

A Cassette Recorder for the Intraoperative Electrocardiogram

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Although various systems for recording ECG in the operating room have been described, their routine use may not be practical.¹ The system is often bulky, expensive, and complicated. We have designed a new system which offers several advantages, namely, ease of tape manipulation and electronic control, as well as portability and low cost.

The system is composed of the following components:

1. A. R. Vetter,^{*} Model 2, FM recording adaptor with a modified input for the differential recording signals of the Electronics for Medicine ORM-1 cardioscope.
2. Sony TC125 stereo cassette recording deck.
3. Datascope[†] ECG monitor.
4. A monaural audio amplifier and speaker with volume control.

The hookup of the components is schematically illustrated in figure 1. We chose cassette

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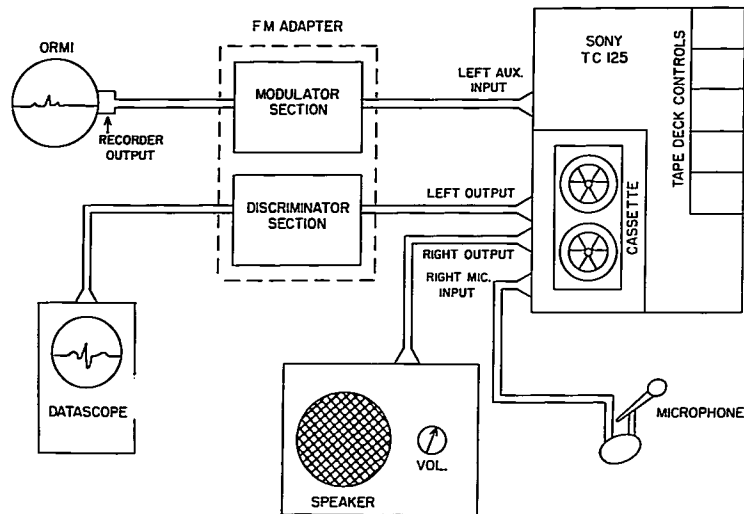
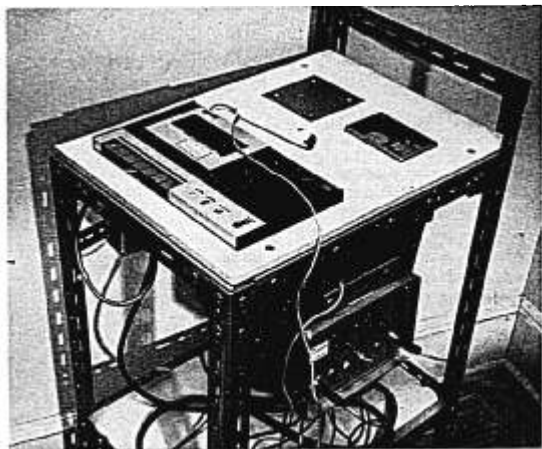


FIG. 1. Schematic diagram of recorder components.

FIG. 2. Photograph of recorder.



recording because of its simplicity, especially when compared with reel-to-reel tape recording. The Sony cassette deck is panel-mountable, provides an automatic recording level, and allows recording on two channels, one ECG and one voice. Unfortunately, this cassette recorder does not presently provide an automatic shutoff at the end of a tape, which would be an advantage. The Datascope unit was included principally to monitor the ECG signal being recorded should adjustment of the FM adaptor be needed, though this is rare in our experience. The components were subsequently mounted on a mobile cart, shown in figure 2. This packaging, although somewhat bulkier than necessary, offered a good compromise between a larger relay rack and the less desirable "suitcase" type of mounting which is not as rugged.

In the course of several months of routine, continual monitoring in the operating room, we have collected a wide variety of ECG patterns. To use these as a teaching aid, a second Sony tape deck was connected to the system in place of the display cardioscope, and se-

lected portions of the previously obtained ECG tapes were rerecorded onto a single cassette. An accompanying commentary was added to the voice channel on the same cassette. It is possible, therefore, for a trainee to play back this teaching cassette, watch for patterns in the familiar medium of the operating room (ORM-1), and simultaneously hear a commentary describing the pathophysiology and treatment of these arrhythmias. In addition, the routine taping of ECG during operation allows one to see an "instant replay" of events which happened too rapidly for careful interpretation at the time of occurrence.

This system offers simplicity of use and is capable of recording EEG or arterial pressure as well as ECG through the ORM monitor. It may also provide a logical first step interface to a computer for computer-aided instruction in electrocardiography.

REFERENCE

1. Morrow, D. H., Bosomworth, P. P., and Stapp, I. P.: A cardiotope recording system, *ANESTHESIOLOGY* 29: 842, 1968.