPE END MODE** blink.



**4** Press the **+ or - SET** button to set the operation after detection of tape end.



- Each time pressing the **+ SET** button, the display changes as follows:  
**STOP** → (REW → STOP) → (REW → REC)
- Each time pressing the **- SET** button, the display changes in the reverse order.

Display	Operation after detection of tape end
STOP	Stops at tape end.
REW → STOP	Rewinds to beginning of tape and stops.
REW → REC	Set to carry out repeat recording. Rewinds to beginning of tape and records.

### Note:

- The buzzer, screen display and counter displays operate as follows depending on the setting for operations after detection of the tape end.

Setting contents	Buzzer	Screen display	Counter display
STOP	Buzzer sounds at tape end	TAPE END blinks	Counter display blinks
REW → STOP	Buzzer sounds at tape end	TAPE END blinks	Counter display blinks
REW → REC			

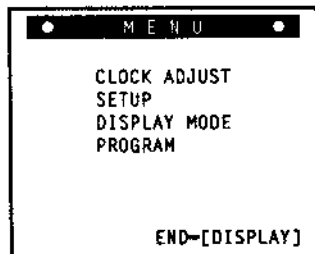


# AUTO REWIND AFTER RECORDING

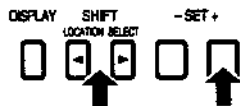
The auto rewind function operates at tape end in the recording. This is helpful to keep the tape recorded.

## How to Set

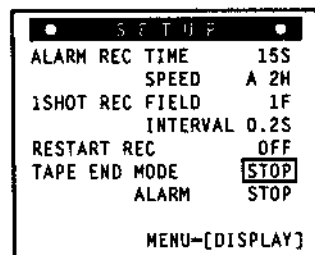
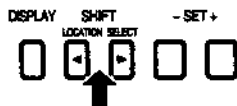
- 1** Press the **DISPLAY** button.



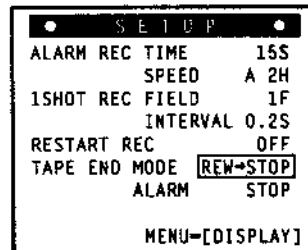
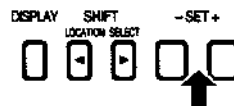
- 2** Press the **<** or **>** **SHIFT** button to make **SETUP** blink and press the **+ SET** button.



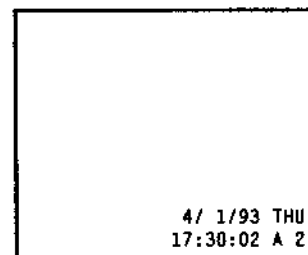
- 3** Press the **<** or **>** **SHIFT** button to make **TAPE END MODE** blink.



- 4** Press the **+ or - SET** button to select **REW** → **STOP**.



- 5** Press the **DISPLAY** button twice to erase the display.



- When tape end is detected during recording, the tape automatically rewinds and stops at beginning of the tape.

### Note:

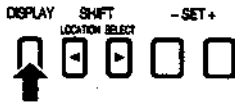
- Alarm recording does not operate during auto-rewind.

# REPEAT RECORDING

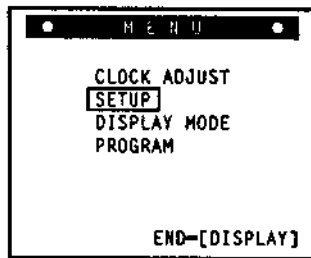
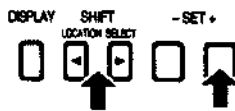
When the tape end is detected, the repeat function operates. The unit automatically rewinds the tape and repeats recording.

## How to Set

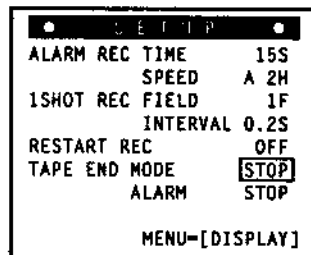
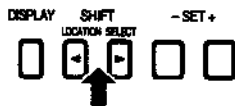
**1** Press the **DISPLAY** button.



