



CG709

Camcorder User's Guide



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

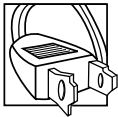
RISQUE DE CHOC
ELECTRIQUE NE PAS OUVRIR



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 PERSONNEL.

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 and model numbers located on the bottom of the camcorder.

Model No: CG709

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 60-61)

Customer Service..... 800-447-1700 (page 59)

Accessories..... 800-338-0376 (pages 47-50)

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First-Time Operation

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

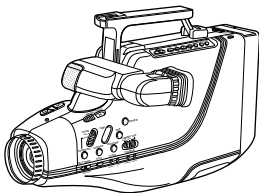
Assistance

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

Camcorder Exchange Warranty.....	800-283-6503
Customer Service.....	800-447-1700
Accessories.....	800-338-0376

1. Unpack 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 of the items are missing or appear damaged, contact your dealer immediately.



Camcorder: Model CG709

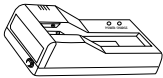


Battery Pack
Stock No. 1CVA156

WARNING: LEAD-ACID BATTERY MUST BE DISPOSED OF PROPERLY.

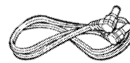


Shoulder Strap
Stock No. 222043



AC Adapter/Charger
Stock No. 229412

Caution: Do not use this adapter/charger for any other purpose than charging the 1CVA156 battery pack or supplying power to the camcorder.



DC Cable
Stock No. 217840



Audio/Video Cable
Stock No. 210923



Clock Cell

3-Volt micro lithium cell battery – such as CR2025 – is available from most local drug stores and camera shops. Use of another cell may present a risk of fire or explosion.

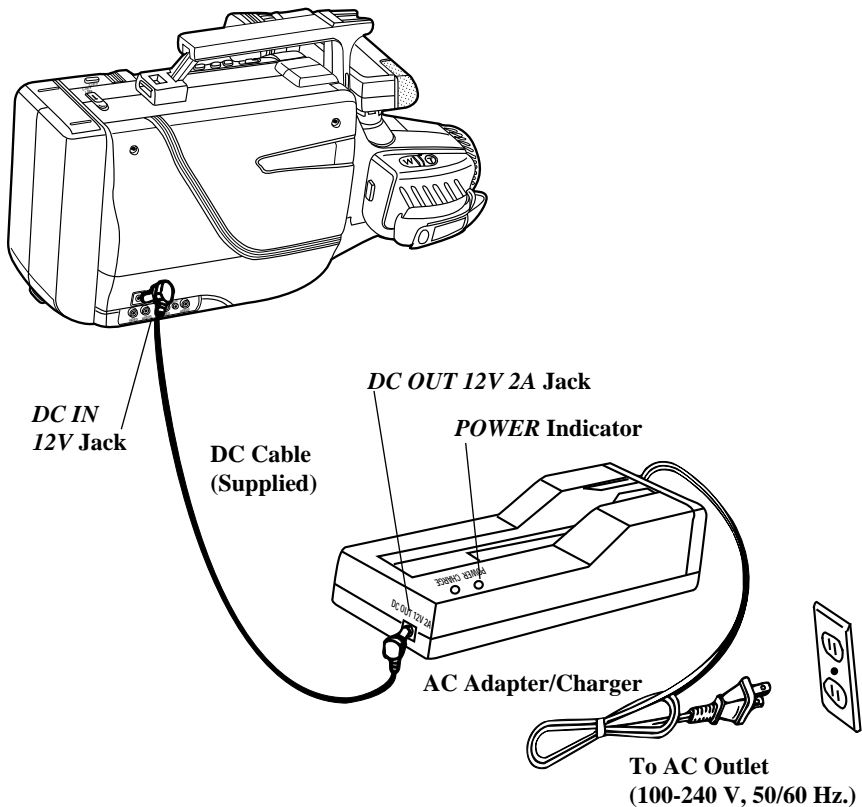
Cautions: Lithium cell battery. Must be disposed of properly. Never handle a punctured or leaking cell. May cause burns or personal injury.

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 battery.

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.

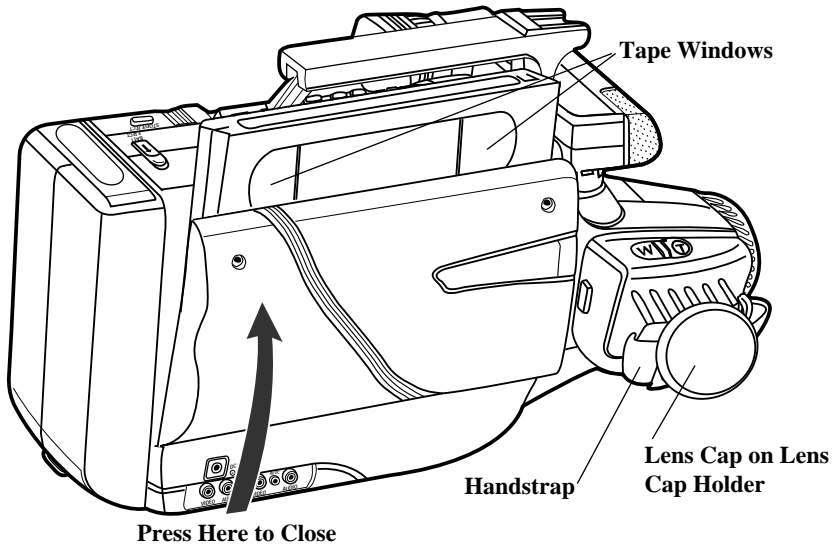
- Attach one end of DC cable to *DC IN 12V* jack on side of camcorder.
- Attach the other end of DC cable to *DC OUT 12V 2A* jack on AC adapter/charger.

- Plug the adapter/charger into the nearest AC outlet (100-240V, 50/60 Hz).

The *POWER* indicator on the adapter/charger will light.

(continued on next page)

First-Time Operation



3. Adjust the handstrap.

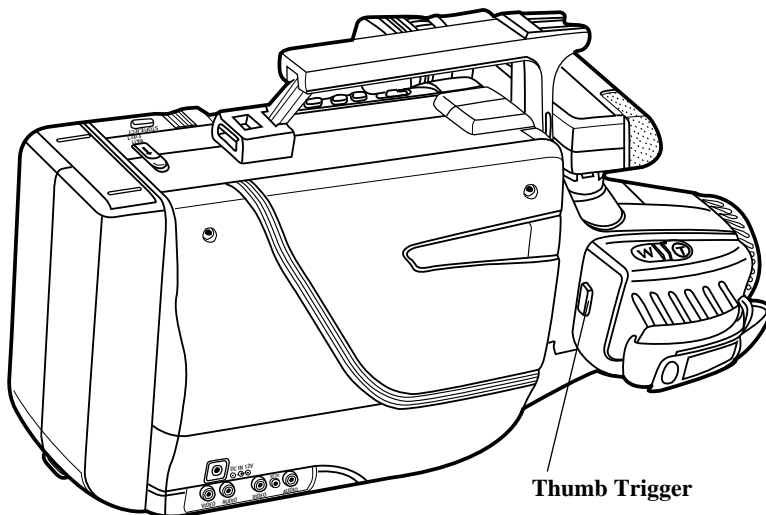
Open the strap, adjust to fit your right hand, and close the strap.

4. Remove the lens cap and attach it to the handstrap.

5. Insert a cassette.

- A. Press *STOP/EJECT* to open cassette compartment.
- B. Insert cassette with safety tab facing up and tape windows facing out.
- C. Close cassette compartment door.

First-Time Operation



8. Rotate the viewfinder into operating position and adjust the eyepiece focus control.

If the image in the viewfinder is blurry, adjust the eyepiece focus control for your vision.

9. Start and Stop Recording.

Press the thumb trigger to start and stop recording. Do not hold the thumb trigger. *REC* will appear in the viewfinder when the camcorder is recording.

Notes: Pressing *PAUSE/STILL* will also start and stop recording.

Any material recorded on the tape will be erased if you record over it.

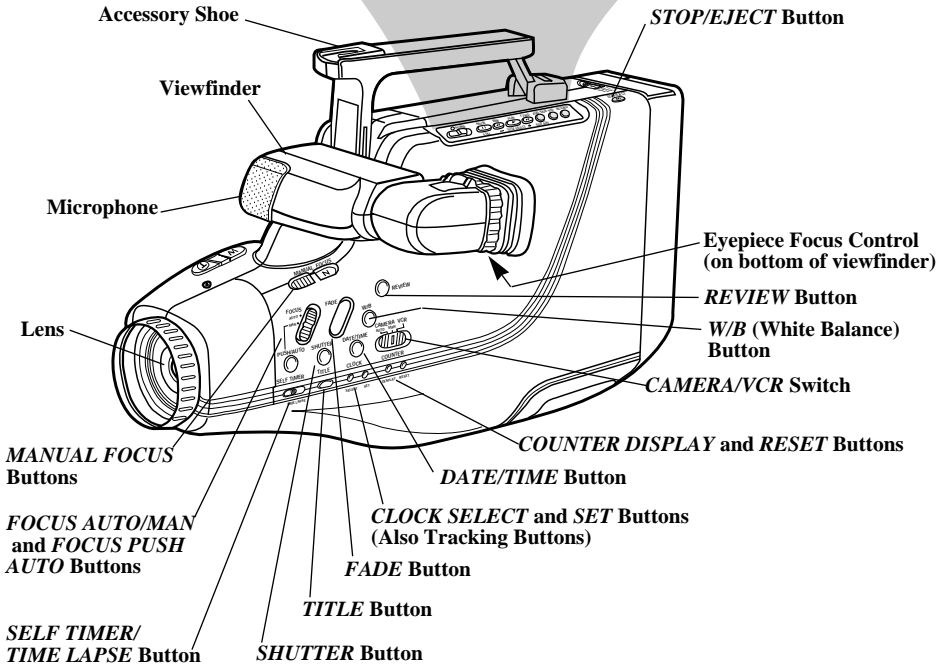
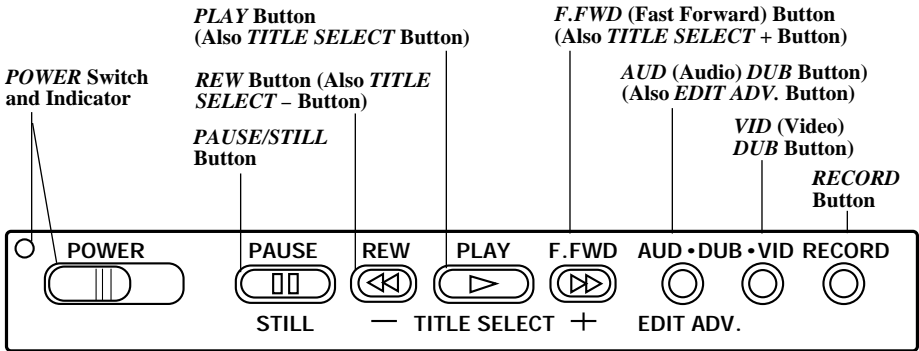
The camcorder records and plays back only in SP speed.

10. Play back what you have recorded.

- Press the thumb trigger to stop recording.
- Place the *CAMERA/VCR* switch in *VCR*.
- Press *REW* to rewind the tape.
- Press *PLAY* to play back the tape.
- Press *STOP/EJECT* when you are finished.

First-Time Operation

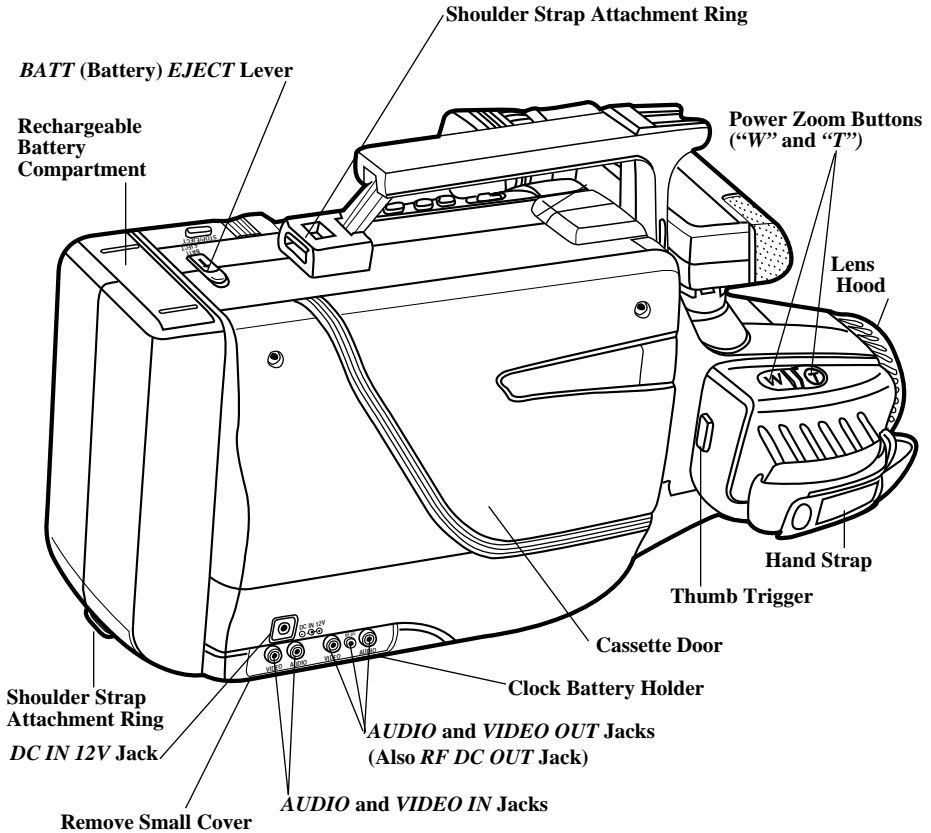
11. Review camcorder's operating controls.



