

**PREAMPLIFIER**

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# Audio Research Reference 6

Replacing the long-serving Reference 5, and coming in below the £30k Reference 10, Audio Research's Reference 6 preamp heralds a new phase in the company's evolution  
Review: **Ken Kessler** Lab: **Paul Miller**

**T**wenty sixteen is the 21st anniversary of the Audio Research Reference Series, and in that period, there have been seven line stage preamps. As a reviewer who takes the term 'reference' to mean a standard by which to judge other components, I have been wedded to the range since 2009's REF 5. With the Reference 6, a new level of performance has been attained at the £12,000 level, the lower tier of the line.

Because Audio Research developed the Reference range into a family, rather than just a flagship preamp and power amp (plus phono stages and DACs along the way), the company added stereo and mono power amps of varying outputs and, of late, at least two line-stage preamps. The single-chassis REF 6 is the less costly of the two: the company's 'ultimate' remains the REF 10 two-box affair [*HFN* Mar '13], at three times the cost.

Because the '6 post-dates the '10, the gap is closer than one might think, and the Law of Diminishing Returns comes into play. Yes, the REF 10 is the 'daddy', but the '6 is not a case of glory through nepotism. Rather, it is to the '10 what Porsche's Cayman is to the 911, and if you're a car nut, you'll know that the analogy doesn't mean 'cheaper' – it means 'less expensive'.

## 21ST CENTURY RETRO

One of the first products to appear under the aegis of ARC boss Mike Tsecouras – a dyed-in-the-wool tube-lovin' audio casualty – the REF 6 had to replace one of the company's most successful line-stages. More importantly, it had a stylistic/aesthetic role to play because – after the company was acquired by Italians – the new G-Series [*HFN* Jan '15] introduced a fresh look.

So, starting with the fascia, the REF 6 is as much a break from tradition as it is a continuance. Re-read that: this is no wild

departure from a design language dating back to the early 1970s. The handles are still there, the laboratory-look remains, but the designers performed a visual segue that ranks alongside the new Mini, so you know instantly that this is an ARC preamp, but the look is 21st century retro.

Far more important are the improvements over the REF 5SE. It remains a line stage, as ARC has kept phono stages as components on their own. Says Tsecouras, 'The combined lessons learned from our flagship REF 10 line stage, and those from our recently released SE power amps became the starting point for the complete redesign of the REF 6 line stage.' ARC's continued support of a trickle-down philosophy explains why the new '6 is closer to the earlier '10. For openers, the REF 6 has a redesigned valve preamp stage

using six 6H30 triodes instead of four 6H30 tubes. The company increased the tube count to provide more linear gain [see PM's Lab Report, p33], in the quest for a more dynamic and precise sound.

I was told that by fitting a larger R-core power transformer, ARC has reduced the impedance of the REF 6's power supply, which now boasts a lower impedance by using improved decoupling capacitors specially developed for the REF 6.

Also devised specifically for the REF 6 are the output coupling caps, 'to allow the new circuitry's linearity to be revealed, in both tonality and in image specificity'. That's a mildly vague statement, not easily ascertained by mere listening, but it helps perhaps to define the sensation one hears when moving from '5 to '6 with levels matched: the '6 has an authority that



**RIGHT:** The vacuum tube audio stage employs six 6H30 triode tubes (three per channel) together with another 6H30 and 6550WE beam tetrode for regulation in the power supply





reminded me of the ARC Anniversary [HFN Apr '11] and the '10, with the external power supplies.

## CASEWORK MAKEOVER

Back to the externals. The outputs remain the same, with two sets of main outputs and one for record out, in both single-ended and balanced XLR modes, but the input layout has changed, while an eighth has been added. Instead of the inputs being labelled, with sockets grouped in vertical pairs of XLR-plus-single-ended, they are arrayed as four balanced inputs and four single-ended inputs. All are labelled only as 'Bal 1, 2...', etc, and 'SE 1, 2...', etc. Specific labelling of each is up to the user, via the new digital control section.

This makeover also added heavier, shaped side panels, which make the unit look butch, while providing more isolation to feedback from acoustic and mechanically induced noises. The luxury feel has been enhanced by the use of

knobs and push buttons from machined aluminium, combined with new optical encoders. This feel is also evident in the all-metal remote [see p33], adding to the sense of opulence.

For once, the owner's manual is essential reading, for when I switched sources for the first time, I got nothing out of a single-ended input. Scrolling through the menu, I found a setting called 'Volume Reset', fiddled with it, and out came the sound because that option determines how the REF 6 remembers levels... or not.

