

**TLR3040
Time-Lapse VCR**

**Installation/
Operation Manual**

C671M (1/01)

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GENERAL

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

| | | |
|--|---|---|
|  | AVERTISSEMENT DANGER D'ÉLECTROCUTION NE PAS OUVRIR |  |
| <p>AVERTISSEMENT: POUR ÉLIMINER TOUT RISQUE D'ÉLECTROCUTION, NE PAS OUVRIR LE COUVERCLE (OU LA PARTIE ARRIÈRE). AUCUNE PIÈCE RÉPARABLE PAR L'UTILISATEUR NE SE TROUVE À L'INTÉRIEUR. POUR TOUTE INTERVENTION D'ENTRETIEN OU DE RÉPARATION SE CONFIER AUX TECHNICIENS QUALIFIÉS.</p> | | |



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.



La flèche symbolisant l'éclair dans un triangle équilatéral a pour objet de tirer l'attention de l'utilisateur sur le fait, qu'il y a des tensions dangereuses non-isolées à l'intérieur de l'enceinte du produit qui peuvent être suffisamment impor-tantes pour conduire au risque d'électrocution.



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 equipment.



Le point d'exclamation au sein d'un triangle équilatéral a pour objet de tirer l'attention de l'utilisateur sur le fait qu'il y a des instructions de mise en service et d'entretien (de réparation) dans les fiches descriptives de l'appareil qui doivent obligatoirement être respectées.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

CAUTION:

TO PREVENT ELECTRIC SHOCK DO NOT USE THE POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

AVERTISSEMENT:

AFIN D'ÉVITER TOUT RISQUE D'INCENDIE OU D'ÉLECTROCUTION, NE PAS EXPOSER CET APPAREIL À LA PLUIE NI À L'HUMIDITÉ.

ATTENTION:

POUR PRÉVENIR LES CHOCS ÉLECTRIQUES NE PAS UTILISER CETTE FICHE POLARISÉE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ÊTRE INSÉRÉES À FOND SANS EN LAISSER AUCUNE PARTIE À DÉCOUVERT.

SAFEGUARDS, WARNINGS, CAUTIONS, AND CARE



WARNING: *The included power cord is used for 120 VAC, 60 Hz. Never connect any outlet or power supply having a different voltage or frequency. If you are unsure of the type of power supply, consult your equipment dealer or local power company.*

Observe the following WARNINGS before installing and using this product. Follow all warnings and instructions marked on the VCR.

Instructions

Read all the safety and operating instructions before operating the VCR. Keep the instructions for future reference. Follow all operating and use instructions. Heed all warnings on the equipment and in the operating instructions.

Tapes

Only video cassette tapes with the VHS mark may be used with this model.

Power Source and Power Cord

Do not damage the power cord—it may cause fire or shock hazard. Route the cord so it will not be walked on or pinched by items placed on or against it. Pay particular attention to the cord at the wall plug or convenience receptacle and the point where it connects to the VCR. When unplugging the power cord, grasp the plug and remove it carefully.

Installation/Service

Installation and servicing should be done by qualified service personnel only and conform to all local codes. Do not try to service the VCR yourself. Opening or removing covers may expose you to dangerous voltage or other hazards.

Damage Requiring Service

Unplug the VCR from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power cord or plug is damaged.
- If liquid has been spilled or objects have fallen into the VCR.
- If the VCR does not operate normally when following the operating instructions.

Adjust only those controls covered by the operating instructions. Improper adjustment of other controls may cause damage and will often require extensive work by a qualified technician to restore the VCR to normal operation.

- If the VCR was dropped or the cabinet damaged.
- When the VCR shows a distinct change in performance. This indicates a need for service.

Replacement Parts

Be sure the service technician uses only replacement parts Pelco recommends, or which have the same characteristics as the original part. Unauthorized substitutions may cause fire, electric shock, or other hazards.

Safety Check

When service or repair to the VCR is completed, ask the service technician to perform safety checks to ensure it is in safe operating condition.

Water/Moisture/Condensation

Do not use this VCR near water. It is designed for indoor use only and must not be installed where exposed to rain and moisture.

Do not place objects containing water, such as drinks, on top of the VCR.

If the VCR is exposed to a rapid increase in temperature (such as warming a cold room or after moving it from a cold location to a warm one), condensation may form on the tape transport mechanism inside the VCR. To prevent damage to the VCR or tapes, plug the VCR into the AC outlet and turn the power on for about two hours. Do not play back or record on the VCR during this time.

Condensation is likely to occur:

- When the VCR is moved from a cold room to a warm room or from outdoors to indoors
- When a cold room is heated quickly
- When the humidity is very high

Avoid using the VCR where cold air (such as from an air conditioner) will blow directly on it.

Cleaning

Unplug the VCR from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Clean with a soft cloth slightly moistened with mild detergent and water. Wipe dry. NEVER use petroleum-based solutions.

Attachments

Do not use attachments not recommended by Pelco as they may cause hazards.

Accessories

Use only with a cart, stand, tripod, bracket, or table recommended by Pelco or sold with the VCR. Follow Pelco's instructions when mounting equipment, and use a mounting accessory recommended by Pelco.

Do Not Place Anything Heavy On The VCR

Heavy objects placed on the VCR will damage it.

Ventilation

Slots and openings in the cabinet provide ventilation and prevent it from overheating. Do not block these openings. Never place the VCR near or over a radiator or heat register. Do not place it in a built-in installation such as a rack unless proper ventilation is provided or Pelco's instructions have been followed. There are many ventilation holes on the bottom of the VCR—for maximum ventilation, place it on a hard level surface only.

Grounding or Polarization

This VCR has a three-wire grounding-type plug—a plug with a third (grounding) pin. As a safety feature, this plug fits only into a grounding-type outlet. If you cannot insert the plug into the outlet, contact an electrician to replace the obsolete outlet.

Lightning/Power Surges

Unplug the VCR for additional protection during lightning storms or when it is unused for long periods. Pelco recommends using conditioned-output uninterruptible power supplies (UPS) and/or surge protected outputs to maximize protection of the VCR.

When Not In Use

When you finish operating the VCR, always unload the cassette and turn off the power.

Overloading

Do not overload wall outlets and extension cords as this increases the risk of fire and electric shock.

Foreign Objects

Never push objects of any kind into the VCR through openings. They may touch dangerous voltage points or short out parts that could cause a fire or electric shock, or damage the mechanism.

Care of Video Cassette Tape

- Avoid violent vibration and shock.
- Do not place near a strong magnetic field (near a motor, transformer, or magnet).
- Never place or store in direct sunlight.
- Avoid dusty places.
- Place the cassette in the cassette case and store vertically.
- Never store tapes in humid locations.

UNPACKING INSTRUCTIONS

Unpack and inspect all parts carefully. Save the shipping carton, boxes, and inserts. They are the safest material in which to make future shipments.

If an item appears damaged in shipment, replace it properly in its box and contact the factory at 1-800-289-9100 or 1-559-292-1981 for a replacement. (International customers fax 1-559-348-1120 for authorization and instructions.)

If an item needs to be returned to the factory for repair, consult the WARRANTY AND RETURN section of this manual for instructions.

INTRODUCTION TO TIME-LAPSE RECORDERS

Time-lapse recording permits longer than ordinary recording times. The primary reason for using time-lapse recording in a CCTV security system is that a single VCR tape can be used for an extended period beyond the standard recording time. The following explains how time-lapse recording works.

The actual recording on VCRs is a series of still pictures or fields. Standard consumer VHS recorders store 60 fields (30 frames) per second. A T-120 cassette lasts just two hours in this mode (SP mode). You can get slightly longer recording times (six hours) using the extended recording mode (EP mode). You can record even longer on a T-160 cassette in these modes: two hours and 40 minutes in SP mode and eight hours in EP mode. (Refer to Table C for actual recording times in different modes.)

Time-lapse recorders, however, use microprocessor-based techniques to record fewer fields per second than a normal VHS machine and extend recording time. This negates the need to change the tape every two hours—and also substantially reduces viewing time when the recording is played back, another important consideration.

In normal VCR operation, all video head scans (60 per second) are recorded. But in time-lapse mode the tape runs more slowly and records pictures periodically. In 12-hour mode, a normal time-lapse machine records 10 fields per second, and in 24-hour mode, it stores just five fields per second (for up to 12 and 24 hours on a tape, respectively). Longer times are possible by slowing the recording rate further.

At normal speed a picture is recorded every 1/60 of a second so there is little change over five frames. In longer time-lapse modes, however, a field is recorded intermittently over a longer period so changes are apparent from field to field.

The time-lapse recording can be played back at normal two-hour tape speed, which makes for rapid review—one of the time-lapse recorder's most important advantages. Action on the tape, however, appears faster than normal.

As an advanced feature, time-lapse recorders (like the TLR3040) can automatically switch from time-lapse to real-time recording when an alarm condition occurs. This is important since the primary purpose of recording an event is identification, and real-time recording provides more detail.

TLR3040 FEATURES AND FUNCTIONS

The TLR3040 Time-Lapse VCR is a powerful surveillance tool designed for industrial and security recording. The unit supports both T-120 and T-160 tapes.

- **T-120 Tapes**
The unit can record for 6, 18, or 30 hours.
- **T-160 Tapes**
The unit can record for 8, 24, or 40 hours.

The TLR3040 features frame-by-frame and field-by-field playback and high-speed search. Playback also allows still picture viewing.

Audio Recording—Audio recorded in 8H, L24H, and L40H modes is played back only in its respective mode.

Resolution and Image Quality—This VCR has a high-quality circuit allowing more than 330 lines in black and white mode and more than 240 lines in color mode.

Automatic Head Cleaning—This VCR automatically removes foreign matter from the heads when a cassette is inserted for continuous smooth operation.

Easy Setup Using a Monitor—The on-screen menus simplify setup programming. You can select these menus even without inputting a video signal.

Easy Cueing with Alarm Recording—Index signals are automatically added at the beginning of alarm recording for easy cueing. You can even use the monitor to confirm an alarm recording's starting time.

One-Button Recording Check—You can confirm correct recording by pressing the PLAY/REC CHECK button during recording.

Complete or Partial Front Panel Lock—All or some of the front panel buttons are locked, keeping the VCR in its current condition.

Protection Against Power Failures—Recording data (including date, time, and timer setup) is stored in backup memory, so the system can resume recording after a power failure. The monitor displays the time of the failure.

External Time Clock Adjustment—You can reset the on-screen clock to the nearest hour by applying a signal to the RST (reset) IN terminal at the rear of the VCR.

Variety of Search Functions—You can do index and skip searches, or search by time and date.

Special Playback Features—These include still images, speed search, reverse playback, frame-by-frame and field-by-field viewing in both directions, slow-motion, and high-speed viewing.

JOG Dial/SHUTTLE Ring—You can use these controls to search for the desired image. You can adjust the playback speed with the SHUTTLE ring and search for an image frame-by-frame with the JOG dial.

Recording Options—This system offers the following recording options: daily/weekly/holiday timer recording, alarm recording, series recording, remote recording, and repeat recording.

Digital Elapsed Time Display—The elapsed time of recording and playback is stored in non-volatile memory. You can use the elapsed time display as a guide to when to do periodic maintenance.

Tape Use Counter—This counter displays how many times you have recorded on a tape. This helps you decide when you need to replace a tape.

Daylight Savings Time Setting—A daylight savings time setting is available. You can set the clock forward an hour by programming the menu.

NOTE: *The battery backup is for memory only—the VCR does not continue recording if the power goes out. If you want to keep recording during an outage, make sure the VCR system is on your UPS (uninterruptible power supply) system.*

QUICK START

BASIC START

NOTE: *This section is intended for people experienced in working with time-lapse recorders and installing CCTV systems. (However, you might want to take a few minutes to review the material in the General section.)*

1. Decide where to locate the VCR. Do all system hookups first (camera, multiplexer, etc.) if you are installing the VCR in a location where you cannot access its rear panel.
2. Connect the VCR to other equipment (refer to the *Installation* and *Connecting the VCR to a Multiplexer* sections.)
3. Set the time and date with the **power off** by pressing the MENU button for more than three seconds and then adjusting the time and date on the fluorescent display. (Refer to the *Adjusting the Clock* section.) Skip if you do not want to set the time and date.
4. Plug in the VCR and press the POWER button.
5. Insert a T-120 or T-160 tape. Refer to Table C for recording times.
6. Put the VCR in the recording mode you want by pressing the REC/PLAY MODE + and – buttons. Watch the fluorescent display. Set the recording speed to 8H, L24H, or L40H.
7. Press REC to begin recording. Press STOP to stop.
8. Turn the SHUTTLE ring right to fast forward and left to rewind. Press STOP to stop. Press PLAY to play back the tape.
9. Refer to the *Initial System Testing* section for information on testing.

ADDITIONAL ITEMS

You can also incorporate the following programming steps for more than a basic quick setup.

- If desired, set the tape end and quasi v-sync options (refer to the *First Time Set Up Menu* section).
- If desired, set the display mode and time and date size options (refer to the *Display Menu* section).
- If desired, program for timer recording (refer to the *Timer Program Menu* section).
- If desired, program for alarm recording mode and duration (refer to the *Recording Set Up Menu* section).
- If desired, refer to the *Rear Terminal Menu* section to program for call out (refer to the *Series Recording* section), clock out, operation of the mode out terminal, and operation mode of the REC IN terminal.

INSTALLATION

PRE-INSTALLATION CAUTIONS

- Provide secure power to system components. Prevent overloading or shorting by dedicating power circuits to the surveillance equipment. Restrict access to the surveillance system circuit breakers, switches, and equipment power cords.
- If you need to record multiple cameras, a multiplexer is required.
- Surveillance system components must be operationally compatible. Time-lapse recording speeds and dwell times of any accessory switching equipment must be compatible with each other.
- The TLR3040 Time-Lapse VCR provides multiple alarm recording speeds so it is important that alarm triggering of components be operationally compatible. Refer to the *Introduction to Time-Lapse Recorders* section for information on time-lapse recording.
- Complete all system hookups (cameras, multiplexer, etc.) before installing the VCR in a location where you cannot access its rear panel.

