

V C R F A C T S TM VCR66019

MAINTENANCE & REPAIR DATA

*Easily repair the
top 75% of VCR
problems*

Emerson[®]

Models VCR875, VCR953, VCR755



- *Troubleshooting common malfunctions*
- *Guide to disassembly*
- *Step-by-step servicing and repair*
- *Mechanical and electrical parts lists*

PROMPTTM
PUBLICATIONS

VCR66019 Emerson

CARE OF THE VCR

Power Precautions

- This VCR is equipped with a polarized AC plug made to fit into a polarized AC power outlet. Do not defeat the AC plug safety feature.
- Do not allow anything to rest on the AC power cord.
- Periodically examine the power cord for damaged or cracked insulation.
- During electrical storms, unplug the VCR to avoid power surges which could damage the machine.

Safe Environment

- The VCR cabinet is equipped with vents to prevent heat buildup. Never block, cover, or otherwise obstruct these vents with doilies, tapes, or other objects.
- Instruct small children not to drop or push objects into the vents. Better still, put the VCR out of their reach.
- Do not use liquids near the VCR. Do not put potted plants on the unit, because watering them

invites accidents. If liquid is accidentally spilled on or near the unit, unplug it from the wall outlet and allow it to dry normally. Do not use a blow dryer to dry it off, as some parts could be damaged by the concentrated flow of hot air.

- High humidity affects the delicate electronic parts in the VCR. Most units are equipped with dew sensors that prevent it from operating when the humidity is too high.

Routine Cleaning

- Dust the VCR as often as you would your fine furniture. Special dust covers are available commercially for further protection.
- When the cabinet needs a more thorough cleaning, first unplug the unit from the AC power supply. Do not spray pump or aerosol cleaners directly on the VCR. Instead, apply the cleaner to a soft cloth and then wipe the cabinet.
- *Hint:* Run a high quality blank tape through the unit once or twice a month to keep the audio/video heads clean.

This VCRFACT was prepared at the offices of Howard W. Sams & Company by: Barry Buchanan, Tim Clensy, Dave Crouch, George Farrell, Wendy Ford, Bob Hamilton, Dan McGowan, and George Weliver. We welcome your feedback. Write to:

*VCRFACTS Department WF
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Indianapolis, IN 46214*

MAINTENANCE SCHEDULE

To keep your VCR in top working condition, we recommend the following periodic cleaning, lubricating, and part replacement schedule. The schedule is presented in number of tapes because every user's viewing habits are unique. For example, if you record or watch one 2-hour tape per evening, you should service a new unit after approximately 8

months (250 tapes). To simplify keeping track of the schedule, we recommend that you keep a log of any maintenance performed on the VCR.

Date purchased: _____

From: _____

Serial number: _____

<i>Every</i>	<i>What to do</i>	<i>Which parts</i>	<i>How to</i>	<i>Date done</i>
250 tapes	Clean	Audio/control head	See page 12	_____
		Capstan shaft	See page 22	_____
		Erase head	See page 14	_____
		Pressure (pinch) roller	See page 20	_____
		Impedance roller	See page 20	_____
		Supply reel table	See page 17	_____
		Takeup reel table	See page 17	_____
		Upper cylinder (video heads)	See page 12	_____
		Video head motor	See page 15	_____
500 tapes	Replace	Video head	See page 15	_____
750 tapes	Replace	Pressure (pinch) roller	See page 20	_____
1000 tapes	Grease	Loading cam gear section	See page 23	_____
		Impedance roller	See page 20	_____
		Loading base (tape guide track)	See page 20	_____
	Oil	Supply reel shaft	See page 17	_____
		Takeup reel shaft	See page 17	_____
		Reel belt	See page 22	_____
	Replace	Loading motor belt	*	_____
		Main brake spring	*	_____
		Main brake arm (l)	*	_____
		Main brake arm (r)	*	_____
		Tb brake arm	*	_____
		Tension band	*	_____
2000 tapes	Replace	Audio/control head	*	_____
		Erase head	See page 14	_____
		Supply reel table	*	_____
		Takeup reel table	*	_____
2500 tapes	Replace	Cylinder unit	*	_____
		Video head motor	*	_____

*This operation requires delicate adjustments that should be attempted only if you have the training and special equipment for that purpose. See the manufacturer's documentation.

HOW THE VCR WORKS

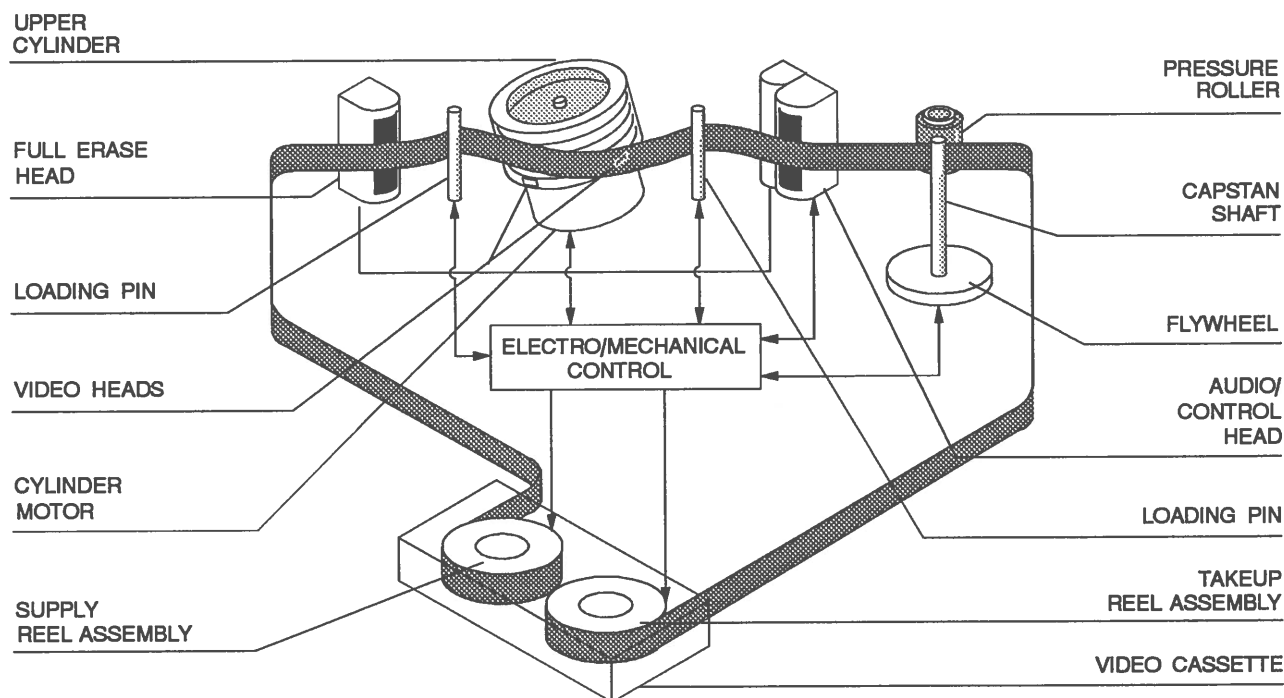
When you power up the VCR and insert a cassette, the cassette loading assembly pulls the cassette down and settles it onto the supply and takeup reel tables. When you push Record or Play, the upper cylinder (drum), driven by the video head motor, starts to spin as the tape loading pins pull the tape out of the cartridge. These pins move along the input/output tape guide tracks and wrap the tape approximately three-fourths of the way around the upper cylinder, which houses the video heads. At the same time, the capstan stator unit begins to turn the capstan shaft. The pressure roller moves in and squeezes the tape against the capstan shaft so that the capstan motor can pull the tape through the machine. Meanwhile the takeup reel is activated and rotates to pull the tape back into the cassette. Various pins and rollers regulate the tension and the path of the tape.

As the tape moves through the tape path, it passes various heads whose function is to pick up, record, or

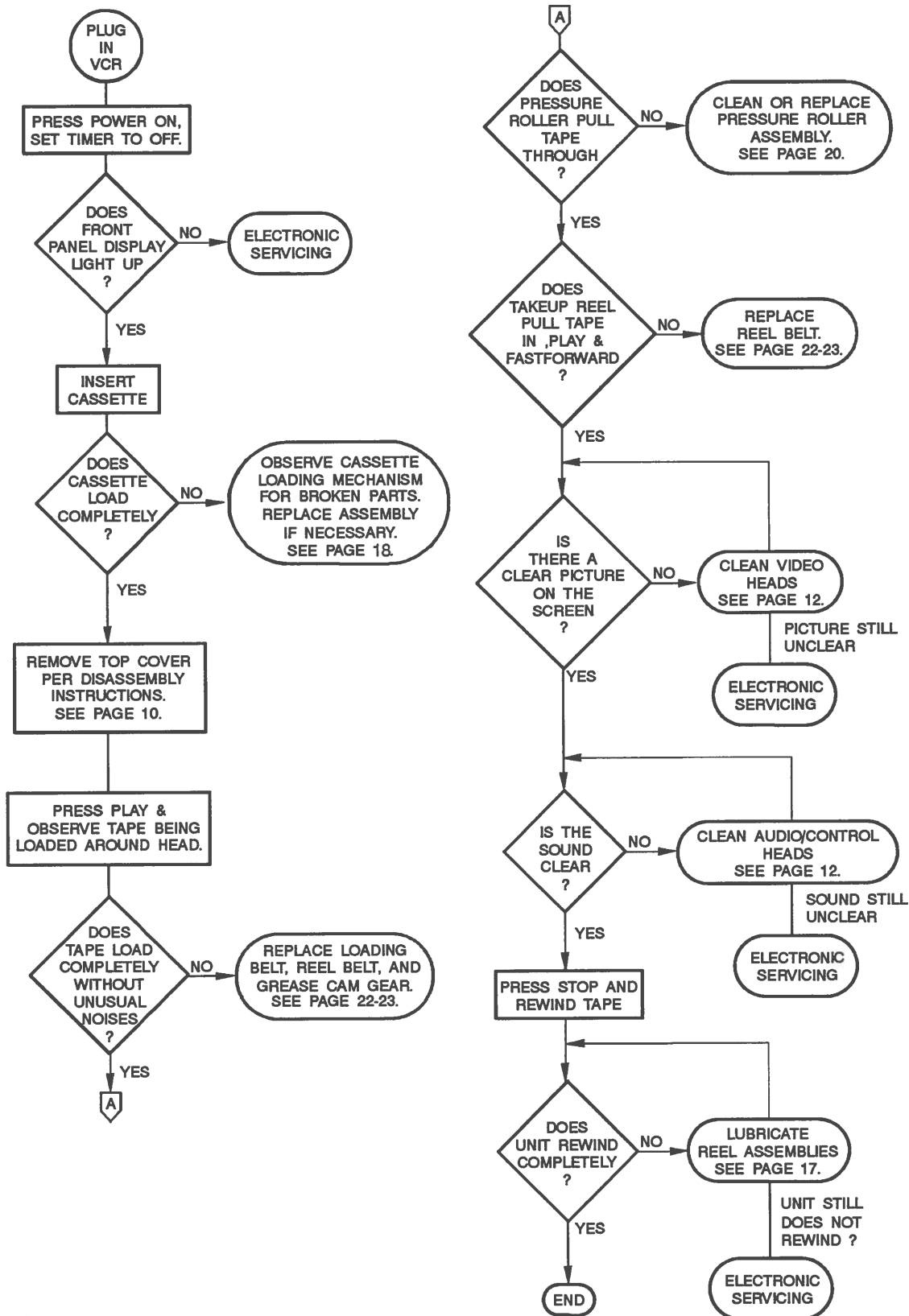
erase the electromagnetic signals on the tape. These are the signals that the VCR sends or receives from the TV monitor as pictures and sound. Accurate pictures and sound are possible because an electromechanical control (EMC) system carefully synchronizes the relative speeds of the direct drive cylinder motor (that moves the video heads) and the capstan motor (that pulls the tape).

