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## verdicts

●●●●●	<b>OUTSTANDING</b>
●●●●	<b>EXCELLENT</b>
●●●	<b>GOOD</b>
●●	<b>MEDIOCRE</b>
●	<b>POOR</b>
£	<b>VALUE</b>



There's no better symbol of high fidelity than the electrostatic loudspeaker. Pushing air with a gossamer thin Mylar film driven by electrostatic forces has got to be the most immediately and obviously evocative way of generating sound. It's something we can all understand is truly esoteric – and Quad produced one of the first domestic electrostatic loudspeakers in 1957. The world has been trying to beat them at it ever since, but none have managed to pull ahead convincingly. When

Quad announced two new models recently we immediately lined up a review of the most affordable ESL-2812 and you can read about it in this issue on page 12.

Serendipity brought us an astonishing top quality, battery powered high resolution music player to play through the Quads, the Astell&Kern AK100. Ours flew in from Korea (as it were!) set up in Korean. I puzzled as to which bit of Korean I must select to get English up on screen. After a lot of menu searching and a few little expletives there was light through the darkness of my misunderstanding and I was off. What was immediately apparent was its superb sound. Peter Comeau, chief acoustics engineer of the IAG Group, and Quad designer, dropped in from China and was suitably impressed to hear Mastering Quality music files played through the Quad ESL-2812 electrostatics. What a glorious demo of where high fidelity is going!

We all thought SACD was dead didn't we? Oh enthusiasts of little faith; we thought the same about the LP too. Shame. Silver discs may be on their last legs, perhaps dragged down by a lingering sense of being inferior, but high quality digital seems peculiarly tenacious in its ability to retain fans. DSD digital lives on and may be winging its way to you in due course, over fibre optic and copper cables, as a download. See what we have to say about DSD on page 49.

The world of high quality audio is moving on at a cracking pace as we swing into 2013 – and you'll find plenty of it here in the latest issue of Hi-Fi World. I hope you enjoy it. You can tell me personally at the Bristol Sound & Vision Show, in Bristol, February 22nd-24th. We are on Stand 4A. I hope to see you there.

## Noel Keywood, editor

## testing (see [www.hi-fiworld.co.uk](http://www.hi-fiworld.co.uk) for full explanations of all our tests)

To ensure the upmost accuracy in our product reviews, *Hi-Fi World* has extremely comprehensive in-house test facilities, and our test equipment - from big names like Rohde & Schwarz and Hewlett Packard - is amongst the most advanced in the world.

Loudspeakers are measured using a calibrated Bruel & Kjaer microphone feeding a Clio-based computer

analyser, using pulsed and gated sinewaves, in a large room to eliminate the room's influence. Pickup arm vibration is measured with a Bruel & Kjaer accelerometer.

No other UK hi-fi magazine has in-house testing, and none has access to such advanced tests across all types of equipment. That's why you can depend on *Hi-Fi World* reviews.



## ELECTRONIC MAGAZINE

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# news

## FULL MOON

SimAudio has a wide range of new products. Designed around the M-AJiC32 circuitry (an asynchronous jitter elimination system) performing in 32-bit fully asynchronous mode, the Moon 380D DAC (from £3,200) features the ESS Sabre32 DAC operating in 32-bit Hyperstream where the conversion process uses eight DACs per channel. There are eight digital inputs covering AES/EBU, S/PDIF, Optical and USB. All of these inputs accept a signal up to 24-bit/192kHz resolution. Housed in a rigid, custom-made chassis with a brushed and anodized front panel, the Moon 380D includes a SimLink controller; an IR

input, a 12 Volt trigger output, a RS-232 port and an over-built power supply. Replacing the W-8, the new Moon 870A power amplifier (£16,275) is a balanced differential dual-mono design that outputs 300W into 8 Ohms and 600 watts into 4 Ohms. Several in-house developed advancements include Moon output transistors and a "zero global feedback" circuit, referred to as Lynx. A sister power amp, on the horizon, is the Moon 860A power amplifier (£11,450), a balanced differential dual-mono design that outputs 200W into

8 Ohms and 400W into 4 Ohms, featuring similar internal technology.

The Moon 740P preamplifier (£7,750) is a dual-mono fully balanced differential design, following in the footsteps of the Moon 850P reference. It features two toroidal transformers in conjunction with five stages of DC voltage regulation and extensive choke filtering, along with four stages of the company's newly developed M-LoVo (MOON Low Voltage) DC regulation circuit; a circuit made up of a combination of ICs and discrete parts that, says Moon, is virtually free of noise. The M-eVOL2 volume control circuit, featuring 530 individual volume steps, uses MDACs (operating in a current steering R-2R configuration) which alter the audio signal's amplitude yielding, says Moon, no sonic degradation of the signal, regardless of the selected volume setting.

Finally, the 180 MiND Music Streamer (£950) allows you to stream digitally stored music to your audio system and playback via your amplifier and speakers. There is also access to Internet radio using the embedded V-tuner. Digital music files in all common formats are supported up to 24-bit/192kHz resolution. A 16-bit/48kHz limit exists when streaming wirelessly between the location of your digitally stored music and the MiND. MiND can stream music either through a standard Ethernet connection or wirelessly, over a Wi-Fi network. If your audio system uses a Moon Preamplifier or Integrated Amplifier equipped with SimLink capability, you can control features such as input selection, volume and power on/off using the MiND control App.

Release date information will follow soon. Click on [www.renaissanceaudio.co.uk](http://www.renaissanceaudio.co.uk) or call 0131 555 3922 for more information



## NUFORCE HEADPHONES

NuForce has released the HP-800, 32 Ohm, closed backed, headphones. Featuring a die-cast aluminium frame and 40mm neodymium drivers the headphones include breathable memory-foam ear cups covered in soft leatherette. Two removable cables are included for portable and studio use. Other accessories include a carry bag. The NuForce HP-800s are available for £119.

For more information click on [www.nuforce-europe.com](http://www.nuforce-europe.com)



## DIAMOND LIGHT

Wharfedale has announced the Diamond 100 Series speakers which replace the Diamond 10 Series. The Diamond 100 comprises two standmount speakers, three floorstanding models plus two centre speakers for home cinema use. The full line-up includes: Diamond 121 2-way standmount (£230); Diamond 122 2-way standmount (£280); Diamond 155 2.5-way floorstander (£500); Diamond 157 3-way floorstander (£700); Diamond 159 3-way floorstander (£1,000); Diamond 101C 2-way centre speaker (£230) and Diamond 102C 3-way centre speaker (£350).

The drive units have been redesigned. Wharfedale's woven Kevlar cone now sports a new profile based on research originally undertaken for the high-end Jade range. The bass and midrange cones incorporate semi-elliptical 'break-up' areas and each surround is treated to match the cone

edge with a 'Diamond pattern' moulding. The dust cap is blended and treated to provide a smooth transition with the treble unit which has also been entirely redesigned and now incorporates a ferrite magnet system, together with a waveguide around the fabric dome.

Wharfedale's engineers have also formulated an all-new cabinet panel construction consisting of multi-grain faceted boards (a mix of chipboard and MDF) bonded together to damp unwanted high-Q resonances and block internal sound leakage.

Phone 01480 447700 or click on [www.wharfedale.co.uk](http://www.wharfedale.co.uk) for more information.

## AUDIO SUSPENSION

...has launched its debut wall-mounted shelf, the ASU-100, designed to provide isolation from unwanted resonance. Hand-made in Sussex, the new ASU-100 is the first product in a new line from Audio Suspension. Built from high-grade 20mm acrylic, the ASU-100 is securely anchored to internal walls using two polished-chrome shelf supports faced with silicone rubber to ensure a high level of damping at the connection point. Two front-mounted 1.5mm steel-wire cables offer further support and scope for levelling and are secured by polished-chrome Posi-Lock supports.

Shelves can be made in custom sizes and colours to order. Price is from £250.

Contact [www.audiosuspension.com](http://www.audiosuspension.com) for more information.



## MUSIC ANGEL

The new Music Angel Friendz is a compact 6W stereo loudspeaker with a built-in digital amplifier that can be daisy chained for increased volume and rechargeable battery with over 120 hours of playback time and a charge time of one to three hours. Finished in aluminium, spanning 75x50x52mm and weighing 150gm, the Music Angel Friendz comes in a choice of seven colours (i.e. black, blue, silver, green, pink, orange and red). Available in-store now from Waitrose or on-line from [mobilefun.co.uk](http://mobilefun.co.uk) and Amazon, Music Angel Friendz is priced at £25 each.

Click on [www.frequencytelecom.com/brands/music-angel-friendz](http://www.frequencytelecom.com/brands/music-angel-friendz) or phone 020 8397 2222 for more information.



## NEW TIMESTEP PHONO STAGE

Following on from his experience producing and selling the lovely sounding Ant Audio Kora discrete phono stage, Dave Cawley of Timestep has released a new high quality Moving Coil phono stage, the T-01MC, that again uses discrete FETs, rather than ICs. In keeping with the 'simple but pure' design rationale. The circuit is of dual-mono zero negative feedback topology. All FETs are individually hand tested and selected. Gain is fixed at 67dB (x 2200) and input impedance 100 Ohms, suitable for most MC cartridges. Timestep can supply different values if required. Ground management is such that hum can be avoided, without compromise to safety. The T-01MC is fully compliant with EN60065 Class I, RoHS, CE, WEEE and LVD. Price is £995.

For further information click

<http://www.time-step.com/timestep/Timestep-T-01MC-phonostage.htm>



## AUDIO PRO LV1

Living LV1 is a wireless speaker system, the only cable necessary being for power. With its built-in digital amplifier, wireless receiver, DSP (Digital Signal Processing) and digital filters, the LV1 delivers stereo sound from a single box using Audio Pro's 'Embracing Sound' technology. A complete speaker system in one box, LV1 is ready to use in the Audio Pro network. To use, you plug the USB transmitter into your computer and power up the speaker and you are ready to listen to your music content. The included remote control allows you to set all volume levels throughout the home – master volume of all zones together or individual zone volume. The Audio Pro Network uses a dedicated, protected the 2.4 GHz-band to play uncompressed formats such as FLAC, Apple Lossless a built-in "sniffer" system detects other wireless channels and automatically jumps to free RF (Radio Frequency) channels in order to avoid interference before listening. The system progressively controls the audio bands available, ensuring that the Audio Pro network can coexist with other wireless systems. An additional built-in security filter removes all RF interference from other wireless networks. The Audio Pro Living LV1 is available now in the UK in red, black or white leather finishes, priced at £350.00.

Click on [www.audioprodirect.co.uk](http://www.audioprodirect.co.uk) for more information.



protocol in and more. Developed especially for the Living range,

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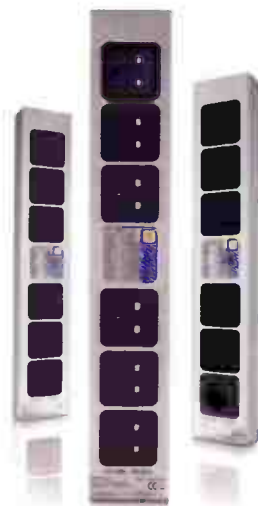
Isotek has released three new products to tackle mains noise in and around your hi-fi. The EVO3 Polaris is an affordable mains conditioning block based upon a delta filter topology for the filtration of both Common Mode and Differential Mode mains noise to six outlets – each one independently isolated via IsoTek's Polaris X technology to prevent cross-contamination. In addition, 13,500A of instantaneous protection is provided, safeguarding equipment via IsoTek's sequential and repeatable protection system. Price is £250. The EVO3 Mini Mira is a mains filtration device optimised for use with TVs and projectors.

Taking the Mira circuit, compacting it and stuffing it into a steel and aluminium case, at the product's heart is IsoTek's proprietary Triple

Resonant Filter, designed to focus on the frequencies that are critical to picture quality, coupled to a series of shunt and delta filters plus auto-sensing Adaptive Gating technology, which adapts filtering according to the current draw of the load. Two power outlets are provided, one to feed any type of TV (CRT, plasma and all varieties of LCD) or video projector, the other for a partnering device such as a set-top box or Blu-ray player. Price is £195.

The EVO3 Premier is a power cable. At its core are three 2 square mm conductors made from 99.9999% OFC and coated in silver to aid conductivity, with a Teflon FEP dielectric extruded over each. The three conductors are given a rotational twist to aid EMI/RFI rejection, and surrounded by cotton filler to add internal strength, reduce microphony and further enhance the cable's dielectric properties. Price is £80.

Click on [www.isoteksystems.com](http://www.isoteksystems.com) or call 01276 501392 for more information.



## SST2

Bryston has launched the B-135 SST2 integrated amplifier with 135W of power as a replacement for the B-100. The new amplifier adds features such as seven high level inputs, a pass-through provision for home cinema applications and a pre-amp out/power-amp. An additional on-board DAC with 8x over-sampling performance and a moving magnet phono stage can be fitted.

Connection is via gold plated five-way speaker binding posts, gold plated RCA and S/PDIF inputs and outputs or twin Toslink sockets. You also get a headphone jack and volume is adjusted via a digitally controlled analogue volume dial. Three completely separate custom toroidal transformers are split using two for the analogue circuits and one for the digital section. Price is £4,900.

Click on [www.bryston.co.uk](http://www.bryston.co.uk) or phone 0870 4441044 for more information



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## LOEWE SOUNDVISION

Loewe's SoundVision audio system is now available in high-gloss white lacquer with new insets in a chrome and metallised finish plus new software so the main menu touchscreen display now affords direct access to the MusicDetector. Other improvements include upgrades to the FM radio mode and the individualisation of AUPEO! radio services.

The now fully Bluetooth-enabled Loewe SoundVision includes a 7.5in touchscreen including track information, album covers and broadcaster logos.

Loewe SoundVision can be connected to the Internet via LAN, WLAN or Powerline. You can also create your own individual music programmes with the integrated and editorially managed music service AUPEO! In hardware terms, the system includes six built-in speakers, two of which are integrated subwoofers. Price is £1,250.

Click on [www.loewe.tv/uk](http://www.loewe.tv/uk) for more information.



## FLAT QUAD

Like the outgoing ESL-2805 and ESL-2905, the latest ESLs incorporate multiple electrostatic panels – four in the ESL-2812 (reviewed in this issue) and six in the larger ESL-2912. The two inner panels utilise concentric rings of electrodes to help imaging. All the panels are held within a high-mass structure of tensioned aluminium extrusions coupled to stainless steel supports.

Improvements began with the power supply for the EHT voltage, eliminating 'creepage' (the possibility of charge flowing between components on the circuit board) by developing a new two-layer PCB with 2oz copper, which ensures optimum insulation and distance between contacts and a symmetrical layout for the components. This new layout also facilitates an improvement in cable dressing, again reducing the effects of creepage, particularly in high-humidity environments.

New components have been introduced to the power supply, including Vishay metal film resistors and Murata audio-grade capacitors.

In the ESL-2912, the insulation material is applied in three coats to avoid degradation of the EHT charge under high dynamic conditions. These latest versions of the Quad ESL can thus play louder and handle more power than previous models.

If overdriving is detected the speaker is temporarily muted and the illuminated Quad logo will flash. Prices are £6,499.95 per pair for the ESL-2812 and £7,999.95 per pair for the ESL-2912.

Click on [www.quad-hifi.co.uk](http://www.quad-hifi.co.uk) or phone 01480 447700 for more information.

## HRT STREAMING

The microStreamer, from HRT, is an external sound card that connects between a computer, tablet, smartphone or any other compliant host, and your headphones or audio system. Arriving in a solid aluminium case, it fits easily in your palm or pocket. Featuring an asynchronous USB transceiver, digitally controlled analogue attenuator coupled to an OCL amplifier, the microStreamer draws power from the USB bus. There are no drivers or software to install while LED indicators show the current sample rate (i.e. 32k, 44.1k, 48k, 88.2k & 96k) as well as the state of the mute circuit. Price is £179.

Contact: Audiofreaks on 020 8948 4153 or click on [www.audiofreaks.co.uk](http://www.audiofreaks.co.uk) for more information.

### microStreamer

High Performance external USB sound card & headphone amplifier



## VERY CURVY

The Model 1300 phono stage from Zanden is not limited to just the traditional RIAA equalization but also incorporates additional equalization circuits so that all stereo LP records can be played. The equalization curves include Decca, Columbia, Teldec and EMI. The model 1300 uses an LCR type passive circuit design, while the amplification section is a patented fixed-bias design, containing fixed bias 6922 valves. Rectification was selected in the power supply for its low noise properties and incorporates 6922 and 6CA4 vacuum tubes. Two loading positions are available to provide the greatest compatibility with a wide range of cartridges. Other features include step-up transformers from Jensen, noise absorption and shielding techniques plus Asahi-Kasei Fibers Corporation's Pulshut RF noise absorption material. Price is £13,495.





# To the Point

**The only 'point source' panel loudspeaker in the world, Quad's new 2812 electrostatic is something special. But how does it sound? Noel Keywood finds out.**

**U**nder the skin the new ESL-2812 electrostatic loudspeaker from Quad, priced at £6,499.95, is a development of their ESL-63, a unique 'point source' electrostatic launched in 1963. It's a loudspeaker I owned and

loved around twenty years ago, modified and used so heavily that in the end they fell apart! So the ESL-2812 is well known to me and I was eager to find out what Quad had done to update it.

The ESL-2812 is a 'full range' electrostatic with no subwoofer, so

bass comes from the electrostatic panel – unlike a Martin Logan for example – and that's one reason the ESL-2812 is large. The other is that to work as a 'point source' – think of sound coming from a golf ball representing one point in space – the electrodes take the form of a

disc surrounded by concentric rings, meaning you end up with height and width of the same dimensions.

All of which goes to explain the rather bluff appearance of the ESL-2812. Where my '63s had a sandy brown grill cloth and a simple wooden top piece that picked up on the style of modern 1960s furniture, the ESL-2812 has a dark cloth, and a more sombre style that I suspect is meant to appeal to an older target audience, or a conservative Far East market that places faith in traditional values, especially in Western products. Measuring 690mm wide and 1070mm high, plus 380mm deep the ESL-2812s need space and a reasonably large room – think 20ft long or more – as they work best with plenty of room behind.

My ESL-63s were light and their frames insubstantial, one reason they got progressively weaker as I removed their rigid protective grilles. Quad have progressively strengthened up the frames since that first model and I was taken aback at the substantial 33kg weight of the new ESL-2812. It now has a very strong frame, rear tensioning support and heavy base to keep it steady. Quad say they've improved the audio transformer and this has likely contributed to the weight increase.

In the name of stability the new base now carries four adjustable feet, complete with adjustment bar, so the 'speaker can be made stable. Our measurements showed the ESL-2812 is best tipped back a few degrees so it fires 3-5degrees upward, according to how far away the settee is. This can be judged subjectively by moving up or down in front of the loudspeaker; changes aren't great but the ESL-2812 slips to the warm wide of neutral off-axis and needs its position optimised to minimise this.

Connection to the loudspeaker is via conventional 4mm gold plated terminals that accept bare wires, spades (USA) or 4mm banana plugs. Mains power enters through an IEC socket and they need 220V-240V, 110V-120V, or 100V.

Inside any electrostatic loudspeaker, sound is produced by a lightweight sheet of Mylar film, so gossamer thin and evenly driven it follows music perfectly: the ESL-2812 promises perfect sound quality, far better than a cone-and-box loudspeaker. What the ESL-63 pioneered was pseudo-point source radiation where sound is radiated

from a central disc then, progressively, from annular rings surrounding it, through a cable delay line, the idea being to set up a hemispherical radiation pattern mimicking that of a point source.

This establishes a single, unequivocal source of sound, eliminating the multiple sources in a conventional loudspeaker and their inevitable phase error (ignoring KEF

Uni-Q and Tannoy Dual Concentric). I'll talk more about the subjective impact of this later.

Also in the base lies a power supply, explaining the need for a mains connection to each loudspeaker. The supply develops 5kV to the film, and the audio is stepped up by the transformer to swing a similar voltage between the electrodes either side, so moving the film in sympathy with the audio. The ESL-2812 has overload protection circuits and an illuminated Quad badge will start to flash if these

circuits act. Most electrostatics need a lot of power and the ESL-2812s are no exception. Quad quote 86dB sound pressure level (SPL) from one Watt of input but we measured just 82dB – and in use our figure was borne out: volume had to be wound up far higher than with our Quadral Wotan VIIIs for example, fairly typical of a conventional loudspeaker.

The ESL-2812s need power to go

"sometimes, the ESL-2812s just blew everything else away"

loud and around 100 Watts is a good target figure, but this is the case with all full range electrostatics. Transistor amplifiers can be used and, unlike most electrostatics, the ESL-2812s do not sink to 1-2 Ohms above 10kHz, so they are no threat to output transistors. The downside is that this affects their high frequency output, contributing to a soft sound, so what you gain on the swings you lose on the roundabouts.

## SOUND QUALITY

I've lived with and tuned electrostatics all my life, starting with a pair of arcing Brauns (German Quads),

through ESL-57s to ESL-63s and of course all the electrostatics we have reviewed at Hi-Fi World. They are so horribly revealing that I use valve (tube) amps to drive them; most modern transistor amps will survive, but it isn't guaranteed if you play at high volume. Quad make plain the fact that the

***A rear tensioning bar must be tightened by hand before use, to add rigidity. This improves image stability and bass definition.***

ESL-2812s can go very loud (unlike earlier Quads) and I had our Icon Audio MB845 MkII power meters swinging right up the scale, meaning I was pushing 100 Watts or so into them – cleanly too.

So the ESL-2812s go loud – and if you exploit this then you





**Rear panel of the ESL-2812 has IEC mains input socket, rocker power switch and red LED. It also carries a dimmer for the front logo and input terminals.**

will need at least 100 Watts. Their sudden lift in impedance at 10kHz ensures that transistor amplifiers will survive though, because it is this bit that transistor amplifier protection circuits can barely cope with.

So we listened with a pair of Icon Audio MB845 MkII monoblocks able to deliver 110 Watts per channel, and a pair of Quad II-eighty power amplifiers. Of the two the Quads give a brighter balance from KT88s and best suit I feel, livening the ESL-2812s slightly, but as always the silky power of the 845 equipped Icons was as beguiling as ever. Transistor power amps that would suit come from Quad and Creek and Naim even, with a valve preamp I would suggest, from Croft or Icon Audio.

Room and room position are an issue with electrostatics, especially full range ones like the Quads, because they are bass dipoles. The ideal room is long and narrow, with the Quads placed against the side walls to extend their panel area, Peter Walker once advised me. And he is right: I heard Reggae coming from ESL-57s in a room like this and bass quality was extraordinary. In most rooms though, the Quads need space behind them to absorb the rear wave and / or sound absorbing panels. We used sound absorbing panels and positioned them one metre from the wall.

Adjustable feet are provided deliberately to tilt the ESL-2812s back, so they point slightly up at listeners, for this gives the brightest balance. The upper midrange softens

a trifle with them firing horizontally, but there are no inter-driver phase effects so the 'speakers vary little with height, or where you stand in the room.

Angled inward there were some small image shifts with head movement; facing straight forward

probably due to the electrode structure, subtracting energy above this frequency. Then treble rolls down sharply above 10kHz. Put all this together and what I heard was an easy going top end with muted high-end sparkle: the regular tap on a triangle through Henri Mancini's Pink

It was a deeply confident and relaxing sound, yet had an insight other loudspeakers could only wish for.

down the room this disappeared. They are best spaced well apart, with 6ft a minimum (between centres) and up to 9ft possible; we used 8ft and central images remained firm, making for a wonderfully spacious sound stage that stretched wider than most loudspeakers are able to support. The ESL-2812s set up stable and firm images and they are completely consistent wherever you listen, due to the 'point source' nature of this loudspeaker.

In basic balance the ESL-2812s are very mild natured. They sounded as soft as my ESL-63s once did, and the 63s had a slow treble roll off under measurement. The ESL-2812s have a slow roll off above 5kHz with phase dips,

Panther theme was fast, clean and packed with filigree detail, but the tail of each strike was truncated, lacking the extended ring produced either by the ribbon tweeters of our Quadral Wotans or the



electrostatic panel of the Martin Logan Electromotions (currently sitting in my lounge being re-evaluated for our website audience). Yet at the same time treble was still incredibly clean, well damped, all-of-a-piece and packed with internal detail, quite unlike that from most loudspeakers, meaning those with dome tweeters. The strings of Nils Lofgren's guitar on 'Keith Don't Go' were vibrant and I could hear right into the plectrum punishing the strings of his guitar, but there was at the same time a sense of warmth and ease to the sound.

Lacking multiple drive units and the phase errors between them, the ESL-2812s provided a sense of evenness and consistency in their sound that made every performance hang together as one complete picture. This made for a nice wide picture of the English Chamber Orchestra behind Nigel Kennedy playing Spring, from Vivaldi's 'Four Seasons'; they sounded smooth, large and composed. It was with this difficult and revealing performance that the ESL-2812s started to show their mettle: there was a gentle, understated quality to them that bristled with insight and detail. I could hear individual violins and their strings, yet I wasn't being assaulted by searing high treble. Nigel's Stradivarius had a sense of being there in body in front of me, rather than existing as a shaky, disjointed simulacrum as it sounds on most loudspeakers. It was a deeply confident and relaxing sound, yet had an insight other loudspeakers could only wish for. Quads may not be perfect and the ESL-2812s have flaws I feel, but they can be magic too: you must be patient and wait for the genie to emerge from the bottle! And emerge it did, reminding me why I once chose to live with Quad ESL-63s.

Because it uses a single electrostatic drive unit the ESL-2812 is incredibly cohesive – it sounds all-of-a-piece from top to bottom, wonderfully smooth and free of any box thrum or colour, because there is no box of course. Our ESL-2812s had good bass all the same, and here you have to listen at length and 'take a view' because electrostatic bass differs from box bass. With the ESL-2812 Quad have worked to improve bass quality and power, it was obvious from measurement and listening. The obvious way to do this was to uprate and improve

the audio transformer. I know this because Peter Walker once told me he deliberately made the audio transformer small so it would overload (saturate) in the bass to limit power into the loudspeaker! Now, with a bigger core and higher handling power it can fly. Measurement shows the ESL-2812 gets right down to 40Hz, but it doesn't do subsonics.

Bass sounded a trifle soft in impact from the ESL-2812s but smooth all the way down and much better than Quads of yore. Yet it was also far more supple and expressive

from Angelique Kidjo's 'Fifa' were relatively light, lacking the deep boom that comes from the port of a box speaker (this album puts power into notes around 30Hz, below the ESL-2812s lower limit). Whilst the walking bass line was clearly paced and fluidly described it lacked the deep rumbling power I am used to.

Another property one listener identified, a small degree of upper midrange shout, was apparent with this disc, the ESL-2812 emphasizing a 1996 recording that isn't too sleek in itself.

Playing a selection of high



***The Quad II-eighty power amplifier we used to drive our ESL-2812s. It's a good match, having the power and quality needed for such a loudspeaker.***

than that from box loudspeakers. Sometimes, the ESL-2812s just blew everything else away as a result: hand drums staked out a mournful start to Dadawa's 'Canton Story', hanging gently in a quiet space between the panels, but the sudden entry of a massive drum strike at centre stage nearly sent me over the back of our settee. The power meters swung to maximum too, so I was putting real power through the speakers. This strike was massive, but firm and fast, with no following boom or overhang, allowing me to hear right into the drummer's actions. This is where an electrostatic produces bass of far better quality than a box, and the ESL-2812 showed its mettle here.

Yet at times limitations were obvious too. The opening bass guitar line of 'Sound of the Drums'

definition tracks from the Astell & Kern AK100 digital player reviewed in this issue showed how smooth and revealing the ESL-2812s are. It also identified their metier: where with old recordings the Quads could sound less than svelte by revealing poor recording quality in a way conventional loudspeakers cannot do, equally with high definition digital the ESL-2812s sounded gorgeous. With the Trondheim Soloists playing Britten's 'Simple Symphony No4, Boisterous Bourree' in 24/192 the orchestral sections stood out as islands in a dark background, strings glistening with detail, allowing instruments to stand apart from each other. There was, at times, a little brashness to strings that made them sound forceful and this again related to an upper midband with a little



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shout to it.

With 'Waltz of the Flowers' from the Nutcracker Suite (24/96) strings were smooth however, if a little further back on the sound stage than in the Norwegian recording. The strings of a strummed harp echoed in space at the beginning, with deliciously liquid quality to them and horns blared out with assured authority.

The lack of distortion or quantisation noise in a 24/96 recording is made obvious by loudspeakers with this sort of resolution, which is why I said earlier this is the Quad's metier. They have very low distortion and more clearly reveal what lies in a recording as a result; a patina of hash and muddle is removed in effect.

This was most apparent with Rebecca Pidgeon singing Spanish Harlem (24/176.4) where the silky quality of her voice at the microphone, and its projective strength were clearly beyond anything

else available, shading CD. Plucked acoustic bass had plenty of strength and again had a fluid progression unhindered by wobbling cones and box boom. There was a lovely peaceful silence behind the music that gave it a feeling of stability and solidity on the sound stage. The ESL-2812s gelled with high resolution digital and showed where they stand in the future of audio. What I heard was a step ahead of the norm., the AK100 feeding the power amplifiers direct from its headphone outlet.

Amongst many listeners to these Quads Rafael Todes felt they didn't reveal orchestral depth perspectives as well as his B&W 802Ds, and nor were they as sparkling as his 'One Thing' Quad ESL-57s, whilst acknowledging their smoothness and insight. As he has played in the LSO and I have not (!) I accept this, and suspect the absence of high treble helps mute the sense of 'air and space'.

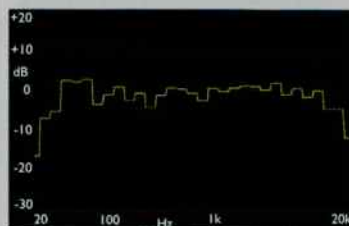
## CONCLUSION

The ESL-2812 is a full range, point source electrostatic with strong, smooth bass. That makes it very different to all other loudspeakers out there. It is fast and expressive at low frequencies, although it doesn't do subsonics. Add in a slow treble roll down and you get a loudspeaker that is big, warm yet wonderfully lucid as only an electrostatic can be. Stereo imaging is pinpoint and the sound totally coherent. All of which makes the ESL-2812's sound unique. That does not mean it is perfect, but electrostatics always come with one drawback or another. The ESL-2812 moves the game on in many areas, reproducing classical music in a sublime manner, and Rock very well indeed, at really high volume if you so wish, with thunderous bass. A fabulous loudspeaker then, in many areas one of the best, if in some others still improvable.

