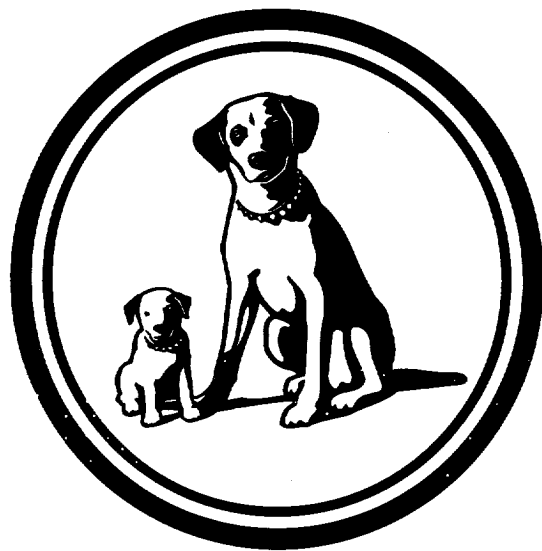


REA

camcorder user's guide

CC641/CC643



Important Safety Information

Be sure to read all the safety information before you begin to use this product.

WARNING: To reduce the risk of fire or shock hazard, do not expose camcorder or AC adapter/charger to rain or moisture.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



This symbol indicates "dangerous voltage" inside the product that presents a risk of electric shock or personal injury.

ATTENTION

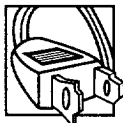
RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR



This symbol indicates important instructions accompanying the product.

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER (OR BACK). NO USER-SERVICEABLE PARTS ARE INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONEL.

Cautions



CAUTION: To prevent electric shock, match wide blade of plug to wide slot, fully insert.

ATTENTION: Pour éviter les chocs électriques, introduire la lame la plus large de la fiche dans la borne correspondante de la prise et pousser jusqu'au fond.

To reduce risk of injury, charge only rechargeable batteries recommended by the manufacturer for this camcorder. Other types of batteries may burst causing damage and personal injury.

FCC Regulations state that unauthorized changes or modifications to this equipment may void the user's authority to operate it.

Product Registration

Please fill out the product registration card and return it immediately. Returning this card allows us to contact you if needed.

Keep your sales receipt for proof of purchase to obtain warranty parts and service and attach it here. Record the serial number and model numbers located on the bottom of the camcorder.

Model No: CC643/CC641

Serial No: _____

Purchase Date: _____

Purchased From: _____

Assistance

We want to make sure you enjoy your new camcorder. If you have any questions, call:

- Camcorder Exchange Warranty.....800-283-6503 (pages 80-81)
- Customer Service.....800-336-1900 (page 79)
- Accessories..... 800-338-0376 (pages 66-71)

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First-Time Operation

This section describes only the basic steps necessary to set up your camcorder to record. Refer to the other sections for detailed operation and feature options.

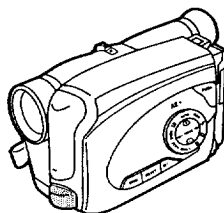
Assistance

The toll-free numbers are available to help you with any problem you may encounter.

Camcorder Exchange Warranty.....800-283-6503
Customer Service..... 800-336-1900
Accessories..... 800-338-0376

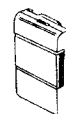
1. Unpack the camcorder and accessories.

- Save the packing materials and box in case you ever need to ship or store your camcorder.
- The items shown below are packed with your camcorder. If any are missing or appear damaged, contact your dealer immediately.



Model CC643 or CC641*

*Your model of camcorder may not look exactly like the pictures in this guide.



Rechargeable 6 Volt Battery
Part No FB1260

**WARNING: NICKEL
CADMIUM BATTERY
MUST BE RECYCLED OR
DISPOSED OF PROPERLY.**

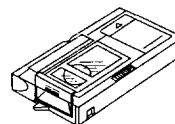


AC Adapter/Charger Part No. 236689
and DC Cable Part No. 233087

Caution: Do not use this adapter/charger for any purpose other than charging the FB1260 or FB120 battery pack or supplying power to the camcorder.



Shoulder Strap
Part No. ACS091



Cassette Adapter
Part No. 232845



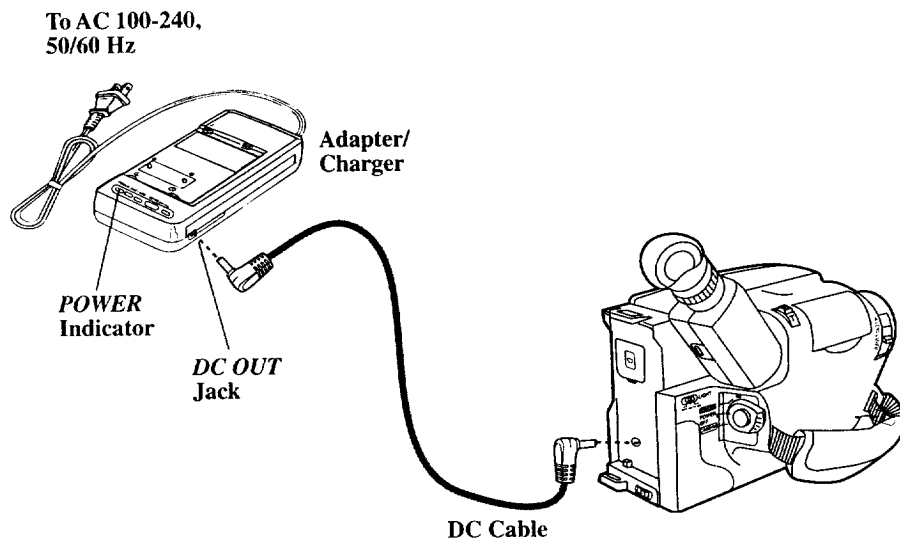
Cassette Adapter Battery
(Size "AA" 1.5 Volt)



Clock Cell
3-Volt Micro Lithium Cell – such as CR2025 – available from most local drug stores and camera shops. Use of other cells present a risk of fire or explosion.

CAUTIONS: Lithium cell must be disposed of properly. Never handle a punctured or leaking cell. May cause burns or personal injury.
Keep out of the hands of children. Can cause death or injury if swallowed. If swallowed, consult a physician immediately for emergency treatment.
The lithium cell used in this device may explode resulting in a fire or chemical burn if mistreated. Do not recharge, disassemble, heat above 212°F (100°C), or incinerate.
Never use metallic tweezers to hold the cell, and never short circuit the + and – sides of the cell.

First-Time Operation



2. Attach the adapter/charger.

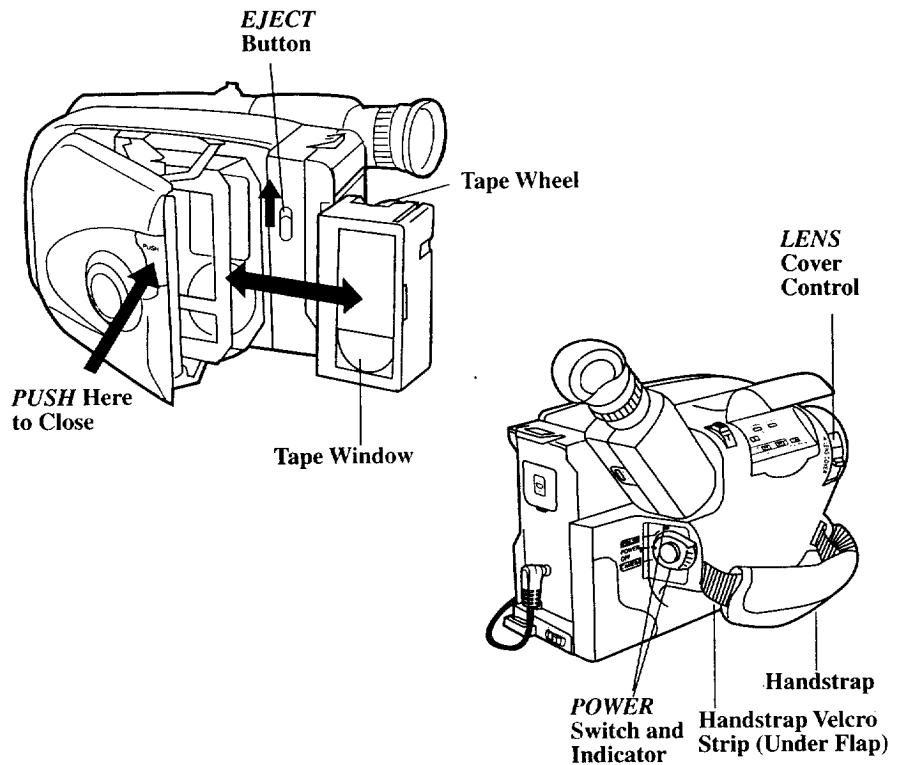
Since the battery must be charged before it can be used the first time, attach the adapter/charger to the camcorder.

- Connect one end of the DC cable to the *DC OUT* jack on the adapter/charger.
- Connect the other end of the DC cable to the DC in jack on the camcorder *as shown above*.
- Plug the adapter/charger's plug into an operating outlet. The adapter/charger's *POWER* indicator will light.

3. Insert a tape.

- Slide *EJECT*.
- Turn the tape wheel on the cassette to remove any slack from the tape.
- Insert the cassette with the tape wheel facing up and the tape window facing out.
- Press on the area labeled *PUSH* until the cassette door locks into place.

First-Time Operation



4. Adjust the handstrap to fit your hand.

- Lift the flap on the handstrap and separate the velcro strip.
- Insert your hand, adjust the strap to fit snugly, refasten the strap, and close the flap.

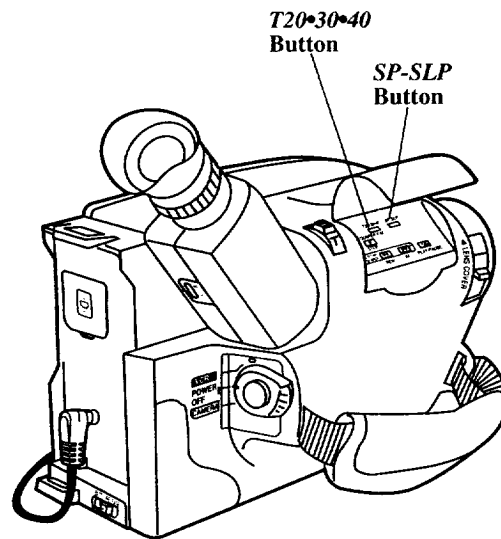
5. Slide **LENS COVER** control to open lens cover.

6. Place **POWER (CAMERA/OFF/VCR)** switch in **CAMERA**.

- The power indicator will light and the camcorder will enter record pause. \equiv PAUSE \equiv appears in the viewfinder when the camcorder is in record pause.
- The position of this switch tells the camcorder whether you want to record (**CAMERA**), turn the power off (**OFF**), or play back tapes (**VCR**).
- The camcorder will automatically turn off if it remains in record pause for five minutes. Place **POWER** in **OFF** and then back in **CAMERA**.

(continued on next page)

First-Time Operation



7. Select a recording speed and tape length.

Select SP or SLP recording speed. Press the *SP-SLP* button to select a recording speed. The speed selected (*SP* or *SLP*) appears in the viewfinder.

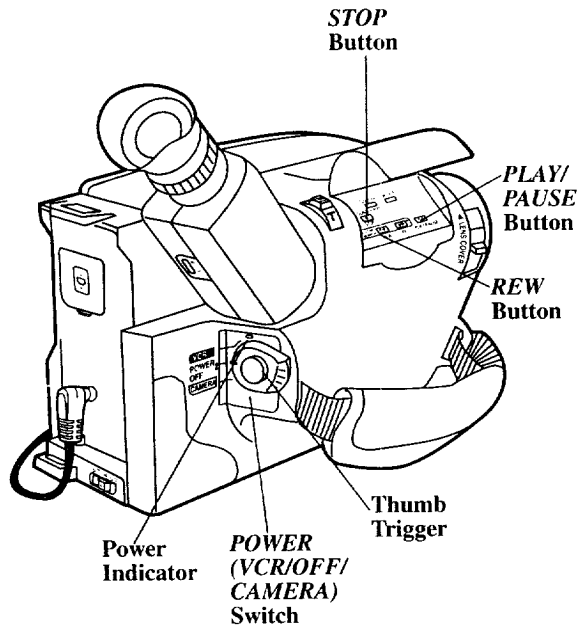
- *SP* – Standard play provides the best picture, but the shortest recording time (20 minutes with a TC-20 tape).
- *SLP* – Extended play provides three times the recording time as *SP* (60 minutes with a TC-20 tape). *SLP* has slightly more picture noise in normal playback.

Set the length of the tape you are using so the camcorder can correctly calculate the recording time remaining on the tape.

Repeatedly press the *T20•30•40* button to select a tape length.

- Select *T20* if you are using a tape with 20 minutes or less recording time in *SP*.
- Select *T30* if you are using a tape with 30 minutes recording time in *SP*.
- Select *T40* if you are using a tape with 40 minutes recording time in *SP*.

First-Time Operation



10. Start and stop recording.

- Press and release the thumb trigger to start recording. **REC** appears in the viewfinder, and the tally light will light when the camcorder is recording.
- Press and release the thumb trigger again to stop recording. The camcorder is now in the record-pause mode (≡ PAUSE ≡ appears in the viewfinder).

11. Play back what you have recorded.

- Place the **POWER** switch in **VCR**.
- Press **REW** to rewind the tape.
- Press **PLAY/PAUSE** to play back the tape in the viewfinder.
- Press **STOP** when you are finished playing back the tape.
- *Details on viewfinder playback are on page 58.*

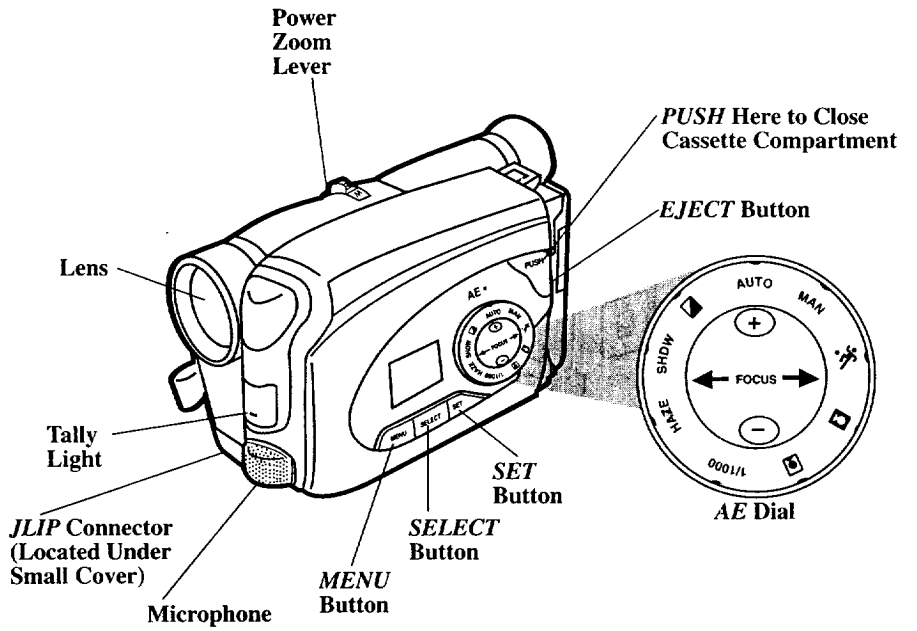
12. Place the **POWER** switch in **OFF** to turn off the camcorder.

The power indicator will turn off.

13. Close the lens cover.

First-Time Operation

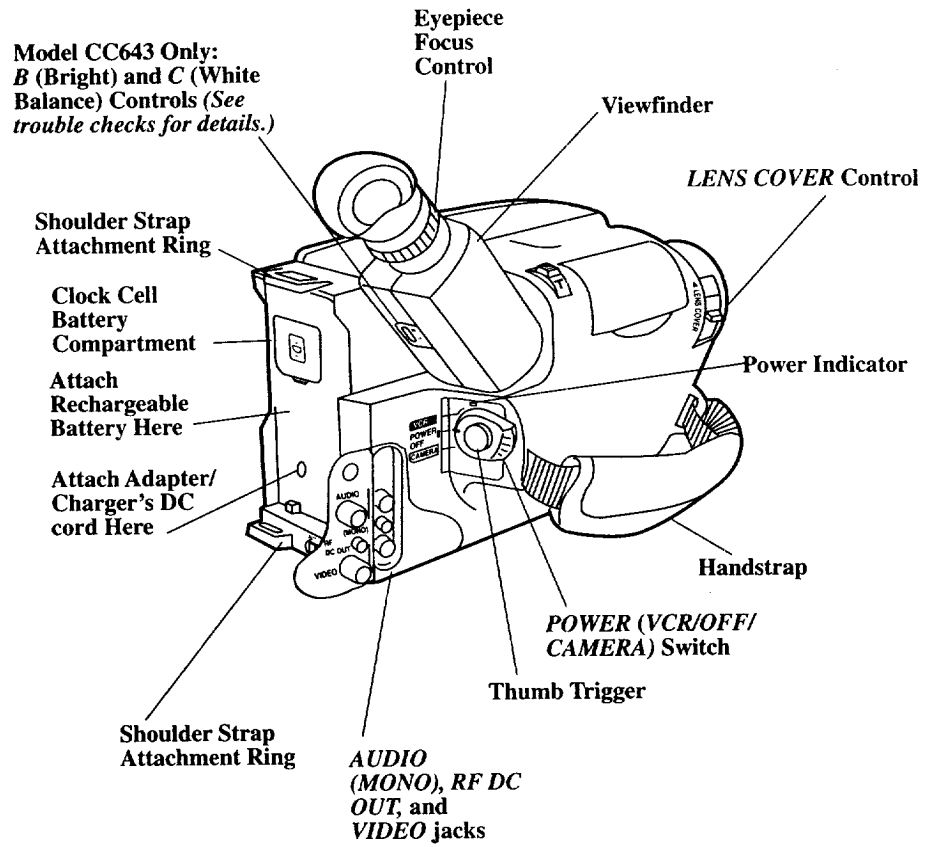
14. Review camcorder's operating controls.



