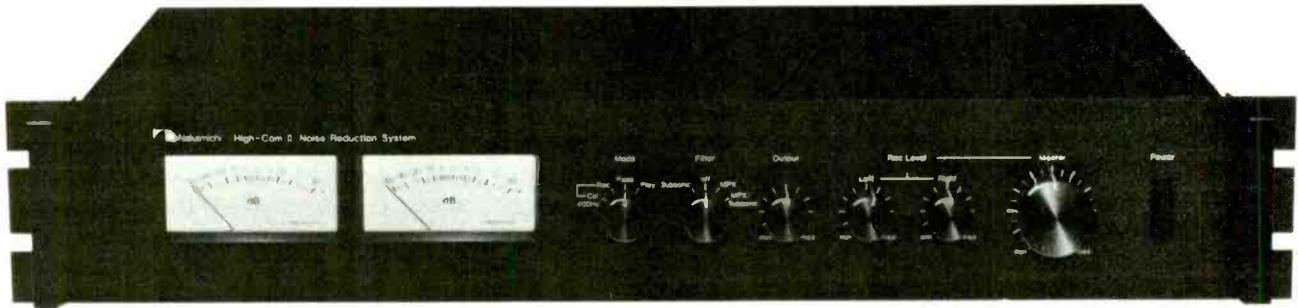


Nakamichi High-Com II Noise Reduction System



General Description: Nakamichi's High-Com II noise-reduction system, developed jointly with Telefunken, is a two-band compander (hence the II in the name). Simply stated, in any compander the dynamic range (difference between softest and loudest signals) is compressed so as to fit "comfortably" within the limitations of a storage or transmission medium, such as tape. The weakest signals are thus amplified and recorded at a level above the inherent noise of the tape. At the same time, the strongest signals are recorded below the level of severe distortion. On playback, the signal is expanded so that weak signals are made weaker (to compensate for the extra gain they received during compression). The noise level, which is weaker yet, is thereby reduced to inaudible levels. The strong signals, on the other hand, are amplified to compensate for the compression they underwent earlier.

Nakamichi's High-Com II is designed to perform in this manner, but with the added benefits of preserving transients, and without the side effect known as "breathing." Low distortion, and no introduction of sonic coloration also were design goals in this project. High-frequency transients require that a signal processor have a fast "attack time" to recognize an abrupt change in signal level. Too fast an attack time, however, can cause the device to respond unduly to low-frequency signals and thereby introduce bass distortion.

Nakamichi's solution to this problem has been to divide the musical spectrum into two ranges, so that highs and lows are processed separately through their own circuits. This technique has been in professional-grade noise reduction systems but has never before been offered in a format and at a price that would appeal to a larger market of audiophiles and "semi-pro" recordists. (The original Dolby system, using four frequency ranges, costs thousands of dollars; the Dolby-B, widely used in cassette decks, confines its action to only one frequency range, above 5 kHz). High-Com II is rated to provide 20 dB of noise reduction through the entire audio band. The reduced tape distortion is said

to make for 5 dB more of headroom, so that the total improvement in dynamic range comes to 25 dB.

The product that embodies this design concept is styled in typical Nakamichi fashion, with black matte panel and neat, though legible, control markings. Of rack-mount width and fitted with handles, the front panel has two peak-level signal meters (one per channel) calibrated from -40 to +10. To their right are two rotary switches, followed by four knobs and the device's AC power off/on button.

The first rotary switch is a mode selector with positions for calibrate, record, pass and play. In "calibrate," a built-in 400-Hz tone generator supplies a test signal for calibrating levels. The actual controls for level adjustment in this process are at the rear, and the meters provide readout for the process. The meters also are used as guides when recording.

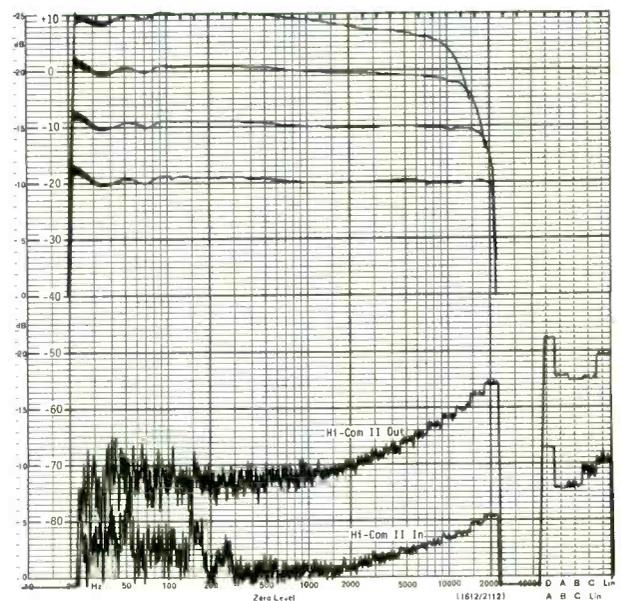


Fig. 1: Nakamichi High-Com II: Frequency response and noise analysis with and without High-Com II.