

Video Camera Recorder Hi8

CCD-TR500

Operation Manual

Before operating the unit, please read this manual thoroughly and retain it for future reference.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided on the right hand. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Video Camera Recorder

Model No. CCD-TR500

Serial No. _____

AC Power Adaptor

Model No. AC-V500

Serial No. _____



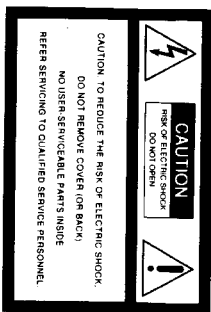
video Hi8 Handycam

Welcome to Video Hi8

Congratulations on your purchase of this Sony Handycam® Camcorder. With your Handycam, you can capture life's precious moments with superb picture and sound quality. Your Handycam is loaded with advanced features that will make the same time it is very easy to use. You will soon be producing home video that you can enjoy for years to come.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Notice for the Customers in Canada

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

For the Customers in the U.S.A.

WARNING

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not

installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation if this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:

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

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:
(1) This device may not cause harmful interference,
and (2) this device must accept any interference received, including interference that may cause undesired operation.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

CAUTION FOR THE CUSTOMERS IN THE USA AND CANADA

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN OUTLET NOT DESIGNED TO ACCEPT POLARIZED PLUGS. IF THE PLUG DOES NOT FULLY INSERTED TO PREVENT BLADE EXPOSURE.

The AC VS00 AC power adaptor can be used as follows:

- to charge an NP-500 battery pack
- to supply power to the Sony 8 mm video equipment which operates with the NP-500 series battery pack



- Only for use with  type battery packs. Be sure to purchase battery packs with  mark on the package.
- Be sure to confirm the type of your video equipment before using. This adaptor cannot be used for some models.

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Before You Begin About This Manual

If you want to shoot as soon as possible read the chapters "Getting Started" and "Basic Operations" first. As you read through this manual, buttons and settings on the camcorder are shown in capital letters, e.g. Set the POWER switch to CAMERA.

Note on TV Color Systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system based TV. When you want to use a PAL-M system based TV, you will need a NTSC/PAL-M transcoder (as this is an NTSC system based camcorder). Please check the list on page 45 to see the TV color system of your country.

Note on the Supplied RFU adaptor

You can use the supplied RFU adaptor only in the country where you bought this camcorder. Since each country has its own electricity and TV color system, you may not be able to use the RFU adaptor when you use the camcorder abroad.

Precaution on Copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Checking Supplied Accessories

Check that the following accessories are supplied with your camcorder.

* The HSA-V500 Handycam Station is not supplied and may be available for the U.S. market only.

1-11-9K
P.L.
is AVAILABLE SEPARATELY

About This Manual/Checking Supplied Accessories

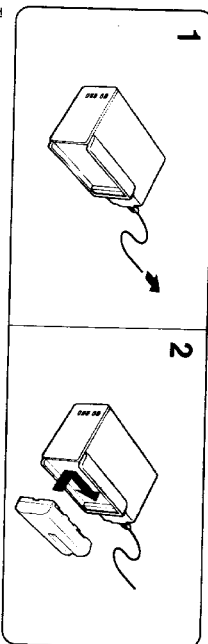
Getting Started

Charging and Installing the NP-500 Battery Pack

Before using your camcorder, you first need to charge and insert the supplied NP-500 battery pack. The supplied battery pack has been slightly charged when you purchase the camcorder. You can charge the battery pack by using the supplied AC-V500 AC power adaptor.

Charging with the AC Power Adaptor

- (1) Connect the AC power adaptor to a wall outlet. (2) Align the surface of the battery pack, indicated by the arrow, with the edge of the terminal shutter of the AC power adaptor. Then fit and slide the battery pack into the guides. The orange CHARGE lamps flash or lights up and charging begins. When charging is completed, the three CHARGE lamps light. (They go out after about 1 hour.) Detach the battery pack and insert it into your camcorder (p. 7).
- You can check the battery pack before it is completely charged. Three CHARGE lamps show the battery life. For charging time and battery life, refer to the table below.



There are some other methods to charge the battery pack. For detailed information, see "Description of Charging the Battery Pack (p. 25)".

Notes

- When a fully charged battery pack is installed, the CHARGE lamps will light once, then go out.
- Charging is not performed during operation of the video equipment connected to the AC power adaptor. If you operate the video equipment during charging, the charging will stop and the CHARGE lamps will go out.

Charging Time and Battery Life

Status of CHARGE lamps	Charging time*	Battery life**
Start	Start	Start
30 minutes	30 minutes	20 minutes
50 minutes	50 minutes	35 minutes
1 hour 30 minutes	1 hour 30 minutes	50 minutes

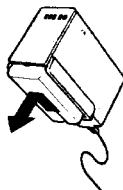
* Approximate charging time to charge an empty battery pack using the AC-V500 (lower temperatures require a longer charging time.)

** Approximate continuous recording time indoors.

*** The three CHARGE lamps go out after about 1 hour.

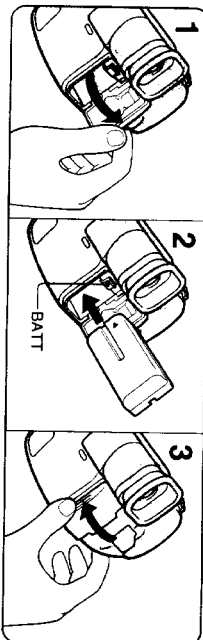
Detaching the Battery Pack

Slide the battery pack in the direction of the arrow.



Inserting the Battery Pack into the Camcorder

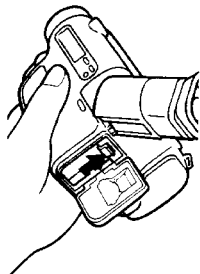
- (1) Open the lid of the battery compartment. (2) Insert the battery pack until it is hooked by the BATT (battery) release key. (3) Close the lid.



Charging and Installing the NP-500 Battery Pack

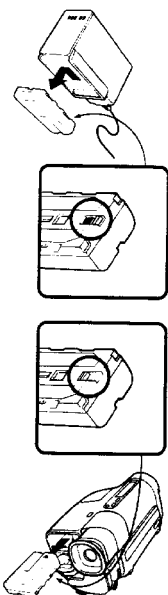
To Remove the Battery Pack

Pointing down the lens of the camera, slide the BATT (battery) release key upward.



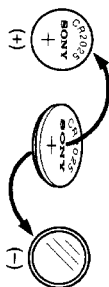
The switch on the battery pack

This switch is provided to help you remember the charging status of the battery. Set the switch to the "green mark" position after charging. (When detached from the AC power adaptor, the switch exposes the green mark. When detached from your camcorder, no mark is indicated.)



Installing the Lithium Batteries

Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander. Note that the lithium battery has a positive (+) and a negative (-) terminal as illustrated. Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder or the Remote Commander.



WARNING

The battery may explode if misreated. Do not recharge, disassemble, or dispose of in fire.

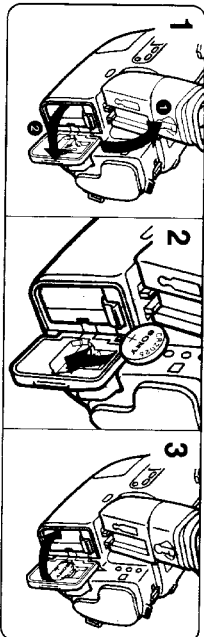
Caution

Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

Installing the Lithium Battery into the Camcorder

To activate the clock and the world clock, you must insert a lithium battery.

(1) Turn the viewfinder up and open the lid of the battery compartment. (2) Install the lithium battery with the positive (+) side facing out. (3) Close the lid.



To Remove the Lithium Battery

Push the battery down once and pull it out from the holder.

When replacing the lithium battery, keep the battery pack, or other power source attached. Otherwise, you will need to reset the date and time.

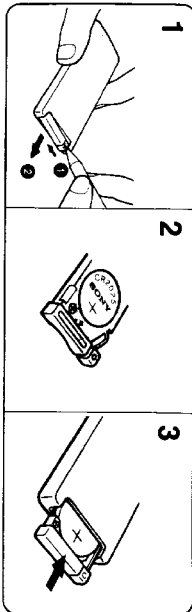


Installing the Lithium Batteries

Installing the Lithium Battery into the Remote Commander

To use the Remote Commander, you must insert the lithium battery. Use one of the supplied CR2025 lithium batteries.

- (1) Pull out the lithium battery holder from the Remote Commander.
- (2) Insert the new lithium battery with the positive (+) side facing upward.
- (3) Put the lithium battery holder back into the Remote Commander.

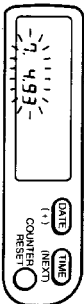
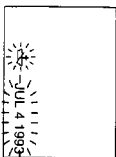


Lithium Battery Life

The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the date or time indicator keeps flashing in the display window and the indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA.

The lithium battery for the Remote Commander lasts for about 1 year under normal operation. When the battery becomes weak or dead, the Commander does not work.

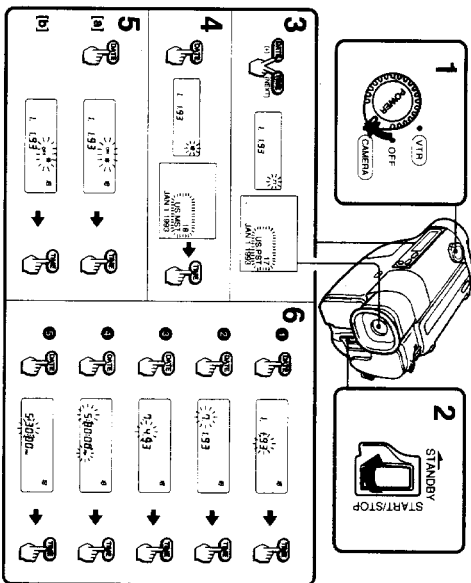
In either case, replace the battery with the Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.