(continued on next page)

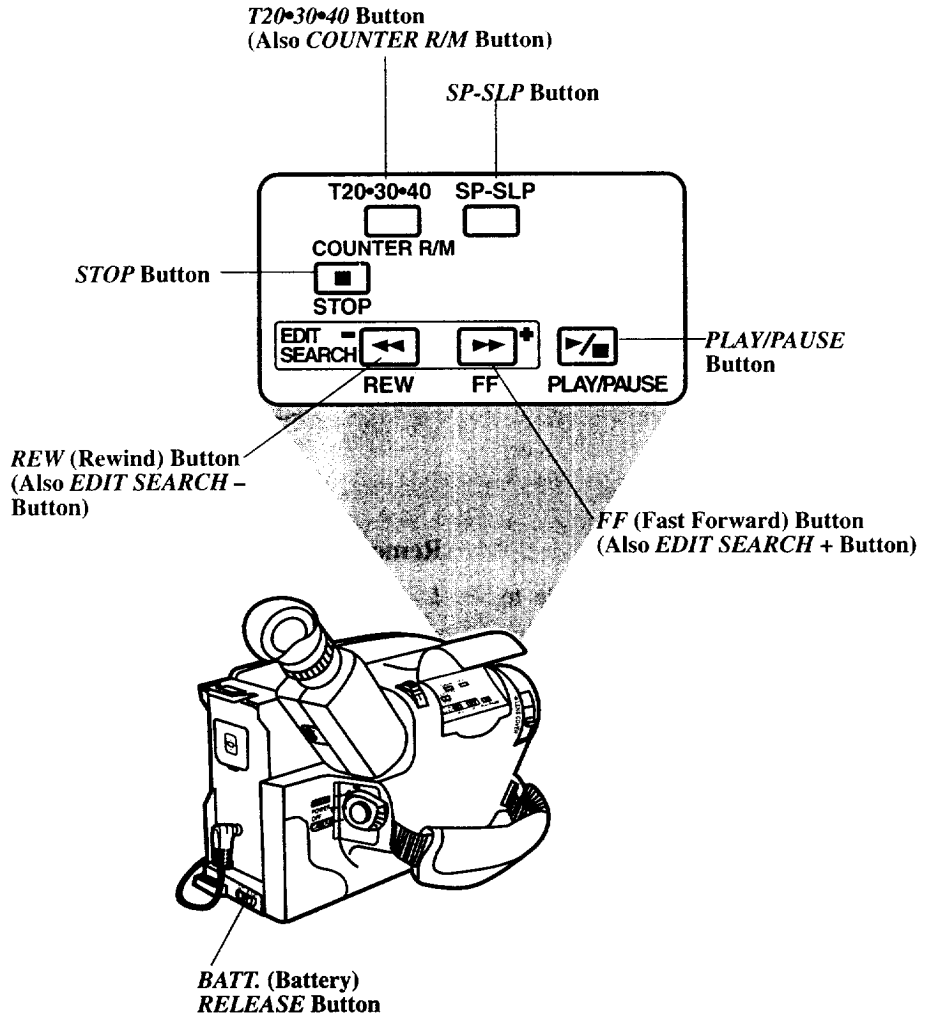
First-Time Operation

14. Review camcorder's operating controls. (continued)



First-Time Operation

14. Review camcorder's operating controls.

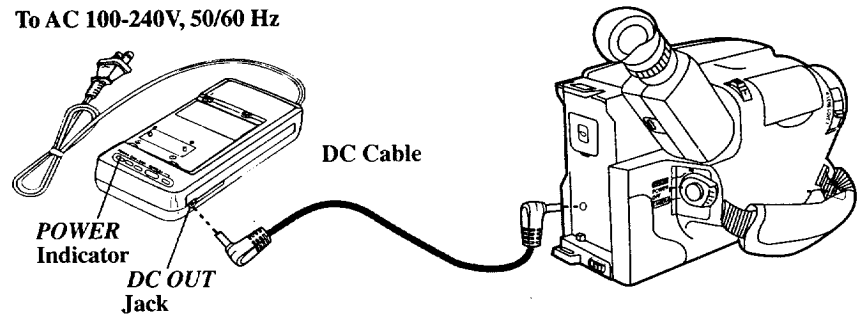


Powering Your Camcorder

Using the Adapter/Charger to Power Your Camcorder

The adapter/charger attaches to the camcorder and lets you power your camcorder directly from standard household power. The adapter/charger operates on 100-240 volts, 50/60 Hz, so it can be used virtually anywhere in the world to power the camcorder or recharge the battery.

To AC 100-240V, 50/60 Hz



Attach Adapter/Charger

1. Connect one end of the DC cable to the *DC OUT* jack on the adapter/charger.
2. Connect the other end of the DC cable to the DC in jack on the camcorder *as shown above*.
3. Plug the adapter/charger's plug into the nearest AC outlet (100-240V, 50/60Hz).
4. If the adapter/charger is properly connected, its *POWER* indicator will light.

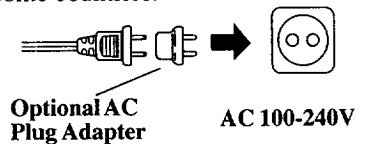
CAUTION: Do not use this adapter/charger for any other purpose other than charging the FB1260 or FB120 battery pack or supplying power to the camcorder.

Remove Adapter/Charger

1. Unplug the adapter/charger from the wall outlet.
2. Remove the DC cable from the adapter/charger and camcorder.

Using an Optional Plug Adapter

An optional plug adapter may be required in some countries.



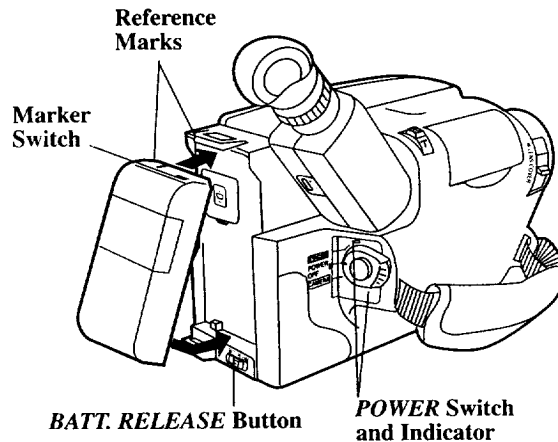
1. Plug the adapter/charger's plug into the AC plug adapter.
2. Plug the AC plug adapter into the AC outlet.

Powering Your Camcorder

Using the Battery to Power Your Camcorder

The battery must be charged *as described on the next page* before it can be used the first time. Initial charging will take approximately 70 minutes. When fully charged, the battery should supply about 70 minutes of operating time (depending on how much you use zoom and pause). Conserve battery power by turning the camcorder off during recording breaks.

Note: The small marker switch on top of the battery is for use as a personal reminder to help you remember to recharge the battery. It has no other function.



Battery Safety Precautions

Do not short the battery's terminals.
Do not attempt to disassemble or modify the battery. There are no user-serviceable parts inside.
Use the battery only with specified adapter/chargers and camcorders.
Throwing the battery into a fire or exposing it to excessive heat - over 149°F (65°C) could be hazardous.

Attach the Charged Battery

If the DC cable is attached to the camcorder, remove it before attaching the battery. Also, install the lithium clock cell before attaching the battery pack. *Details on page 38.*

1. Align the reference mark on the battery with mark on back of camcorder.
2. Hold the top of the battery flush against the camcorder and press the

bottom of the battery down until it locks into place.

3. Place the *POWER* switch in *CAMERA*. The power indicator will light.

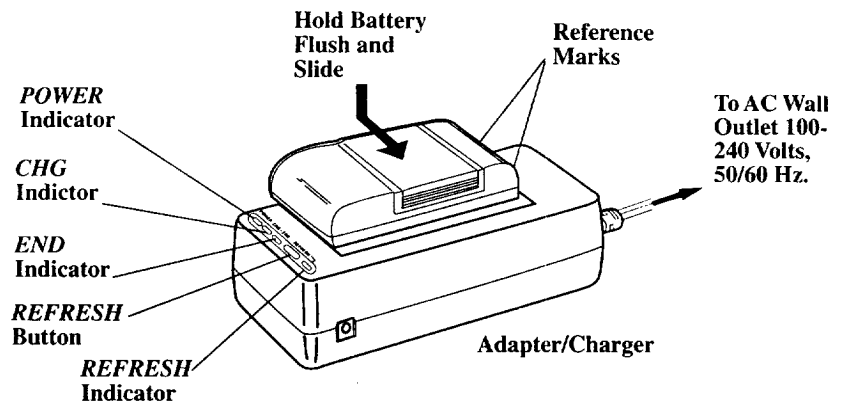
Remove the Battery

Slide and hold *BATT. RELEASE* to the right while removing the battery.

ATTENTION: The RBRC seal on the battery used in your Thomson Consumer Electronics product indicates that we are participating in a program to collect and recycle Nickel Cadmium batteries throughout the United States. Please call 1-800-8-BATTERY for information or contact your local recycling center.



Powering Your Camcorder



Caution: When a battery is attached to the adapter/charger, do not turn them upside down. The battery may fall off and be damaged or cause injury.

Charge the Battery

If the DC cable is attached to the *DC OUT* jack on the adapter/charger, remove its plug.

1. Align reference mark on battery with mark on adapter/charger.
2. Hold the battery flush against the adapter/charger and slide it in the direction of the arrow.
3. Plug adapter/charger into nearest AC outlet (100-240V, 50/60Hz).
4. If the battery is properly connected, the adapter/charger's *CHG* (charge) indicator will light.

Note: If you try to charge a battery that has not been charged for a long period of time, it may take a few minutes for the *CHG* indicator to light.

5. After the battery is charged, the *END* indicator will light.
6. Remove the charged battery by sliding it off the adapter/charger.
7. Attach the charged battery to the camcorder.

Use the *REFRESH* Button

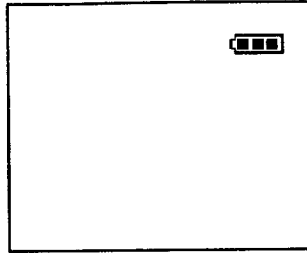
The battery will provide increased operation time if you "refresh" it after five chargings. The refresh feature "refreshes" the battery by completely discharging it.





1. Attach battery to adapter/charger.
2. Press *REFRESH*. The *REFRESH* indicator will light and the battery will begin discharging.
3. When discharging is completed, the *REFRESH* indicator will turn off, and the *CHG* indicator will light. The battery will then charge.
4. After the battery is charged, the *END* indicator will light. Remove the battery from the adapter/charger.

Powering Your Camcorder

Battery Level Indicator

The battery level indicator appears in the viewfinder and shows you the amount of power in the rechargeable battery.



- When  appears, the battery is fully charged.
- As the power is used  and  appear.
- When the battery power is almost gone,  flashes in the viewfinder. The camcorder will turn off automatically after a few seconds. Place the *POWER* switch in *OFF* to turn off the camcorder before replacing the battery.

The battery level indicator will not be recorded on the tape when it appears in the viewfinder.

Battery Care and Storage

- Recharging takes approximately 70 minutes depending on the battery's condition.
 - Refreshing takes approximately 210 minutes depending on the battery's condition.
 - After repeated charging and use, operation time will gradually decrease. When operation time becomes too short to be useful, it is time to replace the battery.
 - If the *CHG* indicator starts flashing, the battery pack has become too hot.
- Remove the battery and let it cool down.
- If the battery discharging must be stopped in the middle, remove the battery from the adapter/charger before unplugging it from the AC outlet.
 - Let a hot battery cool down before attaching it to the AC adapter/charger.

Powering Your Camcorder

Optional Car Cord Adapter

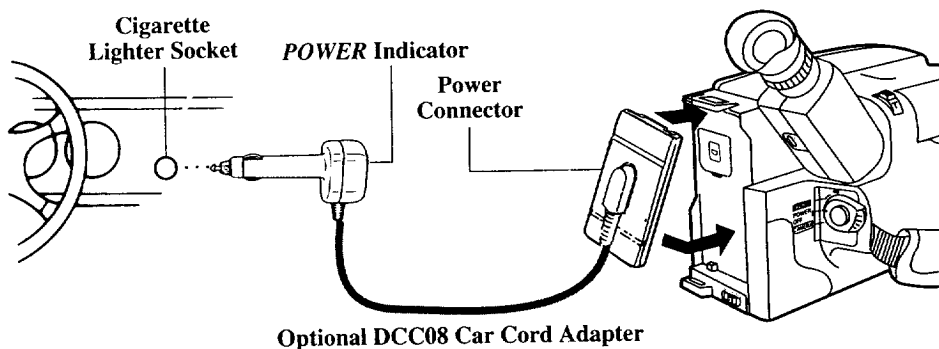
The optional DCC08 car cord *shown on page 66* allows you to power your camcorder from the cigarette lighter socket of a car, truck, or RV. It converts 12-volts to a 6-volt output.

Note: Consult the installation and operating instructions enclosed with the DCC08 for complete operating instructions.

Cautions: The DCC08 is designed to be used only with vehicles having negative ground electrical systems.

Use only car cord adapter DCC08 with this camcorder. Use of any other car cord adapter may damage the camcorder and void your warranty.

Using the DCC08 Car Cord Adapter



1. Place the *POWER* switch in *OFF* to turn off the camcorder. Power indicator on the camcorder turns off.
2. If the battery or DC cable is attached to the camcorder, remove it.
3. Hold the top of the power connector flush against the camcorder, and press the bottom of the power connector down until it locks into place.
4. Take the vehicle's cigarette lighter out of the socket.
5. Insert the car cord's cigarette lighter plug into the vehicle's cigarette lighter socket. The power indicator on the car cord adapter will light.
6. Place the *POWER* switch in *CAMERA* to turn on the camcorder. The power indicator on the camcorder lights.

Caution: Make sure the camcorder's power is turned off before removing the car cord's plug from the cigarette lighter socket.

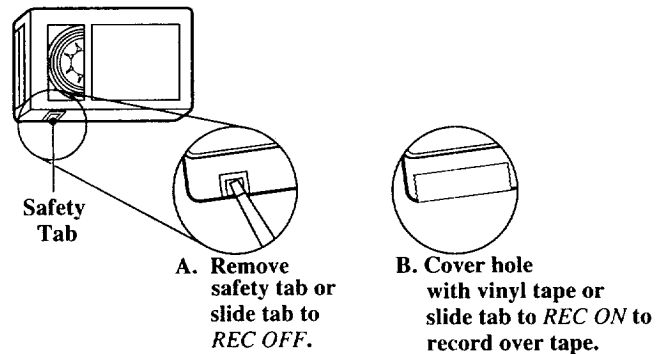
Video Cassettes

Make sure you select good quality tapes to be used with your camcorder. Use of poor quality tapes or tapes that have been damaged or mishandled can contaminate the video heads, resulting in a snowy picture or no picture at all during playback. Because there is no control over the type of tape purchased or rented by consumers, head cleaning is not covered under warranty. It is considered normal maintenance.

The automatic head-cleaning system minimizes the need for accessory cleaners or cleaning by a Servicenter. This system is activated whenever you insert or remove a cassette.

Erase Protection – Safety Tab

You can use your video cassettes over and over again. To erase a previous recording, just record over it.



Recording and Playback Speeds and Times

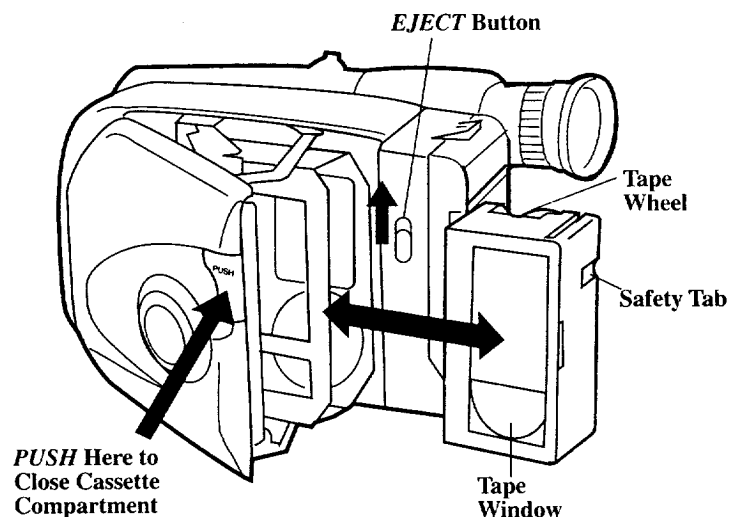
The camcorder records and plays back in standard speed (SP) or extended play (SLP). Select the recording speed using the *SP-SLP* button. The selected speed will be displayed in the viewfinder. Listed below are the maximum SP and SLP recording times for popular VHS-C cassettes.

- SP – Standard play provides the best picture (less picture noise), but the shortest recording time (20 minutes with a TC-20 tape).
- SLP – Extended play provides three times the recording time as SP (60 minutes with a TC-20 tape). SLP has slightly more picture noise than SP in normal playback. This may not be noticeable.

Cassette	Recording Time	
	SP	SLP
TC-20	20 Min.	60 Min.
TC-30	30 Min.	90 Min.
TC-40	40 Min.	120 Min.

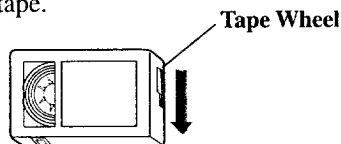
Video Cassettes

Inserting and Removing Cassettes



Caution: Insert the cassette only one way with the tape wheel facing up and the tape window facing out. The cassette should slide easily into the compartment. Do not force the cassette.

Before inserting a cassette, turn the tape wheel on the side of the cassette in the direction shown to remove any slack in the tape.



1. Attach a power supply. Then slide and release *EJECT* to open the cassette compartment.
2. Insert or remove the cassette.
3. Close the cassette compartment door by pressing on the area labeled *PUSH* until it locks into place.

Cassette Care and Storage

- When you are finished with a cassette, rewind it, remove it from the camcorder, and label it.
- Store cassettes vertically in their protective cases at normal room temperatures. Do not leave your camcorder or cassettes in a car or outdoors for an extended period. Excessive heat or cold may damage your cassettes.
- Keep the cassette away from strong magnetic fields such as electric motors and other devices.
- Keep dust from entering the cassette compartment. All dust is abrasive and will cause excessive wear on the tape and the camcorder's recording or playback heads.
- Do not use cassettes with damaged or spliced tape.
- Do not use a cassette if it has been damaged or exposed to moisture. The tape may jam and/or damage your camcorder.

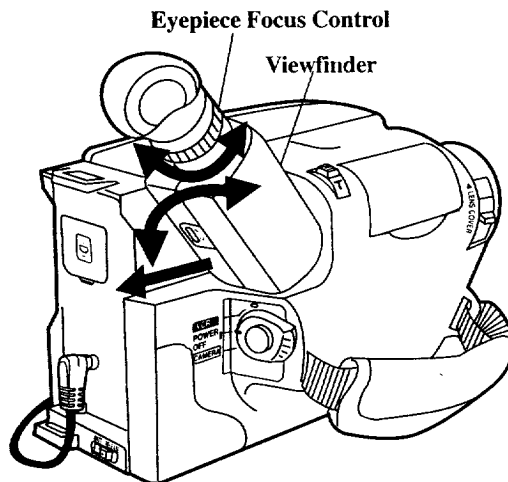
Recording

Viewfinder

The camcorder's viewfinder is a miniature monitor that displays the picture seen by the camcorder when recording.

