



VIDEORECORDER®  
**AV-3650**  
Operating Instructions

The SONY Model AV-3650 Videocorder is a compact, portable video tape recorder which provides many special features, such as fully-automatic picture and sound recording.

Live-action picture and sound recording, which is accomplished through the use of the SONY Video Camera and microphone, is suited for education, training, home entertainment, and a wide variety of other applications.

Read this instruction manual carefully and save it for future reference.

## FEATURES

### AGC/MANUAL Recording System

Audio and video recording levels can be controlled automatically or manually by the setting of the AGC/MANUAL switch. In the AGC position, the SONY-MATIC recording system assures perfect recording with very little effort. Audio and video level meters are provided for setting levels manually.

### Playback on a Conventional TV Screen

With use of a SONY RF Unit, available as an optional accessory, the recorded tape can be viewed on an ordinary TV screen.

### Complete Tape Interchangeability

Tapes are fully interchangeable so that a tape recorded on any SONY AV-Series Videocorder can be played back on the AV-3650.

### Slow and Still

A still playback picture can be obtained by simply setting the Function Selector to PAUSE. Slow motion tape speed can be varied by turning the SLOW SPEED control.

### Tracking Control

A manual control corrects improper tracking in the playback picture. A meter is provided to indicate optimum tracking.

### Skew Control

The SKEW control adjusts tape tension in the playback mode.

### External Sync Switch

The playback video signal is locked to the external video signal. By setting the EXT SYNC switch to DEFEAT, the drum servo locks to the ac power line frequency.

### Editing

New video and audio may be added or inserted to a previously-recorded tape in the playback mode.

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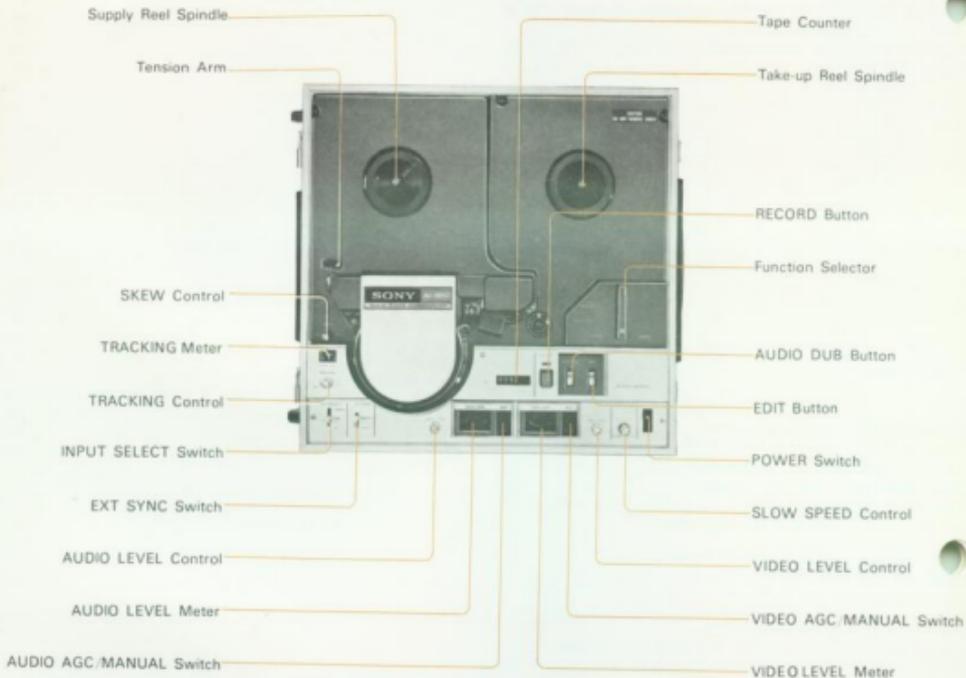
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## PRECAUTIONS

