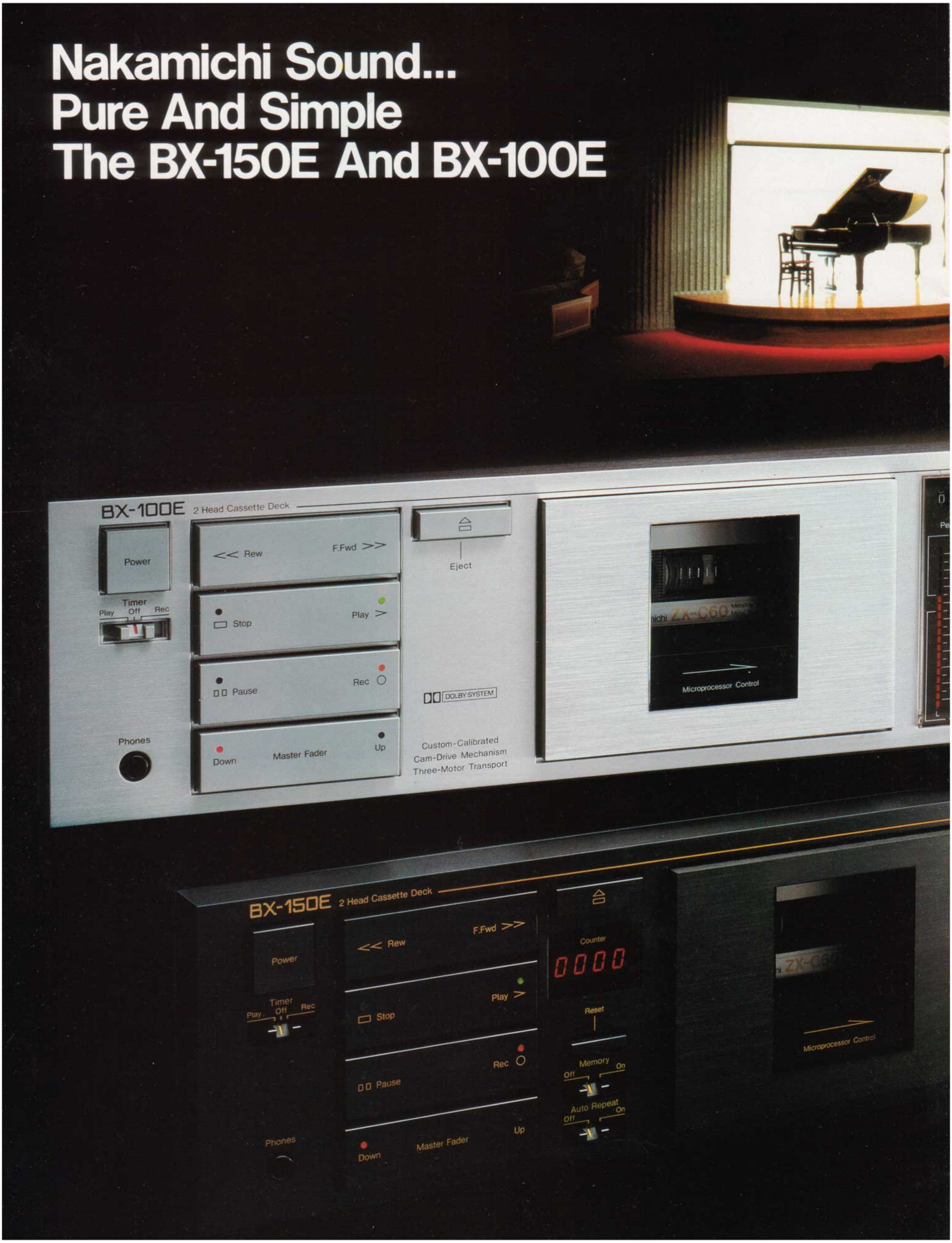
Nakamichi
BX-150E/BX-100E
2-Head Cassette Decks





Nakamichi Sound...
Pure And Simple
The BX-150E And BX-100E



Concentrating On Essentials

The Nakamichi "Silent Mechanism"

Most single-capstan decks shroud music in a veil of high-frequency flutter and modulation noise that specifications do not reveal. "Weighted-flutter" measurements place great emphasis on "wow"—slow variations perceived as a change in pitch. High-speed variations are given less weight, and speed changes that occur faster than 200 times a second are completely ignored. Yet, it is precisely these variations that thicken sound and rob it of clarity.

We've gone to extraordinary lengths to reduce wow and flutter in the BX transport. Unlike many single-capstan decks in which one motor powers both capstan and reels, the BX-150E/BX-100E employ *separate* capstan and reel motors. A single-capstan transport is especially sensitive to reel-torque variations, so we paid special attention to this area. The takeup motor is specially designed for torque uniformity and an accurate metal pulley (rather than a plastic wheel of questionable concentricity) transmits torque to the system. A DC servo maintains capstan speed independent of reel loading.

