

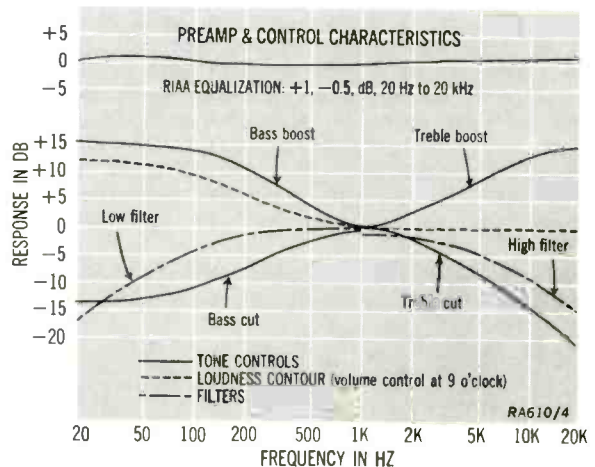
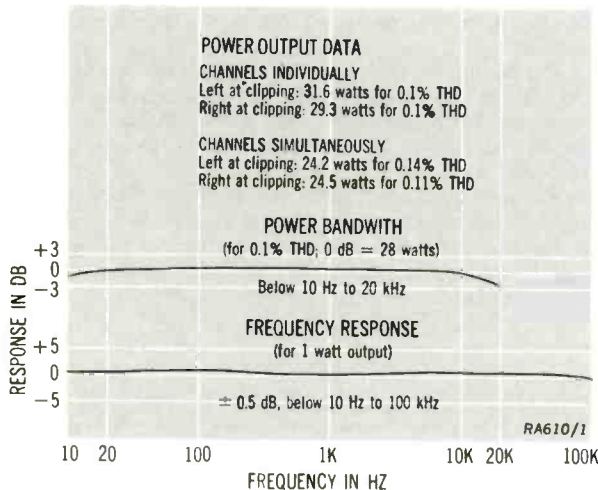
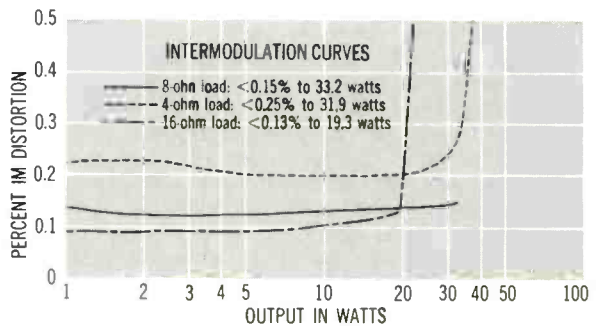
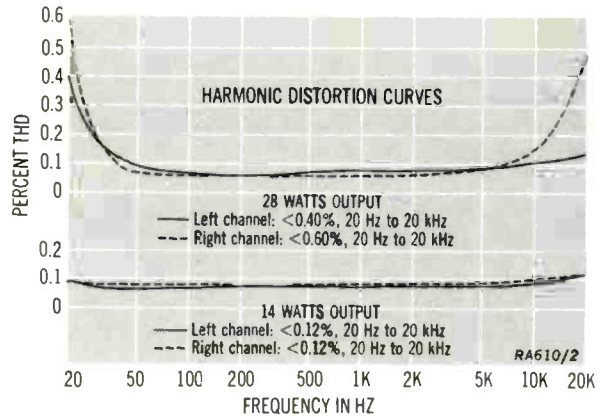
Good Performance in Moderate-Power Rotel Amp

The Equipment: Rotel RA-610, a stereo integrated preamp/power amplifier. Dimensions: 16 by 5 by 8 3/4 inches. Price: \$179. Manufacturer: Roland Electronics Co., Ltd. of Japan; U.S. distributor: Rolacor of America, Inc., 2642 Central Ave., Yonkers, N.Y. 10710.

Comment: Amplifiers of modest power output and price all too often show signs of corner-cutting elsewhere in their design. Not so the RA-610, which is distinctly better than average, with distortion factors on a par with those we have come to expect in power amplifiers at, say, twice the power rating. Its physical design, while not luxurious, is neat and solid; controls are clearly marked, easy to use, and logically arranged.

