# Time Lapse Recorder

## User's Guide
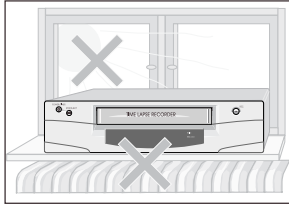
POWER/TIMER
STOP/EJECT
■/▲
TIME LAPSE RECORDER
REC
PANIC
REM LOCK

Be sure to read carefully and follow all the SAFETY INFORMATION on pages i, ii, iii.
Keep the manual in a safe place for future reference.

# Precautions

- Read carefully through this manual to familiarize yourself with this high-quality Time Lapse VCR.
- Make sure the rating of your household electricity supply matches that shown on the back of the Time Lapse VCR.
- During the power off, the unit is always connected to the mains. Unplug the unit from the wall outlet if it is not to be used for several days or more.
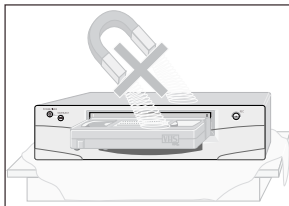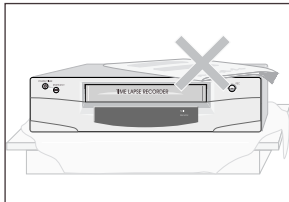
Do not ...

... expose the Time Lapse VCR to high levels of humidity and heat, to avoid the risk of fire and electric shock.

... open the Time Lapse VCR. Have a qualified technician carry out repairs.

... connect the Time Lapse VCR to the power supply if you have just moved it from a cold to warm environment. This can result in condensation inside the recorder and cause serious damage to the machine and cassettes. Wait around two hours to allow it to reach room temperature.
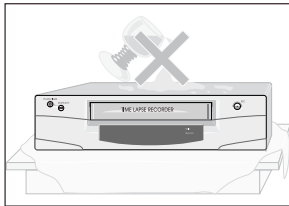
Make sure ...

... the Time Lapse VCR is placed on a steady, flat surface.

... you place the Time Lapse VCR where there is good ventilation all around.

... you clean the Time Lapse VCR only with a soft, lint-free cloth; do not use aggressive or alcohol-based cleaning agents.

... you disconnect the power supply if the Time Lapse VCR appears to be working incorrectly, is making an unusual sound, has a strange smell, has smoke emitting from it or liquids have got inside it. Have a qualified technician check the recorder.

... you disconnect the power supply and aerial if you will not be using the Time Lapse VCR for a long period or during a thunderstorm.

**For your own safety!**
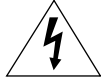
- There are no components in this Time Lapse VCR you can service or repair yourself.
- Do not open the case of the Time Lapse VCR. Only allow qualified personnel to repair or service your set.

- This Time Lapse VCR is designed for continuous operation. Switching it off does not disconnect it from the mains (stand-by). To disconnect it from the mains, you have to unplug it.
- Recording any copyright protected material may infringe a copyright.

# Important Safeguards

<table>
<tr><td></td><td style="text-align:center"><strong>CAUTION</strong><br>RISK OF ELECTRIC SHOCK<br>DO NOT OPEN</td><td>⚡</td></tr>
<tr><td colspan="3" style="text-align:center">CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE<br>COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE.<br>REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</td></tr>
</table>

⚡ 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.

⚠ The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and 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. |
| --- |
| CAUTION : TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT. |

1. **READ INSTRUCTIONS** - All the safety and operating instructions should be read before the unit is operated.

2. **RETAIN INSTRUCTIONS** - The safety and operating instructions should be retained for future reference.

3. **HEED WARNINGS** - All warnings on the unit and in the operating instructions should be adhered to.

4. **FOLLOW INSTRUCTIONS** - All operating and use instructions should be followed.

5. **CLEANING** - Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

6. **ATTACHMENTS** - Do not use attachments not recommended by the unit's manufacturer as they may cause hazards.

7. **WATER AND MOISTURE** - Do not use this unit near water - for example, near a bathtub, washbowl, kitchen sink or laundry tub; in a wet basement; nor near a swimming pool in an unprotected outdoor installation, or any area which is classified as a wet location.

8. **ACCESSORIES** - Do not place this unit on an unstable stand, tripod, bracket or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Use only with a stand, tripod, bracket nor mount recommended by the manufacturer or sold with the unit. Any mounting of the unit should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION** - Openings in the enclosure, if any, are provided for ventilation and to ensure reliable operation of the unit and to protect it from overheating. These openings must not be blocked or covered. This unit should never be placed in a built-in installation unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

10. **POWER SOURCES** - This unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply you plan to use, consult your appliance dealer or local power company. For units intended to operate from battery or other sources, refer to the operating instructions.

**11. GROUNDING OR POLARIZATION** - This unit may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternately, this unit may be equipped with a 3-wire grounding-type plug, having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

**12. POWER-CORD PROTECTION** - Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.

**13. POWER LINES** - An outdoor system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal. U.S.A models only - refer to the National Electrical Code Article 820 regarding installation of CATV systems.

**14. OVERLOADING** - Do not overload outlets and extension cords as this can result in a risk of fire or electric shock.

**15. OBJECT AND LIQUID ENTRY** - Do not push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.

**16. SERVICING** - Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

**17. DAMAGE REQUIRING SERVICE** - Unplug the unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

   a. When the power-supply cord or plug is damaged.

   b. If liquid has been spilled, or objects have fallen into the unit.

   c. If the unit has been exposed to rain or water.

   d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.

   e. If the unit has been dropped or the cabinet has been damaged.

   f. When the unit exhibits a distinct change in performance - this indicates a need for service.

**18. REPLACEMENT PARTS** - When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

**19. SAFETY CHECK** - Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

**20. COAX GROUNDING** - If an outside cable system is connected to the unit, be sure the cable system is grounded. U.S.A models only - Section 810 of the National Electric Code, ANSI/NFPA No.70-1981, provides information with respect to proper grounding of the mount and supporting structure, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit, connection to grounding electrodes and requirements for the grounding electrode.

**21. LIGHTNING** - For added protection of this unit during a lightning storm or when it is left unattended and unused for long period of time, unplug power cord from the wall.

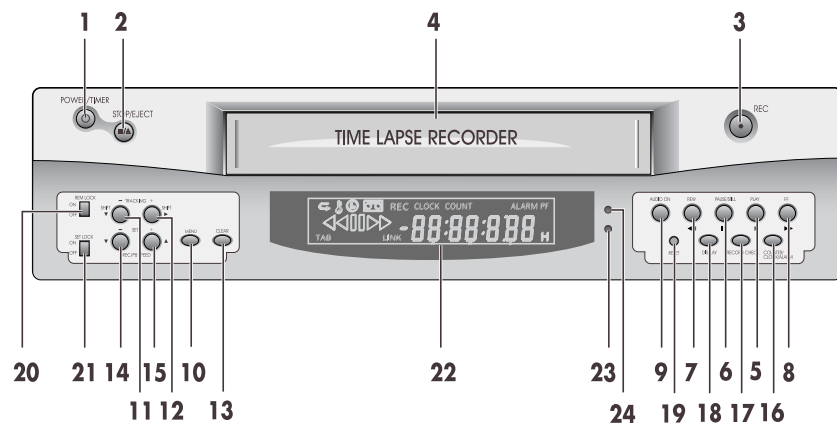Polarized Attachment Plug Marking - for CNL use only.

CAUTION -  TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT
.

# Contents

Time Lapse Video Cassette Recorder

# Locations of controls and indicators

## Front panel



1   POWER/TIMER button

2   STOP/EJECT button

3   RECORD button

4   CASSETTE Compartment

5   PLAY button

6   PAUSE/STILL button

7   REW button

8   FF button

9   AUDIO ON button

10  MENU button

11  SHIFT( ▼ ) / TRACKING (-)
    button

12  SHIFT( ► ) / TRACKING (+)
    button

13  CLEAR button

14  REC/PLAY SPEED( ▼ ) button
    (SET - button)

15  REC/PLAY SPEED( ▲ ) button
    (SET + button)

16  COUNTER/CLOCK/ALARM
    button

17  RECORD CHECK button

18  DISPLAY button

19  RESET button

20  Remote Control LOCK switch

21  SET LOCK switch

22  Display Window

23  Remote Control LOCK
    indicator
    It comes on when the Remote
    Control Lock switch is set to the
    "ON" position.

24  PANIC IN indicator

## Digital Display
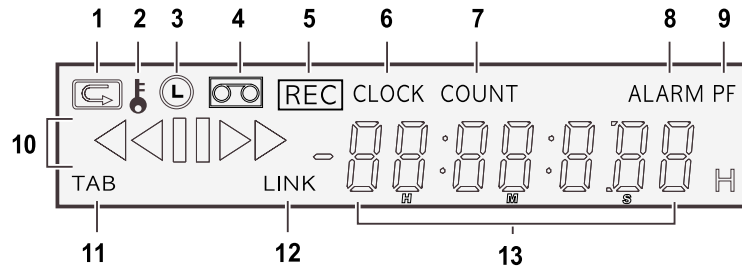


**1  Repeat recording**

It indicates that repeat recording is activated. When the tape reaches its end, the unit will rewind and record over previously taped footage.

**2  SET LOCK**

It comes on when the SET LOCK sw is set to the "ON" position.

