

480Z/481Z/482Z



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Nakamichi Corporation

The 480 series was developed with the aim to provide Nakamichi's superior record/playback sound quality and basic performance in easy-to-operate popular cassette decks. The second-generation models 480Z, 481Z and 482Z further pursue this policy, while having been graded up for more better performance. Important improvements consist in the inclusion of the new Dolby B-C type noise reduction system which adds the new Dolby C-type to the choice of noise reduction, the replacement of the needlepointer level meters by LED displays, and the inclusion of a "Bias Tune" control for fine adjustment of the bias current.

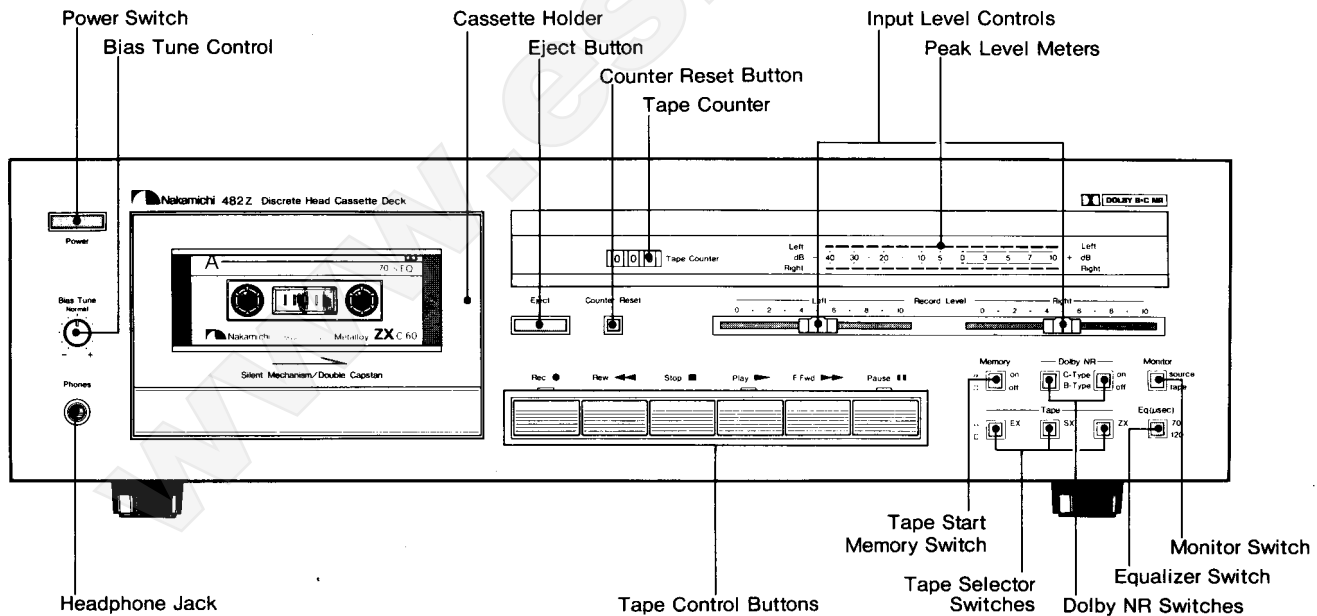


Fig. 1 482Z Front Panel

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• Dolby B-C Type Noise Reduction

In addition to the Dolby B-Type noise reduction system commonly employed in cassette decks so far, these models incorporate the newly developed Dolby C-type noise reduction system. The NR switch on the front panel gives a choice between the positions “B-Type”, “C-Type” and “ NR off”. Figure 2 shows the frequency response and noise spectrum analysis on a 482Z.

* For details, please refer to the technical explanation of the Dolby B-C type noise reduction in the news release for models 581Z and 582Z.

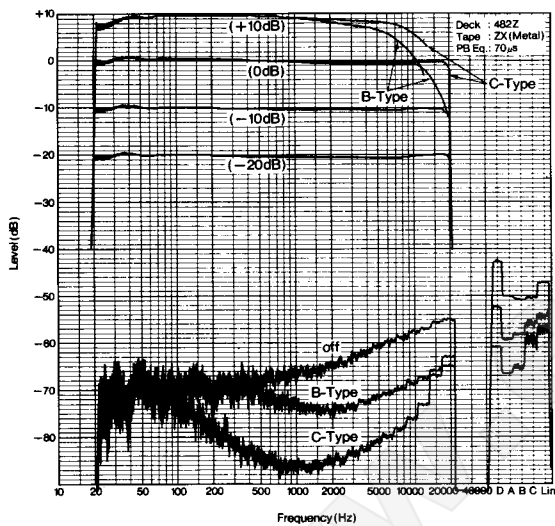


Fig. 2 482Z Frequency Response/Noise Analysis

• Mechanism

When the saturation level is improved and noise is suppressed to undetectable level, the basic performance of the cassette deck to deliver clear sound quality becomes more important than ever. The transport mechanism of a cassette deck, besides moving the tape at uniform speed, has to fulfill many requirements. One of the most important is the suppression of flutter effects which cause modulation of the basic signal and cloud up the signal heard

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from the tape. The tape transport system employed in the models 480Z, 481Z and 482Z is basically equivalent to the Asymmetrical Diffused Resonance Transport which proved its excellence in Nakamichi's top-of-the-line cassette decks such as the 1000ZXL. It guarantees the extraordinary clarity of the playback response. The main features of this transport system are, among others,

- (1) non-resonant chassis to eliminate slight resonances resulting from motor rotation, etc.
- (2) double-capstan drive with two capstan/flywheel assemblies of different diameters to eliminate external vibrations and guarantee close, constant head-to-tape contact.
- (3) precise control of tape movement functions by logic circuitry and Nakamichi's unique motor-driven cam.

