



# Nakamichi

## CR-2/CR-1

2-Head Cassette Decks



# Experience the Nakamichi difference

Whether we are creating an "ultimate" music system such as Nakamichi Series-7 componentry or eminently affordable systems such as our Series-1 and Series-2 components, Nakamichi's single-minded commitment to excellence is your guarantee of the finest in music reproduction. Even our least costly cassette decks—the CR-1 and CR-2 have the distinctive clarity audiophiles recognize as "Nakamichi Sound," for, in designing them, we concentrated on the four essentials of cassette recording: transport, heads, electronics and custom calibration.

## Microprocessor-Controlled Silent Mechanism

Although the transports in our various series differ in sophistication, every one is based upon the Nakamichi Microprocessor-Controlled Silent-Mechanism concept. In a Nakamichi transport, a motor-driven cam engages the head base, pinch roller and brakes more gently and more precisely than is possible with conventional solenoids. Since the motor turns only when *changing* functions, there is no vibration during actual operation. Freedom from vibration is essential in reducing the modulation noise and high-frequency flutter that are ignored in "weighted" flutter measurements but destroy musical clarity. The microprocessor supervises every change in function and inserts the intermediate steps needed to protect the tape. Thus, you can switch between modes with complete safety.

The CR-2/CR-1 capstan is driven by a special DC motor that is servo controlled to ensure speed accuracy. Since single-capstan transports are particularly sensitive to reel-torque variation, the CR-2 and CR-1 use a *second* high-performance motor (independent of the capstan motor) to drive the reels. Torque is transmitted to the reels via a precision gearing arrangement rather than plastic wheels to ensure smooth operation and minimum wow and flutter.

## 3-Head Performance in a 2-Head Deck

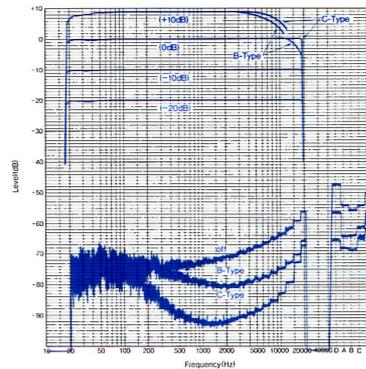
With over 30 years' of magnetic-design experience, Nakamichi is uniquely qualified to create an R/P head that rivals the performance of most 3-head systems in frequency response and freedom from distortion. In fact, few 3-head decks match the CR-2/CR-1's smooth response from 20 Hz to 20 kHz—a smoothness that guarantees freedom from sonic coloration.

The RP-2G's laminated-sandust core makes full use of metal tape's recording potential and can actually achieve a recording level of +7 dB. In playback, its 1.2-micron gap easily resolves 20-kHz recordings while its hyperbolic geometry minimizes "contour effect" for smoother bass response. The E-2D's dual-gap design and low-loss ferrite core ensure complete erasure of metal tape.



## Nakamichi Electronics

Nakamichi electronics are world famous for quality and those in the CR-2 and CR-1 are no exception. The noise-reduction systems use the latest Dolby ICs which provide a significant improvement in performance. The recording amplifiers employ high-output ICs and Nakamichi Double-NF equalization to eliminate the distortion caused by electrolytic capacitors. The playback amplifiers also use Double-NF topology but are discretely configured of low-noise transistors to match the playback head and ensure maximum signal transfer. A bipolar supply powers the playback amplifier and eliminates need for interstage coupling capacitors. The power transformer is doubly shielded to prevent hum radiation, and the amplifier and logic circuits are powered from separate windings to minimize noise. Independent local regulators are used extensively to prevent interstage coupling through ground.



Deck: CR-2 / Tape: ZX (Type IV) / PBEQ: 70µs / MPX FILTER: OFF

The bias supply operates at an unusually high frequency (105 kHz) to avoid intermodulation distortion. Operation at this frequency requires superior recording and erase heads but is essential for sound clarity. A balanced topology ensures exceptional stability and freedom from bias distortion to guarantee quiet recordings of remarkable bandwidth. The results are clearly evident in the graph on the left.

