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NAIM AUDIO NAP 135 MONO AMP AND NAC 72 PREAMP

Manufacturer's Specifications

Preamplifier

Frequency Response: 20 Hz to 20 kHz, ±0.5 dB.

THD + N: 0.1%, 20 Hz to 20 kHz.

High-Level Sensitivity: 75 mV.

Maximum Output: 7.5 V.

Dimensions: Preamp and Hi-Cap power supply, each 8 in. W × 3 in. H × 11¾ in. D (20.3 cm × 7.6 cm × 29.8 cm).

Weight: Preamp, 6 lbs. (2.7 kg); power supply, 16 lbs. (7.3 kg).

Prices: Preamp, $1,395; power supply, $1,245.

Amplifier

Output: 75 watts into 8 ohms, 135 watts into 4 ohms.

Power Bandwidth: 3 Hz to 40 kHz +0, −3 dB.

THD + N and IM: 0.1%, 20 Hz to 20 kHz, at rated output level.

Sensitivity: 105 mV for 1 watt output into 8 ohms.

Impedance: 22 kilohms.

Dimensions: 17 in. W × 3 in. H × 11¾ in. D (43.2 cm × 7.6 cm × 29.8 cm).

Weight: 29 lbs. (13.2 kg).

Price: $2,995 each.

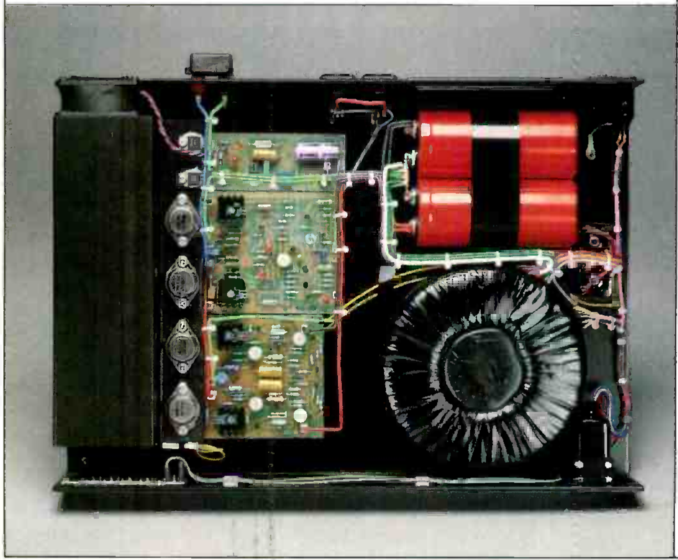
Company Address: 1748 North Sedgwick St., Chicago, Ill. 60614.

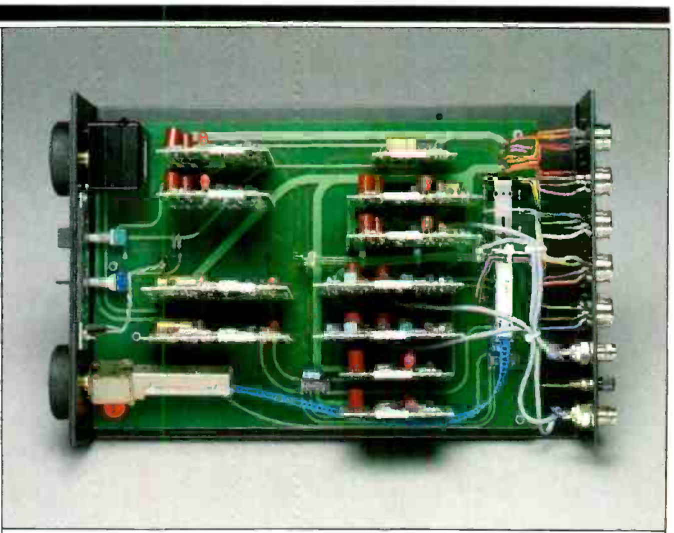
For literature, circle No. 93

Naim Audio is one of those English companies you hear about but whose products you probably don't get to experience unless you go out of your way to listen to them. In fact, the top-of-the-line NAC 72 preamp, the optional Hi-Cap (high-capacity) power supply, and the pair of NAP 135 mono power amps reviewed here are the first Naim equipment I have ever used. The company makes other components too, including tuners, integrated amps, electronic crossovers, and even speakers.