Setting the Date and Time

Before setting the clock, make sure a power source and lithium battery are installed.

- (1) Set the POWER switch to CAMERA.
- (2) Open the STANDBY cover.
- (3) Press DATE (+) and TIME (NEXT) simultaneously until the area name and number flash in the viewfinder.
- (4) Press DATE (+) to set your home area.
- (5) Set the time.
- (6) For Daylight Savings Time, press DATE (+) then press TIME (NEXT).
- (7) For DATE (NEXT), press DATE (+) to set the year to 1993. There is no need to press DATE (+) in 99.
- (8) For TIME (NEXT), press DATE (+) to set the month, day and hour by pressing the digit advance (adv.) button.



Time Zones and Area Numbers and Names

S.T. in the following table stands for Standard Time.

Time Zones	Area Name	Area Number
Hawaii S.T.	HAWAII	15
Alaska S.T.	ANCHORAGE	16
Pacific S.T./West Canada	US PST	17
Mountain S.T.	US MST	18
Central S.T.	US CST	19
Eastern S.T./East Canada	US EST	20

Setting the Date and Time

To Correct the Date and Time Setting

Repeat steps 3 to 6.

To Check the Preset Date and Time

Press DATE (+) to display the date indicator in the viewfinder and the display window. Press TIME (NEXT) to display the time indicator. When you press the same button again, the indicator goes out.

To Reset to Standard Time

Change D.S.T. mode setting in the menu system (p.33).

The year indicator changes as follows:

1993 → 1994 → 2022

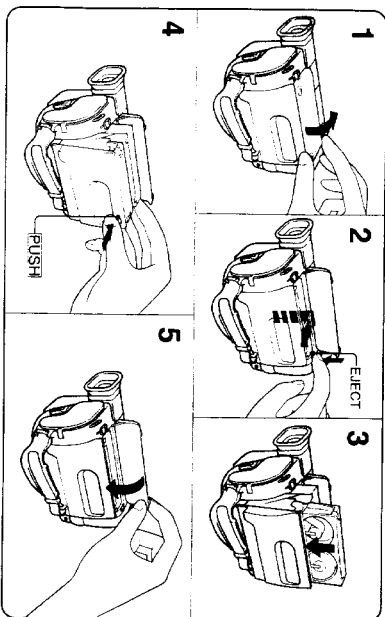
Note on the time indicator

The internal clock of the camcorder operates on a 12-hour cycle. 12:00:00 AM stands for midnight, 12:00:00 PM stands for noon.

Inserting a Cassette

Make sure that a power source is installed.

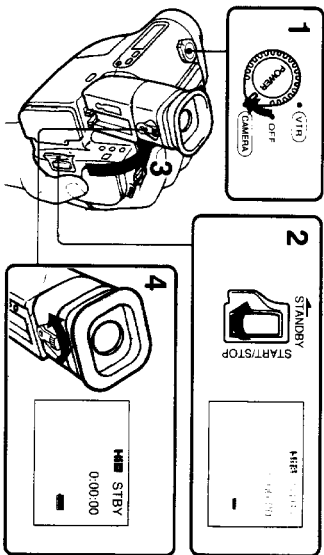
(1) Open the lid of the cassette compartment. (2) Press EJECT. The cassette compartment automatically flips up and opens. (3) Insert a cassette (not supplied) with the window facing out. (4) Press the PUSH mark on the cassette compartment cover to close it. (5) Close the lid. To eject the cassette, press EJECT.



Adjusting the Viewfinder Lens

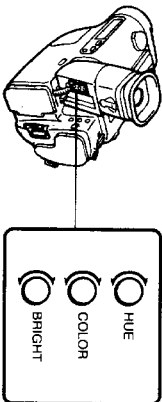
Before you use the camcorder for the first time or after someone else has used it, focus the viewfinder lens. Make sure that the power source is connected to the camcorder.

(1) Set the POWER switch to CAMERA. (2) Open the STANDBY cover. (3) Turn the viewfinder up. (4) Move the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus.



To adjust the picture quality

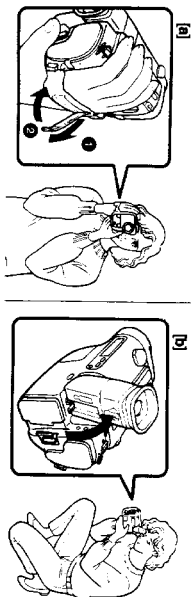
If you want to change hue, color and brightness of the picture displayed on the viewfinder screen, turn the screws on the viewfinder slowly using a screwdriver (not supplied). You do not need to adjust them in everyday operation.



	Turn clockwise	Turn counterclockwise
HUE	Greenish skin tones	Reddish skin tones
COLOR	More color intensity	Less color intensity
BRIGHT	More brightness	Less brightness

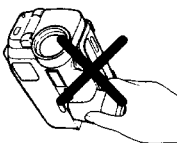
Hints for Better Shooting

For hand-held shots, you'll get better results holding the camcorder according to the following suggestions:



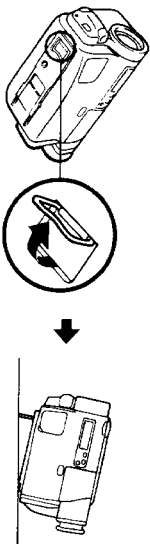
- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls.
- Place your right arm against your side.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyepiece.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Turn the viewfinder up for recording from a low position. [b]

Do not pick up the camcorder by the viewfinder.



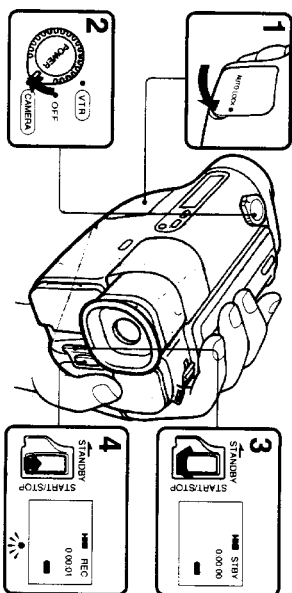
Place the camcorder on a flat surface or use a tripod.
When using the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p.31). Make sure the tripod screw is shorter than 6.5mm (9/32 in).

Use the instant stand.
Lift up the stand at the bottom of the camcorder. Do not attach a shoulder strap to the stand.



Basic Operation Camera Recording

Make sure that a power source is installed and a cassette is inserted. Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly.
(1) Close the AUTO LOCK cover for automatic adjustment (p.29). (2) Set the POWER switch to CAMERA.
(3) Open the STANDBY cover. (4) Press START/STOP. The camcorder starts recording and the "REC" indicator will appear in the viewfinder.



To Stop Recording Momentarily

Press START/STOP again. The "STBY" indicator appears in the viewfinder (Standby mode).

To Finish Recording

Close the STANDBY cover and set the POWER switch to OFF. Then, eject the tape (p.12).

Note on Standby mode

If you leave the camcorder for 5 minutes or more with a cassette inserted in Standby mode, the camcorder stops recording. To prevent the battery from draining, the camcorder prevents wearing down the battery and wearing out the tape. To resume Standby mode, close the STANDBY cover once and open it again. To start recording, press START/STOP.

Note on recording

When you record from the beginning of the tape, run the tape for about 15 seconds before actual recording. This prevents the camcorder from missing any start-up scenes when you play back the tape. You can record tapes in SP (standard play) mode only.

Note on the tape counter

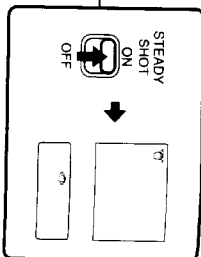
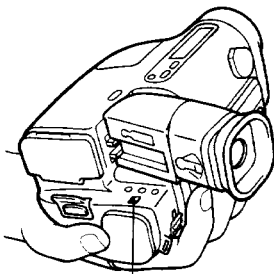
The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press RESET located below the display window.

Getting a Steady Picture

You can use the Steady Shot function to compensate for camera-shake in the following cases:

- When you zoom in
- When you shoot while moving
- When you shoot from a car window

Set STEADY SHOT to ON. The "C" indicator appears in the viewfinder and the "C" indicator in the display window.



To Release the Steady Shot Function

Set STEADY SHOT to OFF.

Note on the Steady Shot function

The Steady Shot function will not correct excessive camera shake.

When you do not need to use the Steady Shot function

Set STEADY SHOT to OFF.

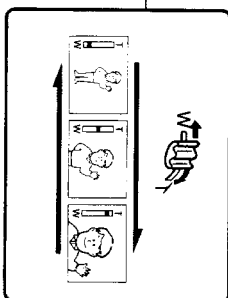
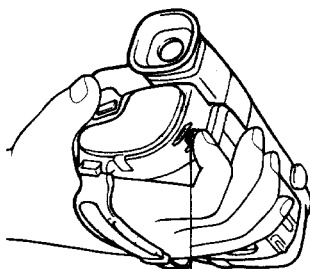
When you shoot stationary object with a tripod

Set STEADY SHOT to OFF.

Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. You can also use zooming to focus manually or to decide on a shooting angle before you start recording. For more professional-looking recordings, use the zoom sparingly.

T side for telephoto (subject appears closer)
W side for wide-angle (subject appears farther away)



Zooming Speed

Slide the power zoom lever firmly for a high-speed zoom. Slide it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, slide the W side of the power zoom lever if the focus is sharp.

You can also shoot a subject that is at least 90 cm (about 3 feet) away from the lens surface in the telephoto position, or 1 cm (about 1/2 inches) in the wide-angle position.

