

SANYO

INSTRUCTION MANUAL

TLS-924P

Time Lapse Video Cassette Recorder

English

GB

Time Lapse Videorecorder

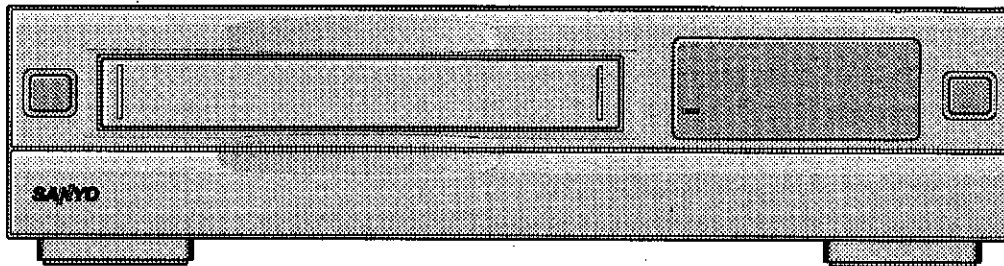
Deutsch

D

Magnétoscope à cassette cyclique

Français

F



PRECAUTIONS

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

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only. If the power supply cord (AC power cord) of this appliance is damaged, it must be replaced. Return to a SANYO Authorised Service Centre for replacement of the cord.

CAUTION: Do not put your hand or other objects in the cassette loading slot because of risk of injury or accident. Be sure to keep small children away from the VCR.

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Location

For safe operation and satisfactory performance of your VCR, keep the following in mind when selecting a place for its installation:

- Shield it from direct sunlight and keep it away from sources of intense heat.
- Avoid dusty or humid places.
- Avoid places with insufficient ventilation for proper heat dissipation. Do not block the ventilation holes at the top and bottom of the VCR. Do not place the unit on a carpet because this will block the ventilation holes.
- Install the VCR in a horizontal position only.
- Avoid locations subject to strong vibrations.
- Avoid moving the VCR between cold and hot locations (see "Moisture Condensation Problems", this page).
- Do not place the VCR directly on top of the TV, as this may cause playback or recording problems.

Avoiding Electrical Shock and Fire

- Do not handle the power cord with wet hands.
- Do not pull on the power cord when disconnecting it from an AC wall outlet. Grasp it by the plug.
- If any liquid is spilled on the VCR, unplug the power cord immediately and have the unit inspected at a factory-authorized service centre.
- Do not place anything directly on top of this VCR.

Moisture Condensation Problems

Cause:

When the VCR is first installed, moved from a cold area to a warm area or placed in a location with high humidity, dew (moisture) may form in the unit. The Dew indicator (d d d d) blinks. If you operate the VCR with dew inside, damage may result.

Prevention:

- ① Make all necessary connections.
- ② Plug the power cord into a 220 – 240 V AC outlet.
- ③ Do not operate the VCR for approximately 2 hours.

When the VCR reaches room temperature, the Dew indicator (d d d d) will turn off and the VCR will be ready to operate.

Power on/off

Power is switched on/off by pressing the **POWER** button.

Power off display



Power on display



"Power off" is the condition in which only the time is displayed.

Disconnect the mains load from the wall socket if the VCR is not to be used for a long time.

FEATURES

- Field playback
- 12, 24-hour mode recording audio playback
- Autorepeat recording
- Alarm recording function
- On-screen mode setting
- Integrated time date generator
- Alarm scan function
- Forward field advance function
- 30-day memory backup
- Security lock
- Head-cleaning function

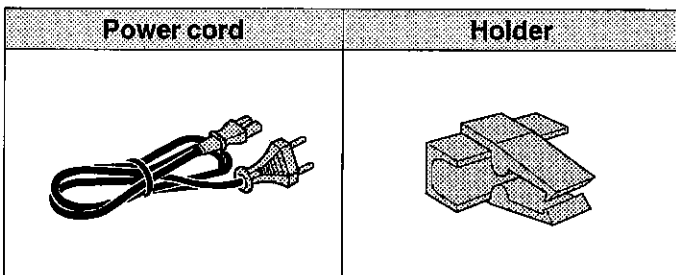
What is Time-Lapse Video?

A standard VCR records 50 images (fields) per second, while this time lapse VCR can record at different rates (from 1 image every 1/10 sec. to 1 image every 9/50 sec.). This feature makes it possible to record up to 27 hours on a single video tape. As a result, this unit is extremely useful for long-term monitoring or recording changes that place slowly over an extended period of time (such as the blooming of a flower).

If a tape that was recorded in time-lapse mode is played back in the normal 3-hour mode, the speed of the tape will be increased by anywhere from 5 to 9 times, depending on the speed the original recording was made at, so that the slow changes that were recorded can be viewed at a much faster speed.

ACCESSORIES

Check to make sure that all the accessories listed below have been included with your VCR.



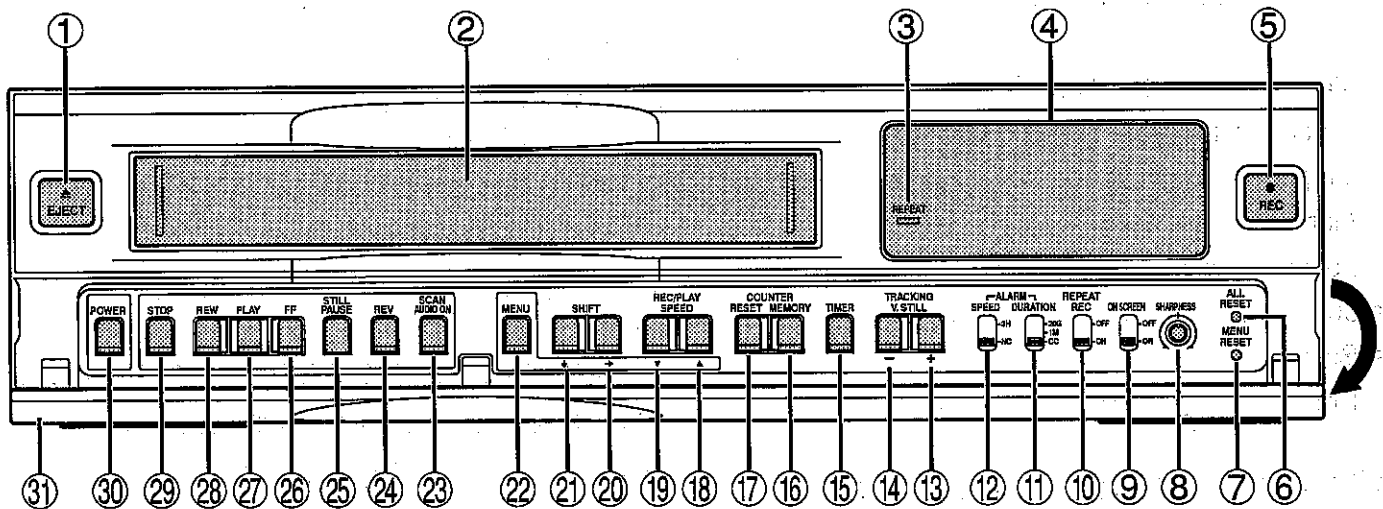
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LOCATIONS OF CONTROLS AND INDICATORS

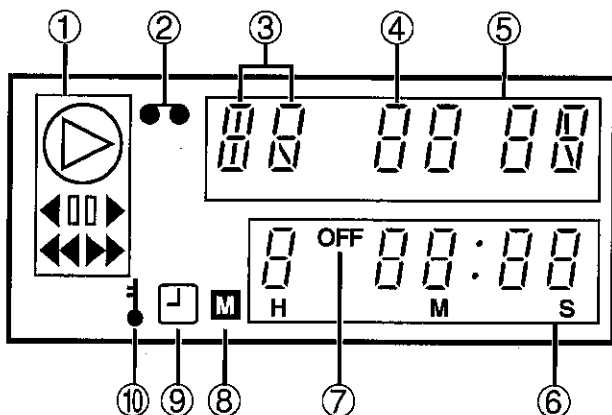
Front Panel



- ① **EJECT** button
- ② Cassette loading slot
- ③ **REPEAT LED** (autorepeat recording indicator)
- ④ Digital display panel
- ⑤ **REC** (record) button
- ⑥ **ALL RESET** button
- ⑦ **MENU RESET** button
- ⑧ **SHARPNESS** control
- ⑨ **ON SCREEN** switch
- ⑩ **REPEAT REC** (autorepeat recording) switch
- ⑪ **ALARM DURATION** (alarm recording time) switch
- ⑫ **ALARM SPEED** (alarm recording speed) switch
- ⑬ **TRACKING/V. STILL +** button
- ⑭ **TRACKING/V. STILL -** button
- ⑮ **TIMER** button
- ⑯ **COUNTER MEMORY** button
- ⑰ **COUNTER RESET** button
- ⑱ **REC/PLAY SPEED ▲** button
(increase recording/playback speed)
- ⑲ **REC/PLAY SPEED ▼** button
(decrease recording/playback speed)
- ⑳ **SHIFT →** (display position right) button
- ㉑ **SHIFT ↓** (display position down) button
- ㉒ **MENU** button
- ㉓ **SCAN/AUDIO ON** button
- ㉔ **REV** (reverse playback) button
- ㉕ **STILL/PAUSE** button
- ㉖ **FF** (fast forward) button
- ㉗ **PLAY** button
- ㉘ **REW** (rewind) button
- ㉙ **STOP** button
- ㉚ **POWER** button
- ㉛ Front door