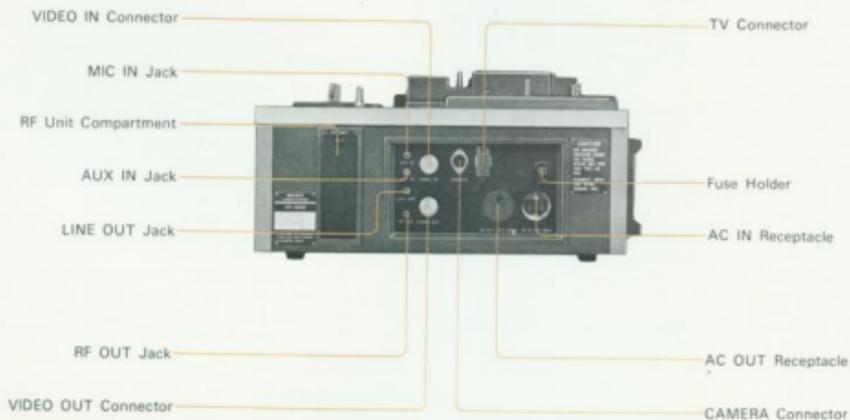
1. Keep the Videocorder away from extreme temperatures and excessive dust and moisture.
2. Keep both Videocorder and video tapes away from strong magnetic fields and sources of electronic noise such as motors, generators, or voltage regulators.
3. Avoid subjecting the tape transport mechanism to unnecessary shock or impact. Do not press or place anything on the head drum cover.
4. Clean the tape path, guides, head drum, and heads before using the tapes. See page 13 for details.
5. The rotary video heads are precisely engineered. Do not touch the heads except for cleaning the heads or threading the tape (with motor off). Never touch the head while the head drum motor is running.
6. Be sure to use the same size tape reels for supplying and taking up the tape.
7. Use the set in a horizontal position only.

# LOCATION OF CONTROLS AND CONNECTORS

## Front Panel



## Rear Panel



## FUNCTION OF CONTROLS AND CONNECTORS

### Front Panel Facilities

#### -SKEW Control

Controls the tape tension. Turn this knob in the playback mode only if the upper portion of the playback picture is distorted. When the RECORD button is pressed, the knob automatically returns to its center position. Do not turn the knob while recording.

#### -TRACKING Control

Regulates video-head tracking. If the playback picture is distorted due to deformation of the tape, turn the knob to achieve optimum picture stability while watching the TRACKING meter. This knob does not function in the record mode.

#### -TRACKING Meter

Indicates tracking condition. Turn the TRACKING control to obtain maximum deflection on the meter.

#### -INPUT SELECT Switch

Selects video input signals applied to the CAMERA connector (CAMERA position), VIDEO IN connector (LINE position) or TV connector (TV position).

#### -EXT SYNC Switch

This switch is effective only when the external video source is connected to VIDEO IN connector and the INPUT SELECT switch is set to LINE.

In the NORMAL position, the playback video signal is locked to the external signal connected to VIDEO IN connector. In the DEFEAT position, the playback video signal is locked to the ac power line frequency. When the playback picture is unstable or noisy, hold the switch down (DEFEAT position) to confirm whether or not the playback signal is influenced by the external video source. If picture distortion disappears with the switch in the DEFEAT position, disconnect the external video source from the VIDEO IN connector to lock the playback signal to the internal ac power line.

#### -AUDIO LEVEL Control

To adjust the audio recording level manually, turn this knob while watching the AUDIO LEVEL meter. This knob has no control over the playback signal.

#### -AUDIO LEVEL Meter

Indicates the audio recording level and playback audio signal level in the playback mode.

#### -AUDIO AGC/MANUAL Switch

Selects automatic or manual control of audio recording level.

#### -VIDEO LEVEL Control

To adjust the video recording level manually, turn this knob while watching the VIDEO LEVEL meter. This knob has no control over the playback signal.

#### -VIDEO LEVEL Meter

Indicates the video recording level during recording and playback video signal level in the playback mode.

#### -VIDEO AGC/MANUAL Switch

Selects automatic or manual control of video recording level.

#### -SLOW SPEED Control

Regulates slow-motion tape speed. Pull up and turn the knob to control the tape speed. When the RECORD button or AUDIO DUB button is pressed, this knob is automatically pulled down.

#### -EJECT Button

Permits insertion of new material into a prerecorded tape or dubbing sound in the playback mode.

#### -AUDIO DUB Button

To add sound to prerecorded pictures in playback, press this button.

#### -RECORD Button

energizes the record electronics of the recorder. To place the Videocorder in the E-to-E mode, depress the button until it locks into position. The red Recording Lamp will light indicating that the Videocorder is ready for recording. To start recording, hold the button down and turn the Function Selector to FORWARD.

