

OVERDRUK UIT
"HIGH FIDELITY MAGAZINE"
AUGUSTUS 1976

Nakamichi's Unique and Fascinating 600

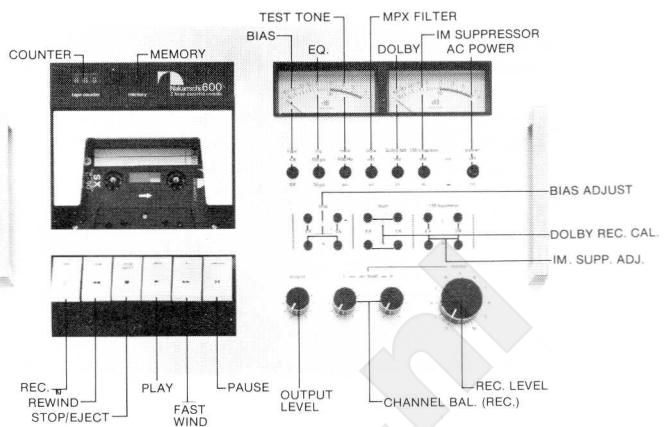
The Equipment: Nakamichi 600, a stereo cassette deck with IM Suppressor and Dolby noise reduction, in metal case.

Comment: We use the word "unique" in our headline on two grounds. First, this is not a typical cassette deck designed to do its thing in just any old system (though it can be used that way); second, in addition to several unusual features it has one (the IM Suppressor circuit) that is introduced here for the first time. Nakamichi—never a company to shun innovation—has done it again.

The 600 was conceived to work in conjunction with the Nakamichi 610 preamplifier (not reviewed here) to deliver an astonishing variety of functions far beyond those of a typical home cassette deck. The functions (such as input mixing) that are pre-empted by the preamp are therefore absent from the 600; but it is a basic, high-quality deck (and then some) that you can integrate into a system that does not include the 610 preamp. It is in such a system that we used the 600, and this report is written on that basis.

The recording level controls consist of a pair of channel-balance knobs plus a master fader (a system we like because it allows you to preadjust and then forget channel balances, using the single REC LEVEL knob for fades). There is a single output control (no channel-balance adjustment here) that does not influence playback metering (so you don't need to align the meters with a standard playback tape before making Dolby or similar adjustments). On the back there are only line connections (both pin and DIN), of course, but there also is a block-schematic that will remind you how the unit works even if you've misplaced the manual—a nice idea adapted from some professional equipment.

The transport controls are similar to those in the Nakamichi 500 and 550. When you are recording or playing tapes you must press STOP before going to the fast-wind modes. The stop key doubles as an eject key, ejecting the cassette only when the transport has been stopped. These features, though they may seem a little cumbersome if



you're used to fast-wind without the interlock or a separate eject key, are sensible, gentle on the tape, and practical, in our opinion. On this model (unlike other Nakamichis) you can make unattended recordings with an inexpensive timer. With the power off, you set up for recording (or playback, if you want to use the 600 as an alarm clock) and pause. A few seconds after the timer turns on the AC, the pause releases by itself. (Incidentally, this design causes the stop key to release the pause key as well.)

Even more important are the front-panel adjustments. Screwdriver pots protected by tiny plastic caps (which are easily lost, so watch it) are provided for individual settings, in each channel, of bias, Dolby recording level, and IM-Suppressor action; and each of these sets of adjustments is repeated for two different tapes (essentially, ferric and chrome). Dolby recording controls have been standard on Nakamichi decks (and are making a gradual reappearance at the high ends of other brands). They allow you to tune Dolby action to the sensitivity of the tape in use. The bias adjustments allow use of tapes significantly different from those for which the 600 is preadjusted, but most users would be well advised to leave this—and certainly the IM-Suppressor adjustment—to a competent service technician.

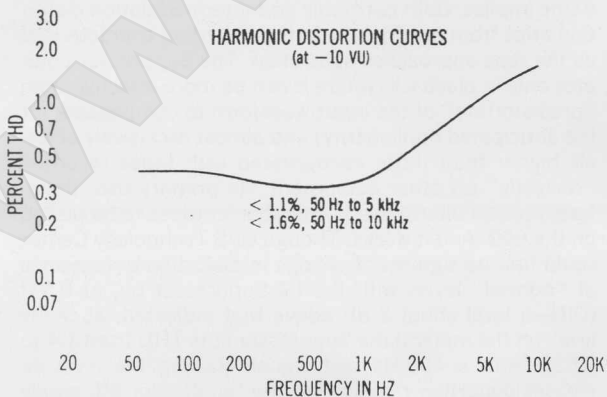
The action of the IM Suppressor is broader than its name implies. Both harmonic and intermodulation distortion arise from nonlinearity in the recording characteristic as the tape approaches saturation. The Suppressor operates only in playback (where it can be more effective than "predistortion" of the input waveform to compensate for the anticipated nonlinearity) and almost exclusively at levels higher than those encountered with tapes recorded "correctly" on other equipment. Its primary use, therefore, is as an alternative to a limiter for tapes to be played on the 600. And it works. Though CBS Technology Center could find no significant change in distortion or response at "normal" levels with the IM Suppressor on, at 0 VU (DIN—a level about 2 dB above that indicated, at Dolby level, on the meters) the Suppressor cuts THD from 1.4 to 0.63% with a 400-Hz test signal. Raising the level increases distortion rapidly with the Suppressor off, slowly with it on. The 3% distortion point (reached at a little over +2 VU without the Suppressor) is thus pushed up to about +4½ VU—very close to the levels represented by the +7 to which the top of the Nakamichi meters is cali-

brated. In other words, the lab confirms that the IM Suppressor adds several dB to the effective headroom of the deck. Incidentally, the peak-reading meters read not only to +7 at the top, but (like other models in the line recently) to -40 at the bottom.

