

SANYO

**Instruction
Manual**

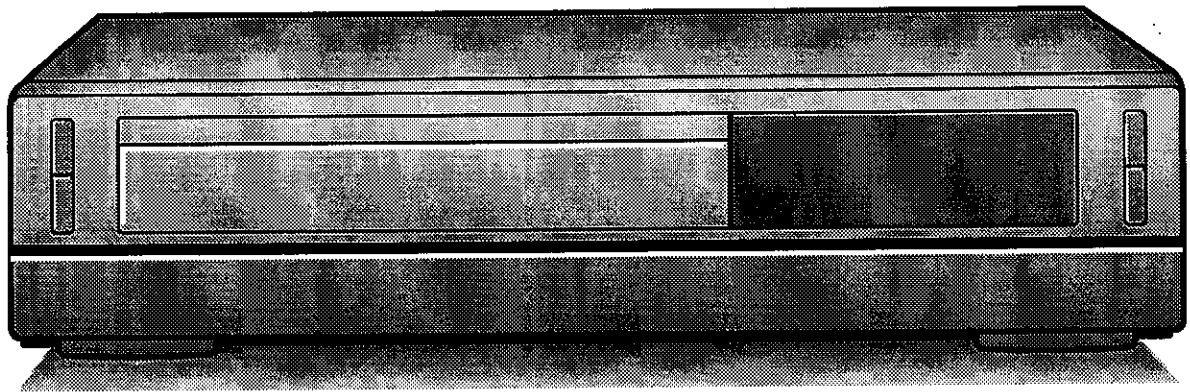
Video cassette
recorder

VHR-220

VHS
PAL

HQ

ASO



PRECAUTIONS

- This VCR is based on a VHS-PAL signal system. Only video cassette bearing the **VHS** symbol can be used.
- Video cassette recorders bearing the "HQ" mark incorporate VHS high picture quality technology. Note that there is interchangeability with former VHS video cassette recorders.

ASO (Active Sideband Optimum)

- VCRs with the ASO mark contain a special picture-enhancing circuit. This circuit reduces picture noise during playback and automatically compensates the playback image to produce the best possible picture quality. It is especially effective for playing back worn rental tapes.
- **ASO is a Nokia patent used under license.**

Operating precautions

Removing the cabinet and touching the inside of the VCR with your hand, a screwdriver, or anything else, is not only harmful to the unit, but is also dangerous.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

- The unauthorized recording of television programmes, video tapes, films and other such material may infringe upon copyright or the rights of third parties.
- Be sure to use this VCR only in a temperature range of 5°C to 40°C and at less than 85% humidity.
- Do not place anything, except cassette tapes, in the unit.
- Do not allow rain, steam, dew, salt water, sand, oily smoke, metal objects, etc. entering the unit.
- Place the VCR on a flat, stable, level surface. Never subject it to violent shaking or any other shock or impact.
- Do not expose the unit to high temperatures. Excessive heat (heat sources such as heaters, ovens, closed car on hot days, etc.) may damage the unit.
- Do not block the air vents that are provided to prevent the temperature inside the VCR from rising excessively.
- Do not use the unit under the following conditions:
 - in locations with high humidity
 - in presence of excessive dirt or dust
 - in areas subject to strong vibrations
 - near strong magnetic fields (e.g. transmitting antennas, motors, fluorescent lights, etc.)
- If the unit does not operate properly, switch it off, refer to the "TROUBLESHOOTING" or consult a dealer or a service center.

About this Instruction Manual

This instruction manual covers for use in both Australia and New Zealand. The main differences between the two models are shown below.

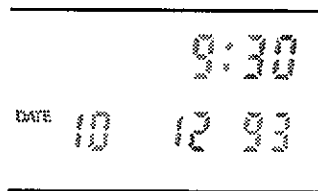
Country	Video channel selector	TV channel
Australia	CH0/CH1	0 or 1
New Zealand	CH2/CH3	2 or 3

The illustrations in this instruction manual show for use Australia. Any difference between the two models is indicated when necessary.

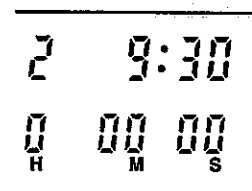
The **POWER** button of this VCR is a secondary circuit, and does not disconnect the unit from the AC power source, even if the button is in the stand-by position, as long as the power cord is connected to an AC electrical outlet.

Note: Stand-by is the condition in which the digital display becomes dimmer.

(Stand-by display)



(Power on display)



CAUTION CONCERNING CONDENSATION

Be careful of condensation

Condensation is the moisture that forms on the outside of a glass when you fill it with cold water. Condensation can also form inside a VCR when it is suddenly moved from a cold place to a warm, humid one, or when a heater has been turned on to quickly heat the room.

Particular care must be taken with your VCR because water particles that form on the video head drum, which is the main VCR mechanism, can cause the video tape to stick to the drum. This prevents proper tape travel and may damage both tape and mechanism.

Follow the procedures below the first time you use the VCR, and whenever you use it in places which are subject to condensation:

1. Connect the aerial cable and make all other necessary connections.
2. Plug the power cord into a wall socket.
3. Turn on the VCR power to warm it up and speed up the drying of any water particles that may have formed on the video head drum.
4. Do not insert a video cassette.

It takes about 1-1/2 to 2 hours to completely eliminate condensation. Wait at least this long before using the VCR.



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PARTS NAMES AND FUNCTIONS

1 Front

- ① Eject button (▲ EJECT)
- ② Cassette loading slot
- ③ Remote control detector
- ④ Digital display
- ⑤ Playback button (PLAY▶)
- ⑥ Stop button (■ STOP)
- ⑦ Summer time adjustment button (STA)
- ⑧ VTR/TV select button (VTR/TV)
- ⑨ Data confirmation button (OK)
- ⑩ Channel up button (▲)
- ⑪ Channel down button (▼)
- ⑫ Channel preset button (PRESET)
- ⑬ Fine tuning/Tracking/V-lock controls (FINE TUNING/TRACKING/V-LOCK)
- ⑭ Record button (● REC)
- ⑮ Pause/Still button (|| PAUSE/STILL)
- ⑯ Fast-forward/Forward search button (▶▶/FF▶▶)
- ⑰ Rewind/Reverse search button (◀◀REW/◀◀)
- ⑱ Power button (POWER)

2 Digital display

- ① Function indicators
 - ▷ : Playback
 - : Record
 - ▶▶ : Fast-forward
 - ◀◀ : Rewind
 - ▷ + || : Still
 - + || : Record pause
 - ▷ + ▶▶ : Forward search
 - ▷ + ◀◀ : Reverse search
- ② Channel position number
- ③ Clock
- ④ Date/Counter display
- ⑤ Cassette-in indicator (●●)
- ⑥ Timer indicator (□)
- ⑦ All-key lock indicator (i)