**3  Timer recording**

It appears when the timer is programmed.

**4  Cassette status indicator**

It illuminates when a tape is inserted.

**5  REC indicator**

It illuminates during recording and when TIMER REC is set to on.

**6  CLOCK indicator**

It indicates the current time.

**7  COUNT indicator**

It indicates the relative position on the tape.

**8  ALARM indicator**

It appears after the alarm mode is activated.

**9  PF indicator**

It indicates the existence of power failure.

**10  Play / cue / review / still / slow**

It indicates the tape operation.

**11  TAB indicator**

It appears when the tape does not have a security tab.

**12 LINK indicator**

It appears when LINK (Series) REC is turned on.

**13 Digit indicator**

It indicates clock, tape counter, and tape speed during playback/recording.

**14 Mode display**

- TAPE COUNTER display (ex:10:HOUR,59:MINUTE)
  - Maximum Hour : 19  - Maximum Minute : 59
- ALARM COUNTER display (ex: A:Alarm , 32:Alarm No.)

- PLAY/REC SPEED display (ex: 36H:Play/Recording Speed)

- TIME display (ex: 7:HOUR , 07:MINUTE)

- ERROR display (ex: E:Error , 04:Error No.)
  - E-01 : The cassette cannot be loaded or unloaded.
  - E-02 : The tape stops.
  - E-03 : The drum can not rotate properly.
  - E-04 : The tape is cut/broken.
- AUDIO ON display (ex: A:Audio , 18H:Play Speed)

## Display of operating conditions

| | Operation Mode | Indicator |
|---|---|---|
| 1 | Record(REC) | ► REC |
| 2 | Record pause (REC PAUSE) | II REC |
| 3 | Playback (PLAY) | ► |
| 4 | Still image (STILL) | II |
| 5 | Fast forward (FF) | ►► |
| 6 | Rewind (REW) | ◄◄ |
| 7 | CUE (CUE) | ►► |
| 8 | Review (REVIEW) | ◄◄ |
| 9 | Slow (Pause Still + FF, Pause Still + REW) | II ► |

## Back Panel
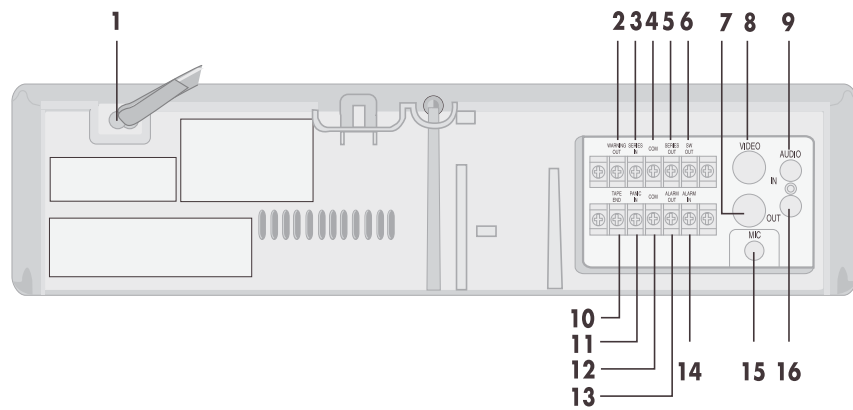


1 AC POWER CORD

2 WARNING OUT terminal

3 SERIES IN terminal

4 COM terminal

5 SERIES OUT terminal

6 SW OUT terminal

7 VIDEO OUT jack (BNC Type)

8 VIDEO IN jack (BNC Type)

9 AUDIO IN jack (RCA Type)

10 TAPE END terminal

11 PANIC IN terminal

12 COM terminal

13 ALARM OUT terminal

14 ALARM IN terminal

15 MIC(microphone input) jack

16 AUDIO OUT jack (RCA Type)

# Remote Control
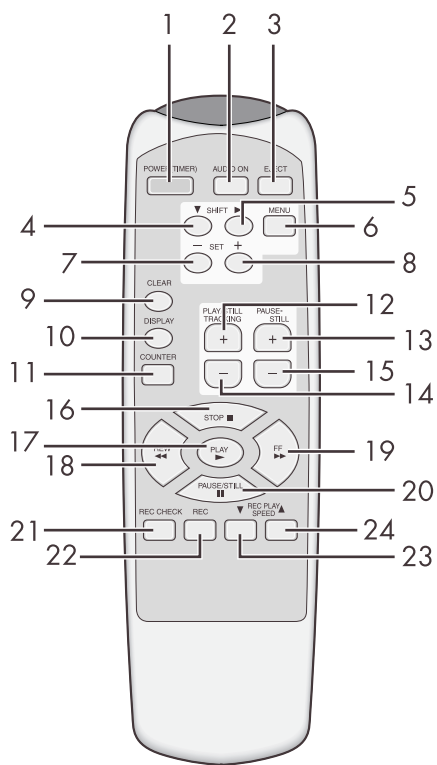


(Optional)

1   POWER (TIMER) button

2   AUDIO ON button

3   EJECT button

4   SHIFT ▼ button

5   SHIFT ► button

6   MENU button

7   SET - button

8   SET + button

9   CLEAR button

10   DISPLAY button

11   COUNTER button

12   PLAY/STILL TRACKING + button

13   PAUSE / STILL + button

14   PLAY/STILL TRACKING - button

15   PAUSE/STILL - button

16   STOP ■ button

17   PLAY ► button

18   REW ◄◄ button

19   FF ►► button

20   PAUSE / STILL button

21   REC CHECK button

22   REC button

23   REC/PLAY SPEED ▼ button

24   REC/PLAY SPEED ▲ button

# Connections

Connect the video camera and monitor TV as shown in the figure below.

NOTE : Make sure to turn the power off on all devices before making the connections.



Monitor TV (sold separately)

Video camera (sold separately)

To VIDEO IN terminal

From an external audio source

To VIDEO OUT terminal
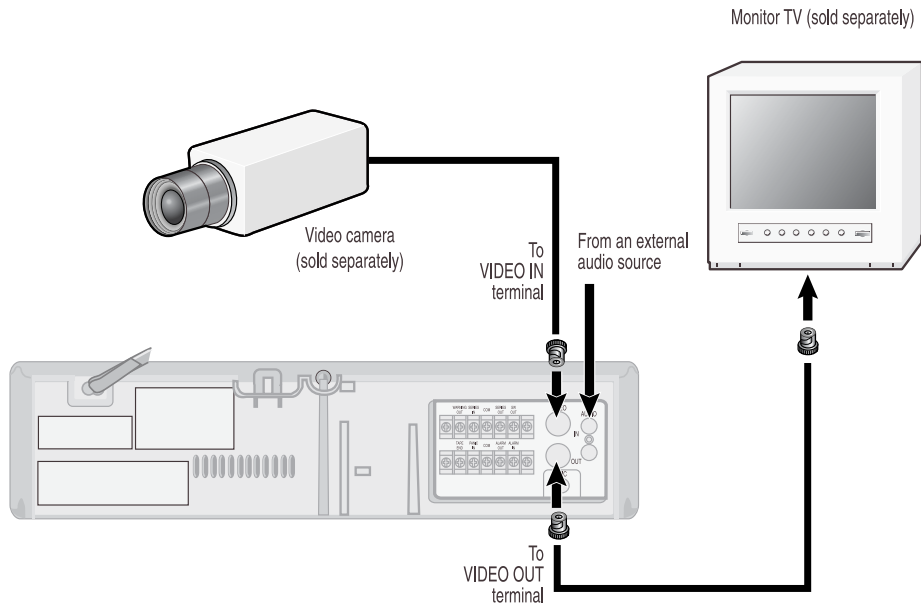
## Power Cord Installation

Insert the plug of the power cord into an outlet.

✔
- *For more details, please refer to the manuals accompanying all other devices. If the connections are not made properly, it may cause a fire or damage the equipment.*

# Video Cassettes Tapes

Use only video cassette tapes bearing the **VHS** logo.

This VCR was primarily designed for use with T-120 cassette tapes. It is recommended to use T-120 VHS video cassette tapes for optimal performance.

## Handling Cassette Tapes

Cassette tapes should always be stored vertically in their cases, away from high temperatures, magnetic fields, direct sunlight, dirt, dust and locations subject to mold formation.

Do not tamper with the cassette mechanism.

Never touch the tape with your fingers.

Protect cassette tapes from shocks or strong vibrations.

## To Protect your recordings

After having recorded a tape, if you wish to keep the recording, use a flathead screwdriver to break off the erasure-prevention tab on the cassette.

To record again on a tape without erasure-prevention tab, cover the hole with adhesive tape.
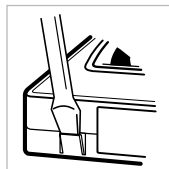
**Erasure-prevention tab**

To prevent accidental erasure, remove the tab after recording.

To record again, cover the hole with vinyl tape.
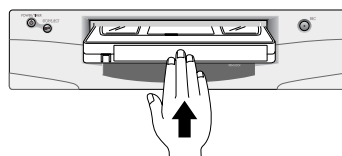
## Loading

Place the cassette, label side up, in the loading slot. Gently push the center of the cassette until it is loaded automatically.

## Unloading

In STOP mode, press the EJECT button. The cassette is automatically ejected.

