

# hi-fi news

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**Exclusive**

## CUE MUSIC!

Pro-Ject's flagship RPM 10 Carbon



### INVESTIGATION

#### Vinyl treasure

The record labels that put sound first, p26

#### Chord Mojo

Top pocket headphone amp

#### Audio Alchemy

DDP-1/PS-5 preamp &amp; DAC

#### Quad S-5 towers

The new ribbon hybrids

#### Audio Research

GSI75 tube integrated

#### Jeff Rowland

Model 625 S2 power amp



• **PLUS** 18 pages of music reviews & features • **VINYL RE-RELEASE** Santana's *Abraxas* on 180g vinyl  
 • **OPINION** 12 pages of letters & comment • **VINTAGE REVIEW** Rogers Ravensbrook series III amplifier  
 • **SHOW BLOG** We report from Tokyo & California • **READERS' CLASSIFIEDS** Hi-Fi bargains galore

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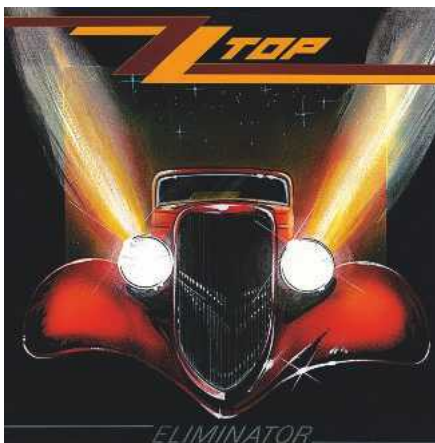
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FREE! Chord's 'Outstanding' SilverPlus USB cable See p88





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**DEVIALET**  
**SILVER PHANTOM**



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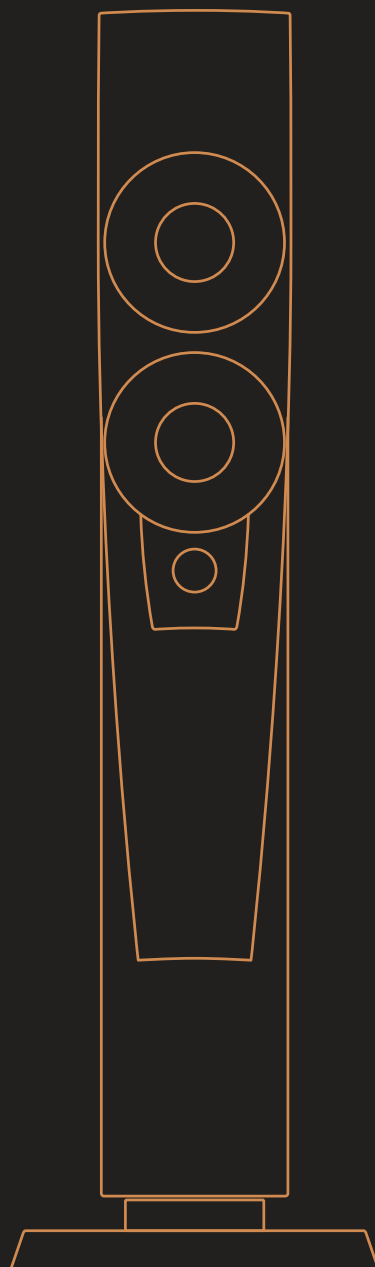
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Hi-Fi+, October 2015

*"That the Carmel belongs in the reference class is unquestionable."*

*"I found myself completely unable to play short excerpts, the sound so captivating I simply had to play it through to the end."*

Phil Gold  
Enjoy The Music, July 2015

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**RIGHT:** Inspired by the Hugo and Hugo TT headphone amp/DACs, Chord's Mojo gets its first in-depth review. See p66



**LEFT:** The W1000Z 'Maestoso' is the 11th generation of Audio-Technica's prized W-series headphones. Our exclusive test begins on p62



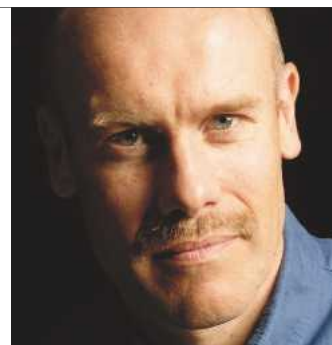
It was a huge pleasure to meet so many longstanding and a gratifying number of new *Hi-Fi News* readers at our recent Hi-Fi Show *Live* event in Windsor. Until the next Hi-Fi Show *Live* on October 29-30th 2016, this was the only chance for enthusiasts to see and hear so many fabulous brands under one roof.

Those who missed out can live the experience vicariously via our on-line Show Blog (also published in last month's *Hi-Fi News*). Fortunately, you'll not be waiting too long before many of our Show's exclusive product debuts are followed up by in-depth reviews in *Hi-Fi News*.

Indeed, the fabulous GSi75 and 625 S2 amplifiers

from Audio Research and Jeff Rowland, respectively, are already to be found within this month's pages alongside other exclusive reviews of Quad's S-5 floorstanders, Hegel's new flagship HD30 USB DAC, the RPM 10 Carbon turntable from Pro-Ject and the long-anticipated DDP-1 preamp/DAC from the re-formed Audio Alchemy brand.

Rarely have we featured quite so many high-scoring product tests in one issue. And this includes the Chord Mojo headphone amp, which is arguably the only product that might possibly qualify as a seasonal 'stocking filler' by high-end hi-fi's elevated standards.



With apologies to overseas enthusiasts, our UK readers will have discovered a special Awards supplement bundled with their January '16 issue. Also published on our websites, the *AVTech Awards 2015-2016* reflect the combined resource and experience of our three technology titles – *Home Cinema Choice*, *Hi-Fi Choice*

**'Rarely have so many high scorers featured in one issue of HFN'**

and, naturally, *Hi-Fi News & Record Review*.

Our unique strength in depth, with hundreds of editorial pages published every month and many more hundreds of products evaluated every year between us, ensures we're able to pick the very best of everything from soundbars to servers, pick-ups to 4K projectors and headphones to hub-powered DACs. These Awards are as comprehensive as they are authoritative. Enjoy!

**PAUL MILLER EDITOR**

**VINYL:** ZZ Top's *Eliminator* is this month's Vinyl Icon (p78), while Steve Sutherland discusses the jinx of 'Black Magic Woman' as Santana's *Abraxas* is re-released on 180g vinyl (p76)

**RIGHT:** *Hi-Fi News & RR* is the UK's representative of EISA's Hi-Fi Expert Group. Editor Paul Miller is EISA's President-elect & Hi-Fi Group Manager



**HI-FI NEWS' EXPERT LINE UP: THE FINEST MINDS IN AUDIO JOURNALISM BRING THEIR EXPERIENCE TO BEAR ON ALL AREAS OF HI-FI & MUSIC**



**BARRY FOX**  
Investigative journalist supreme, Barry is the first with news of the latest developments in hi-fi and music technologies



**JOHN BAMFORD**  
JB brings huge industry experience, a penchant for massive speakers and a love of hi-res audio in all its diverse guises



**KEN KESSLER**  
is a long-serving contributor, luxury goods writer and champion for the renaissance in valves and 'vintage hi-fi'



**KEITH HOWARD**  
has written about hi-fi for 30 years, and edited *Hi-Fi Answers* for nine. KH performs our speaker and headphone lab tests



**STEVE HARRIS**  
Former Editor of this very title from 1986 through to 2005. A lifetime in audio and a love of jazz makes Steve a goldmine



**ANDREW EVERARD**  
has reviewed hi-fi for over 30 years and is still effortlessly enthusiastic about new technology, kit and discovering new music



**STEVE SUTHERLAND**  
worked on *Melody Maker* and then edited *NME* from 1992-2000, the Britpop years. Steve brings a unique slant to our Vinyl Release pages



# A new Classic

D'AGOSTINO LAUNCHES NEW 'BACK-TO-BASICS' HIGH-OUTPUT MASTER POWER AMPLIFIERS

If you've been tempted by Dan D'Agostino's exotic Momentum amplifiers but deterred by the price of entry then you'll doubtless be encouraged by this latest offering from one of the acknowledged artisans of high-end audio. D'Agostino's new 'Master Power' series includes the £13,498 Classic Stereo power amp, a 'purist' design rated at a massive 300W/8ohm. The rugged, rack-mount casework is more than a little reminiscent of Dan's Class A Krell amplifiers from the 1980s but its dual-mono circuit design is inspired by the modern Momentums. Under the bonnet, each amplifier channel is built onto its own massive heatsink and employs no fewer than eight high-current power transistors. You can read our exclusive review in next month's *HFN*.  
**D'Agostino Master Audio Systems, 0208 971 3909; [www.dandagostino.com](http://www.dandagostino.com)**

## Mac sandwich

TWO-BOX TUBE PREAMP FROM MCINTOSH

Separated into two chassis, one catering for audio control/PSU the other housing its audio circuitry, McIntosh's new C1100 tube preamp employs the brand's 'Quad Balanced' circuit topology in a true dual-mono format. Six 12AX7A and 12AT7 triodes are employed in the C1100 – four more than in the C1000 that it replaces – with a commensurate reduction in the number of transistors. This is an analogue-only design (there is no USB DAC onboard) that includes six balanced XLR and four RCA connections plus fully adjustable MM and MC inputs. Price is £12,995.

**McIntosh Laboratory, 01202 911886;  
[www.mcintoshlabs.com](http://www.mcintoshlabs.com)**



## HI-FI NEWS' NUGGETS

### CLEARLY DIGITAL

Inspired by the success of its Clearway speaker cable, the Chord Company has launched a partnering coaxial S/PDIF cable. Priced at £100 for an RCA-terminated 1m length, the Clearway Digital employs a central oxygen-free copper conductor surrounded by gas-foamed polyethylene insulation and a woven copper shield/return. The new cable replaces the company's popular 75ohm Prodac VEE3 digital cable.  
**[www.chord.co.uk](http://www.chord.co.uk)**

### HANA FROM HEAVEN

Handmade by the Excel Sound Corporation of Tokyo, Japan the Hana range of MC pick-ups includes both low (0.5mV) and high output (2.0mV) types equipped with a choice of either elliptical or costlier Shibata profile diamonds. Prices are £276 and £447, respectively, depending on choice of stylus. All four models are built into solid aluminium cartridge bodies and feature 'high rigidity' alloy cantilevers and cross-shaped moving-coil armatures.  
**[www.airaudio.co.uk](http://www.airaudio.co.uk)**

## Direkt from Heco

NEW TWO-WAY INSPIRED BY THE CLASSICS

Boasting a very high 95dB/2.8V/1m sensitivity and 'benign 4-8ohm' impedance, Heco's new £2500 Direkt two-way floorstander takes its styling cues from the racing cars and guitars of the 1950s and '60s. The design of the 270mm Kraft paper bass driver and 28mm silk dome tweeter is bang up-to-date, however, their performance extensively modelled using 21st century software. The bass/mid unit features a low-loss rubber surround, generous magnet assembly and is loaded via two reflex-ports firing out of the cabinet's base. The Direkt is pitched back on three spiked and very rigid legs, raising the ports from the floor and assisting the time-alignment of Heco's short horn-loaded tweeter. The Direkt comes in black or white finishes.

**Heco, Köln,  
Germany, 01822  
612449; [www.heco-audio.de/en](http://www.heco-audio.de/en)**



## Audio-Technica heads up Cyrus re-visits vinyl

### HIGH-END HYBRID TUBE HEADPHONE AMP FROM JAPAN

Priced at a 'heady' £4500, the AT-HA5050H is a new reference headphone preamp from Audio-Technica. This is a hybrid design, combining a pair of E88CC double triodes with a transistorised Class A output stage. Two sets of four 6.35mm output sockets are offered with 0.1ohm, 33ohm, 82ohm and 120ohm source impedance

options (the output is rated at 125mW/16ohm). Analogue (RCA and XLR) ins are included alongside S/PDIF and DSD128 and 384kHz LPCM-compatible USB digital inputs. Traditional VU meters and a rotary volume complete the package.

**Audio-Technica Ltd,**  
**0113 277 1441;**  
**www.eu.audio-technica.com**



### FLEXIBLE PHONO PREAMP WITH PRESETS AND IR REMOTE

Purpose-built for vinyl fans with multiple arm/pick-up combinations, the £1200 Phono Signature from Cyrus offers no fewer than four MM/MC inputs. Adjustment is provided for overall gain, resistance and capacitance loading across some huge 160 permutations – and all at a distance via IR remote control. Other features include memory presets, a switchable warp



filter, single-ended (RCA) and balanced (XLR) outputs.  
**Cyrus Audio Ltd,**  
**01480 435577;**  
**www.cyrusaudio.com**

## Upcoming Events

### IMPORTANT DATES FOR YOUR HI-FI DIARY

- 06-09 JAN** International CES, Las Vegas, USA; [www.cesweb.org](http://www.cesweb.org)  
**21 FEB** Audio Jumble 2016, The Angel Leisure Centre, Tonbridge, Kent; [www.audiojumble.co.uk](http://www.audiojumble.co.uk)  
**26-28 FEB** Sound & Vision Show, Marriott City Centre Hotel, Bristol; [www.bristolshow.co.uk](http://www.bristolshow.co.uk)  
**05-08 MAY** High End Show, Munich, Germany; [www.highendsociety.de](http://www.highendsociety.de)  
**29-30 OCT** The Hi-Fi Show Live 2016, Beaumont Estate, Windsor; [www.hifinews.co.uk/show](http://www.hifinews.co.uk/show)

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# Devialet 'original d'Atelier'

### LIMITED EDITION 'LE 900' MONOBLOCK AMPLIFIERS FEATURE A HOST OF UPDATES

Not content with producing what are arguably the slimmest high performance, high output amplifiers available, Devialet continues to innovate and improve its offerings with this new limited edition monoblock amplifier. A step beyond the existing Le 800 flagship amplifiers, the 'original d'Atelier' (known briefly as Le 900) incorporates enhancements to its ADH (Analogue/Digital Hybrid) core, including a new Class D current-dumping amplifier board capable of delivering a claimed 900W/6ohm. The power supply is necessarily improved along with a significant

evolution of the amplifier's thermal management. Devialet has increased its use of a costly thermal interface material, doubling the thermal exchange area between the electronic boards and casing. The chassis and remote control are machined from a solid block of aluminium and finished in

a hand-polished copper-gold coating that's exclusive to the 100 Original d'Atelier amplifiers being produced.

Each amplifier carries a copper plate embossed with the signature of chief architect, Pierre-Emmanuel Calmel. Price is £22,900.

**Devialet UK Ltd,**  
**ukdistribution@devialet.com**





# Tokyo Audio Show

Words & pictures: Ken Kessler



Now in production, the D'Agostino Momentum Phono Stage was seen with a black finish. A dream for reviewers, archivists and reissue labels, it accepts multiple turntables and provides digital read-outs of the various gain and loading options alongside EQ settings for pre-RIAA releases. [www.dandagostino.com](http://www.dandagostino.com)



Yamaha showed a new version of a speaker with its origins in the 1970s. Looking like an NS-1000 minus the controls, the gloss black three-way NS-5000 made wonderful sounds from its 30mm dome tweeter, 80mm midrange and 300mm woofer with mirror-image offset placement just like the original. Frequency response is stated as 23Hz-40kHz. The price is rumoured to be €11,000 per pair. Due mid-2016. [www.jp.yamaha.com](http://www.jp.yamaha.com)

Taking place the week before the Rocky Mountain AudioFest, Tokyo's International High End Show is the first major hi-fi event of the season. I was lucky to attend again as a guest presenter, playing MoFi's latest albums – mainly the 45rpm doubles – in the TechDAS room, through Constellation's latest electronics and Vivid speakers, with the Air Force One with SAT tonearm and

TechDAS TDC01Ti moving-coil cartridge for the front end.

While the show is certainly small-ish, it still hosted a number of debuts, including the first-ever showing of Audio Alchemy's new phono stage, despite reports elsewhere that it was to be unveiled at the Rocky Mountain event. And only one thing marred the show: word that SACD drives are no longer being made. You have been warned.



Luxman's new D-05u is an SACD player with the latest spec drive and, if rumours are correct, maybe the final spec. Word has it, too, that some companies will find a way to sustain production. Until then, this is a fine basic player for around £1900, with support for LPCM and DSD audio via USB. [www.luxman.co.jp](http://www.luxman.co.jp)



Fave audiophile diva Lyn Stanley was in town to promote her latest LP, *Interludes*, and the SACD versions of her earlier releases, and she provided guests with an unexpected treat: as she had the master copies with her, she launched into an impromptu performance with backing from a hi-fi system!



Rather than unveil it back home, Wilson-Benesch launched the new ACT One Evolution in Tokyo (stage front). It's a full-range, four-way acoustical/2.5-way electrical, floorstanding loudspeaker with drive unit and cabinet construction technology derived from the flagship Cardinal. The ACT One Evolution stands 1.2m tall and is constructed with a combination of precision-machined alloy baffle, alloy side panels and the Advanced Composite Technology 'ACT' Monocoque shell.

[www.wilson-benesch.com](http://www.wilson-benesch.com)



The TechDAS Air Force Three was at the show in final form. We don't know the export retail price yet, but it should be a third lower (or more) than the Air Force Two. My eyes lit up seeing it fitted with three arms, and you can add a fourth if so inclined. And there are times when I wish I had that many, to keep four cartridges ready to rock. And as I have an un-mounted Series I SME 3012... dream on, KK. [www.techdas.jp](http://www.techdas.jp)

With the death threat hanging over SACD, now is the time to buy the Esoteric you've always wanted. The new K-05X sells for £3100 in Japan, the less expensive but similar K-7X costing £2300. It uses the VRDS-NEO technology and a toroidal transformer instead of the K-07X's C-core type. [www.esoteric.jp](http://www.esoteric.jp)



Accuphase had its usual overwhelming array of new hardware, but I loved the period looks of the mighty M-6200 monoblock power amplifier with balanced inputs and bi-wiring capability. Rated at 1200W into 1ohm (just right for the old Scintillas...) or 150W into 8ohm, it perfectly addresses the cult for 1970s-1980s over-the-top Japanese gear. [www.accuphase.co.jp](http://www.accuphase.co.jp)



Tokyo hosted the unveiling of the rather tasty Audio Alchemy PPA-1 phono stage. The PPA-1 offers a single-ended input, single-ended and balanced outputs, and accepts two turntables. Both of the inputs provide MM (50dB) or MC (65dB) gain and either 47kohm or 0-1000ohm loading, respectively. It's priced at US \$1595, while \$500 pays for a better outboard power supply. [www.audioalchemy.com](http://www.audioalchemy.com)



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PM-1

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Tim De Paravicini's demo in the EAR-Yoshino room included a pro Studer C37 playing 1in tapes at 30ips. Tim said, 'This is the best sound you'll hear at any hi-fi show.' He was right: the live jazz recorded with purist techniques, no noise reduction, no mixing, was utterly lifelike. [www.earyoshino.com](http://www.earyoshino.com)



I couldn't resist buying the cutest audio gadget I have ever seen: a 10in working model of the legendary JBL Paragon loudspeaker for £20! It's made of cardboard, origami-style, and comes with a pair of pre-wired, full-range drivers.

Luxman's L-590AXII is another throwback to the 1970s in the looks department, and also when it comes to forgotten features. This 30W/ch integrated amplifier has two balanced inputs, phono MM and MC, full remote, tone controls and facility for two pairs of speakers. Price is £3100. [www.luxman.co.jp](http://www.luxman.co.jp)



Esoteric's C-03Xs is a tempting line-level preamp, priced around £4300, which is entry-to-mid-level for the brand. It's a purist design with single-ended and balanced inputs and outputs and a front panel light to indicate polarity inversion. Construction matches the dearer flagship models. [www.esoteric.jp](http://www.esoteric.jp)

Axiss drew crowds with a plethora of high end goodies – demonstrated by well-known Japanese reviewers – including the star of the display, Lumen White's White Light anniversary speakers. Other brands in rotation included MSB, FM Acoustics, Transparent, Dan D'Agostino, Wilson Audio and Ayre. The company's massive room was always packed, the rapt audience fixed in concentration. [www.axiss.co.jp](http://www.axiss.co.jp)



Air-Tight's Miura-San arrived with the PC-7, its newest MC cartridge and targeted at the £2000-£3000 sector. I adore its earlier models, but the pricing is admittedly on the high side, so this less costly model will be welcomed by fans of the brand. [www.global.airtight-am.net](http://www.global.airtight-am.net)



# California Audio Show

Words & pictures: **Barry Willis**



You can smell jet fuel from the parking lot. Within sight and earshot of San Francisco International Airport, the Westin SFO has been home to the California Audio Show for several years now. Over the weekend of August the 14th to the 16th, the well-appointed, easy-access hotel again hosted dozens of exhibitors and hundreds of visitors to an event that is the second largest audio show in the state and one of a kind in Northern California.

Some major players were conspicuously absent this past summer, as they had been the previous year, leaving plenty of room for many newcomers and permitting some local enterprises, such as San Francisco's Elite Audio Systems, to demonstrate in large ballrooms. First-time exhibitors included Pono, Arkana Physical Research and Magnetic Innovations LLC. One thing's for sure: all got attention and some won accolades.

These self-powered Athena speakers from Piraeus Audio feature extensive DSP for crossover and driver control functions. Signal path is all digital up to the amps and 96dB/octave crossover slopes free drivers to work within their natural range. Retail price is \$24k/pair. [www.piraeusaudio.com](http://www.piraeusaudio.com)



Demonstrated by Grant Fidelity, the Psvane Reference TS845 integrated is a sweet-sounding and beautifully finished single-ended triode (SET) amp from China, said to retain all the benefits of the T845 monoblocks. Rated at 25W 'pure Class A' into 8ohm, the suggested retail price is \$4500 with substantial discounts available online. [www.grantfidelity.com](http://www.grantfidelity.com)

Taking the console monitor concept from studio to desktop, Audio Engine's 2+ powered desktop speaker (also called A2+) was one of several true bargains at CAS, at only \$249/pair. Features include USB connectivity, onboard DAC and a subwoofer output. Optional W3 adapter permits wireless operation. [www.audioengineusa.com](http://www.audioengineusa.com)



A lukewarm reception from mainstream media hasn't damaged Pono's popularity. Neither has whining about the evils of digital audio from company founder Neil Young. One of the busiest tables on the main floor at CAS, the Pono exhibit included headphones of many varieties to demonstrate the player's versatility. [www.ponomusic.com](http://www.ponomusic.com)







The CT-1 interconnect from High Fidelity Cables is a dual-shielded coaxial design claimed to minimise RFI and EMI, with 'PinLoK' RCA connectors said to maximise contact pressure when inserted. Retail price: \$1600/m. [www.highfidelitycables.com](http://www.highfidelitycables.com)

Intriguing products shown by Grant Fidelity included these open-baffle loudspeakers from PureAudioProject. Listed at \$3750 per pair, the Trio 15 TB features an aluminium framework, two 15in Eminence woofers per speaker and what the maker calls 'Modular Open Baffle Architecture' allowing upgrades as owners prefer. [www.pureaudioproject.com](http://www.pureaudioproject.com)



Pink on pink: Evgeny Doroshin of Arkana Physical Research poses with a product sample from his company, which is based in White Plains, New York. Founded and staffed by expatriate Russians, Arkana uses rare-earth metals in its line of cables (interconnect, speaker, and mains power) for an 'unearthly' musical experience. [www.arkanaresearch.com](http://www.arkanaresearch.com)



Creating a stir at CAS were these speakers: the Seraphim XLO Edition in exotic Cocobolo veneer (\$17k/pair). The system included XLO's Signature 3 Shotgun speaker cables (\$5400/pair), Melody tube amplifiers, Onix OC103 Reference media player (\$13k), Argentum Acoustics XP3 Multiplexer and Triangle Art Symphony turntable. [www.angelcityaudio.com](http://www.angelcityaudio.com)



Single-ended triode amps have a dedicated following. Among several on display was this simple beauty, the Consonance Reference 5.5, with parallel 300B output valves. Specs include four line-level inputs, limited negative feedback, an 18W-per-channel output and an 80dB signal-to-noise ratio. US price: \$2800 at show time. [www.opera-consonance.com](http://www.opera-consonance.com)

The vinyl revival continues to gain momentum. Turntable makers are working overtime to create stunners such as this James Kyrourdis-designed two-speed Music Hall Ikura with two-piece plinth, shown in glossy white, with motor and drive belt hidden from view. [www.musicchallaudio.com](http://www.musicchallaudio.com)



# The New Architecture for Preamps



The CP-800 stereo preamp/processor



Conventional high-end preamplifiers are the direct descendants of preamps that were conceived decades ago in a pre-digital world. The CP-800 stereo preamp/processor is something new. It combines the key circuit blocks of a high-end audio system in a unique way to improve and shorten the signal path. Analogue purity is preserved while digital sources acquire new processing features and higher performance than ever. For the first time, a CD ripped to a computer can sound better than it would if played in the world's best CD player.

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[www.classeaudio.com/whitepaper](http://www.classeaudio.com/whitepaper).  
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## CLASSE

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Blues-rocker/singer/guitarist/Rolling Stones fanatic Craig Allison of Lavish Hi-Fi in Santa Rosa, California, does some heavy lifting with the GamuT DI 150 LE integrated amplifier. Allison wowed crowds with the Danish powerhouse, driving Larsen 8 speakers or GamuT's gorgeous RS3 standmounts (\$20k/pair) – the baby model in the company's four-strong Superior range [see *HFN* Oct '14]. [www.gamutaudio.com](http://www.gamutaudio.com)



Sleek, shiny, and seductive: the all-valve Melody Platinum 211 integrated from Australia. A single-ended design, the amp boasts extreme quality parts throughout, especially its capacitors, but needs to be partnered with high sensitivity loudspeakers for maximum enjoyment. [www.melodyamplifier.com](http://www.melodyamplifier.com)



LRE Audio demonstrated a price/performance winner with the \$1200/pair full-range Laura loudspeakers, Oppo BDP-103 disc player, and an amplifier cobbled together from Parts Express for under \$100. Designer Jim Suhre claims the Laura's unique configuration yields superb transients while eliminating room acoustic problems. [www.lreaudio.com](http://www.lreaudio.com)



Boulder scales back its visual audacity with the 1021 digital player, but not the sound quality. Cited as having 'completely redefined the limits of what a digital player could be', the combo high-res streamer/disc spinner is said to be capable of playing any digital file/format with super fidelity. [www.boulderamp.com](http://www.boulderamp.com)

Mexican high-end guru Julian Margules stands near his lovely Orpheus loudspeaker. Margules Audio shared a room with Integrity High Fidelity, US importer of Atlas Cables, Russell K speakers, Densen electronics, and DreamVision projectors. [www.margules.com](http://www.margules.com)



Headphones galore: they were everywhere at CAS, especially at various ground-floor tables and in the large ballroom with vinyl vendors. This shot doesn't showcase any particular brand, but is representative of the explosion in popularity that headphones continue to enjoy. Amusingly, this subcult continues to baffle many old-school audiophiles.

## Next month

We report from Warsaw and Poland's Audio Show

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- Comprehensive Protection- and Softstart-System: Power-Management





# Vinyl: a cut above...

Steve Harris on the early days of the audiophile record labels

**RIGHT:** Doug Sax founded The Mastering Lab in 1967 and made the first Sheffield Lab direct-cut the following year. He's seen here with an impressive line-up of cutting lathes. He passed away in April 2015

The story of audiophile recordings goes back to times before anyone used the word 'audiophile' – although that term does date back further than you might think. In 1947, Ewing Dunbar Nunn started his Audiophile Records company in Saukville, Wisconsin, making 78rpm discs pressed on vinyl rather than noisy shellac, and designed to show off the capabilities of a hi-fi system.

Nunn recorded Dixieland jazz artists who happened to be in town, most notably Red Nichols, and also recorded thunderstorms. But since the earliest days there have been particular recordings that stood out as superior to the rest.

## FULL FREQUENCY

By the end of the 1920s, electrical recording had made it possible to capture the sounds of a large orchestra in a reasonably realistic way. In America, RCA started recording the Philadelphia Orchestra with Stokowski, and in the UK EMI opened Abbey Road.

In 1944, Decca introduced 'ffrr' ('Full Frequency Range Recording'), a spin-off from its war work on submarine detection that extended the frequency response on 78rpm records to an unprecedented 15kHz.

This stood Decca (London in the USA) in good stead when LP records began to replace 78s and the extended treble response could really be appreciated. The arrival of the LP brought what's now seen as a golden age of analogue recording.



Reminiscing in his chapter of the book *Sound Bites*, David A Wilson of Wilson Audio described what it was like, as a teenager and budding audiophile, buying records in 1960.

'The RCA Red Seals, which I preferred, were \$4.98 in quality slipcovers... Removing the LP from its jacket and inspecting the grooved record surface, my old friend and technical mentor (especially with his supernatural eyesight), Don Alley and I could see the low priced LPs' tightly and evenly compressed grooves which betrayed their limited dynamics and filtered bass...

'Usually, the sensuously broad low frequency curves of the RCA's grooves and their tantalisingly wide spacing seduced us into spending the extra cash and buying "shaded dogs". Some Mercury and London and all Hi-Fi Brand and Audio

began to change. Over a period of a few years, I would put a new LP on the turntable, only to take it off before the side was over. My older LPs became the ones I would go to when I wanted to impress someone with the sound or the music. I bought fewer LPs. The grooves didn't look very exciting any more.

'While the liner note "information" provided for RCA Dynagroove, Columbia 360 Sound and some others promised a more technically corrected sound, I didn't hear it that way.'

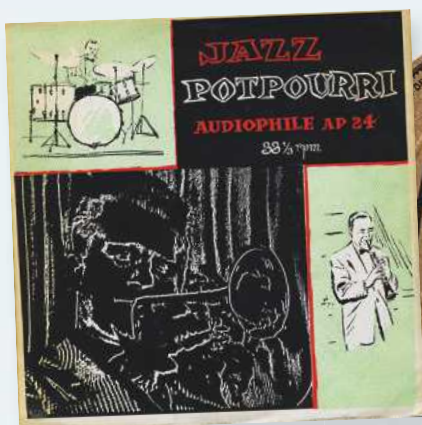
Introduced in 1963, RCA's Dynagroove technique modified the audio signal to suit mass-market record players equipped with spherical styli. But for users of quality systems with elliptical styli, it was a backward step.

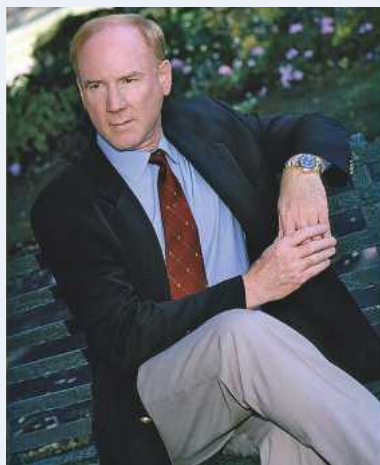
## THE PROBLEM IS TAPE

Wilson would go on to make his own notable audiophile recordings. But around the time when he and many like-minded audiophiles were finding that they preferred their older LPs, two other influential people were looking even further back.

Lincoln Mayorga and the late Doug Sax first met in their junior high school orchestra in 1950, playing piano and trumpet respectively. Moving on to Hollywood High School, Mayorga

**BELOW:** In the late 1940s Ewing Nunn's Audiophile Records company made a series of microgroove vinyl discs, most notably featuring jazz cornettist Red Nichols





became arranger and accompanist for The Four Preps vocal group. Meanwhile, at Fairfax High School, Sax played alongside Herb Alpert.

The two caught up again after this, and in 1956 Mayorga was impressed by the state-of-the-art (mono) hi-fi system built by Doug and his engineer brother Sherwood Sax. But Mayorga didn't rate the piano sound on current recordings, preferring Schnabel on old 78s.

Mayorga and Sax concluded that the problem lay with the use of tape. In 1959 they tested this theory by going into the oldest studio in LA, where it was still possible to connect the microphone feed direct to a pre-war cutting lathe with its 1947 RCA cutter head.

They cut a 16in microgroove 78 of Mayorga playing Chopin's prelude in B flat. When they played it back at home, as Sheffield's official history relates, 'It was so realistic that Lincoln literally fell on the floor'.

Mayorga was now a busy pianist and arranger at Capitol Records. His recording exploits would range from ragtime piano under the name of Joe 'Spider' Dugan to producing Ketty Lester's 'Love Letters'. So he was well equipped as a producer.

But when he and Sax tried to record direct-to-disc in a modern commercial studio, it just didn't work. The idea would have to wait until they could use their own equipment. This they did in 1967. With Sherwood Sax as the third partner, they set up The Mastering Lab, offering a quality disc-cutting service to independent producers.

## 'M&K's RealTime albums were the most intriguing 1970s direct-cuts'

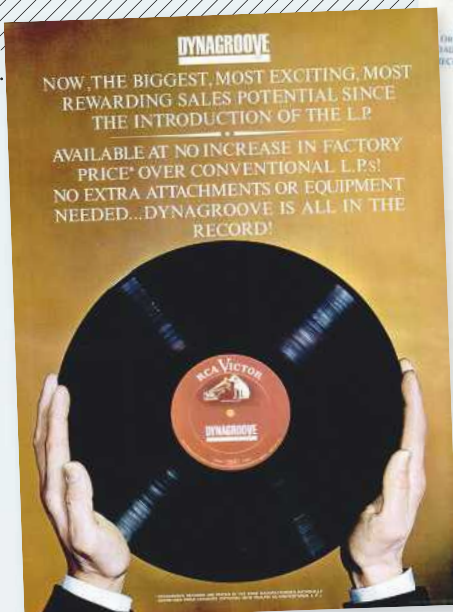
Then they launched the Sheffield Lab label, named after Sheffield Drive, their nearest highway exit. In 1968 came the first Sheffield Lab direct-cut, catalogued as S9, which was also the first of three under the banner of *Lincoln Mayorga and Distinguished Colleagues*.

To increase production, *The Missing Linc* follow-up, S10, was made with two cutting lathes run

in parallel, one being rented for the occasion. For *Vol III*, numbered LAB 1, The Mastering Lab had its own two Scully lathes with Neumann SX 68

cutting heads driven by Sherwood Sax's custom electronics.

As before, the musicians were recorded in the nearby Producers Workshop studio, connected by cable to The Mastering Lab. At



**ABOVE LEFT:** David A Wilson launched his Wilson Audiophile record label before founding the famous speaker company

**ABOVE:** RCA's Dynagroove technology was designed to make records play better on low-grade equipment

**BELOW:** This Sheffield Lab anniversary disc assembled the music from its first three direct-cut sessions



the console in the studio was Bill Schnee, famously described by Sax as 'The greatest engineer since Casey Jones'.

For LAB 2, recorded in February 1975, Sax and Mayorga pulled out all the stops for *I've Got The Music In Me* by Thelma Houston & Pressure cooker. The band included such hot session men as Larry Carlton, Dean Parks, Jim Keltner and Tom Scott.

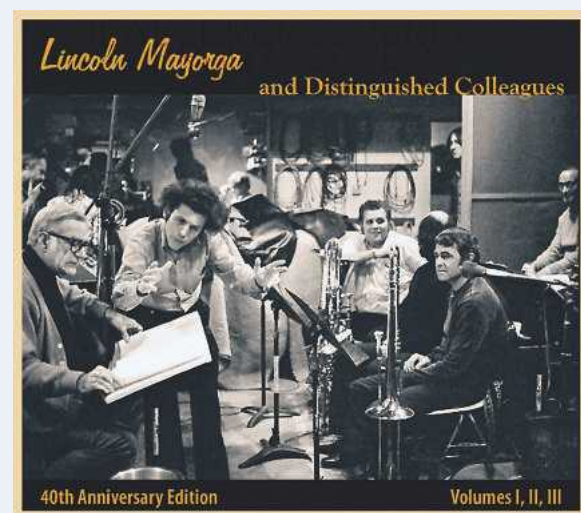
The title song had been a hit for Kiki Dee the year before, but Houston was terrific and lifted the album to a level infinitely above the middle-of-the-road blandness of previous efforts. It became an icon.

## THE REAL STUFF

Depending on your point of view, you might think LAB 3, *The King James Version* of 1976 is even better. Sheffield Lab captured the Harry James band direct-to-disc at the nearby Wylie Chapel, again sending the signal down long cables to The Mastering Lab. Here was a real band, not a studio concoction, playing their real stuff.

After this Sheffield went on to offer the fairly memorable Dave Grusin album *Discovered Again*, the not so memorable *Lincoln Mayorga Plays Brahms...*, more Harry James, new orchestral recordings and the *Sheffield Drum Record*. But Sax, Mayorga and Schnee had already set the standard for others to match.

After Sheffield, some of the most intriguing of the 1970s direct-cuts were the M&K RealTime series by Miller & Kreisel. Co-founder Ken Kreisel started recording music as a teenager, and in his last year at high school began taking his master tapes to play at an upscale Beverly Hills store called Jonas Miller Sound. ☞







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**LEFT:** Although this sampler was taken from the 'back-up' tape masters, M&K RealTime's LPs were direct-cut at 45rpm

Soon he was working at the store, but then joined with Miller to launch M&K as a manufacturer.

Kreisel has been credited with creating the first-ever subwoofer and went on to produce the subwoofer system used by Steely Dan when recording *Pretzel Logic*.

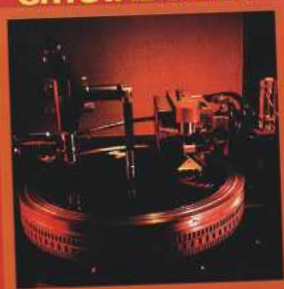
## LABOUR OF LOVE

In 1976, Kreisel started making direct-cut discs, going one better than Sheffield Lab by cutting everything at 45rpm. By this time he'd hired Steve McCormack, later of ModSquad and McCormack Audio, who recalled those heady days in a talk at the Pacific Northwest Audio Society in 2012 [see [www.youtube.com/watch?v=VZ-daKTOZek](http://www.youtube.com/watch?v=VZ-daKTOZek)].

'That project was a labour of love for Ken,' says McCormack. 'He bought a Neumann SX-70 lathe system, modified it by taking out the current limiters and acceleration limiters, built a studio around it, and we did most of these recordings right in the Jonas Miller Sound store, which was a kind of a giant open structure where we had room dividers that we could move around and subdivide little sections to set up equipment and systems and show them off. And we would shuffle things out of the way.

'Ken bought a grand piano, put it in the store, and we would bring the musicians in, move the equipment out of the way and do

## The Sound Is CRYSTAL CLEAR



Crystal Clear Records  
SUPER CUT LIMITED EDITION  
DIRECT TO DISC RECORDINGS

**ABOVE:** Crystal Clear had a large and varied catalogue of direct-cuts. This brochure explained the process

**BELOW:** One of M&K's most celebrated titles, *Flamenco Fever* revelled in the sharp transient sounds of castanets and dancers' feet



**DIRECT TO DISC... SIMPLY BETTER**



the recordings right there. We had AKG C414 microphones that Ken had modified and Levinson preamplifiers that we had stripped

out the RIAA equalisation from and used as our microphone preamps. All of that would feed into a passive mixer of Ken's design and then into a Mark Levinson LNP2 as a master controller that fed the lathe system.

'Then Ken decided to step this up to another level... we took the thing out on location and did live direct-to-disc recordings with it.' M&K's location recordings were ambitious, including sessions with the Roger Wagner Chorale and even a full orchestra and chorus in

the finale of Beethoven's ninth symphony, in a Los Angeles theatre.

Percussive heels and handclaps made *Flamenco Fever* an all-time classic hi-fi demonstration record. In those days, before the explosion of video, you didn't expect to actually see the dancers.

## SMALLER OPERATIONS

Less well remembered, perhaps, are some of the other Californian direct-cut labels. The Great American Gramophone Company and Century Records were offshoots of Keyser Century Corp, which ran the K Disc mastering studio. Between them they offered Buddy Rich, Woody Herman, the Glenn Miller Orchestra

and Les Brown's Band Of Renown, not to mention organists Robert Cundick and George Wright.

Crystal Clear's 1980 catalogue listed 31 titles including name jazz artists like Charlie Byrd and Cal Tjader along with live recordings of the London Philharmonic and the Boston Pops. Crystal Clear's blurb took a swipe at the competition: 'It should be noted that Direct To Disc alone is no guarantee of technical quality since there are many poorly produced Direct To Disc records currently on the market...'

Nautilus Recordings got started in 1977 and its direct cuts included

country music from Randy Sharp, jazz of various kinds from percussionist Chico Hamilton, saxophonist John Klemmer and fusion flautist

Tim Weisberg. Later, Nautilus concentrated on its SuperDisc half-speed remasters, also offering a few titles with dbx encoding. This expanded the dynamic range heard from the LP, but only if you had a dbx decoder.

As a fledgling company in 1976, Reference Recordings had intended to join the bandwagon with a direct-to-disc project, but this never came to fruition. The company took a different direction and got started properly in 1978, with Professor Keith O Johnson and his special 'focused gap' tape machine.

So the direct-cut craze ran its course. In 1978, Telarc released the USA's first digitally-recorded LPs, ➔

**'Crystal Clear's blurb took a swipe at the competition'**



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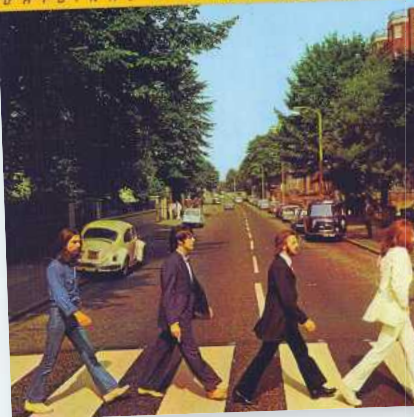
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ORIGINAL MASTER RECORDING



ORIGINAL MASTER RECORDING



## INVESTIGATION

and the industry began looking to a future when vinyl itself would be replaced by a digital medium.

At the same time, instead of laboriously making their own recordings, many more vinyl-based audiophile companies started striking deals with the major record companies and making new LP masters from existing master tapes.

Over the next few years, the most spectacularly successful of these specialists was Mobile Fidelity, waving its half-speed mastering flag. After MoFi came the deluge.

## BRAVE START

In 1986 Chesky Records got started bravely with its remastered *Reader's Digest* and RCA classics, but more and more American companies were entering the same fray. In the UK, the Nimbus-pressed *Practical Hi-Fi* 'Supercut' remasters had already made a brief splash, while Linn Records was by now firmly established.

All this soon added up to a vast array of material aimed specifically at audiophiles. As an example, a 1995-1996 catalogue from the (now defunct) UK mail-order company Audiophile International lists thousands of vinyl titles from more than 50 labels.

A list of those making their own recording, apart from the ones already mentioned, starts with Aeolus of Japan and Altarus of the UK and runs through to Waterlily Acoustics and Wilson, not to mention hi-fi brands AudioQuest, Cardas and Vacuum Tube Logic.

Labels now offering remastered vinyl included Alto, Audiotrade, Concord, Connaissance Musik and Discovery all from Germany, and many others. There were long lists

of titles from the fast-growing US companies Classic Records, now really getting stuck in to the RCA catalogue, and Analogue Productions with lots of jazz.

By then, of course, most of the specialist companies were also offering their new and licensed titles as audiophile CDs. Which is another whole story, really.

That 20-year old printed catalogue, comprehensive enough in its day, seems quaint in our world now, where it sometimes seems that everything that's ever been recorded or reissued can be found somewhere online.

Today we need only click on YouTube to see and hear newsreel footage of Sir Edward Elgar, on opening day at Abbey Road in 1931, conducting 'Land Of Hope And Glory' in an orchestral recording that was state-of-the-art at the time. For us, such an event has become a historic cultural icon, and it's no longer a demonstration of sonic excellence.

## ALL IN THE ACETATE

And couldn't you almost say the same of some 'audiophile' recordings of the more recent past? Today, some of the recordings that were made years ago with so much skill, devotion and effort in protest against the industry's low standards, are venerated more for what they stand for than for what, in their currently re-manufactured forms, they might actually sound like.



**ABOVE LEFT:** Mobile Fidelity controversially remastered The Beatles on vinyl, having first hit the big time with its Japanese-pressed *Dark Side Of The Moon*

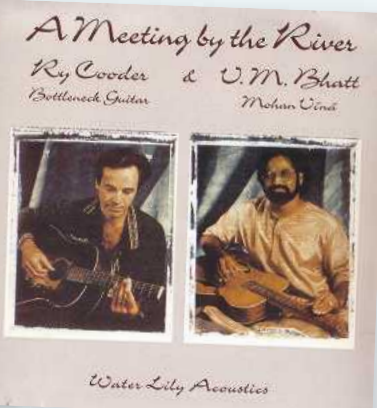
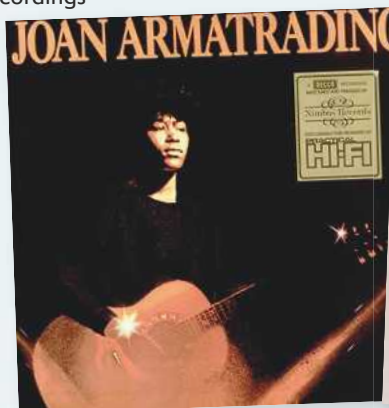
**ABOVE:** David Chesky started with remastered classical music on vinyl

**BELOW:** Nimbus 'Supercut' remaster and the Cooder/Bhatt recording from Waterlily Acoustics

Recalling his days of making direct-cut discs at M&K RealTime, Steve McCormack said: 'Good as those records were, I really wish you could have heard the acetates. You typically never play an acetate that you're going to turn into an album because it can very easily be damaged. But we would oftentimes have acetates that were blown for one reason or another, and we would play them...