Adjust Viewfinder for Convenient Viewing

For convenient viewing, you can slide the viewfinder out from the camcorder and rotate it up and down.



Cautions

Do not force the viewfinder to rotate completely around. This will damage the viewfinder and/or the camcorder.

When carrying the camcorder with the shoulder strap, put the viewfinder down and in. This helps prevent possible damage to the viewfinder from bumping against your body as you move.

Eyepiece Focus Control

The eyepiece focus control lets you set the focus of the viewfinder for your vision. If you wear eyeglasses, you probably can operate the camcorder without them.

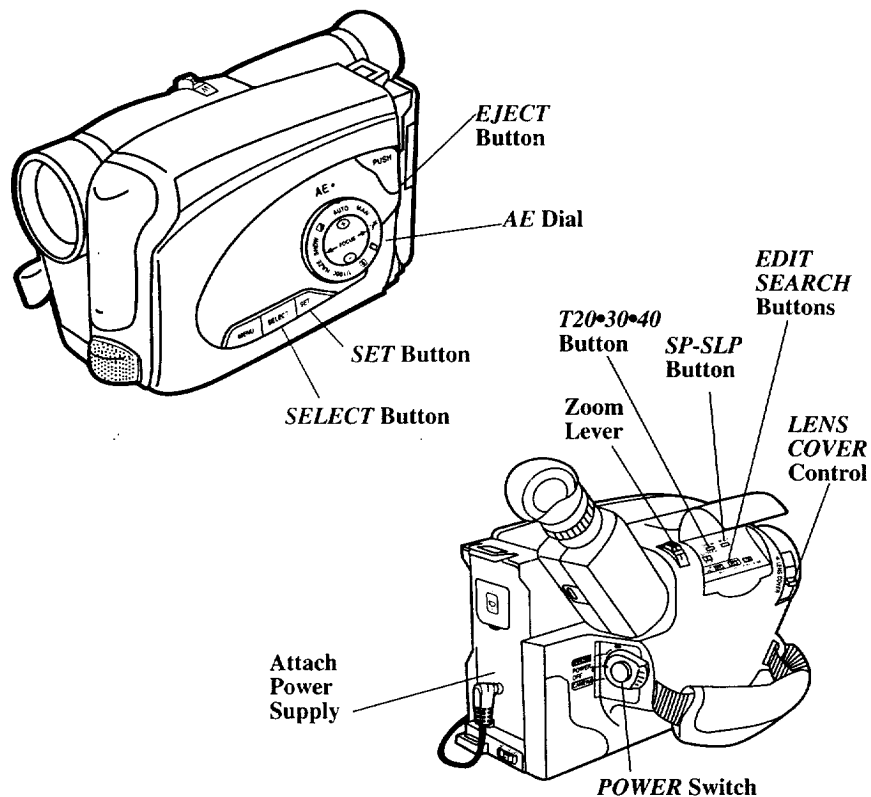
It is easiest to set the correct focus by focusing on one of the viewfinder's on-screen displays. Look through the viewfinder and adjust the eyepiece focus control for your vision.

The eyepiece focus control does not affect the focus of the picture actually recorded by the camcorder.

Recording

Making a Recording

The steps below tell you how to make a recording and suggest using some of the recording features. Each feature is described in detail on the following pages.



1. Attach a power supply.

Attach the adapter/charger, charged battery, or optional DC car cord.

2. Insert a tape.

- Turn the tape wheel on the cassette to remove any slack from the tape.
- Press *EJECT* to open the cassette compartment.
- Insert the cassette with the tape wheel facing up and the tape window facing out.

3. Slide the *LENS COVER* control to open the lens cover.

4. Place the *POWER (CAMERA/OFF/VCR)* switch in *CAMERA*.

The power indicator will light and the camcorder will enter record pause.
≡ PAUSE ≡ appears in the viewfinder.





5. Adjust the viewfinder and eyepiece focus control for your vision.

Recording

6. Select a recording speed and tape length.

- A. Press the *SP-SLP* button to select SP or SLP recording speed.
- B. Press the *T20•30•40* button to select the length of the tape you are using (*T20*, *T30*, or *T40*) so the camcorder can correctly calculate the time remaining.



7. Set the *AE* dial for a special effect.

- Place the dial in *AUTO* to place the camcorder in the full auto mode.
- Place the dial in () sports or 1/1000 to record fast-moving action.
- Place the dial in () back light or () front light to compensate for unusual lighting situations.
- Place the dial in () sepia to create the effect of an old movie.
- Place the dial in *HAZE* to soften the image and create a misty white look.
- Place the dial in (*SHDW*) shadow effect to darken the image and lessen glare.
- *Details are on page 45.*

8. Fade in and out of scenes

- Repeatedly press *SELECT* to display ►*FADE*◄ in the viewfinder. Press *SET*.
- *FADE* will appear in the viewfinder.
- The camcorder will fade in if you start recording or fade out if you are recording.

9. Start and stop recording.

- Press and release the thumb trigger to start recording.  appears in the viewfinder and the tally light will light when the camcorder is recording.
- Press and release the thumb trigger again to stop recording. The camcorder is now in record pause.  appears in the viewfinder.
- The camcorder will automatically turn off if it remains in record pause for five minutes. Place the *POWER* switch in *OFF* and then back in *CAMERA*.

10. Zoom in and out.

- Zoom in and out using the zoom *T* and *W* lever.
- The zoom indicator appears in the viewfinder when you zoom.

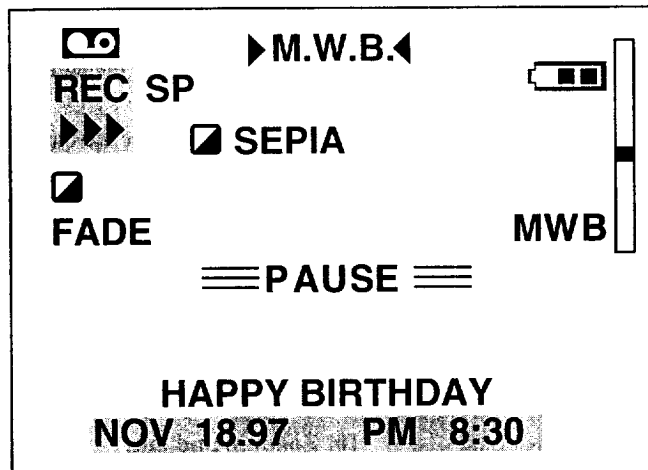
11. Review what you have recorded.

- Press and quickly release *EDIT SEARCH* – to review the last few seconds of your recording.
- Press and hold *EDIT SEARCH* – or + to visually see what you have recorded. Release the button to begin recording at that point.

12. When you are finished, place *POWER* switch in *OFF* and close the lens cover.

Recording

Viewfinder Displays




AE Dial Special Effect Indicators

- **AUTO** (Full Auto Mode)
AUTO LOCK appears briefly when you select *AUTO*.
- **MAN** (Manual Mode)
AUTO RELEASE appears briefly when you select *MAN*.
- **SEPIA**
This indicator appears when you select to give your recordings a brown-tone like old photographs.
- **SPORTS**
This indicator appears when you select to record fast moving action, such as sporting events.
- **BACK LIT**
This indicator appears when you select to make a subject appear brighter that appears too dark because of backlighting.
- **FRONT LIT**
This indicator appears when you select to darken a subject that appears too bright because of front lighting.
- **1 S 1/1000**
This indicator appears when you select *1/1000* to record fast-moving action.
- **HZ: HAZE**
This indicator appears when you select *HAZE* to soften the image and create a misty white look.
- **SD: SHADOW**
This indicator appears when you select *SHDW* to darken the picture and reduce glare.

Battery Level Indicator ()

- This indicator shows the amount of power left in the rechargeable battery.
- This indicator flashes when the battery is almost empty.

Cassette Warning

- The  indicator flashes when the power dial is set to *CAMERA* and the safety tab has been removed from the cassette or there is no cassette in the camcorder.

SELECT Button Indicators (▶ ◀)

The feature selected with the *SELECT* button appears here.

- ▶ *FADE* ◀

This indicator appears when you can select fading.

- Press *SET* to select *FADE*. The camcorder will automatically fade in and out of scenes.
- *Details are on page 36.*
- ▶ *16 X 9* ◀ (Wide Screen)
- Press *SET* to select 16 X 9. The camcorder will record with black bars at the top and bottom of the screen to produce a cinema-like wide-screen effect.
- *Details are on page 37.*
- ▶ *TITLE* ◀ (Preset Titles)

This indicator appears when you can select one of the eight preset titles or the title you created.

- Press *SET* to select one of the titles.
- *Details are on page 42.*

- ▶ *DISP.* ◀ (Display)




- This indicator appears when you can select a display to record on your tape.
- Press *SET* to select date, *AUTO DATE*, date and time, or a title you created. *SET CHAR* appears if you have not created a title.

• *Details are on pages 40-41*



- ▶ *M.W.B.* ◀ (Manual White Balance)

This indicator appears for manual white balance.

Press *SET* to select the white balance mode.

- Select *MWB* when you want to adjust the color temperatures manually.
- Select  when recording outdoors on a sunny day.
- Select  when recording outdoors on a cloudy day.
- Select  when recording using halogen or tungsten lighting.
- *Details are on pages 34-35.*

Status Displays

- The  indicator appears when the camcorder is recording.
- The  indicator appears during record pause.

Tape Speed Indicators (*SP* or *SLP*)

The tape speed selected with the *SP-SLP* button appears here.

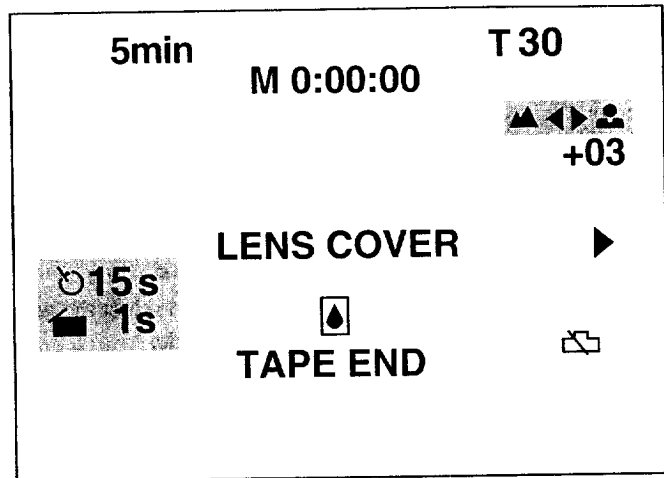
- *Details are on page 17.*

Zoom Indicator ()

The zoom indicator appears here when you use the zoom lever.

Recording

Viewfinder Displays (continued)



Change Indicator (▶)

This indicator appears to let you know that an item in the recording menu has been changed from the original factory setting.

Dew Warning (☒)

The dew indicator appears when excessive moisture (condensation) has entered the camcorder. The camcorder will not operate when this indicator appears. Place the camcorder in a warm, dry area until this indicator disappears.

Exposure Indicators (+03)

This indicator appears when you are adjusting brightness manually using the + and - buttons in the center of the AE dial.

- Details are on page 29.

Focus Indicators (▲ ▲)

These indicators appear when you are adjusting focus manually using the FOCUS ◀ and FOCUS ▶ buttons.

The AE dial must not be set to AUTO.



- The (☒) flash when the auto-focus system cannot operate properly.
- Details are on pages 32-33.

Recording

Lithium Cell ()

- This indicator appears for a few seconds when you turn on the camcorder and the clock cell is missing or needs to be replaced.
- *Details are on page 38.*

Self-Timer, Animation, and Time-Lapse Indicators (1S and 15S)

- The interval time selected for self-timer or time-lapse recording ( 15S, 30S, 1MIN, or 5MIN) appears here. *Details are on pages 46-47 and 50-51.*
- The recording time selected for animation or time-lapse recording ( 1/4S, 1/2S, or 1S) appears here.
- *Details are on pages 48-49 and 50-51.*

Tape Length (T 30)

The tape length (T20, T30, or T40) selected with the T20•30•40 button appears here.

- *Details are on page 52.*

Time-Counter (M0:00:00)

- The time counter appears during playback. It is not recorded.
- An “M” appears in front of the time counter when memory-stop is on.
- *Details are on page 60.*

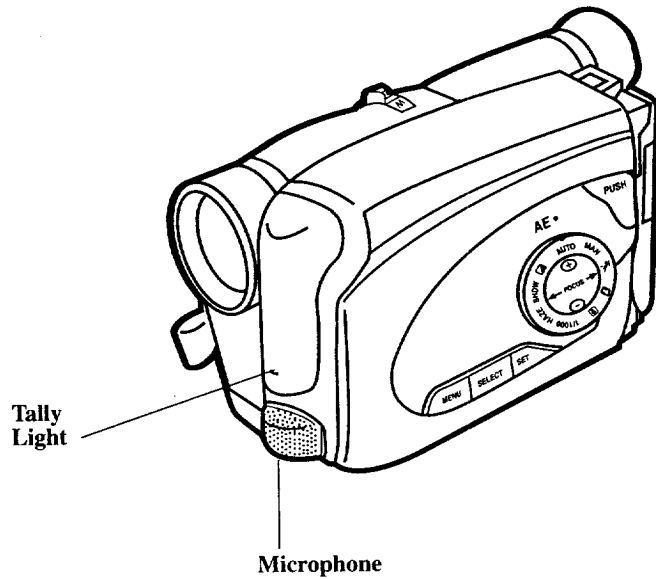
Time Remaining Display (5 min)

The approximate time remaining on the tape is automatically displayed. The correct tape length must be set with the T•20•30•40 button.

- *Details are on page 52.*

Warnings and Information

- **LENS COVER:** When you turn on the camcorder, this indicator briefly flashes to remind you to open the lens cover. This indicator may flash when the camcorder is used in dark areas — even if the lens cover is open.
- **TAPE END** appears when the end of the tape is reached during recording or a cassette is inserted with its tape already at the end.



Flying Erase Head

A separate erase head is mounted on the spinning headwheel (hence the term “flying”). This allows you to make clean edits without the “glitches” or “rainbow noise” that may occur at the beginning or the end of recordings.

Auto Head Cleaner

The camcorder has an automatic head-cleaning system. Whenever a cassette is inserted or removed, this system is activated.

The head-cleaning system minimizes the need for accessory cleaners or cleaning by a Servicenter.

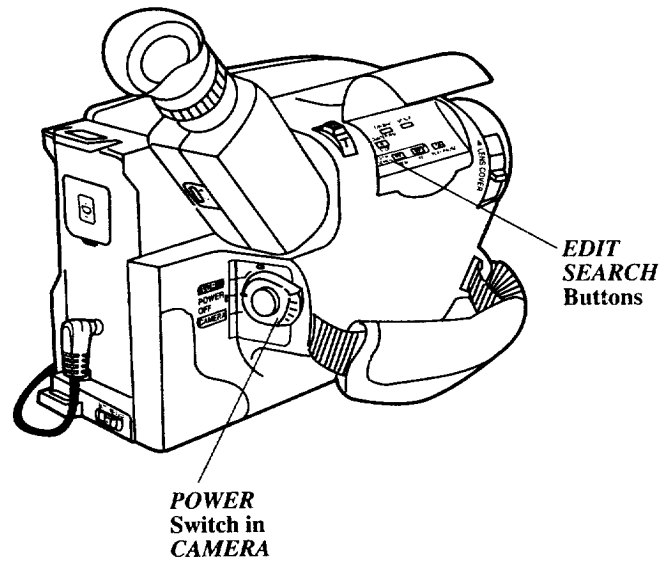
Tally Light

The tally light lights when the camcorder is recording.

Quick Review Feature

Press and release *EDIT SEARCH* – when the camcorder is in record pause to review the last few seconds of a recording. The *POWER* switch must be in *CAMERA*.

The camcorder will play back the last few seconds of the recording, return the tape to its previous position, and return to record pause.



Microphone

The microphone picks up the sound during a recording. It is more sensitive to sounds coming from the direction the lens is pointed.

Camera Edit Feature

The camera edit feature allows you to position the tape when the camcorder is in record pause. Place *POWER* switch in *CAMERA*.

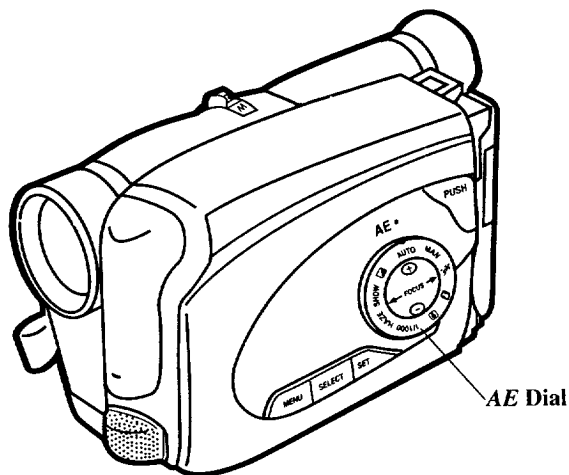
- Press and hold *EDIT SEARCH -* to visually search the recorded tape in reverse.
- Press and hold *EDIT SEARCH +* to visually search forward on the recorded tape.

Release the button to return the camcorder to record pause at that point on the tape. Press the thumb trigger to start recording at this point.

Recording

Full Auto Mode

The *AE* dial lets you select automatic or manual control of several features. The center of the dial lets you focus manually and control the exposure. The center arrow buttons are also used with the menus.

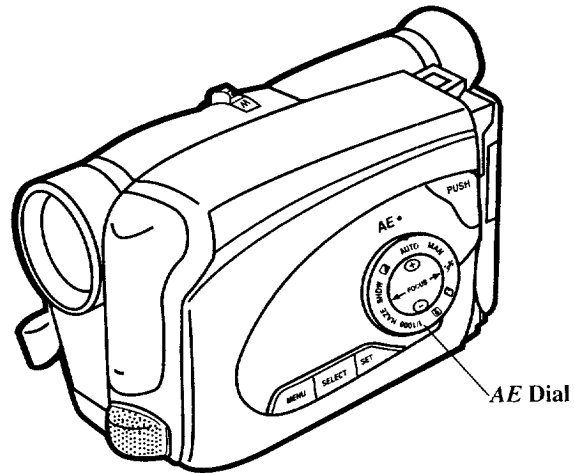


1. Place the *POWER* switch in *CAMERA*.
The power indicator will light and the camcorder will enter record pause.
≡ PAUSE ≡ appears in the viewfinder.
2. Place the *AE* dial in *AUTO*.
3. Press the thumb trigger to start recording.
 - The camcorder will control the focus, exposure, and white balance for you.
 - Fade, title, display, and 16X9 will not operate.
 - *AUTO DATE* is selected for the display.