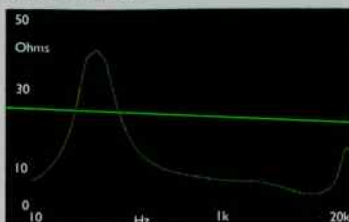
## MEASURED PERFORMANCE

Our frequency response analysis shows fundamentally even output across the audio band, with no long term trends away from the basic 0dB datum. However, there are some interesting details. The upper midband above 3kHz displays the up/down steps that, on another more detailed analysis, showed up as minor phase cancellations, likely caused by the stator assembly. There is a trend downward in treble energy level above 4kHz and a steep drop at 10kHz that relates to a corresponding impedance rise above 10kHz. I spoke to designer Peter Comeau about this because from my experience with audio transformers I suspect the new larger core had increased winding

### FREQUENCY RESPONSE



### IMPEDANCE



capacitance and introduced a resonant peak at high frequencies. He indicated the lift in impedance was deliberate to prevent impedance falling below the 4 Ohm minimum Quad quote in their specs, but that the peak in our sample looked larger and lower in frequency than it was meant to be, and this was a production quality control issue.

It is difficult to control secondary winding electrical characteristics in a transformer that needs so many turns to achieve such a high step-up ratio, from 30V to 3000V I'd guess, or 1:100. The 2812's transformer was meant to be better than ours it appeared, but precisely how future production models will behave I do not know and cannot tell.

The other trend of note is smooth plateau lift of bass from 70Hz down to 35Hz. A more detailed gated sine wave analysis showed that bass output was smooth and resonant free down to 40Hz, but dropped off quickly below this frequency. With no port delivering subsonic content this is the true lower cut-off frequency of the loudspeaker, meaning it covers bass guitar fundamentals, but not lower subsonics. Bass output from the 2812 is smooth and resonance free however, unlike box loudspeakers that are more variable and approximate in this region. So, technically at least, Quad have managed to move the 2812 ahead of what a box loudspeaker can achieve

at bass frequencies, in order to deliver 'electrostatic bass' as it were. This gives the 2812 a clear differentiating factor in the marketplace, ignoring the Kingsound Prince II.

Sensitivity was low, measuring 82dB Sound Pressure Level from one nominal Watt (2.8V) of input. As a result the 2812s need a lot of power to go loud, as we found in practice. A minimum of 80 Watts per channel is about right, with 100-200 Watts needed to play loud.

The impedance curve is inductive up to 48Hz, where the bass panel resonance exists. Above this the loudspeaker acts as a capacitor up to 200Hz, but then it becomes largely resistive up to 12kHz, quite a benign characteristic as electrostatics go, making the 2812 a friendly amplifier load.

The decay spectrum over 200ms showed consistently low levels of overhang across the audio band. There were discrete smears at 250Hz and 150Hz but they died quickly, within 100ms, compared with box loudspeakers. The panel does get a little 'hot' below 60Hz but this is due to its raised output and the levels of bass energy produced. Overall, the 2812 was cleaner than most loudspeakers.

The 2812 measured well in most respects. It is insensitive and needs power, but coloration is low and frequency response smooth, with obviously strong bass but little high treble. **NK**

### QUAD 2812 £6,499.95



#### VERDICT

A unique electrostatic with big bass, soft treble and a powerful sound.

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- low coloration
- supple bass

#### AGAINST

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### Absolute Simplicity: 27w+27w UL or 16w+16w Triode

In recent times there has been renewed interest in valve amplifiers for their musical qualities. Single Ended\* designs are interesting as they strip away a whole layer of components including the "phase splitter" valve, leaving the bare essentials of a valve amplifier to work their magic. But until now the power of many of these amplifiers has been limited to about nine watts unless exotic high power triodes are used, which are out of the reach of many people's pockets. Unfortunately nine Watts is just too low for many of today's modern speakers especially if you listen to orchestral works or rock music.

The recent introduction of the Tung Sol KT120\*\* super beam pentode gave us the opportunity to design a new amplifier using only two valves to obtain power of 16 Watts in Triode or 27 Watts in Ultralinear configuration. Designed with equal emphasis on Triode and Ultralinear this amplifier will provide very good volume level with most loudspeakers having three times the power than a single 300B valve.

Because the MB30s are mono blocks they each get an independent power transformer, a valve rectifier and a custom designed choke, giving the best possible quality of power. A wide range of operating conditions are available including 8 Ohm and 4 Ohm speaker taps and low and high sensitivity switch for operation with or without a pre-amplifier. The output transformers are our own LDF tertiary wound type having excellent bandwidth and dynamics, together with low distortion. A built in meter allows a very simple way to check that the output valves are operating at their optimum value and best performance. This will also tell you when a valve is due for replacement.

There are also things we don't include like printed circuit boards and transistors both of which we feel degrade the performance of valve amplifiers.

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\*Using one output valve rather than the usual two in "push pull". \*\*Also tested with the forthcoming Shuguang and Psvane KT120.

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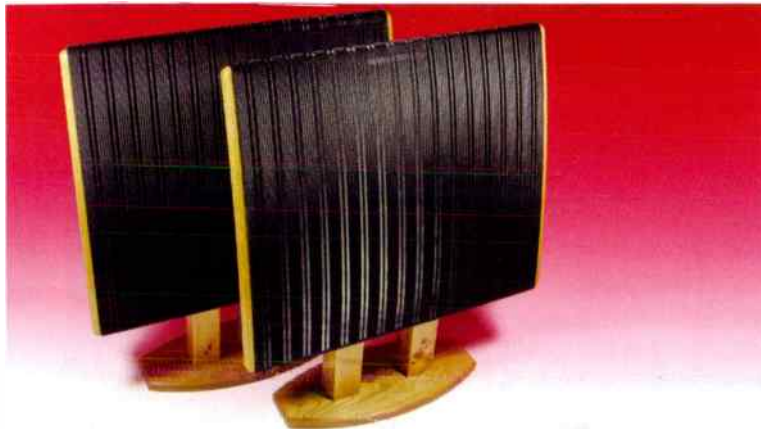
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# Go 'static

Electrostatic loudspeakers are famed for their sound quality. None are cheap, but some are 'affordable'. Here's a roundup for you, plus a quick look at what they do – and don't do!

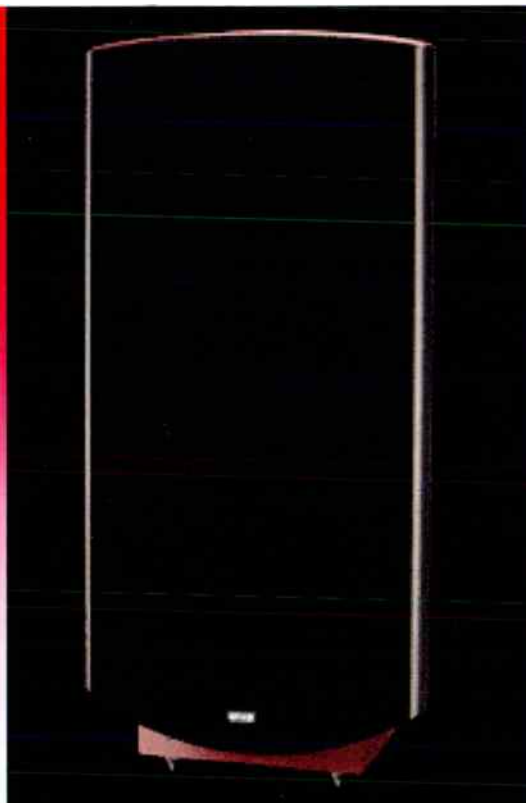
## ONE THING QUAD ESL-57 - around £2000

*A fully refurbished One Thing Audio Quad ESL-57 remains one of the best loudspeakers we have ever heard. Reviewers Rafael Todes and Paul Rigby both own them. You will not get high volume, nor heavy bass or subsonics. This is a full range electrostatic loudspeaker for the connoisseur. See [www.onethingaudio.net](http://www.onethingaudio.net) and our website for a review.*



## MARTIN LOGAN ELECTROMOTION £2500

*A hybrid electrostatic from the USA, where low sounds (below 400Hz) are handled by a conventional bass driver in a small cabinet. The see-through electrostatic panel sounds superb and bass is light but clean. They are sensitive, 50-100 Watts will do, and a room friendly size. See [www.martinlogan.com](http://www.martinlogan.com) and our website for review.*



## QUAD 2912 £7995

*Here's Quad's other new full range model, the 2912. It is a 'point source' electrostatic like the 2812 reviewed here, but with additional bass panels for greater low-end slam.*

### SOUND QUALITY

Electrostatics are fabulously clear and deeply detailed. They are uncoloured and all-of-a-piece in their sound, as most of it comes from one panel, not multiple mis-timed drive units firing all over the place. Stereo imaging is pin sharp and stable too.

### SUBWOOFER

A subwoofer will improve bass quality and power, but it needs to be more than a cheap boom box. A suitable subwoofer must work from 100Hz downward, and preferably have a high pass filter section (rare) to feed the Quads. This removes all bass from them, allowing them to go louder. The change over from electrostatic to subwoofer will always be apparent, because one radiates forward and backward, whilst the other does not, but a good subwoofer will still help and be enjoyable, especially with Rock music. Check out Quad Musikweidergabe ([www.quad-musik.de](http://www.quad-musik.de)), REL, B&W and KEF.



# Write place

**You can hand-write on Samsung's Galaxy Note 10.1 tablet and play music too. Noel Keywood scribbles and listens.**

**S**amsung are a major player in the portable tablet market, with a slew of models. What we were looking for in their range was one you'd buy as a good music player, in addition to all else of course. The Motorola Xoom 2, reviewed in our December 2012 issue (see our website), was impressive in this role, especially in Media Edition form costing less than £200. But the Galaxy Note 10.1 (GT-N8010) ticked all the right boxes for audio work, or so it appeared, so this is what we requested for review.

The Galaxy Note 10.1 is a range topper, costing a solid £389. That

puts it on par with the large screen Motorola Xoom 2 (£380) and well above a basic Apple iPad (£330). But it's unwise to underestimate Samsung products, that can be more technologically advanced than rivals, even if they don't look it. Samsung's ability to manufacture all key parts, rather than buy them in, gives them powerful advantage – and the Galaxy potentially better sound quality.

The boxes ticked by this machine were WAV and FLAC audio file handling, since neither are data-reduced so give best quality, an HDMI output for a wired connection (i.e. high data rate) to an AV receiver or hi-fi, and Bluetooth for convenient

wireless music streaming to a hi-fi. Also on-board was an infra red remote control transmitter, allowing the Galaxy to act as a big, legible-in-the-dark remote control, a nocturnal convenience, one able to eradicate the squalid devices that commonly litter a (my!) lounge table.

The Galaxy Note 10.1 has all these things, plus stereo loudspeakers no less, making it a thinking man's Ghetto Blaster perhaps. But would it be audio heaven I wondered? And could it shade the impressive Xoom 2?

The key feature of the Note isn't these audio bits, but its ability to act as a handwriting tablet. So you can

write your novel by hand, sitting on the bus to work perhaps – no need for a keyboard (but the touch-screen has one, in three forms, in any case). I tried it but wasn't wowed; the stylus skids around on the screen's slippery surface and my writing was worse than with pen and paper – and that's bad.

Doubt turned to delight with the maths input though. The tablet slickly recognised an equation, turning it into formal text. I nearly fell off my seat when, upon pressing a globe symbol, the Note called up Wolfram Alpha and promptly solved the equation, correctly assuming I meant 'decibels' for dB, then giving the right answer! A few more equations later, met by graphs and various other offered solutions had me abandon this little gadget quickly, before I wasted too much time or developed a headache. I can see some users loving this.

Although clever, whether such powers are useful probably depends upon your situation. I have a need for mathematical processing, but it's served by Excel or a dedicated CAD programme; equations on a piece of

**A headphone socket, infra red transmitter and front facing camera. Above them lie flush buttons for power on/off and volume.**



paper or screen are, these days, more about demonstration or education. Teachers and parents might find this ability engages young pupils; perhaps it's useful for doing homework with your children and keeping a computer record.

To enable all this the Note 10.1 has a 'pen' (stylus) that you withdraw to write on the screen. It is not tethered, so drop it and you may lose it. There is a structure of templates to write on, and plenty of examples to guide or inspire.

In addition to this core feature of the Galaxy Note 10.1 there are swathes of other features, including Polaris Office and Adobe Photoshop Touch. The tablet has so much ability not related to audio it is best studied in detail on the Samsung website where there are comprehensive tutorials on usage; type 'GT-N8010' into Google. I could not find a user manual here though (it can be found elsewhere on the web) and the audio file specification in Tech Specs is wrong, missing WAV and FLAC for example. Our list here comes from Samsung's own notes to reviewers, validated by our tests, so it is correct.

Like many of its rivals the Galaxy uses Android (4) as an operating system. It lacks the smooth, integrated user interface of Apple's iOS, but it gets the job done. Samsung provide their own multiscreen overlay that moves with a swipe of the hand to offer multiple, user configurable screen options. Switch on takes 25 seconds, into an obstructive swipe screen, but this can be turned off to speed use. Power saving screen auto time-out can be set up to 30 minutes and there is even a face recognition mode that keeps the Galaxy on when it is being looked at.

Various levels of security are available, including no security for quick and easy home use. The power switch will manually turn the screen off and on, without shutting down the system, and this worked well, in conjunction with auto-time out.

The Galaxy 10.1 has a ten inch diagonal screen 216mm wide and 136mm high. It weighs 600 gms, which is a little heavy, but much the same as other tablets of a similar size, most of the weight being the battery. Battery life was good, the device remaining powered for a day, with light screen use. Since the screen accounts for 80% of the power draw though, battery life between re-charges depends upon



**Discreet grills conceal front facing stereo loudspeakers. Just don't expect bass.**

screen use; the quad-core processor consumes just 7%. The screen lacks an oleophobic coating and our previously used review sample was covered in paw prints when it arrived, but a damp cloth and a little Fairy transformed it to sparkling clean – these things are designed to withstand such treatment, as well as tropical moisture etc; it's part of their specification and built into environmental testing. The new Sony Tablet S has been delayed by moisture ingress during tests we were told, but is due into our offices soon.

## CONNECTIVITY

An HDMI link is a nice, simple way to play music and video from a tablet through an AV receiver, or the home hi-fi through a gadget like the Cableson HDelity audio extractor (see [http://ukhdmi.com/hdmi-audio-extractor\\_QQ103285](http://ukhdmi.com/hdmi-audio-extractor_QQ103285)). There's no faffing around with 'pairing' and temperamental Bluetooth receivers, but there is a cable snaking across the lounge carpet instead! We wanted to review the Galaxy Note 10.1 partly because it has HDMI, putting it on par with the Xoom 2, but in practice HDMI was unusable. Unlike the Xoom 2, the Galaxy lacks a mini-HDMI output socket; instead an HDMI adaptor must be plugged into its multi-pin connector. This is

*The stylus pulls out of a side compartment, automatically triggering the handwriting mode.*



not a standard item, but an extra – and Samsung's press representatives were unable to supply one. So we visited the Samsung store in London's Tottenham Court Road and they didn't have one either, nor were they confident about getting one, asking us to contact Samsung direct (in Korea perhaps?). So HDMI is chimerical on the Galaxy Note 10.1 and Samsung's London store has a long way to go to match the nearby Apple store on Regent Street, packed with all the adaptors, connectors and accessories that help broaden Apple product usage.

This experience does strongly suggest if you want a digital HDMI link to carry HD video and music, then it is best to get a tablet with a mini-HDMI output socket and not rely on an adaptor. As Apple's Lightning socket does not carry video, that leaves the Xoom 2 in a strong position in this regard.

A Bluetooth (Version 4) short range radio link is fitted, with Apt-X codec support, but not Apt-X Lossless. Apt-X is basically CD quality, with 4:1 compression giving a 352kbps data rate (CD runs at 1400kbps). That's good, if not wonderful. The Galaxy will play 24/48 FLAC and it needs a data rate of 2304kbps to be supported, so the Bluetooth link is way below par quality wise to be complementary (hence the need for HDMI). All the same, it worked well enough in my test system, pairing with a Cambridge Audio BT100 feeding a Cambridge Audio Stream Magic 6 network player.

## REMOTE CONTROL

Amongst a wide range of Android Apps pre-loaded on the Galaxy is the Peel Smart Remote App, offering remote control. The website (<http://peel.com/>) talks about "personalised TV recommendations" and the "second screen being a gateway to personal TV discovery" in the "battle for the living room entertainment experience". So Peel doesn't quite see itself as a pedestrian remote control App so much as a commercial whirlwind about to hit the living room – one that hails from California, which may not surprise you. The downside was a limited list of product brands compared with that held by Dijit, another free Android remote control App. I found Marantz and Samsung remote commands for turning power on and off, but Cambridge Audio was missing from the list and nothing else would control my Cambridge Audio 650BD Blu-ray player, or the Stream Magic 6 network player, so Dijit was downloaded. Unfortunately, it did not work on the Galaxy, perhaps because Peel had hogged resources. As Peel is a Samsung endorsed App it does appear to be intrinsic to the Galaxy and although it works, it has limitations. But then, reviewer Paul Rigby called the Xoom 2's Dijit a "work in progress" so Samsung are not alone here.

## COMPATIBILITY

The Galaxy handles a wide range of audio files, including AAC, AAC+, MP3 and WMA, all these being lossy.

Of more interest are WAV, a basic lossless PCM computer audio file, and FLAC a losslessly compressed PCM file, with metadata (the Flac codec is free).

The Galaxy played our 24bit/48kHz sample rate test files but stuttered with 24/48kHz down-sampled music WAVs: their data rate was too high. Compressing them to lossless FLAC cured this however and they played.

Files with 96k sample rate would not play, even though displayed in the music player. It is easy to down-convert high resolution 24/96 files to 24/48 FLAC to retain their smoothness of sound, using software like the Audacity editor.

Plugging the Galaxy into my Mac running Snow Leopard and Lion (dual-boot) brought up the Green Android man in the task bar and transferring music files is simply a matter of dragging and dropping into the music folder. They then appear in the Galaxy's music player.

Plugging into Windows 7 (in Boot Camp) loaded drivers and again transferring files was simple. So the Galaxy speaks to Mac and Windows OK, as is usual with Android. Files exported as .aiff (Apple Interchange File Format) from



*Welcome to a pen with no ink.*



**A multi-way connector carries an HDMI audio/video output, through an adaptor. USB is also available here, for file transfer and charging.**

iTunes needed format conversion too, because the Galaxy's music player would not even see them.

Another load method is via a micro-SD card slot that will augment memory by up to 32GB, a storage expansion and upgrade feature missing from most tablets, that possess only fixed internal memory.

**SOUND QUALITY**

I transferred a variety of 24/48 FLAC files over to the Galaxy and got a well balanced sound via the headphones; quality headphones are justified. High resolution 24bit files data rate reduced to 48kHz and compressed with FLAC played nicely and gave best results, with good insight into violins of the Trondheim Soloists playing Divertimenti (24/192 from 2L). But there is a limit to what this player can do through its headphone output as it has the usual subliminally uncouth sound – a tad coarse – of most portables.

Playing some ripped-from-CD Eagles test tracks over Bluetooth gave the best results. With 'It's Your Life Now', from Long Road out of Eden, horns cut out with the nice fruity rasp that characterises my de-jittered rips, and Bluetooth sounded tidy and enjoyable, having a more stable and couth delivery. It is the best way to get music out of the Galaxy and into a hi-fi, bypassing the internal DAC and headphone output, but you need a Bluetooth receiver for this. Bluetooth compresses music to reduce data rate and, being critical, there was a little blandness due to loss of fine detail compared to the

same files played direct from a LaCie Whizkey direct into the Cambridge Audio Stream Magic 6 (with a BT100) that acted as a Bluetooth receiver and DAC.

This tablet has forward facing stereo loudspeakers, no less, firing out through small grills either side

of the screen but inevitably their sound was thin and lacking in bass, even though it was identifiably stereo, left and right image differentiation being obvious. All the same they allow the Galaxy to be used quickly and conveniently as a music player, without a need for headphones, and there is a bass boost function (don't ask).

**CONCLUSION**

The Galaxy 10.1 is a versatile tablet, limited as a domestic music player by lack of HDMI or a digital audio output.

Sound quality via Bluetooth was good and the best way of getting decent audio quality, especially when playing quality 24bit FLAC files.

However, with players like the Astell & Kern AK100 in this issue appearing, able to play high resolution digital audio, the data rate and transmission mode limitations of the Galaxy Note 10.1 are a thing of the past. It manages no better than most rivals, whilst lagging Motorola's Xoom 2 that, in Media Edition form, shades it. The Galaxy Note 10.1 has a massive array of ability, but with audio it was undistinguished.

**MEASURED PERFORMANCE**

Output from the headphone socket measured 0.32V, typical for a portable music player, but this low ceiling, plus noise in the output stage of -92dB affected most of the figures.

Even with 24bit coding that's quieter than 16bit (lower quantisation noise) output noise in the headphone amplifier dominated low level distortion result because our Rohde & Schwarz UPL spectrum analyser read noise rather than

distortion harmonics. So there was little difference between 16bit and 24bit in practice.

Because of noise EIAJ Dynamic Range measured a poor 92dB with 16 or 24bit, considerably worse than typical hi-fi players or the Astell & Kern AK100 portable player in this issue.

Frequency response was flat from 8Hz to 21kHz (-1dB) with a 48kHz sample rate signal, as the white noise analysis from our Rohde & Schwarz UPL analyser shows, so the analogue headphone output gives an even tonal balance.

Distortion at 0dB measured 0.014% and at -60dB 0.3% – mostly noise.

The Galaxy Note 10.1 headphone output produced unexceptional results for a portable player. It's limited dynamic range isn't untypical of the breed but neither is it distinguished in any way. It offers respectable quality, but no more.

**FREQUENCY RESPONSE**



**DISTORTION, -60dB.**



**Frequency response (-1dB)**

192k sample rate	8Hz-21kHz
Distortion (24bit)	%
0dB	0.014
-60dB	0.3
Separation (1kHz)	108dB
Noise (IEC A)	-92dB
Dynamic range (24bit)	92dB
Output	0.32V

**SAMSUNG GALAXY NOTE 10.1 £389**



**VERDICT**  
A capable handwriting tablet, with unexceptional audio.

**FOR**  
- large screen  
- handwriting  
- plentiful software

**AGAINST**  
- poor headphone amp  
- HDMI unavailable  
- no optical digital output

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### Ortofon TA-110 Tonearm

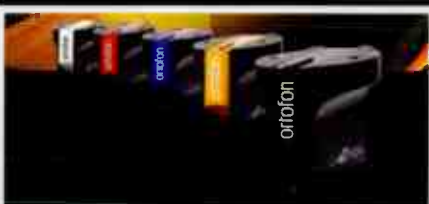
Stylish arm with innovative internal damping, for a more solid performance than its predecessor. 9" Arm - S-Shape Design - Easy to Set-Up - Supplied with Headshell and Arm Wire

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Visit us now: [www.henleydesigns.co.uk](http://www.henleydesigns.co.uk)



**WIN A CHORD QUTEHD DAC WORTH £990 IN THIS MONTH'S GREAT GIVEAWAY!**

**QUESTIONS**

**[1] What is the case made of?**

- [a] steel
- [b] tin
- [c] brass
- [d] aluminium

**[2] It accepts DSD through which input?**

- [a] mains
- [b] analogue
- [c] USB
- [d] back door

**[3] The digital filter is?**

- [a] Watts Transient Aligned
- [b] Cauer
- [c] Bessel
- [d] Coffee

**[4] The DAC is?**

- [a] Burr Brown
- [b] Watts Pulse Array
- [c] Wolfson
- [d] Sony

March 2013 Competition  
 Hi-Fi World Magazine  
 Unit G4 Argo House  
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**H**ere's your chance to win the superb Chord QuteHD digital-to-analogue converter we review this month.

"Enter the Chord QuteHD – a new DAC boasting many of its bigger brother's attributes but coming in at just under £1,000.

Take it out of the box and there's no denying the new DAC's lineage. Housed in Chord's traditional bomb-proof aluminium enclosure it features their small, round window which gives a tantalising glimpse of the electronics

inside.

And, as it is Chord, those electronics are typically bespoke. Chief among those are the in-house designed Robert Watts' third generation WTA (Watts Transient Aligned) digital filter with some 10,240 taps claimed to give better timing and rhythm, plus more accurate sound staging. It is followed by the Watts Pulse Array DAC.

Our Measured Performance gives an insight into just how good a technical performance this produces. And it also gives the Chord one of the best overall specifications available at anywhere near the price. It can handle

24/192kHz files over any of its inputs, is 32-bit/384kHz ready over S/PDIF and as an added bonus can accept DSD over USB with a compatible computer audio player such as Audirvana Plus on Mac or J River Media Centre on Windows machines. OK, so there aren't that many 384kHz files available as of now but DSD has a steadily growing number of on-line sources (see separate piece) and if you want something that can handle both today's various hi-res files and whatever may come in the future then the Chord QuteHD seems to have all the bases covered at a sub-£1,000 price-point".

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**entries will be accepted on a postcard only**

**DECEMBER 2012 WDKEL84 AMPLIFIER WINNER:  
 Mr Euan Gibby of Nuthall, Nottingham**



# Prima facia

**At first face you might think this Prima Luna amplifier is Italian. It's a beauty alright, thinks Rafael Todes, if not an Italian one.**

**P**rima Facie you could jump erroneously (as I did) to the conclusion that Prima Luna is an Italian company. It in fact hails from the Netherlands, its founder and Director being Herman van den Dungen. This integrated amplifier is actually built in China, rather like Icon Audio for that matter, and it occupies a similar segment of the market.

The amplifier sports something called "Adaptive Auto-bias", this simply means that the amplifier biases itself virtually instantly, which avoids the hassle of a monthly tube check that can be easily forgotten, and is kinder to the valves in the early stages of warm up, after the amplifier

is switched on. The biasing system (Bad Tube Indicator) will also spot a defective tube before it can take the amplifier with it, and anyone who has made frequent visits to a repairer for this reason will no doubt appreciate this hugely. I have on more than one occasion had to spend hours driving across London to repair a valve amplifier taken down by a failed tube, and this type of protection takes the hassle out of valves. There are also protection mechanisms to safeguard the output transformer should the temperature rise too high or from high-voltage transients.

The amplifier came furnished with four KT88 valves, and with four 12AU7s as driver valves. However

there is a switch on the right hand side of the amp that enables the user to change over to EL34s; the power rating with KT88s is slightly higher at 40 Watts per channel, as opposed to EL34's 36 Watts.

On the rear panel there are four RCA inputs as well as a home theatre bypass which avoids the preamp section altogether, with a choice of both 4 and





**Four line level inputs, plus 4 Ohm and 8 Ohm loudspeaker outlets, on the rear panel.**

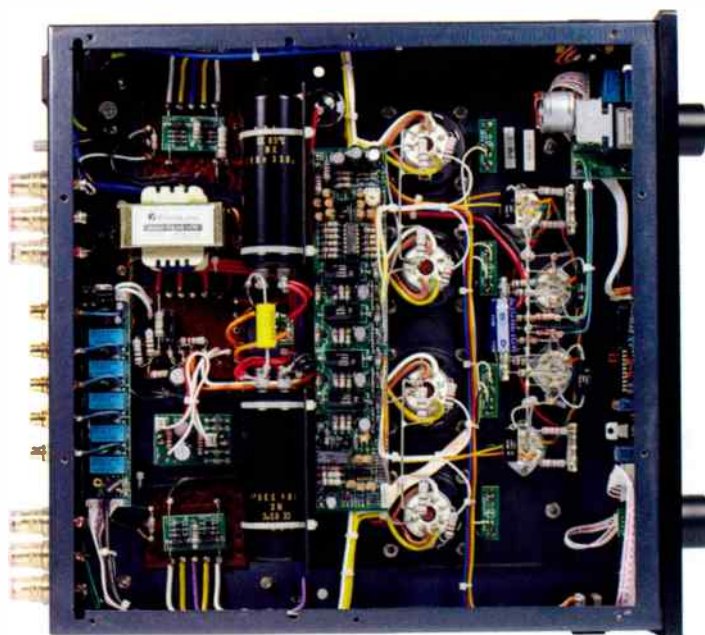
8 Ohm 'speaker taps. On the front panel, there are two rotary switches, one for choice of input, the other a high-quality motorised Alps pot for volume. A stick-thin metal remote-control unit is thrown in for good measure which is glorious and a well-appreciated touch for a unit of this price! A removable cage for protection against children and dogs is supplied, which probably doesn't do much for the sonics of the

amplifier, so for the purposes of listening, I removed it.

**SOUND QUALITY**

Listening to Mendelssohn's rather rarely performed Reformation Symphony, as a BBC re-broadcast from the Proms earlier in the year, using a Magnum Dynalab MD90TSE tuner, I was immediately struck by a light, airy sound, a generous and fairly

"oodles better than a solid-state amplifier for the same money, it is in a completely different league in terms of sonic sophistication"



**Beautifully built interior with quality components an input relay switching using special sealed small-signal relays.**

well-etched soundstage, which is a bit 'lite' down below. Admittedly, I was using B&W802Ds, which are notoriously difficult to drive, and are not the most efficient of beasts but nevertheless, the orchestral spectrum is skewed towards the midrange. Tonally the woodwind sounded rather glorious, there was a gentleness to their presentation which was quite beguiling. There was a clarity between the solo woodwind dialogues which was highly involving for the listener I felt.

This is a sophisticated sound for



**A rocker style mains power switch sits on the left side. Four KT88 tetrodes provide 40 Watts per channel.**

the relatively modest sum of £2349, for what is after all an integrated valve amplifier with a metal remote control unit! I am not used to the concept of having a remote control unit – and a rather elegant one at that – for a valve amplifier. I thought valve amplifiers were meant to be listened to by people wearing sandals who were not afraid to use them. (I jest – I am a thermionic fan and do not possess a pair of sandals currently).

As an encore, after the Mendelssohn Symphony, the Leipzig Gewandhaus Orchestra played the famous Mendelssohn Wedding March from the Midsummer Night's Dream. I was struck by a lack of wallop caused by the Prima Luna's over-politeness, it failed to make the



impact this rousing fanfare deserves and indeed requires.

Turning to the Decca recording of Bartok's Music for Strings, Percussion and Celeste conducted by Solti, particularly in the second movement I am aware of the charm of the piece over and above the way I'm more used to hearing it, as an expression of authority. This amplifier relished the wit in the music, the busy interactive counterpoint, underplaying the power of the lower frequencies in the proceedings. There is also a slight issue the amplifier has resolving detail when the whole orchestra is playing. It definitely feels more comfortable and shows itself at its best when there are smaller forces in action. Having said all this, I did enjoy what it was doing to the music: I was gripped as opposed to being overwhelmed, and wanted to know what was going to happen next in the music...