When you select Rewind, the EMC system changes the direction the capstan motor turns, and a gear arrangement sets up for high-speed reverse tape travel. Brake pads and a tension band slow the reel tables for a smooth flow of tape. An end-of-tape sensor controls shutoff at the end of the rewind.

Complex electronic circuitry coordinates the precise interaction of all these mechanisms. Quality output depends on aligning the mechanical parts to close tolerances and tightly controlling the signal levels.



TROUBLESHOOTING FLOW



TROUBLESHOOTING

When your VCR malfunctions, there are three possible causes: operator problems, mechanical problems, and electrical/electronic problems. This troubleshooting guide will help you detect operator and mechanical problems that you can correct. If those corrections don't work, the problem is probably electrical and you should refer to the manufacturer's detailed specifications.

Start-Up Problems

Power switch "on", nothing happens
Clock display may or may not be lighted

Check that the unit is plugged in. Verify that there is power in the outlet. Inspect the AC power cord for cracks and breaks. Make sure the VCR's Timer function is set to Off. If you just brought the unit in from the cold, wait a half-hour to let any possible condensation evaporate. Check inside the unit for a blown fuse (page 11) and replace if necessary. If these measures don't work, there may be a more serious electrical malfunction.

Cassette Loading Problems

Tape loads but ejects immediately
Cassette does not open for tape loading
Power turns off after tape loading/unloading

Scan the cassette loading assembly (page 18) for worn belts, dirty pulleys, cracked or stuck loading gears, an unhooked or missing release lever spring, broken or chipped gear teeth, or cracks in the loading track. Replace the entire assembly if defects are serious (page 19).

If problems persist, the end-of-tape sensor may be malfunctioning, an electrical-to-mechanical interface may be out of phase, or the tape transport mechanism may need to be realigned, all of which require the manufacturer's data and should be attempted only if you have electronics training.

Tape Play Problems

VCR "eats" tapes
Rewind stops before end of tape
Play, fast forward, rewind functions are slow or don't work
Squealing noises

Tape winding and speed problems suggest malfunctions in the various rollers, the capstan motor, or the cassette takeup assemblies. If your model has an idler tire, check it for breaks or wear. Oil the two reel table shafts (page 17). Clean the impedance roller (page 20), the pressure roller (page 20), and the capstan shaft (pages 20, 21). Check the reel belt and clean the pulleys (pages 22, 23). If none of these remedies are effective, the problem is probably electrical.

Sound Problems

No audio in playback
Volume too low or fluctuates
Buzz, hum, or previous soundtrack present
Popping or static sounds
Wow and flutter

First try another tape to see if the problem disappears. Adjust the audio controls on the TV and try different audio switches on any stereo that is hooked up to the VCR. Clean the audio/control and erase head (pages 12-14). Check and clean the pressure roller and impedance roller (page 20). Check the reel belt for breaks or wear and replace if necessary (pages 22, 23).

Picture Problems

VCR on, but no picture
"Snow" on video screen
"Noise" bars at top or bottom
Intermittent jagged lines
Horizontal lines that follow a set path,
then disappear (indicating scratched tape)
Bending images

Make sure the TV controls are set so that normal television signals are received clearly. Make sure the TV/VCR switches are in the VCR position on both units. Check the connections to the VCR. Try a different tape in the VCR. Adjust the VCR's tracking control, if your model has one. Check for electrical interference from an appliance operating nearby. Look for foreign objects in the unit, and clean any debris from the input/output guide tracks (page 22). Clean the video heads (page 12). Clean all the other parts of the tape path: erase head, impedance roller, audio/control head, capstan shaft, and pressure roller (pages 12-14, 20). Most picture problems will be solved by one of these remedies. If not, electronic servicing is probably needed. (*Note:* There may be incompatible circuitry in recent VCR models when used with older TV sets.)

WHAT TO LOOK FOR INSIDE THE UNIT

Dirty Heads and Rollers

The various heads and rollers often pick up electromagnetic debris after hours of close contact with moving tapes. This debris consists of magnetic oxides that appear as a dusty film.

Worn Rubber Parts

Belts, tires, and other rubber parts that are worn appear dry and dull. If you carefully stretch and bend them, you may find tiny hidden cracks. Don't replace these until you locate the proper replacement parts, as the VCR may still operate even with worn parts. When you do replace them, remove and replace one at a time to avoid confusion.

Broken or Chipped Gears

Look for missing teeth, cracks, and other breaks in the system of plastic gears. Some of these may be deep inside the unit and can only be repaired by a trained technician.

Foreign Objects

People report finding everything from marbles to peanut butter and jelly sandwiches in the units they've had to repair. But look also for smaller pieces of debris such as sprung springs and chips from plastic parts.

Proper Sequence of Operation

Observe the unit in operation to see whether the proper sequence of events occurs as described in "How the VCR Works."

Burns, Smoke, or Smells

If you find these, don't attempt any repairs unless you are qualified. These symptoms spell DANGER.

SERVICING GUIDE

How to Use This Data

- The troubleshooting and servicing information in this VCRFACT is to help you find and correct common mechanical problems in the cassette loading and tape transport mechanisms and to show you how to clean the audio and video heads.
- These types of problems account for 75% of VCR malfunctions and can easily be fixed by a home electronics hobbyist or audio buff who has completed at least a high school science course.
- The remaining 25% of malfunctions are electronic and involve working with live power or fine-tuning adjustments using highly specialized measurement equipment. These problems, and any that require extensive disassembly, should be tackled only if you have special training in electricity and electronics. You will need to refer to schematics and adjustment details furnished in the manufacturer's documentation.
- Use the table of contents at the back of this VCRFACT to locate the information you need to perform a specific servicing task. If you wish to purchase the manufacturer's documentation for electronic repairs, write or call to:

Technical Publications
Emerson Radio Corp.
One Emerson Lane
North Bergen NJ. 07047
(201) 854-4800

Before Taking Apart an Assembly

- Whether you are troubleshooting, cleaning, or simply observing the internal workings of the VCR, realize that this is a complex piece of equipment that is easily damaged by careless handling. Do not attempt any task that you are not confident you can complete successfully.
- Take a careful look at the assembly before removing anything. Note which parts are involved and how they interconnect. If you must disconnect any wires, tape a note to the end of each wire to remind you where it attaches. Be especially wary of any part replacement or servicing that requires extensive disassembly in the guts of the machine. Attempt such tasks only if you are qualified.
- Do not set out to tighten what appear to be loose screws, nuts, or knobs. Some of the adjustments in a VCR are so critical that a simple half-turn on any of them could require lengthy realignment using very specialized technical equipment.

Remove AC Power

- Always unplug the VCR before servicing. Qualified service technicians may wish to troubleshoot by running a videotape through the machine while the covers are off. Do not attempt this unless you have special training in electricity and electronics. Live power is involved and there is danger of shock in untrained or careless hands.
- For added protection even if you do not intend to work with live power, operate the equipment on an outlet that has a ground fault interrupt (GFI) detector. The fault detector will sense when an electrical connection is disrupted and will shut off power to the equipment.

Drain Electrostatic Charge

- Semiconductor devices like VCRs are easily damaged by static electricity. You can pick up an electrostatic charge simply by walking across a carpet, changing position in a fabric or plastic covered chair, combing your hair, or just brushing off your clothes.
- Before handling printed circuit boards (for example, during disassembly), drain off any

electrostatic charge on your body by touching a known earth ground. Examples of grounds are a plumbing pipe or the metal screws on the coverplates of wall switches and receptacles. Anti-static devices (e.g., a wristband) are available commercially for people who do a lot of work with electronic parts.

Demagnetize the Heads

- The buildup of magnetic tape coating material on the upper cylinder and video heads eventually may cause them to become polarized. This will make the heads less and less sensitive to the minute values of information on the tape.
- You can use a demagnetizer to neutralize the charged particles on the heads. This restores their sensitivity and gives better results from head cleaning. But make sure you hold the demagnetizer at least an inch away from the delicate video heads.
- Avoid using magnetized materials anywhere near the VCR. Even a magnetized screwdriver could cause havoc.

Working with Power

CAUTION: Do not work with electrical and electronic parts unless you are qualified by special training.

- Upon completion of service, replace all insulators, knobs, and shields, and restore to their original position any wires that you moved.
- Before returning the VCR to service, perform an AC leakage test using an AC voltmeter with at least 5000 ohms per volt sensitivity. Connect a 0.15 μ F AC capacitor in parallel with a 1500-ohm 10-watt resistor from a good earth ground to all exposed metal parts on the VCR cabinet. A voltmeter reading higher than 0.3 volts RMS across the 10-watt resistor indicates a shock hazard and must be corrected.

DISASSEMBLY TOOLS

For the mechanical servicing described in these pages, you will need these items:

Small point phillips screwdriver
Medium point phillips screwdriver

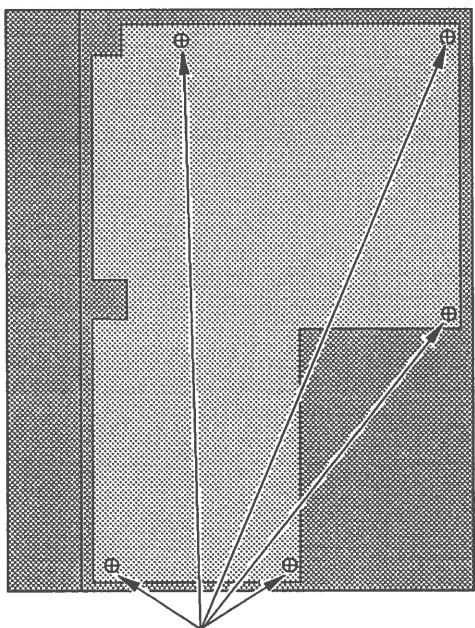
DISASSEMBLY

This section explains the preliminary disassembly required for most cleaning, troubleshooting, and servicing of the VCR. Any additional disassembly required to access specific parts is explained along with the specific procedures. Before beginning, read the general precautions about disassembly on page 8.

CAUTION: Before disassembling any part of the VCR, unplug the AC power cord and touch ground to discharge any static electricity.

Bottom Cover

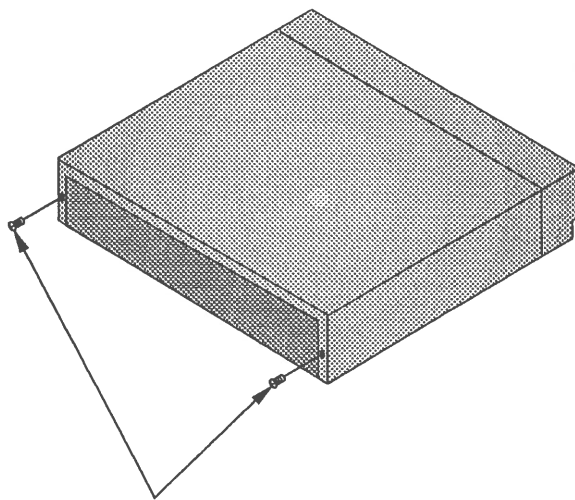
- 1 Stand the VCR with the tape loading side down.