LOCATIONS OF CONTROLS AND INDICATORS

Digital Display



① Operation Indicators

They display the actual operation mode.

| Operation Mode | Indicator |
|-------------------------------------|-----------|
| Record (REC) | ○ |
| Record pause (REC PAUSE) | ○ + |
| Playback (PLAY) | ▷ |
| Still image (STILL) | ▷ + |
| Fast forward (FF) | ▶▶ |
| Rewind (REW) | ◀◀ |
| Cueing (CUE) | ▷ + ▶▶ |
| Reviewing (REVIEW) | ▷ + ◀◀ |
| Reverse playback (RVS PLAY) | ▷ + |
| Field shift forward (FIELD SHIFT +) | ▷ + |

② **Cassette indicator**
 Comes on when a cassette is loaded.

③ **Alarm indicator**
 Flashes when an alarm is being recorded:



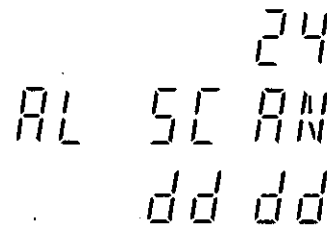
Comes on after the alarm has been recorded:



④ **Power Loss indicator** *P*
 Comes on after a power loss.

⑤ **Mode display**

- Recording/playback speed mode
- Alarm scan mode
- Dew display



⑥ **Counter display**

- Time display



- Linear time counter display



⑦ **OFF indicator** OFF
 Comes on when the tape end has been reached after a recording, except during autorepeat recording mode.

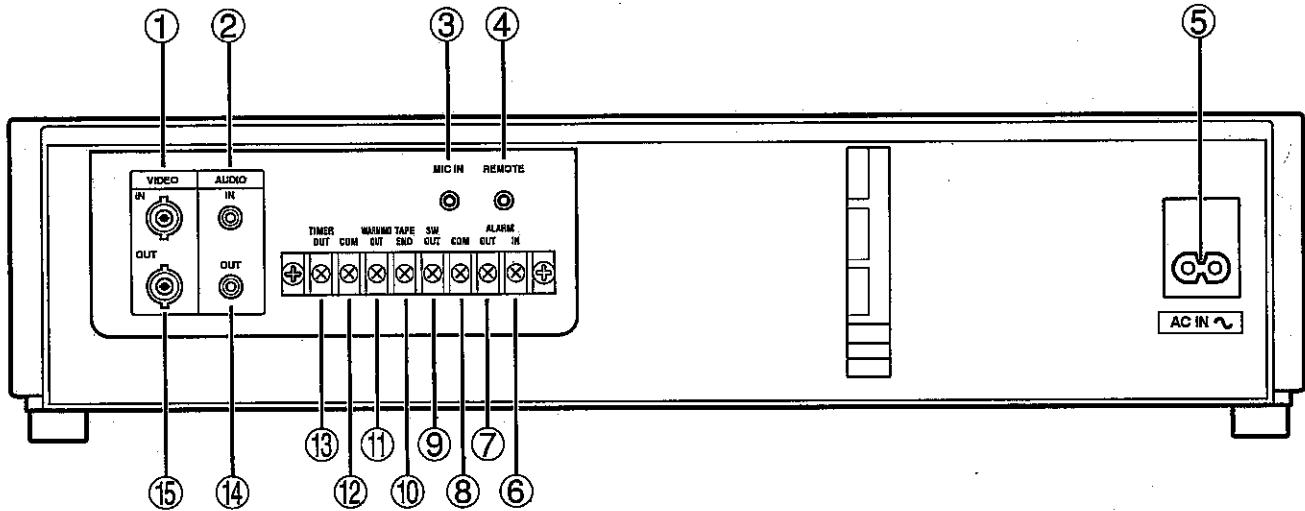
⑧ **Memory Stop indicator** *M*
 Comes on when the memory stop function is engaged.

⑨ **Timer Recording indicator**
 Comes on when in timer recording stand-by mode, or during a timer recording.

⑩ **Security lock indicator**
 Comes on when the security lock is engaged.

LOCATIONS OF CONTROLS AND INDICATORS

Back Panel



① VIDEO IN (video input) jack

② AUDIO IN (audio input) jack

③ MIC IN (microphone input) jack

④ REMOTE (remote control input) jack

⑤ AC Power input

⑥ ALARM IN (alarm input) terminal

⑦ ALARM OUT (alarm output) terminal

⑧ COM (common) terminal

⑨ SW OUT (switch output) terminal

⑩ TAPE END (tape end output) terminal

⑪ WARNING OUT (warning output) terminal

⑫ COM (common) terminal

⑬ TIMER OUT (timer recording output) terminal

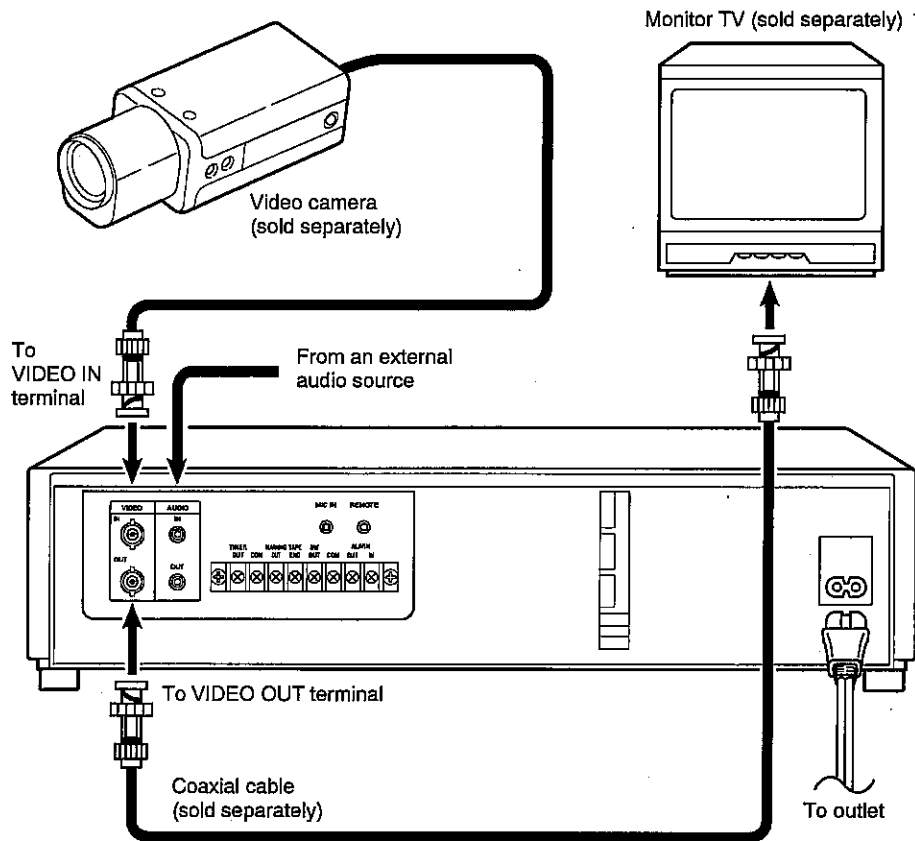
⑭ AUDIO OUT (audio output) jack

⑮ VIDEO OUT (video output) jack

CONNECTIONS

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

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



About the memory reset

If the VCR location is changed or to cancel previous settings, please reset the memory as described below.

All the settings as the time and date will be reset, and the security lock will be cancelled. The MENU 2 (TIMER SET) and the MENU 3 (USED TIME) data can not be reset.

To reset the memory, press the **ALL RESET** button.

