



PrimaLuna EVO 400 Power Amplifier

A Celebration of Tube Virtues

Dick Olsher

PrimaLuna's most powerful Evolution Series amplifier, the EVO 400 reviewed here, delivers 70Wpc in stereo mode, as shipped with the EL34 power pentode. That is definitely a sweet spot for a quad of EL34 pentodes per channel, connected in parallel push-pull, and biased in the ubiquitous Class AB. Styling is unpretentious; there is little attempt to wow prospective customers with a glamorous chassis. The magic is pretty much all under the hood. This is in keeping with PrimaLuna's philosophy of employing excellent circuit designers, its steadfast commitment to quality execution, and its fine after-sales support, all while upholding affordability relative to the realm of ultra-high-end pricing.

The EVO 400's output stage is configured as a classic Ultralinear circuit, still popular some 75 years after it was promoted by Herbert Keroes and David Hafler, though to give credit where credit is due, it was Alan Blumlein who first patented the basic idea in the U.S. in 1940. A portion of the signal power (typically 20% to 40%) is fed to the screen grid via a tap on the output transformer primary. As described by Hafler and Keroes in their 1955 U.S. patent, "we have provided a new tube type, which is neither triode nor tetrode, but which possesses the advantages of each, and which is of increased linearity."

A neat convenience is the remote switching capability of the output stage from Ultralinear to triode mode or vice versa, as the screen grid connection to either the plate or transformer Ultralinear tap is under relay control. This turned out to be a most useful feature. Much of the time, triode mode sounded a bit mellower with better bass-line definition. However, the mode I preferred was usually dependent on the associated preamp and sometimes the music selection; so, being able to switch on the fly helped me arrive at the optimal choice, though it was necessary to adjust the volume as triode mode is a few dBs quieter than UL.

Although the EL34 is the stock power tube, all the popular beam power tubes can be readily used; that includes the KT88, KT120, and KT150. All that is required is switching the bias setting, located on the side of the chassis, from Low to High bias. Although the EL34 is compatible with all these beam power tubes,

it is not entirely identical in terms of the anode characteristic curves. The difference is obvious at low anode voltages and accounts for its more benign distortion spectrum when the amp is driven hard. I wouldn't be in any hurry to roll-in beam power tubes in search of a few extra watts, as many listeners, yours truly included, prefer the EL34's warm tonal balance, meaning its tendency to emphasize the lower midrange. In other words: it delivers the beef! The EL34 was introduced by Mullard, then a division of Philips, circa 1955. It was adopted by Dynaco for its ST-70 amplifier, and that by default makes it the most popular hi-fi power tube of all time. PrimaLuna uses the excellent Psvane brand EL34, manufactured by Changsha Hengyang Electronics in China.

Maintaining optimal bias current in a push-pull output stage is too often a chore that falls squarely on the user. Fiddling periodically with DC balance pots or having to purchase matched tube sets is not ideal. It feels like I've been on my hands and knees for many hours over the years tweaking bias pots. Enter PrimaLuna's Adaptive AutoBias™ circuit which monitors and continuously adjusts bias current under dynamic operating conditions. Plate current for each power tube is sensed via a voltage drop across a 10-ohm resistor. Since the AC signal current rides on top of the DC bias current, the trick is to extract a voltage proportional to the DC component for use in adjusting bias current. The data are fed to the bias board which processes the data and determines the correct bias for each power tube. The

Equipment Report PrimaLuna EVO 400 Power Amplifier

Specs & Pricing

Inputs: 1 pair stereo RCA and XLR, 1 mono RCA and XLR

Outputs: Stereo: 4-, 8-, and 16-ohm speaker taps; mono: 2-, 4-, and 8-ohm speaker taps

Tube complement: 8x EL34, 6x 12AU7

Damping factor: 7 (at 1kHz, 8 ohms)

Power: Ultralinear stereo (EL34/KT88/KT120/KT150): 70/72/85/89Wpc; mono: 140/145/175/188Wpc

Power: Triode stereo (EL34/KT88/KT120/KT150): 38/43/45/51Wpc; mono: 82/88/94/109Wpc

Frequency response: 9Hz–60kHz ±1dB; 8Hz–70kHz ±3dB

THD: Stereo/mono: < 0.1% @ 1W; less than 2% at rated power

S/N ratio: 95dB (105dB A-weighted)

Input impedance 100k ohms

Input sensitivity 1100mV

Weight Net: 68.2 lbs. (31kg)

Dimensions 15.2" x 8.1" x 15.9"

Shipping: 79.2 lbs.