Mendelssohn's String Symphonies are some of the most miraculous works ever produced by a young teenager. Listening to Number 11, which after a slow introduction breaks into a Bach-like fugue, sees rosin dust flying everywhere as the musical argument gets going. The Prima Luna seems to have problems driving the 802s here, quite rapidly the amplifier not unexpectedly goes into distortion with the wick turned up. A shortage of power, but oddly my VAC Auricle Musicblocs with a similar line-up of valves seem to go a lot louder before the sound falls to pieces. However, with the right speakers, this isn't going to be a problem.

Turning to a meaty Mahler Symphony, the last movement of the Sixth, Haitink on Philips, the amplifier

shows great delicacy in the quieter passages, there is not only a satisfyingly holographic orchestral image, but also a gentle quietness to the various woodwind entries.

I have heard racier, more authoritative versions of this, but it succeeds in communicating the musical line very well. Tonally, this amplifier

was doing a fabulous job for the money. It isn't however going to bother the neighbours!

The Prologue has many strong points as well as an Achilles' heel. It has some aspects of greatness; the midrange is beautiful, the sound is airy and the soundstage presents really well, like an amplifier in a higher price bracket. Some diminution

of bass presence will deter a few listeners, particularly those who enjoy Rock and bass-driven music. It will be less of a problem used with bookshelf speakers which will probably share the same deficiency, and may therefore go unnoticed.

For my taste which is obviously classically-skewed, it is simply oodles better than a solid-state amplifier for the same money, it is in a completely different league in terms of sonic sophistication. There is absolutely no steely grain that I expect from most transistor amplifiers, just a pure, organic, liquid sound. It is great "bang for the buck", but I could do with more bang!

### REFERENCE SYSTEM

- Bel Canto CD2
- Weiss DAC202
- Chord Indigo Plus cable
- Townshend Allegri Preamp
- Magnum Dynalab MD90SET
- Chord Signature speaker cables
- Telerium Q Speaker cables
- VAC Auricle Musicblocs power amplifiers
- B&W 802D loudspeakers
- Townshend Seismic Speaker Cradles

### MEASURED PERFORMANCE

The Prologue Premium produced 40 Watts from its 8 Ohm winding and its 4 Ohm tap, so coupling efficiency of the 4 Ohm tap was good. These are quite modest power figures for what appears to be a fixed bias system (applied automatically by solid-state biasing circuits), suggesting long output valve life. I was surprised and impressed by a protection circuit tripping in on one valve

during tests, to protect it. It reset itself after switch off.

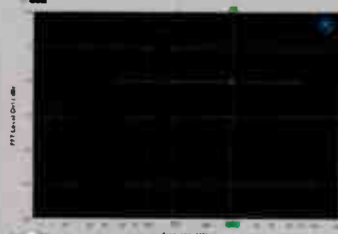
Full power was maintained down to 40Hz too, so the Premium will produce clean bass. However, damping factor measured a low 1.2 and lightly acoustically damped loudspeakers will boom a little.

Distortion was low at all frequencies and comprised primarily third harmonic. The harmonics changed a lot with level. An upper response limit of 120kHz is a very high limit for a valve amplifier. A small +1dB lift exists at the bass end to emphasise deep bass a little, something that usefully adds "heft" to the sound.

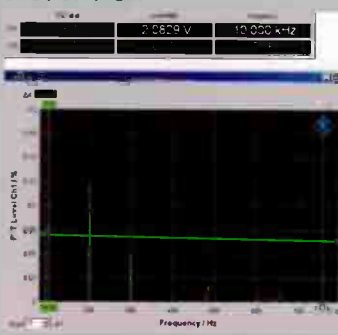
Sensitivity was useful at 300mV for full output.

The Prologue Premium measured well, although it was a little unusual in places due to the biasing scheme, distortion being less consistent than with normal auto-bias. It does offer a clean, wideband output all the same, probably long valve life and clever protection. It is a clever design well executed. NK

### FREQUENCY RESPONSE



### DISTORTION



Power	40watts
Frequency response	4Hz-120kHz
Separation	67dB
Noise	-89dB
Distortion	0.02%
Sensitivity	300mV
Damping factor	1.2

### PRIMA LUNA PROLOGUE £2349



**VERDICT**  
A fabulous sounding amplifier, if with light bass

**FOR**  
- beautiful sound  
- remote control  
- great value

**AGAINST**  
- styling  
- lacks thunder

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Visit our website at [www.hi-fiworld.co.uk](http://www.hi-fiworld.co.uk) or send your emails to [letters@hi-fiworld.co.uk](mailto:letters@hi-fiworld.co.uk). Letter of the month wins a pair of KEF Q100 loudspeakers.

## LETTER OF THE MONTH PRIZE



KEF Q100 LOUDSPEAKERS

For more advice see Letters from earlier issues at [www.hi-fiworld.co.uk/letters](http://www.hi-fiworld.co.uk/letters)

A pair of KEF Q100 loudspeakers are on their way to **ROBERT GARDINER**, Letter of the Month winner in our February 2013 issue.

## Letter of the Month

### ON STREAM

I read Noel Keywood's opinion piece in December's issue and something suddenly happened ... a cloud of despair and despondency descended over me. I realised after enjoying, buying, messing about with and generally loving hi-fi for 30 years that things had moved on ... not just moved on but actually dramatically changed over the past few years. By this I refer to the 'download/streaming/tablet/computer' based direction that things have moved towards.

Here for me – and I'm sure thousands, possibly millions of others – lies the problem. I simply do not understand it!!! Over the past thirty years since I left school and started earning money I've read the mags, visited the hi-fi shows and built and upgraded to a pretty good system of separates that I'm proud of and absolutely love listening to. The most recent purchase was some Kimber Powerkords, so for me I'm just at the tweaking stages. Just as I head towards the finishing line, I look up and realise maybe I'm running in the wrong direction?

In the same issue was a letter ('Library', page 37 from Brian) regarding MP3 downloads/USB sticks that I also found myself scratching my head at ... what is going on?

I don't have a clue what this huge, growing and quite clearly current sector of the market is all about, how it works,



The Naim NAC-N 172XS we reviewed in our February issue plays high resolution audio files from a memory stick, to give superb digital sound quality, better than CD – and it is easy enough to understand if you are a digit-phobe like Dave Mayer.

the basics of the whole damn thing. Obviously, I blame myself for maybe taking a bit of an ostrich approach (head in the sand) over the years and focussing my reading etc on those reviews, articles that interested me, or were relevant to what I was looking for at the time. I have a PC in an upstairs home office, hi-fi is downstairs in the lounge, don't own an iPhone or download music. I still buy CDs, funnily enough...am I prehistoric or what!! So what can I do in terms of linking computer audio to traditional hi-fi...and for goodness sake where do I start?

My best friend recently mentioned that he was going to buy his first decent high end hi-fi to go with his Linn Keilidh speakers. He asked me what I thought about the Naim Uniti, Linn something or other and Cyrus streamer amongst

others. He may as well of been from the Planet Zog, as I hadn't got a clue what he was on about in terms of performance, facilities, compatibility etc.

So can I plead with you as a decent hi-fi mag to put together a 'beginners guide' article – feature to the whole streaming/download business. How it works, what to buy, what does what, what you need, how much do you need to spend to get something decent, performance vs separates playing CD or vinyl, what download formats mean, high res, 24/192, USB, ripping, up-sampling 24/96. See what I mean?

Please help me and doubtless loads of other hi-fi enthusiasts get at least a little bit more up to speed and re-join the right race!!!

Cheers  
Dave Mayer

I understand where you are coming from Dave and we are discussing such a feature right now. Unfortunately, it is truly a complicated subject. Although digital is 'perfect' in theory, in real life many products are far from perfect. There is a divide between the lacklustre sound of budget portable audio, nowadays an iPod playing music (128kbps AAC) downloaded from iTunes, through headphones, and what can be achieved by improving file quality and channeling the result through a decent hi-fi, such as you likely own already.

You can read about this again further on, where Sonos say clearly CD quality is good enough for them (as it is for Samsung, Sony, Apple et al with their tablets) and what is taking place elsewhere – see our Astell&Kern AK100 review.

If you have a computer upstairs you can buy and download files from HDTracks, load them onto a memory stick (I use LaCie Whizkeys) and play them from any media player from Cambridge Audio (e.g. StreamMagic 6), Naim (NAC-N 172XS) and a host of others.

Note I say nothing about ethernet, wi-fi, Bluetooth and all that (comms systems), nor about Macs, music players like Audirvana, file converters like XLD, or any other menu adorned software headache. I don't mention internet radio either. Nor do I mention Spotify or iTunes. You can usefully keep away from all this as a newbie and are better off for doing so. Download high definition files and play them through



**La Cie Whizkey high speed memory with aluminium screening and no LED, lowering current draw.**

high definition audio players.

The benefit is stunning audio quality through the hi-fi system you own and use today. No ethernet cables, no router menus, no DNLA menus, no pairing and no stuttering. No MP3 either! Just lovely sound



**Cambridge StreamMagic 6 plays high resolution digital music files from a memory stick.**

quality, better than CD.

The drawback is cost. High definition album downloads cost as much as quality vinyl, or Blu-ray. The hardware is expensive too: up to £2k or so for a decent media player. But this is a one-off expense that, if you ensure 24/192 capability, should last many years.

I hope this gets you off to a flying start without suffering a severe headache on the way! More lurid digital detail will coming your way soon from our pages! **NK**

#### FRENCH QUESTION

*As I live in the depth of South West France - think mid-Devon circa 1950s – it's difficult for me to audition hi-fi equipment, so I turn to you for expert advice and unbiased ears!*

*I've recently had my Linn LP12 upgraded by Inspire hi-fi, who also added an Inspire X100 arm and Audio Technica AT33EV cartridge, all influenced by your fine team – and a great improvement I might add. I now almost exclusively listen via the vinyl*

*aforementioned, is all Naim – CD5i player, NAC 62 pre-amp, two Hi-CAP power supplies and a pair of SBLs powered by two NAP 250s bi-amped using a SNAXO 2-4 active crossover. All being supported by a Naim Frain rack. The speaker leads are also by Naim. You may deduce that I love the Naim sound and although that's true I came about using their products more by accident than by design. It all began back in '93 when I bought the pre and power amps and a power supply from a friend and built up from there.*

*I do find the sound of my system with certain recordings on the bright side and taking into account that having been a professional drummer for 30+ years I'm pretty used to a bit of attack in the high-mid frequencies! And unlike my wife who's hearing is in better shape, I don't feel the need to cover my ears when a particularly 'forward' sounding recording is being played, but I do find myself wincing sometimes even at medium volume settings!*

*I recently bought a copy of the re-issued Sergeant Peppers album and found it almost unlistenable, it was so hard and 'middy' sounding – then I noticed it was remastered from a digital source. So much for vinyl being analogue!*

*I have to say that due to domestic considerations my listening room set up is not ideal (15ft x 19ft with 9 1/2ft ceiling with the SBLs firing across the width – the floor is tiled with rugs. But when I had the same system back in England, in a much larger room, the sound parameters were much the same.*

*I'm looking at two areas of improvement and would be grateful for any suggestions; a valve phono stage, as I understand this will add 'warmth' and seems to be an economical way for me to get a valve sound without having to change the power amps. You speak highly of the Icon Audio PS3.*

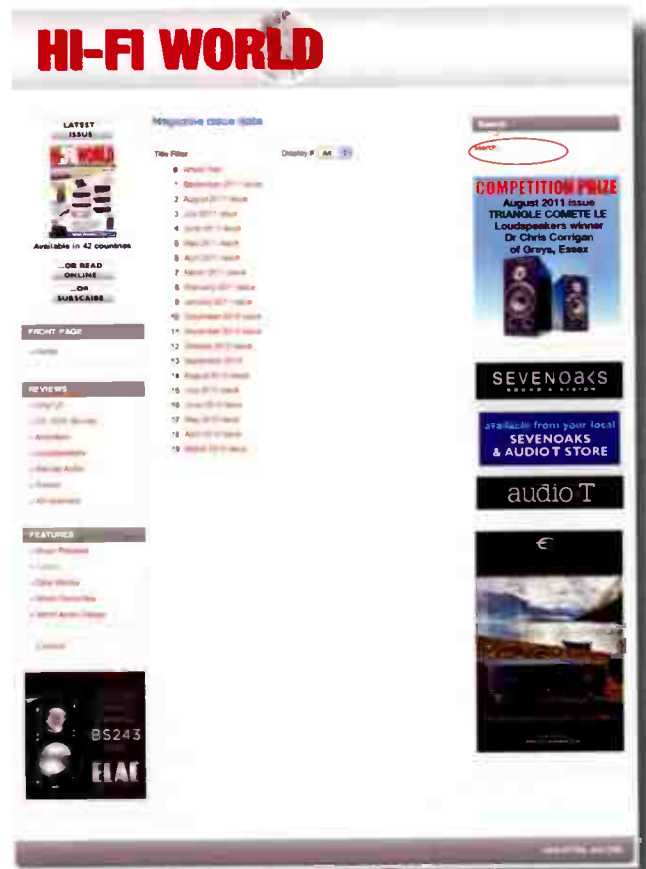
*Or maybe if I went for a valve*

*medium, digital sources definitely taking second place, especially now that so much great music is available on LP. Your excellent vinyl section and of course fascinating letters giving me the most pleasure.*

*My system, apart from the*

# Letters On-Line!

You can now read our Letters on-line, from the last issue back to March 2010. That's a treasure trove of information and advice to our readers, as well as a fascinating catalogue of reader's systems and views. There's mountains of buying information, all just a click away on your computer or i-Pad. Have fun!



You can reply to Letters using the e-mail link at the top of the page -

## World Mail June 2011 issue

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 Letters are published first in the magazine, then here in our web archive. We cannot guarantee to answer all mail, but we do manage most!

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Your experts are -  
**DP** David Pnce, editor; **NK** Noel Keywood, publisher; **PR** Paul Rigby, reviewer; **TB** Tony Bolton, reviewer; **RT** Rafael Todes, reviewer (Alltgn String Quartet); **AS** Adam Smith, reviewer; **DC** Dave Cawley, Sound Hi-Fi, World Design, etc.

...or the reply pane at the bottom of the page.  
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**Tannoy DC10T has a lovely smooth sound, deep insight and very powerful bass – great for a Rock drummer like Boris Williams.**

pre-amp (like the Icon Audio LA4 MkII) in place of the NAC62 it might make me re-evaluate my CD collection and save me some funds towards a pair of speakers – the next area I think could be improved.

I have a nostalgic memory of listening to a large pair of Tannoys at a friend's house and falling in love with the sound – smooth, warm with great bass. I'm interested in the DC10s although my room may be too small for them, but I'm looking for that bass extension. I listen mainly to rock and some jazz. My budget would be around £2000 for the phono stage or preamp and £6000 for the speakers.

Any suggestions would be gratefully received.

Best wishes,

**Boris Williams**

Hi Boris. I think your suggestions make a lot of sense. The NAC 62 is getting on a bit and has a reputation for sounding rather dry and soulless. Everyone who tries a valve preamp with a Naim power amp remarks about the peculiar symbiosis between them and you will get a fuller sound. This is a great way to build a hybrid amplifier in effect and the Icon Audio LA4 MkII you suggest is a good choice. But you will then need an

additional phono stage.

If you mostly use vinyl, you could run an Icon Audio PS3 valve phono stage direct into the Naim, because it has plenty of gain and a volume control. Insert a passive preamp like the Creek OBH-22 to play CD as well, or perhaps Icon Audio's passive preamp. The latter may be most convenient, as it's a single order and delivery for you, perhaps by a Deux Chevaux fourgonnette, along with the Armagnac! Well, it's better than having a box thrown at you from the back of a Transit, as happens to us in London.

Tannoys sound like the loudspeaker for you. Any self-respecting Rock drummer will understand and enjoy a Tannoy. And just as you say they are smooth and have strong bass. The DC10 can be tamed with foam bungs that now come supplied and it may suit your room, which at 19ft is a healthy size. They worked well in our 24ft listening room, but only with foam bungs, unless you like really vast bass. The DC10T had tremendous insight too, likely due to Cryogenic treatment of the crossover. You could perhaps go for a DC8T instead as these nowadays come in well under your budget. Or, just to confuse

the issue a little further, you may want to wait and save for a new super-tuned DC10 Tannoy have been working on for some time. It seems this loudspeaker is popular in the Japanese market, and they have demanded even more from it! The local Deux Chevaux will struggle with a pair of these, however. You'll need a camion. **NK**

### A STEP UP

While you've occasionally highlighted the value of employing a step-up transformer when using a MC cartridge, as far as I'm aware, you've only actually reviewed one from Music First Audio in the last few years. This one review was enough to convince me, however, and I ventured to explore the world of step-ups myself albeit at a lower price level.

After considering several from Audio Note, Ortofon and Rothwell, I decided to purchase the Icon Audio MCTX as it's offered at a good price, is made in England and uses the same transformers as used in their well-reviewed PS3 phono stage.

Well, I must say that the MCTX has been a revelation and has lifted my vinyl set-up significantly over my CD/DAC set-up. As I'm sure a lot of your readers would similarly benefit, can I suggest that you undertake a group test of step-up transformers (maybe including Audio Note's DIY kit) sometime soon? Regards.

**Rob Murphy**



**The MCTX step-up transformer for moving coil cartridges allows them to be used with an MM phono stage. It "has been a revelation" says Rob Murphy.**

Hi Rob. Tantalisingly, you do not tell us what cartridge you are using, nor before and after conditions. Were you using an MM cartridge and have changed to MC? Or an MC stage and you have switched to using MM with the new transformers?

A good transformer, potted in a mu-metal screening case to shield against hum and noise, is almost

a magic experience. But then it would be, because this is the only way you can tap into the electrical power produced by an MC cartridge. Input transformers give less noise and a purer sound than an amplification stage, transistor or valve. You make a good point that there are now increasing numbers of such transformers coming to market, allowing Moving Coil cartridges to feed a Moving Magnet phono input. We will be taking a close look soon. **NK**

**DIGITAL TODAY**

*Just read your Sonos review in the October edition (takes a while to get to Oz). As a Sonos owner, I have a big issue in that although they support 24/196, it is limited to only 16/44 for Flac. This is a terrible situation in 2012. Downloads of Flac 24/196 are commonplace today and Sonos should do something about this restriction if they want to be taken as a serious streaming player. I have a Connect feeding a Bryston DAC and all my music is converted to Flac 16/44. The CDs and LPs play pretty well this way and it is so convenient. Unfortunately I have to play my 24/196 files through my MacBook Pro which is very annoying.*

*I've also recently obtained a Furutech ADL Esprit so I can convert my LPs to 24/196. Now I am currently evaluating other streaming products to fulfil my requirements and I wouldn't recommend Sonos to anyone with serious hi-fi intentions.*

*Before I purchase something else, can you approach Sonos as to the*



**The Sonos system is restricted to 16/44 FLAC, says Peter Deitz, "a terrible situation in 2012".**

*future of Flac 24/196 as they haven't replied to my request? This would be highly appreciated by me and I would think, hundreds of other Sonos owners.*

**Peter Deitz  
Sydney  
Australia**

**SONOS REPLY -**

*We believe the Sonos user experience delivers the best balance between hi-fi sound, rock-solid wireless and ease of use. We currently support uncompressed audio format like Apple Lossless, WAV or FLAC for your music library and whilst we continue to evaluate new music formats, we don't have immediate plans to support resolutions beyond CD quality.*

**Sonos**

*As you can gather from my review of the Samsung tablet this month, there is a strict dividing line between*

*two industries here and two outlooks: one sees high resolution digital (e.g. 24/192) as where we are going, the other is happy with 'CD quality'. Most current-idiom 'audio players' aimed at the computer generation (shall we say) see CD quality as more than good enough and this includes all tablets and portable audio players. CD quality is a simple description that everyone understands, even those who have little understanding of audio quality – and it is good enough for them. This also embraces compressed music (MP3, WMA, AAC etc).*

*There are justifications for this. When signals whizz through the air there is usually a data rate limitation. By this I mean specifically*

*Wi-Fi links suffer data rate reduction at distance and cannot support high resolution audio that runs at up to 9Mbps, compared to 320kbps (x36 slower) for a typical compressed audio stream. Bluetooth runs at this rate too, even though it claims to be 'CD quality' (it is a compressed). Wired links have no such limitation.*

*Also, where headphones are concerned higher quality audio may well be superfluous, since headphone amplifiers are noisy beasts. Unfortunately, companies working in this idiom, like Sonos, march to this beat. My prediction here is that it will all change quickly when a big player like Apple suddenly decides to market a high resolution player on the basis that 'it puts you in the studio'. Then everyone else will have to scramble to keep up and better wireless links may appear.*

*Studios and the hi-fi business see it all differently of course, and more traditionally too. They both work to the notion of ultimate quality and, happily, this is now becoming available to us all, as the Astell & Kern AK100 I review in this issue shows so dramatically. Companies like Naim and Cambridge Audio are making quality 24/192 capable products that chew high resolution files with relish. So it's time to re-align I would suggest Peter. Modern high resolution audio players don't cost the earth and they don't come from Sonos either. **NK***

**REFERENCE UPGRADE**

*Your magazine often features older equipment and also has some elements of DIY so I would like to ask a question and see if I can get a little help.*

*After a recent listening session organised by a friend I was able to hear a pair of KEF 103 Reference (original 1976/77 model). I really liked the sound of these and had not owned a proper*



**The AK100 portable high resolution player has a Mastering Quality folder on-board, for 24/196 music files. Will Apple produce a high resolution iPod like this?**



# Reference Series Model 103

*KEF Reference 103 loudspeaker. "I really liked the sound of these" says Andrew McBride.*

sealed baffle speaker for a very long time. So like many here I did what we all do and scoured the second hand sales and finally eBay. By luck I found a pair and got them for the very good price (in my opinion) of £84. I have now collected them and put them in my front room for use with my TV and they sound as good there as I remembered they did originally. They also have the advantage of being able to work close to the wall making them more domestically acceptable.

However a little online research and some very welcome help from KEF has shown that the crossover is all electrolytic caps which after about 35 years it is very likely they will have dried out and possibly even changed there values. I am looking to replace with polypropylene film items and will also take the opportunity to replace the internal speaker wire with something a little better.

Now it is almost certain that the new caps will be more electrically

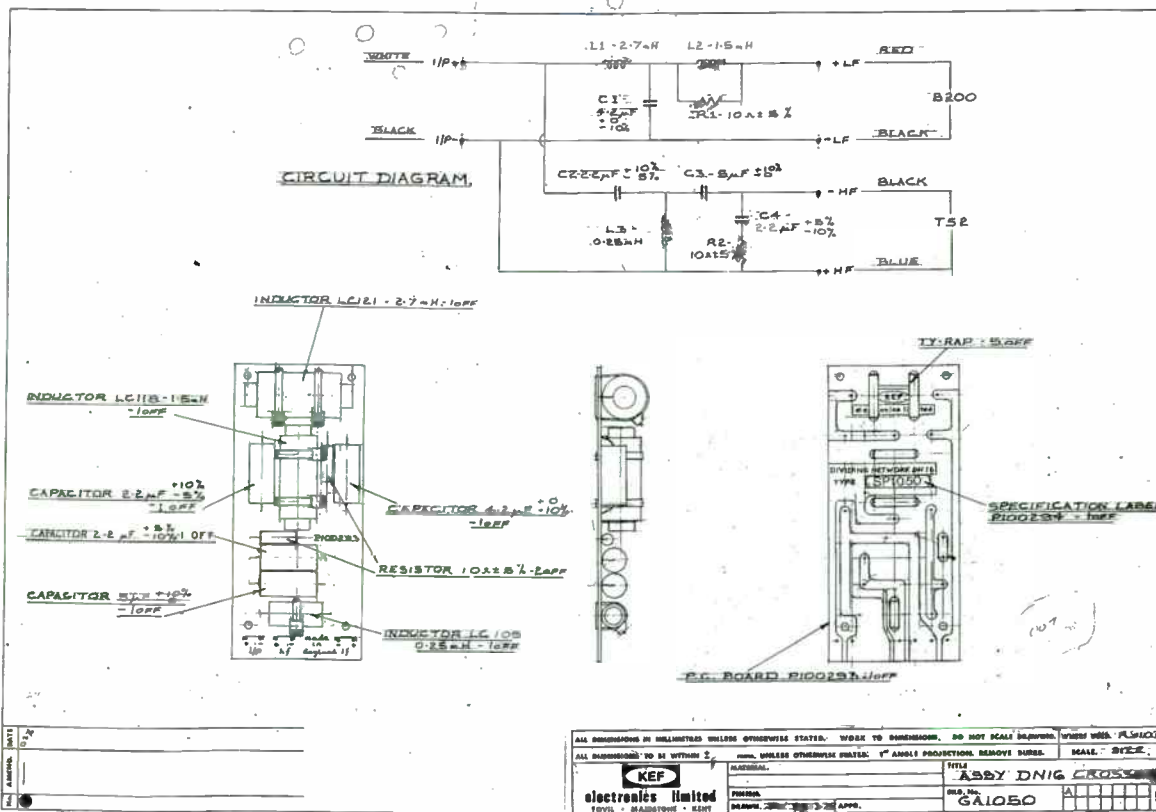
efficient than the originals and the replacements will then change the Q of the speaker. I am told it is possible to add a resistor in series to the HF unit which should adjust the Q back to were it was and about 150 R is the normal value to start with. As I do not have anyway of measuring is there any advice you could give on this? I do not want to change the sound of these units too much as the original sound was what attracted me too them in the first place but if the changes can perhaps add a little transparency and bring them back closer to the original spec then it would be useful.

When I removed the driver front mounting plate to view the Crossover it had been sealed with some form of self adhesive foam strip but this had long since dried out and perished can you advise on anywhere that could supply a replacement or alternative strip seal?

I have included a copy of the original KEF circuit diagram so that you have the details hope this will help.

Regards  
**Andrew McBride**

Restoring the KEFs raises some interesting issues. The drawing you sent, dated March 1975 and drawn by hand no less, shows large(ish) value capacitors that are physically quite small and these are likely Alcps, bipolar electrolytics recognisable by their black case with red end caps. They do not have a wet electrolyte, instead using a metallised polymer film, so should not dry out. However, other ageing processes may well occur and, looking at Alcap product info for ESR, or Effective Series Resistance, I see it carefully isn't stated, an equation having DF as a variable whilst the DF equation has ESR as a variable, meaning you cannot solve either! This makes me suspect the capacitors may well have quite a high ESR even when new and I will presume 1 Ohm. Inserting new film capacitors will raise tweeter output



**KEF Reference 3 crossover circuit diagram, drawn 1975.**

by 3dB or so. But the original ESR is likely to have been compensated for in the design, so you will have to re-insert it by adding 2 Ohms in series with the T52 tweeter. This is a very approximate figure, because I have made some gross assumptions, but it gives some idea of what the issues are, and their magnitude.

The way I would tackle this is to get six 1 Ohm, carbon film resistors of 0.5 or 1 Watt, and connect them in series with the tweeter until I got the result I wanted. Start with one resistor of 1 Ohm. If it makes the sound too dull, then connect the other resistors progressively in parallel. If it is insufficient, then connect the other resistors progressively in series.

You could also consider removing the crossover altogether, placing it outside the box. I would leave the original in place and re-build a new external crossover, with the inductors further apart (but still

some of my experiences on the path I have chosen to follow – which has been fun and rewarding in equal measure.

Having tried various types of loudspeakers over the years, from run-of-the-mill bass reflex designs, to full range horn loaded (e.g. Lowther Acousta), hybrid ribbon designs (Heil/AMT, Decca, Heybrook Sextets) and latterly Klipsch horns, I decided that the latter held the most potential in terms of bringing performers to life. Reading about bespoke horn projects from the likes of Definitive Audio also reinforced my feeling that horns must represent a sort of 'ultimate' reproducer. Given my small room constraints I quickly understood that the key to achieving decent results lay in getting the bass right, and in this respect the little Klipsch Heresy proved a most inspiring starting point. Its sealed enclosure produced tight bass and worked well against the rear wall, so from there it was a case of experimenting... 2 ways, 3 ways, different types of horns (constant directivity, Le

exotic artisans from Japan. It seems to me that for the best part of 30 years, active crossovers were at the heart of state-of-the-art systems, so it seems a bit of a mystery as to why they seem to have disappeared off the map. Surely it can't be just the cost of additional amps when some cable manufacturers have the cheek to ask five figure sums for single runs of their top loudspeaker cables?

From experience going active renders such tweaking less critical, and that route offers a number of other ways to adjust a system's sound to one's personal taste. And that's without talking about the 'life-size' imaging, effortless dynamics, detail... I could go on. Of course there are some downsides. Aside from the aforementioned complexity (more amps required, cables, etc) – imaging is tricky to optimize, phasing issues might trigger bouts of paranoia, but at the end of the day it's a case of trusting your ears and good old 'trial and error'. A little bit of patience is



**A Rane active crossover: plenty of controls for altering crossover frequencies, rate and gain. This is a great way to tailor your own loudspeaker says Gabriel Topalian.**

at right angles) and on separate bass and treble boards. The assembly can go into a solid plastic or aluminium case that sits on the floor. Do not solder leads onto the drive units as you may well unsolder connecting wires to the tags. I think you can lead cables out through the ports.

Leaving the old crossovers in place allows the speakers to be returned to original condition if desired, but if you think this unlikely you could use the original inductors. If you get new inductors make sure they have ferrite cores like the originals, so their d.c. resistance stays roughly the same. Do not use air cores, for this reason.

There is quite a lot of fun you can have here, experimenting with external crossovers that can be hacked about. New crossovers with better components will make a big improvement and you can tweak values until you get the sound balance you want. **NK**

### ACTIVE CROSSOVERS

*I very much enjoyed reading Peter Comeau's musings a while back concerning various loudspeaker design concepts, and I thought I would share*

*Cleach' ...)* made out of solid wood, plaster, reconstituted stone... the options seem endless and trying the horns and driver combinations has been (and continues to be) a lot of fun. Best of all perfectly decent component parts can be had for reasonable money, especially in view of the scary prices which seem to have become the norm, and not just in 'hi-end' audio.

Onto crossovers. Of course, lots of tools are now available online to help one work out the correct values, but if, like me, you are not particularly technically minded, the whole thing can be quite daunting. Nevertheless there is a solution, and with it another major breakthrough as far as I am concerned: go active!

Now, why more isn't written about active crossovers in hi-fi magazines is a little perplexing. Your good selves once published a rave review of the BSS FDS-388, a landmark digital product in its day but not cheap and a little complex to the non-technically minded, but if I am not mistaken I believe that was the only time. There are, of course, myriad designs available from the golden age of analogue, products from the likes of Pioneer, Sony, Accuphase, Sansui, Audio Research, and even Kondo and the more

all that's needed really.

