

## PRE/POWER AMPLIFIER

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# Audio Research GSPre/GS150

Galileo created a telescope to peer deeper into space – an aspiration that has inspired Audio Research to produce its G-Series amps and delve deeper into the world of sound

Review: **José Victor Henriques Lab: Paul Miller**

**W**hen Livio Cucuzza, Fine Sounds' Chief Designer, visited the Audio Research product archive he was inspired to re-imagine iconic tube amplifiers (including the SP1 and D79) in the guise of the new £12,250 GSPre and £17k GS150 power amplifier reviewed here. One might argue Cucuzza did not in fact create anything new with this G Series, but to dismiss his work simply as a contemporary remake of old '70s classics would be a mistake.

Recently, Cucuzza has quite brilliantly exercised the fine art of recreation with fresh interpretations of timeless products, including the exclusive Ex3ma loudspeaker [see *HFN* July '14], originally created by the late Franco Serblin, founder of Sonus Faber, now also owned by Fine Sounds. With the Galileo Series, Livio Cucuzza and his team [see boxout, p37] are attempting to remaster classic Audio Research memorabilia in homage to founder Bill Johnson's legacy. Audacious? Perhaps, but the results are revelatory.

### A LIGHTNESS OF BEING

My first encounter with the GS150 was at Munich's High End Show in 2014, and I was left under the impression it must be a REF150 light [see *HFN* Feb '12] with better aesthetics and beefed up by the new Tung-Sol KT150 output valves. Boy, was I mistaken – the new GS150 has a genuinely minimalist aesthetic, which I think was the whole point of its industrial design. The way the stainless steel front plate reflects light, the welcome absence of the awkward handles, which are now hidden behind the plate, and the openness created by the trio of meter windows, all contribute to that false sense of lightness. In fact, the chassis is roughly the same size as the REF150 while its 39kg weight is some 5kg more.

From the fully balanced design (there are no single-ended inputs) down to the

variable speed whisper fans at the back, it all looks like an undercover REF150. Besides, all its factory specifications are basically the same. I could swear it even uses the same patented output stage configuration, the main difference being the choice of output matching loads: 4 and 8ohm with a common ground terminal (few will miss the 16ohm option anyway).

By contrast, the GSPre is less obviously a REF5 in new attire [*HFN* Jan '10]. Technically you'd have to go back to the SP20 to find something vaguely similar with both line and phono stages. The new 'retro' preamp has two large rotaries for volume and source selection and five function push

buttons inbetween catering for power, mono, muting, headphone switching and access to the limited onboard menu. The GSPre also offers a pair of balanced and four single-ended inputs alongside balanced and single-ended outputs.

### FETS AND TUBES

Unsurprisingly, the line stage circuit is based on ARC's valve of choice – four 6H30 double triodes albeit with a low-noise J-FET front-end. The programmable phono stage is a separate circuit also fronted by J-FETs and powered by two 6H30 tubes, the combination providing up to a claimed 58dB gain to accommodate a variety



**RIGHT:** The GS150 features no fewer than two matched pairs of KT150 output tubes per channel driven by pairs of 6H30 double triodes. This is the first ARC amp to use KT150s





of MM and high output MC cartridges. However, while the GSPre boasts a tube-based headphone amplifier, it hasn't gone the whole hog and dropped in a DAC, as featured in the Galileo Series' GS175 integrated amplifier [see boxout, p37].

Before operating the GS150 you have to install the four 6H30 valves and the two matched quads of KT150 power output valves. The same applies to the critical bias adjustment. As shipped from the factory bias is set to a nominal 65mA per KT150 and the GS150 is ready to go out of the box. But you can and should check it from time to time under zero-signal conditions after a 15 minute warming-up period.

Frankly, and bearing in mind the cost of ownership, you should insist your dealer do all this initial set-up and optimisation for you while also helping familiarise you with its features and functions. A similar valve installation ritual has to be performed before operating the GSPre, I might add.

## METERS AND MENUS

A word about those 'fishbowl' meters which, in this instance, look far more

accurate than our lab tests suggest [see caption, p37]. Such decoration may be a little cruder in its calibration than we'd care to see, but they always look nice and, in today's retro-loving market, are nothing if not a boon to sales. Just ask McIntosh Laboratories another company, along with Wadia, now owned by Fine Sounds. You could do better with a multimeter, but unless you have the necessary skills, never touch the innards of a powered amplifier (especially a tube amplifier which hosts lethal operating voltages).