Trying to figure out how to hook up the Naim equipment was, at first, somewhat puzzling. A number of interconnect cables came along with the gear, most with some kind of DIN connector at one or both ends. I'm a knowledgeable audio engineer, and I was confused! The instruction manual was reasonably well written and covered most of what Naim makes, which enabled me to figure things out. According to Naim Audio of North America, dealers are required to install whatever they sell, and the manual is intended purely as a backup for the consumer. Even so, this manual, along with, perhaps, some help from the dealer, should enable the average customer to get things properly hooked up.

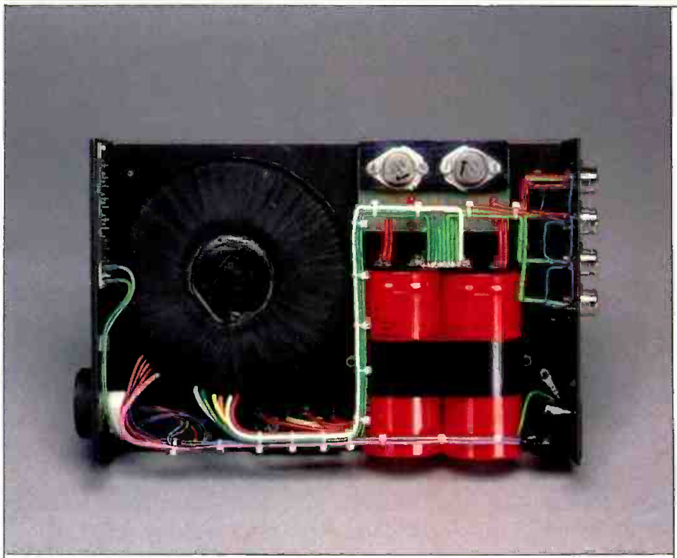
The preamp and Hi-Cap power supply are the same size, each about half the width of the NAP 135 amplifiers. Front-panel controls on the preamp include, from left to right, "Volume," "Balance," a three-position switch (for muting, "Normal," and tape monitor), and a five-position source selector. The volume control and selector switch have large rubber-sheathed knobs. When we look at the rear panel, the great difference between this preamp and more familiar units comes into focus: There isn't a phono connector on it! Instead, there are four BNC r.f. connectors, five DIN connectors with various pin configurations, and a ground post. (Although DIN connectors are actually rather common in European countries, they are rarely found on audio equipment imported into this country.) The BNC connectors are for phono and one auxiliary input. Naim thinks that these connectors make for better sound with low-level inputs. Both RCA-to-DIN and RCA-to-BNC cables are available, but if any of your equipment has nondetachable cords, Naim suggests you replace those cords' phono plugs with DIN or BNC types rather than use adaptors. Three of the DIN sockets share a commonly used five-pin geometry. One of these, labelled "Tuner," is used as a second high-level input. Two of its pins are used for the hot leads of the two channels and one is used for common. The next two five-pin DIN jacks are used for connections to two tape recorders. These connectors have two pins for the two channels' hot connections for record out, two pins for the hot connections for tape in, and the remaining pin for common. Next, a four-pin DIN connector, labelled "Output," is for both preamp power input and signal output. This connector passes both output channels to a host stereo power amplifier (such as the Naim NAP 90 or 140) and receives operating power back from it. The fifth and final DIN connector, a five-pin type with a different pin geometry, is designed for connecting the optional Hi-Cap power supply, required for use with amps (such as the NAP 135s) that do not have power-supply outputs. This jack passes both preamp output signals to the connecting cable but uses two pins for separate power to different parts of the preamp and uses one pin for common. When the adjacent "Output" plug is used to power the preamp, you insert a five-pin male dummy plug into this last socket to tie the two power-supply points inside the preamp together.





When using the Hi-Cap power supply to power the preamp, signals are fed to the power amplifier from sockets on the supply. The knob on this unit's front panel matches those on the preamp. The rear panel has a combination line-cord socket/fuse-holder that I've been seeing lately on new equipment, and four multi-pin DIN connectors. One socket, as previously mentioned, powers the NAC 72 preamp and receives the signals from it. The remaining sockets, all regular four-pin DIN format, feed signals to the system power amp (or amps) or feed both power and signal to the Naim NAXO electronic crossover, which would then feed the appropriate signals to multiple power amplifiers. My initial confusion about the numerous DIN connectors was replaced by admiration for this system engineering, as it allows so many different combinations of Naim components to be used with DIN interconnects.

Although hookup of Naim equipment is a bit unusual, the company's dealers are required to install what they sell.



Within the Hi-Cap supply's enclosure is a toroidal power transformer as big as you'd expect in a power amp, two bridge rectifiers mounted to the bottom of the enclosure, two 15,000-µF/63-V filter capacitors, and a voltage-regulator assembly. A p.c. board carpeted with green LEDs is mounted behind the translucent front panel to surround the black Naim logo with an attractive green glow; the preamp and amps have this same backlighting system.