# Types of on-screen displays and Display Sequence

- If the VCR is in timer recording stand-by mode (the " ☉ " indicator is displayed on the display panel), the on-screen displays will not be available. First press the Power/Timer button, to cancel the recording stand-by mode, then proceed with the VCR programming. When finished, press the Power/Timer button again to return the VCR to timer recording stand-by mode.

- When a menu is displayed, recording will not be possible.

- Press the MENU button three times, the setting procedure is now completed then the normal screen is displayed.

- During recording or playback the menus cannot be displayed.

**Initial Menu**

MENU
- ► VCR Mode Set
- REC Mode Set
- SW Out Terminal Set
- Search Select
- Alarm Time
- Power Loss Time
- Running Time      000000H

shift : ▼   sel: ►    end:MENU
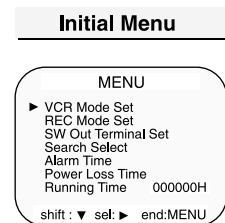
- Press the MENU button. (First time)

- Press the SHIFT ▼ button to move the arrow mark ( ► ) downward for the desired item.

- Press the SHIFT ► button to select the desired item, then the desired menu is displayed.

- Press the MENU button to return to the normal screen from the initial menu.

**Second Menu Group**

**Third Menu Group**

```
        VCR MODE SET
  ► Clock Set
    Display Set
    In/Output Set
    Buzzer Set    NO

  shift : ▼  sel: ►  end:MENU
```

```
        REC MODE SET
  ► Timer Program Set
    Alarm Rec Set
    Repeat Rec Set   NO
    Series Rec Set   NO

  shift : ▼  sel: ►  end:MENU
```

```
     SW OUT TERMINAL SET
  ► Field     01
    Timing    Field




  shift : ▼  set: +−  end:MENU
```

```
        SEARCH SELECT
    Alarm Search
  ► FF         −−
    REW        −−
    Index Search
    FF
    REW
    Zero Search
  shift : ▼► set: +−  end:MENU
```

```
          ALARM TIME
    No    Date    Time
    35   10/30   01:56
    34   10/21   01:30



   next : ▼          exit:MENU
```

```
        POWER LOSS TIME
    35  Fail  12/30  08:00
        Ret  12/30  20:20
    34  Fail  12/29  07:00
        Ret  12/29  07:30

   next : ▼          exit:MENU
```

```
          CLOCK SET
  ► − − : − − : 00    (HR:MIN:SEC)
    − − / − − / 20 − − (MON/DAY/YR)
        − − − (DAY)


  shift : ▼  set: +−  end:MENU
             ( NTSC )
```

```
          CLOCK SET
  ► − − : − − : 00    (HR:MIN:SEC)
    − − / − − / 20 − − (DAY/MON/YR)
        − − − (DAY)


  shift : ▼  set: +−  end:MENU
             ( PAL )
```

```
          DISPLAY SET
    DISPLAY           POSITION
  ► Time        No   R-Bottom
    Date        No   R-Bottom
    Frame Cnt.  No   R-Bottom
    Alarm Cnt.  No   L-Top
    Counter     No   L-Top
    Title       No   L-Top
    ( − − − − − − − − − − − − − − )
  shift : ▼  set: +−  end:MENU
```

```
        IN / OUTPUT SET
  ► Alarm In        N/O
    Alarm Out       High
    Panic In        N/O
    Tape End Out    High
    SW Out          High
    Warning Out     High
  shift : ▼  sel: ►  end:MENU
```

```
      TIMER PROGRAM SET(1)
         START   END    SPD
  ► SUN −−:−−  −−:−−  −−−H N
    MON −−:−−  −−:−−  −−−H N
    TUE −−:−−  −−:−−  −−−H N
    WED −−:−−  −−:−−  −−−H N
    THU −−:−−  −−:−−  −−−H N
  shift :▼► set: +−  end:MENU
```

```
      TIMER PROGRAM SET(2)
         START   END    SPD
  ► FRI −−:−−  −−:−−  −−−H N
    SAT −−:−−  −−:−−  −−−H N
    DLY −−:−−  −−:−−  −−−H N



  shift :▼► set: +−  end:MENU
```

```
        ALARM REC SET
  ► Alarm Rec        NO
    Speed            03H
    Duration         AUTO



  shift : ▼  sel: ►  end:MENU
```

- Press the SHIFT ► button to select the desired item.
- Press the SET - (or +) button to set or Press the SHIFT ► button to select "YES" or "NO".
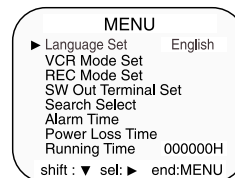- Press the MENU button to return to the initial menu.

# Setting the Clock

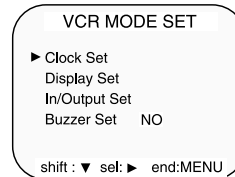Example: To set the clock to April 12, 2000 at 9:30

## Clock Setting

1   Turn the power on to all devices used.

2   Press the MENU button, the initial menu is displayed. Press the SHIFT ▼ button to move the arrow mark ( ► ) located on "VCR Mode Set".
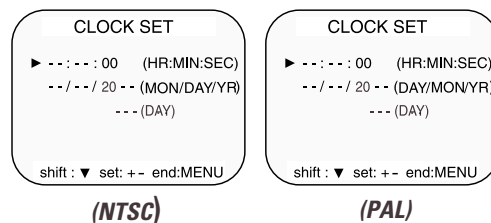
Initial MENU

```
             MENU
 ► Language Set        English
   VCR Mode Set
   REC Mode Set
   SW Out Terminal Set
   Search Select
   Alarm Time
   Power Loss Time
   Running Time      000000H

 shift : ▼  sel: ►   end:MENU
```

3   Press the SHIFT ► button, the VCR MODE SET menu is displayed.  The arrow mark (►) is located in "Clock Set".

```
        VCR MODE SET

 ► Clock Set
   Display Set
   In/Output Set
   Buzzer Set    NO


 shift : ▼  sel: ►   end:MENU
```

4   Press the SHIFT ► button, the CLOCK SET menu  is displayed.

```
       CLOCK SET                      CLOCK SET

 ► - - : - - : 00   (HR:MIN:SEC)   ► - - : - - : 00   (HR:MIN:SEC)
   - - / - - / 20 - - (MON/DAY/YR)    - - / - - / 20 - - (DAY/MON/YR)
         - - - (DAY)                        - - - (DAY)


 shift : ▼  set: + -  end:MENU     shift : ▼  set: + -  end:MENU
```
        *(NTSC*)                          *(PAL)*

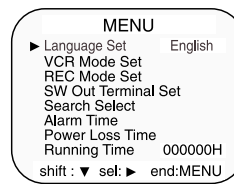5   Press the SET - (or +) button to set the hours (ex : 09), then press the SHIFT ► button.

6  Press the SET - (or +) button to set the minutes (ex : 30), then press the SHIFT ► button.

7  The seconds are already set to "00".

8  Press the SHIFT ► button.

9  Press the SET - (or +) button to set the month (ex : 04), then press the SHIFT ► button.*(NTSC)*

   Press the SET - (or +) button to set the day  (ex : 12), then press the SHIFT ► button.*(PAL)*

10  Press the SET - (or +) button to set the day  (ex : 12), then press the SHIFT ► button.*(NTSC)*

   Press the SET - (or +) button to set the day month (ex : 04), then press the SHIFT ► button.*(PAL)*

11  Press the SET - (or +) button to set the year.

   • *The day of the week is set automatically.*

12  Press the MENU button three times, the normal screen is displayed.

   • *The setting procedure is now complete.*

# Changing the On-Screen Display

## Selecting the Language

You can select the language -English, French, Spanish or German- which is more convenient for you.

1   Turn the power on to all devices used.

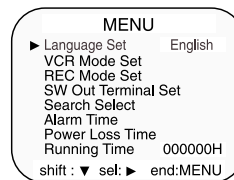2   Press the MENU button. The initial menu  is displayed.  The arrow mark ( ► ) is located in "Language Set".

```
            MENU
  ► Language Set        English
    VCR Mode Set
    REC Mode Set
    SW Out Terminal Set
    Search Select
    Alarm Time
    Power Loss Time
    Running Time      000000H

  shift : ▼  sel: ►   end:MENU
```

3   Press the SHIFT ► button to select the desired language. OSD (On-Screen Display) will display with the selected language.
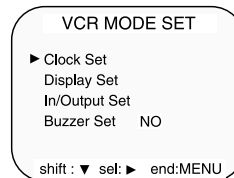
## Selecting the On-screen Display

You can select to display the time, date, frame counter, alarm counter, counter title.

1   Turn the power on to all devices used.

2   Press the MENU button. The initial menu is displayed. Press the SHIFT ( ▼ ) button to move arrow mark ( ► )  to "VCR Mode Set".

```
            MENU
  ► Language Set        English
    VCR Mode Set
    REC Mode Set
    SW Out Terminal Set
    Search Select
    Alarm Time
    Power Loss Time
    Running Time      000000H

  shift : ▼  sel: ►   end:MENU
```

3   Press the SHIFT ► button to select the VCR Mode Set, then the VCR Mode Set menu is displayed.

```
         VCR MODE SET

  ► Clock Set
    Display Set
    In/Output Set
    Buzzer Set    NO


  shift : ▼  sel: ►   end:MENU
```

4  Press the SHIFT ▼ button, until the arrow mark  ( ► ) points "Display set".

5  Press the SHIFT ► button to select Display Set. Then the DISPLAY SET menu is displayed.

```
         DISPLAY SET
DISPLAY              POSITION
 ► Time        No   R-Bottom
   Date        No   R-Bottom
   Frame Cnt.  No   R-Bottom
   Alarm Cnt.  No   L-Top
   Counter     No   L-Top
   Title       No   L-Top
   ( - - - - - - - - - - - - - )
shift : ▼  set: + –  end:MENU
```

6  Press the SET - (or +) button to set "YES" for the functions described below.

   Time ..............The time is displayed.