Recording

Exposure Control

When the *AE* dial is in *AUTO*, the camcorder controls the iris for you. Under normal conditions, the camcorder will adjust brightness automatically. You may need to adjust brightness manually when the background is too bright or too dark in comparison with the subject.



Manual Exposure

1. Place the *POWER* switch in *CAMERA*.
 - The power indicator will light and the camcorder will enter record pause. \equiv PAUSE \equiv appears in the viewfinder.
2. Place the *AE* dial in *MAN*.
 - Press + in the center of the dial to brighten the image.
 - Press - in the center of the dial to darken the image.
 - The exposure level indicator (± 01 to 06) appears in the viewfinder.

Turn Off Manual Exposure

Press both + and - at the same time or place the mode select dial in *AUTO*.

Conditions Requiring Manual Exposure

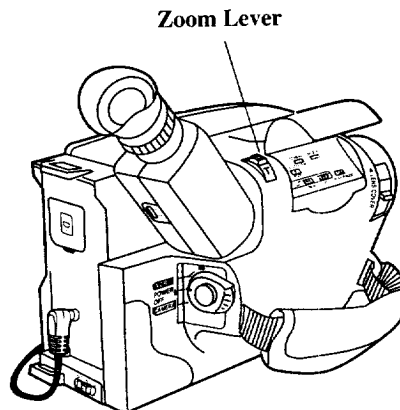
- When recording with a bright background or reverse lighting.
- When recording with a very dark background or very bright subject.
- When recording a reflective natural background — such as a beach or when skiing.

Recording

Zooming

You can zoom in and out for close ups or wide-angle shots just by sliding the zoom lever on the camcorder. The camcorder can automatically focus when you zoom at most distances.

If you want to record a close-up of a small subject closer than three feet, you can turn on the *Tele Macro* feature in the recording menu. This feature allows you to record a small subject at a distance of approximately 23 inches.

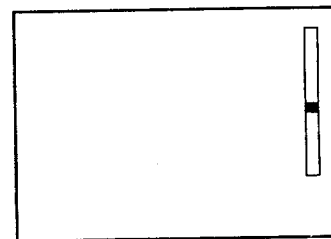


Using the Zoom Lever

1. To zoom in or out, slide the zoom lever on the camcorder.
 - To move the lens in the telephoto (close-up) direction, slide the zoom lever toward *T*.
 - To move the lens in the wide angle direction, slide the lever toward *W*.

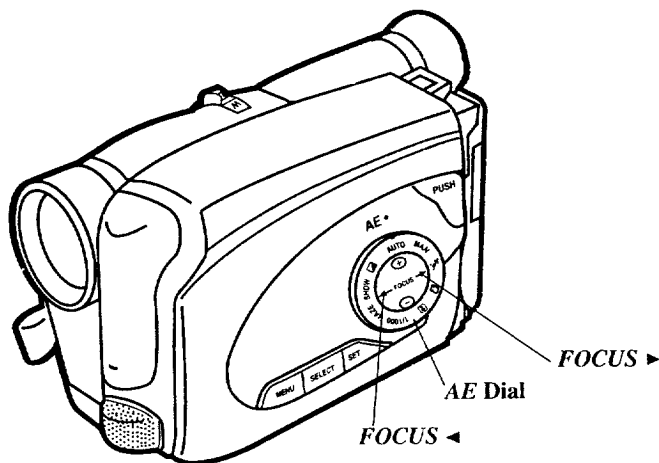
Zoom speed varies on the camcorder according to how far you zoom in or out.

The zoom level indicator appears in the viewfinder.



Recording

Tele Macro Zooming



To Turn on Tele Macro Zooming

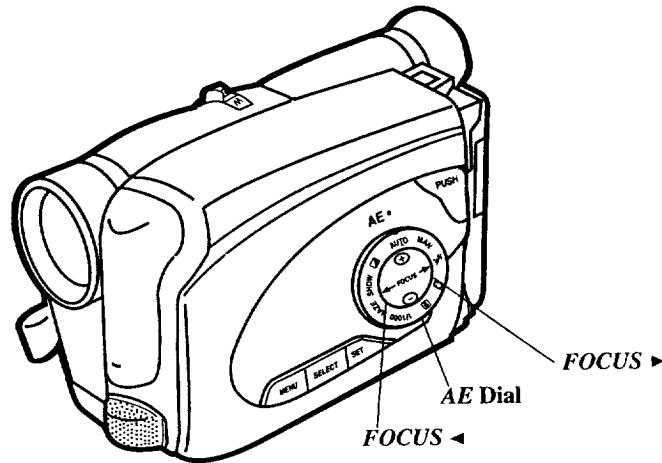
1. Make sure the *AE* dial is not set to *AUTO*.
2. Press the *MENU* button. The recording menu will appear in the viewfinder.
3. Press *+* or *-* in the center of the *AE* dial to highlight *TELE MACRO*.
4. Press *◀* or *▶* in the center of the *AE* dial to select *▶ ON* or *OFF*.
 - Select *▶ ON* if you want to record a small subject within approximately 23 inches.
 - Select *OFF* for normal zooming.
5. Press *MENU* to exit the menu.

GAIN UP	MAX
TELE MACRO	OFF
INTERVAL TIMER	OFF
REC TIME	OFF
JLIP ID NO.	07
SET CHARACTER	
DATE/TIME	
END :MENU KEY	

Recording

Focusing

Under normal conditions, the camcorder can adjust focus automatically. Under certain conditions, you may need to focus manually.



Auto Focus

During auto focus the camcorder will focus automatically on the object located in the center area of the viewfinder.

- Place the *AE* dial in *AUTO* to turn on the auto focus feature.

Note: The low-contrast indicator (▲↔▲) in the viewfinder indicates the auto-focus system may not operate correctly due to low illumination, low or no contrast, repeated patterns, or two subjects at different distances overlapping.

Focus Lock Feature

The focus lock feature is useful when objects pass between your subject and the camcorder or your main subject is not located in the center of the viewfinder.

1. Place the *AE* dial in *MAN*.
2. Center the main object in the viewfinder.
3. Press *FOCUS <* or *FOCUS >* to focus on the main subject. The manual focus indicators (▲▲) appear in the viewfinder.
4. Press *FOCUS <* and *FOCUS >* together (or place *AE* dial in *AUTO*) to turn auto focus back on.

Manual Focus

Under certain conditions, such as those listed, you may need to focus manually.

1. Set the *AE* dial to *MAN*.
2. Slide the power zoom lever toward *T* to zoom in on your subject. To maintain proper focus throughout the zoom range, you must zoom in on the subject before adjusting the focus.
3. Press *FOCUS* ◀ or *FOCUS* ▶ to display a clear picture in the center of the viewfinder.

The ▲ ● indicators appear in the viewfinder. The ◀ or ▶ indicator will

flash. When the focus cannot be adjusted any farther, the ▲ indicator will flash. When the focus cannot be adjusted any closer, the ● indicator will flash.

4. Release the *FOCUS* ◀ or *FOCUS* ▶ to lock in the manual focus.
5. Press *FOCUS* ◀ and *FOCUS* ▶ together (or place *AE* dial in *AUTO*) to turn auto focus back on.

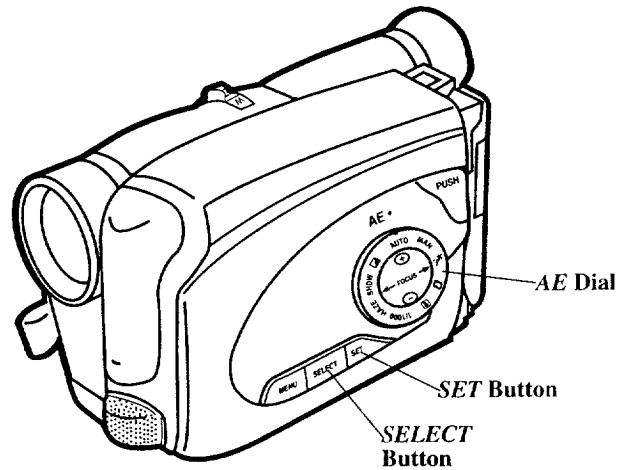
Conditions Requiring Manual Focus

- When recording a subject through a window.
- When recording a subject having a close foreground and a background that is far away.
- When recording two subjects at different distances that overlap in the same scene.
- When the subject is not in the center of the viewfinder.
- When recording in low-light situations.
- When recording a scene with fast motions, like a tennis swing.

Recording

White Balance

Making colors look natural is what white balance is all about. This is achieved by adjusting the way the camcorder “sees” and records the light source in the scene you wish to record. Your camcorder is equipped with automatic white balance. However, under certain conditions, such as recording an object with various shades of the same color or when recording a predominantly red or brown object outdoors, you may want to adjust white balance manually.



Auto White Balance

During auto white balance, the camcorder will automatically adjust the white balance.

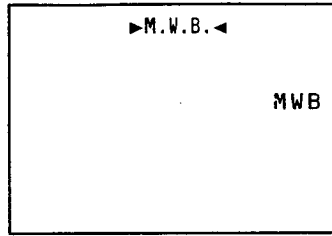
1. Place the *POWER* switch in *CAMERA*.
2. Place the *AE* dial in *AUTO* or press *SET* when ◀ *M.W.B.* ▶ appears in the viewfinder until no indicator appears in the viewfinder.

Manual White Balance

1. Place the *POWER* switch in *CAMERA*.
2. Place the *AE* dial in *MAN*.
3. Press the *SELECT* button until ◀ *M.W.B.* ▶ appears in the viewfinder.

Recording

4. Press *SET* until the white balance indicator you want appears in the viewfinder.



The white balance indicator you select will appear in the viewfinder.

- No indicator appears when you select auto white balance.
- Select *MWB* when shooting subjects with different color temperatures and adjust the white balance as follows:




Note: Connecting your camcorder to a color TV monitor may be helpful when making white balance adjustments.

- A. Point camcorder at a white, flat object such as a piece of white paper.
- B. Press and hold *SET* until *MWB* appears and then press *SET* for at least three seconds.

The *MWB* indicator will flash while the camcorder is adjusting white balance and stop flashing when it is ready to record.

Note: To change the tint for special recording, substitute colored paper for white. The white balance is adjusted based on the color.

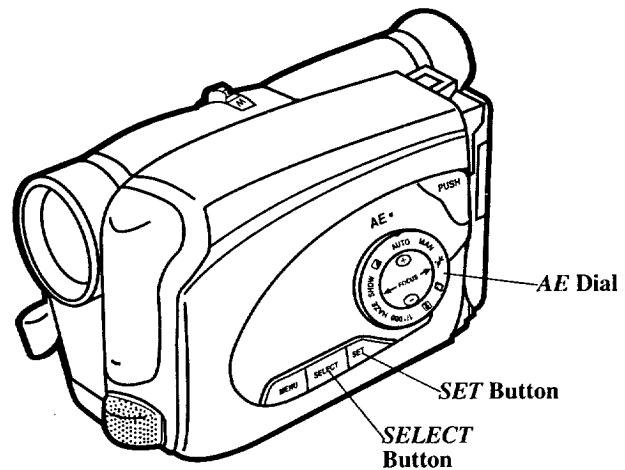
Red paper – deeper green
Blue paper – orange
Yellow paper – deeper purple

- Select  when recording outdoors on a sunny day.
 - Select  when recording outdoors on a cloudy day.
 - Select  when recording using halogen or tungsten lighting.
5. To have camcorder automatically control white balance, repeatedly press *SET* until no white balance indicator appears in viewfinder (or place *AE* dial in *AUTO*).

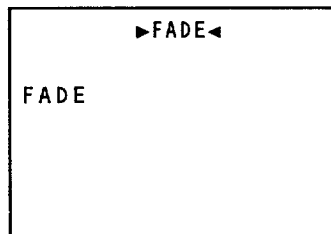
Recording

Fading In and Out

You can add a professional touch to your recordings when you fade in and out of scenes. The picture will gradually appear or disappear. The speed of the fade is automatically controlled by the camcorder.



1. Place the *POWER* switch in *CAMERA*. The power indicator will light. The camcorder will enter record pause.
2. Make sure the *AE* dial is not set to *AUTO*.



3. Repeatedly press *SELECT* until ▶*FADE*◀ appears in the viewfinder.

4. Press *SET*. *FADE* will appear on the left-hand side of the viewfinder when the fade feature is turned on.
 - Press the thumb trigger to start recording and the camcorder will fade in.
 - Press the thumb trigger to stop recording and the camcorder will fade out.
5. To turn off *FADE*, press *SELECT* to remove the *FADE* indicator from the viewfinder, or place the *AE* dial in *AUTO*.

Notes: Press and hold the thumb trigger to record a black screen.

The screen becomes slightly reddish if the fade feature is used with the sepia feature.

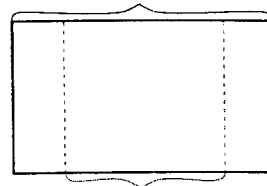
The screen fades out white when the haze feature is turned on.

Recording

16 X 9 Mode

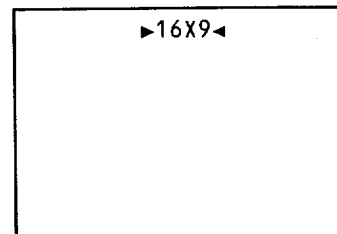
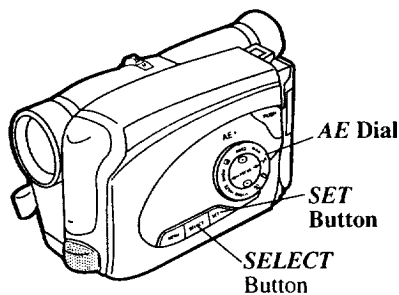
The camcorder has a 16 X 9 recording mode that lets you make recordings compatible with the 16X9 format. When 16 X 9 is activated, the camcorder records black bars at the top and bottom of the picture to produce the wide-screen effect. This is also known as "letterbox" recording.

New 16x9 TV Screen

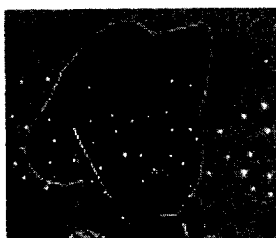


Standard Shape TV Screen

Do not use this mode unless you have a compatible 16 X 9 TV. When played on a regular TV, black bars appear in the picture.



1. Place the *POWER* switch in *CAMERA*. The power indicator will light. The camcorder will enter record pause.
2. Make sure the *AE* dial is not set to *AUTO*.
3. Repeatedly press *SELECT* until ►16X9◀ appears in the viewfinder.
4. Press *SET*. Black bars will appear at the top and bottom of the picture in the viewfinder.
5. To turn off 16 X 9, press *SELECT* to remove the 16X9 indicator from the viewfinder or place the *AE* dial in *AUTO*.




Normal Mode

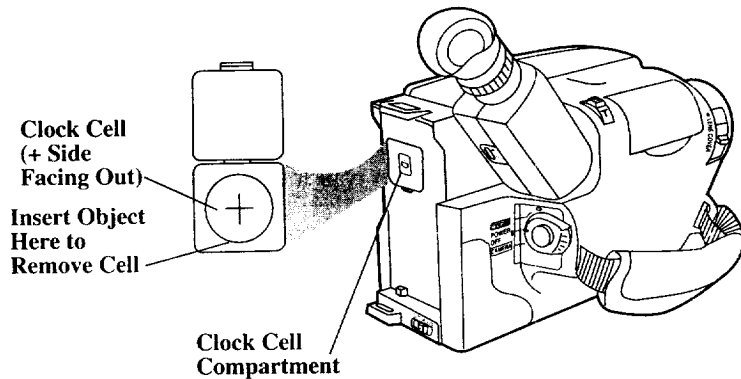


16 X 9 Mode

Recording

Date/Time Display — Clock Lithium Cell

The clock cell indicator  will flash for a few seconds in the viewfinder when you turn on the camcorder if the cell has not been installed or needs to be replaced.



Install the Clock Lithium Cell

1. Make sure camcorder is turned off, and remove any power supply attached to the camcorder.
2. Press release tab of clock cell compartment cover and open the compartment.
3. Insert the clock cell with the "+" terminal facing out.
4. Close the compartment cover. It will click into place.

To Remove Lithium Cell

To remove battery, insert a pointed nonmetallic object between battery and compartment and lift.

Cautions: Lithium cell battery. Replace only with 3-volt lithium cell – such as CR2025. Use of other cell presents a risk of fire or explosion. Must be disposed of properly. Never handle punctured or leaking cell. May cause burns or personal injury.

Keep out of the hands of children. Can cause death or injury if swallowed. If swallowed, consult a physician immediately for emergency treatment.

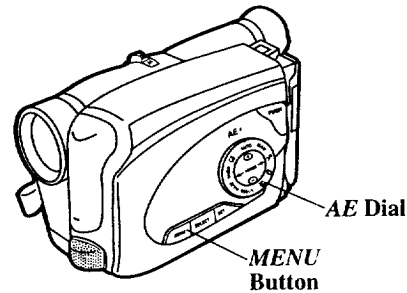
The lithium cell used in this device may explode resulting in a fire or chemical burn if mistreated. Do not recharge, disassemble, heat above 212°F (100°C), or incinerate.

Never use metallic tweezers to hold the cell, and never short the + and – sides of the cell.

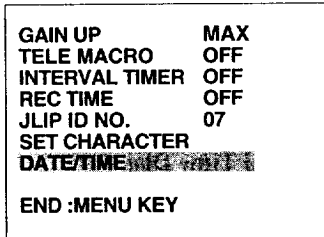
Recording

Date/Time Display — Setting the Time and Date

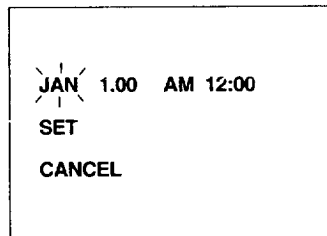
The date and time must be set before it can be displayed and recorded on your tapes. The clock cell must be installed *as shown on the previous page* before the date can be set and recorded.



1. Make sure the *AE* dial is not set to *AUTO*.
2. Press the *MENU* button. The recording menu will appear in the viewfinder.
3. Press + or – in the center of the *AE* dial to highlight *DATE/TIME*.
5. Press ◀ or ▶ to select the item you want to set (month, day, year, hour including AM/PM, and minutes).
6. Press + or – until the correct setting appears. Press + to go forward or – to go back.
7. When you are finished, press ◀ or ▶ to highlight *SET*.
8. When *SET* begins to flash, press *MENU*. The menu reappears. Press *MENU* again to close the menu.



