▲ MITSUBISHI

PROFESSIONAL VIDEO CASSETTE RECORDER
INSTALLATION AND
OPERATION MANUAL

MODEL
BV-1000

S-VHS

THIS VIDEO CASSETTE RECORDER IS BASED ON
THE S-VHS AND VHS FORMAT. ONLY VIDEO CAS-
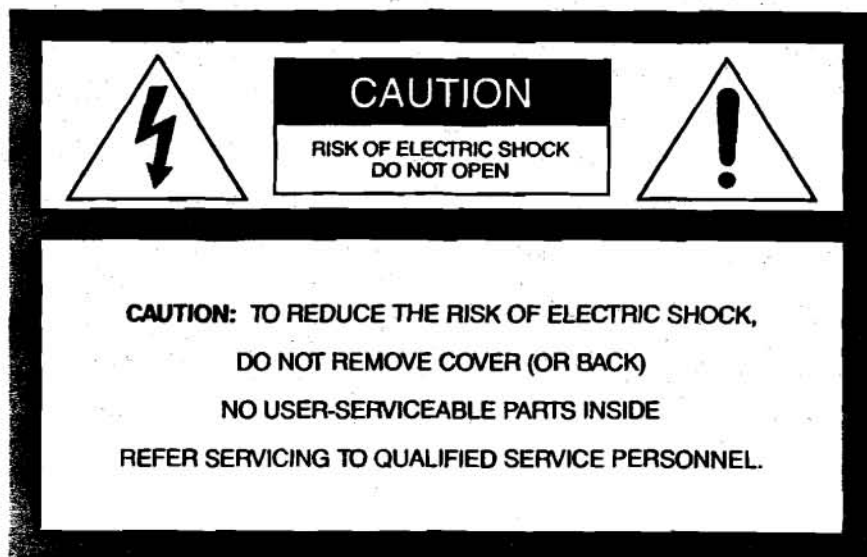SETTE TAPES WITH THE S-VHS OR VHS MARK MAY
BE USED WITH THIS MODEL.

For future reference, a space has been provided for
recording the serial number of your VIDEO CAS-
SETTE RECORDER.
SERIAL No. [   ]
A serial number label is located on the rear panel.

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IMPORTANT SAFEGUARDS

PLEASE READ ALL THESE INSTRUCTIONS REGARDING YOUR VCR AND RETAIN FOR FUTURE REFERENCE. FOLLOW ALL WARNINGS AND INSTRUCTIONS MARKED ON THE VCR.

1. Read Instructions

   All the safety and operating instructions should be read before the appliance is operated.

2. Retain Instructions

   The safety and operating instructions should be retained for future reference.

3. Heed Warnings

   All warnings on the appliance and in the operating instructions should be adhered to.

4. Follow Instructions

   All operating and use instructions should be followed.

5. Cleaning

   Unplug this video product from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.

6. Attachments

   Do not use attachments not recommended by the video product manufacturer as they may cause hazards.

7. Water and Moisture

   Do not use this video product near water — for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.

8. Accessories

   Do not place this video product on an unstable cart, stand, tripod, bracket, or table. The video product may fall, causing serious injury to a child or adult, and serious damage to the appliance. Use only with a cart, stand, tripod bracket, or table recommended by the manufacturer, or sold with the video product. Any mounting of the appliance should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

   An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. Ventilation

   Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the video product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the video product on a bed, sofa, rug, or other similar surface. This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

10. Power Sources

    This video product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For video products intended to operate from battery power, or other sources, refer to the operating instructions.

11. Grounding or Polarization

    This video product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

12. Power-Cord Protection

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

13. Lightning

    For added protection for this video product receiver during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video product due to lightning and power-line surges.

14. Power Lines

    An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

15. Overloading
Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

16. Object and Liquid Entry
Never push objects of any kind into this video product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the video product.

17. Outdoor Antenna Grounding
If an outside antenna or cable system is connected to the video product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges.
Section 810 of the National Electrical Code, ANSI/NFPA No. 70 — 1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

[a] Use No. 10 AWG (5.3 mm^2) copper, No. 8 AWG (8.4 mm^2) aluminum. No. 17 AWG (1.0 mm^2) copper-clad steel or bronze wire, or larger, as a ground wire.
[b] Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4-6 feet (1.22-1.83m) apart.
[c] Mount antenna discharge unit as close as possible to where lead-in enters house.
[d] Use jumper wire not smaller than No. 6 AWG (13.3 mm^2) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC section 810-21 (j).

EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 — "RADIO AND TELEVISION EQUIPMENT"

POWER LINES

SERVICE ENTRANCE CONDUCTORS

GROUND CLAMP

STAND-OFF INSULATORS[b]

SERVICE ENTRANCE EQUIPMENT

MAST

GROUND WIRE[a][b]

ANTENNA LEAD-IN WIRE

GROUND CLAMPS

ANTENNA DISCHARGE UNIT[c]

TO EXTERNAL ANTENNA TERMINALS OF PRODUCT

GROUND WIRE[a][b]

POWER SERVICE GROUNDING ELECTRODE SYSTEM (e.g. interior metal water pipe)

GROUND CLAMPS

BONDING JUMPER[d]

OPTIONAL ANTENNA GROUNDING ELECTRODE DRIVEN 8 FEET (2.44m) INTO THE EARTH IF REQUIRED BY LOCAL CODES. SEE NEC SECTION 810 — 21 (f).

18. Servicing
Do not attempt to service this video product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

19. Damage requiring Service
Unplug this video product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
(a) When the power-supply cord or plug is damaged.
(b) If liquid has been spilled, or objects have fallen into the video product.
(c) If the video product has been exposed to rain or water.
(d) If the video product does not operate normally by following the operating instructions.
Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video product to its normal operation.
(e) If the video product has been dropped or the cabinet has been damaged.
(f) When the video product exhibits a distinct change in performance — this indicates a need for service.

20. Replacement Parts
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

21. Safety Check
Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine that the video product is in safe operating conditions.
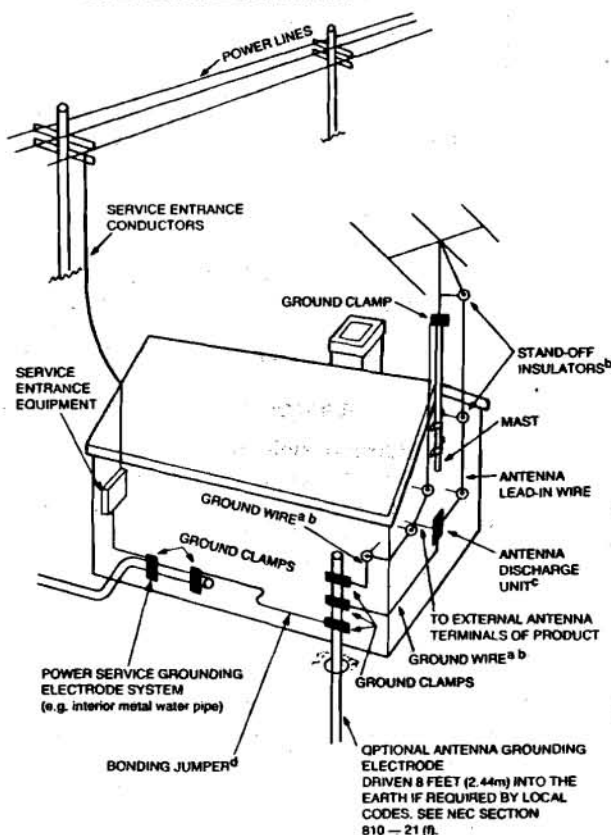
CAUTION AND CARE

CONDENSATION

If condensation occurs inside the VCR the DEW indicator (🔋) illuminates and the VCR will not operate. In this event, leave the power plug connected and leave the VCR POWER turned ON until the VCR has had sufficient time to dry (about 2 hours) and the DEW indicator (🔋) goes off. As a precautionary measure, it is advisable to wait another hour to ensure that all moisture has been removed.

■ Condensation is likely to occur when:
1. The VCR is moved from a cold room to a warm room or from outdoors to inside your house;
2. A cold room is heated quickly;
3. The humidity is very high.
● Avoid using the VCR where cold air, such as that from an air conditioner, will blow on it directly.

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

PROTECT THE POWER CORD

Do not damage the Power Cord. Damage to the Power Cord may cause a fire or shock hazard. When unplugging the Power Cord, please hold by the plug and remove it carefully.

CABINET CARE

Clean with a soft cloth slightly moistened with a mild detergent and water. Wipe dry.
NEVER USE ANY PETROLEUM BASE SOLUTIONS.

NEVER INSERT ANY OBJECT INTO THE CABINET

Do not insert any kind of foreign object into the recorder. This not only creates a safety hazard but can also cause extensive damage to the mechanism.

DO NOT PLACE ANYTHING ON THE RECORDER

Heavy objects placed on the recorder will cause damage. The top of the recorder is also slotted to provide ventilation. Do not obstruct these ventilation slots.

MAINTAIN GOOD VENTILATION

There are many ventilation holes on the bottom of the recorder. For maximum ventilation place the recorder on a hard level surface only.

WHEN NOT IN USE

When you finish operating the recorder, always unload the cassette and turn OFF the VCR POWER.

UNPLUG THE POWER CORD AND DISCONNECT THE ANTENNA DURING A LONG ABSENCE

When you leave your home for a long period of time, turn OFF the VCR POWER, unplug the Power Cord and disconnect the antenna wires.

CARE OF THE VIDEO CASSETTE TAPE

● Avoid violent vibration or shock.
● Do not place in a location where strong magnetic fields exist (near a motor, transformer or magnet).
● Never Place or store in direct sunlight.
● Avoid dusty places.
● Place the cassette in the cassette case and store vertically.
● Never store tape in a high humidity location.
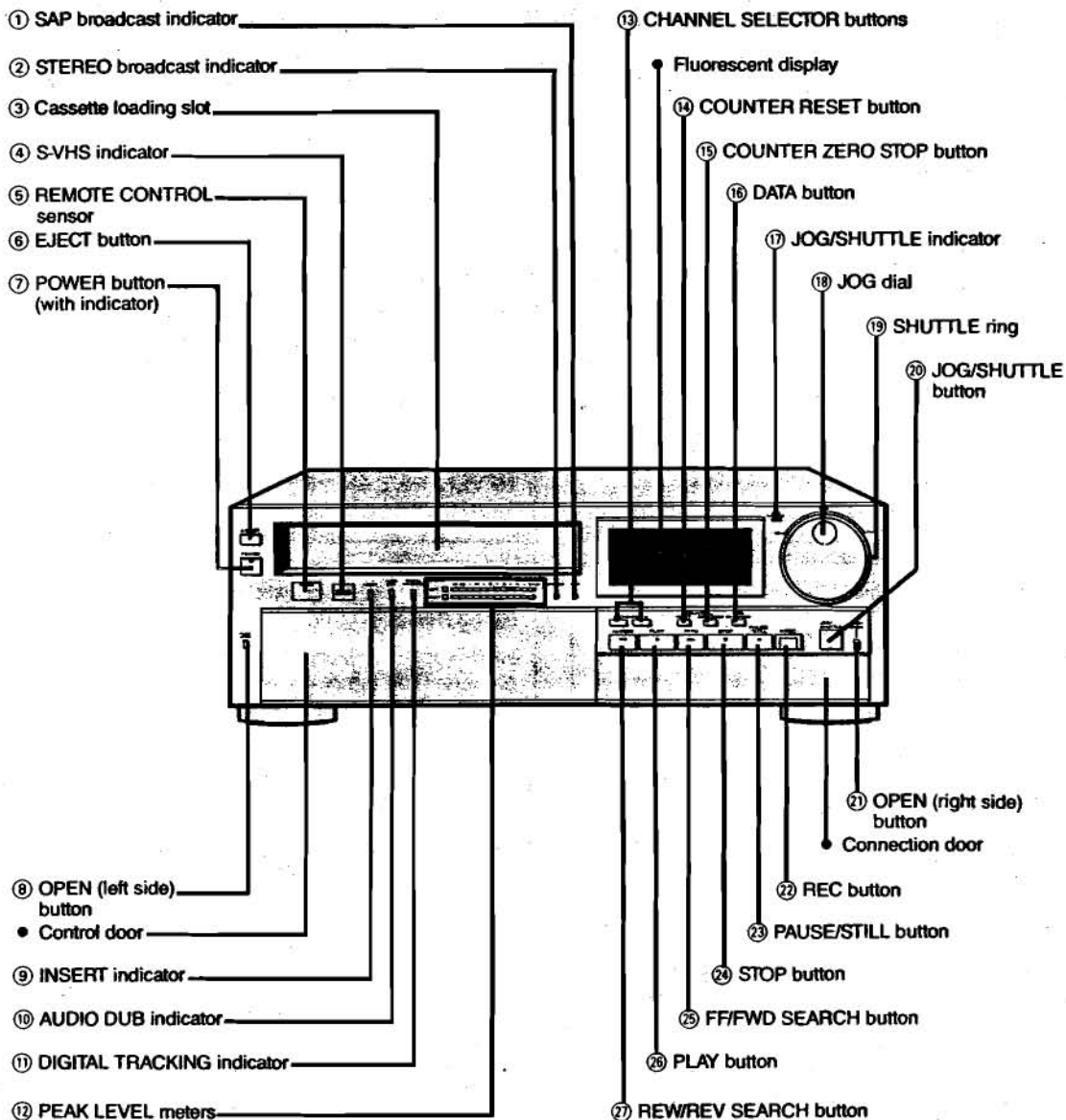
ACCESSORIES
● BATTERIES (2 × AAA)
● S-VIDEO CABLE
● AUDIO CABLE
● WIRELESS REMOTE CONTROL UNIT
● COAXIAL CABLE (75Ω)

H.Q. (HIGH QUALITY) VHS SYSTEM
Video cassette recorders bearing the "HQ" logo are engineered with VHS high-fidelity picture technology. VHS-HQ VCR's are compatible with all other VHS VCR's including those without HQ.

FRONT VIEW

① SAP broadcast indicator

② STEREO broadcast indicator

③ Cassette loading slot

④ S-VHS indicator

⑤ REMOTE CONTROL sensor

⑥ EJECT button

⑦ POWER button (with indicator)

⑬ CHANNEL SELECTOR buttons

● Fluorescent display

⑭ COUNTER RESET button

⑮ COUNTER ZERO STOP button

⑯ DATA button

⑰ JOG/SHUTTLE indicator

⑱ JOG dial

⑲ SHUTTLE ring

⑳ JOG/SHUTTLE button

⑧ OPEN (left side) button

● Control door

⑨ INSERT indicator

⑩ AUDIO DUB indicator

⑪ DIGITAL TRACKING indicator

⑫ PEAK LEVEL meters

㉑ OPEN (right side) button

● Connection door

㉒ REC button

㉓ PAUSE/STILL button

㉔ STOP button

㉕ FF/FWD SEARCH button

㉖ PLAY button

㉗ REW/REV SEARCH button

CONNECTION PANEL

① VIDEO IN 2 and S-VIDEO IN 2 connectors

④ MICROPHONE jack

⑤ HEADPHONES jack

⑥ HEADPHONES LEVEL control

② VIDEO INPUT SELECT switch

③ AUDIO IN 2 connectors

⑦ EXTERNAL INPUT SELECT switch

① SAP broadcast indicator
Illuminates when SAP broadcasts are received.

② STEREO broadcast indicator
Illuminates when stereo broadcasts are received.

③ Cassette loading slot
Cassette tape is inserted into this slot for loading.

④ S-VHS indicator
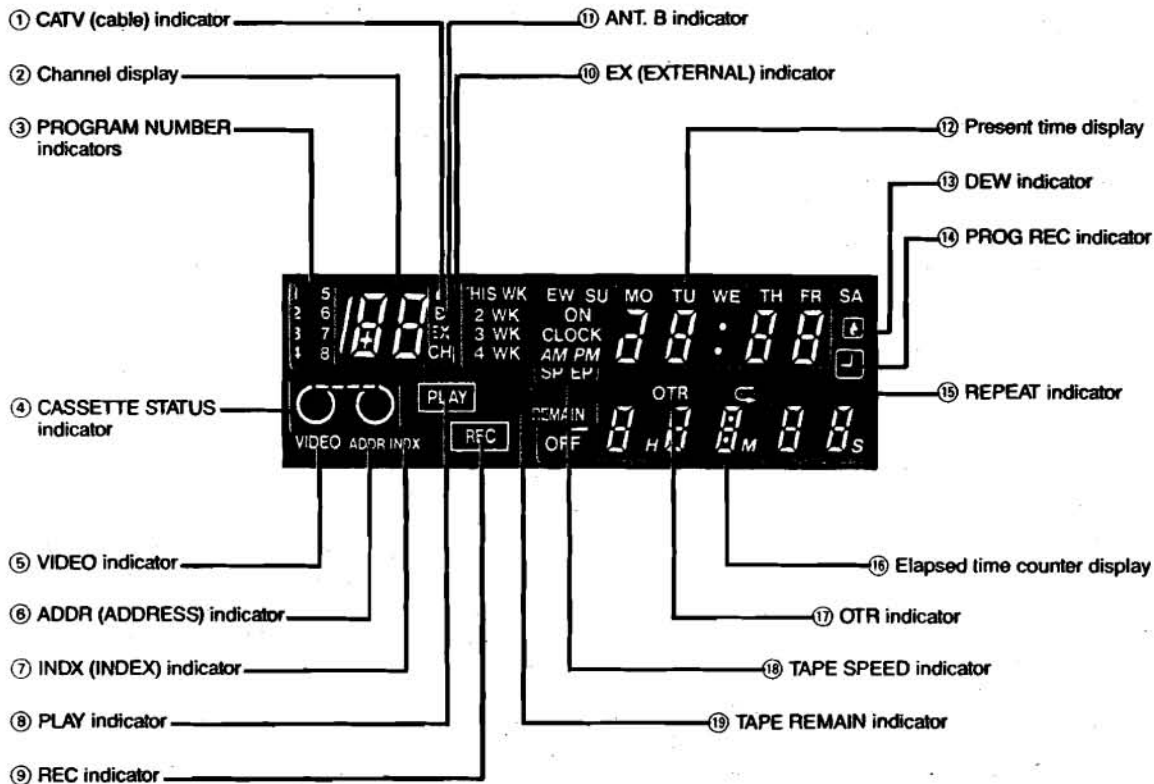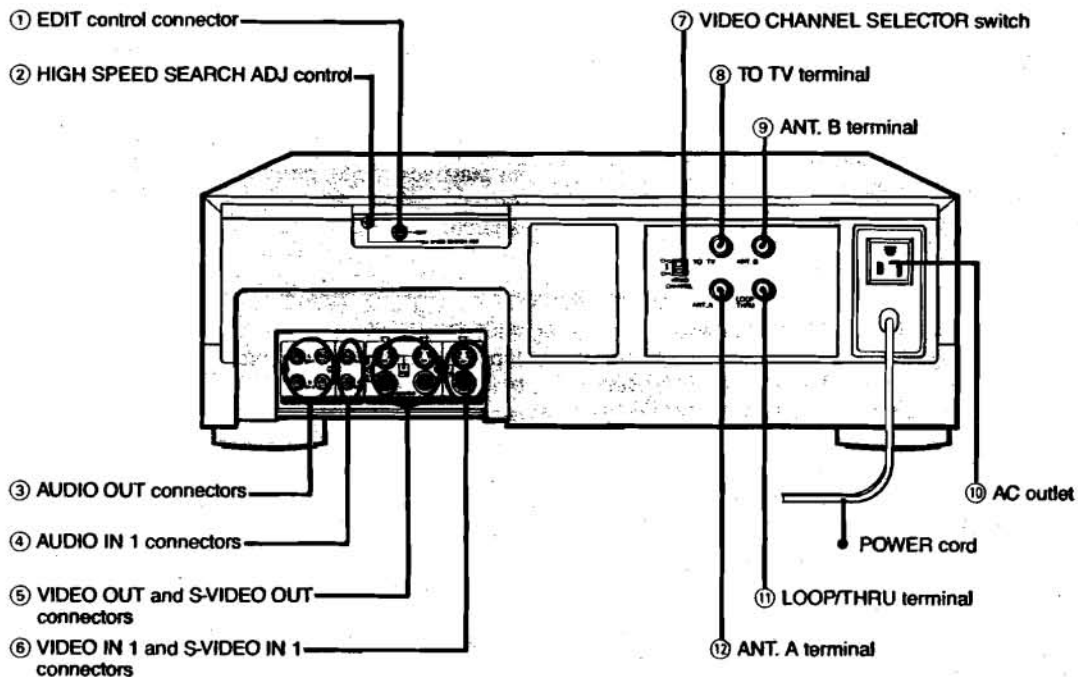Illuminates during S-VHS recording or playback of a tape recorded with S-VHS system.

⑤ REMOTE CONTROL sensor
Receives the infra-red light transmission from the remote control transmitter.

⑥ EJECT button
Press to remove the cassette.

⑦ POWER button (with indicator)
Press to switch ON power to the VCR.

⑧ OPEN (left side) button
Press to open the control door.

⑨ INSERT indicator
Illuminates when the insert edit function is operating.

⑩ AUDIO DUB indicator
Illuminates when the audio dub function is operating.

⑪ DIGITAL TRACKING indicator
Flashes to indicate automatic digital tracking adjustment. Stops flashing and illuminates to indicate automatic digital tracking complete.

⑫ PEAK LEVEL meters
When recording, displays the audio recording level setting. The following 3 functions may be displayed: During recording the audio recording level is displayed. During playback the audio output or Hi-Fi tracking level is displayed, depending on the position of the METER SELECT switch. The meters may also be set to OFF.

⑬ CHANNEL SELECTOR buttons
Selects the TV channel for recording.

⑭ COUNTER RESET button
Press to reset the counter to 0H00M00s.

⑮ COUNTER ZERO STOP button
When pressed, the tape will fast forward or rewind until the counter display indicates 0H00M00s, and automatically stop at that point.

⑯ DATA button
Press to display the counter, channel, operation mode and remaining time display on the screen.

⑰ JOG/SHUTTLE indicator
Illuminates during jog/shuttle mode.

⑱ JOG dial
Refer to JOG DIAL (page 62).

⑲ SHUTTLE ring
Refer to SHUTTLE RING (page 61).

⑳ JOG/SHUTTLE button
Press to engage jog/shuttle mode during playback.

㉑ OPEN (right side) button
Press to open the connection door.

㉒ REC (RECORD) button
Press to begin recording, both video and audio.

㉓ PAUSE/STILL button
When pressed during recording, stops movement of tape temporarily. Press again to continue the recording. When pressed during playback, stops movement of tape, exhibiting a still picture without sound.

㉔ STOP button
Press to discontinue all tape related functions.

㉕ FF/FWD SEARCH button
In stop mode, press to fast forward the tape.
In playback mode, press for forward speed search.
In playback mode, press and hold for about one second before releasing for forward high speed search.

㉖ PLAY button
Press to playback a previously recorded tape.

㉗ REW/REV SEARCH button
In stop mode, press to rewind the tape.
In playback mode, press for reverse speed search.
In playback mode, press and hold for about one second before releasing for reverse high speed search.

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① VIDEO IN 2 and S-VIDEO IN 2 connectors
The VIDEO IN is used to record or dub from another VHS VCR or video source. The S-VIDEO IN is used to dub from another S-VHS VCR (refer to the "DUBBING" on pages 46 and 47).

② VIDEO INPUT SELECT switch
When dubbing an S-VHS tape from another S-VHS VCR set to S (Y/C) position. Otherwise leave it in VIDEO position (refer to the "DUBBING" on pages 46 and 47).

③ AUDIO IN 2 connectors
Connect to the audio output of an audio source to record from that source.

④ MICROPHONE jack
Input for connection of a microphone for audio dubbing (see page 74).

⑤ HEADPHONES jack
Output for connection of headphones for private listening.

⑥ HEADPHONES LEVEL control
Adjusts the headphones output level.

⑦ EXTERNAL INPUT SELECT switch
When the AUDIO, VIDEO and S-VIDEO IN 1 of the rear panel are used, set to 1 (REAR) position.
When the AUDIO, VIDEO and S-VIDEO IN 2 of the connection panel are used, set to 2 position.
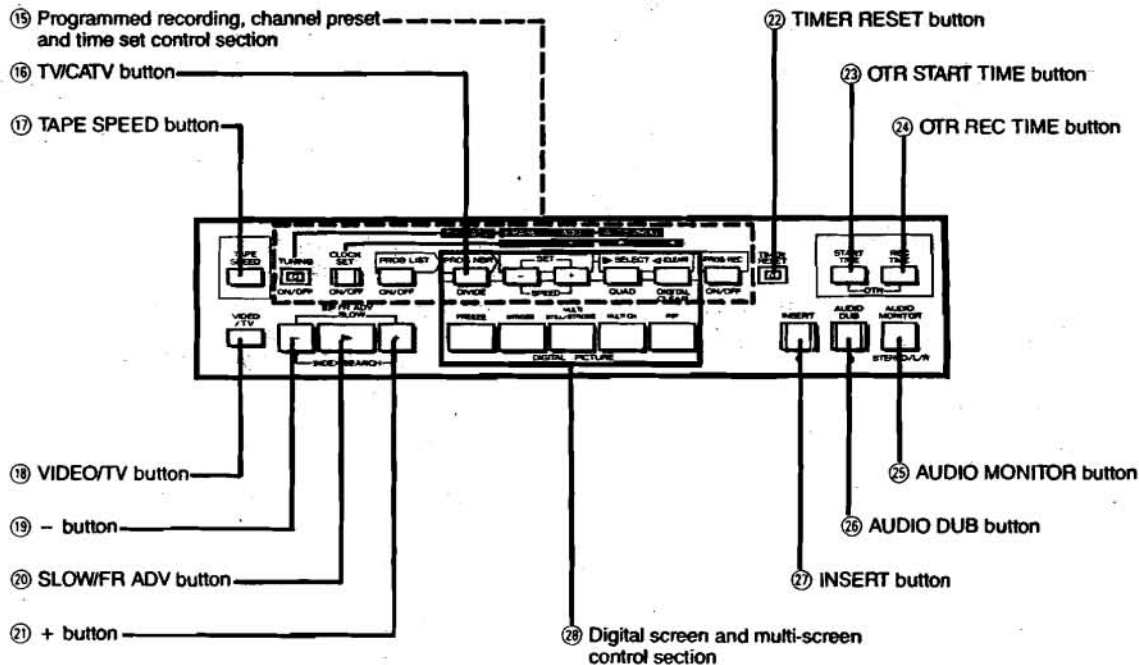
FLUORESCENT DISPLAY

① CATV (cable) indicator

② Channel display

③ PROGRAM NUMBER indicators

④ CASSETTE STATUS indicator

⑤ VIDEO indicator

⑥ ADDR (ADDRESS) indicator

⑦ INDX (INDEX) indicator

⑧ PLAY indicator

⑨ REC indicator

⑪ ANT. B indicator

⑩ EX (EXTERNAL) indicator

⑫ Present time display

⑬ DEW indicator

⑭ PROG REC indicator

⑮ REPEAT indicator

⑯ Elapsed time counter display

⑰ OTR indicator

⑱ TAPE SPEED indicator

⑲ TAPE REMAIN indicator

REAR VIEW

① EDIT control connector

② HIGH SPEED SEARCH ADJ control

③ AUDIO OUT connectors

④ AUDIO IN 1 connectors

⑤ VIDEO OUT and S-VIDEO OUT connectors

⑥ VIDEO IN 1 and S-VIDEO IN 1 connectors

⑦ VIDEO CHANNEL SELECTOR switch

⑧ TO TV terminal

⑨ ANT. B terminal

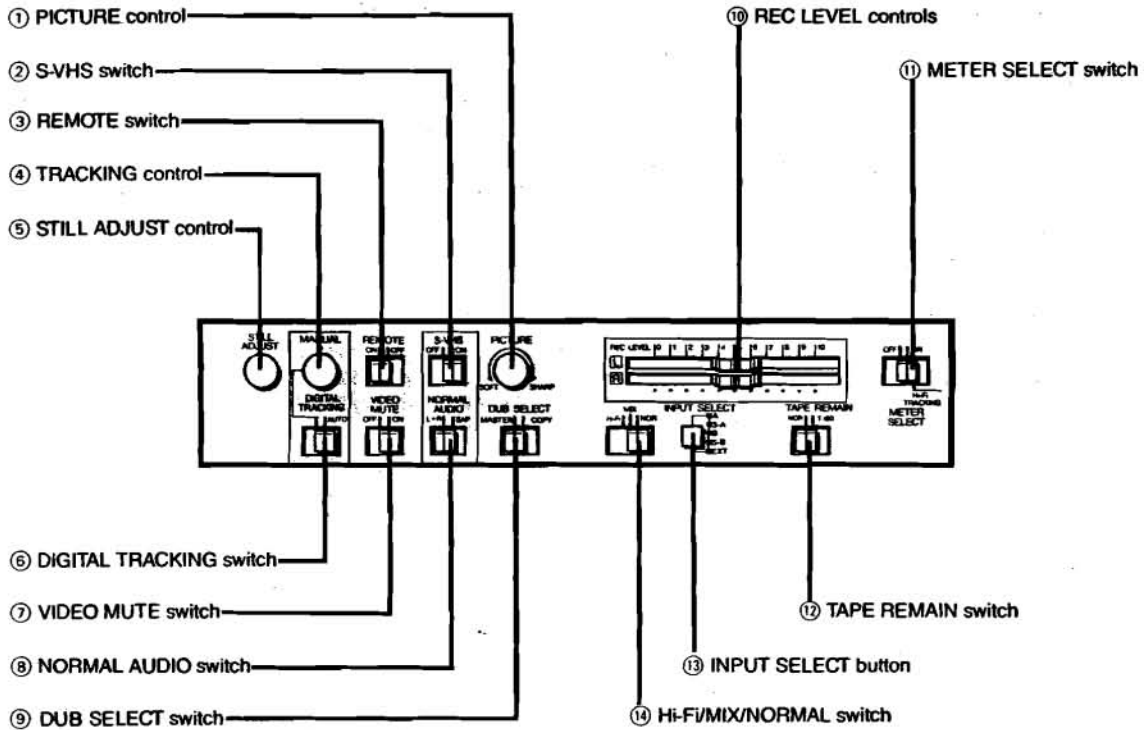⑩ AC outlet

POWER cord

⑪ LOOP/THRU terminal

⑫ ANT. A terminal

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① **CATV (cable) indicator**
Illuminates when the TV/CATV button is set to CATV.

② **Channel display**
Displays the number corresponding to a selected channel.

③ **PROGRAM NUMBER indicators**
Display the number corresponding to a selected program number.

④ **CASSETTE STATUS indicator**
Illuminates when tape is inserted.
The light advances, stops or flashes corresponding to the movement of the tape.

⑤ **VIDEO indicator**
Illuminates when the VIDEO/TV button is set to VIDEO.

⑥ **ADDR (ADDRESS) indicator**
Illuminates during address search; flashes during recording of an address signal.

⑦ **INDX (INDEX) indicator**
Illuminates during index search; flashes during recording of an index signal.

⑧ **PLAY indicator**
Illuminates during playback.

⑨ **REC indicator**
Illuminates during recording.

⑩ **ANT. B indicator**
Illuminates to indicate that the INPUT SELECT button is set to TUNER (ANT. B) or SIMUL (ANT. B).

⑪ **EX (EXTERNAL) indicator**
Illuminates to indicate that the INPUT SELECT button is set to EXT.

⑫ **Present time display**
Indicates present time including the day of the week.

⑬ **DEW indicator**
When illuminated, indicates that condensation has formed inside the VCR. The VCR will not function as long as light is ON.

⑭ **PROG REC indicator**
Illuminates to indicate that the PROG REC button is set to ON.

⑮ **REPEAT indicator**
Illuminates to indicate that the REPEAT button is set to ON.

⑯ **Elapsed time counter display**
Indicates tape run time in hours, minutes and seconds.

⑰ **OTR indicator**
Illuminates during OTR recording.

⑱ **TAPE SPEED indicator**
Indicates tape speed setting: SP illuminates to indicate SP mode; EP illuminates to indicate EP mode.

⑲ **TAPE REMAIN indicator**
Illuminates when the DATA button is set to ON during recording.

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① **EDIT control connector**
Refer to DUBBING (pages 45 and 46).

② **HIGH SPEED SEARCH ADJ control**
If during high speed search the picture wavers from side to side or proper color reproduction is lost turn this control counter-clockwise.

③ **AUDIO OUT connectors**
Audio signals being recorded or played back are available at these connectors for connection to another video recorder or to the audio input of a TV receiver (if so equipped).

④ **AUDIO IN 1 connectors**
Connect to the audio output of an audio source to record from that source.

⑤ **VIDEO OUT and S-VIDEO OUT connectors**
Set 1 is used for connection to a TV receiver/monitor (See the "CONNECTING THE VCR TO THE TV" on pages 15, 16, 17 and 18). Set 2 is used for dubbing to another VCR (refer to the "DUBBING" on pages 46 and 47).