These features provide for extremely low flutter and ensure a playback response free from drop-outs or level fluctuations.

• Heads

(1) Discrete 3-Head System (481Z, 482Z)

The models 481Z and 482Z employ completely separate record, playback and erase heads in Nakamichi's unique "discrete 3-head" configuration.

* For details, please refer to the technical explanation of the discrete 3-head system in the news release for models 581Z and 582Z.

(2) 2-Head System (480Z)

In order to perform both the recording and playback process successfully with one head, it is necessary to find a point which best fits both functions. The record/ playback head RP-9E employed in the 480Z possesses a sendust core and approaches the discrete 3-head system in performance.

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• LED Peak Level Meters

In keeping with the greatly improved total dynamic range of the models 480Z, 481Z and 482Z, accurate peak level indication for record level setting and monitoring is necessary. This task is fulfilled by the 16-segment LED peak level meters which cover the range from -40 dB to $+10$ dB. These meters are free of overshoot problems and make for easy and correct readings.



Fig. 3 LED Peak Level Meters

• Bias Fine Tuning

The models of the 480Z series possess a bias tune control for fine adjustment of bias current. The bias amount can be varied by approximately $\pm 10\%$ from the center click-stop position. It is well known that increasing the bias current curtails high-frequency response and decreasing it improves high-frequency response. If the high-frequency response is found to be deficient at the center click-stop position, the bias amount should be decreased by turning the control to the left (counterclockwise). If the highs are over-bright, the bias amount should be increased by turning the control to the right (clockwise).

With the model 482Z, this adjustment can be performed while instantly comparing the sound quality of the input signal with the signal as recorded on the tape, by alternating between the "Source" and "Tape" positions of the monitor switch. With models 480Z and 481Z, the adjustment is performed while repeatedly recording and playing back the signal until the sound quality of the playback signal approaches the source signal.

When using the recommended tapes, frequency response will be flat at the center click-stop position.

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480Z 2-Head Cassette Deck

By employing a sendust record/playback head and a double-gap erase head, this 2-head cassette deck fully realizes the tape's potential, and by incorporating the Dolby B-C type noise reduction tape hiss is suppressed beyond audibility and dynamic range is greatly enhanced. Either black or silver panel color is available.

481Z Discrete 3-Head Cassette Deck

This deck possesses separate record and playback heads, and a common Dolby NR processor and its surrounding amplifier section which is switchable for recording or playback. Therefore simultaneous record/playback is not possible, but all other features and performance standards are the same as those of the model 482Z.

Of course, the Dolby B-C type noise reduction system is also incorporated, permitting record/playback with extremely low noise level.

482Z Discrete 3-Head Cassette Deck

As completely separate head, Dolby NR processor and its surrounding amplifier sections are used for recording and playback, instant off-the-tape monitoring is possible during recording, simply by pushing the monitor switch.

The bias tune control permits to adjust the bias current to the tape used, which makes it possible to produce recordings which are indistinguishable from the original source.

Of course, the Dolby B-C type noise reduction system is also incorporated in the 482Z, the top model of this series.

Thus the models 480Z, 481Z and 482Z consist a series of high-performance cassette decks which are easy to use, attractive and economic at the same time.

Other features include a two-stage headphones level switch, MPX filter switch, facilities for timer recording and connection of the optional remote control unit RM-100, etc.

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480Z/481Z/482Z Specifications

Power Source.....	100, 120, 120/220—240, 220 or 240V AC; 50/60 Hz (According to country of sale)
Power Consumption.....	30W Max.
Tape Speed	1-7/8 ips. (4.8cm/sec.) \pm 0.5%
Wow-and-Flutter	Less than 0.11% WTD Peak, 0.06% WTD rms.
Frequency Response	20—20,000 Hz
Signal to Noise Ratio.....	Dolby C-Type NR on (70 μ s, ZX Tape) 481Z/482Z: Better than 69 dB at 400 Hz, 3% THD, IHF A-wtd rms 480Z: Better than 68 dB at 400 Hz, 3% THD, IHF A-wtd rms Dolby B-Type NR on (70 μ s, ZX Tape) 481Z/482Z: Better than 63 dB at 400 Hz, 3% THD, IHF A-wtd rms 480Z: Better than 62 dB at 400 Hz, 3% THD, IHF A-wtd rms
Total Harmonic Distortion	481Z/482Z: Less than 0.9% at 400 Hz, 0 dB (ZX Tape) Less than 1.0% at 400 Hz, 0 dB (SX, EX II Tape) 480Z: Less than 1.0% at 400 Hz, 0 dB (ZX, EX II Tape) Less than 1.2% at 400 Hz, 0 dB (SX Tape)
Erasure.....	Better than 60 dB below saturation level at 1 kHz
Separation.....	Better than 36 dB at 1 kHz, 0 dB
Crosstalk	Better than 60 dB at 1 kHz, 0 dB
Bias Frequency	105 kHz
Input	50 mV, 30 k ohms
Output Level.....	600 mV (400 Hz, 0 dB) 2.2 k ohms
Headphone	10 mW (400 Hz, 0 dB, phones level: High) 8 ohms
Dimensions.....	450(W) x 135(H) x 289(D) m/m 17-23/32(W) x 5-5/16(H) x 11-3/8(D) inches
Approximate Weight.....	6.4kg, 14lb. 2 oz

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