4. Press ▶ in the center of the *AE* dial to display the time and date screen.



Notes:

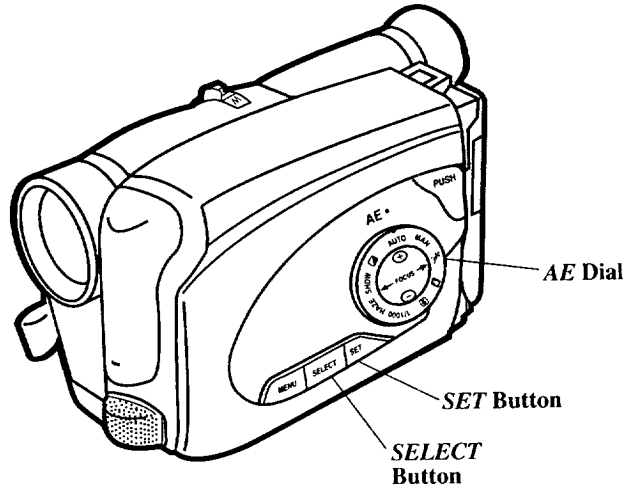
If you enter an invalid date, *INPUT ERROR* appears in the viewfinder. Press +, –, ◀, or ▶ and enter the correct day.

To return to the previous setting while you are setting the time and date, highlight *CANCEL* and press *MENU*.

Recording

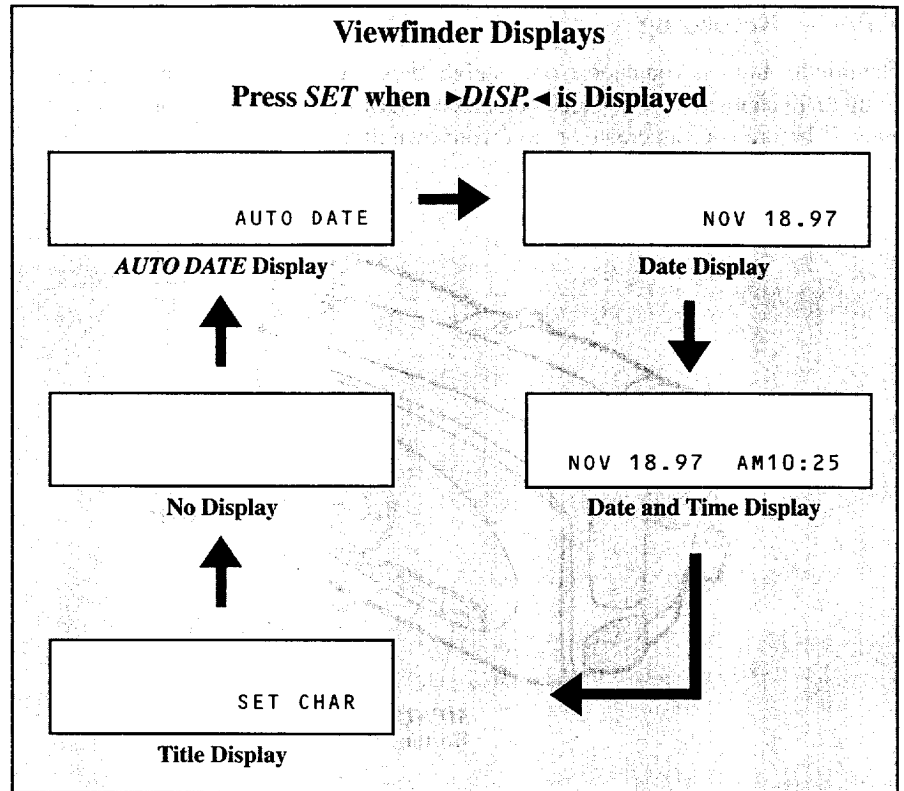
Date/Time and Title Display — Recording

The clock cell must be installed and the date and time set (as shown on the previous pages) before the date and time can be selected and recorded. You must have created a title (as described on page 43) before your title can be selected and recorded.



Select Date, Date and Time, or Title to Record On Your Tape

1. Attach a power supply and place **POWER** switch in **CAMERA**. The power indicator will light.
2. Make sure the **AE** dial is not set to **AUTO** if you want to select any mode except **AUTO DATE**.
3. Repeatedly press **SELECT** until **►DISP.◄** appears in the viewfinder.
4. Repeatedly press **SET** to select **AUTO DATE**, date, date and time, title, or no date display.
 - **AUTO DATE:** The date will be automatically recorded for approximately five seconds and then **AUTO DATE** will be displayed whenever:
 - The date has been set or changed.
 - This display mode has just been selected.
 - The tape has been changed or the tape compartment opened.
 - **Date Display:** The date will be displayed and recorded.
 - **Date and Time Display:** The date and time will be displayed and recorded.
 - **Title:** The title you have created will be displayed and recorded. If no title has been created, **SET CHAR** appears.
 - **No Display:** No display will be displayed or recorded.



To Record the Date, Date and Time, or Title on Your Tape

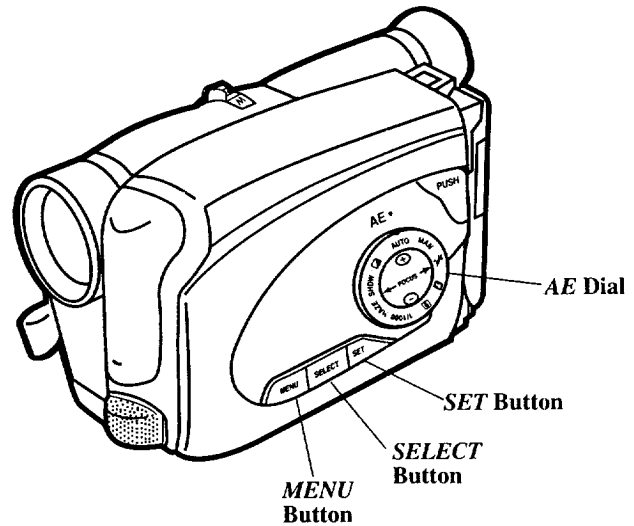
1. Place the camcorder in record pause.
2. Make sure the *AE* dial is not set to *AUTO* unless you want to record *AUTO DATE*.
3. Repeatedly press *SELECT* to display ►*DISP.*◄.
4. Repeatedly press *SET* to display *AUTO DATE*, date, date and time, title, or date off.
5. Begin recording.
6. Press *SET* to remove the display from the viewfinder when you are finished recording it.

Notes: If you do not want to record a date or time, press *SET* to select the date and time off mode. No display appears in the viewfinder. If no title has been created, *SET CHAR* appears and you can create a title.

Recording

Titles — Recording

The title feature lets you choose one of eight preset titles or create your own title — up to 18 characters. The clock cell battery must be installed *as shown on page 38* before you can create or store your own title.



Add a Preset Title

1. Attach a power supply and place *POWER* switch in *CAMERA*. The power indicator will light.
2. Make sure the *AE* dial is not set to *AUTO*.
3. Repeatedly press *SELECT* until ►*TITLE*◀ appears in the viewfinder.
4. Repeatedly press *SET* to select one of the following titles. It will be superimposed and recorded on your tape.

HAPPY BIRTHDAY
HAPPY HOLIDAYS
CONGRATULATIONS
OUR FAMILY
SOMEONE SPECIAL
VACATION
SUPER STAR
FIRST
Title You Created
No Title

5. To remove the title from the viewfinder, press *SET*.

Note: To recall a title, place the camcorder in record pause and press *SET*.

Recording

Create Your Own Title

1. Make sure the *AE* dial is not set to *AUTO*.
2. Press the *MENU* button. The recording menu will appear in the viewfinder.
3. Press *+* or *-* in the center of the *AE* dial to highlight *SET CHARACTER*.

```

GAIN UP           MAX
TELE MACRO       OFF
INTERVAL TIMER   OFF
REC TIME         OFF
JLIP ID NO.      07
SET CHARACTER    █
DATE/TIME
END :MENU KEY
  
```

4. Press *▶* in the center of the *AE* dial to display the character set menu.

```

SET : MENU KEY
▶ A B C D E F G H I
J K L M N O P Q R S
T U V W X Y Z A O U
A E I O U Ñ Æ Ø Å &
: , ' - / ! ? ¿ ♥
0 1 2 3 4 5 6 7 8 9
END CLEAR
  
```

Note: If you wish to erase a previous title, use *+*, *-*, *◀*, or *▶* to highlight *CLEAR*, and press *MENU*.

5. Press *+*, *-*, *◀*, or *▶* to select a character and press *MENU*.

Notes: To choose the location of the next character, use *+*, *-*, *◀*, or *▶* to highlight the row of squares at the bottom of the screen. When the squares are highlighted, use *◀* or *▶* to move the cursor under the desired location, and then press *+*.

6. Repeat step 5 until you have entered your title.

```

SET : MENU KEY
▶ A B C D E F G H I
J K L M N O P Q R S
T U V W X Y Z A O U
A E I O U Ñ Æ Ø Å &
: , ' - / ! ? ¿ ♥
0 1 2 3 4 5 6 7 8 9
TAYLOR IS TWO!
END CLEAR
  
```

Note: To clear or change a character, highlight the blank space or new character and press *+* or *-*.

7. When you are finished, press *◀*, *▶*, *+*, or *-* to highlight *END*.
 8. Press *MENU*. The menu reappears. Press *MENU* again to close the menu.
 9. To record your title, press *SELECT* to display *▶DISP.◀* in the viewfinder, and then press *SET* until your title appears. *Details are on pages 40-41.*
- Note:** You can also record your title by pressing *SELECT* to display *▶TITLE◀* in the viewfinder, and then press *SET* until your title appears. *Details are on page 42.*

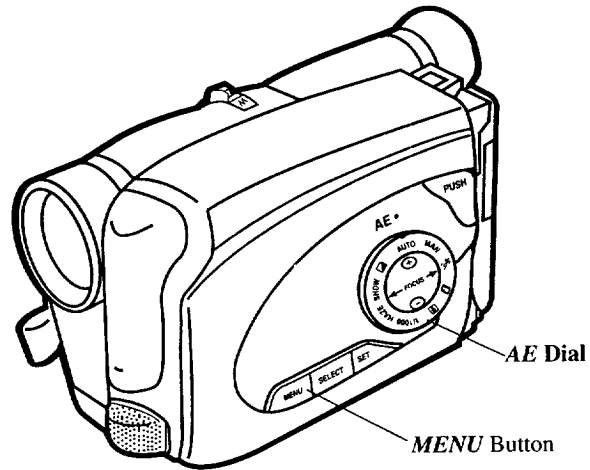
To Stop Recording Your Title

Press *SET* to remove the display from the viewfinder when you are finished.

Recording

Gain Up

This feature allows you to choose how you want to record subjects in dark environments.



1. Make sure the *AE* dial is not set to *AUTO*.
Note: *GAIN UP MAX* is automatically selected when the *AE* dial is set to *AUTO*.
2. Press the *MENU* button. The recording menu will appear in the viewfinder.

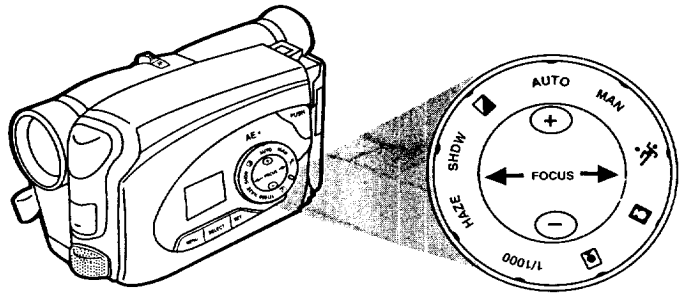
GAIN UP	MAX
TELE MACRO	OFF
INTERVAL TIMER	OFF
REC TIME	OFF
JLIP ID NO.	07
SET CHARACTER	
DATE/TIME	
END :MENU KEY	










3. Press ◀ or ▶ in the center of the *AE* dial to select *GAIN UP MAX*, ▶ *NORM*, or ▶ *OFF*.
 - Select *MAX* to record a brighter subject in a dark environment. The picture may become slightly coarse.
 - Select ▶ *NORM* when you want a darker subject with a smoother, less coarse, picture.
 - Select ▶ *OFF* to shoot dark scenes with no picture brightness adjustment.
4. Press *MENU*. Press *MENU* again to close the menu.

Recording

AE Dial

The *AE* dial lets you select one of several different effects. Turn the dial to select the effect you want. The indicator for the effect will appear in the viewfinder. Set the *AE* dial to *MAN* for normal recording.

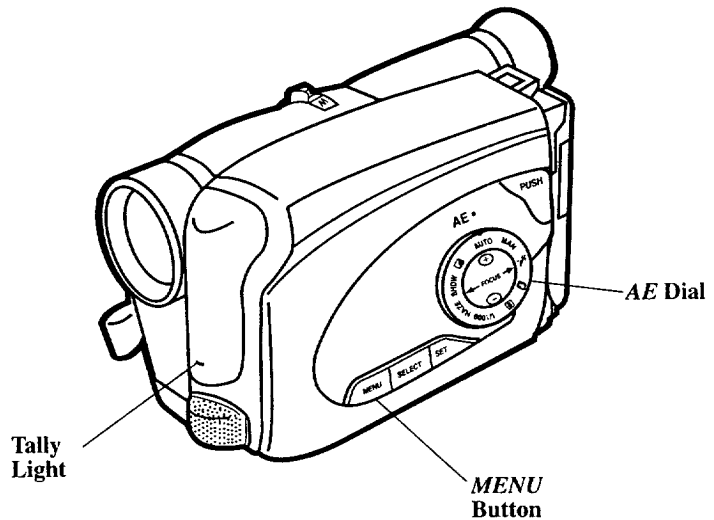


Mode	Indicator	Uses
<i>AUTO</i>	<i>AUTO LOCK</i>	Places camcorder in full auto mode. Fade, display, title, 16 X 9, manual focus, manual exposure, and manual white balance will not operate.
<i>MAN</i>	<i>AUTO RELEASE</i>	Use this mode for recording using some of the manual features.
	 <i>SPORTS</i>	Use to capture fast-moving action with less blurring. Use when playing back a recording on a VCR featuring special effects, such as pause or slow motion.
	 <i>BACK LIT</i>	Use when subjects are in front of a window or have the sun to their back. Compensates for subjects appearing too dark because of backlighting.
	 <i>FRONT LIT</i>	Use when there is a strong front light on the subject such as spotlights. Compensates for subjects appearing too light because of strong front lighting.
<i>1/1000</i>	 <i>1 S 1/1000</i>	Sets shutter speed to 1/1000. Use to record faster moving action than sports mode with less blurring. Use when playing back a recording on a VCR featuring special effects, such as pause or slow motion.
<i>HAZE</i>	<i>HZ:HAZE</i>	Use to soften the image and give the picture a misty white effect.
<i>SHDW</i>	<i>SD:SHADOW</i>	Use to counter effects of glare and darken the picture with a black mist.
	 <i>SEPIA</i>	Picture is recorded in sepia (brownish red) and offers the vintage look of old movies. Use it with the 16 X 9 mode to create an authentic movie theater look.

Recording

Self-Timer

The self-timer lets you set the camcorder to delay recording so you can be in the scene when recording begins.



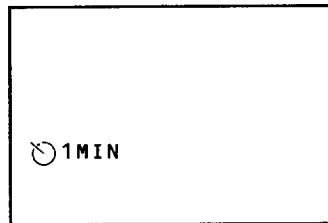
To Set the Self-Timer

1. Place the *POWER* switch in *CAMERA*. The power indicator will light.
2. Make sure the *AE* dial is not set to *AUTO*.
3. Press the *MENU* button. The recording menu will appear in the viewfinder.
4. Press + or - to select *INTERVAL TIMER*.

GAIN UP	MAX
TELE MACRO	OFF
INTERVAL TIMER	OFF
REC TIME	OFF
JLIP ID NO.	07
SET CHARACTER	
DATE/TIME	
END :MENU KEY	

Recording

5. Press ◀ or ▶ in the center of the *AE* dial to select the amount of time you want the camcorder to delay before recording starts.
 - Select *15S* to delay the recording for 15 seconds.
 - Select *30S* to delay the recording for 30 seconds.
 - Select *1MIN* to delay the recording for one minute.
 - Select *5MIN* to delay the recording for five minutes.
 - Select *OFF* if you do not want the camcorder to delay recording.
6. Press *MENU* to exit the menu.
7. ☹ and the amount of delayed recording time appear in the viewfinder.



**Self-Timer Indicator
in Viewfinder**

8. Press the thumb trigger to start recording.

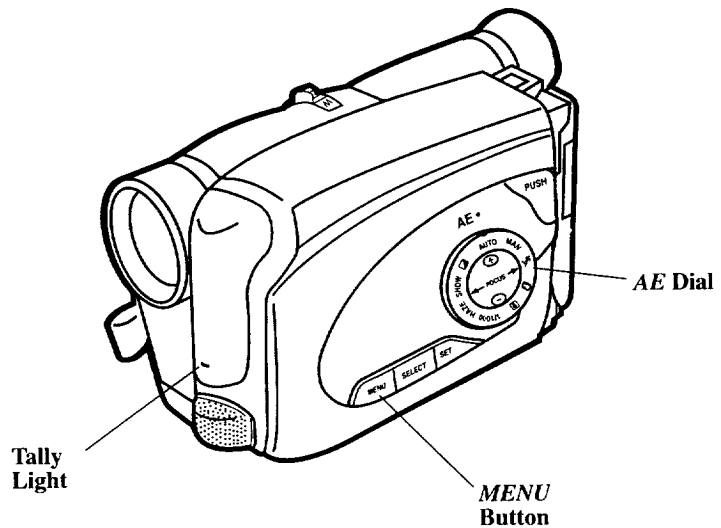
Note: The tally light flashes. About five seconds before recording begins, the tally light will start flashing faster. When the camcorder starts recording, the tally light stops flashing.
9. To stop recording, press the thumb trigger.

Note: To stop self-timer recording before the recording begins, set the *INTERVAL TIMER* in the recording menu to *OFF*.

Recording

Animation Recording

Animation recording produces an illusion of movement for an otherwise stationary scene or object by shooting a series of pictures of slightly different poses (such as cartooning).



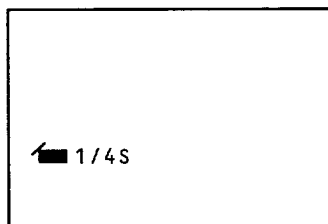
To Record Using Animation

1. Place the *POWER* switch in *CAMERA*. The power indicator will light.
2. Press *SP-SLP* to select *SP* recording speed. *SP* appears in the viewfinder.
3. Make sure the *AE* dial is not set to *AUTO*.
4. Press the *MENU* button. The recording menu will appear in the viewfinder.
5. Press + or – to select *REC TIME*.