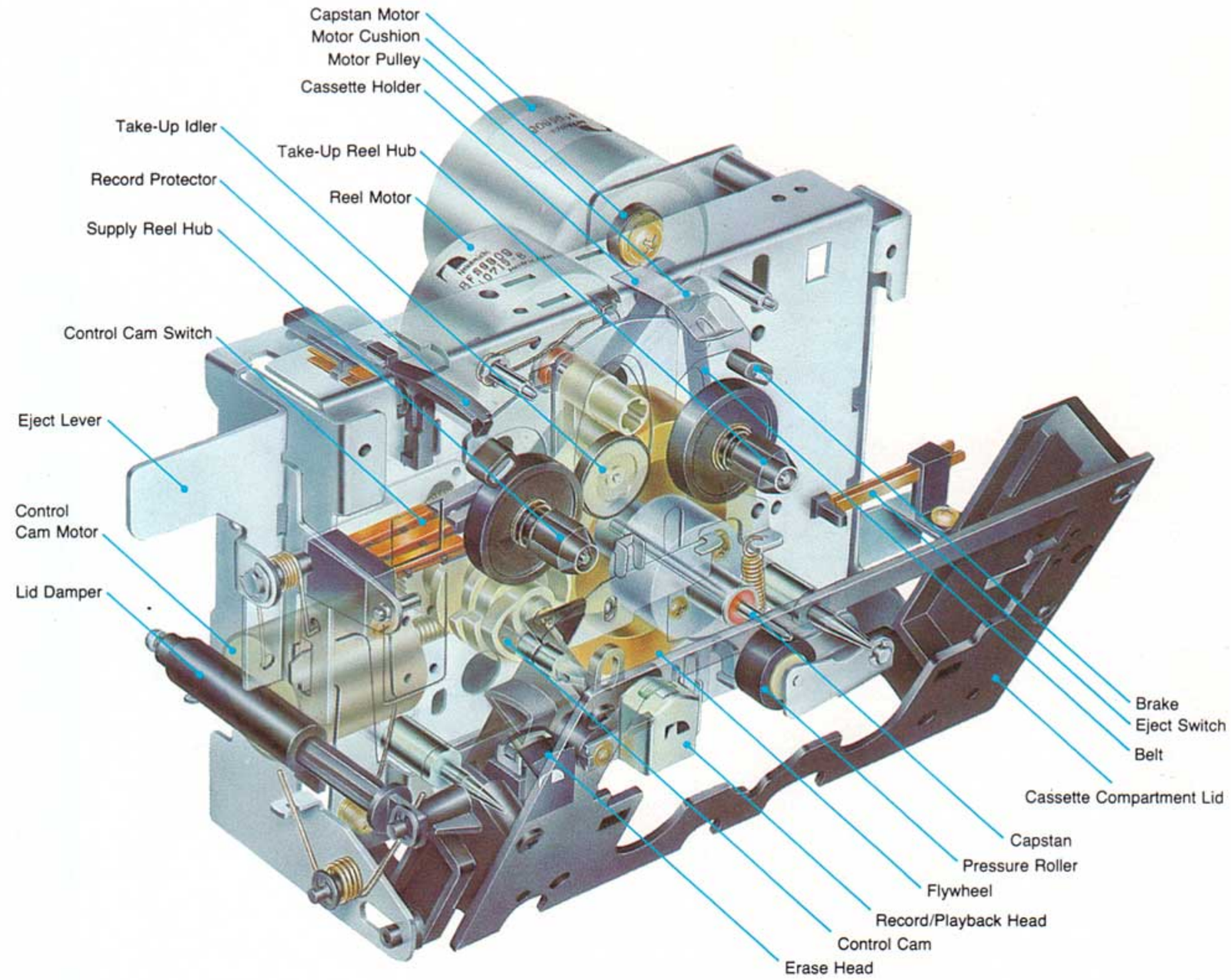


Figure 1 BX-150E/BX-100E Transport Mechanism

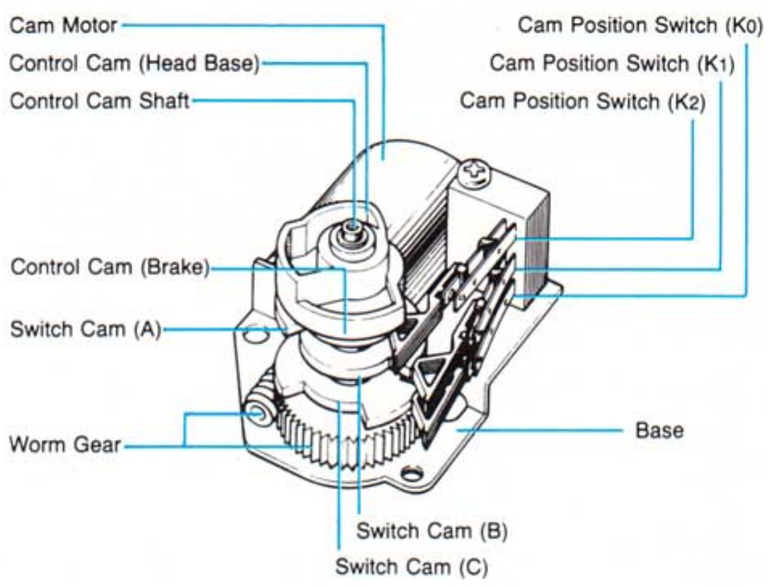


Figure 2 Control Cam Assembly

Vibration plays havoc with any tape deck. That's why we developed our unique "Silent Mechanism." In the BX-150E/BX-100E, a microprocessor-supervised Motor-Driven Cam replaces conventional solenoids to engage heads, pinch rollers, and brakes. The motor turns only when changing a function—never while maintaining one—so there's no vibration. It generates less heat (which improves reliability) and is much more gentle than a solenoid. Of course, this third motor is independent of the capstan and reel drives.

When you press a control button, the BX-150E/BX-100E respond smoothly and precisely. Their motor-control system performs feats a solenoid cannot. Press PLAY, and the Motor-Driven Cam brings the heads up to the tape very rapidly but, just before contact, slows down and eases them into position as no solenoid could. There's no possibility of damaging the tape or upsetting head alignment. Request a mode change, and the microprocessor determines how to proceed and inserts the intermediate steps needed for safe operation.