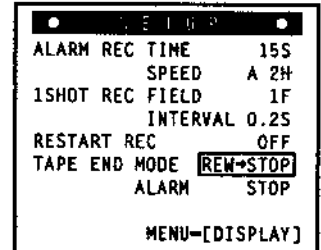
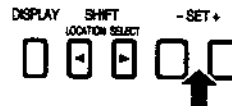
**2** Press the **◀** or **▶** **SHIFT** button to make **SETUP** blink and press the **+ SET** button.



**3** Press the **◀** or **▶** **SHIFT** button to make **TAPE END MODE** blink.

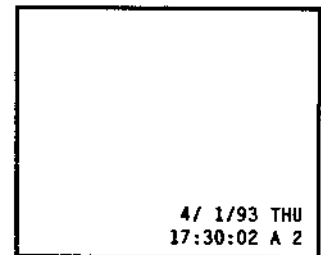


**4** Press the **+ or - SET** button to select **REW → REC**.



- Now the Repeat Recording Setting is completed.

**5** Press the **DISPLAY** button twice to erase the display.



- When tape end is detected during recording, the unit automatically rewinds the tape and goes to recording state at beginning of the tape.

### Notes:

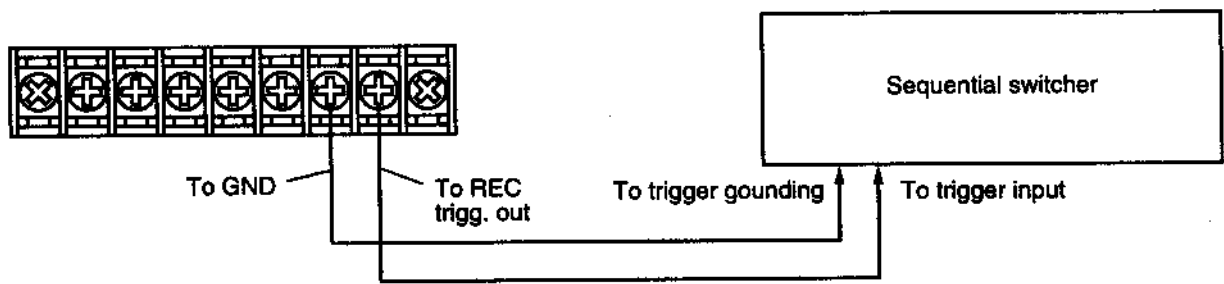
- When carrying out repeat recording, be sure to carry out daily checks.
- Alarm recording does not operate during auto-rewind.

# OPERATING WITH THE SEQUENTIAL SWITCHER

An external sequential switcher can be used with this unit for recording.

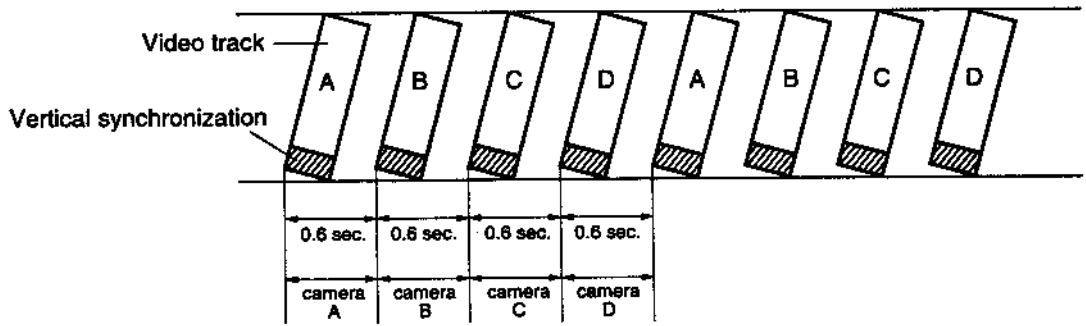
## Connection with the Sequential Switcher

For detailed operations and connections of the switcher consult the Instruction Manual of the sequential switcher.



