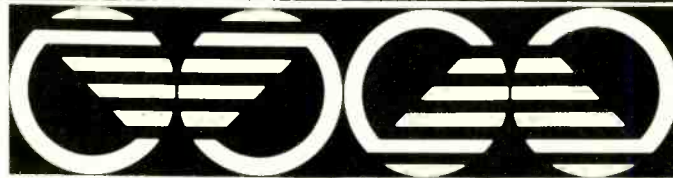


EQUIPMENT PROFILES



JVC CD-1667 60
TEAC 3340 62

Fisher Sound Panels PL 6... 66
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JVC Model CD-1667 Cassette Deck

MANUFACTURER'S SPECIFICATIONS:

Frequency Response: CrO₂, 30 to 16,000 Hz \pm 3 dB. **Normal Tape:** 30 to 13,000 Hz \pm 3 dB. **Signal to Noise:** 50 dB at 1 kHz, with ANRS: 55 dB at 1 kHz, 60 dB at 10 kHz. **Wow and Flutter:** 0.15% rms. **Cross Talk:** 60 dB at 1 kHz. **Channel Separation:** 35 dB at 1 kHz. **Bias Frequency:** 95 kHz. **Motor:** Servo-controlled d.c. **Rewind Time:** 100 seconds, C60. **Dimensions:** 15 by 15 by 10½ inches deep. **Weight:** 10.1 lbs. **Price:** \$199.95

The JVC 1667 is a similar model to the 1668 which was included in our capsule reviews published in the October issue. It does not have a Memory switch, an indicator for CrO₂-normal tape, peak indicator and some other refinements but it *does* have the ANRS noise reduction systems and the basic performance is almost identical. The main functions are controlled by six piano keys with a separate button for Eject on the extreme right. The on/off lever switch is on the left, and above that are the input level slide controls. Next to these are the ANRS noise limiter and Tape Select switches. At the top, on an angled panel, are the two VU meters with the record indicator light and to the right is a three-digit counter. Right at the front, under the on/off switch, is a recessed panel containing the microphone and headphone sockets together with a two-position headphone sensitivity switch. At the rear are the input and output sockets, a DIN connector and two pre-set input controls.

The complete top panel is mounted a little above the wooden base—a nice styling feature.

Measurements

Figure 1 shows the record-playback responses with CrO₂ and TDK ED low-noise tapes as well as the response with a standard playback tape. It will be seen that the CrO₂ measurements are well within the specified 30 to 16 kHz figures. The 3 dB point for "normal" tape is given as 13 kHz but our measurements with TDK ED tape were considerably better and came quite close to the CrO₂ tape performance. The noise reduction system operates by boosting low-level frequencies from 500 Hz in the recording mode and then reducing them on

