

Audio Research REF150 (£12,495)

Don't be deceived: the REF150 stereo amp looks a lot like the REF110 it replaces, but it boasts numerous changes, higher power – and a brand-new output valve

Review: **Ken Kessler** Lab: **Paul Miller**

Despite a tendency for one to assume that a company's flagship model has to be its best effort by default, there are always flukes.

I've met a Porsche fanatic who'd rather live with a 911 Carrera 4 than a Turbo, and I prefer the Rolex Explorer – one up from the 'bottom' – to its dearest, blingiest pimp-wear. When it comes to hi-fi components, there's often something alluring about the middle models.

Rather than alienate half the industry by pointing out mid-level miracles that could cost them sales of the halo items, I will limit myself to stating that I have always had a greater hankering for Audio Research's 'smaller' amps. As often as I have been wowed by whatever is the current REF Series circa-600W monoblock, my lust list usually centres on the more prosaic, entry-level stereo model. Indeed, I am currently saving up for a used REF110 – the amp superseded by the unit at hand.

Why this supposition that mid-level offerings excel? Simple: they usually represent better value for money, because of the Law of Diminishing Returns. In other words, you had to spend a helluva lot more than, say, the REF110's £9498 to better it: the next model up, the REF210 monoblock, cost that much per chassis! So, when I tell you that the REF110's replacement costs a heady £12,495, please don't blanch, because the differences are extensive.

COSMETIC CONFORMITY

In devising a replacement for one of its most beloved models – and one mustn't forget that the REF110 made entry to the Reference Series a viable proposition for far more music lovers than ever could afford REF610s – Audio Research chose to do more than merely *refine* the REF110. It starts with the cosmetics.

To maintain the link to its predecessor, the REF150 has identical dimensions,

RIGHT: In addition to the huge PSU and output coupling transformers, this top shot clearly shows the four matched-pair KT120 pentodes and pairs of 6H30 double-triode driver tubes

but less empty space under the lid. The looks have been updated to reflect the refinements of the past few years, which is behaviour the company has always exercised, thus ensuring that previous models placed side-by-side with new models will be visually sympathetic. Additionally, the company allows customers to mix silver and black elements to match older units, *eg*, black handles on silver faceplates.