- 2 Remove the five screws securing the bottom cover and remove the bottom cover.

Top Cover

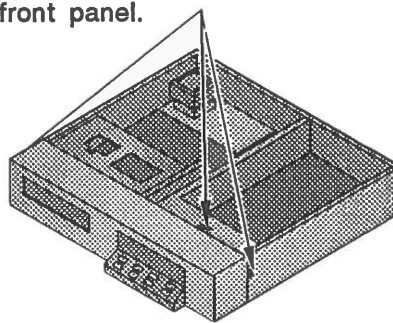
- 1 Place the VCR in a normal upright position.



- 2 Remove the two screws securing the top cover and remove the top cover.

Front Panel

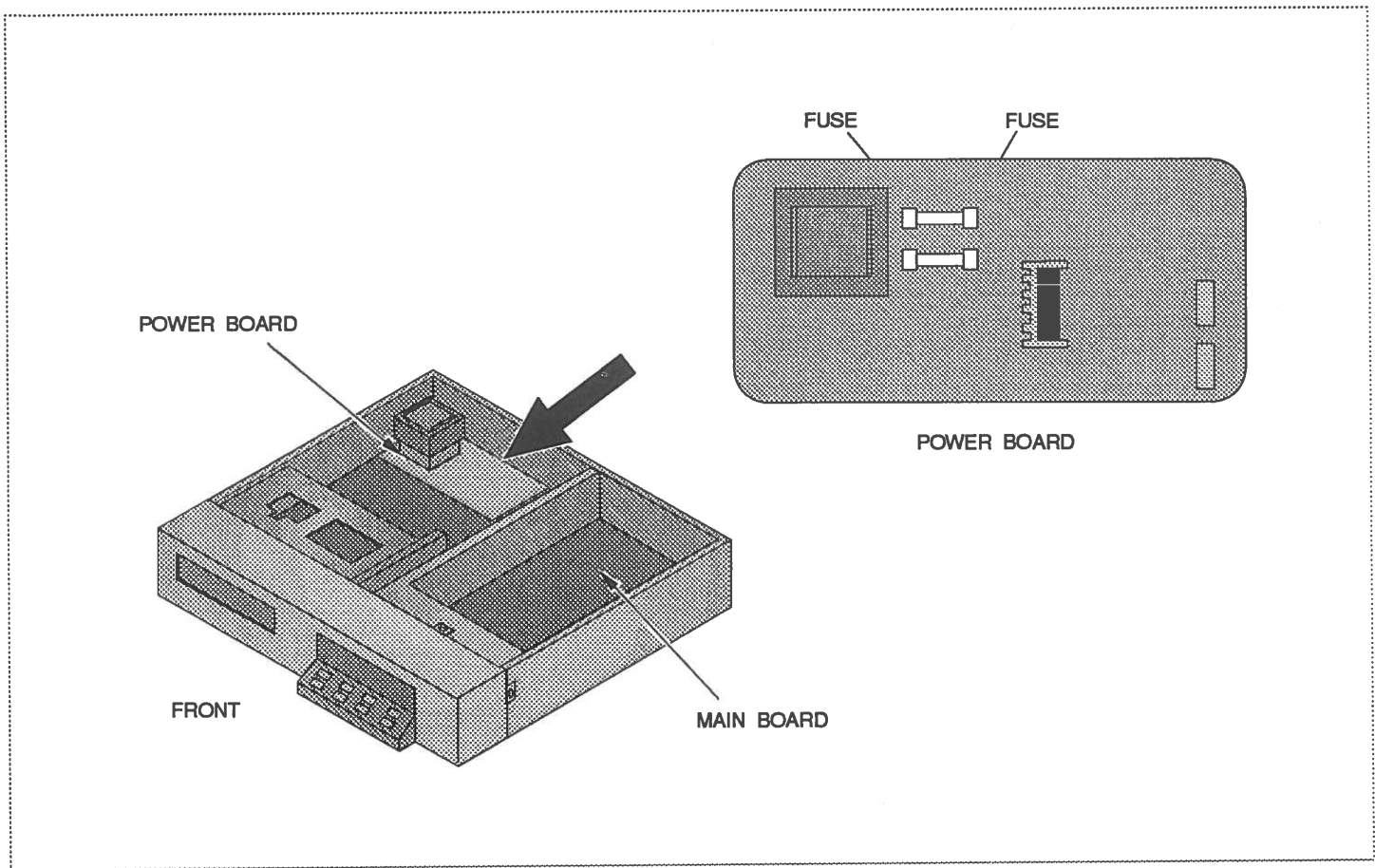
- 1 Remove the top and bottom covers.
- 2 Place the VCR in a normal upright position.
- 3 Release the three locking tabs on top of the front panel.



- 4 Tilt the panel forward until the three tabs on the bottom release.



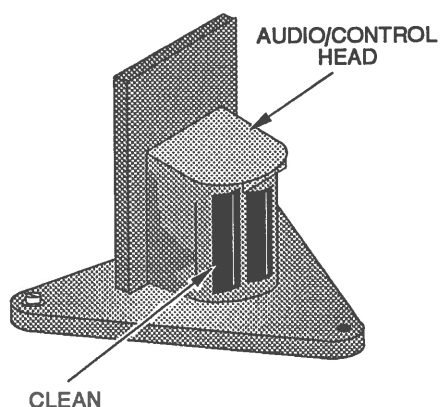
Access to the Fuses



AUDIO & VIDEO HEADS

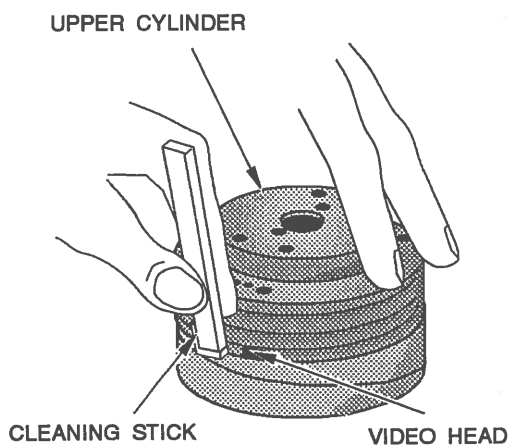
Removing the magnetic oxide buildup on the heads can solve many picture and sound problems. Before cleaning the video, audio, or full erase heads, read about cleaning materials on page 16. Follow the basic disassembly instructions on pages 10 and 11. The instructions given here assume you are cleaning

manually rather than using a tape cleaning cassette. If your VCR shows no improvement after cleaning, you may need to replace the heads, as described in this section. Or problem may lie in the electronic circuitry, in which case you will need to refer to the manufacturer's documentation.



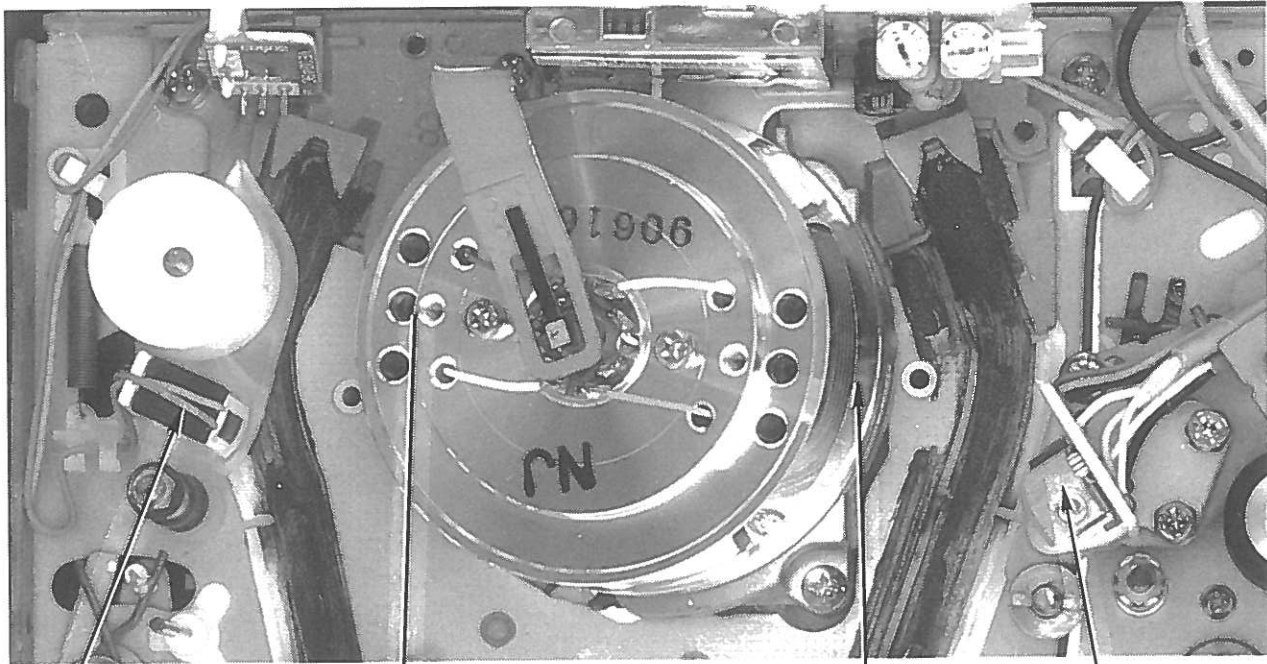
Cleaning the Audio/Control Head

1. Remove the top cover. Using a head cleaning stick dampened with cleaning solvent, gently rub the audio/control head in the same direction as the tape travels during forward play.
2. Do not rub up and down on the head, or use more than a gentle pressure.



Cleaning the Video Heads

1. Hold the top of the upper cylinder. *Do not touch the video heads.*
2. Using a head cleaning stick dampened with cleaning solvent. Place lightly against video heads, do not apply any amount of force to the heads. Gently rotate the video heads back and forth. Also clean the upper drum.
3. Do not rub up and down on the heads or use more than the gentlest pressure.
4. If tape buildup does not immediately rub off, continue rotating gently until the head is clean.
5. Avoid getting head cleaner on any plastic surface.