GAIN UP	MAX
TELE MACRO	OFF
INTERVAL TIMER	OFF
REC TIME	OFF
JLIP ID NO.	07
SET CHARACTER	
DATE/TIME	
END :MENU KEY	

Recording

6. Press ◀ or ▶ in the center of the *AE* dial to select the amount of time you want the camcorder to record.
 - Select *1/4S* to record for 1/4 second.
 - Select *1/2S* to record for 1/2 second.
 - Select *1S* to record for one second.
 - Select *OFF* if you do not want the camcorder to record for a set amount of time.
7. Press *MENU* to exit the menu.
8. ◀ and the amount of recording time appear in the viewfinder.



**Recording Time Indicator
in Viewfinder**

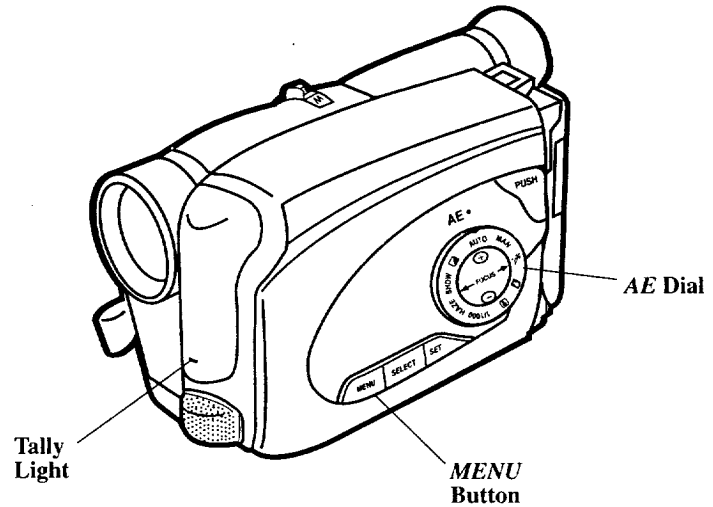
9. Press the thumb trigger to start recording.

Note: The recording stops automatically after the selected period of recording time. You may want to take two to five shots of the subject in the same position.
10. Move the subject and repeat step 9 for the desired number of shots.
11. To stop animation recording, set the *REC TIME* in the recording menu to *OFF*.

Recording

Time-Lapse Recording

Time-lapse recording makes automatic recordings at preset time intervals. The recording will show subtle changes (such as shifts in cloud formations or plant growth) when it remains focused on an object.



To Record Using Time Lapse

1. Place the *POWER* switch in *CAMERA*. The power indicator will light.
2. Press *SP-SLP* to select *SP* recording speed. *SP* appears in the viewfinder.
3. Make sure the *AE* dial is not set to *AUTO*.
4. Press the *MENU* button. The recording menu will appear in the viewfinder.
5. Press + or - to select *INTERVAL TIMER*.
6. Press ◀ or ▶ in the center of the *AE* dial to select the amount of time you want the camcorder to wait between the recordings.
 - Select *15S* to record every 15 seconds.
 - Select *30S* to record every 30 seconds.
 - Select *1MIN* to record every minute.
 - Select *5MIN* to record every five minutes.
 - Select *OFF* to turn off time-lapse recording.

GAIN UP	MAX
TELE MACRO	OFF
INTERVAL TIMER	OFF
REC TIME	OFF
JLIP ID NO.	07
SET CHARACTER	
DATE/TIME	
END :MENU KEY	

Recording



7. Press + or – to select *REC TIME*.

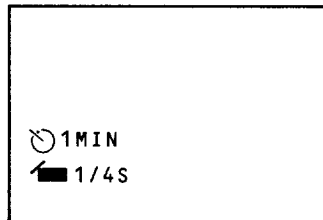
GAIN UP	MAX
TELE MACRO	OFF
INTERVAL TIMER	OFF
REC TIME	OFF
JLIP ID NO.	07
SET CHARACTER	
DATE/TIME	
END :MENU KEY	

8. Press ◀ or ▶ in the center of the *AE* dial to select the amount of time you want the camcorder to record.

- Select *1/4S* to record for 1/4 second.
- Select *1/2S* to record for 1/2 second.
- Select *1S* to record for one second.
- Select *OFF* to turn off time-lapse recording.

9. Press *MENU* to exit the menu.

10.  and the amount of recording time and  and the amount of interval time between recordings appear in the viewfinder.



**Recording Time Indicator
in Viewfinder**

11. Press the thumb trigger to start recording.

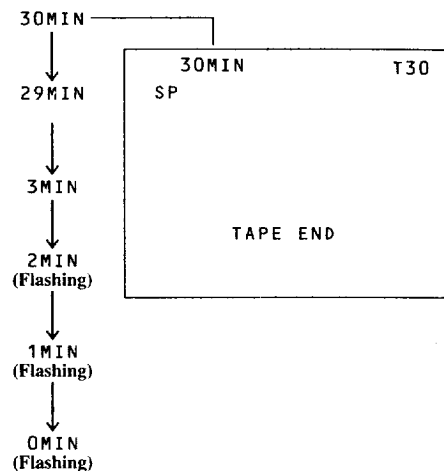
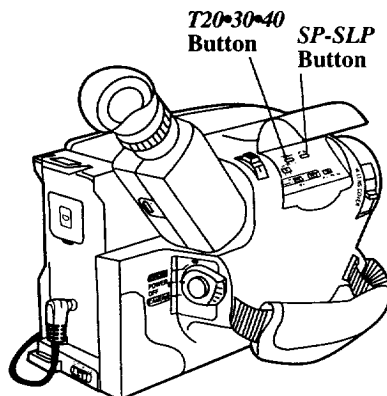
Note: The camcorder will start and stop recording the selected amount of time at the intervals selected. The tally light flashes with the flash speed increasing five seconds before recording begins.

12. To stop recording, set the *INTERVAL TIMER* and *REC TIME* in the recording menu to *OFF*.

Recording

Time-Remaining Display

The approximate time remaining on the tape in the camcorder for the tape speed you have selected is automatically displayed in the viewfinder. Use the *T20•30•40* button to set the correct tape length before the camcorder can correctly calculate time remaining.



Set the Tape Length

1. Use the *SP-SLP* switch to select the tape speed. *SP* or *SLP* appears in the viewfinder.
2. Use the *T•20•30•40* button to select the length of tape you are using.
 - Select *T20* if you are using a tape with 20 minutes or less recording time.
 - Select *T30* if you are using a tape with 30 minutes recording time.

- Select *T40* if you are using a tape with 40 minutes recording time.

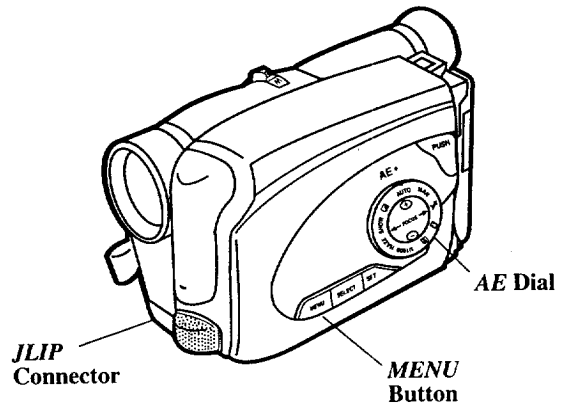
The time-remaining indicator will start flashing when the remaining tape time reaches two minutes.

TAPE END appears when the tape reaches its end during recording or a cassette is loaded whose tape is already at its end.

Recording

JLIP (Joint Level Interface Protocol) Identification Number

The camcorder has a *JLIP* connector that may be used in the future to connect a device, such as a home computer.



To Select a *JLIP ID NO.*

1. Place the *POWER* switch in *CAMERA*. The power indicator will light.
2. Make sure the *AE* dial is not set to *AUTO*.
3. Press the *MENU* button. The recording menu will appear in the viewfinder.
4. Press + or - to select a *JLIP ID NO.*

GAIN UP	MAX
TELE MACRO	OFF
INTERVAL TIMER	OFF
REC TIME	OFF
JLIP ID NO.	07
SET CHARACTER	
DATE/TIME	
END :MENU KEY	

5. Press ◀ or ▶ in the center of the *AE* dial to select a number from 01 to 99. Use the number you select to identify your camcorder if you connect it to a computer using the *JLIP* connector.

Recording

Recording and Traveling Tips

Recording Tips

- In case of fire or theft, make a video recording of your home and contents to store in a safe place.
- Try to make sure indoor scenes are well-lit.
- Do not move the camcorder rapidly from side-to-side while recording. A steady, gradual “pan” avoids blurring and “jitter”.
- Use the viewfinder to make sure the camcorder is level while recording or your scenes will appear “tilted”.
- Do not bump or tap the camcorder’s microphone while recording because this sound will be recorded.
- Include close-ups of individuals when taping family outings or group functions.
- Fading in and out of scenes will make your videos appear more professional.
- Learn to use the special production effects available with your camcorder to add variety to your recordings.
- Be aware of video and audio backgrounds. Background details barely noticed while you are taping may show up as visual “clutter” on your recording. Background noises (especially TV sets, radios, household appliances, traffic sounds, etc.) can detract from the sound you want to record.
- Avoid long “still” shots of landmarks and scenic attractions. Recordings are more interesting if they include people and details. “Local color” will give travel videos lasting appeal. Consider recording a familiar or landmark scene from an unfamiliar vantage point.

Traveling Tips

- Write down your camcorder’s serial number and keep it separate from the camcorder when traveling. If your camcorder is lost or stolen, you will be able to identify it.
- Use extra care to avoid damage to your camcorder and accessories when operating them at a beach or pool. Spray, sand, and dust should be avoided. If your lens has been exposed to the elements, clean it only with proper lens cleaning supplies.
- Make sure you have any plug adapters that you may need before taking your camcorder to other countries. Consult your dealer for advice.
- Carry your camcorder in a carrying case when traveling. *See page 66* for a case designed especially for this camcorder. An ordinary suitcase or carry bag does not offer the protection your camcorder needs. Treat your camcorder as carry-on luggage to protect it from rough handling.

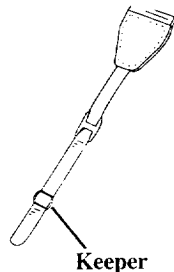
Recording

Attaching the Shoulder Strap

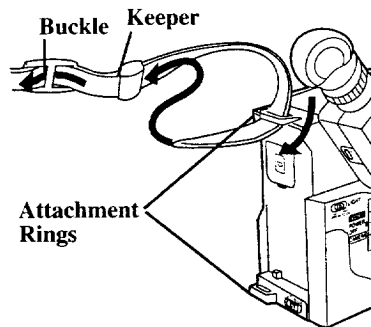
The camcorder's shoulder strap is designed to let you carry the camcorder from your shoulder and – when you are ready to shoot – bring the camcorder to shooting position in one quick movement.

To Attach the Shoulder Strap

1. If the strap keeper is over a double section of the strap, slide the strap keeper off the end of the strap. Replace the keeper on the strap between the buckle and the end of the strap *as shown*.

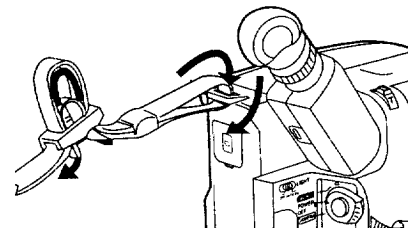


2. Loop the end of the strap over the top of the shoulder strap attachment ring.



3. Thread the end of the strap back through the keeper and buckle making sure it is threaded under the outer strap. Make sure the strap is not twisted.

4. Attach the other end of the strap to the other shoulder strap attachment ring.



5. Adjust the shoulder strap to the desired length.
6. Slide both keepers up snugly against the shoulder strap attachment rings to prevent the strap from slipping.

Cautions: When carrying the camcorder with the shoulder strap, you may find it convenient to rotate the viewfinder down and slide it to the front. This helps prevent possible damage to the viewfinder from bumping against your body as you move.

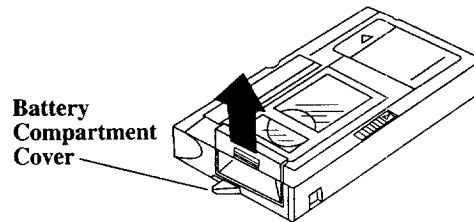
Make sure the shoulder strap is firmly attached before using it to carry the camcorder.

Using the Cassette Adapter

The camcorder uses a smaller size cassette, but records in standard VHS format. The cassette adapter allows you to play your VHS-C cassettes in a VCR just like other standard VHS cassettes.

Insert the VHS-C cassette into the cassette adapter. Insert the cassette adapter into the VHS VCR like a normal VHS cassette.

Install Cassette Adapter's Battery

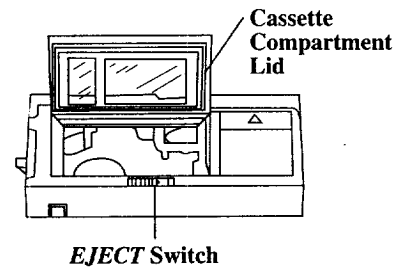
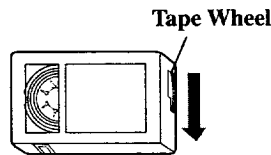


1. Remove battery compartment cover.
2. Install supplied "AA" battery so positive (+) and negative (-) ends align properly with (+) and (-) terminals in battery compartment.
3. Replace battery compartment cover.

Notes: Replace the battery when the load time becomes much longer than normal.

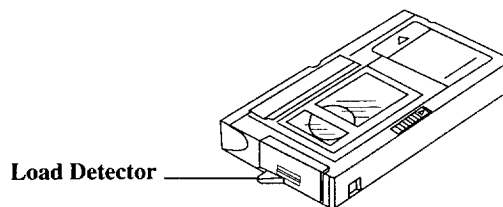
Remove the battery from the cassette adapter if it will not be used for a month or more. This will prevent possible damage from battery leakage. If leakage occurs, wipe up the liquid inside the compartment and replace the battery with a new one.

Insert Cassette into Cassette Adapter



1. Before inserting the cassette into the adapter, remove any slack in the tape by turning the tape wheel on the side of the cassette.
2. Slide *EJECT* to the right to open the cassette compartment lid.

3. Insert the cassette with the tape window on the left and facing up. Allow the cassette to drop into the adapter. **Do not force the cassette.**

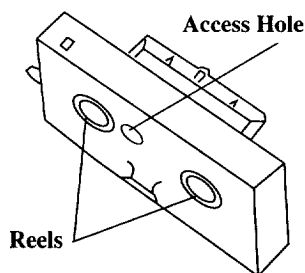


4. Gently close the cassette compartment lid until it locks into place. Make sure the cassette reel area under the adapter is free to turn while the cassette is loading.

Note: You should hear a whirring sound while the tape loads. The adapter's load detector will automatically retract into the adapter.

Caution: If the load detector is still extending from the side of the cassette adapter after you have attempted to load the cassette, loading is not complete. Try to load the cassette again. Attempting to insert the cassette adapter into a VCR with the load detector extending may cause damage to the adapter and/or VCR.

Remove Cassette from Cassette Adapter



1. Slide the adapter's *EJECT* switch to the right. The load detector will extend from the side and the whirring sound indicates the tape is being released before the adapter's cassette compartment lid opens.

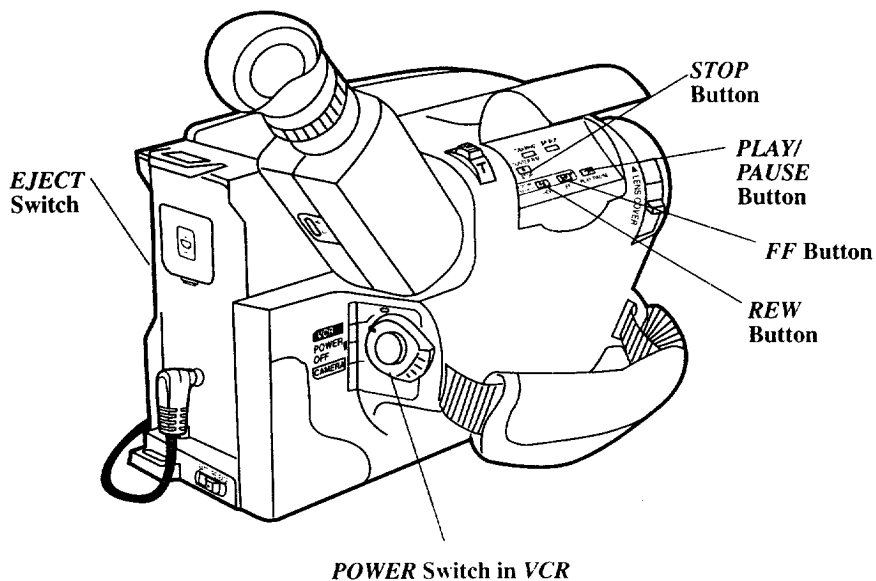
2. Use the access hole on the bottom of the adapter to push the cassette up and remove it from the adapter.
3. Gently close the adapter's cassette compartment lid.

Caution: Do not touch the reels during loading and unloading. It could cause injury or damage the cassette adapter or tape.

Playback

Viewfinder Playback

Viewfinder playback is the simplest way to watch tapes using the camcorder.



To Play Back a Tape

1. Place **POWER** switch in **VCR**. The power indicator will light.
2. Slide **EJECT** and insert the cassette you want to play back. Close the cassette compartment.
3. Press **PLAY/PAUSE** to begin playback. If necessary, adjust tracking.
During playback, use the playback features *on the next pages*.
4. Press **STOP** when you are finished.

Playback Features

Visual Searching

- During playback, press and release *FF* or *REW* if you want to search the tape visually in forward or reverse.
- Press *PLAY/PAUSE* to return to normal playback.
- For brief searching, press and hold *FF* or *REW* for more than two seconds.
- Release the button to return to normal playback.

Tape Positioning

Place *POWER* switch in *VCR* and press *STOP*.