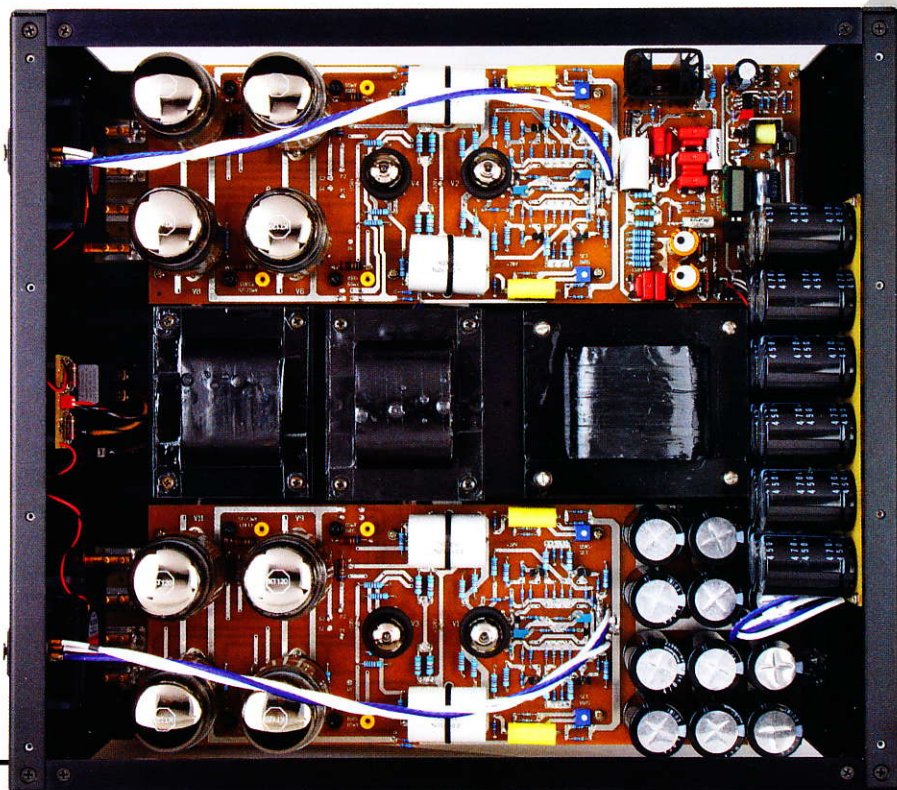
ENHANCED CIRCUITS

As is REF Series practice, the REF150 is fully-balanced. AC enters via a 'flat pin' 20-amp IEC connector, and custom-made terminals provide connection for 4, 8 or 16ohm speakers. 12V triggers are fitted, and the back contains low-turbulence intakes for the whisper fans, with three selectable speeds. The fascia just has an on/off switch with a green power-on indicator.

It's the circuit enhancements that will entice enough REF110 owners (as well as

others in the market for a 150W/ch superamp) to allow *schnorrers* like me to find a plentiful selection of used examples. Power-supply energy storage has been doubled, the coupling capacitors are beneficiaries of the work done on the Anniversary Edition preamplifier and the power transformers are larger. But the biggest change is the fitting of eight KT120 output tubes, driven by 6H30 twin triodes. The KT120 [see boxout] is the *tube du jour*, an instant hit wooing all manner of amplifier makers.

With multistage solid-state regulation, an output stage that combines ultralinear practice and Audio Research's patented 'partially cathode-coupled' topology (believed by ARC to be superior to conventional pentode or triode operation), the REF150 spearheads the company's latest philosophical evolution: gaining power by replacing the stalwart 6550/KT88/KT90 with a more robust, modern tube. Its health is monitored by an





internally-fitted LCD display that indicates tube life in hours.

SCINTILLATING

With my REF5 preamp and PH5 phono stage welcoming their new sibling, the REF150 fed Wilson Audio Sophia 3s, with signals provided by the SME 30/12 and Koetsu Urushi front-end, and the Musical Fidelity KW DM25 transport/DAC. Wiring was YTER throughout.

And the sound – I kid you not – made me think that the Reference Series Anniversary Preamp had somehow slipped back into my room.

Listening to the new Winton Marsalis/Eric Clapton live collaboration, the two of them playing the blues in the manner of a 1920s New Orleans jazz band, I was struck initially by something that rarely captures my

attention before, say, vocals or a sense of space. With a grace I've only heard on rare occasions – via Marantz Project T-1, Apogee Scintillas, certain WAVACs and Air Tights – the amp applied a sheen to the brass and a ringing to the piano that elicited one term only: 'scintillating'.

I was flummoxed. I know my system intimately, and all that was caused by the amplifier. The transformation, though,

was on a par with a change of loudspeaker or front-end. Then it hit me: the scale of the metamorphosis aped precisely the move from REF5 to Anniversary model preamp [see *HFN* Apr '11]. Audio

Research had done it again in a single year.

Tearing myself away from the sparkle of the brass and – I must emphasise this – the searing transient attack, I realised that the soundstage had expanded by a

'It sounded like the wall had suddenly moved a metre away'

TUBE OF CHOICE – THE KT120

The KT120 has taken the high-end by storm, with Audio Research not only fitting all of its new models with this valve, they're even recommending it as upgrades for most earlier models, if the valve will fit. Manufactured in Russia by New Sensor, the KT120 is designed specifically for use in guitar and audio power amplifiers. With a dissipation rating of 60W, the KT120 is capable of higher power output than the much-loved 6550 or KT88. Output power increases for earlier Audio Research models are as follows, with 6550s replaced by KT120s: REF610T increases from 610W to 840W; REF210, 210W/ch to 250W/ch; REF110, 115W/ch to 129W/ch; VS115, 115W/ch to 128W/ch; VSi60, 45W/ch to 52W/ch. Companies that have announced models with the KT120 valve include Copland, Jadis, Octave and Icon, along with a host of guitar amp makers.