SECURING THE VCR CONTROLS

Protect surveillance equipment to forestall tampering. We recommend putting the recorder in a secure VCR cabinet. Pelco offers such units—the RM2000, which is a rack kit for a single VCR, and the RM2004, which is a rack kit for four VCRs.

MONITOR TIPS

- Pelco recommends using a CCTV monitor.
- Some monitors may cause picture vibration or picture distortion at the top or bottom of the image during still or normal playback. (Refer to the *Vertical Adjustment* section for information.)
- A television may be unable to provide a stable picture without vibration or distortion.

INSTALLATION

1. Remove the VCR and all cables from the box.
2. Place the VCR in a suitable location.
3. If installing in a rack, place the VCR in the rack before making cable and power connections. Refer to the documentation included with the rack kit for installation instructions.
4. If you are **not** using a multiplexer, refer to Figure 1.
 - Connect the camera (video output) to the rear of the VCR (video input BNC).
 - Connect the VCR (video output BNC) to the monitor (video input).
 - Connect the alarm input to the VCR (ALM IN and GND [ground] terminals).
 - If you are using a 600-ohm microphone, connect it to the VCR (AUDIO IN jack). Connect the VCR (AUDIO OUT connector) to the monitor (audio input).
5. If you **are** using a multiplexer, refer to the *Connecting the VCR to a Multiplexer* section.

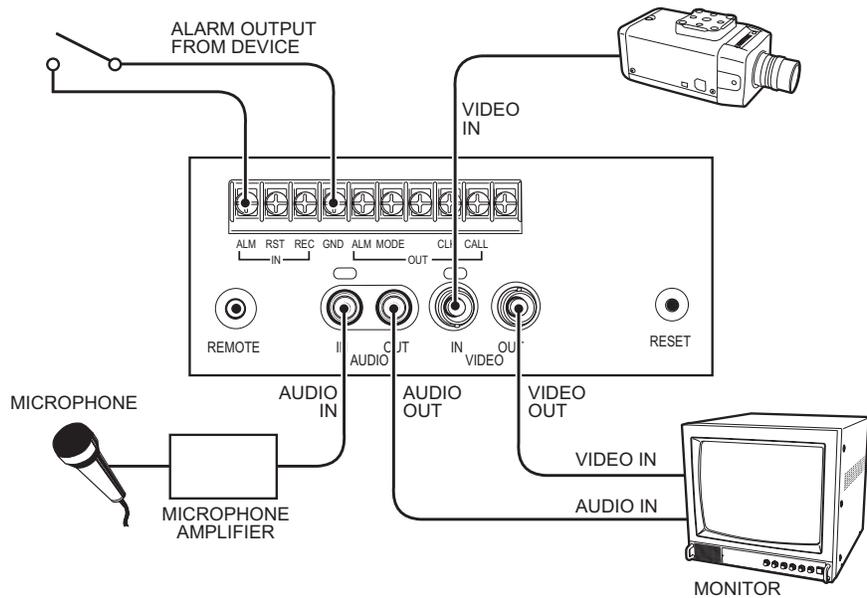


Figure 1. Typical System Setup

00248

CONNECTING THE VCR TO A MULTIPLEXER

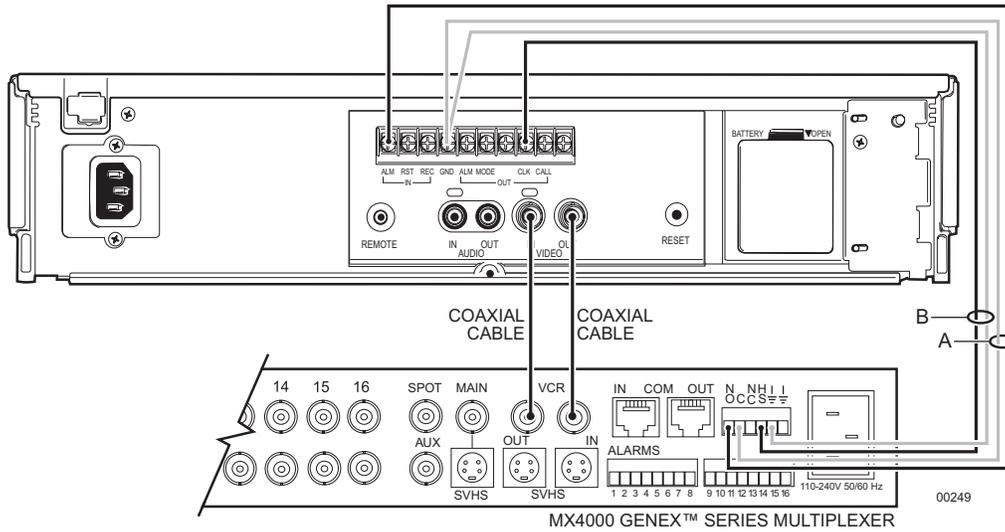


Figure 2. Connecting VCR to Multiplexer

NOTE: Cameras and monitors are connected to the multiplexer. Figure 2 shows the connection between the VCR and an MX4000 Series Genex Multiplexer. Refer to the multiplexer manual for additional component connections.

Figure 2 shows how to connect the VCR to an MX4000 Series Genex® Multiplexer.

- **For Automatic Speed Tracking** (“B” lines in Figure 2)

This lets the VCR control the multiplexer’s recording speed. It is the most efficient recording method.

1. Connect the CLK output to the multiplexer’s head switching (HS) input to synchronize camera switching.
2. Connect the multiplexer’s ground terminal to the VCR’s GND terminal.

- **For Alarm Recording** (“A” lines in Figure 2)

This is to start and stop recording when there are alarms.

1. Connect the multiplexer’s normally open (N.O.) relay terminal to the VCR’s ALM IN (alarm input) terminal.
2. Connect the common (C) terminal to the VCR’s GND terminal.

ALARM RECORDING CONNECTION

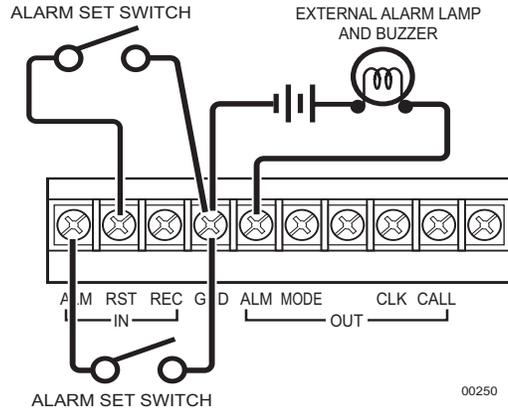


Figure 3. Alarm Recording Connection

You can confirm an alarm from a distance by connecting the ALM OUT terminal with an existing alarm system panel or other peripherals, such as a buzzer. Connect the VCR and other peripherals as shown in Figure 3.

CONNECTING FOR SERIES RECORDING

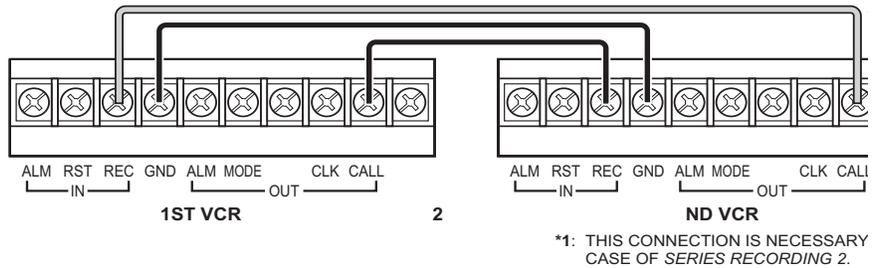


Figure 4. Connecting VCRs for Series Recording

Connect the VCRs as shown in Figure 4. Refer to the *Series Recording* section for information about series recording methods 1 and 2.

CONNECTING FOR REMOTE RECORDING

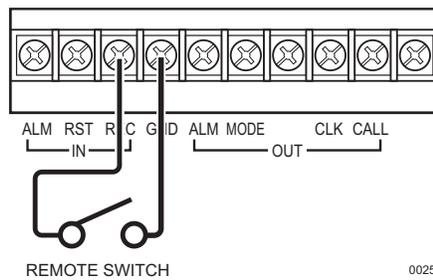
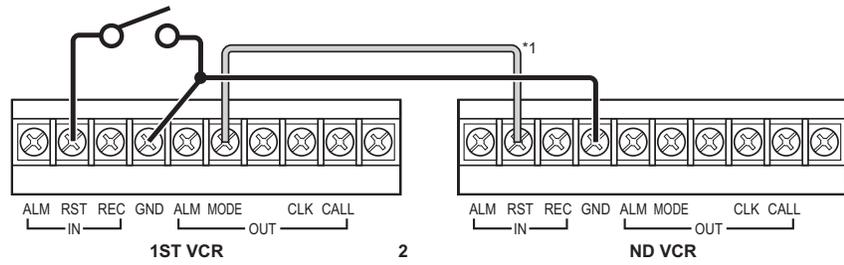


Figure 5. Connecting for Remote Recording

Connect the VCR with a remote switch as shown in Figure 5.

CONNECTING FOR EXTERNAL TIME CLOCK ADJUSTMENT



*1: WHEN CONNECTING THE **MODE OUT** TERMINAL OF THE FIRST VCR WITH THE **RST IN** TERMINAL OF THE SECOND VCR, THE ON-SCREEN CLOCK OF THE SECOND VCR CAN BE ADJUSTED TO THAT OF THE FIRST VCR.

00253

Figure 6. Connecting for External Time Clock Adjustment

If **ALARM REC DURATION** in the Recording Set Up menu is set to other than **MAN 1**, the on-screen clock can be reset to the nearest hour by applying a signal to the **RST** (reset) IN terminal. For example, if the current time is 11:29:59, it will be reset to 11:00:00, and if the current time is 11:30:00, it will be reset to 12:00:00.

CONTROLS

FRONT PANEL

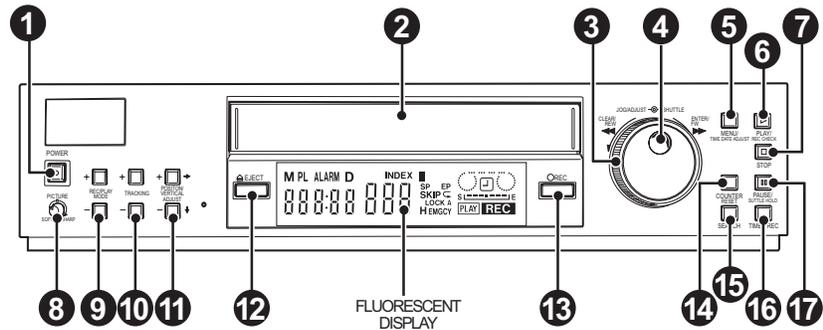


Figure 7. Front Panel

00254

1. **POWER button**
Press for on; press again for off. The POWER indicator lights when the VCR is turned on.
2. **Cassette loading slot**
Insert the cassette in this slot to load it.
3. **SHUTTLE ring**
Use to adjust the playback speed and to program the menus. Turn this ring to the right to advance the tape or to forward search. Turn it to the left to rewind a tape or to reverse search. You can also use it to clear the alarm list, power loss list, timer recording, and to initialize the menu programming. It also lets you program or exit the menus after setup.
4. **JOG dial**
Use to advance or reverse the tape frame-by-frame and to program the menus.

5. **MENU/TIME DATE ADJUST button**
 - When the VCR is turned on, press to display the Main menu. Press again to exit the menu.
 - When the VCR is turned off, press for more than three seconds and you can adjust the VCR's time and date on the fluorescent display.
6. **PLAY/REC CHECK button**
 - When the VCR is in stop mode, press to play back a previously recorded tape.
 - During recording, press for more than 1.5 seconds to check recording function.
7. **STOP button**

Press to halt all tape-related functions.
8. **PICTURE control**

Use this control to adjust picture quality between soft and sharp.
9. **REC/PLAY MODE buttons**

Set to 8H, L24H, or L40H for recording, and to 2H, 8H, L24H, or L40H for playback.
10. **TRACKING buttons (+/-)**

Press to reduce or eliminate the noise during playback, slow playback, etc.
11. **POSITION/VERTICAL ADJUST buttons (+/-)**
 - Pressing the (+) button moves the time and date display to the right. Pressing the (-) button moves the display down the screen. The display cannot be adjusted during an alarm recording or if a warning is displayed.
 - Pressing either button minimizes vertical jitter in still mode or during fast playback. Refer to the *Vertical Adjustment* section for details.
12. **EJECT button**

Press to remove the cassette.
13. **REC (record) button**

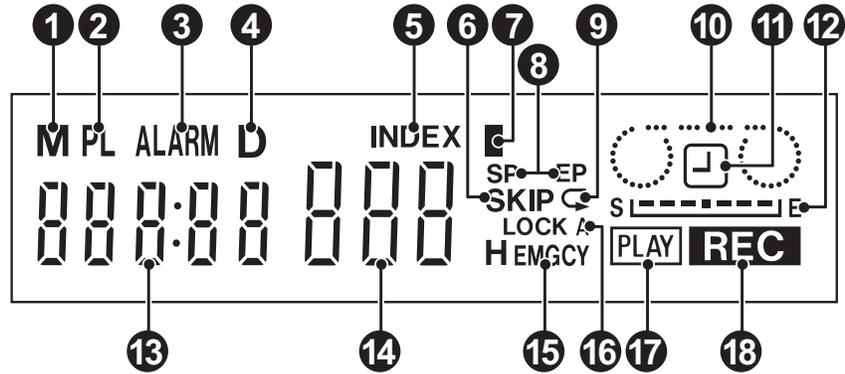
Press to begin recording.
14. **COUNTER RESET button**

Press to reset the counter to 00000.
15. **SEARCH button**

Press to access the Search Function menu.
16. **TIMER REC button**

Press to make a timed recording (once the VCR is programmed to record).
17. **PAUSE/SHUTTLE HOLD button**
 - Press during recording to temporarily stop tape movement. Press again to resume recording.
 - Press during playback for a still picture. Press again to resume normal playback.
 - Press and hold after turning the SHUTTLE ring to fix the playback speed.