## Custom Calibration

Many decks have a single internal adjustment for bias and another for recording level. The CR-2/CR-1 have a *full complement of internal controls* that allows us to calibrate bias and level for *each track and each tape type*. Costly—but worth it to guarantee Nakamichi Sound.

## CR-2/CR-1 Features

\*Microprocessor-Controlled Silent-Mechanism Transport \*Dolby B/C NR with Defeatable MPX Filter \*Bias Fine Tune (CR-2 only) \*Independent Tape & EQ Selection \*37-dB Peak-Level Meters \*One-Touch Rec/Pause \*4-Digit LED Counter (CR-2) \*3-Digit Mechanical Counter (CR-1) \*Memory Stop \*Auto Repeat \*Timer Rec/Play \*Rec Mute (CR-2 only) \*Dolby, Rec Mute, Stop, Play, Pause & Record Indicators \*Concentric Record Level & Balance Controls \*Output Level Control (CR-2 only) \*Headphone Jack \*Remote Control via Optional RM-5 Remote Unit or CA-7 Control Amplifier (CR-2 only)

## CR-2/CR-1 Specifications

Track Configuration .....	4 tracks/2-channel stereo
Heads .....	2 (erase head x 1, record/playback head x 1)
Motors .....	<b>Transport:</b> DC servo motor (capstan drive) x 1 DC motor (reel drive) x 1
	<b>Mechanism:</b> DC motor (cam operation) x 1
Tape Speed .....	1-7/8 ips (4.8 cm/sec) ± 0.5%
Wow and Flutter .....	Less than ± 0.11% WTD Peak Less than 0.06% WTD RMS
Frequency Response .....	20 Hz—20,000 Hz (-20 dB recording level, ZX, SX, EXII tape)
Signal-to-Noise Ratio .....	<b>Dolby-C NR:</b> Better than 70 dB (A-WTD re 3% THD at 400 Hz, 70 µs/ZX tape)
	<b>Dolby-B NR:</b> Better than 64 dB
Total Harmonic Distortion (400 Hz, 0 dB) .....	Less than 1.0% (ZX, SX, EXII tape)
Erase .....	Better than 60 dB (100 Hz, + 10 dB)
Separation .....	Better than 36 dB (1 kHz, 0 dB)
Crosstalk .....	Better than 60 dB (1 kHz, 0 dB)
Bias Frequency .....	105 kHz
Input .....	50 mV/30k ohms
Output .....	<b>Line:</b> 0.5 V/2.2k ohms
(400Hz/0 dB/Output Control Max.)	<b>Headphone:</b> CR-2: 2.2 mW into 8 ohms CR-1: 1.2 mW into 8 ohms
Fast-Wind Time (C-60 cassette) .....	Approx. 80 seconds
Power Source .....	120, 220, 240 or 110/127/220/240 V AC, 50/60 Hz (according to country of sale)
Power Consumption .....	CR-2: 30 W max.; CR-1: 25 W max.
Dimensions .....	430(W) x 100(H) x 265(D) mm 16-15/16(W) x 3-15/16(H) x 10-7/16(D) inches
Approximate Weight .....	5.4 kg; 11 lb 14 oz

\*Specifications and appearance subject to change for further improvement without notice.  
\*Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.  
\*The word "DOLBY" and the Double-D Symbol are trademarks of Dolby Laboratories Licensing Corporation.

## NOTE: "A" and "E" Models

Nakamichi components are sold in more than 50 countries many of which have strict safety regulations to which Nakamichi products must comply. Models designated by an "A" have been produced for the United States and Canada and comply with Underwriters Laboratories (UL) and/or Canadian Standards Association (CSA) standards as well as with applicable state/provincial and federal safety requirements. Models designated by an "E" have been produced for Europe and comply with EEC Recommendation 82/499 as well as with applicable European safety standards. Models without an "A" or "E" have been produced for countries other than North America, Europe and Japan and comply with applicable safety standards. Nakamichi has authorized its local distributors to warrant only products which have been produced for their respective areas.