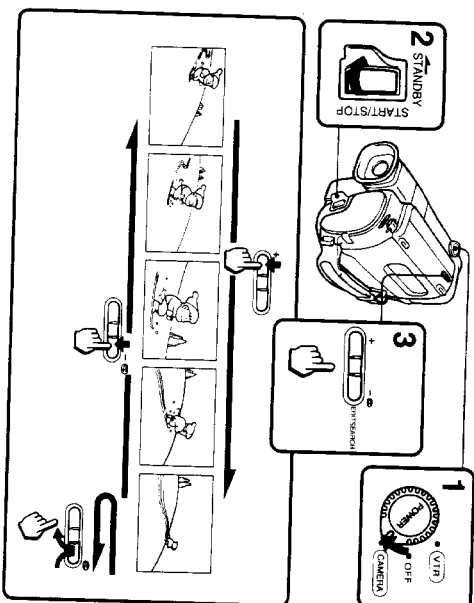
Manual focusing in macro

You can also shoot with manual focus while doing close-ups (p. 30).

Camera Recording

Checking the Recorded Picture in the Viewfinder

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder. (1) Set the POWER switch to CAMERA. (2) Open the STANDBY cover. (3) Press EDITSEARCH. Press the (⏮) side momentarily, the last few seconds of the recorded portion play back (see Review). Keep pressing EDITSEARCH to play back the last recorded portion (Edit Search). Press the (⏪) side to view the reverse playback picture.



Monitoring the Sound While Viewing the Playback Picture in the Viewfinder

Connect headphones (not supplied) to the PHONES jack. Play back the tape in VTR mode (p.22).

To Stop Playback

Release EDITSEARCH.

To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

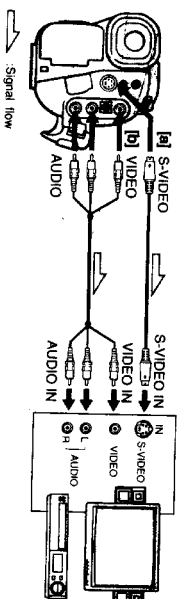
Connections for Playback

You can use this camcorder as a VCR by connecting it to your TV for playback. There are some ways to connect your camcorder to your TV.

- Connecting to a TV with Video/Audio input jacks or a VCR (p.19)
- Connecting to a TV without Video/Audio input jacks (p.19)
- Connecting to a TV or VCR using the Handycam Station (for the Canada model)(p.20)

Connecting to a TV with Video/Audio Input Jacks or a VCR

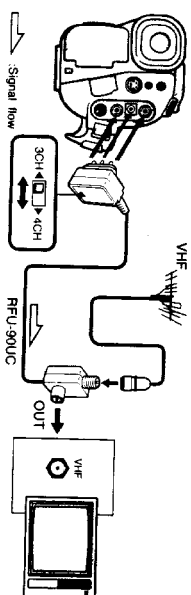
Connect the camcorder to your TV by using the supplied connecting cable. Set the TV/VCR selector to VCR on the TV. When connecting the camcorder to VCR, set the input selector on the VCR to LINE. If you are going to connect the camcorder using the S video cable [a], you do not need to connect the yellow (video) plug of the AV connecting cable [b].



If your TV or VCR is a monaural type, connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is in monaural.

Connecting to a TV without Video/Audio Input Jacks

Connect the camcorder to the TV using the supplied RFU adaptor. Set the channel selector on the RFU adaptor and your TV channel to VHF channel CH 3 or CH 4, whichever is not active in your area. With this connection, the sound is in monaural.



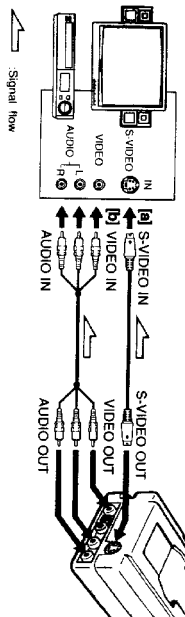
Connections for Playback

Connecting to a TV or VCR Using the Handycam Station (for the Canada model)

By connecting the HSA-V500 Handycam Station (not supplied for U.S.A. model) to your TV or VCR, you can view the playback picture on the TV easily.

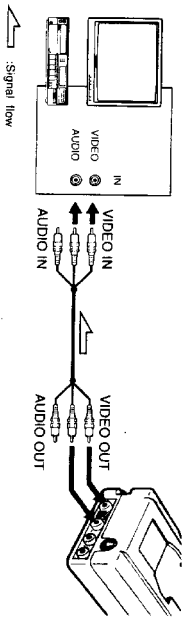
To Connect the Handycam Station to a TV or VCR

Connect the Handycam Station to the TV using the supplied connecting cable. If you are going to connect the TV or VCR using the S video cable [a], you do not need to connect the yellow (video) plug of the AVT connecting cable [b].



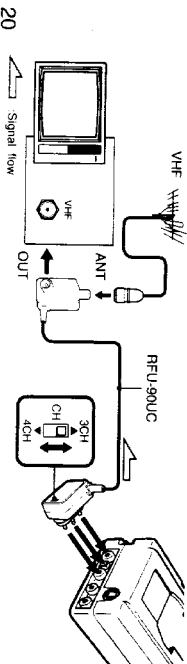
If your TV or VCR is a monaural type

Connect the Handycam Station to the TV using the supplied connecting cable. For audio connection, use only the yellow plug both on the Handycam Station and the TV or VCR. With this connection, the sound is in monaural.



If your TV does not have video/audio input jacks

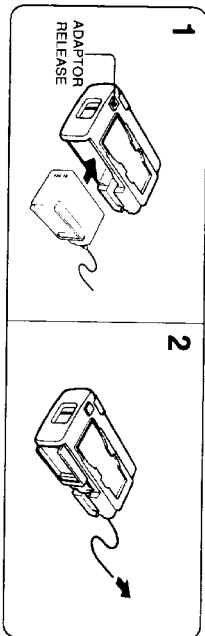
Connect the Handycam Station to the TV using the supplied RFU adaptor. Set the channel selector on the RFU adaptor and your TV channel to VHF channel CH 3 or CH 4 whichever is not active in your area. With this connection, the sound is in monaural.



Attaching the AC Power Adaptor

The Handycam Station is used with the AC power adaptor.

(1) Attach the AC power adaptor to the Handycam Station. (2) Connect the power cord to a wall outlet.



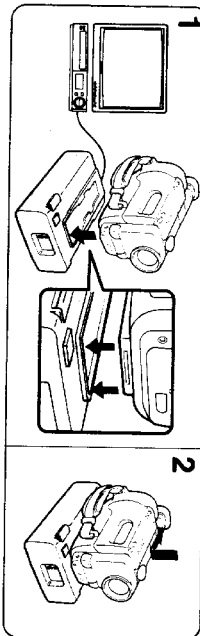
To remove the AC power adaptor

Press ADAPTOR RELEASE.

To Fit the Camcorder to the Handycam Station

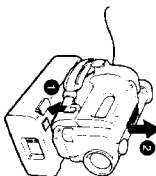
(1) Align the bottom front edge of the camcorder to the front end of the camcorder mounting surface of the Handycam Station. (2) Fit and slide the camcorder in the direction of the arrow until it clicks.

When you playback tapes, set the TV/VCR selector on the TV to VCR, or the input selector on the VCR to Video. If you connect with the RFU adaptor, set the channel selector on the RFU adaptor and your TV channel to VHF channel CH 3 or CH 4 whichever is not active in your area.



To Remove the Camcorder

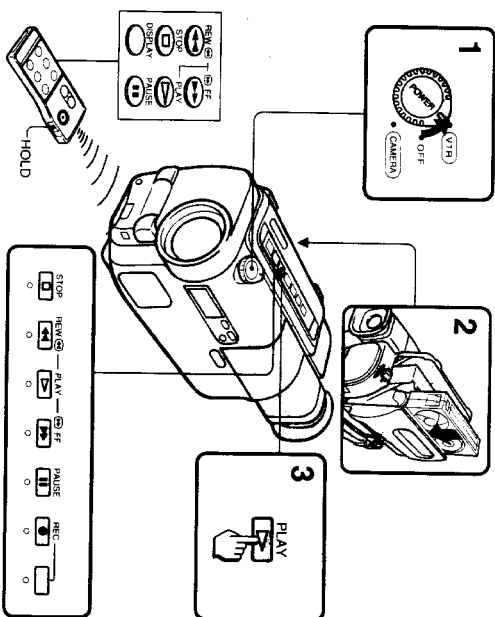
Press HANDYCAM RELEASE on the Handycam Station. Slide and lift up the camcorder.



Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also monitor on the TV screen, after connecting the camcorder to the TV/VCR (p. 19). It is recommended to use the house current as the power source (p. 26). You can control playback using the supplied Remote Commander (p. 54). Before using the Commander, slide the HOLD switch in the direction opposite to the arrow.

(1) Set the POWER switch to VTR. (2) Insert the recorded tape with the window facing out. (3) Press >



To stop playback, press □
To rewind the tape, press ◀◀
To advance the tape rapidly, press ▶▶

Various Playback Modes

To view a still picture (playback pause)

Press II during playback. To resume playback, press II or >.

To locate a scene (picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture during fastforward or rewind (skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press >. Press EDIT/SEARCH in playback pause mode. If you keep pressing EDIT/SEARCH, you can view the picture playback in the forward (+) or reverse (-) direction.

Notes on playback

- Screens appear and the sound is muted in the various playback modes.
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.

To select the monitor sound

Change the "HIFI SOUND" mode setting in the menu system (p. 33).

To display the viewfinder screen indicators on the TV

Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

Description of Charging the Battery Pack

To charge the battery pack, you can choose from the following three methods.

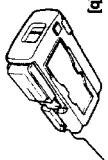
- Charging it by directly attaching it to the AC power adaptor (p. 26) – To quickly charge
 - Charging it by inserting it into the camcorder (p. 25) – To use anytime you need
 - Charging two battery packs consecutively (p. 25)
- In each method, you can charge the battery pack by using the supplied AC-V500 AC power adaptor (a) or with the HSA-V500 Handycam Station (for the Canada model) (b). It is more convenient to take the AC power adaptor separately on a trip.