FLUORESCENT DISPLAY



00255

Figure 8. Fluorescent Display

1. **M (counter memory stop/month) indicator**
 - Lights during counter memory stop.
 - Also, lights while the VCR is turned off and the month of the VCR's clock has been set on the fluorescent display.
2. **PL (power loss) indicator**
Lights when the VCR is turned on after a power failure during recording.
3. **ALARM indicator**
Flashes during alarm recording and stays on when the alarm recording is finished.
4. **D (time date search/day) indicator**
 - Lights during the time date search.
 - Also, lights while the VCR is turned off and the day of the VCR's clock has been set on the fluorescent display.
5. **INDEX (index search) indicator**
Flashes when recording an index signal, and lights during the index number setup and the index search. (Index number is shown on the Recording and Playback Mode display.)
6. **SKIP (skip search) indicator**
Lights during a skip search.
7. **Daylight Saving Time indicator**
Lights when DAYLIGHT SAVINGS is set to ON.
8. **SP, EP (tape speed) indicator**
Indicates the tape speed (SP = standard play, EP = extended play).
9. **Repeat indicator**
Lights when TAPE END in the First Time Set Up menu is set to REPEAT or ALARM•PROT.
10. **Cassette Status indicator**
Lights when you insert a tape. The light advances, stops, or flashes according to tape movement.
11. **Timer Recording indicator**
Lights when the VCR is in standby for timer recording or during timer recording.
12. **Tape Remaining indicator**
Indicates the absolute position on the tape (S = start of tape, E = end of tape).

13. **Counter/Clock display**
 - With the VCR on, indicates the relative position on the tape. (The counter stops counting where no recording is made on the tape.)
 - With the VCR off, shows the clock (24-hour format).
14. **Recording and Playback Mode/Index Number display**

Displays the number corresponding to a selected recording or playback mode. Also, displays the index number during the index number setup and the index search.
15. **EMGCY (emergency recording) indicator**

Lights when EMERGENCY REC in the Recording Set Up menu is set to ON.
16. **LOCK/LOCK A indicator**
 - Lock: Lights when all buttons **except** REC and EJECT are locked.
 - Lock A: Lights when all buttons are locked.
17. **PLAY indicator**

Lights during playback.
18. **REC (recording) indicator**

Lights during recording.

REAR PANEL



WARNING: The included power cord is used for 120 VAC, 60 Hz. Never connect the power cord to any output or power supply having a different voltage or frequency.

Make sure the power cord is unplugged before making any rear panel terminal connections.

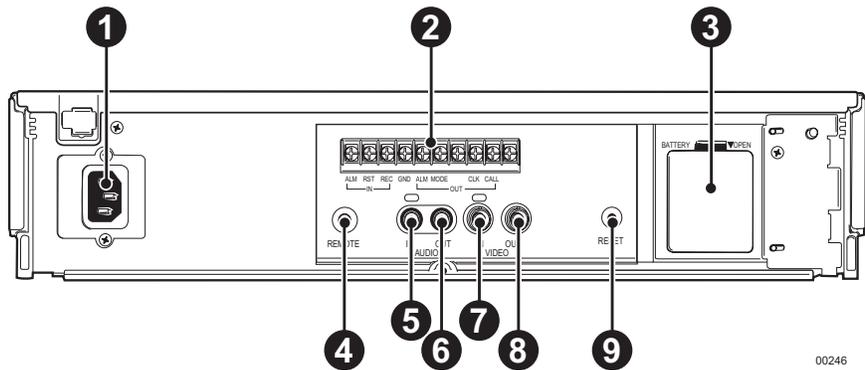


Figure 9. Rear Panel

1. AC power socket

The power cord plugs into this socket. Insert the cord firmly.

2. Terminals

- Input Terminals

ALM (alarm) IN

Use for alarm recording. Connect the alarm sensor here.

RST (reset) IN

Connect alarm reset switch here to stop alarm recording when ALARM REC DURATION in the Recording Set Up menu is set to MAN1. You can also use this terminal to set the on-screen clock when set to any mode other than MAN1.

REC (recording) IN

Use to start and stop recording or for series recording (refer to the *Series Recording* section).

- GND (ground)

Connect the ground lead here when a lead connected to other terminals requires a ground.

- Output Terminals

ALM (alarm) OUT

Use to indicate to an external device that an alarm is being recorded.

MODE OUT

Use to indicate the VCR's mode of operation. When MODE OUT in the Rear Terminal menu is set to CLOCK ADJ, the clocks of all connected VCRs can be adjusted.

CLK (clock) OUT

Use to control an external camera switcher, such as the MX4000 Series Genex Multiplexer.

CALL OUT

Use to indicate when the tape finishes recording or that there was a problem during recording.

3. **Battery box**
The battery is stored here. (**NOTE:** *This is a special battery. Consult your dealer to replace it.*)
4. **REMOTE jack**
Jack for connecting a remote control unit.
5. **AUDIO IN connector**
Audio input connector (RCA pin).
6. **AUDIO OUT connector**
Audio output connector (RCA pin).
7. **VIDEO IN connector**
Input connector for video signal (BNC connector). Connect cameras here.
8. **VIDEO OUT connector**
Output connector for video signal (BNC connector). Connect a monitor here.
9. **RESET button**
Press to erase the date, present time, alarm recording list, power loss list, counter display, and recording and playback mode; and reset them to their default values. The VCR turns off.

ADJUSTING THE CLOCK AND USING THE JOG AND SHUTTLE CONTROLS

JOG AND SHUTTLE CONTROLS

USING THE JOG DIAL

- Turn by using your finger on the indent.
- Turning the JOG dial right advances you through the options while turning left reverses direction.
- When the option is not flashing, turn right to move the cursor downward, turn left to move upward.

USING THE SHUTTLE RING

- The SHUTTLE ring automatically centers itself if you turn it fully right/left and release it.
- Some menus move down to the next layer when you turn the SHUTTLE ring right. Turning it left returns to the previous layer.

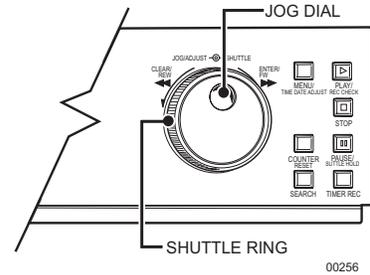


Figure 10. JOG Dial and SHUTTLE Ring

ADJUSTING THE CLOCK

You can adjust the VCR's clock on the front panel even when the VCR is turned off. (You can also enter time and date information through the First Time Set Up menu.) This function lets you enter the order of the time, month, day, and year. The hour time is entered twice due to daylight saving time.

To adjust the clock:

1. When the VCR and peripheral devices are turned off, press the MENU button for more than three seconds. The hour digits on the fluorescent display's clock start flashing.
2. Turn the JOG dial to set the hour digits. (If the flashing item is the same as the current time, turn the SHUTTLE ring without turning the JOG dial.)
3. Turn the SHUTTLE ring right to make the 10-minute digit flash, and then turn the JOG dial to adjust.
4. Turn the SHUTTLE ring right to make the 1-minute digit flash, and then turn the JOG dial to adjust. (If you want to finish the clock adjustment now, press the MENU button for more than three seconds.)
5. Turn the SHUTTLE ring right to make the month digits flash, and then turn the JOG dial to adjust. The month indicator (M) lights.
6. Turn the SHUTTLE ring right to make the day digits flash, and then turn the JOG dial to adjust. The day indicator (D) lights.
7. Turn the SHUTTLE ring right to make the year digits flash, and then turn the JOG dial to adjust.
8. Turn the SHUTTLE ring right. The VCR's clock is now set.
9. Repeat steps 1 and 2, and then turn the SHUTTLE ring left to exit after the hour digits are entered the second time (for daylight saving time).

ADJUSTING TO THE EXACT SECOND

Set the clock as described previously, but set the minutes to one minute ahead of the time you are using as a reference. After step 7, turn the SHUTTLE ring right when the desired time reaches 00 seconds of the minute you have chosen.

PROGRAMMING

GENERAL PROGRAMMING INSTRUCTIONS

The following is a universal procedure that shows how programming is done on the VCR. **Use the JOG dial to select items, turn the SHUTTLE ring to the right to enter, and turn the SHUTTLE ring to the left to exit.**

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select the desired item.
 - Turn right to move the cursor downward.
 - Turn left to move the cursor upward.
3. Turn the SHUTTLE ring right. The desired item is selected and the menu appears.
4. Turn the JOG dial left or right to select an item.
5. Turn the SHUTTLE ring right. The item flashes.
6. Turn the JOG dial left or right to change the setting.
7. Turn the SHUTTLE ring right to enter.
8. Press the MENU button. The day and present time display appears.

LANGUAGE SELECTION MENU

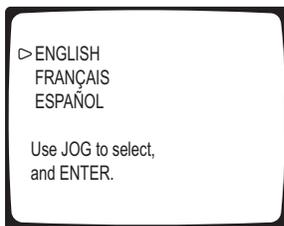
The Language menu appears on the screen:

- When you press the MENU button when the VCR is turned on the first time after it is purchased
- When you press the RESET button during use

Remember: After the first time, the only way to access the Language menu is to press the RESET button on the rear panel with a pointed object. Doing so will erase your custom programming and return the unit to factory default settings. Then follow steps 1-4 below.

The menu offers three languages: English (default), French (Français) and Spanish (Español). To set the language:

1. Press the MENU button. The Language menu appears.
2. Turn the JOG dial to select the desired language.
3. Turn the SHUTTLE ring right. The Main menu appears in the selected language.
4. Press the MENU button to exit.



00257

Figure 11. Language Menu

QUICK GUIDE TO THE MENU STRUCTURE

The VCR's operating parameters are set through various on-screen menus. Program your choices on the menus according to the instructions on the following pages.

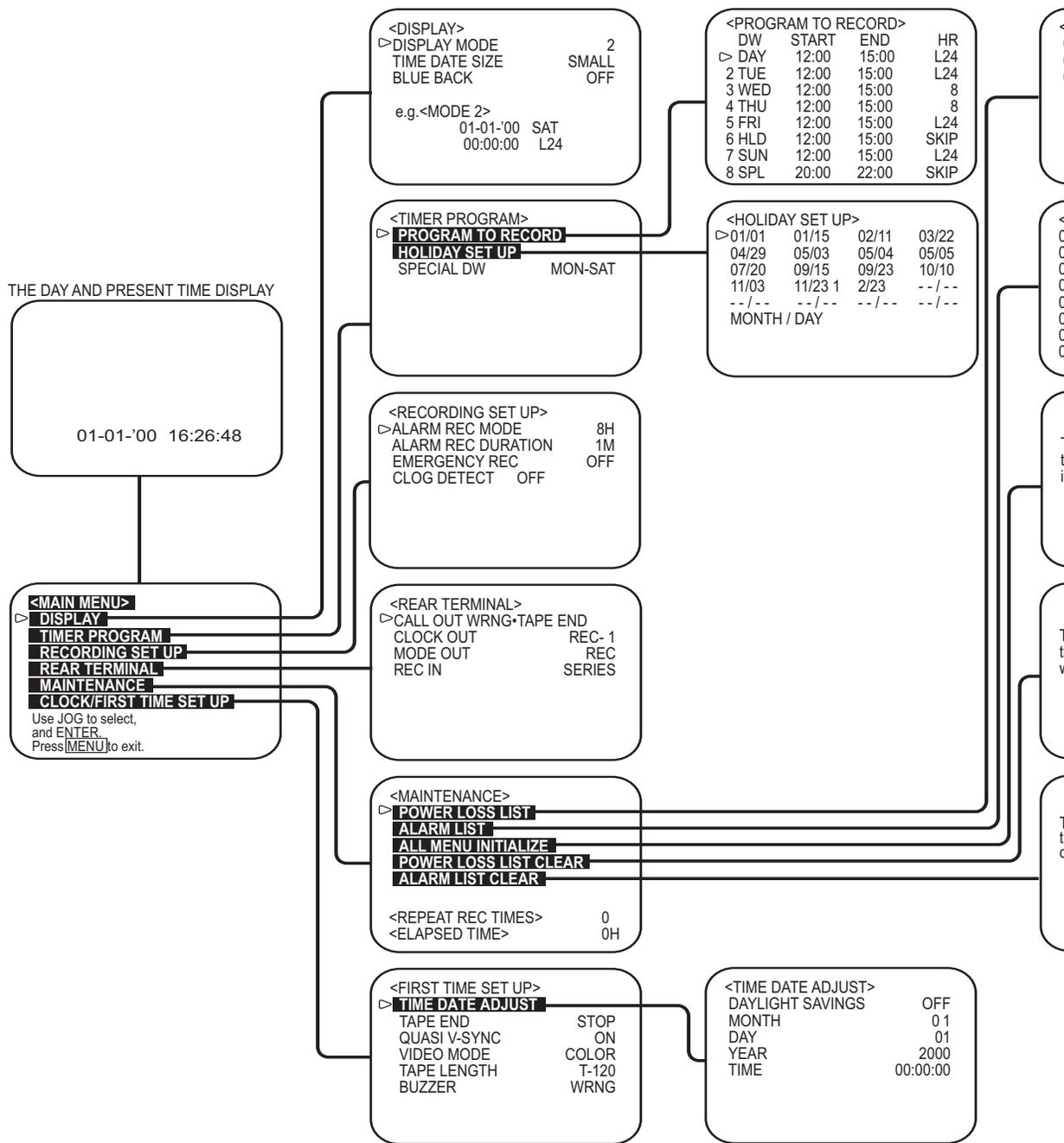
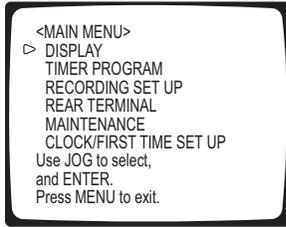


Figure 12. Menu Tree

MAIN MENU



00259

Figure 13. Main Menu

The contents of the Main menu are as follows. Access it by pressing the MENU button.