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First-Time Operation

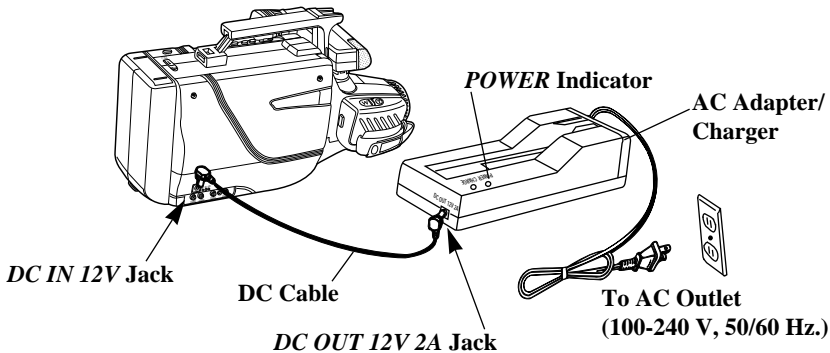
11. Review camcorder's operating controls.



Powering the Camcorder

Using the Adapter/Charger

The DC cable attaches the adapter/charger to the camcorder and lets you power your camcorder directly from standard household power.



Attach the Adapter/Charger

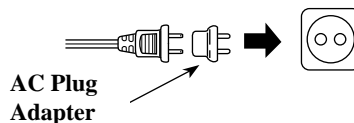
1. Attach one end of DC cable to *DC OUT 12V 2A* jack on the AC adapter/charger.
2. Attach the other end of DC cable to *DC IN 12V* jack on side of camcorder.
3. Plug the adapter/charger's plug into the nearest AC outlet (100-240V, 50/60Hz).
4. If the adapter/charger is properly connected, its *POWER* indicator will light.

Notes: The adapter/charger cannot charge the battery and operate the camcorder at the same time. Remove the battery when you use the adapter/charger to power the camcorder.

Using an Optional Plug Adapter

The adapter/charger operates on 100-240 volts, 50/60 Hz. Some countries may require a plug adapter.

100-240 V, 50/60Hz.



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

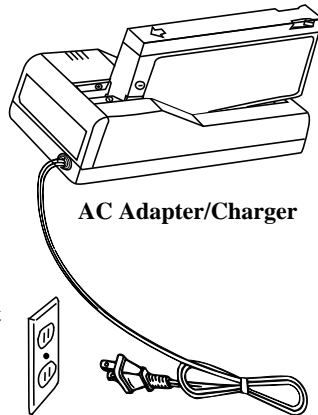
Powering the Camcorder

Using the Battery to Power Your Camcorder

The battery must be charged before it can be used the first time. Initial charging will take approximately two hours. When fully charged, the battery should supply about 100-120 minutes of operating time (depending on how much you use zoom and pause). When using the battery to power the camcorder, slide *POWER* to turn off the camcorder during recording breaks to conserve the battery's power.

Charging the Battery

WARNING:
LEAD-ACID
BATTERY.
MUST BE
DISPOSED OF
PROPERLY.



POWER and ***CHARGE***
Indicators (Located on
Other Side)


To AC Outlet
(100-240 V,
50/60 Hz.)

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.

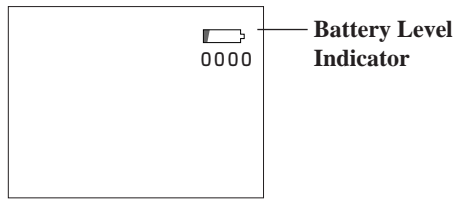
1. Plug the adapter/charger into the nearest AC outlet (100-240V, 50/60Hz). The *POWER* indicator on the adapter/charger will light.
Note: If the DC cable is attached to the adapter/charger, remove it before charging the battery. The adapter/charger cannot charge the battery if the DC cable is attached.
2. Slide the battery into the adapter/charger matching the “-” side of the battery to the “-” side of the adapter/charger *as shown above*.
3. If the battery is properly connected, the adapter/charger's *CHARGE* indicator will light. When the light goes out, the battery is fully charged.
4. Remove the charged battery by sliding it off the adapter/charger.
5. Insert the charged battery into the camcorder *as shown on the next page*.

Powering the Camcorder





Checking Battery Power (Battery Level Indicator)

The battery level indicator () in the viewfinder shows you how much battery power is left. This indicator will not be recorded on the tape when it is displayed.

Repeatedly press the *COUNTER DISPLAY* button to display and remove the battery level indicator from the viewfinder.



Display in Viewfinder

- When the battery is fully charged, the display reads  .
- After a while, only  appears.
- When the battery reaches the empty level,  will start flashing.
Recharge the battery or attach the adapter/charger before continuing to use the camcorder.
Note: The  indicator will automatically appear in the viewfinder when the battery reaches empty, even if the battery level indicator is not displayed.

Caution: When the battery reaches empty, the camcorder will turn off. The battery should have enough power to eject the cassette.

If the camcorder does not eject the cassette when you press the *STOP/EJECT* button, **do not force the cassette door open.** This will damage your camcorder.

Before attempting to eject the cassette, power your camcorder with the adapter/charger or recharge the battery.

Powering the Camcorder

Battery Care and Storage

- The battery will provide better service and longer performance if you charge it before and after use, and store it at normal room temperature.
- Recharge the battery once at least every 6 months. Lead-acid batteries tend to discharge if not used for extended periods. After being stored for a long period, the battery may not supply power for the specified time. Additional rechargings may help restore operation time. After repeated chargings and use, operation time will gradually decrease. When operation time becomes too short to be useful, it is time to replace the battery.
- The battery should be charged at a temperature of 32°F-95°F (0°C-35°C) to prevent damage.
- Do not operate the battery at temperatures below 14°F (-10°C) or above 95°F (35°C). The battery may be damaged if operated at temperatures above 122°F (50°C). Operation time will decrease at extremely low temperatures.
- Use the battery only with specified GE AC adapter/chargers and camcorders.

Battery Safety Precautions

Batteries that are being recharged that have not been used for an extended period may continue to charge after the normal time. Do not charge a battery for more than ten hours.

If both indicators on the AC adapter/charger start flashing, remove the battery, and reattach it. If the indicators continue to flash after several attempts, your battery cannot take a charge and needs to be replaced.

Do not attach a hot battery. The battery should be allowed to cool down. Both indicators on the adapter/charger will flash if you attach a hot battery.

Throwing the battery into a fire or exposing the battery to excessive heat – over 149°F (65° C) could be hazardous.

Do not short the battery's terminals.

Do not attempt to disassemble or modify the battery. There are no user-serviceable parts inside.

If leakage from a damaged battery contacts your skin or clothing, wash it off immediately with running water.

Read the cautions on the battery pack.

Camcorder Recording Tips

Make a video recording of your home and contents to store in a safe place in case of fire or theft.

Practice recording under different lighting conditions. This will help you respond quickly whenever you see a scene you want to record.

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”.

Try to make sure indoor scenes are well-lit. This improves picture quality and color reproduction. Try to avoid taping backlit subjects indoors. Bright light behind your subject may cause the subject to appear too dark.

For a different perspective, try kneeling down (or laying) on the floor when recording children or pets.

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.

Do not bump or tap the camcorder’s microphone while recording because this sound will be recorded.

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 for added interest. Remember to check the lighting before starting to record.

Include close-up shots of individuals when taping family outings or group functions.

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.

Make sure you have any plug adapters that you may need before taking your camcorder to other countries. Consult your GE dealer for advice.

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.

Carry your camcorder in a carrying case when traveling. *See page 47* for a specially designed case. 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.

Video Cassettes

We recommend our cassettes be used with your camcorder. The tape in these cassettes is of high-quality formulation manufactured to critical specifications for excellent performance. Use of tape not meeting these specifications could considerably reduce the performance of your camcorder.

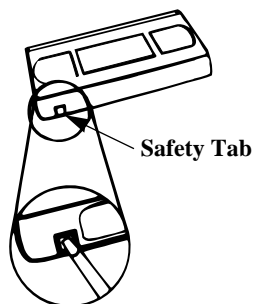
Use of poor quality tapes or tapes that have been damaged or mishandled can contaminate the video heads, resulting in a snowy picture or no picture at all during playback. Because there is no control over the type of tape purchased or rented by consumers, **head cleaning is not covered under warranty**.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

Playing a new tape for approximately 30 minutes will often satisfactorily clean the heads and improve your picture. If a snowy picture or no-picture condition persists, consider the use of a dry chemical, nonabrasive head-cleaning kit. Be sure to follow the directions with the head-cleaning kit carefully. Improper use of a head cleaner may damage your camcorder.

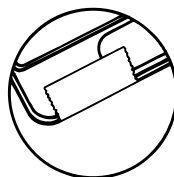
Erase Protection – Safety Tab

You can use your video cassettes over and over again.

To erase a previous recording, just record over it.



To prevent accidental erasure, break the tab.



To record again, cover the hole with vinyl tape.

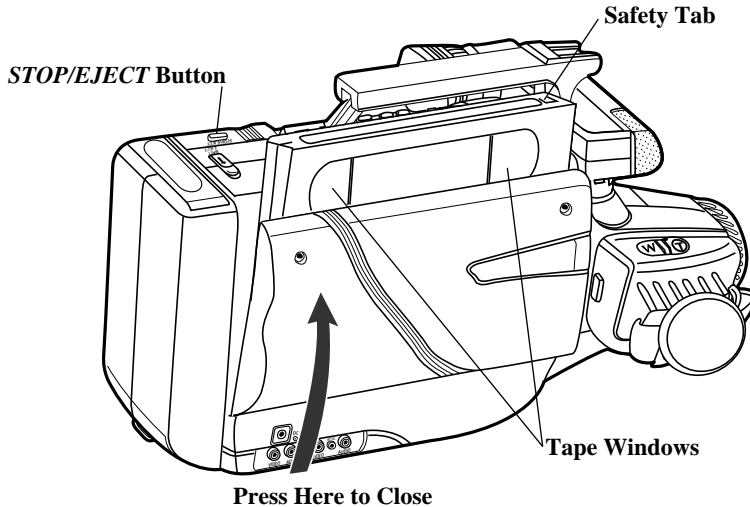
Recording Speed and Times

The camcorder records and plays back in VHS standard speed (SP). Listed are the maximum SP recording times for popular VHS cassettes.

CASSETTE	RECORDING TIME
T-60	60 Min.
T-120	2 Hrs.
T-160	2 Hrs., 40 Min.
T-180	3 Hrs.

Video Cassettes

Inserting and Removing Cassettes



1. Attach a power source (either a charged battery or adapter/charger).
2. Press *STOP/EJECT* to open the cassette door.
3. Insert or remove the cassette from the cassette compartment.

Caution: Insert cassette with safety tab facing up and the tape windows facing out. The cassette should slide easily into the compartment.

4. Gently close the cassette door with your hand.

Cassette Care and Storage

- Rewind and remove the cassette from the camcorder. Break off the safety tab to prevent accidental erasure, and label the cassette before storing it.
- Store cassettes vertically in their protective cases at normal room temperatures.
- Keep dust from entering the cassette compartment. All dust is abrasive and will cause excessive wear on the tape and camcorder's heads.
- Keep cassettes away from strong magnetic fields – such as electric motors.
- Do not use a cassette if it has been damaged or exposed to moisture. The tape may jam or damage the camcorder.
- Do not leave your camcorder or cassettes in a car or outdoors for an extended period. Excessive heat or cold may damage them.

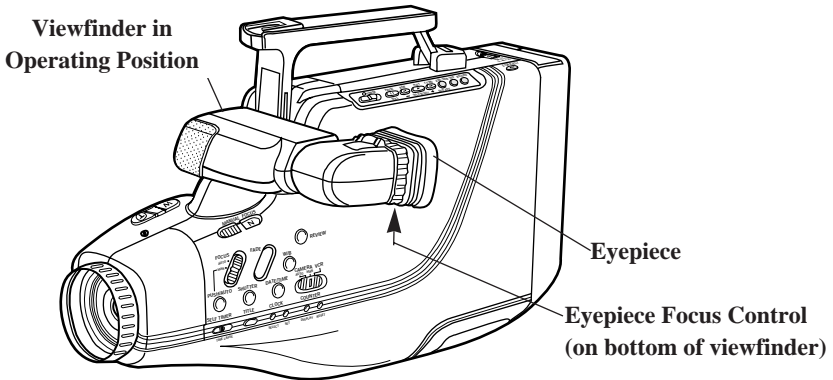
Viewfinder

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

The viewfinder can also be used for viewing the tape during playback.

For convenient viewing, turn the viewfinder to the left and lock it into position. After the viewfinder is locked, you can slide it out and use the right or left eye.

Caution: When carrying or storing the camcorder, turn the viewfinder back to the front to prevent damage to the viewfinder and/or camcorder.



Eyepiece Focus Control

The eyepiece focus control lets you set the focus of the viewfinder for your personal vision. If you wear eyeglasses, you may be able to operate the camcorder without them.

It is easiest to set the correct focus by focusing on one of the viewfinder's on-screen displays (such as the counter).

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.

Tilt Adjustment

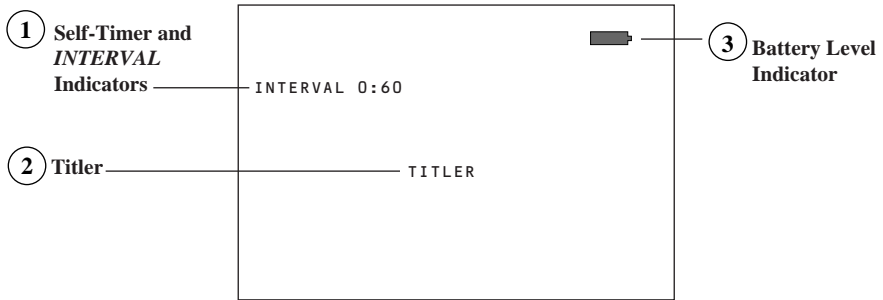
You can turn the eyepiece up or down about 180 degrees.