## Timing for Camera Switching

When using the sequential switcher for 4 channels (and recording for 72 hours)



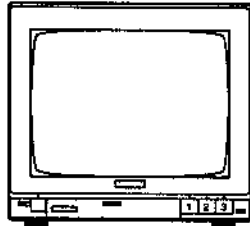
- Each time a video track is recorded, the camera is automatically switched by the position of the vertical synchronization signal.
- The camera switching time differs according to the time mode.

RECORDING OPERATION

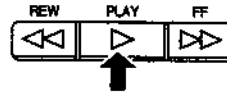
# PLAYBACK OPERATION

## PLAYBACK

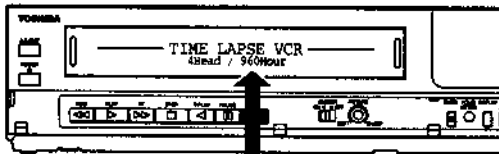
- 1** Turn the power ON for the monitor TV.



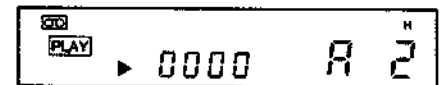
- 3** Press the **PLAY** button.



- 2** Insert a tape which has been recorded on.



- 4** Select the playback time mode.



### Tracking Adjustment

Use the  $\downarrow$ ,  $\uparrow$  **TRACKING** button to adjust when noise appears on the playback screen.



- Press either  $\downarrow$  or  $\uparrow$  **TRACKING** button so that a clearer picture is obtained.
- When returning the tracking to a standard adjustment value, press  $\uparrow$  and  $\downarrow$  buttons simultaneously.

### Notes:

- When restart recording is ON and a power failure occurs or the power cord has been removed and replaced, this unit will automatically go to the recording mode.
- When the **PAUSE** button is pressed during playback, the unit will carry out still playback. To release, press the **PAUSE** or **PLAY** button again. When still screen playback continues for more than 10 minutes the unit goes to playback mode.
- Reverse playback is released after 1 minute and the unit returns to normal playback.
- The time mode cannot be changed during reverse playback (only in A2-hour).
- When playing back a tape that has been recorded in a time-lapse mode (A12-960 hours), pay attention to the following points.
  - There will be some horizontal picture unstable, but this is not wrong with the unit.
  - The upper section of the picture on the monitor screen may be distorted. This is not an abnormality.
- When playing back tapes recorded in the various time modes, the picture may wobble somewhat depending on the time mode.

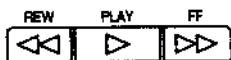
Recording time mode	Time mode for playback
A2 hours, A12-960-hours	A2 hours, A12-960-hours

- The vertical picture unstable occurs during playback in the A12- and A24-hour modes. This is not an abnormality.
- When returning to normal playback after picture search, the picture may wobble.

The following operations are carried out during playback.

### Picture Search

Possible to carry out fast forward and rewind while viewing picture and thus quickly locate the section you wish to view (played back at 5 times the speed in the 2-hour mode). Press the **REW** or **FF** button during playback.



Press the **PLAY** button to return to playback.

### Slow Playback

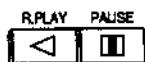
Used for creating a clear playback in the time-lapse mode of a recorded tape. Press the **TIME MODE** button during playback to set to one of the times (A12-960).



To return to normal playback, press the button to set to A2 hours.

### Reverse Playback

Used to carry out reverse playback of tapes recorded in the time-lapse mode. Press the **R.PLAY** button during playback.



To return to playback, press the **PLAY** button.

- When reverse playback continues for one minute, the unit automatically returns to playback.