⑥ **VIDEO IN 1 and S-VIDEO IN 1 connectors**
The VIDEO IN is used to record or dub from another VCR or video source. The S-VIDEO IN is used to dub from another S-VHS VCR (refer to the "DUBBING" on pages 46 and 47).

⑦ **VIDEO (RF converter) CHANNEL SELECTOR switch**
Selects the Video Channel (channel 3 or 4). The TV receiver must correspond to the Video Channel in order to view tapes being played back or to monitor a program that is being recorded.

⑧ **TO TV terminal**
Connect to the VHF/UHF antenna terminal of the TV.

⑨ **ANT. B terminal**
When connecting CATV with converter (decoder), connect to the output of the converter.

⑩ **AC outlet**
This AC 120V 60Hz outlet is provided for convenience to supply AC power to other units. The outlet is ON continuously with the following exception. When the PROG REC indicator (⏏) is illuminated, power to this outlet is interrupted until programmed recording begins.
Do not exceed the maximum power rating of 300W.

⑪ **LOOP/THRU terminal**
When connecting CATV with converter (decoder), connect to the input of the converter.

⑫ **ANT. A terminal**
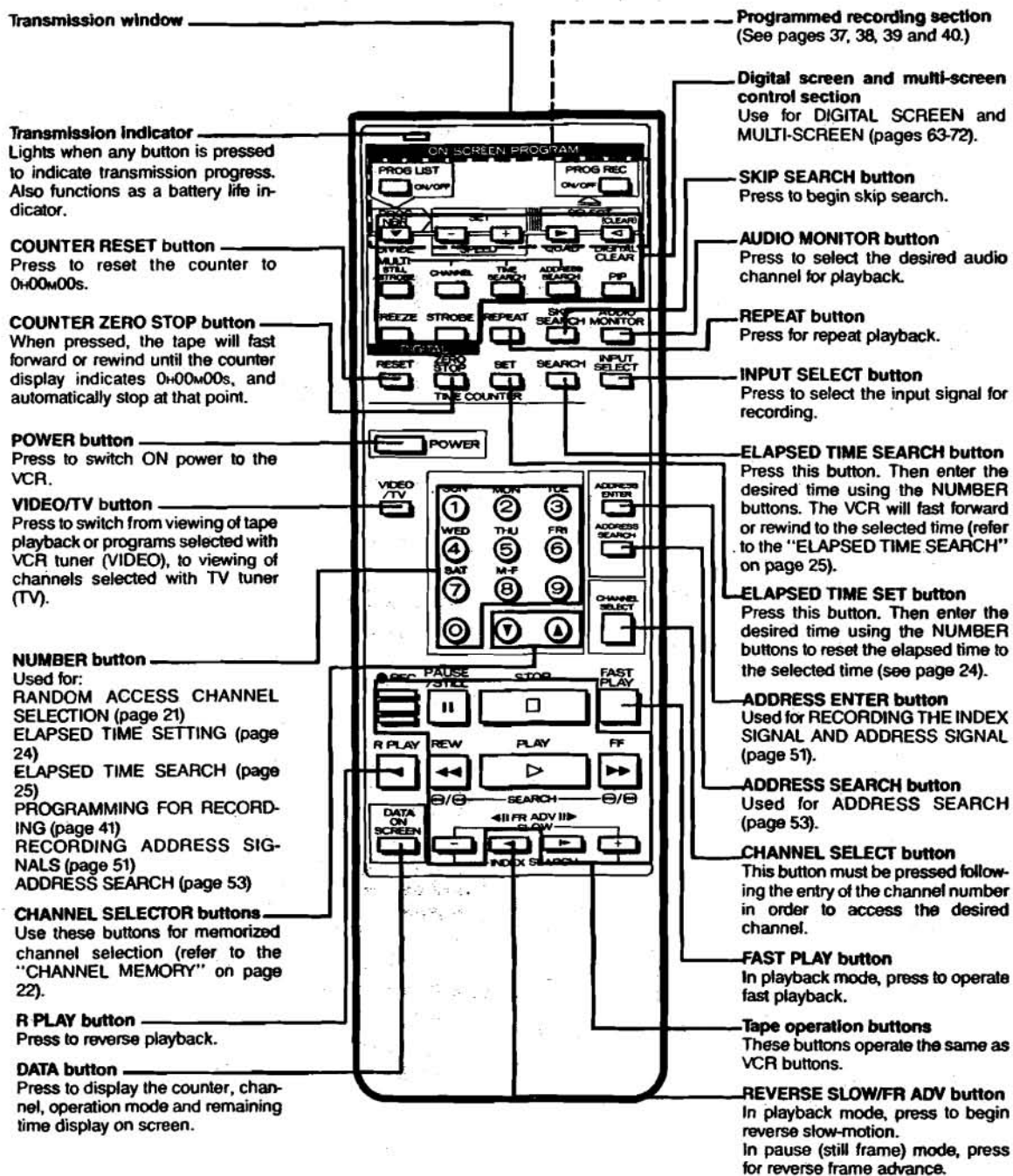Connect to the lead from the VHF/UHF antenna.

CONTROL PANEL

① PICTURE control

⑩ REC LEVEL controls

② S-VHS switch

⑪ METER SELECT switch

③ REMOTE switch

④ TRACKING control

⑤ STILL ADJUST control

⑥ DIGITAL TRACKING switch

⑫ TAPE REMAIN switch

⑦ VIDEO MUTE switch

⑬ INPUT SELECT button

⑧ NORMAL AUDIO switch

⑨ DUB SELECT switch

⑭ Hi-Fi/MIX/NORMAL switch

⑮ Programmed recording, channel preset
   and time set control section

㉒ TIMER RESET button

⑯ TV/CATV button

㉓ OTR START TIME button

⑰ TAPE SPEED button

㉔ OTR REC TIME button

⑱ VIDEO/TV button

⑲ – button

⑳ SLOW/FR ADV button

㉕ AUDIO MONITOR button

㉖ AUDIO DUB button

㉑ + button

㉗ INSERT button

㉘ Digital screen and multi-screen
   control section

① **PICTURE control**
Rotate, clockwise (sharp) to increase picture detail, counter-clockwise (soft) to decrease picture detail. Normally set to the center click-stop position. Operates in playback mode only.

② **S-VHS switch**
Set to ON position to record in the S-VHS mode (An S-VHS tape must be used). The S-VHS indicator illuminates to confirm S-VHS ON and an S-VHS tape is inserted in the machine.

③ **REMOTE switch**
Set to OFF position to disable operation from the remote control unit. Normally set to ON position.

④ **TRACKING control**
In case of the tape whose recording condition is bad, set the DIGITAL TRACKING switch to MANUAL position and rotate the TRACKING control to search a better picture.

⑤ **STILL ADJUST control**
Adjust this control if vibration (shake) is present in the picture during still frame.

⑥ **DIGITAL TRACKING switch**
Refer to AUTOMATIC DIGITAL TRACKING (page 59).

⑦ **VIDEO MUTE switch**
Set to ON position, the TV screen will switch to blue when a channel with no broadcast is selected.

⑧ **NORMAL AUDIO switch**
Set to SAP position for monaural recording of SAP broadcasts on the normal sound track. Set to L+R position for monaural recording of the main channel on the normal sound track.

⑨ **DUB SELECT switch**
Set this switch to COPY position when dubbing (copying) a tape from this VCR to any other VCR. For normal use, set to MASTER position.

⑩ **REC LEVEL controls**
Adjusts the audio recording level.

⑪ **METER SELECT switch**
Set to ON position to monitor record or playback levels on the PEAK LEVEL meters. Set to Hi-Fi TRACKING position to monitor the tracking of the Hi-Fi track on the PEAK LEVEL meters. Set to OFF position to turn off the PEAK LEVEL meters.

⑫ **TAPE REMAIN switch**
Set to T-160 position when using T-160 or T-140 cassette tape. For normal use, set to NOR position.

⑬ **INPUT SELECT button**
Press to select the input signal for recording.

⑭ **Hi-Fi/MIX/NORMAL switch**
Refer to VHS Hi-Fi STEREO AUDIO PLAYBACK (page 56).

⑮ **Programmed recording, channel preset and time set control section**
Contains the controls used to set: programmed recording, channel preset and current time.

⑯ **TV/CATV button**
Press to set the VCR to TV mode or CATV mode.

⑰ **TAPE SPEED button**
Press to set the recording speed to SP (Standard Play) or EP (Extended Play). Speed selection is automatic during playback.

⑱ **VIDEO/TV button**
Press to set the VCR to VIDEO mode or TV mode. When set to TV, the TV will receive off-the-air programs normally. When set to VIDEO, off-the-air programs selected by the VCR's built-in tuner will be viewed on the TV. Should be set to TV when recording one program while watching another.

⑲ **− button**
In slow-motion mode, press to decrease slow-motion speed.
In stop or playback mode, press to activate the index search in the reverse direction.

⑳ **SLOW/FR ADV button**
In playback mode, press to begin slow-motion playback.
In pause (still frame) mode, press to advance one frame at a time.

㉑ **+ button**
In slow-motion mode, press to increase slow-motion speed.
In stop or playback mode, press to activate the index search in the forward direction.

㉒ **TIMER RESET button**
Press to reset the display when the fluorescent display shows an unusual indication. The present time display and the programmed recording instruction will be erased and the power will be turned off.

㉓ **OTR START TIME button**
Press to select the start time for OTR (one touch recording).

㉔ **OTR REC TIME button**
Press for immediate recording in 15 minute timed intervals up to a total of four hours or until tape end. If the OTR START TIME button is pressed before setting the OTR REC TIME, then OTR recording will be delayed until the hour selected.

㉕ **AUDIO MONITOR button**
Press to select a desired audio track for playback.

㉖ **AUDIO DUB button**
Used for adding a new sound track to previously recorded video cassettes. (see page 74).

㉗ **INSERT button**
Selects the insert editing mode. (see page 76).

㉘ **Digital screen and multi-screen control section**
Refer to DIGITAL SCREEN and MULTI-SCREEN (pages 63-72).

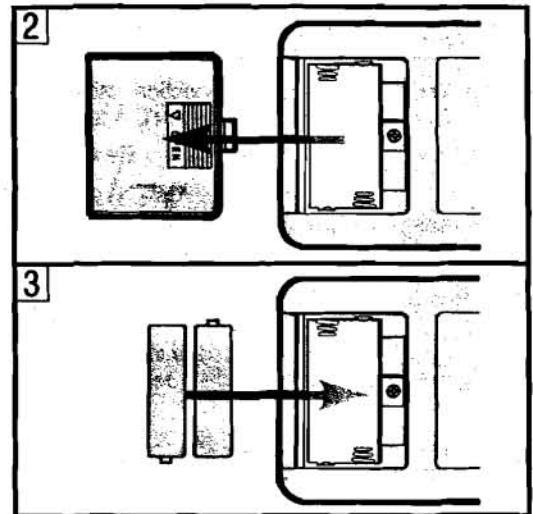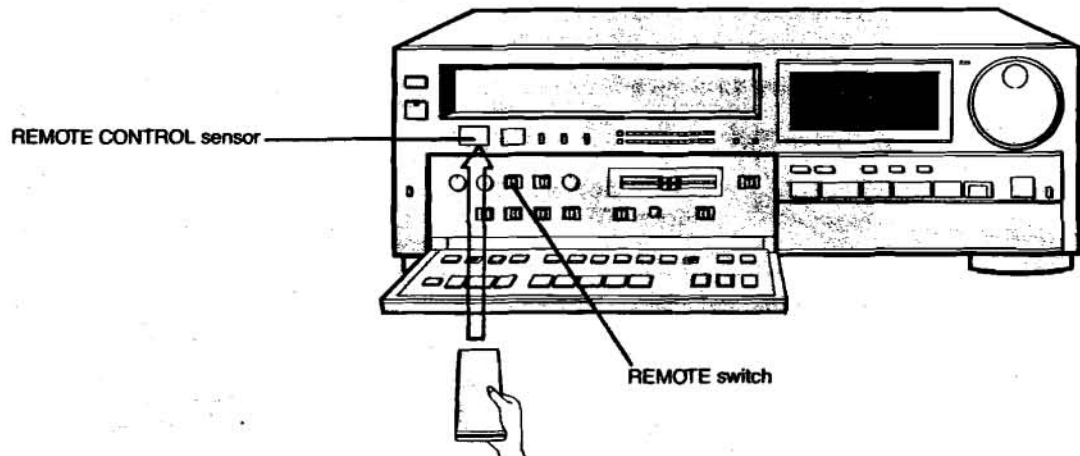# USING THE REMOTE CONTROL UNIT

DESCRIPTIONS AND FUNCTIONS

Transmission window

Transmission indicator
Lights when any button is pressed to indicate transmission progress. Also functions as a battery life indicator.

COUNTER RESET button
Press to reset the counter to 0H00M00s.

COUNTER ZERO STOP button
When pressed, the tape will fast forward or rewind until the counter display indicates 0H00M00s, and automatically stop at that point.

POWER button
Press to switch ON power to the VCR.

VIDEO/TV button
Press to switch from viewing of tape playback or programs selected with VCR tuner (VIDEO), to viewing of channels selected with TV tuner (TV).

NUMBER button
Used for:
RANDOM ACCESS CHANNEL SELECTION (page 21)
ELAPSED TIME SETTING (page 24)
ELAPSED TIME SEARCH (page 25)
PROGRAMMING FOR RECORDING (page 41)
RECORDING ADDRESS SIGNALS (page 51)
ADDRESS SEARCH (page 53)

CHANNEL SELECTOR buttons
Use these buttons for memorized channel selection (refer to the "CHANNEL MEMORY" on page 22).

R PLAY button
Press to reverse playback.

DATA button
Press to display the counter, channel, operation mode and remaining time display on screen.

Programmed recording section
(See pages 37, 38, 39 and 40.)

Digital screen and multi-screen control section
Use for DIGITAL SCREEN and MULTI-SCREEN (pages 63-72).

SKIP SEARCH button
Press to begin skip search.

AUDIO MONITOR button
Press to select the desired audio channel for playback.

REPEAT button
Press for repeat playback.

INPUT SELECT button
Press to select the input signal for recording.

ELAPSED TIME SEARCH button
Press this button. Then enter the desired time using the NUMBER buttons. The VCR will fast forward or rewind to the selected time (refer to the "ELAPSED TIME SEARCH" on page 25).

ELAPSED TIME SET button
Press this button. Then enter the desired time using the NUMBER buttons to reset the elapsed time to the selected time (see page 24).

ADDRESS ENTER button
Used for RECORDING THE INDEX SIGNAL AND ADDRESS SIGNAL (page 51).

ADDRESS SEARCH button
Used for ADDRESS SEARCH (page 53).

CHANNEL SELECT button
This button must be pressed following the entry of the channel number in order to access the desired channel.

FAST PLAY button
In playback mode, press to operate fast playback.

Tape operation buttons
These buttons operate the same as VCR buttons.

REVERSE SLOW/FR ADV button
In playback mode, press to begin reverse slow-motion.
In pause (still frame) mode, press for reverse frame advance.

BATTERY INSTALLATION

1 Remove the packaging and take out the remote control unit and the two size "AAA" batteries.

2 Slide the cover of the battery compartment in the direction of the arrow and remove.

3 Load the two batteries as shown on the right and replace the cover.
Make sure that the polarities, + and −, are properly aligned.

■ Press any of the remote control buttons and observe the transmission indicator. If the indicator fails to operate, replace the batteries with fresh ones.

NOTE:

• Do not use a new battery with an old one.
• Do not heat, disassemble, short or throw batteries into a fire.

REMOTE CONTROL OPERATION

REMOTE CONTROL sensor

REMOTE switch

1 Confirm that the REMOTE switch is set to ON position.

2 Point the remote control unit toward the REMOTE CONTROL sensor on the VCR.

3 Press the desired function button on the remote control unit. The recorder can be operated with the remote control unit up to a distance of about 7 meters (23 feet).

■ If the transmission indicator does not illuminate, the batteries are discharged. Install new batteries.

CAUTIONS FOR REMOTE CONTROL UNIT OPERATION

• Do not place the remote control unit in an area where it may become wet.
• Placing the remote control unit near high heat may cause damage.
• Dropping the remote control unit on a hard floor may result in damage.
• Do not use benzene, thinners or other petroleum based cleaners to clean the remote control unit.
  To clean, wipe a soft cloth slightly moistened with a mild detergent and then wipe dry with a soft cloth.
• If you lose or misplace the remote control unit, a replacement may be purchased from your dealer.

CONNECTING THE ANTENNA TO THE VCR

DISCONNECT THE ANTENNA WIRE FROM THE TV AND CONNECT IT TO THE ANT. A TERMINAL ON THE REAR PANEL OF THE VCR.

SINGLE ANTENNA FOR BOTH VHF AND UHF IS USED.

[A] VHF/UHF antenna connection using 75 ohm coaxial (round) cable. Connect as shown to the ANT. A terminal on the VCR.

Be careful not to bend the center wire.

From VHF/UHF antenna

Connect to ANT. A on VCR.

[B] VHF/UHF antenna connection using 300 ohm flat twin lead.

Connect the antenna leads to the matching transformer and then the extension cable as shown below.

Connect to ANT. A on VCR.

Insert lead under screws and tighten.

VHF/UHF ANTENNA

300 ohm flat cable

75 ohm cable

[B]   [A]

TO TV   ANT. B

ANT. A   LOOP THRU
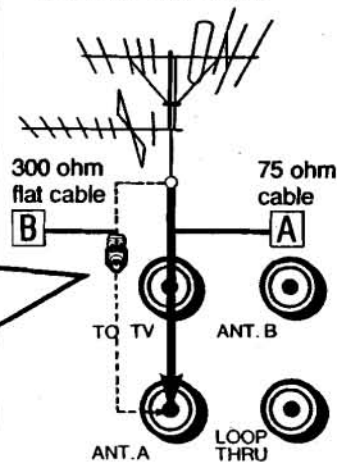
SEPARATE VHF AND UHF ANTENNAS ARE USED.

[A] VHF antenna connection using 75 ohm coaxial (round) cable.

VHF/UHF mixer

From VHF antenna

Connect to ANT. A on VCR.
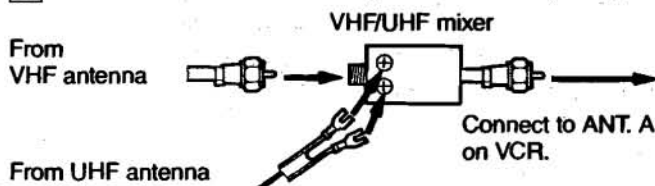
From UHF antenna

[B] VHF antenna connection using 300 ohm flat twin leads.

① Connect the antenna leads to the matching transformer and then the extension cable as shown below.

Insert leads under screws and tighten.

②

VHF/UHF mixer

From VHF antenna

Connect to ANT. A on VCR.
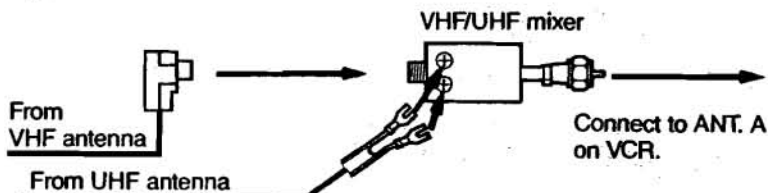
From UHF antenna

UHF ANTENNA   VHF ANTENNA

TO TV   ANT. B

ANT. A   LOOP THRU
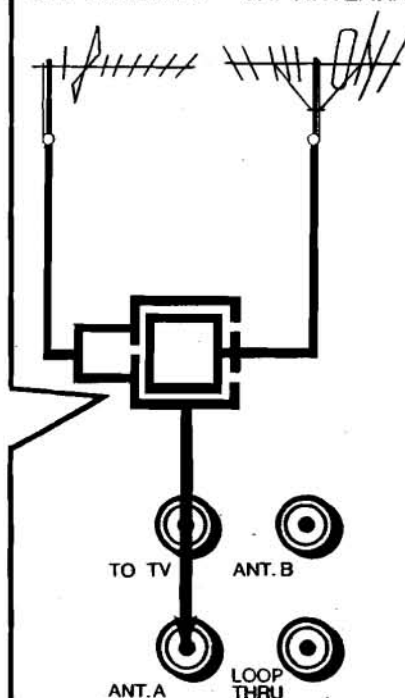
CABLE WITHOUT A CONVERTER (DECODER)

Connect to ANT. A on VCR

TO TV   ANT. B

From CATV (CABLE)   ANT. A   LOOP THRU
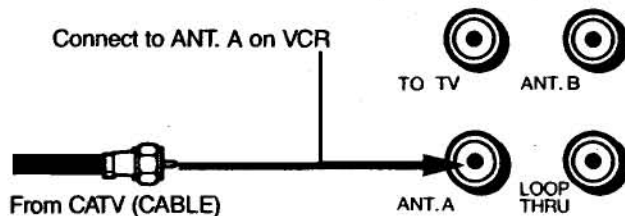
NOTE:

- This VCR can receive TV channels 2 — 13, and CATV (cable) channels 5A (VHF), A-5 — A-1, A — W (MID BAND and SUPER BAND), W+1 — W+84 (HYPER BAND and ULTRA BAND) in CATV mode. CATV (cable) services can vary from area to area. Check your local cable company compatibility requirements.

CONNECTING A CONVERTER (DECODER)

• TO VIEW CATV ONLY

Connect to ANT. B on VCR

CONVERTER

OUT

Connect to ANT. A on VCR

TO TV   ANT. B

IN

From CATV (CABLE)   ANT. A   LOOP THRU

Connect to LOOP/THRU on VCR
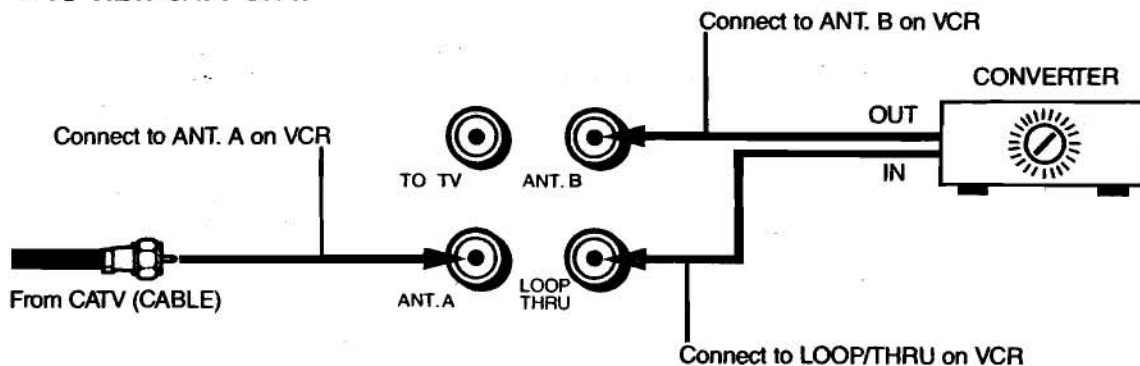
To view any basic "nonscrambled" cable channel press the INPUT SELECT button to ANT. A and tune your VCR to the desired channel. To view one premium "descrambled" cable channel, press the INPUT SELECT button to ANT. B and tune your VCR to the channel of the converter (Usually channel 3 or 4) and select a desired channel with converter channel selector.

• TO VIEW TV AND CATV

VHF/UHF ANTENNA

Connect to ANT. B on VCR

CONVERTER   From CATV (CABLE)

TO TV   ANT. B

ANT. A   LOOP THRU

Connect to ANT. A on VCR
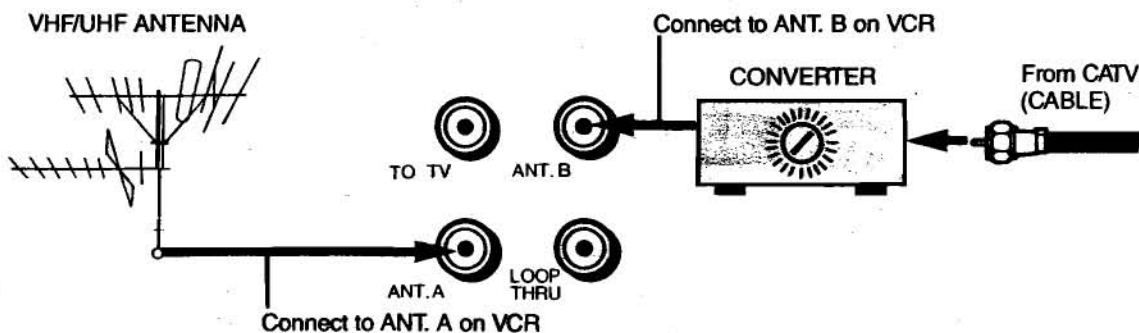
To view the TV program from the VHF/UHF antenna press the INPUT SELECT button to ANT. A and tune your VCR to the desired channel. To view the CATV (cable), press the INPUT SELECT button to ANT. B and tune your VCR to the channel of the converter (Usually channel 3 or 4) and select a desired channel with converter channel selector.

CONNECTING THE VCR TO THE TV

This VCR is equipped to play back S-VHS video and VHS Hi-Fi audio. S-VHS recordings will provide superior picture quality when connected to a TV equipped with an S-VIDEO IN connector. Hi-Fi recordings will provide superior sound quality when connected to:
- TV receiver (or monitor) equipped with stereo speakers and stereo audio inputs.
- Stereo audio system.

Although the connection of this VCR to a monaural TV input is illustrated the benefits of Hi-Fi sound are only available when the stereo audio outputs are attached as illustrated in 2, 3 and 4. The full benefits of S-VHS are only available when the S-VHS output is connected as illustrated in 5.

CONNECTING THE VCR TO:

1. MONAURAL TV   (Page 15)
2. STEREO TV WITH AUDIO AND VIDEO INPUTS   (Page 16)
3. STEREO TV WITH AUDIO INPUTS ONLY   (Page 17)
4. STEREO AUDIO SYSTEM
   MITSUBISHI TV WITH STEREO AV INPUTS AND OUTPUTS   (Page 17)
   TV WITHOUT STEREO AUDIO INPUTS   (Page 17)
5. TV WITH S-VIDEO INPUT   (Page 18)

1. MONAURAL TV
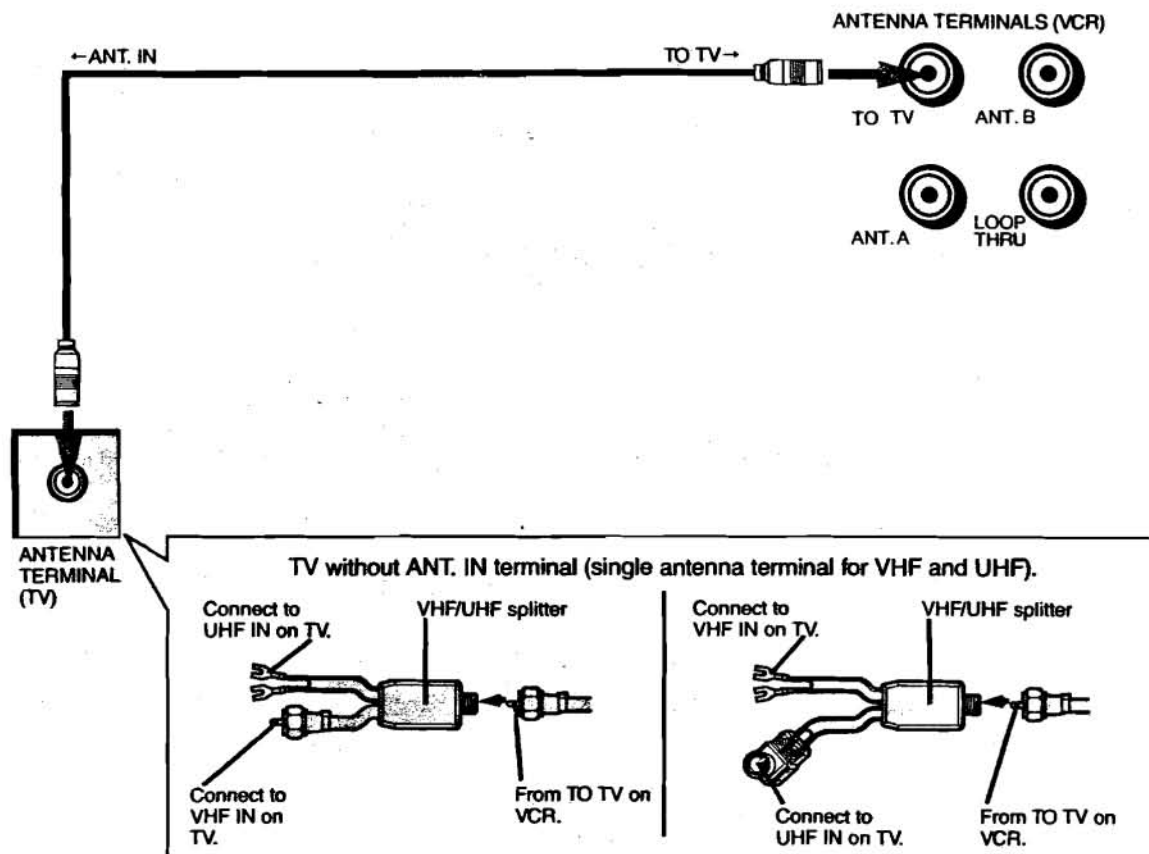
Attach the accessory coaxial cable (supplied) to the VCR and then connect to the TV antenna terminals as shown.

When connected as shown, follow the instructions on SETTING THE VIDEO CHANNEL (page 19) to tune in the VCR's playback on TV channel 3 or 4. This configuration alone will not provide stereo Hi-Fi playback ("LEFT" and "RIGHT" indicators are illuminated). It is suggested that if possible the VCR be connected as shown in 4. STEREO AUDIO SYSTEM.

2. STEREO TV WITH AUDIO AND VIDEO INPUTS

A. TV WITH BNC TYPE CONNECTOR
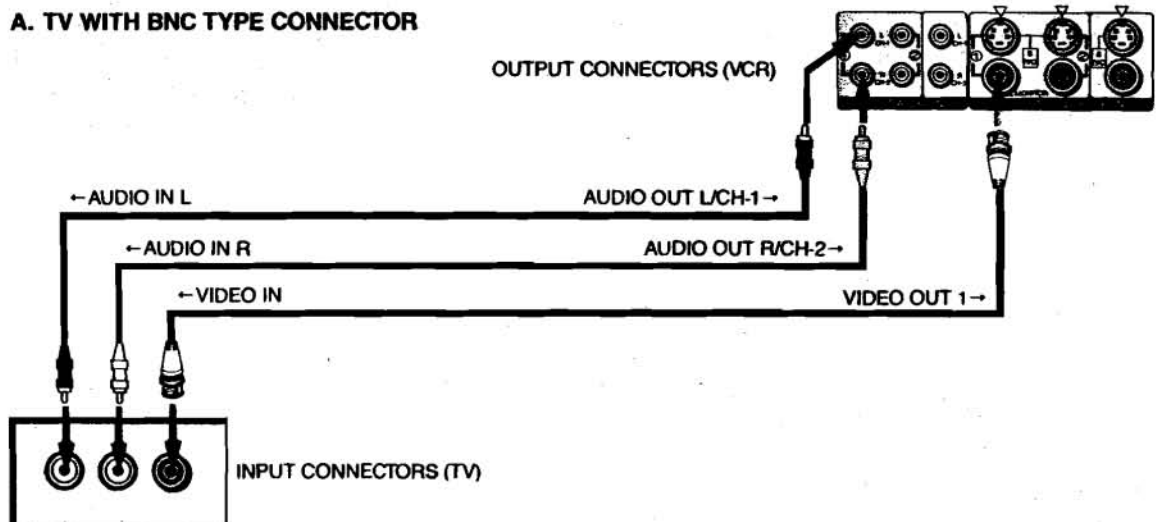
OUTPUT CONNECTORS (VCR)

←AUDIO IN L   AUDIO OUT L/CH-1→

←AUDIO IN R   AUDIO OUT R/CH-2→

←VIDEO IN   VIDEO OUT 1→

INPUT CONNECTORS (TV)

1   Connect the coaxial cable as shown in 1. MONAURAL TV.

2   Connect the stereo audio cable (supplied) as shown.

3   Connect the VIDEO OUT of the VCR to the VIDEO IN of the TV receiver or monitor.
Video signal cord (BNC type) is not supplied with this VCR.

* When connected as shown, select video (external) input on the TV to view playback of video tapes or to monitor the VCR's tuner.