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

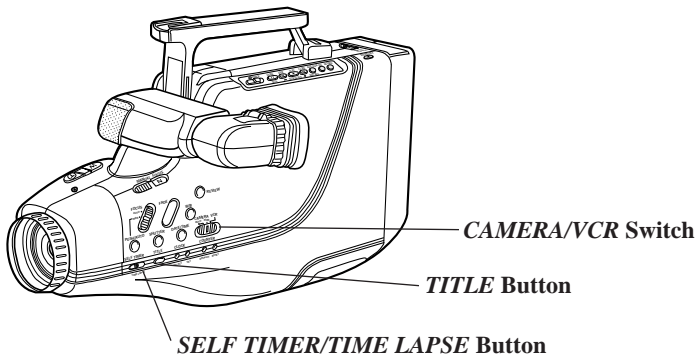
Viewfinder Controls

BRIGHT and *FOCUS* controls are located on the bottom of the viewfinder. The camcorder must be turned upside down and the viewfinder fully extended to see them. These controls were set at the factory and should need no adjustment. If adjustment becomes necessary, carefully use a plastic screwdriver and make adjustments with caution to prevent damaging these miniature controls.

Viewfinder Displays



Displays in Viewfinder



1 Self-Timer and *INTERVAL* Indicators

- *SELF-30S* or *SELF-END* appears when the camcorder is set for self-timer recording using *SELF TIMER/TIME LAPSE*.
- *INTERVAL* indicators appear when the camcorder is set for interval or animation recording using *SELF TIMER/TIME LAPSE*.
- These displays are not recorded on the tape when they appear.
- *Details are on pages 32-33.*

2 Titrer Display

Press the *TITLE* button to create or display a title.

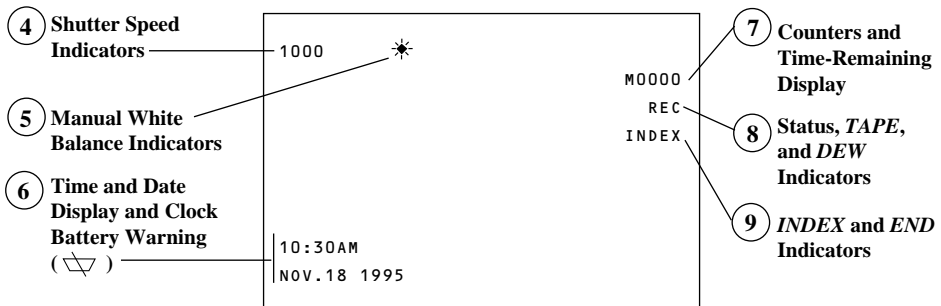
- The title is recorded on the tape when it appears.
- *Details are on pages 34-35.*

3 Battery Level Indicator

- Press *COUNTER DISPLAY* to display (or remove) the battery level indicator.
- This indicator is not recorded on the tape when it appears.
- *Details are on page 13.*

(continued on next page)

Viewfinder Displays



Displays in Viewfinder

4 Shutter Speed Indicators

- The higher shutter speed (1/100, 1/250, 1/1000, 1/2000, or 1/4000) selected with *SHUTTER* appears. No display appears for the standard 1/60 second shutter speed. The *CAMERA/VCR* switch must be in *CAMERA MAN* (manual).
- These displays are not recorded on the tape when they appear.
- *Details are on page 28.*

5 White Balance Indicators

- The indicator for the manual white balance selected with *W/B* (white balance) appears here. The *CAMERA/VCR* switch must be in *CAMERA MAN* (manual).
- Display ☼ when recording using indoor incandescent light.
 - Display * when recording under outdoor light on a bright day.
 - No display appears for automatic white balance.

- These displays are not recorded on the tape when they appear.
- *Details are on page 27.*

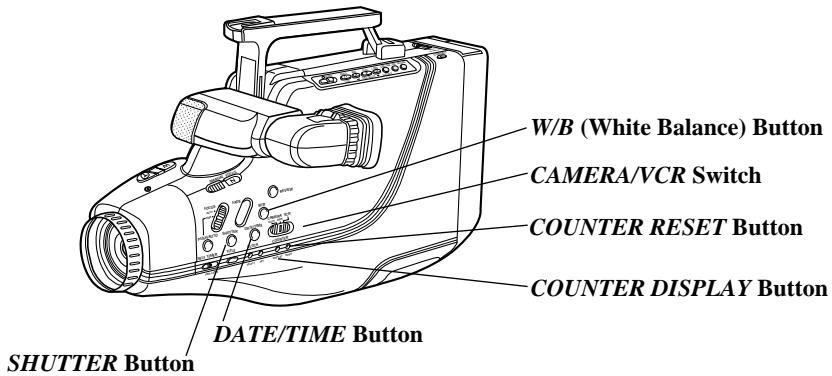
6 Time and Date Display

- Repeatedly press *DATE/TIME* to display (or remove) the time and date (or date only). This display will be recorded whenever it appears in the viewfinder.
- The clock battery warning (⚡) appears here when the clock battery is missing, installed incorrectly, or needs replacing.
- *Details are on page 22.*

7 Tape Counter, Tape Counter with Memory Stop (M), Elapsed-Time Counter, and Time-Remaining Display

- Repeatedly press *COUNTER DISPLAY* for these displays.
- Press *COUNTER DISPLAY* once to display the tape counter.

Viewfinder Displays



- Press again to display the tape counter with memory stop. An “M” appears in front of the tape counter.
- Press again to display the elapsed-time counter.
Note: Press *COUNTER RESET* to reset the tape or elapsed-time counter to “0000” (or “0:00:00”) when they appear.
- Press again to display the time-remaining display.
- Press again to remove the displays from the viewfinder.
- These displays are not recorded on the tape when they appear.
- *Details are on pages 30-31.*
- *PAUSE* appears when the camcorder is in record pause (thumb trigger or *PAUSE/STILL* button pressed to stop recording).
- *ST-BY* (stand-by) appears briefly when the camcorder is preparing to record.
- *TAPE* flashes when the safety tab has been removed from the cassette and the *CAMERA/VCR* switch is in *CAMERA*.
- *DEW* appears when the camcorder has too much moisture inside to operate. Remove the cassette and allow the camcorder to dry out for approximately two hours. *Details are on page 6.*

8 Status Indicator

The following displays appear to tell you what the camcorder is doing.

- *REC* appears when the camcorder is recording.
- *FF* appears during fast-forward.
- *REW* appears during rewind.

9 INDEX and END Indicators

- *INDEX* flashes briefly when the camcorder automatically indexes the tape. *Details are on page 25.*
- *END* flashes when you reach the end of the cassette during recording or playback.

Date and Time Display

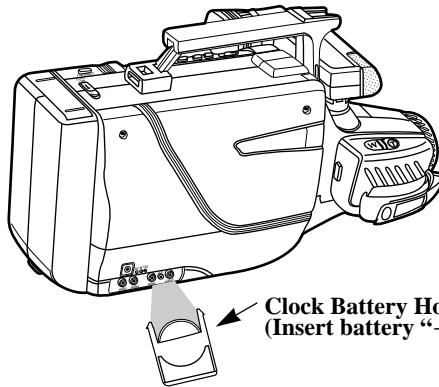
Recording the Time and Date (or Date) on Your Tape

Install the clock battery and set the correct time and date before you record them on your tape.


Whenever the time and date (or date) appear in the viewfinder, it will be recorded on the tape. If you do not want to record the display, remove it from the viewfinder by repeatedly pressing the *DATE/TIME* button.

Press <i>DATE/TIME</i> Button	To Display in Viewfinder and Record on Tape
One Time	Date and Time
Two Times	Date Only
Three Times	Neither Date or Time
Four Times	Returns to Date and Time

Install Clock Battery



1. Remove the clock battery holder.
2. Insert the clock battery with the “+” terminal facing down in the holder.
3. Fully insert the clock battery holder into the camcorder.

Note:  flashes in the viewfinder when the clock battery is missing, discharged, or not installed properly.

Cautions: Lithium cell battery. 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.

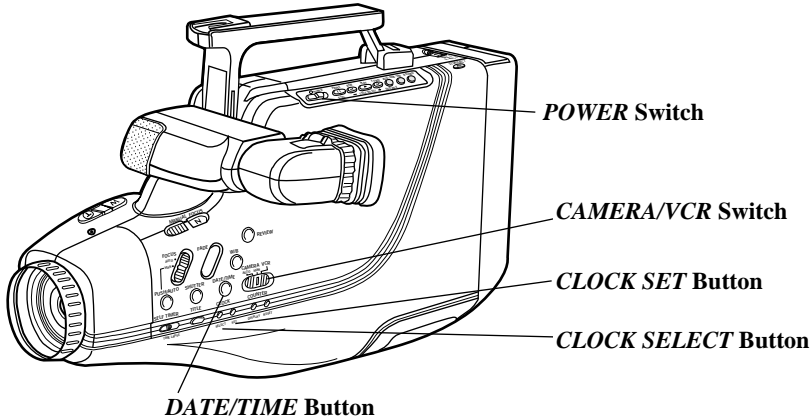
The lithium cell used in this device may explode resulting in a fire or chemical burn if mistreated. Do not recharge, disassemble, heat above 212°F (100°C), or incinerate.

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

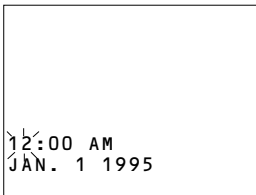
Date and Time Display

Set (or Correct) the Time and Date Display

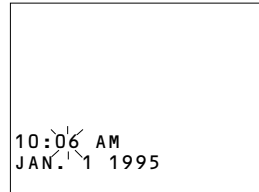
Follow the steps below to set (or correct) the time and date display.



1. Install the clock cell battery as described on the previous page.
2. Attach a power supply (battery or adapter/charger) to the camcorder.
3. Slide the *POWER* switch and place the *CAMERA/VCR* switch in *CAMERA*.
4. If the date and time display does not appear in the viewfinder, press *DATE/TIME*.
5. Press *CLOCK SELECT* until the part of the display you want to set (or correct) flashes.
6. Press *CLOCK SET* until the correct digit(s) appear.
Note: Press and hold *CLOCK SET* to advance the digits faster.
7. When the correct digit is displayed, press *CLOCK SELECT*. The next part of the display will flash.



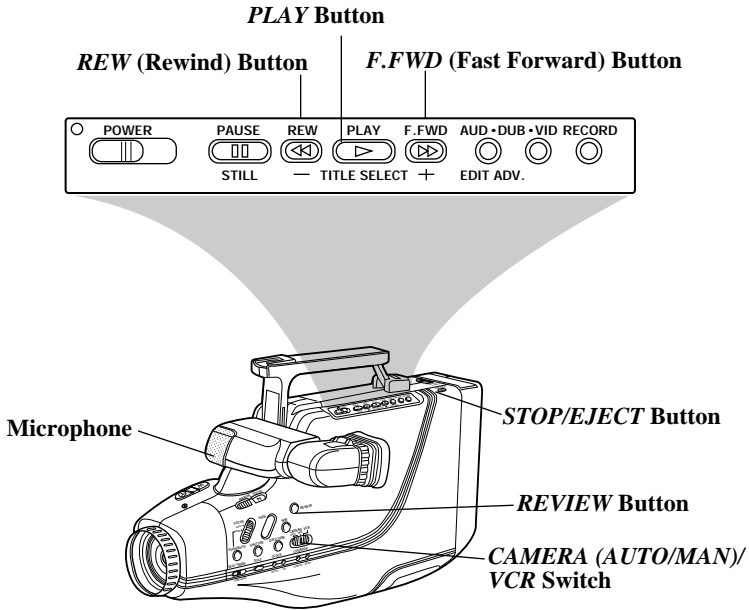
Display in Viewfinder



Display in Viewfinder

8. Repeat steps 5 and 6 to set the correct hour, minute(s), *AM/PM*, month, day, and year.
9. After setting (or correcting) the time and date, press *CLOCK SELECT* until no part of the display flashes to start the internal clock.

Camcorder Features



CAMERA AUTO Feature

The camcorder will automatically control the white balance, focus, and set the shutter speed to 1/60 second when you place the *CAMERA/VCR* switch in the *CAMERA AUTO* position.

To control white balance, select a higher shutter speed, or focus manually, place *CAMERA/VCR* switch in *CAMERA MAN*.

Microphone

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

Record Review

Press *REVIEW* to review the last few seconds of a recording. The *CAMERA/VCR* switch must be in *CAMERA* and the camcorder in record pause.

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

Flying Erase Head

A separate erase head is mounted on the spinning headwheel (hence the term "flying"). This flying erase head allows you to make clean edits without "glitches" or "rainbow noise".

Camcorder Features

Camera Edit

Edit as you record by positioning the tape with *F.FWD*, *REW*, or *PLAY* while the camcorder is in record pause.

The *CAMERA/VCR* switch must be in *CAMERA*.

- Press and hold *REW* (rewind) to visually search the recorded tape in reverse.
- Press and hold *F.FWD* (fast forward) to visually scan forward on the recorded tape.
- Press and hold *PLAY* to view the recorded tape at normal speed.

When you release the button, the camcorder will return to record pause at that point on the tape.

Tape Positioning

You can quickly position the tape using *F.FWD* (fast forward) or *REW* (rewind) when the camcorder is stopped.

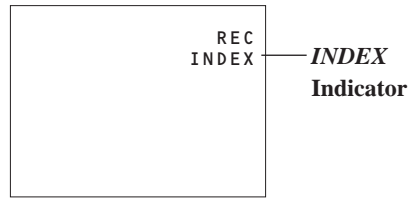
The *CAMERA/VCR* switch must be in *VCR*.

- Press *F.FWD* (fast forward) to fast-forward the tape. Press *STOP* to stop.
- Press *REW* (rewind) to rewind the tape to the beginning. Press *STOP* to stop.

Electronic Indexing

The camcorder automatically records an index mark every time it begins recording after the cassette door has been opened, an edit feature has been used, the camcorder has been placed in the stop mode, or the power has been turned off for an extended period of time.