### Notes:

- If the screen waves up and down during still playback.
- Press the **TRACKING** button in a still playback and adjust to a position where the screen waving stops.



### Still Playback

Used to take a photograph, for example, of a particular scene. Press the **PAUSE** button during playback.



To return to playback, press either the **PAUSE** button or the **PLAY** button.

- If still playback continues for ten minutes, the unit automatically returns to playback.

### Field Advance Playback

Used when you want to analyze a scene in more details during playback. Press the **FF** button during still playback.



- Each time pressing the button, one field will be forwarded.
- To return to playback, press either the **PAUSE** button or the **PLAY** button.

### Reverse Field Advance Playback

Used when you want to analyze a scene in more details during playback. Press the **REW** button during still playback.



- Each time pressing the button, one field is fed in reverse direction.
- The field advance is allowed up to 255 fields.

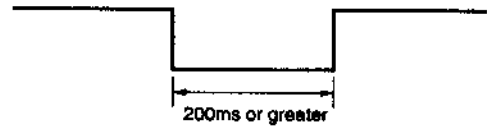
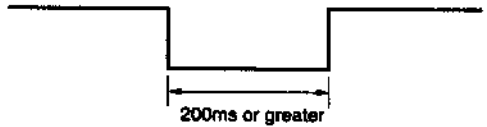

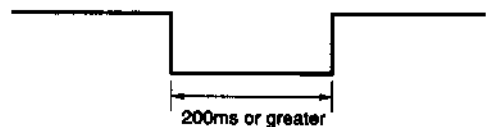
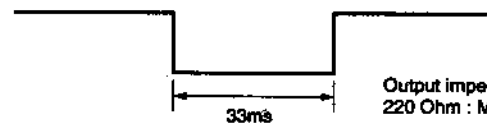
To return to playback, press either the **PAUSE** button or the **PLAY** button.

If noise occurs during slow playback or still playback.

- Set the slow playback mode and press the **TRACKING** button to adjust the tracking. There may still be some residue of noise even after tracking adjustment.

# NOTICE

## RECOMMENDED WIRING DIAGRAM

Input/Output Terminal	Signal level	Additional remarks
ALARM IN	 <p style="text-align: center;">200ms or greater</p>	Ground input 0V – 0.5V
ALARM RESET	 <p style="text-align: center;">200ms or greater</p>	Ground input 0V – 0.5V
ALARM OUT	 <p style="text-align: right;">5V</p> <p style="text-align: right;">Output impedance 220 Ohm : MAX 10mA</p>	High output (alarm recording)
ONE SHOT IN	 <p style="text-align: center;">200ms or greater</p>	Ground input
REC TRIGG. OUT	 <p style="text-align: center;">33ms</p> <p style="text-align: right;">5V</p> <p style="text-align: right;">Output impedance 220 Ohm : MAX 10mA</p>	(During time-lapses and One shot recording) 2-hour mode, alarm recording (2H0: 0V)

This unit has been designed to stand the use over long periods. Nevertheless, we recommend you to carry out regular daily inspection to insure problem-free use.

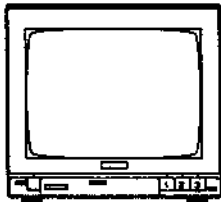
**Note:**

It is particularly important to carry out daily checks when using the unit for repeat recording.

**Order of Daily Checks**

**1** Turn the power ON for this unit and for the connected devices in the surveillance system including the video camera and monitor TV.

**2** Does the correct picture appear in the monitor TV?



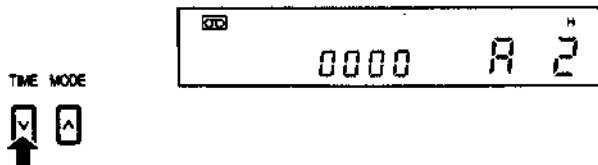
**3** Is the date-time display correct on the monitor TV?