- **DISPLAY**
Sets the format to display the time and date on the monitor.
- **TIMER PROGRAM**
Sets the timed recordings.
- **RECORDING SET UP**
Sets the alarm recording mode, alarm recording duration, emergency recording, etc.
- **REAR TERMINAL**
Sets the number of frames or fields to record for CLK OUT, output signal of the CALL OUT terminal, the MODE OUT terminal, etc.
- **MAINTENANCE**
Displays the power loss list, alarm list, etc. Also, initializes all menu settings. Clears the power loss list and alarm list.
- **CLOCK/FIRST TIME SET UP**
Sets the time and date, quasi v-sync, VCR operation when the end of the tape is reached, etc.

DISPLAY MENU

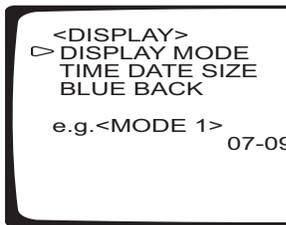


Figure 14. Display Menu

DISPLAY MODE

This is where you set the display mode. (Set the current time and date in the Clock/First Time Set Up menu. Refer to the *Clock/First Time Set Up Menu* section.)

- DISPLAY MODE 1** Displays date (month, day, year), time (hour, minute, second), and alarm recording counter.
- DISPLAY MODE 2** Displays date, day of the week (SUN, etc.), alarm recording counter, time, and recording mode.
- DISPLAY MODE 3** Displays nothing until alarm recording starts—then date, day of the week, alarm recording counter, time, and recording mode are displayed.
- DISPLAY MODE 4** Displays nothing on the monitor, even during alarm recording.

TIME/DATE SIZE

This is where you set the size of the letters in the time and date display.

- SMALL** The letters become small.
- LARGE** The letters become large.

BLUE BACK

This is where you set the background color.

- ON** The blue-colored screen overlays the recorded picture when the menu is displayed on the monitor.

When the setting is ON and the video signal is not input, the background color is blue. The warning "NO SIGNAL" flashes on the screen, and "noSlg" flashes on the fluorescent display.

- OFF** The recorded picture is overlaid with the menu display.

When the setting is OFF and the video signal is not input, the background is blue when the menu is displayed on the monitor.

TIMER PROGRAM

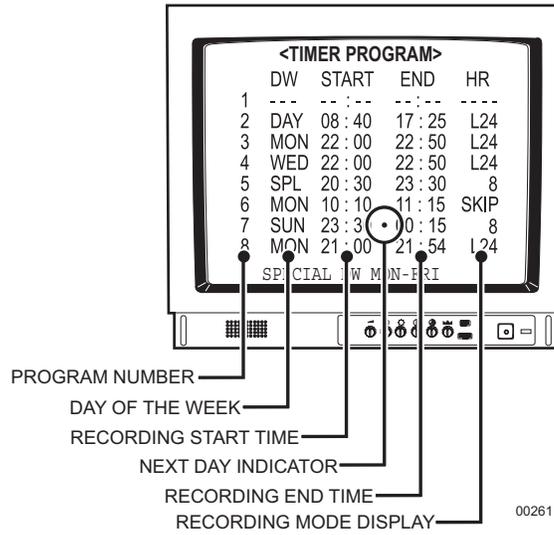


Figure 15. Timer Program Illustration

This is where you set the program number, day of the week, starting and ending times, and the recording mode. (Refer to the *Timer Recording* section for more detailed information and procedures.)

- (program number)** This number identifies the program (eight maximum). If the recording times of two programs overlap, the higher program number has priority.
- DW** Day of the week. DAY is used to record at the same time every day. SPL (special) uses the start/end days selected with SPECIAL DW at the bottom of the screen. HLD is used to control recording on holidays (20 maximum).
- START/END** The VCR uses a 24-hour display for starting and ending recording times. 00:00 indicates midnight; 12:00, noon; and 15:00, 3 p.m. An indicator between the START and END columns shows that recording continues to the following day.
- HR** This is the recording mode. SKIP indicates that timer recording is not performed during the set period.

RECORDING SET UP MENU

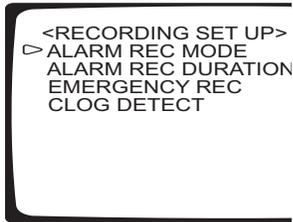


Figure 16. Recording Set Up Menu

Refer to the *Programming for Alarm Recording* section for programming instructions for the following fields.

NOTE: When using the MX4000 Series Genex Multiplexer, set *ALARM REC DURATION* to *MAN2*, and make sure *EMERGENCY REC* is set *ON* if the VCR is to record alarms only.

ALARM REC MODE Sets the alarm recording mode. When you turn the JOG dial, the display switches in the following order: 8H, L24H, L40H, 8H.

ALARM REC DURATION Sets the length of the alarm recording period. When you turn the JOG dial, the display switches in the following order: 1M (minute), 2M, 5M, 10M, MAN1, MAN2, 15S (second), 30S, 45S, 1M.

EMERGENCY REC Sets the emergency recording mode, as follows:

- ON – Starts alarm recording when the alarm signal is received (ALM IN terminal grounded), not only during recording but also when the power is off, when the tape is stopped, or when the VCR is in standby mode for timer recording.
- OFF – Starts alarm recording when the alarm signal is received (ALM IN terminal is grounded) during recording.

CLOG DETECT Sets clog detection mode, as follows:

- ON – The VCR automatically removes particles that may accumulate on the heads during time-lapse recording. If they cannot be entirely removed, the warning CLOG flashes on the fluorescent display.
- OFF – The VCR does not detect a clogged head.

REAR TERMINAL MENU

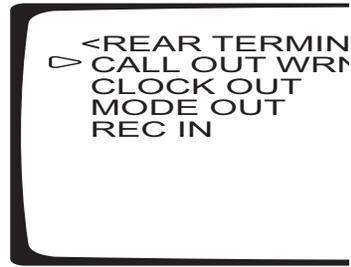


Figure 17. Rear Terminal Menu

Table A. Call Out/Tape End

| CALL OUT setting | | WRNG•TAPE END | WRNG•REMAIN | WRNG |
|------------------|---|---|---|---|
| TAPE END setting | | | | |
| STOP | | Outputs a call signal at the end of the tape. | Outputs a low active signal three minutes before the tape ends. | When a malfunction occurs in the VCR during recording, a call signal is output. |
| REWIND | | Outputs a call signal at the end of the tape for 2 seconds. | (same as above) | (same as above) |
| REPEAT | | (same as above) | (same as above) | (same as above) |
| ALARM •PROT | When there are alarm recordings during recording | (same as above) | (same as above) | (same as above) |
| | When there are no alarm recordings during recording | Outputs a call signal at the end of the tape. | (same as above) | (same as above) |

CALL OUT

Sets the call signal output at the end of the tape. Turns on or off the signal coming from the CALL terminal when the end of the tape is reached during recording. If a problem occurs during recording, a call signal is output from the CALL terminal on the rear panel regardless of the CALL OUT setting.

- WRNG•TAPE END – The VCR outputs a call signal at the end of the tape or when a malfunction occurs. What the VCR does when the tape ends depends on the setting for TAPE END in the First Time Set Up menu.
- WRNG•REMAIN – The VCR outputs a call signal when the tape has about nine minutes left (in 8H mode) or when a malfunction occurs.
- WRNG – The VCR outputs a call signal only when a malfunction occurs.

CLOCK OUT

Sets at the CLOCK OUT terminal the number of frames or fields being recorded (depending on the recording mode).

1. First, set the recording mode for the CLOCK OUT pulse output in the Rear Terminal menu.
 - REC – When recording in any mode
 - T/L REC – When recording in time-lapse mode (L24H, L40H)
2. Second, select the frequency interval by turning the JOG dial, switching the display in the following order: 1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 50, 60, F (field), 1. The numbers from 1 to 60 indicate the number of frames in 8H recording mode and the number of fields in time-lapse recording modes. One frame consists of two fields. One field is selected when set to F (field).

MODE OUT

Sets the state in which the signal output at the MODE OUT terminal is switched to active. When you turn the JOG dial, the display switches in the following order, and under the following circumstances:

- REC – During recording.
- PLAY – During playback.
- POWER – While the VCR is turned on.
- TAPE IN – When you insert a tape in the VCR.
- TAPE REMAIN – When the tape has about nine minutes left (in 8H mode).
- CLOCK ADJ – When the clock indicates 00:00 (minutes:seconds), output the signal for one second only.

REC IN

Sets the REC IN terminal's operating mode.

- SERIES – Recording starts when the signal is input.
- REC-START/STOP – Recording continues while the signal is input. Recording may not start if the input period is short.

MAINTENANCE MENU

- | Refer to the *Maintenance* section for instructions and procedures.

FIRST TIME SET UP MENU

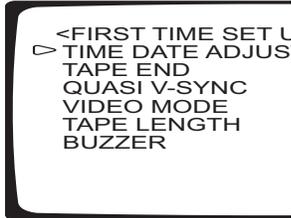


Figure 18. First Time Set Up Menu

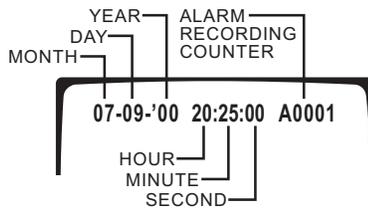
NOTE: *Quasi v-sync must be set OFF for some multiplexers to work properly. With the Pelco MX4000 Series Genex Multiplexer, setting quasi v-sync on or off has no apparent effect on playback.*

NOTE: *To stop the buzzer, press the MENU button once. If the Main menu appears, press MENU again to exit the menu. When the VCR is locked, press the LOCK button to unlock the VCR; then the buzzer stops.*

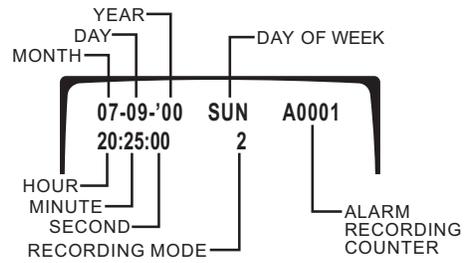
| | |
|-------------------------|---|
| TIME DATE ADJUST | Sets the time, date, and daylight saving time setting. Refer to the <i>Set the Day and Time</i> section for the procedure. |
| TAPE END | <p>Sets the VCR's state of operation when the tape runs out during recording, as follows:</p> <ul style="list-style-type: none"> • STOP – The tape stops. “End” appears on the fluorescent display and TAPE END on the monitor. When CALL OUT is set to WRNG•TAPE END, a call signal is output from the CALL OUT terminal. • REWIND – Rewinds the tape to the beginning and stops (except during timer recording). When CALL OUT is set to WRNG•TAPE END and a tape reaches its end, a call signal is output for two seconds from the CALL OUT terminal. • REPEAT – Rewinds the tape to the beginning and resumes recording. When CALL OUT is set to WRNG•TAPE END and a tape reaches its end, a call signal is output for two seconds from the CALL OUT terminal. • ALARM•PROT – (Alarm Protection) If alarm recordings are on the tape and the tape stops, “End” appears on the fluorescent display and TAPE END on the monitor. When CALL OUT is set to WRNG•TAPE END, a call signal is output from the CALL OUT terminal. If there are no alarm recordings, the tape rewinds and recording continues. |
| QUASI V-SYNC | <p>Sets quasi v-sync on or off.</p> <ul style="list-style-type: none"> • ON – Quasi v-sync signal is inserted on the video output signal when in the special playback modes (still, slow motion, reverse, fast playback, and speed search) and during playback in L24H and L40H modes. • OFF – Quasi v-sync signal is not inserted. |
| VIDEO MODE | <p>Sets the playback and recording color mode.</p> <ul style="list-style-type: none"> • AUTO – The VCR automatically switches the circuits according to the type of input/playback video signal; color, or black and white. • B/W – Select for recording or playback in black and white. • COLOR – Select for recording or playback in color. |
| TAPE LENGTH | <p>Sets the tape length.</p> <ul style="list-style-type: none"> • T-120 – Select when using T-120 tape. • T-160 – Select when using T-160 tape. |
| BUZZER | <p>Sets a buzzer to sound a warning.</p> <ul style="list-style-type: none"> • WRNG – The buzzer sounds when the VCR malfunctions. • WRNG•TAPE END – The buzzer sounds when the VCR malfunctions or the tape reaches its end. • WRNG•REMAIN – The buzzer sounds when the VCR malfunctions or the tape has about nine minutes left (in 8H mode). • OFF – The buzzer does not sound. |

ADDITIONAL MATERIAL

DAY AND TIME DISPLAY MODES



DISPLAY MODE 1



DISPLAY MODE 2 & 3

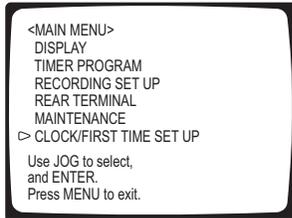
00265

Display Mode 1

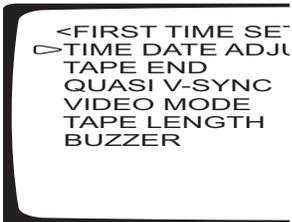
- Month-Day-Year
- Hour:Minute:Second
A 24-hour display is used: 00:00 indicates midnight; 12:00, noon; and 15:00, 3 p.m.
- Alarm recording counter
An alarm recording counter is displayed during alarm recording.

Display Mode 2

- Month-Day-Year
- Day of the week
The day of the week is set automatically.
- Alarm recording counter
- Hour:Minute:Second
- Recording mode



00266



NOTE: The POWER button will not operate if any menu display is flashing.

SET THE DAY AND TIME

Keep the following in mind:

- You must set the day and time before performing timer programming.
- The year 2000 is shown as 00.
- The clock is in 24-hour format.
- The alarm recording counter appears only during alarm recording.

Do the following to set the day and time:

1. Press the MENU button to display the Main menu on the monitor.
2. Turn the JOG dial right to select CLOCK/FIRST TIME SET UP, and turn the SHUTTLE ring right. The First Time Set Up menu appears.