The equalization switch is marked in actual time constants (120 and 70 microseconds) instead of the usual FERRIC and CHROME. One reason for this is that the "chrome" tape for which the 600 is preadjusted is not a chrome formulation at all—it's Nakamichi SX, a ferricobalt that is interchangeable with TDK SA. (See the tape reports in this issue.) Hence the chrome bias setting is marked SX. Similarly, the ferric setting is marked EX. The latter is preadjusted for Nakamichi EX II, which is interchangeable with Maxell UDXL. SX and EX II are the tapes used by CBS for the lab tests. Other tapes to which the 600 provides an excellent match are Nakamichi EX, Maxell UD, Fuji FX, and TDK Audua. The owner's manual—which is top-notch—spells out all this in no uncertain terms. We have also used Scotch Master with the 120/EX settings and various chrome tapes with the 70/SX settings, to good effect. Other ferrics generally are wanting in high-end response (particularly with Dolby) unless the unit is readjusted for them.

The lab data show the 600 to be a really fine machine. The response curves are astonishing for a deck with a combination record/play head since they penetrate into territory that has been almost owned by monitor-head machines like Nakamichi's own 1000. This is one deck in which the usual undefeatable Dolby multiplex filter to suppress any 19-kHz pilot in the signal would measurably have compromised performance. Distortion, noise, wow, and so on, all are excellent. The drive speed, while unaffected by line voltage, is a little farther from exact (a hair over 1% fast) than we would expect on a deck of this class, but it should bother only the most fastidious of users. What does not show in the lab data is the excellent phase linearity (which few other cassette decks seem even to strive for), required by the IM Suppressor but paying off as well-defined transients.

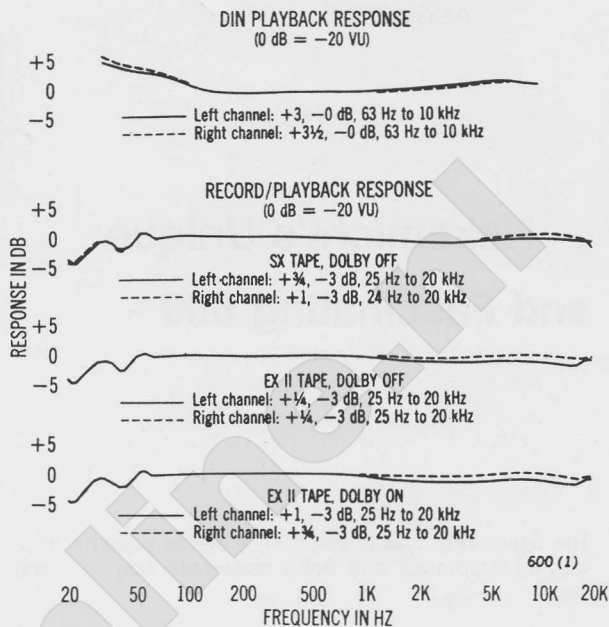
And the 600 most certainly is handsome—despite two significant shortcomings of its cosmetics. First, Nakamichi has put no dust-resistant lid on the cassette well. This makes for easy access to the heads (for cleaning, etc.) but requires that you use the supplied smoked dust cover to keep foreign matter out of the well—a nuisance that might easily have been forestalled. We would rather have to dust the whole front panel than search for a place to set the cover each time we use the unit. Second, the small black buttons are so designed and placed that when one is in perfect position for using the deck—whose angled face in every other respect represents excellent human engineering—it is impossible to tell whether the buttons are in or



out. Toggle switches, or something similar, would be a big improvement.

In so attractive, original, and capable a design, however, any misjudgments of this sort are easily put up with. This deck's manifest advantages are impressive indeed.

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Nakamichi 600 Additional Data

Speed accuracy	1.16% fast at 105, 120, & 127 VAC
Wow and flutter	playback: 0.04% record/play: 0.06%
Rewind time (C-60 cassette)	112 sec.
Fast-forward time (same cassette)	110 sec.
S/N ratio (re 0 VU, Dolby off, CBS weighted)	
playback	L ch: 52 dB R ch: 52½ dB
record/play	L ch: 49 dB R ch: 49 dB
S/N ratio (re 0 VU, Dolby off, unweighted)	
playback	L ch: 50 dB R ch: 50½ dB
record/play	L ch: 48½ dB R ch: 49½ dB
Erasure (333 Hz at normal level)	71 dB
Crosstalk (at 333 Hz)	
record left, play right	45 dB
record right, play left	43 dB
Sensitivity (re DIN 0 VU)	
line input	L ch: 88 mV R ch: 93 mV
Meter action (re DIN 0 VU)	
	L ch: 2 dB high R ch: 2½ dB high
IM distortion (record/play, -10 VU)	
	L ch: 2.8% R ch: 2.3%
Maximum output (re DIN 0 VU)	
	L ch: 760 mV R ch: 820 mV

importeur



TransTec
Schiedamsevest 67,
Rotterdam-3002,
tel. 010 - 14 7055*