FULL ERASE HEAD

VIDEO HEAD

VIDEO HEAD

AUDIO/CONTROL HEAD

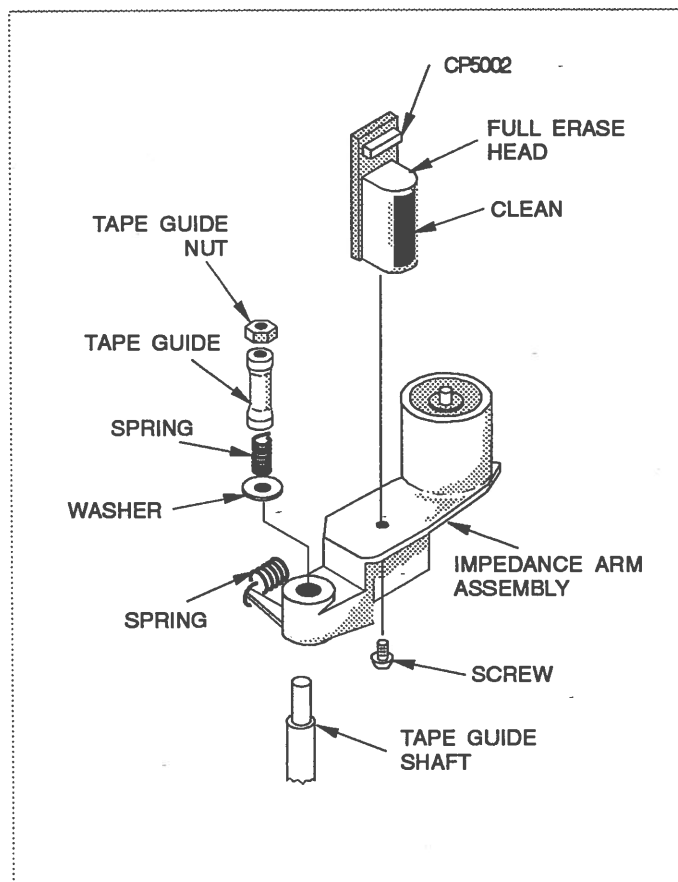


Cleaning the Full Erase Head

1. Using a head cleaning stick dampened with cleaning solvent, gently rub the erase head in the same direction as the tape travels.
2. Avoid scratching or denting the smooth face of the erase head.

Replacing the Full Erase Head

1. Disconnect the erase head electrical connector CP5002 and remove the spring between the impedance arm assembly and the chassis.
2. Record the number of turns required to remove the tape guide nut so that it can be properly reinstalled. Remove the tape guide nut, tape guide, spring, and washer from the tape guide shaft.
3. Slide the impedance arm assembly off of the tape guide shaft and remove the screw, securing the full erase head, from the bottom of the impedance arm assembly.
4. Position the replacement full erase head on the impedance arm assembly and replace the screw that secures the full erase head.
5. Slide the impedance arm assembly, washer, spring and tape guide onto the tape guide shaft.
6. Install the tape guide nut and tighten it the same number of turns that was required to remove it.
7. After replacing the full erase head load a cassette and play it. Insure that the tape does not ride over the upper or lower tape guide flange.
8. If the tape rides over the upper flange of the tape guide, turn the tape guide nut counterclockwise to properly adjust the tape guide. If the tape rides over the lower flange of the tape guide, turn the tape guide nut clockwise to properly adjust the tape guide.



Removing the Upper Cylinder

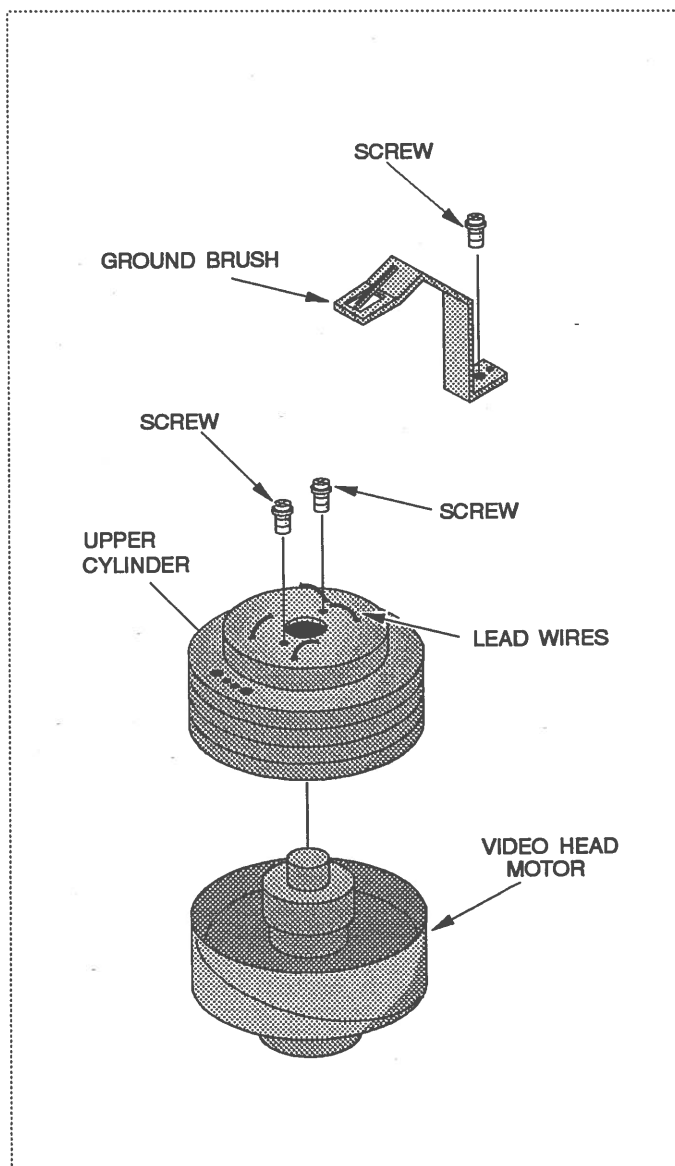
1. Remove the top cover.
2. To insure proper installation of lead wires note their position with respect to upper cylinder solder connection board. *Do not touch the video heads.*
3. Using a low-wattage soldering iron, very carefully unsolder the lead pins that stick up through the upper cylinder.
4. Remove and save the two screws that secure the upper cylinder to the video head motor. Gently lift the upper cylinder to remove it, noting how it aligns with the video head motor beneath it.
5. The video head motor should be cleaned before installing the replacement upper cylinder. Clean the shaft and the top surface of the video head motor using a soft, lint-free cloth dampened with cleaning solvent.

Replacing the Upper Cylinder

1. Install the replacement upper cylinder, maintaining proper alignment with the video head motor. Take care not to damage the lead pins or video heads.
2. Replace the two screws and washers that secure the upper cylinder to the video head motor and resolder

the lead pins. Recheck to be sure all pins were resoldered.

3. Clean the video heads.
4. Before you reinstall the top cover, load a blank tape and make a recording. Play it back to test the replacement upper cylinder and video heads. Watch for signs of curling or creasing as the tape travels. This may indicate improper installation or mechanical alignment problems that will require specialized tools and measurement instruments.



CLEANERS AND LUBRICANTS

Solvents

- Choose a cleaning solvent that does not leave a residue. Denatured alcohol, methyl alcohol, and typewriter cleaner are suitable. Isopropyl (rubbing) alcohol is sometimes used. The solvent must dry without leaving a residue, so wipe up excess solvent right away.
- When using any cleaning solvent, be sure your work area is well ventilated.
- Solvent may damage plastic parts, so wipe up any solvent that touches them.

Sticks and Swabs

- You may clean VCR heads with cellular foam swabs, chamois leather cloth, or a special lint-free cloth. Do not use ordinary cotton swabs, because they shred and leave a residue in the tape path or on the video heads. Special cotton swabs are available on which the cotton is tightly wound. You may use these to clean the tape path *but not* the video heads.

Cleaning Kits

- Local electronics supply stores and VCR sales outlets stock cleaning kits that contain sufficient materials for one or more jobs.

Cleaning Cassettes

- Special cassettes are available for cleaning the video heads. There are three types of cassettes: a "wet" cleaning type and two "dry" cleaning types.
- Wet cleaning tapes are made of a chamois material that may be thicker than ordinary videotape. You moisten it with a few drops of cleaning liquid, insert the cassette into the VCR, and set the unit in Play or Record mode. As the moistened chamois

travels the normal tape path, it passes over the video and audio heads and wipes them clean.

Caution: Wet cleaning cassettes have been known to unscrew or break tape guides, lodge under the video heads, and damage the assembly. Use the cassette with the thinnest possible chamois.

- One type of dry cleaning cassette uses a fibrous material that cleans by rubbing the heads as it passes over them.
- The other type of dry cleaning cassette uses a fine abrasive that cleans by scraping the accumulated oxides from the heads. This abrasive type of cassette should be used sparingly a few seconds of use are equivalent to many hours of wear from a normal videotape. It should be used only when the VCR shows signs of a clogged head (for example, snow in the picture, or no video).
- If you decide to clean with a cassette, follow the manufacturer's instructions carefully.

Grease & Oil

- Before you lubricate, clean off the old lubricant with a dry cotton swab. In applying the new lubricant, use only enough to do the job. It's easy to overdo, especially with oil, because it seeps and moves around so easily. Use no spray lubricants, and take care not to get grease or oil on belts, pulleys, or rubber tires.
- When oiling is recommended, use one-half to one drop of lightweight, good quality machine oil. The reel tables may require two drops.
- When greasing is recommended, use the grease recommended by the VCR manufacturer or a white lithium grease. Sometimes different kinds of greases are specified for different operations. Some greases react with plastics and metals and may cause problems. Petroleum-based greases tend to gum up more quickly than synthetic ones.