Inside the NAC 72 preamp, the bottom area is taken up by a large motherboard. Numerous individual p.c. boards plug vertically into the motherboard via female clips that engage male pins on the motherboard. The input selector is a long linear slide switch at the rear of the motherboard, where all the signal connectors are. A plastic-sheathed metal tape, which works like a bicycle's brake cable, connects this switch to the front panel, where the control knob's rotary motion is converted to linear motion to activate the switch. These neat components allow the switch to be where it's needed for best electrical performance. A high-quality, dual 20-kilohm Alps volume control is mounted to the front of the motherboard, as are the balance and mode controls.

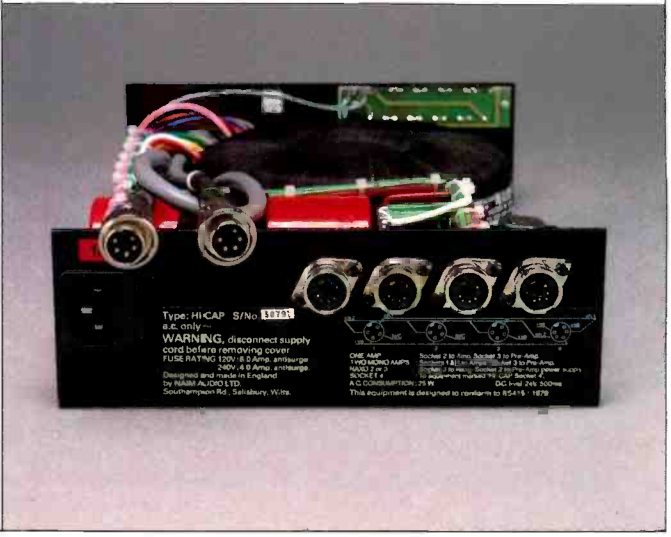
The front panel of the NAP 135 mono amplifier has a pushbutton power switch near its right edge. At the top left is the backlit Naim logo. As you look at the rear panel, on the left is a combination a.c. line-cord socket/fuse-holder. Next is an air-intake slot. In the middle of the panel is a pair of XLR connectors for signal input; one is wired to accept the left-channel signal from Naim's multi-conductor interconnect cable, the other to accept that cable's right-channel signal. To the right is a horizontally oriented dual-banana socket for speaker connections and, finally, the small cooling fan at the outlet end of the heat-sink tunnel.

Inside the amplifier, a large toroidal power transformer, two power rectifier bridges, and a pair of filter capacitors take up about half of the interior space. Running along the right-hand side is a horizontal heat-sink with a ledge on which four TO-3 and two TO-220 power transistors are mounted. Multiple fins extend to the right edge of the internal space. The right edge of the amp enclosure covers the open part of the heat-sink, forming the closed tunnel through which cooling air is drawn by the fan. Mounted under the ledge are three p.c. boards. These boards, from front to back, are for control of the cooling fan, main signal amplification, and power-supply regulation.

The same method of construction is used for all three of these Naim components. A U-shaped piece of metal forms each unit's rear panel, bottom, and front subpanel. A plastic front dress panel adorns each piece. The aforementioned chassis pieces slip into a cast or welded metal outer cover that makes up the top, bottom, and sides of the overall enclosure. The materials and workmanship are to a high standard.

Measurements

I began my testing with the NAC 72 preamp. As is my custom, I measured gain and sensitivity first (Table I). Concentrating on the line section of the preamp, I first checked what kind of bandwidth limiting was taking place in the filter stage and "AUX" input amplifier. Rise- and fall-times were measured at the tape output jacks for signals being fed into "Tuner" and "AUX" line inputs, with the "AUX" input amplifier set for unity gain. (A quick comment about rise- and fall-times: To be complete, one should talk about the separate rise- and fall-times of a pulse. However, in general they are the same unless some nonlinear phenomenon like slewing occurs. I'll abbreviate to just rise-time unless the rise- and fall-times are different.) Rise-times through "Tuner" and "AUX" were 5 and 9.6 µS, respectively, giving equivalent bandwidths of 70 and 36.5 kHz (using the usual rough formula that bandwidth equals 350 divided by the rise-time). This tells us that the tape output buffer is somewhat limited in high-frequency response and that the "AUX" input amp is more limited yet. Next, rise-times were measured at the main outputs, with "Volume" clockwise and "Balance" centered. Rise-time was now 8 µS for the "Tuner" input and 11 µS for "AUX." The former figure shows that the approximate bandwidth of the filter block preceding the "Volume" and "Balance" controls is about 44 kHz. The overall bandwidth



The volume control's two channels tracked within 0.3 dB down to −80 dB, the best tracking I have ever measured!