Charging by Directly Attaching it to the AC power Adaptor – To quickly charge

Charge the battery pack by directly attaching it to the AC power adaptor (p. 26).



(a)



(b)

Charging Time and Battery Life

Status of CHARGE lamps	Charging time*	Battery life**
	Start	-
	30 minutes	20 minutes
	50 minutes	35 minutes
	1 hour 30 minutes	50 minutes

- * Approximate charging time to charge an empty battery pack using the AC-V500 (Lower temperatures require a longer charging time).
- ** Approximate continuous recording time indoors.
- ***The three CHARGE lamps go out after about 1 hour.

Charging it by Inserting it in the Camcorder – To use anytime you need

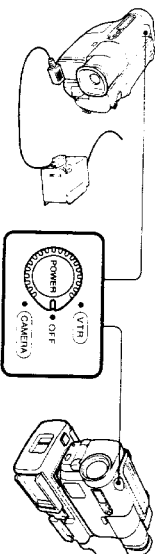
You can also charge the battery pack installed in the camcorder.

Heat the battery pack into the camcorder (p. 7), connect the camcorder to the AC power adaptor (p. 26) or Handycam Station (p. 25), and set the POWER switch to OFF. The battery remaining indicator appears in the display window and charging begins. You can check the charged capacity by looking at the battery remaining indicator during charging. When charging has been completed, the battery remaining indicator disappears. For charging time and battery life, refer to the table on the next page.

While charging, the camcorder may heat up. This is not cause for concern.

(a)

(b)



Charging Time and Battery Life

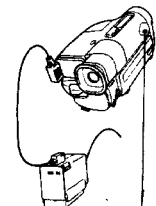
Charging time*	Battery life**
5 hours 30 minutes	50 minutes

- * Approximate charging time to charge an empty battery pack using the AC-V500 (Lower temperatures require a longer charging time).
- ** Approximate continuous recording time indoors.

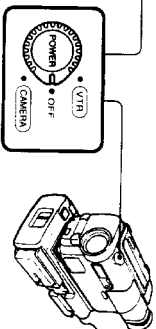
Charge Two Battery Packs Consecutively

You can charge two battery packs consecutively. Charge one battery pack by attaching it directly to the AC power adaptor (p. 26), and another battery pack by inserting it into the camcorder. The battery pack attached to the AC power adaptor is charged first. Then the battery pack inserted into the camcorder is charged. When charging is completed, the battery remaining indicator disappears. Following the CHARGE lamps on the AC power adaptor went out. For charging time and battery life, refer to the table below.

(a)



(b)



Charging Time and Battery Life

Charging time*	Battery life**
8 hours	50 minutes each

- * Approximate charging time to charge an empty battery pack using the AC-V500 (Lower temperatures require a longer charging time).
- ** Approximate continuous recording time indoors.

Using Alternate Power Sources

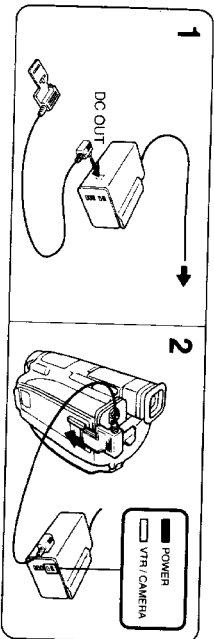
You can choose any of the following power sources for your camcorder: battery pack (P 7), house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V500 (supplied)
Outdoor	Battery pack	Battery pack NP-500
In the car	12 V or 24 V car battery	Car battery charger DC-V500

Using House Current

Use the supplied AC-V500 AC power adaptor.

- (1) Connect the power cord to a wall outlet, and connect the supplied connecting cord to the DC OUT jack on the AC power adaptor.
- (2) Insert the connecting plate into the outside at the bottom of the camcorder.



Note on the AC power adaptor

Keep the AC power adaptor away from video equipment if video operation is disturbed.

Note on the instant stand

Do not use the instant stand (p. 14) when you connect the connecting cord to the camcorder. The connecting plate will be stressed that may cause a malfunction. The camcorder will be unstable.

Caution

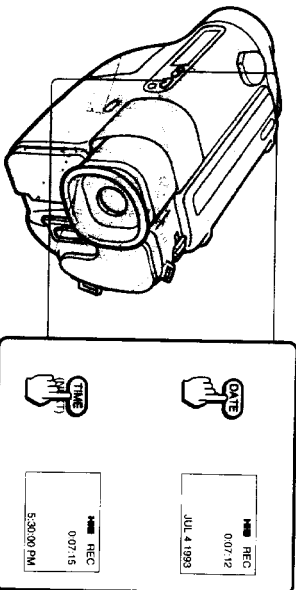
To prevent accident from a short circuit, do not come into contact with the terminal inside the shutter at the bottom of the camcorder.

Using a Car Battery

Use the DC-V500 car battery charger (not supplied). Connect the car battery cord to the cigarette lighter socket of a car (12V or 24V). Connect the car battery charger and the camcorder using the supplied connecting cord.

Recording the Date or Time

In CAMERA mode, press DATE (+) or TIME (NEXT). You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.



To Stop Recording with the Date or Time

Press DATE (+) or TIME (NEXT) again. Recording continues.

Using Alternate Power Sources/Recording the Date or Time

Fade-In and Fade-out

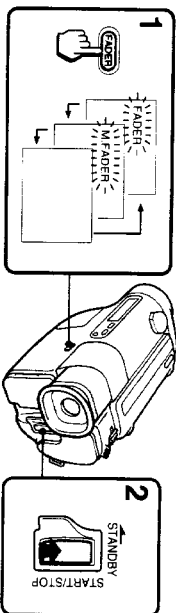
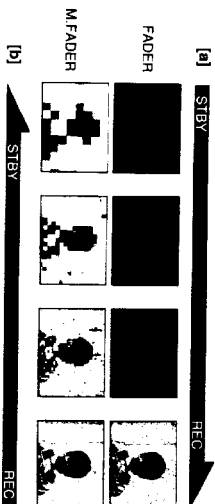
You can fade in or fade out to give your recording a professional appearance. When fading in, the picture will gradually appear from black or mosaic. The sound will also gradually increase. When fading out, the picture will gradually fade to black or mosaic. The sound will also decrease.

When Fading In [a]

- (1) During the camcorder is in Standby mode, press FADER. The FADER indicator starts flashing.
- (2) Press START/STOP to start recording. The FADER indicator stops flashing.

When Fading out [b]

- (1) During recording, press FADER. The FADER indicator starts flashing. (2) Press START/STOP to stop recording. The FADER indicator stops flashing.



To Cancel the Fade-In/out Function

Before pressing START/STOP, press FADER once or twice until you have neither the FADER nor M FADER indicator in the viewfinder.

When the date/time or age indicator is displayed

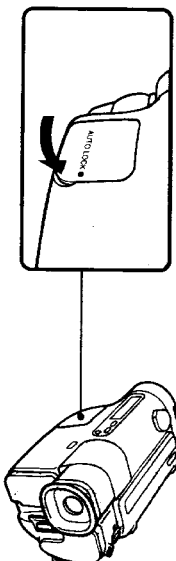
The date/time or age does not hide in nor fade out.

Selecting Automatic or Manual Adjustment Modes

The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some circumstances, manual adjustment is better for creative recording.

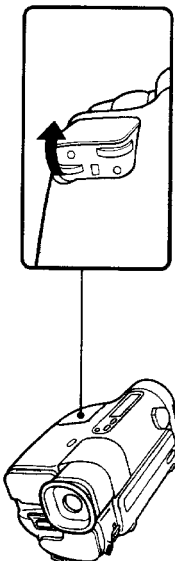
Automatic Adjustment Mode

Close the AUTO LOCK cover. In AUTO LOCK mode, the camcorder adjusts the focus and exposure automatically. It also sets the shutter speed to 1/100 when STEADY SHOT is set to ON and 1/60 when it is set to OFF.



Manual Adjustment Mode

Open the AUTO LOCK cover until it clicks. In manual mode, you can adjust the focus and the exposure manually, and select from three PROGRAM AE modes to fit the shooting situation. Even if you switch to manual mode, the settings you didn't adjust manually remain the same as when in automatic adjustment mode.



About the previous settings

Manual settings are saved in the following case:

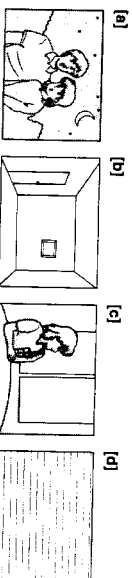
- When you resume automatic mode after you make manual adjustments and then select manual mode again.
 - When you set the POWER switch to OFF.
- However, manual settings are cancelled if more than 5 minutes pass after you have detached the battery.

Focusing Manually

When to Use Manual Focus

Use manual focus under the following conditions:

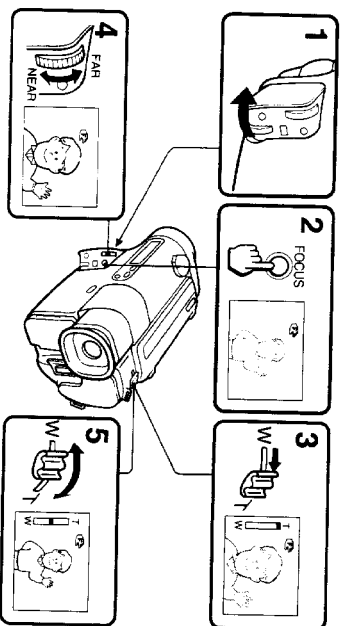
- Insufficient light [a]
- Subjects with little contrast – walls, sky, etc. [b]
- Subjects with brightness behind the subject [c]
- Horizontal stripes [d]
- Subjects through tinted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod



Focusing Manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.

- (1) Open the AUTO LOCK cover until it clicks. (2) Press FOCUS. The ∞ indicator appears in the viewfinder.
- (3) Keep the power lever to the T side until the zooming steps. (4) Turn the focus dial to adjust the focus. (5) Set the desired shot length.