NOTE:

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

IMPORTANT NOTE (U. K. Only)

The wires in the mains lead are coloured according to the following code:

Blue: Neutral

Brown: Live

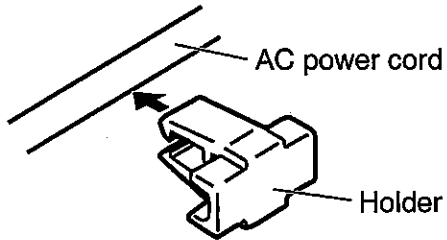
If the colours of the wires in the mains lead of this apparatus do not correspond with the colour markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured blue must be connected to the terminal which is marked with the letter **N** or coloured blue or black.
- The wire which is coloured brown must be connected to the terminal which is marked with the letter **L** or coloured brown or red.
- Do not connect either wire to the **Earth** terminal.

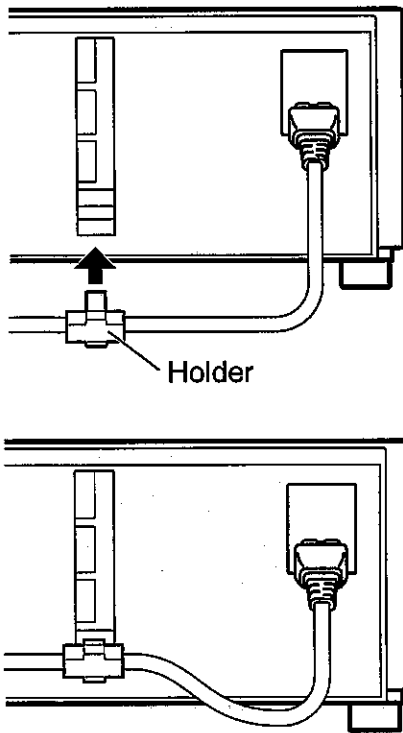
CONNECTIONS

Power cord.

- 1 Plug the power cord (supplied) into the AC power input (AC IN ~) on the VCR back panel. Insert the plug straight and firmly.
- 2 Install the AC power cord into the holder.



- 3 Fix the holder to the VCR back panel.



VHS VIDEO CASSETTE TAPES

Use only video cassette tapes bearing the **VHS** logo. This VCR was primarily designed for use with E-180 cassette tapes, it is recommended to use E-180 VHS video cassette tapes for optimal performance.

Handling Cassette Tapes

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

Do not tamper with the cassette mechanism and never touch the tape with your fingers.

Protect the cassette tapes from shocks or strong vibrations.

To Protect your Recordings

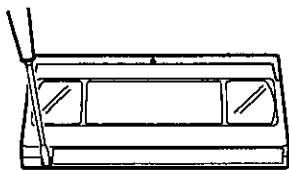
After having recorded a tape, if you wish to keep the recording, use a flathead screwdriver to break off the erasure-prevention tab on the cassette.

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

NOTES:

- If you try to record on a cassette without erasure-prevention tab, the VCR will eject the cassette.
- If the **TIMER** button is pressed when a cassette without erasure-prevention tab is loaded, the timer recording indicator (□) will start flashing.

Erasure-prevention tab



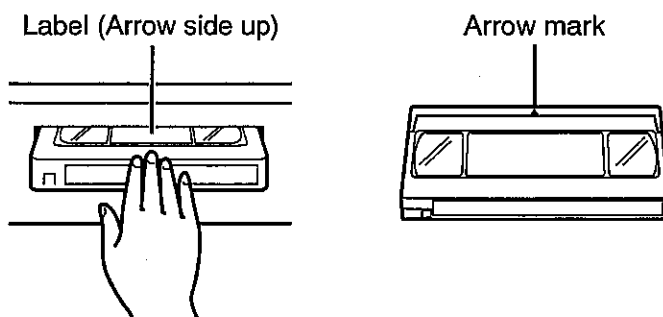
To prevent accidental erasure, remove the tab after recording.



To record again, cover the hole with vinyl tape.

Loading

- 1 Place the cassette, label side up, in the loading slot. Gently push the centre of the cassette until it is loaded automatically.
 - When the cassette is loaded, the cassette indicator "●●" will light on the digital display.
 - The time display will switch to the reset counter "0_H 00_M 00_S" display.



Unloading

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

NOTES:

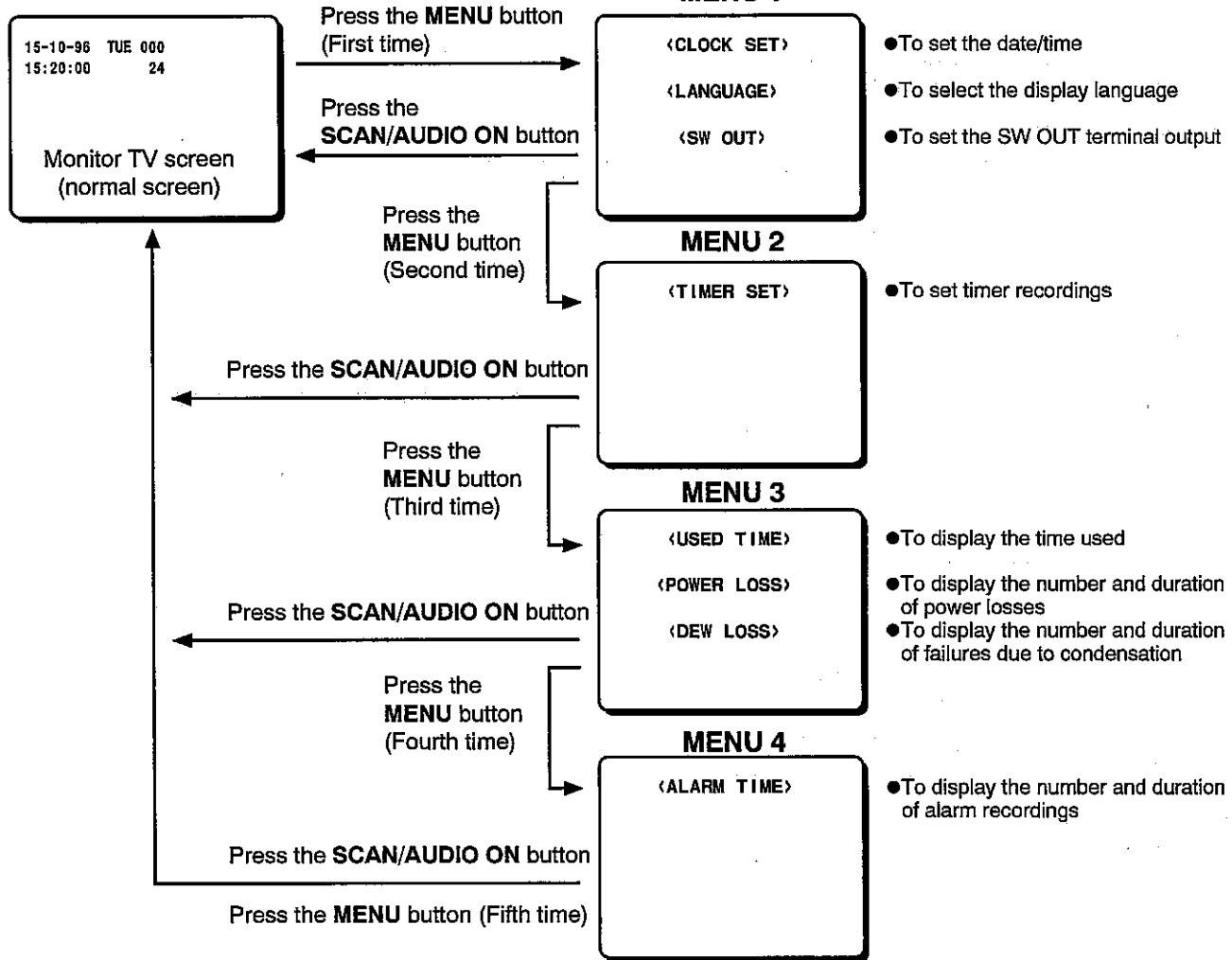
- Do not insert any object in the cassette loading slot, as that may cause injury and damages to the VCR.
- If your hand gets stuck in the cassette loading slot, unplug the power cord and consult the dealer where the unit was bought. Do not forcibly pull the hand out as that may cause severe injuries.

TYPES OF ON-SCREEN DISPLAYS AND DISPLAY SEQUENCE

NOTES:

- If the VCR is in timer recording stand-by mode (the "□" indicator displayed on the digital display), the on-screen displays will not be available. First press the **TIMER** button, to cancel the recording stand-by mode, then proceed with the VCR programming. When finished, press the **TIMER** button again to return the VCR to timer recording stand-by mode.
- When a menu is displayed, recording will not be possible.
- Press the **SCAN/AUDIO ON** button, the setting procedure is now completed then the normal screen is displayed.
- During recording or playback the menus cannot be displayed.