Anyway the whole 'going active' experience has really re-kindled my enthusiasm for audio, and I can't recommend it too highly. I would be interested in hearing your thoughts on the subject, and perhaps suggest that it could form the subject of an interesting series of DIY articles?

Keep up the good work,

**Gabriel Topalian**

Hi Gabriel - and thanks for your views on the now-rare subject of active crossovers. It's great that you are experimenting and getting good results, with the sense of satisfaction that brings. An active crossover is for the experimenter though and they are, it seems, a dying breed.

Also, the topology of an active loudspeaker fed by an active crossover, rather than a passive crossover, is a little daunting. And the bass unit needs to be tailored to the cabinet too, since active crossover cannot compensate for gross mismatches and the time domain problems mismatching may bring (overhang). So although active crossovers are nice to play with, they cannot cope with all issues.



**Loudspeaker foam port bungs.** At top is a one piece bung with a flat that allows some air flow. Below is a roll of foam that allows air flow through the centre and will fit a slot port. These bungs damp down heavy bass, and tighten it up.

However, if you choose high quality drive units and follow their manufacturers recommendations about cabinet size etc then this is a great way to build a loudspeaker. Unfortunately, so few people nowadays would go down this path that the market for active crossovers will be miniscule. And this is why no one bothers to build or sell them any more I suspect. **NK**

### PORT DAMPING

Having been a regular reader of your magazine for more years than I care to admit, I hope you won't mind me writing with one small query?

In your November 2012 review of the Usher Dancer Mini-Two speakers you mentioned the use of acoustic foam to damp down port output and went on to say that a 50% fill of foam made a useful improvement in your test room.

I'm interested in understanding a little more about what you did here. I very much enjoy my Dancer Mini-Twos, particularly the full-scale reproduction that they afford, but there are times when, in my 5m x 5m room, a little less would be a bit more! Could you spare a moment to explain what is meant by the term acoustic foam and, also, what the 50% fill means in practice: does this relate to the area of port that is filled (or, conversely, left open) by the foam, or the depth of foam that is inserted into

the port?

Looking forward to your reply.

Kind regards

**James Batchelor**

Hi James. Yes, you have a problem there. A 5m (15ft) square room has a big resonant mode at 36Hz and the Mini-Two will excite this strongly because it delivers enormous LF energy.

We half filled the port with acoustic foam. It was a 3cm thick slab of foam about 10in long, rolled up into a tube and put into the port. This narrows the port and provides some acoustic resistance. If that is insufficient then the port can be filled completely. You will hear the difference.

You can get acoustic foam from Studio Spares (Google it, they are in North London).

Your room will boom because it is square. Try and put in the largest volume of acoustic foam possible. Studio Spares sell foam bass traps but you need a lot of them in big volume to absorb bass energy. I hope this helps. **NK**

### MINI TWO TOO

I am a USA owner of the Usher Mini-Two loudspeakers, and note that

the December issue of *The Absolute Sound* gives a similarly rave review... and also suggests the need to tighten the low bass. Query, then: exactly what did you do to plug the ports: material, dimensions, etc?

**M B Rosenberg**

We half filled the port with acoustic foam. It was a 3cm slab of foam rolled up into a tube and put into the port. This narrows the port and provides some acoustic resistance.

**NK**

As you suggested, I half filled the ports with rolled up acoustic foam and immediately heard the difference: tighter bass with no noticeable loss of low end response in my 24ft square listening room. Sure did help; thanks from across the pond!

**M B Rosenberg**

You're more than welcome. It's a gloriously simple way to fine tune any reflex loudspeaker. The only other (more expensive) trick is to fill the room with big, deep settees. Most cushions are foam filled and absorb bass energy, damping down room boom. You get a lovely comfortable lounge that sounds great too! And likely a happy wife. **NK**



**Usher Dancer Mini Two produces strong bass and "a little less would be a bit more!" says James Batchelor.**

## SERIES V-12 MAGNESIUM TONE-ARM

Based on the multi-award winning Series V pick-up arm, the Series V-12 incorporates the same design and engineering that have made SME a byword for excellence. Coherent musical control is held over the entire frequency range in terms of tonal quality, stability and stereo imaging. Startling dynamic range, neutrality, structurally inert, the Series V-12 embodies every worthwhile feature in a pick-up arm. The 12 inch tone-arm is pressure die-cast in magnesium complete with an integrated headshell to eliminate tone-arm resonances in the audio spectrum and offers a 27% reduction in maximum angular error distortion over 9 inch models. Listening; the benefits of minimal tracking error and harmonic distortion are clearly revealed.

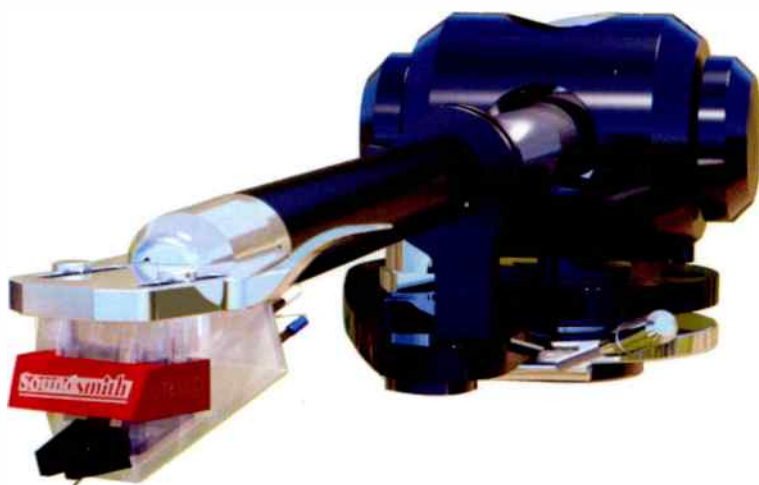


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## The secret to make your cartridge perform at the same level as one costing between 3 to 70 times as much



2012 Tonearm of the Year award - The Absolute Sound Magazine



2012 Tonearm of the Year award

Vinyl enthusiasts would find themselves in an unexpected journey when they try an Origin Live arm.

The results obtained by using one of these arms, are indeed extraordinary and open eyes to new possibilities. In fact, users find that their cartridge starts performing at the same level as one costing anywhere between 3 and 70 times the price.

Such claims seem wild, but the strange thing is that owners of Origin Live arms, are so impressed by the improvements over established references, that they go on later to upgrade to arms higher in the range and are just as delighted.

To find out why these claims are not so wild, please read [www.tonearm.co.uk](http://www.tonearm.co.uk)

*"The biggest improvement I've made in 25 years of listening to music and lots of exchanges of hi-fi stuff!! ....breathtaking, big new level!! It's like coming to Nirvana". OWNER COMMENT- FERDINAND ROEHRIG*

Email: [originlive@originlive.com](mailto:originlive@originlive.com)

Website: [www.originlive.com](http://www.originlive.com)

Phone: +44(0)2380 578877



Moving on to 24/96 via USB and things just got better. Kate Bush's '50 Words For Snow' has never sounded better. That word authority springs to mind again. In comparison other DACs can sound lacking in substance whereas the Chord tracks the music with a grip that brings a sense of scale yet conveys a palpable feeling of ease. The sound is smooth but never laid-back unless it's absolutely meant to be.

That confident feeling is present across all the inputs – and it's fair to say the preferred option is going to be very much down to individual choice and partnering equipment. What isn't negotiable though is that the Chord has the resolving ability to clearly show the differences between various sampling rates.

As mentioned, DSD files may not exactly be widespread in the mainstream but there are an increasing number of online outlets offering the option. Listening to the QuteHD you begin to see why. A selection of test tracks and albums from America's Blue Coast Records and other sources showed a delicious, organic feel from DSD. Playing the San Francisco Symphony Orchestra's rendition of Mahler's Symphony Number 1 provided an improved sense of flow and detail – as though you can actually hear into the music and the acoustic space it's recorded in.

Detail certainly seemed stronger and the whole sound had a much more palpable feel of scale and dynamics. That's not to say the difference was always to DSD's benefit. On some tracks high-resolution PCM downloads seem to beat their DSD counterparts, displaying slightly more snap and bite to the sound compared to the latter's slightly softer sound. This may be down to a variety of reasons – but it's good that Chord provides the option for direct DSD playback alongside the PCM alternatives.

**CONCLUSION**

Whatever flavour of file you choose, the new Chord QuteHD is an absolutely fantastic sounding and deeply impressive DAC. Its sound is big and bold and yet displays an impressive level of detail. It has an uncanny ability to make everything played through it sound natural



Playing CD the QuteHD's window glows red.

with a superb sense of timing and transient response.

Add in Chord's trademark build quality and the fact it's ready

to handle 384kHz and direct DSD decoding it represents something of a bargain at its price-point. Very strongly recommended.

**MEASURED PERFORMANCE**

The QuteHD handles 192kHz sample rate code and all lower values on both optical and electrical S/PDIF inputs, and is rare for managing this through an optical Toslink connector. Frequency response extended to a high 60kHz before rolling down smoothly, our analysis shows. With 96kHz sample rate frequency response drops sharply at 47kHz, so the QuteHD offers maximum analogue bandwidth, against the more limited response of many current designs. These tests lit the window blue for 192k, green for 96k, pale green for 88.2k, pink for 48k and red for 44.1k (CD).

Distortion was very low with 24bit resolution, measuring 0.027% at -60dB, our analysis shows, and this was a stable and consistent result at all sampling rates. Unsurprisingly, EIAJ Dynamic Range was a massive 117dB with 24bit, one of the best figures possible.

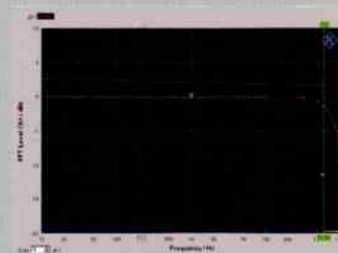
USB gave exactly the same results as S/PDIF, meaning it was quieter than most and performed unusually well, with little noise or distortion resulting in an EIAJ Dynamic Range of 117dB again. It accepted up to 192kHz sample rate and gave great linearity with 24bit.

The QuteHD lived up to its name, It offers full 192kHz sample rate operation on all inputs, and superb 24bit linearity

too. Measured performances was exceptional. **NK**

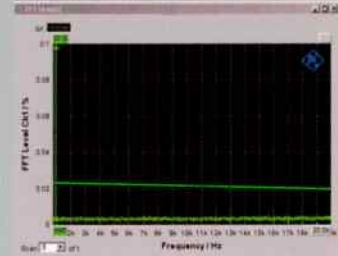
Frequency response	4Hz–61kHz
Distortion (24bit)	%
0dB	0.0006
-60dB	0.027
Separation (1kHz)	112dB
Noise (IEC A)	-116dB
Dynamic range (24bit)	117dB

**FREQUENCY RESPONSE, 192k**



**DISTORTION, 24bit, -60dB 3V**

THD (dB)	Level (dB)	Frequency (Hz)
0.0280 %	-59.911 dB	997.00 Hz
OFF	OFF	OFF



**CHORD QUTEHD DAC £990**



**VERDICT**  
A seriously impressive product. For many it could be what they need for years to come.

- FOR**
- up to 384kHz capable
  - can handle DSD direct via USB
  - exceptional soundstage
  - superb build quality

**AGAINST**  
- limited inputs

Chord Electronics Ltd  
+44 (0)1622 721444  
www.chordelectronics.co.uk

**Simple design,  
elegant construction,  
and does not miss a beat!**



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*"Offering a clear midrange with tight and efficient bass, the Samba is a refined speaker cable"*

HI-FI World, February 2013



# DSD delight

**Chord's QuteHD is one of a select number of DACs able to handle DSD digital code. Jon Myles looks at growing interest in Direct Stream Digital, devised by Sony.**

**S**ACD may not have caught on in the way its co-developers Sony and Philips hoped when they unveiled the format some 30 years ago. But it still enjoys a loyal following – especially in Japan – and hardware manufacturers like Cambridge Audio, Marantz and Oppo continue to make players capable of handling SACD discs. But it's remained a small subset of the music market, despite its claims to better sound, thanks to a unique code scheme known Direct Stream Digital

## DSD

Direct Stream Digital

or DSD.

Now, however, Direct Stream Digital is gaining a growing band of followers as computer audio and download music grows in popularity. Key to this is the DoP open format standard which allows a suitably equipped DAC to receive a DSD stream and replay it without conversion to PCM.

Load up software such as J River Media Centre on your PC or Audirvana Plus on a PC, connect via USB to a DAC such as Chord's QuteHD or the Mytek Digital Stereo 192 and DSD playback becomes as simple as for any other hi-res format. Adherents of DSD claim the result is a more organic, lifelike and natural sound – just as SACD promised all those years ago. And interest is growing.

America's Blue Coast Records

has a steadily growing collection of DSD titles and says sales are increasing exponentially. And Chord's Matthew Bartlett reports DSD was one of the buzz words at the recent giant CES technology show in Las Vegas. "Nearly everyone who came into our room asked whether our DACs could handle DSD," he says.

Blue Coast Records' founder and five-time Grammy nominee Cookie Marenco believes 2013 will be the year DSD begins to really take hold as a significant music delivery medium. "In fact we've just released Mahler's Symphony Number 1 by the San Francisco Symphony Orchestra and 80 per cent of our sales were DSD," she says. "The response has been overwhelming. The consumer is pulling this train. We tested it and they ate it up.

There's a dozen or more manufacturers that now have devices that can handle DSD and the artists are saying we have the customers for it".

Matthew Bartlett agrees. "There are many studio masters that were recorded in DSD so we think there is a high chance that these will be released for download eventually," he says. "In Asia the DSD market is very big and we are slowly starting to see this filter through to other markets. It's difficult to say how significant the DSD market will be but we think it's important that customers have the choice."

But – and perhaps most crucially – does DSD actually sound better? As the number of DSD titles grows, provenance of the recordings is likely to become a key issue to avoid the controversy that has surrounded some up-sampled hi-res downloads. Adherents say that to sound at its



best music must be recorded and stored entirely as DSD without transcoding to PCM. Yet most studio processing is in PCM, as DSD is hard to use in this role.

But Cookie Marenco says done properly the results are palpable with the right equipment. "I like to stress that a \$600 DSD DAC can sound worse than a \$15,000 CD player with an incredible 44.1 DAC – but when we're on a level playing field PCM can't hold a candle – or the dynamics – to DSD. It's the closest sound to analog that I've experienced".

And Matt Bartlett adds: "I personally like the DSD sound but PCM perhaps gives a more accurate/analytical response. The important thing is we support both so the customer can make up their own minds as to which format they prefer".

DSD is 1-bit and has a sampling rate of 2.822MHz (64 times the Compact Disc sampling rate of 44.1kHz). It has greater dynamic range and wider frequency response than CD, but not high resolution 24/96 PCM.

With the DoP interface the DSD is disguised as a 24/176.4kHz PCM signal and plays back directly on a suitably equipped DAC.

The DSD 1-bit data stream requires only a low-pass filter to recover the analogue waveform on replay.

### DSD FILE SITES

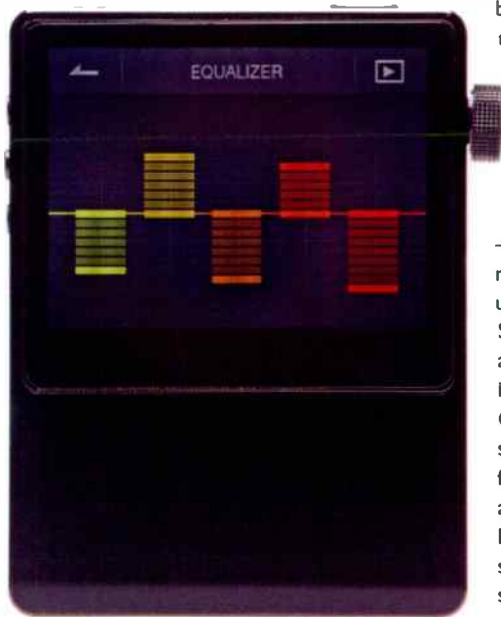
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**The graphic equaliser display.**

AK100 easy and fast to use, although if I missed the graphic screen controls it would change screens, and this is why the small hardware buttons are provided. The capture area of the screen buttons needs expanding to reduce this irritation.

The player is beautifully built: its machined alloy case feels rigid and solid; its buttons have a short, firm action. Warnings are automatically provided for most actions. So when I plugged an optical lead (with adaptor) into the input the AK100 detected it and re-configured itself as a DAC, providing an on-screen warning. The underlying hardware/software interface is very well thought through and intelligent, but this is a specialist machine and the screens are opaque in meaning and in logic sequence.

There are lots of nice details though, including a large on-screen digital volume readout (0-75) accompanied by a graphic display, the valuable bit depth and sample rate readout that warns of truncated or rate changed files (this happens a lot during computer processing

**The base houses small chamber with sliding door that conceals two micro-SD cards. Beside is a micro-USB socket for charging and file transfer. It outputs digital audio too, we were told.**



but few realise it) and there is even a graphic equaliser.

This player has been designed as a portable hi-fi player – think super CD player – rather than an iPod rival; it isn't simply an upmarket portable. So I used it to drive a variety of systems, including the new Quad 2812 electrostatic loudspeakers featured in this issue, a pair of Martin Logan Electromotion electrostatics, and two home systems, one AV and the other stereo with a WAD 300B valve

amplifier and WAD KLS9 loudspeakers. The point being that to appreciate what the AK100 can do means using a top quality replay chain. But I kicked off with headphones and some properties were immediately obvious.

**SOUND QUALITY**

Initially, before measuring or spending time with the AK100, I grabbed a pair of lightweight Jays V-Jays 'phones used when travelling, to sort out this player's menu structure and foibles. With a slew of songs externally dumped onto a 16GB (faster than 32GB) Kingston memory card, casual listening in a quiet room made obvious the AK100 has a darkness to its silences and a sense of silky smoothness, almost a warmth. I

found myself winding volume right up, the sound was so clean, then winding it rapidly back down as crescendos loomed! In this sense it is like a very clean hi-fi system that encourages the volume to be wound up – and you only realise how loud it is when someone tries to speak. This happens because the ear judges volume by distortion; lower distortion and 'loud' does not seem it.

I found out later, during measurement, that the AK100 really does go hugely loud, arguably too loud for headbangers glued to headphones. It's output is way above that of volume-limited portables and it is easy to turn right up. But boy is it enjoyable! (hearing damage results from continuous listening at high levels).

I switched to a pair of Sennheiser HD650s and it all got much better, greater dynamic scale,

firmer bass and more extended treble becoming obvious in particular. However, swapping between various headphones and then moving onto a Marantz SR8002 receiver in an AV system with Martin Logan Electromotion electrostatic loudspeakers up front made clear that headphones don't fully reveal the AK100's potential, unless you use Stax electrostatic 'phones perhaps, – not too easy on the move. But the message is the AK100 is way above a normal

portable in quality terms, in another league in fact. You can detect its ability even through budget travelling 'phones of decent quality.

I use my Marantz receiver as a test mule, because its internal 24/192 DACs and amps are clean and revealing, and its connectivity broad in conjunction with a Cambridge Audio Stream Magic 6 network player with BT100 Bluetooth receiver.

Running Bluetooth first, the player paired immediately and was playing within ten seconds or so. Again its smooth, almost silky quality was obvious, characteristic of 'digital done properly', meaning not CD. Violins hung in space and were clear and stable, and also clearly separated



**Small mechanical operating buttons offer track skip, play/pause.**

from each other when playing Trondheim Soloists Divertimenti (24/192) through the Electomotions.

Swapping over to a direct optical connection brought out greater low level filigree detailing and a stronger sense of depth and space to the sound stage, putting the many players into more easily identified positions.

The same was true of Rock, kick drum sounding firm, brushed cymbals shimmering with fine detail in Misery, from Dave's True Story. A set of Eagles rips from Long Journey Out of Eden sounded as gently smooth and transparent as they do through the best DACs. Even when working from internal battery power, that tends to compromise bass push, bass was firm.

Running digitally from the optical output of the player uses the receiver's DACs, the AK100 becoming a portable digital source. Connecting the headphone output to the receiver's analogue inputs (using Pure Direct mode to bypass the DSPs and snuff the displays), to assess its own 24/192 DAC produced very similar results, the player's on-board DAC sounding creamy smooth and utterly svelte.

I later used the AK100 as a top quality digital 'CD player' like this to drive our Icon Audio MB845 MkII valve power amplifiers direct, connecting through a 3.5mm-to-phono socket headphone output adaptor and, ultimately, driving Quad ESL-2812 electrostatic loudspeakers. This demonstrated just how smooth and well separated the strings of the Trondheim Soloists were in glorious 24/192, and Rebecca Pigeon had a breathy presence between the loudspeakers singing Spanish Harlem. There was silky dark silence behind Amber Rubarth singing 'Storms are On the Ocean' and a lovely stable, solid feeling to her image between the loudspeakers. The AK100's internal Wolfson DAC offers glorious results, perhaps helped by being battery driven and free from earth currents, hum and noise.

This is a top quality, high definition music player, one that can be connected up to a hi-fi through its headphone output. The AK100 is no ordinary portable, that's for sure.

### CONCLUSION

The AK100 is at heart a wonderful digital source player, deeply engineered in a unique fashion. It's best seen as a portable high resolution 'CD player', masquerading as an MP3 player. I used it as such

through its headphone outlet and got spectacular sound quality from high resolution 24/96 and 24/192 digital recordings. It's very well made and finished and it works well too, but it does have a few frustrating weaknesses.

The whole issue of charging and battery life indication needs

improvement and some useful instructions produced. A pamphlet on how to choose language might be useful too!

Such idiosyncrasies apart the Astell&Kern AK100 is an astonishing player, with fabulous sound quality and an amazing spread of ability as a source. It's a must have in fact.

**At top lie an on/off button, an optical digital input (centre) and 3.5mm headphone output jack (right) that incorporates an optical digital output.**



### MEASURED PERFORMANCE

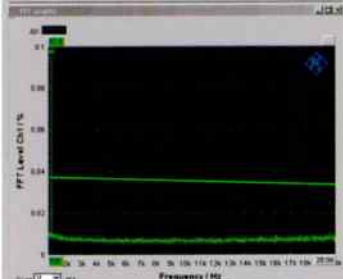
The headphone output of this player delivers 1.55V, close to (-2dB) the 2V of a CD player and much higher (+14dB) than the usual 0.3V of a typical portable player. The DAC and output amplifier were far quieter than the norm for portable players too, noise measuring -110dB when playing a notched out -60dB tone (24bit), to avoid output muting. These are exceptional figures for a portable and are comparable to a hi-fi DAC. As a result EIAJ Dynamic Range measured no less than 110dB with 24bit, again on par with a good stand-alone DAC.

The headphone output performs as well as a high quality analogue line

### FREQUENCY RESPONSE, 192k



### DISTORTION, 24bit, -60dB



output and can be used as one. These results were from test files, but the optical input gave almost identical (a tad better) results.

Frequency response was flat from 4Hz to 71kHz (-1dB) with a 192kHz sample rate signal, as the analysis from our Rohde & Schwarz UPV analyser shows, so again the analogue headphone output performs as well as a quality DAC.

Distortion at -60dB was low with 16bit, measuring 0.18% and similarly low with 24bit at 0.06%, the distortion analysis shows. This result and low noise both contributed to the player's high EIAJ Dynamic Range figures.

Jitter on the digital output was low in all respects, low rate clock wander coming in at 40pS, uncorrelated jitter hovering at 4pS and signal related jitter (1kHz, -60dB test tone) measuring 18pS. These figures better most CD players, matching the best.

The AK100 produced exceptional results for a portable player. It has massively greater dynamic range, lower distortion and negligible jitter than typical portables, measuring as well as a high quality stand-alone DAC. It's a portable hi-res player that approaches the limits of what is possible. **NK**

### Frequency response (-1dB)

192k sample rate	4Hz-71kHz
Distortion (16 / 24bit)	%
0dB	0.0006/0.0006
-60dB	0.18 / 0.06
Separation (1kHz)	108dB
Noise (IEC A)	-110dB
Dynamic range (16/24)	102/110dB
Output	1.55V

ASTELL&KERN  
AK100 £569



### VERDICT

A portable high definition player with fabulous sound quality. Awesome, if with irritations.

### FOR

- sound quality
- small size
- connectivity

### AGAINST

- poor charge display
- limited file compatibility
- short 4hr battery life

Air Audio Distribution  
+01491 629 629  
www.airaudio.co.uk

# WORLD STANDARDS

Your guide to the best products we've heard that are currently on sale in the UK...

## TURNTABLES

### REGA RPI 2010 £225

Pleasing sound, fine build and ease of set-up and use make this a great first 'real' hi-fi turntable.

### REGA P2 2008 £300

Excellent value for money engineering, easy set up and fine sound.

### REGA P3-24 2008 £405

Seminal affordable audiophile deck with fine bundled tonearm. Tweakable, and really sings with optional £150 outboard power supply.

### MICHELL TECNODEC 2003 £579

Superb introduction to Michell turntables - on a budget. Top quality build and elegant design mean it's still the class of the mid-price field.

### FUNK FIRM VECTOR II 2009 £860

Innovative engineering gives a nimble, pacy and musical sound that's one of the best at the price.



### MICHELL GYRODEC SE 2005 £1,138

Design icon with superlative build and finish. Sound is beautifully smooth, effortless and exceptionally expansive. No longer peerless at the price, but still a brilliant platform.

### MARANTZ TT-15S1 2005 £1,299

Cracking all in one deck/arm/cartridge combination, this must surely be the best sounding 'plug and play' package at this price point.

### ROKSAN RADIUS 5.2 2011 £1,450

Although getting expensive, the latest Radius is a highly grown up package with a flowing yet engaging nature; a fine package.



### AVID DIVA II SP 2010 £2,000

New twin belt drive and power supply make this a more commanding performer, although there's a substantial price hike. Speed, dynamics and detail are hard to beat anywhere near the price.

### INSPIRE ECLIPSE SEv2 12 2010 £2,349

Finely engineered, smooth and detailed sounding deck offering valuable twelve inch tonearm compatibility.

### NOTTINGHAM ANALOGUE HYPERSPACE 2010 £2,390

Deliciously spacious, lyrical and beguiling sounding turntable, but lacks ultimate grip.

### MICHELL ORBE 1995 £2,500

The top Michell disc spinner remains a superbly capable all rounder with powerful, spacious sound that's delicate and beguiling.

### DR FEICKERT WOODPECKER 2010 £3,445

Elegant deck with great low frequency solidity, coherent soundstaging and a precise midband.



### LINN LP12SE 2010 £3,510

Surely hi-fi's most iconic turntable, the legendary Sondek goes from strength to strength. New Keel subchassis and Radikal DC motor add precision and grip to one of the world's most musical disc spinners. Expensive, though.

### ACOUSTIC SIGNATURE STORM 2011 £3,612

An excellent high end design with a smooth, solid, open and lyrical sound and razor sharp styling and build.

### FLETCHER AUDIO OMEGA .5 2010 £3,699

Charming high end turntable that's a fitting testament to the late Tom Fletcher.

### PALMER 3 2010 £3,750

Eccentric hand built high end turntable with a pleasingly smooth, sweet and lucid sound.



### E.A.T. FORTE S EVO 12 2010 £4,750

Excellent premium price turntable with power, precision and passion aplenty, but relaxed and easy going by nature too. Great value package with the Pro-ject Evo 12" arm option.

### ACOUSTIC SOLID ONE 2007 £4,050

Huge turntable, both in terms of sheer mass and sonic dynamics. Fit up to three arms and enjoy, just don't damage your back moving it...

### SME MODEL 10A 1995 £4,556

Exquisitely engineered deck and SMEV tonearm combo that's an extremely accomplished performer with classical music.

### AVID VOLVERE SEQUEL 2007 £4,600

Stylish high end vinyl spinner with industrial strength build quality and a sound to match. Exceedingly neutral yet powerful sound is edge-of-the-seat stuff.

### BRINKMANN BARDO 2010 £5,845

Unique high end direct drive turntable with amazing grip and focus, albeit not the most romantic of natures.



### McINTOSH MT10 2008 £8,995

Big, expensive, controversially styled and glows more than some might consider necessary, but an astonishingly good performer.

### EAT FORTE 2009 £12,500

Lavishly finished two box, two motor turntable with gorgeous Ikeda 407 tonearm bundled. Exceptionally stable and unfussy performer with a relaxed but highly enjoyable gait.

## TONEARMS

### REGA RB251 2009 £136

Capable way past its price point, the new 3-point mount version of the classic RB250 serves up a taut and detailed sound. A little lean for some tastes, but responds well to rewiring and counterweight modification.

### MICHELL TECNOARM A 2003 £442

The late John Michell's clever reworking of the Rega theme, using blasting, drilling and rewiring! Surely the best overall performer under £500.

**ORIGIN LIVE**

**SILVER 3C** 2010 £599  
Excellent mid-price tonearm with a clean and open yet lyrical sound.

**HADCOCK GH-242 EXPORT**

2010 £770  
Consummately musical, lyrical sounding tonearm, but needs the right turntable. Excellent value.

**SME 309**

1989 £767  
Mid-price SME comes complete with cost-cut aluminium armtube and detachable headshell. Tight, neutral sound with good tonality, but lacks the IV's pace and precision.

**FUNK FIRM FXR II**

2010 £1,175  
Clever reworking of the ubiquitous Rega platform, the FXR II gives a wonderfully musical, almost unipivot like performance.

**AUDIO ORIGAMI PU7**

2007 £1,300  
The classic Syrinx PU3 updated to spectacular effect. Hand made to order, with any mass, length and colour you care for. Fit, finish and sound truly impressive.

**NAIM ARO**

1987 £1,425  
Charismatic unipivot is poor at frequency extremes but sublime in the midband; truly emotive and insightful.

**HELIUS OMEGA**

2008 £1,595  
Stylish and solid lump of arm with fabulous build quality, that turns in a dynamic and weighty performance.

**SME SERIES IV**

1988 £1,620  
Offers nine tenths of the SMEV's magic at just over half price. Exquisitely built and finished, and a design classic. Faces stiff competition these days, but lovely nevertheless.

**SME 312S**

2010 £1,750  
Twelve inch magnesium alloy armtube plus SMEV bearings makes an impressive transcription tool with an insightful yet composed sound. Superlative build completes the package.

**GRAHAM PHANTOM**

2006 £3,160  
Sonically stunning arm with magnificent bass dexterity and soundstaging. Build quality up to SME standards, which is really saying something!

**TRI-PLANAR**

**PRECISION** 2006 £3,600  
Immaculate build, exquisite design and one of the most naturally musical and lucid sounds around.