#### -Automatic Shut-off Switch

Automatically turns off the power when the tape runs out or breaks. If the Function Selector is set to FORWARD or REWIND without tape threaded, the power will be shut off by this switch.

#### -Function Selector

FAST FORWARD.....advances the tape quickly.  
PAUSE/STILL .....stops tape motion so that a still picture can be obtained in the playback mode. The RECORD and AUDIO DUB buttons are not released in this position.  
FORWARD .....moves the tape at normal speed for recording or playing back.  
STOP .....stops tape motion.  
REWIND .....rewinds the tape.

### Rear Panel Facilities

#### -RF Unit Compartment

To view the playback picture through an ordinary TV set, insert the RF Unit, optional.

#### -RF OUT Jack

When using the RF Unit, connect the Antenna Selector (supplied with the RF Unit).

#### -MIC IN Jack

Use this jack to connect a low-impedance microphone.

#### -AUX IN Jack

Use this jack to connect an alternative sound source, such as a phonograph, tuner, tape recorder, or other microphone/amplifier system.

#### -LINE OUT Jack

Connect to an external hi-fi system or high-impedance crystal earphone.

#### -VIDEO IN Connector

Connect a video camera or a TV receiver/monitor equipped with a UHF-type coaxial video output receptacle.

#### -VIDEO OUT Connector

Connect a video monitor having a 75-ohm input impedance.

#### -CAMERA Connector

Connect a SONY AVC-Series video camera.

#### -TV Connector

Connect any SONY video monitor. All video and audio interconnections to the monitor are made at this connector.

#### -AC OUT Receptacle

Supplies up to 500 watts ac power to one other Videocorder component such as a monitor, camera, etc.

#### -AC IN Receptacle

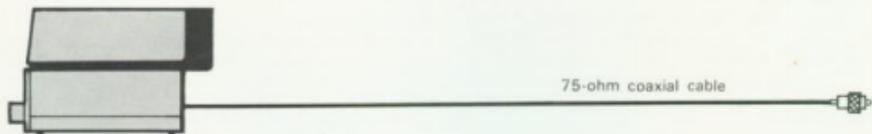
Connect the power cord to any convenient ac outlet.

#### -Fuse Holder

Contains a 1.5 ampere cartridge fuse. Do not use a fuse with a higher rating.

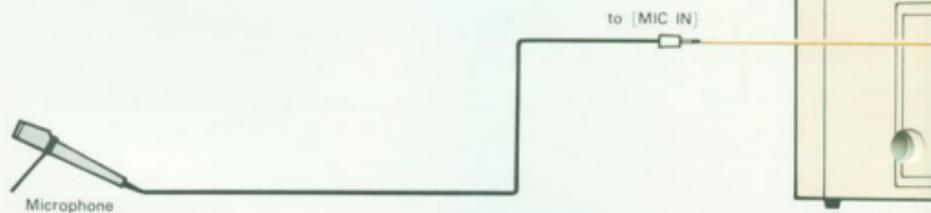
## PREPARATION

### Connections

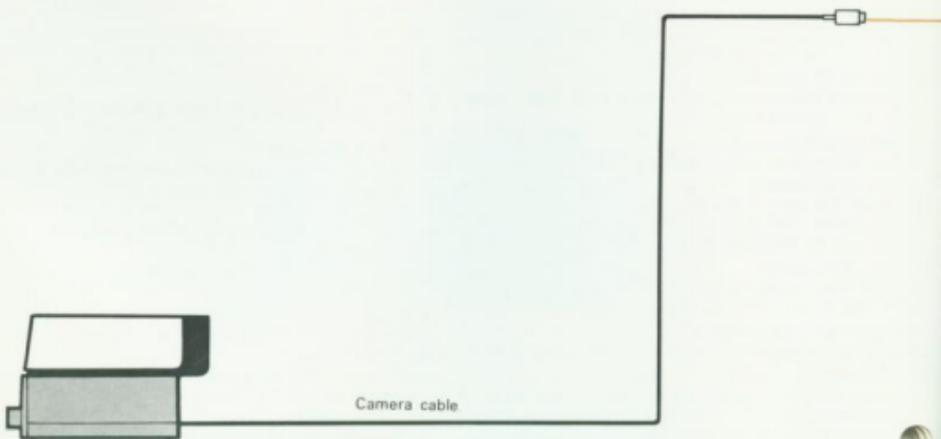


Video camera equipped with UHF coaxial connector and having its own internal sync source

