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## Milbert BaM-230 car stereo amplifier

**W**HEN YOU STOP AND THINK about it - something I hadn't actually done until this very moment - reviewing a vacuum tube car stereo amplifier in the middle of an Arizona summer *isn't* one of the smarter things I've ever done, nor for that matter is my reviewing a car stereo amplifier *period*, as I'm not now nor have I ever been much of a car stereo enthusiast.

Demographically speaking, I gather that I'm somewhat of an exception in this regard. Mind you, it's not that I have anything against listening to music in the car - I listen to it all the time - just that I've been to too many CES shows and heard too many "Old MacDonald" specials (you know: "...*here a driver, there a driver, everywhere a driver-driver*") to ever take the subject of car stereo more seriously than say, televised evangelism, professional wrestling, or lite beer.

Now that I've moved back to Arizona and live on the northern-most outskirts of Scottsdale, I'm spending a lot more time behind the wheel than ever before and, well, I'm beginning to think that maybe car stereo isn't the folly I once thought it was. When your round-trip commute is a little over a mile, as mine was previously, it's easy to become complacent about the crappy sound of most factory-installed systems. But spend the better part of an hour in the car, twice a day, as I have for the past eleven months, and you'll find that tune growing old very quickly indeed.

Of course, deciding to improve the sound of your system is one thing and actually doing so quite another. As I suggested earlier, most car stereos, in my opinion, aren't worth the effort necessary to *steal* them, let alone earn the money to pay for them. Exceptions to the rule do exist, of course, the Milbert being one of them, but not too surprisingly, they tend also to be expensive.

The Milbert BaM-230 is an automotive version of David Berning's now classic EA-230 amplifier. Putting out all of thirty watts and biased for Class B operation, the BaM-230 is a relatively straightforward design; as straightforward, that is, as any vacuum tube car stereo amplifier can ever hope to be.

Obviously, the most difficult obstacle to overcome was the need for a high-voltage DC power supply. Drawing upon his experience with the TF-10 and TF-12 preamps, Berning designed a switching-type supply that runs at 54kHz and at the same time steps up the DC voltage from 12 volts to "as high as 1500." I haven't actually measured it, but the manual's warning is sufficiently stern (it claims that there's enough energy stored inside the amp to "shatter the shaft of a screw-driver!") that my journalistic instincts have been tempered somewhat and I'm content to take their word for it. The filaments are heated directly from the battery (shades of Trevor Lee...) and draw a fair bit of current, hence the manual's caution about "casual" installations.

Anyway, the output stage B+ is regulated, as are the filament and bias voltages; furthermore, the amp turns itself off when the battery output drops below 11 volts (thus preventing the unaware from running it down to the point where it cannot start the car). The domestic EA-230 has an unregulated supply, relying solely upon a large filter capacitor for voltage-stabilization. In theory, the Milbert's regulated supply confers upon it a significant sonic advantage over the EA-230, but as I didn't have one available during this review, I can neither confirm nor deny this in practice.

I wasn't able to locate my schematic of the EA-230, but as I recall it, the Milbert's audio circuitry is *very* similar. I understand the output stage has been "retuned," but I'm at somewhat of a loss to figure out exactly what that might mean. The PC

boards are mounted flat and sit on several rubber biscuits, whereas the EA-230's hung vertically and were bolted directly to the chassis. As the EA-230 tended to be rather microphonic, this is another potentially significant point in favor of the Milbert relative to the Berning.

Alas, the Milbert *does* continue in the EA-230 tradition of using less-than-premium-quality parts, what with Electro-cube series 230 coupling caps and largely undistinguished resistors (oddly, it also uses Teflon-insulated hook-up wire). The tinkerer should be aware, however, that swapping parts will *not* necessarily improve the sound, at least not across-the-board. I know that many of you will find this hard to believe, but I speak from experience (after messing about with my EA-230 - metal film resistors, polystyrene capacitors, hand-selected tubes, lowering the already low [8dB] amount of negative feedback - I ended up putting it back the way Berning built it because it really *did* sound better that way).

Installation proved to be fairly easy, my first step being to make sure the air conditioner was fully charged with Freon (hey, this amp runs *hot*!). In order to expedite the reviewing process, I mounted the amp to the floor of the back seat rather than in the trunk, holding it in place with a few of those stretchy elastic things. Pulling the heavy-gauge battery wire through the firewall wasn't particularly fun, nor was lifting out the passenger seat and carpet in order to pull the cables to the back seat. In reality, the installation isn't all that difficult, at least not as compared to a few of the systems I have installed for friends. Suffice it to say that so long as you follow the instructions and possess even a minimal degree of facility with hand tools, you shouldn't have any problems. Believe it or not, I had the amp up and running in just about thirty minutes.\*

Incidentally, for most of this evaluation,

I used my Nakamichi 350 portable cassette deck and taped my source material onto TDK SA-90 cassettes. An advantage to using the Nakamichi is that I'm able to record on the same deck the tapes will be played back on, making moot such matters as azimuth alignment and tracking accuracy of the Dolby chips. I used several different speakers, ranging from my internally-biamped ADS 2002s (used as a reference) to a pair of modified LS3/5As. In addition, there's a pair of Infinity CS-693 6x9s in the rear deck of the BMW which are connected to the Blaupunkt Tucson in the dash with Sound Connections' Vampire Wire. I also used MIT MI-330 Shotgun interconnect and MH-750 speaker cable whenever it was appropriate (yeah, I know, but it was handy).

