



Repairing Cassette Recorders

Many recorders may develop troubles that are common to others, regardless of make and model. Here are some troubles and their cures.

by GARY McCLELLAN

CASSETTE RECORDERS ARE BECOMING more popular than ever, and that means more are coming in for service. If you are now turning away these machines, you are missing out on a lot of potential profits. In practice, most of the problems that you'll encounter will be easy to fix; bad batteries, broken microphone cables, and tape jammed up in the machine head the list. Of course you'll run into more difficult problems, but with a good understanding of tape recorders—aided by the service manual of the machine you are working on—you should be able to handle these units almost painlessly.

Five popular machines, their most common problems and their repairs, are about to be presented. Hopefully, they'll be helpful to you on your next cassette recorder repair job. At the least, they may give you ideas as to where to look for the trouble. Let's look at the first example.

The Norelco 150 Carrycorder

In recent years a great many of these machines have come in with the complaint of slow fast forward or rewind. A check of the motor and the drive belt showed that the motor pulley would not turn the belt under these conditions. Simply cleaning off the belt and pulley solves most of these problems, but in extreme cases you'll have to replace the belt. These belts are made out of plastic, and they tend to stretch with age. I have seen a few cases where this belt had stretched so much that the recorder stopped working completely!

The Norelco 2401 cassette changer

This machine is one of Norelco's 1970 models. It stacks up to six tapes, and can give up to six hours of nonstop music. Recently my unit stopped changing cassettes. For want of a better place to start looking for the trouble, I checked the well where the tapes drop to be recorded or played. Running across the bottom, there is a recessed track. Riding on this track, there is a finger-like device that moves the played cassette out of the well so that a

new one can take its place. Looking carefully at this finger, I happened to notice that it was jammed flat inside the track. It should have been in a popped-up position. An adjustment with a pair of needle-nosed pliers cured this one.

A Norelco 2502 changer (which is mechanically identical) came in with the same problem. The cure was the same.

The Sony Easymatic 100

One of these machines came in with no erase and poor record. A scope check of the bias oscillator showed the output voltage to be high, like there was no load on it. A new erase head was tried, the voltages dropped to

normal, and the recorder worked fine again.

The Sears 8245 recorder

This machine came in with no record or erase. I went immediately to the bias oscillator. Not surprisingly, there was no output. About this time I noticed that R39 was getting hot (see Fig. 1). The only possible chance for this to happen would be if Q7 and Q8 were drawing too much current. These transistors (2SC536's) were pulled and checked; both were shorted. I didn't have a pair of them handy, so I tried a pair of 2N706's. They worked fine, although VR3 had to be readjusted for better performance on *record*. I have since found that 2N706's work better in this circuit. The recorder was returned working perfectly.

Another one of these machines came in without the battery/level meter working. I tried a 0 to 500- μ A meter in place of the original movement, and it worked fine (see Fig. 2). A new meter cured this one. Incidentally, be careful when replacing subminiature meters; they're fragile!

The GE M-8300 recorder

A salesman friend of mine brought in one of these. He complained of weak record and playback, but said that the erase was okay. With this information, I went to work. With a pre-recorded cassette playing in the recorder, I tried to trace the signal through the record/playback amplifier. Immediately one thing became clear; the gain of each stage was too low! Next the supply voltages were checked; all of these were okay. I must admit that this one had me stumped until I thought of the coupling capacitors. So I checked the input capacitor—it was open! And so were most of the others! I finally ended up by replacing all of them. That did it; the gain came back, and the recorder worked like new. It was about this time my friend mentioned that he had been leaving the recorder in the trunk of his car. It was the heat that damaged it!

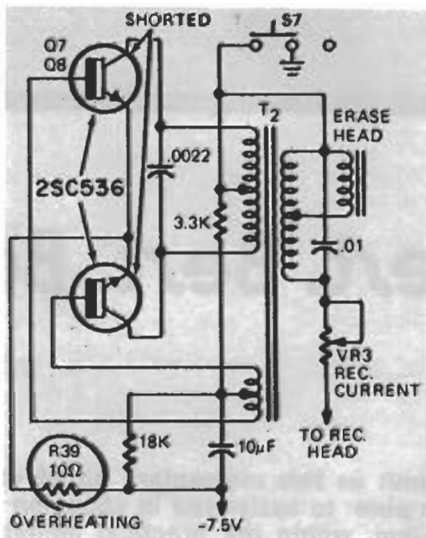


FIG. 1—BIAS-ERASE OSCILLATOR in a Sears model 8245 cassette recorder. Shorted transistors caused erase and record failures.

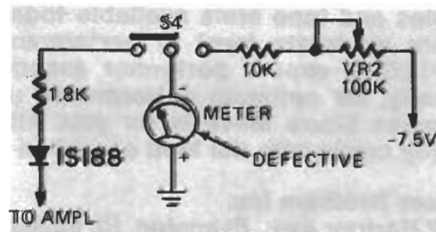


FIG. 2—METER CIRCUIT checks battery and recording level through selector S4.