Set the **ON SCREEN** switch to the "ON" position

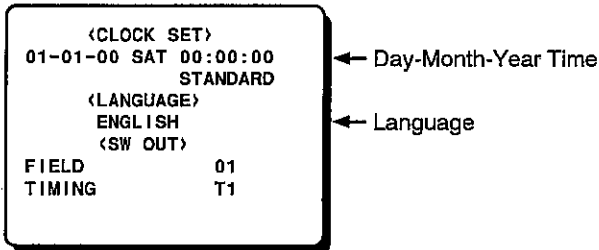


Example: To set the clock to October 15, 1996 at 3:20 PM (15:20).

Clock and Language Setting

- 1 Turn the power on to all devices used.
- 2 Press the **MENU** button, the MENU 1 (CLOCK SET) is displayed.

MENU 1 Initial values



- 3 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the day (ex: 15), then press the **SHIFT** → button.
 - The day of the week is set automatically.
- 4 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the month (ex: 10), then press the **SHIFT** → button.
- 5 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the year (ex: 96 for 1996), then press the **SHIFT** → button.

NOTE:

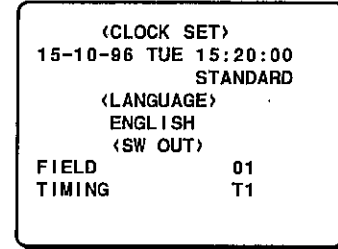
- The last 2 digits only are displayed.

- 6 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the hours (ex: 15 for 3 PM), then press the **SHIFT** → button.
- 7 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the minutes (ex: 20), then press the **SHIFT** → button.
- 8 For accurate clock setting, press the **REC/PLAY SPEED** ▼ button timed with a time broadcast, or other accurate time signal, this will start the seconds counting from 00.
- 9 Press the **SHIFT** ↓ button.
- 10 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set STANDARD (standard time)/DAYLIGHT (summer time).
- 11 Press the **SHIFT** ↓ button.

- 12 Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the language.

- Each time the **REC/PLAY SPEED** ▼ (or ▲) button is pressed, a different language, ENGLISH-FRANCAIS-DEU.TSCH, is selected.

MENU 1 Example setting



- 13 Press the **SCAN/AUDIO ON** button, the normal screen is displayed.

- The setting procedure is now completed.

NOTE:

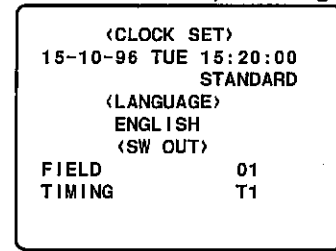
- If a cassette tape is not loaded, you can reset the seconds to "00", by pressing the **COUNTER RESET** button.

Standard/Daylight Time Adjustment

The clock time can be changed to daylight saving time (by adding one hour) or standard time (by subtracting one hour).

- 1 Press the **MENU** button, the MENU 1 (CLOCK SET) is displayed.

MENU 1 Example setting

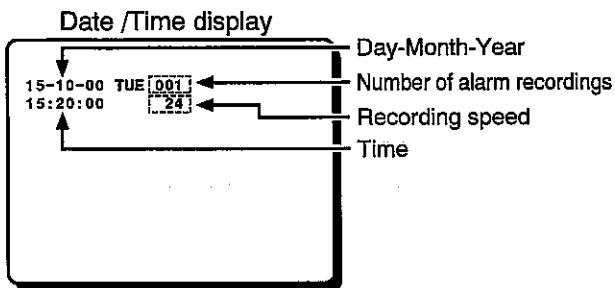


- 2 Press the **SHIFT** ↓ button.
- 3 Press the **REC/PLAY SPEED** ▼ (or ▲) button.
 - The display changes to DAYLIGHT (or STANDARD).
 - One hour is added to (or subtracted from) the current time.
- 4 Press the **SCAN/AUDIO ON** button, the normal screen is displayed.
 - The setting procedure is now completed.

CHANGING THE DISPLAY POSITION

Changing the Date/Time Display Position

- ❶ Turn the power on to all devices used.
- ❷ Set the **ON SCREEN** switch to the "ON" position.
 - *The date and time are displayed.*
- ❸ Press the **SHIFT** → (or ↓) button.
 - *The display will move towards the right (or the bottom).*



NOTES:

- If the **SHIFT** → (or ↓) button is kept pressed for 1 second or more the display will move at a faster speed.
- If the **ON SCREEN** switch is set to the "OFF" position, the date and time will not be recorded.

NORMAL RECORDING

Normal Recording

- ① Turn the power on to all devices used.
- ② Load a cassette tape with erasure-prevention tab.
- ③ Set the **ON SCREEN** switch to the "ON" position.
- ④ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording speed.
 - *The recording speed is displayed on-screen and on the digital display.*
- ⑤ Press the **REC** button.
 - *The "O" indicator is displayed on the digital display and recording starts.*

NOTES:

- If the **REPEAT REC** switch is set to the "OFF" position, recording will continue to the end of the tape, then the VCR will rewind the tape to the beginning then stop. ("OFF" will be displayed on the digital display.)
- When "OFF" is displayed, timer recording and alarm recording will not be possible in order to protect the previous recording on the tape.
- To cancel the "OFF" display, press the **EJECT, PLAY, STOP, FF** or **REW** button.

- ⑥ To stop recording, press the **STOP** button.

[Recording Speed]

| Recording speed | Recording duration (with an E-180 cassette tape) | | Recording interval | Audio recording | Tape motion |
|-----------------|--------------------------------------------------|---------|--------------------|-----------------|-------------|
| | Standard mode | 3 hours | | | |
| 3 | Standard mode | 3 hours | 1/50 second | Possible | Continuous |
| 12 | Time lapse mode | 15 | 0.1 | | |
| 24 | | 27 | 0.18 | | |

NOTES:

- A tape recorded on this VCR cannot be played back on another make of time lapse VCR.
- If you press on the **REC** button and the loaded cassette has no erasure-prevention tab, the VCR will eject the cassette.
- During recording, the **MENU** button will not function (the menu cannot be displayed).

Record Pause

Recording can be interrupted temporarily.

- ① Press the **STILL/PAUSE** button during recording.
 - *The "O" and "⏸" indicators are displayed on the digital display.*

NOTES:

- The image appears on-screen but it is not recorded.
 - If a recording pause continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.
- ② To resume recording, press the **STILL/PAUSE** button again.

Autorepeat Recording

The same tape can be recorded over many times.

- ① Set the **REPEAT REC** switch to the "ON" position.
 - *The REPEAT LED will light.*
 - ON Autorepeat recording function on
 - OFF Autorepeat recording function off
- ② Press the **REC** button.
 - *Recording will start. When the tape end is reached, the VCR will rewind it to the beginning regardless of the counter memory, and recording will resume.*

NOTES:

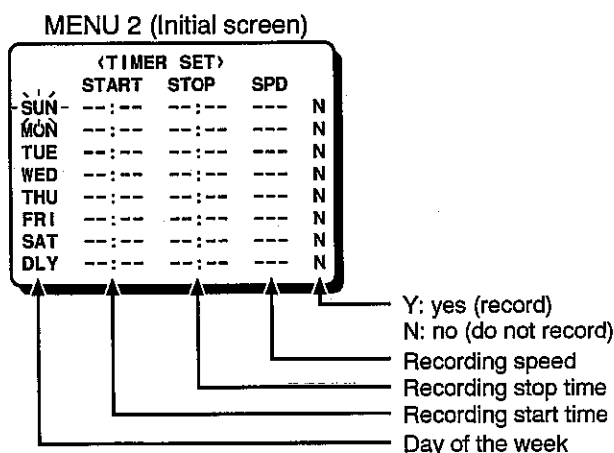
- If during autorepeat recording mode, the **REPEAT REC** switch is set to the "OFF" position, the recording will continue to the end of the tape then it will be rewound to the beginning and stop. "OFF" will be displayed on the digital display.
- If during autorepeat recording mode, an alarm is triggered, alarm recording will take place. The recording will continue to the end of the tape then it will be rewound to the beginning and stop. "OFF" will be displayed on the digital display and autorepeat recording mode is cancelled.
- If "AL" is displayed on the digital display, autorepeat recording will not be possible.

PROGRAMME TIMER RECORDING ① MENU 2

There are two program timer recording methods, daily recording or recording on certain days of the week.

Example: To record on every Saturday from 9:00 AM to 5:00 PM (17:00), in 24-hour mode (recording speed).

- ① Make sure that the set date and time are correct.
- ② Load a cassette tape with erasure-prevention tab.
- ③ Press the **MENU** button to display the MENU 2 (TIMER SET).
 - "SUN" (Sunday) will be flashing.



- ④ Press the **SHIFT** ↓ button, until "SAT" (Saturday) is flashing.
- ⑤ Press the **SHIFT** → button.
 - The recording start hour position starts flashing.
- ⑥ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording start hour (ex: 09), then press the **SHIFT** → button.
 - The recording start minutes position starts flashing.
- ⑦ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording start minutes (ex: 00), then press the **SHIFT** → button.
 - The recording stop hour position starts flashing.
- ⑧ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording stop hour (ex: 17), then press the **SHIFT** → button.
 - The recording stop minutes position starts flashing.