   Date ..............The Month-Day-Year is displayed.***(NTSC)***

                            The Day-Month-Year is displayed.***(PAL)***

   Frame Cnt......The number of frames is displayed.

   Alarm Cnt......The number of alarms is displayed.

   Counter .........The counter is displayed.

   Title ...............The title is displayed.

   • *A maximum of 20 characters can be used.  (alphabet, numbers, space)*

7  Press the SHIFT ► button to set the display position.

8  Press the SET - (or +) button to set the position of the time, date, frame cnt. alarm cnt. to "L-Bottom (or R-Bottom).

   • *If one of 4 items is set, the position of 4 items is changed identically.*

9  Press the SET - (or +) button to set the position of counter, title to "C-Top" (or "R-Top" or "L-Top")

   If one of 2 items is set, the position of 2 items is  changed identically.

   L-Top / C-Top / R-Top

   : Left Top / Center Top / Right Top

   L-Bottom / R-Bottom

   : Left Bottom / Right Bottom

10 Press the MENU button three times, the normal screen is displayed.

   The setting procedure is now complete.

# Normal Recording

## Normal Recording

1 Turn the power on to all devices used.

2 Load a cassette tape with erasure prevention tab in place.

3 Press the REC/PLAY SPEED ▼ (or ▲) button to set the recording speed.

   • *The recording speed is displayed on-screen and on the display panel.*

   • *If you don't want to record the recording speed, counter, title, time, date etc, press the DISPLAY button, then start recording.*

4 Press the REC button.

   • *The "REC" indicator is displayed on the display panel and recording starts.*

5 To stop recording, press the STOP button.

<Recording Speed>

| Recording Speeds & Duration | | | | Recording Intervals Sec. | | Rec. Fields/Sec. | | Audio Recording | | Tape Motion | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NTSC | | PAL | | | | | | | | | |
| T-120 | T-160 | E-180 | E-240 | NTSC | PAL | NTSC | PAL | NTSC | PAL | NTSC | PAL |
| 2(SP) | 2.67 | 3 HR | 4 HR | 1/60 | 1/50 | 60 | 50 | YES | YES | Continuous | Continuous |
| 6(EP) | 8 | 12 HR | 16 HR | 1/60 | 5/50 | 60 | 10 | YES | YES | Continuous | Continuous |
| 18(EP) | 24 | 18 HR | 24 HR | 3/60 | 7/50 | 20 | 7.1 | YES | YES | Continuous | Continuous |
| 24(SP) | 32 | 24 HR | 32 HR | 12/60 | 9/50 | 5 | 5.6 | NO | YES | Intermittent | Continuous |
| 36(SP) | 48 | 36 HR | 48 HR | 18/60 | 12/50 | 3.3 | 4.2 | NO | NO | Intermittent | Step |
| 48(SP) | 64 | 48 HR | 64 HR | 24/60 | 16/50 | 2.5 | 3.1 | NO | NO | Intermittent | Step |
| 72(SP) | 96 | 72 HR | 96 HR | 36/60 | 24/50 | 1.6 | 2.1 | NO | NO | Intermittent | Step |
| 96(SP) | 128 | 96 HR | 128 HR | 48/60 | 32/50 | 1.2 | 1.6 | NO | NO | Intermittent | Step |
| 120(SP) | 160 | 120 HR | 160 HR | 1 | 40/50 | 1 | 1.3 | NO | NO | Intermittent | Step |
| 168(SP) | 224 | 168 HR | 224 HR | 1.4 | 1.1 | 0.7 | 0.9 | NO | NO | Intermittent | Step |
| 240(SP) | 320 | 240 HR | 320 HR | 2 | 1.6 | 0.5 | 0.6 | NO | NO | Intermittent | Step |
| 360(SP) | 480 | 360 HR | 480 HR | 3 | 2.4 | 0.3 | 0.4 | NO | NO | Intermittent | Step |
| 480(SP) | 640 | 480 HR | 640 HR | 4 | 3.2 | 0.25 | 0.3 | NO | NO | Intermittent | Step |
| 720(SP) | 960 | 720 HR | 960 HR | 6 | 4.8 | 0.16 | 0.2 | NO | NO | Intermittent | Step |
| 960(SP) | 1280 | 960 HR | 1280 HR | 8 | 6.4 | 0.12 | 0.1 | NO | NO | Intermittent | Step |

✎ (SP) means to be recorded by SP heads. (EP) means to be recorded by EP heads.*(NTSC)*

## Record Pause

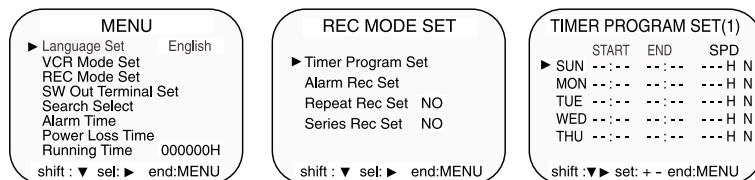Recording can be interrupted temporarily.

1 Press the PAUSE/STILL button during recording.

   • *The "REC" and " ‖ " indicators are displayed on the display panel.*

2 To resume recording, press the REC button, or press the PAUSE/STILL button again.

# Program Timer Recording

There are two program timer recording methods, daily recording or recording on certain days of multiple weeks (weekly recording).

## Example 1 : To record on every Thursday from 10 : 00 to 18 : 00 , in 18-hour mode (recording speed)

1  Make sure that the set date and time are correct.

2  Load a cassette tape with erasure prevention tab in place.

3  Press the MENU, SHIFT ▼ button twice to move the arrow mark ( ► ) located on the "REC Mode Set", SHIFT ► button to select "Timer Program Set", SHIFT ► button to display the "TIMER PROGRAM SET(1)" menu.

```
┌─────────────────────────┐  ┌─────────────────────────┐  ┌─────────────────────────┐
│          MENU           │  │       REC MODE SET      │  │   TIMER PROGRAM SET(1)  │
│                         │  │                         │  │     START  END    SPD   │
│ ► Language Set   English│  │ ► Timer Program Set     │  │ ► SUN --:--  --:--  ---H N│
│   VCR Mode Set          │  │   Alarm Rec Set         │  │   MON --:--  --:--  ---H N│
│   REC Mode Set          │  │   Repeat Rec Set   NO   │  │   TUE --:--  --:--  ---H N│
│   SW Out Terminal Set   │  │   Series Rec Set   NO   │  │   WED --:--  --:--  ---H N│
│   Search Select         │  │                         │  │   THU --:--  --:--  ---H N│
│   Alarm Time            │  │                         │  │                         │
│   Power Loss Time       │  │                         │  │                         │
│   Running Time  000000H │  │                         │  │                         │
│ shift : ▼ sel: ► end:MENU│  │ shift : ▼ sel: ► end:MENU│  │ shift :▼► set: + – end:MENU│
└─────────────────────────┘  └─────────────────────────┘  └─────────────────────────┘
```

• *The white block cursor is on "SUN"(Sunday).*

4  Press the SHIFT ▼ button, until the cursor is on "THU".

5  Press the SHIFT ► button.

• *The cursor is moved to the recording start hour position.*

6  Press the SET - (or +) button to set the recording start hour(ex : 10), then press the SHIFT ► button.

• *The cursor is moved to the recording start minutes position.*

7  Press the SET - (or +) button to set the recording start minute (ex : 00), then the SHIFT ► button.

• *The cursor is moved to the recording stop hour position.*

8  Press the SET - (or +) button to set the recording stop hour(ex : 18), then press the SHIFT ► button.

• *The cursor is moved to the recording stop minutes position.*

9  Press the SET - (or +) button to set the recording stop minutes(ex : 00), then press the SHIFT ► button.

• *The cursor is moved to the recording speed position.*

10  Press the SET - (or +) button to select the recording speed(ex : 18), then press the SHIFT ► button.

• *The cursor is moved to the N/Y position.*

11  Press the SET - (or +) button to select "Y".

Y . . . . . recording will take place

N . . . . . recording will not take place

<u>Programmed timer recording Example</u>

```
TIMER PROGRAM SET(1)
          START    END     SPD
► SUN  --:--   --:--   ---H N
  MON  --:--   --:--   ---H N
  TUE  10:00  18:00  018H Y
  WED  --:--   --:--   ---H N
  THU  --:--   --:--   ---H N

shift :▼ ►  set: + –  end:MENU
```

- *Repeat steps 4 to 11 to program timer recordings for other days of the week.*
- *To set two or more timer recordings the same day of the week, press the SHIFT ▼ button, until the cursor is located in the day of the week for the second recording, then press the SET - (or +) button, to set the desired day of the week. With each press of the SET - ( or +) button, the day will change as indicated below.*

SET - : ← direction , SET + : → direction

SUN ↔ MON ↔ TUE ↔ WED ↔ THU ↔ FRI ↔ SAT ↔ DLY

12  Press the MENU button three times, the normal screen is displayed.

13  Press the POWER/TIMER button.

- *The timer recording indicator "🕐 " will light on the display panel. The VCR is now in timer recording stand-by mode.*

## Example 2 : To record on everyday from 10 : 00 to 18 : 00, in 18-hour mode (recording speed)
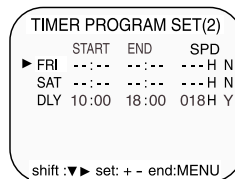
1   Repeat steps 1 to 3 of example 1.