**SME SERIES V**

1987 £2,389  
Vice-like bass with incredible weight, ultra clear midband and treble astound, although some don't like its matter of factness!

**LINN EKOS SE**

2010 £3,700  
Subtle mods over the years, including revised bearings and the recent new wiring has kept it a serious contender in the superarm stakes. Has a commanding musicality all of its own.

**OL ENTERPRISE 3C**

2010 £4,500  
Few if any pivoted arms come close to this arm's combination of liquid musicality and forensic grip.

**CARTRIDGES****AUDIO TECHNICA AT-95E**

1984 £25  
Great starter cartridge that's detailed and musical beyond its price. Superglue the stylus in for better sound!

**AUDIO TECHNICA AT-F3/III**

2010 £189  
Great value entry level moving coil with detail and grip you just can't get from similarly priced moving magnets.

**ORTOFON 2M RED/BLUE**

2007 £60/£120  
Modern, high resolution budget moving magnets that are always an engaging listen.

**GOLDRING G1042**

1994 £239  
One of the best MMs going, with sweet and extended treble and punchy, muscular bass.

**ORTOFON VIVO BLUE2011**

£275  
Super new budget moving coil cartridge from respected Danish manufacturer; a real step up from previous efforts.

**DENON DL103R**

2006 £295  
Awkward to get working properly with a poor mounting arrangement, yet it rewards with a musical performance that makes similar priced cartridges sound cold.

**DYNAVECTOR DV10X52003**

£295  
Distant descendent of the classic Ultimo 10X, this has warmth and sweetness in spades, allied to a punchy bass. Beats G1042 comfortably.

**ORTOFON 2M BLACK**

2007 £350  
Staggeringly good high-end MM that uses a stylus from the MC Jubilee and easily rivals similarly-priced MCs

**DYNAVECTOR DV20X-H2003**

£395  
Deliciously sweet sound with fantastic get-up-and-go makes this a great value budget MC. High output version works a treat with valve phono stages too.

**AUDIO TECHNICA AT-OC9MLIII**

2010 £399  
New stylus and cantilever breathe life into this feisty, punchy and detailed performer.

**ORTOFON RONDO BRONZE**

2005 £500  
Excellent mid-price moving coil with real rhythmic alacrity and a decent deal of finesse.

**LYRA DORIAN**

2007 £649  
Incisive and musical, this baby Lyra is one of the most powerful and revealing MCs at its price point. Beware the sharp treble, though!

**BENZ MICRO GLIDER L2**

2008 £650  
Crisp, clean and detailed MC; particularly impressive at both ends of the frequency spectrum

**ZYX R-100H**

2005 £799  
Exceptionally tight sounding and detailed cartridge with the musical skills to match, this is up with the best at the price, with a presentation all of its own.

**TRANSFIGURATION****AXIA**

2007 £890  
Musically adept and highly resolute cartridge with impressive tracking abilities. Top end lift means careful matching required, however.

**BENZ MICRO WOOD SL**

2010 £945  
Highly finessed Swiss moving coil that plays music with riflebolt precision.

**ORTOFON CADENZA****BLUE**

2009 £1,000  
Musical, allied to the box sound, allied to real finesse, makes this a great do-it-all high end moving coil.

**ORTOFON CADENZA****BRONZE**

2010 £1,350  
Smooth and engaging high end MC with a slightly warmer and more relaxed presentation than its superb bigger brother.

**ORTOFON CADENZA****BLACK**

2010 £1,650  
Ultra incisive, transparent and dimensional moving coil with grip and punch aplenty.

**ORTOFON MC WINDFELD**

2008 £2,250  
Ortofon's new flagship MC is a sophisticated and alluring performer that takes the vinyl experience to a new level.

**KOETSU RED K****SIGNATURE**

2007 £2,399  
The new K Signature adds a hefty dose of insight and finesse to the already impressive Red and the results are fabulous.



**DIGITAL SOURCES****MUSICAL FIDELITY V-DAC** 2010 £170

Clear, concise, low distortion sound belies giveaway price. Supelative value for money.

**CAMBRIDGE AUDIO****DACMAGIC** 2010 £230

A flexible new DAC, this is an impressively rhythmic and detailed performer.

**ARCAM rDAC** 2010 £300

Cracking budget DAC sporting a fulsome and musical sound with gorgeous build and styling.

**MUSICAL FIDELITY****MI DAC** 2010 £400

Surprisingly sophisticated upsampling DAC with oodles of detail and air, but bass isn't quite as powerful as it could be.

**STELLO DA100****SIGNATURE** £750

Superbly finessed sounding DAC at the price, with strong driving bass and plenty of air and space.

**CAMBRIDGE AZUR 840C** 2006 £800

Well built CD player with a silky, yet detailed sound and a whole host of useful facilities. Excellent value for money.

**NAIM CD5i** 2008 £895

Naim's new italic 'i' variant improves even further on the original mid-price classic, offering super tight, grippy and musical sound.

**ROKSAN KANDY K2 CD** 2010 £900

A charmingly musical performer at the price, this is a surprisingly sophisticated CD player for the money.

**BENCHMARK DAC-1S 2009** £930

Power, precision and poise - allied to real seat-of-the-pants musicality, this DAC justifies its premium price.

**MUSICAL FIDELITY M3 CD** 2011 £995

Excellent mid-price machine with slick slot loading and an open and inviting sound.

**ELECTROCOMPANIE PD-1** 2011 £1,250

Quirky but highly capable digital convertor with an effective wireless radio option (£250) and balanced outputs.

**SIMAUDIO MOON 300D** 2010 £1,290

Lovely fluid sounding DAC with a deep, dark, velvety tonality.

**CYRUS CD8 SE** 2008 £1,350

Bespoke Servo Evolution mech makes this the most musically engaging machine at the price, with super smooth tonality to boot. Optional PSX-R adds bass and dimensionality.

**DENON DCD2010AE 2010** £1,700

Powerful, open sound allied to a rich tonality and satisfying subtlety make this an excellent mid-price buy.

**NAIM DAC** 2010 £1,995

Superb high end digital convertor with a probing, punchy and forensically detailed sound.

**MERIDIAN G08.2** 2011 £2,400

Everyman's modern high end CD player, the stylish, well made Meridian has an extremely enjoyable yet refined and accurate sound.

**MARANTZ SA-KI PEARL CD** 2010 £2,500

Finely honed affordable high end silver disc spinner, this has a musical lucidity that's unexpected at this price.

**LEEMA ANTILLA IIS ECO** 2011 £2,995

Stable and smooth yet superbly detailed and musically engaging, this is class of the £3,000 CD player field.

**CHORD QBD64** 2008 £3,000

Bespoke architecture gives a uniquely musical sound that's beguiling yet proffers dizzying incision and grip.

**ELECTROCOMPANIE EMC-1UP** 2009 £3,450

Quirky yet extremely capable high end upsampling CD spinner, with a musical fluency that beguiles more than it impresses.

**ACCUSTIC ARTS CDP1MK2** 2007 £3,985

Styling not to everyone's taste but build quality is impeccable and the performance is stunningly musical.

**ESOTERIC X-05** 2010 £4,495

Superlative 'affordable high end' CD/SACD spinner with excellent build, massive detail and great poise.

**WEISS DAC202** 2010 £4,600

Brilliantly open and insightful sounding DAC with a range of useful features.

**ELECTROCOMPANIE EMP-1/S** 2011 £4,650

Epic in scale, lavish in tone and exuberant in its musicality, this is a memorable SACD spinner. Quirky in operation and modest in finish, though.

**NAIM CDX2-XPS2** 2003 £4,950

A fine high end machine, but add an XPS2 and it becomes one of the most characteristically engaging 16bit machines we've ever heard. Plays music with such passion!

**NAIM CDS3** 2003 £7,050

The most polished Naim CD to date; tremendously capable and musical, but lacks the Rottweiler quality of the cheaper CDX2-XPS2.

**dCS DEBUSSY** 2011 £7,500

Compact, stylish DAC bringing the gloriously smooth, svelte, spacious sound of dCS to a wider audience.

**ACCUSTIC ARTS DRIVE I MK2/TUBE DAC 2** 2007 £7,980

Superbly built high end CD transport and DAC combo that shows just what the format can be capable of. Very tangible, musical sound with wonderful dynamics and glistening harmonics. Only curious styling and clunky build detract from its brilliance!

**DCS PAGANINI DAC** £9,599

Digital rarely sounds better; dCS's bespoke Ring DAC makes for power, punch and insight on an epic scale. Add clock and upsampler for an even more profound experience.

**NAIM CD555/555PS** 2006 £14,000

Very probably the best CD player yet made - certainly the most expensive; a digital tour de force.

**NETWORK****NAIM HDX** 2009 £4,405

Interesting one-box network enabled hard disk music system gives superb sonics together with impressive ease of use.

**LINN KLIMAX DS** 2007 £9,600

Landmark network music player, offering brilliant sonics at up to 24/96 resolution from hard disk/NAS. Expensive, but you can hear why...

**PHONO STAGES****CAMBRIDGE AUDIO 640P** 2009 £99

Excellent entry level design that raises the bar for budget phono stages. Crisp, smooth yet brightly lit sound on both MM and MC that's a vast improvement on most budget inboard designs.

**GRAHAM SLEE ERA GOLD V** 2004 £370

Warm, open and musical nature makes this a great budget phono stage.

**ASTIN TREW AT8000** 2010 £880

Expansive, detailed, powerful sound makes this a leading sub-£1,000 contender.

**CHORD CHORDETTE DUAL** 2010 £799

Well presented mid price designed with detailed sound and USB input for archiving.

**ICON AUDIO PSI.2 2007 £599**

Excellent valve phono stage with good range of facilities and fine imaging abilities.

**A.N.T. AUDIO KORA 3T LTD 2010 £995**

Exceptionally musical and natural sounding all discrete transistor phono stage, with highly lucid, valve-like presentation.

**AVID PULSUS 2010 £1,100**

Powerful, propulsive, expansive sound puts this right at the top of the £1,000 phono stage tree.

**QUAD QC24P 2007 £1,200**

Dynamic performer that can be used on its own as a complete phono-level preamp.

**ICON AUDIO PS3 2008 £1,500**

Super sounding valve phono preamplifier, with an expansive, engaging and organic nature that makes vinyl sheer joy!

**SUTHERLAND 20/20 2010 £1,999**

Well engineered, smooth sounding solid-state phono stage with a charm of its own.

**EMILLE ALLURE 2010 £2,495**

Just as the name suggests, this is a lovely way to play LP with an exceptionally open and lucid sound.

**AVID PULSARE 2010 £3,800**

This superbly built, well specified phono stage has a powerful and authoritative sound that bristles with detail and energy.

**WHEST PS.30 RDT SE2011 £4,500**

The least solid-state sounding Whest we've heard, this builds on the family strengths of precision and grip but adds a welcome poise and fluidity.

**NAT AUDIO SIGNATURE 2011 £5,633**

Sophisticated sounding, unusually engineered MM and MC phono stage, but faces stiff competition at this lofty price.

**AMPLIFIERS****ICON AUDIO STEREO 40/III 2010 £1,200**

Excellent starter tube integrated, with plenty of detail and an expansively musical sound.

**NAIM NAIT 5i 2007 £725**

The italic 'i' version remains one of the most musically competent and dynamically engaging integrations at the price.

**AUDIOLAB 8000S 2006 £400**

In another life, this sold for three times the price, making it a stand-out bargain now. Very clean, powerful and tidy sound but not the world's most beguiling.

**CAMBRIDGE 840A V2 2007 £750**

Version 2 addresses version 1's weaknesses to turn in a mightily accomplished performance, offering power, finesse and detail.

**SUGDEN MYSTRO 2010 £1,225**

Sugden's first Class AB integrated in a long time surprises; rollickingly good fun, it loses surprisingly little in smoothness to its Class AB siblings.

**NAIM NAIT XS 2009 £1,250**

With much of the sound of the Supernait at half the price, this is powerful, articulate and smooth beyond class expectations.

**CREEK DESTINY 2 2010 £1,445**

Beautifully voiced integrated amplifier with a distinctly seductive, tube like sound. A solid-state superstar!

**SUGDEN A21A S2 2008 £1,469**

Crystalline clarity, dizzying speed and forensic detailing makes this seminal design the most musical at the price, but power limited so needs sensitive speakers.

**CYRUS 8XPD 2010 £1,500**

A quality integrated that suits all genres of music providing insight and clarity in a compact but flexible package.

**ANATEK A50R 2007 £1,600**

Simple integrated amplifier with super bass grip and effortless dynamics.

**VINCENT SA-236MK 2010 £1,749**

Big, powerful and expansive sounding hybrid transistor amplifier, with a lively, musical nature.

**NAIM SUPERNAIT 2007 £2,475**

Integrated *tour de force* from Naim that combines impressive functionality and connectivity with super sound.

**AUDIO RESEARCH VSI60 2009 £3,298**

Load of tube power allied to a strong bass and smooth open midband makes this a grin-inducing listen.

**LEEMA TUCANA II 2010 £3,495**

Polished high end integrated amp that combines power, detail and genuine musicality with a good range of facilities.

**SUGDEN IA4 2007 £3,650**

Goodly amount of Class A power, icy clarity and a breathtakingly fast, musical sound make this one of the very best super-integrations.

**QUAD II CLASSIC 2010 £4,500**

Beautiful retro styled integrated amplifier with a subtle, supple sound - although needs matching to speakers that are easy loads.

**QUAD II CLASSIC INTEGRATED 2010 £4,500**

Thoroughly modern music maker with classic style and great pedigree, this amp sings with gentle music but is no headbanger!

**SIM AUDIO MOON 6001 2010 £5,750**

Sturdy build, useful facilities and a wonderfully relaxed, seamless and even-handed sound will win this many friends.

**MUSICAL FIDELITY AMS35i 2010 £6,000**

One of the best high end integrations we've come across, this combines hear-through transparency with musical get-up-and-go.

**DARTZEEL CTH-8550 2010 £16,500**

Charismatic and quirky high end solid-state integrated amplifier with superb sound and a charming visage.

**HEADPHONE AMPLIFIERS****FIDELITY AUDIO HPA 100 2011 £350**

Great little headphone amplifier with a lively yet refined and open sound.

**MUSICAL FIDELITY X-CAN V8 2008 £350**

Open and explicitly detailed sound plus serious bass wallop and the ability to drive anything to very high levels makes this a great partner for most mid-to-high end headphones.

**PREAMPLIFIERS****MING DA MD7-SE 2012 £1520.00**

A valve preamplifier with an open, effortless sound and big sound stage. It has plenty of gain so will accept any source and drive any power amp. A tuneful beauty.

**CREEK OBH-22 2008 £350**

Brilliant value budget passive, with remote control, mute and input switching, plus an easy, a neutral sound.

**ICON AUDIO LA-4 2011 £800**

Uses early 6SN7 triodes for liquid sound, has plenty of gain and remote control.

**DPA CA-1 2010 £2,650**

Excellent solid-state preamp with a meticulously detailed and propulsive sound, but a deep velvety tonality.

**MELODY PURE BLACK 101D 2007 £3,295**

The clarity and openness of valves plus firm grip and fine detail make this a preamplifier masterclass.

**MUSICAL FIDELITY PRIMO 2009 £7,900**

Seriously expensive, but one listen explains why. Wonderfully exuberant sound that can only come from a top quality tube design.

**MF AUDIO CLASSIC  
CII SILVER****2010 £4,500**

One of the best preamplifiers we've heard at any price, this transformer coupled marvel does very little wrong; its powerful, clean, open yet delicate sound is unmatched at or near the price.

**NUFORCE P-9** **2007 £2,200**

Impressive two box preamp with superb resolution and an engaging sound.

**POWER AMPLIFIERS****XTZ AP-100** **2010 £520**

Decently smooth yet usefully muscular, this power amp punches way beyond its price point in sonic and value terms.

**QUAD 909** **2001 £900**

The latest current-dumper has a smooth and expansive character with enough wallop to drive most loads. Not the most musical, but superb value all the same. Lovely build, finish and Quad's legendary service are nice.

**NUFORCE REFERENCE 9SE V2** **2006 £1,750**

Brilliant value for money monoblocks with massive power and super-clean, three dimensional sound.

**DPA SA-1** **2010 £2,850**

Pacey, engaging and rhythmic almost to a fault, this solid-state power amplifier isn't the world's most powerful but is none the worse for it.

**QUAD II-40** **2005 £3,230**

Modern tube monoblock power amplifiers with plenty of power, liquid and open mid-band and spacious, airy treble. Explicit, engaging sound, but not as euphonic as some.

**ELECTROCOMPANIET NEMO** **2009 £4,450 (EACH)**

The Norwegian power station is as cool as a glacier tonally, yet impresses with its sheer physicality and fleetness of foot. 600W per channel makes for a massive bang per buck.

**ICON AUDIO MB845 MkII****2010 £5,500**

With 120W from big 845 valves right down to low frequencies, this power amplifier has massive dynamics and bass swing, yet is easy on the ear.

**QUAD II-80** **2005 £6,000**

Quad's best ever power amplifier, this is a dramatic performer with a silky but dark tonality, blistering dynamics, serious power and a compellingly musical sound. They don't come much better.

**MUSICAL FIDELITY AMS50****2010 £7,000**

Mighty, assured high end full Class A integrated proffering icy clarity allied to real musicality. Lacks the lucidity of the best tube amps but redeems with power and punch.

**LOUDSPEAKERS****Q ACOUSTICS 2020** **2010 £140**

Great little standmounters with a friendly, fun yet surprisingly refined gait. Excellent value starter speakers.

**ACOUSTIC ENERGY NEO I****2007 £199**

Tidy and well balanced standmounters with pleasing clarity and detail.

**MISSION MX2** **2011 £200**

Sophisticated sound alloyed with real musical insight makes these small standmounters super value for money.

**ACOUSTIC ENERGY NEO I v2****2010 £225**

Civilised sounding speaker with fast and tuneful bass.

**B&W 686** **2007 £279**

B&W's new baby standmounters offer a sophisticated and mature performance that belies both their dimensions and price tag.

**WHARFEDALE DIAMOND 10.3****2010 £290**

Great small standmounters for audiophiles on a budget; dry punchy sound with impressive soundstaging at the price.

**MORDAUNT SHORT****AVIANO 2** **2010 £300**

Classy sounding standmounter at a still affordable price.

**KEF IQ30** **2009 £330**

Beautifully built, classily styled standmounters with exceptional image projection and a very clean, detailed sound.

**USHER S-520** **2006 £350**

Astonishingly capable budget standmounters that offer detail and dynamics well beyond their price and dimensions.

**MARTIN LOGAN SOURCE****2008 £1,600**

Brilliant entry level electrostatics, giving a taste of loudspeaker esoterica for the price of most moving coil boxes. Tremendous clarity, evenness and delicacy, although not the world's most powerful sound.

**XTZ 99.25** **2010 £640**

Disarmingly open and refined at the price, these standmounters bring unexpected civility, refinement and insight to the price point. Exceptional value for money.

**ACOUSTIC ENERGY AE1 CLASSIC****2006 £845**

Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.

**SPENDOR S3/5E** **2004 £950**

A natural successor to the BBC LS3/5a, whose impressive neutrality, imaging and evenhandedness makes this a superior, if less charismatic, loudspeaker.

**MY AUDIO DESIGN****MY1920** **2011 £1350**

Exceptionally smooth, spacious and refined mini monitors that beguile and excite in equal measure.

**ELAC BS243** **2010 £1,000**

More transparent and spacious than they've a right to be at this price, these refined mid-price standmounters represent top value.

**RRR FS100** **2007 £1,055**

Mind-boggling amount of loudspeaker for the money. Big and sturdily built with serious bass and awesome soundstage scale. A real bargain.

**ONE THING AUDIO ESL57****2007 £1,450**

One Thing Audio's modifications keep the good old ESL57 at the very top of the game.

**GURU QM-10P** **2007 £1,595**

Quirky but adorable standmounters that are way off the pace in respect of detail and power, but well capable at playing a tune and pulling you in to the music.

**USHER BE-718** **2007 £1,600**

Beryllium tweeters work superbly, allied to a fast and punchy bass driver. The result is subtle, smooth and emotive.

**ISOPHON GALILEO** **2007 £2,100**

Big standmounters that really grip the music and offer quite startling dynamics and grip.

**MY AUDIO DESIGN****MYCLAPTON SE** **2010 £3,299**

Powerful, dynamic, musical yet refined, this unconventional point-source design yields dramatic sonic benefits.



**SPENDOR S8E 2008 £1,895**

Generously large, silky smooth delivery, this dynamic sounding floorstander is an excellent all rounder.

**MONITOR AUDIO PL100 2008 £2,300**

The flagship 'Platinum' series standmounter has a lovely warm and delicate sound with superlative treble.

**PMC OB11 2008 £2,950**

Cleverly updated floorstanders give scale and solidity in slim and well finished package.

**EMMINENT TECHNOLOGY****LFT8B 2010 £2,300**

Brilliant ribbon/moving coil hybrid with seamless, delicate and expansive yet tremendously musical nature.

**MAD MY CLAPTON GRAND MM****2010 £3,599**

Distinctive coaxial standmounters with wonderful soundstaging, bright lucid midband and true musical insight.

**YAMAHA SOAVO I.1 2009 £3,000**

Musical, transparent large floorstanders with impressive dynamics and cohesion. Excellent build and finish.

**MOWGAN AUDIO MABON****2007 £3,995**

Massively capable loudspeakers that offer dynamics, scale and clarity in an elegantly simple package. Wide range of finishes, too.

**B&O BEOLAB 9 2007 £5,000**

Technically impressive and visually striking loudspeakers with sound quality that more than matches their looks.

**TANNOY DEFINITION DC10T****2010 £5,000**

Wonderfully wide and open, super fast and amazingly engaging to listen to.

**ISOTEK AQUARIUS 2010 £795**

Highly accomplished premium priced mains conditioner that delivers the sonic goods, unlike so many others.

**ECLIPSE****TD712z/2 2011 2011 £5,100**

Flawed genius, and wilfully so. These loudspeakers don't do everything well, but what they can do is profound and enthralling; rhythms, dynamics and soundstaging.

**ARS AURES MI 2006 £5,995**

Sublime build and finish allied to an insightful, assured and even-handed musical performance makes these an essential high end audition.

**QUAD ESL-2905 2006 £5,995**

The old 989 with all the bugs taken out, this gives a brilliantly neutral and open sound like only a top electrostatic can; still not a natural rock loudspeaker, though.

**SPENDOR ST 2010 £5,995**

This classy sounding, superbly presented big floorstander will appeal to those seeking high end sonics with subtle looks.

**REVOLVER CYGNIS 2006 £5,999**

Revolver pull out all the stops and show what they can do with this magnificent flagship loudspeaker. A superb monitor that is like a mini B&W 801D in many ways.

**VIVID VI.5 2010 £6,000**

Breathtaking transparency, superlative coherence and dizzying speed make these one of the best standmounters ever made - providing you like their 'studio sound'.

**GERMAN PHYSIKS LIMITED II****2011 £7,800**

Don't be fooled by the austere looks; this is a superbly enjoyable omnidirectional speaker with a wonderfully fast, expansive sound.

**USHER BE-10 2009 £10,500**

Clever high end moving coil design with immense speed and dizzying clarity allied to epic punch. Needs the best ancillaries to fly, though...

**REVOLVER CYGNIS GOLD****2010 £15,000**

Vast in scale with effortless dynamics and an easy, barrel chested bass, these big bangers are great for lowish power tube amps. Large room needed!

**MARTIN LOGAN CLX LINEAR****2010 £15,990**

Meticulously crafted electrostatic that's free from traditional limitations, this is one of the very best loudspeakers money can buy.

**B&W 801D 2006 £10,500**

In many respects, the ultimate studio monitor; dazzling clarity and speed with commanding scale and dynamics.

**ISOPHON****CASSIANO 2007 £12,900**

Drive units featuring exotic materials allied to superlative build quality result in an immensely capable loudspeaker. Not an easy load to drive, however.

**ACCESSORIES****WADIA 1701 2010 £349**

The first iPod dock to extract the music digitally, letting you hook your little Apple direct to a DAC for superior sound.

**TOWNSHEND MAXIMUM****2003 £800**

Classy ribbon supertweeter with flexible level settings and cool styling - you'll be amazed at the difference it makes, especially with Quad electrostatics.

**HEADPHONES****JAYS V-JAYS 2010 £49**

Wonderful little budget over-ear portable phones with a clean, smooth sound to beat the best of the rest at the price.

**SENNHEISER MX-550 2005 £19**

Our unqualified recommendation for those seeking a serious sounding pair of in-ear phones. Smooth, detailed and musical.

**SENNHEISER PX-100 2002 £29**

Cracking pair of lightweight open back cans ideal for personals, but good enough for real hi-fi use. Superb build allied to a smooth and engaging performance make them the spiritual successor to the HD400s.

**GOLDRING DR150 2006 £70**

Excellent build and fine sound makes these budget cans superlative value for money.

**SENNHEISER HD-590 1998 £199**

The company's best real-world cans to date. Open and smooth with plenty of detail. Brightly lit midband makes them an ideal partner for a valve headphone amp.

**SENNHEISER HD-650 2004 £250**

A super all round reference design with crisp, detailed and even sound allied to superlative build and comfort. Cable upgrade yields great results.

**SENNEISER HD800 2010 £1,000**

The ultimate expression of the Sennheiser philosophy offers massive speed, clarity and insight, although lacks some of the charm of the softer, more beguiling rival Staxes.



**STAX SR-007T OMEGA II/SRM-007T 2006 £2,890**

Simply the best headphones we've ever heard at any price, these sweetly translucent electrostatic ear-speakers are like no other headphone, or loudspeaker for that matter...

**INTERCONNECTS**

**TELLURIUM Q BLACK 2010 £276/3m**

A deep, dark, velvety performer that's nevertheless highly musical, it represents excellent value as mid-price cables go.



**TECHLINK WIRES XS 2007 £20**

Highly accomplished interconnects at an absurdly low price. Stunning value for money.

**WIREWORLD OASIS 5 2003 £99/M**

Excellent mid-price design with a very neutral, silky and self-effacing sound. Superb value for money.

**CHORD COMPANY CHAMELEON 2 £90/M**

One of our favourites, these are musical performers with a smooth yet open sound.



**DNM RESON 2002 £40/M**

Neutral and transparent - a steal!

**VDH ULTIMATE THE FIRST 2004 £260/0.6M**

Carbon interconnects that help you forget the electronics and concentrate on the music. Miraculous transparency. Tight and tuneful bass mixed with air and space results in a cracking cable for the money.



**TCI CONSTRICTOR 13A-6 BLOCK 2003 £120**

Top quality 'affordable' mains outlet block, with fine build and good sonics. Well worth the extra over standard high street specials, which sound coarse and two dimensional by comparison.

**MISSING LINK CRYO REFERENCE 2008 £375**

Currently our favourite 'affordable high end' interconnects, with a deliciously smooth, open and subtle sound without a hint of edge or grain. Superb value, inasuch as it's as good as some designs at three times the price.

**TUNERS**

**DENON TU-1500AE 2006 £120**

Excellent entry level analogue tuner; slick sonics and fine feature count make it a bargain.

**CAMBRIDGE AUDIO 640T 2005 £250**

Sweet sounding digital/analogue hybrid with fine build and finish at the price.

**ARCAM FMJ T32 2009 £550**

Excellent hybrid FM/DAB+ tuner with a smooth, engaging sound. Factor in its fine build and it's a super value package.

**CREEK CLASSIC TUNER 2006 £550**

No tuner offers better sound per pound; wonderfully three dimensional and smooth from bottom to top.

**MICROMEGA FM-10 2010 £750**

Don't let the modest proportions fool you, this is a state-of-the-art modern analogue tuner with bespoke internals giving a warm, expansive sound.

**MYRYAD MXT-2000 2005 £800**

Sumptuous sound and excellent build is all most will ever need in a tuner; superb.

**MAGNUM DYNALAB MD-90T 2010 £1,295**

Exceptionally able, but commensurately priced, audiophile tuner that cannot fail to charm.

**MAGNUM DYNALAB MD-100T 2006 £1,895**

One of the best ways to hear FM that we know; superbly open and musical sound in a quirky but characterful package.



**SYSTEMS**

**YAMAHA CRX-M170 2007 £200**

One heck of a lot of quality performance on DAB, CD and FM for £200! Optional matching £120 NX-E300 loudspeakers aren't too shabby either.

**TEAC DR-H300DAB 2008 £329**

Nicely built and styled mini with fine performance on all sources that even plays DVDs!



**NAD C-715DAB 2008 £429**

Small, neat looks cover a truly capable system that shows just what a compact design can achieve.

**ARCAM SOLO MINI 2008 £650**

Half the size and two-thirds the price of a full-sized Solo, the Mini gives very little away in terms of performance to its bigger brother.

**SHANLING MC-30 2007 £650**

Quite possibly the cutest all-in-one around with fine performance from the CD player, tuner and MP3 player input. Very low power, though.

**PEACHTREE AUDIO IDECCO £1,000**

Excellent sounding iPod dock, impressive DAC and fine amplifier section make this an excellent one box style system.

**ARCAM SOLO 2005 £1,249**

Excellent all-in-one system, with a warm, smooth and balanced sound to match the features and style.

**LINN CLASSIK MUSIC 2008 £1,250**

Neat update of the original and best one-box stereo system; superbly musical sound beats equivalently priced separates.

**NAIM UNITIQUE 2010 £1,350**

Great little half width one-box system with truly impressive sound allied to a wealth of source options.

**MERIDIAN F80 2007 £1,500**

Fantastically built and versatile DVD/CD/DAB/FM/AM unit, designed in conjunction with Ferrari. Ignore nay-sayers who sneer that it isn't a 'proper' hi-fi product; most see sense when they listen to it...



**AURA NOTE MUSIC CENTRE 2007 £1,500**

Lovely shiny CD/tuner/amplifier with fine sound quality and dynamic abilities.

**NAIM UNITI 2009 £1,995**

Uniquely versatile one box music system with excellent ergonomics and sonics to match. A landmark product for Naim.

**LINN CLASSIK MOVIE 2007 £2,250**

Superbly built all-in-one that offers excellent sound across all formats and is surprisingly easy to use.



**MERIDIAN SOOLOOS 2.1 2010 £6,990**

Thanks to its crisp styling and bright, colourful touchscreen, plus excellent search facilities this is one hard disk music system with a difference. Best partnered to Meridian active loudspeakers.

**MARANTZ 'LEGEND' 2007 £22,000**

The combination of SA-7S1 disc player, SC-7S2 preamp and MA-9S2 monoblocks delivers jaw-dropping performance.

# Wood case

Erzetich has released a new headphone amp. Paul Rigby reviews the Bacillus Tilla.