NOTE:

- If the set stop time is earlier than or the same time as the set start time, the VCR will consider the stop time to be the following day, and "T" will be displayed next to the recording stop time.
- ⑨ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording stop minutes (ex: 00), then press the **SHIFT** → button.
 - The "SPD" (recording speed) position will start flashing.
 - ⑩ Press the **REC/PLAY SPEED** ▼ (or ▲) button to select the recording speed (ex: 24), then press the **SHIFT** → button.
 - "N" will start flashing.
 - ⑪ Press the **REC/PLAY SPEED** ▼ (or ▲) button to select "Y".

Y: recording will take place

N: recording will not take place

Programmed timer recording Example 1

| | START | STOP | SPD | |
|-----|-------|-------|-----|---|
| SUN | --- | --- | --- | N |
| MON | --- | --- | --- | N |
| TUE | --- | --- | --- | N |
| WED | --- | --- | --- | N |
| THU | --- | --- | --- | N |
| FRI | --- | --- | --- | N |
| SAT | 09:00 | 17:00 | 24 | Y |
| DLY | --- | --- | --- | N |

- To programme other timer recordings, repeat steps ④ to ⑪.
- ⑫ Press the **SCAN/AUDIO ON** button, the normal screen is displayed.
 - ⑬ Press the **TIMER** button.
 - The timer recording indicator "□" will light on the digital display, the VCR is now in timer recording stand-by mode.

NOTES:

- To modify, cancel or stop timer recording, press the **TIMER** button first to cancel the timer recording mode.
- A timer recording of more than 24 hours can only be set on the last two (7th and 8th) lines. On the 7th line, set the recording start time and set "*" for the rest of the line. On the 8th line, set "*" for the START time position, then set the recording stop time, recording speed, and select "Y" or "N".

Changing a Programme Timer Recording

- ❶ Press the **MENU** button to display the MENU 2 (TIMER SET).
- ❷ Press the **SHIFT →** (or **↓**) button, until the setting to correct is flashing.
- ❸ Press the **REC/PLAY SPEED ▼** (or **▲**) button, to correct the setting.
- ❹ Press the **SCAN/AUDIO ON** button, the normal screen is displayed.
- ❺ Press the **TIMER** button.

To Cancel a Programme Timer Recording

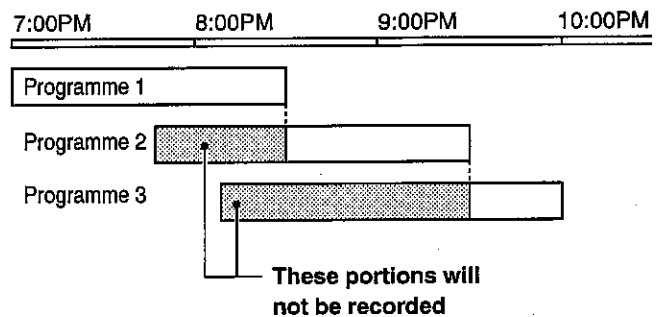
- ❶ Press the **MENU** button to display the MENU 2 (TIMER SET).
- ❷ Press the **SHIFT →** (or **↓**) button, until the "Y" corresponding to the timer recording to cancel is flashing.
- ❸ Press the **REC/PLAY SPEED ▼** (or **▲**) button, to select "N".
- ❹ Press the **SCAN/AUDIO ON** button, the normal screen is displayed.
- ❺ Press the **TIMER** button.

To Cancel all Programme Timer Recordings

- ❶ Press the **MENU** button to display the MENU 2 (TIMER SET).
- ❷ Press the **MENU RESET** button.
 - *All programmed timer recordings are erased.*
- ❸ Press the **SCAN/AUDIO ON** button, the normal screen is displayed.

NOTES:

- During timer recording or timer recording stand-by, all the buttons on the VCR, except the **TIMER** button, are disabled.
- If there was a power loss, the recording will be interrupted. When the power is restored, the recording will resume if the stop time has not yet been reached, and "P" will be displayed on the digital display. The VCR internal battery is completely recharged after the VCR has been connected to a live outlet for 48 hours, and it will maintain all the VCR settings memory for up to 30 days.
- Set the timer recordings so that the recording times do not overlap. If they do, the one with the earliest recording start time will have priority. (See chart below.)



- To set two or more timer recordings for a same day of the week, press the **SHIFT →** (or **↓**) button, until the day of the week for the second recording is flashing, then press the **REC/PLAY SPEED ▼** (or **▲**) button, to set the desired day of the week.

ALARM RECORDING

Alarm Recording Setting

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

- ❶ Make all necessary connections.
- ❷ Set the **ALARM SPEED** switch to the desired recording speed.
 - 3H 3-hour mode recording
 - NC Recording at the speed already set
- ❸ Set the **ALARM DURATION** switch to the desired recording duration.
 - 20S 20-second recording
 - 1M 1-minute recording
 - CC Recording as long as the alarm signal is being input (minimum recording of 5 seconds)

NOTES:

- During alarm recording all buttons are disabled.
- If an alarm trigger is received while alarm recording is in progress, recording will be conducted from that point, for the set duration. The alarm counter will register the alarm, but it will not be found during an alarm scan search.
- If the alarm recordings are going to be played back with the alarm scan search function, set the recording speed to 3-hour mode, and the alarm recording duration to 20S or 1M.
- When there is a power loss during alarm recording, if the power is restored within the recording set during, alarm recording will continue.
- If an alarm trigger is received during autorepeat recording mode, the autorepeat recording mode is cancelled.
- If the power is off, recording will be conducted for the set duration, then the unit will return to the power off state.

Alarm Recording Counter Display

- During alarm recording, "AL" will be flashing on the digital display.
- If the **ON SCREEN** switch is set to the "ON" position, the number of alarm recordings is displayed, and the number of alarm triggers flashes on the monitor screen.
- The maximum display number of alarm recordings is "999", at the next alarm recording the counter will indicate "000".
- When the MENU 4 (ALARM TIME) is displayed, press the **MENU RESET** button to reset the alarm counter to "000" (all the data of MENU 4 is reset).

Connections to the ALARM IN/OUT Terminals

- Alarm input signal
Connect a make-contact (no voltage) switch between the **ALARM IN** and **COM** terminals.
- Alarm output signal
Normally DC 5V are output between the **ALARM OUT** and the **COM** terminals. When an alarm input (trigger) is received and the unit is recording, the output falls to 0V. Once the alarm recording is over, the output returns to DC 5V.

NORMAL PLAYBACK

Normal Playback

- 1 Turn on the power to the VCR and TV monitor.
- 2 Load the video cassette tape.
- 3 Press the **REC/PLAY SPEED** ▼ (or ▲) button to select the playback speed.
 - *The selected playback speed is displayed on the digital display.*
- 4 Press the **PLAY** button.
 - *Playback starts.*
 - *If necessary, adjust the tracking to eliminate the noise from the picture.*
- 5 To stop playback, press the **STOP** button.
 - *To advance or rewind the tape, press the **FF** or **REW** button.*

NOTES:

- A tape recorded on another make of time lapse VCR cannot be played back on this unit.
- A tape recorded on this VCR cannot be played back on another make of time lapse VCR.

Tape Playback Speed

| Recording speed | Playback speed | | |
|-----------------|----------------|-----|-----|
| | 3 | 12 | 24 |
| 3 | 1 | 1/5 | 1/9 |
| 12 | 5 | 1 | 5/9 |
| 24 | 9 | 9/5 | 1 |

Example: If a tape recorded in 24-hour mode recording speed is played back in 3-hour mode playback speed, the playback will be at 9 times the normal speed.

Tracking Control

If there is noise in the image during playback,

- 1 While looking at the playback picture, press and hold the **TRACKING/V. STILL+** button to minimize the noise.
- 2 If it cannot be minimized, press the **TRACKING/V. STILL-** button.

Sharpness Control

Turn the **SHARPNESS** control clockwise or counterclockwise for the desired sharpness of the image.

Audio Playback

- The playback speed has to be the same as the recording speed, for normal playback of the audio.
- For a tape recorded in 12-hour and 24-hour recording modes, to playback the audio, press the **SCAN/AUDIO ON** button after pressing the **PLAY** button. "A" will be displayed to the left of the playback speed on the digital display.

NOTE:

- Noise will appear in the image when audio playback is used.

SPECIAL PLAYBACK

Picture Search

- 1 Press the **FF** (or **REW**) button, during normal playback.
 - *The image can be seen while the tape is advanced (or rewound) at high speed.*
- 2 To return to normal playback, press the **PLAY** button.