To Reactivate Auto Focusing

Press FOCUS again, or close the AUTO LOCK cover. The ∞ indicator in the viewfinder disappears.

Shooting in relatively dark places

Shoot at wide angles after focusing in telephoto.

Note on the focus dial

- 30 The focus dial does not have a stop position.

Adjusting the Exposure

When to Adjust the Exposure

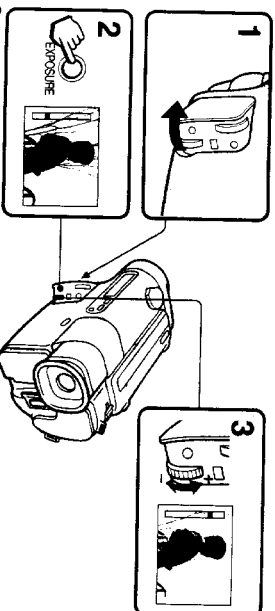
Adjust the exposure manually under the following cases.

- Turn the Exposure dial to + when:
 - The background is too bright (back lighting)
 - Insufficient light: most of the picture is dark
- Turn the Exposure dial to - when:
 - Bright subject and dark background
 - To record the darkness faithfully



Adjusting the Exposure

- (1) Open the AUTO LOCK cover until it clicks. (2) Press EXPOSURE. The exposure indicator appears in the viewfinder and the exposure is locked at the set brightness. (3) Turn the EXPOSURE dial to adjust the exposure. The exposure is locked at the adjusted brightness.



To Return to Automatic Exposure Mode

Press EXPOSURE again, or close the AUTO LOCK cover.

Shoot with the sun behind you

When the light source is behind your subject, or in the following situations, the subject will be recorded too dark.

- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shoot in the dark

We recommend you to use the video light (not supplied). To get the best color, you must maintain a sufficient light level.

Using the PROGRAM AE Function

You can select from three PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus) or capture high-speed action with Sports mode or High-Speed Shutter mode.

Selecting the Best Mode

Select the best mode by using the following examples.



Portrait mode

- A still subject such as a person or flower
- Subject behind an obstacle such as a net
- Zooming in on a subject in telephoto

Sports mode

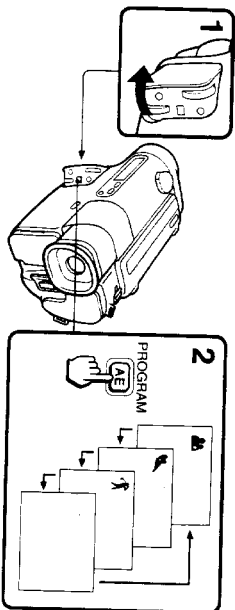
- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape in a moving car

High-speed shutter mode

- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in clear, sharp picture

Using the PROGRAM AE Function

- (1) Open the AUTO LOCK cover until it clicks. (2) Press PROGRAM AE repeatedly so that the desired mode indicator appears inside the viewfinder.



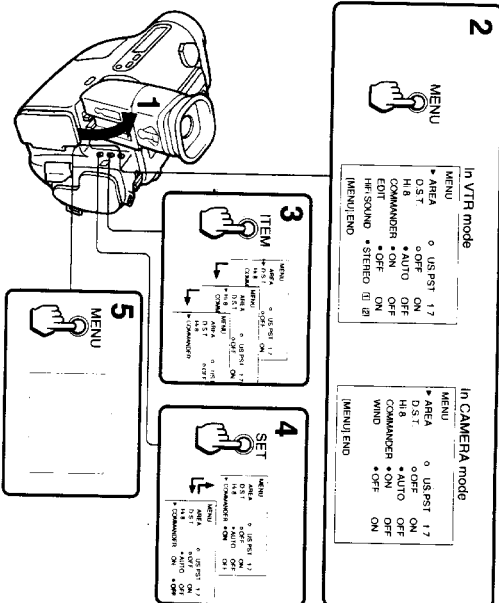
Note on shutter speed

The shutter speed in each PROGRAM AE mode is as follows:

- Portrait mode - between 1/60 to 1/2000
- Sports mode - between 1/60 to 1/500
- High-speed shutter mode - 1/4000

Changing the Mode Settings

You can change the mode settings in the menu system to further enjoy the features and functions. (1) Turn the viewfinder up. (2) Press MENU to display the menu in the viewfinder. (3) Press ITEM to move the cursor \blacktriangle and select the desired item. (4) Press SET to move the cursor \bullet (or \circ) and set the desired mode. If you want to change the other modes, repeat steps 3 and 4. (5) Press MENU to erase the menu display.



2

In VTR mode	
MENU	
AREA	0 US PST 1.7
D.S.T.	0 OFF
H.I.B.	0 AUTO OFF
COMMANDER	0 ON OFF
EDIT	0 OFF ON
HI- SOUND	0 STEPED TL LB
[MENU] END	

In CAMERA mode	
MENU	
AREA	0 US PST 1.7
D.S.T.	0 OFF ON
H.I.B.	0 AUTO OFF
COMMANDER	0 ON OFF
WIND	0 OFF ON
[MENU] END	

About the previous mode settings

- When you detach the battery.
 - The AREA and D.S.T. mode settings are retained (displayed with cursor \circ).
 - The other mode settings are saved for 5 minutes (displayed with cursor \bullet).
- However, these settings are cancelled if the lithium battery is exhausted.

Selecting the Mode Setting of Each Item

AREA

- You cannot select this item before setting the date and time (p. 11).
- Select the area name of the time zone where you will use the camcorder when you use the world clock (p. 35).

D.S.T. -CONOFF-

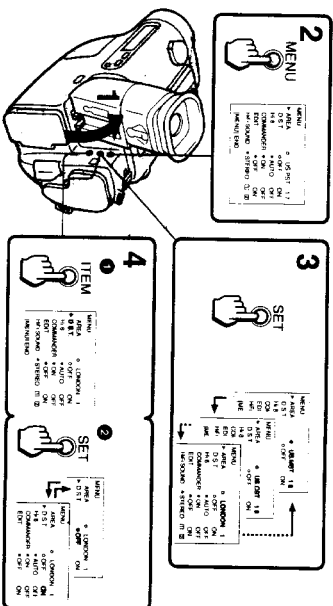
- You cannot select this item before setting the date and time (p. 11).
- Select ON to set the clock to Daylight Savings Time.
- Select OFF to set to standard time.

- H18 <AUTO/OF>**
 - Select AUTO to have the camcorder automatically set the recording mode (H18 or standard 8 mm) depending upon cassette type being used.
 - Select OFF to record a H18 tape in standard 8 mm format. See page 39 for details about cassette types.
- COMMANDER <ON/OFF>**
 - Select ON when using the supplied Remote Commander for the camcorder.
 - Select OFF when not using the Remote Commander for the camcorder.
- EDIT <ON/OFF>**
 - In CAMERA mode, this option is not displayed.
 - Select ON to minimize the picture and sound deteriorations when editing.
 - Select OFF otherwise.
- H18 SOUND <STEREO / [1] / [2]>**
 - In CAMERA mode, this option is not displayed.
 - Normally select STEREO.
 - Select [1] or [2] to play back a dual soundtrack tape.
- WIND <ON/OFF>**
 - In the VTR mode, this option is not displayed.
 - Select ON to activate wind noise when recording.
 - Select OFF otherwise.

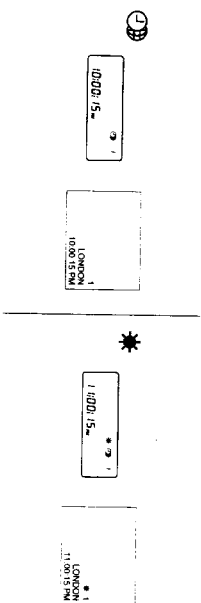
Using the World Clock

Before using the world clock, you need to set the date and time in your home area (0. 1.). Reset the clock according to the local time zone by setting AREA and D.S.T. modes in the menu system. First find the area name in the "Time zone chart" on page 36.

- Turn the viewfinder up. (2) Press MENU to display the menu. (3) Press SET to select the area name where you will use the camcorder. (4) Press ITEM to select D.S.T. item. Press SET to select ON for Daylight Savings Time or OFF for standard time.



The indicator appears in the display window and the area name appears in the viewfinder when using the world clock. The indicator appears in the display window and the viewfinder when setting to Daylight Savings Time.



To Check the Date

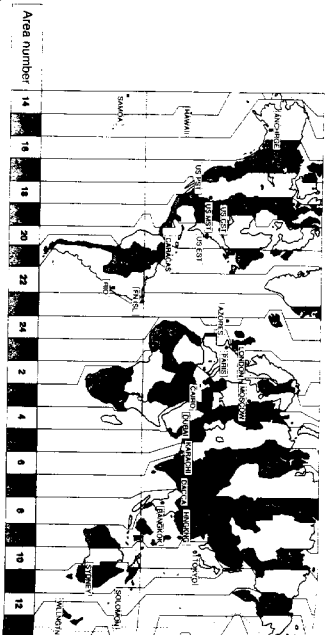
Press DATE (+). To turn off the date indicator, press DATE (+) again.

To Reset to Your Home Area Time

Reset the AREA mode in the menu system to your home area name.