The *INDEX* indicator will flash briefly in the viewfinder when the camcorder is recording an index mark.



Display in Viewfinder

Later, when you play back the indexed tape in a VCR that has a compatible indexing feature called "VHS Index Search System" the invisible marks can be located automatically. See your VCR owner's manual for index playback instructions.

Focusing Your Camcorder

Manual Focus

Under certain conditions, you may need to focus manually.

1. Place the *CAMERA/VCR* switch in *CAMERA MAN*.
2. Place the *FOCUS AUTO/MAN* switch in *MAN*.
3. To maintain proper focus throughout the zoom range, zoom in on the subject by pressing power zoom button "T".
4. Press one of the *MANUAL FOCUS* buttons to display a sharp, clear picture in the viewfinder.

When *FOCUS MAN* is in *MAN*, you can press and hold *PUSH/AUTO* to switch to auto focus. Release *PUSH/AUTO* to return to manual focus.

The following conditions during recording may require manual focusing.

- Recording subjects with shiny surfaces.
- Recording subjects with sharp angles.
- Recording flat subjects, such as a white wall.
- Recording in low-light situations.
- Recording fast-moving action, such as golf swings.

W/B (White Balance) Button


Automatic White Balance

The camcorder automatically controls color (white) balance when the *CAMERA/VCR* switch is in *CAMERA AUTO*. No white balance indicator appears in the viewfinder for automatic white balance.

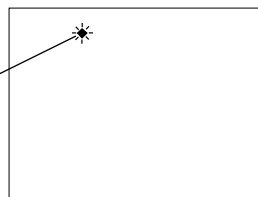
Manual White Balance

Under some conditions, you may want to adjust white balance manually. Place the *CAMERA/VCR* switch in *CAMERA MAN* to manually adjust white balance.


Press *W/B* (white balance) to display the appropriate indicator in the viewfinder.

- Display  when recording indoors with incandescent light.

White
Balance
Indicator

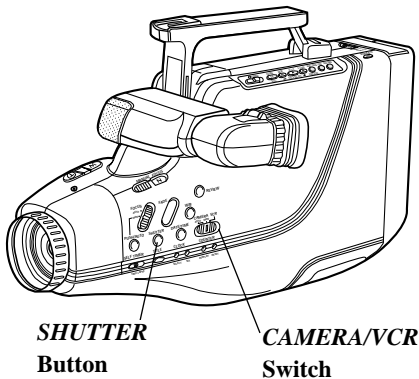


Electronic Viewfinder

- Display  when recording outdoors on a bright day.
- Display no white balance indicator to have the camcorder control white balance automatically.

Using Variable Shutter Speeds

The camcorder has a variable shutter with five higher shutter speeds than the normal 1/60 second speed. The shutter speed is automatically set to the normal shutter speed of 1/60 second when the *CAMERA/VCR* switch is in *CAMERA AUTO*. No indicator appears in the viewfinder when the shutter speed is set to 1/60.



Shutter Speed

1000

Display in Viewfinder

To Select Higher Shutter Speeds

1. Place the *CAMERA/VCR* switch in *CAMERA MAN* (manual).
2. Repeatedly press *SHUTTER* to select a shutter speed of 1/100, 1/250, 1/1000, 1/2000, or 1/4000 second. The higher shutter speed (100, 250, 1000, 2000, or 4000) will appear in the viewfinder.

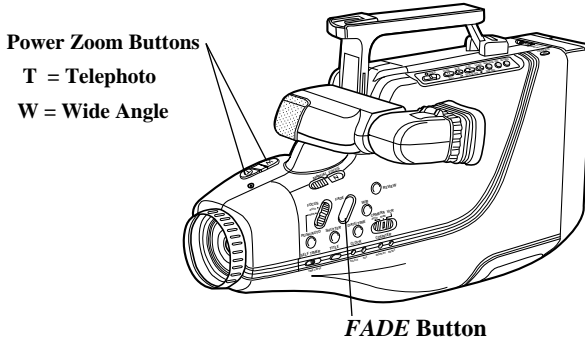
<i>SHUTTER</i> Button	Shutter Speed	Displays in Viewfinder
Not Pressed	1/60	None
Press Once	1/100	100
Press Twice	1/250	250
Press Three Times	1/1000	1000
Press Four Times	1/2000	2000
Press Five Times	1/4000	4000

Notes: Higher shutter speeds are recommended when taping fast-moving action outdoors that you plan to play back on a (3-5 head) VCR using special effects (such as stop-action pause and slow motion).

The normal shutter speed (1/60 second) is recommended for indoor videos and most of your recording. Tape recorded at the higher shutter speeds may not show movement and change of scene as smoothly as recordings at the normal 1/60 second speed.

Higher shutter speeds require more light. For indoor high-speed shutter recording, additional halogen or tungsten lighting may be required. Use of fluorescent, mercury vapor, or sodium lighting may cause a flickering effect.

Zooming and Fading In and Out of Scenes



Power Zooming

The 12:1 motorized zoom lens allows you to zoom in and out for close-up or wide-angle shots.

The power zoom buttons are easily controlled by your index and middle fingers when you hold the camcorder properly through the handstrap.

- Press “*T*” to move the lens in the “telephoto” (close-up) direction.
- Press “*W*” to move the lens in the “wide-angle” direction.

Fading In and Out of Scenes

When you fade in and out of scenes, the picture gradually appears or disappears. Speed of the fade is automatically controlled by the camcorder.

Fading In

When you fade into a scene, the recording will start with a blank screen and the picture will gradually appear.

1. While recording, press the thumb trigger (or *PAUSE/STILL*) to place the camcorder in record pause.
2. Press and hold *FADE* until the picture in the viewfinder disappears. Then press the thumb trigger (or *PAUSE/STILL*) to start recording.
3. Release *FADE* after a few seconds. The picture will gradually appear.

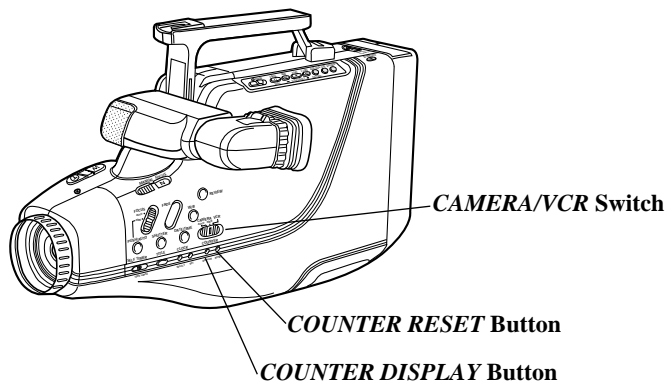
Fading Out

When you fade out of a scene, the picture will gradually disappear.

1. While recording, press and hold *FADE*. The picture will gradually disappear from the screen.
2. Continue to hold *FADE* and press the thumb trigger (or *PAUSE/STILL*) button to put the camcorder in record pause.
3. When the camcorder has entered record pause, release *FADE*. The camcorder will return to normal operation.

Counters and Time-Remaining Display

Repeatedly press *COUNTER DISPLAY* to display the tape counter, tape counter with memory stop, elapsed time counter, or time-remaining display in the viewfinder. These displays are not recorded on the tape.



Tape Counter

The tape counter helps you locate a place on the tape. Record the tape counter reading at the beginning and end of each recording session for future reference. Press *COUNTER RESET* whenever the tape counter is displayed to reset the counter to "0000".

Tape Counter with Memory Stop

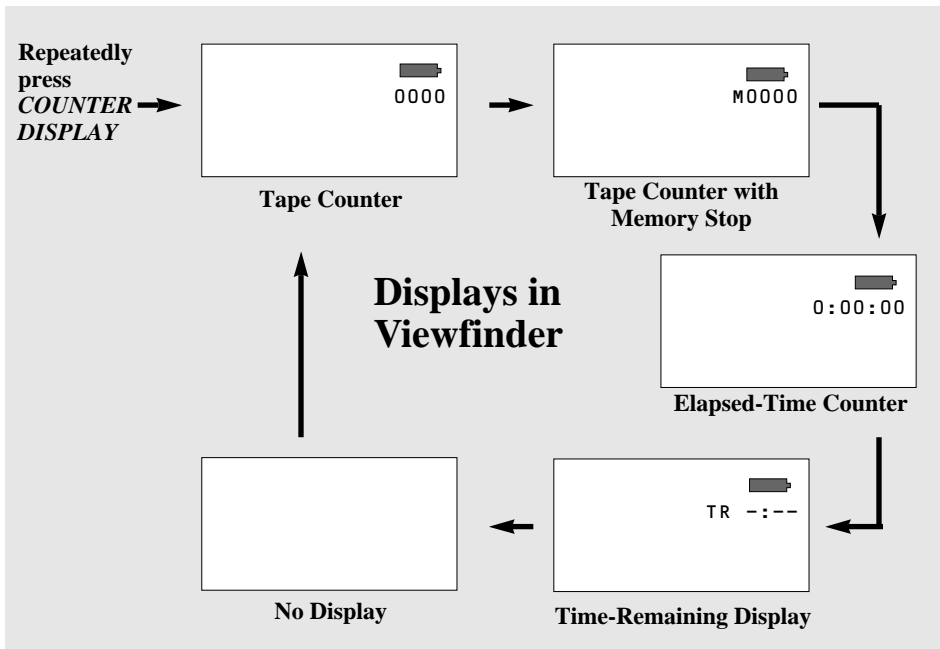
The tape counter's memory-stop feature helps locate a certain point on the tape. This is useful if you want to review a section immediately after recording or repeatedly play back a segment of the tape. When memory stop is turned on, the tape will stop automatically during fast-forward or rewind when the time counter reaches "M0000".

To use memory stop:

1. Repeatedly press *COUNTER DISPLAY* to display tape counter with memory stop ("M" appears with tape counter when memory stop is on).
2. Locate the place on the tape you want to return to, and press *COUNTER/RESET* to reset tape counter to "M0000".
3. Continue to record or play the tape. When you want to return to the place you marked, press the thumb trigger to stop recording (or press *STOP* to stop playback).
4. Make sure the *CAMERA/VCR* switch is in *VCR*. Then press *REW* (rewind). The tape will rewind until it reaches the time counter reading of "M0000".

Note: Whenever the tape counter with memory stop is displayed in the viewfinder, the camcorder will stop rewinding or fast-forwarding when the counter reaches "M0000". To continue rewinding or fast-forwarding the tape, press *REW* (rewind) or *F.FWD* (fast-forward) again.

Counters and Time-Remaining Display



Elapsed-Time Counter

The time counter shows actual time elapsed while recording. The **CAMERA/VCR** switch must be in **CAMERA** for the time counter to operate.

Before you start to record a tape, repeatedly press **COUNTER DISPLAY** to display the time counter in the viewfinder. Then press the **COUNTER RESET** button to set the counter to "0:00:00".

Time-Remaining Display

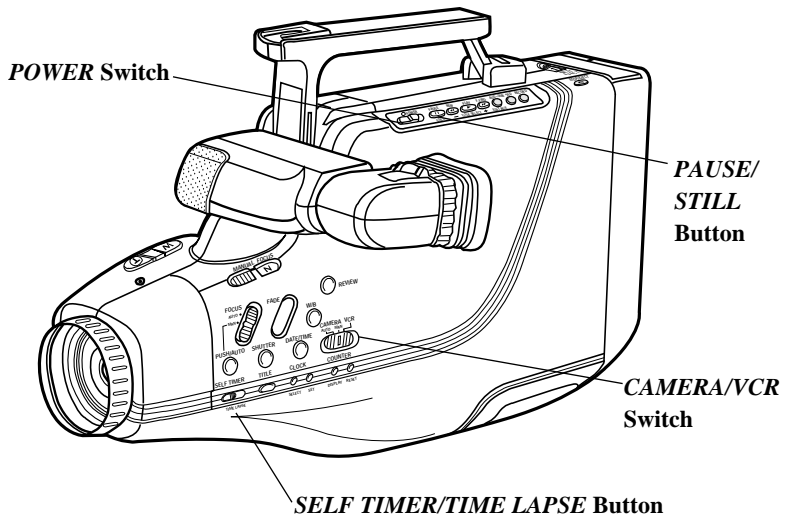
The time-remaining display shows the amount of recording (or playback) time left on a cassette inserted in the camcorder.

When the time-remaining display appears in the viewfinder, the camcorder will automatically calculate and display the time remaining for any tape (other than T-140, T-160, or T-180).

Repeatedly press **COUNTER DISPLAY** to display the time-remaining display in the viewfinder.

Note: The display will remain blank while the camcorder takes a minute or two to calculate the time remaining on the tape. After it has been calculated and displayed, it will automatically be updated and readily available as long as the cassette remains in the camcorder.

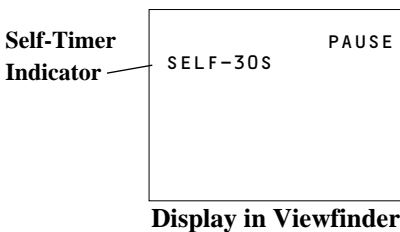
SELF TIMER/TIME LAPSE Button



Self-Timer Recording

The camcorder will delay the start of a recording for approximately ten seconds after you activate the self-timer recording feature.

1. Turn on camcorder and place **CAMERA/VCR** switch in **CAMERA**.
2. A. Slide **SELF TIMER/TIME LAPSE** once. The **SELF-30S** display will appear in the viewfinder.



Ten seconds before you want to record, press the thumb trigger

(or **PAUSE/STILL**). The camcorder will record for approximately 30 seconds and then stop automatically.

- B. Slide **SELF TIMER/TIME LAPSE** twice. The **SELF-END** display will appear in the viewfinder.

Ten seconds before you want to record, press the thumb trigger (or **PAUSE/STILL**). The camcorder will record until you press the thumb trigger to stop it.

