# The RX-202E With UDAR Auto Revese Convenience... Unidirectional Performance!

## What's wrong with ordinary auto reverse?

Nothing would be wrong with conventional auto reverse *if* cassettes were perfect. Unfortunately, they're not! Tape can't be slit to perfectly uniform width. Housings can't be molded to zero tolerance. And, tolerances can't be ignored!

In-cassette guides must be broad enough to accommodate the widest tape. Most of the time, the tape is narrower and is guided by one edge. It's impossible to guarantee that the pins on which the guides rotate are perfectly perpendicular to the direction of motion. The tape edge in contact with the roller then forces the guide up or down the pin.

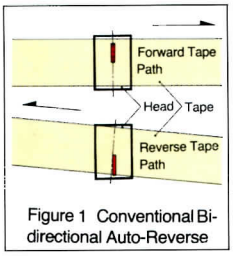


Figure 1 Conventional Bi-directional Auto-Reverse

As long as the tape moves in one direction, equilibrium is established. The tape carries the guide to one side and it stays there. But when direction is reversed, the tape is likely to carry the guide to the *opposite* side of the pin and track differently.

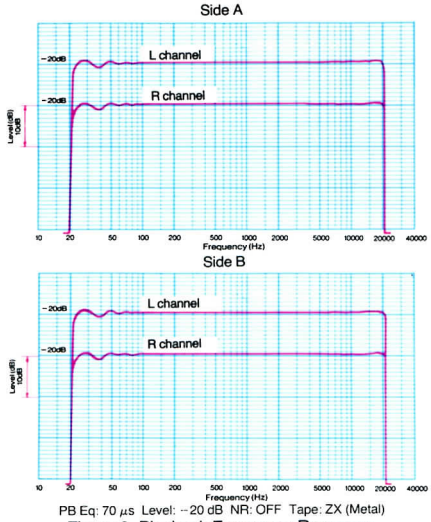
That's the "bidirectional azimuth problem" in a nutshell. Conventional auto-reverse decks change *tape* direction going from Side A to Side B. On Side A, tape moves from left to right; on Side B, it moves from right to left. If the tape was recorded moving from left to right—the normal case—there probably will be azimuth error when it's played from right to left.

Even a tiny error has considerable effect on high-frequency response. An error of *2/15* of a degree causes a 3-dB loss at 10kHz and eliminates 20-kHz information entirely, and noise-reduction systems compound the problem.

## The RX-202E...Unconventional Auto Reverse!

Nakamichi always has been keenly aware of the "bidirectional azimuth problem" and, for years, offered only *uni*directional cassette recorders for we could not sacrifice performance for convenience!

NAAC—Nakamichi Auto Azimuth Correction used in the DRAGON and TD-1200 Mobile Tuner/Cassette Deck—eliminates azimuth error entirely by *tracking* recorded azimuth and aligning the playback head with it automatically.



PB Eq: 70 μs Level: −20 dB NR: OFF Tape: ZX (Metal)
Figure 2 Playback Frequency Response

UDAR—*Unidirectional Auto Reverse*—freatured in the RX-202E *avoids* bidirectional azimuth error altogether!

## Unidirectional Auto Reverse... Convenience Without Compromise!

UDAR offers the convenience of conventional auto-reverse and the performance for which Nakamichi is famous. The concept is so simple that it's elegant.

UDAR *automates* the actions *you* perform when the tape runs out. At the end of a side, UDAR disengages the cassette, turns it around, reloads it, and resumes operation. Simple! Reliable! Effective! And *fast!* UDAR flips the cassette and is back in operation in just over a second!

The RX-202E transport is *Uni*directional. Tape *always* moves in the *same* way in which it was recorded so there is *no* "bidirectional azimuth error." Response is as perfect on Side B as on Side A—flat from 20 Hz to 20 kHz! And, with unidirectional motion, fast forward always moves the tape towards the *end* of the side, reverse towards the *beginning* so you're never confused as with some bidirectional decks.

UDAR performs every normal auto-reverse operation: "one-way," "once-through," or "continuous" playback *and* "one-way" or "once-through" recording. Sides change automatically when the tape runs out or whenever you press REVERSE. UDAR is independent of the transport and so does not affect mechanical precision in any way. It's operated by its own motor and controlled by a microprocessor that prevents mistakes.

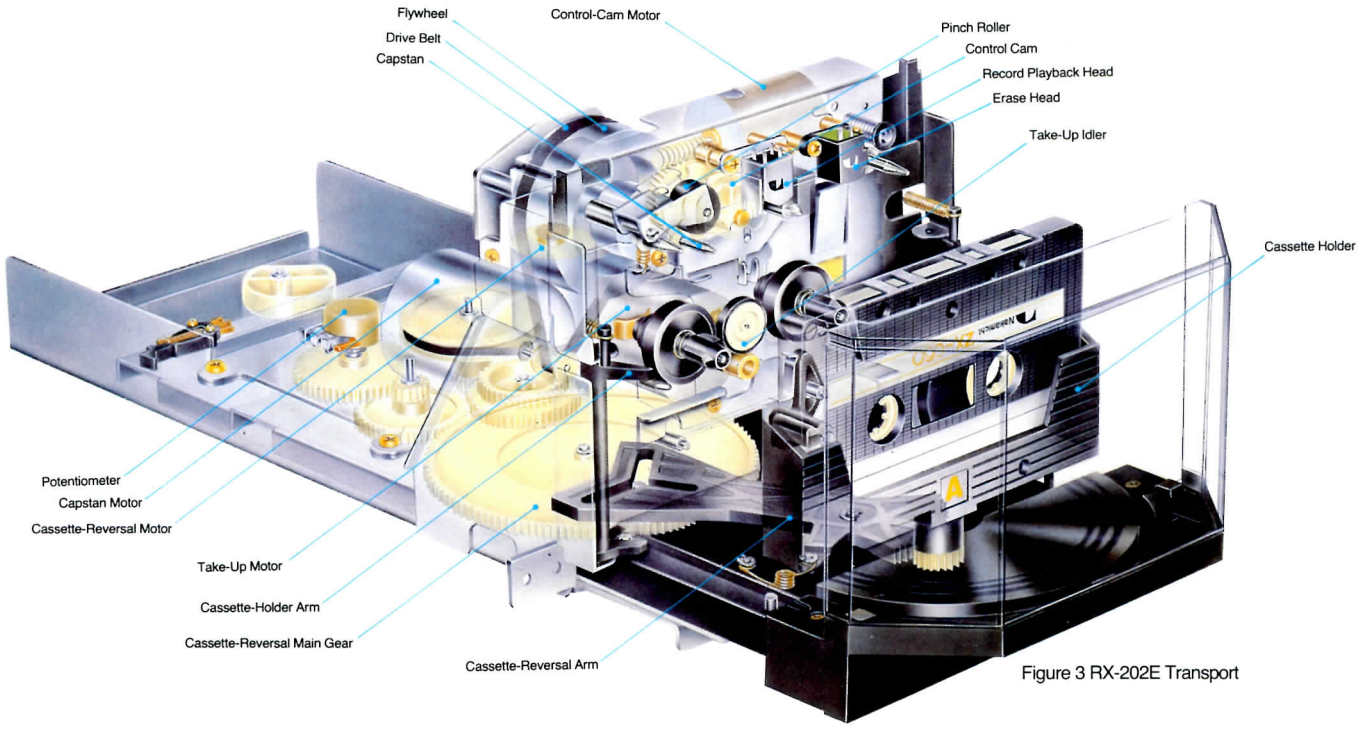


Figure 3 RX-202E Transport