At this point, half of you are probably wondering Why? and the other half, Why not? I put that question to the people at Milbert and was surprised (a little bit) by their answer: for years, it seems, they'd been dissatisfied with the sound of car stereos in general and *their* car stereo in specific. They started experimenting (they are scientists by profession) and decided very early on that the amplifiers then available were the weakest link of the chain. They tried every amp they came across, and no matter how promising or pedigreed, every one of them ultimately failed to satisfy. Then one day they heard an old monophonic radio someone had pulled from an old Mercedes: How was it that an old *vacuum tube* radio could sound so good? Being trained in the scientific process, they were quick to deduce the answer: it was the vacuum tubes!

And so it was they embarked upon their search for the ultimate vacuum tube car stereo amplifier. Mind you, this was way back in the mid-Seventies, and it was a long time before they made any real progress, their interim reference being a Scott 299B integrated amp run from a power inverter (the EA-230, incidentally, originally used the very same output transformers as the Scott, later changed to a custom-made version offering lower distortion figures).

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Although it wasn't the easiest of the three to install, I started my listening in the older of the two Audis, mostly, I think, because it serves as my everyday transportation and it by far had the worst sounding system. After fiddling with the placement of the speakers (to the extent that LS3/5As sitting on the rear deck can be fiddled with), I started listening.

First impression? This amp will play louder than is probably healthy. Thirty watts might not seem like much, but believe me, it's *more* than enough...

Second impression? \$1495 really isn't all *that* much money, is it?

Third impression? I can't afford it, and I'm certain I'll eventually regret it, but...

I bought it.

Well, actually, I *intend* to buy it, once the review period expires, but my point remains unchanged: yes, it's *that* good. In fact it's *sooo* good that it clearly outstrips the rest of my system. In order to hear its shortcomings, and there *are* a few, I had to bring it inside (along with a battery) and flog it on the Stax to uncover them. I had originally resisted the idea of doing this - the point of reviewing a product *in situ* is just that: to see how well it functions in its intended environment, serving its intended purpose. Unfortunately, as I listened to the Milbert further, moving it from car to car, I realized that, as much as I enjoyed listening to it, I really didn't have much idea of what it sounded like. That's okay, I guess, but as a reviewer, the idea of writing about a product I'd never "heard" bothered me somewhat. In the end, I gave up and plugged it into my system at home.

Sure, the high end is a little rolled off, the midrange is a tad recessed, and the midbass a trifle loose; yeah, there's a mild bit of harshness in the upper midrange, stage width is (perhaps) a touch exaggerated and depth somewhat constricted, but keep in mind that I'm referring to a car stereo amplifier - an amplifier clearly a class ahead of its competition - and quite frankly, considering its intended application, such complaints quickly seem trivial and almost petty.

In the car, however, or at least in *my* cars, you hear none of this. The Milbert, for all intents and purposes, sonically disappears. Tapes I made of favorite records were simply more pleasant to listen to, and more accurately reproduced, albeit a bit overly dynamic (heresy, I know, but I've grown tired of turning the music up-then-down, up-then-down... shifting manually doesn't bother me, but adjusting the radio all the time drives me nuts).

As an aside, my brief fling with CD-on-the-run was an interesting experience. I have come to the conclusion that either I listen significantly less critically while driving, or road noise "dithers" the signal somewhat, but regardless, I actually enjoyed those silver critters far more than I ever have in my home. Sam Tellig, writing about the Sony D-15 in a recent issue of *Stereophile* (September 1988), called it "good enough to be the only CD player you need," and having recently spent a week with one courtesy of a vacationing friend (go figure - he buys a *portable* CD player and then leaves it behind while he's traveling!), I'm tempted to agree. But I digress.

I guess what I'm saying is that the Milbert BaM-230 is sufficiently better than

so many of the components it'll be used with that its shortcomings are largely irrelevant. I'm amazed by what they've been able to accomplish, but even more so, I'm amazed that I'm amazed. I'm still not a car stereo enthusiast (I'd rather buy a fresh set of Yokohama A-008R tires than a new cassette deck or speakers) but I have a hunch that I'm coming around. Besides, who knows? When the development of their upcoming preamp/cassette deck and electronic crossover is finished (the crossover, for use with subwoofers, is just about there, or so I've been told), I just might be standing in line, pen in hand, checkbook open....

If you're *really* serious about hearing music in your car - and can afford the stiff tariff - I suggest you take the Milbert BaM-230 out for a long drive in the country and hear how it handles.

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#### Bob Reina comments:

I think Dr. Negativo is overreacting here. Let's keep in mind that the flaws Goggin is pointing out are those discovered on his living room system *vis a vis* what he's used to in terms of "living room amplifiers" (he owns a pair of Jadis JA-80, remember). Now, if we forget about that, and just listen, what this sucker does in a car can't be put into words.

I am not exaggerating when I say this unit sounds so good that while sitting in my driveway, playing high-quality tapes of Mercury Living Presence recordings, I was in tears.

I am not exaggerating when I say that, when driving, the realism is so startling that it can dangerously distract your attention from the road.

I am not exaggerating when I say that when I used this amp in my Goldmund/Mirage-based living room system (*via* a DC power supply), the sound was scarily close to that reproduced by my Quicksilver Monos.

I only wish that I had my present Nakamichi 500 car unit when I last listened to the Milbert. Its now-stolen Proton predecessor, although a good value for the money, doesn't match the resolution capabilities of the Nakamichi, let alone the Milbert.

I cannot wait to hear the preamp Al Milbert is working on. I hope he'll include some type of azimuth adjustment on the cassette unit, as the Nakamichi has taught me just how critical that is for accurate high frequency reproduction.

And, yes, like Goggin, I too would buy one of these amps - provided that I could figure out a way to mount it in my car, continue to live in New York City, and not have to worry about having it stolen the next day (besides, my trunk is *not* free of gasoline vapors or water leaks!).