

Equipment Profiles (continued)



Viking Model 433 4-Track Stereo Tape Deck

MANUFACTURER'S SPECIFICATIONS—Record/Playback Frequency Response: 40 to 18,000 Hz ± 3 dB @ $7\frac{1}{2}$ ips, 40 to 12,000 Hz ± 3 dB @ $3\frac{3}{4}$ ips, 50 to 6,000 Hz @ $1\frac{7}{8}$ ips. Signal-to-Noise Ratio: 54 dB or better. Distortion: 1% THD at 1000 Hz. Bias/Erase Oscillator: 80 kHz. Crosstalk Rejection: 55 dB. Fast Forward/Rewind Time: 70 sec. for 1200 ft. Reel Size: 7" max. Wow and Flutter: Less than 0.2% @ $7\frac{1}{2}$ ips, 0.25% at $3\frac{3}{4}$ ips, 0.5% at $1\frac{7}{8}$ ips. Dimensions: $15\frac{3}{4}$ " W x $14\frac{3}{8}$ " H x $8\frac{3}{4}$ " D (behind panel, $6\frac{1}{2}$ "). Price: \$369.95. With walnut base, \$389.95.

Viking's new Model 433 is an attractively styled, unusually versatile, medium-priced machine. It offers lots of worthwhile features for the serious tape recordist—sound-on-sound and echo, among them. At the same time, it is an impressive performer. The model number "433" spells out what the recorder includes: four tracks, three hyperbolic tape heads, and three speeds. (It also has three motors.) As distinguished from a tape recorder system, the Viking deck does not incorporate power amplifiers and/or speakers, of course. Thus, it is not designed to be used as a portable unit (though it could be used for this purpose with the addition of portable amplifiers and speakers such as Viking's Model 4400 speaker/amplifier system).

The 433 deck, which is a gold and black unit, can be purchased for cabinet or panel-cutout "custom" installation, or with an oiled-walnut base. The former includes mounting brackets.

An operator of the 433 tape deck is likely to find the two level meters most useful since they are illuminated when in use, indicating the mode of operation at a glance. That is, while recording mono, only the proper level meter is active, as an example. Equally helpful are Viking's mode indicators. These are four indicators (two on each side of a level meter) that light up "Play" or "Record," with a green or red illu-

mination, respectively. A single multi-function selector switch is used to choose the desired function which can be observed on the mode indicators (and the function read even at a 10-ft. distance).

There are separate playback level controls and monitor controls which vary their respective outputs (RCA phono jacks at the rear). A monitoring headphone jack (for 4 to 600-ohm headphones) is also provided on the front panel. The inputs have separate microphone and high-level controls so that mixing of auxiliary sources with microphones can be accomplished by the recorder electronics without an external mixer. The mikes plug into the front via phone plugs, while the hi-level inputs come into the rear. Another feature is an echo switch which enables some of the sound picked up by the playback head to enter the recording circuits. The record head precedes the playback head in time by a few milliseconds, so we get some echo while recording. On most recorders this requires cable patching at the rear plus some sort of control to vary the amount of echo. Here the amount of echo is controlled by the "play" controls while recording. The mode switch also includes transfer modes from left to right and vice versa, for sound-on-sound (special effects) recording. Naturally, a source/tape compare switch is also provided on the front panel.

The 433 is mechanically and electrically separable into four parts that unscrew and unplug for easy replacement in servicing. The top section has the supply and take-up reel motors, together with associated electronics. The center section contains the capstan motor and flywheel, tape-gate solenoid, and record equalization switch. A side mination, respectively. A single multi-section holds the tape-motion controls and relays, and the bottom section contains all record/playback electronics.

See Fig. 2.

Controls on the right consist of two mechanically interlocked, three-position lever switches which defy user error. Pause and record buttons are above the levers, and a three-position lever on the left side of the deck selects speed by moving a rubber belt between the capstan motor's stepped pulley and the flywheel. A four-digit resettable counter, above the speed selector, is driven off the supply reel. A remote pause button at the end of a long portable cord (which plugs into the rear of the deck) allows momentary pauses to be made during recording or playback.