'The sad fact is that the test pressings that came back didn't sound as good as the acetates they were made from... there's just a loss in that process.'

And even after a lifetime in high-end audio, McCormack still remembers the impact those direct-cut 'acetates', or lacquer masters had on him: 'To this day they are the best sounding recorded media I have ever heard in my life. They are better than anything I've ever listened to.' ☺





# Pro-Ject RPM 10 Carbon

Mixing elegant styling, fine build quality, a proven tonearm and excellent optional MC, this is a highly convincing package for vinyl veterans and newcomers alike

Review: **Nick Tate** Lab: **Paul Miller**

**T**hey said vinyl was dead, but just as its last rites were being read, the humble Long Playing Record rose Phoenix-like from the ashes. Compact Disc fans scoffed, declaring the vinyl revival merely a 'fad', then watched in horror as CD sales began to slide, seemingly in inverse proportion to those of LP reissues. Now, at the start of 2016, vinyl looks set to outlast the digital disc that was invented to replace it...

The venerable microgroove record has rather caught the zeitgeist. From Shoreditch to San Francisco, we see cool-looking arty types carrying record bags, coffee shops selling LPs and fashion magazines photographing black plastic. It's partly a case of the young generation rejecting the iPods of their parents, and also because many men of a certain age are now reliving their golden years – purchasing icons from their past.

## COVERS ALL BASES

Then of course there's a third demographic, people who simply love the sound of music played the analogue way. The new Pro-Ject RPM 10 Carbon covers all these bases, especially the latter two – it's stylish, undeniably retro and properly engineered to sound good.

Indeed, it's the ideal 'ultimate turntable' for vinyl revivalists coming back to the format. Many who stayed with LP through its darkest days may possibly have a more complex and expensive record player than the RPM 10 Carbon, which is a simpler and more elegant way to play black plastic.

The reason for this is its lack of any sort of fiddly sprung suspension system – thus avoiding a whole new world of pain to the already quite involved process of setting-up a turntable. One close rival to the RPM 10 Carbon for example, is Michell's GyroDec/TecnoArm – which is a good deal trickier to get the best out of.

The problem for unsprung decks is that they're generally far more susceptible to air- and ground-borne vibration than their bouncy brethren. Some manufacturers simply fit soft rubber feet, whereas others throw mass at the problem, mounting them in hugely heavy solid plinths.

Pro-Ject has done something different, filling the turntable chassis and 14.5kg Ground-IT Carbon base with resin-coated steel pellets, packed inside the CNC-machined MDF structure. This is then heat-treated and gets a carbon fibre surface coating. It makes for a 'dead' sounding base and chassis.

The platter is machined from aluminium, internally damped with a thermoplastic elastomer, and topped by an integral vinyl 'mat'. The thinking is that by using a range of materials, no one single resonant mode can dominate. It's so heavy (10.4kg) that you would think this would wreck the main bearing within minutes, but the stainless steel spindle sits gently on the inverted

ceramic bearing thanks to opposing magnets, which push against one another to lessen the load.

## AN ACCOMMODATING ARM

A long, thick circular rubber belt runs around the platter and is spun by an offboard motor with its own AC power pack and electronic speed control for 33.3/45rpm records. The deck runs smoothly and quietly, just as soon as you have got the tension on the belt correct by placing the motor unit at the ideal distance from the platter's edge.

Many prospective purchasers will find the pre-installed 10in Pro-Ject 10CC Evolution tonearm attractive. Fitting an arm is fiddly and not everyone has obliging dealers nearby who can do it for them. It has a low-ish effective mass of 9g [see Lab Report, p35], and uses a damped conical carbon fibre tube with decent internal wiring, an inverted bearing and a selection of damped counterweights that will



**RIGHT:** Like most modern belt drives, the motor is not part of the main chassis; unlike many, it's an AC-type. 10in Pro-Ject 10CC Evo tonearm makes a fine partner



accommodate a wide range of cartridges. Henley Designs, the UK importer, offers the fitment of the £1750 Ortofon Cadenza Black MC for just £1000 – making the whole deck, arm and cartridge package as tested £3300. There is also an optional acrylic dustcover and record clamp, the latter bringing a subtle subjective improvement to the sound.

Far less fiddly to set up than the likes of a Linn LP12 or Michell GyroDec, the Pro-Ject requires no specialist knowledge, other than the ability to read the instruction manual. To get the best from the deck, during set-up you should keep the belt and platter edge clean, optimise the belt tension and tighten up the Allen bolts in the arm when you've completed the MC's alignment.

#### MASTERTAPE SOUND

Pro-Ject's RPM 10 Carbon is a most impressive performer at its price, offering

a sound that will amaze those people returning to the vinyl format, yet still impress veteran vinyl junkies. It has a deep, dark, powerful character that goes straight to the music in the groove. This is doubtless down in large part to its virtually

inaudible rumble, fine speed stability and good tonearm performance – all of which contribute to its authoritative, mastertape-like sound.

For example, the title track from Pink

Floyd's *Wish You Were Here* [Harvest SHVL 814] was extremely natural and unforced, with a vanishingly small amount of background noise. It had space and composure, and lots of detail too – despite an ever so slightly warm nature.

The way this deck gets right into a musical performance without firing it at you in an aggressive way, is most satisfying. Like the best Belgian chocolate, it's sultry and smooth yet has real flavour too. By this

'Like the best  
Belgian chocolate,  
it's smooth yet has  
real flavour too'

**ABOVE:** Rather than using springs, the MDF base and chassis are filled with resin-coated steel pellets to damp vibration. Vinyl-topped platter is a hybrid of elastomer and aluminium


I mean you can really get a sense of the recording studio and the tonality of the final mix, and every disc sounds different.

Aside from being obviously smooth and sophisticated, the Pro-Ject doesn't sound particularly 'coloured', it's just slightly tonally sweeter than a decent digital source – which is precisely what people want from a turntable at this price.

As you'd expect, the Floyd track came over with a satisfyingly rich yet earthy guitar sound, and tight, taut drum work. Thanks in no small part to the excellent Cadenza Black, you can enjoy the silky treble and its superb filigree detailing – the shimmer from the hi-hat was most realistic.

Give the Pro-Ject something livelier to spin – such as Scritti Politti's 'Boom There She Was' [*Provision*, Virgin V 2515], and you're struck by its speed and scale.

It isn't quite as pacey as some rivals, but has more body than most and is happier to sit there showing the power and scale of a recording, rather than running around frantically trying to capture every last detail. In this respect, you can liken it to a Harley Davidson touring motorcycle, rather than a high-revving Japanese sports bike: considerably less frantic but no less fun.

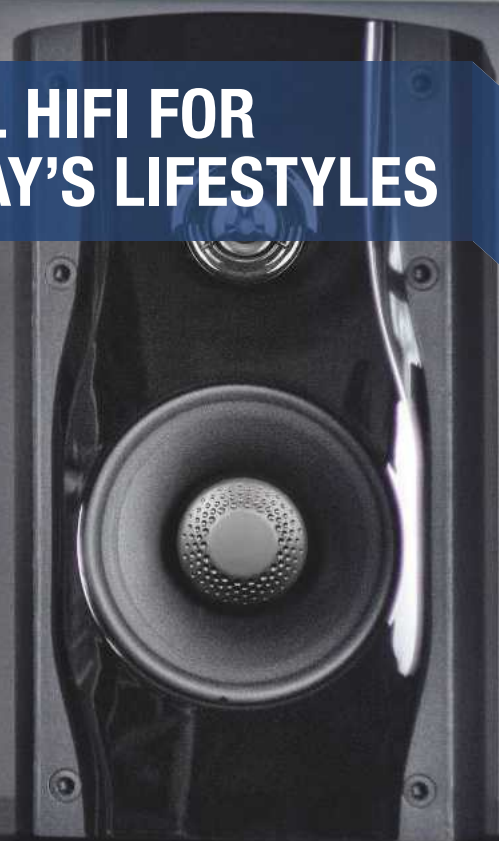
The width of the RPM 10 Carbon's soundstage really surprises, giving an almost panoramic feel to the proceedings. The Scritti Politti track was so immersive that it might as well have been recorded in surround sound. Elements of the mix ran far left and right of my loudspeakers, 

### ARCHITECTURAL DECKS

In the 1970s most turntables adhered to a recognisable form factor – a chassis (plinth), subchassis, motor, platter and armboard – but by the start of the 1980s we began to see 'skeletal' decks from the likes of Oracle and Michell which wore their subchassis on the outside, negating the microphonic effects of a boxy plinth. The next logical step was to remove the motor from the main chassis completely. This was common by the mid-'90s although the idea of a standalone motor unit wasn't new, having been tried in Japan in the late '70s. Separately-placed motors can yield a real improvement in sound quality, reducing chassis noise, improving dynamic range and – according to some – promoting a more engaging, insightful sound. As ever there's a downside in that minute changes in motor position necessarily effect the belt tension and platter speed stability.

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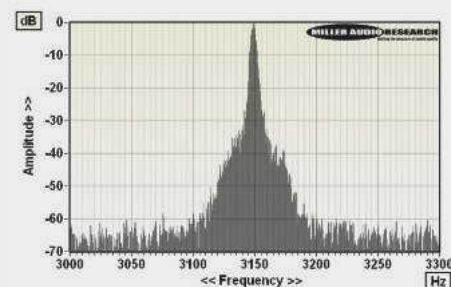


## LAB REPORT

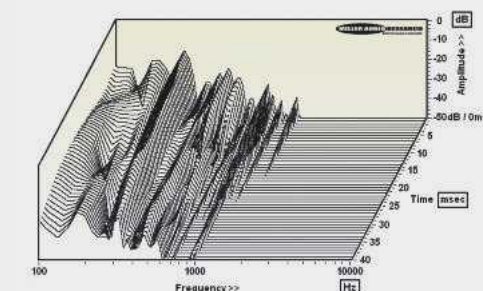
### PRO-JECT RPM 10 CARBON

This deck is clearly an evolved form of the Pro-Ject Evolution RPM 10.1 [HFN May '10], the original Perspex platter replaced here with a far heavier 10.4kg damped-alloy platter which includes an integral 'vinyl' top surface. Despite the increased rotating mass, the inverted stainless steel/ceramic bearing delivers a worthwhile 2dB reduction in rumble over its forebear, the -72.8dB recorded here only a 1-2dB short of the very best we've measured at any price. Through-groove noise is essentially unaltered but there's still a 1dB advantage gained by using the record weight. Wow and flutter is slightly higher, but with a peak-weighted figure of just 0.05% the RPM Carbon 10 is still exceptionally stable [see Graph 1]. Of course, that there's no fixed motor position is the bigger variable here.

We tested the partnering 10CC Evolution tonearm some five years ago [HFN Jun '10] when the lightweight but very rigid carbon fibre tube was revealed to have a diffuse main bending mode at 190Hz but also showed two high-Q resonances at 600Hz and 1.2kHz. Pro-Ject has clearly responded to this information by improving the hard carbon tube's internal damping, offsetting these midrange resonances for a stronger but less subjectively debilitating harmonic at 290Hz [see Graph 2, below]. Effective mass is 9g and the four ABEC 7 tolerance ball races offer very low (<10mg) levels of friction. Tested with its medium counterweight, the Evolution's downforce proved to read about 10% over the actual value, with an expected 2g measuring closer to 1.8g. If in doubt, overcompensate slightly. Readers can view QC Suite reports for Pro-Ject's RPM 10 Carbon deck and 10CC Evolution tonearm by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



ABOVE: Wow and flutter re. 3150Hz tone at 5cm/sec (plotted  $\pm 150$ Hz, 5Hz per minor division)



ABOVE: Cumulative tonearm resonant decay spectrum, illustrating various bearing, pillar and 'tube' vibration modes spanning 100Hz-10kHz over 40msec



ABOVE: Pro-Ject's Connect-IT Phono 5P-CC cable is supplied with RCA plugs, although balanced XLRs are optional. The motor's small external mains transformer supplies power via a mini-socket on the base of the (black) stainless steel housing

sounding less 'boxed-in' than with most other turntables and digital sources I have heard in the same system. At the same time, the stage stretched rearwards commendably well, having the effect of pulling the listener right into the mix.

#### SLINKY RHYTHMS

Rhythmically, it ploughs its own furrow, giving a solid and even feel to the music. The rival Michell GyroDec sounds quite 'metronomic' by comparison – great on the basics but a little uninvolved – whereas the Linn LP12 goes the other way, being intricate and engaging yet not quite as 'solid' sounding.

The Pro-Ject takes the middle way; the slinky rhythms of Dave Brubeck's *Take Five* [CBS 31769] for example, really worked well via the RPM 10 Carbon, giving a secure and unflustered performance.

Those famous syncopations really got my feet tapping, and I found myself getting deeply involved with the piano and drum work. Indeed, it seemed particularly distinguished playing jazz, having that fortuitous combination of slight tonal warmth allied to a deft and dexterous control of the music's rhythms.

The same attributes that make it good for rock, pop and jazz hold for classical too. Orchestral music via LP can be a real treat, and so it proved with the Pro-Ject RPM 10 Carbon.

My much-spun copy of Beethoven's 'Pastoral' Symphony with Karajan and the Berlin Philharmonic [Deutsche Gramophon, SLPM 138 805] was next on the platter, and it soon became clear that this unit's super-quiet bearing and excellent speed stability were paying off. Again, we heard its expansive soundstage, fine detail resolution across the midband and a delicate, well-defined treble.

The latter brought an excellent sense of air to the proceedings, staying composed on dynamic peaks. Indeed, the deck proved adept at communicating the relative differences in playing level of the various instruments, allowing the sound at the back of the venue to fall away into (seemingly) inky blackness. The contrast between the quietest solo passages and the BPO at full force was also striking – showing this turntable is able to handle dynamic light and shade as well as its best price rivals.

The Pro-Ject's only real problem is the high quality of its opposition at the price. Fortunately, it has few obvious weak points: some might think its bass a fraction too slow, but others will hear this as a reassuringly solid bottom end. Some might crave a slightly more forensic midrange, but again others will love its unfussy and authoritative presentation.

By way of comprehensive defence, it possesses a calm and measured presentation that builds a broader – and arguably more convincing – sound picture than much of the competition. ☺

#### HI-FI NEWS VERDICT

There's much to like about this 'affordable high-end' package. Sonically, it has none of the vices of cheaper turntables, and many of the attractions of far costlier designs. This, allied to its relative ease of set-up and fine styling make it a persuasive package for born-again vinylistas and old friends of the format alike. The optional Ortofon Cadenza Black MC cartridge, with a saving of £750, is icing on the cake.

Sound Quality: 85%



#### HI-FI NEWS SPECIFICATIONS

Turntable speed error at 33.33rpm	33.33rpm (-0.02%)
Time to audible stabilisation	5sec
Peak Wow/Flutter	0.02% / 0.03%
Rumble (silent groove, DIN B wtd)	-68.5dB / -69.2dB (w. weight)
Rumble (through bearing, DIN B wtd)	-72.8dB
Hum & Noise (unwtd, rel. to 5cm/sec)	-63.3dB
Power Consumption	6-10W
Dimensions (WHD) / Weight (w. base)	500x275x400mm / 36.5kg

# Audio Alchemy DDP-1/PS-5

Famous for components that represented the epitome of budget esoterica a quarter century ago, the celebrated Audio Alchemy brand has been resurrected with a fanfare  
Review: **John Bamford** Lab: **Paul Miller**

Readers above a certain age will surely remember the Californian-based Audio Alchemy brand, renowned for producing a range of highly affordable digital components throughout the 1980s and '90s. Audio Alchemy's design team was headed-up by Peter Madnick, who has gathered together several of his former colleagues to resurrect this illustrious brand name and develop a complete range of system components for the 21st century. As the company's new website puts it: 'Since the days of the original Audio Alchemy you've grown up and so have we.'

## OPTIONAL 'POWER STATION'

Premiered at the Hi-Fi Show *Live* in October '15, the new company's £1595 DDP-1 preamp/DAC forms the heart of Audio Alchemy's component line-up. It enters a crowded marketplace now awash with USB-equipped DACs, many including a headphone output and volume control so that you can dispense with a preamp in an all-digital system. However, there is scarcely a cornucopia of choice if you'd like your DAC/preamp to have analogue inputs as well. Audio Alchemy has wisely chosen to include three unity-gain analogue inputs (one balanced XLR and two single-ended RCAs) alongside the DAC's suite of digital inputs to make the DDP-1 a complete control centre for any system set-up.

Our early demonstration sample came complete with its partnering PS-5 'Power Station' add-on power supply which is in the new component line-up as a £495 upgrade. With two DC outputs on its rear panel the PS-5 is designed to beef-up the performance of the DDP-1 and a further component in Audio Alchemy's new 'eco system'. Visitors to Symmetry Systems' demonstration suite at The Hi-Fi Show *Live* will also have enjoyed a sneak preview of the compact power amplifiers in the Audio

Alchemy range designed to partner this DDP-1/PS-5 combo. Currently there are two models: the DPA-1 Stereo (£1595) rated at 150W/8ohm and DPA-1 Mono (£1595 each) rated at 400W/8ohm. Both are hybrid designs employing discrete FET input stages and linear power supplies in conjunction with highly efficient Class D output stages supplying the 'grunt'.

And by the time you're reading this, Audio Alchemy should also be shipping its bijou-sized phono preamp and network audio player. Like Simaudio's Moon 180MiND network player [*HFN* Aug '13], the £1295 DMP-1 Digital Music Player will provide headless music streaming (controlled by an app on a tablet or smartphone) for those who can't be doing with pushing music from a computer player into the DDP-1's USB input.

Indeed, the combination of DDP-1, PS-5 and DMP-1 sounds particularly intriguing since the latter includes an I<sup>2</sup>S digital output to marry with this DAC/preamp's I<sup>2</sup>S digital input, alongside familiar S/PDIF and AES/EBU interfaces. Audio Alchemy has always championed I<sup>2</sup>S interfacing, in which clock and serial data signals remain on separate lines to minimise jitter. Strictly speaking, I<sup>2</sup>S is a serial bus for communicating PCM audio data between circuits *inside* electronic devices, so while Audio Alchemy's I<sup>2</sup>S interface employs a multi-pin S-Video-style connector, PS Audio uses HDMI, others use RJ45 Ethernet connectors and cables...

While the aluminium casework of the DDP-1 has been nicely styled, it's not especially luxurious in terms of fit and finish. The component rests on perfunctory



**RIGHT:** Inside the compact DDP-1 multiple regulated supplies feed the analogue preamp, X MOS-based USB input and a pair of AK's premium, DSD-ready/32-bit AK4399 DACs





rubber feet stuck underneath the chassis, and the supplied infra-red handset is an inexpensive plastic affair. Nevertheless, there's a wealth of audio engineering under the lid designed to deliver extremely high quality music playback, and a micro-B USB socket at the rear has been included to make the unit easily upgradeable with firmware revisions.

#### SOFTWARE TO COME

On board is a Xilinx FPGA and two XMOS DSPs (one of which is programmed to implement the DAC's asynchronous USB input) together with a separate receiver chip for its S/PDIF (optical and coaxial) and AES/EBU inputs. Two 32-bit stereo DACs are employed, the DDP-1's second XMOS chip running proprietary filtering and resolution enhancement algorithms developed by Audio Alchemy.

The software for this – described by Peter Madnick as 'formatting the output data following the FPGA and PLL re-clocking to optimise the DACs' performance in the manner of the original Audio Alchemy DTI-PRO32' – wasn't loaded in our early review

sample [see Lab Report and PM's Opinion, p103] so we've yet to hear the unit at full throttle. Currently the DDP-1 handles PCM playback up to 192kHz/24-bit and DSD64, although the hardware is perfectly capable of providing higher-rate DSD playback should the market demand it.

System 'housekeeping' is handled separately by a Freescale processor buried behind the front panel, the designers endeavouring to prevent peripheral noise from the processor and liquid crystal display from polluting any audio signal paths. Meanwhile electronic volume control of the DDP-1's FET buffered gain stage is governed by a 'quad deck' ALPS motorised potentiometer (the DDP-1 is a balanced design), output signals

being switched via a button on the fascia, and the handset, to alternatively feed a chip-based buffer and high-power monolithic headphone amplifier.

Audio Alchemy plans to introduce a higher-end headphone amplifier designed for head-fi enthusiasts as a standalone component in its portfolio in the not too distant future.

*'I always felt encouraged simply to get on with enjoying the music'*

**ABOVE:** A small display indicates status and digital sample rate, with menu settings accessed by a rotary selector and buttons on the left. Volume, mute and headphone are on the right

Inside the PS-5 Power Station are two regulated supplies feeding 20V and 12V DC respectively to the DDP-1's balanced analogue and digital circuits, via a multi-pin DIN connector cable. The PS-5's curved front panel allows it to nestle elegantly on the right hand side of the DDP-1 on a shelf in an equipment rack, but it's a pity the DAC/preamp's PSU input socket is furthestmost on the left – the connecting cable thereby hindering accessibility to the sockets on the DDP-1's busy rear panel.

#### WARMTH AND ALLURE

I plumbed in Audio Alchemy's DDP-1/PS-5 combo directly to the balanced inputs of a T+A P3000 power amplifier [HFN Sept '14], which had the benefit of being bolstered by its additional PS3000 power supply unit. It didn't take long to appreciate that the Audio Alchemy DDP-1 exhibits a notably different sonic character from my resident T+A DAC 8 [HFN Oct '12].

Whereas the latter's clean and stark sound quality presents music in a sharply-etched manner (its comportment coincidentally ideally countering the tonal balance of my 'polite' and sweet-sounding Townshend Sir Galahad monitors) the DDP-1 has a warmer and more alluring personality, with an easy-going temperament that will surely prove heavenly to many listeners.

High frequencies in particular appeared free of edge and grain, combined with a bold and rounded midrange that seemed to reinforce the body and substance of almost every instrument and performer from every genre of music I played.

When listening to the supremely natural-sounding recording of jazz-rock combo Vantage Point's album *Resolution* [96kHz/24-bit, AIX Records 80040] I found myself thinking that where T+A's DAC 8 ➞

#### AUDIO'S ALCHEMISTS

In the late 1980s, as CD became the music industry's dominant delivery format, specialist hi-fi firms began to focus attention on improving performance from digital media. Once CD players sported digital outputs, the concept of standalone DACs was born. In the UK, Musical Fidelity launched its Digilog and A&R Cambridge (latterly Arcam) introduced its Black Box. And in the US the California-based LM Acoustics company began producing a wide range of affordable products branded Acoustic Alchemy, all aimed at audiophiles seeking audio nirvana from CDs. The Audio Alchemy 'Digital Decoding Engine' (DDE) was priced at just US \$399, other products from the marque including the 'Digital Transmission Interface' (\$299) went between a transport and processor and the 'Analog Decoding Engine' (\$199) 'conditioned' the analogue output from a DAC. Subsequent revisions to the DDE saw the introduction of Pacific Microsonics' HDCD digital filter. Audio Alchemy ceased trading at the end of the 1990s, but today's reborn company sees many of the brand's original design team reunited.



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## USB DAC/PREAMP



**ABOVE:** Two coaxial and two optical S/PDIF digital ins are joined by USB 2.0 and AES/EBU inputs, a micro USB in for firmware updates, analogue RCA and XLR inputs plus RCA and XLR outputs. Optional PS-5 PSU connects via a short umbilical cable

seems to illuminate instruments with bright spots of light, the DDP-1 bathes the sound image in a less intense and more even spread of luminosity. High frequencies appeared clean and open – certainly not shy or over-polite – yet the DDP-1's top end was never overbearing.

The sharp attack of drummer Simon Phillips' crashing cymbals was appropriately aggressive without ever sounding edgy or mechanical, their fizzing decay delightfully natural. And the lifelike dynamics of this 'live take' recording were impressively visceral, the depiction of the band's verve and energy keeping me on the edge of my seat as the DDP-1/PS-5 combo helped my system recreate a most convincing musical event.

### A DIVE INTO DSD

Especially appealing was the fact that its warm-hued tonal balance made it less accusatory and harshly critical of compressed pop and rock recordings with their spiky and jagged edges, so that raucous aural onslaughts such as 'Fancy' by Australian female rap artist Iggy Azalea, from her album *The New Classic* [Virgin 3740916], and the epic but system-challenging 'No Church In The West' from Jay-Z & Kanye West's *Watch The Throne* [Roc-A-Fella Records 0602527650579] could be blasted out at unsociable SPLs without causing undue fatigue. Bass was richly balanced and extended which, again, helped flesh-out the sound of less than stellar recordings to make them musically engaging.

Returning to rather more audiophile fare, I couldn't help but

dive into my music library in pursuit of some very special DSD files. These sound sublime, not because they're recordings captured natively in the direct stream digital format *per se*, but simply because they're beautiful recordings, full stop.

Jared Sacks' DSD recording of Holland's Ragazze Quartet performing Haydn's String Quartet Op.76, for his Channel Classics label [DFF file download; CCS SA 34613 on SACD], was rendered wonderfully by this Audio Alchemy combo, offering great insight into how the instrumental lines interrelated and making each string instrument easy to distinguish within the naturally reverberant acoustic space.

If Audio Alchemy's design team was seeking that elusive 'analogue feel' for the sound of its DAC/preamp then it's certainly hit the mark, for while it might not be the most vibrant or forensically revealing DAC I've ever heard, throughout my auditioning I always felt encouraged to get on with simply enjoying the music. That's a powerful recommendation, and I have every confidence the final suite of custom digital filters will build on this existing foundation. ☺

### HI-FI NEWS VERDICT

The DDP-1 is a little too expensive to be classed as 'budget esoterica', especially when combined with its PS-5 add-on PSU. Nevertheless this is a highly esoteric offering representing tremendous value for listeners seeking fine audio on a sensible budget. Hats off to the design team for managing the cost of parts so effectively, this Audio Alchemy combo successfully crafting numbers into music in bewitching fashion.

Sound Quality: 88%



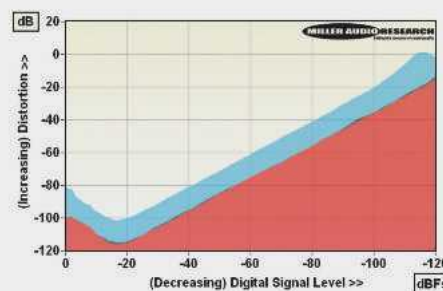
## LAB REPORT

### AUDIO ALCHEMY DDP-1/PS-5

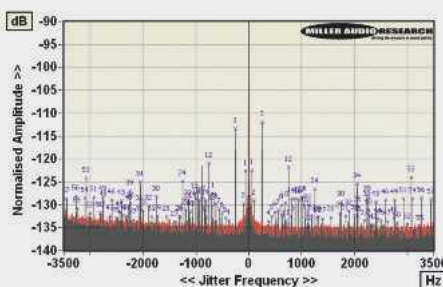
As this DAC includes a digitally-governed, 99-step volume control, it can also function as a unity-gain analogue preamp suited to high output line sources. Input overload and preamp output levels exceed 10V in this mode via its 100ohm source impedance (balanced XLR in and outs) while the A-wtd S/N ratio reaches 97.7dB (re. 0dBV) and the response is flat to within  $\pm 0.03$ dB from 1Hz-100kHz. Via its *digital* inputs, the DDP-1 offers a maximum 6.9V balanced output and 112.8dB A-wtd S/N ratio although the left channel was some 6dB lower than this in our sample (tested with the PS-5 outboard supply).

More importantly, the various digital filter/enhancement modes were not enabled and so the DDP-1 defaulted to its standard linear phase/fast roll-off digital filter. Once again however, and with 96kHz/192kHz sample rates in particular, the (ultrasonic) response of its left and right channels was at some variance. With 44.1/48kHz media the responses showed a mild +0.09dB bass shelf from 20-200Hz and a similarly mild depression through the presence band while, with 96/192kHz media the responses were flat to within  $\pm 0.2$ dB up to 45kHz and  $\pm 0.5$ dB to 90kHz, respectively, via the left channel but showed a -1dB/45kHz and -3.5dB/90kHz droop via the right.

Jitter was better suppressed via USB than via S/PDIF [see red vs. black spectra, Graph 2] but distortion was unchanged and very low at 0.001-0.009% (20Hz-20kHz re. 0dBFS), falling to a minimum of 0.00005% at -20dBFS [see Graph 1, below]. Readers are invited to view comprehensive QC Suite test reports for Audio Alchemy's DDP-1/PS-5 DAC/preamp by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



**ABOVE:** Distortion versus 48kHz/24-bit digital signal level over a 120dB range via S/PDIF (1kHz, red) and USB (1kHz, black; 20kHz, blue)



**ABOVE:** High resolution jitter spectra comparing USB (red) with S/PDIF (black, with markers)

### HI-FI NEWS SPECIFICATIONS

Maximum output level (Balanced)	6.91Vrms at 100ohm
A-wtd S/N ratio (S/PDIF / USB)	112.8dB / 112.0dB
Distortion (1kHz, 0dBFS/-30dBFS)	0.00098% / 0.00007%
Dist. & Noise (20kHz, 0dBFS/-30dBFS)	0.0086% / 0.00058%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0dB to -0.14/-0.18/+0.5dB
Digital jitter (S/PDIF / USB)	185psec / <10psec
Resolution @ -100dB	$\pm 0.1$ dB
Power consumption	15W (<1W standby)
Dimensions (WHD) / Weight	267x76x295mm / 3.6kg (DDP-1)



# Quad S-5

What may be the biggest bargain in floorstanders harks back to the roots of Quad – enter the ribbon hybrid S-5  
 Review: **Ken Kessler Lab: Keith Howard**

**W**ith Quad launching a new range of mid-priced electronics – the Artera models [*HFN* Nov '15] – it was no surprise that a new series of suitably-priced loudspeakers would emerge. The S-Series isn't the first box-type speaker from Quad, which issued its first small two-way, the L-10, nearly 20 years ago. But even that wasn't its first...

In the S-Series are five models starting at £500 per pair, including the S-1 and S-2 standmount models, the S-4 and S-5 floorstanders and the S-C centre speaker for home cinema systems. Reviewed here is the top-of-the-range S-5 (£1500 per pair), which delivers so much bang for the buck that I had to double-check the price. Even its Far Eastern origins cannot account for the remarkable value for money.

## RIBBON TWEETER RETURNS

The S-5 is a 3-way design just over one metre in height, but with far more than the minimum three drive units. Its front baffle contains a 125mm mid driver crossing over at 570Hz to two 165mm bass drivers, while the back contains a bass fanatic's dream: three 165mm ABRs. These augment the bass, but they also force the user to situate the speakers at least two feet from the walls. Too close, and the sound becomes muddled.

While this driver complement is an impressive arsenal for all activity below 3.2kHz, the most important element of the range is the 12x45mm ribbon tweeter that features in every model. Quad has turned the clock back to the late-1940s, when Peter Walker used, yes, a ribbon tweeter in his now legendary Acoustical Corner Ribbon [see box-out, facing page].

This (2016) is the company's 80th anniversary, so looking backward is a nice touch, but the tweeters in the Acoustical Corner Ribbon couldn't handle much power and would burn out too easily. The new ribbon developed for the S-Series is of sandwich construction and sits in a powerful magnetic field with the 'dual role of being both the voice coil and the

sound radiator'. The added power handling capability should avoid the fragility of its great granddaddy.

Modernity defines its construction, from the woven Kevlar used for the mid-bass units, to the bi-wiring facility and the selection of footwear – two beautifully-finished metal frames with fully adjustable spiked feet – that add to the shipping weight. Positioning is critical, but only because of the rear-firing ABRs in this and the S-4 (the two bookshelf models are ported) while Quad claims that 'these passive, rear-firing bass units support the main drivers to extend bass response down to 35Hz' [see Lab Report, p43].

In practice the S-5's vertical array, narrow front baffle and the ribbon behaviour create a curious sound image unless you don't mind hot seat listening: the soundstage is wide whatever crimes the installation may encompass, but severe toe-in in the manner of Sonus fabers, and certain Wilsons, benefit the sense of focus. These can image like a Rolleiflex camera if you balance the toe-in and the distance from the walls. If not, a certain vagueness intrudes, but it is never unpleasant.

Do not for a moment think of this as criticism. I will never apologise for 'hot seat' speakers, because every world-class system I've ever heard is selfish, optimised for its owner – in the singular: there is always a sweet spot, and then everything else. What defines a good speaker is one where even off-axis, those relegated to 'the cheap seats' still hear most of the music's three-dimensionality.

If the bang-for-the-buck only meant the performance, these would still be worth the money, but Quad has ensured that they look good too. There are no nasty corners as the top edges are rounded at the front and rear, if not quite to the Italian extreme. Our review samples came in black

**RIGHT:** Quad's new 'sandwich' ribbon tweeter is joined here by a woven kevlar-coned midrange and two 165mm bass units. The slim, tall cabinet is bolted onto a metal base with spiked outriggers to improve its stability



## QUAD'S ORIGINAL HYBRID

Designed in 1949 by Peter Walker, the Acoustical Corner Ribbon was built until 1955, with 600 made. That being the mono era, 600 happy customers enjoyed this early hybrid but lucky were the enthusiasts who acquired a second when stereo appeared. Bass and mid were handled by a 12in twin-cone Goodmans unit in a double reflex arrangement. The ribbon was a ½in-wide corrugated aluminium strip while shaped pole pieces were glued to the magnet and a short horn directed the radiation to roughly match that of the midrange (a 45° reflector behind the ribbon sent some energy up to the ceiling enlarging the apparent source). Recalls speaker designer David Smith, 'Peter once talked about the original corner speaker: "It had a big woofer for bass and a ribbon for highs. It gave a lot of boom and sssss, you know, it sounded hi-fi, but didn't sound very natural. Still, it gave the people what they wanted".' By 1954, Peter was captivated by electrostatics.

wood veneer but Quad also offers the S-5 in sapele (mahogany) wood veneer [as pictured here] with hand-lacquered piano white and piano black to follow.

While no sane person would use a £1500 pair of speakers in the system I have for reviewing, I wanted to give the S-5s their best shot – as I would any speaker, regardless of price. Set-up was straightforward, the metal frames at the bottom providing incredible security.



### UNCANNILY '3D'

Thus the S-5s were auditioned with the Audio Research REF 5SE preamp and REF 75 power amp [HFN Nov '12], with Crystal Cables throughout, and sources including the Musical Fidelity Nu-Vista CD player [HFN Dec '15] and my recently-acquired, well-used Marantz DV8300 SACD/DVD player, SME 30/12 turntable/arm, EAT E-Glo phono stage and Clearaudio

Goldfinger MC [HFN Jan '15]. Add it up, and it's something like 40 times the cost of the Quads. But, oh, did they love it!

If you're a reader of long-standing, you'll know that the (hi-fi) love of my life was Apogee – I succumbed to the lure of ribbons and have never forsaken my devotion. That's why, I suppose, the S-5 reminded me of the Apogee hybrids of the company's later years, and also of the MartinLogan Motion range hybrid box-type speakers (but they're Heils, not ribbons).

Aaah, you're thinking: all of these hybrids must have driver-type disparities.

Not so. Trust me – the designer of this system knew how to integrate a ribbon and dynamic drivers, and while KH's lab tests may have revealed a low-ish impedance, the S-5's high sensitivity meant the REF 75

had no problems driving them to seriously uncomfortable levels.

But head-banging is not my style, which is a good thing, as one of the very few criticisms that emerged was how the speakers have their own ideal (i.e. realistic) levels, but they do not like being hammered. The amp was not an issue, because I also used the D'Agostino Momentum Stereo [HFN Aug '12], which has so much power to spare that the S-5s could not possibly tax them.

All that ABR-acreage suggests copious amounts of bass, and, yes, the S-5 convincingly passed the Kodo test. Kodo's *Heartbeat: Drummers Of Japan* [Sheffield Lab CD-KODO] is percussion on steroids,

and the Quads performed so admirably that I could only marvel at the way level and scale were balanced. Best of all, the ribbons were able to convey the air and space that are signature qualities

'The S-5s are easy to listen to, to like and to savour over long sessions'

of this recording; and this was repeated with the exquisite SACD of Miles Davis's *Nefertiti* [Mobile Fidelity UDSACD2146].

This recording sounded uncannily '3D', even well off-axis, with a gorgeous bloom and a room-filling horizontal spread that – yes – recalled dipoles. I fired up my old Quad ESL-57s just to hear if it was my imagination, or wishful thinking, that attributed the silkiness, openness and laid-back demeanour to the S-5s, but it wasn't: these are easy to listen to, to like and to savour for long sessions.

As there is no smoother, silkier set than Lou Rawls *At Last* [Blue Note CDP 7 91937 2], there was always the possibility that they might be too 'nice'. Certainly, the punch and attack present on the Miles Davis SACD demonstrated the S-5's ability to reproduce transients with just ➔





# MOON

by SIMAUDIO

The Neo 230HAD is a headphone amplifier, a DAC and a line-stage preamplifier all housed in one very stylish package. The possibilities are endless as it can be used with virtually any digital source, offering the same fidelity as your main music system. The 230HAD fills an immense void in the current headphone marketplace, with an exceptional price to performance ratio.

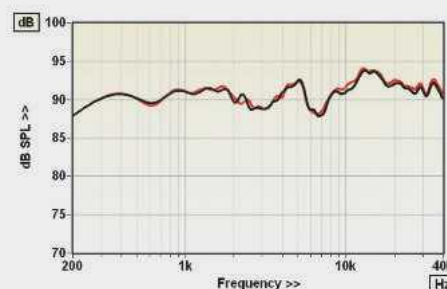




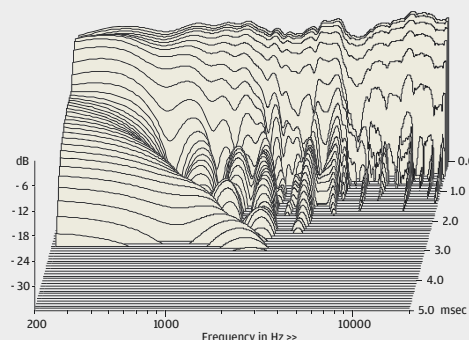
## QUAD S-5

Quad claims 90dB sensitivity for the S-5 which, unusually, is something of an *underestimate* according to our tests, which recorded a pair average of 90.9dB on pink noise. So the tradition of conservative specification seems still to be in place at Quad. That said, 4ohm rather than the specified 6ohm would be a more appropriate nominal impedance for a speaker said to have a minimum modulus of 3.2ohm; we actually measured a minimum of 3.0ohm at 151Hz. Impedance phase angles are sufficiently high that, in concert with the low modulus, they cause the EPDR (equivalent peak dissipation resistance) to fall to a minimum of 1.4ohm at 111Hz, making the S-5 a more than typically testing load for this size and class of floorstander.

The forward frequency response [Graph 1, below], measured on the axis of the ribbon tweeter, is essentially flat in trend aside from a shelving up of the top audible octave above 10kHz. Response errors are well controlled at  $\pm 3.0$ dB for both speakers and pair matching is a good at  $\pm 1.1$ dB (all 200Hz-20kHz). Near-field measurement of the S-5's bass response requires combining the outputs of three front-firing drivers and the three rear-firing ABRs, which introduces some uncertainty to the result, but bass output falling to 60Hz, as we recorded (-6dB re. 200Hz), is really quite typical for a floorstander of this size and sensitivity. Ultrasonic output, as you'd expect with a ribbon tweeter, is extended to above 40kHz. The cumulative spectral decay waterfall [Graph 2, below] differed slightly for each of the review pair but both displayed a series of resonances above 1kHz due to breakup modes in the Kevlar midrange driver cone. KH



ABOVE: The S-5's forward response is generally flat in trend but shows a slightly 'hot' upper treble



ABOVE: Cabinet resonances are damped well enough leaving a series of mid-driver modes between 1-7kHz

## HI-FI NEWS SPECIFICATIONS

<b>Sensitivity</b> (SPL/1m/2.83Vrms – Mean/IEC/Music)	91.9dB/90.9dB/90.6dB
<b>Impedance modulus min/max</b> (20Hz–20kHz)	3.0ohm @ 151Hz 14.2ohm @ 38Hz
<b>Impedance phase min/max</b> (20Hz–20kHz)	-54° @ 79Hz 35° @ 25Hz
<b>Pair matching</b> (200Hz–20kHz)	$\pm 1.1$ dB
<b>LF/HF extension</b> (-6dB ref 200Hz/10kHz)	60Hz / >40kHz/>40kHz
<b>THD 100Hz/1kHz/10kHz</b> (for 90dB SPL/1m)	0.7% / 0.3% / <0.1%
<b>Dimensions</b> (HWD)	1070x205x330mm

**LEFT:** The S-5 employs three rear-facing ABRs (Auxiliary Bass Radiators) in place of a port. Below, Quad has fitted bi-wire speaker cable terminals

Riskier still, in an all-valve system including a phono stage, was using super-sweet sounding vinyl. Madeline Bell's version of 'The Look Of Love' on *Blessed With Love* [STS Records 6111144] is less husky than Dusty Springfield's version – her vocals more like Ms Reeves's – but the production of the STS recording is purely audiophilic and therefore recorded with 'naturalness' as its primary criterion.

### TRUE COHERENCE

Considering the unbelievably reasonable cost of the S-5, applied to the complexity of harnessing a three-way system with three ABRs, topped by a ribbon, the results were mystifying – in a good way.

The sound of Bell's voice and backing were so truly coherent and free of discontinuities, from the deepest bass to the treble's extremities, that it made a mockery of those who rend their garments about mixed driver systems and swear that only full-range speakers can ever be so consistent.

Reality check: this speaker comes from the company that made the most highly-regarded, full-range speaker in the history of hi-fi. OK, Peter Walker (may he rest in peace) had nothing to do with the S-5, but I'd like to think his spirit hovered over the designer, Peter Comeau, IAG's Director of Acoustic Design, while it was on his drawing board. Damn, is this a wonderful surprise. ☺

## HI-FI NEWS VERDICT

What can I say? The S-5 delivers so much speaker for £1500 that – were we living in different times – they would have caused a revolution. But we live in the MP3 era, so these are bargains of which too few will know. And what everyone will be missing is an astounding performer with scale, attack and fatigue-free performance that recalls not only a be-ribboned forebear: there's a touch of the ESL magic, too.

Sound Quality: 87%

0 - - - - - 100

the right, crisp edges and smooth decay: the trumpet had all of the metallic punch, as well as Miles-ian nuances related to his breathing and mouthpiece control. Would the super-cool Rawls be too seductive?

Can anything be *too* seductive? The mix of vibes, keyboards, rich bass and – above it all – those duets with Dianne Reeves, provided the evidence that the S-5 respects textures and does not shave off anything. No rolled-off highs, no removal of necessary aggression. And trust me: when Reeves joins in during 'Fine Brown Frame' you hear the sort of vocal power that can embarrass a weak system. The ribbons loved every phrase.

# Audio Research GSi75

If 'all-in-ones' leave you cold, imagine a high-end contender without compromise, an upsampling USB DAC, a phono stage and KT150 valves – the Audio Research GSi75  
 Review: **Ken Kessler** Lab: **Paul Miller**

**W**hen I first saw prototypes of the G Series, at the parent company's design studios in Italy in early 2014, I was told that the styling cues were inspired by, and paid homage to, the very earliest Audio Research models. The looks, it turns out, would be as far as that backward glance would extend (pun intended) because the G Series represented a *new* family of products [see *HFN* Jan '15], below the Reference models but overlapping with and extending above the existing catalogue of non-Reference models.

As retro as the styling may be, the G Series is the company's bridge to the future. With the GSi75, the third model to arrive in the new line-up, Audio Research has embraced the 21st century audiophile's needs even more so than with the G Series separates.

## ALL-IN-ONE FOR GROWN-UPS

Yes, it ticks all the boxes that represent the demands of traditionalists, in that it is all-valve, has balance and mono facilities, user-adjustable valve bias and even features a phono stage with two levels of gain. Its circuitry enjoys trickle-down benefits from the Reference range. But £14,500 also purchases an integrated DSD-compatible USB DAC, a valve headphone output with ¼in socket and an all-metal remote control to command an extensive menu of user-defined settings.

This is an 'all-in-one' for grown-ups, who want more than some small, compromised box with built-in speakers, but who wouldn't want to house pre/power separates. Despite ARC fitting it all into one chassis, the GSi75 is rather large at 483x263x518mm (whd) and weighs a wholesome 25kg. That said, it is still an integrated amp if we're not being precious about it, and speakers and sources are all you need to add to create a full system.

There is one attitudinal change in the unit that is atypical of ARC, despite the comprehensive standalone DACs in its catalogue: the GSi75 begs for a computer to be included with the turntable, CD player or transport or FM tuner you may feed it. ARC is serious about the brave new world so the carton contains a CD for installing drivers on Windows machines (Macs, one the other hand, recognise it as soon as you connect the USB).