3. Turn the JOG dial right to select TIME DATE ADJUST, and then turn the SHUTTLE ring right. The Time Date Adjust menu appears.
4. Turn the JOG dial right to set DAYLIGHT SAVINGS, and then turn the SHUTTLE ring right. The daylight savings item flashes.
 - When set to ON, the clock advances one hour.
 - When set to AUTO, the clock advances one hour from the first Sunday in April (at 2 a.m.) to the last Sunday in October (at 3 a.m.). **Remember:** Programmed recordings starting or ending in the daylight saving time changeover period may not be recorded correctly.
 - When set to ON or AUTO and the clock advances one hour, the daylight saving time symbol (☀) is displayed next to the present time display. The daylight saving time indicator (■) is illuminated on the fluorescent display.

Daylight saving time may vary from the one above depending on your region or the year. In this case, set DAYLIGHT SAVINGS to ON or OFF manually.

When DAYLIGHT SAVINGS is set to ON or OFF and there is no tape in the VCR, you can toggle DAYLIGHT SAVINGS to ON and OFF on the VCR's front panel by simultaneously pressing the STOP and EJECT buttons.

NOTE: If power goes out while daylight saving time is selected, the power failure mark "X" replaces the daylight saving time symbol. When the power failure mark "X" disappears, the daylight saving time symbol reappears.

5. Turn the JOG dial to set the month, and then turn the SHUTTLE ring right.
6. Set DAY, YEAR, and TIME the same way. Year digits can be set from 97 (for year 1997) to 27 (for 2027).

Do the following if you want to set the time to the exact second. Set the minute digits one minute ahead of the time you are using as a reference. The digit on the right will flash and the seconds digits stay at 00. Turn the SHUTTLE ring right when the time reaches 00 seconds of the time you set. The time will begin counting from 00. Turn the JOG dial to set the day, and then turn the SHUTTLE ring right.

7. Turn the SHUTTLE ring right while the 1-minute digit of TIME is flashing. Programming is now complete. The First Time Set Up menu appears.
8. Press the MENU button. The day and time display appears on the screen.

LOADING, UNLOADING, PROTECTING THE TAPE CASSETTE

You can load video cassette tapes into your VCR as long as it is plugged into a power source. Loading a cassette automatically turns the VCR on even if its power switch is turned off. Use only video cassette tapes marked **VHS**.

We recommend using high grade (HG) tape. (Standard grade tape can be used, but is not recommended.) Use only T-120 or T-160 tapes, nothing longer.

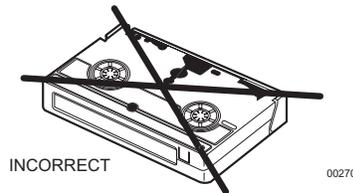
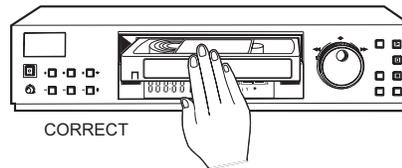
LOADING

1. Prepare to insert the cassette into the cassette slot by holding it so the long narrow edge with the contents label faces you. The hinged narrow edge should face the VCR. The clear plastic window showing the tape should face up.
2. Line up the cassette squarely with the cassette slot and gently push the cassette in until the VCR pulls it in. The cassette status indicator on the fluorescent display lights when the cassette is inserted.

The VCR's protection circuit will eject improperly loaded cassettes. If the VCR ejects the cassette you are trying to load, remove it and check that the contents label is facing you and the clear plastic window showing the tape faces up. Wait a few seconds and try again.

Also, you cannot load a cassette while all the VCR's buttons are locked and the lock all indicator (LOCK A) is illuminated.

3. The VCR turns on automatically. If the erase prevention tab on the cassette has been removed, the VCR automatically plays back the tape.



UNLOADING

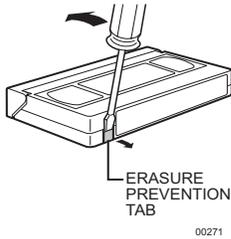
1. Press the EJECT button on the front of the VCR.

Even in standby mode the VCR will eject a video cassette. When you press EJECT, the VCR automatically turns on, ejects the tape, and turns off.

You cannot eject a tape while recording without first pressing the STOP button, or while all the VCR's buttons are locked.

2. Remove the cassette.

PREVENTING ACCIDENTAL ERASURE



Video cassettes come with an erasure prevention tab. Removing it stops the tape's contents from being erased or recorded over. The VCR automatically ejects a cassette if you try to record over it with the erasure prevention tab removed.

DAMAGED CASSETTE TAPE

We recommend taking any torn or broken cassette tape requiring repair only to professionals who specialize in such procedures. The adhesives on many common types of tape could damage the heads on the VCR.

WHEN TO REPLACE A TAPE

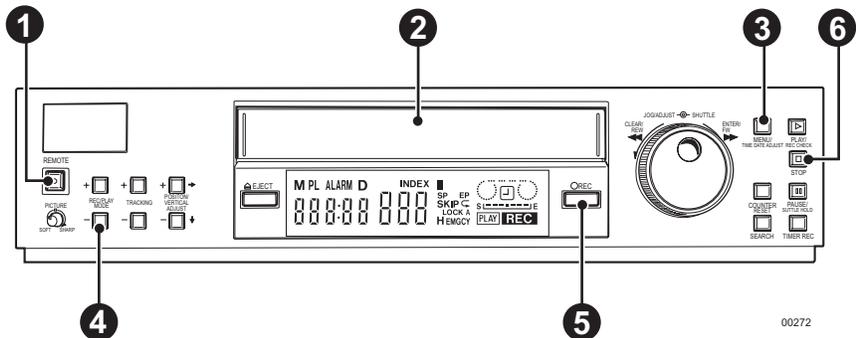
We recommend you replace the tape cassette with a new one according to the mode in which it is used. Refer to Table B.

Table B. Tape Replacement By Use

| Recording Time Mode | Number of Tape Uses | |
|---------------------|---------------------|-------|
| | T-120 | T-160 |
| 8H | 100 | 50 |
| L24H | 60 | 30 |
| L40H | 30 | 10 |

RECORDING

MANUAL RECORDING



1. Turn on the VCR and peripheral devices.
2. Load a cassette with the erasure prevention tab intact.
3. To record the day and time, display them on the monitor.

(If you are not using a multiplexer and the date and time do not appear on the monitor and you want them recorded on tape, you must turn them on using the VCR's menu system. If you already have them supplied by a multiplexer, you probably will not want them turned on via the VCR's menu.)

4. Press the REC/PLAY MODE button to select the desired recording mode.
 - The recording mode shown on the fluorescent display assumes the use of T-160 tape.
 - Refer to the *Recording Mode* section for the actual recording/playback time when T-120 or T-160 tape is used.

5. Press the REC button to begin recording.
6. Press the STOP button to stop recording.

Keep the following in mind:

- Press the PAUSE button to momentarily stop recording. Press again to resume recording.
- To protect the tape, pause mode is released automatically after about five minutes.
- The REC button will not function unless the tape is in stop or pause mode.
- The VCR automatically ejects a cassette whose erasure prevention tab is removed if you try to record on it.
- A tape recorded on this VCR may or may not be played back correctly by another VCR.

RECORDING MODE

Pressing the REC/PLAY MODE button switches the recording mode in the following order: 8H, L24H, L40H, 8H.

In recording mode, the VCR indicates the recording time with a T-160 cassette. Table C shows recording times with T-120 and T-160 cassettes.

Table C. Recording/Playback Times

| | T-120 | T-160 |
|-------------|--------------|--------------|
| (2H) | (2h) | (2h 40m) |
| 8H | 6h | 8h |
| L24H | 18h | 24h |
| L40H | 30h | 40h |

() is for playback only.

RECORDING CHECK FUNCTION

When the VCR is recording, press the REC CHECK button for more than 1.5 seconds and then release. The tape rewinds a little and then plays back the recording just made. When the tape reaches the spot where you pressed REC CHECK, the VCR starts recording again.

AUDIO RECORDING

Apply the specified line input signal to the AUDIO IN connector. Audio will not be recorded if a peripheral for audio is not connected.

The 8H, L24H and L40H modes allow audio recording and playback. The 2H mode allows audio playback only.

The lengthier the recording mode, the poorer the sound quality. In L40H mode, sound quality is such that speech can be heard.

REPEAT RECORDING

With this function, when the tape reaches its end during recording, the VCR rewinds the tape and starts recording again.

Table D shows what happens automatically when the tape ends during recording.

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select CLOCK/FIRST TIME SET UP, and then turn the SHUTTLE ring right. The First Time Set Up menu appears.
3. Turn the JOG dial to select TAPE END and turn the SHUTTLE ring right.
4. Turn the JOG dial to select REPEAT or ALARM•PROT, and then turn the SHUTTLE ring right. Refer to Table D. The repeat indicator on the fluorescent display lights.
5. Press the MENU button. The day and time display appears on the screen.

Table D. Action When Tape End Is Reached By Setting

| | STOP | REWIND | REPEAT | ALARM•PROT |
|---|-----------------|--|--|--|
| When there are alarm recordings on the tape | The tape stops. | The tape automatically rewinds to the beginning (except in timer recordings) and then stops. | The tape automatically rewinds to the beginning and then recording resumes (recording over existing alarms). | The tape stops.* |
| When there are NO alarm recordings on the tape | (same as above) | (same as above) | (same as above) | The tape automatically rewinds to the beginning and recording resumes. |

*To repeat recording on the same tape in ALARM•PROT mode, eject the tape once and reinsert.

Recommended Number of Tape Uses

Video tape wears during use. Use a new cassette according to Table B.

SERIES RECORDING

You can do series recording by connecting two or more TLR3040 VCRs together. Refer to Figure 4 for the physical connection.

If a problem occurs (for example, the motor malfunctions during recording) in the first VCR, the second VCR automatically begins recording.

Series recording will not work during timer or emergency recording.

When recording in series, set CALL OUT in the Rear Terminal menu to a mode other than WRNG.

There are two types of series recording. Choose either Series Recording 1 or Series Recording 2.

Series Recording 1

When the tape in the first VCR reaches the end during recording or an error occurs on the VCR, the tape in the second VCR automatically begins recording.

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select REAR TERMINAL, and then turn the SHUTTLE ring right. The Rear Terminal menu appears.
3. (Perform this step and step 4 on the **first VCR only**.) When the cursor is next to CALL OUT, turn the SHUTTLE ring right.
4. Turn the JOG dial to select WRNG•TAPE END, and then turn the SHUTTLE ring right.
5. (Perform this step and step 6 on the **second VCR only**.) Turn the JOG dial to select REC IN, and then turn the SHUTTLE ring right.
6. Turn the JOG dial to select SERIES and turn the SHUTTLE ring right.
7. Press the MENU button. The day and time display appears.

Series Recording 2

When the first VCR's tape reaches its end, the second VCR automatically begins recording. When the second VCR's tape reaches its end, the first VCR starts recording again. The two keep recording one after the other. Set up **both** VCRs as follows:

1. Perform steps 1 through 6 in the *Series Recording 1* section above.
2. Turn the SHUTTLE ring left. The Main menu appears.
3. Turn the JOG dial to select CLOCK/FIRST TIME SET UP, and then turn the SHUTTLE ring right. The First Time Set Up menu appears.
4. Turn the JOG dial to select TAPE END, and then turn the SHUTTLE ring right.
5. Turn the JOG dial to select REWIND, and then turn the SHUTTLE ring right.
6. Press the MENU button. The day and time display appears.

REMOTE RECORDING

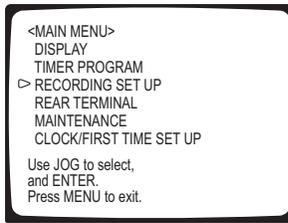
This function lets you control the start and end of recording from a remote location. The VCR starts recording when the REC IN terminal is grounded. Refer to Figure 5 for the remote recording connection.

An index signal is not recorded during remote recording.

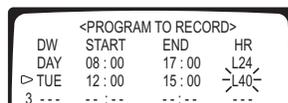
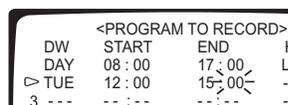
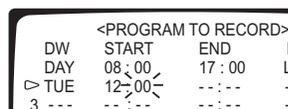
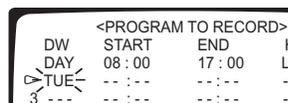
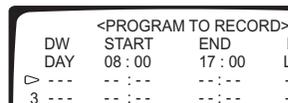
Series and timer recording cannot be used simultaneously with remote recording.

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select REAR TERMINAL, and then turn the SHUTTLE ring right. The Rear Terminal menu appears.
3. Set REC IN to REC-START/STOP.
4. Press the MENU button. The day and time display appears on screen.

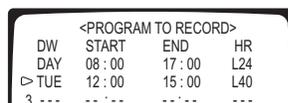
TIMER RECORDING



0027



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Remember to set the date and time before timer programming.

PROGRAMMING PROCEDURE

(Refer to the *Timer Program* section for information on the columns on the Program To Record menu.)

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select TIMER PROGRAM, and then turn the SHUTTLE ring right. The Timer Program menu appears.
3. When the cursor is next to PROGRAM TO RECORD, turn the SHUTTLE ring right. The Program To Record menu appears.
4. Turn the JOG dial to select the program number.
 - Select DAY to record at the programmed time every day.
 - Select HLD to apply HOLIDAY SET UP settings (refer to the *Holiday Set Up* section).
 - Select SPL to apply SPECIAL DW settings (refer to the *Special DW Settings* section).
6. To set the START recording time, turn the JOG dial to select the hour digits (24-hour format). Turn the SHUTTLE ring right when done.

Set the 10-minute and 1-minute digit positions in the same way.
7. To set the END recording time, turn the JOG dial to select the hour digits. Turn the SHUTTLE ring right when done.