The Viking 433 has three four-pole motors. One drives the two-pound, dynamically balanced capstan/flywheel assembly, while the others drive the supply and take-up turntables directly. A tilt-away pressure roller simplifies tape threading through the straight slot as shown in Fig. 3.

The entire head assembly (see Fig. 3) is removable by unscrewing two screws and unplugging three molded head connectors. A spring-loaded pressure pad is used at the left-hand guide and two pin guides between the erase and record heads and after the playback head, both attached to the movable gate, provide the necessary tracking for correct contact between the tape and heads. Braking is dynamic, with no mechanical brakes whatsoever. One result of this is that, in threading the tape, the reels are completely free-wheeling. For someone used to mechanical brakes, there might initially be a tendency to spill tape during threading, but once familiar with reels that are completely free to turn in either direction, one can thread very quickly, with little tension applied to the tape. An idler/run-out arm acts as the tape-end and tape-break sensor, shutting everything off at the appropriate time, in addition to doing its duty as final tape guide before the take-up reel.

Seven plug-in printed circuit cards comprise the 433's all solid-state electronics. They are divided according to function, and each is removable. Playback equalization and record bias are adjustable from the rear of the deck. See Fig. 4. But since the rear cover has an interlocking a.c. power connector, a "cheater cord" is required to make these adjustments while the machine is running.

Performance

As expected, the unit performed exceedingly well throughout all our tests. Wow and flutter, measured at beginning, middle, and end of tape reel, and

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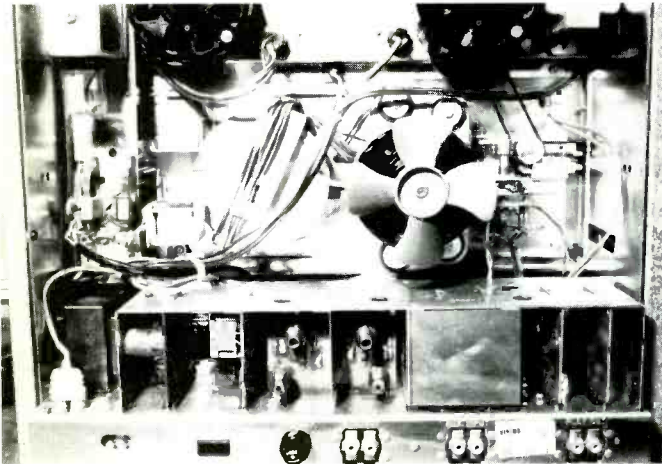


Fig. 2—Rear view of tape deck showing four demountable sections.

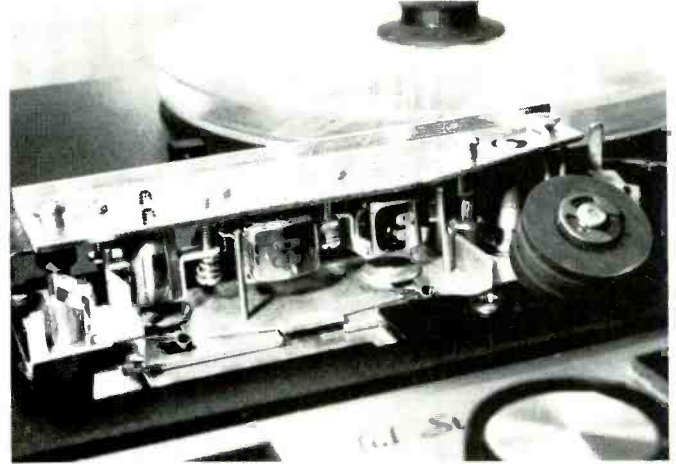


Fig. 3—Head assembly, showing capstan and tilt-away pinch roller. Note the easy access for cleaning and demagnetization.

Fig. 4—Plug-in electronics shown with metal shield removed.