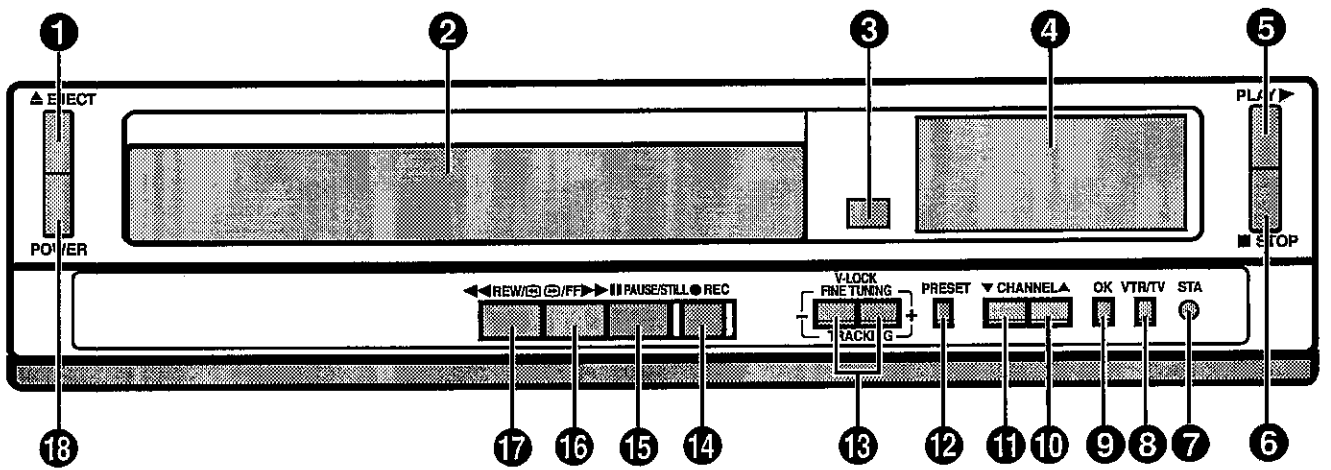
3 Rear

- ① Aerial input terminal (ANT IN)
- ② Aerial output terminal (ANT OUT)
- ③ Video channel select switch for Australia...(CH0/CH1) for New Zealand...(CH2/CH3)
- ④ Audio input terminal (AUDIO IN)
- ⑤ Video input terminal (VIDEO IN)
- ⑥ Audio output terminal (AUDIO OUT)
- ⑦ Video output terminal (VIDEO OUT)
- ⑧ Power socket (AC IN)

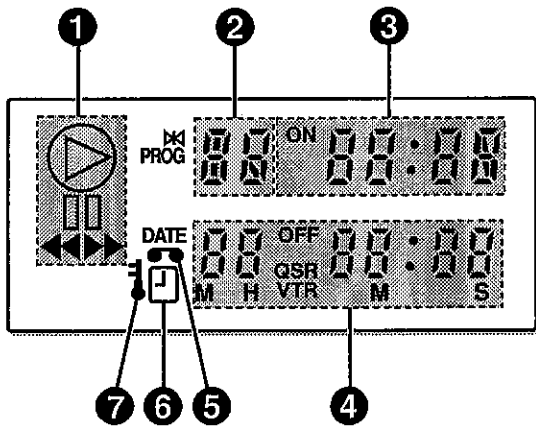
4 Remote control unit

- ① VTR/TV select button (VTR/TV)
- ② Power button (POWER)
- ③ Clock set button (CLOCK)
- ④ Programme set button (PROG)
- ⑤ Cancel button (CL)
- ⑥ VPS on/off button (VPS)
The VPS button is included in the remote control unit but it is not used.
- ⑦ Channel down button (▼)
- ⑧ Auto-tracking button (ATR)
- ⑨ Rewind/Reverse search button (◀◀REW/◀◀)
- ⑩ Record buttons (● REC)
To record press both buttons.
- ⑪ Key lock button (↔)
- ⑫ Index button (INDEX)
- ⑬ TV monitor button (MONITOR)
- ⑭ Numeric buttons
- ⑮ Channel up button (▲)
- ⑯ AV select button (0/AV)
- ⑰ Fast-forward/Forward search button (▶▶/FF▶▶)
- ⑱ Playback button (PLAY▶)
- ⑲ Pause/Still button (|| PAUSE/STILL)
- ⑳ Stop button (■ STOP)
- ㉑ Counter memory button (MEMORY)
- ㉒ Counter reset button (RESET)