Set the 10-minute and 1-minute digit positions in the same way.
8. To set the recording mode (HR), turn the JOG dial to select the recording mode. (Timer recording will not be performed if you set it to SKIP.)
9. Turn the SHUTTLE ring right when finished. The cursor should stop flashing. If the program has not been set completely, the DW column will keep flashing.
 - If the END time is the same or earlier than the START time, the next day indicator (•) is automatically displayed. This indicates the recording will run continuously from the START time on the first day to the END time on the next day.
 - Repeat steps 4-9 to set two or more programs at once (you can set up to eight programs).
 - To erase the program setting, select the program number to be erased. Turn the SHUTTLE ring right to flash the day of the week, then turn the SHUTTLE ring left.
10. Press the MENU button. The day and time display appears.
11. Press the TIMER REC button. The VCR turns off and the timer recording indicator lights on the fluorescent display. (When you press the TIMER REC button during the programmed period, the VCR starts recording immediately.)

HOLIDAY SET UP

Up to 20 days a year can be set as days to perform timer recording. Or you can specify up to 20 days when timer recording will **not** be performed during the programmed period by setting HR in the Program To Record menu to SKIP.

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select TIMER PROGRAM, and then turn the SHUTTLE ring right. The Timer Program menu appears.
3. Turn the JOG dial to select HOLIDAY SET UP, and then turn the SHUTTLE ring right. The Holiday Set Up menu appears.
4. Turn the JOG dial to move the cursor right to select the month you want and turn the SHUTTLE ring right.

To erase the preset month and day, turn the SHUTTLE ring **left** while the month item is flashing.

5. Turn the JOG dial to select the day you want, and then turn the SHUTTLE ring right. Repeat steps 4 and 5 to set two or more days at once.
6. Press the MENU button. The day and time display appears.

SPECIAL DW SETTINGS

You can set the recording period by specifying the start and end day of the week for timer recording.

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select TIMER PROGRAM, and then turn the SHUTTLE ring right. The Timer Program menu appears.
3. Turn the JOG dial to select SPECIAL DW, and then turn the SHUTTLE ring right.
4. Turn the JOG dial to set the start day, and then turn the SHUTTLE ring right.
5. Turn the JOG dial to set the end day, and then turn the SHUTTLE ring right. The start and end days cannot be set to the same day.
6. Press the MENU button. The day and time display appears.

OVERLAPPING PROGRAMS

When the recording period of two or more programs overlap, the VCR always gives priority to the higher-numbered program.

WHAT IF THE TIMER RECORDING INDICATOR STARTS FLASHING?

Do the following if the timer recording indicator starts flashing:

1. Press the TIMER REC button to turn off the timer recording indicator.
2. The flashing indicator can mean:
 - A tape is not inserted. **Remedy:** Insert a tape.
 - A tape without an erasure prevention tab is inserted. **Remedy:** Insert a tape with an erasure prevention tab.
 - The day and time have not been set. **Remedy:** Set the day and time (refer to the *Adjusting the Clock* or *Set the Day and Time* sections).
 - A menu item has been set (flashing). **Remedy:** Turn the SHUTTLE ring right to stop the flashing.
3. Press the TIMER REC button to turn on the timer recording indicator.

ALARM RECORDING

When an alarm occurs, the VCR switches to alarm recording.

- Set the alarm recording mode and alarm recording period in the Recording Set Up menu. Refer to the *Recording Set Up Menu* section for field definitions and additional information and the *Programming for Alarm Recording* section for instructions.
- The index signal is automatically recorded when an alarm recording begins (INDEX indicator flashes on the fluorescent display).
- Even if an alarm recording is happening, a new recording starts when the second alarm signal is input. (However, if the interval between two alarm recording start times is too short, the second signal may not be detected during skip or index search. Refer to Table E.)

Table E. Minimum Interval Between Recordings

| Alarm Recording Mode | Minimum Interval Between Two Alarm Recording Start Times |
|----------------------|--|
| 8H | Approx. 15 seconds |
| L24H | Approx. 2 minutes |
| L40H | Approx. 2 minutes |

- An alarm recording continues until its end during timer recording, even if the timer recording end time is reached.
- An alarm recording is cancelled if the tape reaches its end.

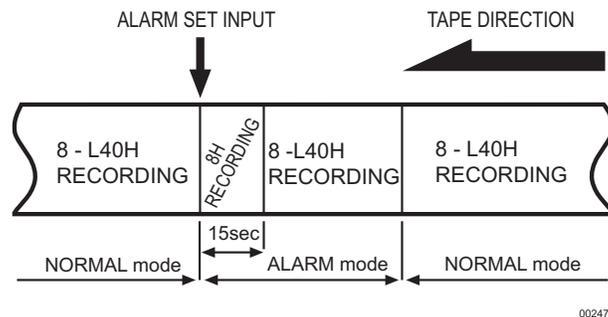
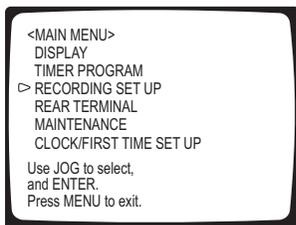


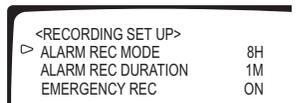
Figure 19. Switching from Normal to Alarm Mode and Back

ALARM RECORDING CONNECTION

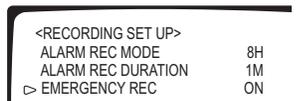
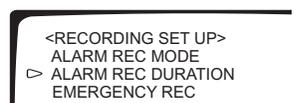
You can confirm an alarm from a distance by connecting the ALM (alarm) OUT terminal to an existing alarm system panel or other external device, such as a buzzer. Refer to Figure 3.



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NOTE: *If an alarm input is received during alarm recording, a new alarm recording will start with the new input signal.*

Alarm recording will continue for the period set in the ALARM REC DURATION field, even if a timer recording has reached its end time.

Alarm recording stops when the end of the tape is reached.

PROGRAMMING FOR ALARM RECORDING

Emergency recording activates alarm recording even if the VCR is off, stopped, or in timer recording or standby modes. After an emergency recording, the VCR automatically returns to its original state. The emergency recording indicator (EMGCY) on the fluorescent display lights provided EMERGENCY REC is ON. After an emergency recording, the VCR automatically returns to its original state.

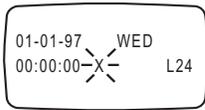
You should set the alarm recording mode in the Recording Set Up menu before using alarm recording.

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select RECORDING SET UP, and then turn the SHUTTLE ring right. The Recording Set Up menu appears.
3. When the cursor is next to ALARM REC MODE, turn the SHUTTLE ring right.
4. Turn the JOG dial to set the alarm recording mode you want, and then turn the SHUTTLE ring right.
5. Turn the JOG dial to select ALARM REC DURATION, and then turn the SHUTTLE ring right.
6. Turn the JOG dial to set the alarm recording duration you want, and then turn the SHUTTLE ring right.
 - When set to MAN1, alarm recording continues until the RST (reset) IN terminal is grounded.
 - When set to MAN2, alarm recording continues while the ALM IN terminal is grounded.
 - You can adjust the internal time clock by applying a signal to the RST IN terminal when ALARM REC DURATION is set to other than MAN1.
7. If you wish to activate emergency recording, turn the JOG dial to select EMERGENCY REC, and then turn the SHUTTLE ring right. Turn the JOG dial to select ON for emergency recording or OFF to disable it.
8. Press the MENU button. The day and time display appears.

During alarm recording, the alarm recording count is displayed automatically except when Display Mode 4 (display nothing) is selected.

- The alarm recording count display counts up to 9999 alarm recordings and then resets to 0000 and continues counting.
- When initializing the alarm recording list, the alarm recording count display is reset.
- The alarm indicator (ALARM) flashes during alarm recording and stays lit when the alarm recording finishes.

RECORDING AFTER A POWER FAILURE



00286

After a power failure during manual, timer, or alarm recording, the VCR turns itself on when the power resumes and begins recording in the same mode as before the failure.

When power resumes, an "X" appears next to the present time on the screen for about a minute. The fluorescent display shows the power loss indicator (PL).

If there is a power failure during playback, the VCR will be in stop mode when power resumes.

Refer to the *Power Loss List* section for more information on viewing and clearing the list.

MAINTENANCE

POWER LOSS LIST

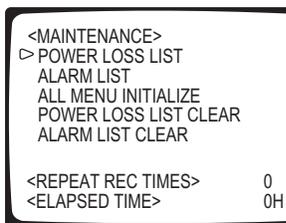
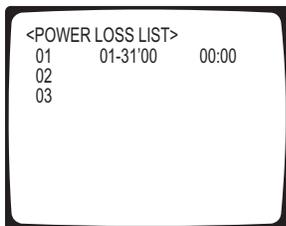
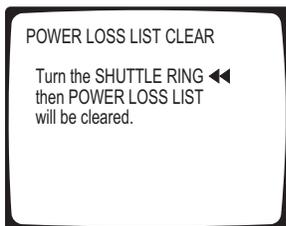


Figure 20. Maintenance Menu

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00289

The Power Loss List displays up to three power failure start times. If more occurred, the first and last two start times will be displayed.

VIEWING THE POWER LOSS LIST

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select MAINTENANCE, and then turn the SHUTTLE ring right. The Maintenance menu appears.
3. Turn the JOG dial to select POWER LOSS LIST, and then turn the SHUTTLE ring right. The Power Loss List appears.
4. Press the MENU button. The day and time display appears.

CLEARING THE POWER LOSS LIST

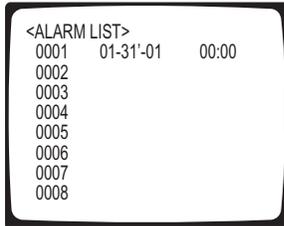
1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select MAINTENANCE, and then turn the SHUTTLE ring right. The Maintenance menu appears.
3. Turn the JOG dial to select POWER LOSS LIST CLEAR, and then turn the SHUTTLE ring right.

(If you change your mind at this point and want to exit the menu **without clearing** the list, skip to step 5.)

4. Turn the SHUTTLE ring left to clear the list. The Maintenance menu appears.
5. Press the MENU button.

Once the list is cleared, the power loss indicator (PL) goes off.

ALARM LIST



00290

When alarm recordings begin, the start times are stored in memory so you can confirm when they occurred. Up to eight alarm recording start times can be stored in memory. If there are more, the first and last seven are displayed. A maximum of 9,999 alarm recording start times will be counted.

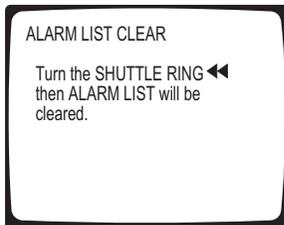
VIEWING THE ALARM LIST

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select MAINTENANCE, and then turn the SHUTTLE ring right. The Maintenance menu appears.
3. Turn the JOG dial to select ALARM LIST, and then turn the SHUTTLE ring right. The Alarm List appears.
4. Press the MENU button. The day and time display appears.

CLEARING THE ALARM LIST

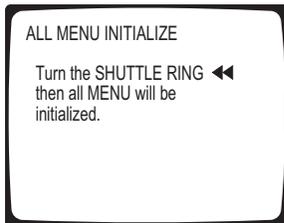
1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select MAINTENANCE, and then turn the SHUTTLE ring right. The Maintenance menu appears.
3. Turn the JOG dial to select ALARM LIST CLEAR, and then turn the SHUTTLE ring right.
4. Turn the SHUTTLE ring left to clear the list. The Maintenance menu appears.
5. Press the MENU button.

Once the list is cleared, the alarm recording indicator (ALARM) on the fluorescent display goes off.



00291

ALL MENU INITIALIZE (RESET)



00292

This feature resets all menus (except timer programs) to their initial settings.

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select MAINTENANCE, and then turn the SHUTTLE ring right. The Maintenance menu appears.
3. Turn the JOG dial to select ALL MENU INITIALIZE, and then turn the SHUTTLE ring right. The All Menu Initialize menu appears.

(If you change your mind at this point and want to exit the menu **without resetting** all menus, skip to step 5.)

4. Turn the SHUTTLE ring left. All menus (except Timer Program) return to their original settings.
5. Press the MENU button. The day and time display appears.

ELAPSED TIME AND REPEAT RECORDING TIMES DISPLAY

| | |
|-----------------------|----|
| <MAINTENANCE> | |
| ▷ POWER LOSS LIST | |
| ALARM LIST | |
| ALL MENU INITIALIZE | |
| POWER LOSS LIST CLEAR | |
| ALARM LIST CLEAR | |
| <REPEAT REC TIMES> | 0 |
| <ELAPSED TIME> | 0H |

002

The repeat recording times and elapsed time are shown on the bottom of the Maintenance menu.

ELAPSED TIME

The elapsed time indicates the total time the VCR has been used for recording and playback (up to 89,999 hours). Use the elapsed time as a guide for periodic parts replacement.

REPEAT REC TIMES

- The repeat recording times displays the number of times a tape has been recorded on. The number of tape uses increments by one when the tape ends during recording (except when TAPE END in the First Time Set Up menu is set to STOP).
- The number of tape uses is kept even if AC power is disconnected, provided the backup battery is fully charged.
- The number of tape uses is reset when a new tape is inserted.
- The number of tape uses shown can be up to 200. OVER appears if 200 times is exceeded.

To view:

1. Press the MENU button. The Main menu appears.
2. Turn the JOG dial to select MAINTENANCE, and then turn the SHUTTLE ring right. The Maintenance menu appears. The repeat recording times and elapsed time are shown at the bottom of the screen.
3. Press the MENU button. The day and time display appears.

PLAYBACK

PLAYBACK PROCEDURE

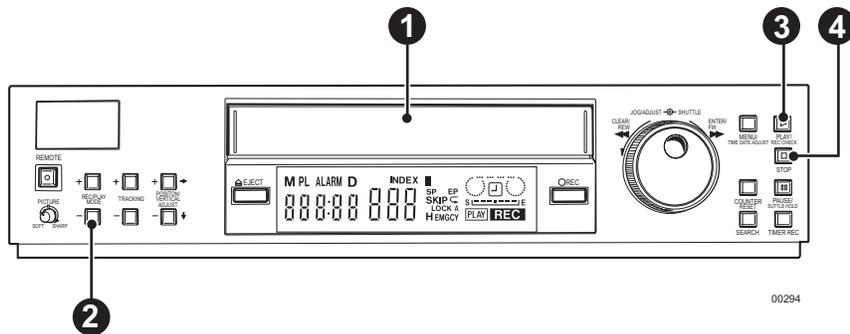


Figure 21. Playback Controls

1. Load a pre-recorded tape. (Turn on the VCR and peripherals if you have not already done so. If the erasure prevention tab has been removed, the VCR automatically begins playback mode.)
2. Press the REC/PLAY MODE buttons (+) or (-) to select the desired playback mode. (Refer to the *Playback Mode* section for more information.)