Of course, in the manual you'll find out all about the control functions and displays, and that it even has a valve hour counter. You'll also discover how you can set up the amp to auto shut-down via the menu, which is nice if you are a late night low-level listener.

To run the menu you just have to press the Menu button repeatedly, while watching the fluorescent display

**ABOVE:** No touchscreen gimmickry here as the GSPre marks a return to traditional rotary and pushbutton controls. The former also facilitate navigation of the on-board menu

(fortunately less garish than in previous iterations), adjust the settings with the volume knob and press Mute to confirm. You can also do this with the remote. The audiophile will like the fact that the GSPre also offers mono and inverted polarity

operation – very useful for centre focus tuning) – and easy (if limited) adjustment of pick-up impedances. Alas, the processor on/off function has nothing to do with any internal DAC, rather the

integration of the GSPre in a multichannel surround sound system.

## EX3MA POWER

For the world's first review of the GSPre/150 duo, a superb associated system was *de rigueur*, comprising an ARC CD9 disc player/DAC and a pair of appropriately rare Sonus faber Ex3ma loudspeakers.

The Galileo pairing was also auditioned in a second system with Sonus faber Liliun loudspeakers, alongside a REF 5SE/150 pairing to enable a further comparative test. The analogue front-end was equally cutting-edge and comprised an SME 30/2 turntable/SME Series V tonearm fitted with an Air-Tight PC1 cartridge feeding an ARC REF PH2 SE phono preamp. All cabling was by Transparent Audio Ultra.

Driving the Ex3ma, the GS150's 8ohm outputs sounded audibly louder than the 4ohm taps, an observation that might otherwise be mistaken for a 'better' sound due to its more urgent sense of projection and focus. But to my ears the 4ohm

*'A large, colourful musical wall-to-wall canvas opened up'*

## ARC'S KT150 DEBUT

The KT150 power output vacuum tube is a new Tung-Sol branded design from New Sensor. New Jersey-based Tung-Sol was the inventor of the 6550 tube back in 1955 and, alongside EMI/Marconi's 'kinkless tetrode' KT88, was one of the first valves designed specifically for the audio market. The KT150, by contrast, is manufactured in Russia by the New Sensor Corporation, which now owns the Tung-Sol brandname alongside the familiar Sovtek and Electro-Harmonix marques. In practice, the KT150 is a development of the KT120 which was launched in 2009, itself substantially more powerful than the longstanding but still commonly-used KT88. Today, the KT150 is billed as 'the most powerful octal beam tetrode ever produced', with a plate (anode) dissipation of 70W, against 60W for the KT120, or about 40W for a KT88. Its gerkin-shaped glass envelope not only improves thermal dissipation and reduces microphony but, some audiophiles have suggested, also contributes a hint of the rose-tinted '6550 coloration', so cherished by ARC's founder, the late Bill Johnson.





**ABOVE:** Dominating but also graceful, ARC's trio of analogue meters conveys a measure of mains line voltage, tube bias current (in adjustment mode) and power output. The log scaling of the latter seems of decorative value only as a sustained 10W/8ohm registered just '0.015' on the display

outputs exhibited a wider and deeper soundstage, albeit in lieu of a slightly more laid-back image that some might describe as 'romantic' in nature but that others, myself included, will hear as simply more musical. Neither the perfect placement of voices and instruments nor the rendering of the spaces between them or fine detail were affected by my 4ohm preference.

A large, transparent, colourful and multi-layered musical wall-to-wall canvas opened like a hovering parachute, the enfolding acoustic conferring a sense of space that was both staggering and utterly immersive.

Image focus versus a more 'holographic' presentation is a trade-off that's in the very nature of many valve

amplifiers. Not so the GS150, which is of a more neutral, focused and transparent persuasion, though not at the cost of image dimensionality or midrange bloom.

From the onset, the GS150 took immediate charge of all the musical proceedings with poise and aplomb, presence and control, exhibiting clarity, speed, and supreme resolution of instrumental and vocal textures.

The GSPre sang joyfully along as it should do, not imposing its character on the sound – although I suspect the built-in phono stage lacks the same ultimate degree of dynamics and transparency as does the line level. (I admit that I didn't experiment extensively with different cartridges and cartridge loadings when using the SME/Air Tight front-end.)