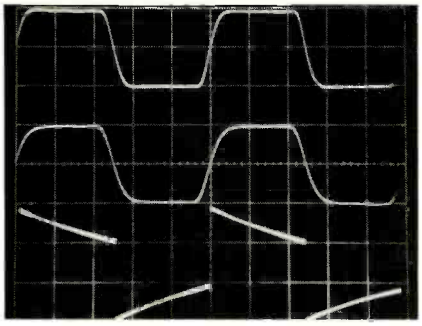


Fig. 1—Square-wave responses, measured at line amp output, for 10-kHz square wave through "Tuner" input (top), 10-kHz square wave through "AUX" input (middle), and 40-Hz square wave through "AUX" input (bottom). Scales: Vertical, 5 V/div.; horizontal, 20 µS/div. for 10-kHz traces, 5 mS/div. for 40-Hz trace.

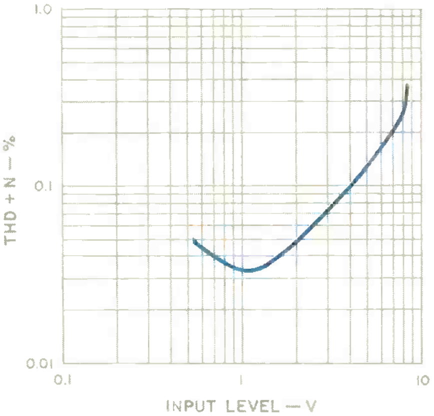


Fig. 2—THD + N vs. input level for 1-kHz signal applied to the "AUX" input. Curve is truncated below 0.5 V, as it would show noise more than distortion past this point.

through the "AUX" input to the main output is more like 32 kHz. A good feature of this low-pass filtering is that it has no overshoot, a result of its Bessel characteristic. The roll-off rate of the high-frequency filtering was 18 dB/octave. Figure 1 nicely illustrates this: Compare the 10-kHz square wave through the "Tuner" input (top trace) with the slower but nicely damped response to a 10-kHz square wave via "AUX" (middle trace). The bottom trace shows a 40-Hz square wave, applied via the "AUX" input, measured at the main output with instrument and IHF loading. With signal applied to the "Tuner" input, the low-frequency tilt was about 60% of that shown for the signal going into the "AUX" input.

Distortion from the line amplifier was found to consist of low-order second- and third-harmonic components, essentially constant with frequency over the audio range. Maximum output at the onset of clipping was about 8 V rms and was the same with instrument or IHF loading. Figure 2 shows how 1-kHz THD + N varies with output level for signals applied to the "AUX" input. With signal fed into the "Tuner" input, distortion is a little lower below 1 V output but is about the same above 1 V out. Signal acceptance at the "Tuner" or "AUX" inputs was quite good, taking about 8 V rms before the filter's amplifier block started to clip.

Line amplifier noise figures, referred to input, are given in Table II, along with IHF signal-to-noise ratios. As can be seen, the "Tuner" input, which does not have an active input amplifier, is quieter than the "AUX" input, which has a signal amplifier and band-limiting filter block. The input noise tabulated here is more from these circuits than from the line output amplifier which follows the "Balance" and "Volume" controls. In practice, though, the difference is negligible; this is demonstrated by the IHF S/N figures, which are dominated more by the noise of the line output amplifier. Recall that IHF S/N ratio is obtained by putting a 0.5-V signal into a line input and adjusting the system volume control for an output of 0.5 V. If active circuitry is present before the volume control, as in this instance, the S/N ratio of these

Table I—Gain and sensitivity, NAC 72 preamplifier.

	Gain, dB			
	Instr. Load	IHF Load	Instr. Load	IHF Load
	LEFT		RIGHT	
AUX to Tape Out				
Minimum	−13.2	−13.7	−13.1	−13.5
Maximum	+10.2	+9.7	+10.2	+9.3
AUX to Main Out				
Minimum	7.8	7.8	7.9	7.9
Maximum	31.2	31.2	31.2	31.2
Tuner to Tape Out	0	−0.5	0	−0.5
Tuner to Main Out	21.1	21.1	21.1	21.1
Phono to Tape Out	56.1	55.6	56.2	55.7
Phono to Main Out	77.1	77.1	77.15	77.15

	IHF Sensitivity	
	LEFT	RIGHT
AUX To Tape Out		
Minimum Gain	2.4 V	2.36 V
Maximum Gain	163 mV	165 mV
AUX to Main Out		
Minimum Gain	204 mV	200 mV
Maximum Gain	13.9 mV	13.9 mV
Tuner to Tape Out	525 mV	525 mV
Tuner to Main Out	44.5 mV	44.5 mV
Phono to Tape Out	830 µV	820 µV
Phono to Main Out	70.5 µV	69.5 µV

The power supply held its output voltage even when the a.c. line dropped to 85 V, so brownouts should not be a problem.

