

**IAR Hotline! 76-79**  
**Master Guide to the Best of 1998**  
**- and the Worst!**  
**What to Buy ... What to Avoid**  
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### Push Pull Class AB Triode Amps

This may be the ideal type of power amp for many music lovers. At its best (and we have two wonderful examples for you here), it can offer the musical naturalness of the single ended triode, combined with the practicality of moderately high power output (40 to 55 watts, instead of 8 to 15 watts).

The higher power output gives you the freedom to choose virtually any speaker system, including speakers with the best fidelity, even if their efficiency is rather low. Recall that, when inefficient acoustic suspension speakers were first introduced in the early 1950s, the need arose for truly prodigious power output, so we began to see the first monster power amps, which went beyond the 25 watt norm, all the way to a mighty 50 to 60 watts; thus, power output around 50 watts has been considered to be plenty, even for very inefficient speakers.

Technically, the class AB push pull triode amp type occupies a kind of middle ground, and thus you might think it a compromise. Thanks to its push pull class AB mode of operation, it enjoys more power output than single ended triode designs - but because it uses triodes instead of tetrodes or pentodes, it is restricted to less power output than push pull class AB amps using tetrodes or pentodes. So it is compromised with respect to power.

Technically these push pull class AB amps using triodes might represent a middle ground compromise, but sonically they need not both worlds. The two examples here (perhaps the best of the breed) sound just like the best single ended triode amps, with all those wonderful sonic qualities combining articulate transparency with musical naturalness and a special liquid golden glow (see discussion of this topic in special section below). And indeed they can sound better than most single ended triode amps, in most practical real world applications like driving the world's best speakers (which are typically only moderately efficient), since they have significantly more power, with greater dynamic headroom before overload.

Meanwhile, these push pull class AB amps using triodes can sound more musically natural than the higher powered push pull class AB amps using tetrodes or pentodes, because triodes require less complex circuitry and because triodes have a more linear transfer characteristic that requires less feedback to linearize (they are inherently virtually free of ugly odd order distortion byproducts, unlike tetrodes and pentodes).

Also, the distortion byproducts from any feedback linearization of a triode's curve might be more musically natural than the byproducts from feedback linearization of the different shaped curve of a tetrode or pentode. Tetrode and pentode curves inherently produce some ugly odd order distortion, and feedback typically generates additional ugly (higher order) odd order distortion byproducts, thus piling odd order distortion on top of odd order distortion. Meanwhile, triodes start out virtually free of odd order distortion (having only relatively benign even order distortion); and then even this even order distortion can be substantially eliminated in a push pull triode circuit.

Thus, far from being a middle ground compromise, at least some push pull class AB amps using triodes represent the best of both worlds, an ideal amp for music lovers wanting a musical, golden glow amp that is also practical for driving whatever speaker system they choose as their favorite. Two push pull class AB triode amps, the Audioprism Mana Reference and Legend LM-Triode, have this musically liquid, golden glow sound, so we have included them in this section. Other push pull

Legend Audio learned this lesson, and took it a step farther. Their excellent LM-90 is a push pull class AB amp using KT90 tetrodes. Legend then tried connecting these tetrode tubes as triodes, and the sound got even better. But then Legend found that, to optimize the sonic performance of these triodes, the support circuitry had to be changed in ways more complex than a simple switch could manage. So, instead of producing one amp with a switch to convert between triode mode and tetrode mode, Legend makes two distinct amps, each optimized for the best sound in triode mode or tetrode mode, respectively. You can guess which sounds better. And which takes the prize as an IAR Best Buy.

### **Class 1a**

#### **Legend LM-Triode**

This power amp is a minor miracle and an IAR Best Buy. For those of you who want the golden liquidity of single ended triode sound, but don't want the many practical limitations of that topology, this amp may be the answer to your prayers.

The LM-Triode is a monoblock amp, rated at 42 watts, and selling for \$5495 (per pair). It is a conventional push pull, class AB amp, using an output transformer. Yet its sound is like no other push pull class AB, transformer output amp. The LM-Triode could be a sonic dead ringer for an excellent single ended triode amp, with its beautiful transparency, ravishing liquidity, very clean sound, and excellent neutrality within the golden glow context. Except of course that the LM-Triode has more power than most single ended triode amps, while selling for less than most.

The LM-Triode's sound is technically excellent in all aspects, and then on top of that it is wonderfully musical. Indeed, if the LM-Triode were a single ended triode amp, it would rank just behind the far more expensive Venture amp. The LM-Triode shares, in common with the best single ended triode amps, a musical transformation that makes music glow with golden liquidity, helping most commercial recordings to sound more like live music as heard from a typical concert hall seat (see discussion below). And, like the best amplifiers of any ilk, the LM-Triode is very informative, transparently revealing a wealth of musical information from the recording and doing so very cleanly.

The LM-Triode also has that special sense of relaxed ease that truly great amplifiers have, which allows the amp to sonically disappear and makes music listening so enjoyable and relaxing. The LM-Triode manages to bring together and combine the best of two contradictory worlds of audio: it is at once superbly articulate and also exquisitely musical and natural. Only the very greatest (and usually most expensive) audio products manage this feat. Most audio products err on one side or the other; they might be articulate but also too artificially hard or sterile, or they might be musically natural but also too soft, veiled and inarticulate.

The LM-Triode uses the KT90 tetrode tube as a triode. There is no switch to convert this amp to higher powered tetrode operation, because the supporting circuitry is optimized to provide the best possible sound in triode mode. Other Legend power amps include the 90 watt LM-90 monoblock (\$4395), which uses the KT90 output tubes in tetrode mode, and the 75 watt LM-II, which is a more economical (\$3495) monoblock power amp using 6550 tubes. Mention and credit should also be given to the other components in Legend's exhibit system, all of which are made by Legend, from preamp and CD player to cables and speakers. Clearly, for the sonic virtues of the LM-Triode amp to be so audible, all the other links in the Legend chain must be very transparent, clean, and musical.

class AB tube amps, switchable between triode and pentode or tetrode mode, belong more to the accurate white light family, even in triode mode, so we have put them (the VAC. Visionary, VTL Wotan, and Margules) in the section below.

The use of triodes for a push pull class AB amp is no new, indeed it antedates the very existence of tetrode and pentode tubes. In more recent times, Marantz made tube power amps that could be switched between pentode and triode operation, and several contemporary amps in this survey have this feature. The triode position always sounds better, even though the power output is much lower. Clearly there's a lesson here.

The Legend speakers, two way trapezoidal mini-monitors (\$3995), were weak in the bass (like the similar looking Chateau Research and Diapason above), but the manufacturer said this pair had not yet broken in, and that bass improves after the woofers come into proper alignment with the system's vent tuning. So we chose not to explicitly rank these speakers in the speaker section above. If their bass were truly better after break-in, these speakers would rank higher than the Chateau Research and Diapason, because the Legend speakers are more transparent and neutral, and lower in colorations.