Price: \$5295

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Associated Equipment

Phono front end: Kuzma Reference turntable; Kuzma Stogi Reference 313 VTA tonearm; Koetsu Rosewood Signature phono cartridge

Phonostage: PrimaLuna EVO 400

Digital front end: Denafrips Terminator DAC

Loudspeaker: Analysis Audio Omega planar magnetic, MoFi Electronics SP10

Cable & interconnect: Kimber Select KS1016 & KCAG interconnects; TARA Labs RSC 500 Prime and Acoustic Zen Hologram II speaker cable

Accessories: Sound Application CF-X & TT-7 power line conditioners; Ideon Audio 3R Renaissance mk2 Black Star USB regenerator/reclocker; Herbie's Audio Lab tube dampers

nominal quiescent bias current setting used here is 33mA, which at a plate voltage of 450VDC corresponds to a plate dissipation of about 60% of the EL34's maximum allowed 25W, which is typical for Class AB operation.

Not only is tube maintenance essentially eliminated, but performance is also improved due to a significant reduction in harmonic distortion. According to PrimaLuna, in the range between 12 and 30 watts, measured distortion levels drop by over 40%. I assume that this is largely due to improved push-pull operation of the output transformer, closely approaching the ideal of no DC current flow through the primary winding. Additionally, when a bad tube is detected, the corresponding tube LED indication changes from green to red. That happens when the circuit detects a significant increase in bias current for a couple of seconds, which is most commonly encountered during a potential output-tube failure.

Class AB push-pull tube amps have been refined for decades; so, it's inevitable that similarities with past designs would result. Still, there are many design decisions to be made that impact the final sound quality. One of them is choice of preamp tube. The 12AU7 dual triode features prominently in this design, as it is used for both the input-voltage gain stage and the long-tailed-pair phase-splitter. The 12AU7 triode sections are connected in parallel, which effectively creates a composite tube with reduced noise, increased transconductance, and lower drive impedance. That means for example that the phase-splitter uses up four triode sections instead of two. Excellent return for a total investment of three extra preamp tubes. There are other nice design

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features, such as DC filament voltage and plate voltage regulation for the preamp tubes.

Several important protective design features are incorporated. The latest generation of the auto-bias circuit includes a B+ relay to protect the output transformer and power supply against power tube failures. That's sensible insurance against catastrophic damage over the life of the power tubes. All PrimaLuna power transformers are pro-

ected against overheating: An internal thermal sensor breaks the primary, allowing the unit to cool down.

In most applications, 70 watts of tube power per channel should prove to be more than sufficient. In the event of a power-hungry inefficient speaker load, there is the option of doubling the output power by switching the amp over to monophonic operation. In this configuration, the two channels are bridged together across the outputs to drive a single speaker. The key is to make both channels amplify the same input signal. That is done by driving the amp with single input and internally routing its inverted image to the other channel. Of course, you would need to purchase a second EVO 400 to drive a second speaker, and for that reason, I asked for and obtained a pair of amps

for evaluation. There is really nothing new here. I recall that in the 1960s the Dynaco ST-70 kit manual explained how to bridge the amp into mono mode. The EVO 400 makes this very easy. The back panel is appropriately marked and indicates which inputs and outputs to use. Be sure each amp is off before selecting mono mode and making all connections.

To quote David Hafler circa 1952: “Amplifiers which test well do not always sound well, although amplifiers which test poorly always sound poorly.” One major reason for that being the resistive test load used in measuring amplifier performance versus the complex reactive load of real-world loudspeakers. Most box speakers exhibit order-of-magnitude impedance variations across their frequency bandwidth and certainly don’t look much like a 4- or 8-ohm resistor. For that reason, I decided to use two loudspeakers in my testing. First up was the Analysis Audio Omega planar-magnetic driven by a pair of EVO 400 monoblocks. This is a 4-ohm nominal load known to respond well to a high-power solid-state amp, but I was determined to show the EVO no mercy, as the monoblocks were substituted for my 300Wpc SMC Audio stereo amp.