2   Press the SHIFT ▼ button, until the cursor is on "DLY". The MENU below is displayed.

*   *To modify, cancel timer recording, press the POWER/TIMER button to cancel the timer recording mode.*

```
 TIMER PROGRAM SET(2)
       START   END    SPD
 ► FRI  --:--  --:--  ---H N
   SAT  --:--  --:--  ---H N
   DLY  --:--  --:--  ---H N


 shift :▼► set: + – end:MENU
```
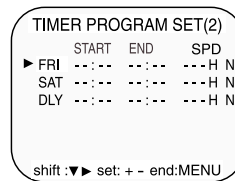
3   Repeat steps 5 to 13 of example 1.

```
 TIMER PROGRAM SET(2)
       START   END    SPD
 ► FRI  --:--  --:--  ---H N
   SAT  --:--  --:--  ---H N
   DLY  10:00  18:00  018H Y


 shift :▼► set: + – end:MENU
```

Programmed timer recording Example 2

## Changing a Program Timer Recording

1   Press the MENU, SHIFT ▼ , SHIFT ► , SHIFT ► buttons in sequence to display the TIMER PROGRAM SET(1) menu.

2   Press the SHIFT ► (or ▼ ) button, until the cursor is located in the setting to correct.

3   Press the SET - (or +) button, to correct the setting.

*   *Press the MENU button three times until the normal screen is displayed.*

4   Press the POWER/TIMER button.

## To Cancel a Program Timer Recording

1   Repeat step 1 of changing a program timer recording.

2   Press the SHIFT ► (or ▼) button until the cursor is located in the "Y" corresponding to the timer recording to cancel.

3   Press the SET - (or +) button, to select "N".

4   Press the MENU button three times until the normal screen is displayed.

5   Press the POWER/TIMER button.

   • *The clear button can erase the programmed  timer recording in the line that the cursor is located.*

**Notes...**

   • During timer recording all the buttons on the VCR, except the STOP button, are disabled. If the STOP button is pressed for three seconds during timer recording, the recording will stop. During timer recording stand-by, press the POWER/TIMER button if the buttons do not respond.

   • If there is a power loss, the recording will be interrupted. When the power is restored, the recording will resume if the stop time has not yet been reached, and " PF " will be flashing on the display panel. The VCR internal battery is completely charged after the VCR has been connected to an AC power outlet for 48 hours, and it will maintain all the VCR settings memory for up to 30 days.

   • Set the timer recordings so that the recording times do not overlap. If they do, the one with the earliest recording start time will have priority.
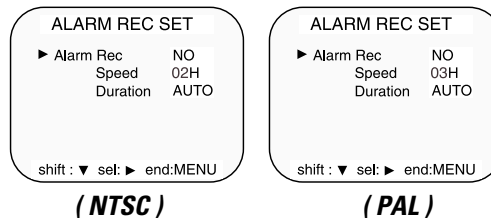
   (See chart below)

| 7:00 | 8:00 | 9:00 | 10:00 |
|---|---|---|---|
| Program 1 | | | |
| Program 2 | | | |
| Program 3 | | | |

These portions will not be recorded.
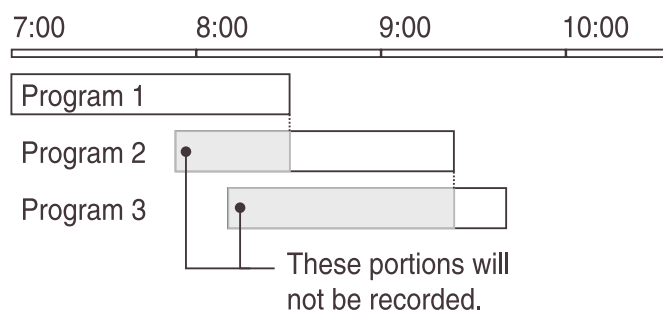
   • If the cassette tape is ejected while timer recording is set, the buzzer will be heard 5 times (when the buzzer function is set to "YES".).

# Alarm Recording

## Alarm Recording Setting

Alarm recording is performed when there is an input (trigger) at the ALARM IN terminal, " ALARM " is displayed on the display panel.

1　Make all necessary connections.

2　Press the MENU, SHIFT ▼ , SHIFT ► buttons in sequence to display the REC MODE SET menu .

3　Press the SHIFT ▼ button until the arrow mark( ► ) points to Alarm Rec Set.

4　Press the SHIFT ► button to display the ALARM REC SET menu.

```
        ALARM REC SET                    ALARM REC SET

 ► Alarm Rec    NO              ► Alarm Rec    NO
     Speed      02H                 Speed      03H
     Duration   AUTO                Duration   AUTO



 shift : ▼  sel: ►  end:MENU        shift : ▼  sel: ►  end:MENU
```
**( NTSC )**　　　　　　　**( PAL )**

✔

- *During alarm recording all buttons are disabled except the STOP button. If the STOP button is pressed, the alarm recording will stop.*

- *If an alarm trigger is received while alarm recording is in progress, the recording duration for the second alarm will be calculated from that point.*

- *When there is a power loss during alarm recording, if the power is restored within the recording set duration, alarm recording will continue.*

5　Press the SHIFT ► button to select "YES" or "NO".

- *YES . . . . . The alarm recording takes place when there is alarm trigger input*
- *NO . . . . . . The alarm recording does not take place*

6　Press the SHIFT ▼ button to set the Alarm speed.

7　Press the SHIFT ► button to select the desired recording speed.

<table>
<tr><td align="center">( NTSC )</td><td align="center">( PAL )</td></tr>
<tr><td>• 2H . . .2-hour mode recording</td><td>• 3H . . .3-hour mode recording</td></tr>
<tr><td>• 6H . . .6-hour mode recording</td><td>•12H . . .12-hour mode recording</td></tr>
<tr><td>•18H . . .18-hour mode recording</td><td>•18H . . .18-hour mode recording</td></tr>
<tr><td></td><td>•24H . . .24-hour mode recording</td></tr>
</table>

8　Press the SHIFT ▼ button to set the alarm duration

9　Press the SHIFT ► button to select the desired recording duration.

- *Auto : Records as long as the alarm signal is being input. (Minimum 2 minutes is recorded.)*
- *3/5/10/15/20/25/30 MIN : Recording for the set duration.(MIN : minute)*
- *T.END : Records until the tape end is reached when there is alarm trigger input.*

✔

- *Alarm Counter Reset can be performed by pressing the CLEAR key in "Alarm Time" of Initial Menu screen.*

## Alarm Recording Counter Display

During alarm recording, " ALARM " will be flashing on  the display panel.

The maximum display number of alarm triggers is "35", at the next alarm recording the counter will  indicate "00".

# Panic Recording

When there is a panic input at the PANIC IN Terminal, panic recording starts and continues to the end of tape in 2-hour recording mode.

Also, PANIC IN indicator will be on.

To release the panic recording, press the STOP key.

# Series(Link) Recording

Using 2 VCRs or more, the series recording function lets you switch recording from one unit to the next (only with VCRs of the same model as this one).

## Series(Link) Recording Setup

1    Connect 2 VCRs or more as illustrated on next page.

2    Set the following items as indicated.

| Item | VCR No.1 | VCR No.2 and on |
|---|---|---|
| Cassette tape | Loaded | Loaded |
| Operation mode | Stop | Stop |
| Repeat Rec Set | "NO" | "NO" |
| Series Rec Set | "YES" | "YES" |
| Timer recording | OFF (not set) | OFF (not set) |
| Security lock switch (SET LOCK switch) | "OFF" | "ON" |

3    Press the REC button on VCR No.1.

   • *Recording will start in series recording mode.*

- *During series recording, autorepeat recording or timer recording are not possible.*

- *If in the REC MODE SET menu, "Series Rec Set" is set to "NO", series recording will not be possible.*

4   Set the security lock on VCR No.1.

- *When the end of the tape on VCR No.1 is reached, the output at the SERIES OUT terminal will switch signal. This will start recording on VCR No.2, the tape will stop and be ejected on VCR No.1.*

```
      REC MODE SET

 ►Timer Program Set
   Alarm Rec Set
   Repeat Rec Set    NO
   Series Rec Set    NO


   shift : ▼  sel: ▶   end:MENU
```

Monitor TV

To VIDEO OUT jack
(VCR)

Video camera

To SERIES IN terminal
(VCR No. 3)

To
SERIES OUT
terminal

To
VIDEO IN
jack

VCR No. 1

To
SERIES IN
terminal

To
SERIES
OUT
terminal

To
VIDEO IN
jack

VCR No. 2

To
COM
terminal

To
VIDEO OUT
jack

To
COM
terminal

To VIDEO OUT jack

To VIDEO IN jack
(VCR No. 3)

To COM  terminal
(VCR No. 3)

# Autorepeat Recording

## Autorepeat Recording

The same tape can be recorded over many times.