NOTES:

- During picture search, noise (horizontal bars) will appear in the picture.
- The sound is muted.

Still Image

- 1 Press the **STILL/PAUSE** button, during normal playback.
 - *A still image can be viewed.*
- 2 To return to normal playback, press the **PLAY** button.

NOTES:

- If still mode continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.
- If the image is unstable (rolling vertically), adjust the vertical lock control to correct.

Vertical Lock Control

During still image mode,

- 1 Press and hold the **TRACKING/V. STILL+** button to reduce the vertical rolling of the image.
- 2 If it cannot be corrected, press the **TRACKING/V. STILL-** button.

Frame Advance

- 1 Press the **FF** button, during still image mode.
 - *The still image is advanced of one image (field).*
- 2 To return to normal playback, press the **PLAY** button.

Reverse Playback

- 1 Press and hold the **REV** button, during normal playback.
 - *Reverse playback will start.*
- 2 To return to normal playback, release the **REV** button.

NOTES:

- During reverse playback, noise will appear in the picture.
- Reverse playback is only possible during 3-hour playback speed mode.
- The sound is muted.

Alarm Scan

- 1 Set the **ON SCREEN** switch to the "ON" position.
- 2 Press the **SCAN/AUDIO ON** button during stop mode.
 - *"AL SC AN" will be displayed on the digital display and on screen.*
- 3 Press the **FF** (or **REW**) button.
 - *The unit will advance (or rewind) the tape at high speed and playback the first 5 seconds of every alarm recording.*
 - *To cancel the alarm scan mode, press the STOP button.*
- 4 While the desired recording is being played back, press the **PLAY** button.
 - *Playback will start, alarm scan mode is cancelled.*

NOTE:

- When the **ALARM SPEED** switch is set to 3H, the alarm scan function will only find alarm recordings of 20 seconds or more.

TAPE COUNTER

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

- ① Press the **COUNTER RESET** button, at the beginning of the desired recording.
 - *The counter will be reset to "0_H 00_M 00_S".*
- ② Press the **COUNTER MEMORY** button.
 - **"M"** is displayed on the digital display.
 - *To cancel the counter memory function, press the **COUNTER MEMORY** button a second time.*
- ③ After recording or playback, press the **REW** button in stop mode.
 - *The tape is rewound to the counter "0_H 00_M 00_S" reading.*
 - *If you rewind the tape past the "0_H 00_M 00_S" position, press the **FF** button.*

NOTES:

- There is no tape counter indication for the blank portions of the tape.
- In the 3-hour recording speed mode only, the tape counter indicates real hours, minutes and seconds.
- In the other recording speed modes, the tape counter indication is a ratio of the 3-hour mode base indication. (In 12-hour recording mode, each "second" of the tape counter actually represents approximately $(12/3) + 1 = 5$ real seconds.)
- There may be a slight discrepancy between the position shown on the tape counter and the actual tape position.
- When rewinding the tape past the "0_H 00_M 00_S" position, a minus (-) sign will be displayed.

Calculating the remaining tape duration using the tape counter display

On a E-180 cassette tape, it is possible to record 3 hours (180 minutes) in the 3-hour recording speed mode.

If the recording is started at the beginning of the tape and the tape counter is reset to "0_H 00_M 00_S", the tape usage duration and remaining tape duration can be calculated.

$$\text{Tape usage duration} = \text{Counter reading value} \times \left(\frac{\text{Recording speed value}}{3} + 1 \right)$$

$$\text{Remaining tape duration} = (\text{Recording speed value} + 3) - \text{Tape usage duration}$$

Example:

If the recording tape speed is 24-hour mode and the counter reading is "1_H 30_M 00_S" (1.5 hours).

$$\text{Tape usage duration} = 1.5 \times \left(\frac{24}{3} + 1 \right) = 13.5 \text{ (hours)}$$

$$\text{Remaining tape duration} = (24 + 3) - 13.5 = 13.5 \text{ (hours)}$$

SETTING THE SW OUT TERMINAL OUTPUT

MENU 1

When recording in time lapse mode, different outputs can be selected for the **SW OUT** terminal.

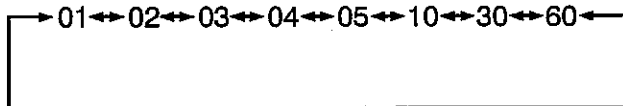
- 1 Press the **MENU** button, the MENU 1 (SW OUT) is displayed.
- 2 Press the **SHIFT ↓** button, until the "FIELD" (or "FRAME") setting is flashing.

NOTE:

- If "TIMING" is set to T2 (see step 4), "FRAME" will be indicated instead of "FIELD".

- 3 Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the "FIELD" (or "FRAME"), then press the **SHIFT ↓** button.

- *With each press of the button, the setting will change as indicated below.*



- *The "TIMING" setting starts flashing.*

- 4 Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the "TIMING".

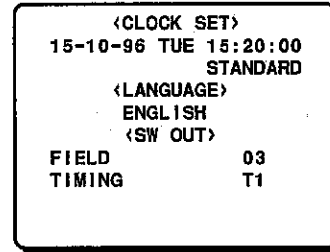
T1 1 pulse is output after each set number of fields.

T2 1 pulse is output after each set number of frames.

- 5 Press the **SCAN/AUDIO ON** button, the normal screen is displayed.

- *The setting procedure is now completed.*

MENU 1 Sample setting



SETTING THE SECURITY LOCK

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

- 1 While holding the **SHIFT →** button, press the **REC/PLAY SPEED ▲** button.

- "1" is displayed on the digital display.

To cancel the security lock, while holding the **SHIFT →** button, press the **REC/PLAY SPEED ▼** button, "1" will be erased from the digital display.

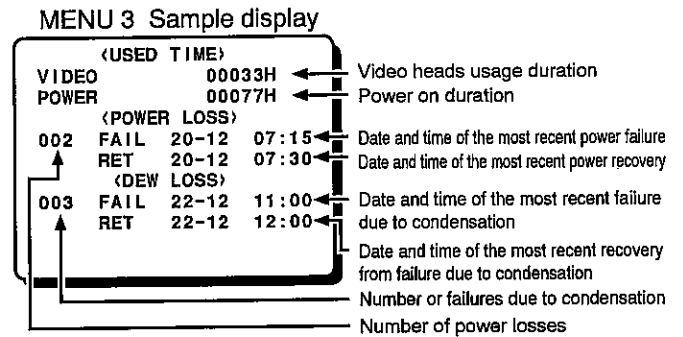
NOTES:

- While the security lock is engaged all commands, except the one to cancel the security lock, are disabled.
- The security lock cannot be engaged while a menu is displayed.

CHECKING USAGE DURATION, POWER FAILURE AND FAILURE DUE TO CONDENSATION

MENU 3

- Press the **MENU** button to display the MENU 3 (USED TIME), (POWER LOSS), (DEW LOSS).
 - (USED TIME) The video heads usage duration and the power on duration are displayed.
 - (POWER LOSS) ... The number of power losses, and the date and time of the most recent power failure and recovery are displayed.
 - (DEW LOSS) The number of failures due to condensation, and the date and time of the most recent failure and recovery are displayed.



- Press the **SCAN/AUDIO ON** button, the normal screen is displayed.

NOTE:

- If the **MENU RESET** button is pressed while the MENU 3 is displayed, the (POWER LOSS) and (DEW LOSS) data is erased. The (USED TIME) data cannot be reset.
- "P" will be erased from the digital display.

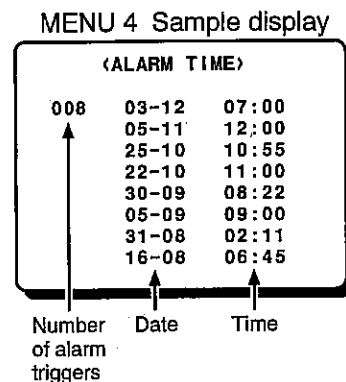
CHECKING THE ALARM RECORDINGS TIME

MENU 4

- Press the **MENU** button to display the MENU 4 (ALARM TIME).
 - The number of alarm triggers, and the 8 most recent alarm recording times are displayed.

NOTE:

- The data for the previous alarm recordings is erased.
- Press the **SCAN/AUDIO ON** button, the normal screen is displayed.



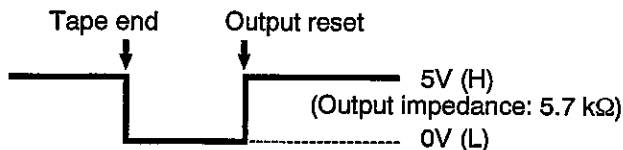
NOTE:

- If the **MENU RESET** button is pressed while the MENU 4 is displayed, the displayed data is erased.
- "AL" will be erased from the digital display.