With track after track, the 'four elements' were consistently present: 'air' (spaciousness), 'water' (liquidity), 'fire' (dynamics) and 'earth' (solidity and presence), whether with the complexity of Beethoven, the romanticism of Berlioz

or Handel's religiousness, depending on programme material. The same with Dylan's raucity, Sinatra's velvety crooning or Supertramp's buoyant productions. I could go on and on, such is the versatility of the GS duo!

I listened to too many records to bore you here with a detailed list and description. But being Portuguese, let me speak about *Fado* (songs of fate and sorrow). I listened to part of Mariza's *Transparente* [EMI 7243 4 77119 2 3]

where she sings 'Duas Lágrimas de Orvalho' (which has solo voice accompanied by a weeping cello), and there were tears in my eyes, such was the power of the GS duo to convey pathos, emotion, sadness,

suffering and pain. And I also felt *saudade* – that Portuguese word that expresses the longing for something that does not exist and yet which is still felt as overwhelmingly real. It was an emotional experience I shall never forget.

## HARMONIC COMPLEXITY

The Sonus faber Ex3ma sounds bigger than it ought to, if you judge it by its looks alone. But you can't fool the laws of physics. In terms of macro dynamics, comparing the Ex3ma to the Lilium loudspeaker is like comparing your regular rose garden hose to a fire hose.

It is easy to fall in love with it for its sheer beauty and musical perfume, the harmonic complexity, tonal neutrality and timbral honesty, but the GS/Lilium pairing moves so much more air in the room (it's a little reticent at the low end though), that it will blow you away if you are into big bands and large symphonic forces.

The GS duo not only looks much better it also *sounds* way better than the ARC ➔

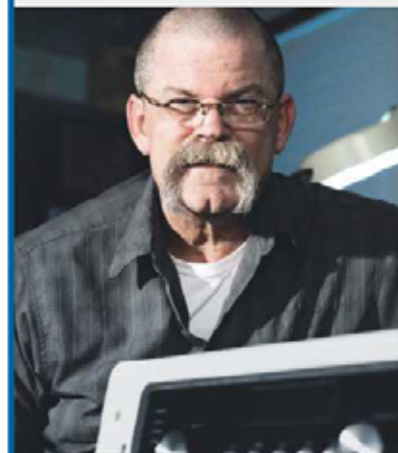
## WARREN & WARD

During our review we were able to quiz Warren Gehl, responsible for 'sonic design', and Ward Fiebiger, chief engineer responsible for ARC's technical design [pictured, below].

So is the GS150 really just a REF150 with new looks? 'As with many designs from Audio Research, the GS150 is an evolutionary step from the REF150', explained Warren. 'For while the two amplifiers share many common aspects, there have been numerous parts and layout changes which affect the sound. 'By contrast the GSPre is really more a hybrid of a variety of products. Performance-wise, it nears the sonic capabilities of the Reference 5SE preamplifier and the PH8 phono preamplifier.'

ARC's engineers did consider implementing a DAC in the GSPre but with limited real estate inside the case, and the inevitable cost implications, finally decided against it. More important was the decision to make the GS150 the first ARC amp to feature the more powerful KT150 tube. 'In practice, it's not just the headroom offered by the KT150 that's attractive', says Ward. 'The larger glass envelope, as well as its shape, seems also be key to many of the design and subsequent performance enhancements.'

Owners of the REF150 will probably be wondering if they might achieve a better sound still, with KT150s. 'They'd undoubtedly sound more similar,' says Ward, 'but other design changes and advancements will still provide the GS150 with an edge over the REF150.'