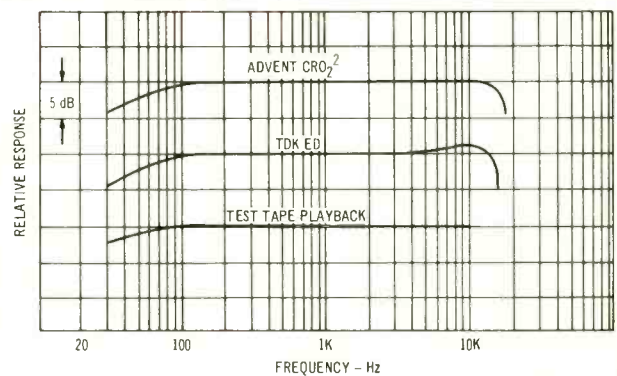


Fig. 1—Frequency response

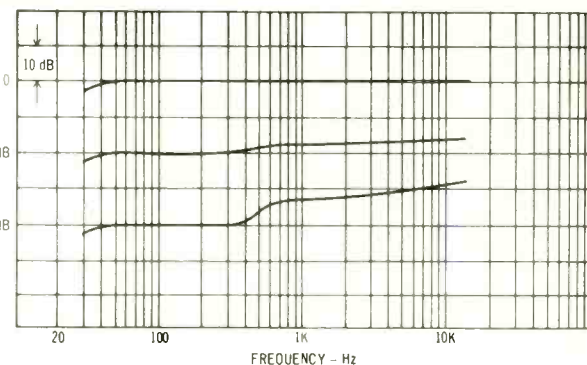


Fig. 2—ANRS recording characteristics at two levels

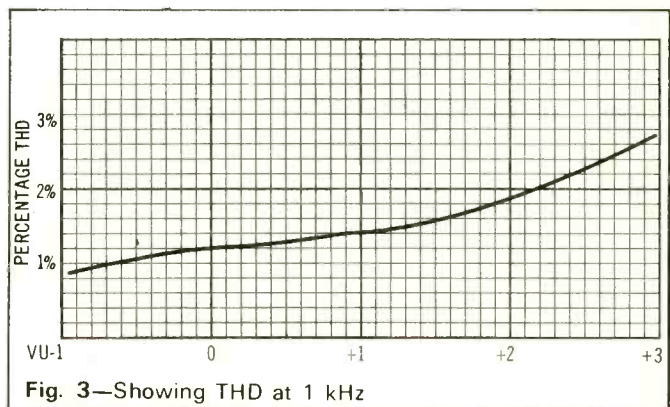
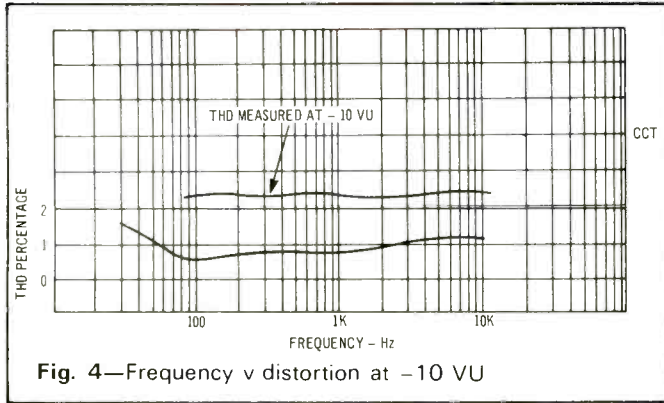


Fig. 3—Showing THD at 1 kHz

playback. Figure 2 shows how the boost is dependent on level. Playback characteristics form a mirror image and actual tests showed that the deviations are insignificant. Signal/noise was 50 dB without ANRS and 55 dB with—an improvement of 5 dB. At 10 kHz the noise reduction increases another 5 dB. Distortion at 0 VU was just over 1% as shown in figure 3. At +3 VU the distortion was only 2.5%—which is excellent. Wow and



flutter measured 0.14% and speed was found to be 0.7% fast. Erase with CrO₂ tape was 49dB. Input sensitivity was 72 mV for 0 VU and line output was 1.2 volts. Microphone sensitivity measured 0.30 mV. Finally, rewind time was 140 seconds for a C90 tape and just under 100 seconds for C60. So much for the figures.

Listening Tests

The first impression of the 1667 was a *smoothness*, an ease of handling unusual for a recorder in this price class. The push-buttons need a very light, almost a feather-light touch but are quite positive in action, and the automatic stop device works without fuss. As the end of the tape is reached, the player stops and the cassette just pops up and sits there—it doesn't fly out into the room! The motor itself is quiet and the machine as a whole is very well made. As the figures indicate, the ANRS feature is well worthwhile—you can certainly hear the difference. Records were taped without the noise reduction system and the tape hiss clearly showed which was tape and which was the record on a comparison test. However, when the ANRS was switched in it was quite difficult to tell which was which! The obvious question is—how compatible is the JVC ANRS system with Dolby? In our review of the JVC 1667, we said it was *reasonably compatible*: in other words Dolby tapes could be played back with little difference in overall sound. There were some exceptions—piano music for instance sometimes showed a slight breathing kind of distortion which was absent when played through a Dolby deck. But for orchestral music it was difficult to hear the difference so we will stick with our original opinion—the systems are reasonably compatible.

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MANUFACTURERS SPECIFICATIONS

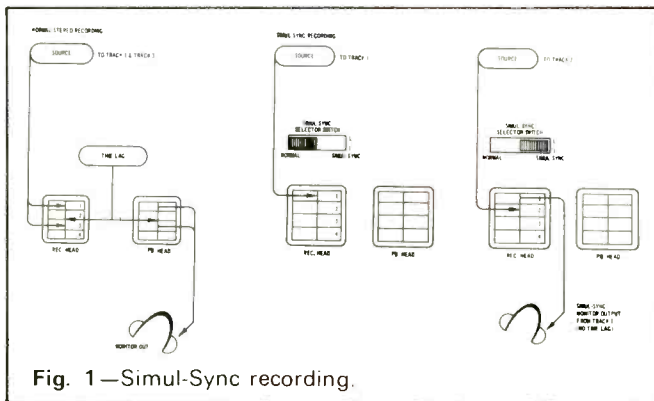
Tape speed: 7½ and 15 ips. **Reel Size:** 10½ and 7 inches. **Motors:** 1 dual-speed hysteresis synchronous, 2 eddy current capstan. **Heads:** 3 four-track and two channel. **Wow and flutter:** 0.04% at 15 ips, 0.06% at 7½ ips. **Frequency response:** 30 to 20,000 Hz ±3 dB at 15 ips, 30 to 18,000 Hz ±3 dB at 7½ ips. **Signal to noise:** 60 dB. **THD:** 1% at 0 VU. **Crosstalk:** 60 dB at 1000 Hz. **Inputs:** Mic: 0.25 mV, Line 0.1 v at 50,000 ohms or higher. **Outputs:** 0.3 v at 10,000 ohms. **Headphones:** 8 ohms. **Dimensions:** 20½ by 17¼ by 8. Price: \$849.