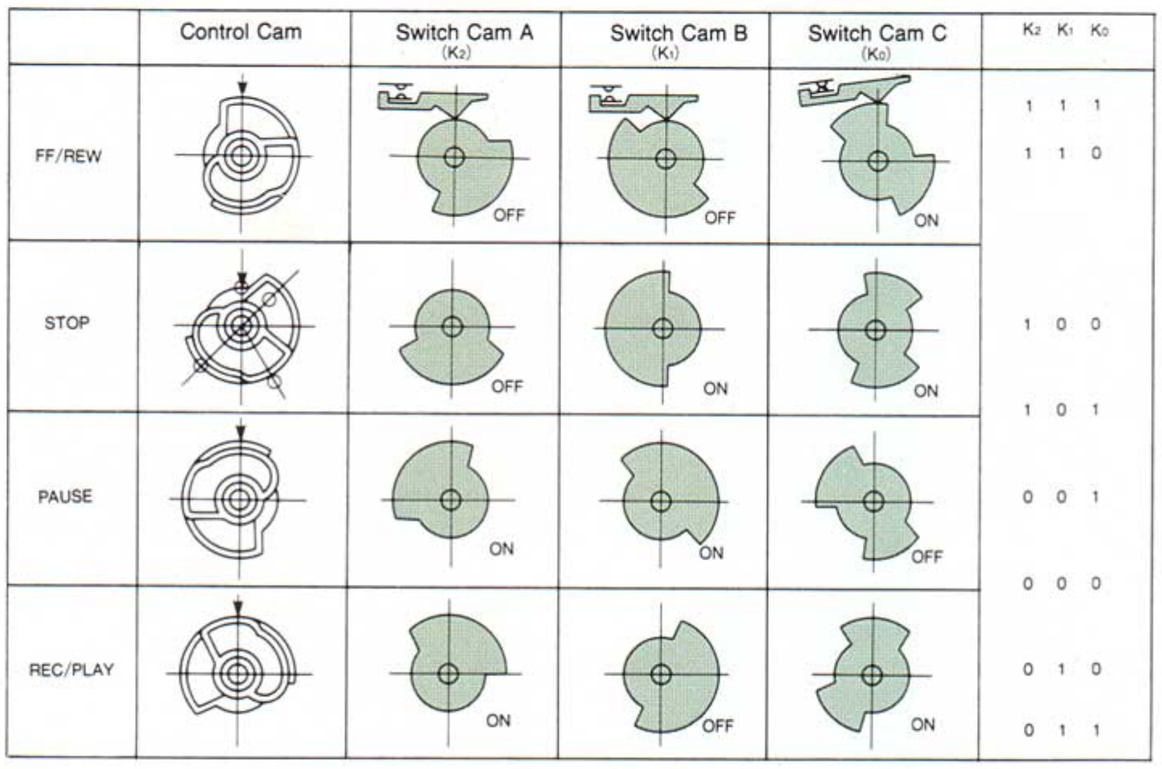


Figure 3 Control Cam Position For Each Transport Mode

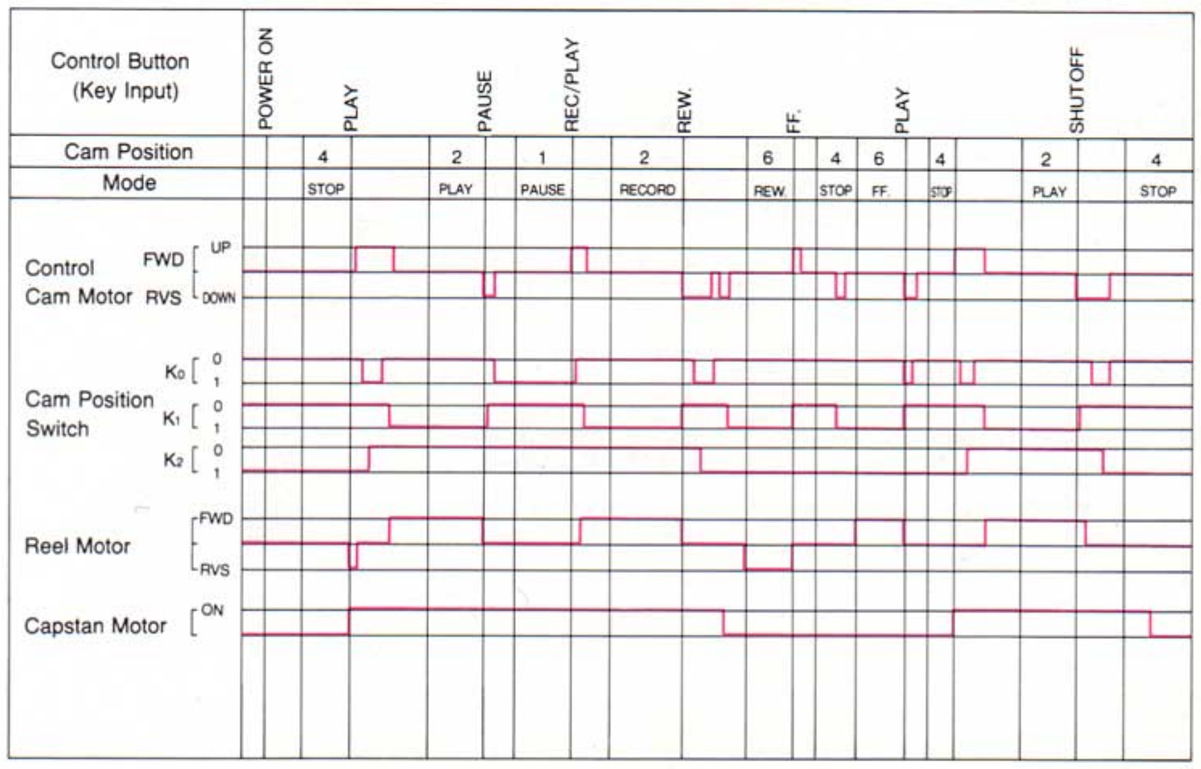


Figure 4 Transport Control Timing Chart

Nakamichi Magnetics

Developing a combination record/play head that outperforms the majority of "sandwich" 3-head designs is no mean feat, but the RP-2D head used in the BX-150E and BX-100E does precisely that. It culminates Nakamichi's three decades of experience in magnetic-head technology.

The RP-2D Record/Playback Head is a marvel of modern magnetic engineering. Its laminated-sendust core has a saturation induction of 10,000 gauss and is capable of maximum operating levels (MOLs) that rival the recording section of most "sandwich" 3-head designs. Its 1.2-micron gap is fully capable of resolving 20-kHz recordings, and a special hyperbolic geometry ensures minimum "contour effect" and remarkably uniform response down to 20 Hz. It's rare to find such *smooth* response in any "sandwich" 3-head deck!