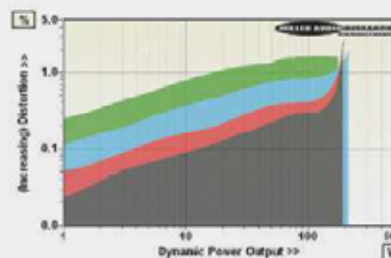


## LAB REPORT

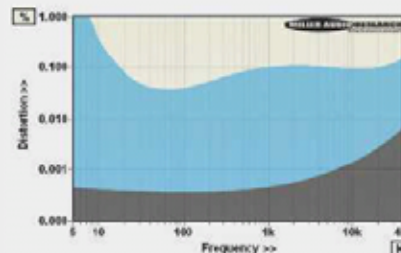
### AUDIO RESEARCH GSPRE/GS150

This is not only ARC's first outing with KT150 tubes but its host, the GS150, is also the most powerful amplifier we've tested from this marque. Besting even the REF150 [HFN Feb '12], the GS150 succeeds in offering 2x170W into 8/4ohm loads via its 8/4ohm taps with a dynamic output of 185W/8ohm (8ohm tap) and 185W, 200W, 175W into 4, 2 and 1ohm (4ohm tap). The output stage configuration and – particularly – that of the associated coupling transformers looks to be very similar in performance to the REF150. The 'shaped' response with its mild +0.1dB bass shelf from 300Hz down to 20Hz allied to a gentle mid/presence roll-off of -0.1dB/5kHz to -0.2dB/20kHz (and -1.7dB/100kHz) is common to both the REF150 and GS150 as is the exaggeration of the trend with reducing load impedance (-0.4dB/20kHz into 4ohm and -0.9dB/20kHz into 2ohm). The 0.6-1ohm output impedance (20Hz-20kHz) is also shared between the models.

Distortion increases gently with output level from 0.03%/1W to 0.1%/10W and 0.4%/100W. Versus frequency, the minimum is at 100Hz (0.06% at 10W), increasing to 0.12%/20kHz and 0.14%/20kHz. Even at 10W/8ohm, the GS150 only breaks 1% THD at a very low 7Hz – impressive stuff and testament to the quality of those transformers [see blue trace, Graph 2, below]. By contrast, the partnering GSPre offers a vanishingly low 0.0004-0.0026% THD (20Hz-20kHz at 1V) together with a usefully wide 96dB A-wtd S/N ratio but the HF response is slightly more tailored still, rolling away to -0.6dB/20kHz. Readers may view extensive QC Suite test reports for the ARC GSPre and GS150 power amp by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) 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). Maximum current is 13.2A



ABOVE: THD versus extended frequency; GSPre (1V out, black trace) versus GS150 (10W/8ohm, blue)

### HI-FI NEWS VERDICT

The GS150 is not only the finest sounding but also the most beautiful stereo amplifier Audio Research has ever built, which is saying a lot for a company that makes some of the best tube amplifiers in the world. The GSPre is the perfect partner both aesthetically and sonically, its beauty within matching the beauty without. Together they've restored my fading faith in vacuum tube technology!

Sound Quality: 89%

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### HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	171W / 170W
Dynamic power (<1% THD, 8/4/2/1ohm)	185W / 185W / 200W / 175W
Output imp. (20Hz-20kHz, pre/power)	995-315ohm / 0.600-1.00ohm
Freq. resp. (20Hz-100kHz, pre/power)	+0.0 to -0.55dB / +0.1 to -0.2dB
Input sensitivity (for 0dBV/0dBW)	204mV (pre) / 170mV (power)
A-wtd S/N ratio (re. 0dBV/0dBW)	96.2dB (pre) / 88.3dB (power)
Distortion (20Hz-20kHz, 1V/10W)	0.0004-0.0026%/0.038-0.096%
Power consump. (pre/idle/rated o/p)	90W / 470W/780W
Dimensions (WHD Pre/150)	403x197x430/403x251x572mm



ABOVE: While the GSPre [top] offers both single-ended (RCA) and balanced (XLR) outputs (plus MM and three RCA line ins and two XLR ins), the partnering GS150 has balanced ins only. A choice of 8 and 4ohm speaker taps are offered on 4mm sockets

REF 5E/150 combination with KT120 valves installed (which are congested and closed-in by comparison). The GSPre/GS150 won hands down, I must say. As well it should, considering that it costs almost double the price.

However, I regret to say the GSPre phono stage is not a match for the remarkable PH2 SE phono preamplifier. To put it bluntly, the GS150 is a much better amplifier than the REF150 [HFN Feb '12], anyway you look at and listen to it.

And the GSPre (at line levels) is marginally a better choice – more open, transparent and musically relaxed – but the PH2 SE walks all over the GSPre's phono stage which is more of a bonus than a real asset to the preamplifier.

### ALTERNATIVE AESTHETIC

Audio Research says its Galileo Series is not intended as a replacement for the existing REFs, and will coexist with the rest of the ARC product range to provide an alternative aesthetic as well as a platform for new ideas. So, before REF owners feel tempted to upgrade lock, stock and barrel, I'd urge them to first

audition an ARC REF150 with KT150s in place of the stock KT120s.

I would keep my fingers crossed though: the GS150 puts the tube-loving audio world on the verge of a revolution to which it may not be prepared, either psychologically or, for most of us at least, financially. Unless your pockets are especially deep, nay cavernous, the GSPre/GS150 sounds so good that to part with it after an extended audition would prove a very painful wrench. ☺