

the absolute sound[®]

volume 7

number 28

december 1982

reprint of the

Classé Audio

DR-2

power amplifier review*



*Reprinted with the publisher's permission from
The Absolute Sound, Vol. 7, Issue 28, December 1982.

The Classe (Class A) DR-2 Power Amp

"True" Class A amplification of audio signals has been a long sought goal since the beginnings of the high-fidelity era. All preamps operate in the Class A mode. Class A power amps, on the other hand, provided technical difficulties that weren't immediately solved.

Earlier the operating characteristics of pentode tube gear were improved in the switch to the triode mode. A reduction in efficiency was the unavoidable penalty of the switch: that is, lower distortion and extended bandwidth in lieu of greater power output. A similar performance trade-off is the rule in contemporary Class A designs. And there simply has been no getting around it.

The modern solid-state Class A amplifier was brought to *commercial* fruition by Nelson Pass of Threshold and John Iverson of Electro-Research. Both designs appeared on the market at about the same time. While other designs of the newly emerging technology were offered, only these two were interesting enough to capture the audio world's imagination. Electro-Research is an on/off affair, the product availability uncertain or non-existent. Threshold is an ongoing and relatively successful concern. Pass, however, has abandoned his unique Class A for a new concept, "Stasis." Perhaps because the Japanese were adept at appropriating his design genius, they bypassed Pass's patents to produce their version of sliding Class A. (To be sure, sonically their work was far inferior to Threshold's.)

In the typical Class A designs two principal approaches have been employed:

The first, a form of feedforward technique, delays the signal to preview same, for the purposes of dynamically adjusting the bias current in the output transistors to "fix" the operation of these devices in the Class A mode in order that the speaker "sees" the amplifier as a current source. This adjustment is done automatically.

The above explanation is simplistic, however. This is the type of Class A (with some variations) that audiophiles encounter when choosing Class A amplifiers rated at 50 watts or more. I would correctly call this technology "efficiency-enhanced Class A." Some of the most important benefits of pure Class A operation (that these amplifiers rarely meet), is a requirement for *thermal stability*. One theory has it that in the enhanced Class A mode the bias varies, altering the transistor's temperature from moment to moment which

changes device parameters. Higher bias current decreases the device's capacitance, lower bias increases capacitance, thus the bandwidth of the output stage dynamically fluctuates. Several types of bias-related thermal distortions (a few connected with "device noise") have been identified. *Pure* Class A overcomes these distortions, since bias levels remain constant.

The second type of Class A operation, one said to be "pure" Class A, presents different technical difficulties. This type of amplifier does not vary bias current dynamically. Instead, Class A operation is interfered with by speaker loads (impedance). For instance, at 8 ohms, the amp will supply its rated power. When the impedance according to frequency falls, as it does at some frequency in virtually all speakers, the amp automatically converts to Class A/B operation and hence will – unintentionally – increase current bias. So back to square one.

Many Class A amplifiers rated between 50 and 100 watts fall into this second category; therefore, they should be de-rated.¹ Since, most of the time, amplifiers operate at powers below ten watts, we can reasonably surmise, with the above described Class A amps, on signal peaks and/or on impedance dips, the sound quality will deteriorate. In short, the sonic purity of Class A amps is compromised by the commercial demand for higher power. Very few audiophiles will spend big bucks for a super quality 35-watt tube or 25-watt transistor Class A design. We are still stubbornly attached to 350 HP (horsepower, not Harry Pearson) V8s, and 200 watt amusical behemoths.²

¹A de-rated amplifier may supply Class A power, for example, thusly:

at 8 ohms = 100 watts
at 4 ohms = 50 watts
at 2 ohms = 25 watts

The remainder of power, not rated, is delivered in Class A/B operation. In practical application, several sliding bias amps cannot handle low impedance loads without major sonic or electronic failure. (The DR-2, the third type of Class A amp is not de-rated, nor does it need to be.)