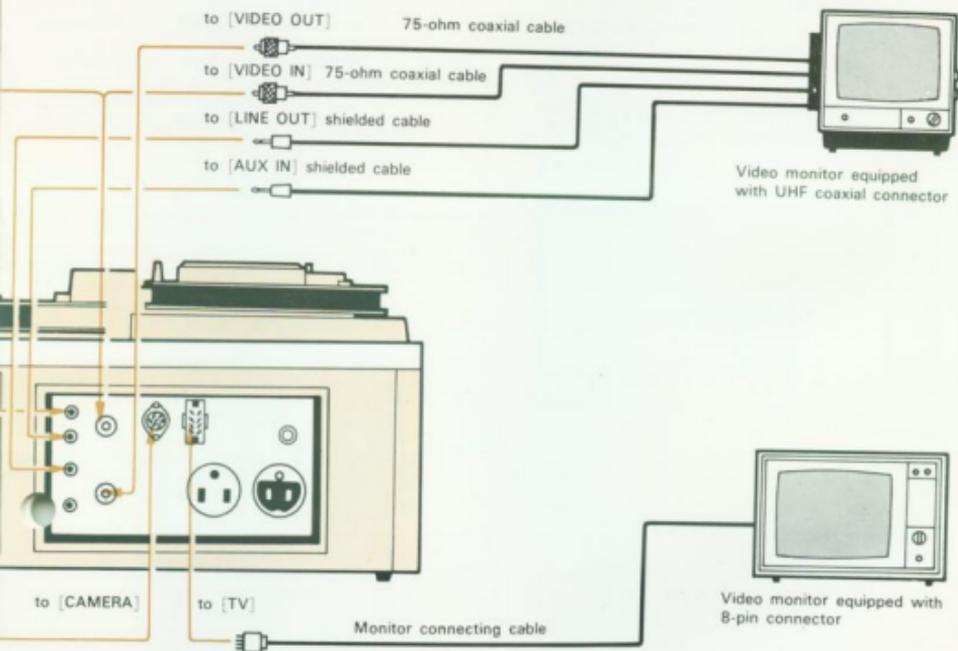
When perfect still-picture playback is required, a 2 : 1 interlaced camera or a sync generator should be used



Microphone



Video camera equipped with 6-pin connector



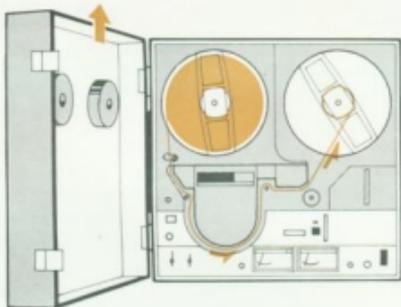
CAMERA LINE/TV Selector and connected equipments

Selector	Connector	Connected equipments
 → CAMERA		
 → LINE		
 → TV		

## RECORDING

### Tape Threading

1. Place a full reel of tape on the supply reel spindle and an empty reel on the take-up reel spindle.
2. Unwind approximately two feet from the full reel and thread it from left to right as illustrated.



3. Complete the connections between the Videocorder and associated equipment.
4. Thread a tape and set the tape counter to [000] by pushing the reset button.
5. Push the POWER switch to turn on the Videocorder and turn on the connected components.
6. Set the INPUT SELECT switch to the proper position according to the input signal applied.
7. Depress the RECORD button until it locks into position. The red Recording Lamp will light to indicate that the Videocorder is ready for recording.
8. Set the AGC/MANUAL switch to AGC.  
The AGC Lamp above the level meter will light in green. No adjustment of video and audio signal levels is required with the SONY-MATIC recording system.  
**NOTE 1:** If manual level control is desired, set the AUDIO and/or VIDEO AGC/MANUAL switch to MANUAL and, while watching the level meters, set each level control. Adjust the audio recording level so that the needle of the level meter does not swing past the green zone on sound peaks. Adjust the video recording level so that the needle of the level meter centers in the blue region of the scale.  
**NOTE 2:** The needles of the VIDEO and AUDIO LEVEL Meter deflect in the [AGC] position of the AGC/MANUAL Switches. The deflection of the needles shows that the SONY-MATIC recording system functions normally. On the level peaks the needles may swing to the red zone. However, they have no effect upon the recording. The SONY-MATIC recording system assures perfect recording.
9. To start recording, hold the RECORD button down and turn the Function Selector to FORWARD.
10. When the recording is finished, set the Function Selector to STOP.