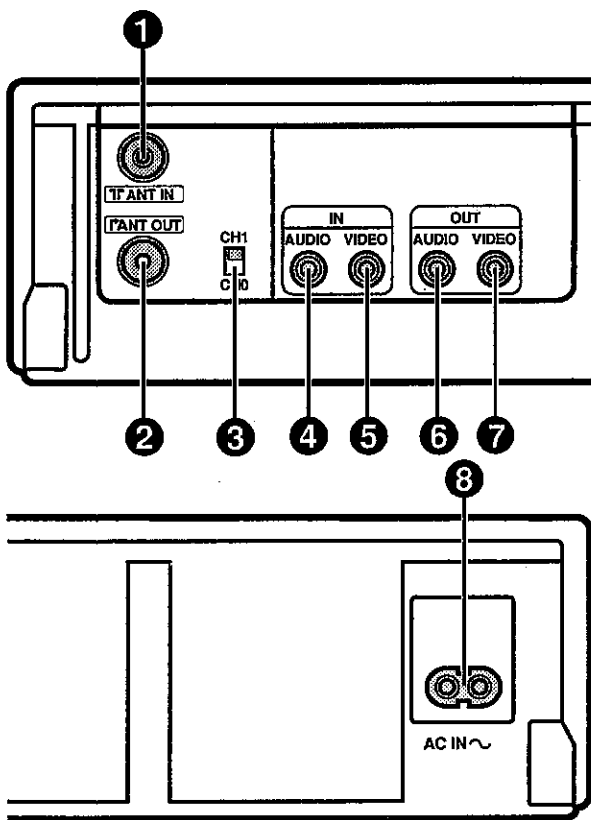
1 Front



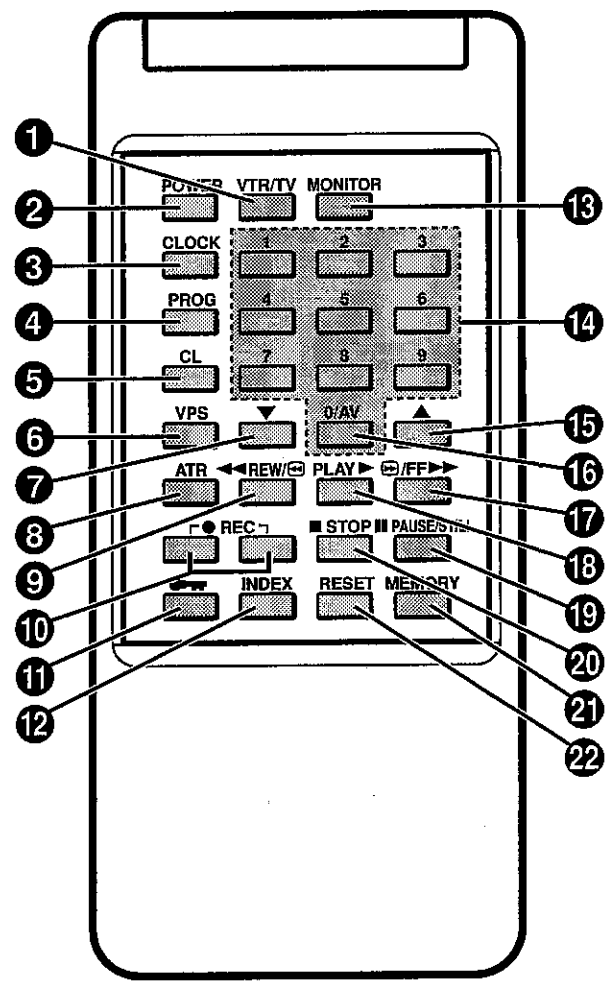
2 Digital display



3 Rear



4 Remote control unit



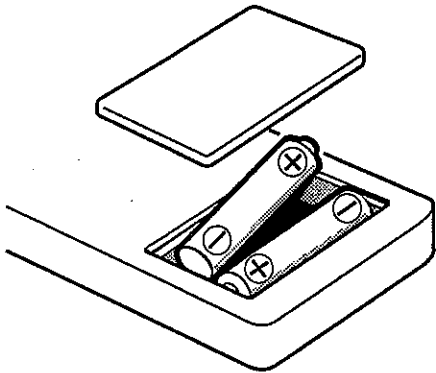
REMOTE CONTROL UNIT

Battery insertion

1. Open the lid.
2. Insert 2 "AA (IEC R6)" 1.5 volt batteries according to the (+) and (-) signs.
3. Replace the lid.

Notes:

- Operate the remote control unit within a range of approx. 30° from the front of the VCR.
- Operate the unit within approx. 6m (20 ft.) from the front of the VCR.
- The battery life under normal operating conditions is about six months. If the batteries become weak, the operating distance will decrease; when this occurs, replace the batteries.
- If the remote control unit is not to be used for a long period of time, remove the batteries.



CONNECTIONS

Power cord

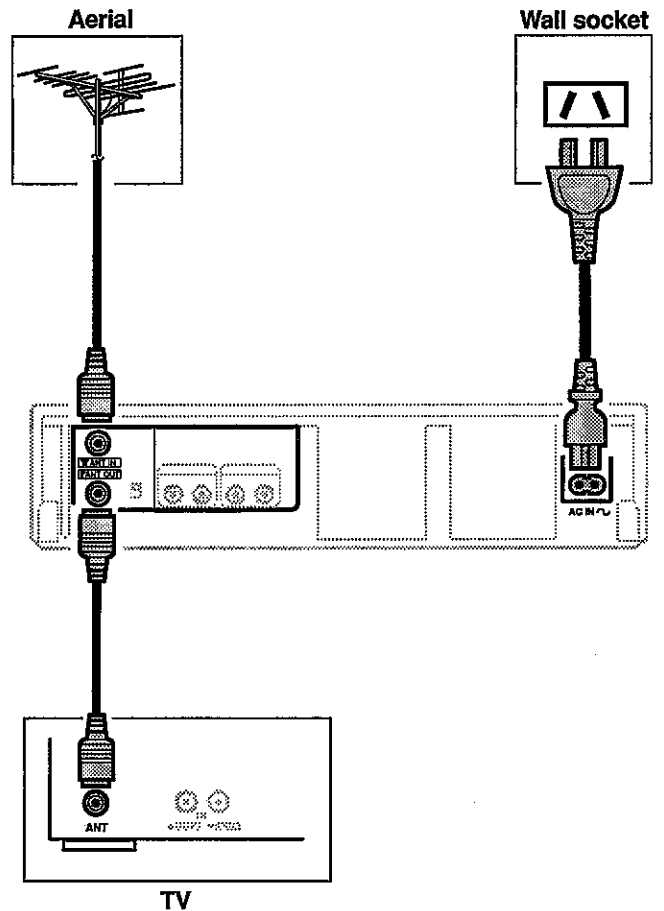
Plug the power cord into the VCR power socket before using the unit. Insert the plug straight and firmly.

- Insert the plug of the power cord into the wall socket.

Aerial/RF connection

- Unplug the aerial cable from your TV receiver and reconnect it to the terminal marked "ANT IN" on the VCR.
- Connect the aerial output cable supplied as an accessory with the VCR to the "ANT OUT" terminal on the VCR. Connect the other end of this aerial output cable to the TV receiver.

Both video and audio (monaural) signals are fed to the TV receiver and can be viewed by setting the TV receiver to your preset video channel. (See page 7)

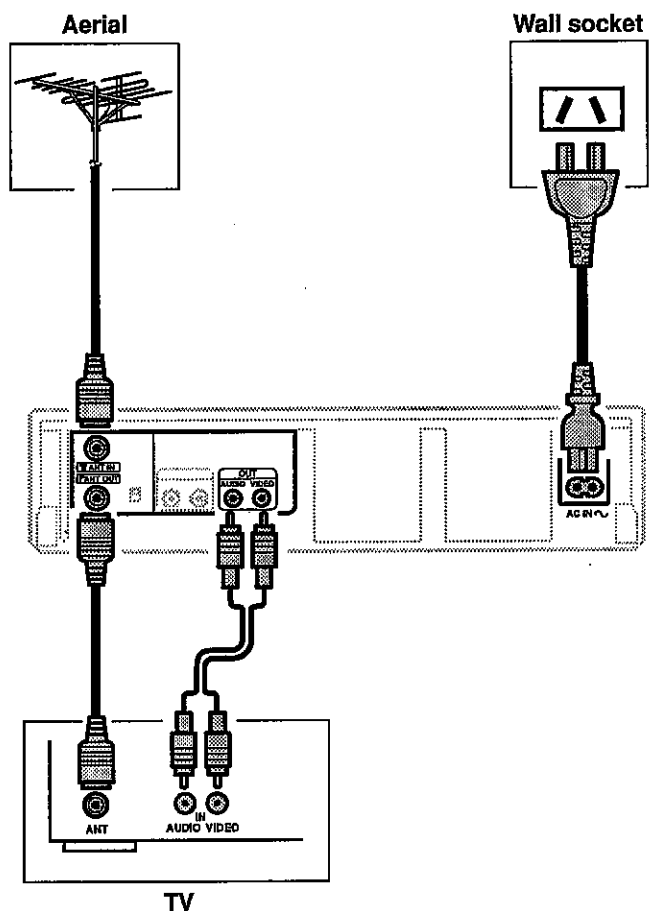


AV connection

If your TV receiver has an video/audio input terminals, the following AV connections are also possible. The cable is sold separately.

- Connect the **AUDIO/VIDEO OUT** terminals on the VCR to the video/audio terminals on the TV receiver.
- Both video and audio signals are fed to the TV receiver.
- The advantage of this connection is a higher quality of picture and sound during playback.
- If you play back a tape, set to the TV receiver to the AV mode.

Note: To switch the TV input mode, refer to the instruction manual of the TV.