It was so uncharacteristic of high-end audio that I had to remind myself I wasn't playing with something from a huge Japanese multinational. I was listening to downloads on a MacBook Air within *seven seconds* of making the connections, and I have never heard anything sound so good via iTunes. All I had to do was match the

inputs' levels to ensure that I was A/B-ing it with all sources at the same volume.

Don't let that example of easy set-up dissuade you from taking a deep breath and approaching this with care. Here's one product that implores you to pour a glass of Guado Al Tasso and study the owner's manual. But before doing this, I slotted it in between the SME 30/12 with Series V12 arm and Clearaudio Goldfinger [*HFN* Jan '15], Marantz DV8200 SACD/DVD player (a £110 find at the recent John Howes Audio Jumble), the Musical Fidelity Nu-Vista CD player [*HFN* Dec '15] and Wilson Alexias [*HFN* Mar '13]. And there was much to learn to optimise everything.

While the front panel's source and volume rotaries and the five buttons command nearly everything, the remote



**RIGHT:** This top shot clearly shows the matched pairs of KT150 pentodes and 6H30P double-triode driver tubes while the phono and USB DAC stages are housed within the casework



adds from-the-listening-position switching for MM/MC phono stage gain and other elements that actually tailor the sound. The unit automatically upsamples digital inputs to 352.8/384kHz straight out of the box, but the user can also experiment with 'Fast' and 'Slow' digital filter types.

### GREAT DIGITAL PROCESSOR

The GSi75's digital inputs include USB, coaxial and optical, while the phono input is joined by three line-level inputs, one of which can be set in processor or 'unity gain' mode. This total of seven inputs should satisfy the majority of users – if you did need to expand, a second preamp or an external DAC would be easy to accommodate.

While I did try other DACs, and used both the line and digital outputs on the Marantz and Musical Fidelity players, the digital processing in the GSi75 delivered

*'The harmonies kicked in and the sound filled out like a soufflé rising'*

sound so solid, so coherent, so smooth and so rich that I felt no need to contradict the unit's *raison d'être* as a one-stop (amplification) purchase. During my time with it, I fed digital sources via each of the three inputs and found myself favouring coaxial for the CD transports; but playing around with USB and assorted high-res downloads proved more rewarding than I had anticipated.

But, aah! the phono stage! I set it at 100ohm and the higher of the two gain options and it sounded fantastic with the Goldfinger. Its gain is switchable between 45dB or 62dB for use with MM or MC cartridges, while input impedance is selectable at 47kohm and 1kohm, 500, 200 or 100ohm. Because this can be done via remote or through the front panel, I was able to A/B the settings from the hot seat.

As for omissions in the GSi75, one could argue that Wi-Fi or Bluetooth might suit

**ABOVE:** This unit features the company's new styling, essentially an update of the original ARC products' look from the 1970s. Two rotaries and five buttons control everything on offer

some, but the computer-via-USB capability should deal with all streaming concerns. What was curious for ARC was the lack of a single balanced-via-XLR input.

### PEELING AWAY THE LAYERS

After my recent experience of the KT150 valve, thanks to the Reference 150 SE [HFN Dec '15], I knew that the GSi75 would deliver the sort of sound I adore. Even fresh from the distributor, with a mere eight hours on it, the GSi75 exhibited composure and finesse, allied to more grunt, than I expected. Remember: the REF 150 SE has twice the valve complement. This amplifier only has two per channel, driven by 6H30s, so I could hardly have expected it to approach the sheer force of a separate stereo power amplifier with twice the output tubes [see Lab Report, p47].

'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)] allayed any fears that the GSi75 would find the Wilsons a challenge.

Opening with some conga-type percussion, whucka-whucka guitar, strings and gorgeous harmonies, the first track possesses a sound that swells and fades. It is nascent disco, before the production swamped the music. The GSi75 preserved the lushness, the sweep, while all of it was punctuated by that crisp guitar work. Better still, the lead vocalist sounded breathy and sincere, while the backing vocalists meshed with such fluidity that it became rather overwhelming. ➔

### WATT'S GOING ON?

At the risk of infuriating those who are slaves to numbers, my experience with the GSi75 demonstrates to me that valve capabilities continue to contradict their factory specification. And you should know that, as much as I worship my Audio Research REF 75, it struggles to behave convincingly with my resident Wilson Alexia loudspeakers, despite its complement of two KT120s per channel. On the other hand, the GSi75, fitted with just two KT150s per side and also rated, like the REF 75, at 75W per channel, drives the Alexias with ease.

According to the published data from Tung-Sol, which manufactures the valves, the specifications for the KT120 and the KT150 are nearly identical. Regardless of this, the GSi75 with KT150s emphatically slaughtered the KT120s in the REF 75, never running out of breath and extracting from the Wilsons playback levels far in excess of what I find normal. Can I explain this disparity? No. Will I be fitting KT150s to my treasured REF 75? Absolutely.



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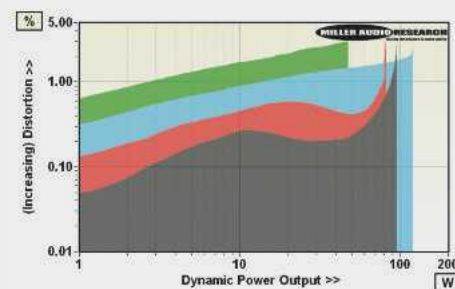
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## LAB REPORT

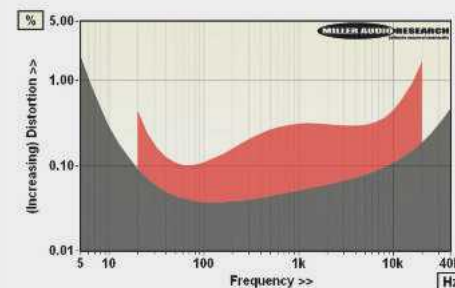
### AUDIO RESEARCH GSi75

With half the KT150 tube complement of ARC's range-topping GSi150 power amp [*HFN* Jan '15], this fully integrated GSi75 model offers almost exactly half the output power – 2x80W into 8 and 4ohm (via 8 and 4ohm taps) at between 1-2% THD. There's some small headroom to stretch the GSi75's envelope under dynamic conditions, amounting to 95W, 85W and 118W into 8, 4 and 2ohm loads before dropping back to 48W/1ohm, and distortion increasing almost linearly with output into these lower impedances [see Graph 1, below]. Into 8ohm, distortion increases from 0.05%/1W to a flat-ish ~0.2% (maintained from 7-20W) after which it increases again to 0.25%/30W, 0.35%/40W, 0.45%/50W and 0.65%/60W. Versus frequency the GSi75 holds to a respectable 0.4%/20Hz up to 10W – a reflection of those massy output transformers – while limited compensation means THD increases again above 10kHz to 1.7% at 20kHz. The fact that it's as low as 0.45% at 10kHz is more important from a subjective standpoint [see Graph 2, below].

The moderate 2.10–3.05ohm output impedance coupled with the GSi75's inherent treble roll-off (–1.1dB/20kHz into 8ohm and –1.2dB/20kHz into 4ohm) suggests overall tonal balance will depend as much on the amp/cable/speaker combination as the 'colour' of any harmonic distortions. Noise, too, will play a role, as our sample of the GSi75 betrayed rather more PSU-related harmonics than the GSi150, its A-wtd S/N ratio below average at 77dB (re. 0dBW). (No USB DAC tests are published here as the tube stage dominates its overall performance.) Readers may view an in-depth QC Suite report for Audio Research's GSi75 amplifier by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



ABOVE: Dynamic power versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (cyan) and 1ohm (green) speaker loads. Maximum current is 7.7A



ABOVE: Distortion versus frequency at 1W/8ohm (5Hz-40kHz, black) and 10W/8ohm (20Hz-20kHz, red)

### HI-FI NEWS SPECIFICATIONS

Power output (<2% THD, 8/4ohm)	82W / 78W
Dynamic power (<2% THD, 8/4/2/1ohm)	95W / 85W / 118W / 48W
Output impedance (20Hz–20kHz)	2.10–3.05ohm
Freq. response (20Hz–20kHz/100kHz)	–0.04dB to –1.10dB/–10.7dB
Input sensitivity (for 0dBW/75W)	66mV / 590mV
A-wtd S/N ratio (re. 0dBW/75W)	76.8dB / 95.6dB
Distortion (20Hz–20kHz re. 10W/8ohm)	0.11–1.67%
Power consumption (Idle/Max. o/p)	233W / 430W
Dimensions (WHD) / Weight	483x263x518mm / 25kg



ABOVE: MM/MC phono and three line ins (on RCAs) are joined by optical, coaxial and DSD-ready USB digital inputs. The 4mm speaker connections have 8 and 4ohm taps

I worked my way through college in Orono, Maine, selling hi-fi systems to that track 43 years ago. I heard it at least 100 times in six months. The GSi75 peeled away a layer to let me hear tiny details I had somehow missed. Staying with music of that vintage and genre, I slipped in the Detroit Emeralds' 'Feel The Need' [*Greatest Hits*, Westbound CDSEWD 119 (CD); and *Feel The Need*, Atlantic K50372 (LP)].

The brass added to the instrument line-up of the Hues Corporation, underscoring the strings and backed with energetic guitar, filling the room from the outset. And yet – bang! – the harmonies kicked in and the sound filled out even more, like a soufflé rising. Suddenly, I was 22 and the allure of hi-fi once again matched that of opening a fine wine. True, the intoxicants differed then, but high or not, this track moved me.

### TURNING BACK THE CLOCK

Now I was hearing it in a way I could not have imagined back then, via an optical disc alongside the vinyl. The latter bettered the digital in every way imaginable, but the former no longer sucked. But the GSi75 made it clear that each format had its strengths and weaknesses.

A decade earlier, and we're listening in on the Reprise studios playing host to Dean Martin's son and his two buddies. Dino, Desi & Billy's *Our Time Coming* [Reprise RS-6194], though a bunch of kids backed by studio pros, delivered four albums that have, say, the same charm – or lack of – when watching *Bugsy Malone* after the original, Paul Muni, version of *Scarface*. I don't care how brilliant Jodie Foster is now: nothing is worse in the field of acting than brats playing adults.

Not that Dino, Desi and Billy were brats. It's just that their voices

hadn't broken. Despite this, it sounds like the greatest-ever teen band thanks to the Wrecking Crew. With the ARC in the midst of it all, the assembled might of James Burton, Don Randi, Hal Blaine, *et al*, benefited from transient attack, bass extension, an open soundstage, a sense of air – thus positioning them in the room with undeniable veracity. The half-century in between had disappeared.

Turning to SACD, and the delights of vintage mono, I listened to 'Mood Indigo' from Duke Ellington's 1950 milestone, *Masterpieces By Ellington* [Analogue Productions CAPI 4418-SA]. From the opening tinkling of the pianos, above gentle bass, I enjoyed the same sensation as slipping into a warm bath. Which is pretty good, considering that I prefer showers.

A minute or so in, and the clarinet of Jimmy Hamilton sounded more lifelike than any recording of this age really ought to do. Johnny Hodges' alto sax was again so fresh, so vivid, so real that I now understood the irony of Chad Kassem calling his SACD label 'Analogue Productions'. I simply couldn't fault one second with the GSi75. ☺

### HI-FI NEWS VERDICT

For this addict to the KT150, it was a joy hearing it in another context entirely. My expectations were low because I – stupidly – assumed that all-in-ones must suffer sonic compromises. The GSi75 undermines that thinking better than any product I know because, unlike other features-first all-in-ones, the sound is sensational. If I wasn't an 'old school' snob enamoured of separates, I'd ditch the lot for this.

Sound Quality: 88%



# Hegel HD30

This is the first time a product from the Norwegian Hegel brand has appeared in these pages: it makes its début with a DAC that proves the importance of silence...

Review: **Andrew Everard** Lab: **Paul Miller**

**T**he boom in the availability of high-end digital-to-analogue converters has raised an interesting possibility for the system-builder using solely digital sources: given that so many of these products have a variable-level analogue output, it's possible to connect them straight into a power amp or even a pair of active speakers, bypassing the need for a conventional line-level preamplifier. The £3200 Hegel HD30, the flagship DAC from this Norwegian company, is one such 'digital control centre'.

The HD30 offers not just an array of conventional digital inputs, including asynchronous, DSD-compatible USB, but also the ability to function as a DLNA/UPnP network client supporting the likes of Apple AirPlay. Yes, the network capability is somewhat limited – this is a client to which music needs to be 'pushed' using a third-party app – but it's still a function well worth having, and makes the Hegel an interesting alternative to more conventional network music players.

## SO WHO IS HEGEL?

So, before we get ahead of ourselves, who exactly is Hegel? While the company may not be familiar to many readers, its roots go back the late 1980s, and a thesis on amplifier transistor design by student Bent Holter, then studying at the Technical University of Trondheim. Based on his research into harmonic distortion in amplifiers, he developed what is now called 'SoundEngine' technology, initially for use in amps for his band, The Hegel Band, with help from telecoms company Telenor.

As well as amplifiers, Hegel added DACs and CD players, with the first converter in 1994 followed by a player in 1996. Over the subsequent couple of decades the company has refined and developed its range, and now has distribution in 32

countries. It handles its UK distribution from its Oslo HQ, and has a small number of dealers here, with a range now encompassing both integrated and pre/power amplification, CD players and DACs, and a headphone amplifier.

As is often the way with products from Scandinavian or Nordic companies, its products are distinguished by solid but simple design and construction, giving clean lines and fuss-free operation along with a 'hewn from solid' feel, as is the case with the HD30 here.

There's not much on show beside a large, clear blue-on-black display (of input source and sampling rate/output level) and two controls, for source and volume, but the whole thing exudes a feeling of cool quality – as you might hope for this kind of money. And yes, that front panel is milled from a solid piece of aluminium.

The HD30 uses a pair of 32-bit DACs in a dual-mono implementation for optimal stereo separation, and a system it calls 'SynchroDAC' in place of the more common 44.1kHz to 176.4kHz and 48kHz to 192kHz upsampling processes

employed elsewhere [see PM's boxout].

The combination of SynchroDAC and the balanced topology reduces odd-order distortions and improves the achievable dynamic range but the final frequency response is limited to about 50kHz. Similarly, the crystal clock is located hard up against the DAC section of the PCB to minimise jitter, while the analogue output stage draws on Hegel's SoundEngine technology, employing 'adaptive feed-forward' compensation, rather than global feedback, to manage distortion.

## CHRISTMASSY HANDBOOK

The analogue output is available on both RCA phono and balanced XLRs, with the level controlled by the right hand knob on the fascia and via the remote control handset supplied, which is another cool metal device. Setting the level to its fixed maximum, at which point the display will show '101', gives a suitable output for use directly into a conventional integrated amplifier or preamplifier.

The main digital inputs, selected by the left knob or the remote handset, are pretty

**RIGHT:** The HD30 features separate linear PSUs for its balanced analogue output and digital circuits, the latter also benefiting from discrete clocks and Asahi Kasei Electronics Corporation's premium 32-bit audio chipset







conventional, encompassing S/PDIF coaxial (on RCA phono and BNC), three optical and an AES/EBU input, but the HD30 also has both a Type-B USB input for connection to a computer, and an Ethernet port. The USB has a dip-switch beside it to select either A or B: the former gives 'plug and play' operation with computers, but is limited to files of up to 96kHz/24-bit, while the latter extends compatibility to 192kHz/24-bit and DSD64/128 (using DSD over PCM frames), but requires the use of downloadable drivers for Windows, and (for DSD) Mac OSX.

Strangely, the purpose of the A/B switch isn't explained anywhere in the manual (which comes complete with a Nordic forest scene on the cover, making it look more like a Christmas card than an instruction book) – I had to turn to the 'read me' notes supplied with the driver download for my Mac computers.

However, as Anders Ertzeid, Hegel's VP Sales & Marketing, acknowledged during our research for this review, 'the sound [in A and B modes] is exactly the same'. Hegel says the HD30 is best used with Audirvana as a computer music player, and

the software and DAC worked together as smoothly as any such combination I have tried. However, the unusual streaming solution will take a bit more familiarisation for anyone more used to all-in-one network player devices.

The usual UPnP control points, including PlugPlayer and the Kinsky open-source software distributed by Linn, work well

with a NAS full of music and the Hegel, though they do require learning the concept of adding tracks or albums to a playlist before they can be output through the HD30. It's not quite as intuitive as a player able

to 'pull' music from the server for itself, but you soon get used to the 'push' method.



### OUT OF THE SILENCE...

The most immediately apparent aspect of the sound of the Hegel is what isn't there, as this must be one of the quietest hi-fi components I have ever auditioned. No, I'm not talking about level here – with a healthy 2.5V fixed output there's no shortage of that – but rather the complete absence of noise, throwing the music being played into a sharp relief as soon

*'It's characterful  
in all the right  
ways, sounding  
subtly nuanced'*

**ABOVE:** Front panel has no more than controls for input selection and output level while the central display shows input selected to the left and sampling rate/output level to the right

as you start playing anything. It's actually rather startling at first, leading to some suspicion that everything's going to sound rather hyper-realistic – or perhaps just hyped-up – but after only a short period of acquaintance with the HD30 it soon becomes clear that this is not only going to be a thrilling ride, but also a highly enjoyable musical experience.

Quite simply, the Hegel is almost the exemplar of 'I was hearing things on recordings I never knew were there'. However, this is not purely a show of hi-fi ability to the point of distraction from the music, but rather all about startling the listener with its dynamics, its power, and the depth, focus and detailing of the sonic picture it creates.

It's characterful in all the right ways, not imposing anything of itself on the music but rather bringing out the subtlest nuances of the sound of voices or instruments, and giving excellent insight into technique and performance, all the while developing an unfettered sound that might even have one thinking a hefty power amplifier had been transplanted into the system. And we're not just talking about the very latest super-whizzo audiophile recordings here.

With the eponymous first album from Dire Straits, here in DSD64 [Vertigo UIGY-9634], I was immediately taken aback by the sheer impact of the instruments on the slow-burning 'Six Blade Knife', from the sharp, crisp guitar stabs to the fine detail of the patter of the percussion, and the laconic character of Mark Knopfler's voice.

In the same way, the Hegel dug deep into the layers of David Gilmour's *Rattle That Lock* set [96kHz/24-bit download, Columbia 88875123262]. OK, so that does make it sound even more Floyd-like for good or bad, but there's no shortage of punch yet at the same time allowing the

## ORGANIC SOUND

Hegel's design philosophy is embodied in what it loosely describes as 'Organic Sound' where 'all parts of a dynamic recording are reproduced exactly like the original'. With no more specific detail provided on its website, Hegel leaves me wondering if this ethos was partially inspired by its choice of audio chip supplier Asahi Kasei and the 'Velvet Sound' promoted in its literature [see [www.akm.com/akm/en/product/featured/velvetsound](http://www.akm.com/akm/en/product/featured/velvetsound)]. The sophisticated 32-bit architecture of this premium chip range is clearly aimed at high-end hi-fi brands requiring support for 768kHz LPCM and 11.2MHz DSD, offering 'a balance between information and intensity... focusing on the original sound to achieve rich musicality and high performance'. Hegel has adopted a pair of these Velvet Sound AK4490 DACs with a matching AK4137 sample-rate converter for its HD30, although in practice, and evidenced by Hegel's response specification of '50kHz', all inputs are resampled to a frequency close to 96kHz. We've seen DACs from MBL and Métropole that downsample to precisely 96kHz, but Hegel's HD30 brings its own, unique, twist [see Opinion, p103 and Lab Report, p51]. PM

“I don't know these  
guys from Germany  
but the sound was  
fantastic...”

*Michael Fremer Stereophile,  
T.H.E. Show Newport 2013*



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## OUTBOARD USB DAC



**ABOVE:** Three optical and two coaxial (BNC and RCA) S/PDIF ins are joined by AES/EBU and USB with an Ethernet port supporting Apple AirPlay and UPnP streaming. Variable (and fixed at volume '101') outputs are available on RCAs and balanced XLRs

listener a fine impression of how well it's been pieced together.

One of the very good things about the Hegel is that it seems almost completely input-agnostic, such that one can't say it's best with USB or network or whatever, and switching back down to tried and tested CD quality revealed it's also able to do a very fine job when playing the formats likely to make up the majority of potential buyers' music collections.

With the recent Duran Duran outing *Paper Gods* [Warner Bros 9362-49264-2] the Hegel gets its teeth into the driving bass-line of 'Pressure Off', while giving full rein to the guest guitar of co-producer Nile Rodgers and the vocals of Janelle Monáe, making this not only a return to form but a complete Duran Duran classic: big, multi-layered and so classy.

### CAPTIVATED BY LIVE MUSIC

I even gave it a workout with some vintage overproduction, in the form of 'America' from *The Nice's Autumn '67 – Spring '68* [DSD64, Virgin UICY-9696], and while the age of the recording and its relative simplicity is inescapable, the Hegel brings out all the scale of the music and the beginnings of Keith Emerson's career in keyboard abuse to exciting effect, as the notes can be heard clicking and banging away high in the mix.

With Béla Fleck and Chick Corea's *Two live set* [Concord Jazz CJA-37992-02], the Hegel does a beautiful job of keeping the unusual combination of banjo and piano crystal-clear while evoking an almost uncanny sense of the

presence of the audience, and not just in the end-of-number applause! With the 2014 *Martha Argerich And Friends Live From Lugano* box [44.1kHz/24-bit, Warner Classics 0825646134601], the sheer detail of instruments and performance ensures a thrilling sound and total involvement too.

Oh, and it definitely handles DSD audio in an utterly compelling way. The 1-bit sampler compilation *8 Ensembles* [DSD64, JL002] – a typically detailed recording by Channel Classics/NativeDSD-founder Jared Sacks – takes in everything from vocal ensembles to violin and piano. Via the HD30, it's hard not to be awestruck by the sheer realism of the textures on offer, especially in the pizzicato attack of the Ravel sonata for violin and cello, where I swear you can almost hear the vibration of every string!

And then you switch to the DSD128 version of the same album – its bandwidth fitting within the HD30's 50kHz 'window' – and everything snaps into even sharper focus, and we're discovering even more from the recordings. It's totally addictive stuff. ☺

### HI-FI NEWS VERDICT

Regardless, or perhaps *because* of its downsampling of very high rate media, Hegel's HD30 begs to be auditioned by all serious digiphiles. By tweaking the sample rate of the DAC chips and using the low-noise technology developed for its amps, the Norwegian designers have come up with a product delivering a sound with remarkable presence, impact, subtlety and detail. It's a wholly captivating listen.

Sound Quality: 88%



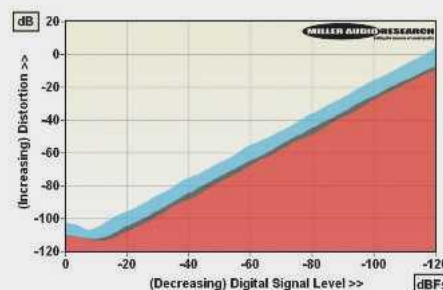
## LAB REPORT

### HEGEL HD30

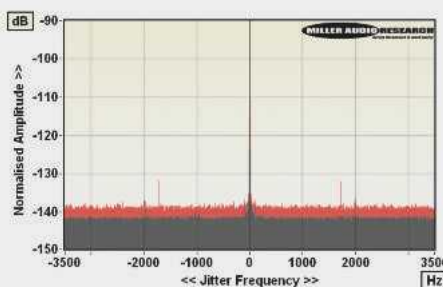
In practice, Hegel asynchronously resamples *all* S/PDIF and USB inputs to realise an analogue frequency response that's  $-0.06\text{dB}/20\text{kHz}$  (44.1/48kHz inputs) and  $-0.31\text{dB}/45\text{kHz}$  (or  $-3\text{dB}/47\text{kHz}$  with any incoming rate above 96kHz, including DSD128). Within this bandwidth, both USB and S/PDIF inputs yield the same excellent performance, with 110.2dB/110.7dB A-wtd S/N ratios, respectively, from a maximum 2545mV output and 22ohm source impedance (balanced XLR outs). Stereo separation stretches out to 130dB through the midrange while its L/R channel balance is good to  $\pm 0.04\text{dB}$  over the top 80 steps of its digitally-governed volume.

Distortion is also very low indeed, and as much a function of the analogue output/filter stage as the pair of AK4490 DACs. THD drops as low as 0.0002% from 20Hz–20kHz at  $-10\text{dBfs}$  [see Graph 1, below] with a peak level maximum of just 0.00055% at 20kHz regardless of 48kHz, 96kHz or 192kHz input sample rate (many DACs show a change in high frequency distortion behaviour depending on the native sample rate – the HD30 does not). Low-level resolution is good to  $\pm 0.1\text{dB}$  over a full 100dB dynamic range and stopband rejection, from Hegel's choice of AK's 'Traditional' sharp roll-off filter, is  $>124\text{dB}$ .

Most impressive of all are the 'clean' jitter spectra from both S/PDIF and USB inputs [see Graph 2, below], the mere 5–15psec achieved through a combination of Hegel's discrete low phase noise clocks and the proprietary jitter reduction technology at the core of Asahi Kasei's AK4137/4490 chipset. Readers may download full QC Suite reports that detail the Hegel HD30's S/PDIF and USB performance by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



**ABOVE:** Distortion vs. 24-bit/48kHz digital signal level over a 120dB dynamic range (red = 1kHz, S/PDIF; black = 1kHz, USB; blue = 20kHz, USB)



**ABOVE:** High resolution jitter plots with 24-bit/48kHz data comparing S/PDIF (black) with USB (red)

### HI-FI NEWS SPECIFICATIONS

Max. output level /Imp. (Balanced)	2.54Vrms / 22ohm
A-wtd S/N ratio (S/PDIF / USB)	110.7dB / 110.2dB
Distortion (1kHz, 0dBfs/-30dBfs)	0.00035% / 0.00016%
Dist. & Noise (20kHz, 0dBfs/-30dBfs)	0.00054% / 0.00053%
Freq. resp. (20Hz-20kHz/45kHz)	+0.0 to $-0.06\text{dB}$ / $-0.31\text{dB}$
Digital jitter (48kHz/96kHz / USB)	5psec / 7psec / 15psec
Resolution @ $-100\text{dB}$ (S/PDIF / USB)	$\pm 0.1\text{dB}$ / $\pm 0.2\text{dB}$
Power consumption	19W (1W standby)
Dimensions (WHD) / Weight	430x100x310mm / 6.5kg



# Jeff Rowland Model 625 S2

Now including trickled-down design features seen in its eye-wateringly expensive flagships, Jeff Rowland's 625 power amplifier has undergone a Series 2 makeover  
 Review: **John Bamford** Lab: **Paul Miller**

**V**eteran designer Jeff Rowland, who worked at Ampex as a young man before founding his own high-end audio electronics brand, has never been frightened of challenging conventional wisdom in amplifier design and the 625 power amplifier – now in Series 2 guise – is his latest example.

This powerhouse Class A/B design is rated at a substantial 325W/8ohm, its ample muscularity combined with Bentley-style opulence and a surprisingly compact footprint. The dense construction of the 625 S2 is partly explained by JR's use of a switched-mode power supply (SMPS), something which might raise eyebrows with many audiophiles, especially when featured in a high-end two-channel power amp priced at £13,500.

## BUILT TO LAST

Indeed, he first embraced switched-mode supplies back in the late-'90s [see boxout, facing page] and has always maintained it's never a case of *what* technology is used, but *how* you use it.

His company's distinctive amplifiers, which have been coveted by audiophiles the world over for more than three decades, are built with the intention of lasting a lifetime, and new models tend to come along only once in a blue moon – this 'Series 2' replacement for the longstanding 625 model being no exception.

As with all amplifiers from the Colorado-based boutique brand, the chassis is a work of art, sporting Jeff Rowland's optically wavy front panel which is precision-machined using a diamond-tipped cutter.

New owners are warned to be careful how they clean the fascia for the first few months, the instruction manual pointing out that its automotive-grade polyurethane coating, which gives it a uniquely glossy finish, takes six months to fully cure. The chassis' main body is hewn from a block

of aircraft-grade 6061-T6 aluminium claimed to provide 'exceptional thermal heat transfer and dissipation, RFI/EMI shielding, and resonance control' – there are no bolted-on heatsinks here – and this accounts for much of the 625 S2's 25kg mass since there's no hefty toroidal transformer inside.

The amplifier sits on removable balls and studs made of Delrin which are screwed directly into the underside of the chassis and designed to offer effective isolation of high frequency mechanical noise.

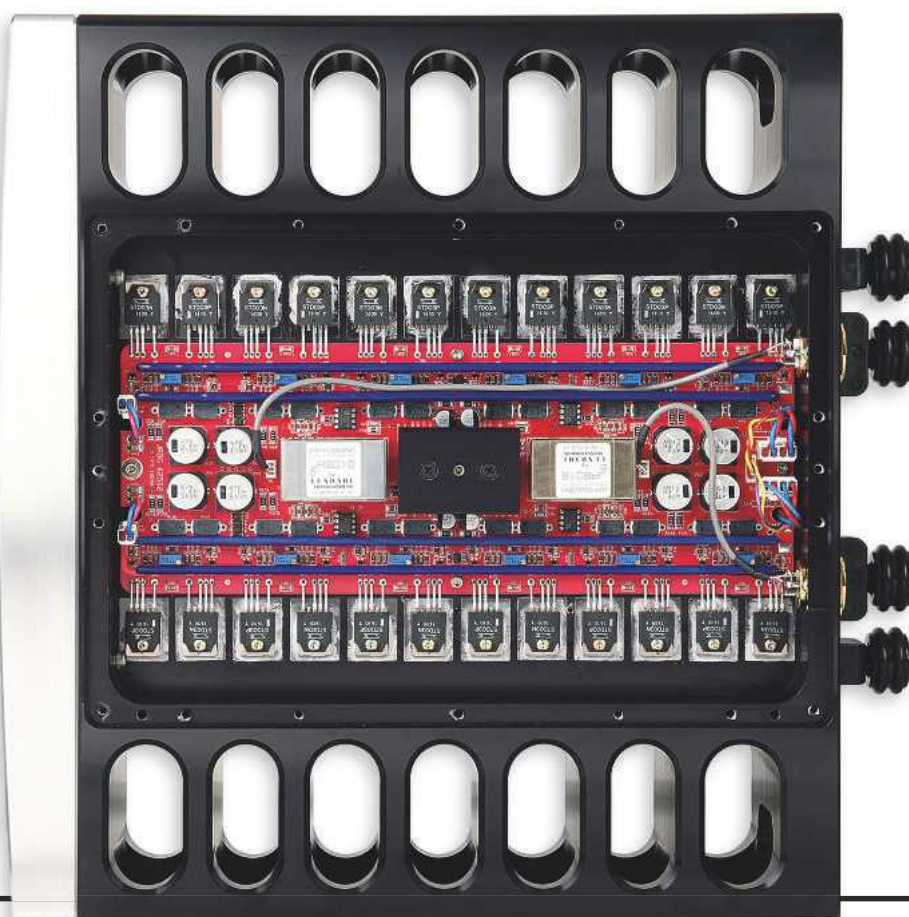
Lifting the top plate reveals immaculate build quality throughout, with surface mount components minimising signal paths and compact construction overall which, together with the solidity of the one-piece chassis, aims to provide good

thermal stability. The topology is fully differential (balanced), with a transformer-coupled input. The circuit features highly regulated supplies, with substantial copper bus bars, and is based on separate voltage and current gain blocks.

## IMPROVED PCB SPECIFICATION

Using the existing circuit topology of the outgoing 625 and employing 12 Darlington transistors for each channel as before, the S2 now features the Rogers ceramic circuit board material [see [www.rogerscorp.com](http://www.rogerscorp.com)] as used in the company's £25,000 725 monoblock amplifier. Claimed benefits of this PCB are increased substrate rigidity, improved thermal conductivity and reduced dielectric energy storage. Also trickled down from the bigger

**RIGHT:** No fewer than 12 pairs of Sanken power transistors are bolted onto a machined alloy chassis and heatsink. The switchmode PSU is held within a screened cavity beneath





725 is the inclusion of Jensen 4-pole filter capacitors in the power supply to reduce line noise, while the supply's output voltage has been increased slightly to yield a 25W boost in total amplifier power output [see Lab Report, p55].

The Jeff Rowland Design Group has also added what it describes as 'an innovative error correction technique previously unknown or implemented in the art of amplifier design', in order to improve the amplifier's distortion specifications at high frequencies.

Further upgrades for the 625 Series 2 include new custom-designed input transformers, with a linear phase 2-pole low-pass filter to improve input signal buffering, EMI immunity, and attenuate out-of-band signals from any source – including the spurious noise inherent in native DSD recordings.

The transformers are made for Jeff Rowland by transformer specialist Lundahl of Sweden, employing an increased turns

ratio, and wound with Cardas high purity copper wire.

A push-button on the fascia incorporating a white illuminated circular ring takes the power amp in and out of standby, while a 3.5mm mini-jack connector at the rear provides remote power on/standby switching in automated installations. When looking at the back panel, the inclusion of Cardas gold-plated XLR input connectors featuring rhodium contacts and Teflon

insulation distinguishes this new Series 2 version from the original 625.

#### **LOW-END CLOUD**

Deciding that the most transparent control amplifier I could use with the 625 S2 would be no preamplifier whatsoever, I switched my resident T+A DAC 8 [HFN Oct '12] into variable output mode so that I could use its built-in volume control, connecting the DAC's XLR outputs directly to the power

'Bass authority, and its sweet and open highs were just sublime'

**ABOVE:** Set off by the elegance of Jeff Rowland's hallmark polished and 'prismatic' fascia, the amplifier's chassis and heatsinking is a solid structure, milled from aluminium

amp via Signal Projects' lavish Hydra balanced cables [HFN May '13], a pair of which costs almost as much as the DAC!

Even pretty much straight from cold, the 625 S2 having only been ticking over for ten minutes or so, it sounded extremely refined and polished. Instruments and voices appeared from an eerily silent background, appearing sharply etched and clean, along with a natural and uncontrived warmth to the tonal balance that was immediately enticing and conducive to prolonged listening. Coupled with this endearing smoothness was the amplifier's tremendous low-end clout.

Winding up the gain to play Mahler's 'Resurrection' Symphony [EMI CDS 7 47962 8] put all of the City of Birmingham Symphony Orchestra's musicians in the room, an immersive listening experience with convincingly blasting brass and the timpani thundering out to vibrate my listening seat. Just as importantly, the system appeared totally relaxed and stress-free while swinging the thrilling dynamics in the *Allegro maestoso*.

This appeared a particular strength of the 625 S2: no matter what mayhem is occurring during 'busy' recordings, instruments always appear uncommonly easy to decipher. A pertinent example was the title track from John Grant's 2013 album *Pale Green Ghosts* [Bella Union BELLACD377X] which features what can best be described as a 'challenging' synthesised bass content that threatens to overwhelm and muddy the richly-textured sound production. Not only could individual elements of the music's

## ROWLAND'S RECIPE

Although company founder and chief designer Jeff Rowland's first amplifiers were low-powered Class A designs, he soon moved on to designing more powerful Class A/B power amps, while striving to maintain the 'sonic beauty' of low-powered Class A amplifiers. And in the late 1990s the Jeff Rowland Design Group moved away from using traditional linear PSUs in its amps, employing more compact and efficient switching-mode types with 'active' Power Factor Correction (PFC). This technique for synchronising the voltage and current cycles on incoming AC mains was first introduced in 1999 in its Model 10 and Model 12 power amps and aims to increase power efficiency while suppressing hash and ripples downstream of the PSU. Rowland's use of switching PSUs and multiple power transistors in its amplifiers' output stages contrasts with other manufacturer's high-powered amps that use a linear PSU and single pairs of output devices. In practice, there's no singular approach to amplifier design!

# Artera

“Lush, gorgeous – choose whatever adjectives you like: The Artera duet respects the music.”

Ken Kessler, Hi-Fi News (November 2015)



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Combining the assurance of tradition with the buzz of innovation, QUAD Artera is the lifeblood of high-performance audio entertainment for modern music lovers. Visit QUAD's new website at [quad-hifi.co.uk](http://quad-hifi.co.uk) to find out more.

QUAD Artera Play and Stereo pictured with QUAD S2 speakers



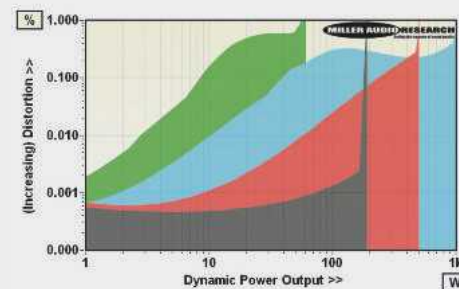


## LAB REPORT

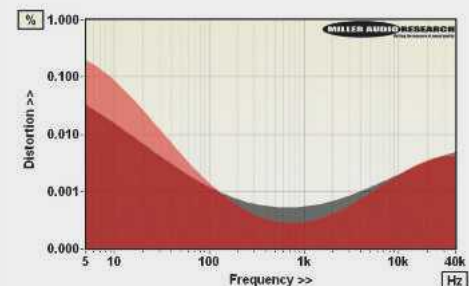
### JEFF ROWLAND MODEL 625 S2

Now updated to 'Series 2' status, Jeff Rowland's Model 625 power amplifier has also seen its paper specification 'tweaked' from 300W to 325W/8ohm and 550W to 600W/4ohm while the overall gain is reduced from 27dB to 26dB. The latter was ratified on the test bench although the measured output power of 2x329W/8ohm and 2x590W/4ohm was sailing rather too close to the wind, popping the 6.3A in-line fuses if the 4ohm output was attempted for more than a few seconds. Under dynamic conditions, which bear a closer correlation to 'real life' anyway, the 625 S2 offered up a secure 333W, 632W and a full 1060W into 8, 4 and 2ohm loads, the output into 1ohm limited to 155W at 1% THD [see Graph 1, below]. Distortion is very low through midrange frequencies into 8ohm at just 0.0003-0.0007% from 1W-300W but increases more obviously into lower impedances, as also evidenced by the dynamic power profiles [red, blue and green traces, Graph 1].

Unusually, distortion also increases more obviously at low bass rather than high treble frequencies – 0.025%/20Hz (and 0.2%/5Hz) with just 0.0036%/20kHz, all at 10W/8ohm [see Graph 2, below]. The 625 S2's sub-bass response is very extended (–0.01dB/20Hz and –0.3dB/1Hz), as is the extreme top-end (–0.05dB/20kHz and –2.3dB/100kHz), again all at 10W/8ohm. Mercifully, PSU switching noise is absent from the background which is smooth and 'white' in character, amounting to an A-wtd S/N ratio of 88dB (re. 0dBW) and 113dB (re. 325W). Readers may view a full QC Suite test report for the Jeff Rowland Model 625 S2 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 versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (cyan) and 1ohm (green) speaker loads. Maximum current is 23A



ABOVE: Distortion versus extended frequency from 5Hz-40kHz (1W, black trace; 10W, red trace)

### HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	329W / 590W
Dynamic power (<1% THD, 8/4/2/1ohm)	333W / 632W / 1060W / 155W
Output impedance (20Hz–20kHz)	0.019–0.051ohm
Frequency response (20Hz–100kHz)	–0.01dB to –2.27dB
Input sensitivity (re. 0dBW/325W)	139mV / 2520mV (balanced)
A-wtd S/N ratio (re. 0dBW/325W)	88.3dB / 113.4dB
Distortion (20Hz–20kHz, 10W/8ohm)	0.0004–0.0158%
Power consumption (Idle/Rated o/p)	85W / 1200W (1W standby)
Dimensions (WHD) / Weight	394x146x413mm / 24.5kg



ABOVE: Balanced (transformer-coupled) inputs only, via XLRs, are joined by a pair of substantial screw-down cable connectors per channel. These are best suited to bare wire rather than 4mm or spade terminated loudspeaker cables

patchwork quilt be comfortably observed – fine details such as the varying echo and ambience effects added to Grant's voice making the song consistently entertaining – but also the Heaven 17-esque musical fanfares suddenly blasting through when least expected.

Indeed, the building tension of this adrenaline-fuelled piece was exquisitely portrayed thanks to the amplifier's apparently calm and tranquil demeanour. Not even the demanding subterranean bass notes some two-and-a-half minutes into the song seemed problematic for my system with the 625 S2 providing the horsepower, the amplifier keeping a tight grip on the drivers in my Townshend Sir Galahad monitors.

Yes, the bass was as thunderous as it always is when playing 'Pale Green Ghosts' at an unsociable sound pressure level (the only way to hear it, frankly) yet it always remained creditably comfortable.

### PEPPERED WITH DETAILS

I underwent a transcendental listening experience enjoying a performance of 'Insurgent' by Porcupine Tree frontman (and prog-rock high-resolution remastering/remixing guru) Steven Wilson recorded and filmed live in Frankfurt a couple of years ago [Kscope 265, DVD+CD; also on Blu-ray Disc].

Again, the amplifier's graceful delivery allowed comfortable observation of the subtle inflections in Nick Beggs' playing of his Chapman Stick alongside the accompanying flute of Theo Travis, despite the overall sound of the recording being awash with reverberation from the venue.

The Chapman Stick's deep register was delivered with immense power, adding tremendously to the music's brooding atmosphere. And the soundstage was wonderfully expansive, the sound of Steven Wilson's band of virtuoso musicians

in the concert hall making the walls of my listening room virtually disappear. And all the while, Wilson's far from pitch-perfect vocal notwithstanding, it was the little peppered details of the musicians' performances that kept me captivated throughout.

Testing the amplifier's mettle with well-recorded high-resolution material from Linn Records, Channel Classics, Reference Recordings and others showed that the transparency of the 625 S2 is outstanding, readily revealing the construction of a recording's soundstage and its individual elements.

Its bass authority, sweet and open highs, and even-mannered midrange were sublime when reproducing audiophile recordings, both fine vintage analogue and modern hi-res digitals alike.

When listening to live music it takes little effort to extract the sounds we're experiencing. But playing recordings via a hi-fi system is rarely that easy – we frequently find ourselves riding the gain, turning it up during quiet passages and down again when things get boisterous. When Jeff Rowland's amplifier was in my system I simply never felt the need. ☺

### HI-FI NEWS VERDICT

This is an impressive amplifier that can be highly recommended to audiophiles wishing to build a luxurious system without having to auction the family jewels. It sounded truly fabulous driving my speakers, delivering the tight control and 'grunt' of a muscular solid-state Class A/B power amp while concomitantly exhibiting the charm and tranquillity of a pure Class A SET tube design. I loved it to bits.

Sound Quality: 87%



# Audience ClairAudient 1+1 v2

Thanks to its innovative approach to loudspeaker design, Audience's dinky desktop boxes certainly stand out from the crowd, but how do their sonics measure up?

Review: **Andrew Simpson** Lab: **Keith Howard**

**M**ini speakers come in many shapes, but most toe the traditional two-way line of adopting a forward-firing tweeter with an accompanying mid/bass driver, perhaps with a vented port thrown in to help with the lower frequencies. Californian brand Audience adopts a very different approach for its nearfield monitors, as this v2 variant of its £1575 ClairAudient 1+1 clearly illustrates.

Unlike most other desktop loudspeakers, these little boxes come equipped with drive units on all four of their vertical faces, configured in a less conventional way than your average tweeter-and-woofer-sporting speaker. The 1+1 v2 sits above Audience's entry-level The ONE desktop model, priced at £775 (or £835 with desktop stands). There's also a tweaked '+' variant of the 1+1 v2, which adds chunkier, solder-free speaker binding posts and Audience's Au24SE internal wiring [see *HFN* Apr '15], bringing its total price to £1875.

## FULL-RANGE DRIVERS

At the heart of Audience's speaker philosophy is the belief in full-range drive units, eliminating the need for crossovers and hence any consequent issues with defining crossover points and time-alignment between each drive unit. This full-range feature is also found with its The ONE model, which uses a single 75mm (3in) driver on its front panel and a 100mm passive bass radiator, or ABR, at its rear.

While the 1+1 v2 adds only a modest increase in cabinet size (one or two inches in each direction), and thereby a little extra internal volume – although it still seems tiny compared to other bookshelf speakers – it gets double the driver complement of The ONE. With the 1+1 v2, both its front and rear faces are fitted with 75mm drivers working in parallel, while each of its side cheeks have passive ABRs.

Representing more than a decade of in-house research [see boxout], Audience's proprietary 75mm A3S full-range driver is a low-moving mass unit (2.5g is claimed) with a substantial 12mm excursion. Its

inverted dome shape is fashioned from titanium alloy, with an S-shaped rubber surround and damped inverted dustcap at its centre. The drive unit's voice coil is made from OCC (Ohno Continuous Casting) copper, while its motor sports a dual gap neodymium magnet and large port to aid air flow and cooling.

The A3S units sit within a rectangular plate which is mitred flush into its baffles. As with the design of the 75mm drivers, the 1+1 v2's side-firing passive radiators are also an inverted dome design, this time made from impregnated paper and tuned to a claimed 45Hz [see Lab Report, p59].

Aside from the spread of drive units, what also hits you straight away about the v2 is its luxurious high-gloss finish, which looks much richer and deeper in the flesh than seen in print or on screen.

The quality of the rosewood veneer to the side panels is exquisite and stands up to some of the best loudspeaker finishes I've come across, although this had me wondering how much more exotic these speakers would have looked if the real wood inlay had been carried over to the rest of the cabinet's surfaces.