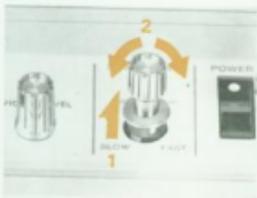
**WARNING:** Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of United States copyright laws.

## PLAYBACK

1. Connect the monitor to the Videocorder.
2. Thread a recorded tape onto the Videocorder.
3. Turn on the Videocorder and monitor.
4. Set the Function Selector to FORWARD. The AUDIO and VIDEO LEVEL meters will indicate the recorded signal levels.
5. Adjust the controls on the monitor to produce the best possible picture and sound. Refer to the instructions supplied with the monitor.
6. When the tape is finished, set the Function Selector to STOP.

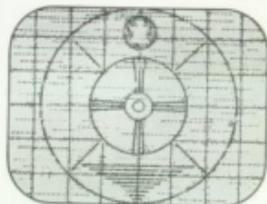
### Slow and Still Playback

When it is desired to slow the playback picture for close examination, use the slow and still facilities. A stop-action picture is obtained by setting the Function Selector to PAUSE. For slow-motion, pull up the SLOW SPEED control and turn the knob to set the desired speed.



### 2) Tracking adjustment

Noise due to improper tracking in the playback picture may be corrected by turning the TRACKING control. Turn the TRACKING control while watching the TRACKING meter. Maximum deflection shows accurate tracking. For normal playback, turn the control fully counterclockwise to the FIXED position.



### Special Adjustments

The AV-3650 provides clean, stable pictures under normal operation. If, however, noise or picture distortion appears when playing a tape made on another AV-Series Videocorder, proceed with the tension and/or tracking adjustments.

#### 1) Tension adjustment

Observe the playback picture on the monitor screen. Picture distortion in the upper part of the screen may be corrected by turning the SKEW control. This knob automatically returns to its center position when the RECORD button is pressed. Do not turn this knob while recording.



## PLAYBACK ON A CONVENTIONAL TV SCREEN

The output signal of the Videocorder is converted to an ordinary TV (rf) signal by inserting the RF Unit (available as an optional accessory). The rf signal is fed to the antenna terminals of the TV set through the Antenna Selector supplied with the RF Unit. The optional RF Unit is set to a particular channel. Refer to page 15 and choose an RF Unit whose preset channel is not used in your area.

**CAUTION:** Connection between the AV-3650 RF OUT terminal and antenna terminals of a TV receiver should be made as shown in these instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices.

1. To remove the lid of the RF Unit compartment, pull out the knob. Insert the RF Unit into the compartment and connect the Videocorder, RF Unit, and TV set as illustrated. Plug the cord from the Antenna Selector into the RF OUT jack on the Videocorder.