ABOVE: One must place the REF150 next to a REF110 to appreciate the subtle refinements. This is still pure Audio Research, with a family resemblance that harks back to 1970

good 20-30%. I am in no mood to defend the use of what some might deem an arbitrary measurement, but I know what a metre is, what a yard is, and the depth of the soundstage, rather than the width, increased by that amount.

How did I arrive at this figure? I left the Marsalis/Clapton duet for the leaner tracks on Keb' Mo's *Peace... Back By Popular Demand* and compared the distances both with other amplifiers, and then played on a completely different system. As I sit eight to ten feet from the line of the speakers, I have a pretty good idea if it sounds like the wall had suddenly moved a metre away. *That's* what the REF150 can do.

What I have yet to try is an amp with 6550s or KT88s, followed by the same amp with a KT120 re-fit. The web is filled with enthusiasts who have, and there appears to be a consensus that the claims made for the KT120's gains over its lesser cousins are consistent with the hype. Certainly the REF150 punches above the promise of its wattage, sounding as dynamic and controlled as the D'Agostino Momentum, but with a different attitude.

Here's where it becomes a matter of preference. Learned friends, expert in the ways of wines, will regale me with tales of Petrus versus Romanée Conti – Bordeaux vs Burgundy being the oenological equivalent of transistors vs tubes. Neither side would dream of arguing that one betters the →

AUDIO RESEARCH REF150 (£12,495)



ABOVE: Balanced XLR inputs are joined by 4, 8 and 16ohm speaker connections (better suited to spades than 4mm plugs). Near-silent fans keep the interior cool

other. So, too, the REF150, the Momentum, the big darTZeel, the Nagra's. I have heard both the REF150 and the Momentum in the same system. The choice would be as difficult and untenable as that between the aforementioned wines.

DIFFERENT QUALITIES

If pressed, as I found with the new Nick Lowe LP, *The Old Magic*, the differences in attitude, or perhaps presentation, are matters of texture and intimacy. The Momentum is more precise and open, the REF150 more lush and caressing. I suppose, especially for those who remember 35mm film cameras, that a comparison of optics would provide a better analogy – one being Leica reportage, the other Zeiss. I'll leave it to you to decide which is which; suffice it to say, the quality is of a similar order.

Where it presents the greatest contrast is with closely-mic'd, textured vocals – the Lowe LPs all but placing him on your shoulder, singing into your ear. With the greater distance of Doris Day's voice, to the front, singing a half-century ago a perfect 'Cheek To Cheek', brass on the right, woodwinds on the left, the blend of her crystalline vocals and the silky sounds of those sleek CBS studio musicians ... the REF150 consistently delivered everything in proportion, the music creating almost a halo effect around the centrally-positioned Ms Day. Through the Momentum, the emphasis shifted slightly toward other qualities, including a marginally lower noise floor and greater punch.

But that was all too easy. Bad Company's air-guitar masterpiece,

'Can't Get Enough', again created a yin/yang situation: the Momentum rocked hard, a piledriver of an amplifier that made you turn it up until the speakers bled. The REF150 seemed to satisfy at lower levels, with less brutality. Does one obviate the other? No. The well-dressed audiophile would have both, just as he/she would own two MCs.

Were I better versed in ontological arguments, especially the perennial, perpetual dilemma we have of treating reproduced music as if it were real and taking place in the present, I might be able to posit a more precise explanation of how two (and there are others, believe me) world-class amplifiers can sound so similar, yet with clearly observable differences.