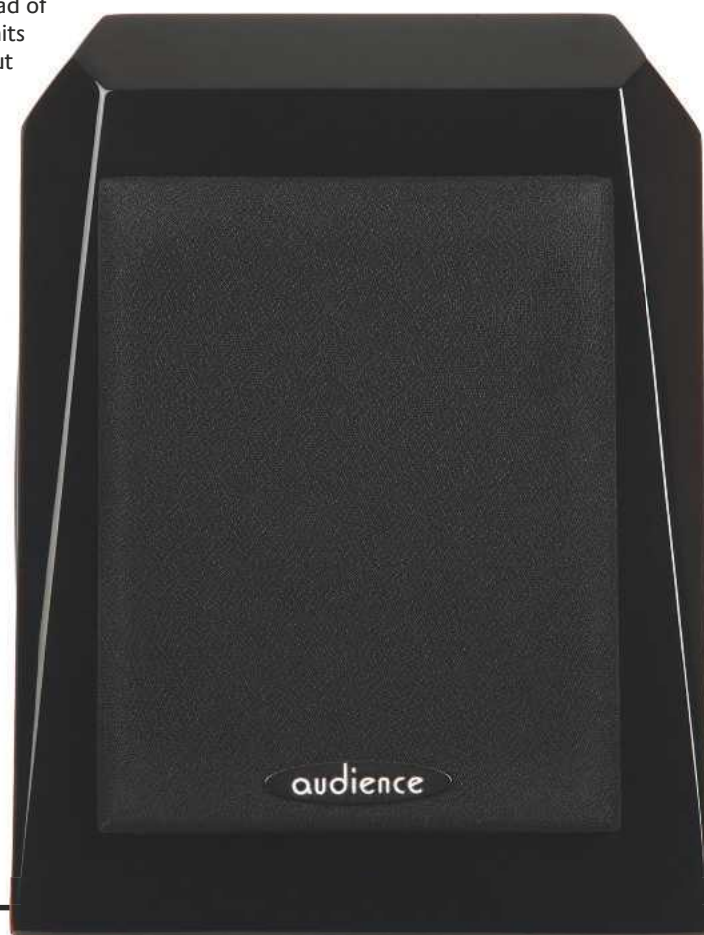
Under its lacquered skin, the speaker's main enclosure is made from 18mm MDF, with separate internal chambers

for each set of active and passive (ABR) drivers. Viewed from above, and with the light catching their glossy veneers, also reveals the 1+1 v2's jewel-like cutaways which make up their multi-faceted exterior shape and which are also intrinsic to their sonic performance.

Both front and rear panels are tilted back at 5°, to aim each drive unit's axis slightly upwards towards the listener, while minimising internal standing waves by reducing parallel surfaces inside the speaker.

This gives the 1+1 v2 a trapezoidal-like side profile, resulting in a larger surface area at their base compared to their tops,

*'These speakers keep you pinned to the edge of your desktop'*



and this also helps to provide the v2s with a rigid footprint.

With drive units fitted on every side, you need to take extra care when lifting these speakers from their outer box to avoid damaging those small drivers. The ones at the speaker's front and rear both get magnetically-attached cloth grille covers, although there's no extra protection for the passive side-firing units, and these also stand slightly proud of the main cabinet, so you'll need to keep inquisitive pets and small children at a safe distance!

Also included within the box are a set of self-adhesive rubber feet, although if you're looking to use them for desktop purposes you'd be well advised to invest in some better aftermarket feet such as Deflex Polipods, to minimise resonance while preventing scuffs and scratches. With the speakers positioned, all that's left to do is hook up your speaker cables to their multi-way 4mm gold-plated loudspeaker binding posts.

### A SEAMLESS INTEGRATION

Having first experienced these speakers in a short demo during our recent Hi-Fi Show *Live*, when driven by a Bel Canto C5i integrated amplifier as part of a dedicated bedroom style set-up, my abiding memory

## MEET THE AUDIENCE

Now based in California, Audience has a story beginning in 1972 following a chance meeting between company CEO John McDonald and the late Richard Smith, a forward-thinking audiophile. Two companies were formed initially, starting with Sidereal Akustic Audio Systems in the late 1970s and then Audience, with design engineer Roger Sheker. In contrast with its current speakers, Audience's early models included the active '16' tower, with 16 Bandor drivers powered by an in-house amp. Work soon began on a crossover-less speaker using full range drive units, and after almost a decade of trials with off-the-shelf units, Roger Sheker developed the 3in diameter A3 driver. Its latest derivative, the A3S, is used in the 1+1 v2 'Personal Reference Monitor' featured here.



was of a wide-open midrange that sounded both free and clean. Replicating a similar system in the smaller of my two listening rooms (which is 2.5m square) I had the speakers placed at either end of my desk unit, 1.5m apart. Driven by a Cambridge Audio Minx Xi one-box digital music system, they produced similar results.

With the speakers toed in at around 15° and firing at my listening seat one and a half metres away, the air around me was filled with a lucid and coherent midband,

which blended into the treble with a seamless integration.

Streaming a 44.1kHz/16-bit ALAC rip of Tori Amos's 'Crucify', from her debut album *Little Earthquakes* [Atlantic/EastWest 7567-82358-2], let the v2s get straight to work on her vocal gymnastics. The way in which Amos swings from hitting the high notes to her gravelly delivery of the line 'crucify myself' can, with some small two-way designs, give the impression that you're hearing two different vocalists – one occupying the lower midrange and the other in the treble. With the 1+1 v2s, however, these extremes were persuasively 'one voice' giving me the sense that I was hearing less of the Audience speaker's 'interpretation' and more of Amos's *actual* vocal performance.

### DRAMATIC IMMEDIACY

And it wasn't just her vocals that the v2s relayed with natural poise, as the piano on this track sounded just as free-flowing, without any sense of being impeded across the frequency band. The manner in which the v2s were also able to capture the intimate delicacy of Tori's efforts on the ivories was equally standout, especially the softly played section at around three minutes into the track; and I found this particularly enthralling.

A 44.1kHz/16-bit FLAC rip of excerpts from *The Firebird* from Stravinsky – *The Great Ballets* [Philips 438 350-2] revealed more of how these speakers can present sounds and instruments in an unhindered manner. As the score begins to open up, during 'Kashchei's Enchanted Garden', ➔

**LEFT:** Full range 3in metal inverted dome (cone) driver is protected by a magnetic grille, however the 4in passive radiators fitted to each side are uncovered, leaving them exposed







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PS AUDIO

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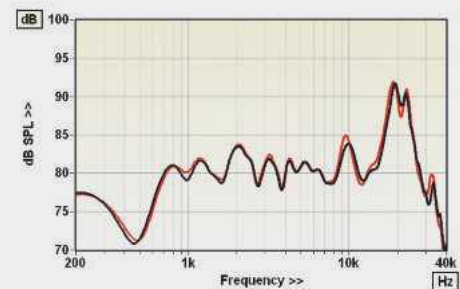
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## LAB REPORT

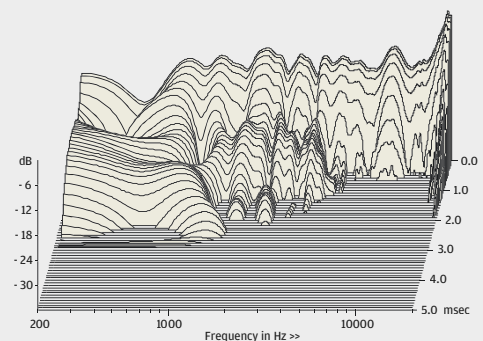
### AUDIENCE CLAIRAUDIENT 1+1 V2

Audience claims 87dB sensitivity for its ClairAudient 1+1 but, as you'd expect given its size, that's optimistic. Our measured 81.4dB for pink noise and 80.9dB for a 'music-shaped' spectrum suggest that 81dB is representative. In the 1+1's favour, this is achieved without resort to low impedance. Its minimum modulus of 6.7ohm coupled with low phase angles results in a minimum EPDR of 4.4ohm at 250Hz, so the ClairAudient presents a benign load to its amplifier. Forward frequency response [Graph 1, below], measured at the centre height of the front-mounted driver, is flat in trend from about 700Hz to 12kHz and response errors here are held to about  $\pm 3.5$ dB. Above 12kHz the response rises because of the cone's breakup mode at around 20kHz, while below 700Hz there's a large dip due to destructive interference between the front- and rear-mounted drivers, which adds further ripples higher in frequency. These features increase the overall response errors to a high  $\pm 10.5$ dB and  $\pm 10.4$ dB respectively. Over the same 200Hz-20kHz range the pair matching error is also a little high at  $\pm 1.8$ dB but reduces to  $\pm 1.0$ dB below 8.5kHz.

A diffraction-corrected nearfield measurement shows the bass response at -8dB/100Hz (re. 1kHz) but if the 1+1 is placed on a large flat surface then boundary gain will provide some LF boost, amounting to -6dB/82Hz. No attempt was made to measure THD at 90dB SPL at 100Hz because of the small drivers. By 82dB SPL the distortion had reached 10.4%, suggesting that they were by then operating at their linear excursion limit. The CSD waterfall [Graph 2, below] shows some unexpected resonances at low treble frequencies. KH



ABOVE: While flat in trend the response is still notably 'rippled' by interaction between front/rear drivers



ABOVE: While the diminutive cabinet is sound enough there are obvious cone breakup modes from 2-5kHz

### HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL/1m/2.83Vrms - Mean/IEC/Music)	84.6dB/84.1dB/80.9dB
Impedance modulus min/max (20Hz-20kHz)	6.7ohm @ 1.2kHz 16.8ohm @ 127Hz
Impedance phase min/max (20Hz-20kHz)	-27° @ 187Hz 30° @ 20kHz
Pair matching (200Hz-20kHz)	$\pm 1.8$ dB
LF/HF extension (-6dB ref 200Hz/10kHz)	82Hz / 29.5kHz/33.2kHz
THD 100Hz/1kHz/10kHz (for 90dB SPL/1m)	See text / 0.2% / 0.6%
Dimensions (HWD)	202x151x246mm



**LEFT:** Rear panel mirrors the speaker's front face with a matching driver. As this is a crossover-less design, only a single set of 4mm cable posts is required for hook-up

the little v2s would react with a bit more oomph and high-end finesse behind them by introducing some of my main system components into the mix. Hooking up my Musical Fidelity M6PRE/PRX pre/power amplifiers [HFN Nov '13] fed by a Primare NP30 media player [HFN Jul '14] certainly gave the v2s' drive

units more musical fibre to chew on.

Playing a 44.1kHz/16-bit file of Daft Punk's 'The Game Of Love' from *Random Access Memories* [Columbia 88883716862] let the v2s deliver the track with a degree of dexterity I'm not used to hearing from similarly-sized small boxes. This track also underlined that dynamism is also on tap in generous measure with the v2s, making them even sound in some ways like an electrostatic in miniature form. And frankly, this made my usual Q Acoustic bookshelf speakers sound sluggish in comparison.

While bass junkies may crave a little more welly and grunt in the bottom end, thanks to the clarity the Audience 1+1 v2's offer across the rest of the frequency band, I'd be more than tempted to trade some bass extension for the greater degrees of sweetness they offer across midrange and treble. ☺

### HI-FI NEWS VERDICT

In many ways Audience's latest 1+1s are the loudspeaker equivalent of a vintage Lotus Elan - small, fast, precise and above all, lots of fun. Clearly intended for nearfield musical enjoyment, you won't be hit with a thumping bass but will instead be greeted by an agreeably open performance with an almost ethereal midrange. This miniature marvel will surely fill your office or bedroom space with music.

Sound Quality: 78%

0 - - - - - 100

the v2s brought out all the drama of the music with an immediacy that grabbed my attention. The way the speakers really got into the piece demonstrated the attack of those little drive units, keeping me pinned to the edge of my desktop.

Strings and horns entered the mix during the 'Magic Carillon' section offering plenty of pizzazz, and reflecting the expert timing of the musicians as their playing combined to build tension into the music.

### PINPOINT PRECISION

This track and the rest of the album also illustrated the soundstaging and imaging abilities of the 1+1 v2s. Inevitably this is not as expansive as with a conventional, larger bookshelf loudspeaker, yet the sonic landscape set out by these mini monitors is not especially restricted. With the music approaching moderate listening levels, the way they can paint a 3D musical picture means they typically 'vanish from sight'.

With the Neil Cowley Trio's 'Kneel Down' from their *Touch And Flee* album [Naim CD206; 96kHz/24-bit FLAC], the Audience speakers placed the percussion a good 18in behind their rear panels - in spite of the fact that I had them sitting only 9in forward of the room boundary.

In a similar way, pianoforte in the left channel and double-bass in the right were rendered with an appropriate sense of scale and sustain which allowed me to pinpoint each one effortlessly.

While the Cambridge Audio Minx is an excellent one-box unit for the money, I was also keen to see how

# Roksan RPP

The latest addition to Roksan's Caspian range is a heavyweight MM/MC phono preamp. Will this minimalist 'Reference' model be your turntable's best friend?

Review: **Adam Smith** Lab: **Paul Miller**

For a company whose first product in 1985 was a turntable, it is perhaps not surprising that Roksan continues to take record replay very seriously. To this end, it has recently announced a quartet of Caspian models designed to appeal to the vinyl enthusiast. Of these, the £1900 RPP (Reference Phono Preamp) is its flagship phono stage, Roksan promising great performance thanks to its use of the 'highest quality components available'.

## BROAD COMPATIBILITY

In addition to the RPP, Roksan has also introduced the RPM power supply and speed control unit for £1450. Intended for use with its Xerxes 20+ turntable, this offers a crystal referenced control system for excellent speed stability. The remaining two models in the range are rather clever conglomerations of the two units above. The VSC (Vinyl System Control) combines the RPM and RPP into one chassis, powered by a single DS1.5 power unit for £3000. The £3250 VSC S2 adds a second DS1.5 powering each half independently.

The DS1.5 module is also to be found inside the RPP to power the internal circuitry. The front panel is typically



minimalist Roksan – either black or silver with only a blue LED to show when the unit is running. The power switch can be found tucked discreetly under the front left-hand side of the fascia.

The main case is rather daring, being wrapped in a shiny enclosure embossed with the Roksan name on top – overall, the RPP is very solidly built and very well finished, as evidenced by its sturdy 8.5kg weight. At the rear, an IEC mains input socket occupies the right hand side of the panel, with input and output socketry on the left. The only options offered for this are unbalanced RCAs, which might be considered a slight oversight as balanced XLRs are not uncommon at this price level.

Further switches are to be found beneath the RPP. These take the form of two banks of rather fiddly PCB-mounted DIP switches that alter cartridge gain and loading, the Roksan offering a well-chosen range of options. Unfortunately, their lack

**ABOVE:** Roksan's chromed bonnet breaks the monotony of a machined black alloy faceplate, decorated here with a single power-on LED

of labelling means the manual must be consulted each time they are changed.

The settings on offer include three gain options for MM, High Output MC and Low Output MC cartridges, plus 47kohm, 1kohm, 100ohm and 10ohm resistive loading. Load capacitances of 47pF and 100pF are also available to optimise pick-up performance. For my auditioning, I used both Ortofon Kontrapunkt b MC and Ortofon 2M Black MM cartridges [*HFN* Mar '11] mounted in an SME309 tonearm on my Michell Gyro SE.

## A MASTER OF DETAIL

It did not take a great deal of listening to reveal that the RPP is a truly exceptional device. Starting with the MM settings I was hugely impressed by the way in which the unit proved itself to be an absolute master of detail retrieval. Allied to a neutrality and sense of poised effortlessness, I found the Roksan to be an utterly captivating listen.

In many ways it reminded me of the Xerxes turntable, in that it did not immediately make me focus on one particular area of its performance. It has a beguiling sense of midrange insight and the ability to create a truly immersive soundstage. Equally, it makes an easy job of reproducing absolutely everything, while pulling subtle details to the fore. In some ways, this offered a fresh perspective on many songs.

A perfect example of this was the banjo backing Kacey Musgraves on the

## CASPIAN RANGE

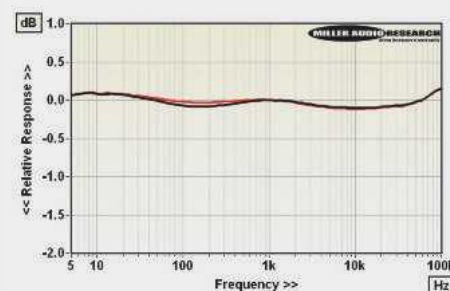
The initial four-piece Caspian separates range was introduced by Roksan in 1998, following three years of research and development. The inaugural line-up consisted of a CD player, integrated amplifier, power amplifier and FM tuner, with a surround sound processor, five-channel power amp and DVD player following later. The first of the Caspian phono preamplifiers came next in 2001, before the range was revamped into the Caspian M Series in 2004. The system was completed in 2005 with the arrival of matching loudspeakers. The Caspian models have, therefore, always been at the heart of the Roksan range since the marque's move into mid-range electronics. To augment this, the Kandy series filled the need for a more affordable set-up while its Platinum models pushed the performance and price higher. The Caspian name is still going strong as, in addition to the four new vinyl-oriented designs, a power amplifier, integrated amplifier and CD player make up the rest of the current range.



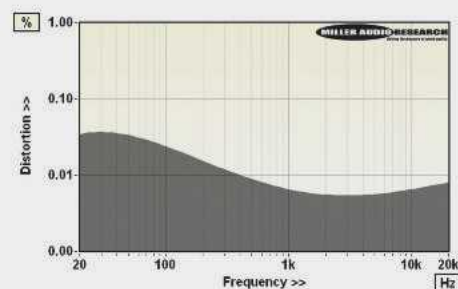
## ROKSAN REFERENCE PHONO PRE

While Roksan had its own Chorus and Shiraz pick-ups in mind when specifying the Reference Phono preamp, its choice of +40.6dB (+40.7dB measured), +56.0dB (+56.9dB) and +65.5dB (+66.5dB) gain settings are also perfectly placed to suit a very wide range of MM and MC cartridges. The same goes for the choice of 47kohm, 10ohm, 100ohm and 1kohm input loading options. Roksan quotes a generalised input overload margin of +26dB which was achieved on test – the MM input reaching 1% THD at 101mV (+26.1dB re. 5mV). The MC1 and higher gain MC2 inputs clip at 15.9mV and 5.2mV, respectively, which corresponds to margins of +30.1dB and +20.3dB. I'd suggest that high output MCs are used into MC1 rather than the MM input in this instance. Meanwhile, and despite the substantial onboard PSU, its comprehensive shielding keeps hum and noise very low (the residual is just -91dBV or 2.8µV via MM), assisting the wide final A-wtd S/N ratios of 89dB (MM) and 77dB (MC). So this is a very 'quiet' phono preamp.

Regardless of input, the RPP's precision RIAA network offers an extended frequency response that's good to ±0.15dB over a very wide 5Hz-100kHz [see Graph 1, below] and a channel balance within ±0.05dB from 20Hz-20kHz. There's no subsonic filtering on offer, however, so this deep bass response will not suit all systems with big, reflex-loaded floorstanders. Otherwise, distortion is lower than Roksan's conservative <0.1% spec. [see Graph 2], the maximum 0.04% occurring at bass frequencies before falling away to just 0.005% through the midrange – at least 100x lower than the best pick-ups! Readers may view a QC Suite test report for Roksan's RPP MM/MC phono preamp by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'Download' button. PM



ABOVE: RIAA-corrected frequency response from an extended 5Hz-100kHz at 0dBV via the MM input



ABOVE: Distortion versus frequency (20Hz-20kHz) at 0dBV (1V output) via the MM input

## HI-FI NEWS SPECIFICATIONS

Input loading (MM/MC)	47kohm / 10-1000ohm
Input sensitivity (MM/MC, re. 0dBV)	9.23mV / 1.43mV / 474µV
Input overload (MM/MC, re. 1% THD)	101mV / 15.9mV / 5.2mV
Max. output (re. 1% THD) / Impedance	10.2V / 22-46ohm
A-wtd S/N ratio (MM/MC, re. 0dBV)	89.0dB / 76.6dB / 77.4dB
Frequency response (20Hz-20kHz)	+0.05dB to -0.07dB
Distortion (20Hz-20kHz, re. 0dBV)	0.0053-0.036%
Power consumption	8W
Dimensions (WHD) / Weight	430x85x310mm / 6kg



ABOVE: A single set of RCA outputs and inputs serve both MM and MC sources with gain and cartridge loading selected via two 8-pin DIP switches on the underside

track 'Merry Go 'Round' from her *Same Trailer Different Park* album [Mercury B0018029-01]. This was vivid and stood out superbly within the mix, whereas it can often drift off into the background a little. Ms Musgraves' vocals were heartfelt and held beautifully centre-stage. The overall effect was fascinating as the musical performance as a whole was a delight. However, it was equally easy to pick out any particular instrument and follow it, thanks to the swathes of detail offered up by the Roksan.

At the top end, the RPP is very clean but without any hint of harshness. On initial listening it sounds quite smooth but it soon becomes apparent that it is missing nothing. The steady hi-hat that accompanies The Eagles' 'King Of Hollywood' from *The Long Run* [Asylum Records K52181] was a perfect case in point here. The overall recording is quite soft, but the hi-hat stands out in stark relief to the right of the soundstage. The RPP locked onto it with a vice-like grip and propelled the track effortlessly.

This is not to say the Roksan needed a bold rhythm to work,

however. When the material became more basic it continued to captivate through its sheer sense of transparency. Vocals were vivid: soft when required but soaring as the occasion demanded. A softly intoned clarinet or a gently played cello was treated with the same careful attention as a frenetic electric guitar solo. Seemingly, the RPP had an uncanny ability to know exactly what was required of it and deliver every time.

### DIGS DEEP WITH EASE

Finally, I have to say that the RPP's bass performance is better than any phono stage I have heard at the

price, particularly on its MC setting. The Roksan digs deeply but its sense of ease and the insight it reveals is almost uncanny.

Spinning 'Holy Thursday' from

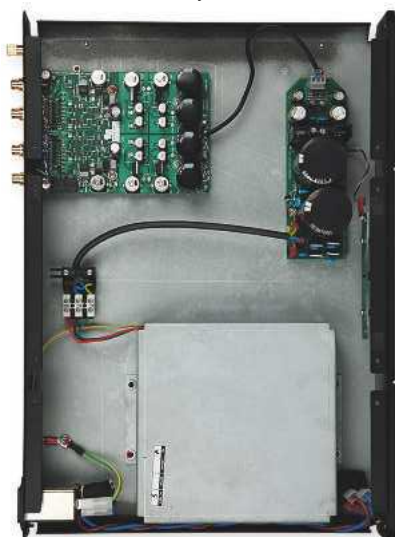
David Axelrod's *Songs Of Innocence* LP [Capitol ST2982] proved an almost transcendental experience. The bass guitar was magnificently fulsome, yet every single note had real form and was perfectly timed. Equally, the impact of each drum strike struck home with precision and true weight behind it. ☺

'Roksan's RPP locked onto the hi-hat with a vice-like grip'

## HI-FI NEWS VERDICT

Fiddly DIP switches and RCA outs aside, the RPP deserves nothing but praise. With it, Roksan has not only succeeded in designing the ideal flagship phono stage for its own range but has also come up with a model that can take on far more expensive units and better many with ease. The Caspian range has seen its fair share of successes over the years but the Roksan's RPP takes things to a whole new level.

Sound Quality: 85%



# Audio-Technica ATH-W1000Z

It's devoid of razzmatazz, conservative in appearance and makes no concessions to portable music sources. But the latest of A-T's sterling W-series still knows how to charm  
 Review & Lab: **Keith Howard**

**A**udio-Technica must be doing something right with its W-series headphones, otherwise the ATH-W1000Z would not be able to boast of being the 11th generation of these statement audiophile products from Japan's second-best-known headphone manufacturer after Sony. In the circumstances A-T is, perhaps, not guilty of hubris in naming it the 'Maestoso' (stately, dignified, majestic). Second in the hierarchy of A-T closed-back headphones only to the £1100 ATH-W5000 [*HFN* Nov '08], the new £599 ATH-W1000Z is certainly of high birth and long lineage.

## BLENDING WOOD AND METAL

Anyone familiar with Audio-Technica's recent over-ear headphone products will recognise the essential ingredients of the W1000Z. It features wooden capsule closures, here made of teak, an internal magnesium frame for the driver, and A-T's distinctive 3D Wing Support system in which two spring-loaded pads support the headphone on the head rather than the conventional full-width headband or strap. Furthermore, the DADS (Double Air Damping System) is claimed to provide 'deep bass reproduction' although, as our lab report indicates [see p65], actually the W1000Z is less impressive in this department than some of its competitors.

No pretence is made of the W1000Z being a candidate for use on the move, or even with hand-held music sources in the comfort of your home. The connecting lead is captive, 3m in length and terminated in a chunky gold-plated ¼in jack plug. Mini-jack connection is simply not catered for: the jack plug is not a sleeve adapter in disguise, and no mini-jack adapter lead is provided. Before we pass by the

lead itself, it provides four-wire connection to the jack plug – so there's no common earth for the two channels – and it uses 6N (99.9999% pure) oxygen-free copper. No carrying/presentation case is provided with these headphones.

My first exposure to the 3D Wing Support system was with the ATH-AD700, one of my favourite £100 headphones of all time. Despite the fact that the two support pads have a smaller surface area than that of a wide headband or strap, it's an arrangement I've always found comfortable, aided by the fact that Audio-Technica doesn't scrimp on ear space.

Here, the earpads are bevelled inwards towards the central opening, and of sufficiently large diameter that you'd have to have particularly large pinnae to find them in any way cramping or incommode. Head clamping force is low too, but judging by the variability in bass response experienced on the artificial ear while testing, I would not be surprised if some users find it difficult, if not impossible, to secure an acceptably airtight seal to their heads – even though the earpads are wide, soft and thicker in the rear, bottom quadrant where there's the difficult task of accommodating the jaw line.

When I listed the familiar features of the W1000Z, something I left out was the headband. Comprising two thin, circular loops of plastic-covered steel, it looks as if it will be prone to resonance and so it is, notwithstanding the compliant mounting of the 53mm drive units [see box-out].

For readers unfamiliar with how I determine this, I always wear the

headphone when performing the impedance test for the lab report. This involves playing a periodic noise test signal over the left capsule only. The noise should neither migrate from its hard-left image

position nor sound coloured (in any other than the intended way).

## RESIDUAL RESONANCE

Too often, though, sound can be perceived travelling some way across to the right and/or the noise signal has coloration added, as a result of structural resonance within the headband [see *HFN* Jun '14]. But with the ATH-W1000Z the coloration is considerably lessened, leaving migration of sound across to the inactive capsule as the principal effect. But it's still audible, and can be banished by the simple expedient of reaching above your head to grasp the twin headband loops to damp them. It goes without saying that in this class of

headphone there should be no audible effect of headband resonance whatsoever.

The ATH-AD700 that so impressed me was not a neutrally-balanced headphone, as has generally been the case

with the larger Audio-Technica models I've encountered. The same is also true of the W1000Z but for much of the time – particularly if your musical diet is inclined more to classical than hard rock – you're unlikely to care because it makes such naturally flowing, easy on

*'Audio-Technica's alchemy is one few competitors can emulate'*



**RIGHT:** Familiar Audio-Technica features include the wood – here teak – capsule closures and the 3D Wing Support headband





**LEFT:** Mini-jack? Forget it, the W1000Z provides for 1/4in jack sockets only – but the connection lead is a four-wire one, obviating shared earth impedance and crosstalk

(better known as ‘A policeman’s lot is not a happy one’). The hapless sergeant and constables are supposed to put a broad smile on your face, and via the W1000Z they certainly did. The soundstage was spacious, the orchestral timbres unforced and believable, and Brannigan’s milking of the absurd notion of a policeman empathising with burglars, cut-throats and ruffians an object lesson in comic opera artistry. I couldn’t have asked for more.

Nothing to laugh at in the second piece I chose: Norah Jones’ marvellous live performance of Randy Newman’s ‘I Think It’s Going To Rain Today’, ripped from the *Higher Ground Hurricane Relief Benefit Concert* [EMI/Blue Note 094634523820]. It features just Jones’ celebrated voice and piano accompaniment, making it one of those live recordings that trounce anything likely to emerge from a studio, *ie*, burdened with over-production and dynamic range squash.

The Maestoso emphasised the huskiness in Jones’ vocal and added some weight to the left-hand of the piano, at the same time suppressing some of the ‘lips and teeth’ detail that a more energetic presence band provides. But I suspect many listeners would embrace these effects, which added an attractive sumptuousness while precluding any criticism of forwardness or sterility.

Back to humour, this time of a bawdy and distinctly non-PC kind from *How The World Wags* [44.1kHz/16-bit download, Hyperion CDH55013]. Subtitled ‘Social music for a 17th century Englishman’, it’s a collection of songs and consort pieces written for domestic performance, the ➔

the ear music that it would be churlish to complain. This is characteristic of the best Audio-Technica ‘phones, and is an alchemy few competitors can emulate.

## NOSTALGIA TRIP

Listening was conducted using my Teac HA-501 headphone amplifier [*HFN* Apr ‘14], a Chord Electronics QuteHD DAC and second-generation Mac mini running Windows XP and JRiver Media Center v19.

I’ve been indulging in a little shameless nostalgia recently. While at school I was involved in the annual productions of Gilbert and Sullivan operettas – first in the chorus, then in the small orchestra – and recently decided it was high time I bought some secondhand copies of the CDs of Decca’s well-known D’Oyly Carte recordings from the late-’50s and ’60s. They aren’t the greatest Decca recordings by any means but good enough, and some of the performances are classics, particularly that by the marvellous Owen

Brannigan as Sergeant of Police in *The Pirates Of Penzance*.

Which is how the first track I played over the ATH-W1000Z Maestoso (ripped from Decca 425 196-2) came to be ‘When a felon’s not engaged in his employment...’

## SPRING TO ATTENTION

A-T’s description of the W1000Z includes reference to ‘a special floating mount system, which helps reduce resonance’, used between the drive unit and wooden capsule closures. In other words, they are compliantly decoupled. So why does the W1000Z have an obvious headband resonance? Perhaps the headband is not decoupled but connected rigidly to the magnesium driver frame, but I think not. More likely is that compliant decoupling is not the panacea it may seem. For the driver to be decoupled over the entire audible range would require the suspension resonance frequency to be well below 20Hz, which would make the suspension impractically soft. If we assume the maximum displacement of the driver on its suspension due to gravity is 0.2mm (the suspension’s so-called static deflection) then the resonance frequency will be 31.5Hz – within the audible range – and above that the isolation will improve at only 6dB per octave. So it’s feasible that, despite decoupling, sufficient low-frequency vibration could still reach the headband to make any resonance audible.





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## HEADPHONES



**ABOVE:** Although the earpads are commodious, soft and thickened in the area of the jaw line, sealing might prove a problem for some users

former including in their subject matter drunkenness, lewdness and passing wind – the last written by Henry Purcell, no less.

### HAUNTING SAX

'The Saint Turned Sinner' is, in any dispassionate analysis, a scurrilous example of religious bigotry but performed with infectious zeal by The City Waites. The Maestoso didn't quite do this piece of sing-along proselytizing full justice. From the opening bar the jaunty rhythm should be infectious but the W1000Z rather flunked this, dragging the tempo a little.

The bass on this Tony Faulkner recording is a bit fat and indistinct, and the W1000Z's upper-bass excess only made it worse. Comparison against a more neutrally-balanced headphone served to emphasise that while the W1000Z's warm-hued and softened sound suits some programme material wonderfully, it does not favour everything.

If this sounds to you like a headphone unlikely to exhume and give new life to old rock/pop recordings, you're right. The Maestoso did a fair job of upholstering Janis Ian's *Stars* – a wonderful, protracted testament to world-weariness and disillusionment – but did nothing to elucidate the CBS recording, which is murky even on the Blu-spec CD [Sony Music SICP 20250]. Plus the shortfall in presence band output sometimes exposed treble sibilants. As

much was true of the altogether busier and more upbeat 'Country Dreamers', from Wings' *Band On The Run* [96kHz/24-bit download]. The Maestoso smoothed over some of the rougher edges of this 1973 recording (which was made in an eight-track recording studio in Lagos) but in doing so diluted the rhythmic vitality.

On the last two items I tried – the famous popping raindrops *Largo* from 'Winter' in Vivaldi's 'Four Seasons' [Signum Records] and the opening track of the live performance of *The Rewrite Of Spring* [Dacapo Records] – the Maestoso was more at home. Trafalgar Sinfonia's string sound was warm and the stereo image spacious in the Vivaldi, and the plangent sound of the soprano sax playing a snippet of Stravinsky's theme – to the initial accompaniment of the buzzes and noise of the PA system and tuned and untuned percussion – was hauntingly reproduced. ☹

### HI-FI NEWS VERDICT

Audio-Technica continues to make distinctive headphones, and hooray for that. The W1000Z Maestoso majors on comfort and a spacious sound that mostly avoids bass heaviness but still has a warm cast, which flatters some recordings while removing a little crispness and detail from others. Not an obvious choice for rock music lovers, it's more at home with lighter vocal, jazz and classical programme material.

Sound Quality: 81%



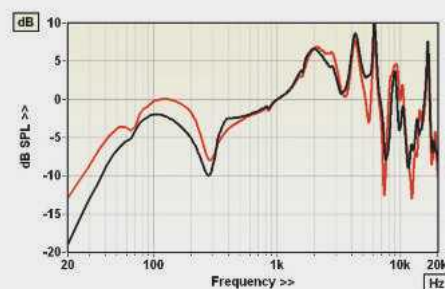
## LAB REPORT

### AUDIO-TECHNICA ATH-W1000Z

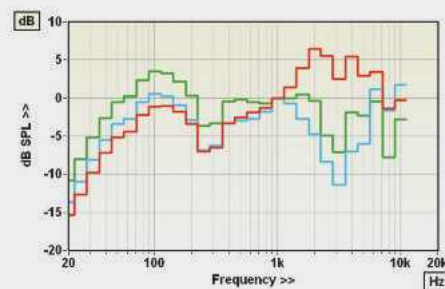
Audio-Technica specifies the W1000Z Maestoso's sensitivity as 101dB for 1mW, equivalent to 114.7dB for 1V across the specified nominal impedance of 43ohm. Our measured figure at 1kHz, averaged for the two capsules, was 115.7dB, so if anything the Maestoso is conservatively specified. Over the range 20Hz to 20kHz we measured the impedance as varying between maxima and minima of 51.5ohm and 41.3ohm, both occurring below 100Hz. With a source resistance of 10ohm this gives rise to a frequency response modification of 0.35dB; for a 30ohm source it rises to 0.77dB. Neither is likely to be noticeable given that earpad sealing issues can give rise to much larger changes in bass response.

Uncorrected frequency responses for each channel [Graph 1, below] are, as always, the average of 100 individual response measurements per capsule, comprising 10 averaged responses for each of 10 iterations, between which the headphone is removed from and replaced on the artificial ear in order to capture response changes due to slightly different positioning of the driver relative to the ear or to variations in earpad sealing. Capsule matching errors of  $\pm 6.9$ dB (from 40Hz-10kHz), mostly represents different interactions with the left and right artificial pinnae, which are of slightly different shape, as well as apparent differences between the capsules at low frequency, probably caused by the left capsule sealing less effectively.

This will also have affected the bass extension figure, again averaged for the two channels, of 33Hz (-6dB re. 200Hz), a slightly disappointing result given that many modern headphones are almost flat down to 20Hz. The diffuse-field corrected frequency response [green trace, Graph 2 below] suggests that perceived tonal balance will be on the warm side due to a slight excess output at 100Hz and a shortfall in the presence band above 2kHz.



**ABOVE:** Some excess bass around 100Hz and a reduced presence band output suggests the W1000Z will sound 'warm' (see DF-corrected response, below)



**ABOVE:** Third-octave freq. resp. (red = uncorrected; cyan = FF corrected; green = DF corrected)

### HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL at 1kHz for 1Vrms input)	115.7dB
Impedance modulus min/max (20Hz-20kHz)	41.3ohm @ 20Hz 99ohm @ 51.6Hz
Capsule matching (40Hz-10kHz)	$\pm 6.9$ dB
LF extension (-6dB ref. 200Hz)	33Hz
Distortion 100Hz/1kHz (for 90dB SPL)	0.4% / 0.1%
Weight (inc cable and 0.25in connector)	396g



# Chord Mojo

Tiny, solidly made, extremely capable and still built in Britain – is the smallest DAC/headphone amp from Chord Electronics the company's most ambitious move to date?

Review: **James Parker** Lab: **Paul Miller**

If not quite betting the farm on its new Mojo pocket-sized DAC/headphone amplifier, it's clear Kent-based Chord Electronics is taking quite a flyer – its new product is both engineered and built the expensive way, and yet is a fraction of the price of the company's previous portable digital introduction, the Hugo, at just £399.

Asking £1400 for the Hugo and £2995 for the TT version, you might expect ways have been found to cut costs: a plastic case, perhaps; the adoption of off-the-shelf technology in place of the pricier models' in-house digital solution; or the outsourcing of production to China, for example, as so many other companies have done.

That, however, isn't the way Chord does things, or so the company founder John Franks explains it. In order to ensure the Mojo lives up to the acclaim heaped on previous Chord products, the new model had to be built like them, from the casework to the clever stuff under the lid to the UK manufacturing. In other words, it had to be a recognisable Chord product, just much smaller.

## CITING NUMBERS

Speaking at a lavish launch event for the Mojo, Franks outlined the thinking behind the product, and it soon became clear that, for the numbers to work, it needs to sell not only in substantial quantities, but in volumes so far unimaginable for a Chord product. The company has clearly invested heavily in getting the cost of the Mojo's build and components down to a level commensurate with a product that's designed to sell for less than a third of the price of the Hugo.

And Franks talks ambitious numbers for the Mojo, which is ostensibly aimed at the smartphone users of the world: citing analysis of the penetration of iPhones,

Galaxies and the like worldwide, he says that, were the new device to sell to just one in every 100,000 smartphone owners worldwide, that would bring sales of some 350,000 units a year. Not to be sniffed at...

So the Mojo may be small, but it's still cased in aluminium, the main housing being milled from a single piece of the material and adorned with a translucent version of the 'ball' controls which are found on other models in the range together with the colour-changing illumination to indicate volume, sample rate and so on.

Inside the case there's a large battery, just about occupying the whole of the plan dimensions of the enclosure, and underneath that the electronics, again based around Chord's use of a Field Programmable Gate Array (FPGA) running the number-crunching for filtering and digital-to-analogue conversion in the form

of Chord-written – or to be more accurate, Rob Watts-written – code.

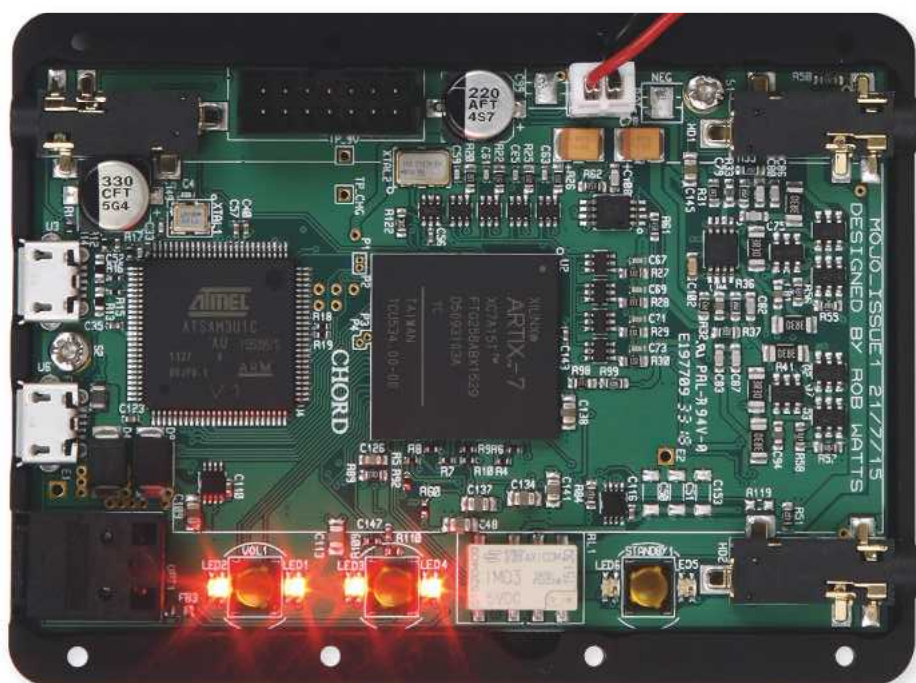
## INTUITIVE TO USE

Franks explains that the obvious way to do a product like this would be to use a bought-in DAC chipset, these days costing a few dollars when purchased in bulk. But engineers using such chips, he says, 'are really DAC users, not DAC designers', and the company has chosen to stick with its long-developed digital

platform even in this lower cost, highly portable device. The reason is simple: Chord wants the Mojo to sound as good as it can, even at this more affordable price – and that means retaining as much control as possible over the design.

So what is the Mojo? Well, a 'DAC/headphone amp' sums it up in basic terms, but there's more to it than that as this little box can handle 'mastering grade audio',

*'Its performance makes many more elaborate devices look overpriced'*



**RIGHT:** A version of Robert Watts' WTA filter and DAC technology runs on a powerful Xilinx Artix-7 FPGA while LEDs indicate volume level and incoming sample rate. The rechargeable battery occupies the lid (not shown here)





**LEFT:** The Mojo has Chord's usual 'milled from solid' aluminium casework for durability, while the single power button lights to indicate digital lock, and changes colour to show sample rate

thanks to sampling rate compatibility from 32kHz all the way up to 768kHz, as well as DSD up to DSD256/11.2MHz. It boasts entirely automatic file format detection and switching, indicated by changing of the colour of the single power 'ball' and runs from the aforementioned internal battery, which is designed to give ten hours' use from a four hour charge (either from a computer or using a standard USB phone/tablet charger).

Separate micro USB sockets for audio input and charging are fitted alongside optical and electrical S/PDIF digital inputs while two headphone outputs on 3.5mm sockets include digital volume control plus the option of setting a fixed level for use into a preamp or integrated amplifier.

And it is truly tiny: in the old days we would have said it was about the size of a fag packet, but suffice it here to mention dimensions of 82x60x22mm, and a weight of just over 180g. Think about the size of a boxed pack of cards, and about twice the weight, and you're just about there.

In use, the Mojo is entirely intuitive, basically because there's nothing much to learn. The power button does exactly what it suggests, while holding the two volume buttons while switching on will set

the outputs to fixed level, the buttons then lighting a bright blue. If you switch off and then back on again, the setting defaults to variable level, to avoid nasty surprises should you connect your headphones.

As already mentioned, the power button lights up to show the presence of a digital signal, and changes colour to show what 'flavour' the signal is, while the other two buttons increase or reduce the volume level, with an additional extra-fine cycle of adjustment at each end of their range. A brief press of the two volume buttons once the Mojo has powered up reduces the illumination brightness. Both brightness and variable level settings are remembered when turning off and on again.

To use the Mojo with an iOS device requires Apple's Lightning to USB female Camera Adapter Kit (the Chord only works with Lightning-equipped devices), to which the USB cable Chord supplies can be connected, although at the time of writing plans were well advanced for a range of Mojo add-ons to simplify this and some other connections [see boxout].

To play high-res music on an iOS device

connected to the Mojo will also need a third-party player: Chord suggests Onkyo's HF player, which I used to good effect during this review.

Using the Mojo with an Android device requires the use of an 'on the go' (OTG) cable to enable the smartphone or tablet to act as a USB host, and again the Onkyo app, or USB Audio Player Pro.

Chord supplies drivers for Windows PCs but none are needed for Mac OSX computers, though it should be noted that at the time of writing the Mojo, in common with a number of other devices of this kind, doesn't seem to be supported by the latest version of OSX, El Capitan. Beyond that, the only real operational foible is that the Chord can tend to run rather warm, both when charging and when playing hard: the company explains that this is entirely normal, due to the compact dimensions and high-power battery.

## ALL YOU COULD ASK

It's hard not to see the Mojo selling in unprecedented numbers if the word

spreads out beyond the hi-fi community and into the wider world, as well as finding a lot more hi-fi enthusiast buyers for the British brand.

You see, it's good: very good indeed, and while the intention may have been to make a product offering almost all of the performance of the Hugo line in a more portable form, I think what Chord has actually

done is create something just as good, but with a £1000 discount!

I've been using the Mojo for some weeks now, both on the end of my iPhone and Mac computer, and straight into my main audio system both as a source component and as a digital preamplifier, and to be frank it does everything anyone could ☺

## MOJO WORKING

The flexibility of the Mojo is set to expand with the impending availability of a number of add-ons, previewed at a recent launch event. These will come in the form of even smaller boxes designed to attach to the input end of the Mojo. Held in place by plugging into the existing ports, the first will be an iOS interface with a short lead terminated in a Lightning plug, giving a much neater connection than the current 'Camera Adapter plus USB cable' arrangement.

Chord is literally thinking outside the box with its future plans for these add-ons: on the way is a module able to accept SD card storage, allowing the Mojo to function as a standalone player, a Wi-Fi bolt-on to turn it into a network player, and a Bluetooth add-on for wireless connection to suitable devices. At the time of writing, pricing has not been announced for what is clearly an intriguing range of Mojo expansion modules.