I cycled through several preamps because in my experience the preamp-amp interface is just as critical as the well-known amp-speaker interface. In each case, the EVO 400 assumed the sonic character of the associated preamp. Starting with the tube-rectified Don Sachs Model 2, the impression of vintage tube sound was quite

At its asking price, the EVO 400 represents supreme value.

compelling. Apparent loss of transient speed lent the presentation a relaxed feeling. The soundstage was wide and deep with image outlines popping into space with 3D conviction. Harmonic textures were gloriously sweet but not to the point of becoming thick and syrupy. Low-level detail was easy to resolve even during complex dynamic passages. Tonally, the emphasis was on the lower midrange, the power range of the orchestra, a major plus in my list of sonic priorities. Bass lines were surprisingly well defined. At this point, it was clear that the EVO 400 was capable of delivering tube magic without conceding much to solid-state competition.

Next in line was the Klyne 6LE-4.1. It’s the only solid-state preamp in the house. I’m generally not a fan of solid-state preamps, and according to Stan Klyne, neither is he. But the 6LE conforms to Stan’s performance priorities, favoring musicality over mindless detail resolution. It’s plenty detailed, but I never got the impression of being hosed with information. The upper octaves were smooth and without a hint of brightness.

One of my favorite tube preamps is the Wyetech Labs Coral, offering a lovely take on modern tube sound. In this context, it produced a nicely focused and supremely expansive soundstage with ex-

cellent transparency. The presentation was naturally detailed and offered naturally sweet harmonic textures.

My final destination was the EVO 400 preamp and phono-stage for a complete PrimaLuna amplification chain. The result was exceptional image solidity accompanied by a texturally luxurious and relaxed presentation. It was simply gorgeous tube sound—edgeless flowing textures yet nicely detailed without being aggressive. The lower midrange was full bodied, giving jazz bass full scope of expression. Tonal colors were fully saturated, in particular, a blessing on solo cello passages, which sounded absolutely majestic. Of great importance to me is being able to plumb the music’s emotions and moods, effectively connecting with its passion and drama. This the EVO 400 chain was able to facilitate in exemplary fashion.

The second phase of testing was centered around the MoFi Electronics Source-Point 10 loudspeaker, an honest 8-ohm nominal load, driven by a single stereo EVO 400 amp, more than enough power to drive the SP10 cleanly to loud levels even in a large room. Not only that, but the SP10 did a virtual disappearing act so that what was left was a deep and spacious soundstage. Image outlines were almost palpable and focused within the confines of a soundstage of remarkable depth and breadth, which was totally untethered from the speakers. Tonal gravitas is not easy to come by, yet the EVO 400 managed to flesh out the lower octaves infusing upright bass and cello with a full complement of tonal heft. I kept alternating between triode and UL modes, at times preferring triode because it resisted having the presentation pushed forward and offered better bass-line definition.

I experimented with a couple more linestages: the Blue Velvet DIY stage and the Nelson Pass First Watt Korg B1. Both benefited from the Acoustic Zen Hologram II speaker cable, which made for a major difference as far as increased transparency and image focus. This setup was quite revealing of front-end tweaks. For example, I replaced the switching power supply on the Korg B1 with a linear 24VDC supply, a tweak that yielded a much more refined treble range and highlighted the Korg B1’s lightning-fast transient response. Again, the essential tonal neutrality of the EVO 400 shone through, as it allowed the personality of the front-end component to assert itself.

It made sense to me to pit the EVO 400 against my Will Vincent Dynaco ST-70. The Dynaco is the amp that started it all for me, igniting my deep and abiding love affair with tubes, so many years ago. To be fair, the Dynaco still sounds competitive in the realm of 35Wpc tube amps, but relative to the EVO 400 stereo amp it sounded fuzzy and less transparent. The PrimaLuna offered similar natural textures, but its superior detail resolution, enhanced dynamic nuances, and ability to peer deeper into the soundstage made for a much more compelling sonic impression.

The EVO 400 offers a celebration of tube virtues without sacrificing performance at the frequency extremes or obscuring low-level detail. It makes most vintage tube amps sound opaque by comparison. It delivers the tonal gravitas the EL34 pentode is famous for and satisfies my craving for a big tone presentation. At its asking price, the EVO 400 represents supreme value. Run, don’t walk, to your nearest PrimaLuna dealer for an in-depth audition. **tas**