1   Press the Menu, SHIFT ▼ , SHIFT ► button in sequence to display the REC MODE SET menu.

```
┌─────────────────────────────┐
│        REC MODE SET          │
│                              │
│   ► Timer Program Set        │
│     Alarm Rec Set            │
│     Repeat Rec Set    NO     │
│     Series Rec Set    NO     │
│                              │
│   shift : ▼  sel: ►  end:MENU │
└─────────────────────────────┘
```

✔

2   Press the SHIFT ► button to make the arrow mark ( ► ) point to Repeat Rec Set.

3   Press the SHIFT ► button to set the desired autorepeat recording mode.

   *NO . . . . . . Autorepeat recording doesn't take place.*

   *YES . . . . . Autorepeat recording takes place.*

   *"R.REC" will light on the display panel.*

4   Press the Menu button two times, the normal screen  is displayed.

   - *The setting procedure is now complete.*

5   Press the REC button.

   - *Recording will start. When the tape's end is reached, the VCR will rewind it to the beginning regardless of the counter memory, and recording  will resume.*

# Normal Playback

1   Turn on the power to the TV monitor.

2   Load the video cassette tape.

3   Press the REC/PLAY SPEED ▼ (or ▲) button to select the playback speed.

- *The selected playback speed is displayed on the display panel*
- *A tape recorded with EP heads can be played in 6-hour, 18-hour modes (**NTSC ONLY**).*
- *A tape recorded with SP heads can be played in 2-, 24-, 36-, 48-, 72-, 96-, 120-, 168-, 240-, 360-, 480-, 720-, 960-hour modes (**NTSC ONLY**).*
- *The picture quality recorded by EP heads can be lower than SP heads (**NTSC ONLY**).*
- *A tape recorded can be played in 3-, 12-, 18-, 24-, 36-, 48-, 72-, 96-, 120-, 168-, 240-, 360-, 480-, 720-, 960-hour modes (**PAL ONLY**).*

4   Press the PLAY button.

- *Playback starts.*
- *If necessary, adjust the tracking to eliminate the noise from the picture.*

5   To stop playback, press the STOP button.

- *To advanced or rewind the tape, press the FF/CUE or REW/REVIEW button.*

## Tracking Control

If there is noise in the image during playback,

1   While looking at the playback picture, press and hold the TRACKING + button to minimize the  noise.

2   If it cannot be minimized, press the TRACKING -  button.

## Audio Playback

Audio playback is only possible in 2, 6 and 18-hour modes *(**NTSC**)* or 3,12,18 and 24-hour modes *(**PAL**)*.

The playback speed has to be the same as the recording speed, for normal playback of the audio.

For a tape recorded in  2, 6 and 18-hour modes *(**NTSC**)* or 3,12,18 and 24-hour modes *(**PAL**)*, to playback the audio, press the AUDIO ON button after pressing the PLAY button. "A" will be displayed to the left of the playback speed on the display panel. Press the AUDIO ON button again to remove "A".

✔

- *A slow motion effect or accelerated playback effect can be achieved by using a slower or faster playback speed than the speed used for recording.*

✔

- *Noise will appear in the image when audio playback is  used in 18-hour mode (**NTSC**) or 6,12, 18 and 24-hour modes (**PAL**).*

# Special Playback

## Picture Search

1   Press the FF/CUE (or REW/REVIEW) button, during  normal playback.

   • *The image can be seen while the tape is advanced (or rewound) at high speed.*

2   To return to normal playback, press the PLAY button.

## Still Image

1   Press the PAUSE/STILL button, during normal playback.

   • *A still image can be viewed.*

2   To return to normal playback, press the PLAY button.

   • *With each press of the PAUSE/STILL button, the still image is advanced one image (frame).*

## Vertical Lock Control

During still image mode,

1   Press the TRACKING + button to reduce the vertical rolling of the image.

2   If it cannot be corrected, press the TRACKING - button.

## Slow

1   With each press of the FF button, during still image mode, the slow speed will change as indicated below. 1/15times  → 1/20times  → 1/30times (forward direction)

2   With each press of the REW button, during still image  mode, the slow speed will change as indicated below. 1/15times  → 1/10times  → 1/5times (forward direction)

3   To return to normal playback, press the PLAY button.

## Recording Check

During recording, press the REC CHECK button.

   • *The tape will be rewound for about 5 seconds and  slow play mode will be performed. The VCR will then return to the previous recording mode.*

## Time/Date Search

1   Press the Menu button to display the initial menu.

2   Press the SHIFT ▼ button to select Search Select, then press the SHIFT ► button to display the SEARCH SELECT menu.

```
    SEARCH SELECT
    Time/Date Search
 ►  Time : - -        Date  : - -
    FF    : +         REW : -
    Alarm Search
    Search Number  : - -
    FF    : +         REW : -
 Zero Search
shift : ▼► set: +−  end:MENU
```

3   Move the arrow mark(►) to "Time" in the Time/Date Search mode as you want to search.

4   Press the SET - (or +) button to enter the time as you want to search.

5   Press the SHIFT ►  button to move the cursor to "Date", then press the SET - (or +) button to enter the date as you want to search.

6   Press - (or +) button to proceed in reverse (or forward) direction.

   • *The display returns to the normal screen.*

   • *The VCR will advance (or rewind) the tape at high speed.*

   • *To cancel the Time/Date Search mode, press the STOP button.*

7   While the desired recording is reached, press the PLAY button.

   • *Playback will start, and Time/Date Search is cancelled.*

## Alarm Search

1   Repeat steps 1 to 2 of Time/Date Search.

2   Move the arrow mark(►) to search number.

3   Press the SET -(or +) button to enter the number of alarm marks you want to search.

4   Press the SHIFT ▼ button to select FF or REW, then press - (or +) to proceed in reverse (or forward) direction.

✔

• *The start time in Time/Date Search can be different according to its recording mode.*

• *Only the date/hour except minute/second can be searched in SEARCH SELECT screen.*

- *The display returns to the normal screen.*
- *The VCR will locate the desired alarm recording and begin playback.*
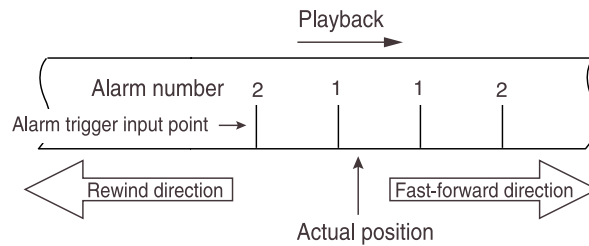


## Alarm Scan

1   Repeat steps 1 to 2 of Time/Date Search.

2   Move the arrow mark ( ▶ ) to FF or REW in Alarm Search Mode.

3   Press the SHIFT ▶ button to search forward or in reverse without entering a specific alarm number.

- *The display returns to the normal screen.*
- *The VCR will advance (or rewind) the tape at high speed, and playback the first 5 seconds of every alarm recording.*
- *To cancel the alarm scan mode, press the STOP button.*

4   While the desired recording is being played back, press the PLAY button.

- *Playback will start, and alarm scan is cancelled.*

## Zero Search

1   Repeat steps 1 to 2 of Time/Date Search.

2   Press the SHIFT ( ▼ ) to move the arrow mark ( ▶ ) to Zero Search.

3   Press the SHIFT ▶ button to rewind the tape to the zero position.

# Other Functions

*   *When you insert a cassette, the counter always resets to zero.*

*   *There is no tape counter indication for the blank portions of tape.*

*   *In the 2-hour(**NTSC**), 3-hour (**PAL**) recording speed mode only, the tape counter indicates real hours, minutes and seconds.*

*   *In the other SP recording speed modes(24H, 36.....960H), the tape counter indication is a ratio of the 2-hour mode base indication.(In 24-hour recording mode, each "second" of the tape counter actually represents approximately 24/2 = 12 real seconds.) (**NTSC ONLY**)*

*   *In the other EP recording speed modes(18H), the tape counter indication is a ratio of the 6-hour mode base indication.(In 18-hour recording mode, each "second" of the tape counter actually represents approximately 18/6 = 3 real seconds.) (**NTSC ONLY**)*

*   *In the other recording speed modes(12H, 18, 24.....960H), the tape counter indication is a ratio of the 3-hour mode base indication.(In 24-hour recording mode, each "second" of the tape counter actually represents approximately 24/3 = 8 real seconds.) (**PAL ONLY**)*

*   *There may be a slight discrepancy between the position shown on the tape counter and the actual tape position.*

*   *When rewinding the tape past the "0H 00M 00S" position("0H 00M 00S" on the display panel), a minus(-) displayed.*

## Tape Counter (Zero Search)

Using the counter, it is easy to find a desired recording.