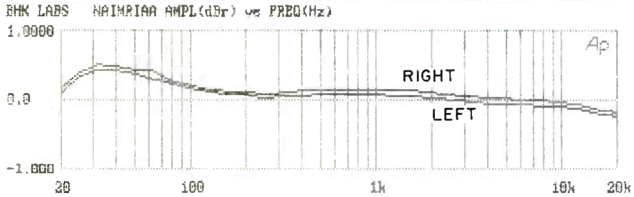


Fig. 3—RIAA equalization error, measured at tape output with instrument loading. With IHF load (not shown), the level dropped about 0.3 dB but response was unchanged.

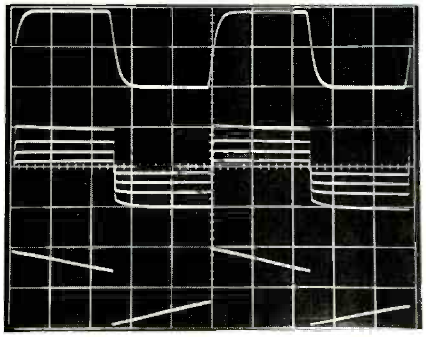


Fig. 4—Response of phono section to pre-equalized square waves of 10 kHz (top), 1 kHz at several input levels (middle; see text), and 40 Hz (bottom), all with instrument load. Vertical scales: Top and bottom, 0.5 V/div.; middle, 2 V/div. Horizontal scales: 20 μS/div. for 10 kHz, 200 μS/div. for 1 kHz, and 5 mS/div. for 40 Hz.

electronics when fed a 0.5-V signal frequently exceeds that of the output amplifier when it is fed the attenuated signal delivered by the volume control.

Volume-control tracking between channels was found to be within 0.3 dB down to −80 dB! This particular control takes the sweepstakes for the best-tracking control I have ever tested.

Interchannel crosstalk was measured for both the "Tuner" and "AUX" inputs. As is frequently the case, crosstalk was not the same in each direction, being lower from the left to the right channel than in the right-to-left direction. Typical results were down more than 80 dB at frequencies below 1 kHz, increasing to −64 dB at 5 kHz and to −52 dB at 20 kHz. Crosstalk was in phase.

Input impedance at 1 kHz measured about 80 kilohms at "AUX" and about 30 kilohms at "Tuner." Output impedance was a low 5 ohms at the main outputs and about 560 ohms at the tape outputs.

Figure 3, the RIAA phono equalization error, shows quite a close match between channels. The most salient features of the equalization error are a slight emphasis in the region around 30 to 50 Hz and a slight roll-off in the top octave.

In the phono section, THD + N for 2 V output was almost 0.4% at 20 Hz, decreasing to about 0.2% at 100 Hz, getting down to the 0.05% area over most of the midrange, and climbing back to about 0.08% at 20 kHz. At an output level of 1 V, THD + N was 0.2%, 0.027%, and 0.06% for frequencies of 20 Hz, 1 kHz, and 20 kHz, respectively. Driving the phono preamp to output clipping revealed a relatively low output level for the supply voltage used. Output clipping occurs first on the positive half-cycle, at an output voltage of about 3 V rms. Considerable asymmetry exists; I had to drive the circuit a lot harder to see any negative half-cycle clipping.

Phono overload versus frequency is shown in Table III. Results are given for the left channel with instrument load only; the right channel behaved very much like the left. Loading the output with the IHF load of 10 kilohms in parallel with 1,000 pF of capacitance lowered the output level at visual onset of clipping by about 0.5 dB for the same measured input voltage. Notable is the relatively constant output voltage with frequency at the overload point. The

Table II—Preamp line section noise levels vs. bandwidth for input terminated with 1 kilohm, "Volume" control at maximum, and "Balance" control centered. The IHF S/N ratios for both channels were 86.8 dB for the "AUX" input and 86.2 dB for the "Tuner" input.