**T**here is a sense of eccentricity in the naming of the Bacillus Tilla and also the construction of the chassis. Not in its shape, you understand, which spans 130x90x160mm and weighs in at 1010g and features a full-size headphone socket plus volume knob at the front with a toggle power switch and a pair of inputs at the rear.

It's what sits behind the aluminium fascia that raises eyebrows. It's the hand carved and artificially aged Linden wood, better known as Lime in the UK; hence the Tilla appellation. The grey stained wood features a cut-out window on the top of the chassis, filled with a stiff steel mesh.

The designer explained "What I was trying to imagine is what would fit well on a big old wooden desk in a study, a room full of shelves filled with books, and someone enjoying classical music on headphones while working or just relaxing. That kind of ambience."

Apart from this, the amp features Obbligato Gold input capacitors, an Alps Blue Velvet volume potentiometer, gold-plated RCA connectors and two on-board 15V power supplies.

## SOUND QUALITY

I started my review by spinning Anita O'Day's 'Honeysuckle Rose' from the Verve album, 'The Jazz Stylings Of...', that is rather forward in its mastering. This track begins with a rolling double bass which immediately displayed the Bacillus' fast and punchy lower frequencies.

Despite a constriction in the soundstage, the Bacillus' finely etched detail within the upper mids was informative. Brass, for example, was admirably resonant.

Although vocals were lacking emotive distinction, there was an attractive, direct nature to the performance. There is a subtle guitar sequence during the early stages of the track which the Bacillus found difficult to track but the piano was precise in nature, with a spotlight upon it that enhanced detail.

Moving to Neil Young's 'Blue Eden' from his 'Sleeps With Angels' LP, the Bacillus gave a performance packed with gusto, a big, bold presentation with strong, meaty bass. Percussion was characterful and massive. Again, there was a slight constriction in soundstage. Despite that, the distortive electric guitar

strums were menacing and aggressive while the rhythm guitar was forward in the mix, adding to the musical melange.

Moving to the Peggy Lee, played via my Densen B-475 CD player, and 'Trapped (In The Web Of Love)' from 'Then Was Then. Now Is Now', there was a chilly delivery from Lee. Yet detail fans will enjoy the Bacillus' attention to all corners of a typical master. As every area of the mix was spotlighted, the music sounded busy and eventful. The constricted soundstage did mean that the evocative Hammond sounded rather laterally compressed but, that said, it also offered a deliciously smoky presentation. Bass, meanwhile, was delightfully bouncy, strong and arrived with a welcome heft.

## CONCLUSION

The design might be rather eccentric but what we have here is a headphone amp that will please those music fans who hate to miss out on anything. This amp drags out most of those subtleties that are often too shy to make an appearance. The Bacillus Tilla picks them up and puts them on a pedestal for your enjoyment.



**ERZETICH  
BACILLUS TILLA  
HEADPHONE AMP**  
£342  
[& £16 SHIPPING]



### VERDICT

Casting a spotlight on all aspects of the mix, the Bacillus is an ideal headphone amp for fans who like to get under the hood of a music mix.

### FOR

- spotlight detail
- punchy bass
- rock-centric

### AGAINST

- restrained soundstage
- design

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# Yamah(st)a!

Martin Pipe reviews the Yamaha Aventage RX-A820 AV receiver, purposed for audio.

**A**ventage fine tuning technology is currently exclusive to the elite of Yamaha's AV receiver range, of which the entry-level model is the RX-A820 reviewed here. Oddly, the (PDF-only) manual makes no reference to Aventage – even in its 'features' section. Those cynical of contemporary marketing practice may reach their own conclusions.

However, it does draw attention to some of the pleasantly-styled RX-A820's other delights – which include auto-calibration, networked audio, freely-available Android/iOS control 'Apps' and numerous AV inputs.

This is a 7.2 design, meaning that seven amplifier channels plus two subwoofers can be accommodated simultaneously. How you harness those amplifiers is entirely up to you. Bi-amping is supported, and so you could have a conventional 5.1 setup with bi-wired front channels if

compatible speakers are used.

If you want surround speakers behind you, and thus the full 7.1 experience, then the RX-A820 will pander to your whims, although bi-amping is then no longer an option.

An interesting alternative to rear-surrounds is to use front-mounted 'presence' speakers. These are a Yamaha exclusive and have nothing to do with the 'height' channels of Dolby Pro-Logic IIx, which aren't supported here (although Pro-Logic IIx is, along with Dolby Digital, DTS and their hi-def variants).

The RX-A820 boasts a number of special 'DSP' modes, which simulate 'real world' venues with greater accuracy than was once possible in the pro-audio and musician fields.

Although the presence and rear-surround channels use different amplifiers, automatically-switching between the two when soundfields are changed is not allowed.

Also supported, but not at the same time as presence speakers, which use the same amp channels and speaker terminals – is an independently-selected stereo source simultaneously driving a pair of 'Zone 2' speakers in a second room, with 5.1 in the first room.

There's no Wi-Fi on board. To get the RX-A820 on-line, as it were, you'll need to snake an Ethernet cable to it from your router. Do this and you'll be rewarded with DLNA audio playback and a pretty good Internet radio 'client'.

During the review period I was greeted with a 'new firmware available' message. The upgrade process failed, so I was forced to instal firmware from the website via USB. The new feature added was support for Napster, a subscription streaming music service not dissimilar to Spotify.

That's not the only way you can get music into the RX-A820 digitally.

The USB port will also accept audio files – MP3, FLAC, WAV, WMA and M4A/MP4 are all supported (as are 96kHz sampling rates and 24-bit resolution - hurrah!

Oh, and if you've an Apple iThing then your music collection can be experienced via the RX-A820. A digital connection is used, and so to all intents and purposes the limiting factor will be the encoding rate you selected in iTunes.

At the 'old-school' end of the technology spectrum are an FM/AM radio, but no DAB, and a phono input.

Yes, Yamaha – like Onkyo and some others – hasn't forgotten that some of us still enjoy listening to vinyl. The integrated phono stage is basic, and only caters for standard MM cartridges.

Sitting somewhere between the new tech and the old are digital sources that you can connect via HDMI – such as DVD and Blu-ray players. There are no fewer than eight such inputs, one of which sits behind a small front-panel drawbridge, alongside a menu control and headphone socket. Camcorder enthusiasts and gamers will appreciate such convenience.

The HDMI ports support 3D, and – better still – the DSD streams of disc players that can spin SACDs. You get two HDMI outputs.

HDMI conversion and upscaling of analogue video inputs (five composite and two component in all) will keep your cabling to a minimum. Incredibly, the RX-A820 is able to convert these – and HD sources like Blu-ray and HDTV – to 4k video. How many 4k displays are out there? Not many, and the currently-available handful are expensive. Still, it's nice to see Yamaha accommodating the future as well as the past.

That said, Yamaha has made no serious concessions to any recording device. There's no 'tape loop' of the sort that will grace any two-channel hi-fi amp, nor a digital audio output.

You get two optical digital inputs and two coaxial digital inputs for Sky boxes, CD transports and so on.

## PERFORMANCE

Listening to two-channel music sourced from CD, using a Cambridge Audio Azur 751BD Blu-ray player connected via HDMI, the presen-

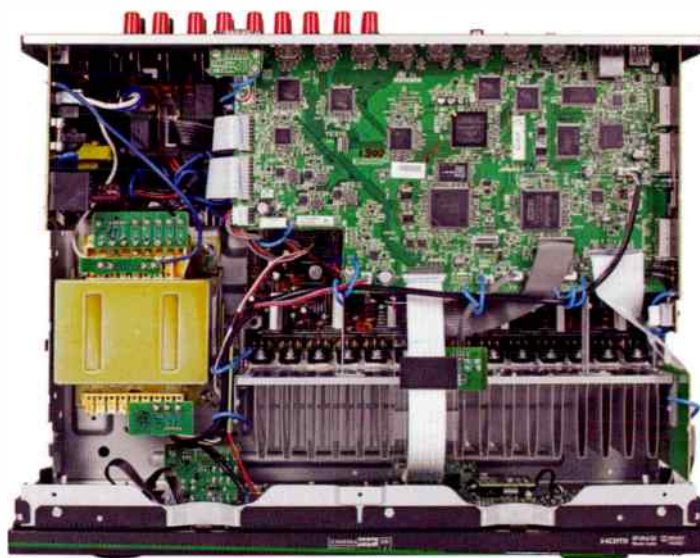
tation was a mite bass-shy. The Magic Numbers' eponymous first album lost some of its lower-octave warmth. In addition, the soundstage was rather confused.

This was with the RX-A820 in its '2-ch stereo' mode; switching to 'Pure Direct', which bypasses much of the circuitry that many would consider superfluous to 'straight stereo' listening, improved imaging as well as refinement of subtle musical details.

In these two modes, the subwoofer isn't used. However, in alternative DSP modes (like '7-ch stereo'), it's active – and instruments like the bass guitar and drums derive its low-frequency benefit. This multi-channel mode yields some interesting effects when it comes to instru-

a 'you are here' feeling from tracks like 'Waterfront' and 'New Gold Dream'. Not being in Europe for the recording of these concerts circa 1986, though, I cannot vouch for the accuracy of such treatment. But it certainly makes the listening experience more exciting.

Interestingly, the aforementioned Simple Minds album wasn't a CD. It was a double LP, auditioned via a Technics SL1200 Mk3 turntable (fitted with a Philips GP422 cartridge) and the RX-A820's phono stage. This proved to be better than expected, considering its 'ultra-budget' nature. That bass reticence was alas still there, though. The 'fat' Moog bass is a sound that musicians still strive for, but here the impact was lost on tracks that gave it prominence (like 'Take Me', from Donna Summer's 'I Remember Yesterday', played on the original GTO LP). Again, the 'all speaker' mode helped by switching the sub into circuit, albeit at the expense of soundstaging accuracy



**An interior motherboard comes packed with large DSP chips to carry out the many processing functions. At left is a neat EI mains frame transformer of good quality.**

mental placement. Playing the Ron Goodwin Orchestra's '633 Squadron' soundtrack it almost seemed as if I'd been placed in the orchestra pit – the strings and horns coming from all around.

Other Yamaha DSP modes are of definite subjective value. Live-venue acoustic simulations (such as 'The Roxy Theatre' and 'Hall In Vienna') can enhance live recordings, such as Simple Minds' 'Live In The City of Light'. Here, the rear speakers complemented the fronts to impart

and detail.

Other aspects of Yamaha's digital empowerment I found have a very positive effect, the compressed music enhancer being one example. A 192kbps MP3 copy of new-wave influenced act Metronomy's excellent 'Nights Out' had firmer basslines and more incisive percussion with the effect engaged. It was even worth a try when listening to non-compressed music from radio.

Going way back in time to 1973, though, gave me an opportunity to

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## GENESIS REVISITED II

Steve Hackett  
Hackett

This is the second, more consistent and imaginative look back at old Genesis songs and contemporary solo works played by the band in the seventies, the first being 'Watcher Of The Skies'. It's from the ex-Genesis lead guitarist, in a luxury vinyl version spread over four LPs, complete with a double CD, in a slip case. Retaining its original structure, Hackett tweaks and elaborates while a team of new vocalists and support players add their own style to the songs. And what a team! Amongst many others are: Porcupine Tree's Steve Wilson, Opeth's Mikael Akerfeldt, ...And You Will Know Us By The Trail of Dead's Conrad Keely, It Bites' Francis Dunnery, King Crimson's John Wetton, Nik Kershaw (!), The Flower King's Roine Stolt, Marillion's Steve Rothery and Spock's Beard's Neal Morse.

Most of it works but even when it doesn't (some of the

vocals mid-way through Supper's Ready are too staged, instead of letting go, the vocalists 'act' the lyric while Nad Sylvan's Peter Gabriel impression is almost too good) there is a charm to the whole production. Hackett, meanwhile flows through everything, like liquid glue, keeping the entire production vital, alive and buzzing.

There are old trees out there, Yew trees specifically. Some are thousands of years old, hollowed out, gnarled, with roots that twist into the earth, feeding a green canopy that promotes life, youth and hope: a living dichotomy. That is Hackett and this album. If anyone has the right to play this music, it is Hackett. He represents the roots of Genesis, he is enveloped in its deepest history while the songs are almost mythic. Yet, here we have a blend of youth and experience reinterpreting them in a fresh, powerful and, it has to be said, quite magnificent manner. **PR**



## ARETHA: LADY SOUL

Aretha Franklin  
Atlantic

You know, I'd almost forgotten what it sounded like to hear a soul song sung straight from the heart, without any tedious and hair pulling vocal calisthenics (Whitney Houston stand up! Oh, you can't) or annoying frippery. Franklin, on this score alone, sounds so darned refreshing. Maybe that is more to do with her 'training' as a gospel singer. Within that environment, after all, the idea is to get a message across and do it efficiently and succinctly before the attention of the congregation's attention wanders. As she said herself, back in 1968 to the Record Mirror, about her gospel days, "Oh, we had good times right enough. I was in a group, a gospel group with my sisters Erma and Carolyn".

On this album, she not only targeted her message and decorated each song with an adornment of singing prowess (but no more) but her passion shows

through in buckets while the quality of the songs she has as ammunition is scarily good. 'Chain Of Fools' anyone? A whopping hit off the album. Don't forget '(You Make Me Feel Like) A Natural Woman', a song written for Franklin by Brill Building geniuses Gerry Goffin and Carol King: a true moment in soul - and musical - history.

She then has the audacity to claim cover songs as her own, her outstanding delivery demands it. So James Brown's 'Money Won't Change You' and Ray Charles' 'Come Back Baby' become her songs while she infuses the civil rights song, 'People Get Ready' with a new, measured focus. Featuring a solid master, this album is a died-in-the-wool classic and has now been reissued by Warners/Rhino.

In the same vinyl series, also look out for Alice Cooper's 'Killer', Otis Redding's 'Otis Redding Sings Soul' and Little Feat's 'Sailin' Shoes'. **PR**



**F**ront-man, Ian Anderson was adamant that the band's previous album release, 'Aqualung' was not a concept album, despite what the critics said. So he wrote this album, a parody on the concept genre. The album is supposed to be written by an eight year-old boy, a wannabe poet, with grandiose ideas. This was the year of Monty Python, after all, surreal humour was 'in'. So how did the critics respond? The critics reviewed it as another – 'serious' concept album!

"People sometimes didn't get the joke and took it all absolutely seriously," said Anderson. "But for the most part I think people understood it was a British humour thing. This was not meant to be a rock opera, it was meant to be the ramblings of a young, precocious mind. It was just light hearted fun, although it had its serious moments".

This luxurious box set version celebrates the 40th Anniversary of the release of the original album (plus Thick As A Brick 2 [TAAB2], the 2012, solid sequel to the original) and features two well mastered 180gm records, a new 5.1 digital stereo version, mixed by Porcupine Tree front-man, Steven Wilson along with a DVD containing DTS & Dolby Digital 5.1 surround mix, stereo 96/24 recordings based on both the new mix and the 1972 flat transfer plus the original newspaper rebuilt for the 12 x 12 format on 16 pages of newspaper style paper (but more durable), the 2012 newspaper printed on gloss paper (that were originally PDF files on the TAAB2 DVD), an Ian Anderson interview covering both albums and the 2012 tour plus other interviews, a feature on the album, rare photos, recording and touring mementos and a 104-page hardback book. A corker of a reissue. **PR**



## THICK AS A BRICK 1 & 2

Jethro Tull  
EMI

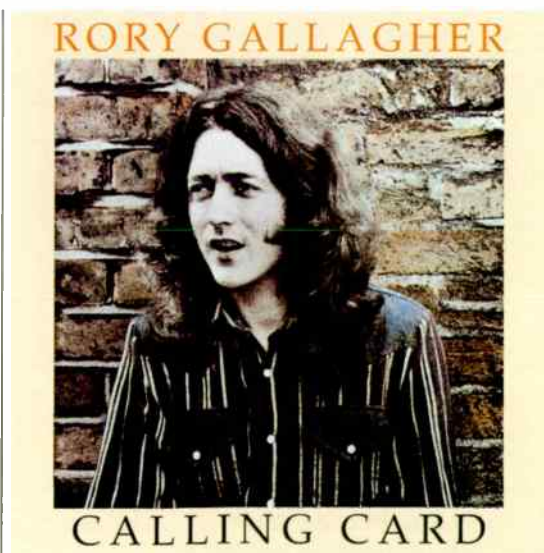
**R**eleased in 1976 and produced by Deep Purple bass player, Roger Glover, this was Gallagher's second album for the UK-based Chrysalis label. It was also a landmark as it turned out to be the final album with his long term colleagues Lou Martin (keyboards), Rod De'Ath (drums) and Gerry McAvoy (bass). The album is a perfectly balanced piece with plenty of creative inspiration that found Gallagher in a curious mood, searching for new ideas and boundaries. So, while 'Do You Read Me' is typically strong and meaty, it has a stripped air to it that allows more nuance and subtlety to enter the song structure.

'I'll Admit You're Gone' sees Gallagher perform this melodic ballad with a light touch and attendant care and attention while someone will have to explain to me why 'Edged In Blue' has been overlooked as a Gallagher classic

for all these years. Is this Gallagher's best studio album ever? I think so. If you have a penchant for storming blues guitar from a man who really knows what he's doing or have looked upon Gallagher's canon with interest but have yet to take the plunge, then this album is a perfect entry point.

Music On Vinyl's trademark mastering is heard here with a detailed, background silence and subsequent clarity that is a testament to the cutting engineer.

Music On Vinyl has also reissued a stream of additional Rory Gallagher vinyl LPs including 'Against The Grain' (1975) not his best but still prime period stuff; 'Photo-Finish' (1978) a strong LP that is not essential but a required purchase for fans; 'Top Priority' (1979) another blazing rocker of an album but this one needed a couple of balancing ballads and 'Jinx' (1982) a tough, confident LP revealing Gallagher's blues chops. **PR**



## CALLING CARD

Rory Gallagher  
Music On Vinyl

# Open-reel tape decks

Martin Pipe revives his GX-630DB, and discusses its place in the tape world of the 1970s

## AKAI STEREO TAPE DECK 4000DB

### 4000DB STEREO TAPE DECK

The new 4000DB is an attractively designed compact tape deck offering multiple connections and controls and quality features among which are Akai's one-micron gap heads for high density recording and the well known Dolby Noise Reduction System.



*The Akai 4000 series proved to be among the most popular tape decks ever sold. Hard to imagine now, but during the 1970s hi-fi boom you could buy these machines from the Argos catalogue – as well as the more usual national hi-fi chains (such as Comet and Laskys). This particular version, the 4000DB, was equipped with the Dolby B noise reduction system.*

**M**ost articles focusing on reel-to-reel tape equipment tend to extol the virtues of the Revox A77 and its successor the B77.

And these Swiss-made machines were indeed an aspirational choice for well-heeled tape enthusiasts, combining robust build quality, flexibility and a sound quality that – certainly according to the wisdom of the time – the cassette format could never even approach (when the A77 was originally launched in 1967, the Dolby B noise reduction system essential to acceptable cassette performance was still at an embryonic stage).

The A77 was among the few domestic and semi-professional decks able to accept the 10.5 inch spools, meaning that users could choose a faster tape speed (essential for sound quality) without sacrificing playing time. The A77 was built around a rigid die-cast chassis, was solenoid-controlled (opening up the possibility of remote control), had three heads enabling off-tape monitoring and dedicated separate drive motors for the take-up spool, feed spool and the capstan that drove the tape through the transport during recording and playback. The direct-drive capstan motor was regulated with the precision expected of Swiss engineering by a then-revolutionary servo-controlled electronic control-system that offered two speeds - 9.5 cm/s and 19 cm/s on domestic versions.

In the late 1960s and early 1970s though, the Japanese were starting to make a major impact on the worldwide audio industry. Their products were well-made, reliable and often cheaper than the European and American competition. Brands

with an increasing presence on British dealer shelves included Sony, Pioneer and Akai. The latter firm, like Sony in its early days, specialised in tape equipment. In the late 1960s, the company was – alongside Norwegian recorder manufacturer Tandberg – instrumental in promoting the innovative 'cross-field biasing system'.

In this system a third head (fourth, in the case of decks with separate recording and playback heads) was mounted on the opposite side of the tape; the ultrasonic-frequency bias current applied to it 'linearising' the recording process and ensuring optimal sound quality.

Crossfield bias was, at the time, considered a better solution than the established one – which employed mixing the bias signal with the audio and applying that to the recording head. Crossfield bias was a feature of Akai's X-360 circa 1969, a flagship three-speed machine packed with innovative 'gadgets' like a head-cleaning reminder, magnetic spool-braking, auto-reverse and motorised input-level adjustment! It would even work at the 'professional' speed of 38cm/s, with capstan sleeve fitted. Sadly, the X-360 was nearly twice the price of an A77 – and would only accept the smaller seven-inch spools.

Crossfield bias had its problems; to work, the 'bias head' needed to be kept in consistently-accurate alignment for best results – which wasn't guaranteed with that era's engineering tolerances. By the early 1970s, Akai had abandoned it; Tandberg, which came up with the idea, persisted for a while longer.

At around this time, Akai had launched one of the 'mainstays' of its tape recorder range – the 4000 series. Selling for less than £100 at

launch, it was one of the cheapest 'quality' decks then available. Its single-motor two-speed transport was compact, but only smaller tape spools were accommodated. However, enthusiasts were drawn to its three-head system; recordings could be monitored as they were being made, thereby assuring the user that all was well. Each head was optimised for its function, with benefits for performance (in particular, frequency response). And these machines were among the cheapest 3-head decks available. Home-recordists used the 'confidence replay' feature as the basis of an 'echo' effect, feeding back some of the (delayed) playback audio into the recording amplifier. Changing the recording speed changed the echo duration.

price'.

Sony offered competition at this end of the market in the form of the TC377 – this was the early-to-mid 1970s 'boom-time' for hi-fi (hard to imagine now, but a weekly hi-fi magazine was published in this era!). Of similar basic design to the 4000, it offered a third speed (4.75cms) that was of little interest to the audiophile. However, the TC377 employed wear-resistant 'ferrite-and-ferrite' ('F+F') heads. For this reason, more TC377s are today in use than Akai 4000-type machines. I say 'most', because the final Akai machine of this range – the GX4000 – offered the company's answer to Sony's ferrite heads. These were known as Glass Crystal ('GX') heads, and Akai was so confident of their longevity that a ten-year warranty was offered to customers. Many Akai decks fitted with these heads continue to deliver good service – and some examples nearing four decades in age show minimal head wear. Indeed, you're only likely to encounter problems when a head's windings go 'open-circuit'.

GX heads were introduced on Akai high-end reel-to-reel decks in the early 1970s, and the technology was subsequently employed in the company's eight-track and cassette decks. Until the company's demise as a 'true' hi-fi manufacturer in the 1990s, cassette decks with GX heads were still being sold. Today you're more likely to find a GX-series reel-to-reel with heads in good shape than, say, a Revox A77.

Which brings us to the deck featured here. Made circa 1976, the GX-630DB was Akai's answer to the Revox A77. Although heavy and well-built, pressed-steel is however much evident in the GX-630DB's construction. Elsewhere, it shares much in common with its better-known Swiss equivalent. It has a solenoid-activated three-motor, three-head (GX, natch!) design that



**Looking superficially similar to the GX-630DB is this rare GX-630D-SS – which employed the same tape transport. A four-channel machine, the GX-630D-SS was intended for the recording and playback of quadraphonic material. It also arrived as a 'simul-sync' facility (like that offered by the competing Teac A-3340S) made it of interest to musicians recording at home.**

The 4000 series, which was produced for over a decade in various forms, gained a good reputation among hi-fi enthusiasts. A later 'DB' version offered Dolby B for quieter recordings, notably at the slower 9.5cm speed. One hi-fi magazine in the late 1970s claimed that its recording quality was 'as good as cassette decks selling for twice the

price'. Sony offered competition at this end of the market in the form of the TC377 – this was the early-to-mid 1970s 'boom-time' for hi-fi (hard to imagine now, but a weekly hi-fi magazine was published in this era!). Of similar basic design to the 4000, it offered a third speed (4.75cms) that was of little interest to the audiophile. However, the TC377 employed wear-resistant 'ferrite-and-ferrite' ('F+F') heads. For this reason, more TC377s are today in use than Akai 4000-type machines. I say 'most', because the final Akai machine of this range – the GX4000 – offered the company's answer to Sony's ferrite heads. These were known as Glass Crystal ('GX') heads, and Akai was so confident of their longevity that a ten-year warranty was offered to customers. Many Akai decks fitted with these heads continue to deliver good service – and some examples nearing four decades in age show minimal head wear. Indeed, you're only likely to encounter problems when a head's windings go 'open-circuit'.



**My own GX-630DB on the workbench, making a test recording (9.5cm/s, Dolby on). The electrolytic capacitors in the power supply and audio boards had been replaced, together with incorrectly-specified transistors and zener diodes in the speed-control circuit. With the aid of a test-tape and a frequency counter, the tape speeds were then aligned.**

can accommodate 10.5in. spools and, courtesy of a valve-base sized socket, an optional remote-control facility.

The capstan is directly-driven by a servo-regulated motor capable of operating at 9.5cm/s or 19cm/s, as was common with other high-end



**enjoy the GX sound**

What makes AKAI's GX-630D Stereo Reel-to-Reel deck so outstanding is that it gives you wonderful GX sound. It's a sound that's never been reproduced with the AKAI developed stereo and a full range crystal ferrite head. The full size head (the GX Head) which is also one of its kind in the world is constructed with the best and most precisely machined metal. The AKAI Head is "flat" and "wide" and "wide" and "wide" for over 150,000 hours of use. The GX Head is made of one piece of steel. The GX Head is made of one piece of steel.

This GX Head also provides a "true" sound that's never been reproduced without distortion.

This high speed stereo GX-630D also features such outstanding features as 3 heads with control motor for direct operation of a automatic, reverse or manual stop, stop and start, and stereo function with lock. The GX-630D can be easily converted to 19" or conventional stereo deck.

The GX-630D perfectly matched a 10.5" x 1.5" double flange Stereo A80/PM Multiple Stereo Error Amplifier and 500 000 150-1 Stereo Speaker System.

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**Akai's lasting contribution to audio recording was glass crystal ferrite ('GX') heads, which made their 1970 debut on the GX-365 – an update of the X-360 recorder. Next came the GX-280D, a more-affordable (£270) deck, shown here in a 1971 advertisement. GX heads were guaranteed to offer a service life of 'over 150,000 hours'; in other words, the heads could outlive mechanical components.**

(SONY tape for best recording with SONY tape recorder)

# TC-377



Can be used in horizontal position with the change of mounting

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ting SONY's latest technology and long years of engineering experience. This model's features include SONY's new ferrite heads. All three heads, erase, record and playback, are made of ferrite and provide extremely long life and remarkably improved performance. They maintain their original superior characteristics for many years. The high-quality three head system permits tape/source monitoring and adds great flexibility and variety to recording techniques, enough to meet the wishes of the most demanding audiophiles. With many other functional and exciting features, the TC-377 gives you increased stereo recording and listening enjoyment. This versatile and magnificent stereo sound performer is the choice of discriminating hi-fi enthusiasts.

Be a hi-fi... be Different  
**SONY**

**To compete with the popular 4000 series, Sony launched its TC-377 in 1973. Until it was replaced by the more modern-looking TC-399, it attained similar levels of popularity to the Akai equivalent. Slightly more expensive, Sony's proposition was better-featured. It had a third speed of 4.75cm/s (little audiophile value!) and ferrite heads (which were considerably longer-lasting than the 4000's metal-faced types)**

Japanese domestic recorders of the time (Sony, Teac, etc.). Some later A77s were available with Dolby B noise reduction, but this was fitted 'as standard' to the GX-630DB (there was in fact a non-Dolby version of the deck, the GX-630D, but that wasn't as popular).

Such a facility was of particular value when making tapes at the slower (noisier) speed, which could be of benefit for compilation 'party' tapes or FM radio broadcasts (Radio One 'In Concert', anyone?)

Other features included a pair of large backlit VU meters that operated in play as well as record (the A77s were active only during recording), and the ability to mix between a pair of microphone inputs and a line-level source.

Although A77 owners could fit power amplifier modules capable of driving speakers directly, the GX-630DB was purely a 'deck' designed

for integration into a hi-fi system.

Most A77s were sold in 'half track' form. Here, the two stereo tracks run the full width of the tape (with a guard band between them to reduce 'crosstalk'). As a result, recording was only in 'one direction'; some recording enthusiasts harnessed this to great creative effect by reversing the spools to play a recording 'backwards'!

The GX-630DB – like the 4000 series, TC377 and many other Japanese decks – employed an interleaved 'quarter-track' format. Here, the economy-minded tape user (and remember that tape was expensive!) could make a stereo recording on one 'side' of the tape, before flipping over the reels and recording on the second 'side'. Using the 9.5cm/s speed and a 10.5in. reel loaded with 3,600 feet of long-play tape, you could record continuously for over three hours! Flip the tape

over, and another three hours of stereo recording was yours.

However, you don't get something for nothing. Because the same quarter-inch tape is now occupied by four narrower tracks (and the guard bands spacing them) the signal-to-noise ratio is lower – one of the reasons for that popular Dolby version, presumably. The guard bands are narrower, too, and so crosstalk is more noticeable – especially with recordings made at the higher speed. It's not uncommon to hear faint low-frequency breakthrough from recordings made on the other side of the tape, especially if they contain rock or dance music featuring heavy bass or drums.

The narrower tracks also meant that recordings (typically made at the slower speed) were more susceptible to 'dropouts'; owners of quarter-track machines had to pay particular attention to keeping their tape transports clean and the careful dust-free storage of tapes!

Four-track recording was also used for discrete 'quad' (Q4-format) which remains the best way of experiencing music mixed to this format. Naturally, stereo machines only gave you two of the four tracks at any time; to play quad tapes you needed a machine like the Teac A3440 as well as four channels' worth of amps and speakers.

Akai, funnily enough, also built a four-channel deck around the GX-630DB's mechanics, known as the GX-630D-SS. This rare machine lacked Dolby, but I guess the available internal space was already taken up by the additional (discrete-component – no ICs here!) recording and playback amps.

The quarter-track format can also, of course, be used to make four separate mono recordings. Akai's 4000 series made this easier by fitting a neat track-selector knob on its headblock. The user could easily select either of the mono tracks, or both for stereo; the switch was active during both recording and playback. Such a control was missing on the GX-630DB; however, a pair of switches enabled recording on one or both channels.

Playback was more problematic. Connect a GX-630DB to a conventional stereo system, and a 4-track mono tape would give you different soundtracks from each speaker!