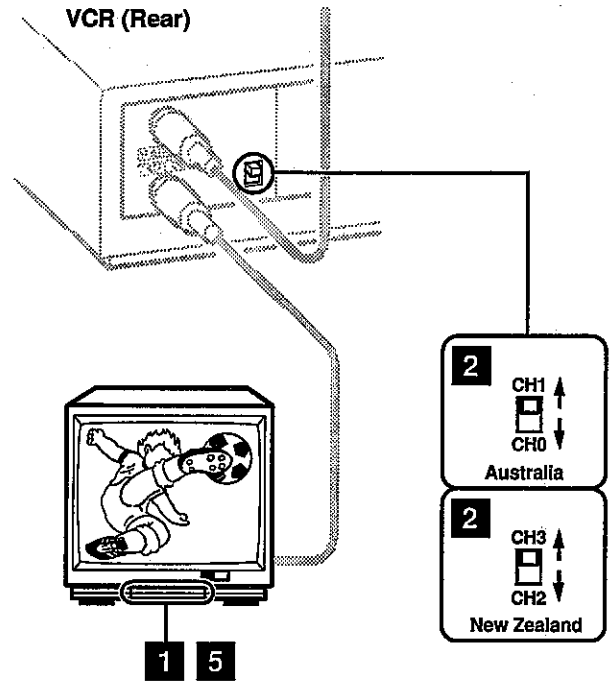


ADJUSTING THE TV RECEIVER TO THE VIDEO CHANNEL

The following procedure is only necessary if no AV connection to the TV is made. With an AV connection, simply switch the TV to AV mode.

- 1** Set the TV receiver to channel (Australia...0 or 1, New Zealand...2 or 3). (Choose the channel that is not used for broadcasting in your area.)
- 2** Then set the video channel select switch, on the rear of the VCR, to the (Australia...“CH 0” or “CH 1”, New Zealand...“CH 2” or “CH 3”) position, corresponding to the channel selected on the TV receiver.
- 3** Press the **VTR/TV** button to display “VTR” on the VCR display.
- 4** Select, on the VCR, an active channel by pressing the (▲ or ▼) button, or with the numeric buttons. Or, play back a prerecorded tape.
- 5** Adjust the channel tuning control on the TV (or fine tuning control) to the point at which the picture and sound are best.

When using the VCR, set the TV receiver to this channel (Australia...0 or 1, New Zealand...2 or 3). **This is your video channel.**



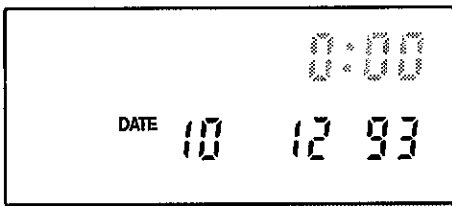
CLOCK SETTING

- The VCR clock setting is made using the remote control unit.
- When a single digit number is going to be set, press the [0/AV] button first and then the desired number. (ex.: In case of "9": press [0/AV] and then [9].)

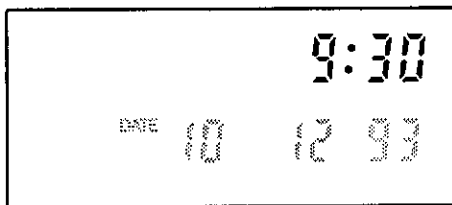
Example: 9:30 December 10, 1993

1 Press the **CLOCK** button to activate the clock setting function.

2 Set the date using the numeric buttons.
Example: December 10, 1993 (10/12/93)
Press [1] → [0/AV] → [1] → [2] → [9] → [3].



3 Set the time using the numeric buttons.
Example: 9:30
Press [0/AV] → [9] → [3] → [0/AV].



4 Press the **CLOCK** button.

Note: Seconds will start counting from "00" as the **CLOCK** button is pressed.

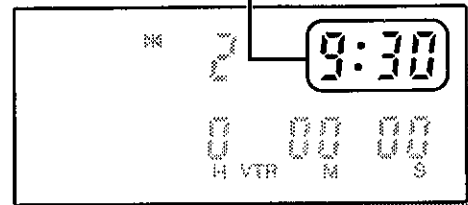
In case of mistake...

- It is impossible to program illogical settings. (For example a day setting higher than "31".)
- Clock setting can be changed by pressing the (▲ or ▼) button until the desired number flashes, then input the correct number.

Summer time adjustment

- Press the **STA** button on the VCR to advance or retard the clock setting by one hour, in a single operation, when changing from "standard time" to "summer time" and vice versa.
Press the **STA** button 1, 2 or 3 times to obtain the desired setting. A 4th press will reset the clock to its original setting.

Note: Use a thin object, as the tip of a pen, to press the **STA** button.



Resume function

- This unit has a backup function that saves the settings for up to 60 minutes.
If there is a power failure while it is used, everything stops but will return to normal if the power is restored within 60 minutes.
 - **As the power is re-established ...**
The play, record, fast forward or rewind mode will continue. The clock and timer settings will still be correct.
- Note:** If the digital display reads "88:88", the time, date and recording programmes should be reset.

TUNING CONTROL ADJUSTMENTS

- The tuning control adjustments are made using the buttons on the VCR.
- This VCR has a built-in tuner capable of memorizing up to 39 television channels.
You can select any position from 1 to 39 to preset the channels that can be received in your area.

Before starting

Set the TV receiver channel to the preset video channel or to the AV mode.

Example: To preset UHF channel "30" to channel position "2".

- Press the **VTR/TV** button to display "**VTR**" on the VCR display.

- 1 Press the **PRESET** button on the VCR. This will activate the channel preset mode and, the position number will start to blink.
- 2 Select the desired channel position number (Example: "2") by pressing the (▲ or ▼) button. Then press the **OK** button.
- 3 Select the band "**L**", "**H**" or "**U**" (Example: "**U**") using the (▲ or ▼) button, then press the **OK** button.

Notes:

- Select the band "**L**", "**H**", "**U**" or the skip function "**S**" by pressing the (▲ or ▼) button. Each time you press one of these buttons the indicator will change between "**L**", "**H**", "**U**" and "**S**".
- If "**S**" is selected at this step, the selected position number will be skipped.

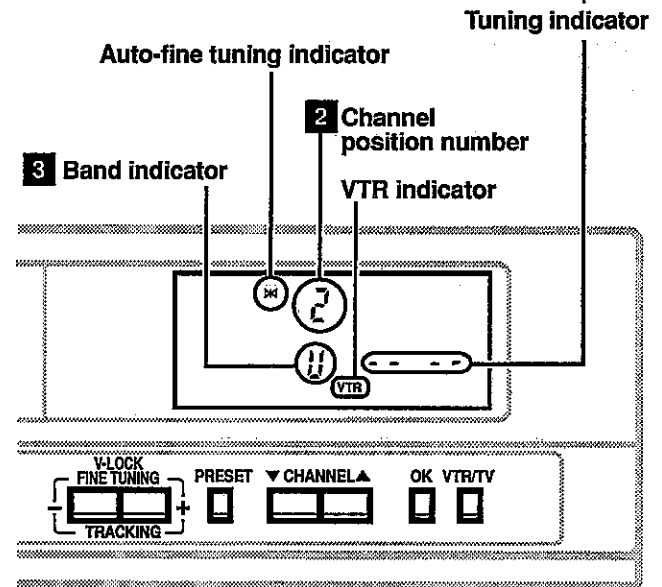
Band Indicator of the VCR	Channel range	
	Australia	New Zealand
"L"	0 - 5	1 - 3
"H"	5A - 11	4 - 11
"U"	28 - 69	21 - 69
"S"	Skip function	

- For all position numbers where no channel has been programmed select the skip function "**S**". These position numbers will be skipped when tuning a channel on the VCR.
- 4 Press the (▲ or ▼) button to tune the broadcast you want to assign to that position number. The (▲) button will access the following broadcast. The (▼) button will access the previous broadcast.
- The image of the selected channel will appear on the screen.
Example: Select the desired broadcast (channel 30) by pressing the (▲ or ▼) button.
 - **When the broadcast from channel 30 is received, press the OK button when the channel auto-fine tuning indicator (⊠) comes on.**
Channel 30 has been preset to position number "2". At that time position number will change from "2" to "3".
 - To assign a channel to another position number, repeat steps 2 to 4.