I can only say that I adore both, as I do Chandler and Hammett, Tignanello and Solaia, Knishes and Kreplach. Life's too rich and varied to be exclusionary. That the REF150 costs 'only' £12,495 thus renders it a bargain. ☺

HI-FI NEWS VERDICT

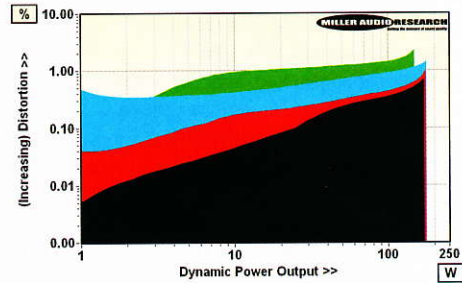
Writing this was strange because I knew that I was buying the model it replaces. That's a testimony to the REF110 – I'm not an 'early adopter' – but having heard the REF150 on four occasions, I must admit that the gains are immense. Those with REF110s still own superb amps, but the REF150 is, well, a Turbo to the REF110's Carrera. And I never said that my friend who prefers the Carrera to the Turbo is sane.

Sound Quality: 88%

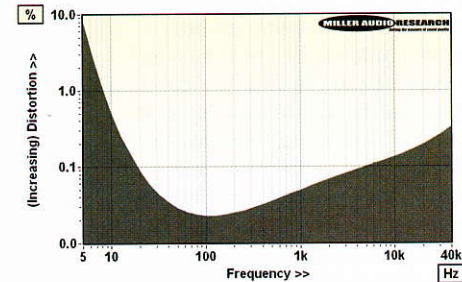


This is the first amplifier we've tested with the new 'flavour of the decade' KT120 output tube and the results are very encouraging indeed, at least within ARC's implementation. A total of two matched pairs per channel delivers a full 2x155W into 8/4ohm loads through its 8/4ohm taps, respectively, and a solid 175W into 8, 4 and 2ohm under dynamic conditions [see Graph 1, below]. Audio Research also specifies a near-DC -3dB point of 0.5Hz which is more than met in practice, for the REF 150 remains flat to within +0.06dB from 1kHz down to 1Hz. The high treble response is more obviously influenced by loading, not least because its output impedance rises from 0.65ohm at 20Hz to 0.75ohm at 1kHz to 1.15ohm at 20kHz, leading to a 20kHz roll-off of -0.25dB into 8ohm (via 8ohm tap) and -0.4dB/-0.85dB into 4/2ohm (via 4ohm tap). The specified -3dB point of 120kHz is only reached unloaded where a mild +1.2dB (transformer) resonance is detected at 76kHz. In practice, the REF 150 shows a slightly 'warm' character with an enhanced (+0.1dB) bass and shelved (-0.2dB) presence region.

Midrange distortion is low at <0.01% (1W/8ohm) and increases with power output, reaching 0.05% at 10W/8ohm and 0.5% at 100W/8ohm. With only 14dB feedback in tow, the increase from 0.05% (1kHz) to 0.2% (20kHz) at 10W is very mild while the substantial output transformers ensure low distortion is also maintained down to 20Hz bass frequencies [see Graph 2, below]. Noise is low too, the 91dB A-wtd S/N ratio (re. 0dBW) would be impressive for a solid-state model. Readers are invited to view a comprehensive QC Suite test report for the Audio Research Reference 150 tube amplifier by navigating to www.hifinews.com and clicking on the red 'download' button. PM



ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads via 8/4ohm taps



ABOVE: THD vs. extended frequency from 5Hz-40kHz at 10W/8ohm. Core saturation at sub-bass freqs. only

HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	155W / 155W
Dynamic power (<2% THD, 8/4/2/1ohm)	175W / 177W / 178W / 148W
Output impedance (20Hz-20kHz)	0.65-1.15ohm (8ohm tap)
Frequency response (20Hz-100kHz)	+0.1dB to -2.2dB
Input sensitivity (for 0dBW/150W)	176mV / 2250mV (balanced)
A-wtd S/N ratio (re. 0dBW/150W)	91.0dB / 112.8dB
Distortion (20Hz-20kHz, 10W/8ohm)	0.025-0.19%
Power consumption (Idle/Rated o/p)	430W/750W
Dimensions (WHD)	483x222x495mm