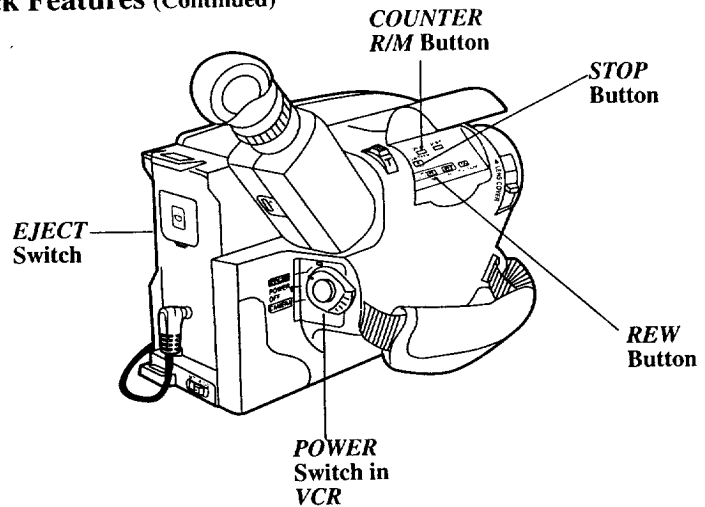
- Press and quickly release *REW* or *FF* to rewind or fast-forward the tape.
- Press *STOP* to stop the tape.

Stop-Action Pause

- During playback, press *PLAY/PAUSE* to “stop the action” and view one frame of the tape.
- Press *PLAY/PAUSE* to return to normal playback.

Caution: Pause is designed for momentary interruptions and should not be used for an extended period of time. If the camcorder remains in pause for more than five minutes, it will automatically enter the stop mode and then turn off to prevent excessive tape wear.

Playback Features (Continued)

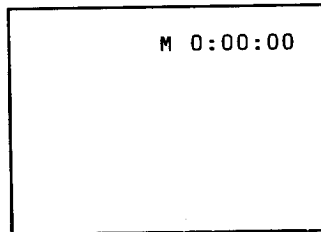


Time Counter

The time-counter display shows the actual time elapsed when playing back a segment of tape. The memory-stop feature helps locate a certain point on the tape. When memory stop is on, the tape will stop automatically during rewind or fast forward when the time counter reaches *M 0:00:00*.

To Use the Memory-Stop Feature

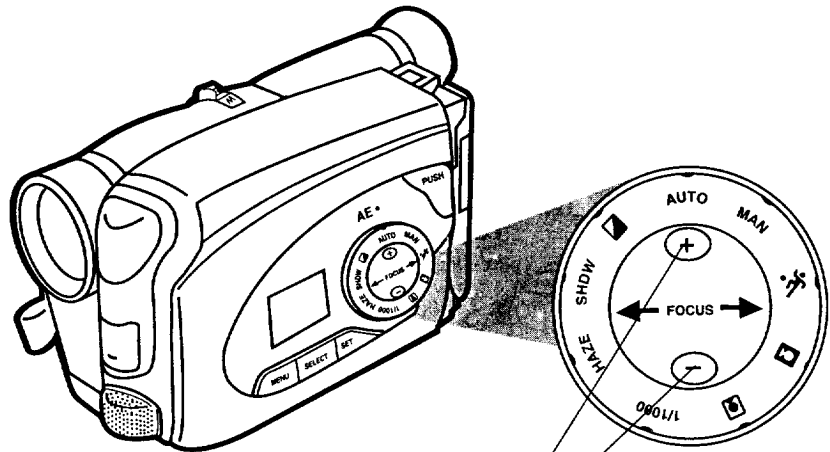
1. Locate the place on the tape you want to return to, place the *POWER* switch in *VCR*, and press *COUNTER R/M* for more than two seconds to reset the counter to *0:00:00*.
2. Press *COUNTER R/M* for less than one second to turn the time counter's memory-stop feature on or off. When memory stop is on, an *M* appears before the time counter in the viewfinder.
3. Continue to play the tape. When you want to return to the place you marked, press the *STOP* button.
4. Press *REW*. The tape will rewind to the time counter reading of *M 0:00:00*.



Time Counter With Memory Stop Turned On

Playback

Playback Features (Continued)



Tracking Buttons
(Also + and - Buttons)

Tracking

During playback, streaks may appear in the playback picture. Press either tracking button to move the streaks up or down and out of the picture.

- During stop-action playback, pressing one tracking button may reduce picture "jitter" (picture bouncing up and down). Some "jitter" is normal.

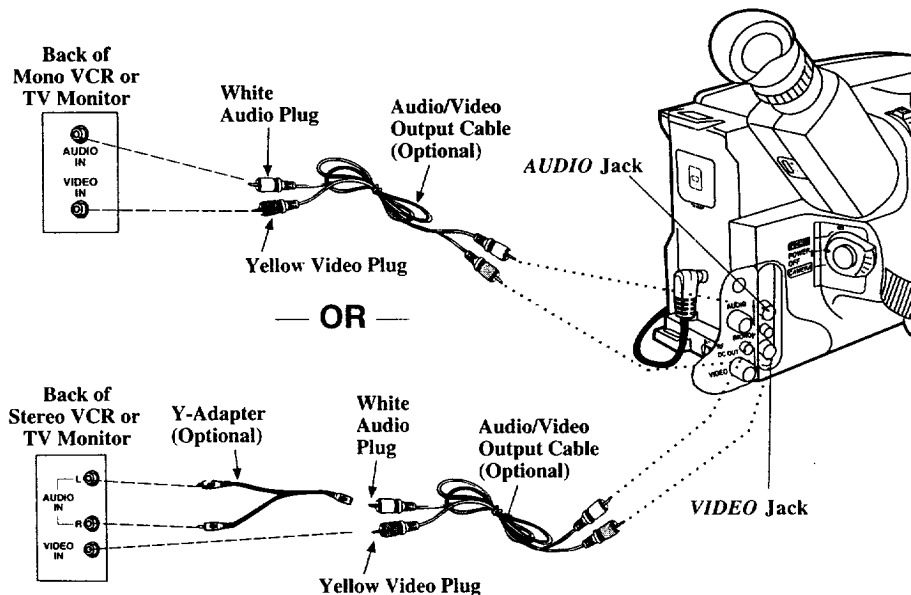
Simultaneously press both tracking buttons to return tracking to its preset center.

Note: The tracking buttons may have no effect on tapes recorded on other camcorders or VCRs.

Playback

Playback on TV (or VCR) with *AUDIO/VIDEO IN* Jacks

To connect your camcorder to a TV monitor (or VCR) with *AUDIO/VIDEO IN* jacks, you will need an optional audio/video cable such as VH83 shown on page 68. If your TV is already connected to a VCR, you can attach the camcorder to the VCR and watch what the camcorder is recording or playing on the TV.



Installation

1. Attach the white plug on one end of the audio/video cable to the *AUDIO IN* jack on the TV (or VCR).

Notes: If your cable does not have white and yellow plugs, just be sure to attach the same color to the audio jacks.

If your TV (or VCR) has stereo *AUDIO IN* jacks, attach the plug to the one labeled *MONO*. If one is not labeled *MONO*, you may need a Y-adaptor, such as AH25, shown on page 68 to hear both channels.

2. Attach the yellow plug to the *VIDEO IN* jack on the TV (or VCR).
3. Attach the white plug on the other end of the audio/video cable to the *AUDIO* jack (located under the small cover) on the side of the camcorder.
4. Attach the yellow plug to the yellow *VIDEO* jack on the camcorder.

Playback

Playback Operation and How to Copy Tapes on the VCR

1. A. Camcorder connected directly to TV: Turn on the TV and tune it to the video input channel.
B. Camcorder connected to VCR that is already connected to TV: Turn on VCR and place it in the "line" or "camera mode". (If your VCR does not have a "line" or "camera mode", consult the VCR owner's manual.) Operate the TV as you normally do to see the signal coming from the VCR.
2. Place the *POWER* switch in *VCR* to turn on the camcorder. The power indicator will light.
3. Press *PLAY/PAUSE*.
 - During playback, use the playback features on pages 59-61.
4. To copy what the camcorder is playing, place a blank cassette in the VCR, and press the VCR's *RECORD* button.
Note: Make sure the memory-stop feature is turned off (press *COUNTER R/M*) or the camcorder will enter play pause when the counter reaches *M 0:00:00*.
5. Press *STOP* when you are finished.

Caution: The unauthorized recording of copyrighted material may infringe the rights of others.

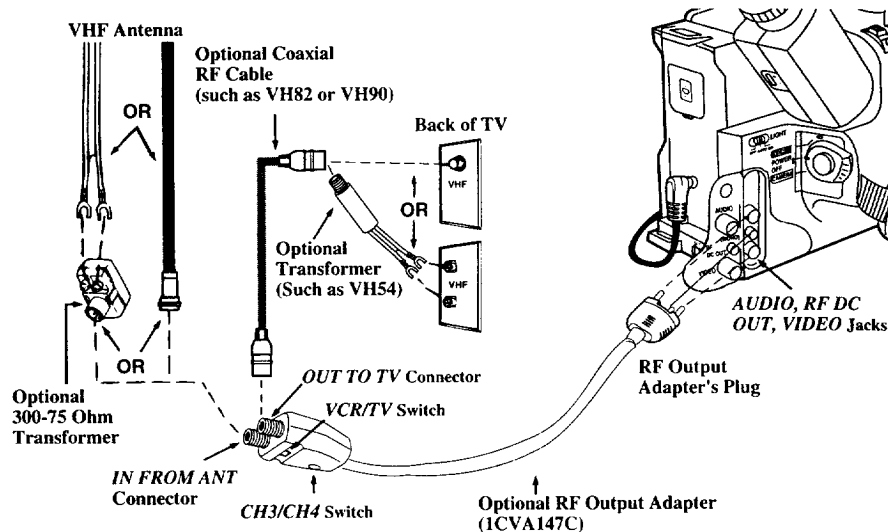
Viewing What the Camcorder is Seeing (or Recording)

1. A. Camcorder connected directly to TV: Turn on the TV, and tune it to the video input channel.
B. Camcorder connected to VCR that is already connected to TV: Turn on VCR and place it in the "line" or "camera mode". (If your VCR does not have a "line" or "camera mode", consult the VCR owner's manual.) Operate the TV as you normally do to see the signal coming from the VCR.
2. Place the *POWER* switch in *CAMERA*.
Note: When the camcorder is used as a camera, turn the TV's volume down to prevent a high-pitched squeal caused by feedback.
3. Press the thumb trigger to begin recording. You can watch what the camcorder is seeing (or recording) on the TV screen.

Playback

Playback on a TV Without Audio/Video Inputs

To connect your camcorder to a TV without audio/video inputs, you will need an optional 1CVA147C RF output adapter and an optional coaxial RF cable, such as VH82 or VH90 shown on page 68. If your TV has *AUDIO* and *VIDEO IN* jacks (or is connected to a VCR), refer to pages 62-63.



Installation

1. Disconnect the VHF antenna from your TV. Connect the antenna to the *IN FROM ANT* connector on the RF output adapter if you are going to leave the adapter connected to the TV.

Note: If your VHF antenna is the flat twin-lead type attached by two screws, you will also need an optional 300/75 ohm transformer.

2. Attach one end of the optional coaxial RF cable to the *OUT TO TV* connector on the adapter, and attach the other end to the VHF input on your TV as shown.

Note: If your TV has 300 ohm screw terminals, you will need a 75/300 ohm transformer, such as VH54, shown on page 68.

3. Attach the RF output adapter's plug to the *AUDIO, RF DC OUT*, and *VIDEO* jacks located under the small cover on the side of the camcorder.

Playback

Playback Operation

1. Set the *CH3/CH4* switch on the RF output adapter to channel 3 or 4.
2. Turn on the TV, and tune it to the same channel you selected with the RF output adapter's *CH3/CH4* switch.
3. Place adapter's *VCR/TV* switch in *VCR*.
4. Place *POWER* switch in *VCR*. Power indicator will light.
5. Press *PLAY/PAUSE* on the camcorder.
 - During playback, use the playback features described on pages 59-61.
6. Press *STOP* on the camcorder when you are finished.

Viewing What the Camcorder Is Recording

1. Turn on the TV and tune it to channel 3 or 4. When the camcorder is used as a camera, turn the TV's volume down to prevent a high-pitched squeal caused by feedback.
2. Set the *CH3/CH4* switch on the RF output adapter to the same channel you selected on the TV.
3. Place adapter's *VCR/TV* switch in *VCR*.
4. Place *POWER* switch in *CAMERA*. Power indicator will light.
5. Press the thumb trigger to begin recording. You can watch what the camcorder is seeing (or recording) on the TV screen.

Normal TV Viewing

For normal TV viewing, you may leave the RF output adapter hooked up to the TV. Disconnect the adapter's plug from

the camcorder and place the adapter's *VCR/TV* switch in *TV*.

Note to Cable TV Installer

This reminder is provided to call your attention to Article 820-40 of the National Electrical Code (Section 54 of Canadian Electrical Code, Part I), that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

Optional Accessories

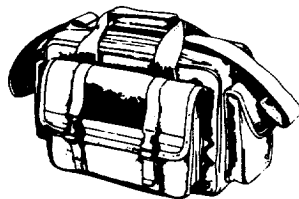
We invite you to take a look at some great ideas for sparking creativity and adding to the fun of using your compact VHS camcorder. The following pages have a selection of accessories to help make your memorable moments look and sound even better.

These accessories are designed to make the process of recording and watching your videos more enjoyable.

To order accessories, contact your local Dealer.

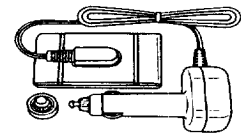
If a dealer is not nearby, all accessories are available through toll-free ordering or by using the order form *on page 69*.

AC201A Soft Carrying Case



Custom compact soft case designed especially to provide protection and utility for your compact VHS camcorder and most accessories. Rugged fabric lined with soft non-abrasive material and generous padding. Has three outside pockets with storage for lens filters, adapters, batteries, and tapes.

DCC08 Car Cord Adapter

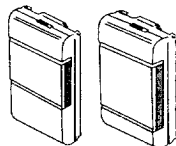


Do not use any other car cord with this camcorder.

This car cord adapter enables you to operate your camcorder from your car, truck, or RV by plugging the car cord directly into the vehicle's cigarette lighter socket. The DCC08 is designed specifically to convert power from a 12-volt battery to a 6-volt output.

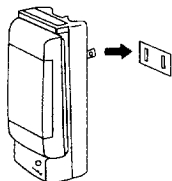
Optional Accessories

FB1260 and FB120 Rechargeable Batteries

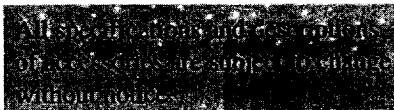


These rechargeable nickel-cadmium batteries are designed specifically for long life. The FB1260 is the same battery that came packed with your camcorder. The FB120 powers your camcorder twice as long as the FB1260 (depending on how much you use zoom and pause). Both can be recharged with the AC adapter/charger that came with your camcorder.

CPS91 AC Battery Charger



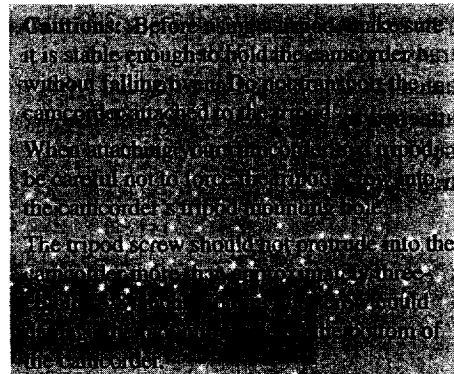
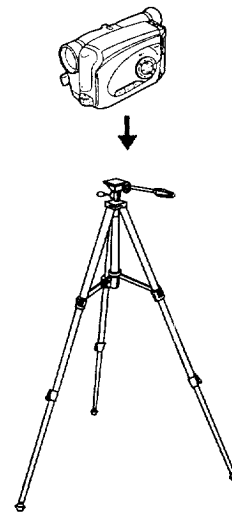
The CPS91 battery charger plugs directly into an AC outlet and charges the FB1260 and FB120 camcorder batteries. Because the CPS91 operates on 100-240 Volts, 50/60 Hz, it can be used virtually anywhere in the world. A plug adapter may be required in some countries. Charging takes approximately seven hours for the FB1260 (1-hour battery) and 13 hours for the FB120 (2-hour battery).



Using the Optional AC088 Tripod

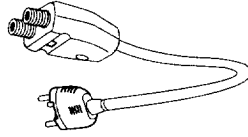
Mounting the camcorder on a tripod, such as AC088, will keep the camcorder steady and produce excellent video results.

This tripod's fluid-effect head provides smooth camera pan and tilt. The quick-release mount makes it easy to attach or remove the camcorder. The grooved, tubular 3-section leg design folds down to 26" when not in use. Rubber feet allow for sure footing.



Optional Accessories

1CVA147C RF Output Adapter



This RF output adapter is used with a coaxial RF cable, such as VH82 or VH90, to connect your camcorder to a standard TV (one without audio/video inputs) for playback. If your antenna cable is the flat twin-lead type attached by two screws, you will also need a 300-to-75 ohm transformer. If your TV has 300 ohm antenna screw terminals, you will need an optional 75-to-300 ohm transformer such as VH54.

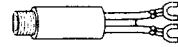
Coaxial RF Cables



VH82 (6-ft)
VH90 (12-ft)

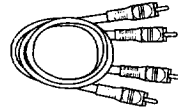
These RF cables are used with the RF output adapter to connect your camcorder to a standard TV (one without audio/video input jacks) for playback. If your TV has 300 ohm antenna screw terminals, you will need an optional 75-to-300 ohm transformer such as VH54. If your antenna cable is the flat twin-lead type attached by two screws, you will also need an optional 300-to-75 ohm transformer.

VH54 Cable Transformer



This 75-to-300 ohm transformer is used to connect a standard 75-ohm antenna cable (such as VH82 or VH90) to the 300 ohm screw terminals on a TV.

VH83 Audio/Video Cable



This six foot audio/video cable can be used to connect the camcorder to a TV monitor or VCR for tape playback or copying tapes.

AH25 Y-Adapter



This Y-adapter allows you to connect your camcorder's mono audio cable to a stereo TV or VCR.



Accessory Order Form

Order Form for Camcorder Model CC643/CC641				
Description	Part No.	Price	Qty.	Total
Super Lightweight Tripod	AC088	\$ 39.95		
Soft Camcorder Case	AC201A	\$ 39.95		
Shoulder Strap	ACS091	\$ 12.95		
Y-Adapter	AH25	\$ 1.95		
AC Battery Charger	CPS91	\$ 59.95		
Car Cord Adapter	DCC08	\$ 89.95		
Rechargeable Battery (Extended)	FB120	\$ 79.95		
Rechargeable Battery (Standard)	FB1260	\$ 49.95		
75-300 Cable Transformer	VH54	\$ 1.95		
Coaxial RF-Cable	VH82	\$ 4.95		
Audio/Video Cable	VH83	\$ 4.95		
Coaxial RF-Cable	VH90	\$ 5.95		
RF Output Adapter	1CVA147C	\$ 59.95		
AC Adapter/Charger and DC Cable	236689 233087	\$ 96.45 \$ 24.95		
Cassette Adapter	232845	\$ 49.95		

Prices are subject to change without notice.

