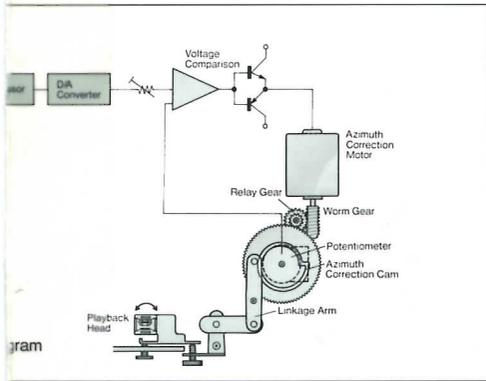


Nakamichi Technology Discrete-Head Recording/Asymmetrical-Du



time a tape of that type is mounted and sensed by the Automatic Tape Selector. At the end of the procedure, the CR-7 rewinds the tape to the point at which it began auto calibrating and enters REC/PAUSE, ready to record.

As explained at the lower left, azimuth misalignment produces serious treble losses which are exacerbated by noise-reduction systems. Of course, the CR-7 reproduces tapes it recorded itself—and tapes recorded on a properly aligned deck—perfectly well. Thanks to its manual play-head azimuth-alignment system, it also can reproduce tapes recorded with *improper* azimuth and produce full-range response.

As shown in Figure 4, the azimuth-alignment mechanism can take commands from three sources: the Auto-Calibration system, a front-panel Playback Azimuth control or via the RM-7C Wireless Remote Control Unit supplied with the CR-7. When playing a tape of questionable azimuth, you need only adjust the play-head azimuth via the front-panel control or the remote for best treble response. Once you have, you're assured of hearing *everything* recorded on that tape! During correction, one channel of the recording indicator converts to a "relative-azimuth" display to show you how far you've adjusted the head.



With the exception of Auto Calibration, Azimuth Alignment and a few special features found only on the CR-7, the CR-5 and CR-7 are virtually identical. Both use the special technologies that make a Nakamichi cassette deck unique in the industry.

Discrete Three-Head Technology

Nakamichi invented the "3-Head" cassette deck more than a decade ago. From that day to this, to Nakamichi, a "3-Head" deck means three *discrete* heads—heads that are physically, electrically and magnetically independent. Only a Discrete-Head deck can extract *total* performance from a cassette because only *discrete* heads can be individually optimized and aligned for perfect results.

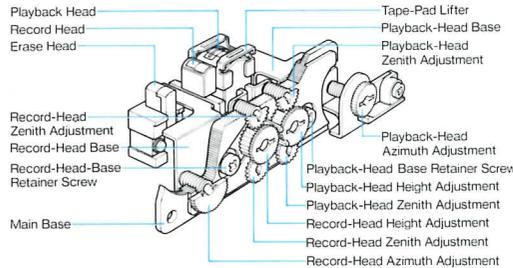
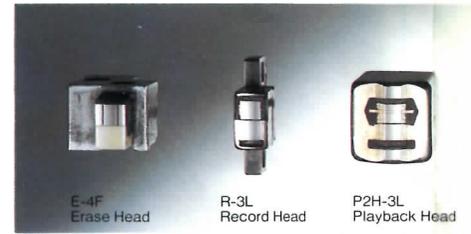


Figure 8 Discrete Three-Head Mounting Arrangement

Most 3-head decks use "sandwich" heads—separate record and play sections in the same housing. Once the head is made, there's no way to align the gaps (much less implement an auto azimuth-alignment system!) Even if the gaps are aligned mechanically during construction—no mean feat since they must be parallel within 0.1 micron (4 *millionths* of an inch!)—there's no guarantee that they will be *magnetically* aligned.

With both cores in the same structure, there's little room for shielding. Bias and signal leak into the playback gap and upset Dolby tracking when monitoring. If an auto-calibration system is used with such a head, this "crossfeed" by *itself* causes miscalibration!



With Nakamichi Discrete-Head Technology these problems don't exist. Not only can the two gaps be individually optimized, but the heads can be shielded from each other to eliminate crossfeed and magnetically aligned to each other after the deck is fully assembled.

Figure 8 shows the mounting arrangement used in the CR-7/CR-5. Each head has its own height, azimuth and zenith (tilt) adjustments which are separately aligned to sub-micron tolerances to ensure ideal performance.

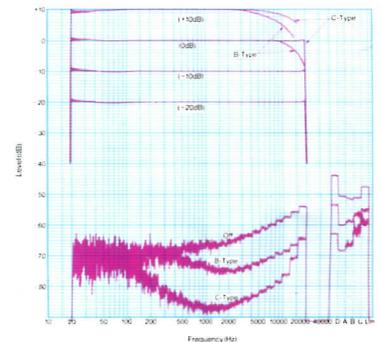


Figure 9 CR-7 Frequency Response/Noise Analysis
Deck: CR-7/Tape: ZX (Metal)/PB Eq: 70µs/MPX Filter: Off

The record and play heads use the famous Nakamichi laminated-Crystalloy core—fabricated by an exclusive process that eliminates physical stress. Thus, the magnetic properties of the material are fully preserved, a fact proven in performance. As Figure 9 indicates, CR-7 response is within ± 3 dB from 18 Hz to 21,000 Hz at -20 dB and almost equally good at 0 dB with Dolby-C NR. Thanks to our special "relieved-surface" architecture and special poletip geometry, head life is over 10,000 hours and bass response is exceptionally smooth.



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CR-7
Discrete Head Cassette Deck