CASSETTE HOLDER ASSEMBLY



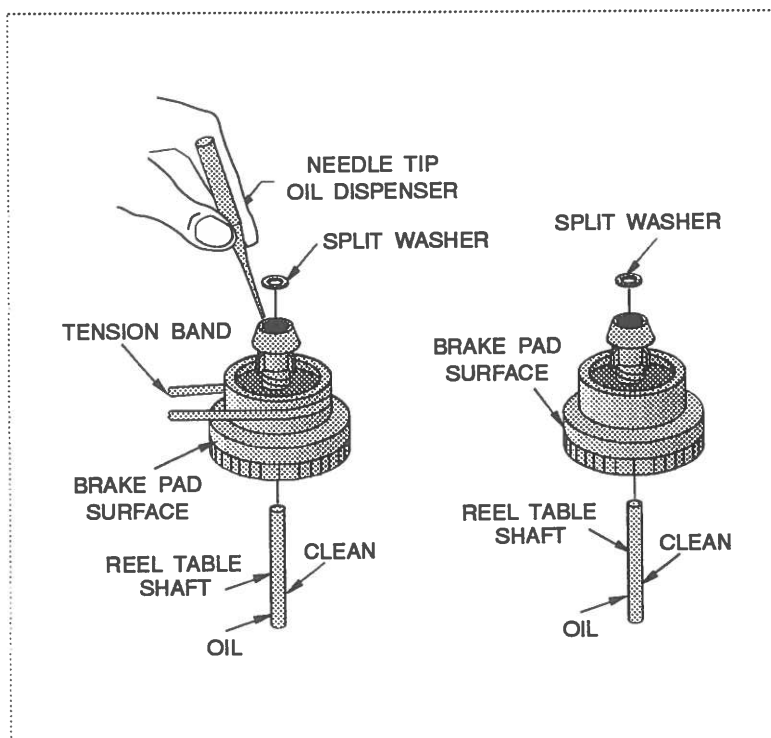
Cleaning the Reel Tables

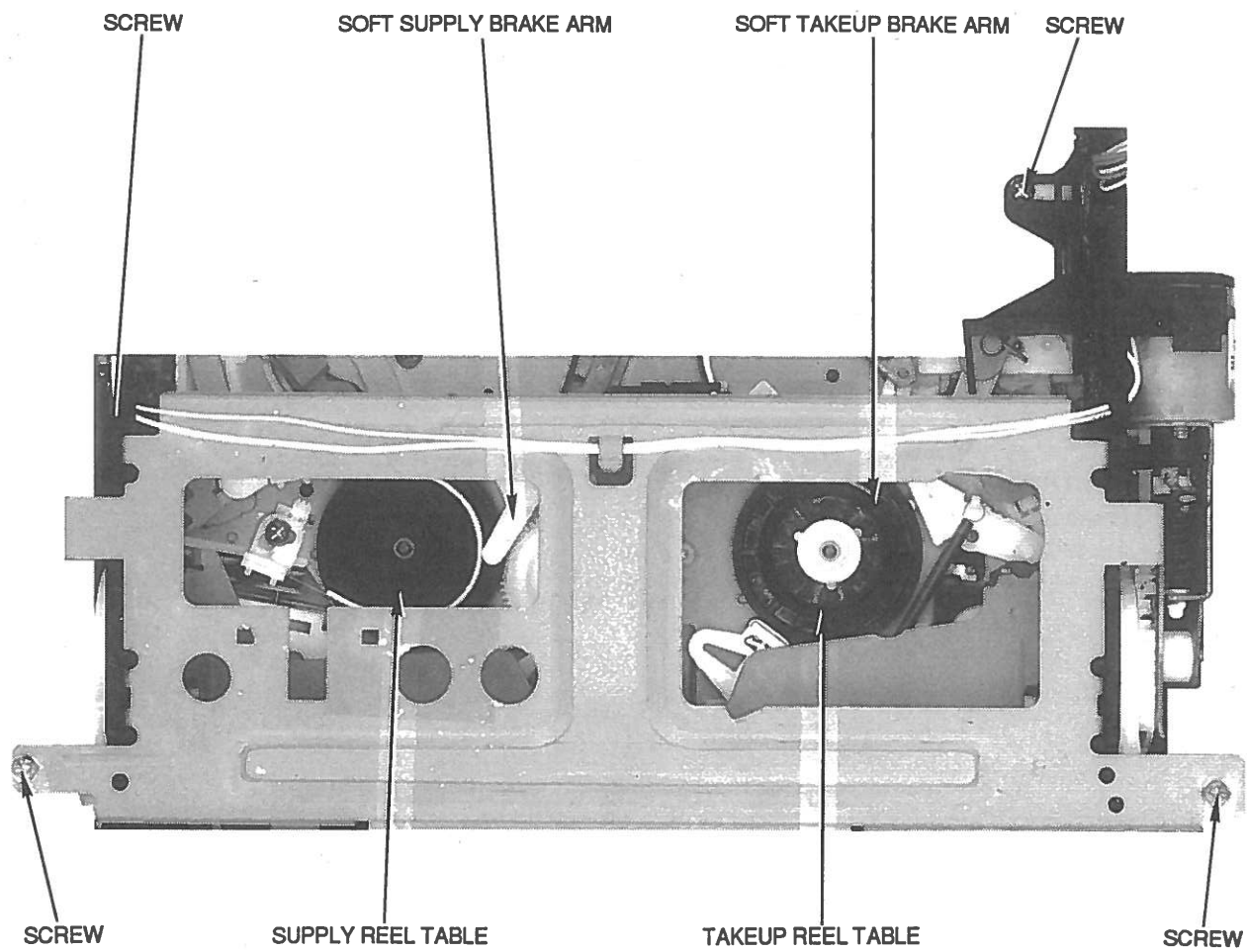
1. Use a cleaning swab slightly dampened with a solvent that won't harm plastic.
2. Wipe the brake surfaces of the supply reel and takeup reel tables, being careful not to wet the brake pads. Don't run a tape until the pads are dry and free of cleaning solution.

Oiling the Reel Tables

1. Oil the supply reel and takeup reel tables during routine maintenance.

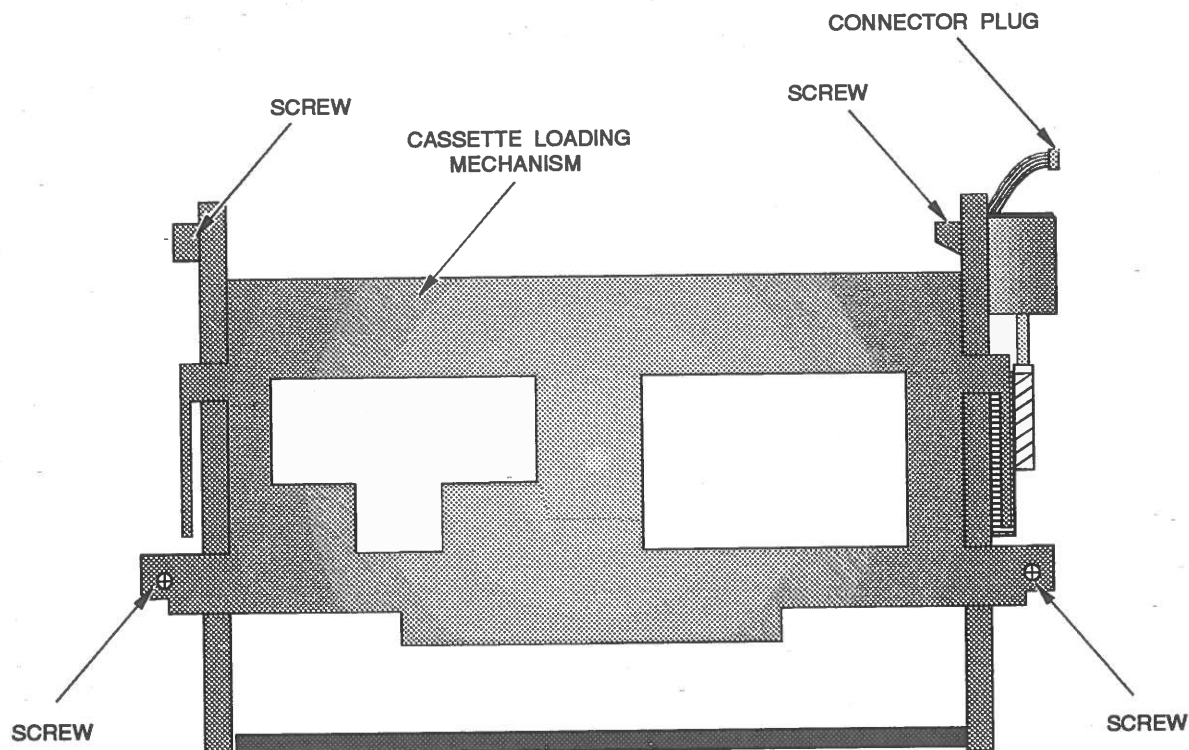
2. With the VCR in an upright position and the top cover off, locate the split washers at the tops of the two reel table shafts. Remove these rings.
3. Remove the soft supply brake arm by releasing the clip holding it onto its shaft. Gently pull the tension band over the supply reel table and remove the supply reel. Remove the takeup soft brake arm by releasing the clip holding it into its holder. Then remove the takeup reel.
4. Clean the shafts thoroughly with alcohol then slowly squeeze out one drop of lightweight oil onto each shaft.
5. Wipe up any excess oil then reinstall the reel tables and the brake arms in same manner as they were disassembled.





Replacing the Cassette Loading Mechanism

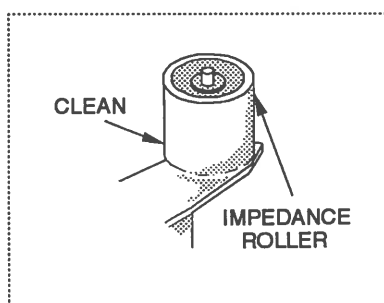
1. Although it is possible to replace individual parts in this assembly, such replacements should be attempted only if you have the special equipment necessary to align the parts properly. Others should consider replacing the entire mechanism.
2. Remove the top cover and front panel, and place the VCR in the service position. Set it to Eject mode.
3. Disconnect the cassette loading mechanism electrical connector from plug CP01 on the main board. Carefully remove four screws securing the cassette holder. Remove the mechanism.
4. To install the new cassette loading assembly, carefully position it into place. Reinstall the four screws. Connect the cassette loading assembly electrical connector into plug CP01.



TAPE TRANSPORT ASSEMBLY

Cleaning the Impedance Roller

1. Clean the impedance roller using a head cleaning stick dampened with cleaning liquid. Do not allow the cleaning solvent to contact any plastic surface.
2. Gently rub only in the direction of forward tape travel, taking care not to scratch or dent the smooth surface of the roller.



2. If it does need to be cleaned, clean it last, because it will blacken the cleaning swab and load it with debris. Wipe with a solvent in the direction of tape travel.
3. After cleaning, wipe away any residual alcohol quickly and completely.

Replacing the Pressure Roller

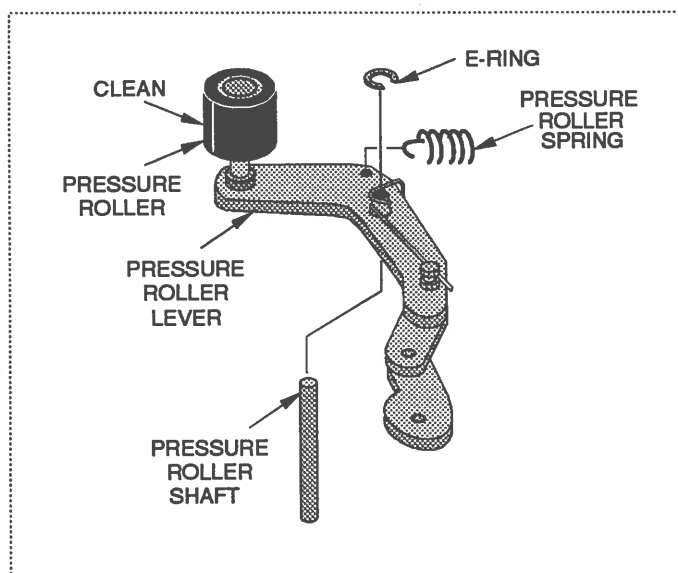
1. Remove the top cover and cassette loading assembly.
2. Release the pressure roller spring from the spring post.
3. Remove the E-ring from the pressure roller shaft. Note the location and position of the pressure roller lever. Slowly and carefully pull the pressure roller lever straight up to remove it from the shaft.
4. Install the replacement pressure roller lever onto the shaft. Replace the E-ring and reinstall the pressure roller spring

Greasing the Input/Output Tape Guide Tracks

1. Wipe away the old grease from the tape guide track surfaces and around the bases of the loading posts. Don't loosen any screws on the loading post bases or on the V-stopper pieces that receive them when the VCR is operating. These positions are set at the factory using special tools and fixtures.
2. Apply new grease to the track surfaces, using a thick film to achieve smooth movement of the loading bases. Do not get grease on the loading posts or on any other surfaces over which the tape travels.

Cleaning the Pressure Roller

1. The pressure (pinch) roller is made of rubber. Rubber can be dissolved by alcohol, so clean this part only if it looks dirty.