2. Set the ANT/VTR switch on the Antenna Selector to VTR.

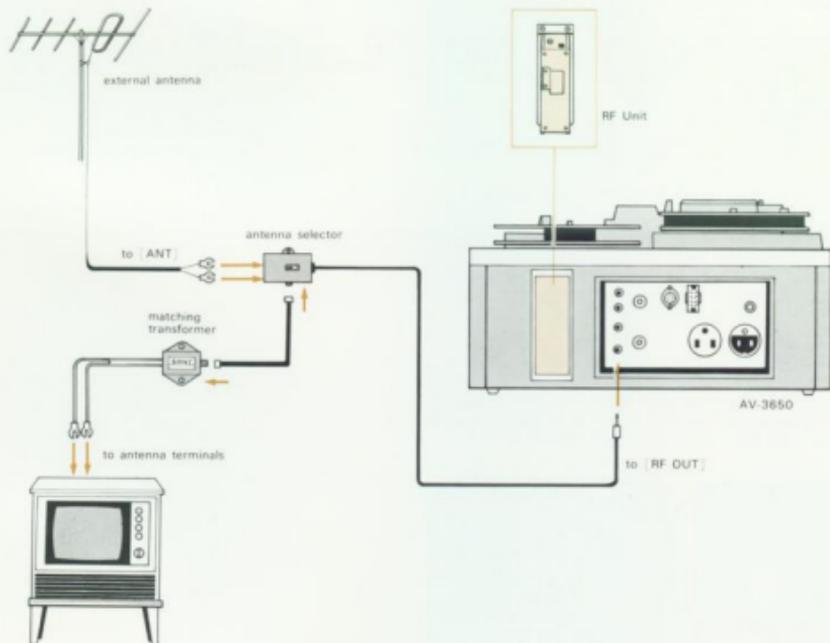
**NOTE:** When the Videocorder is not in use, the TV set may be operated as a normal television receiver by setting the ANT/VTR switch to the ANT position and connecting the 300-ohm external antenna to the antenna terminals of the Antenna Selector.

3. Set the TV channel selector to the channel to which the RF Unit is set.

4. Set the Videocorder to the playback mode.

5. Adjust the fine tuning knob on the TV set to obtain the best possible picture.

**NOTE:** When the RF Unit is not installed, no output signal is available from the RF OUT jack.



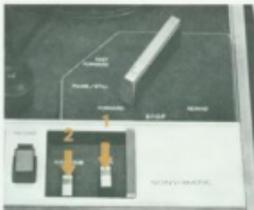
## DUBBING AUDIO

If it is desired to insert (dub) new sound onto a previously-recorded tape, use the following procedure. Audio is dubbed with the Videocorder in the playback mode.

1. Connect a sound source to the proper Videocorder input; a microphone to MIC IN, or tape recorder, record player, radio, etc. to AUX IN.

NOTE: The AUX IN jack is disabled when a microphone is connected.

2. Set the INPUT SELECT switch to CAMERA or LINE.
3. Adjust the audio recording level.
4. Playback the prerecorded tape and when the desired position for dubbing sound is reached, press the EDIT button. Then press the AUDIO DUB button firmly. Sound dubbing starts when the AUDIO DUB button is locked into place (the EDIT button will pop up when the AUDIO DUB button locks into place).



When dubbing is finished, set the Function Selector to STOP.

## EDITING TAPE

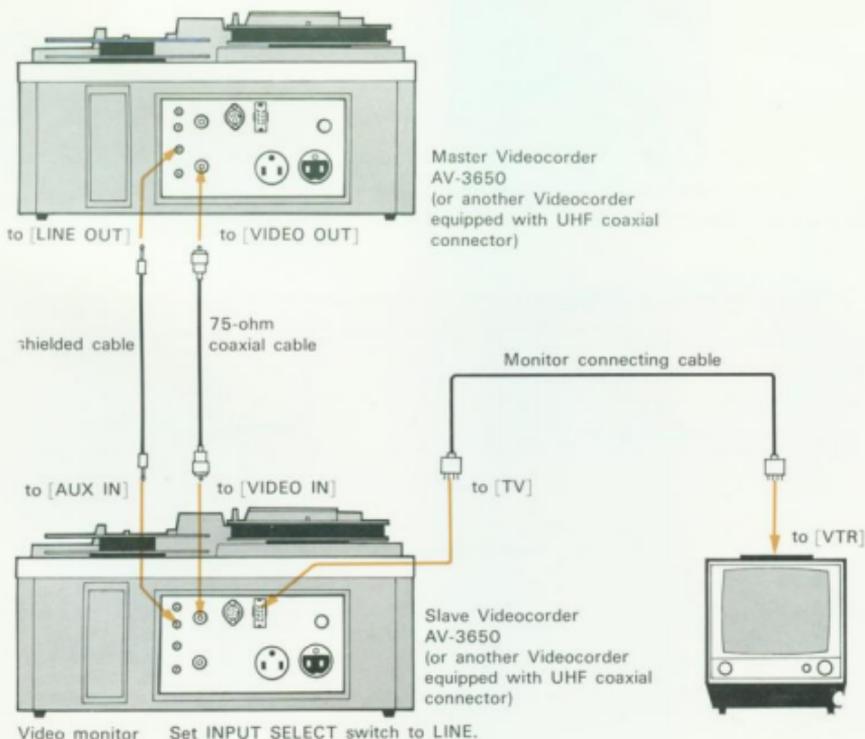
If it is desired to add or insert a new video into a prerecorded tape, use the editing facilities.