²A few exceptions exist, i.e., in some higher-powered tube units, like those of Grant-Lumley, Audio-Research, and Conrad-Johnson.

This 25-watt slugger (under review) can drive all but the most inefficient speakers. But, I suspect, only those who check this out for themselves will be convinced.

Many manufacturers have offered their interpretations of what Class A operation really is. Dave Reich, the designer of Classe's DR-2 offers one comprehensively stated, non-negotiable rule of pure Class A operation:

If the bias level of any amplifier remains at, or below some preset fixed level during signal, and under load, it is operating in pure Class A. If a particular signal or load causes the bias level to increase beyond that preset fixed level, it is no longer operating in Class A, but Class A/B.

Reich's comments leave no questions. Pure Class A operation is uncompromised. It requires both massive heat sinks and power supplies. It is expensive to build and it makes a lot of heat. The DR-2 joins that exclusive fraternity of "pure" Class A units populated, to my knowledge, by only three other commercial products: Levinson's ML-2, the Staxes, and Bedini's 25/25.

I trust the reader will recognize that this discussion is *secondary* to what his real interests should be: authentically accurate sound. And that is *not* what he often gets with many Class A units now on the market.

The DR-2, rated at 25 watts into 8, 4, and 2 ohms, weighs approximately 65 pounds, which may attract any weight lifters who do curls with power amps. The DR-2 has pristinely beautiful sonics. It is among the finest electronic sound reproducers in the world. It is, however, far from perfect. In fact, inferior amps outperform it in specific areas. But, overall, this beast is awesomely musical.

It is exemplary in exposing the intricacies behind bold sonic textures, and the nuances within delicate ones. This is something I have not experienced from *any* solid-state device in low level sections where ambience predominates. Other solid-state amps fail miserably, even those with tube-like pretensions.

In a choral passage of *Kor* (Proprius 7770), the cut "Bengt Hambreus-Michaeli-motetten," one can hear, nay count, all singers – not because of pure definition, but because of the three-dimensional sonic environment the DR-2 uniquely creates. I hear each singer positioned, as he or she pops out of the ambient haze, whether he or she is two or seven feet behind the primary vocalist. I can tell how far left or right he or she is positioned in relation to the others. The singers are not detached from the

spacial reality they inhabit. The DR-2 has that uncanny ability to cast a uniquely realistic perspective onto soundspaces. The singers, as each recedes toward the rear of the soundstage, actually become sonically smaller. Get this: Each voice becomes more and more attenuated in the high frequencies, just as it happens live.

The DR-2 has a lucidity, grainlessness, and focus in the midrange. But its definition is not that great. However, complex passages do not fly apart. There is no strain nor glare sensed at all. (The full body of the woodwinds is there in all the glory. No threadbareness here!) Other amps, on comparison, simply are unable to cope nearly as well through these passages. I can say that experienced audiophiles were bowled over by this quality in listening sessions. It isn't that I hear instruments within complex ensembles downplayed. On the contrary, I perceive the correct integration of ambiances that convinces this listener of authentic reproduction. With its soundstaging finesse (the stage is backed off [too much?]) it is not forward enough, though it is wider and deeper than the other amps I had on hand. It is this amp's low level expertise that I find so beguiling. It is the kind of fascinating performance that augers well for future solid-state designs. The DR-2's tonal quality (and transparency) is superb, its character neither dark nor light, not frazzled, nor metallic. There are a few (negligible) discontinuities.

The top frequencies are slightly ethereal, yet as clean as you can get. The delineation of harmonic partials is just about right. The timbre of the highs do not call attention to themselves (as they do on the Acoustat Trans-Nova which overemphasizes partials). Nor do the highs roll off like the Audio Design's do.

For that matter, the DR-2 does not imbue the music with the texture and electronic haze of the Perreaux, nor the edges of the Acoustat. Only the best tube amps can replicate the highs with this sort of resolution.