B. TV WITH RCA TYPE CONNECTOR
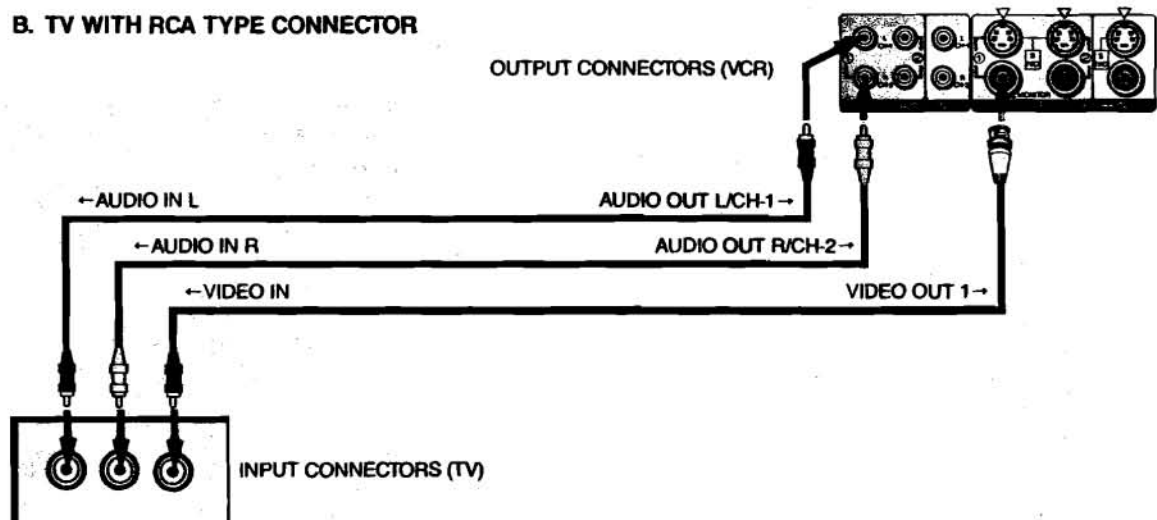
OUTPUT CONNECTORS (VCR)

←AUDIO IN L   AUDIO OUT L/CH-1→

←AUDIO IN R   AUDIO OUT R/CH-2→

←VIDEO IN   VIDEO OUT 1→

INPUT CONNECTORS (TV)

1   Connect the coaxial cable as shown in 1. MONAURAL TV.

2   Connect the stereo audio cable (supplied) as shown.

3   Connect the VIDEO OUT of the VCR to the VIDEO IN of the TV receiver or monitor.
Video signal cord (BNC→RCA) is not supplied with this VCR.

* When connected as shown, select video (external) input on the TV to view playback of video tapes or to monitor the VCR's tuner.

3. STEREO TV WITH AUDIO INPUTS ONLY
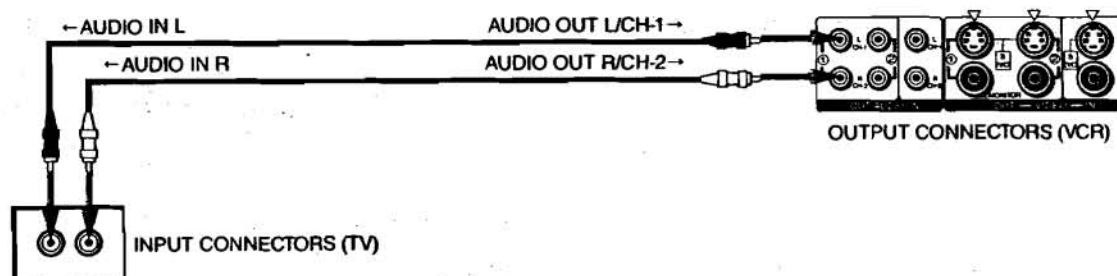
←AUDIO IN L   AUDIO OUT L/CH-1→

←AUDIO IN R   AUDIO OUT R/CH-2→

OUTPUT CONNECTORS (VCR)

INPUT CONNECTORS (TV)

1. Connect the coaxial cable as shown in 1. MONAURAL TV.

2. Connect the stereo audio cable (supplied) as shown.

● When connected as shown, follow the instructions on SETTING THE VIDEO CHANNEL (page 19) to tune in the VCRs playback on TV channel 3 or 4. Then select external audio on the TV to monitor the stereo Hi-Fi audio playback of the VCR.

4. STEREO AUDIO SYSTEM

MITSUBISHI TV WITH STEREO AUDIO AND VIDEO INPUTS AND VARIABLE AUDIO OUTPUTS

1. If you own a MITSUBISHI TV with variable audio outputs and video and audio inputs, connect the VCR as shown in 2. STEREO TV WITH AUDIO AND VIDEO INPUTS, and then follow your TV's instructions on connecting the TV to a stereo audio system.

2. Stereo Hi-Fi playback is obtained by selecting external input on the TV and AUX on the stereo system amplifier.

3. Press the PLAY button on the VCR and adjust the volume from the TV remote control unit.

TV WITHOUT STEREO AUDIO INPUTS

←TO TV   ANT. IN→

TUNER

Amplifier

←AUDIO IN L/CH-1   AUDIO OUT L→

←AUDIO IN R/CH-2   AUDIO OUT R→

←AUDIO OUT R/CH-2   AUX IN R→

←AUDIO OUT L/CH-1   AUX IN L→
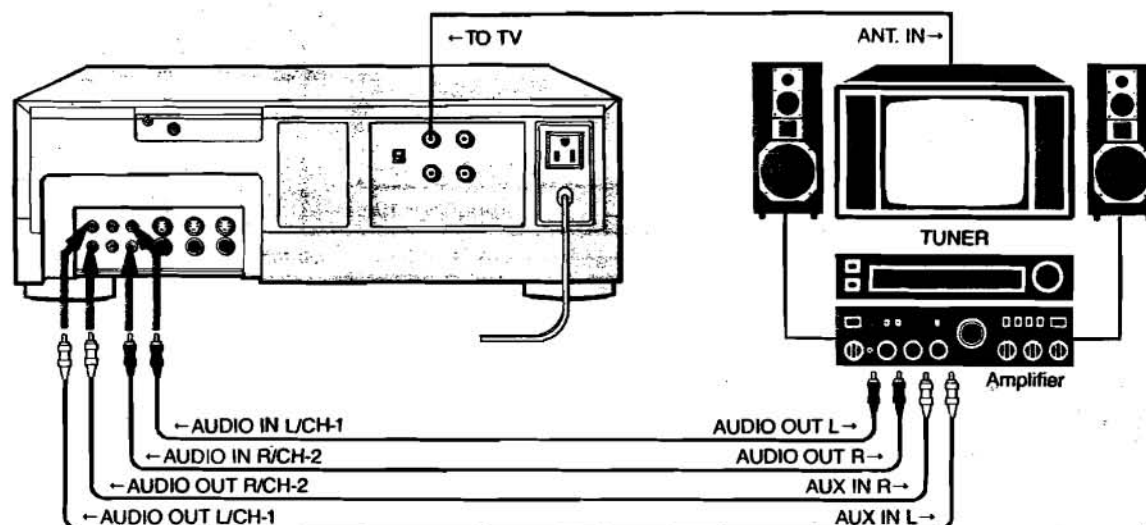
1. Connect as shown using standard shielded signal cords with RCA pin type connectors.

2. Turn on the TV and set to the Video Channel (CH3 or CH4) or if the VCR is connected to the video input of the TV or monitor switch to video (external) input.

3. Turn on the stereo amplifier and set the amplifier input selector to AUX position.

4. Load the cassette. Set the Hi-Fi/MIX/NORMAL switch to Hi-Fi position. Press the AUDIO MONITOR button to STEREO. Press the PLAY button.
Adjust the sound volume with the amplifier volume control.

5. TV WITH S-VIDEO INPUT

If your TV is equipped with S-VIDEO INPUT connector and then connected it as shown below, the full benefit of S-VHS playback is available.

OUTPUT TERMINALS (VCR)

CONNECTION OF S-CONNECTOR:
Line up the groove in the connector with the projecting part of the plug and insert.

←S-VIDEO OUT   S-VIDEO IN→

INPUT TERMINALS (TV)

←AUDIO OUT L/CH-1   AUDIO IN L→

←AUDIO OUT R/CH-2   AUDIO IN R→
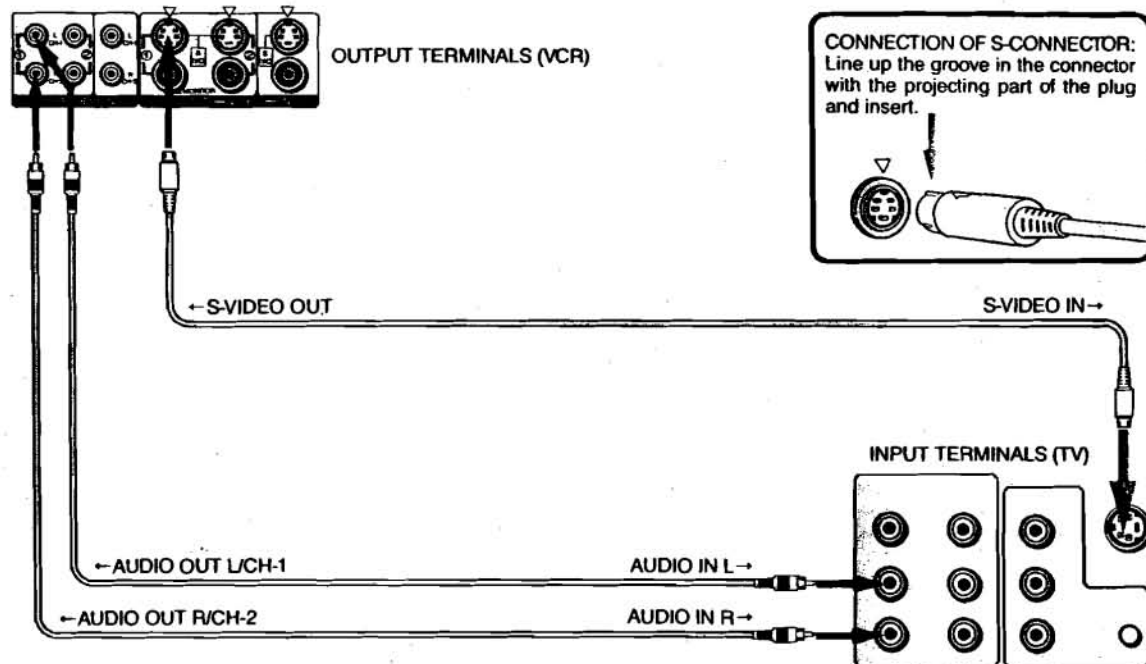
1. Connect the antenna leads as shown in 1: MONAURAL TV.

2. Connect the stereo audio cable (supplied) as shown.

3. Connect the S-VIDEO OUT of the VCR to the S-VIDEO IN of the TV using S-video cable (supplied).

4. Refer to the TV owners manual on how to select the S-VIDEO IN of the TV.

AC OUTLET

An AC 120V 60Hz outlet is provided for convenience to supply AC power to other units.

Power to this outlet is on continuously as long as the VCR is plugged into an AC outlet with the following exception: When the PROG REC indicator ([⏱]) is illuminated, power to this outlet is interrupted until programmed recording begins. Power is switched off when programmed recording terminates. This configuration allows the programmed recording timer to function as an audio timer for purposes of audio only recording (see page 50).

NOTE:

● Do not exceed the maximum power rating of 300W.
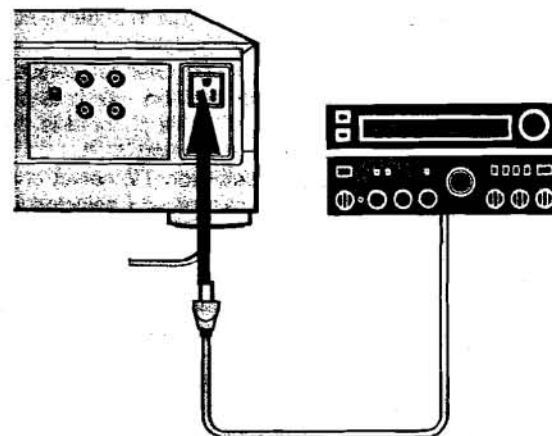
SETTING THE VIDEO CHANNEL

IF YOU CONNECTED YOUR VCR AS SHOWN ON THE PREVIOUS PAGE (i.e. TO THE AUDIO AND VIDEO INPUTS OF YOUR TV OR MONITOR) THEN TO VIEW PLAYBACK OF THE VCR SWITCH YOUR TV OR MONITOR TO VIDEO OR EXTERNAL INPUT AND DISREGARD THIS PAGE.
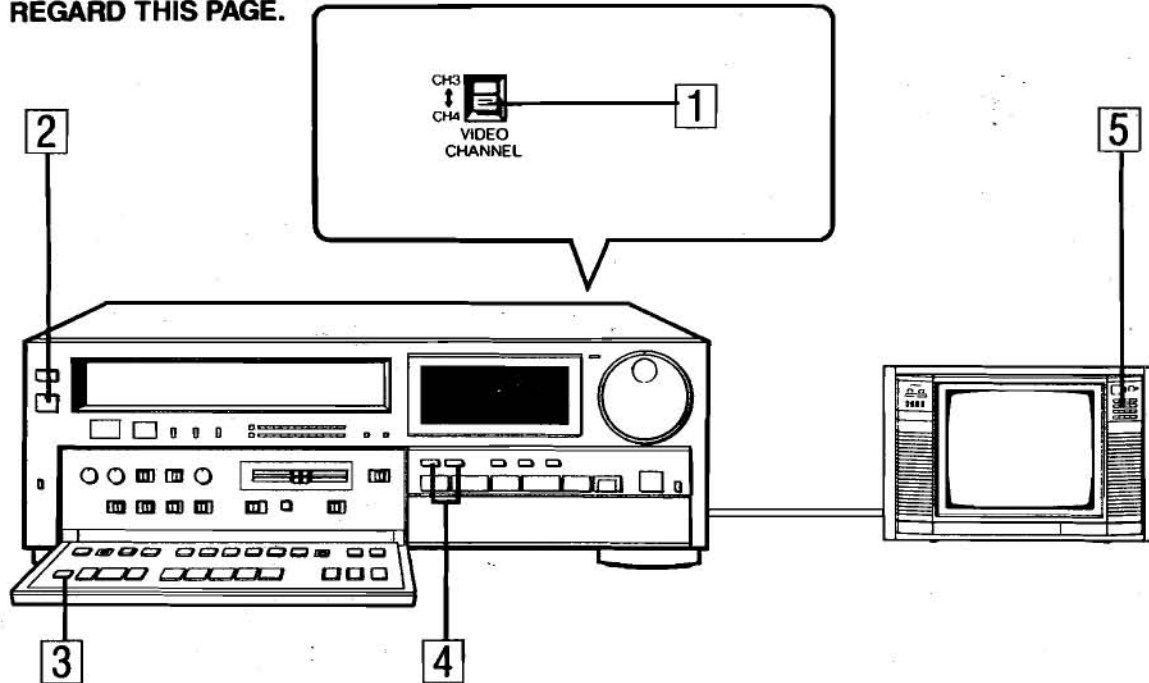
[1] Select the VCR Video Channel by setting the VIDEO CHANNEL SELECTOR switch to CH3 or 4 whichever is not being used for TV broadcasts in your area.

[2] Press the POWER button to ON.

[3] Press the VIDEO/TV button to VIDEO.

[4] Select any channel (using the VCR CHANNEL SELECTOR buttons) to receive a TV broadcast in your area.

[5] Turn ON the TV receiver and set to CH3 or 4 to correspond with the Video Channel selected in [1].

[6] • For a push-button type channel selection TV.
  If CH3 or CH4, corresponding to the VCR Video Channel, is not present on your TV, select an unoccupied channel and adjust to obtain a color picture of the program selected in [4].
  See TV Instruction Book for details.
  When setting the TV video channel selector position, particularly on soft touch TV's, it is usually more convenient if the position which is shown when the TV is first switched on is used as the Video Channel. Generally, this channel is the top one (in a vertical arrangement) or the furthest left one (in a horizontal arrangement).
  • For a rotary channel selection TV, select channel 3 or 4 depending on the VCR Video Channel you selected in [1]. If the picture you selected in [4] is not clear, push in the fine TV tune adjustment knob and adjust for best picture detail.

NOTE:

A clear picture will not be obtained in these steps unless the TV is properly fine-tuned to the Video Channel. If difficulties are encountered, or a clear picture with color cannot be obtained, the following optional method may be used:
  • Set the TV to the Video Channel (3 or 4).
  • Press the POWER button to ON.
  • Play back a pre-recorded tape.
  • Adjust the TV receiver fine tuning until a clear picture with color is obtained.
    The TV is now properly fine-tuned to the Video Channel.

19

SELECTING A CHANNEL

This VCR is equipped with a frequency synthesizer (FS) electronic tuning system. The FS system provides random access channel selection and channel memory function. A total of 181 channels can be selected and include: Broadcast channels 2-13 (VHF), 14-69 (UHF) and cable (CATV) channels 1-13 (VHF), 14-22 (MID BAND), 23-36 (SUPER BAND), 37-64 (HYPER BAND), 65-94 (ULTRA BAND), 95-99 (MID BAND) and 100-125 (ULTRA BAND).

NOTE:

The CHANNEL SELECTOR buttons will not operate until the channel memory has been programmed (see page 22).
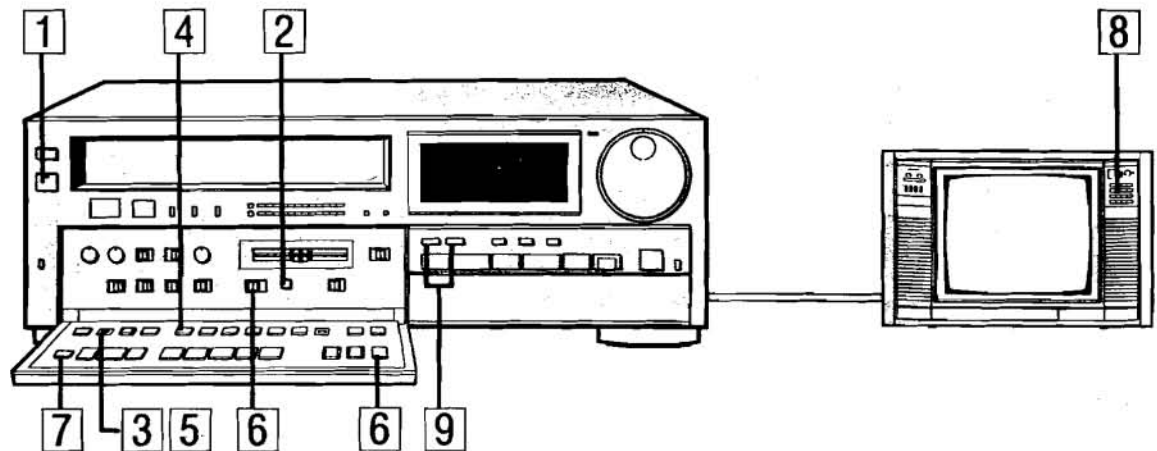
[1] Press the VCR POWER button to ON.

[2] Press the INPUT SELECT button to ANT. A or ANT. B.

[3] Press the TUNING switch to ON using a pencil or a ballpoint pen.
(The elapsed time counter display will turn off.)

[4] Press the TV/CATV button to TV.
(The CATV indicator turns off.)

[5] Press the TUNING switch to OFF using a pencil or ballpoint pen.
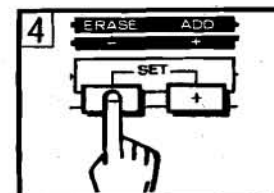(The elapsed time counter display is illuminated.)

[6] Set the Hi-Fi/MIX/NORMAL switch to Hi-Fi position and press the AUDIO MONITOR button to STEREO.
("LEFT" and "RIGHT" of the PEAK LEVEL meters illuminate.)

[7] Press the VIDEO/TV button to VIDEO.

[8] Turn ON the TV and set to the Video Channel.

[9] Press the CHANNEL SELECTOR buttons on the VCR or the remote control unit.

VIDEO MUTE SWITCH

If the VIDEO MUTE switch is set to ON position, the TV screen will switch to blue in any of following conditions:
— when playing back a tape recorded with audio signals only
— when a non-recorded section of the tape is played back
— when a channel with no broadcast is selected
— when the broadcast has finished
— when the INPUT SELECT button is in EXT and no video signal is present

If the broadcast signal is weak the video mute may be activated. To view a program with a weak broadcast signal, set the VIDEO MUTE switch to OFF position.

NOTE:

• Depending on types of tape to be played back, the video mute may be activated.
In this case, set the VIDEO MUTE switch to OFF position.

TV CHANNEL SELECTION PROCEDURE

Random access channel selection of all VHF (2-13) and UHF (14-69) channels is operated by pressing the desired channel number using the NUMBER buttons (0-9) and the CHANNEL SELECT button on the remote control unit. For example, to receive channel "23" press 2 and 3 buttons and then the CHANNEL SELECT button in sequence.

NOTE:

- Since there are no channel numbers 0, 1 or 70-99, if these channel numbers are pressed the channel remains unchanged.

CABLE (CATV) CHANNEL SELECTION PROCEDURE

Follow the steps listed under "SELECTING A CHANNEL" (see page 20). Substitute the following instruction for step number [4]: [4] Press the TV/CATV button to CATV. (The CATV (cable) indicator illuminates.) Random access channel selection of all VHF (1-13) and CATV (14-125) channels is operated by pressing the desired channel number using the NUMBER buttons (0-9) and the CHANNEL SELECT button on the remote control unit. For example, to receive channel "114" press 1, 1 and 4 buttons and then the CHANNEL SELECT button in sequence.
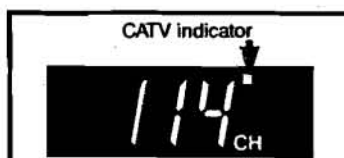
CATV indicator

114 CH

NOTE:

- Since there are no channel numbers 0 or 126-199, if these channel numbers are pressed the channel remains unchanged.

CABLE (CATV) CHANNEL ASSIGNMENT

- Since there are no channel numbers 0 or 126-199, if these channel numbers are pressed the channel remains unchanged.

	VHF L			MID		VHF H	SUPER		HYPER			UHF/ULTRA
TV	2-4		5·6	—		7-13	—		—			14-69
C A B L E	2-4	5A (1)	5·6	A-5(95)	A(14)	7-13	J(23)	Q(30)	W+ 1(37)	W+11(47)	W+21(57)	W+29(65) ⏐ W+58(94) W+59(100) ⏐ W+84(125)
				A-4(96)	B(15)		K(24)	R(31)	W+ 2(38)	W+12(48)	W+22(58)	
				A-3(97)	C(16)		L(25)	S(32)	W+ 3(39)	W+13(49)	W+23(59)	
				A-2(98)	D(17)		M(26)	T(33)	W+ 4(40)	W+14(50)	W+24(60)	
				A-1(99)	E(18)		N(27)	U(34)	W+ 5(41)	W+15(51)	W+25(61)	
					F(19)		O(28)	V(35)	W+ 6(42)	W+16(52)	W+26(62)	
					G(20)		P(29)	W(36)	W+ 7(43)	W+17(53)	W+27(63)	
					H(21)				W+ 8(44)	W+18(54)	W+28(64)	
					I(22)				W+ 9(45)	W+19(55)		
									W+10(46)	W+20(56)		

For example: Channel number "14" corresponds with mid-band cable channel "A".

NOTE:

- Cable (CATV) services can vary from area to area. The channel number assignments shown in the channel table may not correspond with the channel numbers used by your local cable company. Direct tuning to cable channels without the use of the cable company "converter" or "pre-selector" will depend on the specific channels in use by the cable company. Direct tuning to cable channels is limited to unencoded (unscrambled) channels only. Check your local cable company compatibility requirements.

CHANNEL MEMORY

The channel memory is a special tuning system circuit which can be programmed to eliminate tuning of unwanted or unoccupied channels in your area. The channel memory operates when using the VCR or remote control CHANNEL SELECTOR buttons marked ▲ and ▼ only. Random access channel selection using the NUMBER buttons (0-9) is not affected by channel memory.

■ AUTO PROGRAMMING INTO CHANNEL MEMORY

1 Press the VIDEO/TV button to VIDEO, turn ON the TV and set to the Video Channel (3 or 4).

2 Press the INPUT SELECT button to select the antenna input, ANT. A or ANT. B.

3 Press the TUNING switch to ON using a pencil or a ballpoint pen. (The elapsed time counter display will turn off.)

4 Press the TV/CATV button to select the desired reception mode, TV or CATV.

5 Press the AUTO PROG button.

   • Auto programming will automatically proceed from channel 2 upward.
   • During auto program, the scanned channels appear on the fluorescent display.

6 Press the TUNING switch to OFF using a pencil or a ballpoint pen. (The elapsed time counter display is illuminated.)

   When the CHANNEL SELECTOR buttons marked ▲ or ▼ is pressed, tuning automatically proceeds to the next programmed channel. Random access channel selection using the NUMBER buttons (0-9) may be used to tune any channel including those channels which have not been programmed into channel memory.

NOTE:
   • Press the AUTO PROG button during auto programming to stop the programming sequence.
   • If reception of some channels is weak, these channels may not be entered into channel memory. In this case, enter the channel manually using the ADD button.

■ MANUAL PROGRAMMING INTO CHANNEL MEMORY

1 Press the VIDEO/TV button to VIDEO, turn ON the TV and set to the Video Channel (3 or 4).

2 Select the channel to be entered into channel memory using the NUMBER buttons (0-9) and the CHANNEL SELECT button on the remote control unit.

3 Press the TUNING switch to ON using a pencil or a ballpoint pen. (The elapsed time counter display will turn off.)

4 Press the ADD button.

5 Press the TUNING switch to OFF using a pencil or a ballpoint pen. (The elapsed time counter display is illuminated.)

NOTE:
   • Manually programmed channels will be erased from channel memory when the AUTO PROG button is pressed.

■ ERASING FROM CHANNEL MEMORY
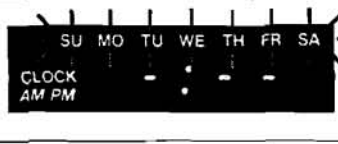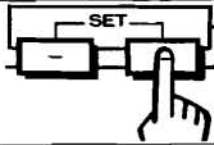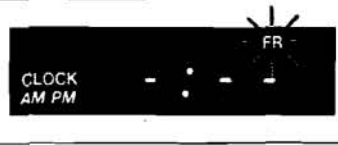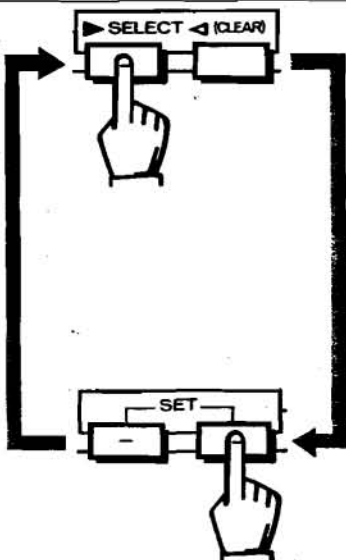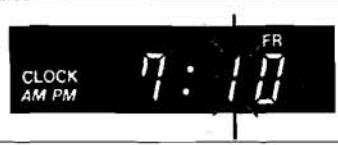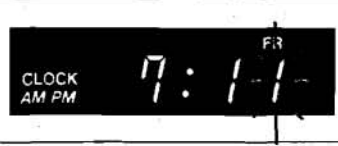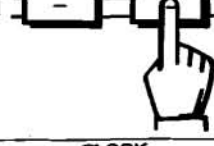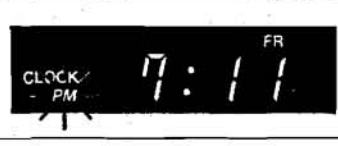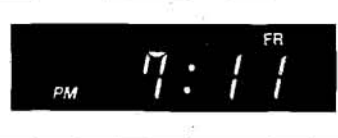
1 Press the VIDEO/TV button to VIDEO, turn ON the TV and set to the Video Channel (3 or 4).

2 Select the channel to be erased from channel memory using the NUMBER buttons (0-9) and the CHANNEL SELECT button on the remote control unit or the CHANNEL SELECTOR buttons.

3 Press the TUNING switch to ON using a pencil or a ballpoint pen. (The elapsed time counter display will turn off.)

4 Press the ERASE button.

5 Press the TUNING switch to OFF using a pencil or a ballpoint pen. (The elapsed time counter display is illuminated.)

NOTE:
   • Manually erased channels will be re-entered into channel memory when the AUTO PROG button is pressed.
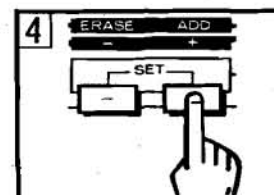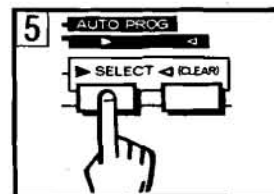
SETTING THE PRESENT TIME

PROCEDURE		TIMER DISPLAY
1 Press the CLOCK SET button.	CLOCK SET	SU MO TU WE TH FR SA CLOCK AM PM - : - -
2 Press the SET button to set the day of the week.	SET	FR CLOCK AM PM - : - -
3 Press the SELECT ▶ button. The hour digits will flash. Press the SET button to set the hour digits.	▶SELECT ◁ (CLEAR)	FR CLOCK AM PM 7:00
4 Press the SELECT ▶ button. The 10 min. digit will flash. Press the SET button to set the 10 min. digit.		FR CLOCK AM PM 7:10
5 Press the SELECT ▶ button. The min. digit will flash. Press the SET button to set the min. digit.		FR CLOCK AM PM 7:11
6 Press the SELECT ▶ button. AM and PM will flash. Press the SET button to set AM or PM.	SET	FR CLOCK - PM 7:11
7 Press the CLOCK SET button to complete the time setting.	CLOCK SET	FR PM 7:11

NOTE:

* If the display continues to flash, then the clock will not advance. Press the CLOCK SET button and confirm that the display has stopped flashing.

SETTING THE TIME TO THE SECOND

Set the clock as described above (steps 1 — 6) and press the CLOCK SET button at exactly zero seconds.

MEMORY BACK UP IN CASE OF POWER FAILURE

THE MEMORY BACK UP PREVENTS LOSS OF THE PRESENT TIME AND PROGRAMMED RECORDING INSTRUCTIONS IN THE EVENT OF A POWER FAILURE LASTING UP TO 30 MINUTES.
The memory back up is automatically recharged and will be fully charged provided the power cord has been plugged in for at least 1 hour. In the event of loss of power and depletion of the memory back up, all programmed recording settings and time display will be lost. This is shown by the - : - - time display upon resumption of power.

NOTE:

* If there has been a power failure during programmed recording or OTR recording, recording will stop at that point and restart on resumption of power.
* In the event of a power failure, the power will be turned off and will not return on resumption of power. To reactivate, press the POWER button to ON.

ELAPSED TIME COUNTER

THIS VCR INCORPORATES AN ELAPSED TIME COUNTER WHICH SHOWS TAPE RUN TIME IN HOURS, MINUTES AND SECONDS. SINCE THE COUNTER WORKS BY DETECTING A CONTROL SIGNAL, ACCURATE TIME DISPLAY IS MAINTAINED EVEN THROUGH FAST FORWARD OR REWIND OPERATIONS.

ELAPSED TIME COUNTER

Displays tape run time in hours, minutes and seconds.

EXAMPLE:

Tape has been running for 1 hour, 30 minutes and 15 seconds.	Tape was rewound 15 minutes and 45 seconds past 0н00м00s.
$1_H 3 0_M 1 5_S$	$-0_H 1 5_M 4 5_S$
	Minus indicator

■ Pressing the COUNTER RESET button resets the elapsed time counter to 0н00м00s.

NOTE:

- The elapsed time counter works by detecting the control signal on recorded tapes. It will therefore not function with tapes that have not yet been recorded. It will, however, while recording new tapes.
- The elapsed time counter will not function when the VCR is in any of the following conditions:
  - VCR power is OFF.
  - The OTR is being used.
  - The PROG LIST button is ON.
  - Stand-by for programmed recording.
  - The TUNING switch is ON.
  - During adress search.
- The elapsed time counter displays the time as follows.

```
  →-0н00м01s←→ 0н00м00s←→ 0н00м01s←
      →-9н59м59s←→9н59м59s←
```
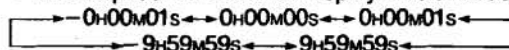
ELAPSED TIME SET BUTTON

The counter number can be replaced by the desired number.

[1] Press the ELAPSED TIME SET button on the remote control unit.
(The elapsed time counter display shows - н - - м - - s.)

[2] Press the CHANNEL SELECTOR ▼ button for negative times.

[3] Enter the desired elapsed time using the NUMBER buttons on the remote control unit.
(Minute and second numbers can not be set to over 59.)

NOTE:

- To cancel the counter number while selecting, press the ELAPSED TIME SET button again. The counter will be reset to 0н00м00s.

COUNTER 0 STOP

The counter 0 stop function provides a convenience of rapidly locating the beginning of a record or playback segment on the tape. The desired point on the tape can be marked simply by pressing the COUNTER RESET button at that point.