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## HEADPHONE AMP/USB DAC



want of a device such as this, delivering levels of performance likely to make larger and more elaborate devices look overpriced.

## A THRILLING DEVICE

Having tried it with a range of headphones from high-end planar magnetics such as those in the Oppo range to in-ears including Focal's excellent Sphear and a pair of the remarkable Astell&Kern AK T8iE, I have no doubt about the ability of the Mojo to drive cleanly even demanding designs with both confidence and power.

Meanwhile the Chord claim that this is an extremely low-noise design is entirely borne out by the superb dynamics the Mojo delivers – not to mention the almost eerie silence between tracks – even when under the scrutiny of the 'direct injection' effect of really good in-ear 'phones.

Having used a number of DAC/amps of this kind, both portable and home-use, I'd go so far as to suggest that not only is the Mojo a remarkable example of the portable audio art, but also more than good enough to be considered very seriously as a DAC for use with a static hi-fi system.

Whether playing a selection of music via Tidal or Qobuz from the computer, or the likes of the excellent releases available via the NativeDSD website, this is a thrilling device to use, whether at home or out and about.

Play the set of string quartets by Joseph Wölfl played by the Pratum Integrum Orchestra Soloists [Caro Mitas CM0032006; DSD64], and the Chord delights with the tight, clear resolution of the instrumental lines and the manner in which the music is propelled forward with excellent rhythmic integrity.

Load up Yuja Wang's energetic reading of the Ravel Piano Concertos [96kHz/24-bit DG download; 479

**ABOVE:** One micro USB port is provided for audio in (up to 768kHz/32-bit), the other for charging, with a 3.5mm coax and Toslink optical in for S/PDIF. Two 3.5mm headphone sockets are fitted

4954] and the Mojo both delivers the intensity and expressiveness of the performance, but also recreates the space and ambience of the Zurich Tonhalle recording venue.

It'll do down and gritty, too, blasting out 'Bonzo's Montreux' from the 96kHz/24-bit version of Led Zep's *Coda* [Swan Song 8122795584] with both full-on attack and serious weight, even when levels are pushed up into the kind of area you probably shouldn't explore except briefly, and then purely in the interests of science.

This mix of fine detail and ambience – all the hi-fi stuff – and sheer connection with the music is what makes the Chord so involving and enjoyable. So is there a problem with the Mojo? Only one: it's so good it begins to make buying a Hugo look a bit of an extravagance.

But I have a feeling that won't trouble the company too much – this little device is going to sell by the truckload. ☺

## HI-FI NEWS VERDICT

The Mojo is nothing short of sensational value for money, challenging many more expensive DACs with its superb sound quality and ability to drive a wide range of headphones. You can even use it to drive a conventional hi-fi system. An even more impressive statement of Chord's capabilities than was the Hugo, it should prove a runaway success for the company, and an unmissable audiophile bargain.

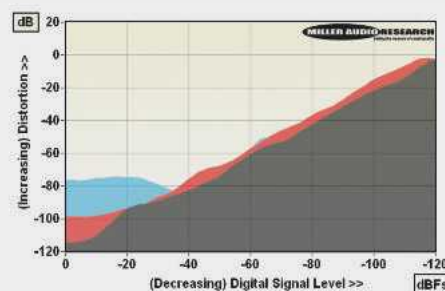
Sound Quality: 90%



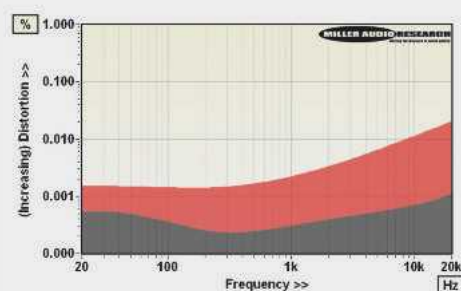
## CHORD MOJO

Presaged by the performance of its larger Hugo models, Chord's Mojo is the most impressive portable battery-powered USB DAC/headphone amp we've tested in *Hi-Fi News* so far. At full volume, and with a peak level (0dBfs) digital input, the Mojo's output is already clipped (+15.5dBV or 5.95V), but backing off reveals a 'clean' voltage output of +13.4dBV (4.66V or 36mW/600ohm) with a power output of 550mW/25ohm at 1% THD, 530mW at 0.5%, 520mW at 0.2% and 510mW at 0.005% [see Graph 1, below]. These figures are within a whisker of those offered by the larger and costlier Chord Hugo TT [*HFN* Dec '15] although, because its analogue output stage is necessarily built to a tighter budget, the Mojo's treble performance is slightly more influenced by headphone loading.

Unloaded, the Mojo's response reaches –0.1dB/20kHz, –3.2dB/45kHz and –10.8dB/90kHz with 48kHz, 96kHz and 192kHz media, respectively, but droops slightly to –0.5dB/20kHz, –4.4dB/45kHz and –12.1dB/90kHz at the same sample rates while delivering 10mW/25ohm. Fortunately the Mojo's low 0.75–2.0ohm output impedance promises little additional variation with undulating headphone loads. However, there's a similar, but mild, increase in HF distortion with loading, the Mojo's vanishingly low 0.0002–0.001% THD (20Hz–20kHz) increasing to 0.0014% through bass and midrange to 0.021% at 20kHz at 10mW/25ohm [see Graph 2, below]. But digital jitter is as low as we've seen from a portable USB DAC at just 50psec and the A-wtd S/N the widest at 104dB – stunning at the price. Readers may view a full QC Suite test report for Chord's Mojo USB DAC/headphone amp by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



ABOVE: THD vs. digital signal level at 1kHz (black, unloaded; red, loaded into 25ohm where 0dBfs = 550mW, –10dBfs = 55mW and –27.4dBfs = 1mW) and 20kHz (blue, into 25ohm)



ABOVE: Distortion versus frequency from 20Hz–20kHz (black, 1V unloaded; red, 10mW into 25ohm load)

## HI-FI NEWS SPECIFICATIONS

Maximum output (re. 0dBfs into 47kohm)	4.66V
Max. power output (re. 0dBfs into 25ohm)	550mW
Output Impedance (20Hz–20kHz)	0.74–1.96ohm
A-wtd S/N ratio (re. 0dBfs)	103.8dB
Distortion (20Hz–20kHz, re. 10mW)	0.0014–0.021%
Freq. resp. (20Hz–20kHz/45kHz/90kHz)	–0.0 to –0.5/–4.4dB/–12.1dB
Digital jitter (loaded at 25ohm/unloaded)	50psec / 45psec
Power consumption (charging)	2W
Dimensions (WHD) / Weight	82x22x60mm / 180g



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# In-akustik Referenz LS-2404

The extensive In-akustik range has a new, fourth-generation flagship loudspeaker cable and it's as thick as a hawser. Review & Lab: **Paul Miller**



Offering everything from interconnect and loudspeaker cables to Ethernet and HDMI leads, the German In-akustik brand aims to provide a wired solution for every consumer's AV installation. Nevertheless its design engineers are clearly audiophiles at heart because a lot of emphasis is placed on its top-end 'Referenz' range of audio cables, now headed by the fantastically unwieldy LS-2404.

Supplied pre-terminated with In-akustik's own rhodium-coated KS-103 spade connectors, a 3m set is priced at a not inconsiderable £2479, but this buys you a very substantial and largely hand-made cable. Now in its fourth generation, In-akustik's 'super-speed waveguide' geometry has been expanded to encompass no fewer than 24x0.74mm<sup>2</sup> multicore conductors, grouped as signal and return pairs and wound around a hollow polyethylene (PE) tube. Each of the 0.74mm<sup>2</sup> conductors comprises multiple OF-copper strands, individually lacquer-coated to prevent non-linear surface-to-surface conduction.



**ABOVE:** In-akustik's flagship Referenz speaker cable is terminated in alloy splitters that also mark its directionality

These are wound around a solid PE core, insulated by foamed 'DUO-PE II' and firmly jacketed in a hard-grade PE.

On test, the LS-2404 offered a vanishingly low 4.5mohm/m series resistance and 0.09µH/m loop inductance but the paralleled construction pushes capacitance up to 368pF/m – acceptable over a 3m length but arguably less than amp-friendly if you went for custom sets over 5m.



### SMOOTH OPERATOR

Perfectly suited to high current amplifiers offering a very low source impedance, the LS-2404 cable is an exceeding low (power) loss solution that promotes the best possible 'grip' at low frequencies.

My Devialet Le 800/B&W 802 D3 combination [*HFN* Dec '15]

sounded especially deep and fulsome with the LS-2404 in tow, the ensemble seemingly relishing the bedrock of bass that

underpins classic tracks like Massive Attack's 'Unfinished Symphony' [*Blue Lines* 44.1kHz/16-bit CD rip]. Moreover, the extreme top-end not only sounded very smooth but also delicately crisp and sensitively nuanced in its portrayal of percussion, brass and metal-stringed guitar. Vocal transparency was slightly less 'see through' by comparison but, boy, this cable can surely belt out tunes with the best of them! ☺

### HI-FI NEWS VERDICT

Flexibility might not be the LS-2404's forte but, partnered with a very capable amplifier and floorstanding loudspeaker, it does nothing to hinder the flow and impact of the deepest bass. The moderate capacitance could mitigate against its use over long runs with some amplifiers but its solid construction argues, instead, for use in close-coupled installations where the power amp(s) are sited adjacent to a pair of equally substantial loudspeakers.

Sound Quality: 80%



**LEFT:** Supplied in a padded wooden crate, the LS-2404's rigid, low-microphony construction means it has a limited bend radius

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"The Perfect Wave Memory (PWM) player seemed to act synergistically with the DirectStream, enhancing the latter's ability to retrieve the maximum amount of sonic information, and sounding even less "digital" in the process".

"I was struck by the claim, made by PS Audio's CEO Paul McGowan, that the processing done by the DirectStream results in superior playback of CDs. I heard more musical detail from CD than I had previously had. This detail was genuinely higher resolution manifested by greater differentiation among the sounds of instruments and rhythmic patterns. Quite amazing".

**Robert Deutsch – Stereophile Feb 2015**



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# Classical Companion

BEHIND THE MUSIC WITH HI-FI NEWS & RECORD REVIEW

## Alfred Brendel *Concert pianist and writer*

Alfred Brendel's farewell performances, in 2008, were recorded by Decca, but he's still a voice to be heard as poet and author. **Christopher Breunig** recalls an early meeting

Staying at a family home in Highgate, Alfred Brendel sat patiently for about two hours answering my questions for what would become a *Guardian* feature. That was in 1970, well before the record company ground rules were established: a run of 20-minute interviews, a PR hovering nervously in the background...

Brendel's only stipulation was that he should see my transcript – duly returned, it saved me from misspelling Busoni's *Fantasia Contrappuntistica*, a piece he had recorded early in his career as concert pianist.

Although, when we met, Brendel had just signed up with Philips – a contract continuing until he withdrew from public performance in 2008 (albeit, to the irritation of purist collectors Universal later decided he, like Mitsuko Uchida, was a 'Decca artist') – he was still performing here at modest music

→ Alfred Brendel's early recordings were for Vox, later reissued here as Turnabout LPs

← Alfred Brendel photographed in 2010



society venues. Even so, for 16 or so years he had been making records in Vienna for the Vox label, often working alone, playing then selecting and editing tapes.

Starting with the Stravinsky *Petrouchka* transcriptions he recorded all 32 Beethoven sonatas, all the variations, (which had not been done before – you really should not miss those on 'Rule Britannia!' and 'God Save The

King'), and concertos. Also of note are Mozart's and the little-known Franz Liszt, eg, *Weihnachtsbaum*, *Csárdás Macabre*, *Unstern!* with its sinister tritones, and the collected operatic transcriptions.

But he wasn't pleased with the welcome these received as Turnabout reissues – often with poor orchestral support (incidentally, his first 'Emperor' recording was also Zubin Mehta's debut on LP) and compromised dynamics. They aren't even shown in the 'complete discography' on his website.

Brendel has always felt that the prewar 78s by artists he admired – his teacher Edwin Fischer, Cortot, Schnabel – sounded more truthful than many modern productions.

'I hear their sound. I don't miss anything, even the dynamics and high frequencies. Every *pianissimo*, every climax is really there.' He has written about this in a series of Robson books, and there was a new one published last August: *Music, Sense And Nonsense* [ISBN: 9781849549059; £25 hardback or £20 ebook]. Combining *Musical Thoughts And Afterthoughts* and *Music Sounded Out* with added new material, this comprises essays on musical interpretation and texts, dealing largely with the composers he's most associated with: Beethoven, Haydn, Liszt and Schubert, and influential interpreters such as Furtwängler and Fischer.

### A SCHOENBERG CHAMPION

The 2001 Robson paperback *Alfred Brendel On Music* [ISBN 1 86105 358 9] had a complete chapter on the Schoenberg Piano Concerto, a work he had long championed. Brendel made one

'His first recital comprised a programme of just fugal works'

of the first recordings, for Vox, and 36 years later a Philips remake, both in partnership with Michael Gielen and the Südwestrundfunk Orchestra. Further versions with Rafael Kubelík [DG] and Bruno Maderna [Stradivarius] have also appeared.

Criticised at a press conference some years ago for pursuing a narrow repertoire, Brendel countered the question 'Why no Ravel?' by suggesting that since Liszt could portray fountains of water so well (*Les jeux d'eaux à la Villa d'Este*), why not stick with him? While interested in Boulez and Stockhausen, he felt the necessary specialisation would only serve to draw him 'away from things which seem more important'.



PHOTO: BENJAMIN FALOVEGA/DECCA CLASSICS

Cautious in manner in interviews, he is not averse to joking. On his habit of protecting his fingertips with sticking plaster, he'll say he 'plays best when I am plastered'. And on Messiaen's music he has commented wryly that, if you take out the Liszt, only birdsong and pornography remain.

His 1998 Faber book *One Finger Too Many* (followed by *Cursing Bagels*) revealed another string to Brendel's bow, surreal imaginings in poetry form: a performer hovering aloft over his piano as the keys played an E-flat trill; Beethoven poisoning Mozart while disguised as Salieri; the arrival (at last) of Godot; and so forth.

If an audience does not laugh at some pieces by Haydn or Beethoven, he says, then there's something wrong with the performer.

A 2000 BBC documentary, *Man And Mask* can be seen on YouTube, and it tells you all you need to know about the early life in Zagreb, where his father ran a cinema and where



PHOTO: CLIVE BARDA/PHILIPS CLASSICS

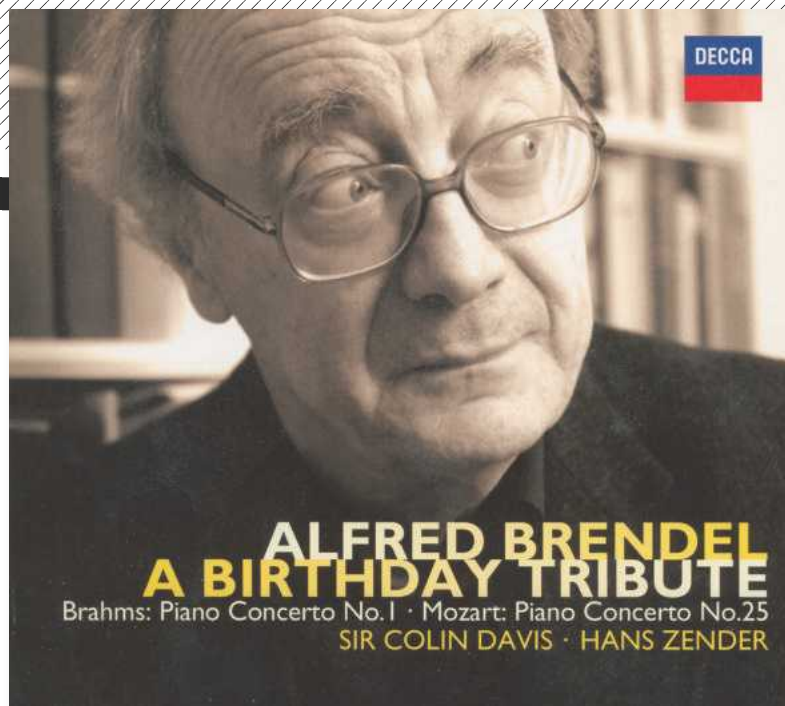
he saw German propaganda films. Later the family moved to Graz, Austria. Brendel revisits old haunts and describes how his first recital, at only 17 (1948), comprised a programme of solely fugal works.

We see some modernist paintings he had thought destroyed but kept by a friend. And briefing Sir Simon Rattle for what would be his fourth recorded cycle of the Beethoven concertos – after the Vox series he did them with Bernard Haitink and the LPO, then live in 1983 with James Levine and the Chicago SO (introducing some tempo changes prompted by further studies).

It's odd to see that the only mention of Brendel in either *Gramophone's* 'Schubert top ten recordings' or 'Schubert piano sonata recommendations' website features is his live *Schwanengesang*.

➔ **Marking the pianist's 80th birthday, this Decca set [see boxout] comprises live performances selected by Brendel himself**

➔ **Sir Neville Marriner, whom Brendel described as like 'an extension of my arm' when they recorded Mozart together**



with Matthias Goerne [Decca 475 6011]. When he began playing the sonatas in London in complete cycles, the *Times* diarist Bernard Levin wrote more than once about their revelatory qualities.

### A SCARCITY OF SCHUBERT

It's hard to credit that just before Brendel went to Philips, the mid-1969 classical catalogue showed just 16 LPs of these works, with the concluding B-flat, D960, represented only by transfers from Artur Schnabel's 1939 78rpm set. (This was one instance where Brendel has always argued *against* taking the first-movement repeat.)

With the Beethoven piano sonatas, the analogue Philips cycle suffered from a rather bland sound quality, and I much prefer the digital remakes listed below,

notwithstanding a lot of vocal noises from Brendel himself. A complementary *Diabelli Variations* choice is perhaps the BBC recording in Decca 475 8322, a 3CD set of broadcasts including Chopin's *Andante Spianato And Grande Polonaise* – a rare example of this pianist in Chopin, although we also had a 1968 version on a Vanguard LP of five *Polonaises* now on HDtracks at 44.1kHz/16-bit res.

Towards the end of his career Brendel was revisiting the Mozart Concertos with 'Charlie', as he called Sir Charles Mackerras, completing Nos 9, 12, 17, 20, 22, 24, 25 and 27 with the SCO, but not in my view superseding the cycle with the St Martin's Academy/Marriner [Philips Mozart Edition, 422 5072]. But then, there was a certain charm with those old Vienna/Vox versions too! 🎵

## ESSENTIAL RECORDINGS

### Beethoven Piano Concertos

Philips 462 7812 (three discs)  
Brendel's fourth recorded cycle is with the Vienna Philharmonic under Sir Simon Rattle, from the great Musikverein (but not live).

### Alfred Brendel Plays Schubert

Philips 475 7191 (two discs)  
Live performances (1984-99) of the Sonatas D784, 840, 894, 959 and 960. But there are so many fine alternatives to choose from, including a 1996-7 Medici Arts DVD series with introductions by Brendel.

### A Birthday Tribute

Decca 478 2604 (two discs)  
Performances preferred by Brendel: Brahms's

D-minor Piano Concerto with the Bavarian RSO/Davis; Mozart's K503 with the SWR Orch/Zender; Beethoven's Op.110 Sonata; Schubert's Impromptu D935:1.

### The Farewell Concerts

Decca 478 2116 (two discs)  
Live performances of Mozart's 'Jeunehomme' Concerto, K271, with VPO/Mackerras and Hanover recital performances of Bach, Beethoven, Haydn, Mozart and Schubert (the composers most associated with the pianist).

### Beethoven 32 Piano Sonatas

Decca 478 1821 (ten discs)  
Transferred across from Philips, these are the digital recordings from 1992-6 – see text.



# Vinyl Release

BEHIND THE MUSIC WITH HI-FI NEWS & RECORD REVIEW

## Santana *Abraxas* (180g vinyl)

Mixing Latin rhythms with rock themes, the band's second studio LP was to put them on the map. **Steve Sutherland** reassesses the album, recently reissued on 180g vinyl

**H**ands up if you're acquainted with The Woman From Lemb? No? Just as well. Created some 3500 years BC, this small limestone statue of uncertain significance was dug up in Lemb, Cypress in 1878 and passed into the hands of an antiquities collector by the name of Lord Elphont. Within six years, he and all seven of his family met untimely ends. The statue then came into the possession of a gentleman called Ivor Venucci. Guess what. Within four years he and his nearest and dearest were all pushing up daisies.

Next? Lord Thompson-Noel. A further four years and all the Thompson-Noels ceased to be. Then Sir Alan Biverbrook bought it, as it immediately hastened himself, his wife and two daughters to similarly early graves.

However, two spooked Biverbrook sons survived just long enough to donate the damned thing to the Royal Scottish Museum in Edinburgh where it still resides to this day, but not before offing the curator who handled her within her first year on exhibit.

Unsurprisingly The Woman From Lemb is also known as The Goddess Of Death and it's her I was thinking of when I began this celebration of Santana's second, and many say best, LP, *Abraxas*. Released in 1970, just after the fledgling band's career-defining performance at the Woodstock Festival, it carries within its exquisite grooves a song surely as cursed as any ever written. That song, appropriately enough, is called 'Black Magic Woman'.

### ERRATIC BEHAVIOUR

It was penned in 1968 by a bloke called Peter Green, at this point in his career the leader of a Brit-blues outfit called Fleetwood Mac and a guitarist emerging with a fluid technique easily the equal of his much-lauded pal from John Mayall's Bluesbreakers, Eric Clapton. Released as a single on the Blue Horizon label, 'Black Magic Woman' did OK in the UK charts, reaching number 37. But all was not well

*'It carries within its grooves a song surely as cursed as any ever written'*

with Mr Green and he began to freak out his bandmates with his increasingly unpredictable behaviour.

Convinced that he didn't deserve the riches and idolatry that his chosen path was delivering, he began gobbling LSD by the bucketload, a habit that culminated in a total breakdown brought on by a particularly strong dose administered at a squat in Munich. By now Mr Green was insisting that he and the band give all their money away and his songwriting veered from the stately majesty of '68's 'Albatross' through '69's schizophrenic 'Oh Well' to

1970's nightmarish 'Green Manalishi'.

Then he quit and drifted into the ozone where he's stayed to this day, only occasionally re-emerging for a session or two, a sorry

shadow of his former self.

Once Green had quit the Mac, the task of singing 'Black Magic Woman' live fell to co-guitarist Danny Kirwan, who duly began to hit the booze too heavily, got fired by his bandmates in '72 and descended into mental illness and homelessness for the best part of the next two decades.

### EXOTIC NEW BLEND

Meanwhile our song was picked up by the young Mexican hotshot guitarist Carlos Santana under the watchful eye of his promoter and adviser Bill Graham, who hammered home the importance of picking commercial material which would play well on the radio.

Santana duly wedded 'Black Magic Woman' to 'Gypsy Queen', a jazzy instrumental which had been written and released in 1966 by a Hungarian guitarist called Gabor Szabo. It was a big break for Gabor but, with Santana's version of his song on the airwaves and climbing the charts, he began to acquire a taste for heroin which led him to seek rehab at Narconon, a programme run by

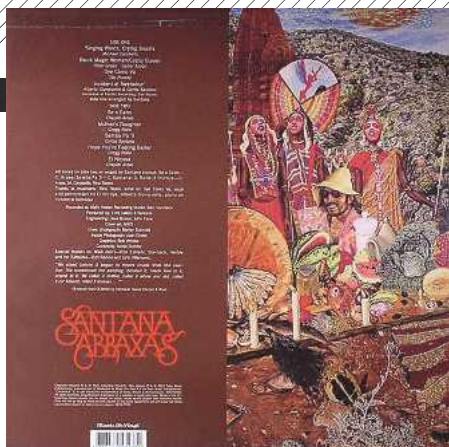
### STEVE SUTHERLAND

Steve edited NME from 1992-2000, the Britpop years, launching NME.com and reviving the NME Awards. Previously he was Assistant Editor on Melody Maker. Among his many adventures he has been physically threatened by Axl Rose, hung out awhile with Jerry Garcia and had a drink or two with Keith Richards...



Columbia press shot (l to r): Mike Shrieve (drums), David Brown (bass), Mike Carabello (percussion), José Areas (percussion), Gregg Rolie (vocals) and Carlos Santana (guitar)





➔ Priced £26.95, the 180g vinyl reissue of Santana's *Abraxas* on Music On Vinyl is available online at [www.amazon.co.uk](http://www.amazon.co.uk)

Scientists who then signed him to their affiliated Vanguard Artists label. In 1980 Gabor sued the Church of Scientology for \$21 million, accusing it of embezzling his money. The case was dropped a year later and a year after that, Gabor was dead from liver and kidney failure.

Still, it seemed, 'Black Magic Woman' was delivering only good things to Carlos Santana and the band which carried his name. In January 1971, it was riding high at No 4 in the Billboard charts, publicity which helped *Abraxas* to No 1 in the album charts and signalled the arrival of an exotic new blend on the musical landscape.

## LIQUID AND FIRE

The *Rolling Stone* review of *Abraxas* claimed it might do for Latin music what Chuck Berry did for the blues, and with rollicking percussion-heavy work-outs like 'Se A Cabo' and 'El Nicoya', both written by Nicaraguan percussionist José Areas, and the more traditional rocker, 'Hope You're Feeling Better', penned and sung by organist Gregg Rolie, Santana were the toast of the West Coast, Carlos Santana's liquid-and-fire guitar as unique and enthralling as Page, Beck, Clapton or any other fretgod you care to name.

Packaged in the most erotic of covers featuring Annunciation, a richly coloured painting of an extremely pneumatic naked African American lady by artist Mati Klarwein, and featuring some zeitgeist-y pseudo-mystical poetry on the back courtesy of in-vogue author Hermann Hesse, *Abraxas* was just about the perfect release for its time.

Psychedelic mambo, rockin' rumba, hippie salsa, underground cha-cha-cha... reviewers fell over themselves to coin a phrase to capture the fresh, free-wheelin', South of the border fiesta spirit being cooked up by a brew of multi-racial, multi-talented musicians who were surely destined for years at the top.



But it didn't quite turn out that way. Several band members soon developed drug habits that forced them to quit and, as Carlos began wilfully to steer his crew into jazzier terrain, vocalist Rolie headed for the exit. Reviews were good but sales declined for this new out-there fusion and Carlos started suffering from a similar delusion to Peter Green.

Unfulfilled by fame and influenced by fellow guitar pioneer John McLaughlin of The Mahavishnu Orchestra, he took himself a guru name of Sri Chinmoy, changed his name to Devadip ('The lamp light and eye of God'), and plunged headlong into experimental territory which had more in common with John Coltrane than, say, The Rolling Stones. It may have been good for his soul, but it was career suicide.

## RETURN TO SENSES

Over the next few albums, most of the band straggled off confused and the charts remained unimpressed. It took almost a decade for their leader to tire of the constraints imposed by his guru and return to what some called his senses and music like his lovely cover of The Zombies' 'She's Not There' which reconnected his talents with the wider audience they deserved.

I'd like, if I may, to add a personal footnote to this celebration of *Abraxas*. My dear old dad and I never really shared any mutual musical appreciation when I was

growing up – he liked soft-centred Nashville stuff like Jim Reeves and Slim Whitman while I was in my bedroom annoying him by hammering out Hendrix at the very top volume my Dansette could manage.

But one song amongst the constant cacophony always caught his ear and that was 'Samba Pa Ti' – one of Carlos Santana's finest, most sensual instrumentals.

When I eventually left home, he bought himself *Abraxas* just so he could listen to that song. And when he died, it was 'Samba Pa Ti' that was playing as they trundled his coffin into the flames. ☺

## RE-RELEASE VERDICT

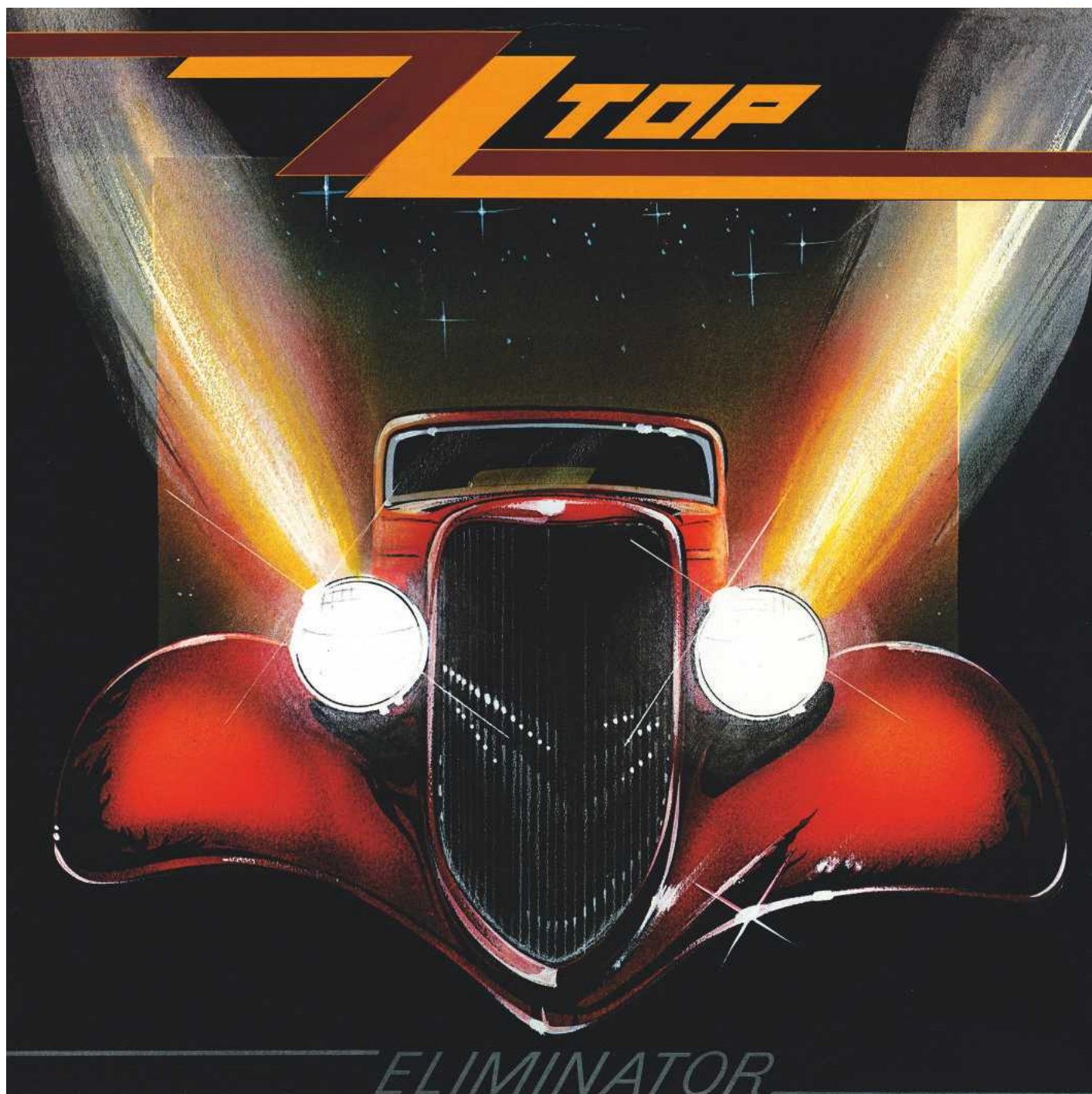
Issued in a crisply printed gatefold sleeve made from thick card and coming complete with a faithful reproduction of the original 60x90cm poster, this reissue once again reflects the care and attention to detail taken by the MOV label.

As for the vinyl, this felt physically heavy, exhibited no warp and there were no playing issues whatsoever, giving credence to the label's claim that the pressing plant it uses in the Netherlands is one of the best. There was also a complete absence of noise. Recommended. HFN

Sound Quality: 89%

0 - - - - - 100





## ZZ Top *Eliminator*

From America's premier boogie band in the 1970s to worldwide stars by the next decade. Could the group's huge commercial success have been down to a Liverpudlian synth pop band they encountered while making a 1980 episode of the *Old Grey Whistle Test*?

Words: **Mike Barnes**



**W**hen Jimi Hendrix was a guest on Johnny Carson's *Tonight* show in the summer of 1969, he offered the opinion that Billy Gibbons, guitarist in The Moving Sidewalks, who had supported The Experience, was 'America's best young guitar player'. But Hendrix would have been shocked at exactly how big Gibbons's new group would eventually become.

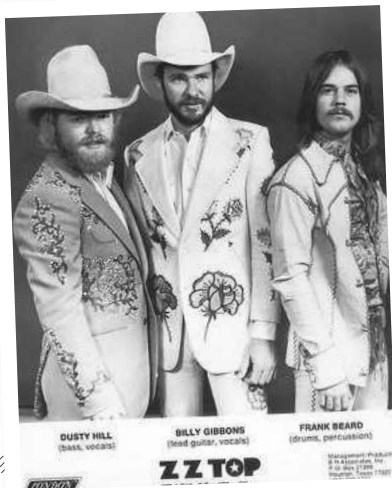
Billy Gibbons grew up in Houston, Texas and formed his first band, The Saints, in 1963 at the age of 14. Next were The Coachmen, who changed their name to The Moving Sidewalks, and whose 1967 single '99th Floor' appears on the second *Pebbles* compilation of garage rock and early psychedelia.

Although Texas in the mid-to-late '60s was an essentially conservative place, there was a sub-stratum of LSD-fuelled countercultural musical activity centred on the notorious band that went by the name of the 13th Floor Elevators, who Gibbons admits were a major influence.

## BLUE HAIR

The connection continued with Gibbons' next group, which saw him team up in 1969 with fellow Texans Frank Beard – who played drums – and bass player Dusty Hill from the band American Blues, who rather bravely sported blue hair.

The new group was called ZZ Top and their debut, *The First ZZ Top Album* (1971) has many flamboyant moments, especially Gibbons' lead and slide guitar playing. But psychedelia had been left behind for what was now, essentially, lean and limber blues-rock.



➔ Frank Beard, Dusty Hill and Billy Gibbons. Frank Beard wears only a moustache

➔ 'Legs' single with sleeve. The car is Gibbons' customised 1933 Ford, which is also illustrated on the LP sleeve

➔ Press shot from 2015

➔ The band in Nudie suits, which they also wore on the cover of their 1975 album *Fandango!*

This sound was refined on *Tres Hombres* (1973), which reached No 8 in the US billboard charts and 1975's *Fandango!* which reached No 10. The latter included the single 'Tush': one of the first songs to embody the elements that would make up their signature bad-ass Southern boogie style.

The lyrical sentiments are fairly unequivocal: 'I said Lord take me downtown/I'm just lookin' for some tush'. But even here there was a feeling that unlike some of the phallogentric hard rock chest-beaters of the time, ZZ Top were delivering these sentiments with tongue in cheek.

This notion is reinforced by the single's picture sleeve where they are drawn, comic-book style, looking somewhat like the Furry Freak Brothers, walking down a city street behind a girl wearing hot pants.

After *Tejas* (1976), just as they seemed to be breaking big, ZZ Top went on hiatus, which has recently been revealed to have been due to Frank Beard's heroin addiction.

When they re-grouped, Hill and Gibbons had, unilaterally they still insist, grown beards the length of which would have befitted old Testament prophets, whereas Beard, the good-looking one, had shaved his off (while gaining a moustache and a mullet). This might sound trivial, but it gave them an absurd image which went from Gibbons and Hill wearing rodeo suits and

ten-gallon hats onstage to matching white overalls, which from a distance made them look like a couple of hoary old prospectors

rocking out in their long johns. The guitarists were just into their 30s, but looked about 60.

## AN EPIPHANY

ZZ Top re-established themselves with relative ease, their sixth LP *Degüello* making the US Top 20 in 1980. They could surely have carried on playing their trademark boogie in its raw state *ad infinitum* – rather like Status Quo in the UK. But paradoxically the band were an

**'The guitarists were just into their 30s, but looked about 60'**

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## VINYL ICONS

### PRODUCTION NOTES

*Eliminator* was produced by the band's long time manager Bill Ham at Ardent Studios, Memphis, Tennessee in 1982. It was a studio the group had used since 1973, but this time the approach would be different.

Gibbons later explained that they were dealing with an early version of MIDI (Musical Instrument Digital Interface). 'All these instruments were talking to each other, and you could make this one the slave to this one. The crack in the code was that the drum machine introduced close-to-perfect time to the listening ear for the first time, which had been the aspiration of musicians since the invention of the metronome.

'So we didn't abandon the blues backdrop. We kept a rock focus. But all of a sudden we're paying attention to good timing, good tuning. Simple.'

Pre-production work was mainly undertaken in Frank Beard's home studio, with Linden Hudson, a friend of the band who was far more conversant with the electronic



hardware than they were and who had helped build the studio. Hudson suggested that the group set a click-track to around 120bpm, a brisk 4/4, which he felt represented the most popular rock tempo. It set the speed for the hit singles 'Gimme All Your Lovin'' and 'Sharp Dressed Man'.

All three musicians were not featured on every cut. The album version of 'Legs' was all synths and sequencers except for Gibbons' guitar. Despite democratic band credits, he was the only group member who actually played on the song, with studio engineer Terry Manning playing all the synthesiser and rhythm parts, many of which were based on the demos that had been made with Hudson. 'You get bored playing to a click track,' said Beard in 2012. 'No way was it as much fun for me as playing like Ginger Baker'.



RALPH ARVISEN

← Dusty Hill (left) and Billy Gibbons on stage with the band in San Antonio, Texas, in 2015

← Ardent Studios located in Memphis, Tennessee was a studio the group had been using since 1973. But for *Eliminator* the approach would be different

← The 12in version of 'TV Dinners', the fourth single to be released from the album

← Three sharp dressed men. The band's name was Gibbons' idea. Seeing concert posters for blues singers BB King and ZZ Hill he decided to combine the two names. He rejected ZZ King...

open-minded trio and had an epiphany of sorts in 1980 when they played on the BBC2's rock show *The Old Grey Whistle Test* with Liverpool synth pop group Orchestral Manoeuvres In The Dark. Gibbons later revealed how the group were struck by 'their synchronous robotic physical stage presence'.

Repairing to Frank Beard's newly appointed 8-track home studio, ZZ Top started messing around with a synthesiser and used its squelchy sequenced patterns on 'Groovy Little Hippy Pad' for their 1981 release *El Loco*. There was really no turning back and for 1983's *Eliminator*

the band went the whole hog, mixing sequencers and synths with rock guitars, each song recorded to a strictly regulated beat.

### THE HOLY GRAIL

In the 1980s, sequencers and click tracks were increasingly being employed to regulate drum tempos. Accuracy was now the holy grail, and drum grooves in pop and dance music would often be stripped down to hi-hat and four simple beats to the bar, alternating bass drum and snare.

This approach was generally unsuited to rock 'n' roll, where very slight fluctuations in tempo – call it 'feel' – occur naturally, and the tyranny of the click-track can result in music that sounds like it's being held back on a tight leash.

On paper, *Eliminator's* mix of sequencers and slide guitars might well have produced a prize turkey, but combined with their trademark strong, simple melodies, it all dovetailed perfectly.

### UNLIKELY COLLISION

Nowhere was this more the case than on 'Sharp Dressed Man', which was an unlikely collision of sequencers and Southern bar blues in the vein of The Allman Brothers

with Frank Beard's simplistic metronomic drums and Billy Gibbons's slide guitar revving up irresistibly, not unlike a high performance

automobile on cruise control.

Played in tandem with the similarly constructed 'Gimme All Your Lovin'', with vocal harmonies from Hill and Gibbons, one had the perfect songs to play while checking your appearance in the mirror before heading out on a Saturday night. Both were big hit singles.

'Legs' is set to a sequenced synth pattern not too far removed from Blondie's 'Heart Of Glass' and the

'One feels ZZ Top rather desired the very things they satirised'







## *All watts are not equal...*

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Editor's Choice 2014, The Absolute Sound

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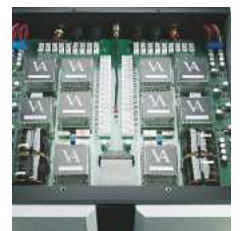
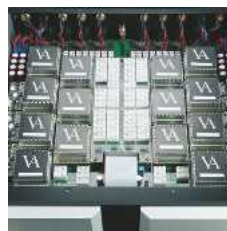
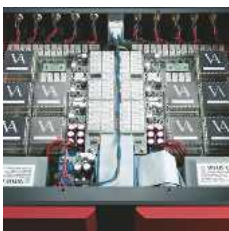
Neil Gader, The Absolute Sound

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# Alternate Format Discography



ZZ Top in 1983 with custom *Eliminator* car-shaped guitars

lyrics, 'She's got legs and she knows how to use them', sound trite if not ridiculous. But whereas some '70s stars reluctantly entered the MTV age, praying that the make-up, lighting and camera work would be flattering, ZZ Top embraced it like they had embraced the new music technology, with the group's bizarre image and absurdist sense of humour coming into their own.

The video for 'Legs' finds a somewhat frumpy, bespectacled, put-upon sales girl – with, as it happens, nice legs – who works in a shoe store. She is then transformed by a trio of models into a supermodel and they all ride off into the sunset in the 'Eliminator' car (Gibbons's customised 1933 Ford featured on the album cover). The group are in attendance, of course, playing guitars covered in fake fur. 'Legs' won Best Group Video in the 1984 MTV awards.

Rock 'n' roll has always been an unreliable medium for conveying irony, but if these droll snapshots of '80s American life – particularly 'TV Dinners' – were taken at face value, then they would work that way, too. One feels that ZZ Top rather desired the very things they satirised.

## FUTURE-PROOFED

*Eliminator* racked up a staggering 10 million plus sales over a period of three years, although it never reached above No 9 on the Billboard album charts. Thirty-two-years on, ZZ Top are still releasing some remarkably strong iterations of the same basic formula, particularly 2012's *La Futura* (a single 'I Gotsta Get Paid' features a video of leggy babes driving hot rods).

And in their shades, stetsons and mighty beards, they look pretty much the same as they always have done. Whether by accident or design, their image was effectively future-proofed years ago. ☺

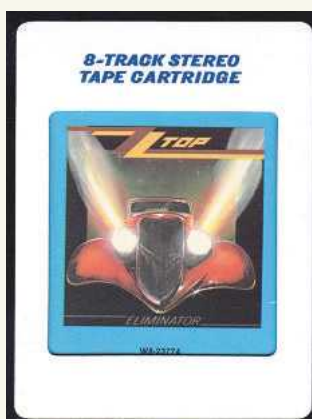


## ORIGINAL LP (1983)

*Eliminator* was first released on vinyl LP in March 1983 on Warner Brothers Records [9-23774-1]. Rare versions include the Irish release, which was manufactured in Germany and arrived – perhaps the result of a Freudian slip – with the track 'I Got The Six' misprinted on the sleeve as 'I Got The Sex'.

After the initial release a few oddities slipped out in 1984 with a Yugoslavian version licensed to Suzy Records (with the initial Warners catalogue number) and a Peruvian promo edition on Warners, but with all the titles translated into Spanish [01-23774-1]. A special picture disc version was released in the UK on WEA in 1985 [W3774P].

The album was reissued in standard format in the US in 1986 [9-23774-2]. There was a notable licensee involved in this reissue in the then Czechoslovakia: the Supraphon label, which was – and still is – renowned as the country's premier classical music outlet.



## CASSETTE AND 8-TRACK (1983)

The 8-track cartridge was almost at the end of its lifespan as a format when *Eliminator* was released. But the album saw two releases, both Club Editions, one on Warner Brothers [W8-23774] and one on RCA Music Service

under licence from Warner Brothers [S134129].

The early '80s was the age of the personal stereo and so a cassette version was released worldwide, but with the US and Canada versions using Dolby noise reduction. All had the catalogue number 9-23774-4. In Yugoslavia the cassette was again licensed to the Suzy label [WB 4923774].

In 1996 a cassette reissue was released on Soyuz, then Russia's largest label [7599-23774-4] and in Poland on Warners subsidiary, Polton [PCW-573].

## CD RELEASE (1983)

*Eliminator* was an early example of an album being released on vinyl LP, cassette, 8-track cartridge and CD simultaneously. The US version was manufactured by JVC in Japan, the European manufactured in Germany by Polygram.

Both these releases were 'Target' CDs. These were one of the earliest CD pressings, issued by WEA (Warner-Elektra-Atlantic) in the early to mid-'80s and manufactured abroad before domestic press facilities in the US were up and running. Target CDs derive their name from the label design used by WEA, which resembles the crosshairs of a gunsight or a target in striking colours.

Today these original CD releases are collectable. Some collectors maintain that these Target CDs have greater fidelity as they are flat transfers of the master tapes, without the processing, noise reduction and compression that have been used with more contemporary remastering.

Both these original CDs carry the catalogue number 9-23774-2. The US version came with a less dramatic misprint than the Irish vinyl LP, namely 'If I Could Only Fly Flag Her Down' [9-23774-2].

The Japanese version came out in 1985 on Warner Brothers [9-23774-2/32XD-133]. This included an eight-page insert with tracklisting in Japanese and English, and lyrics in English. A year later a remastered CD hit the stores in the US [9-23774-2].