- 5 When the tuning control adjustment is completed, press the **PRESET** button to return to normal operation.

- During normal use, a position number can be accessed by using the (▲ or ▼) button or by composing the desired position number using the numeric buttons.

The number of indicators increases as the channel number increases.
Example: Channel 23[-]
Channel 60[- -]



Channel fine tuning

- When the tuning of a channel is not optimum, the auto-fine tuning indicator (⊠) will light and the best possible fine tuning will be made.
- If the signal is weak or if the broadcast is disturbed by interference, the reception can be improved by manual fine tuning.

1. Press the **PRESET** button.
2. Select the unsatisfactory broadcast by pressing the (▲ or ▼) button.
3. Press the **FINE TUNING/TRACKING/V-LOCK** (-, +) controls to obtain the best possible picture and sound. The auto-fine tuning indicator (⊠) will go off.
4. When the best picture and sound are obtained press the **OK** button.

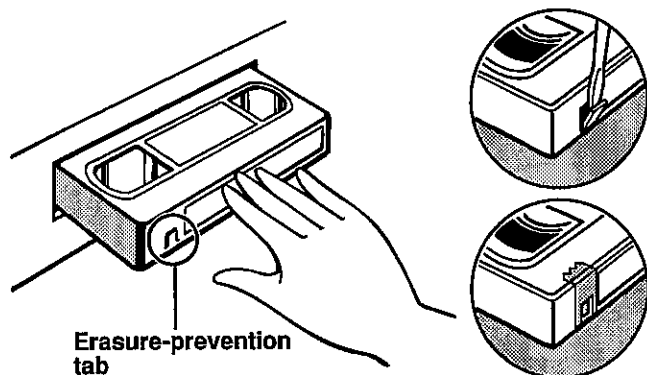
To go back to auto-fine tuning mode

1. Press the **PRESET** button.
2. Press the (▲ or ▼) button to select the broadcast to return to the auto-fine tuning mode.
3. Press the **OK** button, then press the **PRESET** button to return to normal operation. The auto-fine tuning indicator (⊠) will light and fine tuning for that broadcast will be returned to the automatic mode.

CASSETTE LOADING AND UNLOADING

Loading

When a video cassette is inserted, it will be loaded automatically and the cassette-in (●) indicator will illuminate.



Erasure-prevention tab

If the erasure-prevention tab on the back of the video cassette is removed, the cassette cannot be recorded on. This tab is designed to prevent the accidental erasure of recorded material.

Note: The tab should be snapped off at its base, and removed completely.

To record onto the same cassette again, place two layers of adhesive tape over the space where the tab was, so as to cover the space completely.

Auto power on

The power is automatically switched on as a cassette is inserted while the VCR is in the stand-by condition.

Unloading

Power off eject

The video cassette will be ejected when the ▲ EJECT button is pressed, even when the VCR is in stand-by condition.

CAUTION: Do not put your hand or other objects in the cassette loading slot because of the risk of injury or an accident.

Be sure to keep small children away from the VCR.

Automatic head-cleaning system

This VCR is equipped with an automatic head-cleaning system which automatically cleans the heads every time a cassette is loaded or unloaded. However if during playback noise appears in the picture, it is recommended to use commercially available head-cleaning cassettes to completely clean the VCR heads.

Note: Be careful not to use head-cleaning cassettes too often, as they may damage the video heads.

PLAYBACK

1 Insert the video cassette.

2 Press the ► PLAY button.

Auto play

The VCR will play back a tape automatically when a video cassette is inserted whose erasure-prevention tab has been removed.

3 To stop the playback, press the ■ STOP button.

- To rewind the tape, press the ◀REW button.
- To advance (fast-forward) the tape, press the ►FF button.

Auto eject

When a video cassette without an erasure-prevention tab is played to the end of the tape, the tape will be automatically rewound and then the cassette will be ejected.

Tracking adjustment

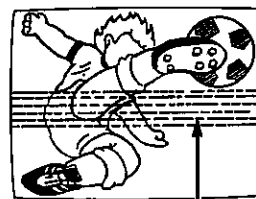
1 Auto-tracking adjustment

If the playback picture is disturbed by noise interference press the ATR button, adjustment to the optimum point will occur automatically.

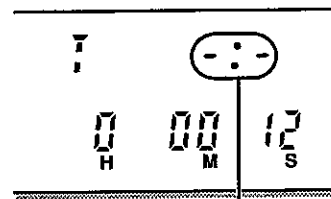
2 Manual tracking adjustment

If the playback picture still shows interference, manually adjust it with the FINE TUNING/TRACKING/V-LOCK (-, +) controls, on the VCR, to minimize the noise.

Note: If you wish to return the tracking adjustment to its original "centre position" after having changed it, press both the FINE TUNING/TRACKING/V-LOCK (-, +) controls simultaneously.



Noise interference



(-) ← Centre → (+)

TV monitor function

This function lets you view a TV programme during video playback.

- Press and hold the MONITOR button during playback. The programme of the channel that was last selected will be shown on the TV screen as long as the button is held.
- You can also monitor other external input sources. To do so, the input should be set to "AV" by pressing the [0/AV] button.

SPECIAL PLAYBACK

Forward search

- Press the **▶▶FF** button during playback or fast-forward operation. The picture can be viewed while the tape is advanced at a fast speed.
- Normal playback will resume as the **▶PLAY** button is pressed.

Reverse search

- Press the **◀◀REW** button during playback or rewind operation. The picture can be viewed while the tape is rewound at a fast speed.
- Normal playback will resume when the **▶PLAY** button is pressed.

Note: To search for a particular scene you can switch from fast forward to forward search and vice versa by simply pressing the **▶▶FF** button, or from rewind to reverse search by simply pressing the **◀◀REW** button.

Still picture

- Press the **|| PAUSE/STILL** button during playback. A still picture can be viewed.
- Normal playback will resume when the **▶PLAY** button is pressed.

Still vertical lock adjustment

- If the still picture moves up and down, press the **FINE TUNING/TRACKING/V-LOCK** (**-**, **+**) controls to adjust the still picture.

Frame advance

- Press the **|| PAUSE/STILL** button during still playback to advance the picture frame by frame. Each press advances one frame.
- Normal playback will resume when the **▶PLAY** button is pressed.

Notes:

- During special playback modes (forward search, reverse search, still picture, and frame advance) the picture may contain some noise or vibration. But this is not a malfunction.
- If still picture playback is continued for about five minutes, the VCR will automatically change to stop mode in order to prevent the tape from being damaged.