	Referred Input Noise, μV			
	AUX Input		**Tuner Input**	
Bandwidth	LEFT	RIGHT	LEFT	RIGHT
Wideband	21.0	20.6	13.6	13.6
20 Hz to 20 kHz	11.5	11.5	4.6	4.5
400 Hz to 20 kHz	11.3	11.2	4.3	4.3
A-Weighted	10.4	10.2	4.2	4.2

Table III—Phono overload vs. frequency for instrument load; left channel only shown.

Frequency, Hz	**Input, mV**	**Output, V**
20	0.52	3.0
50	0.67	3.0
100	1.0	3.0
300	2.5	3.0
1k	4.8	3.0
3k	8.2	3.0
5k	12.2	3.0
7k	16.4	3.0
10k	23.2	3.0
15k	34.0	2.9
20k	45.5	2.9

I can't recall an amplifier whose waveform changed so little when I added capacitance to its load.

onset of overload occurs when the input voltage reaches 4.8 mV at 1 kHz, which provides a nice, comfortable margin of at least 20 dB for low-output moving-coil cartridges (those with an output of less than 1 mV). I wouldn't recommend the use of the NA 323S phono board for high-output moving-coil pickups; Naim's NA 322 phono board, for moving-magnet pickups, would be better suited for them.

'Scope photos of phono circuit performance with pre-equalized square-wave signals are presented in Fig. 4. The top and bottom traces are for frequencies of 10 kHz and 40 Hz, respectively. In the middle trace, the test frequency is 1 kHz and output level is varied to show the effects of high-frequency overload with the out-of-band (above 20 kHz) energy in the pre-equalized square wave. At a little more than ±1 V, some asymmetry is becoming visible. The IHF load didn't materially affect this, which is pretty good performance in this test.

Referred input noise of the moving-coil phono board is listed in Table IV. Whether A-weighted or measured in the band from 400 Hz to 20 kHz, the noise is fairly low although not state of the art. Audible hiss should not be a problem except possibly with pickups having extremely low output.

Interchannel crosstalk in the phono circuitry, measured at the tape output, was outstanding—more than 90 dB down for frequencies as high as 300 Hz, decreasing to −81 dB at 3 kHz and to −74 dB at 20 kHz. This was for the worse, left-to-right, direction; in the right-to-left direction it was some 3 to 4 dB better.

A final note on the Hi-Cap power supply. The a.c. line draw was about 0.2 ampere. The power-supply regulators held up their output voltage at a.c. line voltages down to 85 V. Power-line brownouts are not likely to affect this unit.

For the NAP 135 power amps, Naim recommends against using any interconnect leads except their own, and against using a passive volume control. I had a problem with this, as I normally use a passive selector switch connected by a pair of 20-foot cables to my system power amps, which are between and behind the speakers. So one of the first things I measured on the amps was input impedance, to see if the input capacitance would allow me to use them with my passive switched attenuators. I came up with an input impedance on the order of 20 kilohms and an input capacitance of about 700 pF. I considered this amount, when

Table IV—Phono section noise vs. bandwidth and source resistance. The IHF S/N ratio was 74.6 dB for each channel.

Bandwidth	**Source Impedance**	**Referred Input Noise, µV** LEFT	RIGHT
Wideband	0 Ohms	0.4	0.4
20 Hz to 20 kHz	0 Ohms	0.13	0.13
400 Hz to 20 kHz	0 Ohms	0.066	0.068
A-Weighted	0 Ohms	0.068	0.067
Wideband	100 Ohms	0.4	0.4
20 Hz to 20 kHz	100 Ohms	0.18	0.17
400 Hz to 20 kHz	100 Ohms	0.087	0.087
A-Weighted	100 Ohms	0.089	0.09

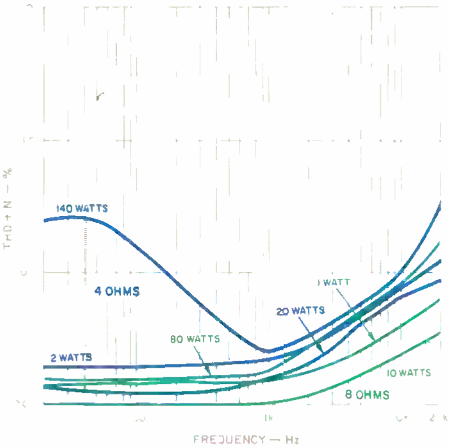


Fig. 5—THD + N vs. frequency as a function of power and load, NAP 135 amplifier.