This has created a change to the row of buttons below the

display. The REF 5SE's processor and balanced/single-ended buttons have been replaced with 'Menu' and 'Enter'. The processor mode is now in the menu, while the balanced/SE mode selector isn't needed as the remote contains buttons for all eight inputs. The rest remain as per the '5SE for power on, mono, invert and mute. Other functions in the menu include

*'Brass and strings  
had a tube-y  
sweetness I could  
never give up'*

**ABOVE:** Like the REF 5, the '6 places a rotary control to either side of the fluorescent display for input select and level, with six function buttons below; remote takes care of the rest

a mode where the REF 6 automatically goes to sleep according to user preference, one for setting display brightness, balance, and displaying hours of valve usage. The processor setting assigns unity gain, or 'pass through', to one of the eight inputs should the user want that source integrated into a system with a secondary device, such as a surround sound processor.

## CHILLINGLY REAL

I quickly discovered that, auditioned with REF 75SE power amps and Wilson Alexias [HFN Mar '13], the REF 6 needs the recommended 300 hours' burn-in to approach its best, with at least 20 minutes warm-up from cold. The review sample arrived with 250 hours on it, so – after an initial burst – I let it run-in another 50 hours over a weekend. It was worth it.

Knowing intimately the nuances of Eleanor McEvoy's *Naked* [Moscodisc/Diverse DIV 052LP], I wasn't prepared for an even more gut-wrenching reaction to her most emotional moments. And this is an LP where emotion oozes from every squiggle in the groove. While the '5SE had charmed me for years, the '6 found a way to open up the sound even more.

I can liken it only to a change from one grade of cable to the next level up, whether Crystal or Nordost or Transparent, when the gains to voicing are genuinely and easily discernible. Perhaps I'm privileged in having heard McEvoy live more than once, and as close to her as I sit to my speakers. The resultant portrayal was chilling, almost supernatural rather than merely authentic. That may sound like mere exaggeration, but such was the

## GENERATION GAME

Careful evolution best describes the path of ARC's single-chassis Reference preamps, which started with the REF 1 in 1995, notable for its resemblance to 'classic' ARC preamps with its row of knobs above toggles, between handles. Its gain was all-tube, with eight inputs, but with full microprocessor control of volume, balance, record and input selection. It also featured fully regulated power supplies, dedicated analogue and logic transformers and audiophile-grade components throughout. The REF 2 from 1998 looked the same and allowed '1s to be upgraded to '2s. A unity gain stage was added, as was tube regulation. The REF 3 of 2004 was a full re-design, now featuring a fluorescent display and menu that replaced many controls. With the REF 5 of 2009, the circuit design was revised again, now fully balanced and operating in pure Class-A triode mode, but the basic look remained the same. Its valve complement comprised four 6H30s in the analogue stage, with a 6550 and a 6H30 in the power supply.



## LAB REPORT

### AUDIO RESEARCH REFERENCE 6

Six years on from the launch of Audio Research's REF 5 [HFN Oct '10], the upgraded and restyled REF 6 still bears many of the key hallmarks of its forebear. The balanced outputs are capable of delivering over 50Vrms from a 300ohm source impedance, increasing to 455ohm at 20kHz, and while this preamp features an additional pair of 6H30P Sovtech double triodes in its line stage the overall gain (balanced in/out) is unchanged at +12dB as is the A-wtd S/N ratio of 96.5dB (re. 0dBV). Distortion is well within ARC's broad 0.01% specification but is now just half that incurred by the REF 5, at typically 0.001% from 20Hz-20kHz [see Graph 2, below]. Versus output level, distortion increases from just 0.0004% at 0.5V to 0.001% at 2V and 0.005% at 10V – demonstrating that tube amps needn't be coloured...

Like the REF 5, however, the REF 6's response varies with volume setting [see Graph 1] suggesting that ARC's buffering of this circuit has not changed. In practice, the REF 6 achieves its flattest response of -0.01dB/20kHz and -0.35dB/100kHz at full volume (+12dB gain or 103 on the display) but with its most aggressive treble roll-off of -1dB/20kHz and -8.6dB/100kHz at +6dB gain (86 on the display). As the volume is reduced still further the treble slowly picks up to achieve -0.6dB/20kHz and -7.0dB/100kHz at 0dB gain (61 on the display), -0.2dB/20kHz and -3.2dB/100kHz at -6dB gain (41) before reaching -0.1dB/20kHz and -2.0dB/100kHz at -12dB gain (35 on the display). Finally, stereo separation is improved at >80dB (20Hz-20kHz) compared to >65dB for the REF 5, just as the channel balance is now tightly trimmed to <0.02dB. Readers may view a full QC Suite test report for the Audio Research REF 6 preamplifier by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. **PM**

**ABOVE:** Line-level preamp offers four balanced (on XLR) and four single-ended (on RCA) inputs with pairs of XLR/RCA outputs (plus rec out). RS232 services automation

surprise that I was taken aback. When she thumped her acoustic guitar, the sound was so unsullied that I ran to find a facsimile (OK, my concert-sized Carvalho ukulele) just to hear the real sound of tapping on a wooden enclosure. A cigar box would have served. Regardless, it was a real wood tonality.