■ The tape will automatically fast forward or rewind to counter 0н00м00s when the COUNTER ZERO STOP button is pressed.

NOTE:

- The counter 0 stop function will not operate during recording. First press the STOP button, and then the COUNTER ZERO STOP button.

COUNTER 0 PLAY

To start automatic playback once 0H00M00s is reached, press the PLAY button after pressing the COUNTER ZERO STOP button. If the counter indicates minus, then the tape will fast forward to 0H00M00s and playback will begin. If the counter is positive (no minus indicator) the tape will rewind to 0H00M00s and playback will begin.

NOTE:

* The tape may not rewind or fast forward exactly to 0H00M00s.

ELAPSED TIME SEARCH

To fast forward or rewind to a specific elapsed time:

1. Press the ELAPSED TIME SEARCH button on the remote control unit.
   (The elapsed counter display shows - H - - M - - s.)

2. Press the CHANNEL SELECTOR ▼ button for negative times.

3. Enter the desired elapsed time using the NUMBER buttons on the remote control unit.
   (Minute and second numbers can not be set to over 59.)

The tape automatically winds to that point and playback begins.

NOTE:

* The tape may not fast forward or rewind exactly to the desired position.
* During elapsed time search when the tape is wound to the beginning or end by the time the desired counter number is detected, the search is cancelled and the tape is stopped.
* To cancel the elapsed time search while selecting the number, press the ELAPSED TIME SEARCH button again.
* To cancel the elapsed time search after selecting the number, press the STOP button.

REMAINING TAPE DISPLAY

The remaining tape display indicates in hours and minutes an accurate time remaining until the end of the tape during recording.

1. Set the TAPE REMAIN switch to the appropriate position.

2. Press the DATA button.

TAPE REMAIN		
T-30	T-60	
T-90	T-120	
TAPE REMAIN		
T-140		
T-160		

NOTE:

* Depending on the length of tape being used, it may take a few moments for the remaining time to appear.

LOADING AND UNLOADING THE CASSETTE TAPE

A VIDEO CASSETTE CAN BE LOADED OR UNLOADED UNLESS THE POWER PLUG HAS BEEN DISCONNECTED.
USE ONLY VIDEO CASSETTE TAPES MARKED S VHS or VHS .

TO LOAD

A VIDEO CASSETTE CAN BE LOADED WHEN THE VCR POWER IS TURNED OFF.

Insert the cassette with labeled side facing you.
Push the cassette gently inward until it is automatically retracted and loaded in the correct position.
(The VCR POWER is automatically switched ON. The CASSETTE STATUS indicator (O'O) is illuminated.)

NOTE:
- If a desired function button is pressed by the time the cassette is loaded completely (the CASSETTE STATUS indicator (O'O) is illuminated), the function will be activated after the cassette is loaded.
- Depending on the way of loading the cassette, the protection circuit inside the VCR may eject the cassette automatically. In such a case, wait a few seconds, take out the cassette and load it again.

■ AUTO PLAY:
If a cassette with the erasure prevention tab removed (see TO PREVENT ACCIDENTAL ERASURE below) is loaded, the unit automatically switches to play mode and playback begins.

NOTE: CORRECT   INCORRECT
- An inverted cassette cannot be inserted.
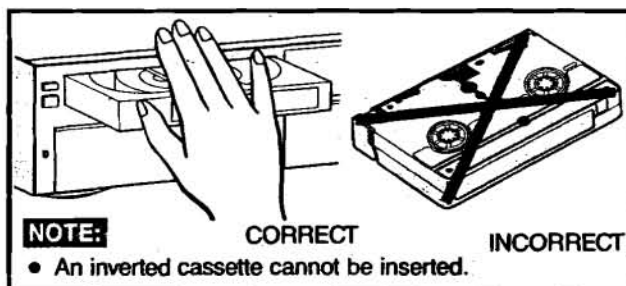
TO UNLOAD

[1] Press the EJECT button, and the cassette will automatically be ejected.

[2] Remove the cassette.

■ POWER OFF EJECT:
Even if the VCR is turned OFF, the cassette may be ejected by pressing the EJECT button. The VCR will automatically turn ON, eject the tape and then turn OFF.

NOTE:
- To prevent misrecording, it is not possible to unload the tape directly in the record mode. Press the STOP button first and then press the EJECT button.

TO PREVENT ACCIDENTAL ERASURE

Every video cassette comes with an erasure prevention tab. Break off this tab to ensure that the contents of the cassette cannot be erased. To re-record such a tape, simply place a piece of vinyl tape over the gap.

NOTE:
- Do not repair a broken tape with a piece of adhesive tape as this will damage the video heads.
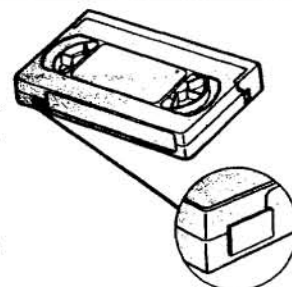
S-VHS RECORDING SYSTEM

IN ORDER TO RECORD IN THE S-VHS MODE AN S-VHS TAPE MUST BE USED. THE TABLE BELOW INDICATES WHAT THE VARIOUS COMBINATIONS POSSIBLE.

S-VHS indicator
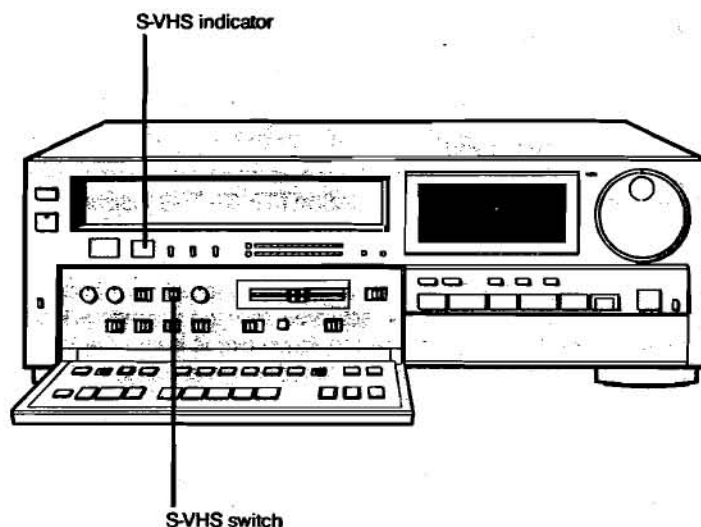
S-VHS switch

S-VHS SWITCH

Set the S-VHS Switch to OFF position for normal VHS recording.
Set the S-VHS Switch to ON position for S-VHS recording on an S-VHS tape.

	RECORDING ON S-VHS TAPE	RECORDING ON NORMAL VHS TAPE
S-VHS OFF ON	TAPE RECORDS IN S-VHS (S-VHS indicator illuminated)	TAPE RECORDS IN VHS (When using a VHS tape, recording will be performed with the VHS system even if the S-VHS switch is at the ON position, and the S-VHS indicator will not light.)
S-VHS OFF ON	TAPE RECORDS IN VHS (S-VHS indicator off)	TAPE RECORDS IN VHS (S-VHS indicator off)

NOTE:

• During playback S-VHS or VHS is automatically selected.
• S-VHS recordings cannot be played back on VHS VCR.

ON-SCREEN OPERATION DATA

AN ON SCREEN DISPLAY IS PROVIDED FOR CONVENIENT VISUAL CONFIRMATION OF PRESENT TIME, COUNTER, CHANNEL AND OPERATION MODE.

NOTE: THE ON SCREEN DISPLAYS WILL NOT BE SEEN WHEN VIEWING ON A TV WHILE USING THE VIDEO OUT 2 CONNECTOR FROM THE VCR.

CHANNEL DISPLAY
Displayed for a few seconds in any of the following conditions:
— when the channel is switched or the INPUT SELECT button is pressed
  • Channel 10 from ANT. A; [CH A 10]
  • Channel 10 from ANT. B; [CH B 10]
  • Input from external; [EXT]
  • Simulcast of channel 10 from ANT. A; [CH A 10 SIMUL]
  • Simulcast of channel 10 from ANT. B; [CH B 10 SIMUL]
— when the NUMBER buttons are pressed
— when the DATA button is pressed

OTR START TIME AND RECORD LENGTH DISPLAY
• Displays OTR start time (ON TIME) and record time (REC TIME) during OTR setting.
• The settings may also be recalled by pressing the DATA button.

NUMBER OF MULTI-SCREENS/INTERVAL OF STROBE SPEED
Displayed for a few seconds in any of the following conditions:
— when the DIVIDE button is pressed
— when the SPEED + or − button is pressed
• "PAGES" indicates the number of sub-screens in multi-screen or the sub-screen size in picture-in-picture.
• "SPEED" indicates the interval of strobe speed or the interval of searching in multi-time search.

```
┌─────────┐
│ CH A 10 │
└─────────┘

┌──────────────────────┐
│ ON  TIME    7:00A    │
│ REC TIME    0:15     │
├──────────────────────┤
│ MULTI   9 PAGES/SPEED 5 │

  SU 12:00A
    0h02m08s   [STOP]
```

PRESENT TIME, COUNTER DISPLAY
Press the DATA button to turn the display on. Press again to turn off.

MODE DISPLAY
Displays the operating status of the VCR when a function is selected or if the DATA button is pressed. Refer to "MODE DISPLAY" on next page.
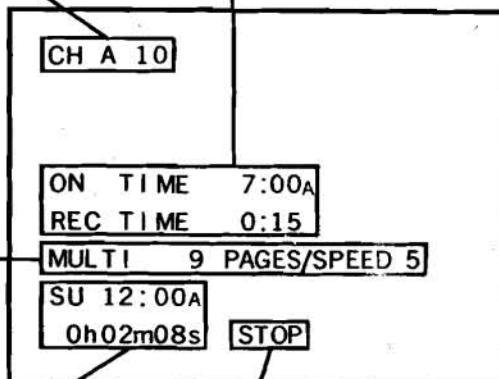
NOTE:
• A slight vibration of the mode display at the bottom of the picture is normal.
• The letters of display may be in color, depending on the pictures on the screen and the type of TV connected.
• During special effects playback or 2way speed search, the mode display may not be displayed.
• If the TAPE REMAIN switch is not set to the appropriate position, the remaining time will not indicate correct tape position.
• If the TAPE REMAIN switch is switched after the time gauge is displayed, it may not indicate the correct tape position and will flash.
• The time gauge works by detecting control signal on recorded tape. It will therefore not function with tapes that have not yet been recorded.
• With T-120 cassette tapes in SP mode, one graduation of the time gauge indicates about 10 minutes.
• During jog/shuttle mode, the mode display may not be displayed.

MODE DISPLAY

Load a cassette **CASSETTE IN**	During counter 0 stop **COUNTER 0 STOP**
During counter 0 play **COUNTER 0 PLAY**	During elapsed time search **TIME SEARCH TO 2h32m58s** Desired counter number
Begin recording **REC SP** Tape speed	Press the DATA button during recording **REM 0:38** Remaining time
During record pause **PAUSE**	During recording of non numbered index signal **INDEX WRITE**
During recording of numbered index signal **ADDRS WRITE 3** Address number	During erasing of index signal **ADDRS/INDEX ERASE**
During 19 step index search **INDEX SEARCH FF +3** Direction Specified number	During address search **ADDRS SEARCH TO 3 NOW 2** Desired address number Detected address number
Press the REPEAT button to engage repeat mode **REPEAT**	Begin repeat playback **REPEAT PLAY**
During rewind of repeat playback **REPEAT REW**	During skip search **SKIP SEARCH**

Begin playback	Begin still playback
PLAY	STILL
Begin slow playback	Begin reverse playback
SLOW	REV PLAY
Begin reverse slow playback	Press the STOP button
REV SLOW	STOP
Begin fast forward	Begin rewind
FF	REW
Press the DATA button during fast forward or rewind	Begin multi time search
S ⌊⊔⊔⊔⊔⊔⊔⊔⌋E Time gauge; indicates approximate tape position.	MULTI TIME SEARCH
Begin multi address search	Begin audio dubbing
·MULTI ADDRS SEARCH	AUDIO DUB
During pause of audio dubbing	Begin insert editing
AUDIODUB PAUSE	INSERT
During pause of insert editing	Press the EJECT button
INSERT PAUSE	CASSETTE OUT

RECORDING
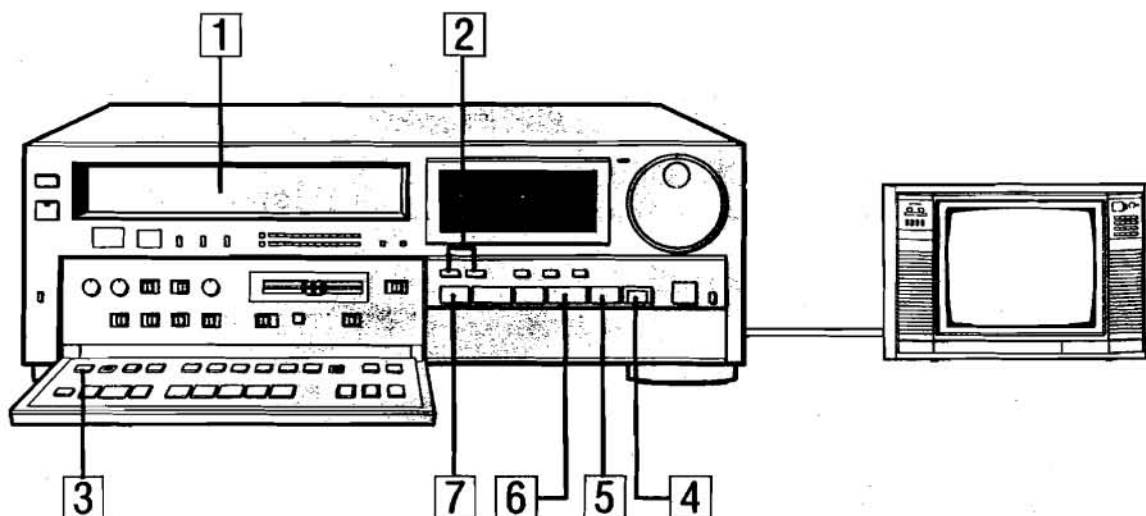
1 Load a cassette with the erasure prevention tab intact.

NOTE:

* To view the channel selected for recording, press the VIDEO/TV button to VIDEO, turn ON the TV and set to the Video Channel (3 or 4). If the VCR has been connected to the video and audio inputs of your TV or monitor, then select video or external input instead.

2 Select the channel you wish to record using the VCR CHANNEL SELECTOR buttons.

3 Press the TAPE SPEED button to the desired tape speed SP or EP.

4 Press the REC button to begin recording.

NOTE:

* Attempting to record on a cassette that has had its erasure prevention tab removed will result in the cassette being ejected when the REC button is pressed (refer to the "TO PREVENT ACCIDENTAL ERASURE" on page 26).

5 Press the PAUSE/STILL button to momentarily stop recording.
Press again to resume recording.

6 Press the STOP button to stop recording.

7 Press the REW/REV SEARCH button to rewind the tape.
The tape automatically rewinds when it reaches the end (automatic rewind).

NOTE:

* To protect the tape, after about 5 minutes in the record pause mode the recording will stop.
* The REC button will not function unless the tape is in the stop, pause or still mode.
* EP recordings made on this VCR cannot be played on VHS VCRs with only SP or SP/LP playback capability.
* This VCR records in SP or EP and plays back cassettes recorded in SP, LP or EP.

TAPE SPEEDS AND MAXIMUM RECORDING TIME

TAPE SPEED	Video Cassette				
	T-160	T-120E	T-90E	T-60E	T-30
SP	2-2/3 hrs.	2 hrs.	1-1/2 hrs.	1 hr.	30 min.
EP	8 hrs.	6 hrs.	4-1/2 hrs.	3 hrs.	1-1/2 hrs.

VIDEO/TV BUTTON

There will be no picture if this button is incorrectly set.

	VIDEO /TV		
Watching TV using the VCR CHANNEL SELECTOR buttons.		Press the VIDEO/TV button to VIDEO.	Provided the TV Video Channel has been set, the program selected by the VCR CHANNEL SELECTOR buttons will appear.
Watching one TV program while recording another.		Press the VIDEO/TV button to TV.	The TV program selected by the TV channel selector controls will appear. The program selected by the VCR CHANNEL SELECTOR buttons will be recorded.
Watching TV.	POWER	Press the VCR POWER button to OFF.	The program selected by the TV channel selector controls will appear.

NOTE:

- The VIDEO/TV button is automatically set to TV when the VCR is turned ON.
- The VIDEO/TV button is automatically set to VIDEO when the PLAY button is pressed.
- The VIDEO/TV button is automatically set to VIDEO when the tape is played back in AUTO PLAY.

INPUT SELECT BUTTON

When the INPUT SELECT button is pressed, the reception signals will be switched on in the order of TUNER (ANT. A) → SIMUL (ANT. A) → TUNER (ANT. B) → SIMUL (ANT. B) → EXT → TUNER (ANT. A) .....

	Fluorescent display	VIDEO	AUDIO	Related item
TUNER (ANT. A)		TV picture (from ANT. A)	TV sound (from ANT. A)	RECORDING (See page 31.)
SIMUL (ANT. A)		TV picture (from ANT. A)	Audio signal from an external source connected to AUDIO IN	SIMULCAST RECORDING (See page 49.)
TUNER (ANT. B)		TV picture (from ANT. B)	TV sound (from ANT. B)	RECORDING (See page 31.)
SIMUL (ANT. B)		TV picture (from ANT. B)	Audio signal from an external source connected to AUDIO IN	SIMULCAST RECORDING (See page 49.)
EXT		Video signal from an external source connected to VIDEO IN	Audio signal from an external source connected to AUDIO IN	DUBBING/AUDIO ONLY RECORDING (See pages 45 and 50.)

- There are two types of VIDEO IN connector, the non-S-connector (BNC type and RCA type) and the S-connector, and they may be selected with the VIDEO INPUT SELECT switch.
- The AUDIO IN connectors and VIDEO IN connectors are located on the front and back, and they may be selected with the EXTERNAL INPUT SELECT switch.

RECORD LEVEL ADJUSTMENT

The Hi-Fi audio recording level can be manually adjusted by setting the METER SELECT switch to ON position. Use the following procedure:

The record level is set by adjusting the REC LEVEL controls while observing the PEAK LEVEL meters. The PEAK LEVEL meter is divided into two sections. The orange bar indicators display permissible recording levels. The red bar indicators display peak recording levels. The REC LEVEL controls should be adjusted so that the maximum number of orange bar indicators are illuminated and the red bar indicators are illuminated only occasionally. For convenience, peak indications of the red bar section are held briefly so they are readily seen and adjustments can be made.
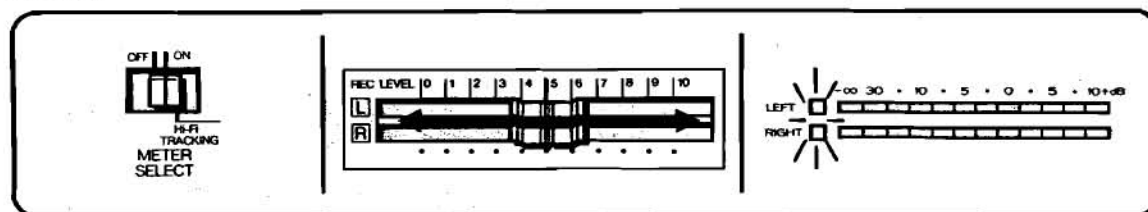
NOTE:

* When the REC LEVEL controls are set to click-stop (marked 5) position, recording level is automatically set to standard position.
* When adjusting the REC LEVEL controls, the Hi-Fi/MIX/NORMAL switch is set to Hi-Fi position and the AUDIO MONITOR button must be pressed to STEREO.
* Recording level adjustment does not affect the normal (linear) sound track.

RECORDING ONE PROGRAM WHILE WATCHING ANOTHER

1. Select the VCR channel you want to record and start the recording (See page 31).

2. Press the VIDEO/TV button to TV and select the TV channel you want to watch using the TV channel selector.

3. To check the picture during recording:
   * Press the VIDEO/TV button to VIDEO.
   * Set the TV channel selector to the Video Channel (3 or 4).

EDITING WINDOW

On setting record pause mode, the TV screen will display an editing window of the main screen and the sub screen:
* The main screen shows the TV broadcast selected by the VCR CHANNEL SELECTER buttons or the video signal from the VIDEO IN connector.
* The sub-screen shows a still picture of the tape that has been recorded up to this point.

Example: When pressing the PAUSE/STILL button to cut a commercial while recording a music program.

* When performing fine editing, the JOG dial and the SHUTTLE ring may be used to search the sub-screen for the position from which fine editing will start while simultaneously viewing the picture on the main screen for which fine editing is desired.
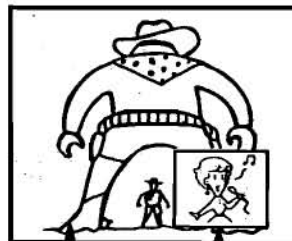
Picture from   Still picture from
a TV broadcast a tape playback

NOTE:

* The audio for the main screen is heard.
* The position and size of the sub-screen are those selected with the picture-in-picture.
* When record pause mode is engaged from still playback, the editing window will not appear. In this case, press the JOG/SHUTTLE button to display it.
* The tape moves when the JOG dial or SHUTTLE ring is used even in the record pause mode. Confirm that the picture on the sub-screen is the desired one before recording.

OTR recording start time display
OTR indicator

ON
AM

$8:15$

OTR
$0:15$

OTR recording time display

[2]

[4] [5] [3] [7] [6]
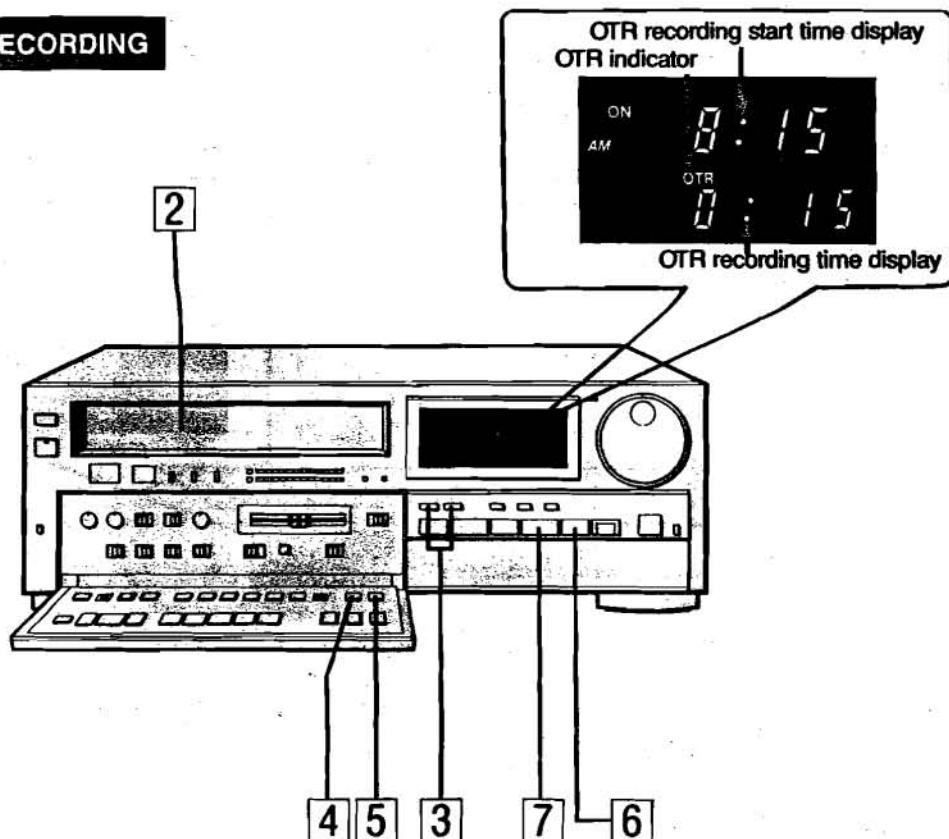
[1] Confirm that the present time display is correct.

[2] Load a cassette with the erasure prevention tab intact.
(Make sure that there is sufficient tape to record on.)

[3] Select the channel you want to record.

[4] Press the OTR START TIME button to set the start time.

EXAMPLE: Present time is 8:11 AM.

	Press once	Press twice	Press three times	Press four times	. . . . .
Start time	8:15 AM	8:30 AM	8:45 AM	9:00 AM	. . . . .

NOTE:

• The start time can be set at any 15 minute interval up to 8:00 AM on the next day.

PRESENT TIME 8:11 AM

Today							Tomorrow			
8:15 AM	8:30 AM	8:45 AM	. . . . .	11:45 PM	12:00 AM	12:15 AM	. . . . .	8:00 AM	8:15 AM

←————————An extent that you can set the OTR start time at.————————→
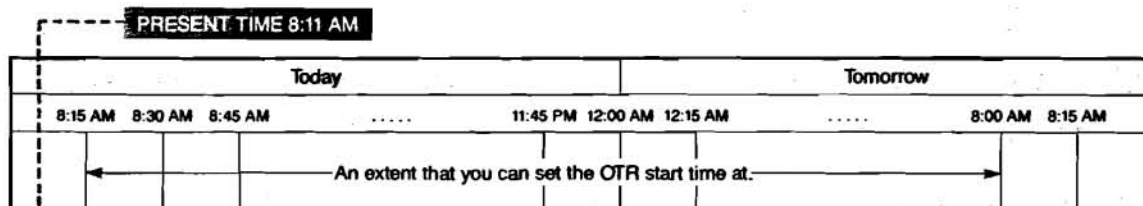
(The OTR start time may be set at any 15 minute point within a 23-3/4 hour time period.)

USING OTR (ONE TOUCH RECORDING)

ONE TOUCH RECORDING (OTR) IS A SIMPLIFIED PROGRAMMABLE TIMER FUNCTION PROVIDING CONVENIENT UNATTENDED RECORDING. THE OTR FUNCTION HAS TWO OPERATION MODES:
1. Immediate recording using the OTR REC TIME button to program for recording in 15 minute timed intervals up to 4 hours or until tape end.
2. Stand-by recording using the OTR START TIME button to set the time when recording begins and the OTR REC TIME button to set the length of time the recording will continue.

IMMEDIATE RECORDING
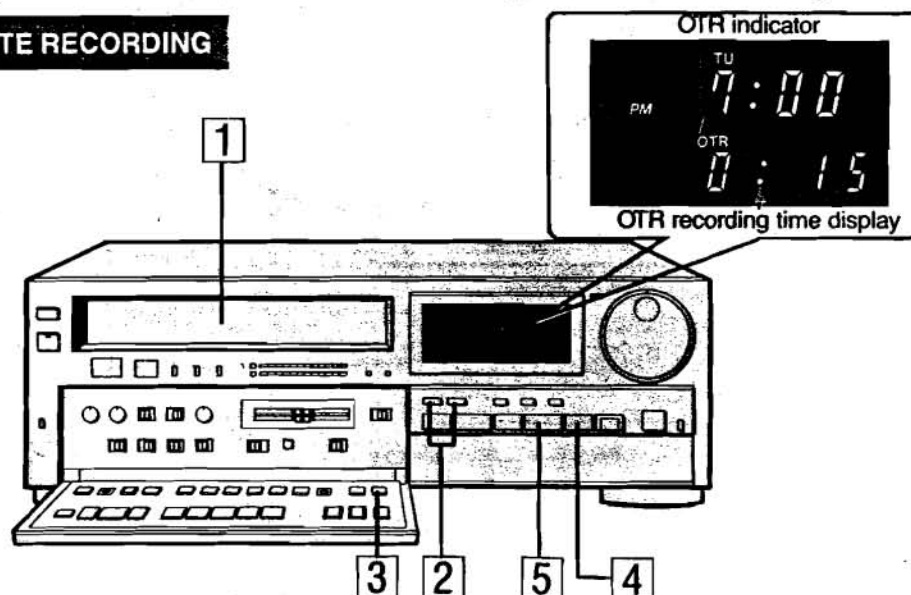
OTR indicator

OTR recording time display

[1] Load a cassette with the erasure prevention tab intact. (Make sure that there is sufficient tape to record on.)

[2] Select the channel you want to record.

[3] Press the OTR REC TIME button. Recording will start and continue for the length of time indicated by the OTR recording time display (up to 4 hours or until tape end.) The OTR indicator is illuminated.
   - Attempting to initiate OTR recording on a cassette that has had its erasure prevention tab removed will result in the cassette being ejected when the OTR REC TIME button is pressed (refer to the "TO PREVENT AC- CIDENTAL ERASURE" on page 26).
   - The elapsed time counter is replaced by the OTR recording time display as shown below. During OTR record- ing the display indicates the OTR recording time remaining.

	Press once	Press twice	.....	Press 16 times	Press 17 times	Press 18 times
Display	0:15	0:30	.....	4:00	End	0:00
Recording time	15 min.	30 min.	.....	4 hrs.	Until tape end	Recording stops after 5 seconds and POWER OFF.

[4] To stop recording temporarily, press the PAUSE/STILL button.
   To restart recording, press the PAUSE/STILL button again.

[5] To stop recording, press the STOP button. (OTR recording time display switches to the elapsed time counter.)

■ When the OTR recording time has elapsed, the VCR switches to stop mode and is turned off.

NOTE:
   - OTR recording also stops when the OTR REC TIME button is pressed repeatedly until the time display shows "0:00". Recording will stop after five seconds and VCR is turned off.

⑤ Press the OTR REC TIME button to select the desired recording time.

	When the OTR START TIME button is pressed.	Press once	. . .	Press 15 times	Press 16 times	Press 17 times
Display	0:15	0:30	. . .	4:00	End	0:00
Recording time	15 min.	30 min.	. . .	4 hrs.	Until tape end	OTR recording cancelles after 5 seconds.

NOTE:

- When OTR recording starts, the OTR recording start time display automatically switches to the present time and the OTR recording time display indicates the remaining recording time.
- Stand-by OTR recording will not function with a cassette that has had its erasure prevention tab removed (refer to "TO PREVENT ACCIDENTAL ERASURE" on page 26).

⑥ To stop recording temporarily, press the PAUSE/STILL button.
To restart recording, press the PAUSE/STILL button again.

⑦ To stop recording, press the STOP button. (OTR recording time display switches to the elapsed time counter.)

CHANGING THE OTR RECORDING TIME OR START TIME

If you want to change the OTR recording time during recording:
To prolong the OTR recording time, press the OTR REC TIME button and select the desired time:
EXAMPLE: If you have 19 minute OTR recording time remaining but want to prolong the time:

Time remaining	Press once	Press twice
0:19	0:34	0:49

To shorten the OTR recording time, repeat pressing the OTR REC TIME button until you reach the desired OTR recording time indicated on the display.
EXAMPLE: If you have started OTR recording for 4 hours but want to shorten to 15 minutes:

Display	Press once	Press twice	Press three times
4:00	End	0:00	0:15

If you want to change the OTR start time:
Press the OTR START TIME button repeatedly until the desired start time is indicated on the display.
You can clear the OTR start time by switching the power off. Switch the power ON and reset the start time using the OTR START TIME button.

NOTE:

- If the tape runs out during OTR recording, the unit automatically switches to stop mode and power is turned off. Press the POWER button to resume the power.
- When OTR recording is completed (display indication 0:00), power is switched off automatically. Press the POWER button to resume the power.
- OTR recording will not function during playback, fast forward and rewind.

HOW TO PROGRAM FOR RECORDING I

UP TO EIGHT PROGRAMS CAN BE RECORDED AUTOMATICALLY WITHIN SATURDAY OF 4TH WEEK BY USING THE FOLLOWING PROGRAMMING PROCEDURE.

Programming can be operated with remote control unit while observing the programmed contents on the TV screen.

(Programming can also be operated using the VCR while observing the fluorescent display.)

NOTE:
- Present time must be set.before programmed recording can be set.
- The on-screen displays will not be seen when viewing on a TV while using the VIDEO OUT 2 connector from the VCR.
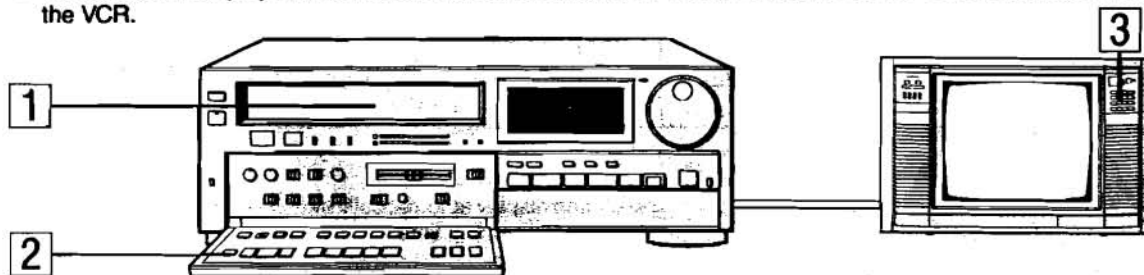
1. Load a cassette with the erasure prevention tab intact.
   (Make sure that there is sufficient tape to record on.)