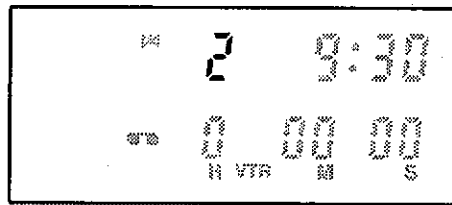
RECORDING TELEVISION BROADCASTS

- 1 Insert a video cassette.

- Press the **VTR/TV** button to display **"VTR"** on the VCR display.

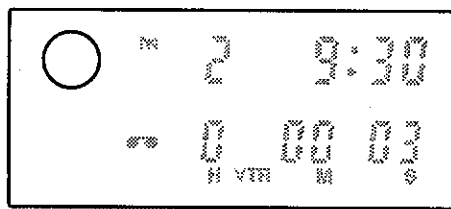
- 2 Press the numeric buttons or the **(▲ or ▼)** button to select the channel to be recorded.

Example: Position number "2" (Channel 23)



- 3 Press the **● REC** buttons.

- Video recording starts. This is the normal video recording procedure.



Mis-erasure prevention eject

The cassette will automatically be ejected if recording is attempted on a video cassette without an erasure-prevention tab.

- 4 To stop the recording, press the **■ STOP** button.

Auto rewind

The VCR automatically rewinds the tape when it reaches the end. This function does not operate with timer recording or QSR timer recording.

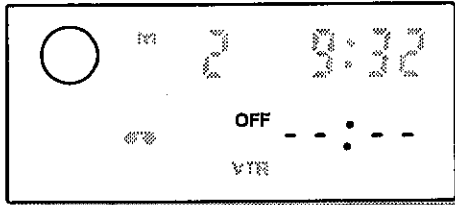
Quick Start Recording (QSR) timer

Timer recording is simple.

You can start a recording and then programme when the VCR is to stop recording and go to stand-by mode automatically.

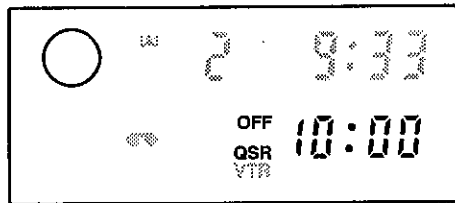
1 Press the ● **REC** buttons to start recording.

2 Press the ● **REC** buttons again and the "OFF-:-:-" indication will start flashing on the VCR display.



Within 10 seconds, set the recording end time by using the ● **REC** and (▲ or ▼) buttons.

- Each press of the ● **REC** buttons will advance the recording end time by units of 30 minutes.
- Each press of the (▲) button will advance the recording end time by units of 1 minute.
- Each press of the (▼) button will retard the recording end time by units of 1 minute.



□ To stop the recording at any time, press the ■ **STOP** button.

Checking/Changing

When the ● **REC** buttons are pressed during QSR recording, the recording end time will blink for 10 seconds.

The recording end time can be changed by pressing the ● **REC** and (▲ or ▼) buttons during this 10-second period.

Other recording possibilities

If you wish to avoid recording unwanted material

1. During recording, press the || **PAUSE/STILL** button. The TV picture and sound will not be recorded.
2. Press the || **PAUSE/STILL** button or ● **REC** buttons, and the recording will resume.

Note: If the record pause mode continues for about five minutes, the VCR will automatically go into the stop mode in order to prevent damage to the tape.

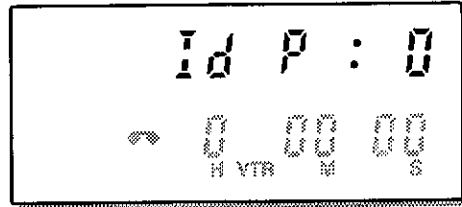
Recording one programme while watching another

1. Start recording the desired TV programme selected on the VCR.
2. Press the **VTR/TV** button to erase "VTR" on the VCR display.
3. Select on the TV receiver the programme you want to watch.

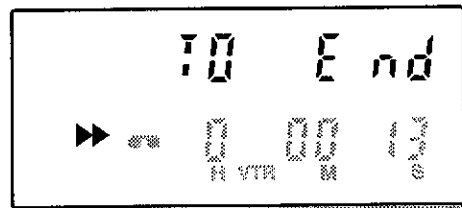
Blank search function

The blank search function automatically searches for the beginning of the next blank (unrecorded) portion of the tape, and stops the VCR at that position. This is convenient when you want to continue recording at the end of a previous recording.

1 In the stop or playback mode, press the **INDEX** button.



2 Press the ► **PLAY** button. The blank search function will start.



Notes:

- If starting in a recorded portion of the tape, the VCR will look for a blank toward the end of the tape. (The end of the recorded portion.)
- If starting in an unrecorded portion of the tape, the VCR will look toward the beginning of the tape for the beginning of the unrecorded portion.
- The stopping position may vary slightly. Play back a few seconds of the tape to make sure it is at the position you want.
- This function may also stop the VCR during slight pauses (unrecorded portions) between taped programmes.

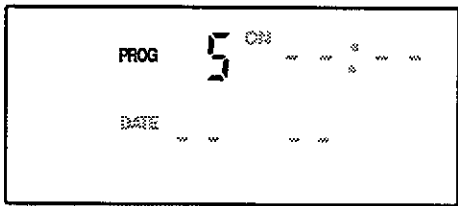
TIMER RECORDING

- Timer recording enables you to set up to 6 programmes to be recorded upon a period of up to 1 year.
- Timer recording is preset using the remote control unit.
- Before setting the timer recording programme, be sure that the present displayed time and date are correct.

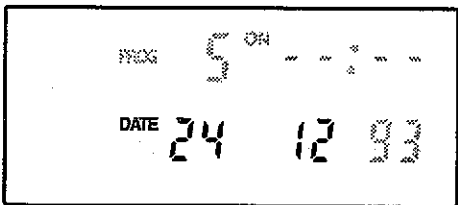
Example: To record a programme on channel position "5" from 21:30 to 23:15 on December 24, 1993.

- 1** Press the **PROG** button.
The timer programming mode is then activated, to return to the normal mode press the **PROG** button again.

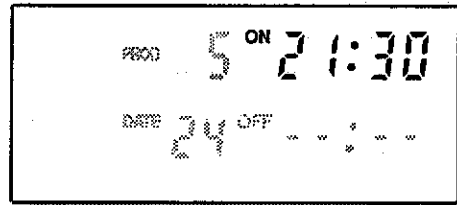
- 2** Set the channel position number using the numeric buttons, for single channel number (**Example:** "5"), press the **[0/AV]** button first.



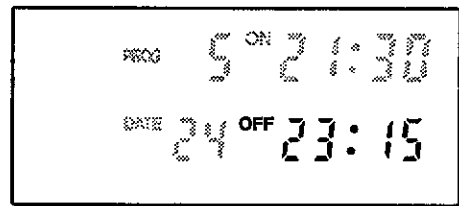
- 3** Set the date on which the recording has to take place.
Example: For December 24 (24/12) press the numeric buttons **[2] → [4] → [1] → [2]**.