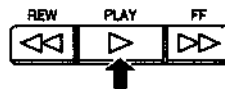
**4** Rewind the tape several digits on the section you recorded the previous day.



**5** Press the  $\nabla$  or  $\wedge$  TIME MODE button to go to the A2-hour mode.



**6** Press the PLAY button.



**7** Is the playback picture normal?  
Is there anything abnormal about the recorded date and time?

**8** Press the REC button.



**9** Check the playback picture that was recorded in the 2-hour mode.

**10** After checking these matters change to the mode you want to set to.

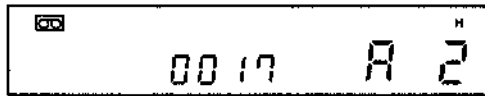
## Steps to Take after Daily Checks

If an abnormality is found, turn the power switch to OFF and remove the power plug from the household AC outlet. Then consult with your dealer.

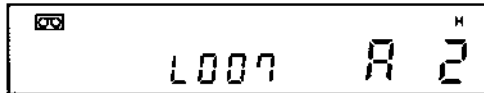
## A Request for Periodic Checks

- This unit includes a time gauge to display the total usage time. When the **HOUR METER** button is pressed the total usage time is displayed for 5 seconds. After this, the time since the last maintenance is displayed for 5 seconds. Periodically make sure the usage time.

HOUR  
METER  
○



Total usage time (Example: 170 hours)



Time since the last maintenance (Example: 70 hours)

- Regularly clean and replace parts in this unit using the displayed usage times as a guide. For further details, consult your dealer.

## Tape Usage Frequency

Replace tapes using the chart below as a guide.

Recording time mode	Usage frequency
2 hours	100
12 hours	40
24 hours	20
48 hours	10
72 hours	7
120 hours	4
168 hours	3
240 hours	2
480 hours	1
720 hours	1
960 hours	1
L01 - L03	1

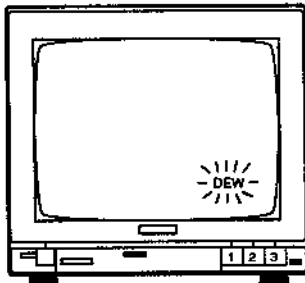
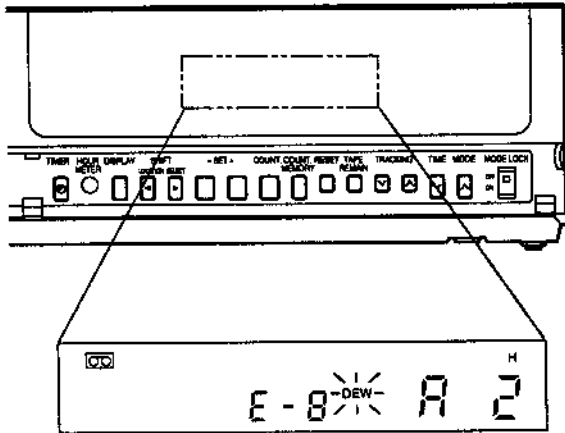
NOTICE



## CAUTIONS DURING USE

### Dew Condensation

This unit includes a safety function to prevent operation when dew condensation occurs and thus protects against damage to tapes, the video heads and other parts.



#### If condensation occurs

The dew display blinks on the VCR display and a buzzer sounds continually (when BUZZER switch is ON).

\* To turn the buzzer off, turn the BUZZER switch to OFF.



Remove the cassette tape.



With the **POWER** switch ON, wait until the Dew display stops blinking.

This may take several hours depending on surrounding conditions.

#### ■ What is condensation?

If you pour cold beer in a glass, water droplets gather on the surface of the glass. This phenomenon is known as condensation.

#### ■ When condensation occurs.

If you continue to use the video device in this state, the tape will cling to the internal parts of the video, causing damage to the tape and video heads.