## COLLECTOR'S EDITION (2008)

In 2008 a major repackaging of the album took place for the Collector's Edition [8122-79975-1. As well as



the original 11-song running order of the original LP, the CD includes the original single edit of 'Legs' and the more synth-heavy dance mix, plus live versions of 'Gimme All Your Lovin'', 'Sharp Dressed Man', 'I Got The Six', 'TV Dinners', and 'Got Me Under Pressure'. It was remastered by Patrick Kraus.

A second disc is a DVD which comprises the promo videos for the singles: 'TV Dinners', 'Gimme All Your Lovin'', 'Sharp Dressed Man' and 'Legs'. The latter two, directed by Tim Newman, both won MTV Video Music Awards in 1984.

Also featured is a 1983 set filmed live on the Channel 4 music show, *The Tube*, with versions of 'Got Me Under Pressure', 'Gimme All Your Lovin'' 'Sharp Dressed Man' and the lascivious 'Tube Snake Boogie' from their 1981 album, *El Loco*. It comes in a fold-out digipak with a silver front sticker.



## SHM-CD (2013)

In 2013 a special limited edition SHM-CD was released in Japan [WPCR-15174] in a cardboard replica sleeve with lyric insert.

## REMASTERED VINYL (2013)

Rhino Records through Warners released a 180g vinyl version of *Eliminator* in 2013 for the US market [9-23774-1/RHI 96555]. This special 30th anniversary reissue was remastered by Bob Ludwig and Bill Kipper. The 30th anniversary issue appeared in Europe on Warner's own label [8122796555].



# Empress Ballroom, *Blackpool*

From '60s rioters to '80s ravers, generations of music lovers have gathered beneath the chandeliers of this capacious seaside venue to see and hear their heroes perform. **Steve Sutherland** heads for the lights of Blackpool for tales from the Empress Ballroom

**Y**ou may have read recently about a chap named Adrian Cox, a train driver from Bournemouth, who appeared in the papers when he blew two grand hiring a print of Monty Python's *Life Of Brian* to show friends and family at his local, condemned ABC cinema in celebration of his 51st birthday.

Mr Cox made the news because, in gaining permission to screen the movie that many consider Python's finest, he had inadvertently overturned a ban which had been imposed by the local council way back in 1980 when they decreed it too blasphemous for public consumption without considerable cuts, which the distributors at the time were unwilling to make.

## WEIRD SITUATION

So for 35 years, Bournemouth had remained *Brianless*, which is quite a weird situation when you come to think about it. Maybe it's something in the seaside air because, as it turns out, the good burgermeisters of Bournemouth are not alone among the councils of our coastal resorts in imposing bans which surely last decades longer than intended. Consider, for



RICHARD ASH



➔ Inside the venue as it is today and (inset) ticket stub for the 1964 Stones gig that saw the band banned from Blackpool

➔ The Empress is one of a dozen different venues that make up The Winter Gardens



PAUL J. MARTIN / SHUTTERSTOCK.COM

instance, Blackpool City Council who, in the summer of 1964, banned The Rolling Stones from

performing in their neighbourhood: a ban which was only lifted after 44 years, by council leader Peter Callow in 2008 when he issued a statement letting bygones be bygones, inviting the band back to play in the 'Pool.

The Stones ban came about after a particularly rowdy gig at the Empress Ballroom, the venue we're all gathered here to celebrate. It was built, a structure of true Victorian splendour, in 1896 as part of the dozen halls designed to make up the Blackpool Winter Gardens, a pleasure emporium some quarter mile from the beach.

With a sprung dance floor spanning some 12,500 square feet – one of the biggest in the world – a vaulted ceiling boasting 12 chandeliers and surrounded on three sides by ornate balconies, the Empress was a jewel in the crown

of an ambitious project which also included an Indian Lounge and the Opera House Theatre.

Home to the local dance festival and, later, political conferences and Matchplay darts, its tenure as a mecca of entertainment has run uninterrupted since its opening, bar a brief spell during World War I when the admiralty requisitioned it for the assembly of gas envelopes for airships. But in its long and eventful history it had never witnessed anything akin to the riot that ensued on the 24th of July '64 when The Stones came to town.

## MOCKED MERCILESSLY

Let's set the scene: The Stones, recently back from their first testing tour of the States where they are mocked mercilessly by the media, have just released their cover of Bobby Womack's 'It's All Over Now', destined to become their first UK number one. Too see it on its way up the charts, the band have embarked on a series of one-off dates in



← Lulu and backing band The Luvvers

→ The year is 1964 and

The Stones descend from a plane at Amsterdam Airport

Bridlington, Brighton, Blackpool and Leeds. Anyone set of seeing The Stones – billed as the double superlative ‘Fabulous Fabulous Rolling Stones’ and supported by Lulu & The Luvvers and Rey Anton & The Peppermint Men – could expect a set comprising mostly of covers such as Rufus Thomas’ ‘Walking The Dog’, Tommy Tucker’s ‘High Heel Sneakers’, Buddy Holly’s ‘Not Fade Away’, the Marvin Gaye hit ‘Can I Get A Witness’, and the Willie Dixon/ Muddy Waters blues classic ‘I Just Want To Make Love To You’, topped off with, of course, ‘It’s All Over Now’.

When The Stones arrive, they aren’t the only game in town. Just across the way, at the Rainbow Theatre on the South Pier, infamous promoter Larry Parnes’ Big Star Show is in its Summer season featuring a twice-nightly bill of Joe Brown, Johnny Kidd & The Pirates and The Tornados. And on the North Pier, Gene Vincent and The Shouts have recently played a stint supported by up-coming Geordie sensations The Animals along with The Atlantics, billed as Blackpool’s top beat group.



→ The Stones’ version of ‘It’s All Over Now’ – No 1 in July 1964, the month of the Blackpool gig



← Freddie Mercury and Queen played at the venue in March 1974 to promote the release of the album *Queen II*



Still, the eager punters pay their ten shillings and pack into the Empress to partake of what The Stones will refer to on the news the next day as, ‘the most sickening night of our lives’.

### PEOPLE GASPING

This is quite some statement considering what usually happened at such events. ‘We’d walk into some of these places and it was like they had the battle of the Crimea going

on,’ Keith Richards remembers. ‘People gasping, t\*\*s hanging out, chicks choking, nurses running round with ambulances. You know that weird sound that chicks make when they’re really letting it go? They don’t hear the music. And we couldn’t hear ourselves for years!’

Such are the familiar scenes accompanying ’60s pop idolatry. But Blackpool is really something else again. It’s hard to fathom where the aggro starts but some time not long after the gig kicks off, a bunch of guys down the front begin spitting at the band, especially, it seems, at Brian Jones whose girlfriend, Linda Lawrence had given birth to Brian’s son, Julian, just the night before.

Keith clocks all the gobbing and reckons this geezer right in front of him is the ringleader. Keith has a word. Or two. An interchange occurs. It involves the f-word. Repeatedly. The geezer spits at Keith. Keith stomps on his hand. Then kicks him in the face. Cue pandemonium.

Here’s Keith’s side of the story: ‘(It was) during Scots week (the annual holiday), when all the Scots come down and get really drunk and let it rip. A whole gang of ’em came to this ballroom and they didn’t like us and they pushed their way to the

### ‘The kit Charlie Watts borrowed was delivered back in splinters’

front, right through the whole 7000 people, straight to the stage and started spitting at us. In those days I had a temper, and, “You spit on me!” I kicked his face in!”

It’s quite a battle. The Stones leg it off stage smartish. The cops call in reinforcements. With dogs. Pretty much all of the seats around the sides of the venue are torn out. The drum kit Charlie Watts borrowed from a local band is eventually delivered back to its tearful owner in splinters. And the *pièce de résistance*, a Steinway piano is heaved off the stage to crash onto the dance floor. Estimates of the damage will range from £4000 to £10,000: a lot of money in those days. Fifty people are carted





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## CLASSIC VENUES



to hospital, 30 of them seriously injured including two coppers.

Such is the furore that Ken Dodd, the buck-toothed guvnor of the Diddy men who sported an ace rat's nest hairdo, well pre-Robert Smith, is asked to extend his evening's show at the adjacent Opera House to ensure his giggling crowd doesn't get accidentally embroiled in the carnage next door.

Cue the ban which is only lifted, as we know, some 44 years later. And it's interesting to note that, only three weeks after The Stones are banished, The Beatles play Blackpool with The Kinks and The High Numbers (soon to be rechristened The Who) also in tow occasioning no untoward scenes beyond the usual fans' screaming, fainting and so on.

### NASCENT RAVERS

Other stand-out Empress shows include the opening night of Queen's first major headlining tour. On the 1st of March 1974, the Ballroom hosted the inaugural live celebration of their latest album, *Queen II*. For £1.10 on the door, the Blackpool audience was also treated to sets by Marie Celeste and Bob Kerr's Whoopie Band.

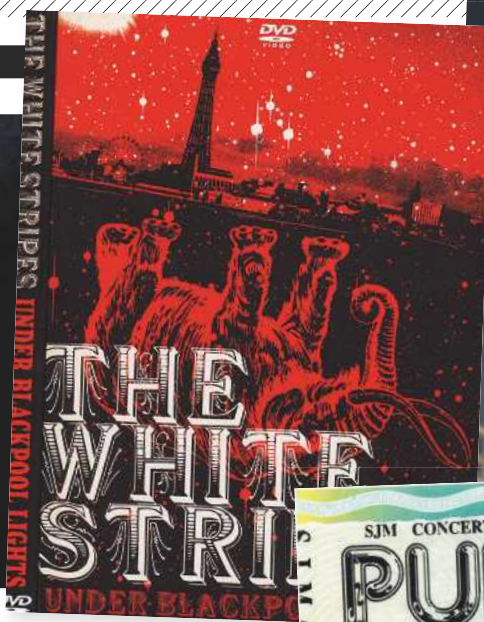
Some 15 years after Queen graced the boards, The Stone Roses invaded the Empress, performing what some say

was their most celebratory and legendary show ever on the 12th of August 1989. Four thousand nascent ravers rocked up to hear a classic set which included 'I Wanna Be Adored', 'Waterfall', 'She Bangs The Drums' and 'I Am The Resurrection', singer Ian Brown explaining: 'We wanted to play Blackpool to give people a day out. When you live in Manchester there's nowhere else to go; it's the local seaside resort.' The occasion was captured on a live film and bootleg album, still freely available on the Internet.

Into the mid-'90s and Sheffield band Pulp stopped by, entertaining fans on the 17th of December 1995 with a 15-song set that included hits from their UK No 1 album of that year, *Different Class*.

The Empress also served as the location for *Under Blackpool Lights*, the first official DVD issued by The White Stripes. Filmed in appropriately moody black and white on the 27th and 28th of January

*'If life were like the movies we'd end with The Stones' return'*

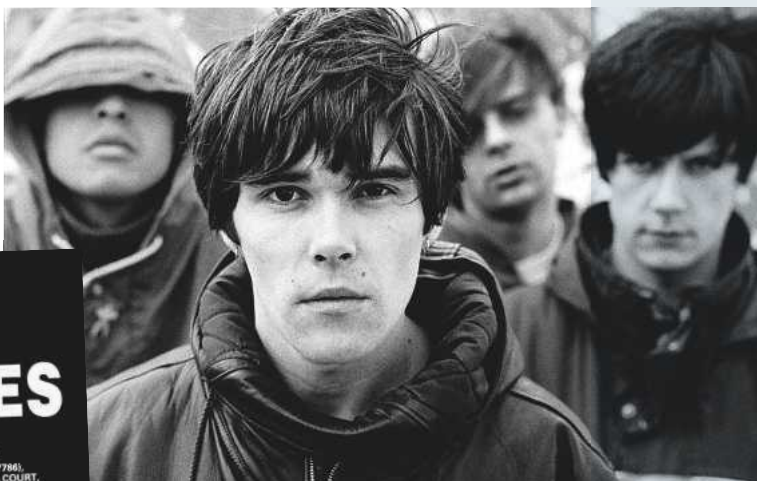


2004 the footage captures 26 tracks of Jack and Meg White at the peak of their dramatic interaction.

### FAB COVERS

Released at the end of 2004, *Under Blackpool Lights* includes many fab cover versions including Screaming Lord Sutch's 'Jack The Ripper', Dolly Parton's 'Jolene' and Son House's 'Death Letter' alongside such original fan favourites as 'Hotel Yorba', 'Seven Nation Army' and 'The Big Three Killed My Baby'.

If life were like the movies, we'd be ending this article with The Stones' triumphant return to the Empress but sadly, as we speak, the RSVP remains in the post. ☹



↑ Jarvis Cocker of Pulp, whose 1995 appearance ended a year that saw the band hit No 1 on the UK LP charts

← Ticket for the December Pulp gig

← Meg and Jack of The White Stripes and their concert DVD recorded at the venue

← The Stone Roses in 1989 and (left) gig poster



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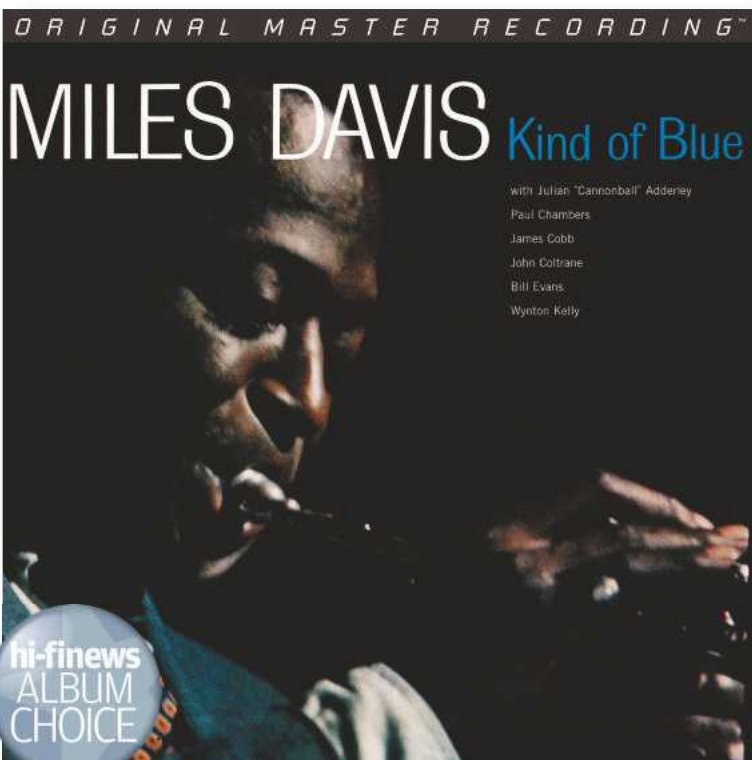
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## ALBUM REVIEWS: VINYL



### MILES DAVIS Kind Of Blue

Mobile Fidelity MFSL 2-45011 (three 45rpm LPs)

I will leave it to others to discuss the minutiae of the various editions of this LP, reissued so many times that a book has been written about the sessions. It is said to be the best-selling jazz album of all time, and I cannot name a format in which it *hasn't* been released. I have a half-dozen respected versions but this is far and away the most vivid incarnation I've experienced. One impressive element is not even the playing: it's the 'air' in the recording. You hear breathing, you hear valves opening. If ever the 45rpm LP needed a 'killer app', this is it: just the original five cuts, sounding like *never* before. Unless, that is, you have a reel-to-reel three-track copy... *KK*

Sound Quality: 93%

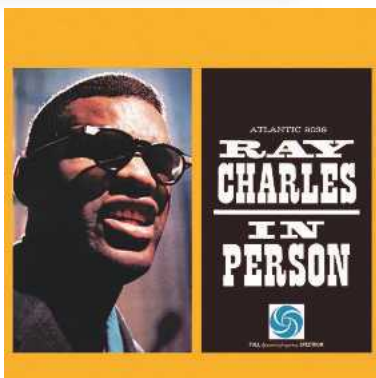


### CLARENCE CARTER Patches

Pure Pleasure/Atlantic SD 8267 (180g vinyl)

While the title track may be familiar to those of the Northern Soul persuasion, the blind guitarist – 80 next year – is more than a one-hit wonder: he's revered by those who know him for his blues-ier output and his proximity to his gospel roots. This is one of his more successful releases in a 50-year-plus career, but clearly the by-product of the title smash. One of those sessions filled with wizard sidemen – this crop includes Travis Wammack – it was recorded at the Fame Studios, so the sound is swampy Deep South. The surprise, though, is the rarely remembered, yet utterly masterful reading of The Beatles' 'Let It Be', which exploits its gospel intent. *KK*

Sound Quality: 90%



### RAY CHARLES In Person

Pure Pleasure/Atlantic 8039 (mono; 180g vinyl)

Wanna torment those who hate mono? This live recording – without question one of Ray Charles' finest – dates from 1959 but it is so room-filling that you'll soon forget the single-channel status. It's all here: rousing, soul-stirring takes of 'The Right Time', 'What'd I Say', an utterly devastating 'Drown In My Own Tears'. The Raylettes were in top form, with backing vocals that perfectly augment some hyper-funky playing from a line-up that included David Newman on sax. This is a short set, but it's quality – not quantity. The audiophile canon is filled with Ray Charles releases, but this one ranks with the very best. They didn't call him a genius for nothing. *KK*

Sound Quality: 90%



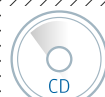
### COMMANDER CODY AND HIS LOST PLANET ARMEN Live In San Francisco 1971

Sundazed LP5522 (180g vinyl)

Barely remembered, but this wacky-baccy outfit (along with Dan Hicks and a few others) made Western Swing and other sassy Country & Western sub-genres palatable to the rock generation. Sundazed has dug deep and unearthed this magnificent, never-before-available live set from 1971, recorded for broadcast by KSAN: 'San Francisco's hippest radio station'. The sound is staggeringly good, and not to be confused with the spate of compressed-sounding CDs now being issued and taken off FM radio. Plenty of pedal steel, stoned humour and unexpected cover versions, this is simply a lot of fun. *KK*

Sound Quality: 87%





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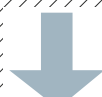
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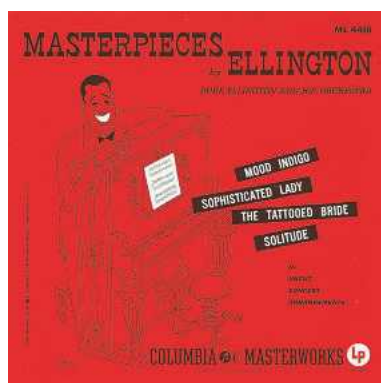
## JOE COCKER

With A Little Help From My Friends

AudioFidelity AFZ209

As debuts go, this one ranks right up there with The Doors' first: it hit in 1969, Cocker arriving among the rock royalty as a fully-formed, blues-y belter. His talent was such that musicians on this included Steve Winwood, Jimmy Page, Albert Lee, Chris Stainton and others of that calibre, with astounding backing vocals provided by Brenda and Patrice Holloway, Merry Clayton and Madeline Bell. It set the pattern for astounding, heart-felt cover versions delivered with pure passion, over the next 40 years. He may have bettered this, but the title track alone showed him to be a near-mythical performer: it takes a certain magic to do it better than The Beatles. **KK**

Sound Quality: 88%



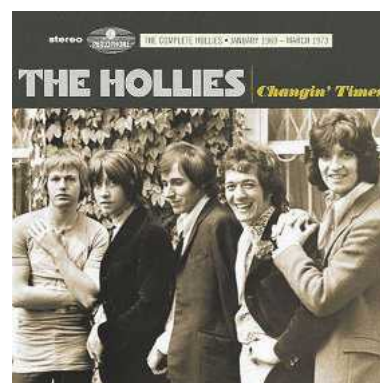
## DUKE ELLINGTON

Masterpieces By Ellington

Analogue Productions CAPI 4418 SA (mono)

Even if you have no interest in the music – and I would worry about one who doesn't at the very least respect Duke Ellington – the fact that this mono, 65-year-old recording sounds as lush as it does is reason to investigate. This is subtlety to marvel at, with textures that can only be described as 'ethereal' or 'gossamer-like'. Offering the original selection of 'uncut concert arrangements' from 1950 of 'Mood Indigo', 'Sophisticated Lady', 'The Tattooed Bride' and 'Solitude', it has been expanded by 'Vagabonds', 'Smada' and 'Rock Slippin' At The Blue Note', from 1951. Ellington's first LP for Columbia, this release helped to establish the concept of an 'album'. **KK**

Sound Quality: 88%



## THE HOLLIES

Changin' Times

Parlophone 0825646336111 (five discs)

Subtitled 'The Complete Hollies: January 1969-March 1973', this offers everything they recorded in a much-maligned period, but you should skip most of CD1: it contains their dire, sub-Las Vegas lounge-lizard album of Dylan covers with arrangements so unsuitable and dated that they're not kitsch but risible. 'Blowin' In The Wind' sounds like a shampoo advert – what were they thinking? That aside, this era yielded their last hits, including 'Long Cool Woman (In A Black Dress)' and 'He Ain't Heavy He's My Brother', with but sporadic chart action afterwards. As ever, the harmonies are peerless, the sound truly sublime – and most of the material is stunningly good. **KK**

Sound Quality: 90%



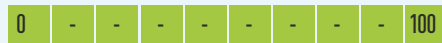
## THE WEAVERS

Reunion At Carnegie Hall 1963

Analogue Productions CAPF 005 SA

At a time when political misfits are enjoying dangerous credibility in positions of real power, it's hard to be blasé while reviewing works by nihilists, anarchists or other so-called rebels. Thus it is through gritted teeth I force myself, in the role of audio critic, to subsume my abhorrence of naïve 'Kumbaya' warblers and recognise the genuine sonic excellence of this perennial audiophile favourite. Still, I love knowing that this clichéd, right-on, PC fare – 'Wimoweh', 'If I Had A Hammer', 'Study War No More' *et al* – will be played without irony through systems that cost more than the annual national wage. Decades before 'unplugged' became a commercial proposition, this was the genuine acoustic standard. **KK**

Sound Quality: 93%



## THE WEAVERS

Reunion at Carnegie Hall 1963

Recorded on location at Carnegie Hall May 2<sup>nd</sup> and 3<sup>rd</sup> at two historic concerts celebrating the **15<sup>th</sup> ANNIVERSARY** of the Weavers







### JONAS KAUFMANN, NESSUN DORMA

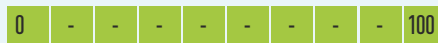
Jonas Kaufmann, et al, St Cecilia Academy Nat Orch & Ch/Antonio Pappano (96kHz/24-bit; FLAC)

[www.hifinews.co.uk](http://www.hifinews.co.uk); Sony Classical 0888750924926

Kaufmann and Puccini – how could anyone resist, when his vocal artistry is so complete? He floats a line with infinite care then expands dynamics to meet every theatrical demand. Terrific warm backing from Pappano too. And the production adds variety by changing vocal perspectives for soloists and chorus – occasionally, though, I found Kaufmann almost too forward and spread. Every Puccini opera is represented with these arias except, of course, the all-female *Suor*

*Angelica*. And the obvious favourites are here: the *Turandot* 'Nessun dorma' excerpt made famous by The Three Tenors, 'Recondito armonio' from *Tosca* (he sang these two at Last Night of The Proms and one here from *Manon Lescaut*), 'O suave fanciulla' from *La Bohème*, 'Addio, fiorito asil' from *Madame Butterfly*, etc. But it's a real pain that you don't get any texts from HRA with the album. **CB**

Sound Quality: 95%



### BILL STEWART

Space Squid (96kHz/24-bit; FLAC)

[www.hifinews.co.uk](http://www.hifinews.co.uk); PIRouet Records PIT3089

So, why Space Squid? Drummer/composer Bill Stewart says 'I like the sound of the title and I am slightly fascinated with squid and octopus. They can also be delicious'. With that out of the way it's also worth knowing that, according to German label PIRouet, he 'reaches for the sky and plumbs the depths with a group of like-minded musical explorers'. Hmm... Joined here by Seamus Blake on sax, Bill Carrothers on piano and bassist Ben Street, and recorded at Sear Sound in New York, Stewart serves up ten original tracks, closing with a downbeat take on 'Dancing In The Dark'. Perhaps we already know what to expect, as most of the album is jazz of the gentle, impressionist kind: full of immaculately recorded instruments, with drums prominent, but more for late night chilling with a knowing nod of the head, rather than getting the old toes tapping. **AE**

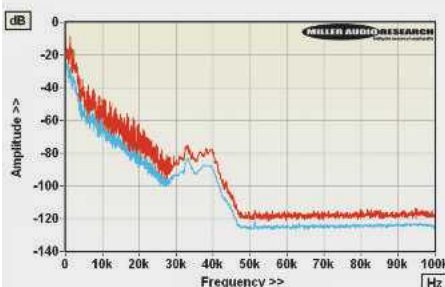
Sound Quality: 80%



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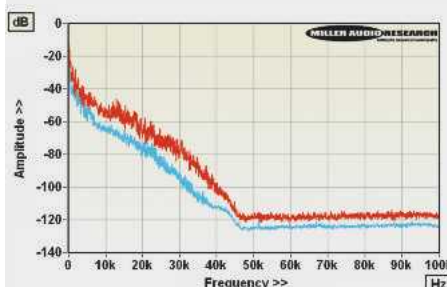
Following our Investigation feature [HFN, Jun '11] where we examined the claimed quality of high-resolution downloads, *Hi-Fi News & Record Review* is now measuring the true sample rate and bit-depth of the HD music downloads reviewed on these pages. These unique reviews will be a regular source of information for those seeking new and re-mastered recordings offered at high sample rates and with the promise of delivering the very best sound quality. (Note: asterisk in headings denotes technical reservation explained below.) **PM**

### LAB REPORT



This 96kHz recording enjoys a huge dynamic range, thoroughly explored by Kaufmann's charismatic performance. A pity about the low-level spurious between 28-40kHz on the right channel only, but with no direct subjective impact. **PM**

### LAB REPORT



Very cleanly recorded and mastered at 96kHz this 24-bit download looks both free of spurious tones and sampling artefacts and enjoys a decent dynamic range to fully express the scope of the accompanying percussion. **PM**



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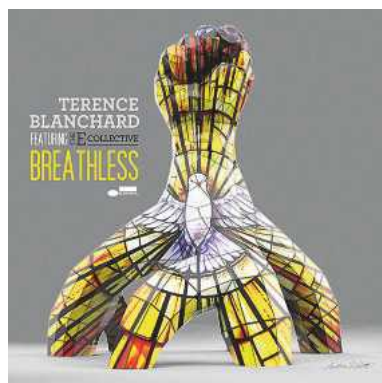
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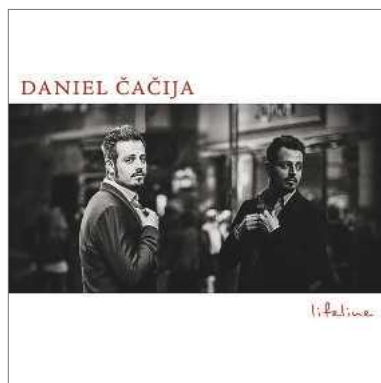
## TERENCE BLANCHARD

Breathless (96kHz/24-bit; FLAC)\*

[www.hifiresaudio.com](http://www.hifiresaudio.com); Blue Note 254726939

Trumpeter and composer Blanchard joins forces with his regular quintet to deliver an album of covers and originals combining plenty of funk and groove, along with lush, deep washes of sound and moments of sparkling musical genius. Executive producer here is Blue Note president Don Was, and the material ranges from a soulful version of Hank Williams's 'I Ain't Got Nothing But Time' to the take on Coldplay's 'Midnight' used to close the set. The sound ranges from the stripped down to the near-orchestral, with Blanchard's instrument always sounding glorious, and the band – Donald Ramsey on bass, Oscar Seaton on drums, guitarist Charles Altura and Fabian Almazan – has that intuitive ability to break free and bounce the tunes around when required. Mixed sample rates notwithstanding [see Lab Report, below], this is one superb-sounding album. *AE*

Sound Quality: 85%



## DANIEL ČAČIJA

Lifeline (88.2kHz/24-bit; FLAC)\*

[www.hifiresaudio.com](http://www.hifiresaudio.com); Mons Records MR 874571

This debut album by Croatian-born but German-resident singer Čačija features what could only be described as an eclectic mix of music, from hip-hop influences to standards (some of them recorded live), but with one major unifying factor: the star, here front and centre before a band of anonymous musicians, has a damn fine set of pipes on him. He can cruise through Mingus's 'Strollin'' with consummate ease, slam out the self-arranged 'No Church In The Wild' (which credits writers from Kanye West to Phil Manzanera and James Brown), and whip up the audience at the North Sea Jazz Festival with his take on 'Lush Life', one of three live tracks closing the album. He's served well by recordings (again uncredited) fully able to reveal his timbres and techniques, to make a fine showcase for what is clearly a highly impressive voice and some great musicianship. *AE*

Sound Quality: 80%



## SCHUMANN

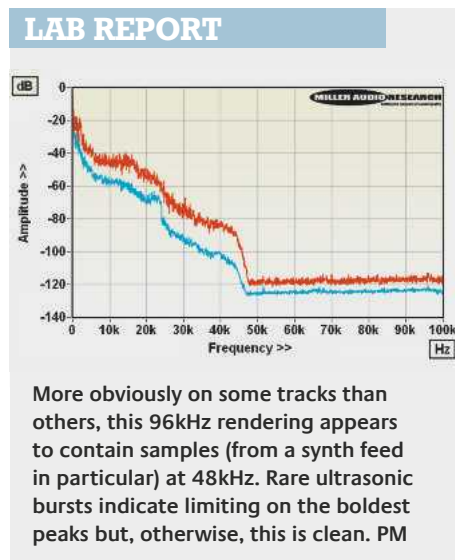
Piano Concerto; Piano Trio No 2.

Alexander Melnikov/Freiburg Baroque Orch/Pablo Heras-Casado; Isabelle Faust; Jean-Guihen Queyras (96kHz/24-bit FLAC)

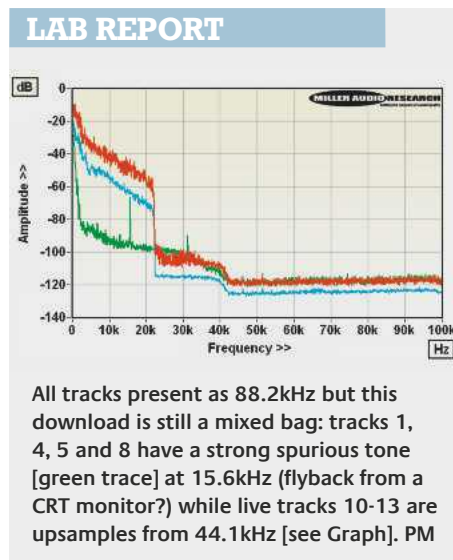
[www.hifiresaudio.com](http://www.hifiresaudio.com); Harmonia Mundi HMC 902198

As with their Dvořák series with the Czech PO, Faust/Melnikov/Queyras are coupling a chamber work with a concerto – this time with a period-instrument orchestra. For the Schumann Concerto, Melnikov has elected to play a robust 1837 Érard; then an 1847 Streicher in the Trio – with more body than the one heard in their Trio No 3 [HMC 902196]. Clear and open, this is an attractive recording, with some subtle detailing mostly from Faust. The Concerto is more unsettling. In (i) Melnikov's playing is at times brusque, loud, then artful and soft – contrasts quite violently imposed, although fully matched by the orchestra, with its reedy wind timbres and dry timps. The *Intermezzo* is bright, extravert, but the finale is rather plain and charmless. *CB*

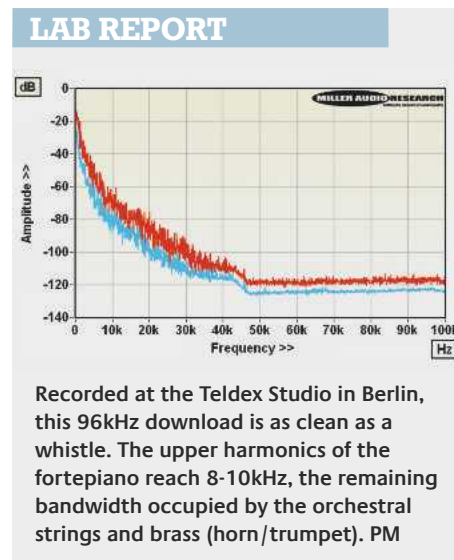
Sound Quality: 75%



More obviously on some tracks than others, this 96kHz rendering appears to contain samples (from a synth feed in particular) at 48kHz. Rare ultrasonic bursts indicate limiting on the boldest peaks but, otherwise, this is clean. *PM*



All tracks present as 88.2kHz but this download is still a mixed bag: tracks 1, 4, 5 and 8 have a strong spurious tone [green trace] at 15.6kHz (flyback from a CRT monitor?) while live tracks 10-13 are upsamples from 44.1kHz [see Graph]. *PM*



Recorded at the Teldex Studio in Berlin, this 96kHz download is as clean as a whistle. The upper harmonics of the fortissimo reach 8-10kHz, the remaining bandwidth occupied by the orchestral strings and brass (horn/trumpet). *PM*





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*Sinfonia Anniversary, with Gold Lion valves (pictured), also available.*



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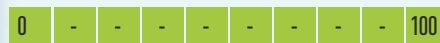
### BUTTERFLY CHILD

Futures

Dell'Orso Records EDDA37CD

If the term 'luminous dream pop' means, or even suggests, anything to you, then it's high time you checked out this, the fourth album by Irish song-weaver Joe Cassidy, aka Butterfly Child. Since his last album – 18 years ago – he has moved to LA and immersed himself in making music for movies and TV, but this is no half-hearted attempt at a credibility comeback. *Futures* overflows with huge, crashing waves of symphonic pop, sometimes reminiscent of The Cocteau Twins, sometimes of Dashboard Confessional, and just occasionally of Phil Spector producing Glen Campbell in a crater on the moon. Stunningly imaginative production ideas, irresistible melodic hooks and heart-meltingly sad lyrics: what more can you ask? *JBk*

Sound Quality: 93%



### YACHT

I Thought The Future Would Be Cooler

Downtown Records DWT70414

If I was feeling lazy, I could describe this LA duo as a subtle blend of New Order, Eurythmics and Ting Tings, but they deserve better. The 11 songs on their sixth album confirm, comfortingly, that they haven't lost the quirky energy or computerised electronic suss that characterised their 2004 debut. If anything, they're more adventurous now than they were then, despite sounding more commercially accessible – which is probably because the mainstream pop world is finally catching up with them. Claire Evans is a great deadpan vocalist and Jona Bechtolt a terrific digital wizard. Quite how the future could be any cooler than this album, I don't know. *JBk*

Sound Quality: 92%



### MARK PONTIN GROUP

Textures

Moochee Records Moochee 0003

Another macho blues-rock axe virtuoso is the last thing I thought I'd be recommending, but Mark Pontin is something else again. I almost ejected the disc after hearing the chunky opening riff of 'Outside Inside' but as the song progressed I started to clock some smart lyrics and unexpectedly subtle backup harmony vocals. Then came 'Change', a soul-inflected slab of melancholy that caught me unawares, followed by the near-grunge murk of 'Three Days' and the almost jazzy changes of 'The Sea'. Even his inevitable riffmeister epics display enough quirky individuality to suggest that Pontin could still be worth hearing a decade hence. *JBk*

Sound Quality: 88%



### COCOROSIE

Heartache City

Lost Girl Records LGR001CD

Here we have the sixth album by two very idiosyncratic ladies indeed, the sisters Bianca and Sierra Casady. Ignore the superficial sheen of their sub-teen girly vocals, and you'll find yourself adrift in a surreal universe where opinionated plants and the sex lives of snails are subjects worthy of singing about. Their songs have a fairy-tale quality, enhanced by the fact that many of their lyrics are spoken, but when they do sing they display that ethereal harmonic sense so typical of siblings, ultra-sweet and slightly disturbing. If you can't take the pseudo-witchy-woman schtick of Stevie Nicks, check out CocoRosie for magic on a wholly more subversive level. *JBk*

Sound Quality: 90%





# eleanor mcevoy love must be tough



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Naked Music (MOSCD4014)  
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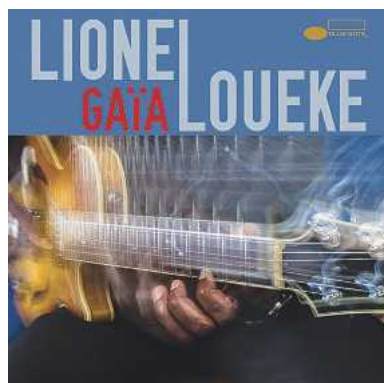
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### LIONEL LOUEKE

*Gaia*

Blue Note 80023545-02

Loueke's trio heard here – with Swedish/Italian bassist Massimo Biolcati and Hungarian drummer Ferenc Nemeth – originated in the late 1990s while all three were at Berklee. They formed the fusion band Gilefema, and played together on the Benin-born guitarist's 2008 Blue Note debut, *Karibu*. But *Gaia*, recorded live with an (unheard) audience, reveals a rockier Loueke than you might expect, reflecting his early admiration for BB King and Hendrix, eg, with 'Procession' resembling a Band Of Gypsies jam. And the only cover here, his jaunty take on The Bee Gees' 'How Deep Is Your Love', closes the album with a serious message for the planet. *SH*

Sound Quality: 85%



### TONY KOFI/ALAN BARNES

*The Kofi-Barnes Aggregation*

Woodville Records WVCD145

Since launching his Woodville label in 2003, the prolific and versatile Alan Barnes has collaborated memorably with fellow saxophonists including Scott Hamilton and Ken Peplowski. After working with Tony Kofi in Arnie Somogyi's Mingus project, he invited Kofi to co-lead the 'Aggregation' quintet and, with both men playing alto sax, the result is a crisp, urgent ensemble sound as well as a string of exciting solos. Barnes' choice of sidemen was inspired too, with the punchy sound of Gilad Atzmon pianist John Turville, the big-toned bass of Adam King and, propelling it all smoothly, the great swinging beat of ex-Gil Scott Heron drummer Rod Youngs. A treat. *SH*

Sound Quality: 80%



### IBRAHIM MAALOUF

*Kalthoum*

Impulse! 4749696

*Wind*, the French-based, Lebanese-born trumpeter's 2011 album, emulated the sound-world that Miles Davis created for the 1957 film *Ascenseur Pour L'échafaud*. Four years on, Maalouf and regular pianist Frank Woeste reunited with the same three New York musicians to record a different kind of homage, a suite based on the best-known song of the great Egyptian diva Oum Kalthoum. Maalouf uses the four-valve quarter-tone trumpet developed by his father, Nassim, while saxophonist Mark Turner is in great form and explores quarter-tones too. With the superb rhythm team of Larry Grenadier and Clarence Penn, this is a triumph of cross-cultural understanding. *SH*

Sound Quality: 85%



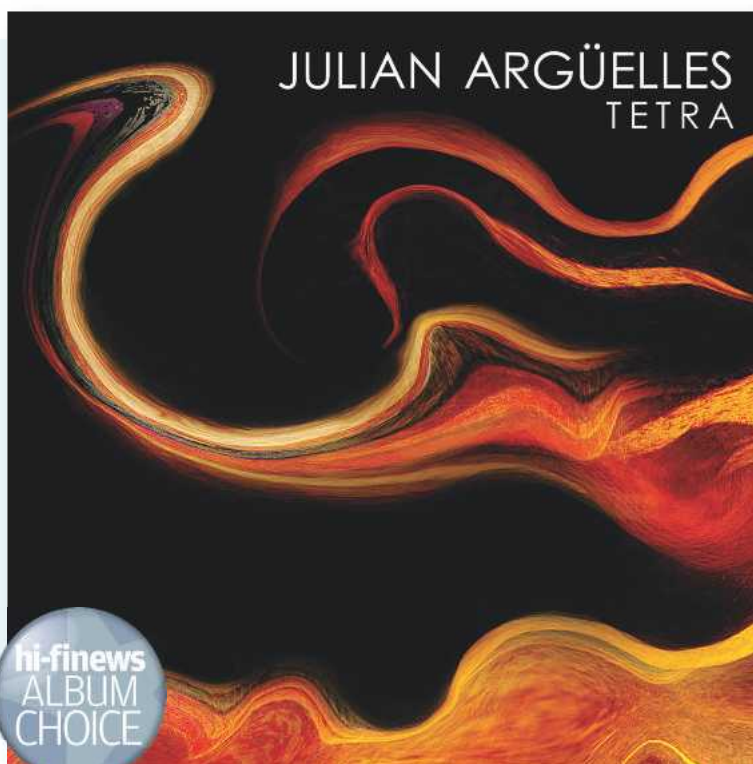
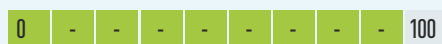
### JULIAN ARGÜELLES

*Tetra*

Whirlwind Recordings WR4678

Though he made his mark with Loose Tubes back in the 1980s, the virtuoso saxophonist has recently featured as composer/conductor with the Frankfurt Radio big band, and here leads his stunningly talented UK quartet. On piano is Kit Downes, who moved on from Empirical to lead his own trio and play organ in Troyka; the drummer is James Maddren and bassist is Sam Lasserson. They soar over every challenge in Argüelles' compositions with the ease of a show jumper making a clear round, and the music just flows from start to finish. Flippant rhyming titles belie the content, 'Nitty Gritty' for example offering the most inspired and lyrical writing. With inviting, natural sonics too, this is an absorbing, rewarding listen. *SH*

Sound Quality: 90%



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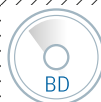
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### PROKOFIEV

Violin Concerto No 2; Violin Sonata; Sonata for two violins  
Viktoria Mullova, Tedi Papavrami, Frankfurt Radio Symphony  
Orchestra/Paavo Järvi

Onyx ONYX 4142 (downloads up to 96kHz/24-bit resolution)

Perhaps unduly influenced by the K214 coupling with David Oistrakh's famous EMI LP recording, I have always seen Prokofiev's Concerto No 2 as quasi-Mozartian. The recent Ehnes/Chandos version wouldn't alter that response, unlike this red-blooded Mullova/Järvi live version which surely sets a new benchmark for performance. Also live, the two-violin Sonata emerges as an equally great work – less so the solo Sonata reworked from a children's exercise. Here, Mullova is positively feral (where Ehnes was merely restrained). Excellent sound too with both venues – the sonatas are from a second, more intimate Frankfurt hall. **CB**

Sound Quality: 95%



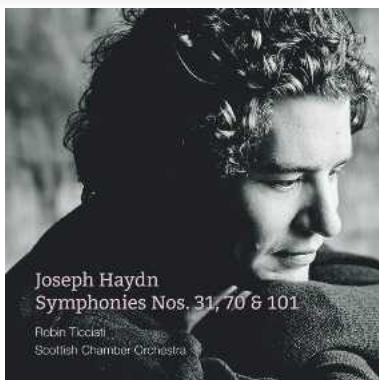
### BERLIOZ

Symphonie Fantastique; Léo  
Gérard Depardieu et al, Chicago SO & Ch/Riccardo Muti

CSO Resound CSOR 901 1501 (downloads up to 96kHz/24-bit)

This two-disc set adds Berlioz's strange sequel *Léo*, 'The Return To Life', to a super-refined account of the *Symphonie*, with all its repeats observed (as with Muti's 1984 Philadelphia/EMI version) and minute attention accorded to every sonority: eg, those brass snarling slides in the 'Witches Sabbath'. I thought it was a real treat musically, although some will want a rougher edge to their Berlioz. *Léo* is rarely heard, as it needs chorus, pianist, tenor and bass-baritone soloists as well as a narrator (Depardieu here). These CSO recordings are from Sep '10 concert performances staged exactly as the composer had specified. **CB**

Sound Quality: 90%



### HAYDN

Symphonies Nos 31, 70 and 101  
Scottish CO/Robin Ticciati

Linn CKD500 (SACD; downloads up to 192kHz/24-bit res)

Robin Ticciati follows his highly individual Schumann cycle [Yearbook Album Choice, 2015] with three works by a composer prominent in his mentor's, Sir Colin Davis's, discography. No 101 is of course 'The Clock' (ticking very smartly here). No 31 also has a name, 'Hornsignal', needing four horn players – an almost unknown luxury in Haydn's time and a fine corporate sound here. The third work in D was written (1779) in response to restoration work after a disastrous fire at Esterháza. Ticciati observes every possible repeat – minuet sections after trios too – but the bouyancy of the SCO playing holds our attention. **CB**

Sound Quality: 90%



### GLINKA/TCHAIKOVSKY/ RIMSKY-KORSAKOV

Jota Aragonesa/Capriccio Italien; Andante Cantabile/  
Tsar Sultan Suite

Philharmonia Orchestra/Paul Kletzki

Hi-Q Records HIQLP043

The Polish conductor was recording for EMI from 1946 to 1963, largely in popular repertoire – as in this well received 1958 Kingsway Hall programme. (Walter Legge valued him as an orchestral trainer.) He's best remembered for *Scheherazade*, a Tchaikovsky *Pathétique*, Mahler 4 and, later, a stimulating Beethoven cycle with the Czech PO [Supraphon]. The beautiful string phrasing of the opening *Andante Cantabile* is equalled throughout and the early stereo recording has wide dynamics and specific soundstaging: an excellent transfer. **CB**

Sound Quality: 80%



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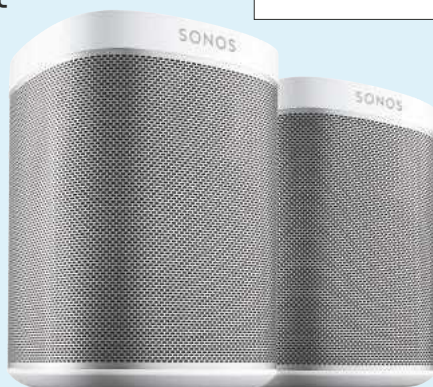
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## Paul Miller Editor

Technician and writer on all things audio for some 30 years, Paul Miller took over the editor's chair in 2006. He invented the QC Suite, used across the audio industry

# No half measures

Alongside the listening impressions of our experienced writers, in-depth test and measurement forms the foundation of every review published in *Hi-Fi News*, and for good reason explains **Paul Miller**

When *HFN* reader Bill Sturman writes in our letters pages [p117] 'what is the value of lab tests?' he asks a very valid question indeed. As Bill's enquiry was initially aimed at loudspeaker testing, Keith Howard has replied in typically thoughtful fashion. But the scope of Keith's answer extends well beyond loudspeaker and headphone testing to encompass every component featured in our pages, from turntables and pick-ups to USB DACs, network media players, headphone amps, integrated, preamp and power amps of every persuasion.