Changing the Mode Settings

Time Zone Chart



Area number	Area name	Nations or area
1	LONDON	England, GMT (Greenwich Mean Time), Morocco, Portugal
2	PARIS	Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, CET
3	CAIRO	Egypt, Finland, Greece, Israel, Turkey
4	MOSCOW	Ethiopia, Iraq, Kenya, Saudi Arabia, (former U.S.S.R. (west))
5	DUBAI	United Arab Emirates
6	KARACHI	Maldives, Pakistan
7	DACCÁ	Bangladesh, India, Myanmar
8	BANGKOK	Cambodia, Indonesia (Jakarta), Thailand, Vietnam
9	HONGKONG	Australia (west), China, Hong Kong, Indonesia (Bat. Borneo), Malaysia, Philippines, Singapore, Taiwan
10	TOKYO	Japan, Korea
11	SYDNEY	Australia (east), Guam, Saipan
12	SOLOMON	New Caledonia
13	WILLINGT	Fiji, New Zealand
14	SAMOA	Western Samoa
15	HAWAII	HST (Hawaii Standard Time), Tahiti
16	ANCHORAGE	AST (Alaska Standard Time), Taiti
17	US PST	AST (Alaska Standard Time)
18	US MST	PST (Pacific Standard Time)
19	US CST	MST (Mountain Standard Time)
20	US EST	CST (Central Standard Time), Mexico
21	CARACAS	EST (East Standard Time), Peru
22	RIO	Chile, Dominica, Venezuela
23	FN ISI	Argentina, Brazil, Uruguay
24	AZORES	Farmado de Moçamba
		Azores Islands

⁺ These are common names. They may be different from formal country names

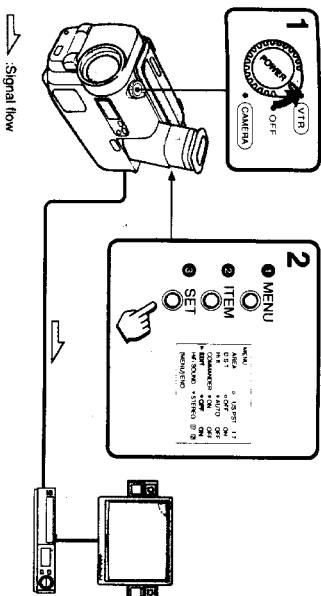
Editing onto Another Tape

You can create your own video program by editing with any other **Hi8**, **Hi8 Hi8**, **MMS VHS**, **SMS S-VHS**, **VHS**, **S-VHS**, or **Hi Betamax** VCR that has video/audio inputs.

Before Editing

After fitting the camcorder to the Handycam Station that is connected to your VCR, turn the POWER switch to VTR (2). Set EDIT mode to ON in the menu switch.

- (1) Set the POWER switch to V.I.H., (2) Set EDIT mode to ON in the menu system (p.33).**



Starting Editing

- (1) Insert a blank tape (or a tape you want to record over) into the recording VCR. Then insert your recorded tape into the camcorder. (2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing. Then play the camcorder to playback pause mode. (3) Set the recording VCR to recording pause mode. (4) Press **II** on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4

To Stop Editing

Press **□ STOP** on the camcorder and VCR. When you finish editing, reset EDIT mode to OFF (p.33)

Use of the EDITSEARCH button

To play back a tape in the forward or reverse direction keep pressing EDITSEARCH during playback pause. You can play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

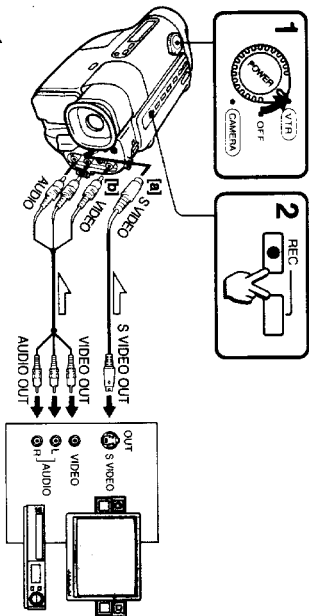
Note on DISPLAY function

If you have displayed the viewfinder screen indicators on the TV (DISPLAY function), erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Recording from a TV or VCR

You can record a tape from another VCR or a TV program from a TV that has video/audio outputs. Connect the camcorder to the TV or VCR.

(1) Set the POWER switch to VTR. (2) Press REC at the point where you want to start recording. In recording and recording pause mode, S VIDEO and VIDEO/AUDIO jacks automatically work as output jacks.



If your TV or VCR is a monaural type, connect only the white plug for audio on both the camcorder and the TV or VCR.

If you are going to connect the camcorder using the S video cable [a], you do not need to connect the yellow (video) plug or the AV connecting cable [b].

To Check the Picture from a TV or VCR before Recording

Press II after pressing ●. You can check the picture in the viewfinder.

To Stop Recording

Press □

Additional Information

Usable Cassettes and Recording/Playback Modes

Selecting Cassette Types

The Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures. You can use Hi8 and standard 8 mm cassettes. When you want to record in the Hi8 system, use only Hi8 cassettes. You cannot record on standard 8 mm cassettes in the Hi8 system.

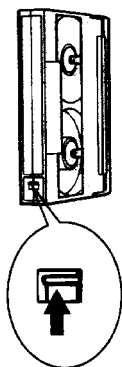
If you are going to play back the tape using a standard 8 mm video recorder/player, you should record the tape in the standard 8 mm system.

If you want to use a Hi8 cassette with the standard 8 mm recording system, set the Hi8 mode to OFF in the menu system before recording (p. 33).

To play back in	Record using cassette type	Set Hi8 setting to
Hi8	Hi8	AUTO
Standard 8	Hi8	OFF
		AUTO (or OFF)

To Prevent Accidental Erasure

Slide the tab on the cassette to expose the red mark.



If you try to record with the red mark exposed, the ● and ▲ indicators flash in the viewfinder, and you cannot record on the tape. To re-record on this tape, slide the tab back out to cover the red mark.

When You Play Back

The playback mode is selected automatically according to the recording system (Hi8/standard 8 mm, SP/LP mode) in which the tape was recorded.

Notes on AFM Hi-Fi stereo

When you play back the tape, the sound is in monaural if:

- You record the tape using this camcorder, then play it back on an AFM Hi-Fi monaural video recorder/player.
- You record the tape on an AFM Hi-Fi monaural video recorder, then play it back on this camcorder.

LP (long play) mode

When you play back a tape recorded in LP mode, the LP indicator lights up in the viewfinder. This camcorder cannot record tape in LP mode.

Tips for Using the NP-500 Battery Pack

Caution

Never leave the battery pack under temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.

Note on Charging

Recharge the battery pack whenever you like

You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. So recharge the battery pack before use.

Preparing the Battery Pack

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

"Battery life" is measured by continuous camcorder recording time, at a room temperature using a fully charged battery. The battery is also expended when:

- You insert or eject a tape.
- The camcorder is set to Standby mode.
- You set the POWER switch to VTR.


Battery life is shorter in a cold climate

Battery efficiency is decreased and the battery wears out more quickly in cold weather (50°F/10°C or less). For longer battery life, we recommend the following:

For longer battery life, we recommend the following

- Keep the battery pack warm until you're ready to start using the camcorder.
- Charge the battery using the AC power adaptor at room temperature (from 50°F/10°C to 86°F/30°C).

Battery Remaining Indicator

You can check the remaining battery by looking at the  indicator in the viewfinder. The decreasing black bar indicates decreasing battery power.

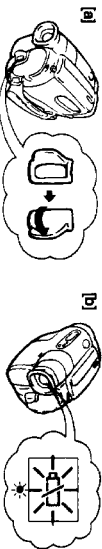


To save battery power close the STANBY cover when not recording

A smooth recording can be made even if recording is stopped and started again. [a]

When to Replace the Battery Pack

You can check the remaining battery capacity by looking at the battery remaining indicator in the viewfinder. When the **V** indicator and the battery lamp in the viewfinder change from slow to rapid flashing, set the **POWER** switch to **OFF**, and replace the battery pack. (Leave the tape in the camcorder in order to obtain a smooth transition when you begin recording again.) **b**



Note on the Terminals

If the terminals (metal parts in the terminal holes) are not clean, the battery duration will be shortened. When the terminals are not clean or when the battery pack has not been used for a long time, repeat installing and removing the battery pack. This improves the contact condition. Also, remove any accumulated dust in the terminal holes by using a pointed stick which is not so hard.

Be sure to observe the following

- To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals.
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

Maintenance Information and Precautions

Moisture Condensation

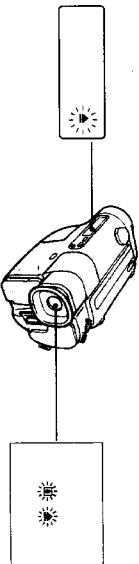
If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. If this happens, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions:

Inside the Camcorder

When **B** and **A** indicators flash in the viewfinder and the display window, moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.

Eject the tape, turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.

If the **3** indicator does not light up when you turn on the power, you can use the camcorder again



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert tape and press a tape transport button, the indicator flashes in the viewfinder and the display window. If this happens, none of the functions except cassette ejection will work.

Eject the tape and let it sit for about 1 hour

If the indicator does not light up when you insert the tape and press a tape transport button, you can use the camcorder again.

On the Lens

No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to Prevent Moisture Condensation

(1) Be sure to tightly seal the plastic bag containing the camcorder.

- (2)** Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are 'noisy' or hardly visible, the video heads may be contaminated.



[a] Slight contamination

[b] Critical contamination
If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still 'noisy', repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

Precautions

Camcorder Operation

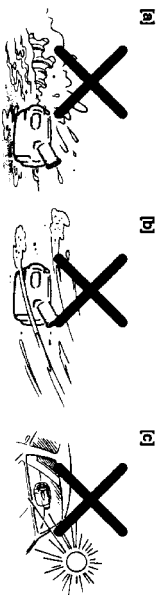
- Operate the camcorder using 7.2 V (battery pack), or 6.5 V (AC power adaptor).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camera.
- Do not wrap up the camcorder, or operate it while it is wrapped up internally.
- Do not use the camcorder in strong magnetic fields or mechanical vibration.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [a]
- Do not let the camcorder get wet. Keep the camcorder from rain or sea water. It may cause a malfunction and sometimes the malfunction cannot be repaired. [b]

On Handling Tapes

Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the tape thickness of tape, or if the tab is out or in.