2. Press the VIDEO/TV button to VIDEO.

3. Turn ON the TV and set to the Video Channel (Channel 3 or 4).

PROCEDURE (These procedures are for when operating from the remote control unit. The procedures for the VCR programmed recording section are however the same.)	
4. Press the PROG LIST button. • The contents of the programmed recording memory are displayed on the screen. • If ' ⏏ ' flashes, this means that the present time has not been set.	
5. Press the PROG NBR ▼ button to select the desired program number. (Program numbers are not shown on the on-screen display. The programs are displayed on the screen in ascending order from top to bottom (1, 2, ..., 8).)	
6. Press the INPUT SELECT button to select the desired input signal.	
7. Press the SET button to select the desired channel.	
8. Press the SELECT ► button. The day of the week will flash. Press the SET button to set the day of the week.	

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AN ON-SCREEN DISPLAY OF THE PROGRAMMED RECORDING MEMORY IS PROVIDED FOR CONVENIENCE WHEN PROGRAMMING AND FOR REVIEW OF THE MEMORY CONTENTS AS DESIRED.

EXAMPLES OF PROGRAMMED RECORDING SETTINGS

Recording start time
Day of the week
Channel number
Recording end time
Tape speed

Present time

CH	DAY	ON	OFF	
A---	---	-:--A	-:--	--
A 39	1SA	10:00P	11:00	EP
B 2	1TU	8:00P	8:30	SP
A 6	3SU	9:30A	10:00	EP
EXT	4MO	11:45P	2:15	EP
A 10	4SA	6:00A	6:30	SP
A102	ETH	8:15A	8:30	EP
B 28S	M-F	7:00P	7:15	SP

• [A] indicates input from ANT. A.
[B] indicates input from ANT. B.

• [EXT] indicates input from external.

• [ETH] indicates every week recording of Thursday.
[M-F] indicates everyday recording from Monday to Friday.

• [S] indicates simulcast recording.

[--] indicates that program is vacant.

[1TU] indicates Tuesday of 1st (this) week.
[3SU] indicates Sunday of 3rd week.
[4MO] indicates Monday of 4th week.

[EP] or [SP] indicates tape speed setting.

[A] indicates AM.
[P] indicates PM.

ON-SCREEN DISPLAY	FLUORESCENT DISPLAY

|9| Press the SELECT ► button. The hour digits of the recording start time will flash. Press the SET button to set the hour digits of recording start time.

|10| Press the SELECT ► button. The 10 min. digit of the recording start time will flash. Press the SET button to set the 10 min. digit of recording start time.

|11| Press the SELECT ► button. The min. digit of the recording start time will flash. Press the SET button to set the min. digit of recording start time.

|12| Press the SELECT ► button. AM and PM will flash. Press the SET button to select AM or PM.

|13| Press the SELECT ► button. The hour digits of the recording end time will flash. Press the SET button to set the hour digits of the recording end time.

|14| Press the SELECT ► button. The 10 min. digit of the recording end time will flash. Press the SET button to set the 10 min. digit of the recording end time.

|15| Press the SELECT ► button. The min. digit of the recording end time will flash. Press the SET button to set the min. digit of the recording end time.

|16| Press the SELECT ► button. The tape speed display will flash. Press the SET button to select the tape speed you wish to record at.

|17| Press the PROG REC button and confirm that the PROG REC indicator ([⅃]) is illuminated.
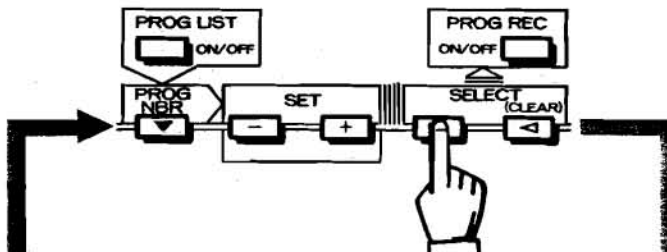
Press the SELECT ► button.

● If the SELECT ◁ button is pressed, the setting item goes back to the previous one.

NOTE:

● If the SELECT ◁ button is pressed when setting the channel, the content of the program is erased.
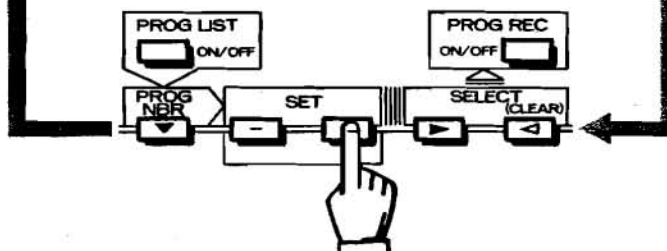
Press the SET button.

(The flashing position can be set when the SET button is pressed.)
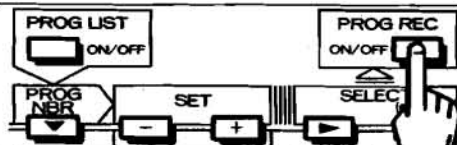
NOTE:

● When the PROG REC indicator ([⅃]) is illuminated, the VCR is not operational. If the VCR is to be used prior to a programmed start time, press the PROG REC button, and the PROG REC indicator ([⅃]) will turn off. Press the POWER button to resume the power.
(Remember to press the PROG REC button again and confirm that the PROG REC indicator ([⅃]) is illuminated to continue programmed recording.)

● If there is an error in the programming, the PROG REC indicator ([⅃]) and/or the CASSETTE STATUS indicator (⊙⊙) flash and the cassette may automatically eject. Refer to WARNING DISPLAY SYSTEM to determine the error (page 44).

ON-SCREEN DISPLAY	FLUORESCENT DISPLAY

CH	DAY	ON	OFF
A---	---	-:--A	-:-- --
B 8	1WE	9:00A	-:-- --

CH	DAY	ON	OFF
A---	---	-:--A	-:-- --
B 8	1WE	9:10A	-:-- --

CH	DAY	ON	OFF
A---	---	-:--A	-:-- --
B 8	1WE	9:15A	-:-- --

CH	DAY	ON	OFF
A---	---	-:--A	-:-- --
B 8	1WE	9:15P	-:-- --

CH	DAY	ON	OFF
A---	---	-:--A	-:-- --
B 8	1WE	9:15P	10:15 --

CH	DAY	ON	OFF
A---	---	-:--A	-:-- --
B 8	1WE	9:15P	10:05 --

CH	DAY	ON	OFF
A---	---	-:--A	-:-- --
B 8	1WE	9:15P	10:00 --

CH	DAY	ON	OFF
A---	---	-:--A	-:-- --
B 8	1WE	9:15P	10:00 SP

(The contents of the programmed recording memory will disappear.)

- The CATV (cable) indicator will not illuminate in the program setting.
- To check the programmed recording memory contents, press the PROG REC button to turn off the PROG REC indicator (⊡), press the POWER button to ON and follow the steps ② — ④ (page 37).
- If the tape runs out during programmed recording, the PROG REC indicator (⊡) and the CASSETTE STATUS indicator (ᴏ̄ᴏ̄) begin flashing and the finished tape is ejected. The programmed recording settings for the partially recorded program number are erased.
- With the exception of the everyday and every week feature, a program is erased following its execution. Except when recording is set for every week and every day, the PROG REC indicator (⊡) will for approximately 1 minute flash when all programmed recording is completed.

■ The channel number, day of the week, recording start time, recording end time and tape speed can also be set by pressing the NUMBER (0-9) buttons and the CHANNEL SELECTOR (▲, ▼) buttons on the remote control unit.

1 First complete the programming by following steps 1 — 6 on page 37.

PROCEDURE	ON-SCREEN DISPLAY
2 Set the channel by pressing the NUMBER buttons. For example, press 0, 0 and 8 for channel 8.	CH DAY ON OFF A--- --- -:--ₐ -:-- -- B 8--:--- -:--ₐ -:-- --
3 Set the week by pressing the NUMBER button (use 5 for every week). For example, press 1 for this week.	CH DAY ON OFF A--- --- -:--ₐ -:-- -- B 8-1:-- -:--ₐ -:-- --
4 Set the day of the week by pressing the NUMBER button (use 8 for everyday from Monday to Friday). For example, press 4 for Wednesday.	CH DAY ON OFF A--- --- -:--ₐ -:-- -- B 8 1WE -:--ₐ -:-- --
5 Set the recording start time by pressing the NUMBER buttons. For example, press 0, 9, 1 and 5 for 9:15.	CH DAY ON OFF A--- --- -:--ₐ -:-- -- B 8 1WE 9:15ₐ -:-- --
6 Select AM or PM by pressing the CHANNEL SELECTOR ▲ or ▼ buttons.	CH DAY ON OFF A--- --- -:--ₐ -:-- -- B 8 1WE 9:15ₚ -:-- --
7 Set the recording end time by pressing the NUMBER buttons. For example, press 1, 0, 0 and 0 for 10:00.	CH DAY ON OFF A--- --- -:--ₐ -:-- -- B 8 1WE 9:15ₚ 10:00--
8 Select the tape speed by pressing the CHANNEL SELECTOR ▲ or ▼ buttons.	CH DAY ON OFF A--- --- -:--ₐ -:-- -- B 8 1WE 9:15ₚ 10:00-SP-

9 Press the PROG REC button and confirm that the PROG REC indicator (⊡) is illuminated. (The on-screen display will disappear.)

The recording start day can be programmed up to Saturday of the 4th week.

The start day can be programmed only to today and coming days.
Therefore, if today is Tuesday, the start day can not be programmed to Sunday and Monday of this week.

	SUN	MON	TUE	WED	THU	FRI	SAT
					1	2	3
	4	5	6	7	8	9	10
Today	11	12	13	14	15	16	17
1st week	18	19	(20)	21	22	23	24
2nd week	25	26	27	28	29	30	31
3rd week							
4th week							
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				

PROGRAMMING TV PROGRAMS THAT END ON THE DAY AFTER

If you want to start the recording at 11:00 PM and end it at 2:00 AM on the next day, simply set the start time to 11:00 PM on recording start day and the end time to 2:00.
There is no need to change the day of the week.

CH	DAY	ON	OFF
A 4	1TU	11:00P	2:00 EP

PROGRAMMING SAME PROGRAMS EVERY WEEK

When setting the day of the week with the SET button, for example Thursday, wait until the [ETH] appears on the on-screen display ([EW] and [TH] on the fluorescent display).

When setting the week and the day of the week with the NUMBER buttons, for example Thursday, press 5 (for every week) and then 5 (THU) button.

Other every week recordings are displayed on the screen as follows.

Every Sunday recording:	ESU
Every Monday recording:	EMO
Every Tuesday recording:	ETU
Every Wednesday recording:	EWE
Every Friday recording:	EFR
Every Saturday recording:	ESA

SUN	MON	TUE	WED	THU	FRI	SAT
				(1)	2	3
4	5	6	7	(8)	9	10
11	12	13	14	(15)	16	17
18	19	20	21	(22)	23	24
25	26	27	28	(29)	30	31

CH	DAY	ON	OFF
A 10	ETH	7:30P	7:45 SP

PROGRAMMING SAME PROGRAMS EVERY DAY FROM MONDAY TO FRIDAY

Everyday programming from Monday to Friday is available.

When setting the day of the week with the SET button, wait until [M-F] appears on the on-screen display ([MO TU WE TH FR] on the fluorescent display) for everyday recording from Monday to Friday.

When setting the day of the week with the NUMBER buttons, press 8 (M-F) button.

SUN	MON	TUE	WED	THU	FRI	SAT
				①	②	3
4	⑤	⑥	⑦	⑧	⑨	10
11	⑫	⑬	⑭	⑮	⑯	17
18	⑲	⑳	㉑	㉒	㉓	24
25	㉖	㉗	㉘	㉙	㉚	31

| CH	DAY	ON	OFF
A	2 M-F	8 : 15ₐ	8 : 30 SP

NOTE:

* To skip recording on one of the days during every week recording, press the PROG REC button on the days to be skipped. The PROG REC indicator (☐) will turn off. Press the PROG REC button again when you wish to resume the programmed recording.
* Everyday and every week recording are not limited to 4th week and will continue until cancelled, providing there is sufficient tape.
* WHEN PROGRAMMING OVERLAPS IN THE SAME TIME SPAN
  If the start times of two programs on the same day overlap, programmed recording begins at the earlier start time and then switches to the program with the later start time.

EXAMPLE:

	7:00PM	8:00PM	9:00PM
Program number 2 7:00PM — 8:00PM			
Program number 4 7:30PM — 9:00PM			
Recording result			

# HOW TO PROGRAM FOR RECORDING II

WARNING DISPLAY SYSTEM

If there is an error in the programming, PROG REC indicator (⊡) and/or the CASSETTE STATUS indicator (ꝺꝺ) will flash and the cassette may automatically eject. The indicators turn off after about a minute.
In such cases, operate the VCR using following procedure.

FLUORESCENT DISPLAY	CAUSE	PROCEDURE
The PROG REC indicator (⊡) flashes.	The recording start time, end time, day of week, tape speed and/or channel have not been set for any program number.	1. Press the PROG REC button. The PROG REC indicator (⊡) will turn off. 2. Press the POWER button to ON, and follow the steps ② — ④ (page 37). 3. Repeat steps ⑤ — ⑯ (pages 37 and 39) as required to complete the programming. 4. Press the PROG REC button and confirm that the PROG REC indicator (⊡) is illuminated.
The PROG REC indicator (⊡) and the CASSETTE STATUS indicator (ꝺꝺ) flash.	• A cassette is not loaded. • A cassette with the erasure prevention tab removed is loaded. (The cassette will be ejected automatically.)	1. Press the PROG REC button. The PROG REC indicator (⊡) will turn off. 2. Load a cassette with the erasure prevention tab intact. 3. Press the PROG REC button and confirm that the PROG REC indicator (⊡) is illuminated.

CHANGING THE PROGRAMMED RECORDING SETTINGS

The programmed recording settings may be changed by using the following procedure.

[1] Press the PROG REC button. The PROG REC indicator (⊡) will turn off.

[2] Press the POWER button to ON and follow the steps ② — ④ (page 37).

[3] Select the program number to be changed and follow steps ⑥ — ⑯ (pages 37 and 39) as required.

[4] Press the PROG REC button and confirm that the PROG REC indicator (⊡) is illuminated.

NOTE:

• Changing the programmed contents is not possible after programmed recording has started.

ERASING THE PROGRAMMED RECORDING SETTINGS

[1] Press the PROG REC button. The PROG REC indicator (⊡) will turn off.

[2] Press the POWER button to ON and follow the steps ② — ④ (page 37).

[3] Select the program number to be erased and press the SELECT ◁ button.

NOTE:

• SELECT ◁ BUTTON:
  To reset to the previous settings, press SELECT ◁ button on any item except channel.
  To clear the selected program, press SELECT ◁ button when the channel is selected (flashing).
• Only the selected program number is erased. All other program numbers remain unchanged.
• To erase the programmed contents after programmed recording has started, press the PROG REC button. The PROG REC indicator (⊡) will turn off.

TIMER RESET BUTTON

In the event the fluorescent display shows an unusual indication the TIMER RESET button may be used to erase the present time display and all programmed recording instructions.

[1] Press the TIMER RESET button using a pencil or a ballpoint pen.
The power will be turned off and the - : - - display will appear.

[2] Press the POWER button to resume the power.

[3] Set the present time and day of the week.

[4] Reset the programmed recording instructions.

DUBBING

S-VHS switch
DUB SELECT switch
AUDIO MONITOR button
INPUT SELECT button
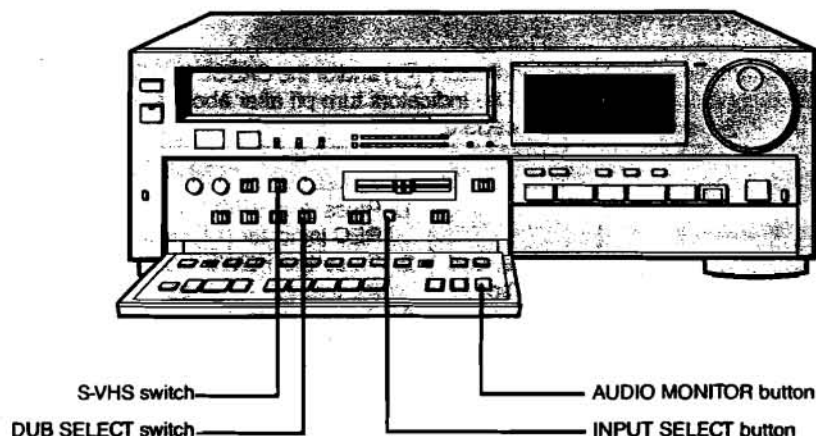
GENERAL NOTES ABOUT DUBBING

1. To maintain quality, make the recording in the S-VHS mode with an S-VHS tape (S-VHS switch ON).
2. Set the DUB SELECT switch to COPY position during dubbing.
3. When dubbing from the BV-1000 (Playback) to another VCR (Record), use the VIDEO OUT 2. Using the VIDEO OUT 1 will cause the on-screen graphics to be copied along with the program material.
4. Be sure the VCR used for RECORD is set to the EXT input position.

DUB SELECT SWITCH

Set this switch to COPY position when dubbing (copying) a tape from this VCR to any other VCR. For normal use, set to MASTER position.

EDITING CONTROL

In case of dubbing to MITSUBISHI VCR with editing control, editing can be performed with the operation of this VCR when the editing control is connected.

	This VCR	Another VCR
1.	Obtain still frame.	Engage record pause mode.
2.	Press the PLAY button to begin playback.	(Recording starts automatically.)
3.	Press the PAUSE/STILL button where you want to stop recording.	(VCR automatically switches to record pause mode.
4.	Locate the point at which you wish to start the dubbing using speed search, and obtain still frame.	—
5.	Press the PLAY button to begin playback.	(Recording starts automatically.)

NOTE:

● In order to produce finer edited results, when editing with the editing window it takes some three or four seconds from the time record pause is released to the time when the contents are recorded.

DUBBING FROM THE BV-1000 TO A MITSUBISHI VCR WITH THE EDIT CONTROL CONNECTOR

- If a Hi-Fi tape is to be copied from the BV-1000, then ensure Hi-Fi playback by pressing the AUDIO MONITOR button until the "LEFT" and "RIGHT" indicators are illuminated.
- Be sure the BV-1000 used for RECORD is set to the EXT input position and the VIDEO INPUT SELECT switch is set to S (Y/C) position.

PLAYBACK

RECORDING

EDIT

EDIT

S-VIDEO OUT 2
AUDIO OUT R/CH-2
AUDIO OUT L/CH-1

S-VIDEO IN
AUDIO IN R
AUDIO IN L

CONNECTION OF S-CONNECTOR:
Line up the groove in the connector with the projecting part of the plug and insert.
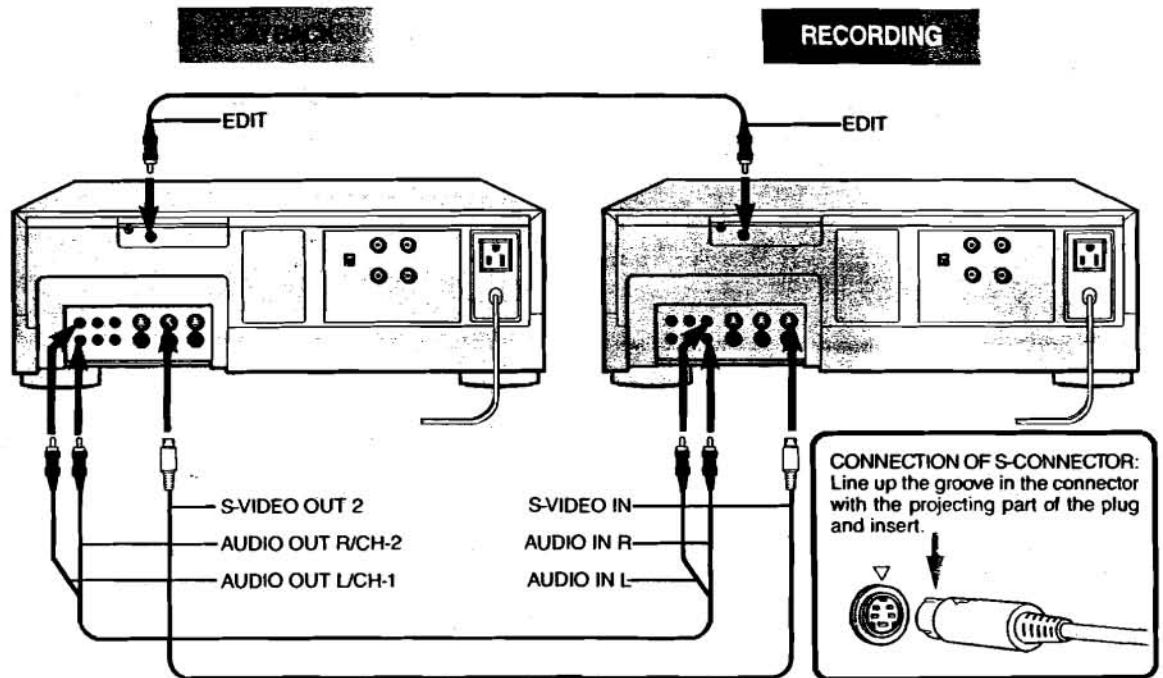
DUBBING FROM THE BV-1000 TO ANOTHER S-VHS VCR

- If a Hi-Fi tape is to be copied from the BV-1000, then ensure Hi-Fi playback by pressing the AUDIO MONITOR button until the "LEFT" and "RIGHT" indicators are illuminated.
- Be sure the BV-1000 used for RECORD is set to the EXT input position and the VIDEO INPUT SELECT switch is set to S (Y/C) position.

PLAYBACK

RECORDING

S-VIDEO OUT 2
AUDIO OUT R/CH-2
AUDIO OUT L/CH-1

S-VIDEO IN
AUDIO IN R
AUDIO IN L

CONNECTION OF S-CONNECTOR:
Line up the groove in the connector with the projecting part of the plug and insert.

46
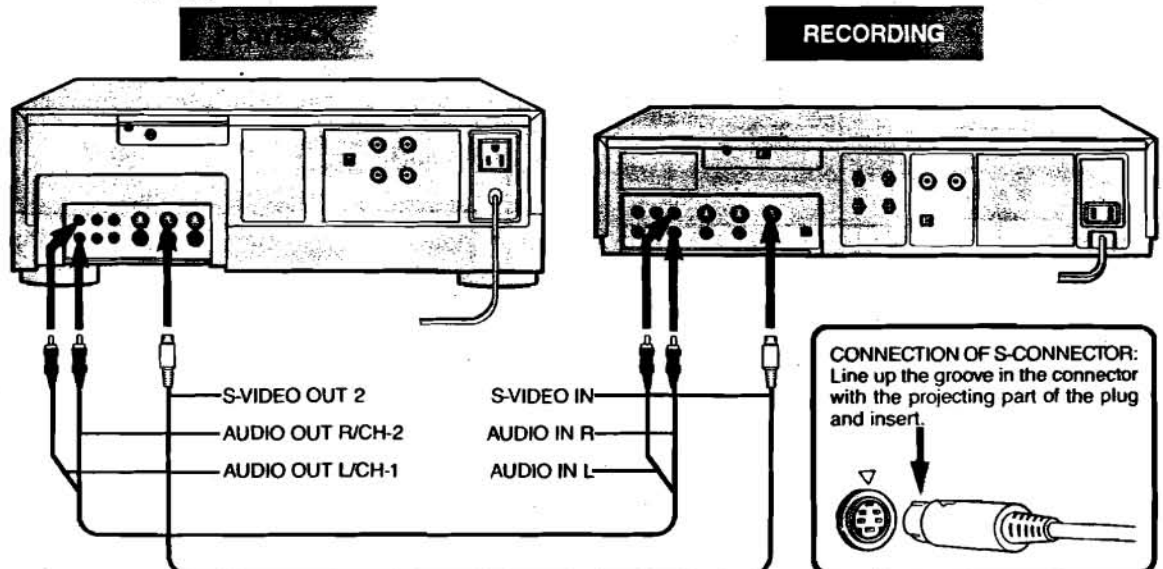
DUBBING FROM THE BV-1000 TO A LINEAR STEREO OR Hi-Fi VCR.

- Connect the VCR's as shown below.
- If a Hi-Fi tape is to be copied from the BV-1000, then ensure Hi-Fi playback by pressing the AUDIO MONITOR button until the "LEFT" and "RIGHT" indicators are illuminated.
- On the RECORDING VCR select external input.

NOTE:

- When recording from a non-S-VHS VCR to the BV-1000, ensure that the VIDEO INPUT SELECT switch is set to VIDEO position.

VIDEO OUT 2
AUDIO OUT R/CH-2
AUDIO OUT L/CH-1

VIDEO IN
AUDIO IN R
AUDIO IN L
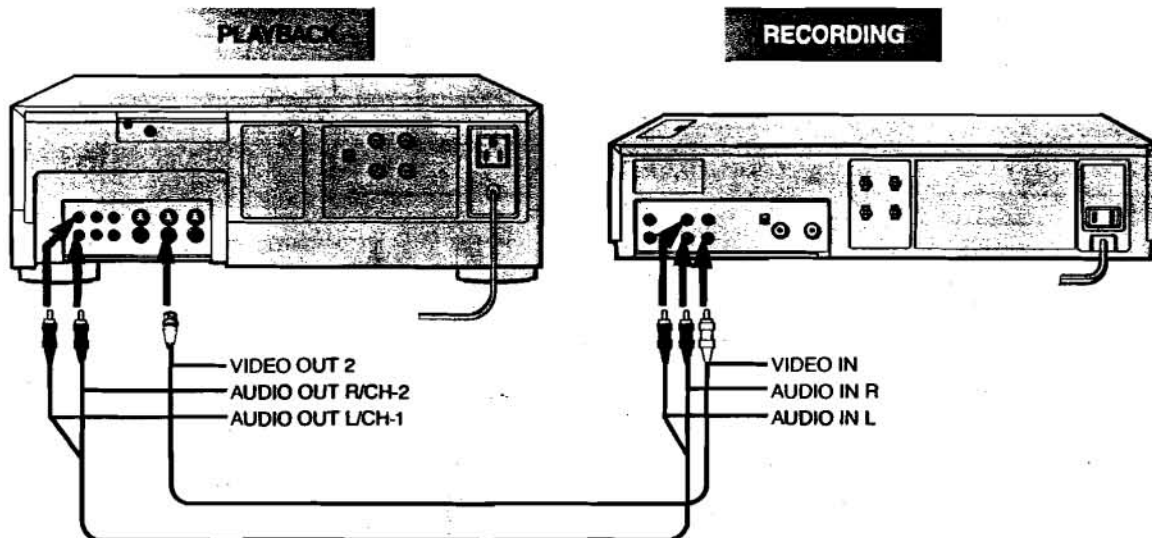
DUBBING FROM THE BV-1000 TO A MONAURAL VCR

- If a Hi-Fi tape is to be copied from the BV-1000, combine the AUDIO OUT L and R of the BV-1000 using a "Y" adaptor and connect them to the AUDIO IN of the other VCR. Ensure both audio channel playback (Hi-Fi) by pressing the AUDIO MONITOR button until the "LEFT" and "RIGHT" indicators are illuminated. The dubbed copy will be in monaural.

VIDEO OUT 2
AUDIO OUT R/CH-2
AUDIO OUT L/CH-1

AUDIO IN
VIDEO IN
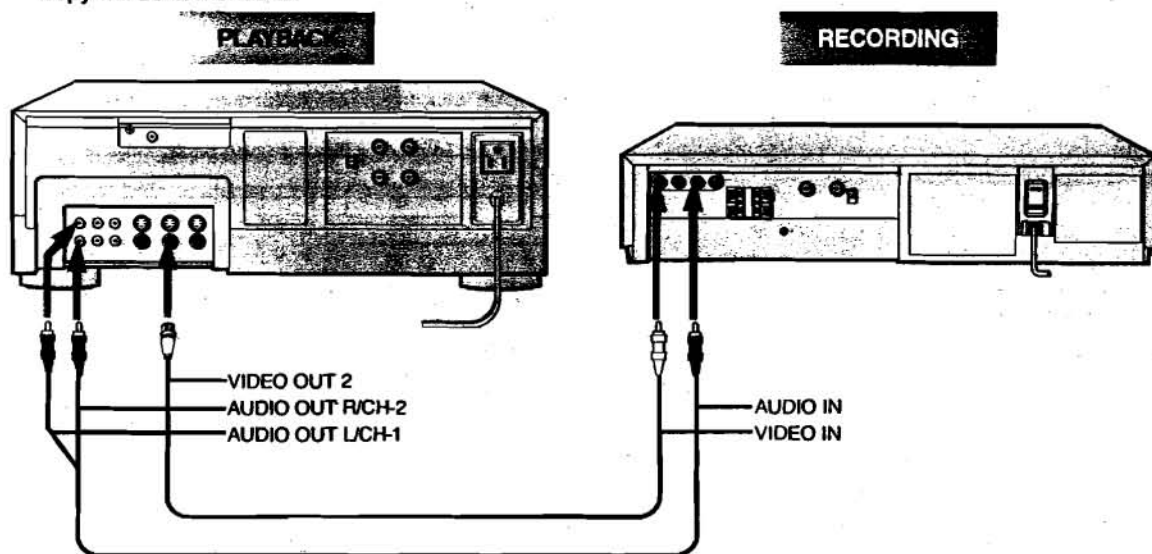
RECORDING STEREO BROADCASTS /SEPARATE AUDIO PROGRAM RECORDING

NORMAL AUDIO switch

STEREO broadcast indicator
SAP broadcast indicator
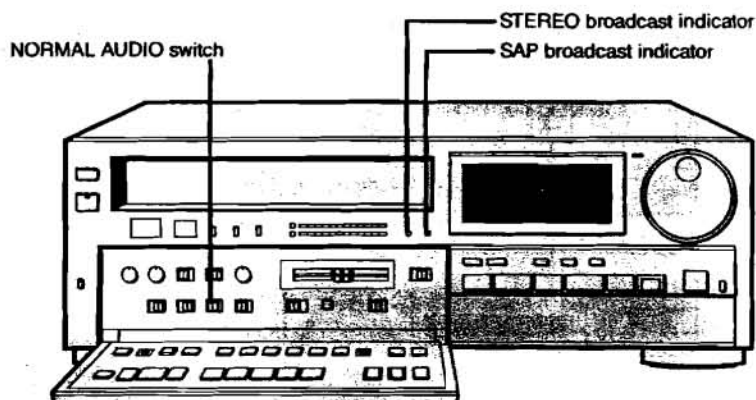
RECORDING STEREO BROADCASTS

THE COMBINATION OF STEREO VHS Hi-Fi AUDIO RECORDING WITH BUILT-IN STEREO BROADCAST RECEPTION CAPABILITY PERMITS HIGH QUALITY RECORDING OF STEREO TV BROADCASTS. THE AUDIO SIGNAL IS ALSO RECORDED ON THE NORMAL (LINEAR) SOUND TRACK FOR COMPATIBLE PLAYBACK ON NON-VHS Hi-Fi VCR.

The recording procedure is the same as for standard recording (see page 31).
- When a stereo broadcast signal is received, the STEREO broadcast indicator is illuminated.
- The appropriate recording system (stereo or mono) is automatically selected according to the type of broadcast signal that is received.

Broadcast	Hi-Fi sound track		Normal sound track
	CH-1	CH-2	
STEREO	LEFT	RIGHT	MONAURAL
MONAURAL	MONAURAL	MONAURAL	MONAURAL

- For best results, the REC LEVEL controls should be set to click-stop (marked 5) position for recording of stereo TV broadcasts. If manual audio recording level adjustment is desired, see page 33 for details.

SEPARATE AUDIO PROGRAM RECORDING

THE MONAURAL SAP (SEPARATE AUDIO PROGRAM) CHANNEL CAN BE RECORDED ON THE NORMAL SOUND TRACK WHILE SIMULTANEOUSLY RECORDING THE MAIN AUDIO PROGRAM ON THE Hi-Fi SOUND TRACK.

■ RECORDING

1 The SAP broadcast indicator is illuminated when the SAP channel is present in the broadcast signal.

2 Set the NORMAL AUDIO switch to SAP position.

3 Begin recording (see page 31).

Program	Hi-Fi sound track		Normal sound track
	CH-1	CH-2	
STEREO + SAP	LEFT	RIGHT	SAP
MONAURAL + SAP	MONAURAL	MONAURAL	SAP

- When the NORMAL AUDIO switch is set to SAP position and the SAP channel is not present in the broadcast transmission, the main audio program will be automatically recorded on the normal sound track in monaural.

■ PLAYBACK

To play back the SAP audio track, set the Hi-Fi/MIX/NORMAL switch to NOR position.