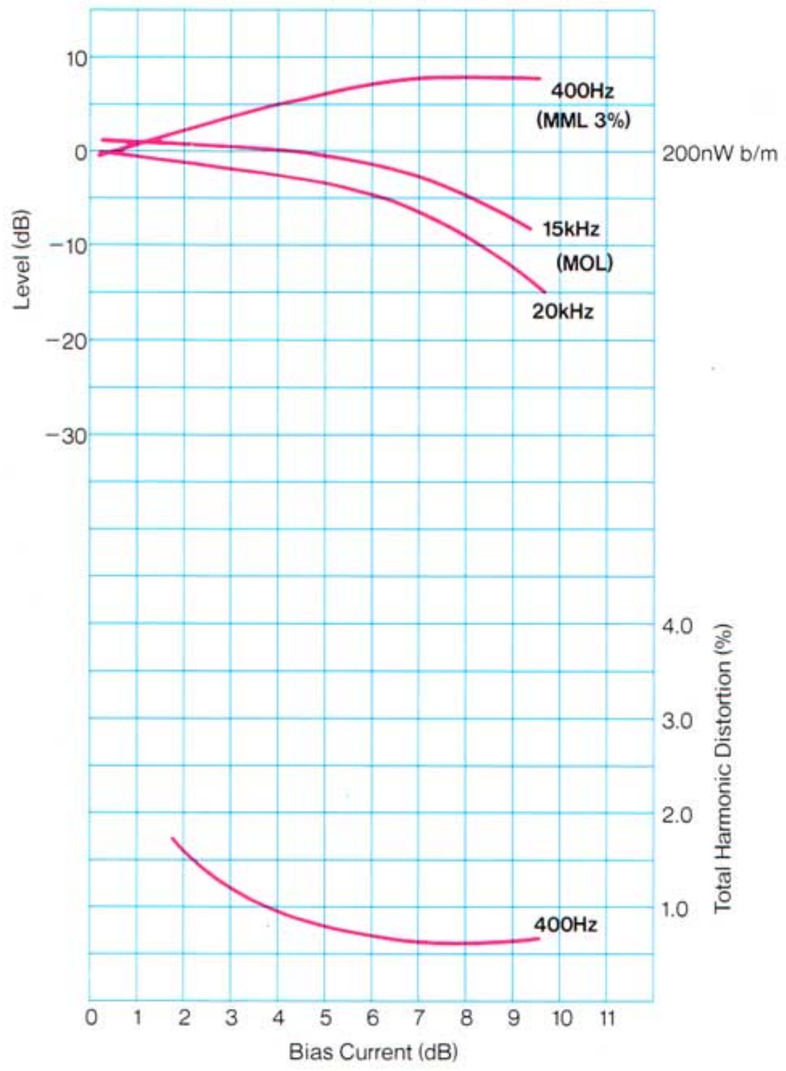


Figure 5 RP-2D R/P Head MOL & THD Versus Bias
(ZX Tape: Bias Freq. = 105 kHz)

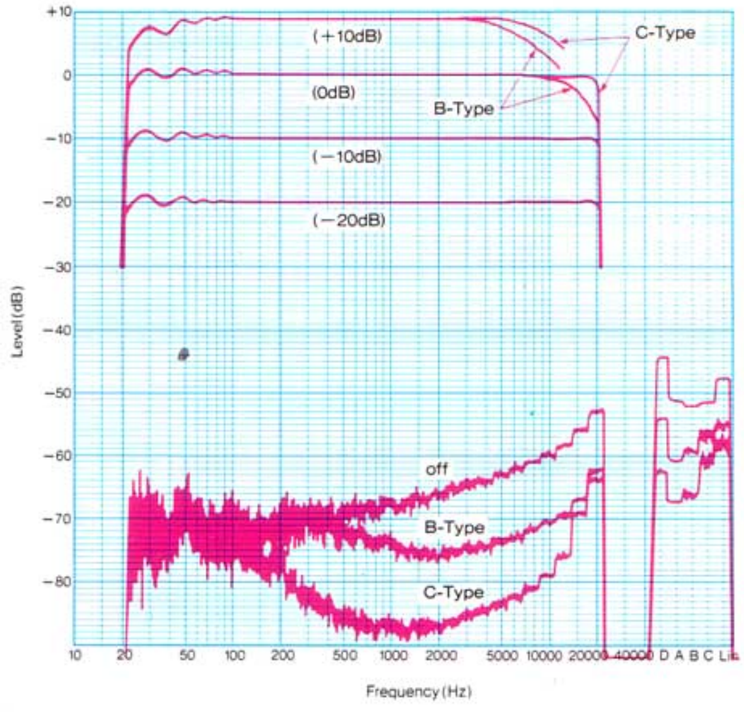
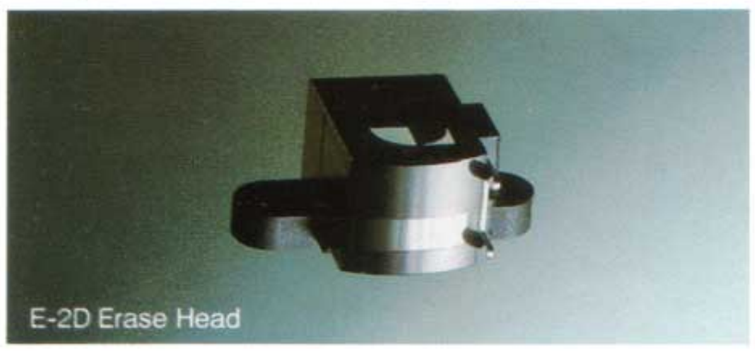