1   Press the CLEAR button, at the beginning of the desired recording.
*   *The counter will be reset to "0H 00M 00S" (on screen).*
*   *The counter will be reset to "0H 00M 00S"(on the display panel).*

2   After recording or playback, press the Menu button to display the initial menu.

3   Press the SHIFT ▼ button to move the arrow mark ( ► ) to Search Select.

4   Press the SHIFT ► button to display the SEARCH SELECT menu. The SEARCH SELECT menu is displayed.

```
┌─────────────────────────────┐
│     SEARCH SELECT           │
│   Time/Date Search          │
│  ►  Time : - -      Date : - - │
│     FF   : +        REW : -  │
│   Alarm Search              │
│     Search Number  : - -    │
│     FF   : +        REW : -  │
│   Zero Search               │
│  shift : ▼► set: +-  end:MENU │
└─────────────────────────────┘
```
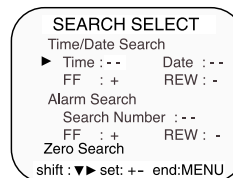
5   Press the SHIFT ▼ button to move the arrow mark ( ► ) to Zero Search.

6   Press the SHIFT ► button to search the counter "0H 00M 00S"("0H 00M 00S" on the display panel).
*   *The display returns to the normal screen.*
*   *The tape is rewound or advanced to the counter "0H 00M 00S" reading("0H 00M 00S" on the display panel).*

## Setting the Security Lock (Set Lock)

The security lock function is designed to prevent accidental stopping of recording if the STOP button is pressed inadvertently.

1  Set the SET LOCK switch to "ON" position.

- *" ⌐ " is displayed on the display panel.*

2  To cancel the security lock, set the SET LOCK switch to "OFF" position.

- *" ⌐ " will be erased from the display panel.*

## Setting the SW Out Terminal Output

Synchronization pulses for multiplexers can be obtained from the SW OUT terminal.

1  Press the MENU button, to display the initial menu.

2  Press the SHIFT ▼ button to move the arrow mark( ▶ )  to SW OUT Terminal Set.

3  Press the SHIFT ▶ button to display the SW OUT  TERMINAL SET menu.

```
     SW OUT TERMINAL SET

  ▶ Field      01

    Timing    Field



    shift : ▼  set: + –  end:MENU
```
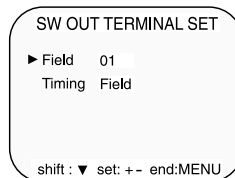
4  Press the SHIFT ▶ button to set "FIELD" (or "FRAME").

- *With each press of the SHIFT ▶  button,  the setting will changes as indicated below.*

5  Press the SHIFT ▼ button, to select Timing.

6  Press the SHIFT ▶ button to set the "TIMING".

- *FIELD . . . 1 pulse is output after each set number of fields.*
- *FRAME . . 1 pulse is output after each set number frames.*

7  Press the MENU button, the normal screen is displayed.

- *The setting procedure is now complete.*

## Setting the Buzzer

1  Press the MENU button to display the initial menu.

2  Press the SHIFT ▶ button to select  VCR Mode  Set. The VCR Mode Set menu is displayed.

```
         VCR MODE SET
  ▶ Clock Set
    Display Set
    In/Output Set
    Buzzer Set     NO

   shift : ▼  sel: ▶   end:MENU
```
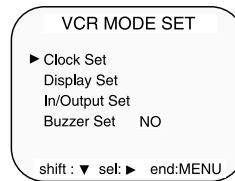
3  Press the SHIFT ▼ button to move the arrow mark(▶) to Buzzer Set.

4  Press the SHIFT ▶ button to set "YES" for the functions described below.

   • *The buzzer will be heard whenever a button is pressed.*

## Checking the Alarm Recording Times

1 Press the MENU button to display the initial menu.

2 Press the SHIFT ▼ button to move the arrow mark(▶) to Alarm Time.

3 Press the SHIFT ▶ button to display the ALARM TIME menu.

```
        ALARM TIME
   No   Date   Time
   35   10/30  01:56
   34   10/21  01:30


   next :▼        exit:MENU
```

• *The number of alarm triggers and the 35 most recent alarm recording times are displayed.*

4 Press the MENU button twice, the normal screen is displayed.

## Checking Power Loss Times

1 Press the MENU button to display the initial menu .

2 Press the SHIFT ▼ button to move the arrow mark(▶) to Power Loss Time.

3 Press the SHIFT ▶ button to display the Power Loss Time menu.

```
      POWER LOSS TIME

   35  Fail  12/30  08:00
       Ret   12/30  20:20
   34  Fail  12/29  07:00
       Ret   12/29  07:30

   next :▼        exit:MENU
```

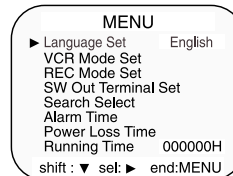• *The number of power losses, and the 35 most recent power loss times are displayed.*

4 Press the MENU button twice, the normal screen is displayed.

## Checking Usage Duration

1   Press the MENU button to display the initial menu.

```
            MENU
► Language Set        English
  VCR Mode Set
  REC Mode Set
  SW Out Terminal Set
  Search Select
  Alarm Time
  Power Loss Time
  Running Time      000000H
shift : ▼  sel: ►   end:MENU
```
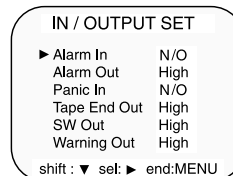
Running Time : The video heads usage duration.

2   Press the MENU button, the normal screen is  displayed.

## Setting In/Out terminals

1   Press the MENU button to display the initial menu.

2   Press the SHIFT ► button to display the VCR Mode Set menu.

3   Press the SHIFT ▼ button to move the arrow mark( ► )  to In/Output Set.

4   Press the SHIFT ►button to display the IN/OUTPUT SET menu.

```
      IN / OUTPUT SET

► Alarm In          N/O
  Alarm Out        High
  Panic In          N/O
  Tape End Out    High
  SW Out           High
  Warning Out      High

shift : ▼  sel: ►   end:MENU
```

5   Press the SHIFT ▼ button to move the arrow mark( ► )  for the desired item.

6   Press the SHIFT ► button to set "Open" or "Closed", "High" or "Low".

7   Press the MENU button three times, the normal  screen is displayed.
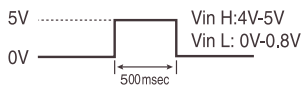
## ALARM INPUT Terminal

5V ·········· Vin H:4V-5V
0V _____ Vin L: 0V-0.8V
500msec

1) "N/C" (Normally Closed Switch Circuit)

   If the input becomes DC 5V for 500 msec or more, the VCR starts alarm recording.

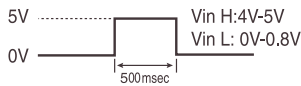500msec
5V _____ 
0V ·········· Vin H:4V-5V
Vin L: 0V-0.8V
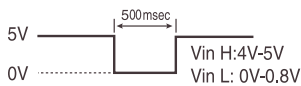
2) "N/O" (Normally OPEN Switch Circuit)

   If the input becomes 0V for 500 msec or more, the VCR starts alarm recording.

## ALARM OUTPUT Terminal

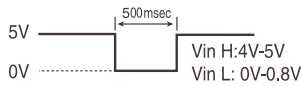5V ·········· Vin H:4V-5V
0V _____ Vin L: 0V-0.8V
500msec

1) "High"

   When an alarm input is received and the unit is recording, the output becomes DC 5V. Once the alarm recording is over, the output returns to 0V.

500msec
5V _____ 
0V ·········· Vin H:4V-5V
Vin L: 0V-0.8V

2) "Low"

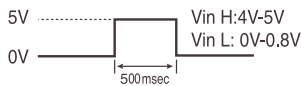   When an alarm input is received and the unit is recording, the output becomes 0V. Once the alarm recording is over, the output returns to DC 5V.
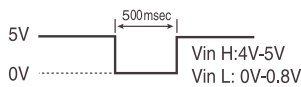
## PANIC INPUT Terminal

5V ·········· Vin H:4V-5V
0V _____ Vin L: 0V-0.8V
500msec

1) "N/C" (Normally Closed Switch Circuit)

   If the input becomes DC 5V for 500 msec or more, the VCR starts panic recording.

500msec
5V _____ 
0V ·········· Vin H:4V-5V
Vin L: 0V-0.8V

2) "N/O" (Normally OPEN Switch Circuit)

   If the input becomes 0V for 500 msec or more, the VCR starts panic recording.

## TAPE END(OUT) Terminal

5V ·········· Vin H:4V-5V
0V _____ Vin L: 0V-0.8V

1) "High"

   During recording, when the end of the tape is reached, the output becomes DC 5V.

5V _____ 
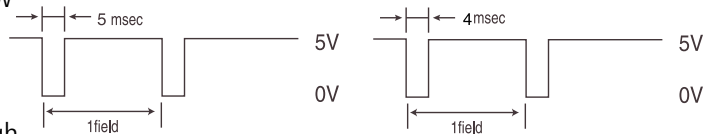0V ·········· Vin H:4V-5V
Vin L: 0V-0.8V

2) "Low"

   During recording, when the end of the tape is reached, the output becomes DC 0V.
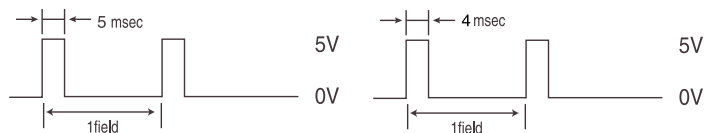
### SW OUTPUT Terminal

While recording, a pulse signal(DC 5V) is output at the SW OUT terminal after each recording period.  This terminal is usually connected to the switch input of devices like a camera switching unit, or a quad compressor.
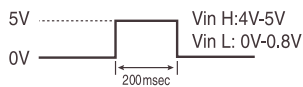
1) Low



2) High



(NTSC)          (PAL)

### SERIES OUTPUT Terminal
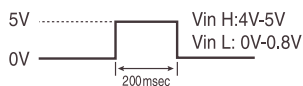


During recording, when the end of the tape is reached, the output becomes DC 5V .