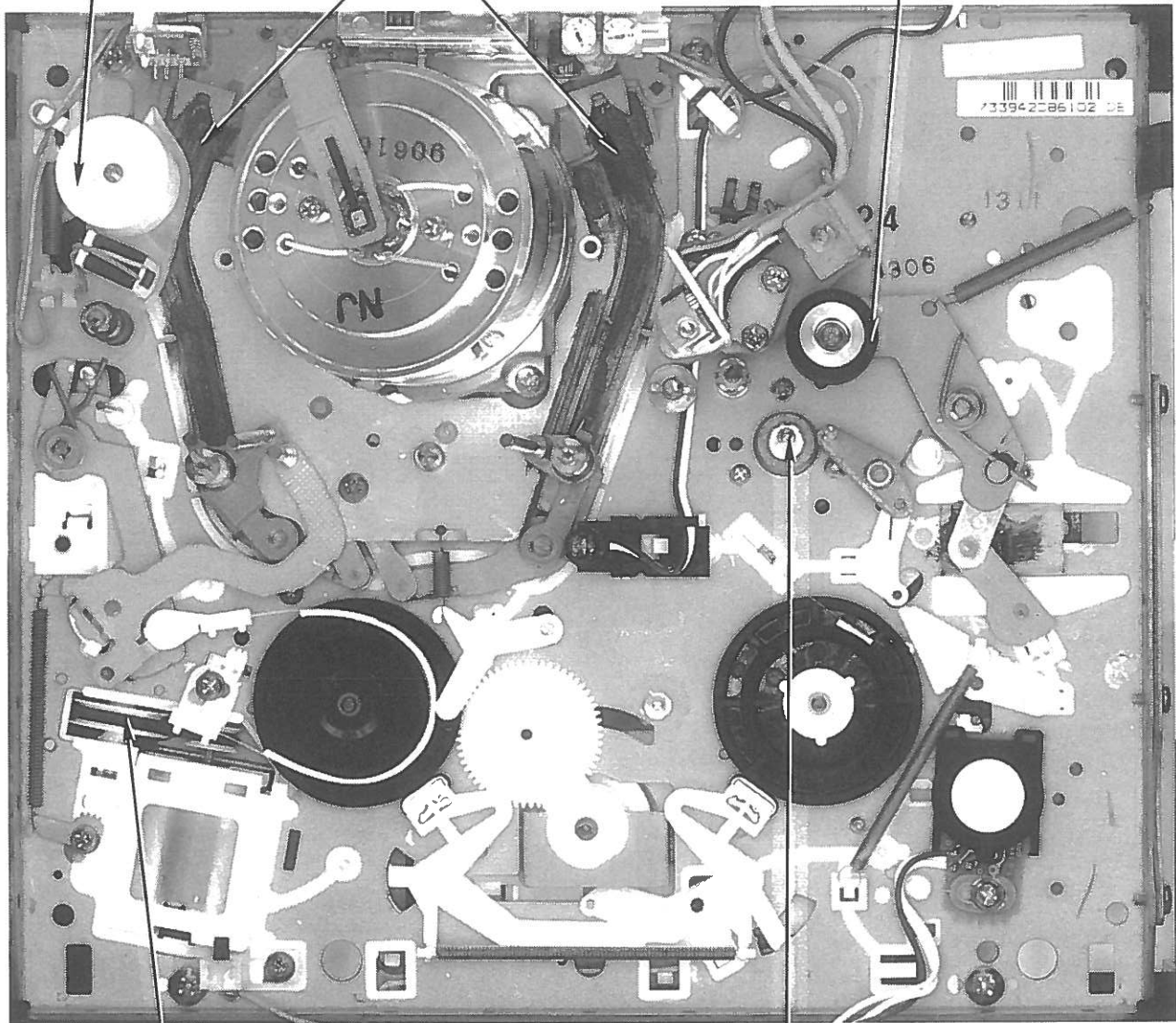




IMPEDANCE ROLLER

TAPE GUIDE TRACKS

PRESSURE ROLLER



LOADING MOTOR BELT

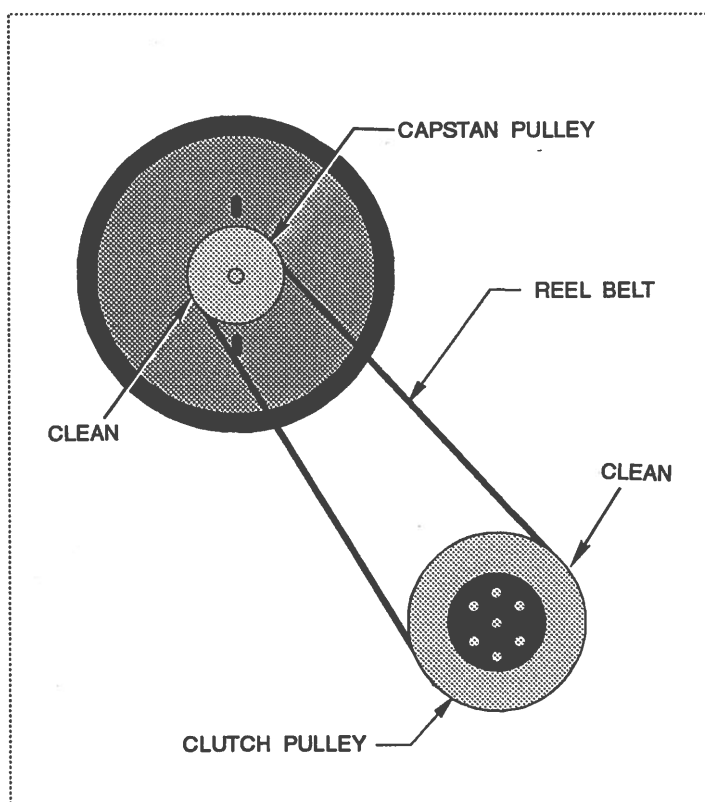
CAPSTAN SHAFT

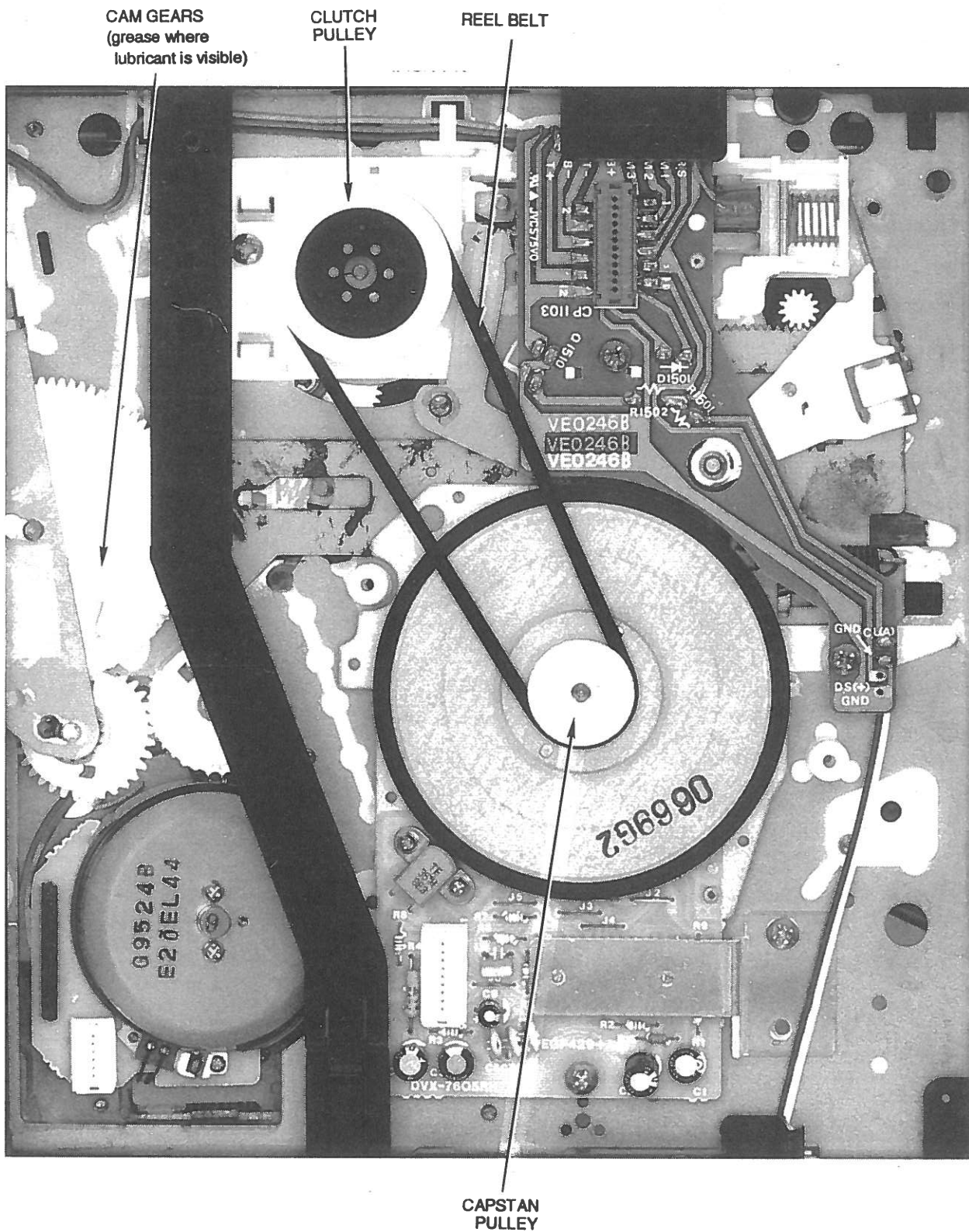
Cleaning the Capstan Shaft

1. During routine maintenance or troubleshooting, always examine the capstan shaft and pressure roller for a buildup of dirt, dust, or tape residue. Clean the capstan shaft next to last because, next to the pressure roller, it is the part of the tape path most likely to accumulate debris.
2. Wipe the shaft in the direction of forward tape travel, using a swab dampened with cleaning solvent. Do not let excess liquid run along the shaft into the dust seals at each end. Make sure the shaft is dry before inserting a test cassette.

Replacing the Reel Belt

1. Remove the bottom cover to access the capstan assembly.
Caution: The capstan rotor is a magnetized disk. Don't let any tools or magnetic particles come in contact with the capstan rotor.
2. Note the position of the capstan pulley assembly and the clutch pulley, then remove the old reel belt from both pulleys.
3. Clean the capstan pulley and clutch pulley with a swab and cleaning solvent. Make sure they are dry before you install the new belt.
4. Carefully place the new reel belt around the capstan pulley assembly and clutch pulley, keeping both pulleys in their original position. Be sure not to nick, cut, or overstretch the new belt.





MECHANICAL PARTS

The reference numbers in the first column of this list are keyed to photographs of the chassis showing the location of each part. The photos appear on pages 26 to 28.

You may obtain these parts from the manufacturer or a Sams authorized stocking core distributor. Use only the exact replacements.