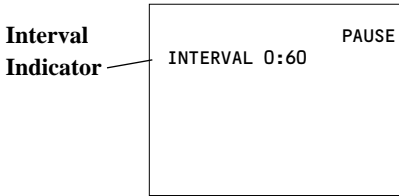
3. To cancel self-timer recording, press the thumb trigger (or **PAUSE/STILL**).

SELF TIMER/TIME LAPSE Button

Adjustable Time-Lapse Recording

This feature lets you compress slow-moving action, such as nature studies, into clean, short videos. The camcorder will record for approximately one second at preset intervals.

1. Turn on camcorder and place *CAMERA/VCR* switch in *CAMERA*.
2. Slide *SELF TIMER/TIME LAPSE* three times. *INTERVAL 0:60* appears in the viewfinder.
3. Press the thumb trigger (or *PAUSE/STILL*). *ST-BY* will appear in the viewfinder. The camcorder will record for approximately one second every 60-second interval. The time left until the next recording will be displayed in the viewfinder.
4. To stop adjustable time-lapse recording, repeatedly slide *SELF TIMER/TIME LAPSE* until the *INTERVAL* display is removed from the viewfinder or press the thumb trigger (or *PAUSE/STILL*).

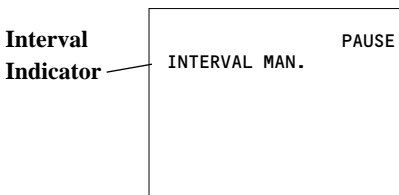


Display in Viewfinder

Animation Recording

This feature lets you create animation recordings (cartooning). You can make an object appear to move by taking several still shots of it in different positions. When the tape is played back, the object appears animated.

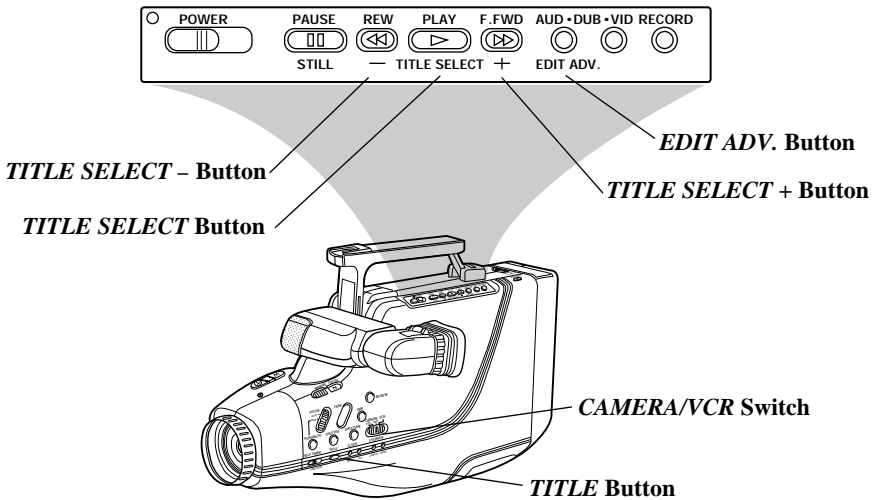
1. Turn on camcorder and place *CAMERA/VCR* switch in *CAMERA*.
2. Repeatedly slide *SELF TIMER/TIME LAPSE* until *INTERVAL MAN.* display appears in the viewfinder.
3. Position the object, and then press the thumb trigger (or *PAUSE/STILL*). The camcorder will record for approximately one second every time you press the thumb trigger. It is usually best to get three to five shots of each pose.
4. Move the object slightly and press the thumb trigger again for each one-second recording in this position.
5. To stop animation recording, slide *SELF TIMER/TIME LAPSE* to remove the *INTERVAL MAN.* display from the viewfinder.



Display in Viewfinder

Titler

The titler can create and store two different titles. Each title can contain two lines with a total of 32 characters – 16 on each line. The built-in character register contains 47 different characters for creating titles.



Creating a Title

1. Attach a power source, turn on the camcorder, and place the *CAMERA/VCR* switch in *CAMERA*.
2. Press *TITLE* to display the title page graphics in the viewfinder.
3. Press *TITLE SELECT* to display the other title page in the viewfinder.
4. Press *EDIT ADV.* to move the flashing cursor to the place you want to begin your title.
5. Select the first character for your title by pressing *TITLE SELECT +* or *-* until the character you want appears. See the “*Chart of Characters*” for the characters available in the titler’s register.
6. After you have selected the first character, press *EDIT ADV.* to move the flashing cursor to the next position you want a character to appear. If a blank space is desired, press *EDIT ADV.* without selecting a character.
7. Repeat steps 4 – 6 until you have completed the title. Press *TITLE SELECT* if you want to create a title on the other title page.
8. Press *TITLE* to remove the title from the viewfinder and store it in memory.
Notes: The clock battery cell must be installed to store the title. Remove the title from the viewfinder for normal recording.

Chart of Characters in Titler's Register

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							
0	1	2	3	4	5	6	7	8	9	
:	-	,	.	'	;	/	?	<	>	!

Correcting Errors During Programming

1. Press *EDIT ADV.* until the flashing cursor is placed over the character you wish to correct.
2. Press *TITLE SELECT* + or – until the correct character appears.
Note: To delete a character, press *TITLE SELECT* + or – until the blank space appears.

Recording Titles on a Tape in the Camcorder

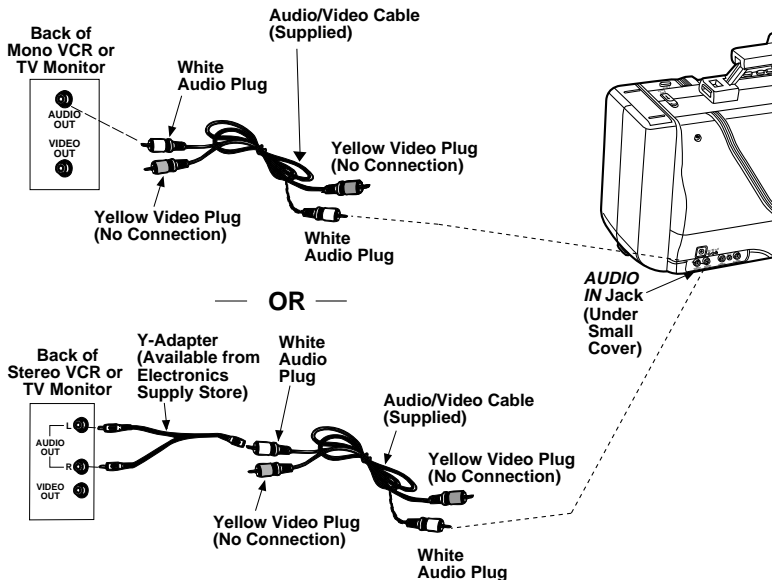
1. Attach a power supply, turn on the camcorder and place the *CAMERA/VCR* switch in *CAMERA*.
2. Locate the place on the tape where you want to record the title.
Note: If you record a title on a pre-recorded tape, audio and video will be erased where the title is inserted. There may be a 3-4 second pause before existing audio and video return.
3. Press *TITLE* to display the title graphics in the viewfinder. Press *TITLE SELECT* to display the other title in the viewfinder.
4. Press the thumb trigger to start recording.
5. When you are finished recording the title, press *TITLE* to remove the title graphics from the viewfinder.

Recording Titles While Copying Tapes from Camcorder to another VCR

1. Attach a power supply, turn on the camcorder and place the *CAMERA/VCR* switch in *VCR*.
2. Place the tape you want to copy in the camcorder.
3. Press *TITLE* to display the title page you want to record in the viewfinder. Press *TITLE SELECT* to display the other title in the viewfinder. The camcorder will remember the last title.
4. Press *TITLE* to remove the title page from the viewfinder.
5. Place a tape with the safety tab in place in the VCR, and place the VCR in record pause.
6. Start copying the tape.
7. When you see the place on the tape you want to record the title, press *TITLE*. The title will be recorded on the copy in place of the original audio and video.
8. Press *TITLE* again to stop recording the title.

Audio Dubbing

The audio dubbing feature lets you record new sound (audio) on a previously recorded tape without erasing the original picture (video). Tapes must be recorded in SP tape speed. New audio can be dubbed by connecting an external sound system to the *AUDIO IN* jack.



To Audio Dub

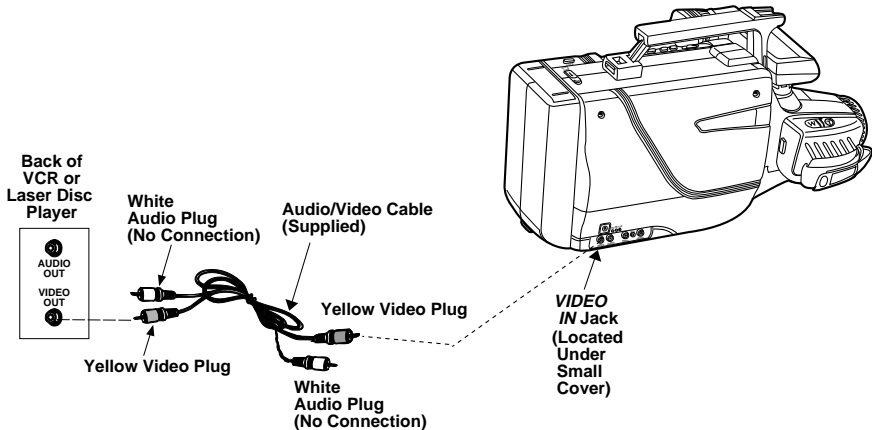
1. Connect the audio source to the *AUDIO IN* jack on the camcorder.
Note: If your TV (or VCR) has *RIGHT* and *LEFT AUDIO OUT* jacks, attach the white audio plug to the one labeled *MONO*. If one is not labeled *MONO*, you may need a Y-adaptor to record sound from both channels.
If you want to monitor the dubbing on a TV, attach the TV to the camcorder as shown on page 42 or 44.
2. Turn on the camcorder and insert the tape you want to dub on.
3. Place the *CAMERA/VCR* switch in *VCR*.
4. Use *PLAY*, *F.FWD*, and *REW* to locate a place on the tape slightly before where you want to begin audio

dubbing. Press *PAUSE/STILL* at the point you want dubbing to begin.

5. Press *AUD DUB*. *A.DUB* and *PAUSE* will appear in the viewfinder. The camcorder is ready to begin audio dubbing.
6. Start the audio source playing, and then press *PAUSE/STILL* to start dubbing. *A.DUB* and *REC* will appear in the viewfinder when you are dubbing.
7. Press *STOP/EJECT* when you are finished.

Video Dubbing

The video dubbing feature lets you record new pictures (video) on a previously recorded tape without erasing the original sound (audio). Tapes must be recorded in SP tape speed. New video can be dubbed by connecting an external video source to the *VIDEO IN* jack.



To Video Dub

1. Connect the external video source to the *VIDEO IN* jack on the camcorder.

If you want to monitor the dubbing on a TV, attach the TV to the camcorder as shown on page 42 or 44.

2. Turn on the camcorder and insert the tape you want to dub new video on.
3. Place the *CAMERA/VCR* switch in *VCR*.
4. Use *PLAY*, *F.FWD*, and *REW* to locate a place on the tape slightly before where you want to begin video dubbing. Press *PAUSE/STILL* at the point you want dubbing to begin.
5. Press *VID DUB*. *V.DUB* and *PAUSE* will appear in the viewfinder. The camcorder is ready to begin video dubbing.

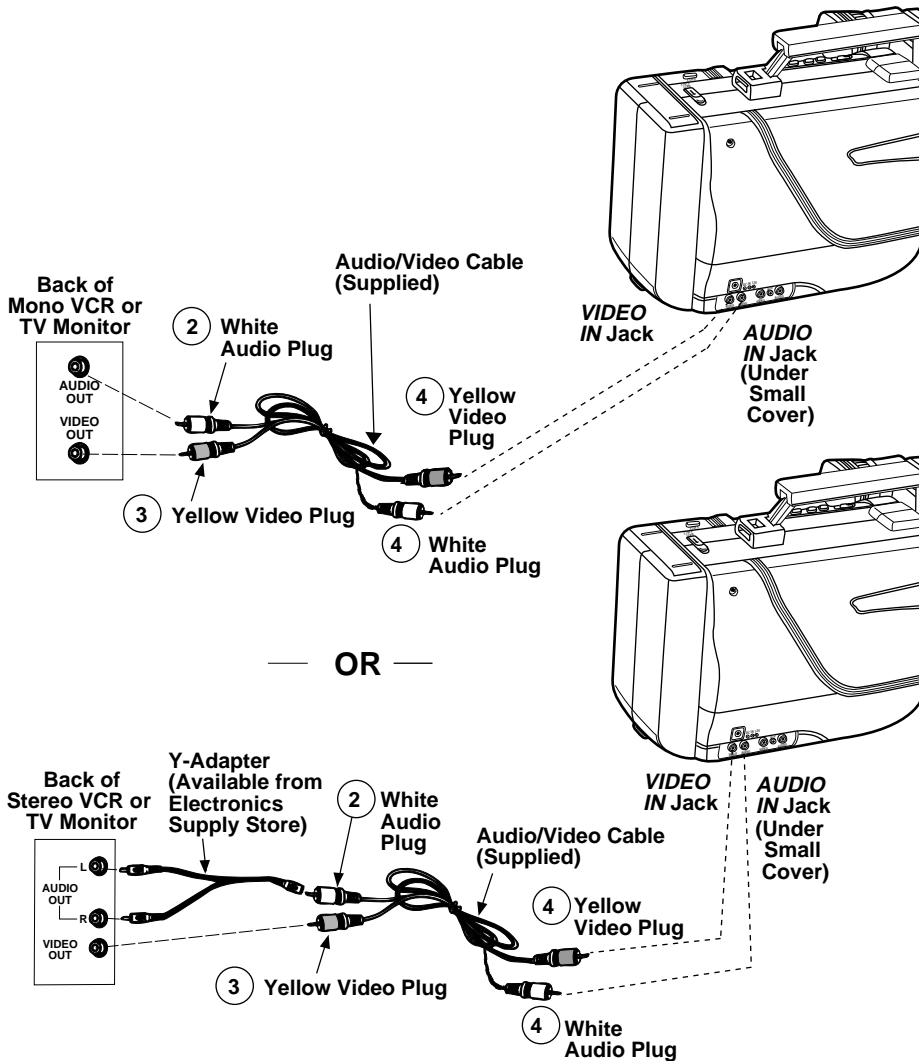
Note: To simultaneously dub audio and video on the tape, press *VID DUB* and then *AUD DUB* in step 5. Be sure to connect both an audio and video source to the camcorder.