- 4** Set the time at which the recording has to start. (ON-time)
Example: For 21:30, press the numeric buttons **[2] → [1] → [3] → [0/AV]**.

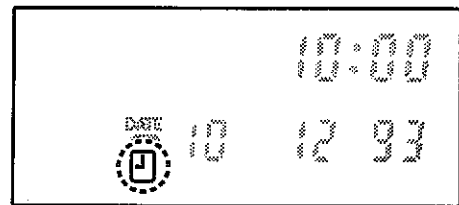


- 5** Set the time at which the recording has to end. (OFF-time)
Example: For 23:15, press the numeric buttons **[2] → [3] → [1] → [5]**.



Auto-timer stand-by

This completes the setting of timer controlled recording and the VCR will automatically go into timer stand-by mode. The timer indicator (⏻) will light.



- By repeating steps **1** to **5**, up to 6 different timer programmes can be preset.

Notes on timer setting

When recording from an external source...

- At step 2 of timer programming instead of programming a channel position number, press the [0/AV] button twice. The indicator "AV" will light.

When recording in the everyday mode ...

- At step 3 of timer programming instead of setting a date, press the [0/AV] button twice. The indicator "Ed" will light. The selected channel will be recorded everyday at the same time.

Timer setting is not possible, if...

- February 29 has been programmed for other than a leap year.

The timer recording doesn't operate

1. If no video cassette is loaded when going into timer stand-by mode.
The (□) indicator will flash.
2. If a cassette with no erasure-prevention tab is loaded.
The (□) indicator will flash and the cassette will be ejected.
3. If 5 minutes before the ON-time of a timer recording, the VCR is not in timer stand-by mode (the power is on, in stop, play or record mode).
The (□) indicator will start flashing, you should then press the POWER button.

Programme priority

- If several timer recordings have overlapping recording times, the recording with the earliest ON-time will be recorded first, until the end.

Notes:

- To stop timer recordings, press the ■ STOP button.
- If there is a power failure during a timer recording, the recording will stop at that point. If the power is returned to the VCR within 60 minutes the recording will resume if the OFF-time for that recording has not yet been reached.

Confirmation of timer recording data

- Press the PROG button to display on the VCR, the timer recording settings.

Note: If less than 6 settings have been memorized, press the PROG button twice to display the timer programming data.

- With each press of the PROG button the timer recording data for each setting will be displayed, then the display returns to the timer stand-by mode.

Revising timer recording data

1. Select the programme you want to modify by pressing the PROG button.
2. Press the (▲ or ▼) button to get flashing the data to modify.
3. Modify the data using the numeric buttons.
4. When finished, press the PROG button.
The VCR returns to stand-by mode.

Erasing timer recording data

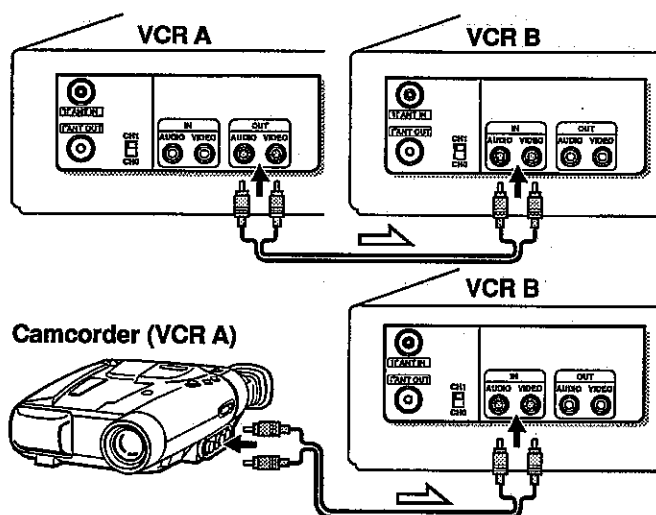
1. Select the programme you want to erase by pressing the PROG button.
2. When the desired setting is displayed, press the CL button to erase all the data for that programme.

COPYING A TAPE

Copying (dubbing) a tape can be done using two video recorders, a playback VCR and a recording VCR.

Setting the VCR to the "AV" mode

- Press the [0/AV] button once to display "AV" instead of a channel position number or,
- Press the (▲ or ▼) button to display "AV" instead of a channel position number.



- 1 Connect **VCR A** (or Camcorder) and **VCR B**.
- 2 Insert the pre-recorded tape into **VCR A** (playback VCR).
- 3 Insert the blank video cassette into **VCR B** (recording VCR).
- 4 Set the **VCR B** to the "AV" mode.
- 5 Set **VCR B** to record pause mode. (The record pause mode is set by pressing the ● **REC** button then the ■ **PAUSE/STILL** button.)
- 6 Start playback on **VCR A** by pressing the ► **PLAY** button.
- 7 When the desired starting position is reached on **VCR A**, start recording on **VCR B** by pressing the ■ **PAUSE/STILL** button or the ● **REC** button.
- 8 When the copy is completed, press the ■ **STOP** button on **VCR B** then on **VCR A**.

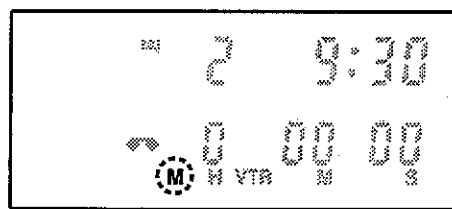
COUNTER MEMORY

This convenient feature for finding the beginning of a specific recording etc., is made possible by the "Linear Time Counter" that indicates the tape run time in hours, minutes and seconds.

Notes:

- Whenever you load a cassette tape, the counter will be reset to "0H00M00S".
- The counter operates using control signals which are recorded on the tape, hence if you play back a tape or portion of tape which has nothing recorded on it, the counter will not operate.

- 1 Press the **RESET** then the **MEMORY** button before starting recording or playback. The zero point of the counter is now memorized and the memory indicator "M" will illuminate.



- 2 When the ◀ **REW** button is pressed at the end of recording, or playback, the tape will be rewound automatically to the memorized position and then stop.

Notes:

- When rewinding further back from position "0H00M00S", the counter shows figures beginning with "–".
- The tape stops at the memorized position even when using fast forward when the counter reading begins with "–".

INDEX SEARCH FUNCTION

When a recording is made, an index signal is automatically placed at the beginning of the recording. This index can be used to search for the recording you wish to watch.

Index signals are not recorded after a recording pause.

- While the index is being recorded, the "Id" indicator flashes.

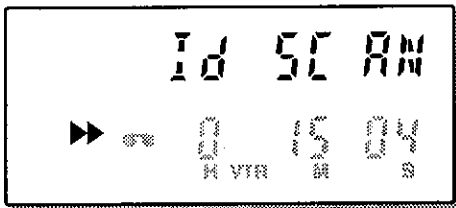
Note: Make sure that indexes are at least five minutes apart from each other.

Index scan search

As instructed, the VCR will go into the rewind or fast forward mode, look for an index signal, play back the first five seconds of the corresponding recording then continue onto the next index signal. It will do so until the beginning (or the end) of the tape.

- 1 Press the **INDEX** button while in the stop or playback mode.