For a moderately priced unit, the RA-610 contains an unusual variety of control options and interconnection possibilities. In the upper left corner of the front panel is the main power switch followed by three knobs: mode, balance, and volume. The mode switch contains a full complement of positions: reverse stereo, normal stereo, left mono, right mono, left-plus-right mono. Below these controls are the stereo headphone jack (which is live at all times) and a series of on/off buttons: speaker pair 1, speaker pair 2, muting (which drops output level by 20 dB), low filter, high filter, tone-control defeat, tape monitor, and loudness. The tone controls are four sliders (separate bass and treble controls for each channel) with detents at the "flat" position. At the far right is the selector knob: phono 1, phono 2, tuner, aux 1, aux 2.

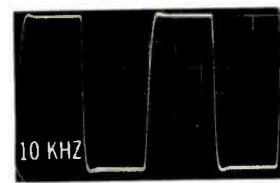
These five inputs also exist as stereo pairs of phono jacks on the back panel, of course. In addition, there is a DIN-style tape-recording jack and phono-jack pairs for tape in, tape out, preamp out, and main amp in. These last—between preamp and power amp—normally con-



tain unshielded metal jumpers, which can be pulled out should you want to insert an additional unit (a room equalizer or quadraphonic decoder) into the circuit at this point. The only other connections on the back panel are the spring clips for the leads to the two pairs of speakers and a thumbscrew ground connection.

The power-amplifier section checked out in the lab to about 25 watts per channel—just about enough for one pair of low-efficiency speakers in an average room—at only 0.1% THD. All the harmonic-distortion measurements in the lab were under 0.5% with the exception of that for 20 kHz in the right channel at Rolecor's rated output of 28 watts. These figures, together with those for IM distortion and noise factors, represent a level of performance that is a cut above what we would expect in this price category. The RA-610 is therefore an attractive unit for use with low-efficiency speakers in less-than-large rooms, or with high-efficiency speakers in almost any size room.

CIRCLE 143 ON READER-SERVICE CARD



Square-wave response

Rotel RA-610 Amplifier Additional Data

Damping factor	40	
Input characteristics (for 28 watts output)		
	Sensitivity	S/N ratio
phono 1	2.2 mV	65 dB
phono 2	2.2 mV	61 dB
aux 1 & 2	125 mV	68 dB
tuner	125 mV	68 dB
tape monitor	125 mV	65 dB
main amp	660 mV	91 dB



Attractive Cassette Deck from JVC

The Equipment: JVC Model 1660-2, a stereo cassette deck with built-in record/playback preamps; intended for use with a home stereo system. Dimensions: 11 by 9 by 3¼ inches. Price: \$119.95. Manufacturer: Victor Co. of Japan; U.S. distributor: JVC America, Inc., 50-35 56th Rd., Maspeth, N.Y. 11378.

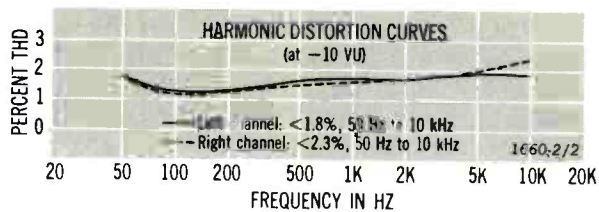
Comment: This model demonstrates just how far cassettes have come. While it is not state of the art, even without the latest refinements its performance is such that many users will find it every bit as satisfactory as an open-reel deck—and in terms of convenience, considerably more satisfactory. The more demanding of our readers will of course want more—Dolby circuitry or adaptability to chromium-dioxide tapes for example—but even some of this group would be surprised at the sonic quality that can be obtained from this deck.

There are three openings on the back section of the 1660-2's top plate: for tape counter, dual VU meter, and cassette well respectively. Along the front section are the power on/off switch, dual volume sliders (which control both recording and playback levels, depending on the mode for which the deck is set), a noise-suppres-

sor on/off switch, the usual "piano-key" control array, and an eject button. Drive disengagement and eject are automatic at the end of the cassette.

At the rear of the deck are the line input and output connections and a DIN (European-style) input/output jack. Two screwdriver controls in this panel can be used to adjust line input levels. In a well at the left of the deck are the two mike inputs (phone jacks), a mono/stereo switch, and a stereo headphone jack.