6. Start the external video source playing, and then press *PAUSE/STILL*. *V.DUB* and *REC* will appear in the viewfinder when you are dubbing.
7. Press *STOP/EJECT* when you are finished.

Caution: Video dubbing is designed to replace existing video. Do not attempt to video dub on a blank tape.

Recording from a TV (or VCR)

To record on the camcorder from a TV (or VCR) with *AUDIO* and *VIDEO OUT* jacks, you will need the audio/video cable that came with your camcorder.



Recording from a TV (or VCR)

Installation

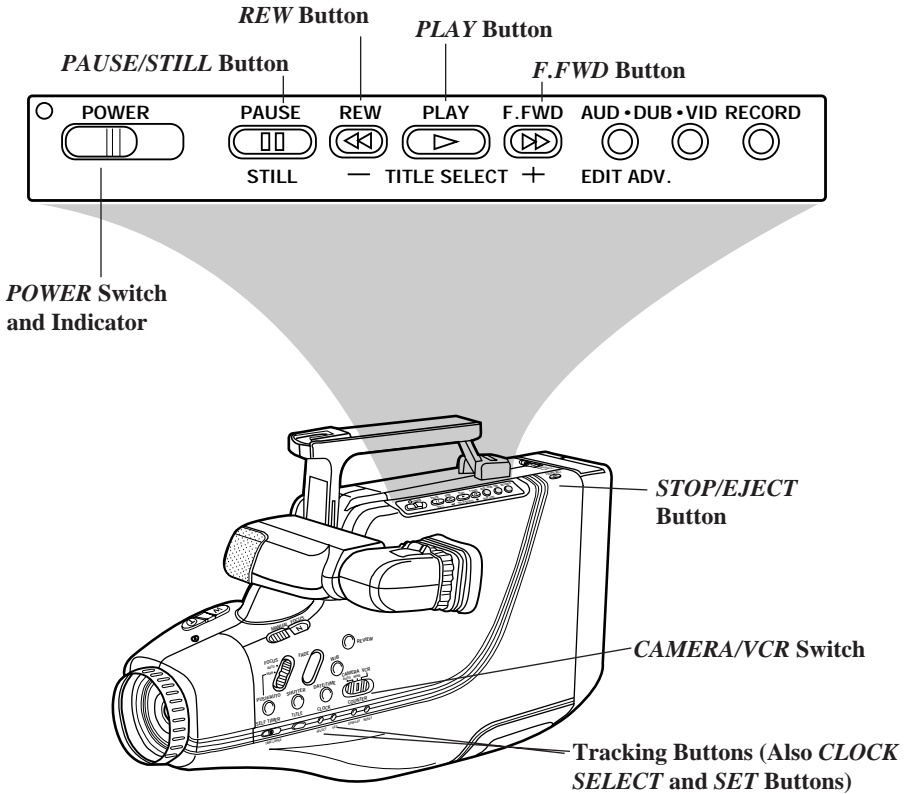
- ① Attach a power source (AC adapter/charger or battery) to the camcorder.
- ② Attach the white audio plug to the *AUDIO OUT* jack on the TV (or VCR).
Note: If your TV (or VCR) has *RIGHT* and *LEFT AUDIO OUT* jacks, attach the white audio plug to the one labeled *MONO*. If one is not labeled *MONO*, you may need a Y-adaptor to record sound from both channels.
- ③ Attach the yellow video plug to the *VIDEO OUT* jack on the TV (or VCR).
- ④ Attach the white audio plug on the other end of the audio/video cable to the *AUDIO IN* jack, and the yellow video plug to the *VIDEO IN* jack on the camcorder.

Operation and How to Copy Tapes

1. A. Camcorder connected directly to TV with *AUDIO/VIDEO OUT* jacks. Turn on TV and tune it to channel you want to record.
B. Camcorder connected to VCR that is already connected to TV. Turn on VCR and select channel you want to record (or place cassette you want to copy in the VCR).
Note: If you want to see what is being recorded, turn on the TV and tune it to the channel you normally use to see what the VCR is doing.
2. Turn on the camcorder, and place the *CAMERA/VCR* switch in *VCR*.
3. Insert a cassette with the safety tab intact into the camcorder.
4. Press the small red *RECORD* button on the top of the camcorder to start recording.
Note: If you are copying a tape, start the VCR playing the tape you want to copy.
5. Press the *STOP/EJECT* button when you are finished recording.

Caution: The unauthorized recording of television programs and other materials may infringe the rights of others.

Viewfinder Playback and Playback Features



Viewfinder Playback

Viewfinder playback is the simplest way to watch tapes using the camcorder. This method is generally used only to review scenes immediately after recording.

1. Slide the *POWER* switch to turn on the camcorder. The *POWER* indicator will light.
2. Place the *CAMERA/VCR* switch in *VCR*.
3. Press *STOP/EJECT* and insert the cassette you want to playback.
Note: Only tapes recorded in SP (standard play) can be played.
4. Press *PLAY* to begin playback. Adjust tracking if necessary.
5. Press *STOP/EJECT* when you are finished.

Viewfinder Playback and Playback Features

Playback Features

Stop-Action Pause

During playback, you can stop the action, and view one frame of the tape.

- Press *PAUSE/STILL*.

Caution: Pause is designed for momentary interruptions and should not be used for an extended period of time. If the camcorder remains in the pause mode for more than five minutes, it will automatically move the tape away from the spinning heads to prevent excessive tape wear.

- Press *PAUSE/STILL* again (or *PLAY*) to return to normal playback.

Visual Search

During playback, you can visually search the tape.

- During playback, press *F.FWD* or *REW* to visually search the tape in forward or reverse.
- To return to normal playback press the button again (or press *PLAY*).

Tracking

During playback, the *CLOCK SELECT* and *SET* buttons are also the tracking buttons. Tracking is used when you play a tape that was recorded on a different camcorder (or VCR).

Note: Only tapes recorded in SP (standard play) can be played.

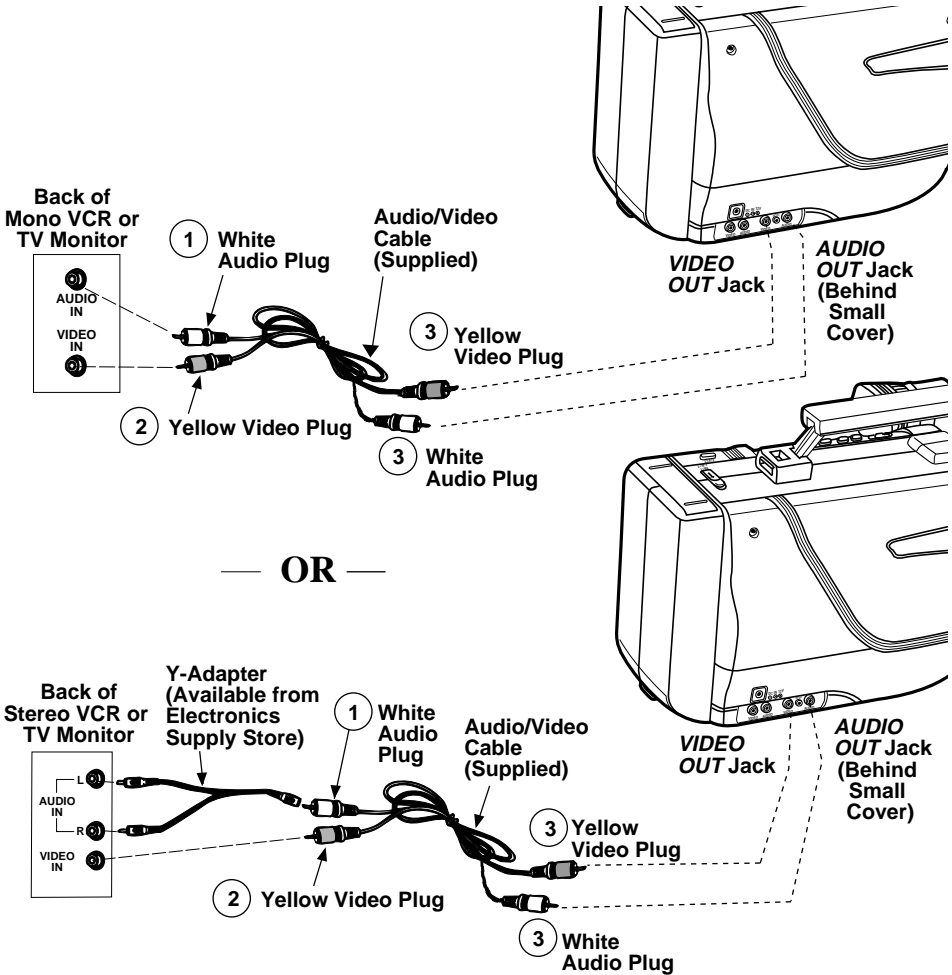
When you play a tape not recorded on your camcorder, streaks may appear if the recorded tracks on the tape do not align precisely with the playback heads. To remove the streaks and align the heads with the tape tracks, press either one of the tracking buttons to move the streaks up or down and out of the picture.

Press and hold both tracking buttons to reset tracking to preset center. Tracking is automatically reset whenever a cassette is inserted.

The *TRACKING* buttons only affect tape playback. They have no effect during recording.

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

To connect your camcorder to a TV monitor (or VCR) with *AUDIO IN* and *VIDEO IN* jacks, you will need the audio/video cable supplied with the camcorder. 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.



Playback on a TV (or VCR) (continued)

Installation

- ① Attach the audio/video cable's white plug to the *AUDIO IN* jack on the TV (or VCR).
Note: If your TV (or VCR) has stereo left and right *AUDIO IN* jacks, attach the plug to the one labeled *MONO*. If one of the jacks is not labeled *MONO*, you may need a Y-adaptor to hear both channels.
- ② Attach the audio/video cable's yellow plug to the *VIDEO IN* jack on the TV (or VCR).
- ③ Attach the white audio plug on the other end of the audio/video cable to the *AUDIO OUT* jack, and the yellow video plug to the *VIDEO OUT* jack on the camcorder.

Playback Operation and How to Copy Tapes on a VCR

1. A. Camcorder connected directly to TV monitor: Turn on the TV and tune it to its 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 *CAMERA/VCR* switch in *VCR*, and slide the camcorder's *POWER* switch. Insert the cassette you want to play back (or copy).
Note: The camcorder can only play back tapes recorded at the SP speed.
3. Press *PLAY* on the camcorder. If necessary, adjust tracking. *Details are on page 41.*
To copy what the camcorder is playing, place a blank cassette in the VCR and start the VCR recording.
4. Press the *STOP/EJECT* button when you are finished.

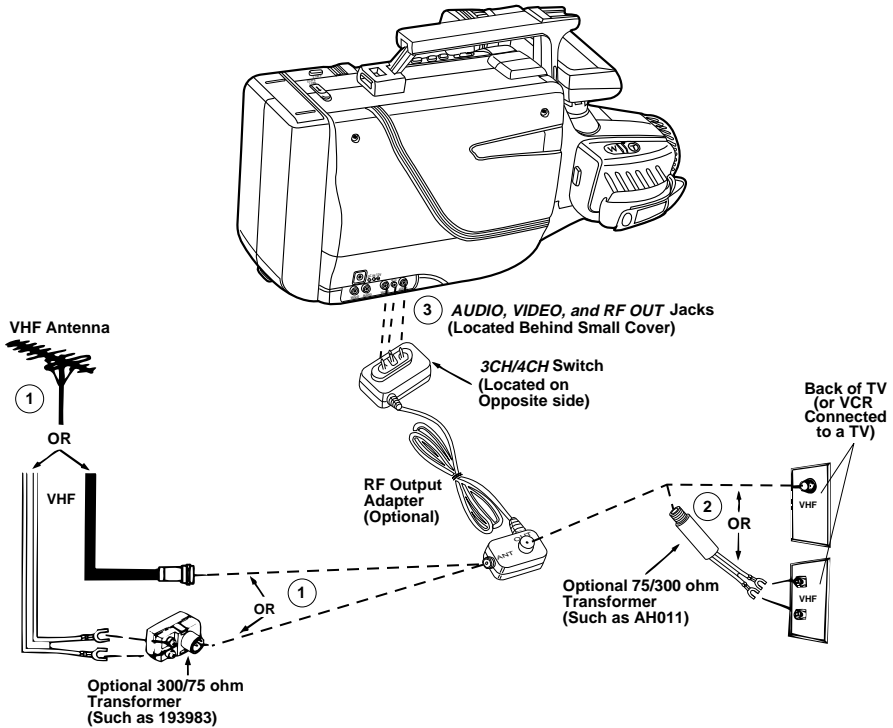
Caution: The unauthorized recording of television programs and other materials may infringe the rights of others.

Watching What the Camcorder is Seeing or Recording on the TV

1. A. Camcorder connected directly to TV: Turn on the TV, and tune it to its 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 *CAMERA/VCR* switch in *CAMERA*, and slide the *POWER* switch to turn on the camcorder. Insert the cassette you want to record on.
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 (or *PAUSE/STILL* button) to begin recording. You can watch what the camcorder is seeing (or recording) on the TV screen.