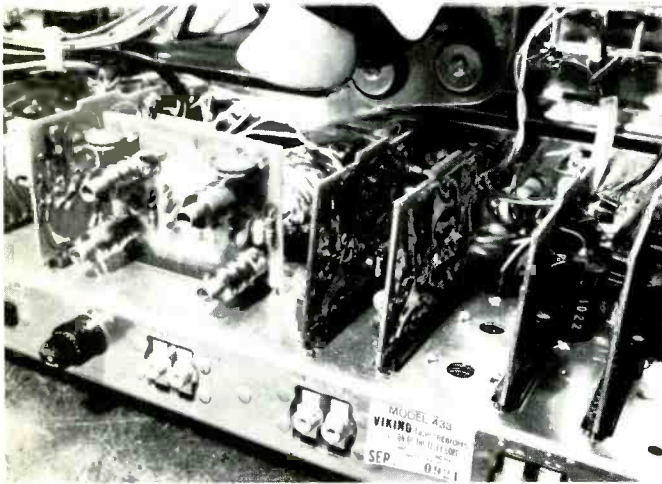


Fig. 5—Playback frequency response. Test tape was full-track, which accounts for the boost at 100 Hz at 7½ ips.

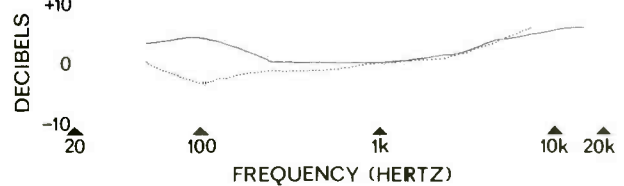
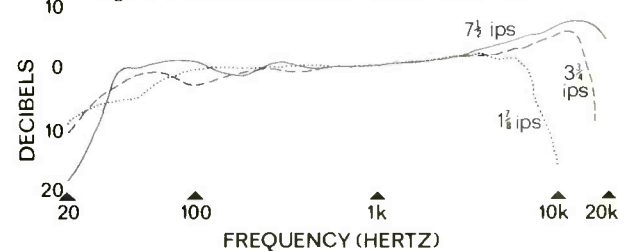


Fig. 6—Record/playback frequency response.



then averaged, was 0.14% total with 0.05% wow at 7½ ips. At 3¾ ips, the machine was better than 0.20% total with 0.12% wow. At 1½ ips, wow and flutter was better than 0.4 total. These figures are excellent, comfortably exceeding the manufacturer's specifications. Fast forward/rewind time was 70 seconds for 1200 feet on tape on a 7-in. reel, as specified.

The playback frequency response, as shown in Fig. 5, yields a response of 50 to 15,000 Hz ± 3 dB at 7½ ips; 50 to 7,500 Hz ± 4 dB at 3¾ ips. This response is very good, although the rising high end could probably be readjusted with the playback equalization control at the rear of the machine to give us a flatter curve. With the above-mentioned adjustment made, the unit is certainly suitable for high-quality reproduction of recorded tapes, being limited only by the fidelity of the source material.

The record/playback response, shown in Fig. 6, yields 40 to 20,000 Hz ± 3.5 dB at 7½ ips, 40 to 15,000 Hz ± 4 dB at 3¾ ips, and 50 to 8,000 Hz ± 3 dB at 1½ ips. The response here also rises at the high end, probably due to a slight error in playback equalization. Also, Scotch 202 tape was used for our tests and, although not specified, most likely the machine was factory adjusted for the standard Scotch 111 tape, which would account for the rest of the peak at the high end. Even with the response as it stands, however, the unit meets its specifications. The record/playback signal-to-noise ratio measured 57 dB below the 3% distortion level, unweighted for both top speeds, except that the test sample's right channel at 3¾ ips was only down 54 dB. These measurements fall within the specs, and are really quite good. Crosstalk was measured at 50 dB down at 400 Hz, both ways, which is just fine for a

quarter-track machine. In matters of distortion, or the absence of it, the Viking 433 stayed below 1% harmonic and 2% intermodulation, recorded -10 dB from 0 level. Input and output levels were as specified. One couldn't ask for anything more from the machine.

In sum, the Viking 433 performed quietly and flawlessly in both recording and playing back of tapes. Mechanical operation was positive and smooth, and the sound was definitely "high fidelity." The use of three tape heads, each expressly designed to perform a specific task, enhances performance of the tape deck. The playback head, for example, has a 50 micro-inch gap; the record head, a 500 micro-inch gap; and the erase head, a double gap. All are quarter-track types, naturally.

Thus, it looks like the Viking 433 stereo deck is a winner.

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