This was the heyday of feature-laden Japanese amps, and one



**The circuits of tape decks, like most other audio equipment, contain a considerable number of electrolytic capacitors. Unfortunately, they eventually dry out and lose their effectiveness. These packs of replacement capacitors give you some idea of how many are fitted to the GX-630DB!**

But it must be remembered that we're talking about something that's running twice as fast as a cassette, with tracks twice as wide (this is the basic format of Sony's largely-forgotten Elcaset, which I hope to examine in a future issue). A certain degree of low-end thickness and warmth is also added, and I found that recording MP3 tracks onto tape with the GX-630DB actually made them more listenable! The 'edges' are rounded off by tape's natural tendency to compress the dynamic range, imparting a pleasant 'analogue-y' character to the sound. We may live in an era of digital downloads and computer-driven convenience, but there's still much to be said for 'old-time' tape recording. If you come across a machine in good condition with a batch of tapes - and affordable machines like the Akai 4000 and Sony TC377 do crop up regularly - why not give one a try?

commonly-encountered control passed the left or right channel to both speakers if you weren't listening to a stereo recording.

My own GX-630DB was a 2006 eBay acquisition - an event I remember particularly well, as it involved driving to a mutually-convenient meeting point. I paid just over £100 for it, which was something of a bargain as current eBay selling prices are usually in the £300 to £350 ballpark (I haven't yet seen a GX-630DB at an Audiojumble, although other Akais - especially 4000-series machines - can usually be found).

After getting the machine home, I discovered that the tape speeds were wrong - and although it could deliver a reasonably-open and spacious sound at the higher speed, there was some obvious 'muddling'. Playing a test tape and monitoring the result with an oscilloscope revealed asymmetry in the audio waveform.

Some time later, and spurred on by a collection of tapes I wanted to digitise, I finally had the excuse I needed to strip down the machine and examine it. I subsequently discovered that the power-supply and speed-control circuitry of this particular example had been inexpertly-repaired at some point. A search of the Internet found circuit diagrams and a service manual (<http://www.hifiengine.com/library/akai/gx-630db.shtml>) and, with soldering iron and replacement parts in hand, I got to work! This was also

a good opportunity to replace all the drying electrolytic capacitors in the signal paths with Nichicon KZ and Elna Cerafine types.

Several hours later, it was all re-assembled and the audition could begin! Speed control was spot-on, and the sound quality much-improved. The spaciousness was even more evident, but the bass had been transformed with more depth and articulation!

That was with tapes recorded on other machines (if you're transferring tapes, by the way, it's important to ensure that the azimuth of the playback head matches that of the original recording or you lose clarity and soundstaging accuracy).

Recording quality is of course influenced by the tape being used. With BASF LH, the 'top' tended to slope off even at the 19cm/s speed. This is because the machine was originally set up for use with higher-bias Japanese tape (Maxell/TDK). Switching to this (Audiojumbles are a superb source for used or sealed 'new old stock' tape - which is difficult to obtain new) restored that missing 'sparkle'. Indeed, I was surprised how good the 9.5cm/s speed could sound - especially with Dolby engaged to keep hiss at bay.

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# AKAI

**Akai's X-360D was incredibly-advanced for its time. Features included cross-field biasing, magnetic braking, off-tape monitoring, auto-reverse playback (not recording!) and a circuit that used the HF drop-off associated with a clogged playback head to remind you that cleaning might be required. In 1969, it had a ludicrous pricetag of £359 (including purchase tax - equivalent to over £4,600 today!) and so few were sold.**

  
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"after listening to it on several occasions, I feel the songs seeping into my consciousness"



Paul Rigby

**T**he music industry is full of trends. One of those has been the drop in the popularity of the CD as a physical musical format along with the concomitant rise in the popularity in downloads. The one trend that no-one expected to see was the rise again in popularity of the vinyl disc.

Most observers believed that physical musical carriers were dead and buried. The venerable LP has disproved that. Vinyl, therefore, is an anomaly. It refused to die when CD hit the market during the early eighties and it still refuses to die today, even when hi-resolution, 'studio quality', music tracks are on the increase.

The reason vinyl is so popular is that it forms the basis for value for money – and there is nothing a marketing man likes more than a product with a conscience. To be honest, there is nothing a typical consumer likes more than value for money, either. Such items bring a sense of worth. They can be handled, admired, shown off and, even more importantly, sold on afterwards. There is no resale value in an artist's catalogue presented as downloadable content. There is tremendous resale value for the same artist's catalogue as vinyl, however.

As a spin-off from the vinyl resurgence are the increasingly popular limited edition box sets. These luxurious and very expensive items are becoming more numerous by the month. This Christmas, box sets blossomed to encompass a wide variety of artists and genres including multi-media, multi-format sets on Deep Purple's 'Machine Head'; T-Rex's 'the Slider'; a 7" collection from Lee Hazlewood called 'You Turned My Head Around: Lee Hazlewood

Industries 1967-1970'; The Who's 'The Studio Albums'; The Damned's 'Damned Damned Damned', Massive Attacks' 'Blue Lines' and many more. They are costly, however, these examples alone range in price from £50-£150. The Beatles topped the lot this Christmas, as the band's entire studio album collection on vinyl, presented as a box set, fetched a wallet stretching £300.

Touted as the ultimate purchase for any dedicated fan, are they really worth it? What do these things actually contain? Content does vary but a typical example of the box set genre is based upon the latest album by ex-Dire Straits front man, Mark Knopfler.

Knopfler's new album is called 'Privateering' which deserves a few words on its own. The album includes Knopfler's now familiar take on the blues, featuring Celtic, English folk ballads, rock, Americana and US-based country blues. As a suite of songs, it might be his best yet. Might be because, after listening to it on several occasions, I feel the songs seeping into my consciousness. This is the thing with Knopfler, his solo work sometimes takes a while to grab you. But once you are 'in' then you will get the best out of the album.

The box set, as all of these box sets do, gives you the main album but then takes you on a fan journey from there on in. So, for this set, you get the original double CD pack within a jewel case but then you get an additional jewel case containing 'Bonus Tracks'. Three, in this case: 'Occupation Blues', 'River Of Grog' and 'Follow The Ribbon', not available anywhere else, plus a DVD documentary called 'A Life In Songs' in which we hear his songs and his words on his songwriting methods.

Not only that, we hear about

Knopfler's family background which includes family photos, original video and interviews with colleagues. You also get the vinyl version of the album spanning two discs, a numbered artwork print of the sleeve art and a credit card that contains a unique number to download a live gig in Madrid on 29 July 2010.

As you can see, the box set would be pretty useless to the casual listener but, for the dedicated fan, this collection of formats, rare and limited edition material is not only a boon but an essential purchase that provides new music but also an insight into the artist. The new box set in fact takes your hand and provides a broad overview of the artist, in this case, in contemporary times.

Other box sets will provide a snapshot in time from the release of that album. With Knopfler, after listening and viewing, you feel that you know the artist that much better and that, with the varying formats and media offerings, you have gotten that bit closer to the music. This is something that you just can't do with a basic CD or download. This is why these limited edition box sets are worthwhile.

Of course, like any product, there are good and bad box sets. Some are obvious rip-offs, offering nothing more than a few pieces of memorabilia and the original album. An exercise in packaging and origami, in fact.

For collections such as the Knopfler set, despite the fact that it's expensive, this set can be bought for around £65 on Amazon, the extras are genuinely useful. Even the artwork print will save those fans who have a yearning to stick their LP sleeve to the wall; they now have a viable alternative. ●

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# "I won a box of 98 near mint condition records for £1"



Tony Bolton

**Y**ou may remember a few months ago that I bought myself an oak record rack from eBay, which resulted in the biggest sort out of my record collection since my last house move some years ago.

Having been quite happily ransacking junk and charity shops for over 35 years, and exploring any musical avenue that looked interesting, I have amassed quite an acreage of vinyl and shellac, dating back as far as 1906 and covering about 700 years of music. I had also acquired a number of duplicates where I had either bought a batch of records, or seen a better copy of something that I already had.

Installing the new rack resulted in about 40 feet of LPs being gone through, best copies kept and a satisfyingly large out pile being produced. Having spent the best part of a week on this exercise I resolved that my head should rule my heart for once, and that I would not buy any more records for a while (do I hear voices muttering 'famous last words?').

Over the years, once people realised that I loved music and was curious to explore as much of its nearly infinite manifestations as possible, I have been given boxes of records by everyone from my parent's friends through to acquaintances who wanted their old collection to go to a good home. On occasion there have also been boxes of them in shops where there was enough of interest to justify buying the entire box (at a suitable price) which have been gone through and anything interesting kept. There was also one occasion where I bought nearly 900 jazz LPs for £98 at an auction, which kept me occupied for months, working out what I wanted

to keep.

Now the LPs are sorted, I have been looking at the 78s, which are breeding underneath every piece of furniture in the house, and in every corner where they could be tucked away, and bracing myself for some serious weight lifting as I weed my way through those. There is also about three feet of 50's and 60's singles and EPs which were given to me when a friend's parents downsized their house. So, as you can see I have quite enough to occupy me without buying any more.

My resolution, surprisingly, held firm for over a couple of months. I steadfastly kept my eyes averted as I walked past various shops, nodding and smiling politely to the owners as I maintained my pace and self discipline. I even managed to go into one shop, chat to the owner and ignore several feet of records recently installed on his shelves, and leave without spending a penny.

All was going well. I started on the 78s, and even managed to see a few bits of clear carpet appearing under a couple of bookcases as I sorted my way through. Then I made a big mistake. I went to the viewing at our local auction. There was the usual pile of easy listening - Jim Reeves, Max Bygraves and so on, which I ignored without any effort.

Then, lurking underneath a rather handsome Edwardian oak dining table I spotted a box, about two feet long and a foot wide. I just had to have a look. Inside was a lot of 1950s American Columbia pressings of Toscanini conducting the NBC Symphony Orchestra playing Brahms, Beethoven and Schubert. Each one that I pulled out seemed to be in near mint condition and I could feel temptation growing. I like Toscanini's work. I enjoy the

passion and intensity that he put into his conducting and have bought examples of his performances when I have come across decent copies.

However, I stood by my resolve, until I reached the back of the box and found two jazz LPs. One was entitled 'Humph At The Conway', being a 1957 recording of Humphrey Lyttleton and His Band live at the Conway Hall in London, the other being a compilation by Leonard Bernstein called 'What Is Jazz' which included music by Bessie Smith, Duke Ellington and Leadbelly.

On the day of the auction, I made my way there, not hurrying, taking the view that if I got there too late then fate had intervened and my resolution would be unbroken. Unfortunately I arrived in plenty of time before the lot was due.

When it came up the auctioneer tried starting the bidding at £10. There was no response. He tried again, this time at £8. Still no response. He gradually worked his way down to £1 opening bid, by this time staring at me, waiting for my reaction (he knows me pretty well). I gave him my most beaming smile and put my hand up. There were no other bidders so I won a box of 98 near mint condition records for £1 plus £1.20 commission and VAT.

Since then I have been playing through them, choosing which I shall keep, and trying to work out where they can be fitted into what was my nicely ordered record collection. My resolution is broken, my shelves are again in chaos, and today is the viewing day for the next auction where I see there are some interesting looking Ella Fitzgerald '50s original pressings. Who was it who said "I can resist everything except temptation"? ●

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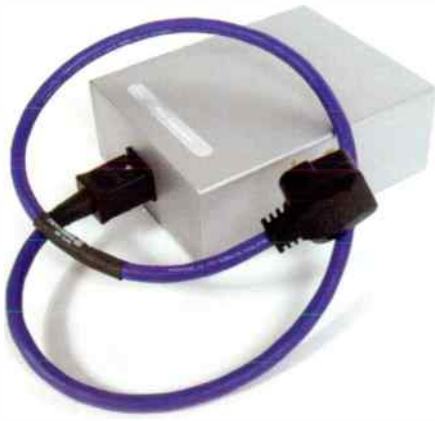


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### RUSS ANDREWS ABZORBER £528

Designed as a filter to reduce distortion and spike activity in and around your hi-fi system, the AbZorber takes a different tack to usual, looking to reduce the distortion within the normal mains voltage.

Plugging the AbZorber into a socket adjacent to that used by the hi-fi itself is an event lacking pizzazz. No lights turn on, nothing whirrs into life and no indication is available that it's actually doing anything. Nothing,

that is, until you listen to your favourite records which suddenly benefit from a lowering of the noise floor. Without the filter, and using a basic mains plug/socket, the twangy guitar on the Yo La Tengo's track 'Fog Over Frisco' was dominant in the mix, too dominant. With the filter added, the bass left was enhanced and was fully formed while the previously invasive twangy guitar was appreciably calmed, those upper mids organised themselves into an orderly procession which meant that I could hear the cymbals properly for the first time, while the backing vocals linked to the lead vocal effectively.

Turning to Frank Sinatra's live cut on vinyl 'The Lady Is A Tramp' from 'The Main Event', the audience cheers and applause no longer sounded like AM radio static while the soundstage was widened, giving Sinatra room and space, improving the emotion of his delivery.

The brass section of the backing orchestra added a detailed grip and

pace that moved the song on a pace while the strings had a stronger place within the song as a whole.

On the classical piece, Handel's 'Sinfonia' by the Dunedin Consort & Players, this music succeeds or fails on the supply of air and space within the master which moves in and around the individual players. Without it, the delivery is a sonic mess as each instrument falls over each other. The AbZorber prevented this by reducing distortion to allow the edges of detail to be present and correct, enabling the ear to hear the end of one instrument and the beginning of the next, adding precision and focus.

The Russ Andrews AbZorber is a seemingly simple piece of technology in appearance and to use (you plug it in and forget about it) but it works hard to remove deleterious noise, improving all aspects of the musical spectrum. **PR**

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# SOUNDBITES

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Switching from a basic mains distribution block to the Music Works was quite a shock: not literally, of course. The first impression related to the stereo image and how much more solid it now appeared. In fact, the entire soundstage had been rearranged with the lead vocal, which now offered greater emotional texture and structure, placed dead centre while the rhythm guitar was positioned just to his right and the backing vocals to the left.

The lead guitar, which was previously dominant in the mix, to the detriment of everything else, was still important but it now didn't bleed

over and into every other sonic element.

Upper mids offered a great clarity because distortion had been lowered by degrees. This also meant that treble was now appreciably more fragile and delicate. As a contrast, the bass line provided a clearer structure and a greater foundation to lower frequencies.

Spinning Frank Sinatra's live cut, 'The Lady Is A Tramp', on vinyl, from 'The Main Event', it was noticeable, when the audience cheering finally stopped, how much Sinatra's voice contrasted with the orchestra backing him. There was an obvious distance between the two and that gap had a noticeable amount of air within it.

Sinatra's voice also had an epic quality to it, projecting outwards. Percussion took a greater role within the overall presentation, treble benefitting from the frequency extension provided by the lowering of the noise floor. Strings were smoother while brass had a

structural edge.

Moving to Handel's 'Sinfonia' by the Dunedin Consort & Players, the reduction in distortion allowed the whole ensemble to breathe freely which relaxed the entire performance, adding a flow to the music. The lack of sonic bleeding meant that the music was far more consistent and, frankly, made more sense to my ear.

The MusicWorks Power Block provides an overall improvement in sound quality that will benefit all of the components within your hi-fi chain. **PR**

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World Radio History

Reviewed by Noel Keywood

# ACOUSTICS SOUND FIELDS AND TRANSDUCERS

Leo Beranek, Tim Mellow

This is a large 705 page reference book, majoring on mathematical descriptions of acoustical phenomena. Since much of the modelling uses electrical analogues it sort-of makes sense to an electrical engineer like me, who is basically a novice in (serious) acoustics. But this raised difficulties for me straight away.

Aware I need to better understand the parameters of 'sound power' in dealing with the contribution of ports to overall sound power from a loudspeaker, I turned to this definition on page 17. There's obviously a link between SPL and radiating area, but p17 did not make it clear to me as a 'student'. What is offered is an equation, from which I must deduce the parameters of sound power. Wikipedia manages better.

But all is not lost. The book is a massive tome that aims to cover absolutely all phenomena, models and situations. Thumbing through pages and pages of equations I reach a section on Acoustic Resistances (p125). Aha! This is a section that, alone, would make me buy the book if I was designing loudspeakers (again). I learn immediately about acoustic resistance elements (a mesh is new to me), behaviour of a port and the acoustic impedance of a narrow slit. You find these in loudspeakers, often used in an ad-hoc manner. Our measurements show it is ports that 'play bass', not bass cones (which in theory stand still) and port outputs are rarely measured or fully understood by designers, parameters being disguised by CAD packages.

By the time I'm reading about Cavity With Hole (p128) I'm getting excited and wanting to e-mail the info to another designer. Then an acoustic transformer pops up (horn), radiation from a pulsating sphere (acoustic point source) and from a plane surface (e.g. a wall). This book has loudspeakers as conceptual acoustic radiators very much in mind. It's just that you'll need to

understand the equations to work out what is going on, as there's little discussion.

'Sound in lossy tubes' (transmission lines) and the 'slip boundary condition' (p178) is starting to suggest why transmission line models were too simple and offers improved equations. The subject of a wave equation for an infinite lossy tube (Chapter 4, section 23) consumes pages of equations and will surely excite some loudspeaker design engineers; it needs and likely deserves intense study.

Chapter 5 is the first to cover devices, being devoted to the microphone. Then comes Chapter 6 on Electrodynamical Loudspeakers, and an analogous electrical circuit (p247) as well as my earlier interest on acoustical power output, but I struggle to find a definition of R<sub>mr</sub> in previous pages (Resistance, mechanical radiation?). Again, the approach is terse and what's being discussed not obvious, at least to an electrical engineer.

Port Dimensions are dealt with briefly on p339 then the book interestingly gets into Transmission Lines. They have not been properly modelled, nor made to work well as a result. I'm lost with Fig 39, a 'semi analytic model with transmission matrices' and do not know how all this fits in with other work (see [www.t-linespeakers.org](http://www.t-linespeakers.org), and others). The book moves well beyond student level and a chapter like this needs a book of its own.

Chapter 8 covers Cellphone Acoustics, meaning mobile device mics and loudspeakers, as well as measurements for type approval. It's a short but potentially valuable chapter.

There's a long chapter on horn loudspeakers and author Tim Mellow told me "the chapter on horns now provides formulas to describe parabolic, conical exponential and hyperbolic horns. Most importantly, I have built actual prototypes of the design examples and shown that the measurements correlate with the calculated responses".

There's a painfully short

chapter (11) on Room Design for Loudspeaker Listening'. If there is one book waiting to be written it is about loudspeaker-room interaction in its totality, including wave tracing for bass dipoles, interaction of ports with room modes and a myriad of other effects most loudspeaker designers know nothing about (and I struggle with), yet really are an intrinsic part of acoustic design if a usefully controlled end result is to be achieved (not happening at present).

The last chapters dive into heavy mathematical analyses of drivers on planes and this is for the mathematically literate and adept students of acoustics. It isn't for the faint hearted – I nearly fell off my seat.

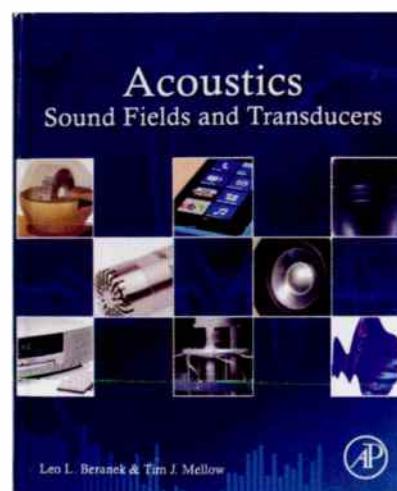
Acoustics Sound Fields and Transducers, is for advanced students and experts. It is both deeply theoretical, and very comprehensive. It also has broad scope and interestingly gets involved in the theoretical handling of practical issues, comparing predictions with real-life models. Here it shows it's written by authors who work in the field. A fantastic book then, a reference work that any practicing engineer, including me, must have, because it offers specialist theoretical models and mathematical analyses not available elsewhere.

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# vinyl section

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MARCH 2013

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Tony Bolton takes a trip to Ortofon in Denmark.

**CLEAR AUDIO DOUBLE MATRIX PROFESSIONAL RECORD CLEANING MACHINE 97**

A neat record cleaner from Germany, tried by Tony Bolton.

**RACMANINOFF FEATURE 101**

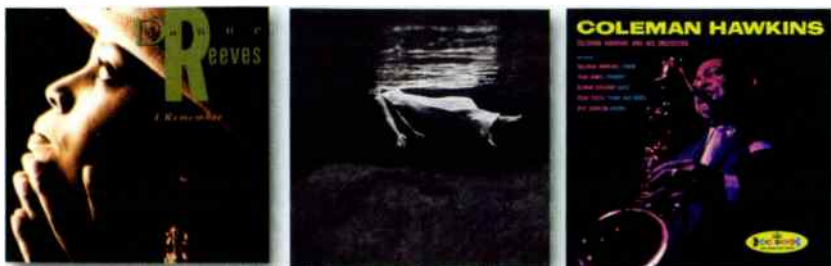
Rachmaninoff playing Piano Concerto No 2, by Tony Bolton.

# news

## CLASSIC QUARTET

UK-based, Pure Pleasure ([www.purepleasurerecords.com](http://www.purepleasurerecords.com)) has four classic new releases, this month. Talented (part time) jazz vocalist and noted scat singer, Dianne Reeves' 'I Remember' (1992) offers a brilliant array of jazz classics that shows what she can do when she decides to focus on the genre. Big Maybelle's 'The Okeh Sessions' sees the big woman with a big, soulful voice, spanning 1952-1955, over two discs and including a range of previously unreleased tracks.

Also look out for 'Coleman Hawkins And His Orchestra' (1960), not one of his best but full of enjoyable fare, nevertheless plus Bill Evans and Jim Hall's 'Undercurrent', the first of two collaborations, showed meditative and progressive hard bop structures.



**GET HEAVY WITH MOV**

Music On Vinyl has a wealth of rock on offer this month including two from the Swedish death metal outfit, Opeth. Both 'Deliverance' (2002) and 'Damnation' (2003) were solid albums, moving away from the wild mood swings and bringing in more evolutionary subtlety and dynamics while retaining the extended track explorations. Both are linked together as family members while the latter explores the band's non-metal song-writing desires. 'Damnation' (clear vinyl) and 'Deliverance' (red vinyl) are limited editions.

Here's an album that you don't see too often, The Stone Roses' 'Turns Into Stone' is a sort of best of B-sides LP featuring eleven cracking tracks of guitar-driven music with the inclusion of 'Fools Gold' as the stand-out.

Also look out for: Ministry's 'The Land Of Rape And Honey', the band's stylistic breakthrough, honing their blend of guitar and synth-based industrial dance music that had a form metal following; Living Colour's 'Vivid' – an all-black metal band, how many do you know? – debut from 1988 and featuring their big hit, 'Cult Of Personality' and Heart's new LP release, 'Fanatic', featuring an included MP3 download option of the full album. A bluesy memoir of an album that suffers from the odd sentimental shocker but mostly stands on well-constructed rockers.



## A PLETHORA...!

...of Mobile Fidelity ([www.mofi.com](http://www.mofi.com)) LPs has just arrived, oozing with superb mastering and solid packaging and featuring the likes of Tears For Fears brilliant 'Songs From The Big Chair' (1985), a mature synth-pop outing and 'The Seeds Of Love' (1989) a pop LP that was more a vehicle for Roland Orzabal.

Moving to the hook-laden guitar pop of Weezer, the label has reissued both 'Weezer' (The Blue Album) debut from 1994 exposed killer hooks and a nerdy band that rocked at high volume while 'The Lion And The Witch' (2002) will be greeted with raucous 'Hurrahs' by those who missed this six-track EP of live tracks that originally went on limited sale and is now very rare indeed.

It's always great to see a vintage title on the Mo-Fi label so we welcome Ricky Nelson's 'Ricky Sings Again' (1959). One of the fifties' biggest stars and wholly consistent. musically, this album might not be his best but it does show Nelson as a more confident artist with songs written especially for him.

Also look out for Bette Midler's 'The Rose' original soundtrack recording from 1978, the B-52's 'Cosmic Thing' (1989) a triumphant return to form that featured the hit single, 'Love Shack' and R.E.M.'s 'Document' (1987), offering a clean sound with enigmatic song choices that pushed the band towards the mainstream.



## SURF'S UP!

Sundazed ([www.sundazed.com](http://www.sundazed.com)) has released an essential double album, 'Lost Legends Of Surf Guitar' covering twenty-eight tracks of little known gems from The Essex, The Catalinas and The Ebb Tides. Arrives in a beautiful gatefold package complete with rare photos.

## VOCALION...ON VINYL?

That's right, this respected stalwart ([www.duttonvocalion.co.uk](http://www.duttonvocalion.co.uk)) whose history goes back into the dawn of music history has returned to vinyl after many years away from the format. Father's Children was Wayne Henderson's soul group. This self-titled LP from 1979 was cruelly ignored by the media at the time. Including soul, funk with jazz elements, it pushes creative boundaries. Also out on the label is Chain Reaction's 'Indebted To You' (1977), the soul harmony outfit's only album release, offering a selection of choice cuts including the incredible 'Hogtied'.

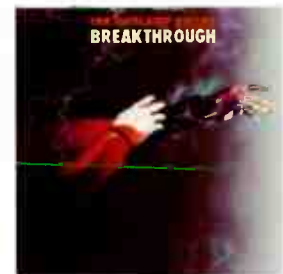


## ...AND FINALLY

Ex-Jam man, Bruce Foxton has a new album out, 'Back In The Room' (Basstone) which has a distinct Jam-like vibe and vocal attack which all Jam fans will love. Paul Weller appears on three tracks while Steve Cropper appears on another. Scott Walker also has a new release out on 4AD ([www.4ad.com](http://www.4ad.com)).

'Bish Bosch' is an avant-garde suite of vocal and sonic explorations that play with tone and mood but with Walker's unmistakable delivery. Changing style a touch is Poppydisc's Yma Sumac reissue of 'Mambo!'. Sumac was an incredible singer (she had a four octave range) and person (rumours say that she was related to Inca kings). This 1954 LP features Billy May's band.

Finally, The Gaslamp Killer's 'Breakthrough' sees this DJ move through leftfield beats with a slice of psychedelia for good measure. Lacking in form or vision, it can be a bit overwhelming but there's no denying the guy's energy.





# Ingenious!

**Avid has been determined to produce an entry-level turntable, Paul Rigby reviews their new disc-spinner, the Ingenium.**

**F**or some time, I've had customer requests for a less expensive turntable than the Diva, Avid boss, Conrad Mas, told me. "I've always, however, not wanted to make another turntable in that price range. I want to make the best turntable in that price range".

That was why the Ingenium was created. The model is actually a base for a range of turntables that

provide a wealth of choice.

The basic Ingenium costs £800, arriving with a standard spindle and

no clamp. You can add the signature Avid screw spindle and clamp for an extra £120 before delivery or for £240 if you upgrade later. "I think that most people will buy the turntable with the £120 upgrade but we can also supply the Pro-Ject Carbon 9CC arm which totals £1,260 or £1,380 with that upgraded spindle and clamp. Incidentally, the arms arrives with an arm cable. A lot of the time, this arm doesn't arrive with a cable at all. Incidentally, this is the same arm supplied to Linn for their LP12 Majik turntable (approx £2,500)".

Mas described the arm as, "functional...it does a service, has good bearings and is well made for the money. It's ideally suited to the Ingenium and is easy to use."

Of course, the Pro-Ject is not the only game in town. Users might wish to fit their own arm. As an alternative, Avid is prepared to fit

a 9in SME base that adds £25 to the basic price of the turntable, "We can also supply a M2-9 arm, if required but a 309 or 3009 would be equally viable. Because of the way we manufacture the turntable we can include features that are also found on the more expensive Diva Mk.1. That means that we can supply a fitting for a 12in SME arm (raising the base price of the deck to £930). The turntable configuration also means that we can extend the length of the chassis to include two arms with a variety of arm combinations (basic price of £1,200 with an extra £120 with a screw spindle and clamp).

As long as it fits, we can mount any other arm but we recommend that people ask us first." Custom order arm fittings demand a £300 charge. "That said, while fitting an SME arm that you already have is one thing, we wouldn't recommend







**An anti-skate weight hangs on a thread over a wire support.**

buying a costly, brand new SME M2-9 arm (£900) to fit to the Ingenium. If you wanted to do that, we'd recommend buying a better turntable, such as a Diva, to take such an arm".

So why produce the Ingenium in the first place? Because the original Diva occupied that same position when it was initially released but then was subject to technological improvements that transformed it into the Diva II which then succumbed to price increases in materials and manufacturing. Hence, the former 'entry level' turntable now fetches £1,600. "This means that the Diva is more of an entry level 'aspiration'. That is, it's a little bit beyond many people's budget. When you put an arm/cartridge on it you're looking at more like £2,500. What I wanted to do was produce something that provided an entry level product but not join the ranks of companies that produce an MDF or plastic slab with a moving bit in the middle that they call a turntable or buy an OEM turntable from Rega. I also didn't want to make something that's for every man and his dog. I wanted to keep to an audiophile product but not compromise on the previous turntables, so you can see a family tree. Hence, we have kept the design philosophy of the more expensive turntables within the Ingenium. For example, to feature a sapphire bearing in a turntable priced at under £1,000 is, as far as I'm aware, unique. We've managed to

keep the prices down because we have the engineering expertise in-house and we buy the raw material in at a good rate because of the volume of work that we are doing with other products".

In technical terms, the platter, drive hub and bearing are identical to the more expensive Diva turntable. The sub-chassis offers a substantial casting: a 2.5" thick, solid bar of aluminium which provides a substantial mass and rigidity that almost totals the same weight as the Diva. To provide additional stability Avid has added a rigidly bolted cross-bar from front to back from aluminium. The same Sorbothane compound used within the Diva has been used to make the isolation feet for the Ingenium and rather than use a separate power supply Avid has used a mains-powered motor but it's the same motor as used in the Diva. Instead of a low voltage, 24V version it's a mains voltage version.

You can fine-tune the speed by pulling and shifting the position of the motor – so it's a good idea to invest in a decent strobe for final checks. Putting tension on the drive belt either increases or decreases speed. This is a basic speed variable method that does the same job as the fancier system seen on the top-of-the-range Acutus but, on that model, you use a system of buttons.

"Because the motor tucks under the platter and is mains driven, the wire goes straight to the mains but you need some way of turning it on and off. I explored having a switch on the motor itself but you have an accessibility problem if it's on a shelf or tucked away: you can't get to the motor to access the switch. I didn't want to get into the realms of a separate power supply because that just adds to the cost. The obvious thing was to have a switch on the cable itself. It doesn't compromise sound at all. The whole switch is soldered in place to ensure a good

connection and the switch is flat on the sides to aid mounting to the surface of the side of a shelf".