#### ■ Times when condensation occurs.

- When the video device has been suddenly transferred from a cold place to a warm place.
- When using the device in a room where the heating has just been turned on or exposed directly to the cold air from an air conditioner.  
When the device is suddenly transported from an air-conditioned room or vehicle to a place with high temperature and humidity in summer.
- When used in a room with high humidity where steam is rising, for example.

#### ■ A heater to prevent condensation will not immediately operate even though the plug is inserted to the AC outlet.

The heater to prevent condensation will not cause the water to evaporate even though the plug is inserted to the AC outlet. When the unit is transferred from a cold place to a warm place it is easy for condensation to develop in the video unit. In such cases, insert the plug to the AC outlet and wait 1-2 hours before using the unit.

# BEFORE CALLING SERVICE PERSONNEL

If you suspect a breakdown, check the following points before calling your serviceman for follow-up service.

Installation	
Power does not go ON.	<ul style="list-style-type: none"> <li>■ Is the power plug securely inserted to an AC outlet?</li> </ul>
There is no camera picture.	<ul style="list-style-type: none"> <li>■ Is the unit properly connected to the TV, video camera and other devices?</li> </ul>
The camera picture is indistinct.	<ul style="list-style-type: none"> <li>■ Is there any problem with the connection of the connecting cords?</li> <li>■ Is the camera properly focused?</li> </ul>
Function/Operation	
The unit does not operate even when the control buttons are pressed.	<ul style="list-style-type: none"> <li>■ Has a video tape been inserted?</li> <li>■ Is the <b>MODE LOCK</b> switch OFF?</li> <li>■ Is the Dew lamp blinking?</li> </ul> <p>The unit is not operating because the safety functions are operating. Wait until the blinking stops.</p>
The clock does not run after restoration of power following a power failure.	<ul style="list-style-type: none"> <li>■ Has the unit's power plug been removed from the AC outlet for a long period? Insert the power plug in the AC outlet and carry out continuous charging for 20 hours or longer.</li> </ul>
The buzzer does not sound.	<ul style="list-style-type: none"> <li>■ Is the <b>BUZZER</b> switch set to OFF? If off, the buzzer does not work.</li> </ul>
Recording	
Playback, fast forward and rewind are possible but recording is not possible.	<ul style="list-style-type: none"> <li>■ Is the tab on the video cassette broken off?</li> <li>■ Is the video tape at tape end?</li> </ul>
Recording has stopped.	<ul style="list-style-type: none"> <li>■ Have more than 10 minutes passed since pressing the <b>PAUSE</b> button during recording?</li> </ul>
Nothing is being recorded.	<ul style="list-style-type: none"> <li>■ Have you been carrying out regular daily checks?</li> <li>■ Is E-6 lit?</li> </ul> <p>If this phenomenon occurs often, something may be broken. Consult with your dealer.</p>
Not possible to record after restoring power following a power failure.	<ul style="list-style-type: none"> <li>■ Is restart recording OFF?</li> <li>■ Has the power failure lasted for longer than 10 days?</li> </ul>
Repeat recording is not possible.	<ul style="list-style-type: none"> <li>■ Is TAPE END MODE on REW-REC?</li> <li>■ Has one of the operations buttons been pressed during automatic rewind?</li> <li>■ Is TAPE END ALARM on CONT?</li> </ul>
Timer recording is not possible.	<ul style="list-style-type: none"> <li>■ Is the present time setting correct?</li> <li>■ Is the timer setting correct?</li> <li>■ Has the <b>TIMER</b> button been pressed?</li> <li>■ Did a power failure continue for a long period after the timer was set?</li> <li>■ Has the <b>POWER</b> switch been turned ON?</li> <li>■ Has the power plug been removed from the AC outlet?</li> </ul>
Alarm recording is not possible.	<ul style="list-style-type: none"> <li>■ Are the alarm sensor and the alarm input properly connected?</li> </ul>
One-shot recording is not possible.	<ul style="list-style-type: none"> <li>■ Is the speed on L01, L02, or L03?</li> <li>■ Is the unit set to recording pause? If set to the pause mode, the one-shot recording does not operate.</li> </ul>