<i>Ref.No.</i>	<i>Mfr. No.</i>	<i>Description</i>	<i>Ref.No.</i>	<i>Mfr. No.</i>	<i>Description</i>
301	850P500023	Spring, Tr.	345	850P800080	Tension Arm Spring
302	850A400056	Guide Roller Assembly	346	850A400046	Tension Arm Assembly
303	850a400038	Incline Base Assembly (s)	347	850A500004	FE Head Arm Assembly
304	850P600128	Flange	348	850P600120	Tension Plate Adjust
305	850A300021	Loading Arm Assembly	349	850P000097	Back Frame Deck
306	850P800083	Spring	350	850P600142	Pressure Roller Actuator
307	850P300055	Loading Gear	351	850P800078	Spring
308	850A400047	Inclined Base Assembly (t)	352	850A000007	Main Chassis Assembly
309	850P600113	Loading Motor Pulley	353	850A600046	Worm Assembly
310	850A300022	Loading Arm Assembly	354*	850P600125	Loading Motor Belt
311	850P800084	Loading Gear Spring	355	850P600141	Main Cam
312	850P300056	Loading Gear	356	850A600048	Tension Lever Assembly
313	850A100006	Loading Base Assembly	357	850A300020	Fan Shaped Gear
314	850P800071	Azimuth Spring	358	850P600196	FS Gear Plate
315	868X0HH804	Conehead Screw	359	850A200005	Clutch Assembly
316	868512HA34	Joint Screw Bind	360	850A600053	MB Lever
317	850P600155	AC Head Base	361	850A600050	CA Lever
318	850P800070	AC Head Base Spring	362	850A600036	Actuator Assembly
319	850P800077	Pressure Roller Spring	363	850A600039	Limiter Post Lever
320	850A400041	Pressure Roller Arm Assembly	364	850P300059	M Gear
321	820A400044	Limiter Post Arm Assembly	365	850P600129	Flange
322	850P800092	Limiter Spring	366	868491H734	Adjustment Screw
323	850P500010	Adjustment Nut	367	850P600122	X Adjustment Nut
324	850P600139	Post Sleeve	368*	850P600124	Reel Belt
325	850P800076	Spring	369	850P000098	Right Side Frame
326	850A700003	Led Holder Assembly	370	868501H804	Adjustment Screw
327	850A600049	TB Brake Arm Assembly	371	850P600111	Photo Coupler Holder
328	820A200007	Reel Table Assembly (t)	401	850P900258	Spring
329	850P800079	Brake Spring	402	850P900256	Top Bracket
330	850A600037	Soft Supply brake Arm	403	850P900261	Spring
331	850P800081	Tension Lever Spring	404	850P900246	Link Gear
332	850A600047	Tension Lever Assembly	405	850P900238	Synchro Gear
333	850A200004	Idler Assembly	406	850A900047	Cassette Side (L) Assembly
334	850A200006	Reel Table Assembly (s)	407	850P900267	Synchro Shaft
335	850A600041	Main Brake Arm (l) Assembly	408	850P900240	Opener
336	850A600042	Main Brake Arm (r) Assembly	409	850P900263	Spring
337	850P800074	Main Brake Spring	410	850P900056	Cassette Side (r) Assembly
338	850A600044	Main Brake Connect Assembly	411	850P900241	Flap Opener
339	850P800117	Brake Spring (ts)	412	850P900259	Spring
340	850A600056	Brake Arm (ts)	413	850P900247	Link Gear (r)
341	850P600130	Post Sleeve	414	850P900260	Spring
342	850P800075	Spring	415	850P900262	Spring
343	850P800072	Spring			
344	850A600057	Tension Band Assembly			

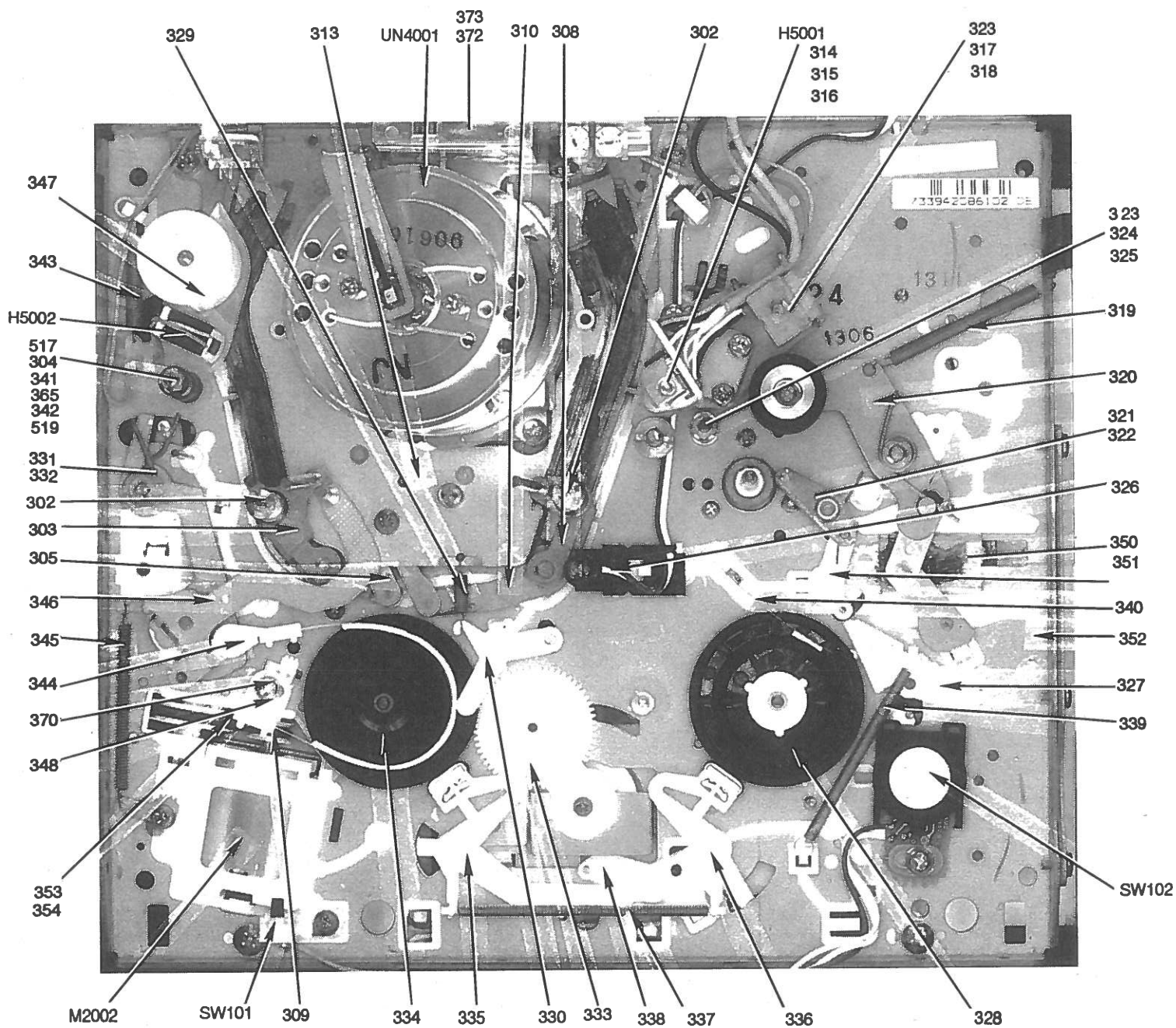


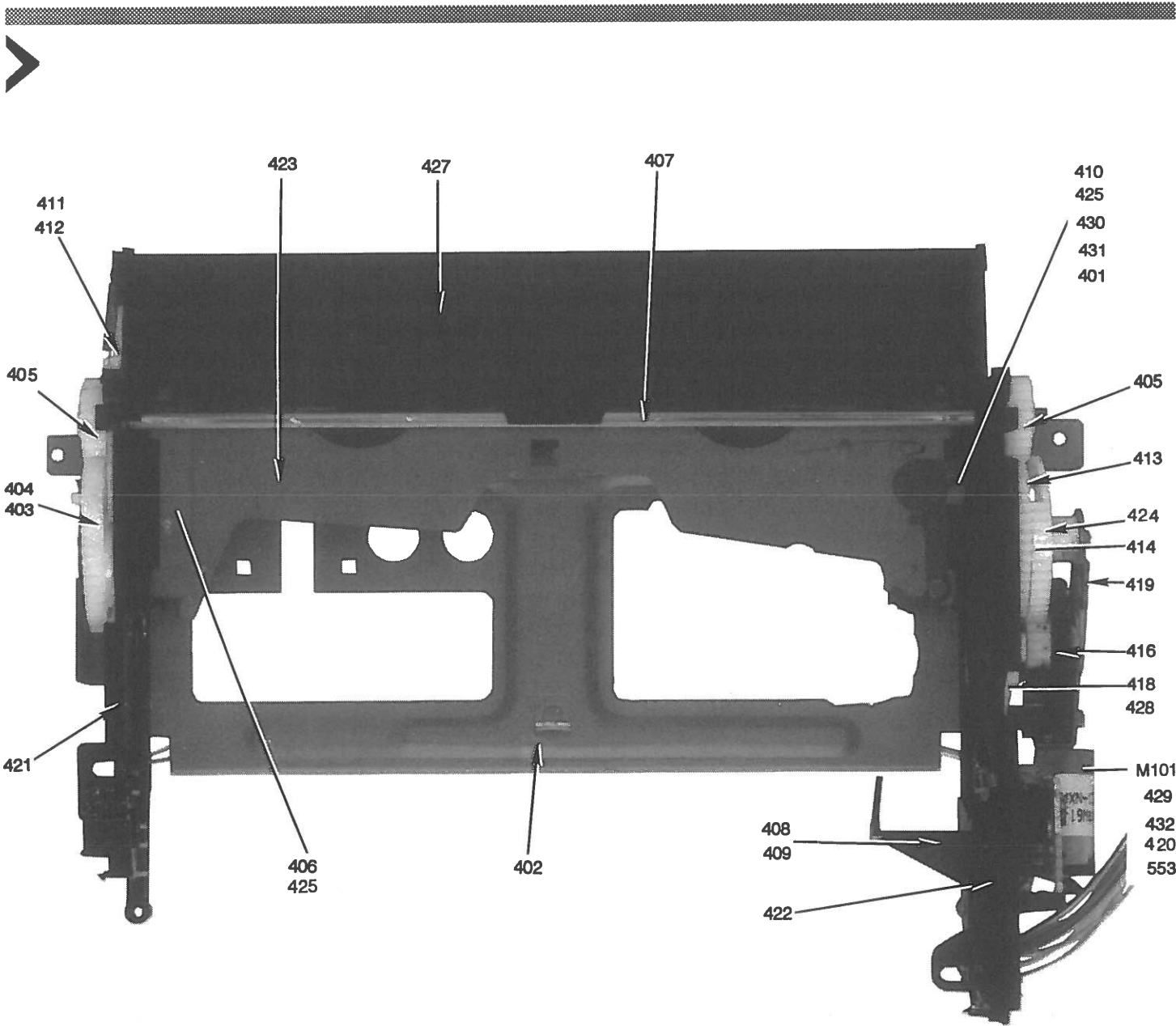
<i>Ref.No.</i>	<i>Mfr. No.</i>	<i>Description</i>	<i>Ref.No.</i>	<i>Mfr. No.</i>	<i>Description</i>
416	850P900243	Worm Wheel	605****	702TSA0004	Cabinet Bottom
418	850P900239	Cam Lever	606**	A43803A723	Cabinet Front
419	850A900045	Motor Bracket	606***	A43803A723	Cabinet Front
420	850P900245	Worm	606****	A43701A723	Cabinet Front
421	850P900251	L Side Bracket	607**	7230002370	Flap
422	850P900252	R Side Bracket	607***	7230002372	Flap
423	850A900044	Sub Cassette Holder	607****	7230002332	Flap
424	850P900244	Clutch Gear	608**	732JPA0045	Tracking Knob
425	850P900257	Spring	608***	712JPJ0435	Door
427	850P900248	Tape Guide Piece	608****	732JPA0045	Tracking Knob
428	850P900273	Spring	609	788JSE0014	Back Screws
429	850P900217	Worm Driver	H5001	1523D91008	Audio/Control Head
430	850P900264	Spring	H5002	1543D02002	Full Erase Head
431	850P900242	Removal Piece	M101	1596978003	Loading Motor
432	850P900229	Rubber Bushing	M2001	1510398009	Capstan DD Unit
601**	702JSB0002	Cabinet Top	M2002	1596958006	Loading Motor
601***	702JSB0004	Cabinet Top	SW101	0550111013	Leaf Switch
601****	702JSB0003	Cabinet Top	SW102	0520343002	Rotary Switch
602**	753JSA0014	Trans. Earth Plate	SW103	0550A22003	Leaf Switch
602***	753JSA0014	Trans. Earth Plate	UN4001**	A43705A500	Cylinder Unit
602****	753TSA0008	Deck Earth Plate	UN4001***	A43901A500	Cylinder Unit
603**	753JSA0021	Deck Earth Plate	UN4001****	A43705A500	Cylinder Unit
603***	753JSA0021	Deck Earth Plate			
603****	753TSA0009	Trans. Earth Plate			
604**	702JPA0326	Cabinet Inside			
604***	702JPA0326	Cabinet Inside			
604****	702TPA0190	Cabinet Inside			
605**	702JSA0019	Cabinet Bottom			
605***	702JSA0019	Cabinet Bottom			