ABOUT THE OUTPUT TERMINALS

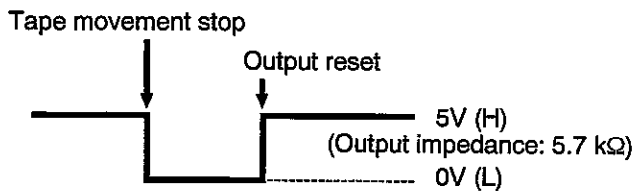
TAPE END Terminal

- During recording, when the end of the tape is reached or when the tape counter reading indicates 2 hours 55 minutes, the output becomes 0V (Low). When the end of the tape is reached, "OFF" will be displayed on the digital display.
- If the **REPEAT REC** switch is set to the "ON" position, the output becomes 0V (Low) for about 2 seconds only.
- To reset the output, press the **STOP** or **EJECT** button.



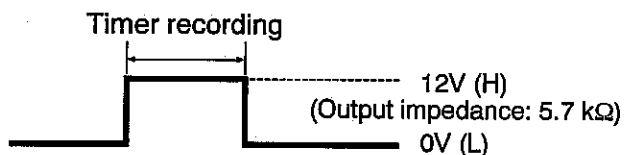
WARNING OUT Terminal

- If the tape stops or other problem, the output becomes 0V (Low).
- To reset the output, unplug the power cord then plug it back in or press the **ALL RESET** button.



TIMER OUT Terminal

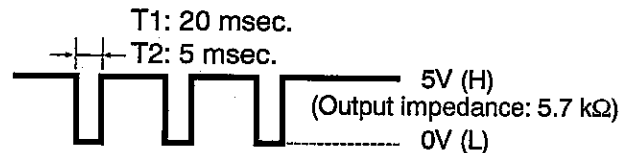
- During timer recording DC 12 V (High) are output. (During timer recording stand-by mode, the output is 0V (Low)).



SW OUT Terminal

When recording in time lapse mode (12- or 24-hour mode), a pulse signal (0V (Low)) is output at the **SW OUT** terminal after each recording period.

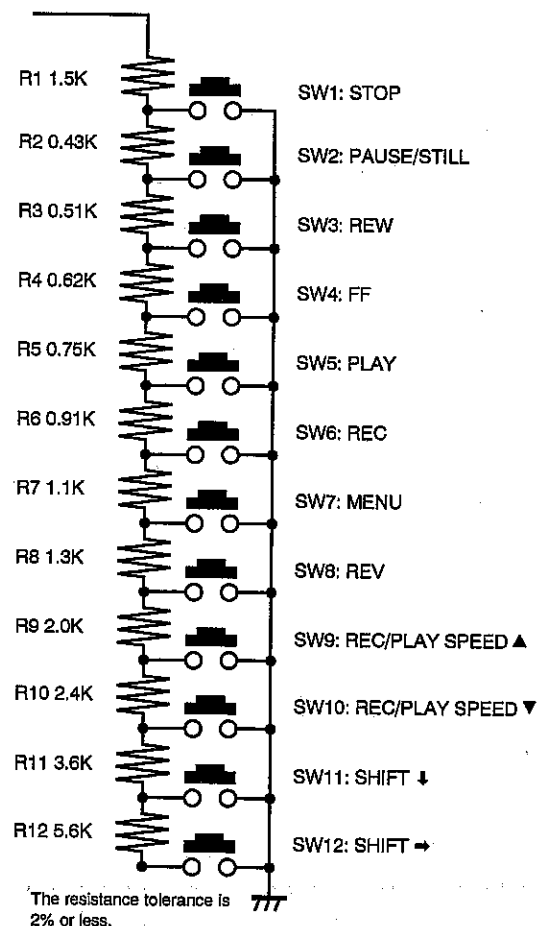
This terminal is usually connected to the switch input (SW IN) of devices like a camera switcher unit, or a quad compressor.



REMOTE Jack

- Remote control of the VCR is possible by connecting a remote controller with a circuit such as indicated below, to the **REMOTE** jack.
- Use a 3.5 mm mini-jack type plug.
- The connection should be done using a shielded cable no more that 5 meters long.

Remote control circuit



DAILY INSPECTION

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

The daily inspections are particularly important if using autorepeat recording.

Inspection Procedure

- ❶ Turn on the power to the VCR, camera, TV monitor and other connected devices.
- ❷ Check that the image received on the TV monitor is correct.
- ❸ Check that the on-screen display of the date and time is correct.
- ❹ Press the **REW** button to rewind the recorded tape a few seconds.
- ❺ Press the **PLAY** button and check that the playback image is correct.
 - Check in particular playback of time lapse recording (12- or 24-hour mode).
- ❻ Check that the recorded date and time are correct.

NOTES:

- If the security lock is engaged, it has to be released before proceeding to the inspection.
- If any problem is discovered during the inspection, turn off the VCR, unplug the power cord then consult your dealer.

TROUBLESHOOTING GUIDE

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

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
|-------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| No power | The power cord is not correctly connected to the wall outlet | Connect the power cord firmly into the wall outlet |
| | The unit is in timer recording stand-by mode | This is normal, not a malfunction |
| No image displayed on the monitor TV | The connections are not correct | Check that all connections are correct |
| | The power to the camera and/or monitor TV is not turned on | Turn all connected devices power on |
| The buttons do not respond | A cassette tape is not loaded | Load a cassette and turn the power on |
| | All functions are suspended due to condensation | Wait for the "ddd" indicator to go off |
| | Alarm recording | Wait for the alarm recording to end |
| | The security lock is engaged | Cancel the security lock |
| Recording is not possible (the tape is ejected) | The loaded cassette has no erasure-prevention tab | Load a cassette tape with erasure-prevention tab or cover the tab hole with adhesive tape |
| Autorepeat recording is not possible | "RL" is displayed on the digital display | Display MENU 4, then press the MENU RESET button to turn off the "RL" indicator |
| Timer recording is not possible | The date and time are not set correctly | Set the date and time correctly |
| | The unit is not set to timer recording stand-by mode | Press the TIMER button to display "□" on the digital display |
| | "N" is selected for the timer recordings | Be sure to select "Y" for the programmed timer recordings |
| Alarm recording is not possible | "OFF" is displayed on the digital display | Press the EJECT, STOP, FF, REW or PLAY button to turn the indicator off |
| Noise in the playback picture | The video heads need cleaning | Clean the video heads |
| The date and time are not recorded | The ON SCREEN switch is set to the "OFF" position | Set the ON SCREEN switch to the "ON" position |
| The cassette tape cannot be ejected | Problem with the system | Turn the power off, then on again |

Periodic Inspection and Maintenance

Periodic inspection and maintenance should be referred to your dealer.

If there is noise in the playback picture, and it cannot be corrected using the tracking control, it may indicate that the video heads need cleaning.

The video heads should be inspected every 1,000 hours of use to determine if they need to be replaced.

The video heads usage can be checked using the MENU 3 (USED TIME).

After a Power Failure

If after a power failure the recording speed is reset to 3-hour mode, it is due to insufficient backup battery charge. This is not a malfunction.

System Down

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

- ❶ Unplug the power cord then plug it back in.
- ❷ Reset the memory. (Press the **ALL RESET** button. Under normal conditions, do not touch the **ALL RESET** button.)
- ❸ If the problem is not corrected after performing steps ❶ and ❷ a few times, consult your dealer.

SPECIFICATIONS

General Specifications

| | |
|-------------------------------|---------------------------------------------------------|
| Recording method | Dual-azimuth dual-head rotating helical scanning system |
| Audio recording | In 3-, 12-, and 24-hour modes |
| Tape speed | 23.39 mm/sec (3-hour mode) |
| Specified video cassette tape | VHS 1/2 inch video cassette tape |
| Recording/playback time | 3, 12 and 24 hours (when using E-180 tape) |
| Fast forward/rewind time | approximately 4 minutes (when using E-180 tape) |
| Television system | PAL colour TV system |

Video

| | |
|-----------------------|---------------------------------------------------------------------------------------------------------|
| Recording method | Luminance signal: FM method Colour signal: Low-pass band-pass transformation direct recording method |
| Input | 1 Vp-p, BNC, 75 Ω , unbalanced |
| Output | 1 Vp-p, BNC, 75 Ω , unbalanced |
| Horizontal resolution | Black & white mode: 350 line or more Color mode: 240 line or more |

Audio

| | |
|------------------|------------------------------------------------------|
| Input | -7.8 dBs, RCA pin jack, 100 k Ω , unbalanced |
| Output | -7.8 dBs, RCA pin jack, 600 Ω , unbalanced |
| Microphone input | -60 dBs, 3.5 mm mini jack, 600 Ω , unbalanced |