Figure 6 BX-150E Record/Play Frequency Response/ Noise Analysis

Deck : BX-150E
Tape : ZX (Metal)
PB Eq : 70μs
MPX Filter : Off


RP-2D Record/Playback Head

Complementing the RP-2D is the E-2D Dual-Gap Erase Head. Its low-eddy-current ferrite core has outstanding high-frequency characteristics that significantly reduce loss and heating so it can be driven to levels that ensure *complete* erasure of high-coercivity, high-remanence metal tape. Its dual-gap design prevents "re-recording," a phenomenon that occurs when the signal *being* erased modulates the erase flux.


E-2D Erase Head

High-Performance Electronics

BX-150E/BX-100E electronics are remarkably sophisticated compared to ordinary tape-deck circuitry. Both recording and playback amplifiers use Nakamichi's famous Double-NF topology to reduce distortion caused by electrolytic capacitors in the signal path, improve DC stability, and permit perfect head matching. Even in these "basic" models, playback gap loss is compensated in the *playback* equalizer and recording loss in the *recording* equalizer to ensure perfect adherence to international standards, maximum high-frequency headroom, and flat response from 20 Hz to 20 kHz.

The BX-150E/BX-100E bias supply operates at an unusually high frequency (105 kHz) to prevent intermodulation distortion. Operation at this frequency requires superior recording and erase heads but is essential for maximum sound clarity. A balanced configuration ensures exceptional stability and freedom from even-order bias distortion to guarantee quiet, reliable recordings of remarkable bandwidth.

Quality—A Nakamichi Obsession

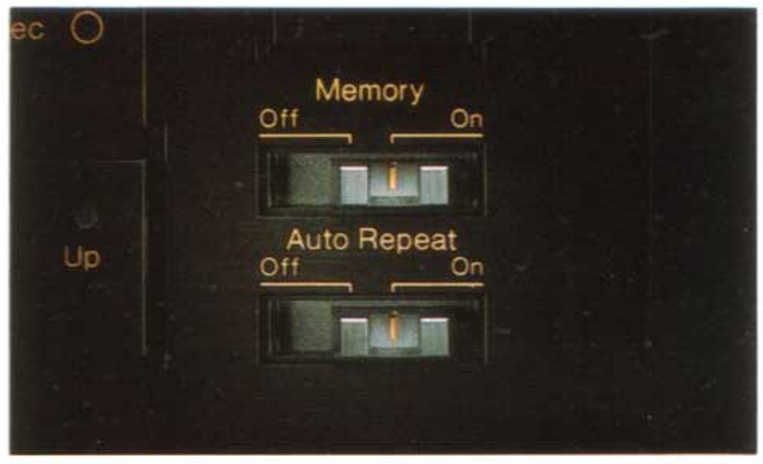
Product quality begins with design and Nakamichi goes far beyond conventional standards to ensure BX-150E/BX-100E performance. Although these are "basic" recorders, they have a full complement of internal calibration controls. These controls are expensive; they're invisible. But, without them, it's impossible to ensure *optimum* performance on *both* tracks and on *all* tape types. Each BX-150E and BX-100E undergoes a 30-step adjustment procedure before it leaves the factory. Bias and recording level are set *independently* on each track for each major tape—Normal, Chrome, and Metal—to assure *you* Nakamichi performance.

Truly Useful Features

When creating the BX-150E and BX-100E, we emphasized basic recording/reproduction quality. Without violating this concept, we added several features to provide the kind of operating convenience you'll find most useful.



● **The Dual-Speed Master Fader** changes recording level more smoothly and professionally than you can do by hand. Once you've set maximum level and balance with the BX-150E/BX-100E's individual left and right controls, one tap of UP (or DOWN) fades the recording in (or out) over 4 seconds. Pressing and holding the button creates the fade in 2 seconds.



● **Auto Repeat** automatically rewinds the tape when it reaches the end of the side and reinitiates playback. Auto Repeat also can be used with Memory Stop for automatic rewind to counter-zero and replay from that point.