SIMULCAST RECORDING

CONNECTION TO AN EXTERNAL STEREO AUDIO SYSTEM WITH AN AM/FM STEREO TUNER PROVIDES RECORDING AND PLAYBACK OF SIMULCAST PROGRAMS.
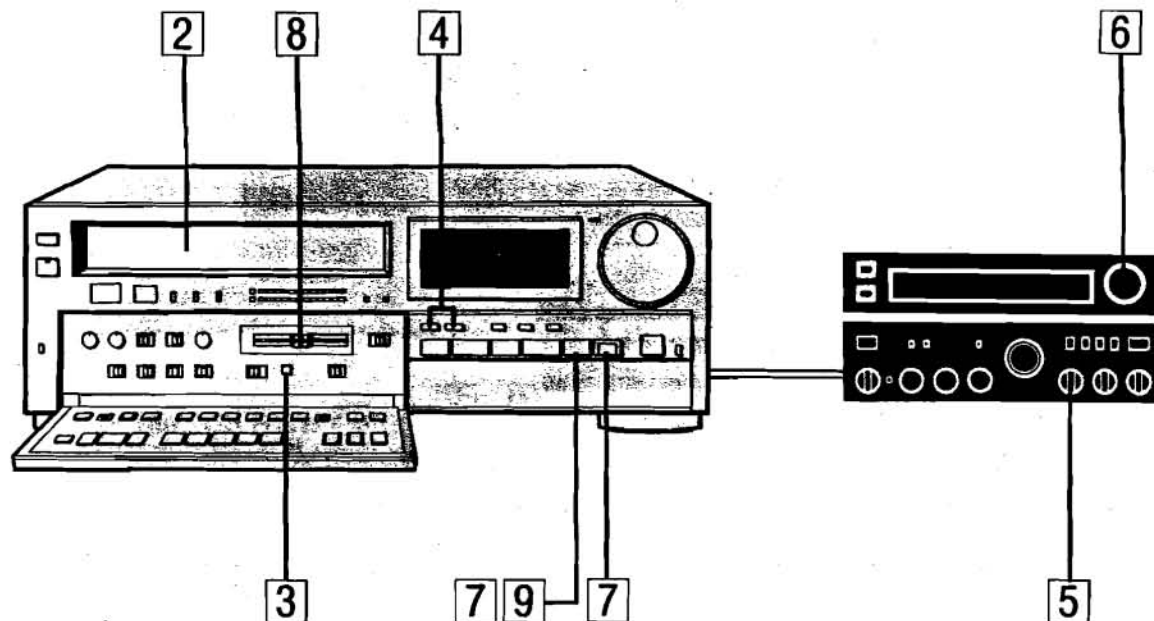
1   Connect the equipment.

2   Load a cassette with the erasure prevention tab intact.

3   Press the INPUT SELECT button to SIMUL (ANT. A or ANT. B).

4   Select the TV channel on the VCR which is broadcasting the simulcast program.

5   Set the amplifier switch ON and select the FM tuner position.

6   Tune the AM/FM stereo tuner to the station which is broadcasting the sound for the TV program.

7   Press the REC button and then press the PAUSE/STILL button. The VCR is now in the record-standby mode.

8   Adjust the REC LEVEL controls while observing the PEAK LEVEL meters (see page 33).

9   Press the PAUSE/STILL button to start the recording.

■ For playback see page 55.

NOTE:

- Attempting to record on a cassette that has had its erasure prevention tab removed will result in the cassette being ejected when the REC button is pressed (refer to the "TO PREVENT ACCIDENTAL ERASURE" on page 26).
- To protect the tape, after about 5 minutes in the record pause mode the recording will stop.

AUDIO ONLY RECORDING

THE VHS Hi-Fi VCR CAN BE USED AS A HIGH PERFORMANCE AUDIO RECORDER.

[1] Connect the stereo audio system.

[2] Load a cassette with the erasure prevention tab intact.

[3] Press the INPUT SELECT button to EXT.

[4] Set the amplifier switch to ON and select the source you wish to record.

[5] Begin playback from source.

[6] Press the REC button and then PAUSE/STILL button. The VCR is now in the record-standby mode.

[7] Return the source to the beginning of the program to be recorded and restart.

[8] Adjust the REC LEVEL controls while observing the PEAK LEVEL meters (see page 33).

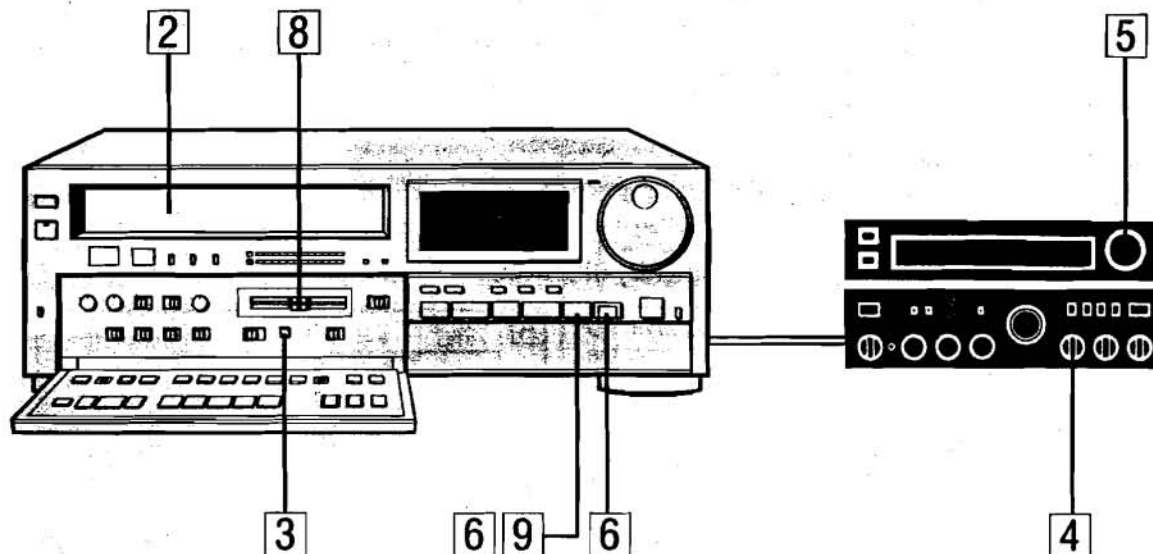[9] Press the PAUSE/STILL button to start the recording.

■ For playback see page 55.

NOTE:

- Attempting to record on a cassette that has had its erasure prevention tab removed will result in the cassette being ejected when the REC button is pressed (refer to the "TO PREVENT ACCIDENTAL ERASURE" on page 26).

- To protect the tape, after about 5 minutes in the pause mode the recording will stop.

PROGRAMMED AUDIO ONLY RECORDING
Unattended recording of audio only programs is possible by using the programmed recording timer.

① Connect the equipment and plug the AC power cord of the audio amplifier into AC outlet on the rear panel of the VCR (Do not exceed the 300W maximum power rating).

② Set the amplifier switch ON, select the source you wish to record.

③ Load a cassette with the erasure prevention tab intact.

④ Set the programmed recording settings (see pages 37 and 39).

At the set time, the audio amplifier and tuner will be turned ON and audio only recording will begin.

INDEX SEARCH/ADDRESS SEARCH

THE INDEX/ADDRESS SEARCH SYSTEM ALLOWS RAPID ACCESS (FORWARD OR REVERSE) TO THE BEGINNING OF ANY PROGRAM HAVING AN INDEX/ADDRESS SIGNAL OR TO POINTS ON THE TAPE WHERE INDEX/ADDRESS SIGNALS HAVE BEEN MANUALLY RECORDED. PLAYBACK STARTS AUTOMATICALLY WHEN THE SELECTED INDEX/ADDRESS SIGNAL IS REACHED.

RECORDING THE INDEX SIGNAL AND ADDRESS SIGNAL

There are two types of signals: numbered and non-numbered.

■ RECORDING INDEX (NON-NUMBERED) SIGNALS

A The index signal is automatically recorded when the REC button is pressed to activate recording from the stop mode.
(After approximately 5 seconds, the INDX indicator will begin to flash. The INDX indicator flashes for approximately 5 seconds while the index signal is being recorded.)

B The index signal may be recorded manually at any point during recording or playback by pressing the ADDRESS ENTER button on the remote control unit.
(The INDX indicator flashes for approximately 5 seconds while the index signal is being recorded.)
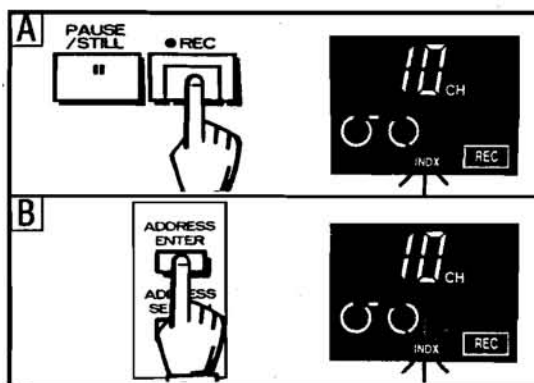
■ RECORDING ADDRESS (NUMBERED) SIGNALS

1 Begin recording or playback.

2 Select the desired number (1-99) using the NUMBER buttons on the remote control unit.

3 Press the ADDRESS ENTER button on the remote control unit.
(The ADDR indicator flashes for approximately 7 seconds while the address signal is being recorded.)

● Address signals can also be recorded by carrying out the above steps in the following order: 2 → 3 → 1.

● It is convenient to note address signal numbers and their corresponding programs on the cassette label.
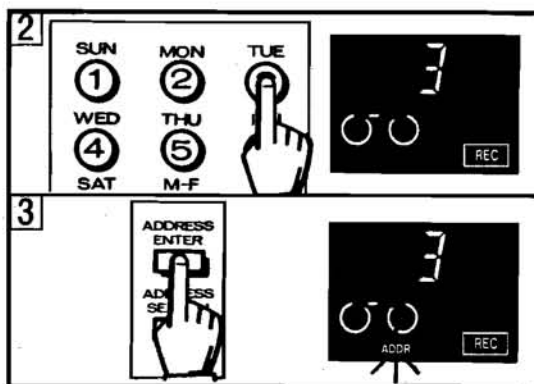
NOTE:

● No index signal is recorded when recording is resumed from the record pause mode.
● Address signals are not automatically recorded when recording is started.
● On tapes for which the tape speed has been switched at some point during the recording, do not attempt to record an index or address signal at the point at which the tape speed was switched.
Recording an index or address signal at a point at which the tape speed has been switched can result in distortion of the picture and inability to locate the index or address signal.
● Index or address signals must be recorded at least one minute apart.
● If index or address signals are recorded on a tape which was recorded on another VCR, distortion of the picture at that point and inability to locate the index or address signal may result.
● If an attempt is made to record an index or address signal on a cassette which has had the erasure prevention tab removed, the signal will not be recorded and playback will stop.
● No sound will be output while an index or address signal is being recorded on a tape during playback.
● On some tapes on which address signals were recorded on another VCR, inability to locate the address signals may result.
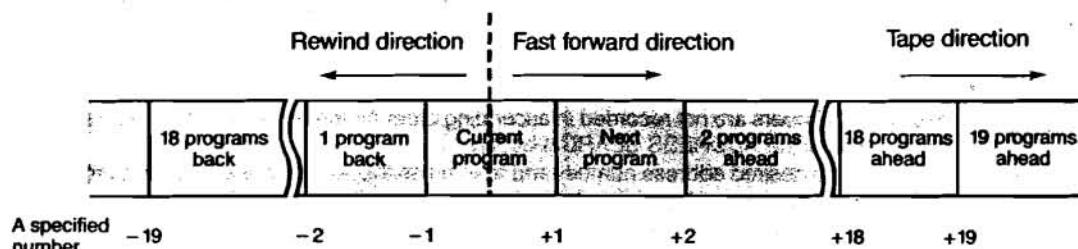
[1] Use index or address search to locate the index or address signal you wish to erase.

[2] When the index or address signal has been located and normal playback begins, press the PAUSE/STILL button to obtain still frame.

[3] Watching the elapsed time counter, rewind the tape approximately 10 seconds, and then press the PAUSE/STILL button to obtain still frame.

[4] Press the NUMBER 0 button on the remote control unit.

[5] Press the ADDRESS ENTER button on the remote control unit.

[6] Press the PAUSE/STILL button to release the still frame mode and erasure of the index or address signal will begin. (The ADDR indicator flashes for approximately 10 seconds while the index or address signal is being erased.)

USING INDEX SEARCH AND ADDRESS SEARCH

■ FORWARD/REVERSE 19-STEP INDEX SEARCH

This function makes it possible to skip a specified number of index and address signals (both non-numbered and numbered) to locate the desired index point.

	Rewind direction	Fast forward direction		Tape direction	
18 programs back	1 program back	Current program	Next program	2 programs ahead	18 programs ahead	19 programs ahead

A specified number   −19   −2   −1   +1   +2   +18   +19

To search for the first index or address signal in the forward direction, press the + button once. The word INDX illuminates and the channel display changes to an index search display displaying "+1". When the first index or address signal is reached, the VCR will begin playback and the channel display will be restored.

Press once for first index or address signal
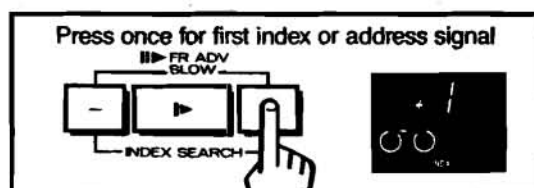
To search past the first index or address signal, press the + button repeatedly, upto 19 times, until the desired index point is displayed on the index search display. The display will countdown until the selected index or address signal is reached at which point playback will commence and the channel display will be restored.

Press upto 19 times

● For reverse index search press the − button. The reverse index search may also be set to search for upto the 19th index or address signal.
● Index search can be interrupted by pressing either the STOP or PLAY button.

Reverse direction
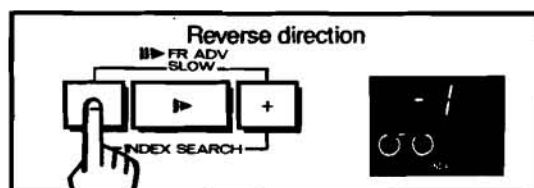
■ ADDRESS SEARCH

This function makes it possible to locate a specific numbered address signal on the tape.

1 Enter the number of the desired numbered address signal using the NUMBER buttons on the remote control unit.
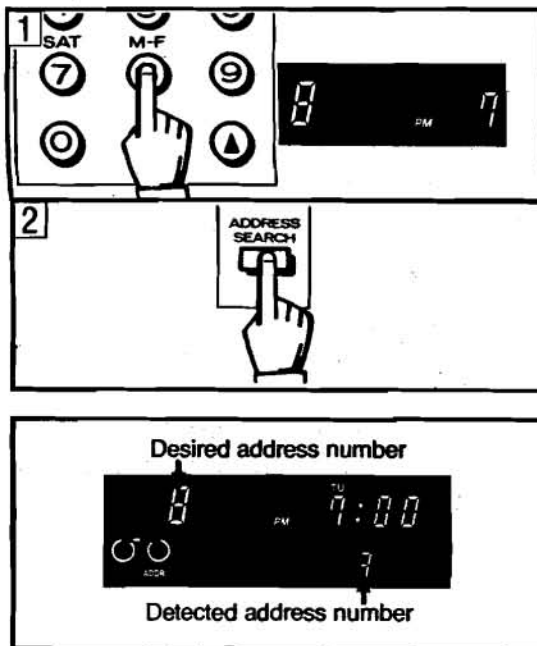
2 Press the ADDRESS SEARCH button on the remote control unit.

● When the specified address signal has been located, its number is shown on the counter display.
If the detected address number is found to be larger than the desired address number while searching in the forward direction, address search switches to the reverse direction.

Normal playback is resumed when the specified address signal is located.

Desired address number

Detected address number

NOTE:
● If the address signal numbers are not recorded in ascending order on the tape, address search sometimes will not function by pressing the ADDRESS SEARCH button.
In such cases, enter the desired address number and then press the + button if the desired program is in the forward direction or press the − button if the desired program is in the reverse direction.
● If the end of the tape is reached while searching for an address number in the forward direction, address search begins in the reverse direction.
● If the beginning of the tape is reached while searching for an address number in the reverse direction, address search is automatically released and normal playback is resumed.

INDEX REPEAT

This function allows any segment of tape between 2 signals (index and/or address) to be repeatedly played back. Press the PLAY button to commence playback of the section to be repeated (program A). Press the REPEAT button on the remote control unit. The REPEAT indicator (⊊) illuminates. When the VCR encounters the next index or address signal on the tape (Index B), playback stops. The VCR rewinds to the previous index or address signal (Index A) where playback resumes (program A). This cycle repeats until the REPEAT button is pressed again to cancel the repeat.

- If playback is started while the REPEAT indicator (⊊) is ON, the repeat playback operation will operate.
- If there is no index signal on the tape, the VCR will continue to the end of the tape, rewind, and then start again from the beginning.
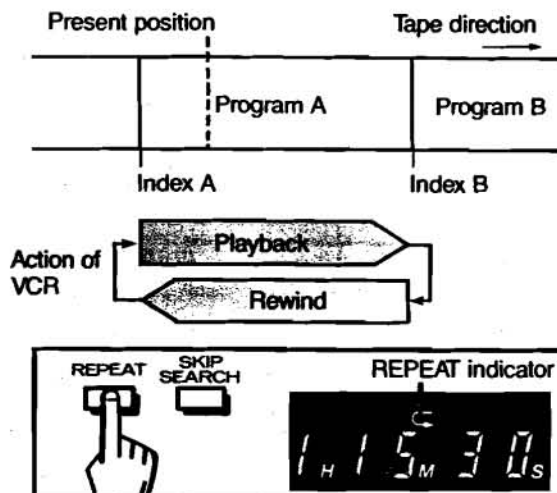
SKIP SEARCH

Pressing the SKIP SEARCH button on the remote control unit causes the VCR to fast forward (without picture) through the tape. When an index or address signal is encountered, the VCR goes into playback mode (with picture) for approximately 5 seconds, allowing the video content of the tape to be viewed. Press the PLAY button for normal playback. Press the SKIP SEARCH button to resume skip search. If no button is pressed, fast forward is automatically resumed until the next index or address signal.
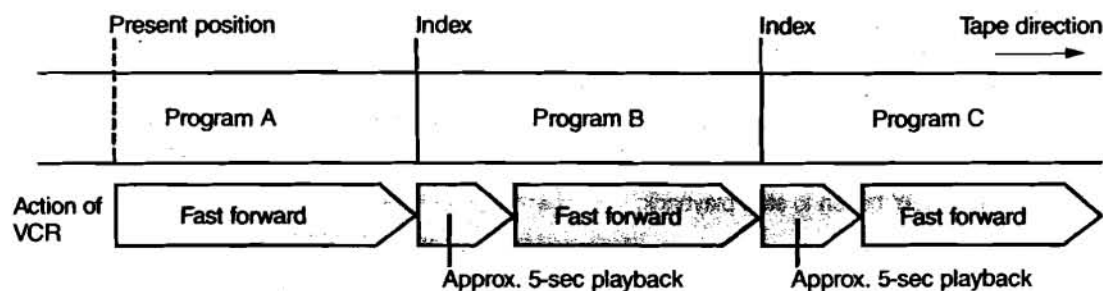
- Press the STOP button to cancel skip search.

TO PLAYBACK A PRE-RECORDED CASSETTE PROCEED AS FOLLOWS:
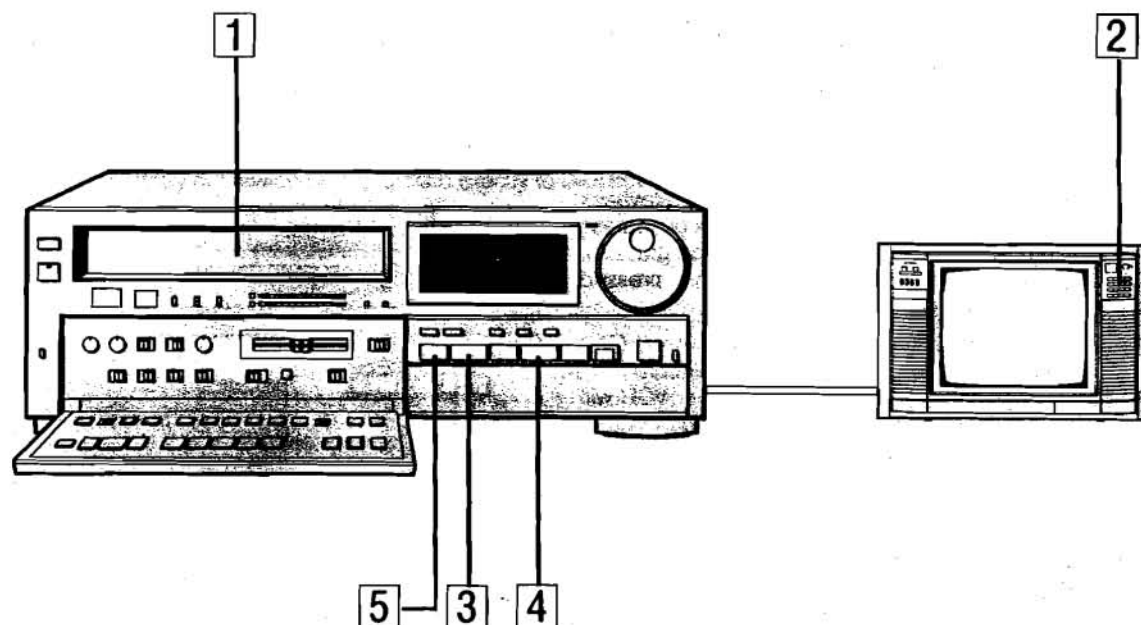
1 Load a pre-recorded tape.

NOTE:

- If a cassette with the erasure prevention tab removed is loaded, the unit automatically switches to play mode and playback begins.
- The automatic digital tracking adjustment operates when playback start (see page 59).

2 Turn ON the TV set's power and set the TV to the Video Channel, 3 or 4. If the VCR has been connected to the video and audio inputs of your TV or monitor, then select video or external input instead.

3 Press the PLAY button to start playback.

4 Press the STOP button to stop playback.

5 Press the REW/REV SEARCH button to rewind the tape.
The tape automatically rewinds when it reaches the end (automatic rewind).

- ■ Automatic rewind.
  When the tape reaches the end in record or playback mode, it rewinds automatically and then stops.
  The automatic rewind does not operate when the tape reaches the end during programmed recording, one touch recording or during fast forward.
- ■ Rewind — with the VCR in stop mode.
  Press the REW/REV SEARCH button to fast rewind the tape.
- ■ Fast Forward — with the VCR in stop mode.
  Press the FF/FWD SEARCH button to run the tape forward at fast speed.

NOTE:

- Fast forward or rewind can only be engaged when the VCR is in stop mode.
  If selected during playback, speed search mode will be engaged.
- On playback, the correct tape speed is automatically selected.
  The TAPE SPEED button need not be adjusted.
- When the PLAY button is pressed, the VIDEO/TV button automatically switches to VIDEO.

VHS Hi-Fi STEREO AUDIO PLAYBACK

This VCR is equipped to playback VHS cassettes recorded with Hi-Fi soundtracks. Hi-Fi recordings will provide superior sound quality when this VCR is attached to:
- TV receiver (or monitor) equipped with stereo speakers and stereo audio inputs.
- Stereo audio system.

Please refer to CONNECTING THE VCR TO THE TV (see pages 16 and 17) for further information on these suggested hook-ups.

Hi-Fi/MIX/NORMAL switch
AUDIO MONITOR button
HEADPHONES LEVEL control
HEADPHONES jack
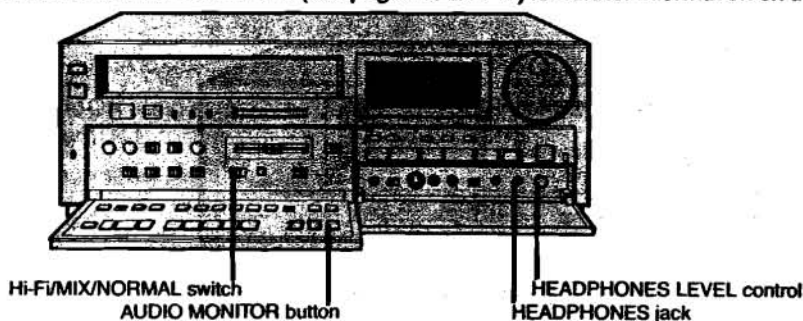
■ Hi-Fi/MIX/NORMAL switch and AUDIO MONITOR button

The audio channel(s) for playback are selected with the Hi-Fi/MIX/NORMAL switch and the AUDIO MONITOR button.

When the AUDIO MONITOR button is pressed, the audio tracks will be switched on in the order of STEREO → L → R → STEREO →······.

Hi-Fi/MIX/ NORMAL switch	AUDIO MONITOR button	Indicator	VHS Hi-Fi RECORDED VIDEO TAPE (Hi-Fi indicator illuminated) PLAYED BACK THROUGH:	
			• Stereo TV • Stereo Monitor • Stereo System	• Monaural TV • Stereo TV's antenna (RF) input
	STEREO	LEFT RIGHT	Stereo	Monaural
	L	LEFT RIGHT	Left channel	Left channel
	R	LEFT RIGHT	Right channel	Right channel
	Not available	LEFT RIGHT	Monaural (Normal sound track)	Monaural (Normal sound track)

- If the Hi-Fi/MIX/NORMAL switch is set to MIX position, it is possible to hear a mixture of Hi-Fi sound and normal sound at the same time.

NOTE:

- When the Hi-Fi/MIX/NORMAL switch is set to MIX position, the sound may be somewhat muffled or hum may occur.
- When the TRACKING control is adjusted, the VCR may switch over from the Hi-Fi sound track to the normal sound track (noise or breaks are heard). This is not a malfunction.
- Pre-recorded tapes with non-VHS HiFi VCR will be played back on normal sound track in monaural ("LEFT" and "RIGHT" indicators will not illuminate).
- The PEAK LEVEL meter displays audio output levels during playback.
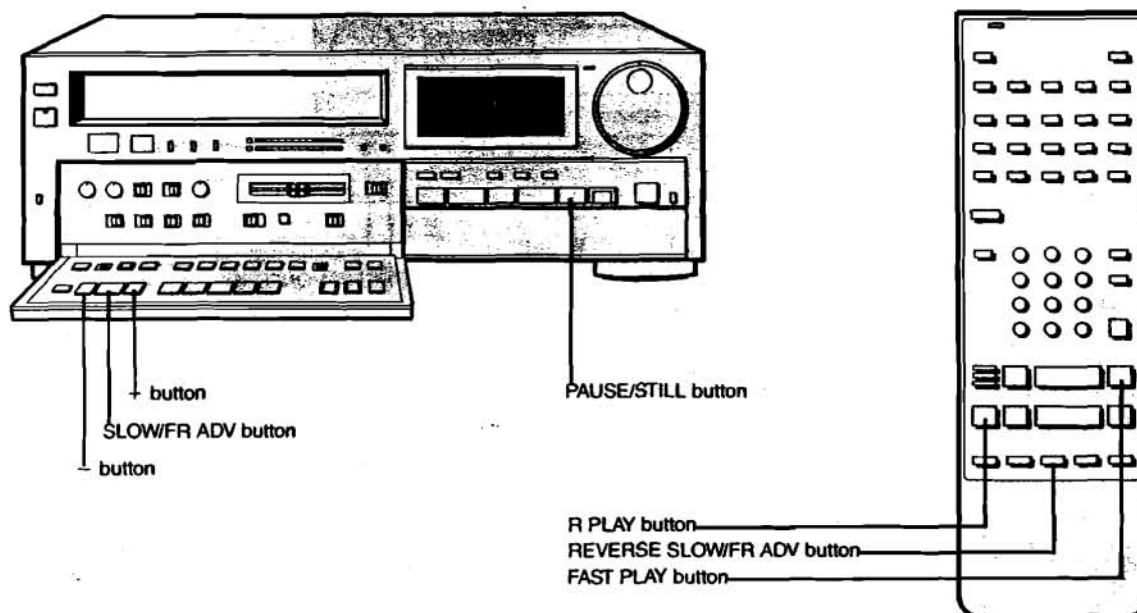
HEADPHONES LISTENING AND MONITORING

Stereo headphones plugged into the HEADPHONES jack can be used for listening during playback or monitoring during recording. The signal present at the HEADPHONES jack is selected with the AUDIO MONITOR button. Volume is adjusted with the HEADPHONES LEVEL control.

This VCR employs direct function switching. Any playback mode may be directly entered from any other playback mode (normal playback, still frame, slow-motion playback, speed search, etc.) simply by pressing the appropriate button. For example, normal playback, slow-motion playback, speed search, etc., may be directly activated from still playback.

DURING FAST PLAYBACK THE AUDIO PORTION IS HEARD. DURING ALL OTHER SPECIAL EFFECTS PLAYBACK THE AUDIO IS MUTED.

+ button

SLOW/FR ADV button

– button

PAUSE/STILL button

R PLAY button
REVERSE SLOW/FR ADV button
FAST PLAY button

STILL/FRAME ADVANCE

[1] Press the PLAY button to begin playback.

[2] Press the PAUSE/STILL button to obtain still frame.
Pressing the button again resumes normal playback.

[3] In pause (still frame) mode, press the SLOW/FR ADV button and release to advance one frame at a time.

[4] In pause (still frame) mode, press the REVERSE SLOW/FR ADV button on the remote control unit for reverse frame advance.

NOTE:

• After about 5 minutes in the STILL mode the VCR will automatically stop to prevent damage to the tape.
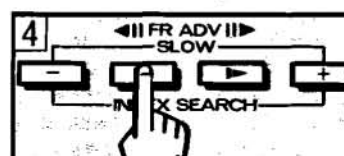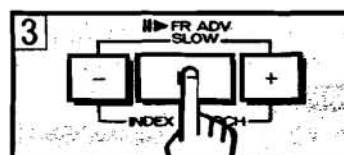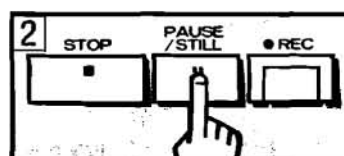
SLOW-MOTION PLAYBACK

1 Press the PLAY button to begin playback.

2 Press the SLOW/FR ADV button to operate slow-motion playback.
Press the button again to obtain still frame.

3 Press the REVERSE SLOW/FR ADV button on the remote control unit
to operate reverse slow-motion playback.
Press the button again to obtain still frame.

■ To increase the playback speed (to approximately 1/5 normal speed),
press the + button during slow-motion playback.
■ To reduce the playback speed (to approximately 1/30 normal speed),
press the − button during slow-motion playback.

NOTE:
● Slow-motion playback is released after about 5 minutes to prevent damage to the tape.
● This VCR incorporates a system to automatically adjust tracking during slow-motion playback. However, some tracking noise may be present when viewing cassettes recorded on other VCRs.
● In still frame, press the SLOW/FR ADV button and hold for about one second before releasing for slow-motion playback.
Pressing the button again restores still frame.
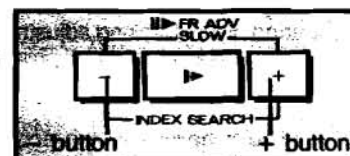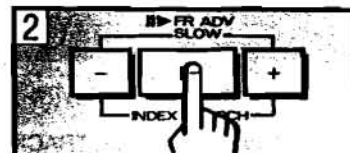● Slow-motion speed is varied in slow-motion playback only.

FAST PLAYBACK

1 Press the PLAY button to begin playback.

2 Press the FAST PLAY button on the remote control unit to obtain play-back of the tape at an increased speed.
Pressing the button again resumes normal playback.
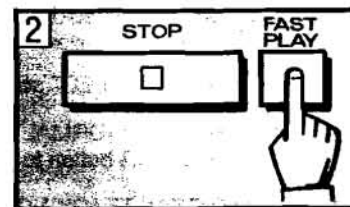
NOTE:
● If the cassette is recorded at SP then the normal sound track audio will be heard.
● Depending upon the tape noise may be present on the picture during fast playback. In this case, adjust the tracking manually (see page 59).

REVERSE PLAYBACK

1 Press the PLAY button to begin playback.

2 Press the R PLAY button on the remote control unit to obtain reverse playback.
Pressing the button again resumes normal playback.
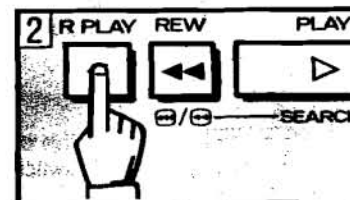
NOTE:
● A few noise bars will appear on the picture during reverse playback.
● Manual tracking adjustment may provide a better picture during reverse playback (see page 59).