Camcorder Care

- Never leave the camcorder under temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight. [c]
- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth. Camcorder body with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.



AC Power Adapter

Charging

- Use only for the specified battery pack. This unit cannot be used to charge an NP-55/65/77 series battery pack.
- Attach the battery pack firmly.
- Charge the battery pack on a flat surface without vibration.

Changing Temperature

The temperature range for charging is 0°C to 40°C (32°F to 104°F). However, to provide maximum battery efficiency, the recommended temperature range when charging is 10°C to 30°C (50°F to 86°F).

Others

- The blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you cannot insert the plug fully into the outlet, contact your dealer.
- To disconnect the cord from the outlet, pull the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the cord has been dropped or damaged.
- Be sure that nothing metallic comes into contact with the metal parts of the unit or connecting plate. If it does, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble or convert the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, it gets warm. But this is normal.
- Keep the unit away from AM receivers, because it will disturb AM reception.
- Do not place the unit in a location where it is:
 - Extremely hot or cold
 - Dusty or dry
 - Nearby fire
 - Very humid
 - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Handycam Station (for the Canada model)

- To use this unit, an AC power adapter AC-V500 is required.
 - Be sure that nothing metallic comes into contact with the metal parts covered with the terminal shutter on the camcorder mounting surface. If it does, a short may occur and the unit may be damaged.
 - Keep the metal contacts clean.
 - Do not disassemble or convert the unit.
 - Take care not to drop the camcorder or AC power adapter when removing them from this unit.
 - While the unit is in use, particularly during charging on the AC power adapter, keep it away from AM receivers because it will disturb AM reception.
 - Do not place the unit in a location where it is:
 - Extremely hot or cold
 - Dusty or dry
 - Nearby fire
 - Very humid
 - Vibrating
- If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Using Your Camcorder Abroad

Each country has its own electricity and TV color systems. Before using your camcorder abroad, check the following points:

Power Sources

You can use your camcorder in any country with the supplied AC power adapter within 100 V to 240 V AC, 50/60 Hz. Use a commercially available AC plug adaptor [a], if necessary, depending on the design of the wall outlet [b].



Difference in Color Systems

This camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV. When you want to use a PAL-M system based TV, you will need a NTSC/PAL-M transcoder. Check the following alphabetical list:

NTSC system countries

Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries

Australia, Austria, Belgium, China, Denmark, Finland, Germany (former West Germany), Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country

Brazil

PAL-N system countries

Argentina, Paraguay, Uruguay

SECAM system countries

Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

Trouble Check

If you run into any problems using the camcorder, use the following table to troubleshoot the problem.

Video Camera Recorder

Symptom	Cause	Corrective Actions	page
The power does not go on.	The battery is not inserted. The battery is dead.	Insert the battery. Use a charged battery.	7 6, 24
The power goes off.	The AC power adaptor is not connected to a wall outlet. While being operated in VHS/Hi-Fi mode, the camcorder has been in use mode for more than 5 minutes.	Connect the adaptor to a wall outlet. Close the STANDBY cover at once and open it again.	26 15
The battery pack is quickly discharged.	The battery is dead. The ambient temperature is too low. The battery pack has not been charged fully.	Use a charged battery. — Charge the battery pack again.	6, 24 — 6, 24
START/STOP does not operate.	The battery pack is completely dead, and cannot be recharged. The tape is stuck to the drum. The tape has run out.	Use another battery pack. Eject the tape. Rewind the tape or use a new one.	6, 24 12 22
	The POWER switch is set to VTR.	Set it to CAMERA.	15
	The tab on the cassette is out (red).	Use a new tape or slide the red tab.	39
The cassette cannot be removed from the compartment.	The battery is exhausted.	Use a charged battery or the AC power adaptor.	6, 24, 26
No function except for cassette ejection works.	Moisture condensation has occurred.	Remove the cassette and do not use the camcorder for at least an hour.	41
The tape does not move when a tape transport button is pressed.	The POWER switch is set to CAMERA or OFF. The tape has run out.	Set it to VTR. Rewind the tape or use a new one.	22 22
The steady shot function does not work.	The STEADY SHOT switch is set to OFF.	Set the STEADY SHOT switch to ON.	16
The autofocus function does not work.	The AUTO LOCK cover is opened. Shooting conditions are not suitable for autofocus operation.	Close the AUTO LOCK cover to set the AUTO LOCK. Open the AUTO LOCK cover and press FOCUS to adjust the focus manually.	29 30

Symptom	Cause	Corrective Actions	page
No sound or only a low sound is heard when playing back a tape.	The Stereo tape is played back with the HiFi/SOUND mode set to "1" or "2".	Set to "STEREO" in the menu system.	33
The image on the viewfinder screen is not clear.	The viewfinder lens is not adjusted.	Adjust the viewfinder lens.	13
The menu is not displayed on the TV.	DISPLAY on the Remote Commander is not pressed.	Press DISPLAY on the Remote Commander.	23
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	The contrast between the subject and background is too high. The camcorder is not malfunctioning.	Change locations.	—
The playback picture is not clear.	EDIT mode is set to "ON".	Set EDIT mode to "OFF" in the menu system.	33
	The channel or input for the camcorder is not selected on the TV.	Select correctly.	19
	The video heads may be contaminated.	Clean the heads using the Sony V8-50CLH cleaning cassette.	42
No picture and no sound is played back when using the Handycam Station. (for the Canada model)	The RFU adaptors are connected to both of the camcorder and the Handycam Station.	Disconnect the RFU adaptor connected to the camcorder.	—
The supplied Remote Commander does not work.	The HOLD switch is working.	Set the switch in the direction opposite to the arrow.	54
	REMOTE COMMANDER mode is set to "OFF".	Set the mode to "ON" in the menu system.	33
	Something interrupts the infrared rays.	Take away the obstacle.	—
	The lithium battery is not inserted with the correct polarity.	Insert the lithium battery with the correct polarity.	9
The lens catters when you set the POWER switch to OFF and shake the camcorder.	The lithium battery is dead.	Insert a new one.	9
	This is not a malfunction.	—	—

Trouble Check

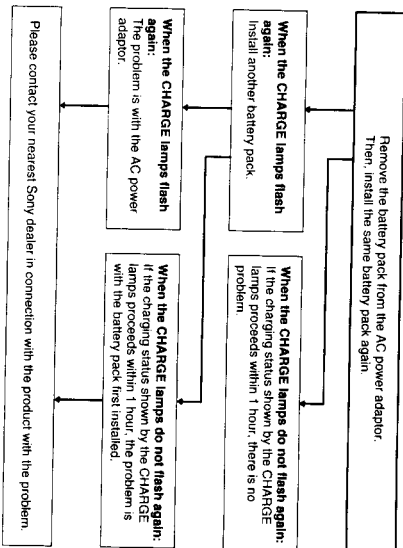
Trouble Check

AC Power Adaptor

Symptom	Cause	Corrective Action	page
The POWER lamp does not light.	—	Disconnect the power cord. After about one minute, reconnect the power cord again.	—
The CHARGE lamp flashes.	—	See the chart below.	—

When the Three CHARGE Lamps Flash

Check through the following chart.



Specifications

Video Camera Recorder

System

Video recording system

Audio recording system Four Rotary heads, Helical scanning FM system

Video signal

NTSC color, EIA standards

Usable cassette

8 mm video format cassette (H8 or SP mode) Approx. 1.43 cm (1/2 inch)

Tape speed

SP mode: Approx. 0.72 cm (5/16 inch)/sec.
LP mode: Approx. 0.36 cm (1/8 inch)/sec. (playback only)

Recording time

SP mode 2 hours (E6P6-120)

Playback time

LP mode 4 hours (E6P6-120)

Fastforward/reward time

Approx. 6 min. (E6P6-120)

Image device

Electronic viewfinder (color)

Viewfinder

Combined 10 x power zoom lens

1.5-4.4 to 54 mm (7/32 to 2 1/4 inches)

39 to 390 mm (1 5/16 to 15 3/8 inches)

F 1.8 to 2.4

Filter diameter 37 mm (1 1/2 inches)

TTL autofocus system inner focus wide macro system

Color temperature

Auto

Minimum illumination

5 lx to 100,000 lx

Illumination lamp

More than 100 lx

Recommended illumination

More than 100 lx

Input and output connectors

4-pin mini-DIN

Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative

Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced

Video input/output

Phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative

Audio input/output

Phono jacks (2 stereo L and R), input: -7.5 dBs, input impedance more than 47 kilohms

Output: -7.5 dBs, (at load impedance 47 ohms)

These above three connectors are automatically selectable according to the operation.