<b>Playback</b>	
There are noises in the playback picture.	■ Adjust with the <b>TRACKING</b> button.
The playback picture is not clear.	■ The video head may be clogged or worn out. Consult with your dealer.
The time-lapse mode playback picture or still playback shakes up and down.	■ Press the <b>TRACKING</b> button in a still playback mode and adjust.
Two recorded sections appear in the playback picture when using several video cameras and changing cameras.	■ Are you using an external synchronous or gen-lock synchronous video camera? Consult with your dealer.
When the unit power plug is inserted to the AC outlet, recording starts and playback is not possible.	■ Is restart recording set to ON?
<b>Other matters</b>	
No screen display appears.	■ Has <b>DISPLAY MODE</b> been set? ■ Is the On-Screen position correct?
Recording does not continue automatically after restoring power following a power failure.	■ Did the power failure continue for more than 10 days?

**Caution:**

- Do not install the VCR in a location near heat sources, such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibrations or impacts.
- Allow adequate air circulation to prevent internal heat build-up. Do not place the VCR on soft surfaces (rugs, blankets, etc.), too near materials such as curtains and draperies or in a built-in installation such as a bookcase or rack.
- Keep the VCR and the video cassettes away from strong magnetic fields.
- To disconnect the lead, pull it out by the plug. Never pull the lead itself.
- Do not drop any inflammable or metallic objects, or liquid into the VCR. This may cause damage to the unit.
- Do not hit or shake the unit when moving it. This may cause damage.
- Remove the cassette from the VCR when not in use.
- Save the original carton and packing materials: they will come in handy if you ever have to transport your VCR. For maximum protections, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids such as insect spray near the unit.  
Do not leave rubber or plastic products touching the unit for a long time. They will damage the finish.

## SPECIFICATIONS

Power supply	120V AC, 60 Hz
Power consumption	26W
External dimensions	430mm × 88mm × 354mm (W × H × D)
Weight	Approx. 7 kg
Signal system	Standard NTSC color television system
Recording System	Rotary 2-head azimuth
Cassette	VHS marked, 1/2 inch cassette tape
Tape speed	A2-hour mode: 33.35mm/second
Recording/playback time	A2/A12/A24/24/48/72/120/168/240/480/720/960 hours (when T-120 is used)
Fast forward/rewind time	Within 5.5 minutes (when T-120 is used)
Video input (BNC)	1.0Vp-p, 75 ohms Unbalanced Luminance signal
Video output (BNC)	1.0Vp-p, 75 ohms Unbalanced Luminance signal
Horizontal resolution	350 lines (monochrome mode), 300 lines (color mode)
Video S/N	More than 45 dB (2-hour mode); monochrome mode More than 43 dB (2-hour mode); color mode
Audio input	Line input: 308mV (RMS) (-8 dBs), more than 47k ohm, pin jack Microphone input: -70 dBs, less than 5k ohms, M6 jack
Audio output	-6 dBs, less than 4.7k ohms, pin jack
No. of audio tracks	1 track
Audio frequency characteristics	100 Hz to 10 kHz (2-hour mode)
Audio S/N	More than 43 dB (2-hour mode)
Operating conditions	Temperature: 41°F to 104°F (5°C to 40°C) Humidity: less than 80%
Storage conditions	-4°F to 140°F (-20°C to 60°C)
<b>Connector section</b>	
Alarm input	Ground input: 0 to 0.5V
Alarm reset input	Ground input: 0 to 0.5V
Alarm output	DC +5V, impedance: 220 ohm, less than 10mA
One shot input	Ground input: 0 to 0.5V
Recording trigger output	During time lapse: 0/5V negative pulse signal (pulse width: 33ms) 2-hour mode: 0V except above-mentioned: 5V

Design and specifications are subject to change without notice.

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