ADJUSTMENT ON PLAYBACK

AUTOMATIC DIGITAL TRACKING

Automatically optimizes playback in all playback modes.

- **AUTOMATIC DIGITAL TRACKING**
  Set the DIGITAL TRACKING switch to AUTO position. Insert a cassette and press the PLAY button. The DIGITAL TRACKING indicator will flash until tracking is set.
  If, during playback, the recorded speed changes or a border between recorded sections on two different VCRs is encountered, the digital tracking will be automatically reset.

NOTE:

- During digital tracking adjustment some noise in the picture or Hi-Fi sound is normal.

- **MANUAL TRACKING**
  In case of the tape whose recording condition is bad, set the DIGITAL TRACKING switch to MANUAL position and rotate the TRACKING control to search a better picture.
  (DIGITAL TRACKING indicator turns OFF.)
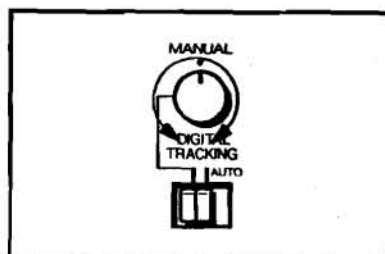
Hi-Fi SOUND TRACKING ADJUSTMENT

Even when picture is clear with the automatic digital tracking adjustment, noise and breaks in the Hi-Fi sound track sometimes occur when playing back tapes recorded on other VCRs. In such cases adjust the Hi-Fi tracking as described below.

1. Set the METER SELECT switch to Hi-Fi TRACKING position.

2. Set the Hi-Fi/MIX/NORMAL switch to Hi-Fi position and press the AUDIO MONITOR button to STEREO.

3. Set the DIGITAL TRACKING switch to MANUAL position.

4. Adjust the TRACKING control until the LEVEL meter (RIGHT) shows the maximum reading.
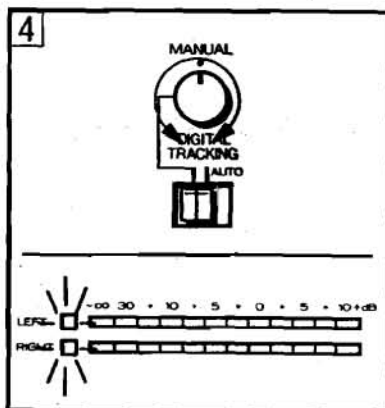
PICTURE QUALITY ADJUSTMENT

This control allows you to adjust the playback picture so that the outline is sharper or softer.

NOTE:

- This control is only effective during playback.
- When the DUB SELECT switch is in COPY position, this control is not effective.
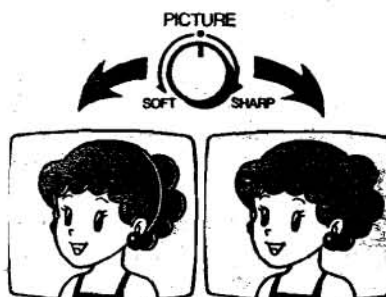
STILL ADJUSTMENT

When watching a still frame or fast playback, the picture may vibrate at the top and bottom. In this case, rotate the STILL ADJUST control to reduce or eliminate the picture vibration.

NOTE:

- Side to side vibration cannot be corrected with the STILL ADJUST control.
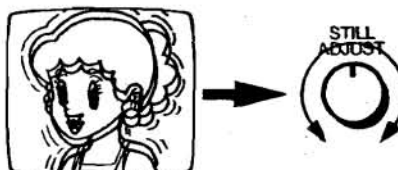
2WAY SPEED SEARCH

THE AUDIO OUTPUT IS MUTED DURING 2WAY SPEED SEARCH.

This VCR employs direct function switching. Any playback mode may be directly entered from any other play-back mode (normal playback, still frame, slow-motion playback, speed search, etc.) simply by pressing the ap-propriate button. For example, normal playback, still frame, slow-motion playback, etc., may be directly activated from speed search.

SPEED SEARCH

[1] Press the PLAY button to begin playback.

[2] Press the FF/FWD SEARCH button to operate forward speed search. Press the button again to restore normal playback.

[3] Press the REW/REV SEARCH button to operate reverse speed search. Press the button again to restore normal playback.

NOTE:
- A few noise bars will appear on the picture during speed search operation.
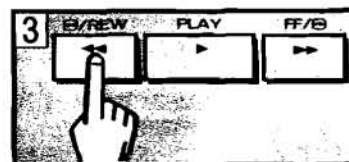
HIGH SPEED SEARCH

[1] Press the PLAY button to begin playback.

[2] Press the FF/FWD SEARCH button and hold for about one second before releasing for forward high speed search. Press the button again to restore normal playback.

[3] Press the REW/REV SEARCH button and hold for about one second before releasing for reverse high speed search. Press the button again to restore normal playback.

NOTE:
- Due to the extremely high speeds (approximately 12 times [SP] and 36 times [EP] as fast as normal playback) it is normal for the number of noise bars on the screen to increase relative to regular speed search mode. Also at these speeds may roll from top to bottom.
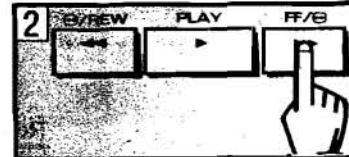
HIGH SPEED SEARCH ADJUSTMENT

If during high speed search the picture wavers from side to side or proper color reproduction is lost, turn the HIGH SPEED SEARCH ADJ control on the rear panel counter-clockwise using a screw driver.

JOG DIAL/SHUTTLE RING

SHUTTLE RING

Use of the SHUTTLE ring changes the playback speed in steps.
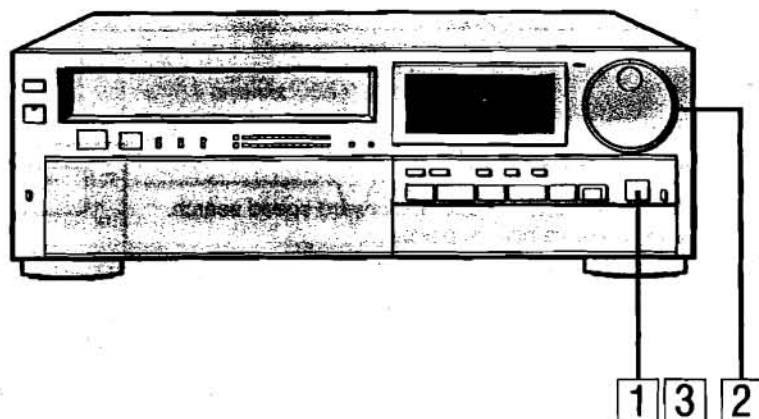
1 Press the JOG/SHUTTLE button to engage jog/shuttle mode during playback.
(The JOG/SHUTTLE indicator will illuminate and playback speed will become the one according to the angle of the SHUTTLE ring.)

2 Turn the SHUTTLE ring to obtain desired playback.
(The playback speed will change as the angle of the SHUTTLE ring changes.)
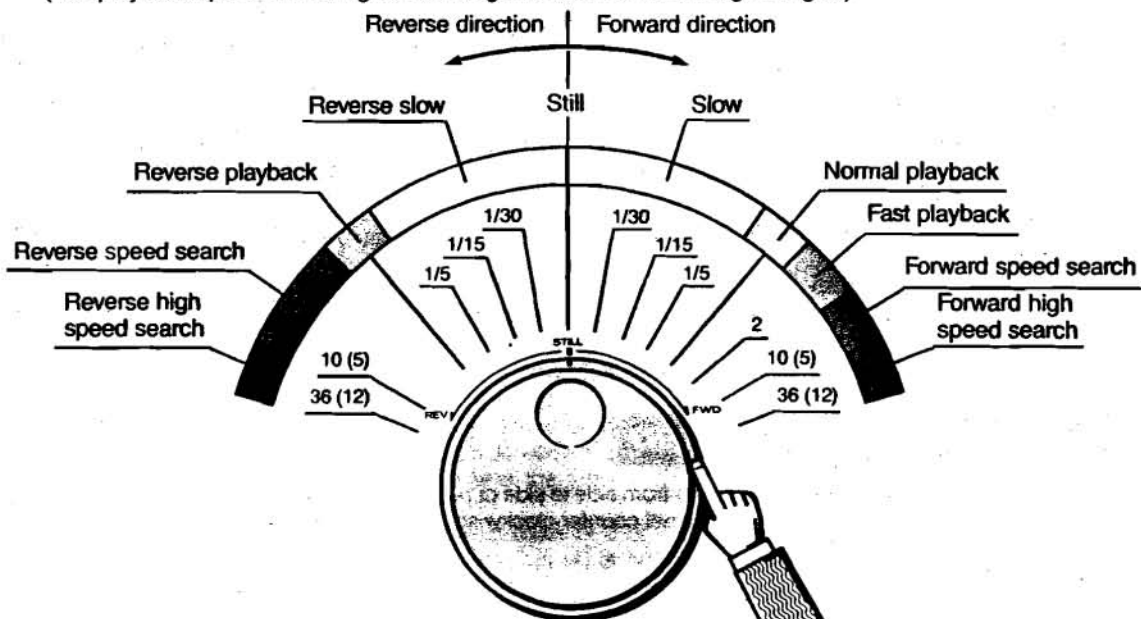
- Each number shows the speed multiplier when normal speed is 1.
- In speed search and high speed search, the number to the left of the parenthesis indicates EP mode and the number inside the parenthesis, SP mode.

3 Pressing the JOG/SHUTTLE button again or the PLAY button resumes the normal playback.
(The JOG/SHUTTLE indicator will turn off.)

JOG DIAL

Use of the JOG dial precisely determines the starting position.
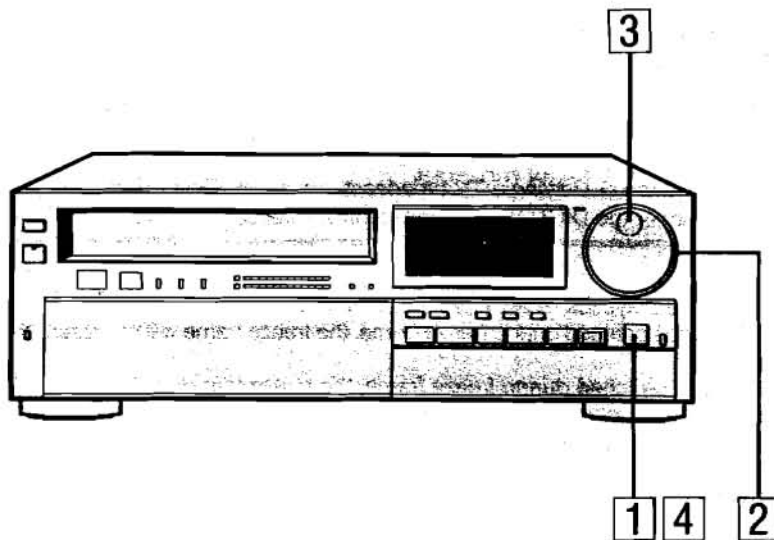
[1] Press the JOG/SHUTTLE button to engage jog/shuttle mode during playback.
(The JOG/SHUTTLE indicator will illuminate and playback speed will become the one according to the angle of the SHUTTLE ring.)

[2] Turn the SHUTTLE ring to the center position to obtain still frame.

[3] Turn the JOG dial clockwise for forward frame advance or counterclockwise for reverse one.
- Each approximately 90-degree turn of the dial will feed one frame of the picture.
- If it is turned rapidly to the right, normal playback will result.
- If it is turned rapidly to the left, reverse playback will result.

[4] Pressing the JOG/SHUTTLE button again or the PLAY button resumes the normal playback.
(The JOG/SHUTTLE indicator will turn off.)

NOTE:
- The audio is muted while using the JOG dial and SHUTTLE ring.
- After about 5 minutes in the still mode the VCR will automatically stop to prevent damage to the tape.
- Any playback mode can be directly engaged during jog/shuttle mode by pressing the appropriate button.
(Jog/shuttle mode will be released and the JOG/SHUTTLE indicator will turn off.)

DIGITAL SCREEN

VARIOUS DIGITAL SCREENS CAN BE ENJOYED BY USE OF THIS VCR'S DIGITAL MEMORY.

NOTE:

- If a picture of digital screen is recorded to another VCR, the recorded picture may not be played back correctly.

FREEZE FRAME

The picture from a tape playback or a TV broadcast can be viewed as a freezed picture by this VCR's digital memory.

- When playing back a tape or viewing a TV broadcast, press the FREEZE button to obtain freeze frame.
  Press the button again or the DIGITAL CLEAR button to release the freeze frame.

NOTE:

- The audio from a tape playback or a TV broadcast is heard.
- If the STROBE button is pressed during freeze frame, the freeze frame will be released and digital strobe mode will be engaged.
- If the VCR channel is switched during freeze frame, the freeze frame will be released.
- Freeze frame cannot be recorded or insert-edited on this VCR.
- If a freeze frame picture vibrates, do the still adjustment (see page 59).

DIGITAL STROBE

Freeze frames from a tape playback or a TV broadcast can be viewed at fixed intervals in a continuous series by the digital memory.

- When playing back a tape or viewing a TV broadcast;
  press the STROBE button to obtain digital strobe.
  Press the button again or the DIGITAL CLEAR button to release the digital strobe.

Freeze frame advances at fixed intervals.

- To change the intervals of strobe speed:
  Each time the SPEED + button is pressed, the strobe speed interval will become shorter; each time the SPEED − button is pressed, it will become longer.
  (The strobe speed will be displayed on the TV screen.)

  The strobe speed interval can be set in eight steps.
  1 second (at display 1) — 1/12 seconds (at display 8)

MULTI 9 PAGES/SPEED 5

Strobe speed
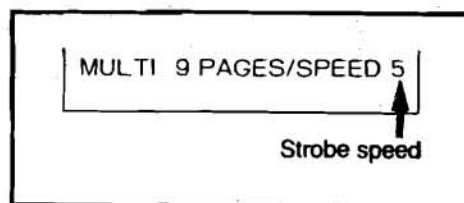
NOTE:

- The audio from a tape playback or a TV broadcast is heard.
- If the FREEZE button is pressed during digital strobe, the digital strobe will be released and freeze frame mode will be engaged.
- If the VCR channel is switched during digital strobe, the digital strobe will be released.
- Digital strobe cannot be recorded or insert-edited on this VCR.

63

PICTURE-IN-PICTURE

The picture from a tape playback and the picture from a TV broadcast can be viewed at the same time.

■ Press the PIP button to engage picture-in-picture during playback.
Each time the button is pressed, the TV screen will change as follows.

Picture from a
tape playback

Picture from a
tape playback

Picture from a
TV broadcast

Picture from a
TV broadcast

Picture from a
tape playback
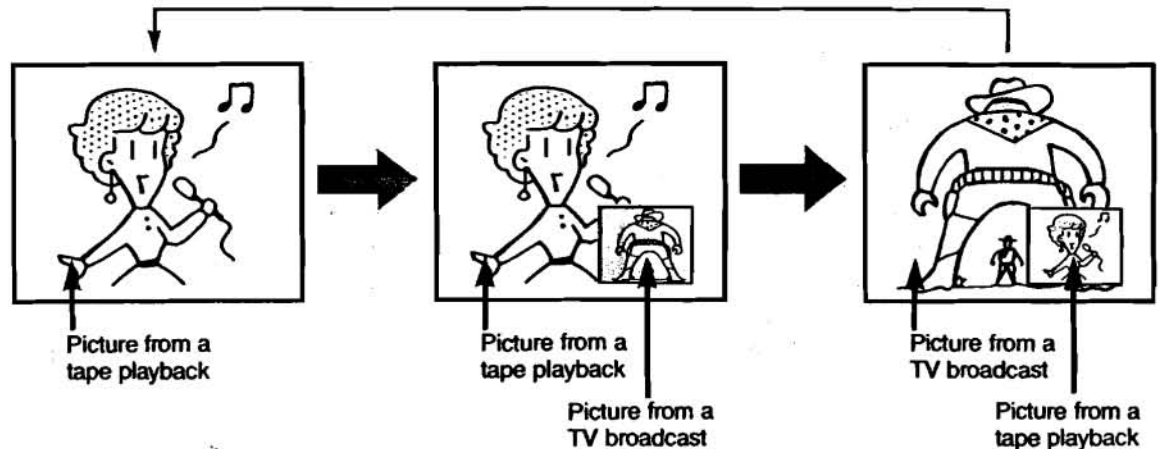
■ Each time the QUAD button is pressed, the sub-screen shifts as illustrated.

NOTE:

• If any playback mode other than normal (still, slow, etc.) is activated when the sub-screen displays a picture from tape playback, shifting the sub-screen position is not possible.
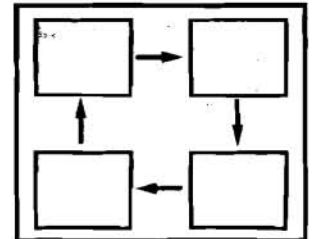
■ Each time the DIVIDE button is pressed, the sub-screen size becomes smaller as shown below.

1/9 → 1/16 → 1/25 → 1/36
1/100 ← 1/81 ← 1/64 ← 1/49
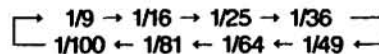
(Each number displayed on the screen represents the size of the sub-screen as a fraction of the normal screen size, which is 1.)

MULTI 9 PAGES/SPEED 5

Size of the sub-screen

NOTE:

• If a channel not currently broadcasting is selected or if there is no signal from VIDEO IN connector, the tape playback picture remains on the screen, the sub-screen cannot be displayed and the sound becomes noisy or stops.
• The audio for the main screen is heard during picture-in-picture.
• If a still, forward or reverse slow, reverse playback, fast playback, speed search or high speed search is activated when the main screen displays a picture from tape playback, picture-in-picture will be released.
• If the picture-in-picture is released when the sub-screen displays a still playback picture, the picture may vibrate. In this case, press the SLOW/FR ADV button.
• Picture-in-picture cannot be recorded or insert-edited on this VCR.
• When the main screen shows a black-and-white picture and the sub-screen shows a color picture, color of the sub-screen may disappear and/or rainbow-colorednoise may appear on the main screen.
When the main screen shows a color picture and the sub-screen shows a black-and-white picture, rainbow-colorednoise may appear on the sub-screen.
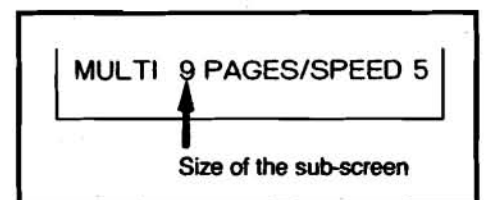
MULTI-SCREEN

MULTI-SCREEN
BY DIVIDING THE SCREEN INTO 9 OR 100 SUB-SCREENS, IT IS POSSIBLE TO VIEW THE TAPE PLAYBACK PICTURE OR TV BROADCAST PICTURE AS A PHOTOGRAPHIC PLAY-BACK. THIS IS ALSO USEFUL IN SEARCHING FOR THE POSITION WHERE RECORDING IS TO START WHEN EDITING.

NOTE:
- If a picture of multi-screen is recorded to another VCR, the recorded picture may not be played back correctly.

MULTI-CHANNEL

It is possible to verify the TV program one after the other.
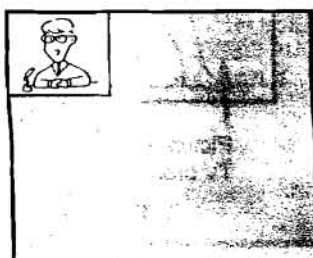
A freeze frame from each channel in the channel memory will be displayed in sequence in the order of the channel number.

This sequence is repeated after all channels in the channel memory have been displayed.
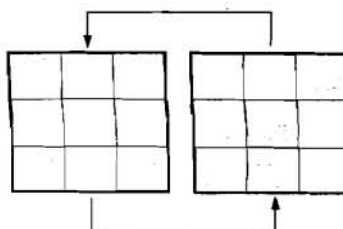
If the number of channels in the channel memory is more than that of sub-screens, the channels that have not been displayed will be displayed (from on the upper left sub-screen) after all sub-screens are filled up.

1. Press the DIVIDE button to select the number of sub-screens.
   (The number of sub-screens will be displayed on the TV screen.)

2. Press the MULTI CHANNEL button.

3. To release the multi channel, press the DIGITAL CLEAR button.

MULTI 9 PAGES/SPEED 5

Number of sub-screens
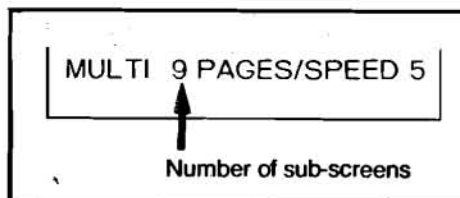
NOTE:
- The number of sub-screens cannot be changed during multi-channel.
  Change the number after releasing it.
- Pressing the SPEED + or − button will change the strobe speed display on the TV screen but does not change strobe speed of multi-channel.
- The channel cannot be switched during multi-channel.
- Multi-channel cannot be recorded or insert-edited on this VCR.
- When there is a black-and-white broadcasting picture in the multi-channel display, color of the color broadcasting sub-screen may disappear and/or rainbow-colored noise may appear on the black-and-white sub-screen.

MULTI-STILL/STROBO

Picture from a tape playback or from a TV broadcast can be viewed as a photographic playback with the multi-screen.

Sub screen

Still pictures memorized by the digital memory

Active picture   Active picture   Active picture
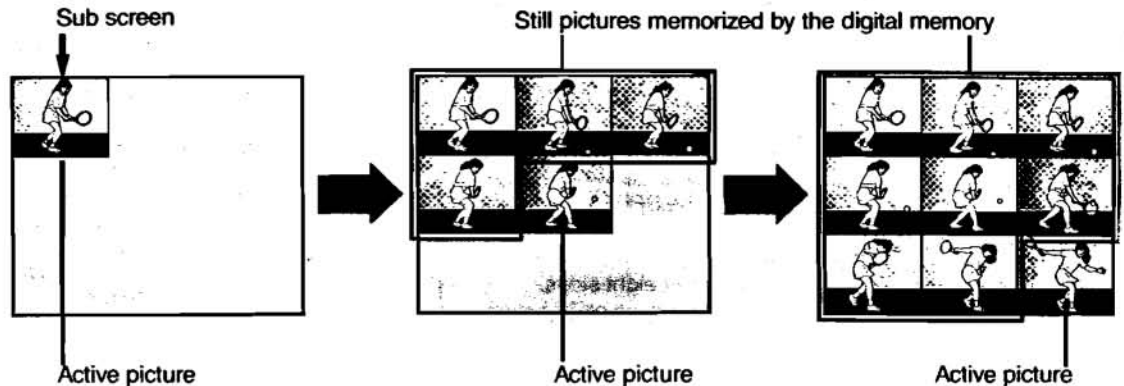
If all available sub-screens have been used, the next picture will be displayed on the sub-screens replacing the existing ones.

Press the MULTI STILL/STROBE button to obtain multi-still/strobe.
- When changing to the multi-still/strobe during normal playback, the active picture enters normal playback and the sub-screens automatically increase at a fixed interval.
- When changing to the multi-still/strobe during still playback, the active picture enters slow playback and the sub-screens automatically increase each time a given number of frames are fed to the screen.
- When changing to the multi-still/strobe from slow playback, active picture enters still playback and the sub-screens do not increase.
(Refer to the "TO INCREASE THE SUB-SCREENS MANUALLY" if an increase in sub-screens is desired.)
- When changing to the multi-still/strobe during viewing a TV broadcast, the active picture enters TV broadcast and the sub-screens automatically increase.

For multi-still/strobe of reverse direction, see page 67.

NOTE:
- The audio is muted during multi-still/strobe when active picture is in slow or still playback.
- During fast playback, speed search, high speed search or recording, multi-still/strobe cannot be engaged.
- Multi-still/strobe cannot be recorded or insert-edited on this VCR.
- The still picture may vibrate if the multi-still/strobe is released when the active picture is in still playback. In this case, press the SLOW/FR ADV button.

THE FOLLOWING CAN BE DONE DURING MULTI-STILL/STROBE:

TO INCREASE THE SUB-SCREENS MANUALLY
- In case the active picture is in still playback, each time the SLOW/FR ADV button is pressed, the active picture advances one frame at a time, and each time the given number of frames are fed, the sub-screens increase.
  - If the SLOW/FR ADV button is continuously pressed for more than about one second, the active picture will enter slow playback.
- In case the active picture is in normal playback or TV broadcast mode, pressing the MULTI STILL/STROBE button only once will not increase the sub-screens. Each subsequent pressing of the button will, however, increase the sub-screens.
  - If it is desired to increase the screens again automatically, keep pressing the MULTI STILL/STROBE button for more than about one second.

TO CHANGE THE NUMBER OF MULTI-SCREENS

■ Each time the DIVIDE button is pressed, the number of multi-screens will increase. (The number of multi-screens will be displayed on the screen.)
  ● The number of multi-screens will change as shown below.

$$9 \rightarrow 16 \rightarrow 25 \rightarrow 36$$
$$100 \leftarrow 81 \leftarrow 64 \leftarrow 49$$

```
┌──────────────────────────────┐
│  MULTI  9 PAGES/SPEED 5       │
│            ▲                   │
└────────────┼──────────────────┘
             │
       Number of multi-screens
```
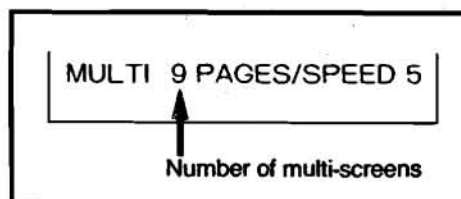
TO CHANGE THE INTERVAL OF STROBE SPEED (THE SPEED AT WHICH THE SUB-SCREENS INCREASE)

■ Each time the SPEED + button is pressed, the strobo speed interval will become shorter; each time the SPEED − button is pressed, it will become longer. (The strobo speed will be displayed on the screen.)
  ● The strobo speed interval can be set in eight steps.
  ● When the active picture is in normal playback or TV broadcast, 2 seconds (at display 1) — 1/30 seconds (at display 8).
  ● When the active picture is in slow playback or frame advance playback, 8 frames (at display 1) — 1 frame (at display 8).

```
┌──────────────────────────────┐
│  MULTI  9 PAGES/SPEED 5       │
│                  ▲             │
└──────────────────┼────────────┘
                   │
            Strobe speed
```

TO TURN ALL SUB-SCREENS INTO FREEZE FRAME

■ Use of the PLAY, PAUSE/STILL and SLOW/FR ADV buttons
  ● The operation is the same as that in playback mode when there is no multi-still/strobe screen. (Refer to pages 57 and 58.)
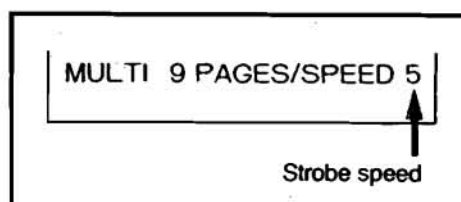   For example, if the PAUSE/STILL button is pressed when the active picture is in normal playback, the active picture will enter still playback.

NOTE:
  ● If the picture is in an action mode such as fast playback, speed search, high speed search and stop, the multi-still/strobe screen will be released.

■ Use of MULTI STILL/STROBE button
  ● If the active picture is in still playback, pressing the button changes the active screen to slow playback.
  ● If the active picture is in slow playback, pressing the button changes the active screen to still playback.

TO TURN ALL SUB-SCREENS INTO FREEZE FRAME

■ If the active picture is in normal playback or TV broadcast, pressing the MULTI STILL/STROBE button when the sub-screen on the bottom right is the active picture will cause all the sub-screens to become still pictures that are memorized by the digital memory.
  ● If it is desired to change a still picture to an active picture, press the MULTI STILL/STROBE button once more. When the button is pressed, the screen on the upper left will become the active picture.

NOTE:
  ● Tape or TV broadcasts continue to advance even though all the sub-screens are still pictures.

REVERSE MULTI-STILL/STROBE

■ Press the REVERSE SLOW/FR ADV button on the remote control unit during multi still/strobe to obtain reverse multi-still/strobe.
  ● In case of changing to the reverse multi-still/strobe when the active picture is in normal playback or slow, the active picture enters reverse slow playback, and the sub-screens increase in the reverse direction each time the given number of frames are fed.
  ● In case of changing to the reverse still/strobe when the active picture is in still playback, the active picture enters reverse frame advance each time the REVERSE SLOW/FR ADV button is pressed, and the sub-screens increase in the reverse direction each time the given number of frames are fed.
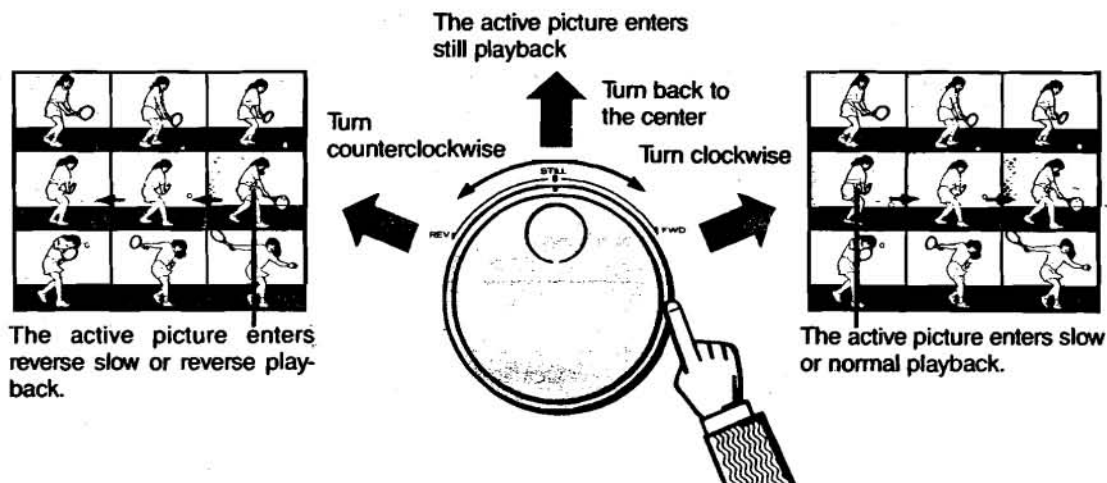   (The active picture enters reverse slow playback if the button is kept pressing for about one second.)
■ Press the MULTI STILL/STROBE button during reverse playback to obtain reverse multi-still/strobe.
  ● The active picture enters reverse playback and the sub-screens automatically increase in the reverse direction at a fixed interval.
    (Pressing the R PLAY button during multi-still/strobe result in the same action as above.)

WHEN THE JOG/SHUTTLE BUTTON IS PRESSED DURING MULTI-STILL/STROBE, THE ACTIVE PICTURE'S PLAYBACK ACTION MODE CAN BE CHANGED BY USING THE JOG DIAL AND THE SHUTTLE RING.

The active picture enters still playback

Turn counterclockwise

Turn back to the center

Turn clockwise

The active picture enters reverse slow or reverse play-back.

The active picture enters slow or normal playback.

Turn counterclockwise

Turn clockwise

The active picture enters reverse frame advance

The active picture enters forward frame advance

BY USING THE JOG DIAL AND SHUTTLE RING WHEN VIEWING THE MULTI-STILL/STROBE, IT IS POSSIBLE TO SEARCH FOR THE POSITION WHERE IT IS DESIRED TO START RECORDING.

[1] During viewing multi-still/strobo, turn back the SHUTTLE ring to the center.

[2] Press the JOG/SHUTTLE button.

[3] Turn the SHUTTLE ring to turn the sub-screen where it is desired to start recording the active picture.

[4] Turn back the SHUTTLE ring to the center.

[5] Turn the JOG dial to search for precise starting position of recording.

[6] Press the PAUSE/STILL button.
(Multi still/strobe is released.)

[7] Press the REC button.

[8] Press the PAUSE/STILL button to begin recording.

NOTE:
● If the SHUTTLE ring angle is set at the position of fast playback, speed search or high speed search when the JOG/SHUTTLE button is pressed, multi still/strobe will be released.

MULTI-TIME SEARCH

This searches the scene every five minutes (or ten minutes) of recorded time, plays it back for a few seconds and then displays a freeze frame of the scene on the multi-screen. Thus the recorded contents of a tape can be reviewed at a glance.