This system of connections and switching strikes us as well thought out to simplify basic processes for the inexperienced recordist. When a microphone plug is inserted into one of the mike jacks, the feed from the line connection in that channel is cut off automatically. We might have preferred that the mono/stereo switch come after the level controls, rather than before, so that the level controls would act as a mixer in the mono mode rather than simply adjusting level on each track of the arbitrarily premixed signals—but this is an exceedingly minor point. To preset recording signal levels a cassette must be inserted into the deck and its controls switched for recording. This minor inconvenience, found in many other cassette units we have seen, can

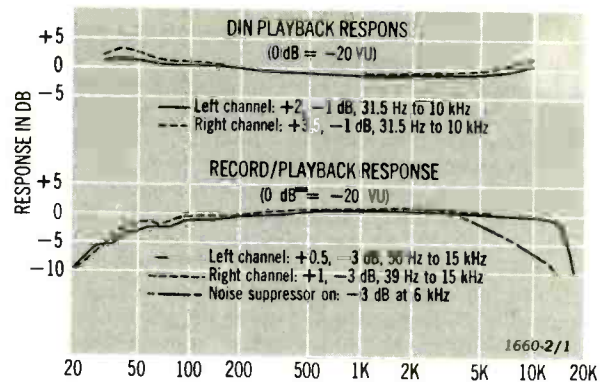


be circumvented by taking level readings in the pause mode to avoid using up tape on test recordings.

The "noise suppressor" is simply a high filter, whose characteristics are shown in the record/playback response graph. On some program material containing a good deal of relatively low-level signal but little in the way of extremely high frequencies—solo guitar is an excellent example—the filter is very successful at taking a big bite out of audible tape hiss without impairing the sonic quality of the recording. In big orchestral music and rock, where consistently high program levels regularly mask tape hiss anyway, the filter's action does take some of the sheen from the sound. The noise suppressor switch therefore requires some discrimination in its use.

With this switch turned off, and using TDK SD tape (which also was used by CBS Labs in measuring the unit's performance), the tape hiss is the only significant audible factor by which we could distinguish recordings made on the 1660-2 from the originals—assuming normal dynamic range and proper level adjustment of course. Frequency range and harmonic distortion both are excellent for a deck in this price category. Flutter is low and speed constancy is unaffected by changes in line voltage, but somewhat on the fast side in our test sample. This factor is self-canceling in playing back recordings made on the deck of course, but a pre-recorded cassette made at precise speed will sound approximately a half-tone sharp—for most listeners, not a serious fault, and slightly better than we have measured in some competing decks.

Among the "Additional Data" you will find the statement that the 1660-2's meters read 5 dB high. This is measured with respect to Philips' specification levels as embodied in standard DIN test tapes. In effect, the meter action places signal levels in home-recorded cassettes 5 dB lower than "standard," increasing headroom but decreasing dynamic range. This approach has been used in some other cassette products we've tested and does have a significant advantage for the inexperienced recordist. In recording from FM (and even from records) where the dynamic range already is compressed, the lower level is a hedge against careless gain riding, overloaded peaks with consequent distortion, and the reduced high-frequency response of cassettes recorded at too high a level. In making live recordings, where dynamic range can be extreme, extra care must be taken to prevent signal levels in quiet passages from falling too low with respect to inherent



JVC 1660-2 Cassette Deck Additional Data

Speed accuracy	105 VAC: 2.9% fast 120 VAC: 2.9% fast 127 VAC: 2.9% fast
Wow and flutter (unweighted) playback:	0.13%
record/playback:	0.19%
Rewind time, C-60 cassette	1 min. 30 sec.
Fast forward time, same cassette	1 min. 30 sec.
S/N ratio (ref. 0 VU)	
playback	L ch: 50.5 dB R ch: 51.0 dB
record/playback	L ch: 48.0 dB R ch: 48.0 dB
Erase (400 Hz at normal level)	58.5 dB
Crosstalk (at 400 Hz)	
record left, playback right	38.5 dB
record right, playback left	40.0 dB
Sensitivity (for 0-VU recording level)	
aux (line) input	L ch: 130 mV R ch: 122 mV
mike input	L ch: 1.3 mV R ch: 1.2 mV
Accuracy, built-in meters	L ch: 5 dB high R ch: 5 dB high
IM distortion (record/play, -10 VU)	L ch: 7.5% R ch: 7.0%
Maximum output (preamp or line, 0-VU)	L ch: 1.35 V R ch: 1.25 V

noise levels, of course; but even so—by observing the meters and setting the gain accordingly—we were able to make excellent live recordings with the unit.

This model, then, is a simple, efficient unit at an attractive price—and one that will appeal particularly to the neophyte or the casual recordist.