The TEAC 3340 is primarily a quadraphonic recorder, a semi-professional machine with a high standard of performance. However, it can be used for 2-channel record-playback, ½-track playback, mono record-playback as well as 4-channel record-playback. The main feature of the 3340 is probably the Simul-Sync facility—about which more later.

Looking at the photograph, it will be seen that there is a group of eight controls on the left side. These are the output level controls and dual-concentric input controls for microphone and line. Above these is the tape speed knob with slide switch for small or large tape reels. The Simul-Sync unit is in the center and tape source-tape monitor switches are located between the VU meters. Underneath are the four microphone input jacks and a headphone socket. A slide switch allows the phones to be connected to the front or rear channels or F + R. At the right is the stop control, tape direction lever,



record push-button, on/off switch, bias switch and record mode switches. The input and output sockets, plus a fuse and a power input socket are all located at the rear.



Simul-Sync Recording

This is a technique which allows you to play back and monitor one track without time delay while recording a second, third or fourth track in perfect synchronization. The head function switch provides this feature by changing the record head to playback when the switch is in the Simul-Sync position, thereby eliminating the time delay which is inevitable with conventional monitoring systems. See figure 1. Thus, a rhythm section could be recorded on track 1, brass on track 2, piano on 3. A vocalist can then dub in later and the complete sound mix can be created by the independent level controls. Figure 2 shows the view underneath. The main motor is a dual-speed hysteresis type and the reel motors are eddy current induction types. Figure 3 shows the heads and capstan assembly. Note the heavy, rigid base plate which is necessary to

maintain correct alignment. Permalloy shielding is employed and then a hyperbolic shape is used which TEAC claim gives minimum head contact for reduced tape wear and increased head life. Other features of the 3340 include independent

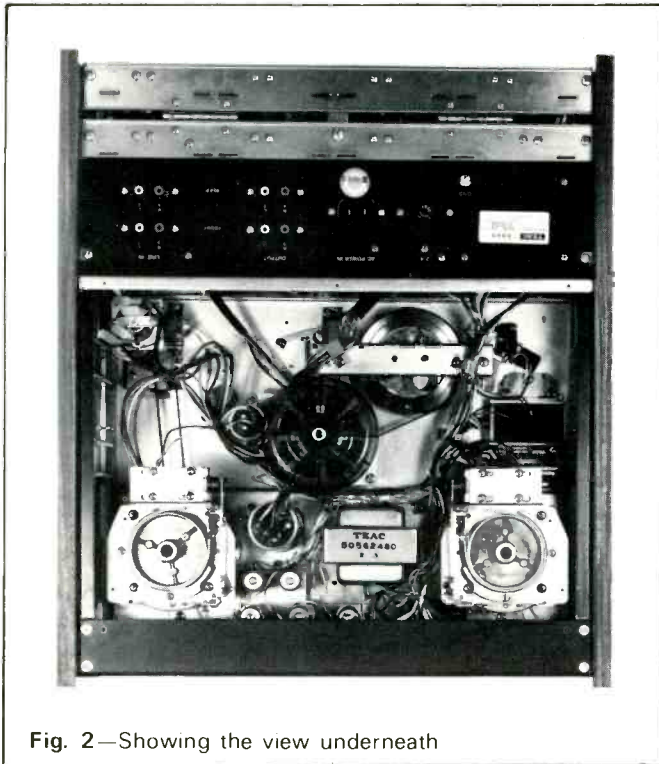


Fig. 2—Showing the view underneath

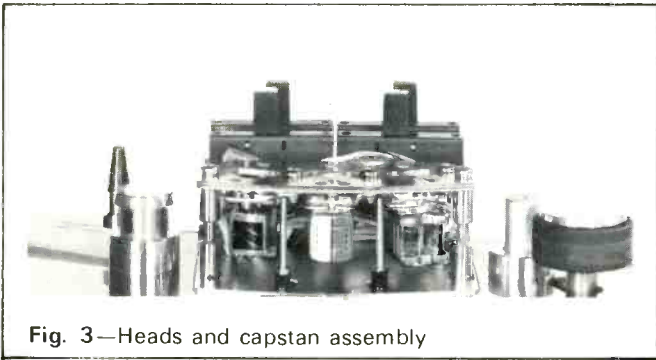


Fig. 3—Heads and capstan assembly

record and relay amplifiers, expanded scale VU meters, oil damped tension arm, "Quick Lok" reel holders, automatic tape lifters and provision for manual cueing.