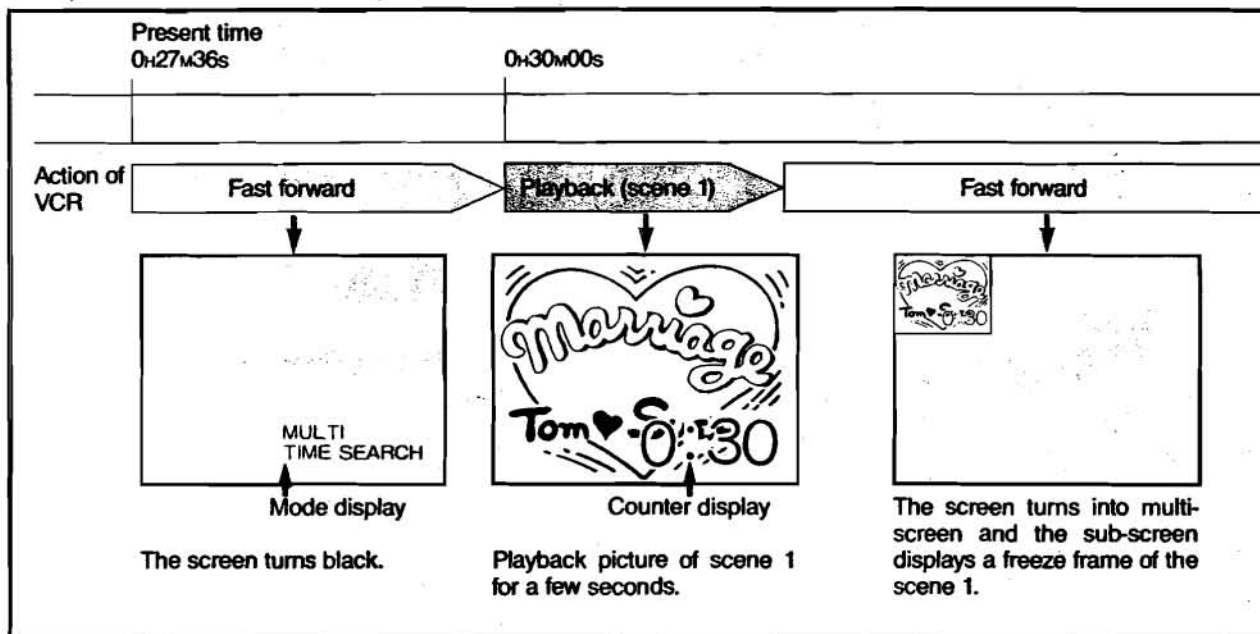There are two types of multi-time search; one displays every five minutes of recorded time (the minute digit on the counter will be 0 or 5) and the other displays every ten minutes of recorded time (the minute digit on the counter will be 0.)

Example: Multi-time search of every 5 minutes with 9 sub-screens

Present time
0H27M36s   0H30M00s

Action of VCR: Fast forward → Playback (scene 1) → Fast forward

MULTI TIME SEARCH
Mode display
The screen turns black.

Counter display
Playback picture of scene 1 for a few seconds.

The screen turns into multi-screen and the sub-screen displays a freeze frame of the scene 1.

[1] Press the DIVIDE button to select the number of sub-screens.
(The number of sub-screens is displayed on the TV screen.)

[2] Press the SPEED + or − button to select the interval of searching.
(Interval of searching is displayed on the TV screen.)
  - For searching of each five minutes, select the strobo speed display between 1 and 4.
  - For searching of each ten minutes, select the strobo speed display between 5 and 8.

[3] Press the MULTI TIME SEARCH button on the remote control unit.

[4] To release the multi-time search, press the DIGITAL CLEAR button.

NOTE:
  - The number of sub-screens and interval of searching cannot be changed during multi-time search.
  - If the tape stops with black screen, press the DIGITAL CLEAR button.

TO PLAY BACK THE SCENE DISPLAYED ON THE MULTI-SCREEN
Perform elapsed time search using the counter number displayed on the scene. The tape will wind to the scene and playback will begin.
  - Enter the counter number to the second.
  - Pressing the STOP button stops the playback and resumes the multi-screen.
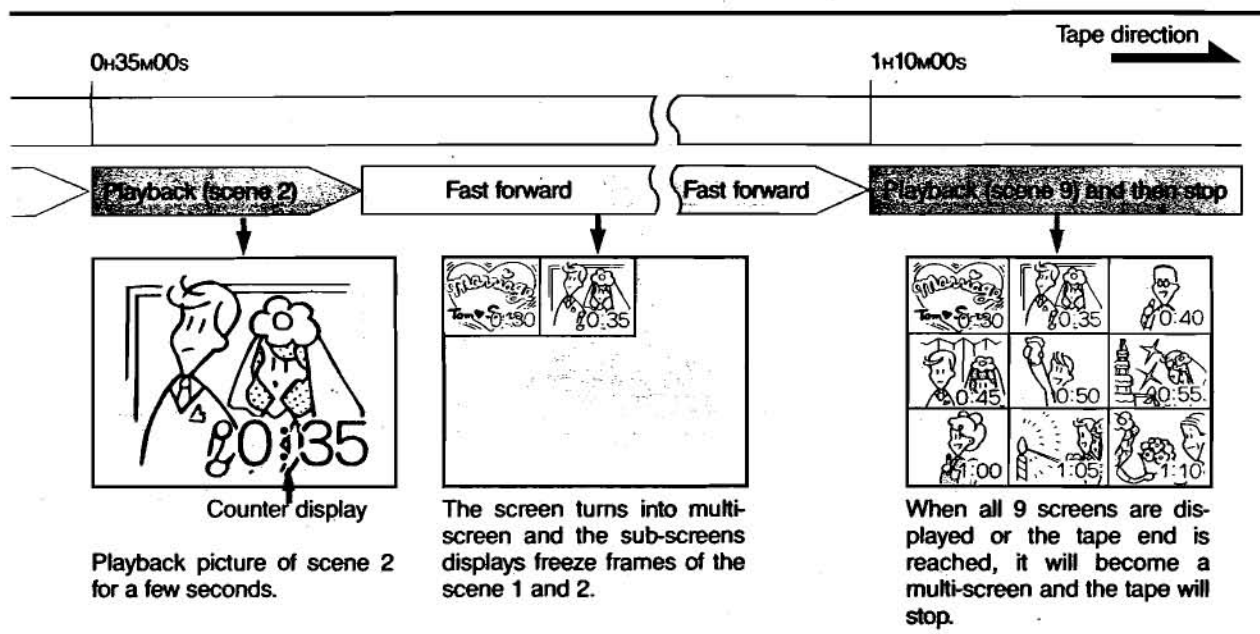
0ʜ35ᴍ00s   1ʜ10ᴍ00s

| Playback (scene 2) | Fast forward | Fast forward | Playback (scene 9) and then stop |

Counter display

Playback picture of scene 2 for a few seconds.

The screen turns into multi-screen and the sub-screens displays freeze frames of the scene 1 and 2.

When all 9 screens are displayed or the tape end is reached, it will become a multi-screen and the tape will stop.

IT IS CONVENIENT TO INSERT-EDIT A MULTI-SCREEN AT THE BEGINNING OF RECORDED SECTION TO VIEW THE RECORDED CONTENTS OF A TAPE AT A GLANCE.

① Begin the multi-time search to display all sub-screens.

② Rewind the tape to the beginning.

③ Press the PLAY button and then the PAUSE/STILL button to obtain still frame.

④ Press the INSERT button to engage insert standby mode.
(The TV screen does not display the editing window.)

⑤ Press the PAUSE/STILL button to start insert editing.

⑥ Press the STOP button after recording for a few seconds.
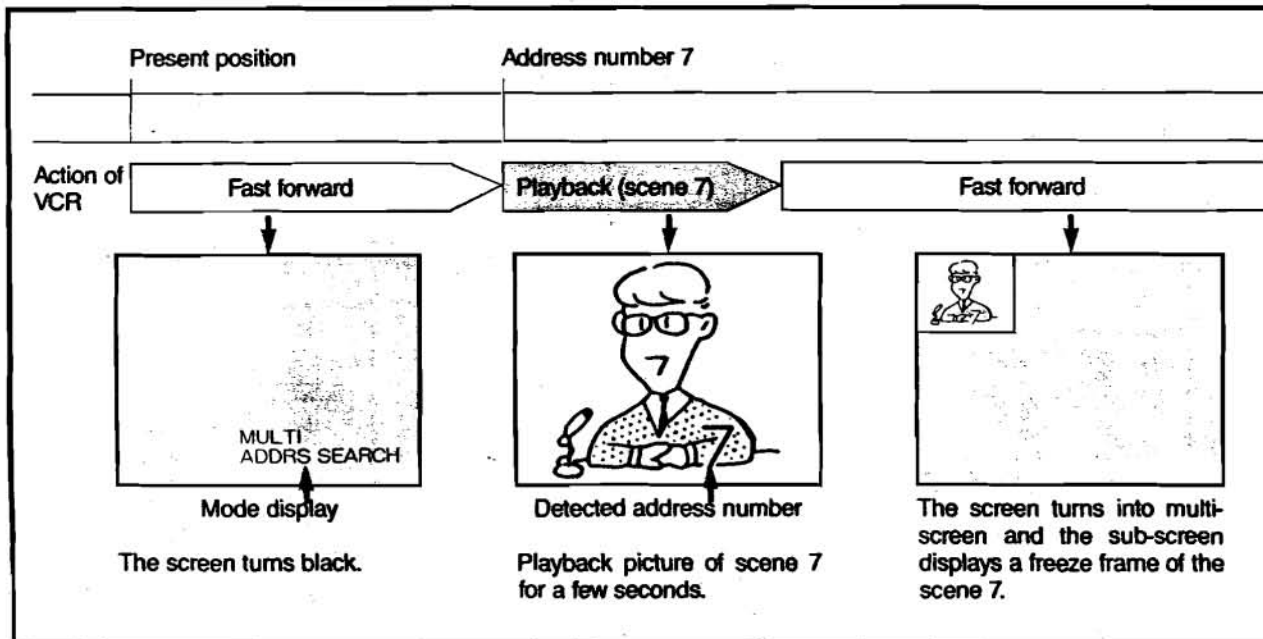(The multi-screen is released.)

NOTE:

• During insert editing, the audio signal (such as the audio signal of a TV broadcast) from the equipment that is currently connected to the AUDIO IN connectors can be simultaneously recorded. If the audio signal is not to be recorded, set the REC LEVEL control to 0.

• If the beginning of the tape was not recorded, the picture on which insert editing has been performed will be disturbed. In this case, record the beginning of the tape in advance with a few seconds of some picture that can be deleted, and then perform insert editing.

• The still frame in step ③ will vibrate, but this is not a malfunction. In this case, vibration cannot be eliminated by the still adjustment.

• During multi-screen playback of a tape on which insert editing has been performed, changing the tape to still playback will cause the screen to vibrate, but this is not a malfunction.

This searches the scene where the address signal has been recorded, plays it back for a few seconds and then displays a freeze frame of the scene on the multi-screen. Thus the recorded contents of a tape can be reviewed at a glance.

Example: Multi-address search with 9 sub-screens

Present position	Address number 7	

Action of VCR	Fast forward	Playback (scene 7)	Fast forward

MULTI ADDRS SEARCH	Detected address number	
Mode display		The screen turns into multi-screen and the sub-screen displays a freeze frame of the scene 7.
The screen turns black.	Playback picture of scene 7 for a few seconds.	

1. Press the DIVIDE button to select the number of sub-screens. (The number of sub-screens is displayed on the TV screen).

2. Press the MULTI ADDRESS SEARCH button on the remote control unit.

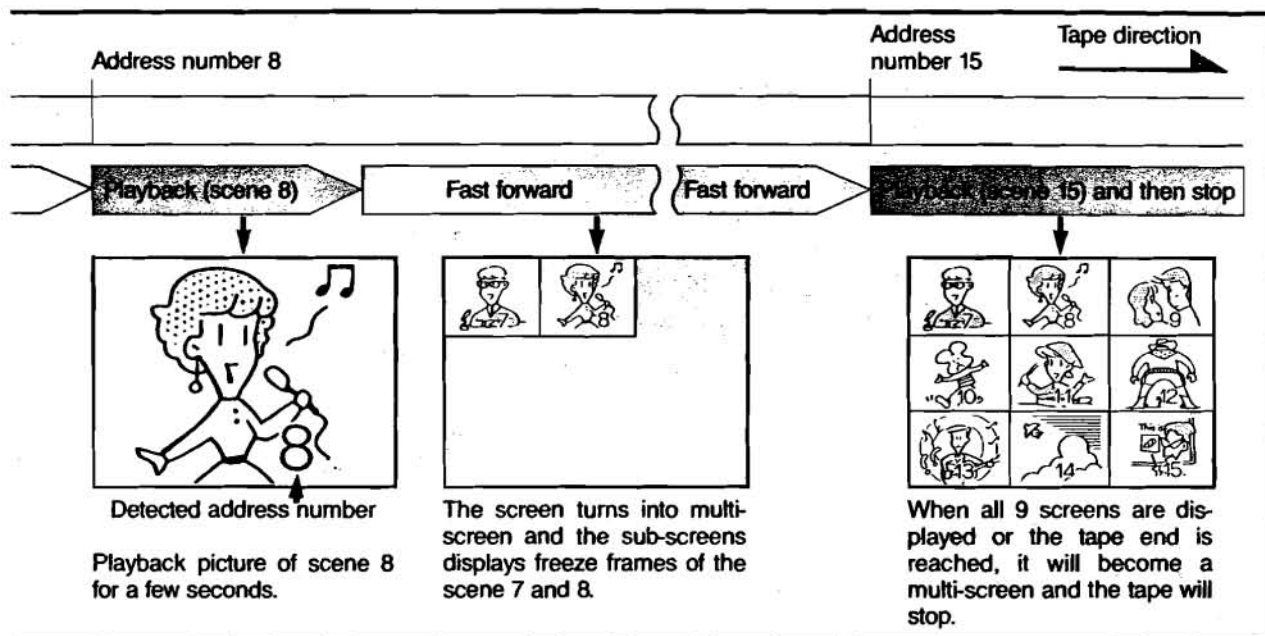3. To release the multi-address search, press the DIGITAL CLEAR button.

NOTE:
- The number of sub-screens cannot be changed during multi-address search.
- If the tape stops with black screen, press the DIGITAL CLEAR button.

TO PLAY BACK THE SCENE DISPLAYED ON THE MULTI-SCREEN

Perform address search using the address number displayed on the scene. The tape will wind to the scene and playback will begin.
- Pressing the STOP button stops the playback and resumes the multi-screen.

Address number 8   Address number 15   Tape direction ▶

| Playback (scene 8) | Fast forward | Fast forward | Playback (scene 15) and then stop |

Detected address number

Playback picture of scene 8 for a few seconds.

The screen turns into multi-screen and the sub-screens displays freeze frames of the scene 7 and 8.

When all 9 screens are displayed or the tape end is reached, it will become a multi-screen and the tape will stop.

IT IS CONVENIENT TO INSERT-EDIT A MULTI-SCREEN AT THE BEGINNING OF RECORDED SECTION TO VIEW THE RECORDED CONTENTS OF A TAPE AT A GLANCE.

① Begin the multi-address search to display all sub-screens.

② Rewind the tape to the beginning.

③ Press the PLAY button and then the PAUSE/STILL button to obtain still frame.

④ Press the INSERT button to engage insert standby mode.
(The TV screen does not display the editing window.)

⑤ Press the PAUSE/STILL button to start insert editing.

⑥ Press the STOP button after recording for a few seconds.
(The multi-screen is released.)

NOTE:
- During insert editing, the audio signal (such as the audio signal of a TV broadcast) from the equipment that is currently connected to the AUDIO IN connectors can be simultaneously recorded. If the audio signal is not to be recorded, set the REC LEVEL control to 0.
- If the beginning of the tape was not recorded, the picture on which insert editing has been performed will be disturbed. In this case, record the beginning of the tape in advance with a few seconds of some picture that can be deleted, and then perform insert editing.
- The still frame in step ③ will vibrate, but this is not a malfunction. In this case, vibration cannot be eliminated by the still adjustment.
- During multi-screen playback of a tape on which insert editing has been performed, changing the tape to still playback will cause the screen to vibrate, but this is not a malfunction.

FINE EDITING

SINCE THIS VCR USES A FLYING ERASE HEAD, EXCEPTIONALLY FINE EDITING IS POSSIBLE.
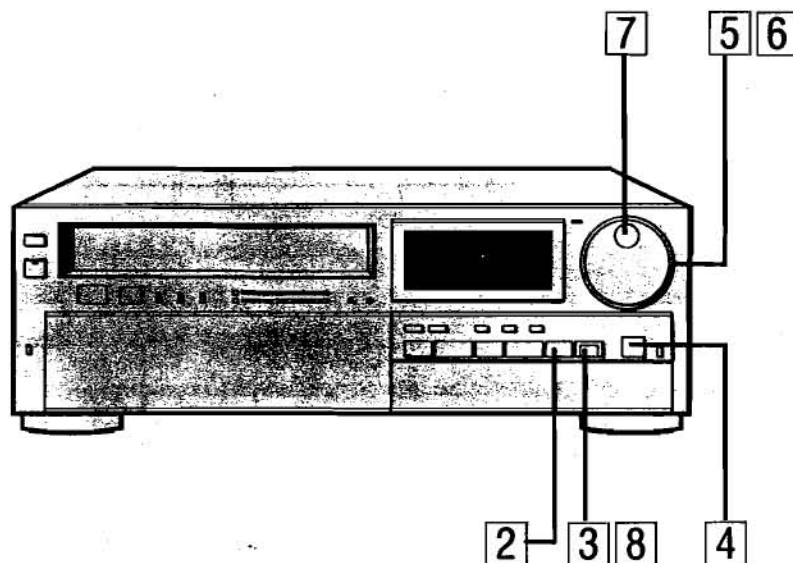
1 Begin playback.

2 Press the PAUSE/STILL button to obtain still frame.

3 Press the REC button to engage record pause mode.

4 Press the JOG/SHUTTLE button.
(The TV screen will display an editing window and the playback speed for the sub-screen will become the one according to the angle of the SHUTTLE ring.)

5 Turn the SHUTTLE ring to locate the point at which you wish to start recording while observing the sub-screen.

6 Turn back the SHUTTLE ring to the center.

7 Turn the JOG dial to locate the precise position of recording.

8 Press the REC button to start recording.

NOTE:

- If the tape speed is switched at an edited section, the picture there will be distorted.
- In order to produce finer edited results, when editing with the editing window it takes some three or four seconds from the time record pause is released to the time when the contents are recorded.

AUDIO DUBBING

THIS VCR ALLOWS YOU TO RECORD NEW SOUND ON A PRE-RECORDED CASSETTE ALONG WITH THE EXISTING PICTURE. THE SOUND TRACK AVAILABLE FOR AUDIO DUBBING IS THE NORMAL SOUND TRACK ONLY. THE Hi-Fi SOUND TRACKS ARE REPRODUCED AS USUAL DURING AUDIO DUBBING.

	BEFORE	AFTER
Hi-Fi SOUND TRACK	Narration	Narration
NORMAL SOUND TRACK		Sound effect

● Set the EXTERNAL INPUT SELECT switch to "2" position.

←LINE OUT   AUDIO IN 2→   ←MIC

2   4 5 3
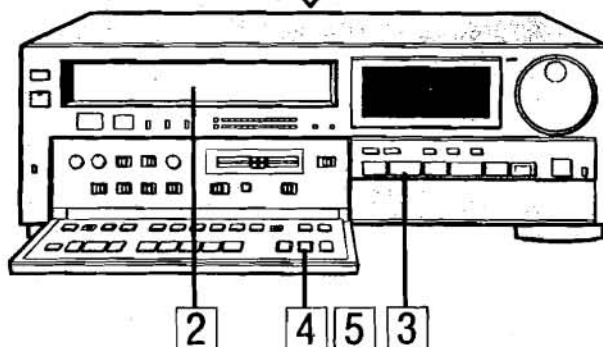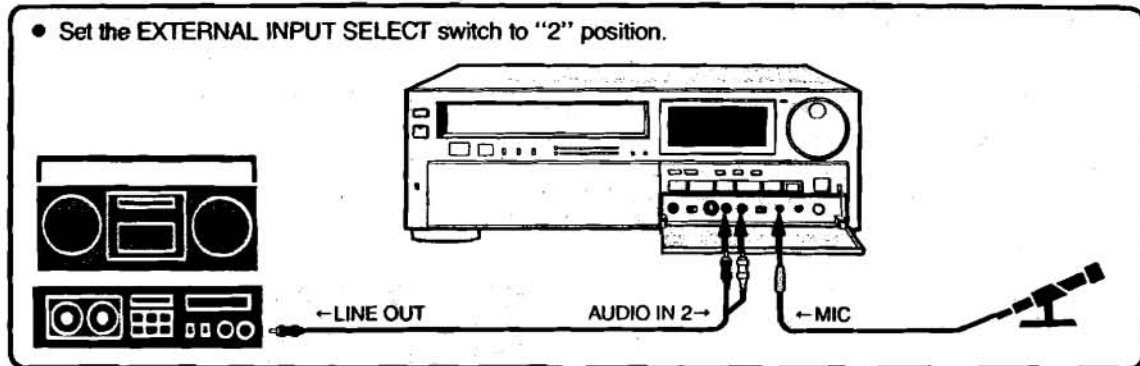
1 Connect the equipment to be used for the new recording.
   Use the MIC jack to connect a microphone.
   Use the AUDIO IN connectors for a radio cassette recorder or cassette deck.
● Press the INPUT SELECT button to EXT when using the AUDIO IN connectors.

2 Load a cassette with the erasure prevention tab intact.

3 Press the PLAY button to begin playback. Locate the point where audio dubbing is to begin. Use the speed search, fast play and pause controls to find the precise location. Select pause at that point.

4 Press the AUDIO DUB button (the AUDIO DUB indicator will illuminate) and operate the sound source. Release the pause to begin audio dub recording.

5 Press the AUDIO DUB button to terminate audio dub recording at the desired point. The AUDIO DUB indicator will go off.

NOTE:

● Audio dubbing is not possible using a cassette whose erasure prevention tab removed.
● When using a microphone, if a high-pitched sound is heard from the TV set, either turn down the TV volume or place the microphone away from the TV set.
● When both the microphone and audio input terminals are connected, audio dubbing is only done with the microphone signal. Always remove the microphone when not in use.
● The sections where audio dubbing has been done will have somewhat reduced audio quality.
● Audio dubbing erases any preexisting recording on the tape and replaces it with new audio.
● During audio dubbing, the audio monitor automatically switches to the normal audio track.
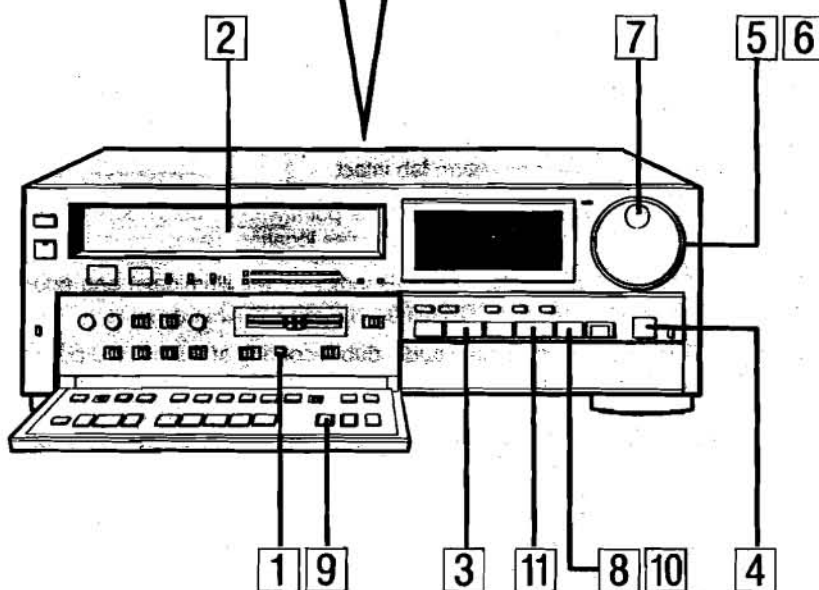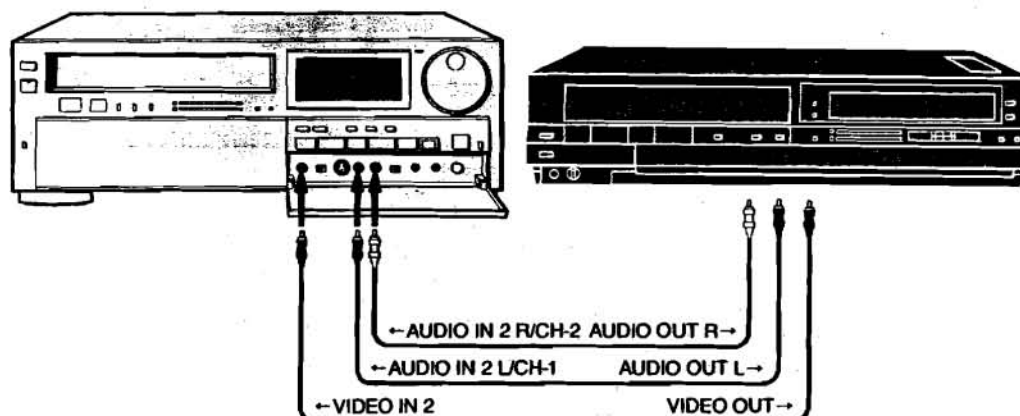
INSERT EDITING

AN "INSERT EDIT" IS THE RECORDING OF NEW VIDEO INTO A SECTION OF AN EXIST-
ING TAPE TO REPLACE THE ORIGINAL VIDEO. YOUR NEW VCR IS DESIGNED TO PER-
FORM AN "INSERT EDIT" WITH A MINIMUM OF PICTURE DISTORTION AT THE "EDIT-IN"
AND "EDIT-OUT" POINTS.

NOTE:

- Only the VHS Hi-Fi audio track is recorded in the insert edit mode. The normal audio sound track is not erased and will contain the audio from the original recording.
- Performing an insert edit in the same location more than once will degrade picture quality.
- Some picture distortion or charge in color may occur with the insert edit depending upon recording conditions.

CONNECTION:

■ For inserting video signals from another VCR
● Set the this VCR's EXTERNAL INPUT SELECT switch to "2" position.

←AUDIO IN 2 R/CH-2 AUDIO OUT R→

←AUDIO IN 2 L/CH-1 AUDIO OUT L→

←VIDEO IN 2 VIDEO OUT→

1. Connect the equipment to be used for insert edit. Press the INPUT SELECT button to EXT.

2. Load the cassette to be edited, set the TV to the Video channel and wind the tape to the approximate edit point.

3. Press the PLAY button (continue the playback for a few seconds and check that the DIGITAL TRACKING indicator is illuminated).

4. Press the JOG/SHUTTLE button.
   (The JOG/SHUTTLE indicator will illuminate and playback speed will become the one according to the angle of the SHUTTLE ring.)

5. Turn the SHUTTLE ring to locate the point at which you wish to start insert edit recording.

6. Turn back the SHUTTLE ring to the center.

7. Turn the JOG dial to search for precise starting position of insert edit recording.

8. Press the PAUSE/STILL button.
   (The JOG/SHUTTLE indicator will turn off.)

9. Press the INSERT button to engage the insert standby mode.

10. Operate the video source and press the PAUSE/STILL button to begin insert edit recording.

11. Press the STOP button to stop insert edit recording.

NOTE:
- The PAUSE/STILL button may be operated during insert edit recording to bypass material from the video source.
- If the VCR is left in the insert standby mode for longer than about 5 minutes, it automatically switches to stop to protect the tape.
- At the beginning of insert recording the sound is momentarily played back in the fast rewind mode. This is not due to any failure or defect.
- Use of the TAPE SPEED button is not necessary during insert edit recording. VCR automatically inserts the recording in the same tape speed at which the tape has been recorded.
- The tape speed is not displayed during insert recording.
- Insert recording cannot be done on unrecorded tape.

BEFORE CALLING FOR SERVICE

What may initially appear to be trouble is not always a problem. Make sure first...

Q (Symptom)	**A** (Remedy)
No power supplied to VCR.	• Has the Power cord been disconnected from the AC outlet? • Is the PROG REC indicator (⊡) illuminated? If so, press the PROG REC button. The PROG REC indicator (⊡) turns off. Press the VCR POWER button to ON.
The VCR POWER is ON but unit does not operate.	• Press the TIMER RESET button using a pencil or a ball point pen, and then press the VCR POWER button to ON.
Poor TV picture.	• Adjust the fine tuning control on the TV (channel 3 or 4).
REC button does not operate.	• Is the DEW indicator ON? If so, refer to the "CONDENSATION" on page 4. • Has the cassette erasure prevention tab been removed? If so, stick a piece of vinyl tape over the gap (see page 26). • Is the tape wound to the end?
No picture during recording.	• Has the TV been set to the Video Channel (channel 3 or 4)? • Has the connection cord become disconnected? • Is the VIDEO/TV button set to TV? If so, set to VIDEO. • Is the INPUT SELECT button set to EXT? If so, set to TUNER or SIMUL.
No recording of TV programs.	• Is the VCR's channel selector set to an active channel? • Is the INPUT SELECT button set to EXT? If so, set to TUNER or SIMUL.
No timer recording.	• Has the PROG REC button been switched ON? • Have the present time and recording time been set accurately? • Has the channel been set properly? • Has a power failure occurred? • Has the power cord been disconnected?
PLAY button does not operate.	• Is the DEW indicator ON? If so, refer to the "CONDENSATION" on page 4. • Is the PROG REC indicator (⊡) illuminated? If so, press the PROG REC button. The PROG REC indicator (⊡) turns off. Press the VCR POWER button to ON. • Is the cassette tape at its end?

Rewind and/or Fast Forward do not operate.	• No fast forward:
	  Is the tape wound to the end?
	• No rewinding:
	  Is the tape wound to the beginning?

Noise (snow) in the picture and distorted Hi-Fi sound.	• Has the DIGITAL TRACKING switch set to MANUAL position?
	  If so, set to AUTO position.
	  If noise appears when the DIGITAL TRACKING switch is set to AUTO position, set the DIGITAL TRACKING switch to MANUAL position and rotate TRACKING control until the best picture and Hi-Fi sound can be obtained. (See page 59.)

No Hi-Fi sound or Hi-Fi sound is interrupted.	• Even when picture is clear with the automatic digital tracking adjustment, noise and breaks in the Hi-Fi sound track sometimes occur when playing back tapes recorded on other VCRs. In such cases adjust the Hi-Fi tracking. (See page 59.) • The tape may be too old or too damaged for proper recording.

Q (Symptom)	A (Remedy)
Clear TV pictures but during playback the picture is not clear.	• This may be due to a build up of oxide particles on the video heads that normally occurs after a long period of time. Do not attempt to clean the video heads, as improper head cleaning procedures may irreparably damage the video heads. Contact your dealer.
VCR does not operate with remote control unit.	• Is the REMOTE switch set to OFF position? If so, set to ON position.

If the above remedies do not cure the problem you are having, disconnect the power cord and contact your dealer.

SPECIFICATIONS

Power source	120V 60Hz
Power consumption	Approx. 53 watts
Television system	EIA standard (525 lines, 60 fields) NTSC-type color signal
Tape format	S-VHS/VHS
Tape speed	33.35 mm/sec (SP), 16.68 mm/sec (LP) (Playback only), 11.12 mm/sec (EP)
Record time	160 min/with T-160 cassette (Time is tripled in EP mode)
Playback time	160 min/with T-160 cassette (Time is doubled in LP mode and tripled in EP mode)
Fast Forward/Rewind time	Approx. 3 min with T-120 cassette
TV tuner	Antenna input 75 ohm unbalanced F connector
	VHF CH2 ~ 13, UHF CH14 ~ 69
	CATV 5A, A-5 — A-1, A-W, W+1 — W+84
RF channel output	Channel 3 or 4 (switchable)
Channel selection	Frequency synthesizer
	Set : up/down
	Remote control unit : ten keys, random access
VIDEO	
Input	0.5 to 2.0Vp-p : 75 ohm, BNC plug (REAR)
	0.5 to 2.0Vp-p : 75 ohm unbalanced RCA type jack (FRONT)
Output	1.0Vp-p : 75 ohm, BNC plug
Y signal input/output	1.0Vp-p/75 ohm (S-connector)
C signal input/output	Burst 0.286Vp-p/75 ohm (S-connector)
AUDIO	
Frequency responce	20Hz ~ 20kHz (Hi-Fi sound)
Dynamic range	Better than 90dB (Hi-Fi sound in SP mode)
Wow and flutter	Less than 0.005% Wrm (Hi-Fi sound)
Input	− 8dBs 50k ohm unbalanced RCA type jack
Microphone Input	− 67dBs 10k ohm standard mic jack
Output	− 8dBs 1k ohm unbalanced RCA type jack
Timer	12-hour digital type
	8 programs over four weeks (Includes Monday thru Friday and every week functions.)
Timer accuracy	Crystal oscillation
Operating temperature	41°F ~ 104°F (5°C ~ 40°C)
Operating humidity	35% to 80%
Dimensions	16-11/16 ″ (W) × 5-15/16 ″ (H) × 15-15/16 ″ (D)
Weight	26.4 lbs

The S-connectors input (or output) separately Y and C signals which correspond to NTSC video signals.

Weight and dimensions shown are approximate.
Design and specifications are subject to change without notice.

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