

# NAKAMICHI DRAGON

£1750

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This astonishing machine represents the pinnacle of cassette deck engineering, being easily the most complex model to ever grace the cassette deck market. The price is now pretty astonishing too. An irony of the Dragon, however, is that its complexity is directed toward playing hi-fi's worst medium, namely pre-recorded cassettes. The category includes recordings made on any other machine of course, not just the things one buys in record shops.

On the four-track head, one track pole in either direction has phase sensing between vertically stacked segments. The head platform has motor driven azimuth correction, achieved by adjusting for zero phase error. This system operates continuously and very rapidly to eliminate head azimuth error and the treble loss it causes.

As if this was not enough, auto-reverse is provided by a dual-capstan transport with direct drive to both capstans. In fact, it would be impossible to use a belt driven back-tension capstan, because when direction reverses, both capstans must change speed slightly to maintain a 0.2% speed differential, so individual electronic control of each motor is essential. Only reverse play is provided, not reverse recording.

As usual with Nakamichis, recording frequency response can be tuned by manually adjustable bias, which works with metal tapes as well as chromes and ferrics. Record sensitivity is adjustable too.

Totally independent record and replay heads are fitted, which provide the ability to off-tape monitor.

## SOUND QUALITY

The ability to fully recover the high frequency content of a recording inevitably has the effect of eliminating the dullness, warmth or clothiness that pre-recorded tapes appear to suffer when played on the average cassette deck. This not only provides a sense of clarity and finds detail within a recording, it also establishes stereo images. Extended low frequency response is responsible for adding bass slam. Even though there's some recorded wow in pre-recorded tapes, good dual-capstan transports can still make them sound temporally tighter.

With tapes that are a perfect match for the Dragon, especially Maxell MX, recording quality proved exceptional, although a very high record level is not advisable because of treble overload. That's MR-X Pro matches almost as well but takes a lot more level. Results with ferrics and chromes were similar, with some slight rounding of transients noted.

## SUMMARY

This is a dual-capstan, dual direct drive, auto-reverse (play only) machine with an independent replay head that senses azimuth and automatically tilts to eliminate error. The result is

near perfect reproduction of pre-recorded tapes - but at some price! The deck also happens to make astonishingly

good recordings, as well as generate awe amongst onlookers. It's a masterpiece of engineering.

## TEST RESULTS

<b>REPLAY (pre-recorded tapes)</b>	
frequency response (-2dB)	30Hz - 20kHz
speed accuracy	+0.5%
hiss (70uS, Dolby out)	-58dB
<b>RECORDING (blank tapes)</b>	
frequency response (IEC Primary Refs.)	
ferric (IEC I)	23Hz - 20kHz
chrome (IEC II)	23Hz - 20kHz
metal (IEC IV)	23Hz - 20kHz
separation (1kHz)	-50dB
distortion (315Hz)	0.3%
hiss (70uS, Dolby out)	-55dB
speed variations (DIN total)	0.03%
modulation noise (1k-3k)	-46dB
flutter energy 3k-3.13k	-36dB
<b>MOL/SAT (IEC Primary Refs.)</b>	
IEC I (ferric)	+4dB / -4dB
IEC II (chrome)	+1.8dB / -6dB
IEC IV (metal)	+7dB / -1.5dB

## TECHNICAL PERFORMANCE

As the spectrum analysis clearly shows, the Dragon demonstrates unparalleled speed stability. Dual direct-drive gets flutter down to an all time low of 0.05%, wow down to 0.02% (see "sharpness" of test tone in Fig 1) and virtually eliminates drift in the long term (days) or the short term (seconds). A quartz crystal reference is central to its long term stability. Modulation noise and band flutter energy were also exceptionally low. This performance was maintained in reverse. Not only is the transport complex, it works impressively well.

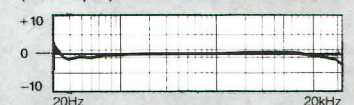
Replay frequency response was flat from 30Hz up to 20kHz, showing only the slight deviations that Nakamichi knowingly adopt. Some recordings become almost

unpleasantly bright, but most only benefit from this characteristic. The Dragon can revive some certain tapes, giving them a sense of life and openness.

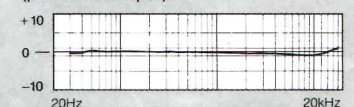
Recording frequency response extends smoothly and evenly up to 20kHz. A rise in output below 30Hz is due to a bass peak at 15Hz, for which there's a sub-sonic notch filter.

The head has high mid-band overload margins, similar to those of the CR-7. Treble overload (SAT 10k) occurred early with metal tape, so high overload types like Sony ES or That's MR-X Pro are recommended.

### RECORDING FREQUENCY RESPONSE (blank tapes)



### REPLAY FREQUENCY RESPONSE (pre-recorded tapes)



### FLUTTER & WOW