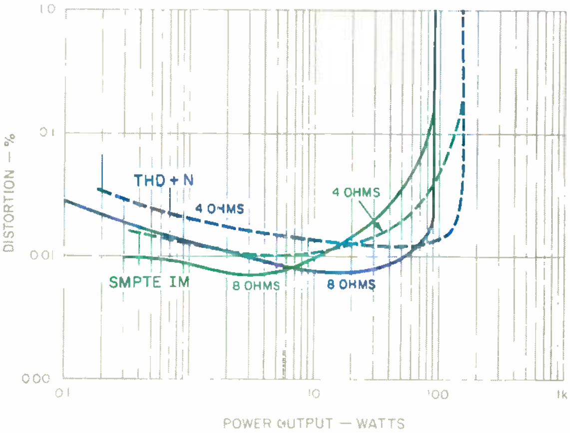


Fig. 6—SMPTE IM and 1-kHz THD + N vs. power output as a function of load.

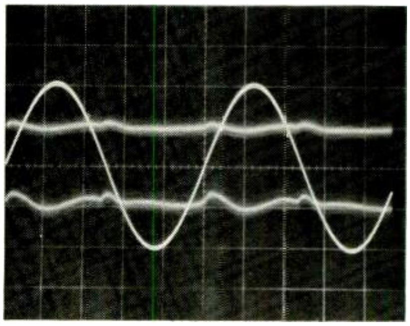


Fig. 7—Output and distortion residue for 1-kHz signal. For 10 watts into 8 ohms (top residue trace), THD was 0.008%; for 20 watts into 4 ohms (bottom residue trace), THD was 0.013%.

Some amplifiers without output buffers become unstable when driving low capacitance, but not the Naim NAP 135s.

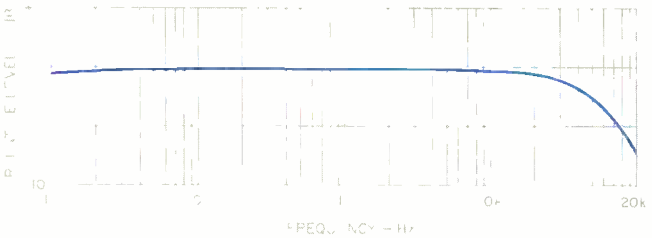


Fig. 8—Frequency response at 1 watt out into 8 ohms.

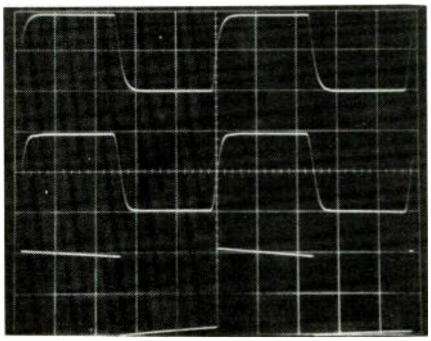


Fig. 9—Square-wave response for 10 kHz into 8 ohms (top), 10 kHz into 8 ohms paralleled by 2 μF (middle), and 40 Hz into 8 ohms (bottom). Scales: Vertical, 5 V/div.; horizontal, 20 μS/div. for 10 kHz, 5 mS/div. for 40 Hz.

Table V—Output noise of Naim NAP 135 amplifiers, Serial Nos. 58268 (amp A) and 58269 (amp B), with 1-kilohm input termination. The IHF S/N ratios were 88.8 dB for amp A and 85.0 dB for amp B.

	Output Noise, μV	
Bandwidth	AMP A	AMP B
Wideband	226	258
20 Hz to 20 kHz	213	242
400 Hz to 20 kHz	108	167
A-Weighted	102	154

paralleled with my interconnect capacitance of about 1,000 pF, to be too high to try the NAP 135s in my normal setup. This is not a negative comment on the amplifiers per se, as they will work just fine with Naim preamps.

Voltage gain was 28.7 dB with 8-ohm loading, which yields an IHF sensitivity figure of 105 mV. Measurements of THD + N as a function of frequency, power output, and load are shown in Fig. 5. Results are shown for only one of the power amplifiers, as the two were quite similar in performance. The rise in distortion below 1 kHz for 4-ohm loading at the 140-watt level is the onset of premature clipping in the positive half-cycle of the output waveform. How much the distortion increased was a function of how hot the amp was. Figure 6 shows both THD + N and SMPTE-IM distortion as a function of power and load. Typical harmonic-distortion residues at the 10- and 20-watt levels for 8- and 4-ohm loading are shown in Fig. 7. Even though the idling current is very low in this design, aberration at the waveform zero crossings is quite low. Some asymmetry in the distortion residue between signal half-cycles can be seen, indicating that the two half-cycles aren't perfectly matched.