Connectors

| | |
|----------------------|--------------------------------------|
| Alarm input | Contact closes with no voltage |
| Alarm output | DC 5 V (± 0.5)/5.7 k Ω |
| Tape end output | DC 5 V (± 0.5)/5.7 k Ω |
| Warning output | DC 5 V (± 0.5)/5.7 k Ω |
| Switch output | DC 5 V (± 0.5)/5.7 k Ω |
| Timer output | DC 12 V (± 0.5)/5.7 k Ω |
| Common | 0 V (GND) |
| Remote control input | 3.5 mm mini jack |

Other Specifications

| | |
|-----------------------------|-------------------------------|
| Operating temperature range | 5°C to 40°C |
| Operating humidity range | 80% or less |
| Power requirements | 220 – 240 V AC, 50 Hz |
| Power consumption | 18 W |
| Dimensions | 360 (W) x 91 (H) x 340 (D) mm |
| Weight | 4.6 kg |

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

VORSICHTSMASSNAHMEN

WARNUNG: DAS GERÄT DARF KEINEM REGEN ODER HOHER LUFTFEUCHTIGKEIT AUSGESETZT WERDEN, UM DIE GEFAHR EINES FEUERAUSBRUCHS ODER VON ELEKTRISCHEN SCHLÄGEN ZU VERMEIDEN. Um einen elektrischen Schlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur einem Fachmann. Bei einer Beschädigung des Netzkabels muß dieses unbedingt ausgewechselt werden. Ersatzkabel sind von jeder autorisierten SANYO-Kundendienststelle erhältlich.

ACHTUNG: Stecken Sie nicht die Hand oder irgendwelche Gegenstände in das Kassettenfach, weil eine hohe Verletzungsgefahr vorhanden ist. Halten Sie Kleinkinder vom Videorecorder entfernt.

Aufstellung

Für einen sicheren Betrieb und eine gute Leistung des Videorecorders sollten Sie bei der Aufstellung die folgenden Punkte beachten:

- Vermeiden Sie einen Aufstellungsort mit direkter Sonneneinstrahlung oder in der Nähe von Wärmequellen.
- Vermeiden Sie eine staubige oder feuchte Umgebung.
- Zur Abführung der entstehenden Wärme muß eine ausreichende Belüftung vorhanden sein. Die Entlüftungslöcher an der Ober- und Unterseite des Videorecorders dürfen nicht abgedeckt werden. Stellen Sie den Videorecorder nicht auf einen Teppich, weil die Belüftung beeinträchtigt wird.
- Stellen Sie den Videorecorder nur in horizontaler Position auf.
- Vermeiden Sie Aufstellungsorte mit starken Vibrationen.
- Setzen Sie den Videorecorder keinen raschen Temperaturschwankungen aus (siehe Abschnitt "Kondensatabscheidung" auf dieser Seite).
- Stellen Sie den Videorecorder nicht auf dem Fernsehgerät auf, weil sonst bei der Aufnahme und Wiedergabe Störungen auftreten können.

Vermeidung von elektrischen Schlägen und von Brandausbrüchen

- Berühren Sie das Netzkabel nicht mit nassen Händen.
- Ziehen Sie zum Lösen des Netzsteckers nicht am Kabel, halten Sie immer den Netzstecker fest, um ihn aus der Steckdose zu ziehen.
- Falls Flüssigkeiten auf dem Videorecorder verschüttet werden, müssen Sie unverzüglich den Netzstecker aus der Steckdose ziehen und das Gerät von einer autorisierten Reparaturdienststelle überprüfen lassen.
- Stellen Sie keine Gegenstände direkt auf den Videorecorder.

Kondensatabscheidung

Ursache:

Wenn der Videorecorder von einem kalten in einen warmen Raum oder einen Raum mit hoher Luftfeuchtigkeit gebracht wird, kann sich im Geräteinneren Kondensat abscheiden. In diesem Fall blinkt die Kondensatanzeige (ddd). Falls der Videorecorder in diesem Zustand in Betrieb genommen wird, kann er beschädigt werden.

Verhütung:

- 1 Schließen Sie alle Kabel an.
- 2 Schließen Sie das Netzkabel an einer Netzsteckdose mit 220 – 240 V an.
- 3 Nehmen Sie den Videorecorder für ca. 2 Stunden nicht in Betrieb.

Wenn der Videorecorder die Raumtemperatur erreicht hat, erlischt die Kondensatanzeige (ddd) und der Videorecorder ist betriebsbereit.

Ein/Ausschalten

Der Videorecorder kann mit der **POWER**-Taste ein- und ausgeschaltet werden.

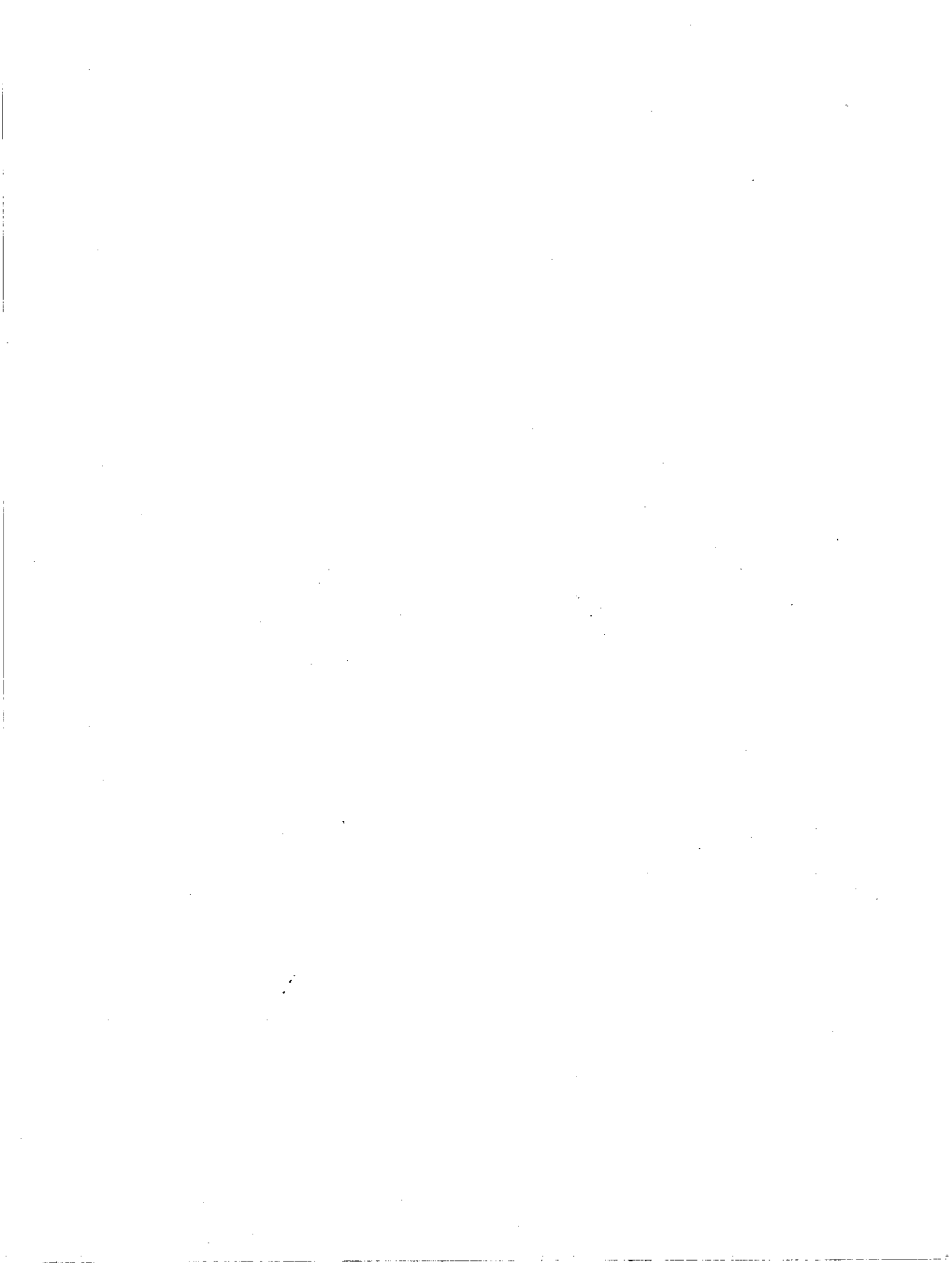
Anzeige ausgeschalteter Zustand

Anzeige eingeschalteter Zustand



Im ausgeschalteten Zustand wird auf der Anzeige nur die Uhrzeit angezeigt.

Falls der Videorecorder für längere Zeit nicht verwendet wird, ziehen Sie den Netzstecker aus der Steckdose.



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