Playback on a TV without Audio/Video Input Jacks

To connect your camcorder to a TV without audio/video input jacks, follow the steps below. You will need an optional 1CVA488 RF output adapter. *Optional accessories are shown on page 49.*



Installation

- 1 Disconnect the VHF antenna from your TV and connect it to the optional RF output adapter.
 - A. If your antenna is a round 75-ohm cable, connect it to the *ANT* connector on RF output adapter.
 - B. If your antenna is a flat twin-lead, connect the flat-lead connectors to the screw terminals on an optional 300-75 ohm transformer, such as 193983. Then connect the transformer to the *ANT* connector on the RF output adapter.
- 2 Attach the *OUT* connector of the RF output adapter directly to the *VHF IN* terminal on the back of your TV.

Note: If your TV has VHF screw terminals, you may need an optional 75-300 ohm transformer, such as AH011.
- 3 Connect the three-pronged plug end of the RF output adapter to the *AUDIO*, *RF*, and *VIDEO OUT* jacks on the camcorder.

Playback on a TV (or VCR) (continued)

Playback Operation

1. Choose *3CH/4CH* using the switch on the RF output adapter.
2. Turn on the TV and tune it to the same channel you selected with the *3CH/4CH* switch on the RF output adapter.
3. Place the camcorder's *CAMERA/VCR* switch in *VCR*, and slide *POWER*.
4. Insert the cassette you want to play back into the camcorder.
5. Press the *PLAY* button on the camcorder.
6. Press the *STOP/EJECT* button on the camcorder when you are finished playing back the tape.

Watching What the Camcorder is Seeing or Recording on the TV

1. Turn on the TV and tune it to channel 3 or 4 (the same channel you selected with the RF output adapter).
2. Place the camcorder's *CAMERA/VCR* switch in *CAMERA*, and slide *POWER*. Insert the cassette you want to record on.
3. Press the camcorder's thumb trigger (or *PAUSE/STILL*) to begin recording. You can watch what the camcorder is seeing or recording on the TV screen.

Note: When the camcorder is used as a camera, turn the TV's volume down to prevent a high-pitched squeal caused by feedback. Remove the cassette.

Normal TV Viewing

For normal TV viewing, you can leave the RF output adapter hooked up to the TV. Just disconnect the RF output

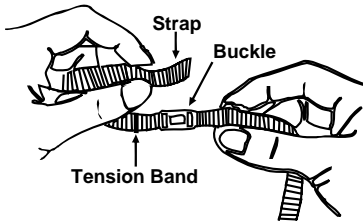
adapter's plug from the camcorder so you can watch the signal from your VHF antenna.

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.

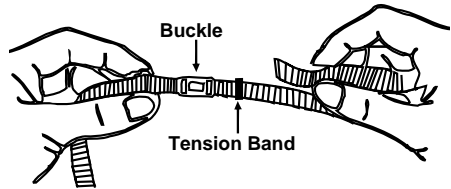
Attaching the Shoulder Strap

The shoulder strap is designed to let you carry the camcorder from your shoulder, and – when ready to record – bring the camcorder to recording position in one quick movement.

1. Unhook one end of the strap from the buckle leaving the tension band in place.



3. Thread end of strap back through tension band and then through buckle.

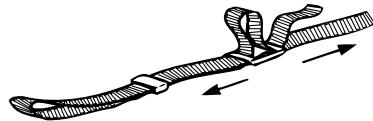
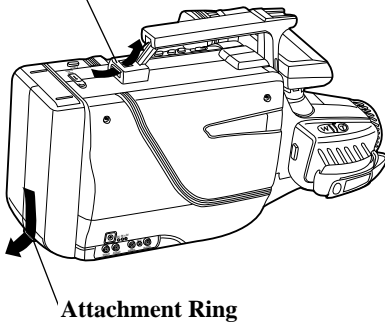


2. Thread the end of the strap through one of the strap attachment rings.

4. Repeat steps 1 through 3 to attach the other end of the strap to the camcorder.

5. Adjust shoulder strap's length by pulling strap up through buckle and adjusting in either direction.

Attachment Ring



Cautions: Turn viewfinder to the front when using shoulder strap to prevent damage to the viewfinder from bumping against your body as you move.

Make sure shoulder strap is securely fastened to the camcorder before using it to carry the camcorder.

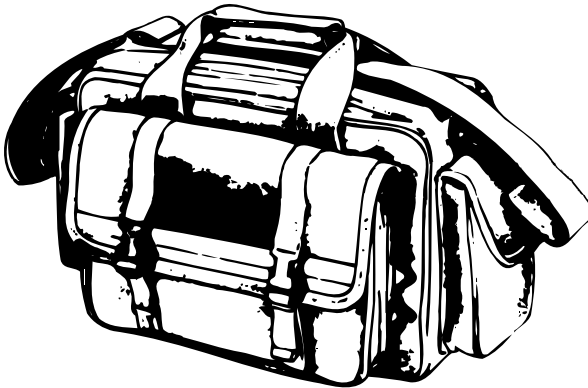
Optional Accessories

We invite you to take a look at some great ideas for sparking creativity and adding to the fun of using your GE camcorder. 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 pages 51-53*.

1CVB100 Soft Camcorder Case

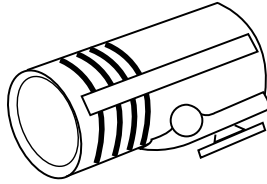


This case provides exceptional protection and utility for full size camcorders and most accessories. It is constructed of rugged-type fabric for years of service and good looks. Three outside pockets provide accessory

storage with mesh-covered lens filter compartment and built-in holders for other accessories. The hand grip and adjustable strap allow for comfortable transportation of the camcorder.

Optional Accessories

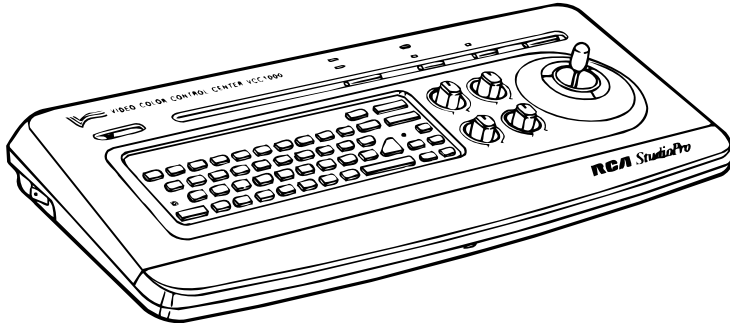
VDC88 Color Enhancement Light



This light is an indispensable accessory for camcorder users who desire brighter, sharper pictures. It also brightens natural colors in extremely low-light situations.

The light comes with a battery pack (BP1000) and battery charger (VDC085). Uses one replacement bulb (VDC090).

VCC1000 Video Color Control Center

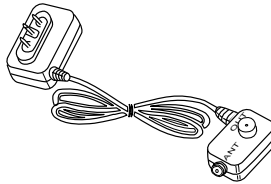


The VCC1000 is two accessories in one. It allows you to adjust color intensity, tint, white balance, and sharpness of tapes being dubbed. This is helpful when the original tape was produced under poor lighting conditions or poor color settings.

The second feature, the character generator, lets you create titles that can be recorded on your tapes. This lets you add a professional and/or personal touch to your home videos.

Optional Accessories

1CVA488 RF Output Adapter

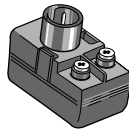


This adapter is used to connect your camcorder to a standard TV (one without audio/video input jacks) for playback.

If your antenna cable is the flat twin-lead type attached by two screws, you will

also need a 300-75 ohm transformer, such as 193983. If your TV has 300 ohm VHS screw terminals, you will need an optional 75-300 ohm transformer, such as AH011.

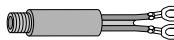
193983 Cable Transformer



This 300-to-75 ohm transformer is used to connect a standard (300-ohm) antenna

twin-lead to a standard round 75-ohm connector.

AH011 Cable Transformer



This 75-to-300 ohm transformer is used to connect a standard 75-ohm antenna to the 300-ohm screw terminals on a TV.

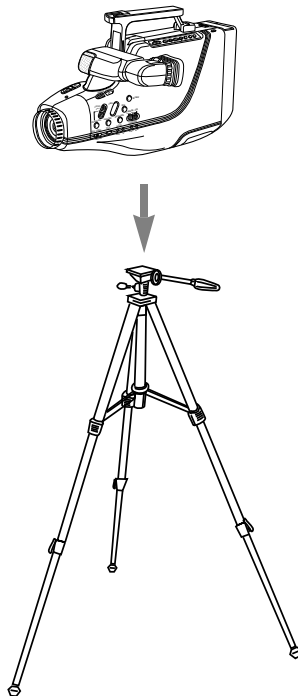
All specifications and descriptions of accessories are subject to change without notice.

Optional Accessories

AC088 Super Lightweight 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.



Cautions: Before using a tripod, make sure it is stable enough to hold the camcorder without falling over. Do not transport camcorder attached to tripod.

When attaching your camcorder to a tripod, be careful not to force the tripod screw into the camcorder's tripod mounting hole.

The tripod screw should not protrude into the camcorder more than approximately three-eighth (3/8) inch. Forcing the screw could damage the mounting hole on the bottom of the camcorder.

Accessory Order Form

Order Form for Camcorder Model CG709

Description	Part No.	Price	Qty.	Total
Super Lightweight Tripod	AC088	\$ 39.95		
75-300 Ohm Transformer	AH011	\$ 1.90		
Battery Pack for VDC88	BP1000	\$ 29.95		
Video Color Control Center	VCC1000	\$ 349.00		
Battery Charger for VDC88	VDC085	\$ 18.95		
Replacement Bulb for VDC88 Light	VDC090	\$ 12.95		
Color Enhancement Light	VDC88	\$ 79.95		
Rechargeable Battery	1CVA156	\$ 49.95		
RF Output Adapter	1CVA488	\$ 49.95		
Soft Camcorder Case	1CVB100	\$ 89.95		
300-75 Cable Transformer	193983	\$ 6.95		
Audio/Video Cable	210923	\$ 10.00		
DC Cable	217840	\$ 14.95		
Shoulder Strap	222043	\$ 22.95		
AC Adapter/Charger	229412	\$ 149.95		

Prices are subject to change without notice.

Total Merchandise (\$10 Minimum Order) \$ _____

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, Handling, and Insurance \$ 5.00

Total Amount Enclosed \$ _____

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

- Allow eight weeks for delivery.
- All accessories are subject to availability.
- Where applicable, we will ship a superseding model.

Detach Here 

Please complete other side also 

Accessory Order Form

Charge your order on your VISA
or MasterCard by
filling in below

USE YOUR CREDIT CARD

IMPORTANT: Copy complete account number
from your VISA card



--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

My card expires:

--	--

--	--

IMPORTANT: Copy complete account number
from your MasterCard



--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Copy Number
above your
name on
MasterCard

--	--	--	--

My card expires:

--	--

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AUTHORIZED SIGNATURE

Prices are subject to change without notice.

PLEASE

Print or type your name and
address clearly. This will be your
mailing label.

A complete and correct order will
save you days of waiting.



Name: _____
Street: _____
_____ Apt: _____
City: _____
State: _____ Zip: _____

Please make sure that both sides of this form have
been filled out completely.

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 or MasterCard ready and call the toll-free number listed below between 8AM and 8PM Eastern Standard Time. **Use this number only to place an order for accessory items listed on this order form.**

1 – 800 – 338 – 0376

Most times your order will be shipped UPS within 72 hours of receipt. If ever it is not possible to ship within 30 days, we will notify you with an update on your order and an option to cancel.

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

For more information on these accessories (or current prices), write to the following address:

Video Accessories Customer Service
Thomson Consumer Electronics, Inc.
Distributor & Special Products
2000 Clements Bridge Rd
Deptford, NJ 08096-2088

International Orders

This offer is valid only in the United States and Canada. For international orders, please send your request for a price quotation (not an order) to:

International Customer Service
Thomson Consumer Electronics, Inc.
Distributor & Special Products
2000 Clements Bridge Rd
Deptford, NJ USA 08096-2088

Care and Maintenance

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 and playback heads and cassettes.

Do not use strong or abrasive detergents when cleaning your camcorder. They may damage the camcorder.

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.

Do not touch the lens with your fingers! The oil from your skin may damage the lens. To clean the lens, always use lens-cleaning tissues and a commercially prepared cleaning solution designed for use on camera lens.

Always replace the lens cap on the lens when the camcorder is not in use.

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 aim your camcorder at the sun or other bright objects.

Do not operate or leave your camcorder in extremely humid environments.

Do not use an adapter/charger or batteries other than the ones specified for this camcorder. Use of the wrong accessories may cause damage to 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 either component becomes wet, turn off the power and take the unit to an Authorized GE Camcorder Servicer.

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 a cold location to a warm location, moisture may cause the tape to stick to the headwheel and damage the headwheel or tape.

Do not leave your camcorder in direct sunlight. Doing so could permanently damage the camcorder's internal parts.

Do not attempt to disassemble your camcorder. There are no user-serviceable parts inside.

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 GE Camcorder Servicenter, look below for the type of trouble you are experiencing. Then perform the simple checks and adjustments listed for that trouble.

Trouble	Checks and Adjustments
No Power (POWER Indicator Will Not Come On)	<ul style="list-style-type: none"> • If using the rechargeable battery, it may need recharging. • If using the AC adapter/charger, make sure it is plugged into a working AC outlet.
Will Not Record or Play Back	<ul style="list-style-type: none"> • If the <i>DEW</i> indicator is flashing in the viewfinder, there is moisture in the camcorder. Remove cassette and let camcorder dry out for at least two hours. When the <i>DEW</i> indicator stops flashing, camcorder will operate. • Make sure there is a cassette in the camcorder. • Try ejecting and re-inserting the cassette. • The cassette tape is broken; try another cassette. • You have reached the end of the cassette – try rewinding it.
Will Not Play Back	<ul style="list-style-type: none"> • <i>CAMERA/VCR</i> switch must be in <i>VCR</i>.
Will Not Record	<ul style="list-style-type: none"> • Safety tab has been removed from cassette. <i>See page 16.</i> • <i>CAMERA/VCR</i> switch must be in <i>CAMERA</i>.
No Picture in Viewfinder	<ul style="list-style-type: none"> • Make sure lens cap has been removed.
Tape Stops During Rewind or Fast Forward	<ul style="list-style-type: none"> • The tape counter with memory stop may be displayed in viewfinder. When an “M” appears in front of the tape-counter display, the camcorder will stop rewinding or fast-forwarding when the counter reads “M0000”. Press the <i>REW</i> (rewind) or <i>F.FWD</i> (fast-forward) button again to continue, or press the <i>COUNTER DISPLAY</i> button to remove the display from the viewfinder.
Camcorder Remains in Play-Pause Mode	<ul style="list-style-type: none"> • Press <i>PAUSE/STILL</i> (or <i>PLAY</i>) to return to normal playback.