Measurement

The frequency response at 7½ and 15 ips is shown in figure 4 and it will be seen that the upper 3 dB roll-offs are 26 kHz and 35 kHz with Maxell low-noise tape. Signal/noise was 60 dB (at 0 VU) at 7½ ips and 63 dB at 15 ips. Distortion at 1 kHz, 0 VU measured 0.55%—better than the modest claim of 1%. Wow and flutter was 0.03% at 15 ips and 0.05% at 7½ ips. Input for 0 VU was 30 mV for line and 0.20 for mic. Maximum output at the line terminals was 1.2v at 0 VU. Fast winding time was 90 seconds for 1200 ft. and 120 seconds for 1800 ft.

Listening Tests

The 3340 was on test for a period of just over a month and gave every satisfaction. The controls were exceptionally easy to operate—in particular the stop button was absolutely posi-

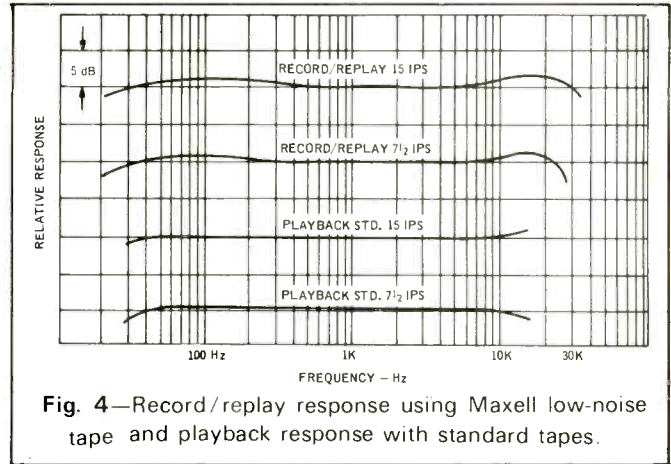


Fig. 4—Record/replay response using Maxell low-noise tape and playback response with standard tapes.

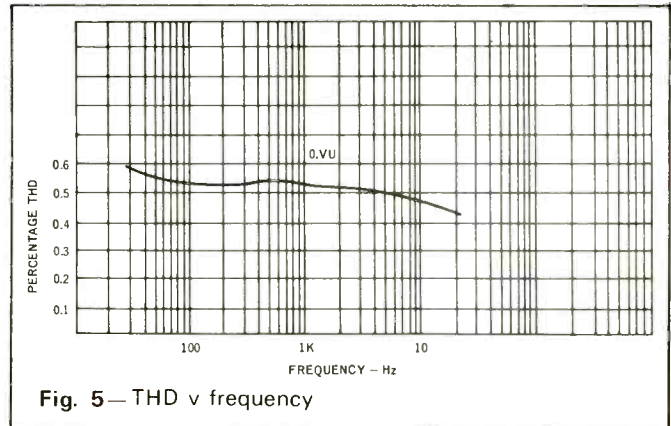


Fig. 5—THD v frequency

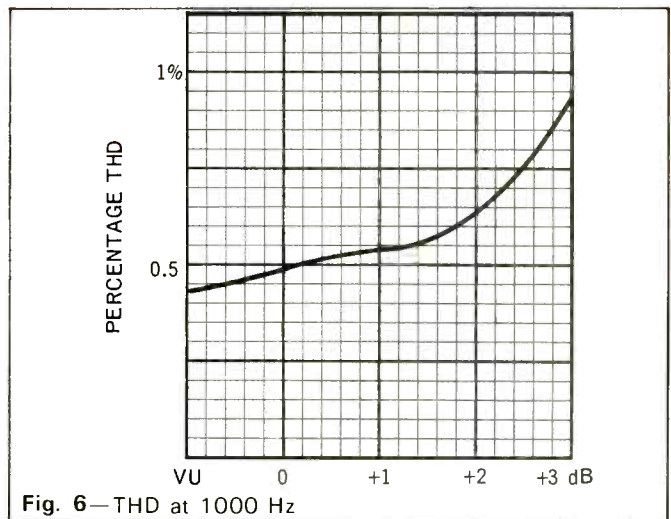


Fig. 6—THD at 1000 Hz

tive, yet I never succeeded in breaking any tape not even 1 mil! Some 4-channel recordings were made using EV-RE 55 microphones and it was just possible to detect a difference between 15 ips and 7½ ips but it was very slight. The Simul-Sync facility worked beautifully and so did the monitor switches. These perform three functions, they allow you to monitor either the source signal before it is recorded, or the signal from the tape and in addition they select the signal to be displayed on the VU meters and routed to the headphone jack. This recorder is particularly suitable for the semi-professional user, small rock groups or studio use but it is also recommended to any enthusiast who requires a 4-channel machine with top performance. At \$849 it is not cheap but in our opinion, well worth the money.

T.A.

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