Many of our lab tests are not simply aimed at verifying a manufacturer's basic specification – is the power output *really* 100W, and so on – but are uniquely investigative in nature. Simply put, almost every month your favourite hi-fi magazine discovers and reveals aspects of a product's performance that you'll never read about anywhere else. Or at least not until 'anywhere else' has read *Hi-Fi News*!

### BEHIND THE SCENES

So, this month I'm going to take you behind the scenes and reveal a few of the stories we uncovered while testing our review samples. For starters, we repeated the vibrational analysis on Project's 10CC Evolution tonearm [p32] and discovered that it's better damped than five years ago, so while its effective mass is unchanged it's now better suited to lower compliance MCs that typically kick-out more 'needle talk' into the tonearm. And as we're the only magazine to have developed such tests, no-one else could have told you that.

Then there's the RPP phono preamp from Roksan [p60] – our LF response test

'I'm going to take  
you behind the  
scenes and reveal  
some secrets'



**ABOVE:** Test and measurement revealed the underlying innovation of Hegel's HD30 DAC [p48]

indicated that it's probably not best suited to systems with big, reflex-loaded speakers but we also revealed the exact gain and input overload margins of every setting so you can gauge the ideal parameters for your own choice of MM or MC pick-up.

Similarly, while Chord's Mojo USB DAC/headphone amp [p66] will receive a storm of media interest following its lavish launch, only the review in *Hi-Fi News* will confirm the generous power output

and usefully low source impedance of its inbuilt amplifier. I'd say this peace of mind was part and parcel of any complete and independent review, wouldn't you?

### DIGGING DEEPER

But what happens when we dig deeper, as we did with Hegel's impressive HD30 DAC [p48]? Our uniquely comprehensive S/PDIF and USB tests – performed at every sample rate up to 192kHz and DSD128 – showed the HD30 was delivering an analogue frequency response of –3dB/47kHz and –6dB/48kHz, which is rather less than the 90kHz+ expected from 192kHz audio but just fractionally more extended than if downsampled to 96kHz.

Some 15 years ago, when developing the software engine for the latest QC Suite test station, I discovered that some

sigma-delta ADCs and DACs (on the capture card) offered improved THD and noise performance when used at sample rates slightly offset from the traditional 48kHz, 96kHz, 192kHz, etc, values. It seems that Hegel has realised this also and implemented the concept in its 'SyncroDAC' conversion regime.

### AVOIDING GAFFES

On occasion we uncover 'features' that completely floor a product, so we ensure these designs are 'fixed' before making it onto our pages. OK – so let's end with a product from this month and a cautionary tale for all reviewers not assisted by an experienced technician.

Audio Alchemy's DDP-1 DAC/preamp [p36] steps through its four digital filter and resolution enhancement options on its main display, each easily selected by IR remote. Only AA hadn't loaded this code onto the early DDP-1 review platform, and neither had it told the press that the indicated filters 1, 2, 3 and 4 were all, in fact, filter 1.

Having discovered this on our lab bench, I quizzed Peter Madnick, Audio Alchemy's 'wizard', at our recent Hi-Fi Show *Live*. 'These features will be enabled on the next update,' he said 'but there's already been a review where the writer has described his preference for the sound of one filter over the other!' Oops. So, if for no other reason, that, in a nutshell, is the value of measurements! ☺



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## Barry Fox Technology journalist

Barry Fox trained in electronics with the RAF and worked as a patent agent, but he gave that up to enter journalism. He is one of the world's top technology writers

# Worlds apart

While there's no shortage of new devices able to stream high-speed data, they appear to be aimed solely at the video and gaming crowd. Why is music being overlooked, wonders **Barry Fox**

**M**ost *HFN* readers would rather cut off their ears than keep track of the mobile phone and computer tablet world. I sympathise because I sometimes have to go to launch events for new smart phones. The audience quite literally whoops with joy when internal memory capacity or case colour options are announced. In that world, hi-fi is a speaker dock.

At the recent Audio Renaissance conference held in London, Michael Hill, Managing Director of Radioplayer, the joint venture between the BBC and commercial radio that aggregates online radio listening on computers, tablets and mobiles, was asked about digital audio with respect to quality.

### MAKING THE TRADE

Citing the broadcast trade-off between more channels or higher bit-rate he assured: 'Although I absolutely respect audiophile tendencies, with gold-plated phono plugs and all that, actually most people don't. They would rather have something going into their ears, than not be able to have that new channel that has just launched. We have to make the trade and I just don't think quality is that important to most normal people.' Hill made no mention of offering people the chance to hear better quality, online, at higher bit-rates than by DAB, then asking their opinion...

During a panel session on hi-res streaming, Matt White, Director of User Experience at Omnifone, the backroom company that stores the music streamed by 'name' online services, threw out a useful reminder. It's not practical to deliver Ultra 4k HDTV by terrestrial broadcast, so disc, satellite or broadband

must be used. 'If a device can stream 4k Netflix movies, it can certainly handle hi-res,' he noted.

Computer company Nvidia recently launched a small table-top box called Shield which is designed to stream 4k video and games. It costs £150, uses the Android OS and can handle data speeds up to 100Mbps. Even when streaming video at between 15 and 25Mbps the Shield box was surprisingly cool to the touch. It would be just the job for hi-res audio.

Amazon launched a similar device called Fire on the same day but seemed surprised that someone from the audio world might be interested. 'We have to limit the number of media we can outreach to,' said Amazon's spokeswoman.

It took me three days of nagging to get a press release spec sheet and, after several weeks, I am still waiting for answers as to what data rates the Amazon stream box can handle. The underlying problem is that the worlds of computer, video, games and hi-fi are stuck in silo thinking. The future

lies with those who recognise that high speed data is just data and that in the end what it carries doesn't much matter.

Chord Electronics recently announced the Mojo, a £400 headphone amp

and DAC in-a-box [see review, p66] 'that enables smartphones and connected devices to deliver recording-studio sound quality to your headphones'. But how do you connect the Mojo digitally to a smartphone or streaming device?

'The answer isn't straightforward,' says Chord, 'due to the plethora of phones available across the platforms. However there are three groups: Apple, Android and Windows phones. Apple is easy: if it has the (Apple proprietary) Lightning connector then it can be used with the camera connection kit to transfer audio.

'Amazon seemed surprised someone from the audio world might be interested'

**ABOVE:** For more on the Audio Renaissance event see [www.futuresource-consulting.com](http://www.futuresource-consulting.com)

'Android is more difficult as there are so many different implementations, but in general, they all work via USB, although some require third-party apps to take control of the USB interface and send out the audio data. With Android 5 lollipop (the latest version of the Android OS), which has USB audio built in, this process will become simpler.'

### TIME TO TALK

'Windows phones will work with the USB connection directly with the Chord driver, but some Windows phones do not allow this so can't be used.

'We can't assume that every device with a micro USB will have a digital audio output, but it is more than likely that it will. It is more to do with the operating system rather than the device itself.'

These are uncharted waters that need the hitherto alien audio and mobile worlds to start talking – much like warring relations over Christmas lunch. ☹





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## Barry Willis

Journalist for top American audio-video publications

While his main interest is high-end audio, Barry Willis also writes about the culinary industry, visual art and theatre for a huge variety of US newspapers and magazines

# Music by the lake

**Barry Willis** spends time at one of classical music's best kept secrets – a festival now in its fifth year that takes place on the shore of Lake Tahoe in the US, a location best known for winter sports

It may seem too early in the year to plan a summer holiday, but classical music lovers need to learn about one of North America's best (and possibly least known) annual festivals.

Many know about long-running annual events such as Tanglewood, which draw thousands of visitors each summer, but may never have heard of the Tahoe Summerfest, three weekends of classical music in an idyllic setting in Incline Village, on the north shore of Lake Tahoe, one of the world's largest and most beautiful mountain lakes.

Now in its fifth year, the Summerfest provides music fans a rare opportunity to enjoy music made by top-tier musicians from the best orchestras in the United States and Canada – each member hand-picked by Tahoefest artistic director and conductor Joel Revzen.

## THE WORLD'S BEST

Some are in residence for an entire month; others perform only for a single weekend, as happened this past August with astounding classical guitarist Ana Vidović, a native Croatian now residing in Baltimore. Revzen calls her 'among the world's best', and is said to have auditioned dozens of expert guitarists before inviting her to the 2015 event.

Over the weekend of our visit, Vidović was showcased in a Friday night smorgasbord of Spanish-themed orchestral works by Albeniz, Arriaga,

**RIGHT: Landing page for the Tahoe Summerfest at [www.tahoesummerfest.org](http://www.tahoesummerfest.org) shows artistic director and conductor Joel Revzen (centre of main picture) with orchestral players at the 2015 event**



Rodrigo, and Argentine tango master Astor Piazzolla. She played the following night with an all-female chamber group, and was mesmerizing in both performances.

Each performance had a theme – the evening of August the 7th was 'Spanish Fire'; the following Friday, August the 14th, was deemed 'Hero's Passage', with works by Wagner, Richard Strauss, and Haydn. Saturday evening's theme was 'White Nights, Golden Moons' with works by Rimsky-Korsakov and Tchaikovsky.

## SUPERSTAR CELLIST

The event-closing Sunday matinee concert was called 'The Danube-Baltic Express' featuring works by Mozart, Tchaikovsky, and Beethoven – and showcased cellist Paul Watkins, a superstar of whom the French-born Chinese American cellist Yo-Yo Ma has said he is 'in awe'.

Watkins and Vidović are representative of the level of talent that Revzen attracts to an event that is the definition of informal high culture. Sponsored by JetBlue, the

performance venue on the campus of private Sierra Nevada College is intimate and informal – a large comfortable tent with excellent seating, adjacent to the school's library. Local restaurants,

wineries, and caterers provide a delightful array of food and drink in another nearby tent, with tables under cover and in the open air.

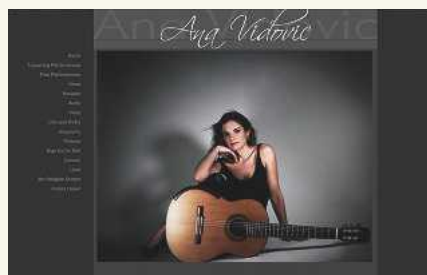
Lake Tahoe's high elevation and

arid climate make for warm days and cool nights. Concert attire varied from casual to quirky-chic to semi-formal. Organizers hope both to attract more philanthropists, with the goal of building a permanent concert hall.

They also hope to make the Tahoe Summerfest an annual destination event to rival Tanglewood. The level of quality and geniality presented during our visit should ensure that.

You could have a very full weekend (or two) should you wish to pursue it. Our first experience was wonderful. We're looking forward to repeating it. ☺

'Tahoe Summerfest is an event that is the definition of informal high culture'



**ABOVE:** See [www.anavidovic.com](http://www.anavidovic.com) for more on Croatian classical guitarist Ana Vidović



## PWR-222 High End Mono Power Amplifier

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### Staggering Performance

The PWR-222 delivers a staggering 250W/8ohm and can deal with even the most power hungry speakers. It features a 700W super low noise torodial power transformer, 44.000uF of RIFA capacitors, two 500amp MOS-FETS and WBT NexGen terminals.

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Balanced and unbalanced input | Analogue multi display, clear and informative  
12V standby trigger | Nonmagnetic enclosure | Designed, developed and build in Copenhagen, Denmark

# audioemotion





## Jim Lesurf Science Journalist

Jim Lesurf has spent a lifetime in audio, both as an engineer at UK hi-fi company Armstrong and reader in Physics and Electronics at St Andrew's University

# Too many guests

This month **Jim Lesurf** unpicks some myths about AM radio and explains why a greater choice of radio stations can lead to a fall in sound quality. Will Internet radio overcome this issue?

**B**ack in the days when I was at primary school we lived in a house that backed on to a large bomb site from the Second World War. It had been roughly cleared and was being used as a car park for people travelling on from Stratford railway station. My friends and I would sometimes peer through the windows of the parked cars and look at the dashboards. We would be thrilled to find a car whose speedometer went up to 120mph. We took for granted that the car must be able to go as fast as it showed on the dial.

## EXOTIC NAMES

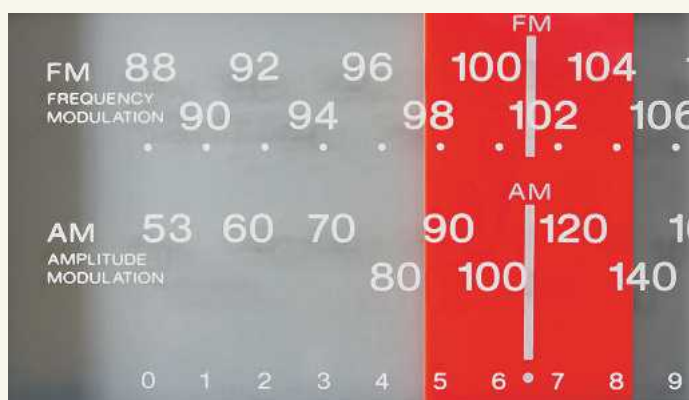
At the time, the radios we had at home only tuned to long, medium and short-wave bands. Their tuning scales showed the locations of various broadcasting stations, many from well beyond the UK – Athens, Cairo, Hilversum, Rome, Budapest and sometimes even stations in the US or Russia. As with car speedometers, the implication was that the more exotic and unfamiliar the names, the more powerful the radio must be at 'pulling in' those distant sources of music and news.

As time passed it became obvious that not all was so well with AM radio. Today few people would take AM radio

seriously as a way to hear music with good audio quality. Indeed, if you read old magazines or newspapers from the 1940s you might get the impression that people back then must have had cloth ears! The era was typified by vast 'Radiolympia' shows and discussions in magazines about the 'high quality' available from the best radios.

Although few are aware of it now, in practice during the 1940s and

**RIGHT: The high levels of interference with AM transmission has seen many AM broadcasters concentrate on sports and talk radio over the years, with music left to those stations broadcasting on the FM band**



1950s the potential quality available from AM broadcasts was far higher than it is now. This was partly because the broadcasts weren't tightly limited in their audio bandwidth. So the best broadcasts provided a range of audio frequencies that could approach that of modern FM. In addition, there were fewer high power stations. So the levels of interference were lower, making clear reception easier.

Sadly, as more AM stations appeared, transmissions had to be corralled into narrower slots in the available RF band space in a bid to minimise the increasing jumble of interference. In short, more 'choice' eroded quality.

Pretty much the same process has since had an impact on the quality of DAB

and digital terrestrial TV broadcasting. The first few years gave the best quality, but in the end a quart was forced into a pint pot and in general, technical quality suffered.

It's hardly surprising, then, that many still prefer FM radio. But sadly, even here similar things have happened. During the 1970s and early 1980s the BBC FM stations exploited the BBC-invented NICAM distribution chain to spread high quality stereo radio across most of the

UK. But then came the rise of two unwanted developments. The first was the development of automated level compression, which tended to crush the dynamics. This was fine for listening in a noisy car or while hoovering the living room, but not good when sitting and listening with care.

The other was our old friend 'choice'. As more and more stations popped up on the FM band the tuners had to work harder to pick out the one you wanted without audible interference. Alas, highly selective tuners tend to produce more distortion – particularly when receiving complex stereo audio. So avoiding cacophonous interference meant reduced audio quality.

## ARC OF QUALITY

It is therefore no surprise that some people think that old tuners give a nicer sound. The snag is that in many areas they are hard to use nowadays because they struggle to reject adjacent stations jostling what you want to hear.

In each case time seems to have generated a sort of 'arc of quality'. First the system was developed and improved to deliver improving sound quality. Then too many guests joined the party and it started to turn into an unruly scrum. Will audio over the Internet avoid this problem? Time will tell... ☺

'It is no surprise that some people think that old tuners give a nicer sound'



# SME MODEL 15



The Model 15 could be described as 'the ultimate in recovery vehicles', allowing the cartridge to retrieve the last nth of recorded material whether, digital or analogue, from the vinyl disc and thus approaches the ultimate in perfection. Receiving its inspiration from the superb Model 10 precision turntable the Model 15 seeks to emulate the excellence of our Models 20/3 & 30/2 turntables whilst retaining the more compact footprint preferred by many of our enthusiasts. The SME Model 15 has been designed with the same attention to detail combined with simplicity of operation that has come to be expected from all SME products. Its superb performance together with laid back styling make it a glamorous addition to your sound system that will astound and amaze listeners for many years to come.



## Steve Harris Contributing Editor

Steve Harris edited *Hi-Fi News* between 1986 and 2005. He loves jazz, blues music, vinyl and vintage hi-fi and anything that makes good music come to life

# A cut above

**Steve Harris** on PC software that brings 'analogue sound' to digital music files and a double album exploring the differences between direct-cut vinyl and the same set mixed down to tape

In much the same way that dance music kept vinyl pressing plants alive in the 1990s, it was the DJ world that fostered home record-cutting and, arguably, the recent revival of direct-to-disc recording.

In the heyday of the 12in single, there was nothing more desirable for a DJ than a custom acetate or dubplate. Then came the idea of making your own.

Vestax, now out of business but then a go-ahead Japanese maker of DJ gear, came up with the short-lived VRX-2000 disc cutter, which cost around £6000 and cut a groove on special vinyl blanks.

Other companies have since come up with cutting heads that fit onto a Technics SL-1200-family turntable [[www.vinylrecorder.com](http://www.vinylrecorder.com) and [www.vinylum.ch](http://www.vinylum.ch)], while Australian mastering engineer Paul Butler Tayer crowd-funded his Desktop Record Cutter [<http://machina.pro>].

### DIGITAL DOCTOR

But if you just want to add 'analogue' sound to an existing source at home, you might as well doctor your digital music with software. The iZotope Vinyl plug-in will add any kind of record noise and even simulate record warps. It's all good fun, but a far cry from fidelity.

Which brings us to Mike Valentine's brilliant *Big Band Spectacular* direct-cut [see *HFN*, Oct '15]. Mike recorded the Syd Lawrence Orchestra live and direct-to-disc at Air Studios, and at the same time recorded the same music on 24-track analogue tape. The tape was used to master a second disc in the final double-album package [see [www.chasingthedragon.co.uk](http://www.chasingthedragon.co.uk)].

So would the direct-cut recording really wipe the floor with the conventionally-mastered version? In a



**ABOVE:** The iZotope vinyl simulation software (left) which claims to simulate the 'classic vinyl sound' and (right) *Big Band Spectacular* with its direct-to-disc LP and second tape-mastered disc



word, yes. I found that the direct-cut album sounded big, exciting and convincingly 'live'. By comparison, the tape-sourced version sounds flat and 'sat on'. It's as if it lacks both bandwidth and dynamic range. So I asked Mike if he could tell me a bit more about how the mastering was done.

'Well, it is interesting isn't it?' says Mike.

'We all at the studio found that the differences were far greater than we expected. Each microphone was fed to the 24-track Studer A827 and also passed to the Neve mixing desk. The live mix was created on the day and sent to the cutting lathe in real time. To create

the mix for the tape version, we treated the session exactly as we had the direct-cut, only now the mic feeds were replaced by those from the 24-track recording.

'In fact, I can say, the mix is the same, because we used the same Neve desk with exactly the same settings, and the same sound mixer, Jake Jackson.

'The desk was left in exactly the same set up mode, the only difference being, that the output was recorded on to a ½in Studer which was running at 30ips. The

master tape feed was then passed to the same cutting head and cut by the same cutting engineer, John Webber.

'All of this was done the next day, to keep everything the same, so we can reasonably say the differences between the two albums can be attributed to going through the tape process.

'This has been the whole point of creating the two albums, so that I can say within reason that you can hear the differences between a direct-cut recording versus one generated through the use of tape.'

### UNIQUE OPPORTUNITY

Mike Valentine deserves a huge vote of thanks for giving us a listening opportunity we've never had before, and his experiment proves the point. Yet for me, it proves something else too.

As end users, it seems, we can never know enough about the equipment, the set-up, the minutiae of adjustment, and the skills of the experienced engineer, to understand fully what makes the difference between a great recording and a so-so one.

Between the microphone and the master, and between the master and the finished product, there are still quite a few mysteries. ☺



## YOUR VIEWS

# Sound Off!

Correspondents express their own opinions, not those of *Hi-Fi News*. We reserve the right to edit letters for publication. Correspondents using e-mail are asked to give their full postal address (which won't be published). Letters seeking advice will be answered in print on our Sound Off pages, but due to time constraints we regret we're unable to answer questions on buying items of hi-fi or any other hi-fi queries by telephone, post or via e-mail.

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## KEEPING VINTAGE ALIVE READER'S DELIGHT AT PAST HI-FI HIGHLIGHTS

Firstly, thank you for a very fine publication. I've been reading *Hi-Fi News* off and on since I discovered it back in 1973. Which brings me to my point...

Thank you for the vintage section. I always take delight in reading of the past highlights in our world of hi-fi. The 'From The Vault' feature in the October issue on the KEF 104 speakers was hugely enjoyable as I bought a pair of these in 1974. They are still in use in aB form and I derive great pleasure listening to them.

I see that the Armstrong model 626 was also mentioned in the October issue. Any chance of a review of that amplifier or the 621 model, which I also still use daily?

I was even more amazed to read the 'Vintage Review' of the Technics SL150 turntable in the same issue. I bought an SL1500 at the same time as the KEF 104 speakers, although that has now long gone, though still have my last cartridge - a Grace F9.

Once again, thanks for the memories and for keeping vintage alive. I never did get to see the original reviews at the time they were printed, so it's interesting to pick up on them now.

*Barry Thomson, via email*

Jim Lesurf replies: I still receive many emails about the Armstrong 600 units. There seems to still be many happy users of these. In some ways they were a wolf in sheep's clothing. On the outside, and in the advertisements, they were sold on the basis of looking stylish, fitting nicely into the living room, and being easy to use. Backed up by Armstrong's reputation for good service and a keen price.

Yet inside the 600 had a number of novel technical features which enhanced performance. This ranged from the ingenious 'diode switching' for smoothly changing inputs with a cross-fade rather than a bang, to performance-enhancing ideas such as using double-IF to give cleaner AM, and a power amp that employed dual feedback to improve the amp's ability to drive speakers at low frequency.

In all honesty, despite having designed later amplifiers myself that are technically more capable, I still regard the 600 as my favourite amplifier of all time. Find one of the later examples in good condition and you can expect good results when used within their limits.

Tens of thousands were sold, but of course 40 years on the survivors may need TLC, and to be used with care. Overall, though, a testament to the skill of Ted Rule who designed them.



ABOVE: The Armstrong 621 amp from 1973 - as used by reader Barry - is rated at 40W into 8ohm and has disc, tuner and aux inputs, plus tape monitor switching

## My DG big-box classical bargain

ONLINE HUNT REWARDS WITH A PRE-CHERISHED TREASURE

I am a new *Hi-Fi News* reader and really enjoy the Classical Companion feature. I noted that Christopher Breunig rated the DG Edition [409 069-2] of recordings by Sergiu Celibidache [*HFN* Oct '15], and was also amused to hear that this box-set now costs over €370 at *amazon.de*. So I decided to see what I could find on eBay.

One used box-set in near mint condition had a starting bid of \$39 plus \$14 postage. I put in a first bid then awaited the close of auction. As it transpired, I was the only bidder and so paid around £35 including postage. The box arrived ten days later and, apart from lacking a cellophane wrapper, could be as new. Thank you Mr Breunig for your informative piece. I look forward to making more purchases based upon your future recommendations.

*Stuart Ross, via email*

Christopher Breunig replies: I am pleased that a more affordable Sergiu Celibidache set was found than the one advertised at *amazon.de* and that it has proved worthwhile. When writing the article, I was disappointed to see that few of the DG box-sets have remained generally available.

## WhitWorld

OUR HI-FI WORLD THROUGH THE EYES OF WHITWORTH



"MY LIFE IS BI-WIRED WHEN IT SHOULD BE BI-AMPED."

## Help receiving BBC Radio 3

READER SEEKS HASSLE-FREE SOLUTION FOR HIS RURAL LOCATION

About 30 years ago I moved to a rural part of Sussex and found that I could not get acceptable radio reception. In fact, during high pressure in the summer months, there would often be interference from French stations broadcasting on a similar frequency.

Then came a solution in the form of the BBC website and its live broadcasts. I could then stream these to my Devialet Expert amplifier. The only issue was that my PC was upstairs at the opposite end of the house and setting it up took some minutes each time I wanted to use it.

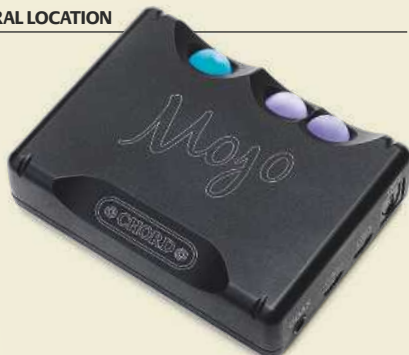
The next idea was to use the BBC iPlayer as installed on my Oppo BDP-105 universal player. But then I found that Radio 3 is no longer available on iPlayer. Oppo was very helpful and explained that it doesn't have the hardware in the BDP-105 to download the BBC radio player.

So I thought I could solve everything with a Network audio player and use Internet radio, which I could control from my listening seat. I have just purchased a Pioneer N50A, which had V tuner Internet radio. But now find the output is MP3 128kbps so not exactly of any quality. 'BBC radio live HD – for UK only' is listed, but will not open. I am assuming that is because V tuner is based in the US.

Any suggestions as to how to receive the best quality BBC Radio 3 without too much hassle would be very much appreciated.

*Martin Phillips, via email*

Andrew Everard replies: This is, I'm afraid, another knock-on effect of the changes to the BBC radio streams on which we reported some months back [see *HFN* May '15], and we're at the



**ABOVE:** The Chord Mojo is a pocket-sized DAC/headphone amplifier costing £399

mercy of the BBC as to how it chooses to broadcast its radio content online, and whether manufacturers are willing to put in the work to accommodate the changes the BBC has made and might make.

Some UK manufacturers have managed to encompass the new stream methods, but I suspect such facilities are less of a priority for non-UK-based manufacturers with a need to serve customers in a wide variety of markets rather than focusing on what the BBC decides to do.

The simplest solution for Mr Phillips would seem to be to invest in an inexpensive notebook computer of the kind we used to call 'netbooks', typically with a 11in screen and selling for £200 or less from the likes of Asus and Samsung.

Provided the laptop/netbook has a USB output, it could be connected straight to the Devialet, and then the BBC iPlayer radio (via whichever browser Mr Phillips prefers) could be used as a radio tuner, without the faff of moving his 'main' computer whenever he wants to listen.

As I write this I'm listening to the Radio 3 Choral Evensong via my MacBook Air into a Chord Mojo DAC [see review, p66] and thus into my main system, but the principle is exactly the same.



**ABOVE:** Stream music to Devialet's Le 200 via the AIR app or USB

## JITTERBUG

USB Filter



### Can a £39 insect make all your CD files sound better than Hi-Res?

Yes and no: Using the same equipment and a quality DAC, a 24/96 file (for example) will always sound better than a CD 16/44.1 file ... but, even a single JitterBug will often allow a CD file to be more musical and more emotionally stimulating than a Hi-Res file without the benefit of a JitterBug.

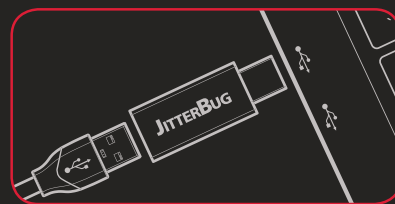
**Noise** is the problem. Real noise—the kind you can't hear directly. Most often, the word "noise" is used to describe tape hiss or a scratch on a record, but these sounds aren't noise; they are properly reproduced sounds that we wish weren't there.

**Problem noise** is essentially random, resonant or parasitic energy, which has no meaning. It can't be turned into discrete sounds, but it does compromise signal integrity and the performance of everything it touches.

**JitterBug's dual-function** line-conditioning circuitry greatly reduces the noise and ringing that plague *both* the data and power lines of USB ports, whether on a computer, streamer, home stereo or car audio front-panel USB input.

A single JitterBug is used in between devices (i.e., in series) as shown below. For an **additional "wow" experience**, try a second JitterBug into another USB port on the same device (such as a computer). Whether the second port is vacant, or is feeding a printer or charging a phone, JitterBug's noise-reduction ability is likely to surprise you. No, the printer won't be affected—only the audio!

While a JitterBug helps MP3s sound a lot more like music, high-sample-rate files have the most noise vulnerability. Try a JitterBug or two on all your equipment, but never more than two per USB bus. There is such a thing as too much of a good thing.



**audioquest**



## Entreq Grounding

### Innovation

Entreq have been pioneering signal grounding since 1999. Over the past 16 years they have established an understanding and a level of knowledge in this unique field that up until recently no other audio or electronics manufacturer had either taken time to explore, understand or even deem worthy of research. This puts Entreq in the enviable position, certainly in the audio industry, of being the leader rather than the follower in this arena.

### Ground Box

Something to establish is that the term Ground, certainly in this part of Entreq's portfolio, does not relate to or mean 'Primary Earth' i.e. what you would understand as your 'Protective Earth' for your mains or electronics. Entreq Ground Boxes do not replace or are substitutes for the protective ground found in your home. We are talking about the ground reference that runs as part of your signal path on the actual circuit for your products (TO BE CLEAR THIS APPLIES TO ALL ELECTRONIC PRODUCTS). The function of the Entreq Ground Box is to present itself as an attractive place for high frequency noise to gather, rather than being carried through your electronics and polluting the precious signal. This pollution, whether generated by stray fields, general field effects or magnetic properties is always there and is littered across the system as a whole. Naturally different systems create, generate and attract different levels of noise! This is why Entreq offer a selection of Ground Boxes to suit every system and every budget.

### Get Connected

You now need to connect your Ground Box to your equipment!

Making a connection to your hifi system with an Entreq Grounding Box couldn't be simpler! Entreq make a range of Ground Cables called 'Ertha Cables' that attach to any free and available connection on any product connected to your system. Connections currently catered for are as follows: RCA, XLR (male and female), USB, BNC, RJ45 and spade. On the other end of these cables is a spade termination that then attaches to the Ground Box itself. As per the Ground Boxes these Ertha cables come in a range of levels; offering the end user the ability to closely match the right combination of both Ground Box and Ertha cable to obtain the perfect optimal performance.

Generally the key component to Ground first is often the product at the centre or hub of your system, whether that is your integrated amplifier, Pre-amplifier or Dac-pre. Next you should consider a source component; either your CD player / DAC, Streamer, Phono stage etc.

Once connected to your product the effects are noticeable within minutes, however the grounding process will continue to improve over the coming hours. After approximately 24 hours you will, in most cases, have obtained the best results. However it is not uncommon on some systems to hear continual Improvements up to and beyond 72 hours!

Please feel free to visit: [www.entreq.com](http://www.entreq.com) for further information on Entreq.

Please find a list of experienced UK Dealers: <http://www.entreq.co.uk/dealers.html>

*This is not Voodoo or Black Magic it is primarily an in depth understanding of Physics, magnetic field technology and the experience of combining these disciplines.*

**In service to the music - Entreq**

## Pick me a pick-up for £600

READER SEEKS REPLACEMENT MOVING-COIL CARTRIDGE FOR DECCA LONDON SUPER GOLD

I would be grateful for some advice on the purchase of a new MC pick-up on a budget of £400-£600 because it's almost impossible to listen to and compare various cartridges at the same dealer. Having read many favourable reviews in your pages, I have a list of possible models: the Audio-Technica AT OC9 ML/III, a pick-up from the Benz Micro range or one from Ortofon's Quintet series (Blue or Bronze). Although I am hoping for a detailed, full-range sound, I want to avoid an excessive or overly-bright top end.

My system is made up of Roksan Caspian series components (integrated amp and separate power amps for bi-amping) from the company's M-Series-1. My turntable is a Michell Gyrodeck with an Origin Live Zephyr arm – both quite new – which connects to a Musical Fidelity X-LPSv3 phono stage.

Currently I use a Decca London Super Gold cartridge, now due a new stylus, hence my need for a change. Loudspeakers are the Tannoy Revolution Signature DC6T.

I like most pop and rock, meaning anything from The Beatles through to Steely Dan and Donald Fagen, Pink Floyd, Genesis, Queen, Grover Washington and Earl Klugh-Bob James. I also enjoy a small number of Classical standards such as the *1812 Overture* and *The Planets Suite*.

I have been reading *HFN* since the mid-'70s and have rarely missed an issue. You must be doing something right! Keep up the good work.

*Anthony Hunt, via email*



ABOVE: The Ortofon Black costs £375 – a £50 premium over the Blue, but worth it



ABOVE: Benz Micro ACE SL with exposed generator set within an acrylic body

Adam Smith replies: The Decca London is an undeniable classic but ripe for replacement and you have chosen an excellent shortlist. That said, I would steer you away from the Audio-Technica. The AT-OC9 is a superb cartridge and I own an AT-OC9ML/II myself, but its sound is relatively bright. It is wonderfully detailed and the II and III versions have successfully tempered the original's occasional tendency towards hardness. However, as you state in your letter that you want to avoid an overly-bright treble, it may not be for you.

Benz Micro designs tend to be much more even-handed and perform very well. I can heartily recommend the ACE SL [see *HFN* Jul '12], which sneaks in at just under your £600 upper limit. It offers a pleasantly full-bodied sound with a smooth, but detailed, top-end and should fit the bill nicely.

Finally, you can rarely go wrong with an Ortofon and the Quintet range maintains the company's knack of making superb quality designs at realistic prices. As you have identified, the Blue and Bronze are in the running and both would make a fine addition to your system.

The Blue is a particular favourite of this magazine and superb value at around £325 [see *HFN* Dec '14]. However, if you can stretch your budget by an extra £50, this will buy you the Quintet Black. The difference between the two cartridges is well worth the money, in my opinion, as the Black will bring a sense of poise and sophistication to the sound that is highly captivating. Once you've experienced this, it's difficult to live without it.



**NIGHTHAWK**

AROUND-THE-EAR  
SEMI-OPEN HEADPHONES



**Remarkably comfortable** NightHawk headphones not only don't feel like most headphones, they also don't give you that all-too-common "it's all happening inside my head" claustrophobia.

Listening through NightHawk is like listening to a pair of **astoundingly coherent** near-field speakers. Emotionally compelling and totally immersive.

In addition to **proprietary new design elements and materials**, NightHawk is the first headphone to apply many of the most advanced technologies previously only used in a few of the very best loudspeakers.

**Please give NightHawk a listen!**

**audioquest**



# Vinyl: thoughts on keeping it clean

HOW GROOVE SHAPES, STYLUS PROFILES AND CLEANING MACHINES ALL PLAY A PART WHEN IT COMES TO RIDDING RECORDS OF GRIME

After unsatisfying results with wet-play systems I started using a simple Knosti cleaner and now the Okki Nokki machine to clean my records. I also experiment with different cleaning liquid mixes and in most cases achieve very good results, though some LPs seem more persistent in retaining dirt and require more washing. A few even resist this... who knows, perhaps their grooves are different?

Lately I discovered another phenomenon with a used copy of Billy Joel's *52nd Street* album. I had washed this several times and it looked 100% clean. When I played it there were no dust particles or fibres sticking to the needle at the end of the first side, even though some 'pops' could be heard.

A few days later I upgraded my player with a new and superior MC cartridge – an Ortofon Rondo Bronze – and played the LP once more. This time, I could see a whole bunch of dust being collected by the needle as the record went round! Obviously the new stylus has a sharper profile than the one I was using previously, thus digging deeper into the groove and carving out micro-dirt from the bottom of it!

Bigger, cheaper needles seem to just move over this deep dirt, perhaps even pressing it down. The result may be that the groove is no longer a clean triangle in shape when looked at vertically but more like a river with a growing bed of dirt at the bottom.

After washing the LP again, the sound improved further. And the dust collection at the needle was gone. But I do wonder if normal washing can really reach the bottom of the groove. Is the liquid, well,



**ABOVE:** The Ortofon Rondo Bronze MC has a nude stylus tipped with an FG80 diamond

‘liquid enough’? And are the hairs of the cleaning brush found in cleaning machines small and rigid enough to get the dirt out? It seems to me that we haven’t reached a perfect cleaning solution when it comes to dirt on the microscopic level. On one hand I need a tougher, mechanical tiny broom but on the other hand I don’t want to scratch the grooves of my LPs, of course.

The machines we usually see on the market mainly spread liquid onto an LP, brush it, then vacuum it away. I saw one machine using ultrasonics and just water, but it was fairly expensive. Is there any news on this topic?

*Rainer Meise, via email*

Jim Lesurf replies: When it comes to wet cleaning records in the past I've just used warm water and a drop of washing-up liquid on a few hard cases of dirty secondhand LPs. However it wouldn't surprise me if this method didn't completely 'wet' the groove right down to its base.

The question of the vertical profile of the stylus is a vexed one because different LPs may well have different groove shapes. See, for example, the results shown in the past issues of *Hi-Fi News* [see below].

The June 1960 issue [bottom right] showed that at the time different companies were cutting different groove profiles. And as this article explained, it may be assumed that the stylus tip should not reach the groove base. Also, in practice the groove will briefly deform as the stylus rakes past. Hence a



**ABOVE:** The Okki Nokki record cleaning machine, see [www.okkinokki.co.uk](http://www.okkinokki.co.uk) for more

change of stylus may well make contact with different parts of the groove and its crime!

Ken Kessler replies: Sorry to spend your money for you, but the general consensus is that ultrasonic cleaning is the very best method. However, even that generates debates as to which machine/method does it better, and even if ultrasonic cleaning presents perils of its own to the vinyl.

I use a non-ultrasonic Clearaudio machine with cleaning liquids and vacuum, with Mobile Fidelity's cleaning fluids. I know people who still swear by Keith Monks machines, too. I'm looking at an ultrasonic, but cost is at present an issue!

At this stage, the best one can do is read all the reviews and – if possible – find a demonstration in a store. As far as the results go, they all work well, but who can say what is happening at a microscopic level?

[illegible]

# Why lab test loudspeakers?

IF THE SEARCH FOR A TECHNICALLY PERFECT SPEAKER IS FLAWED, MEASUREMENTS HAVE NO VALUE

In the August issue of *Hi-Fi News* you reviewed two speakers: the Wilson Audio Sabrina and Focal Aria 948. The former receives the higher rating, which might be expected given that it is five times the cost of the latter. However, when you look at the lab reports for both models you could easily believe that the Focal is the better speaker. Not only does it have a flatter frequency response but the cabinet damping is much better.

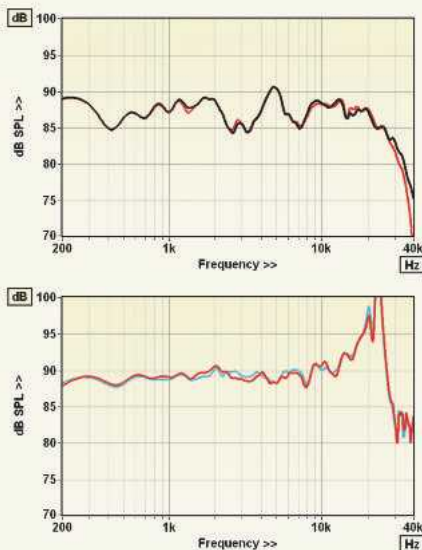
In the sense of creating a perfect technical speaker, the Focal clearly wins. Could it be that the Wilson flatters the partnering equipment which you tested it with and that more neutral components would have revealed shortcomings? Or is it that the search for a technically perfect speaker (flat frequency response, good damping) is flawed, in which case what is the value of lab tests?

*Bill Sturman, via email*

Keith Howard replies: If lab testing told us everything we need to know about how a product sounds then there would be no need to listen to it. Likewise, if listening to a product told us everything we need know, there would be no point measuring it. In fact the two are complementary, and one may inform the other.



**ABOVE:** The Wilson Audio Sabrina and Focal Aria 948 as reviewed in *HFN* Aug '15



**ABOVE:** Frequency response graphs for Wilson Sabrina (top) and Focal Aria 948

For instance, if a speaker has a rising treble response it will probably have a more neutral tonal balance if listened to a little off-axis. Measurements also help us ensure that products are functioning as they should (why waste time listening to a faulty item?), and that they are accurately specified by their maker.

A flat, or sufficiently flat, on-axis frequency response is certainly a desirable attribute in a loudspeaker but when it comes to determining whether it is of superlative sound quality it is only necessary, not sufficient.

The fact that the Aria 948 has a flatter on-axis response than the Sabrina may be laudable, but it is scant evidence on which to claim that it is a better loudspeaker. Were loudspeaker design so straightforward, indeed, it would cease to present much of a challenge to manufacturers or reviewers.

As for the efficacy of the Aria 948's and Sabrina's cabinet damping, it is impossible to assess this from my measurements. I assume Mr Sturman is referring here to some aspect of the cumulative spectral decay waterfalls, but as these are generated from speaker impulse responses windowed to about 5ms they have only 200Hz resolution or thereabouts and therefore cannot provide useful information about cabinet resonances, the most serious of which typically occur at a few hundred hertz.

**EXTREME?**

**IT IS NOW!**

**audioquest.**



# Rogers Ravensbrook amplifier

Investing in new technology gave Rogers an edge, but few at the time expected this tech to appear in an amp so keenly priced. How will this little '60s model fare today?  
Review: **Tim Jarman** Lab: **Paul Miller**

**A**s we have seen in previous Vintage Reviews, by the end of the 1960s most amplifier manufacturers began replacing their valve models with transistor ones. Rogers Developments was not slow to do this, starting in 1967 with the 25W-per-channel Ravensbourne.

Transistors were the expensive option at the time, so it came as some surprise that by 1969 a slightly smaller and more affordable version had hit the shops – the Ravensbrook. Rated at 15W per channel and selling as a chassis model for a very reasonable £45 (plus another fiver if you wanted it supplied in a free-standing wooden cabinet), it effectively replaced the company's valve-based Cadet series [see *HFN* May '13] whose four ECL86s could at best summon up about 8W per channel.

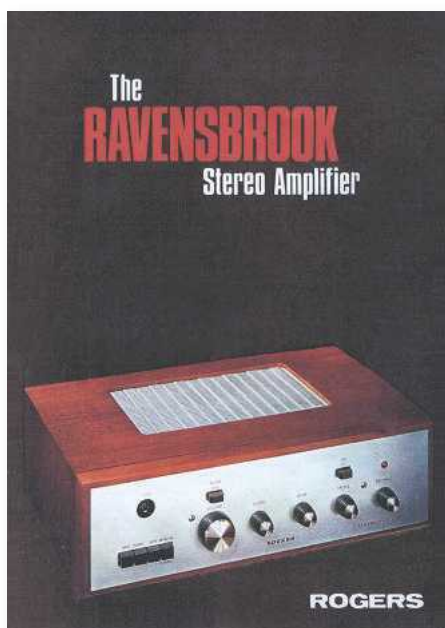
## CLEVER TECHNIQUES

This fully specified integrated unit was keenly welcomed by the reviewers of the day, some of whom marvelled at how Rogers had managed to do it for the money. A look inside revealed some of the clever techniques used.

Firstly, almost all of the components were mounted on a single printed circuit board, allowing a great part of the assembly work to be automated. To this end the factory had invested in a wave of soldering machines, which made quick and light work of what had previously been a slow and labour-intensive task, making for great savings over a long production run.

Few if any other specialist audio companies of the size of Rogers had made similar investments, giving the Ravensbrook an immediate advantage. With an eye on durability, the printed circuit itself was made of glass fibre instead of the cheaper compressed paper alternative. This, too, was unusual for a product in this class.