3. Press PLAY to start playback. (If noise occurs, adjust the tracking. Refer to the *Tracking Adjustment* section.)

When a pre-recorded tape is used for recording, colored noise may appear on the beginning of the playback picture.

4. Press STOP to halt playback.
 - Turn the SHUTTLE ring left to rewind the tape when the VCR is stopped. Press STOP to stop.
 - Turn the SHUTTLE ring right to fast forward the tape when the VCR is stopped. Press STOP to stop.
 - Fast forward/rewind time of a T-160 tape is about 160 seconds, but can vary according to the type of tape.

PLAYBACK MODE

- When you press the REC/PLAY MODE button, playback mode is switched in the following order: 8H, L24H, L40H, 8H (for a tape recorded in one of these modes).
- Picture jitter or noise may occur when the tape is played back in L24H or L40H mode (even if the tape was recorded in that mode).
- A tape recorded in SP mode using another VCR can only be played back in 2H mode.

AUDIO PLAYBACK

There is normal sound playback only when a tape recorded in 8H, L24H, or L40H mode is played back in its respective mode.

Table F. Audio Playback and Picture Quality

| Playback Mode | 2H/8H | L24H | L40H |
|------------------------|--------------|-------------|-------------|
| Audio Playback | Available | Available | Available |
| Picture Quality | Good | Vibrating | Vibrating |

END OF TAPE

When the end of the tape is reached, the following functions are performed automatically during playback or fast forwarding.

Table G. End of Tape Actions

| Tape End Selected | REPEAT or ALARM•PROT | STOP or REWIND |
|--------------------------|--|-----------------------|
| Playback | The tape automatically rewinds to the beginning and stops. | Stop |
| Fast Forward | Stop | Stop |

SPECIAL EFFECTS PLAYBACK

The VCR features the following convenient functions. Audio output is muted during special effects playback.

STILL PICTURE

Press PAUSE during playback. (A few noise bars or vertical movement may appear during still playback.) Press again to resume playback.

FRAME-BY-FRAME PLAYBACK

You can use the JOG dial to advance the tape frame by frame.

1. Press PAUSE to freeze the picture while the VCR is playing the tape.
2. Turn the JOG dial clockwise to advance the tape or counterclockwise to reverse it. To get a continuous frame-by-frame picture, keep rotating the JOG dial.
3. To freeze the picture again, release the JOG dial.
4. Press PLAY to resume normal playback.

A few noise bars or vertical movement may appear during frame-by-frame playback. Noise bars may appear on the picture when switching between forward and reverse playback.

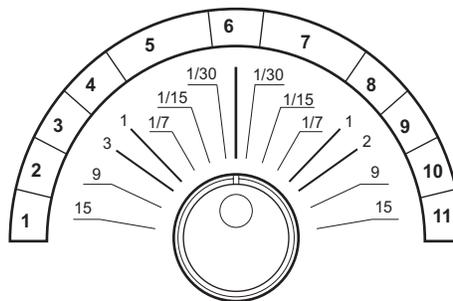
SHUTTLE RING

You can set the playback speed using the SHUTTLE ring.

1. Press PLAY to begin playback.
2. Press PAUSE/SHUTTLE HOLD to get a still picture.
3. Turn the SHUTTLE ring right or left to get the playback speed you want.
4. Cancel by pressing PAUSE/SHUTTLE HOLD to get a still picture and then pressing it again to return to the playback.

Playback speed varies according to the angle of the SHUTTLE ring (as shown in Figure 22).

When the SHUTTLE ring is released, it comes back to the center position and the playback picture stays still.



00295

- | | |
|------------------------------|-------------------------------|
| 1. Reverse high speed search | 7. Slow playback |
| 2. Reverse speed search | 8. Normal playback |
| 3. Reverse fast playback | 9. Fast playback (x2) |
| 4. Reverse playback | 10. Forward speed search |
| 5. Reverse slow | 11. Forward high speed search |
| 6. Still | |

Figure 22. Shuttle Ring Speed Settings

DIRECT SHUTTLE RING

You can also change the playback speed without entering pause mode by turning the SHUTTLE ring during playback, as shown below.

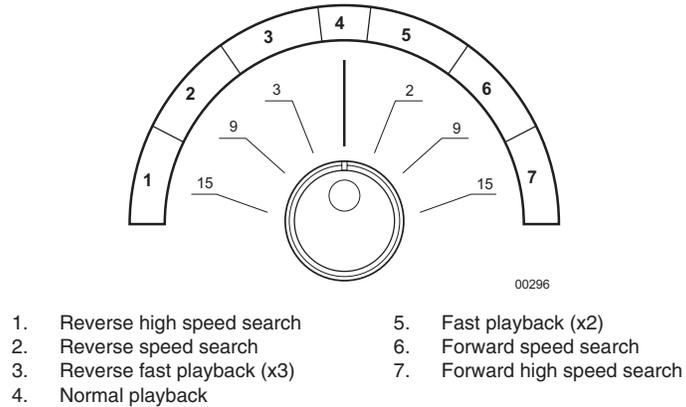


Figure 23. Direct Shuttle Ring Speed Settings

ADJUSTING THE PICTURE DURING PLAYBACK

TRACKING ADJUSTMENT

If noise appears in the picture during playback, fast playback, reverse playback, forward/reverse slow playback, frame playback, or field playback, you can reduce or eliminate it by adjusting tracking.

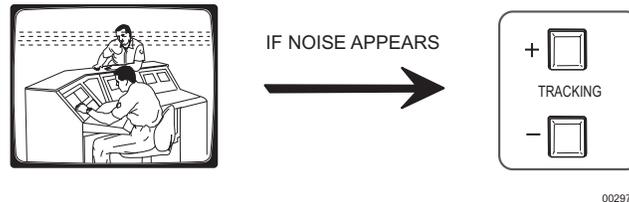


Figure 24. Tracking Adjustment

Adjust tracking at each playback mode or the type of playback (fast, reverse, etc.) since the method of adjusting tracking varies.

Noise bars will move continuously through the picture when holding down a TRACKING button. Noise may also remain although tracking is adjusted during reverse playback or reverse slow playback. Noise may also remain after adjustment when a picture recorded in 8H mode is played back in L24H or L40H mode.

- To adjust during playback:
Press the TRACKING buttons (+/-) for the best picture.
- To adjust during fast, reverse, forward/reverse slow, frame, or field playback:
 1. During still picture mode, turn the SHUTTLE ring to get the desired playback mode. (If noise appears in the frame or field, set to slow playback.)
 2. While turning the SHUTTLE ring, press PAUSE. The playback picture is fixed at the selected speed.
 3. Release the SHUTTLE ring.
 4. Press the TRACKING buttons (+/-).
- To reset the tracking:
Press both TRACKING buttons (+/-) together during playback to set tracking to its initial setting.

ADJUSTING PICTURE QUALITY

This control lets you adjust the playback picture so the outline is sharper or softer. It is only effective during playback. During playback, turn the PICTURE control right for sharper or left for softer.

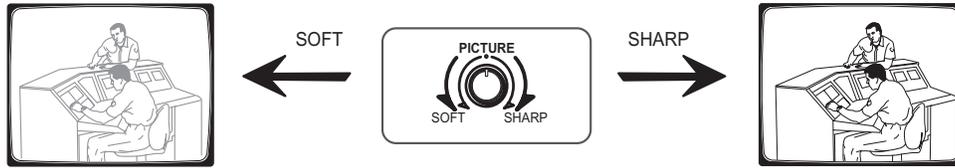


Figure 25. Picture Quality Adjustment

VERTICAL (VIBRATION) ADJUSTMENT

The VERTICAL ADJUST (+/-) buttons will not correct horizontal vibration. Also, they will not work when QUASI V-SYNC in the First Time Set Up menu is set OFF.

- If the picture vibrates when watching still, slow motion, fast playback, or normal playback in L24H or L40H mode:
 1. Press PAUSE during playback.
 2. Press the VERTICAL ADJUST (+/-) buttons to reduce or eliminate picture vibration.

- To reset vertical adjustment:

Press both the VERTICAL ADJUST (+/-) buttons together during still picture, forward or reverse slow playback, or playback in L24H or L40H mode.

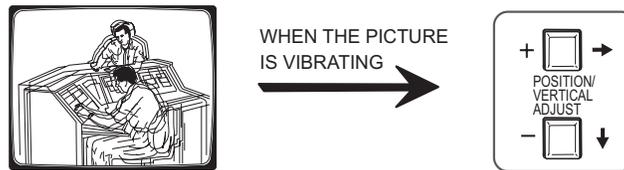


Figure 26. Vertical Picture (Vibration) Adjustment

SEARCH TECHNIQUES

COUNTER MEMORY STOP

This feature rewinds a tape until the counter on the fluorescent display reaches 00000 and stops. (**NOTE:** When the counter indicates 00000, COUNTER MEMORY STOP on the Search Function menu cannot be selected.)

1. Press the SEARCH button once. The Search Function menu appears with COUNTER MEMORY STOP highlighted. The COUNTER MEMORY STOP indicator (M) on the fluorescent display lights.

To exit the Search Function menu without rewinding, press STOP.

2. Turn the SHUTTLE ring right. The VCR starts rewinding the tape.
3. Press STOP to quit rewinding.

SKIP SEARCH

The VCR automatically inserts an index signal at the beginning of each alarm recording, so the start of each alarm can be located. During fast forwarding or rewinding, the VCR plays back a tape (in 2H or 8H mode) for about four seconds where an index signal is recorded. It repeats this process until reaching the end or beginning of the tape.

1. Press the SEARCH button enough times to highlight SKIP SEARCH on the Search Function menu. The skip search indicator (SKIP) on the fluorescent display lights.

To exit the Search Function menu without searching, press STOP.

2. Turn the SHUTTLE ring right (search forward) or left (search backward) to start searching.
3. When you find a picture you want to view, press PLAY.
4. To quit searching, press STOP.

The index signal may be hard to find under some recording conditions. Skip search may not function if the interval between two alarm recordings start times is too short. Refer to Table E for minimum intervals.

Audio output is muted during skip search.

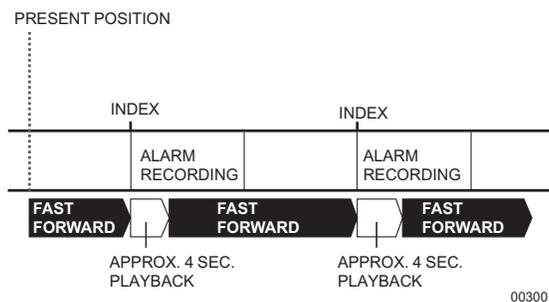


Figure 27. Skip Search

INDEX SEARCH

The VCR automatically inserts an index signal at the beginning of each alarm recording, so the start of each alarm can be located. During fast forwarding or rewinding, the VCR can search for an alarm index signal you have selected. When the VCR finds it, the VCR plays back the tape in still mode.

1. Press the SEARCH button enough times to highlight INDEX SEARCH on the Search Function menu. The index search indicator (INDEX) on the fluorescent display lights.

To exit the Search Function menu without searching, press STOP.

2. Turn the JOG dial to select an index number (between 1 and 255) you want to find.
3. Turn the SHUTTLE ring right (search forward) or left (search backward) to start searching. The index number in the fluorescent display decreases by one as each index signal goes by.

The index signal may be hard to find under some recording conditions. Index search may not function if the interval between two alarm recordings start times is too short. Refer to Table E for minimum intervals.

HOW TO COUNT THE INDEX NUMBER

The index number is the count from the present position. The index number of one alarm recording before the present position is -1. The index number of one alarm recording after is +1.

The maximum count of alarm recordings is ± 255 .

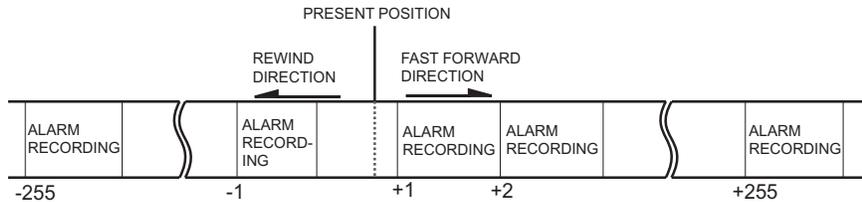


Figure 28. Index Searching

TIME AND DATE SEARCH

You can find a picture recorded at a specific date and time.

1. Press the SEARCH button enough times to highlight TIME DATE SEARCH on the Search Function menu. The time date search indicator (D) on the fluorescent display lights.
2. Turn the SHUTTLE ring right. The Time Date Search menu appears.

Turn the SHUTTLE ring left several times to exit the Time Date Search menu without searching.

3. Turn the JOG dial to set the digits for the hour you want to find next to TIME. Turn the SHUTTLE ring right.
4. Set the 10-minute and 1-minute digits in the same way.
5. Set the date using the JOG dial and SHUTTLE ring in the same manner.
6. Set the direction (forward or reverse) in which to search the tape using the JOG dial and SHUTTLE ring.

(When the desired part of the tape is not found in the selected direction, the VCR automatically searches in the opposite direction.)

7. Turn the SHUTTLE ring right to begin searching. When the recorded picture is found, it is shown in still mode.
8. To quit while searching, press STOP.

The VCR writes an index mark on the tape at each hour (1:00, 2:00, etc.) during recording. The time and date search cannot be resumed if the hour's index mark (set in step 3) is not recorded on the tape. (For example, if the VCR recorded from 8:15 to 17:30 on the tape, only pictures between 9:00 and 17:30 can be found.)

The time and date search may not function correctly if you used a tape with poor recording quality or with alarm recordings in several recording modes. Also, it will not function with a tape recorded with other VCRs or with a tape recorded without setting the date and time.