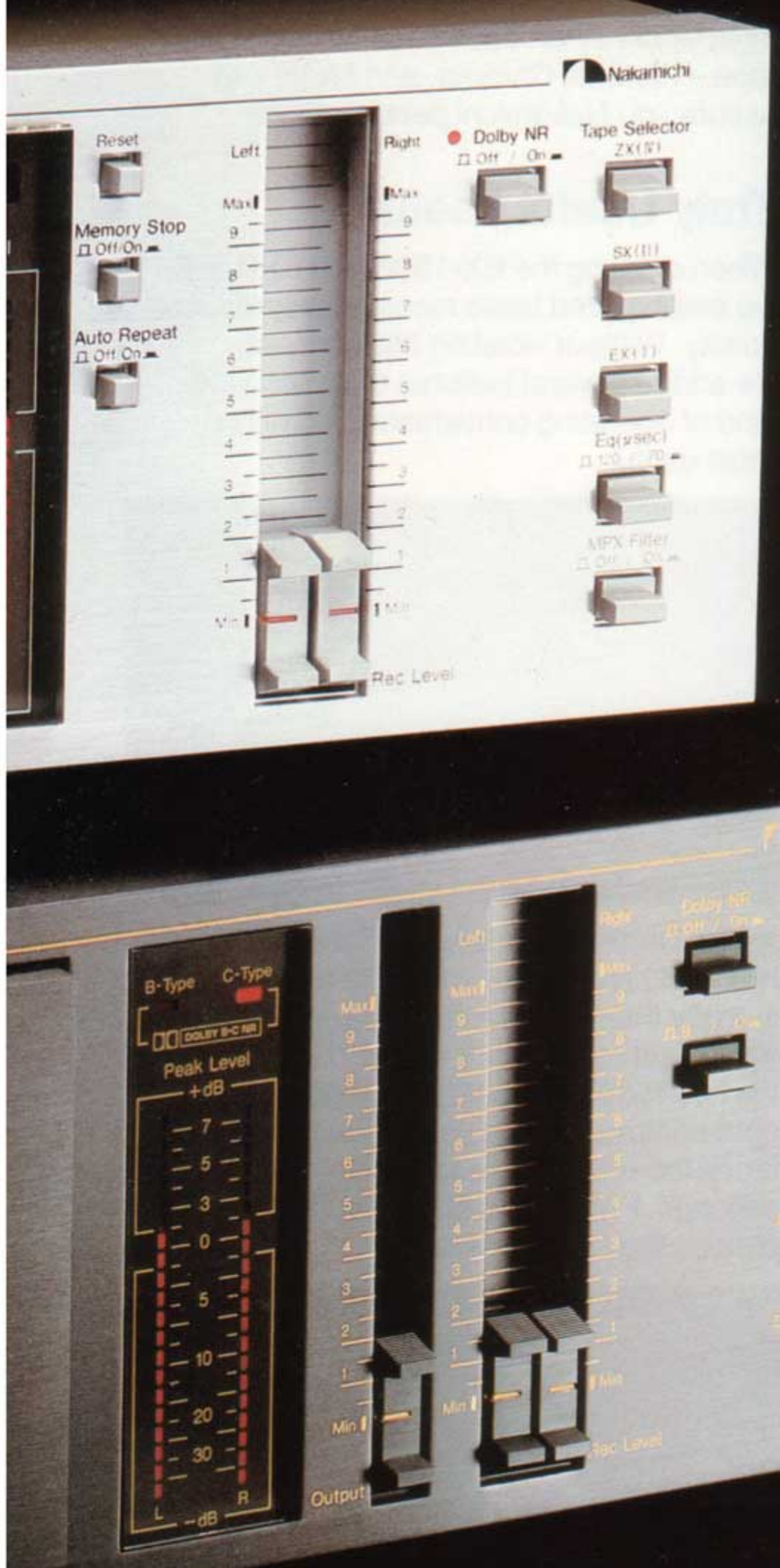
Music...
The Essence Of High Fidelity

Many cassette decks are loaded with features, but, when you listen to them, something is missing. Music lacks clarity; detail is lost in a confused muddle. Basic performance was sacrificed for features many of which will never be used!

If *music* is as important to you as it is to us, you'll appreciate the BX-150E and BX-100E. In designing them, we concentrated on the three essentials of recording excellence: transport, heads, and electronics. Then we proved the design by exhaustive listening and ensured it by extensive quality control.

The importance of listening can't be overemphasized. Specifications *suggest* performance; they do not confirm it. Many factors remain unquantified, and, in the final analysis, a recorder must "sound good." That doesn't mean it should have a characteristic sound of its own; "good sound" means *accurate* sound—the ability to reproduce music without altering tonal balance or introducing noise and distortion.

Accuracy can't be determined without a reference. Since the best reference is live music, we constructed a concert hall and listening room with such excellent acoustics that they're used for professional recording. Many world-famous artists have performed at the Sound Research Center where we conduct our recorder evaluations. At Nakamichi, no product is considered fully developed until it passes through our Sound Research Center!



The BX-150E and BX-100E are available in black or silver to coordinate with other equipment.