### SERIES INPUT Terminal



If the input becomes DC 5V for 200 msec or more,the VCR starts series recording.

### WARNING OUTPUT Terminal

1) "High"



If the error display on the display panel continues to flash, the output becomes DC 5V. If the POWER button is pressed, the emergency mode  is released. then the output becomes 0V.

2) "Low"



If the error display on the display panel continues to  flash, the output becomes 0V. If the POWER button is pressed, the emergency mode  is released.  then the output becomes DC 5V.

# Maintenance

## Daily Inspection

The following daily inspections are recommended in order to assure long-term and trouble-free operation of the unit.

The daily inspections are particularly important if using autorepeat recording.

**Inspection Procedure**

1   Turn on the power to the camera, TV monitor and other connected devices.

2   Check that the image received on the TV monitor is correct.

3   Check that the on-screen display of the date and time is correct.

4   Press the REW button to rewind the recorded tape a few seconds.

5   Press the PLAY button and check that the playback image is correct.

   • *Check in particular playback of time lapse recording (24 hour mode)*

6   Check that the recorded date and time are correct.

## Servicing Periodically

The requirement for professional servicing on the VCR varies depending on the usage and environment of the deck. The following table provides a recommended guide on when to contact a service representative for maintenance.

✔

- *If the security lock is engaged, it has to be released before proceeding with the inspection.*

- *If any problem is discovered during the inspection,unplug the power cord and consult your dealer.*

**WARNING**
Do cleaning and lubricating from time to time even if the deck is not used.

| Items | Maintenance period(Hrs) | | | | |
|---|---|---|---|---|---|
| | 1,000 | 2,000 | 3,000 | 4,000 | 5,000 |
| DRUM TOTAL ASS'Y | ✽ | ▲ | ✽ | ▲ | ✽ |
| CAPSTAN MOTOR | ✽ | ▲ | ✽ | ▲ | ✽ |
| L/C BRKT TOTAL ASS'Y | ✽ | ▲ | ✽ | ▲ | ✽ |
| REEL BELT | ✽ | ▲ | ✽ | ▲ | ✽ |
| IDLER PLT ASS'Y | | ✽ | | ▲ | |
| S/T REEL TABLE ASS'Y | | ✽ | | ▲ | |
| T-SUB BRAKE ASS'Y | | ▲ | | ▲ | |
| BAND BRAKE ASS'Y | | ▲ | | ▲ | |
| MAIN PLATE | | ▲ | | ▲ | |
| L-LOADING ASS'Y | | ▲ | | ▲ | |
| PINCH LEVER T/T ASS'Y | | ✽ | ▲ | | ✽ |
| AC HEAD TOTAL ASS'Y | | | ▲ | | |
| FE HEAD | | | | | ▲ |
| REEL GEAR TOTAL ASS'Y | | ✽ | ▲ | | ✽ |

✽ : Check and replace parts if necessary

▲ : Replacement

# Troubleshooting Guide

If the unit does not operate normally when you follow the instructions indicated in the manual, please refer to the table below.

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
|---------|----------------|-------------------|
| No power. | The power cord is not correctly connected to the wall outlet. The unit is in timer recording stand-by mode. | - Connect the power cord firmly into the walloutlet. <br> - This is normal, not a malfunction. |
| No image displayed on the monitor TV. | The connections are not correct. The power to the camera and/or monitor TV is not turned on. | - Check that all connections are correct. <br> - Turn all connected devices power on. |
| The buttons do not respond. | The unit is in timer recording stand-by mode. Alarm recording. <br><br> Panic recording. <br><br><br> The security lock(SET LOCK) is engaged. | - Press the POWER/Timer button. <br><br> - Wait for the alarm recording to end. <br> - Press the STOP button for 3 seconds to stop. <br> - Wait for the panic recording to end. <br> - Press the STOP button for 3 seconds to stop. <br> - Cancel the security lock. |
| Unit will not go into record mode. | The loaded cassette has no erasure prevention tab. | - Load a cassette tape with erasure prevention tab or cover the tab hole with adhesive tape. |
| Autorepeat. | "NO" is selected for autorepeat recording in the REC MODE SET menu. During autorepeat recording when there is an alarm input, autorepeat recording is canceled. | - Be sure to select "YES" for autorepeat recording. <br><br> - Set "YES" again for autorepeat recording. |
| Timer recording. | The date and time are not correct. The unit is not set to timer recording stand-by mode. "N" is selected for the TIMER PROGRAM SET. | - Set the date and time correctly. <br> - Press the POWER/TIMER button to display "☉" on the display panel. <br> - Be sure to select "Y" for the TIMER PROGRAM SET. |

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
|---|---|---|
| Alarm recording. | "NO" is selected for alarm recording in the ALARM REC SET menu. | - Be sure to select "YES" for alarm recording. |
| Noise in the playback picture. | The tracking must be adjusted.<br><br>The video heads need cleaning. | - Adjust it by using the manual tracking.<br>- Press the PLAY button in the playback mode.<br>- Clean the video heads. |
| The date and time are not recorded. | "NO" is selected for the date and time in the DISPLAY SET menu. The date and time go off the ON-SCREEN by pressing the DISPLAY button. | - Be sure to select "YES" for the display.<br>- Press the DISPLAY button to show the date and time. |
| The cassette tape cannot be ejected | Problem with the system or tape. | - Unplug the power cord then plug it back in. |

## Periodic Inspection and Maintenance

Periodic inspection and maintenance should be referred to your dealer. If there is noise in the playback picture, and it cannot be corrected using the tracking control, it may indicated that the video heads need cleaning. The video heads should be cleaned and inspected every 1,000 hours. The video heads usage can be checked using initial menu, running time.

## System Down

✔

• *Press the RESET button for more than 5 seconds to perform the reset. Running Time will not be reset.*

If the unit does not function at all, try the following.

1 Unplug the power cord then plug it back in.

2 Reset the memory. (Press the RESET button. Under normal conditions, do not touch the RESET button)

3 If the problem is not corrected after performing steps 1 and 2, consult your dealer.

# Specifications

| | NTSC | PAL |
|---|---|---|
| **GENERAL SPECIFICATIONS** | | |
| **Recording method** | Dual-azimuth 4-head rotating helical scanning system | |
| **Audio recording** | In 2, 6, and 18 hour modes | In 3, 12,18, and 24 hour modes |
| **Tape speed** | 33.35 m/sec (2 hour mode) | 23.39 m/s (3 hour mode) |
| **Specified video cassette tape** | VHS 1/2 inch video cassette tape | |
| **Recording/playback time** | 24H Model : L2, L6, L18, 24, 36 hours (when using T-120 tape) 960H Model : L2, L6, L18, 24, 36, 48, 72, 96, 120, 168, 240, 360, 480, 720, 960 hours (when using T-120 tape) | 24H Model : L3, L12, L18, L24, 36 hours (when using E-180 tape) 960H Model : L3, L12, L18, L24, 36, 48, 72, 96, 120, 168, 240, 360, 480, 720, 960 hours (when using E-180 tape) |
| **Fast forward/rewind time** | Within 3 minutes (when using T-120 tape) | Within 3 minutes (when using E-180 tape) |
| **Television system** | NTSC color TV system | PAL color TV system |
| **VIDEO** | | |
| **Recording method** | Luminance signal : FM recording Color signal : Down-converted subcarrier direct recording | Luminance signal : FM recording Color signal : Down-converted subcarrier phase shift recording |
| **Video input** | 1 Vp-p, BNC, 75Ω, unbalanced | |
| **Video output** | 1 Vp-p, BNC, 75Ω, unbalanced | |
| **Horizontal resolution** | Black & white mode 350 lines | |
| | Color mode 300 lines | |
| **AUDIO** | | |
| **Input** | RCA pin jack more than 47kΩ -8.8dBm,unbalanced | |
| **Output** | RCA pin jack less than 1.5kΩ -7.8dBm, unbalanced | |
| **Microphone input** | -60 dBs, 3.5mm mini jack, 10kΩ, unbalanced | |
| **CONNECTORS** | | |
| **Alarm input** | DC 4~5V(Open), DC 0~0.8V(Closed)/5.7kΩ | |
| **Alarm output** | DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ | |
| **Panic input** | DC 4~5V(Open), DC 0~0.8V(Closed)/5.7kΩ | |
| **End output** | DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ | |
| **Warning output** | DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ | |
| **Series input** | DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ | |
| **Series output** | DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ | |
| **Switch output** | DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ | |
| **Common** | 0V( GND) | |
| **OTHER SPECIFICATIONS** | | |
| **Operating temperature range** | 41ºF ~ 104ºF | |
| **Operating humidity range** | 80% or less | |
| **Power requirements** | AC90 ~ 240V, 50/60 Hz | |
| **Power consumption** | 17W | 11W |
| **Dimensions** | 360(W) x 90(H) x 289(D) | |
| **Weight** | approximately 4kg | |

NOTE : The specifications and external appearance of this unit are subject to change without notice.

Ver-13