ADDITIONAL FUNCTIONS AND FEATURES

COUNTER

TAPE COUNTER

A five-digit counter indicates the relative position on the recorded portion of the tape.

COUNTER RESET

Press the COUNTER RESET button to reset the counter to 00000.

COUNTER MEMORY

The counter display is stored in memory when the power is turned off, so the same numbers are displayed when power is restored. (Refer to the *Counter Memory Stop* section for information and procedures for rewinding to 00000.)

MEMORY BACKUP IN CASE OF POWER FAILURE

NOTE: *The backup is for memory only—the VCR will not continue recording during a power outage unless connected to a UPS.*

The VCR includes a built-in memory backup so the settings for time and date, alarm list, power loss list, number of tape uses, counter display, and recording/playback mode will remain in memory if there is a power failure or the power cord is unplugged for a long period (two-three months). The settings remain in memory for up to 31 days provided the VCR has been connected to AC power for at least 40 hours per week. Connection charges the battery backup.

However, if the power cord is unplugged for a long period (two-three months), the time may be wrong. If so, set the clock again.

When ALARM REC DURATION in the Recording Set Up menu is set to MAN1 or MAN2 and the power fails during recording, the VCR may not return to the alarm recording mode when power is restored.

TESTING

INITIAL SYSTEM TESTING

Before using the newly installed surveillance system, do the following:

Make test recordings at the time-lapse speeds you will be using. Test how the system performs with alarms.

Interrupt electrical power to check your installed power backup system (if applicable).

On playback, verify picture quality and that you can see the time and date display under normal and alarm conditions.

REGULAR SYSTEM TESTING

Every day check that the system is operating. Is the recording indicator lit? Does the counter display indicate movement? Does the monitor show proper camera sequencing and time and date information?

Check for recorded alarms. Multiple alarms could make the tape run out early. Make sure there is enough tape to record at least five minutes of alarm activity at the selected speed.

Regularly verify picture quality and operation under normal and alarm conditions. Play a tape recorded recently under normal conditions, which also includes an alarm condition that you triggered manually.

Regularly replace tapes (refer to Table B for a schedule). Check tapes for head scarring. Replace damaged tapes. Always store tapes in their boxes, away from magnetic fields, heat, direct sunlight, and dust.

TROUBLESHOOTING

SELF-DIAGNOSTIC FUNCTION AND WARNING DISPLAY

The VCR uses self-diagnostics to detect internal malfunctions during recording. If one occurs, the VCR indicates it on the monitor and on the VCR's fluorescent display. Table H shows the type of malfunction corresponding to the warning display and the action to take.

Table H. Warning Display and Actions

| Fluorescent Display | Monitor | Cause | Remedy | To Turn Off Indicator |
|---------------------------|-----------|-----------------------------|--|---|
| End | TAPE END | Tape ends during recording. | Rewind tape or press EJECT. | Rewind tape or press EJECT. |
| NoSig | NO SIGNAL | No video signal input. | Check for loose connections. | Restore video signal or clear recording mode. |
| (display starts flashing) | CHECK | Tape or deck trouble. | Check cassette. If nothing is wrong, try recording again. If CHECK still appears, insert a new cassette and retry recording. If CHECK stays on, unplug the power cord and contact your dealer. | |
| CLog | — | Clogged head. | Eject cassette and reinsert. If CLog remains, clean tape. If it still remains, contact your dealer. | Clear recording mode. |

- **When the tape ends:**

When the tape reaches its end during recording, END appears on the fluorescent display and TAPE END appears on the monitor. They will not appear if TAPE END in the First Time Set Up menu is set to REPEAT, ALARM•PROT (when no alarm recording is made), or REWIND.

- **Lack of video signal:**

"NO SIGNAL" appears on the monitor and "NoSig" flashes on the fluorescent display when the VCR cannot get any video input signal during recording. Check that the cable from the camera is not broken and the camera has power.

- **Fouling (clogged) head:**

When CLOG DETECT in the Recording Set Up menu is set ON, the VCR automatically removes particles that have accumulated on the heads during time-lapse recording mode. If they cannot be removed completely, CLog flashes on the fluorescent display. If this happens, follow the remedy in Table H.

BEFORE CALLING FOR SERVICE

| SYMPTOM | REMEDY |
|--|---|
| INSTALLATION PROBLEMS | |
| No power at the VCR. | <ul style="list-style-type: none"> • Is the power cord disconnected at the AC output? • Is the lock or lock all indicator lit? Press the LOCK button several times to unlock the VCR. • Is the timer recording indicator lit? Press the TIMER REC button on the front panel to cancel timer recording. |
| The VCR power is on but the unit does not operate. | <ul style="list-style-type: none"> • Is the lock or lock all indicator lit? Press the LOCK button several times to unlock the VCR. • Safety devices are operating. Press the RESET button on the rear panel using a ballpoint pen or pencil. Turn power on again. |

| SYMPTOM | REMEDY |
|--|--|
| No picture on the monitor. | <ul style="list-style-type: none"> • Are the monitor and camera connected properly? • Is the video cable connected properly? Is the cable defective? Check the connection and for a snapped wire in the cable. |
| Picture on the monitor is not clear. | Is the camera focused? Refer to your camera's user manual and focus the camera correctly. |
| FUNCTION/OPERATION PROBLEMS | |
| No operation when any tape operation button is pressed. | <ul style="list-style-type: none"> • Is the lock or lock all indicator lit? Press the LOCK button several times to unlock the VCR. • Is a cassette inserted? |
| The time is wrong even though the VCR is used every day. | Make sure the VCR has AC power supplied continuously for at least 40 hours per week. |
| The power cord was disconnected for less than 31 days but the time has been reset. | <ul style="list-style-type: none"> • Make sure the VCR has AC power supplied continuously for at least 40 hours per week. • Contents stored in memory may be erased before the 31 days depending on the charge time of the power failure compensation circuit. Set the present time again. |
| A tape cannot be loaded. | Is the lock all indicator lit? Press the LOCK button once to unlock the VCR. |
| RECORDING PROBLEMS | |
| Recording does not work by pressing REC. | <ul style="list-style-type: none"> • Is the lock all indicator lit? Press the LOCK button once to unlock the VCR. • Is the cassette's erasure prevention tab broken off? Load a cassette with an erasure prevention tab. • Has the tape run out? Rewind or load a new cassette. |
| Cannot stop recording by pressing STOP. | <ul style="list-style-type: none"> • Is the lock or lock all indicator lit? Press the LOCK button several times to unlock the VCR. • Is the timer recording indicator lit? Press the TIMER REC button on the front panel to cancel timer recording. |
| Repeat recording does not work. | <ul style="list-style-type: none"> • Is the repeat indicator lit? Set TAPE END in the First Time Set Up menu to REPEAT or ALARM•PROT. • If TAPE END is set ALARM•PROT (alarm protection), repeat recording will not work if there is an alarm recording on the tape. • When a tape reaches its end during alarm recording, the VCR rewinds the tape and stops (recording does not start again) even though TAPE END is set to REPEAT. |
| Timer recording does not work. | <ul style="list-style-type: none"> • Are the day and time set correctly? Set them again if not. • Are the recording start and end times and the recording mode set correctly? Confirm the settings in PROGRAM TO RECORD. • Is the timer recording indicator lit? If not, press the TIMER REC button on the front panel. |
| Alarm recording does not work. | <ul style="list-style-type: none"> • Is the external switch connected correctly? Check the connection. • Is the emergency recording indicator lit? Set EMERGENCY REC in the Recording Set Up menu ON. |
| PLAYBACK PROBLEMS | |
| No operation when PLAY is pressed. | <ul style="list-style-type: none"> • Is the lock or lock all indicator lit? Press the LOCK button several times to unlock the VCR. • Is a cassette inserted? • Has the tape run out? |
| Noise bars appear in the picture during playback. | Adjust tracking by pressing the TRACKING buttons on the front panel. |
| Playback speed is fast or slow. | Adjust playback speed by pressing the REC/PLAY MODE buttons on the front panel. |
| The picture vibrates at the top and bottom when in still picture mode. | Adjust the picture by pressing the VERTICAL ADJUST buttons on the front panel. |
| Camera pictures are clear during recording but unclear during playback. | The video heads may be clogged with oxide deposits. Clean them using a video head cleaning cassette available in most local retail stores. Consult your dealer if this fails to solve the problem. |

SPECIFICATIONS

ELECTRICAL

| | |
|--------------------|--|
| Power Source: | 100-230 VAC, 50/60 Hz (the included power cord is used for 120 VAC, 60 Hz) |
| Power Consumption: | Approximately 18 watts |
| Rating | |
| ALM/CALL/MODE: | Active: "low" level, maximum current 50 mA (+5 VDC)/10 mA (+24 VDC) Non-active: open, maximum voltage +24 VDC |
| ALM/RST/REC: | Active: when terminals are short-circuited or "low" level voltage is applied Non-active: open |
| CLK: | Recording: a pulse of the frequency division ratio selected in Rear Terminal menu |

VIDEO AND AUDIO

| | |
|--------------------------------|--|
| Tape Format: | VHS, 1/2-inch width high-density video cassette tape |
| Television System: | 525 lines, 60 field, NTSC-type color system |
| Video Recording System: | 4 rotary heads |
| Luminance Signal: | Frequency modulation recording |
| Color Signal: | Low frequency conversion, sub-carrier phase shift recording |
| Audio Track: | 1 track |
| Tape Speed and Recording Time: | Refer to Table I |
| Fast Forward/Rewind Time: | Approximately 160 seconds with T-160 tape |
| Horizontal Resolution: | More than 330 lines (black and white) More than 240 lines (color) |
| Audio Frequency Response: | 70 Hz - 4 kHz (8H mode) |
| Signal-to-Noise Ratio: | Video: better than 42 dB Audio: better than 43 dB |
| Input: | Video: 1.0 Vp-p, 75 ohms, BNC plug Audio: 308 mV (rms), 50 ohms, RCA plug |
| Output: | Video: 1.0 Vp-p, 75 ohms, BNC plug Audio: 388 mV (rms), 1 ohm, RCA plug |
| Battery Backup: | Lasts 31 days |

MECHANICAL

Heads

Video: 4 rotary heads
 Audio/Control: 1 stationary head
 Erase: 1 full-track head

Motors: 3 direct drive (drum, capstan)

Connectors

ALM Input: Screw terminal for starting alarm recording
 RST Input: Screw terminal for finishing alarm recording or for adjusting on-screen clock
 REC Input: Screw terminal for starting/finishing recording or for series recording
 GND: Screw terminal for ground
 ALM Output: Screw terminal for output while alarm recording is underway
 CLK Output: Screw terminal to command camera switching
 MODE Output: Screw terminal for indicating the VCR's selected mode
 CALL Output: Screw terminal for external warning device or for series recording

GENERAL

Operating Temperature: 41° to 104°F (5° to 40°C)

Relative Humidity: Maximum 80%

Dimensions

(JOG dial Included): 16.7 (W) x 12.3 (D) x 3.7 (H) inches (42.5 x 31.3 x 9.5 cm)

Weight: 9 lb (4.2 kg)

Weight and dimensions shown are approximate.

(Design and product specifications subject to change without notice.)

Table I. Tape Speed and Recording Time (T-160 Cassette)

| Mode | Record Time (hours) | Speed (mm/s) | Recording Interval (s/field) | Recording Fields (per second) | Video Signal | Audio Signal | Tape Drive |
|-----------|---------------------|--------------|------------------------------|-------------------------------|--------------|--------------|-------------------|
| 8H (EP) | 8 | 11.12 | 0.0167 | 60 | Continuous | Recordable | Continuous |
| L24H (EP) | 24 | 3.71 | 0.050 | 20 | Time-lapse | Recordable | Continuous (slow) |
| L40H (EP) | 40 | 2.22 | 0.083 | 12 | Time-lapse | Recordable | Continuous (slow) |

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REGULATORY NOTICES

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

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

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

INFORMATION

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

INFORMATION

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

PRODUCT WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship for a period of one year after the date of shipment.

Exceptions to this warranty are as noted below:

- Five years on FT/FR8000 Series fiber optic products.
- Three years on Genex™ Series products (multiplexers, server, and keyboard).
- Three years on Camclosure® and fixed camera models, except the CC3701H-2, CC3701H-2X, CC3751H-2, CC3851H-2X, MC3851H-2, and MC3851H-2X camera models, which have a five-year warranty.
- Two years on standard motorized or fixed focal length lenses.
- Two years on Legacy®, CM6700/CM6800/CM9700 Series matrix, and DF5/DF8 Series fixed dome products.
- Two years on Spectra®, Esprit®, ExSite™, and PS20 scanners, including when used in continuous motion applications.
- Two years on Esprit® and WW5700 Series window wiper (excluding wiper blades).
- Eighteen months on DX Series digital video recorders, NVR300 Series network video recorders, and Endura™ Series distributed network-based video products.
- One year (except video heads) on video cassette recorders (VCRs). Video heads will be covered for a period of six months.
- Six months on all pan and tilts, scanners or preset lenses used in continuous motion applications (that is, preset scan, tour and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to Pelco, Clovis, California. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental or consequential damages (including loss of use, loss of profit and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, Sales Order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

In order to expedite parts returned to the factory for repair or credit, please call the factory at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair).

All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid. Ship to the appropriate address below.

If you are located within the continental U.S., Alaska, Hawaii or Puerto Rico, send goods to:

Service Department
Pelco
3500 Pelco Way
Clovis, CA 93612-5699

If you are located outside the continental U.S., Alaska, Hawaii or Puerto Rico and are instructed to return goods to the USA, you may do one of the following:

If the goods are to be sent by a COURIER SERVICE, send the goods to:

Pelco
3500 Pelco Way
Clovis, CA 93612-5699 USA

If the goods are to be sent by a FREIGHT FORWARDER, send the goods to:

Pelco c/o Expeditors
473 Eccles Avenue
South San Francisco, CA 94080 USA
Phone: 650-737-1700
Fax: 650-737-0933

REVISION HISTORY

| Manual # | Date | Comments |
|----------|------|-------------------|
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