A novel circuit idea brought further savings. In both the Ravensbrook and the Ravensbourne the use of transformer coupling for the signal to the output transistors meant that the driver circuits could be greatly simplified, eliminating the need for several costly devices. The



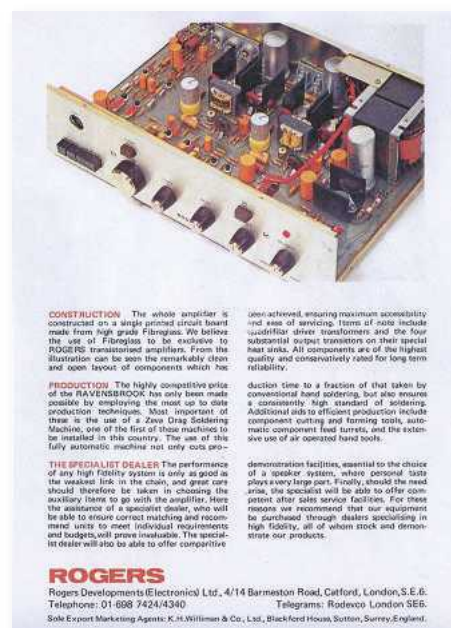
**ABOVE:** A brochure for the original Series 1 model – note the larger volume knob. The interior view shows the special coupling transformers located in the centre of the printed circuit board

transformers allowed for an ideal match between the output stage and the circuits that preceded it, reducing the requirement for gain. They also automatically performed the phase-splitting function, making yet more parts redundant.

Transformers for high quality audio are difficult to design, and in the end a special quadrifilar winding technique had to be used, a unique process in a British amplifier of the period. One disadvantage of using transformers at this point in the circuit is that since a DC signal cannot be passed through them it is no longer possible to use negative feedback to stabilise the amplifier's operating point.

As a result, an elaborate set of manual adjustments was needed to set up the Ravensbrook's power amplifier, something which other manufacturers were starting to design out of their smaller models.

In the end, the adjustment was not as critical as it might have been since AC coupling via capacitors was used to interface the output stage to the loudspeaker load.



This detail aside, the circuit of the Ravensbrook was largely conventional, although the use of a regulated power supply in a low cost model like this can be seen as generous.

Outwardly the styling was clean and modern, yet the Ravensbrook was still distinctively a Rogers product. The hallmark 5-pin DIN connector on the front panel for a tape recorder (a duplication of the one at the back of the amp) helped to reinforce the continuity.

## THREE SERIES

The Ravensbrook evolved through three distinct versions. The original (Series I) model can easily be recognised as the control knobs are black plastic and the volume one is larger than the others. The Series II was essentially a restyle job with metal knobs used for the rotary controls (which were now all of the same size) while round push-buttons were employed for the source selector instead of square ones.

The Series III, which is the model tested here, looks the same as its predecessor but



is rated at 20W into 8ohm instead of 15W, mainly thanks to an uprated power supply. This doesn't make a huge difference to the listening levels that can be generated but makes the amp more flexible.

## RIVALS CATCH UP

By the time the Series III appeared, the rest of the market was beginning to catch up with the Ravensbrook. Although its price had only increased slightly there was now a much greater choice of imported equipment available for the same sort of money, of more recent design, with better specs and more modern appearance. By the end of 1975 production had ceased and Rogers Developments was in liquidation.

A look at the DIN connectors at the back of the Ravensbrook tells you straight away

that this amplifier isn't going to be as easy to integrate with modern equipment as some. However, the situation is even more baffling than it first appears due to some quirks in the Rogers design.

Firstly, the speaker sockets are 2-pin DIN types, which is unremarkable in itself, but the amplifier is specified for 8 and 15ohm loads, which may be more of a problem.

This is understandable when one considers the loudspeakers available at the time of the amp's release: 15ohm covers various BBC-based types as well as Quad ESLs, although it is a much less common value

now. The documentation states that 4ohm types, which now are commonplace, may be used but for optimum results an external matching transformer might be required. I've never seen such a thing in a

'The amp came as a chassis model for a very reasonable £45'

**ABOVE:** The Series 3 model has a clean appearance that's still attractive today. The front-mounted 5-pin DIN connector for a tape recorder is common to many Rogers models

form that is suitable for hi-fi applications, so the best bet is to stick to loudspeakers of reasonably high nominal impedance.

Moving on to the inputs, these are DIN sockets too, but they are wired in such a way as to make special cables a necessity. To further confuse matters, the diagrams given in the user instructions are not necessarily correct, something to be aware of if you are considering having special cables made. By way of example, the line-level tuner input is laid out with the opposite pair of pins used for the signal than is common. This means a standard DIN or DIN-to-RCA cable won't work unless you are using the matching Ravensbrook or Ravensbourne tuner.

## ABRUPT ACTION

The sensitivity is also on the high side for a CD or DAC source, giving the volume control an abrupt action and making it difficult to achieve an accurate channel balance at low listening levels. External attenuators will help here, used in conjunction with a DIN-to-four-RCA-plug cable to make the correct pins available.

The tape socket is wired more conventionally, but since the recording outputs are obtained passively, directly from the source selector, the level will be too high for a recorder built to the DIN standard. Once again, a DIN-to-four-RCA-plug cable will allow the connection of suitable equipment.

The phono ('disc') input is intended for MM-type cartridges and has a pair of push buttons adjacent to it which, in

## equipment reviews

### MANUFACTURER'S SPECIFICATION:

Continuous average power into 8 ohms 20 watts, 15 watts into 15 ohms, 10 watts into 30 ohms. Frequency response 20 Hz to 20 kHz, ±1 dB. Total harmonic distortion 0.1% at 100 Hz, 100 mV. Signal-to-noise ratio 60 dB. Input impedance 100 kΩ. Output impedance 100 Ω. Power supply 250 VA, 250 V, 50/60 Hz. Dimensions 10 1/2" x 10 1/2" x 10 1/2". Weight 10 lbs. Rogers Developments, Ltd., 100, The Quadrant, London W1A 1AA.

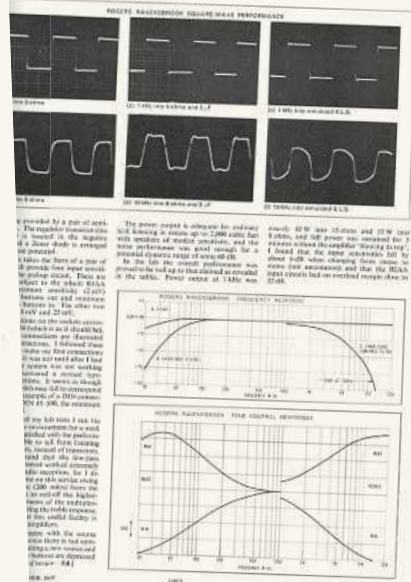
### ROGERS RAVENSBROOK INTEGRATED STEREO AMPLIFIER



The design philosophy was to make a small, portable, and easy to use amplifier. The amplifier is designed to be used with a variety of speakers, from 8 ohm to 30 ohm. The amplifier is designed to be used with a variety of sources, from tape to CD. The amplifier is designed to be used with a variety of accessories, from a remote control to a power supply.

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**LEFT:** Review from *HFN* Sept '69 shows that measured performance was considered good despite the amp's low cost and unusual circuit



# KENNERTON

## AUDIO EQUIPMENT



KENNERTON MAGISTER HEADPHONES



KENNERTON ODIN HEADPHONES



KENNERTON IKIZ  
IN EAR PHONES



KENNERTON EGO HEAD AMPLIFIER



**RIGHT:** A peek under the lid reveals that the majority of the parts are mounted on a high quality fibreglass PCB. Minimum hand-assembled internal wiring keeps costs down

combination, give four sensitivities. The higher two are sufficient for modern cartridges and in all cases the loading is the correct 47kohm, with RIAA equalisation in circuit for all settings.

Connected up, the amplifier is easy enough to use, once one gets the hang of the power switch not being the one nearest to the indicator (that one turns the loudspeakers off for headphone listening). The only confusing control is the one labelled 'slope', which is a progressive 6kHz low-pass filter. Fully retarding the control gives a flat response.

A fixed high-pass filter set at 60Hz is also available, although you shouldn't need that unless there is something awry with the rest of your installation.

## TIM LISTENS

My Monitor Audio PL100 loudspeakers were perhaps not the ideal load for our Ravensbrook Series III to drive. However, a brief test showed that reasonable levels were achievable without an excessively large change in the character of the sound, suggesting that the amplifier was coping well with the challenge.

But this isn't a unit to give more than its rating suggests, being just about adequate in terms of power delivery. It lacks the punch of the similarly rated NAD 3020 [see *HFN* Nov '12] but is nevertheless a distinct improvement over the Rogers Cadet, which struggles with anything more than light listening duties.

**'The Rogers amp projected the track's sparkly percussion well'**

With my Cyrus CD8 SE2 as the source, I tried *The Seeds Of Love* by Tears For Fears [Phonogram 838 730-2] and found the Ravensbrook, like many of the small Rogers amps I've experienced, to be a lively and enjoyable performer.

The album opens with the atmospheric 'Woman In Chains', which kicks off with some nice sparkly percussion that the Rogers projected well. More bass heft would not have gone amiss and the long cymbal crashes could have been cleaner, but really these are minor points.

If there was a disappointment it was the steely nature of the vocals at times, especially those of Oleta Adams, which

gained a definite edge that isn't supposed to be there. Nonetheless, with 'Sowing The Seeds Of Love', the multi-layered tapestry of sound that is the album's title track, the Ravensbrook did well, navigating the various instruments and sound effects deftly and leaving plenty of space around them. This is an easy amplifier to relax and listen to music with.

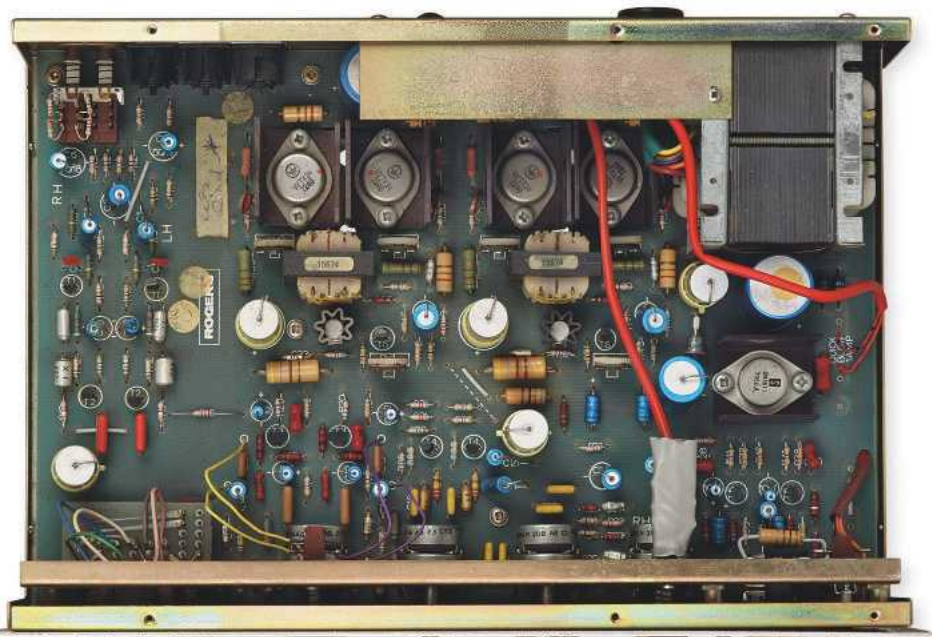
## BETTER INTEGRATED

Interested to explore the amp's handling of female vocals further, I next tried the track 'Breathing' by Kate Bush, taken from the album *Never For Ever* [EMI CDP 7463602]. This time the vocals were better integrated and did not display the previously noted hardness to the same extent. The bass seemed adequately fulsome, although other amps can deliver a richer, somehow darker experience from this piece.

Also in the amplifier's favour was the fact that the soundstage was broad, a smattering of detail coming from outside the loudspeaker boundaries without there being a hole in the middle of the sonic picture.

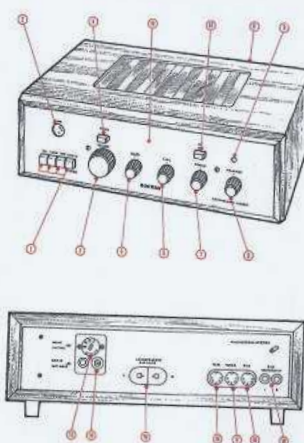
Meanwhile, the quieter sections, as the track closes, showed the Rogers amplifier to be free from any noticeable hiss and hum, even if the mains transformer in our example did

**LEFT:** Brochure for the Series 1 shows it in a domestic setting. There were enough facilities and connections to support a full system



**RAVENSBROOK**

- Four very push-button Input Selector provides selection of DIN, Tuner and Tape inputs. The four buttons provide position for the left hand input channel & for the right hand input channel. The output from a compatible stereo pick-up is connected in parallel for playing mono records.
- Tape Panel Jacks conforming to DIN standards facilitate connection of portable Tape Recorders. Includes stereo record and replay connections. Tape monitoring is possible with tape recorders having magnetic pickup heads.
- Close tolerance ganged Volume Control controlling all inputs.
- Switched High Pass Filter used to reduce motor rumble etc.
- Low Pass Filter variable 'slope' control enables degree of filtering to be in prior programme material without unduly affecting quality.
- Variable Bass and Treble controls using a modified Bessel circuit, compensates for differences in recordings, room acoustics, personal taste etc.
- Balance Control, a variable control adjusting the balance between the two stereo channels.
- Panel indicator light shows when the amplifier is switched on.
- Front Panel finished in grained silver, set in coffee brown with matching control knobs having open silver inserts.
- Optional free-standing case, suitable for shelf mounting, finished in oak veneers. Chassis metal suitable for horizontal or vertical mounting in convenient equipment racks.
- Push-button Mains ON/OFF switch.
- Mains voltage selector. Dual voltage mains transformer covers for both 200-250 and 100-125 volt supplies.
- Main primary fuse. Additional protection provided by internal R.T.T. protection fuse.
- Dual speaker outputs via DIN socket, 8-16 ohm matching. 4 ohm speakers may be used with slight loss of performance.
- Tape Deck socket. Duplexing facilities available via panel mounted DIN tape socket.
- Dual Tuner inputs via DIN socket.
- Dual Disc inputs via DIN socket.
- Dual disc sensitivity switch provides four alternative input sensitivities catering for virtually all high quality pick-up cartridges, including ceramic and the new very low output magnetic types.







# Performance connections.

Our Mavros cables have gathered extensive praise and multiple awards over the last couple of years, becoming best-sellers around the world.

So when it came to improving them, we thought the best thing to do was to give you a little less.

In our 'Ultra' wideband RCA plugs, reduced mass means less distortion and minimal signal loss.

Sometimes of course, less can mean more.

Our new 'Transpose' modular connection system simplifies the plug assembly process, fewer steps allowing us to ensure not only higher performance and reliability but also maximum flexibility.

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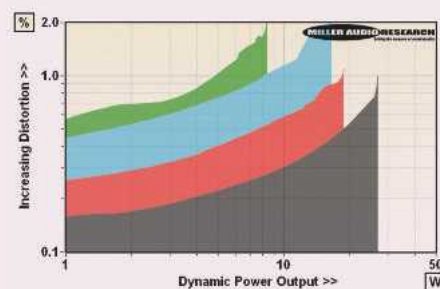
## LAB REPORT

### ROGERS RAVENSBROOK (Vintage)

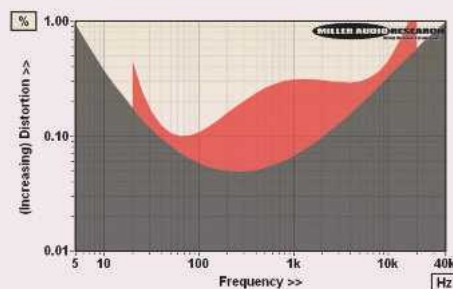
Our well preserved sample of Rogers' Series 3 Ravensbrook integrated amplifier managed its rated specification of 2x20W into both 8ohm and 4ohm, increasing to 28W into 8ohm under dynamic conditions but falling to 19W/1% THD, 16W/2% THD and 8W/2% THD into 4, 2 and 1ohm [see Graph 1, below]. So, as Tim suggests in our review, the Ravensbrook is no powerhouse and certainly not suited to challenging loudspeaker loads. The capacitor-coupled output brings further challenges to the subjective mix as the amplifier's output impedance rises at low frequencies from 0.45ohm in the midrange to a full 2ohm at 20Hz – a feature that may impact bass performance in some systems. The default response of the amplifier is also mildly tailored, rolling-off to -3dB/20Hz (or -3dB/55Hz with the 'Filter' engaged) and -1dB/20kHz and -3dB/40kHz (or -1dB/3kHz and -3dB/4.5kHz with the 'Slope' control turned fully clockwise).

Distortion is held to a reasonably consistent 0.07% up to around 5W before rising to 0.17% at 10W and 0.5% at the rated 20W (all at 1kHz/8ohm). Distortion necessarily rises at subsonic bass frequencies – to 1% at 5Hz/1W/8ohm – but holds to 0.17-0.37% at 20Hz from 1-10W/8ohm [see Graph 2, below]. There's a rise from 0.6-1.5% at 20kHz at 1-10W/8ohm but the Ravensbrook's rolled-off ultrasonic response (-11dB/100kHz) helps keep these harmonics in check. The response does not ameliorate noise in this instance, so the PSU-related harmonics (especially 150Hz) limit the A-wtd S/N ratio to 79dB (re. 0dBW).

Readers may view a full QC Suite test report for the Rogers Ravensbrook III integrated amplifier by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'Download' button. PM



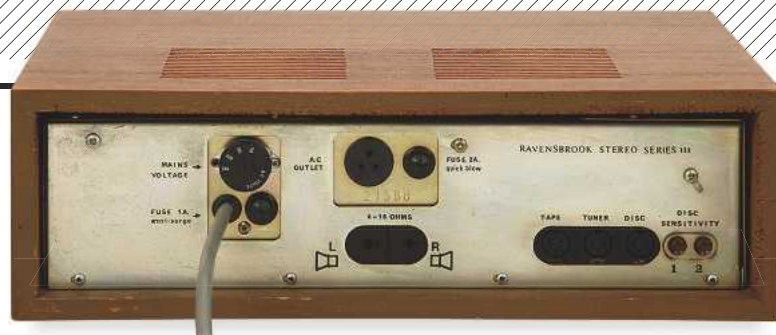
ABOVE: Dynamic power output versus distortion (up to 1% and 2%) into 8ohm (black trace), 4ohm (red), 2ohm (cyan) and 1ohm (green) speaker loads



ABOVE: Distortion versus frequency at 1W/8ohm (5Hz-40kHz, black) and 10W/8ohm (20Hz-20kHz, red)

### HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	22W / 19W
Dynamic power (<1-2% THD, 8/4/2/1ohm)	28W / 19W / 16W / 8W
Output impedance (20Hz-20kHz)	0.44-2.02ohm
Frequency resp. (20Hz-100kHz, 0dBW)	-3.4dB to -11.0dB
Input sensitivity (for 0dBW/20W)	27mV / 130mV (Radio input)
A-wtd S/N ratio (re. 0dBW/20W)	79.1dB / 92.1dB
Distortion (20Hz-20kHz, 10W/8ohm)	0.17-1.4%
Power consumption (Idle/rated output)	20W / 68W
Dimensions (WHD) / Weight	368x127x248mm / 5kg



ABOVE: Rear view shows the switches located next to the input connectors that set the gain of the built-in MM phono stage. There are connections for two speakers only

emit a slight metallic buzz that was audible from the listening position once the music had stopped.

The Ravensbrook gives a light and brisk sound which is a sensible compromise when compared with the alternative: uncontrolled one-note boom. The effect is less pronounced than it is with, say, the Ferrograph F307 amplifier of this period [see *HFN* Oct '14] and can be mitigated to an extent by loudspeaker positioning.

Overall the amp offers solid improvements over the Rogers Cadet, the bass being firmer and the tonality closer to subjectively neutral. Against this it could be argued that the midrange lacks the older model's final ounce of insight, but anyone upgrading would, I imagine, have been pleased with their decision given the improvements overall.

### BUYING SECONDHAND

The Ravensbrook proved to be a real step ahead in terms of reliability when compared to the Cadet range. With improved component quality and the elimination of the troublesome output transformers

there is a good chance of finding a used Ravensbrook in good working order even today.

Poor soldered connections are the main problem, due to the large printed circuit board which has vulnerable items such as the input and loudspeaker sockets mounted directly on it. Repairs are tricky as access to the back of the board requires that the whole thing comes apart – a fiddly and time-consuming task made necessary by the lack of a removable base plate.

The unusual output stages have three adjustments in them per channel, all of which require specialist attention to set up. Each of the four output transistors has to be biased individually, as does the Class A driver stage, which precedes the transformer (a very reliable component, incidentally).

Externally, be aware that the amplifier was available both with and without the standard wooden cabinet, so watch out for chassis models in home-made boxes of indifferent quality.

Also, be on the look out for worn legends on the front panel and missing knob trims, both of which are commonly encountered with well used examples. ☹

### HI-FI NEWS VERDICT

Although relatively inexpensive, both on its release and on today's secondhand market, this is one of the nicest early British transistor amplifiers that I've heard. It is certainly not perfect, but just as when the amp was new, it offers excellent value and is tough and reliable. Much cheaper than a Rogers Cadet and a whole lot less bother when it comes to maintenance, the Ravensbrook is an excellent first vintage buy.

Sound Quality: 72%



ABOVE: Price and pedigree – early ad extolls the virtues of the Ravensbrook



# How records are made

Moulds, masters, sleeves and stampers... Donald Aldous surveys the modern techniques used in the mass production of vinyl discs

*Audio  
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*HFN* will bring  
you an article  
from our vast  
archive of  
features and  
reviews from  
yesteryear

Pantographic duplication, that is, playing a master cylinder on one mandrel and copying the sound vibrations pantographically on to a wax blank cylinder revolving on an adjacent mandrel, began in the mid-1890s and can be considered as the start of mass production of records.

Yet the real advance was made only when electro-deposition became practical, and cylinders could be moulded from a negative matrix. This process dates back to around 1901, but the disc record was soon to take over from the cylinder, with the first commercial discs pressed in England in 1908 in the nucleus of the present EMI (then HMV) factory at Hayes in Middlesex.

Today sophisticated techniques producing electroformed moulds and pressings made in vinyl copolymers are commonplace, but the current LP pressing is a remarkable example of the thermoplastic art enshrining the



**ABOVE:** Then and now – a lathe with a diamond stylus cuts a spiral groove into a master disc while (right) cutting a master on a DMM VMS 82 lathe at Abbey Road

delicate and minute waveforms in its grooves which, when reproduced with lightweight pick-ups, can approximate the original sounds with a high degree of realism.

## MASTERING STAGE

Before describing the manufacturing processes in some detail, it is necessary to glance at the first step

in the chain of events between master tape and the finished record. This is the tape-to-disc mastering stage, in which the final edited tape is

transferred by cutting grooves into a blank lacquer disc, which is often misnamed an 'acetate' disc.

These blanks – made of flat, smooth aluminium – are coated with a specially formulated cellulose lacquer and have to meet the requirements of a flat, mirror-like surface, accurate and uniform thickness of coating, strong permanent adherence of this coating to the base, easy cutting characteristics, wide frequency response, particularly at the

high frequency end, good tracking qualities, lack of background noise and a long replay life.

In the old 78 disc days, this blank was called a 'wax' as, in fact, it was composed of part beeswax. The actual cutting of the groove – by a tiny chisel-shaped stylus of sapphire – is undertaken on a high-precision cutting lathe system (which,

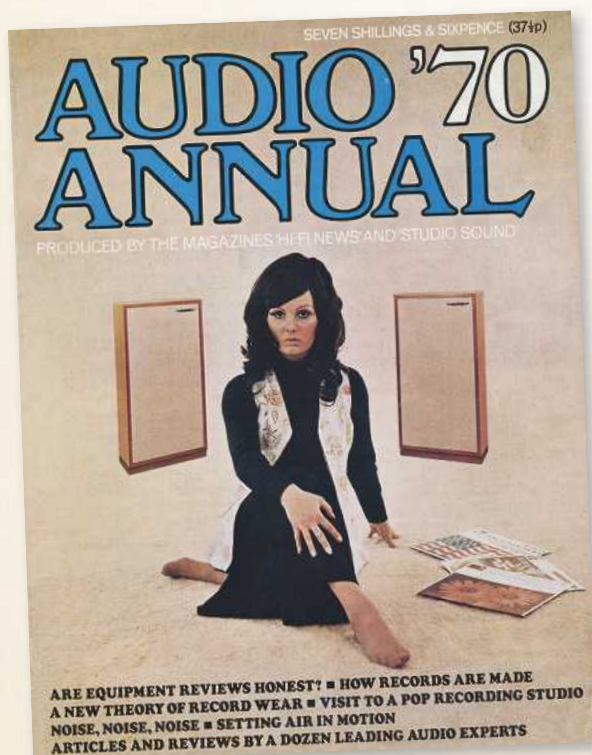
with ancillary equipment can cost £9000 to £10,000) employing a highly developed moving-coil stereo cutter-head which,

by regenerative feedback, offers a wide frequency response at very low crosstalk and distortion figures.

When the blank rotates on the face plate (platter or turntable) of this lathe, the coating comes off the surface as a continuous fine thread, termed 'swarf', which is removed by a suction tube. To facilitate this cutting action, the stylus has a small heating coil wrapped round its shank that softens the lacquer.

The blank disc is held in position by suction – the turntable has a

*'A groove on a 12in LP can be more than a quarter of a mile in length'*





vacuum chuck – and the cutter-head is traversed across a radius of the disc by a lead screw. In monophonic mode, the signals from the tape master induce lateral oscillations of the cutting stylus at right angles to the direction of groove travel, resulting in a groove modulated only in the horizontal sense; but with stereophonic inputs, of course, two sets of signals need to co-exist in the single groove.

This is done by introducing a second mode of vibration at right angles to the first, which produces a groove that varies in depth and width, as well as in direction. The available recording time is controlled by the groove spacing, at a given record speed, and this in turn depends on the amplitude of the lateral modulation in the groove.

### GROOVE SPACING

Transcription lathes today incorporate sensing systems to detect in advance the signal level and so vary automatically the groove spacing accordingly to achieve maximum recording time per side.

The groove-spacing is often less than 1/10,000th part of an inch with some 350 grooves per inch of recorded surface. This means that on one side of a 12in LP disc the groove can be more than a quarter of a mile in length.

The recorded lacquer disc from the cutting lathe is now in appearance and form one side of the finished record, and the purpose of the ensuing electroforming process is to produce metal moulds capable of pressing facsimiles of its surface in vinyl or other plastic substances.

Before this operation can be commenced, the surface of

the lacquer disc has to be made electrically conductive, so that it can become the cathode of an electrolytic plating bath.

Firstly, to do this it is necessary to clean the lacquer surface and then rinse with purified water before treatment by spraying or immersion in a silver solution containing a chemical reducing agent.

This wet silvering process involves careful cleaning with detergents, creating an unbroken water film on the surface which, after sensitising, is again rinsed and a silver layer deposited by a special gun (or two guns) moving over the surface, which is revolving. The result is a mirror-like film of silver by chemical reduction. This layer is extremely thin, of the order of 0.000004in, but it can carry a low current and permit electro-deposition to begin over its whole area when placed in a nickel plating bath.

The next step is production of the metal master (or negative), which until recent years was electroformed in copper. These days nickel is the metal employed, and the silvered blank is mounted on a stick and suspended in a nickel-plating bath.

**ABOVE LEFT:** A nickel plating bath at what is now the former EMI pressing plant in Hayes, Middlesex, and (right) PVC granules which after heating become the record itself

**TOP:** Typical cutting head, in this case made by Neumann. The fine wires carry a current of about 0.4A to heat the stylus which softens the lacquer and eases the cutting

**BELOW:** The five stages that are required to turn a magnetic taped master recording into a final pressed vinyl disc

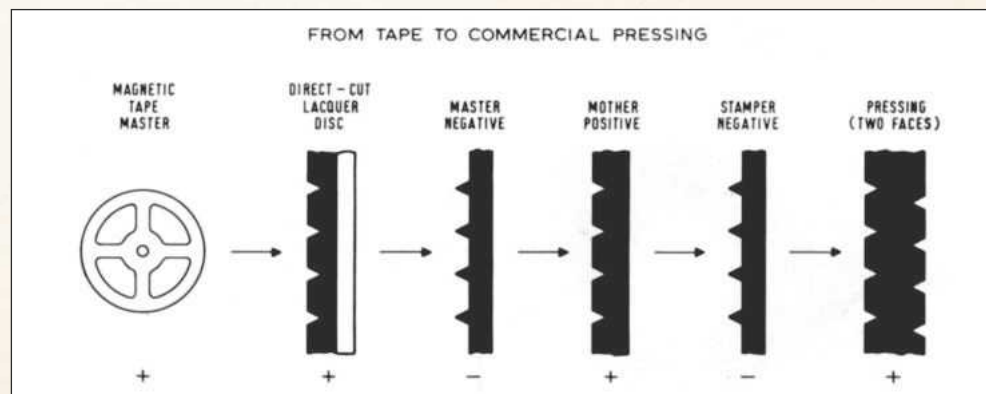
On the bottom of the tank is a slab of nickel – the anode – connected to one side of a low voltage DC supply. The silvered disc rotates just below the surface of the plating liquid and the metallic layer is connected through the stick to the other side of the DC supply. As the current flows, nickel is deposited on the silver face of the lacquer disc, as the cathode.

Once the desired thickness of nickel has been deposited, the lacquer disc is removed and carefully separated or stripped from the metal master. This is a delicate operation and sometimes damages the lacquer surface, but the metal revealed is the silver originally deposited on the lacquer. This cast is a negative copy, in which the grooves appear as ridges.

### POSITIVE THINKING

This master could be used for pressing final records and, where only a limited number is required, the risk of damage is accepted to save cost. Normally, as the working life of such a matrix can be short, it is employed to produce further copies or positives (known as mothers) from which stampers, which will press out the final discs, can be produced.

The sequence of operations can be seen in the diagrams, but some further explanation may clarify the processes. After rinsing and drying, the negative master has a very fine film deposited on its surface by immersion in organic colloid or potassium dichromate solutions, and as it is already nickel and so conductive, more vigorous plating methods can be adopted, and a complete duplicate (a positive) can be electroformed in about an hour. This mother can be played and





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checked for quality-control purposes. Usually several such mothers are produced, from which a number of stampers – that is, negative matrices used to press the final discs – are made. These stampers are thinner than the previous copies, and the loss of quality in these repeated stages is very small and up to ten such transfers can be made without noticeable deterioration.

## SPINDLE HOLE

Careful handling and inspection is necessary at all stages, right up to the negative stamper, on which the bottom radius is easily damaged, as it is represented by a ridge. Various mechanical operations have to be carried out on the stamper matrix to prepare it for the moulding press.

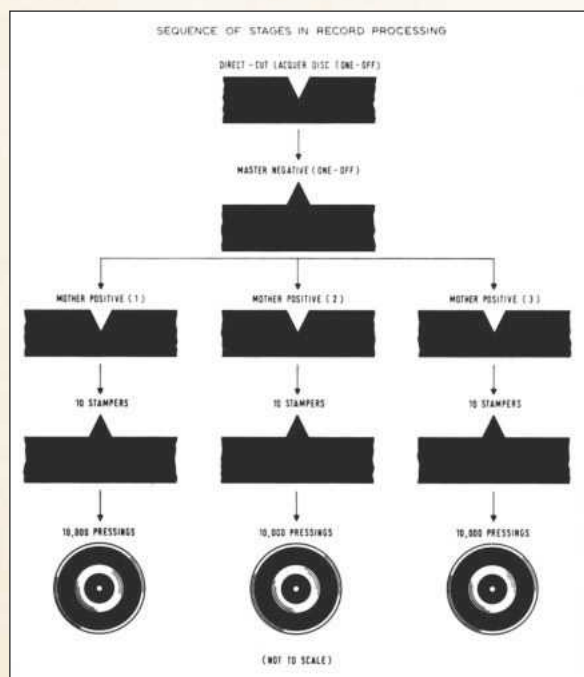
The back has to be smoothed and polished to remove any irregularities that might be forced through under the heavy moulding pressures and so mar the final appearance of the disc, and the location of the spindle hole is highly critical. Even a slight departure from concentricity will produce what is known as a 'swinger' and disturbing variations in musical pitch.

Optical methods with a microscope are used to centre the stamper before the spindle hole is punched, and, finally, the edge is trimmed to size. Some factories chromium plate the stamper to give better wearing properties, although

**RIGHT:** Metal masters are checked for surface noise at the EMI factory at Hayes in Middlesex in 1964. At the time, some 200,000 LPs were pressed per day at the Hayes plant alone



**BELOW:** The master could be used for pressing records but as its working life can be short, it is usually used to produce further copies or positives (known as mothers) from which stampers, which will press out the final discs, can be made



the life of a matrix on the press is rather unpredictable. Even a minute scratch or abrasion can produce a click or 'pop' on the moulded disc, but with care and luck one stamper can press thousands of records.

Other mechanical operations employed include the use of a forming tool on the stamper to make the raised edge and centre of the modern LP disc and, on 7in stampers for 45s, the embossing of the anti-slip serrations. To detect faults as early as possible and so avoid useless expensive operations, as we have indicated, caution is exercised at all times in handling. Visual inspection by a skilled worker can reveal very small faults, which can be examined in

more detail by microscopy. The replay check on the positive mother is also useful and it is possible – believe it or not – by delicate engraving with a tool under a binocular microscope to remove or correct small irregularities or projections from the groove wall.

So we have come to the last stage in the manufacturing process, the actual pressing or moulding of the disc. The final pressing is, of course, produced by – in most cases – compression moulding of the thermo-plastic raw material in a book-type hinged press.

In simple terms, the operation is as follows: two stampers, one for each side of the disc, are mounted on top and bottom plates of the press. Each stamper is clamped on the press block, which can be

internally heated by steam or cooled by circulating water. The record labels are placed on the stamper centre pins, back to front. The wad of record material, previously heated and mixed, is placed in the centre of the bottom stamper.

## THE MOULDED DISC

Both press blocks have been heated by steam and the operator then closes the halves of the press, pushing the whole assembly between the jaws of an hydraulic ram. This closes the ram, exerting pressures around one ton per square

inch, which forces the PVC across the faces of the stampers and between the raised grooves.

With this pressure applied, the heating of

the blocks continues forming the moulded disc. Then cold water is forced through the blocks to cool the pressing. After a period, of, say 24 to 35 seconds, the ram opens, the block halves are separated, and the finished disc, plus a ring of waste material, later removed by a circular cutter and known as 'flash', is taken off the press.

After a quick inspection for flaws, the discs are stacked on a long spindle or in a container, ready for collection and bagging, that is, insertion in the inner liner and outer sleeve. Further checks on random samples for sound quality are made of the pressings before bagging, thence to packing in boxes ready for despatch to dealers.

It will be appreciated that the pressing cycle is very critical and

**'A hydraulic ram exerts pressures of around one ton per square inch'**



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X6 Block, What Hi-Fi Sound & Vision, Sept 2015

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the temperature of the blocks (or dies) can range from 85° to 320°F. An increasing trend today is towards automation, and one type of automatic 100-ton record press (the Swedish Alpha) has a safety gate which, on closing, opens the hydraulic valve controlling the hinged upper blocks, and the press then closes by means of a rack-and-pinion arrangement.

To prevent any slamming shut action, hydraulic braking is contrived by a system of cam and follower valve control. In this way the amount of braking and its timing are fully adjustable.

### INJECTION MOULDING

If the press is set in the 'automatic' position, the pre-set electronic programme continues, whereby the safety gate is lowered automatically by an air cylinder and any interruption to the gate closure will immediately stop the press action. It can be switched to manual operation at any time during its cycle. This high degree of automation is particularly present in such factories as the DGG plant at Hanover, from the silver spraying process, blending of the copolymer vinyl, pre-heating of the mix, right through to the automatic bagging of the cooled disc in the record sleeves.

In this plant too, unattended turntables check test pressings and give pen-recorded paper strip location of any defects or intrusive noises. British record factories, too, are adopting automatic methods, including bagging and packing in lots of 25 records ready for boxing.

Compression moulding methods have been in use for over 70 years, and obviously a lot of know-how has been accumulated, as well as capital investment in plant, but the alternative injection-moulding technique for manufacturing records must be mentioned.

Injection-moulded discs (in which a soft plastic is forced into a mould cavity) have been produced many years ago, both here and in the USA. The materials employed were modified polystyrene or acrylic, but the improved flow properties and



thermal stability of vinyl copolymers has directed attention to these substances for injection pressing.

### TWO DISCS AT A TIME

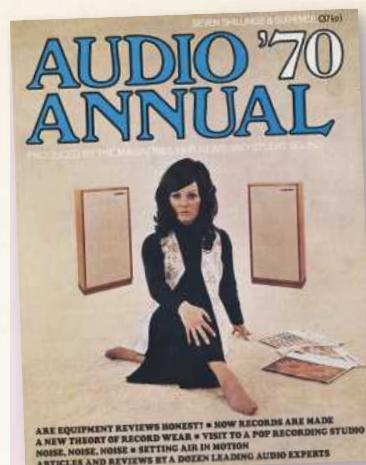
The method is fast and it is possible to produce two discs per pressing cycle. The chief application appears to be with 7in records, as there are problems associated with this method at 12in, such as

separate labelling after pressing and certain defects occurring in some pressings. But the injection process has attractive features, which are being investigated all the time.

The modern stereo LP record is an outstanding example of mass production plastic technology. ☺

**ABOVE:** Pages from the 1970 *Audio Annual* in which Donald Aldous took readers through the chain of processes involved in producing the 'modern stereo LP'

**BELOW:** Finished LPs ready for bagging. The labels are printed on heat-resistant paper in order that they can go into the pressing machines. Only with injection moulding are labels added after pressing



## Also in *HFN's* 1970 *Audio Annual*

### NOISE – ITS FORM AND ORIGINS

Gordon Edge examines the continuing electronic circuit bugbear that is noise.

### ARE EQUIPMENT REVIEWS HONEST?

Frank Jones poses the question and offers some answers. We leave readers to judge his conclusions for themselves.

### MULTIPOP TOUR OF A MULTITRACK 52 STUDIO

David Kirk takes a lighthearted look at a multitrack recording studio of the sort used for taping pop sessions and TV ads.

### RECORD WEAR

Michael Gerzon examines an ancient topic in a new light, bringing a mathematician's expertise to bear on the problem of record wear.

### AIR MODULATION

Did you know that at 174dB the radiation pressure would be sufficient to support a man against gravity? Rex Baldock looks at a wide range of acoustic facts and figures.

### INDEX OF EQUIPMENT REVIEWS

Over 50 pages of tape recorder, tape unit, loudspeaker, pick-up cartridges, amplifier, tuner-amplifier and player unit reviews published during the previous year which we think are likely to be of lasting interest.





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Mark Levinson No 512 CD/SACD	£12,255	Heco celan 500	£550	McIntosh MC203	£3,950	Ganzezza Cartridge	£2,790
Mark Levinson 512 CD/SACD	£5,990	Infinity Kappa 9	£1,750	McIntosh MC275 (2 Available)	£4,250	Dr. Feickert Analogue NG High-Precision	
Mark Levinson No 31 & 30.5 Transp/Dac	£7,450	JBL 250 Ti	£2,890	Musical Fidelity 308 K Mono-blocks	£650	Cartridge Alignment Tool	£149
McIntosh MCD1100	£7,490	KEF Moun	£85,000	Naim Audio Nap 180	£600	EMT 950 Broadcast Turntable	
McIntosh MCD550	£3,250	Krell resolution 3	£2,700	Naim Audio Nait 3	£320	BBC Wide body	£6,500
McIntosh MCD550 CD/SACD player	£5,000	Loewe Reference stand speaker	£1,400	Pathos InPower	£4,990	Esoteric E 03 Phono stage (mm/mc)	£2,990
Meridian Audio 508	£600	Martin Logan Aerius I Stereo Speakers	£850	Plinius SA 250mkIV	£3,495	Gale GT2101 Turntable	£7,990
Micro Seiki CDM2	£1,290	Martin Logan Logos Centre	£590	Sony TAN R1 monoblocks	£8,990	Jan Allaerts MC1B mk1	£1,495
MICROMEGA Microdac	£225	Martin Logan Summit	£4,990	Soulution Audio 711 upgraded from 710	£29,990	Kuzma Stabi (wood) & Ref psu	£1,990
Moon 7500 CD/DAC 24/192	£6,990	Meridian Audio DSP 7200	£16,500	Temor HP 300	£15,500	Linn Sodek LP12, Ittok, Majik PSU, Rosewood	£3,500
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Perreux DP32	£1,475	Sonus Faber Minuetto & Ironwood stands	£890	YBA Passion 1000 monoblocks	£6,890	Origin Live Conqueror mk IIIa	£1,590
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Plinius CD101	£1,890	Sonus Faber Cremona	£2,000	Audible Illusions Modulus 3A	£2,250	Pink Triangle Export/ Zeta	£1,495
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Primare Ccd31	£600	Spendor s100	£1,295	Audio Research LS25 (mki)	£1,800	SME Model 30/2A	£8,790
Proceed CDP CD/HDCD player	£995	Titan 3Way	£1,400	Audiovalve Eclipse	£1,500	SME Model 20/12A	£11,567
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## LAST WORD

# OFF THE LEASH!

KEN KESSLER TELLS IT LIKE IT IS...

Has the trumpeting of vinyl become a form of hi-fi political correctness?

Ken Kessler thinks so...

**F**eel that gush of wind? It's the sighs of relief sweeping *HFN*'s readership: I promise this will be the last time I mention the so-called 'vinyl revolution'. I've had enough of it. It's gone beyond boring to a level of stultification that I believe may stall the growth if not actually harm the world of hi-fi.

### SICK OF IT

I've even received emails from readers telling me they're sick of it – and not because they've abandoned vinyl. It's just that championing the LP has become an insidious form of hi-fi political correctness. All else is heresy. Does anyone really want to suffer through the same nonsense that divided the industry back when CD arrived?

A 'revolution'? It is nothing of the sort. It is a mere cult, like speaking Klingon or pipe smoking. Beyond our informed and enthusiastic hi-fi community the LP rebirth is insignificant, yet it is so hyped by its advocates that you'd think the man on the street was queuing to buy them. Huh? Ask anyone under 40 about vinyl, and most will think you're talking about kinky sex garb. Many don't even know the terms 'stereo' or 'hi-fi'. LPs? Isn't that texting shorthand for 'Let's party!'?

Those wrapped up in the LP's survival often demonstrate a marked lack of

perspective. Indeed, merely questioning the scale of the 'comeback' has turned me into the enemy in some circles – a shock as I review turntables and LPs every month, and never fail to praise the sound of LPs above all other media save for open-reel tape.

Typical of LP boosters is a tendency to be creative with numbers. Although statistics are, according to one adage, the third item in a sequence that goes, 'Lies, damned lies and....', comparing them does make for interesting reading. Among the more enlightening is the number of turntables being sold – surely a direct by-product of the revival. I've read that Pro-Ject Audio Systems,

arguably the largest turntable maker on the planet, produces 250,000 turntables per annum. But check the precise unit sales with Pro-Ject's Heinz Lichtenegger, and you find that the correct

figure is less than half that: 110,000. Such are the risks of wishful thinking and blind worship of vinyl.

### NICHE MARKET

More recently, as if trying to prove that the LP is back like Tom Jones, was the suggestion doing the rounds that 2014's sales were 'almost 74 million LPs'.

Hmmm... if that were the case, we would be talking about nearly a two-billion-dollar industry. But that doesn't quite align with

what the music industry says. On the 17th of April 2015, the International Federation of the Phonographic Industry (IFPI) published this: 'Vinyl has seen a revival in the past few years, with sales increasing by 54.7% in 2014 alone to US \$346.8 million.'

Pretty good, eh? But the report continues: 'Despite its sales success, vinyl remains a comparatively niche part of the global recording industry, accounting for 2% of its US \$14.97 billion revenues in 2014.' I repeat – just 2%.

### MISGUIDED DIEHARDS

Unfortunately, the IFPI did not provide unit sales, only dollar/value sales. But let's be generous and not quibble over multi-LP boxes and how they were counted, *eg*, should a double-LP count as one or two? Let's also presume that the average LP sells for around US \$25, to account for both mainstream titles retailing for as little as \$13, such as Lana Del Rey's *Paradise*, and audiophile pressings at typically \$35-\$50.

This does not disadvantage those grasping for the 74 million LP target: in fact, it helps because a higher average price would mean the need for fewer unit sales to reach the IFPI's figure.

But... if the IFPI is correct, then US \$346.8 million divided by \$25 equals: yup, the 13,872,000 global unit sales (up from the 9m I quoted in *HFN*'s Yearbook) that all straight-thinking audiophiles accept as 2014's sales figure.

I'm not convinced by attempts to discredit the IFPI's numbers – none of us can ignore the fact that it is a non-profit trade organisation representing the global recording industry, looking after the interests of some 1300 record labels, and with greater access to figures than any number of rogue vinyl bloggers.

Whatever the scale of the LP's return, there will always be misguided diehards ready to consign the vast majority of progressive audiophiles to the lower reaches of hell for their lack of faith. But I'm tempted to suggest that promoting vinyl LPs is not morally equivalent to any life-or-death issue. For those who feel that way, vinyl's survival should be the least of your concerns. Try your sanity for starters. ☺

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