#### AND BASS QUALITY?

Readers know I'm no bass fetishist. But turning to the pre-disco/funk classics on both CD and vinyl – the Detroit Emeralds' 'Feel The Need' [Greatest Hits, Westbound CDSEWD 119, CD, and *Feel The Need* Atlantic K50372, LP] and 'Rock The Boat' by the Hues Corporation [The Very Best Of The Hues Corporation, Camden 74321 603422, CD, and *Freedom For The Stallion* RCA APL 1-0323, LP] – I discovered what may be the most staggering gain of all.

Let's back up a mo'. The McEvoy experience wasn't just about transparency. There was a fully-formed soundstage, the three-dimensionality of a standard I have always expected of Audio Research. Tonal neutrality was, to my ears, absolute, with no ear-jarring anomalies. After that one track, I was ready to sign off the '6 as a target of true lustworthiness. But the lean, mainly-unplugged McEvoy LP is no feast for headbangers, nor bass junkies, for it's a test primarily of neutrality and presence.

So far, the REF 6 had ticked every box bar transient attack and bass in its various measures, but only because it hadn't been so challenged. Both the disco cuts listed featured heavy orchestration, massed vocals and wall-of-sound

impact of near-Spectorian majesty. Via the REF 6 preamp, the brass and strings possessed the tube-y sweetness that I could never give up, no matter how much I respect solid-state achievements from that genre's *maestri*.

Wham! The rolling lower octaves of both of those early 1970s treasures added a foundation I had never heard in my system. Extension, weight, sheer mass – the bass was as profound as I had heard from far larger systems than my Wilson Alexias. And the attack? The brass was so sharp, so punchy that I almost wished I understood square waves and oscilloscopes...

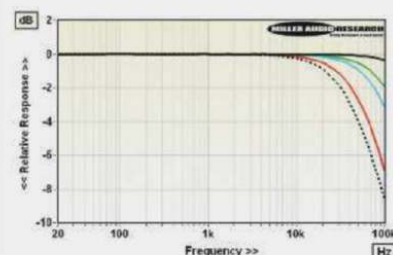
Although I'd heard the REF 6 four times before using it in my own system, I was not completely prepared for the leap in sound quality. It became evident mainly because I could run it side-by-side with a '5SE. The gains are as extreme as those between two generations of Ferraris. They are vivid and so readily apparent as to *defy* expectations. Hell, it's so good that, if you don't have £30k for the REF 10, then you won't lose sleep 'settling' for the REF 6. ☺

#### HI-FI NEWS VERDICT

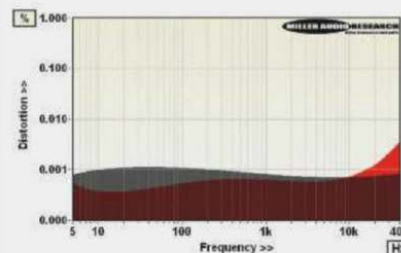
Audio Research has never put a foot wrong with its Reference models. I've played with most, and must admit that some stand out more than others. The REF 6, I believe, will join the ranks of the revered SP6 and SP-10. We've been subjected to so much hyperbole (*mea culpa*) for so long that superlatives lose their impact. But here, 'masterpiece' doesn't come close to describing what ARC hath wrought.

Sound Quality: 91%

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**ABOVE:** Frequency resp. vs. volume (vol display = 103, black; 86, black dashed; 61, red; 41, blue; 35, green)



**ABOVE:** Distortion versus extended frequency from 5Hz-40kHz at 0dBV (left, black; right, red)

#### HI-FI NEWS SPECIFICATIONS

Maximum output (<1% THD, 47kohm)	55Vrms (Balanced)
Maximum input level (<1% THD)	>10Vrms (Balanced)
Output impedance (20Hz-20kHz)	303-457ohm (Balanced)
Frequency response (20Hz-100kHz)	+0.01dB to -8.6dB (re. 0dBV)
Input sensitivity	240mV (Balanced)
A-wtd S/N ratio (re. 0dBV)	96.5dB
Distortion (20Hz-20kHz re. 0dBV)	0.0006-0.0009%
Power consumption	131W (4W standby)
Dimensions (WHD) / Weight	480x198x419mm / 16.6kg