For further details, refer to the "EDITING GUIDE", supplied.

## DUPLICATING TAPE

A prerecorded tape can be duplicated using two Videocorders by connecting output receptacles of one machine to input receptacles of the other.

1. Connect two Videocorders using a 75-ohm coaxial cable and shielded audio cable with mini-plug.
2. Thread the prerecorded tape onto the master Videocorder and a blank tape onto the slave.
3. Play back the master Videocorder.
4. Set the INPUT SELECT switch of the slave Videocorder to LINE and adjust the video and audio recording levels of the slave Videocorder. SONY-MATIC recording does not require any level adjustment.
5. Start both Videocorders; set the master to the playback mode and the slave to the record mode.

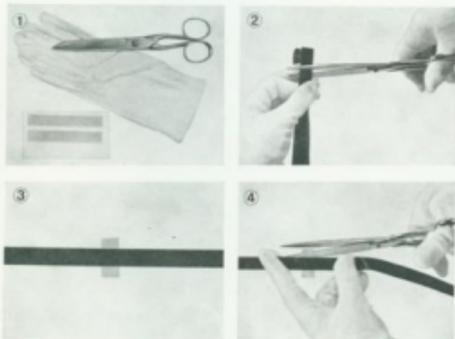


## ERASING

The erase head is energized in the record mode. Therefore, the time a new recording is made, the previous recording on the tape is automatically erased. Should you desire to erase tape without recording, run the tape in the record mode with no signal source connected. Hold down the RECORD button, and turn the Function Selector to FORWARD. Bulk erasing may be accomplished using a bulk eraser for video tapes. This results in quick erasure of prerecorded pictures and sound.

## SPLICING

- 1 Use the splicing tape supplied with the Videocorder. Do not use regular audio splicing tape, as damage to the video heads may result.
- 2 Overlap the tape ends approximately 1/2 inch and make a cut across both tapes at right angles to the length of the tapes.
- 3 Align the ends carefully so that they fit together perfectly. Press a piece of splicing tape firmly over the outer sides of the ends. Make sure that the joint is firm. If any space is left between joints, the video heads may be damaged.
- 4 Trim excess splicing tape slightly into the video tape so that the edges are even.



## MAINTENANCE

### Cleaning the Video Heads

The video heads should be kept clean at all times to assure peak performance in both record and playback modes. Before attempting to clean the rotary heads, be sure that the power to the Videocorder is turned OFF.

1. Set the Function Selector to REWIND.
2. Move the video head to the cleaning groove between the guide roller near the supply reel and the head drum cover by moving the supply reel base.



3. Moisten a head cleaner with cleaning fluid and press the tip lightly against the head.
4. Move the tip of the head cleaner from side to side while holding the supply reel base to keep the head from moving.



**NOTE:** Never move the head cleaner vertically.

5. Another head is located at the opposite end. Rotate the assembly so that the other head faces the cleaning groove. Repeat cleaning as described above.

### Cleaning the Tape Path

To maintain intimate contact between heads and tape, it is advisable to clean the tape path from time to time. Take a soft cloth and carefully wipe the portion over which the tape travels. If the deposits cannot be removed, dampen the cloth with cleaning fluid or denatured alcohol.

**NOTE:** Wipe the surface of the head drum with the cleaning fluid before and after operating the set or near the sea or in a location where acid or alkali gas is used.

### Demagnetizing the Heads

Through constant use the heads may become slightly magnetized. This could cause a distorted picture or, in extreme cases, partial erasure of the tape. Heads may be demagnetized using a conventional audio head demagnetizer. Be sure the head demagnetizer does not touch the rotary heads.



### Lubrication

After approximately 300 hours of use, the pinch roller shaft and reel spindles should be lubricated. Oil should be applied sparingly. Use 3 or 4 drops of SONY Oil (supplied) on the pinch roller shaft, and 1 or 2 drops on the reel spindle. Avoid excess lubrication which can cause damage to the mechanism or contamination of the tape. Make sure all excess oil is wiped off completely.