Total Merchandise \$ _____

Sales Tax \$ _____

We are required by law to collect the appropriate sales tax for each individual state, county, and locality to which the merchandise is being sent.

Shipping and Handling \$ **5.00**

Total Amount Enclosed \$ _____

Use VISA, MasterCard, or Discover.
Money order or check must be in U.S.
currency only. No COD or cash.

Detach Here



Accessory Order Form

To order accessories, contact your local Dealer.

If a dealer is not nearby, you can also follow the directions below to order by telephone or direct-by-mail.

United States and Canada Orders

To place your order by phone, have your Visa, MasterCard, or Discover card ready and call the toll-free number listed below between 8AM and 8PM (EST) Monday through Friday or between 9AM and 5PM (EST) Saturday.

Use this number only to place an order for accessory items listed on this order form.

1-800-338-0376

To place your order by mail, detach and mail the completed order form with credit card information, money order, or check in U.S. currency (made payable to Thomson Consumer Electronics, Inc.) to the following address:

Video Accessories
PO Box 8419
Ronks, PA 17573

Trouble Checks


Troubles sometimes are caused by simple "faults" that you can easily correct without the help of a service technician by first checking a few basic remedies.

Before you call or take your camcorder to an Authorized RCA Camcorder Servicer, look below for the type of trouble you are experiencing. Then perform the simple checks and adjustments listed for that trouble.

If service should be necessary, the warranty information lists what your warranty covers and explains how to get service.

Trouble	Checks and Adjustments
No power	<ul style="list-style-type: none">• Place the <i>POWER</i> switch in <i>CAMERA</i> or <i>VCR</i> to turn on the camcorder. The power indicator will light.• If using battery, it may need to be recharged.• If using AC adapter/charger, make sure it is plugged into a working outlet.
Won't record or playback	<ul style="list-style-type: none">• If using AC adapter/charger, make sure it is plugged into a working outlet.• If the dew indicator (☒) flashes in the viewfinder, there is moisture in the camcorder. Wait until the dew indicator no longer appears before operating the camcorder.• Make sure <i>POWER</i> switch is in correct position for desired operation.• There may not be a cassette in the camcorder.• Try ejecting and reinserting the cassette.• The cassette tape may be broken, try another cassette.• You may have reached the end of the cassette, try rewinding it.
Won't playback	<ul style="list-style-type: none">• <i>POWER</i> switch must be in <i>VCR</i> position.
Won't record	<ul style="list-style-type: none">• Safety tab has been removed or closed. (See page 17.)• <i>POWER</i> switch must be in <i>CAMERA</i>.
No picture	<ul style="list-style-type: none">• Open lens cover.
Camcorder turns itself off	<ul style="list-style-type: none">• Place <i>POWER</i> switch to <i>OFF</i> and then <i>CAMERA</i> or <i>VCR</i> to turn back on. If camcorder is left in record pause or play pause for several minutes, it will turn itself off to prevent tape wear.

Trouble Checks

Trouble	Checks and Adjustments
Tape stops during rewind or fast forward	<ul style="list-style-type: none"> • Time-counter memory may be on. Whenever an "M" appears with the time-counter display, the camcorder will stop rewinding (or fast forwarding) when counter reads <i>M 0:00:00</i>. Press <i>REW</i> or <i>FF</i> again to continue rewinding or fast forwarding, or press <i>COUNTER R/M</i> to turn off the memory-stop feature.
Camcorder remains in pause mode	<ul style="list-style-type: none"> • Press <i>PLAY/PAUSE</i> to return to normal playback.
Sound is too low or distorted	<ul style="list-style-type: none"> • Subject was too far from camcorder.
Dew Indicator flashing in viewfinder	<ul style="list-style-type: none"> • If the dew indicator () flashes in the viewfinder, there is moisture in the camcorder. Wait until this indicator no longer appears before operating the camcorder.
Poor auto-focus operation	<ul style="list-style-type: none"> • Subject is dark or behind glass. Auto-focus may not work under these conditions. Place <i>AE</i> dial in <i>MAN</i> and focus manually. See pages 32-33. • Subject is not in center of viewfinder or two subjects are at different distances. Place <i>AE</i> dial in <i>MAN</i> and focus manually. See pages 32-33. • Lens is smudged, and image appears unfocused.
Viewfinder displays are out of focus	<ul style="list-style-type: none"> • Lens is smudged, and image appears unfocused. • Eyepiece focus control is misadjusted. • Model CC643: The small controls on the bottom of the viewfinder control the brightness and white balance (blue tint) of the viewfinder. These controls have been set at the factory and should require no adjustment. If the controls ever do require adjustment, carefully use a plastic screwdriver. Make the adjustments with caution to prevent damaging the miniature controls.

Trouble Checks

Trouble	Checks and Adjustments
Picture is too dark or subject too dark	<ul style="list-style-type: none"> • For best results, only use higher shutter speeds outdoors. Rotate <i>AE</i> dial to sports (⌘) or 1/1000. <i>See page 45.</i> • Subject in front of a strong backlight. Rotate <i>AE</i> dial to select back-lit (☐). <i>See page 45.</i> • Subject in front of a strong frontlight. Rotate <i>AE</i> dial to select front-lit (☐). <i>See page 45.</i> • Place <i>AE</i> dial in <i>MAN</i> and press + or -. <i>See page 29.</i>
Picture recorded with special effect	<ul style="list-style-type: none"> • <i>AE</i> dial may be turned to special effect mode. Turn the <i>AE</i> dial to <i>AUTO</i>. <i>See page 45.</i>
Colors do not look natural on recording	<ul style="list-style-type: none"> • Try adjusting white balance. <i>See pages 34-35.</i>
Title recorded on tape	<ul style="list-style-type: none"> • Title is recorded whenever it appears in viewfinder. Remove the title from viewfinder. <i>See pages 40-42.</i>
Date and/or time were recorded on tape	<ul style="list-style-type: none"> • Displays will be recorded on tape whenever they appear in the viewfinder. Remove them from viewfinder when recording. <i>See pages 40-41.</i> • When <i>AUTO DATE</i> is selected (<i>AE</i> dial in <i>AUTO</i>), display will automatically be recorded when you begin recording or change the cassette. <i>See pages 40-41.</i>
Date and/or time are incorrect	<ul style="list-style-type: none"> • Clock lithium cell battery may need replacing. <i>See page 38.</i> • Date or time may need to be set. <i>See page 39.</i>
Cannot set <i>REC</i> or <i>INTERVAL</i> time for animation or time-lapse recording	<ul style="list-style-type: none"> • Check tape speed setting. Tape speed must be set to <i>SP</i> for time-lapse and animation recording. • Make sure <i>AE</i> dial is not set to <i>AUTO</i> to display recording menu.

Trouble Checks

Trouble	Checks and Adjustments
Vertical white lines appear when shooting bright object	<ul style="list-style-type: none">• This may occur when background extremely contrasts with the subject.
Error number (E01, E02, etc.) appears in viewfinder	<ul style="list-style-type: none">• Try disconnecting power source. Wait ten seconds and then connect power source again. If error number does not disappear from viewfinder, consult your Authorized RCA Camcorder Servicenter.

Care and Maintenance

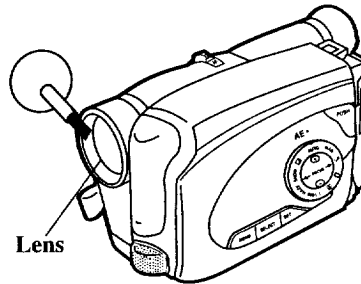
Cleaning the Camcorder

To clean the camcorder's exterior, remove any power source connected to the camcorder and gently wipe it with a clean soft cloth.

Caution: Use of strong cleaning products, such as those containing alcohol or benzine, may damage the camcorder.

Cleaning the Camcorder's Lens

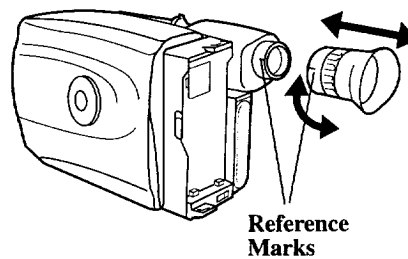
To clean the camcorder's lens, blow it with a blower brush, and then gently wipe the lens with cleaning tissue and commercially prepared cleaning solution designed for use on camera lens. Improper cleaning may scratch the lens.



Caution: Do not touch the lens with your fingers. The oil from your skin can damage the lens.

Cleaning the Camcorder's Viewfinder

The viewfinder eyepiece can be removed for cleaning.



1. Turn the eyepiece counterclockwise and pull it out.
2. Remove dust using a blower brush.
3. Reattach the eyepiece by aligning the reference marks, and then turn the eyepiece clockwise until it clicks.

Care and Maintenance

Proper Care and Storage

- Keep dust and grit from entering the camcorder's cassette door. Dust and grit are abrasive and will cause excessive wear to both the camcorder's recording/playback heads and cassettes.
- Always close the lens cover when the camcorder is not in use.
- Before handling your camcorder, make sure your hands and face are free from any chemical products such as suntan lotion, as it may damage the finish.
- The camcorder can be damaged by improper storage or handling. Do not subject the camcorder to swinging, shaking, or dropping.
- Do not store the camcorder in temperatures below -22°F (-30°C) or above 149°F (65°C).
- When the camcorder is not in use, always remove the cassette and AC adapter/charger or battery.
- Retain the original carton for future storage or shipping purposes.

Things to Avoid

- Do not attempt to disassemble your camcorder. There are no user-serviceable parts inside.
- Avoid operating your camcorder immediately after moving it from a cold location to a warm location. Give the camcorder 1-1/2 to 2 hours to reach a stable temperature before inserting a cassette. When the camcorder is moved from cold to warm, condensation may cause the tape to stick to the headwheel and damage the headwheel or tape.
- Do not aim your camcorder at the sun or other bright objects.
- Do not leave your camcorder in direct sunlight for extended periods of time. The resulting heat buildup could permanently damage the camcorder's internal parts.
- Do not operate the camcorder in extremely humid environments.
- Do not operate the camcorder near the ocean as salt water or salt water spray may damage the internal parts of the camcorder.
- Do not operate the camcorder for extended periods in temperatures below 40°F (4°C) or above 95°F (35°C).
- Do not expose the camcorder or adapter/charger to rain or moisture. If any component becomes wet, turn off the power and take the unit to an Authorized RCA Camcorder Servicenter.
- Do not use an adapter/charger or batteries other than the ones specified for the camcorder. Use of the wrong accessories may cause damage to the camcorder.

Information to User

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.

Alterations or modifications carried out without appropriate authorization may invalidate the user's FCC right to operate the equipment.

**This Class B digital apparatus meets all requirements of the Canadian Interference — Causing Equipment Regulations.
Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.**

Customer Assistance and Service

You can reach Thomson at the following number:

800-283-6503

(Toll free inside U.S.A.)

Our toll-free Camcorder number operates from 8 a.m. to 5 p.m., CST Monday – Friday for U.S. customers only

Thomson provides a toll-free telephone number to help you with any problems you may encounter with your camcorder. Many can be diagnosed over the phone, and if necessary, a replacement unit can be shipped to you. Please have your camcorder model/serial number and date of purchase ready when you call. If your unit is out of warranty, we will quote the cost of a repair or replacement unit to you.

Returning equipment to Thomson for repair or exchange

If we are unable to resolve your problem over the phone, we will gladly service your unit or exchange it for a new or refurbished camcorder. Refer to the limited warranty on the reverse side to learn about your specific rights and responsibilities.

Always consult Thomson and get a Return Authorization number before returning anything! Obtain a Return Authorization (RA) number from the telephone representative before returning your equipment to avoid delays, accounting errors, or even loss of your unit.

Important information to customers who ship defective equipment to Thomson Consumer Electronics

The Thomson representative who authorized the return of your equipment will give you an RA number over the phone. They will also provide you with instructions on where and how to return your Camcorder. Write the number in large, clear characters on the outside of the box. To avoid confusion and misunderstandings, shipments without an RA number clearly visible on the outside of the box will be returned to you at your expense.

Include a brief note describing the problem and any conversations about the problem you have had with Thomson personnel.

Include your name, address and model/serial number of your Camcorder. These numbers

are located on the bottom of your unit.

If your Camcorder is within the warranty period, please provide a copy of the bill of sale to verify purchase date. Use the original box and packing material to protect the equipment from damage in shipment.

For your protection, insure all shipments for full replacement value and use a reliable shipper. Thomson assumes no responsibility for warranty shipments from the customer to the factory if not shipped in the manner prescribed by Thomson.

Limited Warranty

What your warranty covers:

- Any defect in materials or workmanship.

For how long after your purchase:

- 90 days for labor charges.
- One year for parts.

What we will do:

During the initial 90 days

- Exchange your camcorder with a new or, at our option, a refurbished unit or at your option, repair your camcorder at no cost to you.

After the 90 days and within one year

- Exchange your camcorder with a new or, at our option, a refurbished unit or at your option, repair your camcorder. Parts will be provided at no charge, but you will be responsible for the cost of labor required for the repair.

How you get service:

- Call 1-800-283-6503 and have your unit's date of purchase and model/serial number ready. The model/serial number information is on the bottom of your camcorder.
- A representative will troubleshoot your problem over the phone. If the representative determines that you should receive a replacement unit, you will be provided with a Return Authorization (RA) number and the location of a nearby exchange point if one exists. No returns will be accepted without the RA number.

To receive a replacement camcorder before you return yours:

If you are located near an exchange point:

1. We will send a replacement unit to the exchange point next business day delivery.
2. The exchange location will notify you of its arrival.
3. Take your unit, excluding all accessories, and your bill of sale which validates date

of purchase to the exchange location and you will be provided the new or refurbished unit.

4. If the repairs were covered by your warranty, you will not be billed.

If you are *not* located near an exchange point:

1. Provide your Discover, MasterCard or Visa account number and expiration date to our phone representative. This is for security purposes. If we receive your unit within 14 days from the date you were provided a Return Authorization number, only items not covered by warranty will be charged to your account. **IF YOUR UNIT IS NOT RECEIVED WITHIN 14 DAYS, THE SUGGESTED RETAIL VALUE OF THE CAMCORDER WILL BE CHARGED TO YOUR CREDIT CARD.** This amount will be credited if the unit is subsequently received.
2. We will send you a replacement unit next business day delivery.
3. You will receive an invoice packed with the replacement product, but will not be charged for the unit portion of the invoice amount if we receive your unit within 14 days from the date you were provided the RA number. Any labor and parts charges not covered by our warranty will be included and charged against your account.
4. Ship the unit back to us using the replacement unit's carton. Shipping instructions will be included in the carton along with your RA number, which will allow you to easily ship the unit back to us. **Make sure you insure your shipment in case of damage or loss.** Include with the shipment:
 - A copy of your dated bill of sale to verify your unit's warranty eligibility.
 - A brief note describing your camcorder problem.
 - Your name, address and phone number.

Limited Warranty

Return transportation, storage, and handling costs and insurance are your sole responsibility. We accept no liability in case of damage or loss.

To receive a replacement unit after we have received your unit:

1. Write the RA number on the outside of the carton used to return the unit. **Make sure you insure your shipment in case of damage or loss.**
2. Carefully pack the unit using the original box and packing material if possible.
3. Include with the shipment:
 - A copy of your dated bill of sale to verify your unit's warranty eligibility.
 - A brief note describing your camcorder problem.
 - Your name, address and phone number.

Return transportation, storage, handling costs, and insurance are your responsibility. We accept no liability in case of damage or loss.

4. The representative will advise the address to mail a cashier's check or money order for payment if there are any out of warranty labor or parts charges and you elected not to use your credit card.
5. Upon receipt of your product and applicable payment, a new or refurbished unit will be shipped to you next day delivery.

To have your Camcorder repaired by an Authorized RCA Camcorder Servicenter:

- Check with your dealer or call 1-800-336-1900 for the Authorized RCA Camcorder Servicenter nearest you.
- Take your unit to the Authorized RCA Camcorder Servicenter of your choice.
- Show the Authorized RCA Camcorder Servicenter representative your sales receipt or other, evidence of purchase.
- Pick up your camcorder when repairs are complete.

What your warranty does not cover:

- Adjustment of customer controls.
- Damage from misuse or neglect.
- A unit that has been modified or incorporated into other products or is used for institutional or other commercial purposes.
- Batteries for remote control and clock.
- Cleaning of video/audio heads.
- Camcorders purchased or serviced outside the U.S.A.
- Return transportation, storage and handling costs of your unit, including insurance for loss or damage.
- Acts of God, such as but not limited to lightning damage.

Product Registration:

- Please complete and mail the *Product Registration Card* packed with your camcorder. It will make it easier to contact you should it ever be necessary. The return of the card is not required for warranty coverage.

How State Law relates to warranty:

- This warranty gives you specific legal rights and you may have other rights that vary from state to state.

If you purchased your Camcorder outside the United States:

- Contact your dealer for warranty information.

Specifications

General

Power requirement: 6VDC

Power consumption:

CC641: 5.3 watts

CC643: 5.5 watts

Weight: Approximately 1.8 lbs.

CC641: 820 grams

CC643: 805 grams

Camera Section

Image Sensor: 1/4" CCD Imager

Lens: F1.6, f=3.8 to 68.4mm

18:1 power zoom lens

Filter Diameter: 46 mm

Tripod Mount

One 1/4" x 20 threaded hole

Dimensions – Including Viewfinder:

Model CC643:

4-7/16"(W) x 4-7/16"(H) x 8-1/4"(D)

114 (W) x 112 (H) x 208 (D) mm

Model CC641:

4-7/16"(W) x 4-7/16"(H) x 9-1/16"(D)

114 (W) x 112 (H) x 229 (D) mm

AC Adapter/Charger

Power requirement: 100-240 V,
50/60 Hz.

Power consumption: 23 watts

Weight: .7 lbs. (320g)

Dimensions:

6"(W) x 1.7"(H) x 2.7"(D)

150 (W) x 42 (H) x 68 (D) mm

Video Recorder Section

Format: VHS-C

Record/Playback System:

Four video record/playback heads

One flying erase head

Video Signal: EIA Standard

NTSC color

Viewfinder

Model CC643: .55" Color – LCD

Model CC641: .5" B/W – CRT

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Need Assistance? We want to help!

U.S. Consumers:

Camcorder Exchange Warranty	800-283-6503
Customer Service	800-336-1900
Accessories	800-338-0376

Canadian Consumers:

English	800-522-0338
French	800-522-0445

If your camcorder needs service, please contact your dealer or the nearest Servicenter from the yellow pages. Please do not send any products to the Indianapolis address listed in this manual or on the carton. This will only add delays in service for your product.

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