* See Belt Replacements
** Used in model VCR875
*** Used in model VCR953
**** Used in model VCR755

Belt Replacements

<i>Ref. No.</i>	<i>Description</i>	<i>EVG</i>	<i>GC-THORSEN</i>	<i>PRB</i>	<i>WORKMAN</i>
354	Loading Motor Belt	1407-460	1427-18	SCA2.5	1407-460
368	Reel Belt	1407-466	1427-63	SCA8.9	1407-466





ELECTRICAL PARTS



Excluded from these lists are parts that are readily available through your local distributor.

Resistors (Power and Special)

Item	Description	Mfr. No.	NTE No.
# R501	1.5M 1/2W	R011K2155J	HW515
# R502	3.3K 1/2W	R012T2332J	HW233
		R412T23332J*	HW233
# R503	3.9K 1/2W	R012T2392J	HW239
		R412T2392J*	HW239
# R504	3.9K 1/2W	R012T2392J	HW239
		R412T2392J*	HW239
# R505	3.9K 1/2W	R012T2392J	HW239
		R412T2392J*	HW239
# R506	3.9K 1/2W	R012T2392J	HW239
		R412T2392J*	HW239
# R507	3.3K 1/2W	R012T2332J	HW233
		R412T23332J*	HW233

* Used in model VCR755

For SAFETY use only equivalent replacement part.

Ref. No.	Description	Mfr. No.
PCB101	Main Board	A43803A01* A43701A010** A43901A010***
PCB301	Y.C. Board	A4803A300* A43701A300** A43901A300***
PCB411	Head Amp Board	A43803A33* A43701A330** A43901A330***
PCB501,502	Power Supply and Transistor Board	A43803A33* A43701A020** A43901A020***
PCB601	Operation	A43803A27* A43701A270** A43901A270***

* Used in model VCR875

** Used in model VCR755

*** Used in model VCR953

*For information on the nearest
Howard W. Sams & Company
Authorized "Stocking Core" Distributor,
call 317-298-5566.*

Obtaining Parts

When ordering parts, state the model number, the part number, and the part description. For most mechanical parts and for special electronic parts, use only exact replacements from the VCR manufacturer. For semiconductors and VCR belts, comparable replacements are available from the participating vendors listed on page 31.


Semiconductors

<i>Item</i>	<i>Type No.</i>	<i>Mfr. No.</i>	<i>NTE No.</i>	<i>ECG No.</i>	<i>TCE No.</i>
# D501 - D508	DSF10TB-BT-A	D23TDSF10T	NTE116	ECG116	SK3313
# D509,510	11E2TA1	D28T011E20	NTE116	ECG116	SK3313
# D511	LTZ-MR15-T77	DB7T2MR150			
# D512	GZB30B	D93013001B			
D514	1SS132T-77	D17T001320	NTE519	ECG519	SK3100
D515	11E1TA1-T	D28T011E10	NTE116	ECG116	SK3313
D601	LN81RCPH-(C)	0021121050			
D602 - D609	1SS132T-77	D17T001320	NTE519	ECG519	SK3100
D610	HZS6R2JB2-T	D94UA6R2J2	NTE5013T1	ECG5013T1	
D611	HZS5R1EB2-T	D94TA5R1B2	NTE5010A	ECG5010A	SK5A1
D612,18	1SS132T-77	D17T001320	NTE519	ECG519	SK3100
D624,6	1SS132T-77	D17T001320	NTE519	ECG519	SK3100
D1003	GMA-01-BT	D13TGMA010	NTE519	ECG519	SK3100
D1005	HZS11JB3-TE	D94TA110J3	NTE5020A	ECG5020A	SK11A
D1009,10,11	GMA-01-BT	D13TGMA010	NTE519	ECG519	SK3100
D1016	HZS6R2EB2-T	D94TA6R2B2			
D2001 - D2011	GMA-01-BT	D13TGMA010	NTE519	ECG519	SK3100
D2012	11E1TA1-T	D28T011E10	NTE116	ECG116	SK3313
D2013,14	GMA-01-BT	D13TGMA010	NTE519	ECG519	SK3100
D2017,18	GMA-01-BT	D13TGMA010	NTE519	ECG519	SK3100
D3003 - D3006	1SS132T-77	D17T001320	NTE519	ECG519	SK3100
D4001,2,4	1SS132T-77	D17T001320	NTE519	ECG519	SK3100
D4005	HZS9R1JB2-TE	D94TA9R1J2			
D4006,7,	1SS132T-77	D17T001320	NTE519	ECG519	SK3100
D4008	HZS6R8JB2-TE	D94TA6R8J2	NTE5014A	ECG5014A	SK6A8
D4009	1SS132T-77	D17T001320	NTE519	ECG519	SK3100
D4201	HZS13JB2-TE	D94TA130J2			
D4801	1SS132T-77	D17T001320	NTE519	ECG519	SK3100
D6002	1SS166-03TE	D14U001660			
D6003	GMA-01-BT	D13TGMA010	NTE519	ECG519	SK3100
# IC501	STK5342	I23S953420			
# IC502	UPC574J-T	I02190574J	NTE615P	ECG615A	
IC601	OEC1011	I52DT1011A			
IC602	MN1280L	I01901280L			SK9738
IC1001	OEC0015B	I5450015B			
IC1002	M51954AL	I06S51954A			
IC1003	BA6247	I07S062470			
IC1004,5	LA6393S	I03S063930			
IC2001	OEC9008B	I97D49008B			
IC2002	BA10358N	I07S010358			
IC3001	LA7317	I03D373170			
IC4001	LA7323A	I03D37323A			
IC4002	MSM6964-3RS	I08D369643			
IC4101	LA7320	I03DG73200			
IC4801	M50455-003SP	I56D004550			
# IC5001	BA7767AS	I07D767AS0			
IC6001	LA7530N	I03DA7530N	NTE1827	ECG1827	SK9885
# Q501	2SA984K-T	TA3T0984K0	NTE290A	ECG290A	SK3114A
# Q505	2SD1825-LU	TD3H018250		ECG2326	
Q601	2SC536KNP-AA	TC3T0536K0	NTE85	ECG85	SK3245
# Q1001	2SD1111-T	TD3T011110			
Q1002	2SC3400-T	TN3TC03001	NTE2357	ECG2357	SK9742

Item	Type No.	Mfr. No.	NTE No.	ECG No.	TCE No.
# Q1003	2SB698-AA	TB3T006980	NTE290A	ECG290A	SK3114A
Q1004 - Q1006	2SC3400-T	TN3TC03001	NTE2357	ECG2357	SK9742
# Q1007	2SC2274	TC3T022740	NTE289A	ECG289A	SK3122
Q1010	2SC3400-T	TN3TC03001	NTE2357	ECG2357	SK9742
# Q1011	2SB698-AA	TB3T006980	NTE290A	ECG290A	SK3114A
Q1012	2SA1345	TP3TD06001	NTE2360	ECG2360	
Q1013 - Q1014	2SC3400-T	TN3TC03001	NTE2357	ECG2357	SK9742
Q2001	2SC536SP-AC	TC3T0536S0	NTE85	ECG85	SK3124A
Q2002	2SB926-T	TB3T009260	NTE12	ECG12	SK9919
Q2006	2SC3399-AC	TN3TD03001	NTE2359	ECG2359	
Q3002,6	2SC2412K	T87A02412K	NTE2408	ECG2408	
Q3007	2SA1037KT97	T67A1037K0	NTE2409	ECG2409	
Q3008	DTC124EKTTP	TN7TC05001	NTE2414	ECG2414	
Q4001	2SA1037KT97	T67A1037K0	NTE2409	ECG2409	
Q4002 - Q4003	2SC2812-L7-TA	T83A028127	NTE2408	ECG2408	
Q4004	DTC124EKTTP	TN7TC05001	NTE2414	ECG2414	
Q4007	2SC2412K	T87A02412K	NTE2408	ECG2408	
Q4008	2SA1037KT97	T67A1037K0	NTE2409	ECG2409	
Q4009 - Q4010	2SC2812-L7-TA	T83A028127	NTE2408	ECG2408	
Q4011	2SC2412K	T87A02412K	NTE2408	ECG2408	
Q4012	DTA124EKTTP	TP7TC05001	NTE2417	ECG2417	
Q4013 - Q4015	DTC124EKTTP	TN7TC05001	NTE2414	ECG2414	
Q4802	2SA1037KT97	T67A1037K0	NTE2409	ECG2409	
Q4803 - Q4804	2SC2412K	T87A02412K	NTE2408	ECG2408	
# Q5005	2SC1317-T	TC1T013170	NTE289A	ECG289A	SK3124A
Q6001	2SC536SP-AC	TC3T0536S0	NTE85	ECG85	SK3124A
Q6002	2SA608KNP-T	TA3T0608K0	NTE290A	ECG290A	SK3114A
Q6004	2SC3000-AA	TC3T030000	NTE85	ECG85	SK9229
Q6005	2SC536SP-AC	TC3T0536S0	NTE85	ECG85	SK3124A

For SAFETY use only equivalent replacement part.

Participating Vendors

<p>EVG / A Division of Russell Industries, Inc. 3000 Lawson Blvd. Oceanside, NY 11572 516-536-5000</p>			<p>Philips ECG, Inc. (A North American Philips Company) Distributor & Special Markets Div. 1025 Westminster Dr. Williamsport, PA 17701 717-323-4691</p>		
<p> industries, inc.</p>			<p>Projector Recorder Belt Corp. P.O. Box 176 Rte 3, Hwy 59 Whitewater, WI 53190</p>		
<p>GC-THORSEN 1801 Morgan St. Rockford, IL 61105-1209 815-968-9661</p>			<p>Thomson Consumer Electronics, Inc. Distributor and Special Products 2000 Clements Bridge Rd. Deptford, NJ 08096-2088 609-853-2555</p>		
<p>NTE Electronics, Inc. 44 Farrand St. Bloomfield, NJ 07003 201-748-5089</p>			<p>Workman Electronic Products, Inc. 11917 County Rd. 10-2 Delta, OH 43515 800-537-7103 FAX 419-923-7145</p>		

Emerson® Models VCR875, VCR953, VCR755

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