- 2 Press the **FF** button to search toward the end of the tape or the **REW** button to search toward the beginning of the tape.



- When an index signal is found, the VCR will play back 5 seconds of the corresponding recording.

- 3 When the desired recording is found, press the **PLAY** button during that 5-second period to start playback from that position.

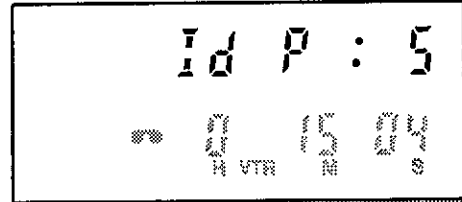
Index search

If the index number relative to the search start position is known, it is possible to instruct the VCR to go directly to the beginning of that recording and to start playback.

You can search for an index of a recording located as far as 99 indexes away from the search start position.

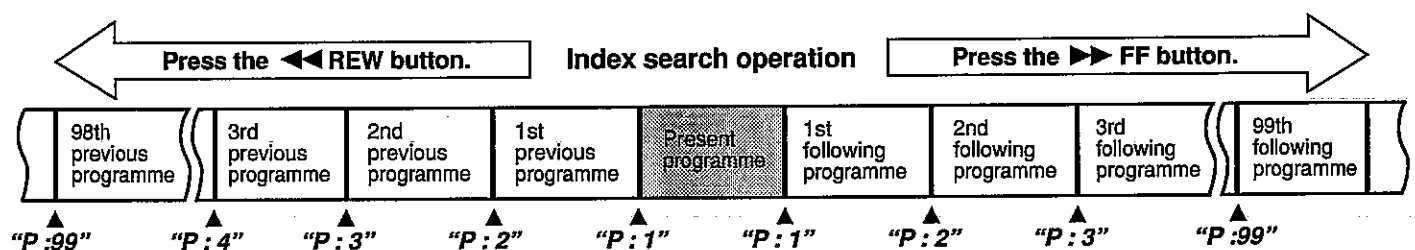
- 1 Press the **INDEX** button while in the stop or playback mode.

- 2 Using the numeric buttons, programme the index of the recording you are looking for. (Example: 5)



- 3 Press the **FF** button to search toward the end of the tape or the **REW** button to search toward the beginning of the tape.

- The VCR then starts searching for the index you programmed. Every time an index is found the displayed number will decrease by one. (Example: "P : 5" → "P : 4" → "P : 3" → "P : 2" → "P : 1") When the desired index is found, playback of the recording you are looking for will start.



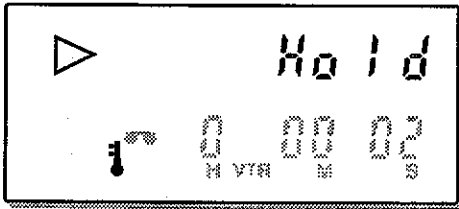
HOLD FUNCTION

Two functions, "Endless play" and "All-key lock", can be enjoyed by using the hold function.

Endless play

This function will play back a tape to the end, rewind it then replay it again, and again until you stop it.

- 1 In the stop or playback mode, press the (↔) button. The "Hold" indicator will flash.
- 2 Press the ► **PLAY** button.



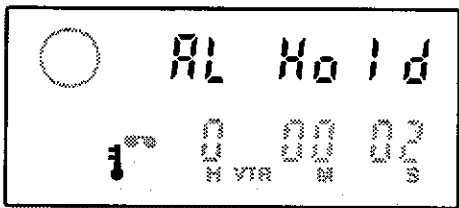
- The "!" indicator will light, and endless play will start. The tape is rewound to the beginning and then playback will start.
- If the counter memory function is used in combination with endless play, the VCR will play back the tape to the counter reading "M OHOOOOS" then start again from the beginning.

- 3 To stop the endless play, press the (↔), ■ **STOP** or ▲ **EJECT** button and the endless play function is cancelled and the VCR goes in the stop or eject mode.

All-key lock

When the all-key lock function is engaged, all the keys on the remote control unit and on the VCR become inoperative.

- 1 Press the (↔) button. If you wish to use the all-key lock function during recording or playback, select first the function you want to use before pressing the (↔) button.
- 2 Press the || **PAUSE/STILL** button. The all-key lock function is set and, the "!" and "AL Hold" indicators will light.



- 3 To cancel the all-key lock function, press the (↔) button.

TROUBLESHOOTING

This VCR is highly sophisticated. It is shipped from the factory after having been checked and adjusted under the most rigid quality control and inspection system. Should problems occur, check the following points.

Symptom	Check points
No power	• The power cord is disconnected.
The remote control unit doesn't operate	• The batteries are low.
No TV programmes received	• Are the connections between your VCR and TV correct? • Was tuning correctly preset?
Off the air reception on the VCR is poor	• The video channel setting of the TV receiver does not correspond to the video channel presetting of the VCR.
Playback picture does not appear	• The video channel setting of the TV receiver does not correspond to the video channel presetting of the VCR.
Interference in playback picture	• Adjust the tracking control. • Dust or dirt on video heads. Take the VCR to an Authorized Service Station or dealer.
No recording	• The erasure-prevention tab on the cassette has been removed.
Timer recording is not possible	• The starting day and time have not been set correctly. • The clock time is not set correctly. • There has been a power interruption of more than 60 minutes.

REPAIRS

This VCR is a precision instrument and, if treated with care, will provide years of satisfactory performance. However, in the event of difficulty, the owner is advised not to attempt to make repairs or open the cabinet. Servicing should always be referred to your servicing dealer or Authorized Warranty Station.

SPECIFICATIONS

General

Video format:	VHS PAL
Television system:	CCIR: 625 lines, PAL colour signals
Recording system:	Rotary two-head helical scan system
Video heads:	2 heads
Tape speed:	23.39 mm/sec
Recording time:	240 minutes with E-240 cassette
Tuner input:	●Australia VHF: 0 - 11 UHF: 28 - 69 ●New Zealand VHF: 1 - 11 UHF: 21 - 69
RF converter:	Built-in VHF converter
Converter output:	●Australia On channel 0 or 1 ●New Zealand On channel 2 or 3
Timer indication:	24-hour indication
Power failure backup:	Approx. one hour
Timer recording:	1 year 6 programmes with everyday recording function
Power requirement:	●Australia 240 V AC $\pm 10\%$, 50 Hz ●New Zealand 230 V AC $\pm 10\%$, 50 Hz
Dimensions (W x H x D):	360 x 85 x 335 mm
Weight:	Approx. 5.6 kg
Power consumption:	28W

Electrical characteristics

Video input:	0.5 - 2.0 Vp-p, 75 \pm 5 ohms
Video output:	1.0 \pm 0.2 Vp-p, 75 \pm 5 ohms
Audio input:	-8.0 dBs, more than 50 kohms
Audio output:	-8.0 dBs, less than 10 kohms
Video S/N:	More than 43 dB
Horizontal resolution:	More than 240 lines

Accessories

Instruction manual	1
Power cord.....	1
Aerial output cable	1
Remote control unit.....	1
"AA (IEC R6)" size, 1.5-volt battery	2

Appearance and specifications are subject to change without notice.

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SANYO

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