The Nakamichi Sound Research Center Listening Room

BX-150E/BX-100E Feature Comparison Chart

FEATURE	BX-150E	BX-100E
Microprocessor-Controlled Silent Mechanism Reduces flutter to an absolute minimum	•	•
Laminated-Sendust R/P Head Rivals the performance of most 3-head decks	•	•
Dual-Gap Ferrite-Core Erase Head Ensures complete erasure of metal tape	•	•
Low-Distortion Low-Noise Amplifiers Matched to the head for optimum performance	•	•
Balanced High-Frequency Bias Supply For minimum noise and distortion	•	•
Dual-Speed Master Fader Produces professional fades at a touch	•	•
Memory Stop Automatic stop at counter zero in rewind	•	•
Auto Repeat Reinitiates playback after rewind	•	•
Defeatable MPX Filter Removes 19-kHz FM-stereo pilot	•	•
Dolby-B Noise Reduction Provides up to 10-dB quieting	•	•
Dolby-C Noise Reduction Provides up to 20-dB quieting	•	
3-Position Tape Selector Accommodates ferric, chrome, and metal tape	•	•
2-Position Equalization Selector Permits use of 120- and 70-μs equalization	•	•
Wide-Range LED Peak-Level Indicators Indicate recording level over 37-dB range	•	•
4-Digit LED Tape Counter Reads from "−999" to "9999"	•	
3-Digit Mechanical Tape Counter Reads from "000" to "999"		•
Timer Record/Play Unattended operation via accessory timer	•	•
Output Level Control Sets line and headphone level	•	
Headphone Output For private listening	•	•



Tapes

ZX Metalloy Cassette Tape
(70 μs, metal bias)
ZX C-60 ZX C-90

SX Ferricobalt Cassette Tape
(70 μs, CrO_2, bias)
SX C-60 SX C-90

EX Ferrioxide Cassette Tape
(120 μs, normal bias)
EX C-60 EX C-90

SX II Super Ferricobalt Tape
(70 μs, CrO_2 bias)
SX II C-60 SX II C-90

EX II Ferricrystal Cassette Tape
(120 μs, normal bias)
EX II C-60 EX II C-90



DM-10 Head Demagnetizer



SF-10 Subsonic Filter



SP-7 Stereo Headphones

BX-150E/BX-100E Specifications

Track Configuration		4 tracks/2-channel stereo
Heads		2 (erase head × 1, r/p head × 1)
Motors	Transport:	DC servo motor (capstan drive) × 1 DC motor (reel drive) × 1
	Mechanism:	DC motor (cam operation) × 1
Power Source		100, 120, 120/220-240, 220 or 240 V AC; 50/60 Hz (according to country of sale)
Power Consumption		23 W max.
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		20–20,000 Hz (−20 dB recording level)
Signal-to-Noise Ratio (A-WTD rms re 3% THD at 400 Hz) (70 μs, ZX tape)		Dolby-C NR (BX-150E only) Better than 68 dB Dolby-B NR (BX-150E and BX-100E) Better than 62 dB
Total Harmonic Distortion (400 Hz, 0 dB)		Less than 1.0% (ZX, EXII tape) Less than 1.2% (SX tape)
Erasure		Better than 60 dB (100 Hz, 0 dB)
Separation		Better than 36 dB (1 kHz, 0 dB)
Crosstalk		Better than 60 dB (1 kHz, 0 dB)
Bias Frequency		105 kHz
Fast-Wind Time		Approx. 85 seconds (C-60)
Input (Line)		50 mV, 30 k ohms
Output (Line)		0.5 V (400 Hz, 0 dB) 2.2 k ohms
(Headphone)	BX-150E:	2.2 mW (400 Hz, 0 dB, output control max.) 8-ohms
	BX-100E:	1.2 mW (400 Hz, 0 dB) 8-ohms
Dimensions		430 (W) × 110 (H) × 250 (D) millimeters 16-15/16 (W) × 4-5/16 (H) × 9-7/8 (D) inches
Approximate Weight		5.5 kg; 12 lb 2 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: Model Name with "E"

Many countries have safety regulations to which Nakamichi has to comply during production.

The additional mentioning of "E" on the model means that this product has been produced according to the radio interference regulations of the EEC, as well as in compliance to the European safety standards.

Within Europe, Nakamichi only offers guarantee for those products which have been specially produced for the European market.

Nakamichi Corporation
Tokyo Office
Shinjuku Daiichi Seimei Bldg., 2-7-1 Nishishinjuku, Shinjuku-ku, Tokyo
Phone: (03) 342-4461 Telex: 2324721 (NAKAM J)

Nakamichi U.S.A. Corporation
19701 South Vermont Avenue, Torrance, California 90502 Phone: (213) 538-8150

Nakamichi GmbH
Stephanienstrasse 6, 4000 Düsseldorf 1 Phone: (0211) 359036

Printed in Japan S-8404200A