Frequency response at 1 watt out into 8 ohms is plotted in Fig. 8. Four-ohm loading did not materially change the response. Related to the frequency response is response to square waves, seen in Fig. 9. The top trace is for 10 kHz with 8-ohm loading. The results of paralleling an additional load of 2 μF across the 8-ohm load are shown in the middle trace. This amp shows the least change of waveform on this test of any that I recall measuring, which demonstrates that it obviously doesn't have an output-buffering RL network. In some other designs that eschew such networks, some value of load capacitance below 2 μF can be found that will make the amplifier unstable. In this case, the amp was stable with all capacitance values below 2 μF. (Incidentally, when I tried to drive the output to higher levels with the 2 μF connected, the power supply's shutdown circuitry was activated, and I had to wait several minutes for the filter capacitors to discharge before the amp could be turned on again.) The bottom trace in Fig. 9 illustrates the amplifier's low-frequency response with a 40-Hz test frequency. Rise- and fall-times at an output level of ±5 V were 5.8 μS with 8-ohm loading and lengthened slightly to 6 μS with 4-ohm loading. The waveshape stayed exponential, like the top trace in Fig. 9, all the way up to voltage clipping with an 8-ohm load, which is a desirable characteristic.

Output impedance of the NAP 135 was essentially constant at about 0.23 ohm over the audio range, giving a damping factor of 35, referenced to 8 ohms. This constant output impedance, along with the relatively unchanging response with capacitive loading, should deliver consistent mid-frequency and high-frequency response with different speaker loads.

Noise at the amplifier output for different bandwidths is shown in Table V, along with the IHF S/N ratio. Although a trace of capacitor-charging current pulses could be seen in one amplifier's output noise, overall noise levels were satisfactorily low.

IHF dynamic headroom, based on a rating of 135 watts into 4-ohm loads, came out at 0.43 dB. Clipping headroom measured about the same, due to the regulated power supplies. In other words, the transient and steady-state power levels were the same, as would be expected. Clipping power into 8-ohm loads was about 86 watts. Maximum current delivery into a 1-ohm load was about +12.5 amperes, beyond which aberrations started to appear in the negative half-cycle.

The amplifier's a.c. line draw at idle was about 0.25 ampere. At an output of 140 watts into 4 ohms, the line-current draw was 3.3 amperes. The regulated power supplies permitted the unit to deliver 140 watts at line voltages

The Naim system gave musically satisfactory reproduction of both CDs and LPs, with good tonal balance and space.

down to about 104 V. This ability to put out full power with such reduced line voltage is impressive performance not matched by many other amplifiers.

Use and Listening Tests

I initially decided to defer to Naim's recommendations and use their interconnect leads. The company sent me a made-up, 11-foot pair of their speaker leads, which enabled me to hook everything up with the power amps located behind the right speaker. Leads for my turntable and cassette deck were supplied by Naim and made by the Chord Company in England. I used the "AUX" input for my tuner and made up an adaptor with female Tiffany phono connectors wired into a five-pin DIN plug for my CD player, which was plugged into the "Tuner" input of the NAC 72.

CD reproduction was generally satisfactory and musical, but the upper midrange on a few discs didn't sound the same as through my usual reference setup. Record reproduction was smooth and musical, with low irritation levels and good tonal balance except for a feeling that the bass was a little weak. Space and depth were good but not outstanding. I have heard a better sense of space, depth, and air with other solid-state gear I have reviewed.

In an attempt to figure out where the irritation on those CDs was coming from, I used the Naim preamp to drive a Berning EA-2101 tube power amp via my usual 20-foot interconnect leads. (I had no qualms about the preamp's being able to drive this load, as my tests had showed virtually no effect from using the IHF load.) With the Naim/Berning combination, some of the CDs sounded notably better, and musical resolution improved.

Despite the measured input characteristics of the NAP 135s, the maverick in me couldn't resist driving these Naim power amps from my passive selector switch/switched attenuator. I used a 2-meter pair of interconnects whose capacitance, plus the amplifiers' input capacitance, just about equalled that of my usual 20-foot interconnects. I used some adaptors to connect the phono plugs to the power amps' XLR inputs. This arrangement functioned perfectly. The sound was pretty interesting: Musical definition and space were better than when I used the amps with the Naim preamp, but overall, I preferred using the preamp with the Naim amplifiers.

I was able to enjoy music with the Naim gear. No glitches or surprises surfaced in using all the various combinations mentioned. Enjoyable as the Naim components were, my reference setup—using the selector/switched-attenuator unit and tube power amplifiers—was somewhat more musically convincing. As I have said before and will no doubt say again, these are my own observations and I do recommend that prospective buyers go out and give the Naim equipment a listen. *Bascom H. King*

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