In the bass there are some problems. I attribute them to the DR-2's low power output since they are manifest in peak passages where first compression and then softening were heard. In these lower frequencies, tonality and definition range from good to excellent. The Trans-Nova and Perreaux will both project more "punch" and etching, which some perceive as better delineation. As for the Audio Design's bass, there's no contest. Even with its slight *hump* in the mid bass, the DR-2 wins hands down. I do

wish, however, that "hump" was less obvious.

Reich has, I understand, designed a discrete bridging circuit for the amp, and, I understand, two DR-2s bridged will eliminate the sonic shortcomings herein reported, without incurring the usual penalties. This remains to be seen — er — heard.

A warning to showroom cowboys: In direct comparison, a single DR-2 will play at far lower levels than most other amps, which gives the impression of less liveness, punch, and definition. You must match levels to assess the true personality of this design.

In sum, the Classe Audio DR-2 is distinct in its stunningly coherent, broad and deep soundstaging ability. It is also pellucid and transparent as well as quiet. It is better than most high-quality solid-state designs in accurately separating individual parts within massed ensembles, in this respect, approaching what we hear through good tube equipment. I sense a very natural — as opposed to spectacular — sonic picture; an illustration that does not draw attention to itself, instead, succeeds in letting the listener experience the music. To sit back to enjoy it without being conscious of commonly-encountered electronic shenanigans.

What more can one say? Oh, yes, there is something. In comparison with the competition, the DR-2 is a bargain. Construction and parts quality is top-notch. Two massive transformers with square cross-section copper windings and 160,000 microFarads of capacitance make up the power supply. Each channel is independent, twin-mono, all transistors are hand selected and matched. Input jacks are gold-plated and assembly is made with allen-hardware.

I am using this amp as my reference.

— **Andrew G. Benjamin**

Manufacturer: Classe Audio, 16877 Boulevard Hymus, Kirkland, Quebec H9H

3L4 Canada. **Source:** Manufacturer's Loan. **Serial No.:** 201364. **Price:** \$2000.

Manufacturer's Comment:

At the risk of sounding like a review of the review, but actually with sincerity, I am impressed by what I consider an intimate and accurate review. The very nature of the DR-2 amplifier — as Mr. Benjamin put it: very natural, as opposed to spectacular — does not lend itself to quick first impressions or seductive colorations. Yet all of its subtle qualities (Are not many of the most sought-after sonic characteristics embraced by subtlety?) were observed by Mr. Benjamin *et al.* Thank you.

A few minor points of clarification —

Although an amplifier may be designated as "Pure Class A" (*i.e.*, fixed bias), it is still subject to de-rating, depending on what impedance it was biased at. Therefore, as an example, two 25Watt Pure Class A amps do *not* necessarily offer the same amount of Class A power.

Regarding the bass of the DR-2, Mr. Benjamin informed me subsequent to submission of his review (please, Andrew, correct me if I'm wrong), that the bass problem was alleviated by "front end" changes in his system.*

Not satisfied with the sonics of gold-plated connectors, but still succumbing to the lowly RCA jacks, we have developed a silver plating which is ninety-five percent resistant to tarnishing. This is *not* a sealing varnish of sorts, but a highly conductive plating treatment. DR-2 amplifiers with serial numbers higher than 203541 will feature these silver plated input jacks.

**Dave Reich
President
Classe Audio
Kirkland, Quebec**

*AGB: Yes, to a great degree — but not completely.

©THE ABSOLUTE SOUND® Limited 1982
All Rights Reserved

No part of The Absolute Sound may be reprinted without the written permission of the publisher.

New subscriptions and renewals are available at the following annual rates: \$20 (US); \$22 (Canada, US Bank, US Funds); and \$35 (outside North America, US Funds). Subscriptions and renewal orders, as well as change-of-address notifications and undeliverable copies, should be sent to: The Absolute Sound, Box L, Sea Cliff, New York, 11579. Mailed 2nd Class from Sea Cliff, New York, 11579.

PRINTED IN CANADA