(continued on next page)

Trouble Checks

Trouble	Checks and Adjustments
Viewfinder Displays are out of Focus	<ul style="list-style-type: none"> • Try adjusting the eyepiece focus control. <i>Details are on page 18.</i>
Poor Picture Quality During Recording	<ul style="list-style-type: none"> • There is insufficient light. Add more light. • Place the <i>CAMERA/VCR</i> switch in <i>CAMERA AUTO</i>, or repeatedly press <i>SHUTTER</i> to set the shutter speed to normal (1/60 second). <i>Details are on page 28.</i> • Place the <i>FOCUS AUTO/MAN</i> switch in <i>AUTO</i> position to have the camcorder focus automatically. <i>Details are on pages 26-27.</i>
Poor Auto-Focus Operation	<ul style="list-style-type: none"> • Place the <i>FOCUS AUTO/MAN</i> switch in the <i>AUTO</i> position for the camcorder to control the focus automatically. <i>Details are on pages 26-27.</i> • Subject may be too dark. Auto-focus system may not work under this condition. Place <i>FOCUS AUTO/MAN</i> switch in <i>MAN</i> position and focus manually. <i>Details are on pages 26-27.</i> • Lens may be smudged and image appears unfocused. • Viewfinder eyepiece focus control may be adjusted incorrectly. <i>Details are on page 18.</i>
Poor Picture Quality During Playback	<ul style="list-style-type: none"> • Tape was recorded on a different camcorder or VCR. If the picture contains black-and-white streaks, press one of the tracking (<i>CLOCK SELECT</i> and <i>SET</i>) buttons to correct. <i>Details on page 41.</i> • Camcorder only has one speed (SP). If tape was recorded at different speed, it cannot be played back in this camcorder.
Picture Too Dark	<ul style="list-style-type: none"> • Repeatedly press <i>SHUTTER</i> to set shutter speed to normal (1/60 second) or place <i>CAMERA/VCR</i> switch in <i>CAMERA AUTO</i>. <i>Details are on pages 24 and 28.</i>
DEW Indicator Flashing in Viewfinder	<ul style="list-style-type: none"> • If the <i>DEW</i> indicator is flashing in the viewfinder, there is moisture in the camcorder. Remove cassette and let camcorder dry out for at least two hours. When the <i>DEW</i> indicator stops flashing, camcorder will operate.

Trouble Checks

Trouble	Checks and Adjustments
Recorded Audio Low	<ul style="list-style-type: none">• Subject may have been too far from the camcorder.
Play, Rewind or Fast Forward Does Not Work	<ul style="list-style-type: none">• Make sure titler graphics are not in viewfinder. Buttons operate differently when titler is displayed.
Higher Shutter Speed or White Balance Indicator Will Not Appear in Viewfinder	<ul style="list-style-type: none">• <i>CAMERA/VCR</i> switch must be in <i>CAMERA MAN</i> position.• Press <i>SHUTTER</i> for higher shutter speeds.• Press <i>W/B</i> for manual white balance.
Date and Time (or Date) were Recorded on the Tape	<ul style="list-style-type: none">• Date and time (or date) will be recorded on the tape whenever they appear in the viewfinder. Press <i>DATE/TIME</i> to remove them from the viewfinder when recording.
Date and/or Time are Incorrect	<ul style="list-style-type: none">• Clock battery cell may need replacing. <i>See page 22</i>• Date and/or time may need to be reset. <i>See page 23.</i>

Specifications

General

Power requirement: 12VDC
Power consumption: 10.5 watts (normal)
Weight: 5.28 lbs. (2.4 kg)
Dimensions: 3.8"(W) x 8.3"(H) x
15.8"(D) (97 x 211 x 401 mm)

Video Recorder Section

Format: VHS
Record/Playback System:
Two video record/playback heads
One flying erase head
Headwheel Cylinder Diameter: 62 mm
Video Signal: EIA Standard NTSC
Color

Camera Section

Scanning: 525 Lines/60 Fields/30 Frames
Image Sensor: One integral color filter
CCD Imager
Lens: 1:12
5.4 ~ 64.8mm
Diameter: 52 mm

AC Adapter/Charger

Power Requirement: 100-240 V, 50/60 Hz.
Power Consumption: 35 watts (nominal)
Weight: 1.13 lbs. (513 g)
Dimensions: 3-3/11" (W) x 2-5/11" (H)
x 7" (D) (83 x 62 x 177 mm)

Tripod Mount

One 1/4" x 20 threaded hole

Information to User

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

Changes or modifications not expressly approved by the manufacturer may void the user's FCC authority to operate this camcorder.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le ministre des Communications.

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 an exchange 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, including 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 including all accessories 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 INCLUDING ALL ACCESSORIES IS NOT RECEIVED WITHIN 14 DAYS, THE SUGGESTED RETAIL VALUE OF THE CAMCORDER AND/OR ACCESSORIES 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 including all accessories 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 along with all accessories included with your camcorder 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.

Limited Warranty

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.

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 along with all accessories included with your camcorder, 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, and handling costs, and insurance are your responsibility. We accept no liability in case of damage or loss.

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

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

- Check with your dealer or call 1-800-447-1700 for the Authorized GE Camcorder Servicenter nearest you.
- Take your unit to the Authorized GE Camcorder Servicenter of your choice.
- Show the Authorized GE 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.
- Battery for clock and other features.
- 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:

- This warranty does not apply. Contact your dealer for warranty information.

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Need Assistance? We want to help!

U.S. Consumers:

Camcorder Exchange Warranty800-283-6503
Customer Service800-447-1700
Accessories800-338-0376

Canadian Consumers:

English800-522-0338
French800-522-0445

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.

THOMSON CONSUMER ELECTRONICS

**10330 N Meridian Street
Indianapolis, IN 46290**

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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 GE Camcorder Servicenter, look below for the type of trouble you are experiencing. Then perform the simple checks and adjustments listed for that trouble.

Trouble	Checks and Adjustments
No Power <i>(POWER Indicator Will Not Come On)</i>	<ul style="list-style-type: none">• If using the rechargeable battery, it may need recharging.• If using the AC adapter/charger, make sure it is plugged into a working AC outlet.
Will Not Record or Play Back	<ul style="list-style-type: none">• If the <i>DEW</i> indicator is flashing in the viewfinder, there is moisture in the camcorder. Remove cassette and let camcorder dry out for at least two hours. When the <i>DEW</i> indicator stops flashing, camcorder will operate.• Make sure there is a cassette in the camcorder.• Try ejecting and re-inserting the cassette.• The cassette tape is broken; try another cassette.• You have reached the end of the cassette – try rewinding it.
Will Not Play Back	<ul style="list-style-type: none">• <i>CAMERA/VCR</i> switch must be in <i>VCR</i>.
Will Not Record	<ul style="list-style-type: none">• Safety tab has been removed from cassette. <i>See page 16.</i>• <i>CAMERA/VCR</i> switch must be in <i>CAMERA</i>.
No Picture in Viewfinder	<ul style="list-style-type: none">• Make sure lens cap has been removed.
Tape Stops During Rewind or Fast Forward	<ul style="list-style-type: none">• The tape counter with memory stop may be displayed in viewfinder. When an “<i>M</i>” appears in front of the tape-counter display, the camcorder will stop rewinding or fast-forwarding when the counter reads “<i>M0000</i>”. Press the <i>REW</i> (rewind) or <i>F.FWD</i> (fast-forward) button again to continue, or press the <i>COUNTER DISPLAY</i> button to remove the display from the viewfinder.
Camcorder Remains in Play-Pause Mode	<ul style="list-style-type: none">• Press <i>PAUSE/STILL</i> (or <i>PLAY</i>) to return to normal playback.

(continued on next page)

Trouble Checks

Trouble	Checks and Adjustments
Viewfinder Displays are out of Focus	<ul style="list-style-type: none"> • Try adjusting the eyepiece focus control. <i>Details are on page 18.</i>
Poor Picture Quality During Recording	<ul style="list-style-type: none"> • There is insufficient light. Add more light. • Place the <i>CAMERA/VCR</i> switch in <i>CAMERA AUTO</i>, or repeatedly press <i>SHUTTER</i> to set the shutter speed to normal (1/60 second). <i>Details are on page 28.</i> • Place the <i>FOCUS AUTO/MAN</i> switch in <i>AUTO</i> position to have the camcorder focus automatically. <i>Details are on pages 26-27.</i>
Poor Auto-Focus Operation	<ul style="list-style-type: none"> • Place the <i>FOCUS AUTO/MAN</i> switch in the <i>AUTO</i> position for the camcorder to control the focus automatically. <i>Details are on pages 26-27.</i> • Subject may be too dark. Auto-focus system may not work under this condition. Place <i>FOCUS AUTO/MAN</i> switch in <i>MAN</i> position and focus manually. <i>Details are on pages 26-27.</i> • Lens may be smudged and image appears unfocused. • Viewfinder eyepiece focus control may be adjusted incorrectly. <i>Details are on page 18.</i>
Poor Picture Quality During Playback	<ul style="list-style-type: none"> • Tape was recorded on a different camcorder or VCR. If the picture contains black-and-white streaks, press one of the tracking (<i>CLOCK SELECT</i> and <i>SET</i>) buttons to correct. <i>Details on page 41.</i> • Camcorder only has one speed (SP). If tape was recorded at different speed, it cannot be played back in this camcorder.
Picture Too Dark	<ul style="list-style-type: none"> • Repeatedly press <i>SHUTTER</i> to set shutter speed to normal (1/60 second) or place <i>CAMERA/VCR</i> switch in <i>CAMERA AUTO</i>. <i>Details are on pages 24 and 28.</i>
DEW Indicator Flashing in Viewfinder	<ul style="list-style-type: none"> • If the <i>DEW</i> indicator is flashing in the viewfinder, there is moisture in the camcorder. Remove cassette and let camcorder dry out for at least two hours. When the <i>DEW</i> indicator stops flashing, camcorder will operate.

Trouble Checks

Trouble	Checks and Adjustments
Recorded Audio Low	<ul style="list-style-type: none">• Subject may have been too far from the camcorder.
Play, Rewind or Fast Forward Does Not Work	<ul style="list-style-type: none">• Make sure titler graphics are not in viewfinder. Buttons operate differently when titler is displayed.
Higher Shutter Speed or White Balance Indicator Will Not Appear in Viewfinder	<ul style="list-style-type: none">• <i>CAMERA/VCR</i> switch must be in <i>CAMERA MAN</i> position.• Press <i>SHUTTER</i> for higher shutter speeds.• Press <i>W/B</i> for manual white balance.
Date and Time (or Date) were Recorded on the Tape	<ul style="list-style-type: none">• Date and time (or date) will be recorded on the tape whenever they appear in the viewfinder. Press <i>DATE/TIME</i> to remove them from the viewfinder when recording.
Date and/or Time are Incorrect	<ul style="list-style-type: none">• Clock battery cell may need replacing. <i>See page 22</i>• Date and/or time may need to be reset. <i>See page 23.</i>

Specifications

General

Power requirement: 12VDC
Power consumption: 10.5 watts (normal)
Weight: 5.28 lbs. (2.4 kg)
Dimensions: 3.8"(W) x 8.3"(H) x
15.8"(D) (97 x 211 x 401 mm)

Video Recorder Section

Format: VHS
Record/Playback System:
Two video record/playback heads
One flying erase head
Headwheel Cylinder Diameter: 62 mm
Video Signal: EIA Standard NTSC
Color

Camera Section

Scanning: 525 Lines/60 Fields/30 Frames
Image Sensor: One integral color filter
CCD Imager
Lens: 1:12
5.4 ~ 64.8mm
Diameter: 52 mm

AC Adapter/Charger

Power Requirement: 100-240 V, 50/60 Hz.
Power Consumption: 35 watts (nominal)
Weight: 1.13 lbs. (513 g)
Dimensions: 3-3/11" (W) x 2-5/11" (H)
x 7" (D) (83 x 62 x 177 mm)

Tripod Mount

One 1/4" x 20 threaded hole

Information to User

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

Changes or modifications not expressly approved by the manufacturer may void the user's FCC authority to operate this camcorder.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le ministre des Communications.

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(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 an exchange 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.

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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, including 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 including all accessories 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 INCLUDING ALL ACCESSORIES IS NOT RECEIVED WITHIN 14 DAYS, THE SUGGESTED RETAIL VALUE OF THE CAMCORDER AND/OR ACCESSORIES 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 including all accessories 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 along with all accessories included with your camcorder 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.

Limited Warranty

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.

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 along with all accessories included with your camcorder, 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, and handling costs, and insurance are your responsibility. We accept no liability in case of damage or loss.

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

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

- Check with your dealer or call 1-800-447-1700 for the Authorized GE Camcorder Servicenter nearest you.
- Take your unit to the Authorized GE Camcorder Servicenter of your choice.
- Show the Authorized GE 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.
- Battery for clock and other features.
- 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:

- This warranty does not apply. Contact your dealer for warranty information.

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Need Assistance? We want to help!

U.S. Consumers:

Camcorder Exchange Warranty800-283-6503
Customer Service800-447-1700
Accessories800-338-0376

Canadian Consumers:

English800-522-0338
French800-522-0445

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.

THOMSON CONSUMER ELECTRONICS

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