RFU DC OUT Special mini-jack, DC 5 V

Headphones jack

Stereo mini-jack (ø 3.5)

Remote jack Stereo mini-jack (ø 2.5)

MIC jack Stereo mini-jack, 48 ohm impedance with 2.5 to 3 V DC, output impedance 60 kilohms (ø 3.5)

Handycam Station terminal

20pin special connector

General

Power requirements

7.2 V (battery pack)
6.5 V (AC power adaptor)

Power consumption

6.3 W (camera recording) including the viewfinder

Installation

Operation temperature

0°C to 40°C (32°F to 104°F)

Storage temperature

-20°C to +60°C (-4°F to 140°F)

Dimensions

Approx. 96 x 102 x 173 mm (width)

Mass

Approx. 720 g (1 lb 10 oz) excluding the battery pack, lithium battery, cassette, and shoulder strap

Approx. 900 g (2 lb) including the battery pack, NP-500, lithium battery CR2025, cassette EG-60, and shoulder strap

Microphone

Electret condenser microphone, stereo

Supplied accessories

See page 5

AC Power Adaptor

Power requirements

100 - 240 V AC*, 50/60 Hz

Power consumption

1.1 W

Charge mode

23 VA (100 V AC), 33 VA (240 V AC)

Operating mode

25 VA (100 V AC), 34 VA (240 V AC)

Output voltage

DC OUT: 6.5 V, 1.5 A operating mode

Battery charge terminal: 6.4 V, 1.1 A in

Application

Operating temperature

0°C to 40°C (32°F to 104°F)

Storage temperature

-20°C to 60°C (-4°F to 140°F)

Dimensions

Approx. 68 x 44 x 107 mm (width)

Weight

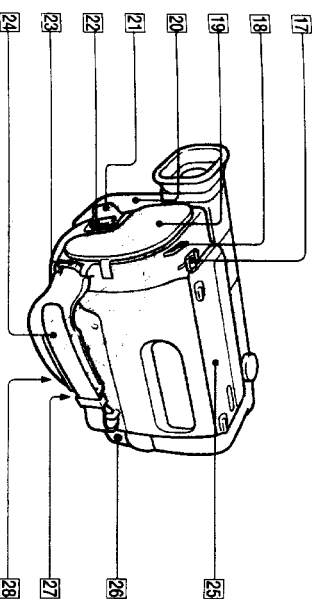
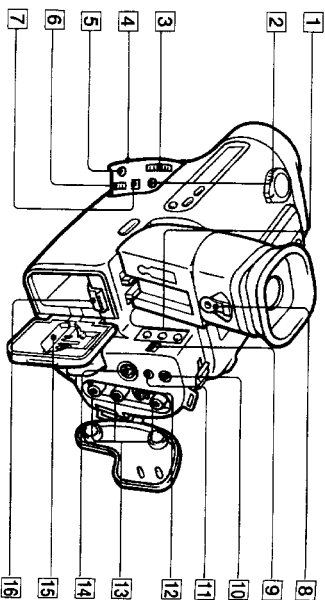
Approx. 260 g (9.2 oz)

* Canadian Standard Association (CSA) certifies 120 V AC only.

Design and specifications are subject to change without notice.

Trouble Check/Specifications

Identifying the Parts



1 Menu operation buttons (p. 33)

2 Focus dial (p. 30)

3 Focus lock cover (p. 30)

4 AUTO LOCK cover (p. 29)

5 EXPOSURE button (p. 31)

6 Exposure dial (p. 31)

7 PROGRAM AE button (p. 32)

8 Viewfinder lens adjustment lever (p. 13)

9 STEADY SHOT switch (p. 16)

10 PHONES (headphones) jack (stereo) (p. 18)

11 REMOTE \square (LANC) control jack

Connect the LANC \square connecting cable to a wired remote control unit such as a editing controller. In this case, set the REMOTE COMMANDER mode to OFF in the menu system (p. 32).

12 Local Application Control Bus (LAC) jack

This jack is used for controlling the hook tripod stand, the equipment and peripherals connected to it. This jack has the same function as the connectors indicated as CONTROL L or REMOTE.

13 RFU DC OUT (RFU adaptor DC out) jack (p. 19)

14 VIDEO/AUDIO jacks (p. 19)

15 S VIDEO jack (4-pin mini-DIN connector) (p. 19)

16 LITHIUM battery compartment (p. 9)

17 BATT (battery) release key (p. 7)

17 POWER ZOOM lever (p. 17)

18 Hook for shoulder strap (below)

19 Jack cover

20 Battery compartment (p. 7)

21 STANDBY cover (p. 15)

22 START/STOP button (p. 15)

23 Hook for shoulder strap (below)

24 Grip strap (p. 14)

25 Cassette compartment lid (p. 12)

26 MIC jack

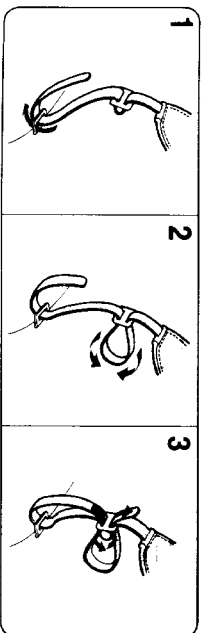
27 Instant stand (p. 14)

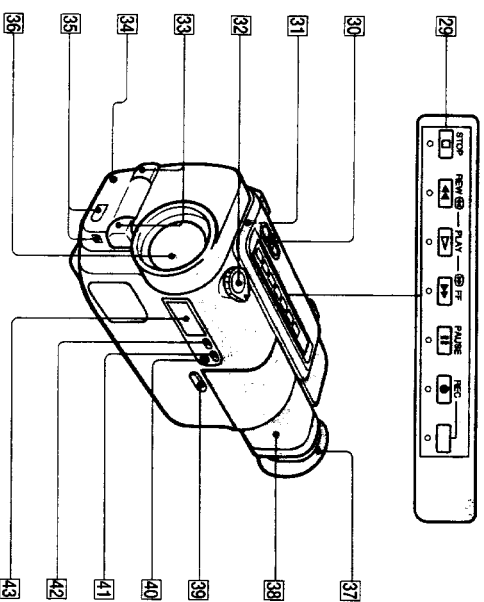
28 Tripod receptacle (p. 14)

When attaching a non-SONY tripod, make sure the tripod is attached to the camera mounting screw in the shoulder (p. 15). Do not attach the tripod to the screw on the side of the camcorder. The screw might damage the inner part of the camcorder.

Attaching the shoulder strap

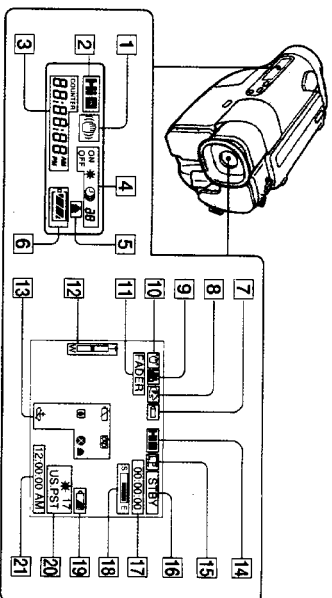
Attach the supplied shoulder strap to the hooks for the shoulder strap (above).





- 29 **STOP** button (p. 15, 22)
- 30 **REW** (rewind) button (p. 15, 22)
- 31 **PLAY** (playback) button (p. 15, 22)
- 32 **FF** (fast forward) button (p. 15, 22)
- 33 **PAUSE** button (p. 15, 22)
- 34 **REC** (recording) button (p. 15, 22)
- 35 **These buttons will function in VTR mode.**
- 36 **STOP** button (p. 15, 22)
- 37 **REW** (rewind) button (p. 15, 22)
- 38 **PLAY** (playback) button (p. 15, 22)
- 39 **FF** (fast forward) button (p. 15, 22)
- 40 **PAUSE** button (p. 15, 22)
- 41 **REC** (recording) button (p. 15, 22)
- 42 **These buttons will function in VTR mode.**
- 43 **STOP** button (p. 15, 22)

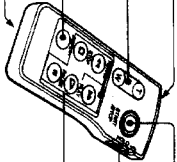
In the Display Window and the Viewfinder



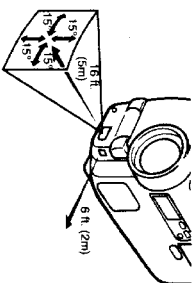
- 1 **Steady shot indicator** (p. 16)
- 2 **Playing back or recording in Hi8 format** (p. 39)
- 3 **Tape counter, time or date indicator** (p. 11, 15)
- 4 **World clock indicators** (p. 35)
- 5 **Warning indicator** (p. 55)
- 6 **Battery remaining indicator** (p. 40)
- 7 **Wind noise reduction indicator** (p. 33)
- 8 **Manual focusing** (p. 30)
- 9 **PROGRAM AE mode indicator** (p. 32)
- 10 **Steady shot indicator** (p. 16)
- 11 **FADE indicator** (p. 28)
- 12 **Power zoom indicator** (p. 17) / **Exposure indicator** (p. 31)
- 13 **Warning indicator** (p. 55)
- 14 **Lights up while recording in Hi8 system** (p. 15, 39)
- 15 **Lights up when playing back a tape recorded in LP mode** (p. 39)
- 16 **Tape transport mode** (p. 15, 22)
- 17 **Tape counter** (p. 15)
- 18 **Tape remaining indicator**
- 19 **Tape remaining indicator**
- 20 **World clock indicator** (p. 35)
- 21 **Date or Time** (p. 27)

Identifying the Parts

Wireless Remote Commander

- 
- 1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning the POWER switch on the camcorder.
 - 2 **Power zoom button**
 - 3 **DISPLAY button**
Press to display the viewfinder screen indicators on the TV when you connect the camcorder to a TV.
 - 4 **Lithium battery holder** (p. 10)
 - 5 **START/STOP button**
 - 6 **HOLD switch**
Slide in the direction of the arrow to prevent the buttons from being accidentally pressed. Before using the Remote Commander, slide in the direction opposite to the arrow.
 - 7 **Tape transport buttons**
To erase the indicators, press again.

Remote Control Direction



Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCHs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

Warning Indicators

If indicators flash in the display window [a] or the viewfinder [b], or a caution lamp on the camcorder flashes, check the following:

1 [a]	[b]	2	3
4	5	6	
7	8	9	

- 1 **Battery Remaining**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.
- 2 The tape is near the end.
- 3 The tape has run out.
- 4 No tape has been inserted.
- 5 The tap on the tape is out (red) (p. 39).
- 6 Moisture condensation has occurred (p. 41).
- 7 The video heads may be contaminated (p. 42).
- 8 Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.
- 9 The lithium battery is weak or the lithium battery is not installed (p. 9).

Identifying the Parts/Warning Indicators

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If you have any question about this product, call:

Sony customer information Center

East Coast: 201-930-7669 (SONY) NJ

Central: 708-250-7669 (SONY) IL

West Coast: 714-821-7669 (SONY) CA

or write to:

Sony Customer Information Center

Sony Drive, Mail Drop #T1-11,
Park Ridge, NJ 07656

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