Again, the essence of the in-line switch reflects the overall philosophy on prioritising sound quality and not aesthetics, "If you want a fancy box to turn the thing on and off, it's another product that you need to buy" said Mas. "Adding a power supply box might add £150 to the cost of the turntable".

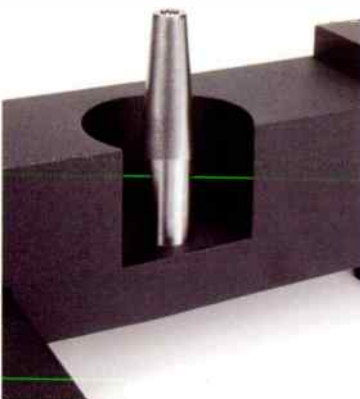
As Avid has it, the Ingenium is its budget turntable. The company makes great play upon the fact it's an 'entry level' deck, in fact. Hi-fi enthusiasts and the cognoscenti might agree. In the real world, however, it's nothing of the sort. No truly budget turntable costs £1,380 to get up and running



(unless you decide to split genre hairs by calling it 'upper budget level' or some such). If you are examining the true budget sector, then you are looking at something like a Rega RPI turntable for around £240, sporting an internal power supply, resin platter, RB101 arm and Moving Magnet cartridge.

Of course, Avid's Conrad Mas would exclaim that the RPI is aimed at exactly the audience which Avid has no wish to plunder. It's the audiophile market where Avid maintains its interest. I would disagree, to some extent. Audiophiles would, I believe, find the RPI a very pleasant listen indeed. It is a well-regarded budget deck, offering a clean midrange and a speedy attack. So, in sound terms, what does a budget Avid give you that a genuine budget deck, like the RPI, does not? Why would a first-time audiophile buyer bother to save all that extra cash to purchase an Ingenium when they could just as easily get a RPI and lots of vinyl? Relative to the money spent, is an Ingenium worth it?

**The free standing motor must be positioned manually for correct speed and least wow. Our measurements showed around 105mm between spindle centres was optimum.**



# RETRO

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## SOUND QUALITY

After setting up the Ingenuim, as suggested by our tests, I began with Neil Young's portentous and brooding 'Safeway Cart' which is bass heavy with a rolling percussion and a quiet delivery. This rock track displayed a focused bass, as predicted during testing with rim shots that were hit with real precision. There was also appreciable bass shimmer from the electric guitar which throbbed with potential power. It sat behind Young's voice, glowing with primeval authority like a thick-necked night-club doorman.

Upper mids displayed a decidedly rich tonality, occupying the wide soundstage. For example, Young's vocals were opened up to reveal a host of new detail. The subtlety and nuance in Young's quiet delivery was full of emotive layering that worked well in portraying his message. There was also space and air in between each instrument that enabled the track to relay detail in a considered and complimentary way.

On Anita O'Day's version of 'Sweet Georgia Brown' from Verve's 'the Jazz Stylings Of...', the turntable didn't provide the smoothest progression when moving through the upper mid registers up to the treble at high volumes. Sometimes, when pushed, the Ingenuim was a tad too lively as it bit and barked a little as control was lost but, as our tests confirm, this may have more to do with the arm than the inherent design of the turntable.

The Ingenuim did offer a free, shimmering treble via the delicate cymbal strikes, with instrumental separation allowing the creation of a melange of interesting detail as brass and double bass formed a solid foundation to the rhythm while the electric guitar played around the feet of the piano to give syncopation to the track. The Avid provided space

for all, allowing the ear to drink in a fully featured arrangement. Meanwhile, O'Day had a clear tone to her delivery that was expressive and animated.

Moving to classical and Sullivan & Mackerras' 'Pineapple Poll' a Gilbert & Sullivan-inspired comic ballet score. On the 'Opening Dance', the brass expulsion was a little strident at high volumes which, again, may connect to arm issues but there was also plenty to like on this track including a rich sweep of the strings over the entire soundstage which not only had breadth but a distinct 3D effect to its depth. The lower frequency areas of the strings were rich and confident too. Detail could be a delight. The delicate triangle interruptions were tantalising, gentle yet elusive while the wind instruments projected a distinct woody nature.

Sustained piano notes in Chopin's Nocturne, Opus 48 No 1, were 'swimmy' due to wow, not uncommon with budget belt drive turntables and a criticism of Regas too. Classical piano is not served well by these conditions.

## CONCLUSION

Should audiophiles save their pennies for an Ingenium rather than buy cheaper and invest in more vinyl? That depends on your needs and requirements. If you want a creditable playback system that supplies the essentials of each record in lively and concise terms, then a well-designed budget deck will serve you well.

If, on the other hand, you want to get to the bottom of your music, to peel back the layers and reveal the truth of what the music is trying to say and to key into the vocalist's emotive pathways then a true audiophile deck is what you need.

As such, the Ingenuim is a good entry point to such a world providing classical piano is not your interest. Otherwise, this is an affordable turntable that oozes quality in both construction and sound and offers an excellent entry point into serious music listening.

## MEASURED PERFORMANCE

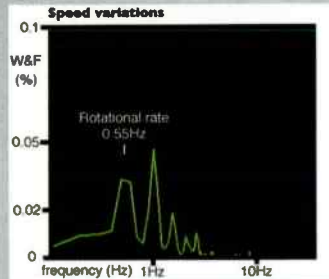
The motor is free standing, raising the issue of belt tension, as this affects speed stability. We received no figure for this but tests showed a distance of approx. 105mm between spindle centres was optimal. As this point the belt just

loses slackness, but is not stretched. There was some low rate speed drift that resulted in erratic wow, but for the most part speed variation (Wow & Flutter) was consistent at around 0.2% DIN weighted, a normal enough result for a budget belt drive turntable. This is good enough for most Rock but sustained piano notes may well waver a little. Our analysis shows equal amounts of wow at basic rotational rate of 0.55Hz (33rpm) and second harmonic of 1.1Hz, but flutter is low.

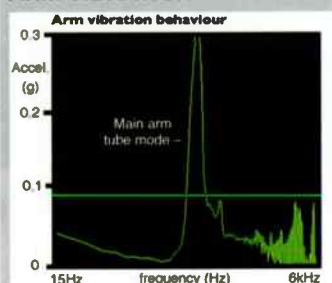
The Pro-Ject 9cc arm is very stiff, but undamped. It rings strongly, hitting 0.4g, but at a very high frequency of 600Hz our analysis shows; most arms ring around 200Hz. Bass should be well defined but the arm may well have a characteristic flavour to its sound and not be dead-pan neutral. It needs internal damping. The headshell is quite lively too. **NK**

Wow	0.4%
Flutter	0.4%
Total unwt'd	0.4%
Total DIN weighted	0.2%
Speed	+0.2%

### SPEED STABILITY



### ARM VIBRATION



## REFERENCE SYSTEM

Rega RP1 turntable/RB101 arm/Rega Carbon cartridge  
T+A G10 turntable/SME M2-9 arm/Benz Glider cartridge  
Trichord Dino phono amp  
Rega Brio-R amplifier  
Black Rhodium Twist interconnects  
Spendor S3/5R2 speakers  
Black Rhodium Twirl speaker cables  
Track Audio Precision 600 speaker stands

## AVID INGENIUM FROM £800



### VERDICT

A deck that offers quality in sound and design but also enough flexibility to provide users with everything they need.

### FOR

- bass response
- upper mid detail
- clarity

### AGAINST

- some wow

Avid Hi-Fi  
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# ORTOFON

**Tony Bolton visits Ortofon of Denmark to see just how they manufacture some of the best pickup cartridges in the world.**



**T**he Ortofon factory is based in Nakskov, in the south of Denmark. Granted trade privileges in 1266, the town developed first as a port, then as a centre of heavy industry, including ship building. In more recent years Nakskov has become a centre for technological and environmental industries, Ortofon being one of the first to set up.

Ortofon was founded in 1918, initially focussing on developing sound recording for films. This later diversified into developing, amongst other products, condenser microphones, dynamic compressors and optical instruments. Always at the forefront of technological development, in 1946 the company entered the gramophone industry with their first mono disc cutter-head. Two years later, the world's first moving coil cartridge was introduced and Ortofon have earned a reputation for building some of the world's finest pick-up cartridges ever since.



*The materials are mixed at 80 C, then tested for hardness and compliance. The raw material is then moulded into shape under pressure at 196 C. After this it is inspected under a microscope.*



*This machine winds the copper coils for moving magnet cartridges which can be seen in a row on the left hand side.*

*All of the materials for creating the rubber components inside a cartridge are mixed on the premises from these raw materials. A similar process produces the plastic components and bodywork elsewhere in the factory.*





The coils are inserted onto Mu Metal pins. These pins are solid in the OM and DJ series of cartridges, while hollow ones are fitted to the 2M series.



On the left are cantilevers; the 'dust' on the right is a large number of spherical styli.



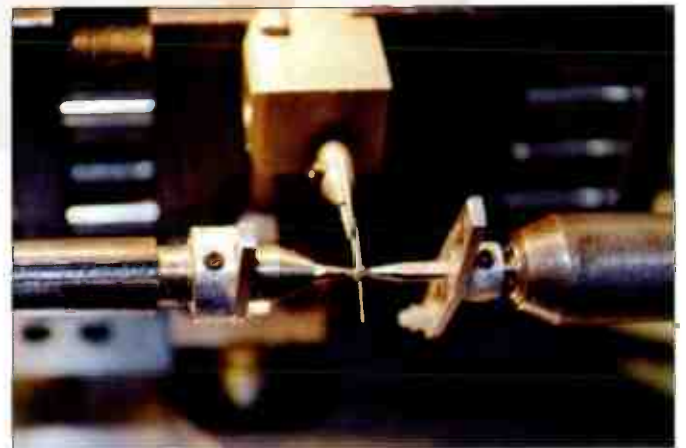
One of these styli has just been fitted to a cantilever. This was photographed through the microscope that is used for assembling them, at 20 times magnification.



Completed Concord DJ cartridge bodies, awaiting fitment of the stylus assemblies.



Here are titanium bodies for the Ortofon Anna cartridge. They are made by spraying 28 micron thick layers of powdered titanium, which is then melted by a laser to form the body.



Here is the cross-piece onto which the coils are wound.

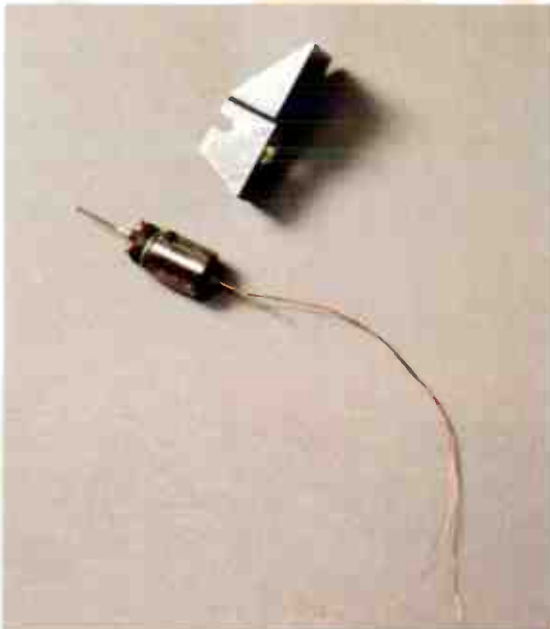




*The coils are wound by hand, as seen in the screen on the right.*



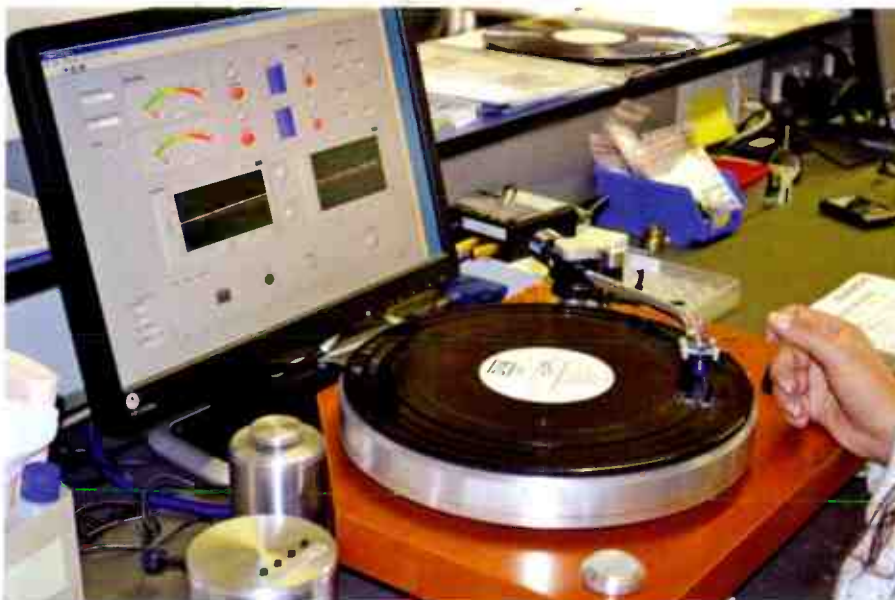
*The stylus being attached to the cantilever. Two screens are used to ensure that the stylus is correctly aligned on the cantilever.*



*The coil assembly and magnet awaiting installation in an A 90 cartridge.*



*The completed assembly being inserted into the body. The rubber suspension is just being attached.*



*A completed A 90 cartridge being tested before packing.*

My thanks to Christian Nielson, CEO, Leif Johannsen, Chief Designer, Lars Thejl, Export Manager and UK Distributor Henley Designs for their hospitality and arranging this fascinating visit.



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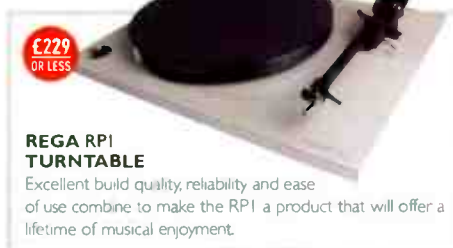
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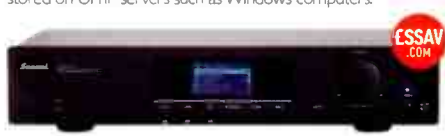
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# Twice As Clean

**Clearaudio Double Matrix Professional Record Cleaning Machine, reviewed by Tony Bolton.**

I have long been a firm believer in the benefits of using a record cleaning machine on all my discs. In fact I have a rule that nothing goes near my turntable unless it has been cleaned. I have found that most surface noise is not caused by wear and tear, but by dust and dirt, even on records that have been looked after.

This is particularly true of records that are supplied in unlined paper sleeves. Over the years the paper deteriorates and micro-

particles get lodged in the grooves. As the needle traverses the record, this fine dust is heard as a series of pops and crackles which do not accurately reflect the condition of the record surface. Also, some records that have been incorrectly stored can be covered in a fine coating of mildew, heard when playing the disc as a sort of swooshing noise.

Not only is all this unpleasant to listen to, it also increases needle and record wear since most dirt is, to some extent, abrasive. To remedy

this, I have, for some time been using the Clearaudio Smart Matrix record cleaning machine which does a very good job in removing these contaminants, often leaving the record sounding as good as the day it left the factory.

Clearaudio have now introduced the Double Matrix Professional Record Cleaning Machine, so named because it can clean both sides of a record at once. This model, priced at £2450, also boasts a certain degree of automation compared to the

# level 8



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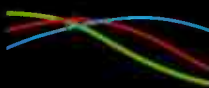
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AXPONA



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**The top cleaning arm swings back to allow a record to be clamped in place. The rubber tubes carry the fluid to the built in application brushes.**

Smart Matrix that I have been using.

It is very simple to set up and use. The supplied cleaning fluid is poured into the reservoir, located at the back left of the machine. The top cleaning arm is swung to the left, and a record placed on the label sized platter. The disc is secured with a clamp that has rubber edges, and covers the whole of the label. Once the cleaning arm is back in position it is held against the record by a pair of magnets.

The disc is rotated by pressing the power button, and the required amount of fluid is released by pressing the button marked Liquid. A little trial and error soon shows that only a small amount is required, the cleaning brushes doing a good job of spreading it evenly across the record surface. I found that reversing the rotation of the disc helped ensure even coverage.

After that the vacuum button is pressed and the fluid is sucked out of the grooves, leaving a dry and very clean looking record.

Afterwards I then swing the

**The antistatic brush is rotated to cover the record after cleaning has finished and must only be used on dry records. It can also be used independently of the cleaning process to remove static from discs.**



antistatic brushes, mounted at the back, over the record for one revolution.

The results looked and sounded impressive, with an almost complete absence of any background noise on a record that was quite crackly before cleaning.

To compare the Double Matrix with the Smart Matrix that I have been using, I chose a 1955 pair of records of 'Die Lustige Witwe' (The Merry Widow). This two LP set was pressed in autochange sequence, as was quite common in the '50s, and all sides looked to be in similar condition – dusty but relatively good. One disc was put through the Double Matrix while only one side of the other record was cleaned in the Smart Matrix machine. I then compared the four sides on the downstairs system.



**250ml of Clearaudio Pure Groove record cleaning fluid is supplied, along with a funnel to make filling the reservoir easier.**

The record treated on the Smart Matrix seemed quite clean. There was the odd pop, but it seemed to be restored to nearly new condition. The other record displayed the same general levels of cleanliness, but there were a few subtle differences. The surface was quieter and seemed rather darker in the silences between tracks.

The music seemed to stand out from the background in greater relief, to have greater



**The filler for the cleaning fluid reservoir is at the top left. The controls come easily to hand at the bottom right.**

dimensionality.

I appreciated the sheer ease, speed and convenience of this machine. I expect to average about 16 records an hour using the Smart Matrix. With the Double Matrix I was able to average about 30. I found the ability to alter the platter speed useful, which, combined with reversing the direction of rotation, allowed any stubborn bits of dirt to be gently worked until they came loose. I also appreciated the relative quietness of this unit which made cleaning records much less of a chore.

Overall, a very well thought out and designed product, which does an excellent job, with little effort on the part of the operator. It is quick, easy and fairly quiet, will clean all sizes of record without the need for adaptors or changing cleaning tubes, and does a thoroughly good job. £2450 does seem like a lot of money, but it is competitively priced compared to equally sophisticated machines from Keith Monks or Loricraft. If you have a large record collection, or an expensive stylus that you wish to preserve, then the Double Matrix is worth the money.

#### SYSTEM USED:

Clearaudio Master Solution/ 12 inch Universal/ Benz Micro Wood SL  
Leema Acoustics Agena phono-stage/ Tucana II amplifier.  
Chario ursa Major loudspeakers.

#### MUSIC USED:

Lehar. 'Die Lustige Witwe' Elisabeth Schwarzkopf, Erich Kunz, Philharmonia Orchestra and Chorus conducted by Otto Ackermann. Columbia Records. 33 CX 1051/2. 1955.

**CLEARAUDIO  
DOUBLE MATRIX  
PROFESSIONAL  
RECORD  
CLEANING  
MACHINE £2,450**



#### VERDICT

Well engineered, double sided record cleaning machine from German vinyl specialist.

#### FOR

- clean both sides at once
- reasonably quiet
- easy to use

#### AGAINST price

Audio Reference Ltd.  
+44 (0) 1252 702705  
www.audioreference.co.uk

# Master issue

**Rachmaninoff was recorded playing his famous Piano Concerto No.2 on two occasions. Tony Bolton listens to one of these recordings, on three different formats.**

**R**achmaninoff's Piano Concerto No.2 is probably one of the best known classical works. It is not only a superb example of the romantic piano concerto, but has appeared in film soundtracks in movies as diverse as David Lean's 'Brief Encounter' (1945), Billy Wilder's 'The Seven Year Itch' (1955), and Clint Eastwood's 'Hereafter' (2010). It has been recorded on numerous occasions, but we are lucky, in that this is one of the relatively few classical pieces where we have the composer's own performance recorded for posterity.

Rachmaninoff recorded Piano Concerto No. 2 on two occasions: acoustically in 1924 at the RCA studios in Camden New Jersey, and electrically on the 10th and 13th April 1929 at the Academy of Music in Philadelphia, home to the Philadelphia Orchestra and conductor Leopold Stokowski.

This recording was first released on 29th September 1929 and has never been out of the catalogues since (see box-out for more details).

*The Naxos CD reissue. Naxos Historical. 8.110601.*



"If you are used to more modern performances the pacing of his recording will come as a surprise"

With such a variety of versions to choose from I have tried comparing the 1929 78 rpm release with the 1950's UK LP Issue and the Naxos CD version.

All versions were listened to through a Leema Acoustics Tucana II amplifier and Chario Ursa Major loudspeakers. Sources were the Leema Antilla CD player and Clearaudio Master Solution turntable, using the Universal 12in arm equipped with either the Ortofon 2M 78 or 2M Mono cartridges (reviews of these coming soon) played through the Leema Agena phonostage.

Obviously, even after cleaning, the 78s play with a certain amount of surface noise, although the 2M 78 cartridge does an excellent job in minimising this, aided by the high frequency filter on the Agena.

Inter-war UK HMV pressings play



*UK vinyl reissue on HMV, circa 1959. ALP 1630*

with noticeably more surface noise than Columbia and Decca contemporaries, but the Indian pressings, made at the HMV plant in Dum Dum, Calcutta use a different shellac formulation to the UK ones and play far better. If you live in parts of the UK that played host to returning members of the Raj, then these records may appear in charity and junk shops and are worth searching out.

There is a certain vividness to the sound that is missing from the later LP and CD transfers that make it worth the effort of getting up to change the ten sides that this performance requires. The actual recording quality is not the best that the era could produce but is acceptable, and displays Rachmaninoff's keyboard virtuosity. If you are used to more modern performances the pacing of his recording will come as a surprise. He keeps the pace up, giving the music quite a compelling pulse, and emphasises certain notes and chords in a way that is not done today.

**Cover of the British HMV 78 RPM release. (Album No. 84)**



**Indian HMV pressing from the plant at Dum Dum, Calcutta. Single play sequence DB 1333 - 37.**



The first release was as Victor set M-58, containing records nos. 8148 - 52. The European release was on HMV as set No. 84 (see picture) containing discs DB 1333 - 37. An auto change sequenced set was also available under catalogue nos. DB 7427 - 31.

Following the introduction of microgroove records in the late '40s RCA Victor released it as a 45 rpm album; Victor WCT 18 and as a 33 1/3 rpm LP as LM- 6123. The UK release was on HMV ALP 1630 (see picture).

RCA again released it, this time re-engineered by Ward Marston, in 1973 as part of the fifteen record Rachmaninoff Centenary set, and later in CD form (ten discs).

Finally it has been restored by Mark Obert-Thorn for both Biddulph (Biddulph Piano Series No. 36) and the Naxos disc pictured. (8.110601)



**British HMV release. Autochange set DB 7427 - 31**

Stokowski's conducting flatters this and the string work is very expressive.

The HMV LP release suppresses most of the surface noise without interfering too much with the higher frequency detail. During the quiet parts it is possible to make out the differing surfaces of the source records, and the sound seems to have had little re-engineering.

The Naxos CD release has had some tonal correction carried out during the transfer process I suspect, giving it a fuller sound in the lower frequencies. The CEDAR-2 Declicking Module is effective in removing virtually all trace of the original surface noise, but leaves a constant low level hiss in its place, somewhat akin to tape hiss, that I actually find more intrusive than the random crackles of the original shellac. I also feel that the digital processing robs the music of a certain intimacy that can be found on the two analogue versions.

Of the three, I find the LP version the most acceptable. It has much of the presence of the 78s, without the

noise issues, and although the bass is a little thin compared to the CD remastering, it sounds a bit more lifelike, with a certain passionate intensity that is slightly masked in the digitalised version.

I regard this as the definitive version of this piece. However, a great many recordings have been made of it over the years, each offering a slightly different interpretation. I would suggest trying some of these:

For a slightly darker performance try Artur Schnabel with Reiner and the Chicago Symphony Orchestra. HMV ALP 1413. Or Svyatoslav Richter with Wislocki and the Warsaw Philharmonic on Deutsche Grammophon 138076. (CD: 4474202). One of my favourite versions is Van Cliburn with Reiner and the Chicago Symphony on RCA Victor SB-6502 (CD: Sony Originals. 88697806412). The second movement is particularly well handled.

Moura Lympny recorded a well regarded version with Malko and the Philharmonia Orchestra. HMV CLP 1007 (rereleased on MFP 2035). (CD: Magdalen METCD8016) and also on Classics For Pleasure CFP 167 with Sargent and the Royal Philharmonic Orchestra.

**Our spelling of Rachmaninoff is that used by the composer.**



# Cables section

**Y**ou love 'em or hate 'em. Cables raise some people's hackles, but Hi-Fi World readers tell us repeatedly cables improve their sound and are a great upgrade. So here we are with a more organised approach to the subject. Loudspeaker cables, interconnects and mains cables, as well as accessories such as connecting blocks will appear in this section in future. If you hate 'em - don't look. But if you love 'em you now know where the goodies are.

Initially at least, we will look at affordable products across a single manufacturer's range. This month Mains Cables R Us, next month The Chord Company, etc.

**This month Paul Rigby takes a look at Mains Cables R Us**

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# INTERCONNECTS

## MAINS CABLES R US ULTIMATE STEREO INTERCONNECTS/NO.12 DIGITAL COAXIAL CABLE



the music. These were cables that offered a sum that was greater than any part.

The Ultimates are not cables that you can use as a spotlight and say, 'listen to the delicate treble on that cymbal' or 'check out the reverb at the end of that line'. The Ultimates are, instead, entirely musical in nature. They perform well when the overall performance is the prime consideration.

Switching to classical and Schumann's 'Traumerei', this solo piano piece threatened to swamp the soundstage with midrange bloom. The Ultimates successfully prevented this and, instead, provided a dreamy haze to the play that gave the track a romance that relaxed the mids and enticed the senses. Again, the Ultimate cables provided a musical experience that seduced the ear.

Turning to the Avid Ingenium turntable with a Pro-Ject 9cc arm and Benz Silver cartridge and spinning Neil Young's grunge-like 'Change Your Mind', the Ultimates enjoyed the rock experience. The conglomeration of rocking, bass-rich frequencies, clashing and soaring, distorting and blaring allowed the Ultimates to frame them in its musical glow, providing an idealistic presentation to Young's solo electric guitar while the Young, double-tracked, lead vocal offered a warmth that lured me into an almost spaced-out vibe that, as Young's solo entered an almost jam-like phase, proved almost hypnotic.

Turning to the No.12 digital coaxial electrical cable, I used an XTZ 100 as a transport and the MCRU No.12 as a connector to access the DAC of my Icon CD-X1 valve-

based CD player with an Epiphany cable as reference.

Spinning Crosby & Nash again, the No.12 provided an instantly appealing playback of this lively and thoughtful performance, offering a balanced array of frequencies that were notably neutral in their overall presentation. The soundstage was open with dynamic mids providing interest to the ear at all times.

Conspicuously, the No.12 fully explored the bass region of the Martin guitars, giving the instrument a new found power and drive while low distortion helped to give the track a clean sound that highlighted those extra ambient noises that you tend to get from close-miked live performances: foot tapping, squeaking chairs and the like. The No.12 provided precision and focus for the price.

### CONCLUSION

The MRCU Ultimates coat the music with a musical warmth that doesn't overly colour the presentation but does challenge the listener to stop nit-picking on the finer detail, sit back and enjoy the overall music.

Despite the lower price, the No.12 digital cable was quite remarkable in its playback capabilities, managing to strip away colouration, removing any element of personality and allowing the music itself to do the talking.



**T**he Ultimate analogue interconnects are silver-based with Eichmann Pure Silver Bullet plugs and Deep Cryo treated.

The No.12 is a digital electrical S/PDIF cable covered in carbon-infused layering to block RFI. The No.12 uses Supra Trico 75 Ohm cable with Rhodium plated RCA connectors.

Sound tests began with the Ultimates, a XTZ CD100 CD player, Rega Brio-R amp and Spendor S3/SR2 bookshelf speakers with Black Rhodium's Tempo interconnect cables as reference, playing 'Déjà Vu' from David Crosby & Graham Nash's 'Another Stoney Evening'.

### SOUND QUALITY

This live CD performance is noted for its clarity, the vocal energy and the tonal accuracy of the pair's Martin acoustic guitars. I noticed that the Ultimates pushed the vocal pair back into the soundstage, giving an 'us and them' stage/audience feel to the presentation that also added a certain warmth to the performance. The upper mids were not as prominent in the mix as the reference Tempos but they still provided a wealth of detail.

Although insight within the upper mid and the treble areas could have been better and the guitars might not have had quite the same dynamic punch attributed to the Tempos, the Ultimates did add a golden aura over

**MAINS CABLES R US ULTIMATE STEREO INTERCONNECTS**  
£395 PER METRE  
[£90 PER EXTRA HALF METRE]



#### VERDICT

A wholly involving cable that steers you away from the analytical and plunges you into the centre of the performance.

#### FOR

- musicality
- warmth
- rock-centric

#### AGAINST

- slight veiling
- some colour

**MAINS CABLES R US NO.12 COAXIAL CABLE**  
£65 PER METRE



#### VERDICT

A cable that tries and succeeds in making itself invisible, the No.12 talks music like no other digital cable at the price.

#### FOR

- clarity
- detail
- low distortion

#### AGAINST

- nothing at the price

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# LOUDSPEAKER CABLES

## MAINS CABLES R US VERMOUTH AUDIO MINI BLACK CURSE/ULTIMATE SPEAKER CABLES



**H**ot of the cable press, Mains Cables R US has two new speaker cables for your delectation. The low cost and vaguely Pirates Of The Caribbean-like Vermouth Audio Mini Black Curse features Ultra-Pure Oxygen Free Copper along with Teflon insulation while the – by contrast – simple and to the point Ultimate Speaker Cables feature 4mm thick copper in a twisted configuration blending OFC and tinned copper.

For sound tests, I hooked up an Avid Ingenium turntable with a Pro-Ject 9cc arm and Benz Silver cartridge, Rega Brio-R amp and Spondor S3/5R2 bookshelf speakers with Black Rhodium's Twirl speaker cables as reference and played Neil Young's grunge-like 'Change Your Mind'.

### SOUND QUALITY

If I was to reduce the Vermouth cables down to a single word it would be: more. Playing this rock track, the bass frequencies had been upped a couple of notches: bass guitar took a prominent position, providing a foundation along with the dominating percussion that added a high degree of weight and mass to the bulk of the track. Young's vocals fronted a backing band offering threat, as well as rhythm. An infusion of bass into this area also added smoothness but it was allied to a

degree of midrange veiling which, on this rock track, was never a big problem. In fact, within this genre of music, it only added to the passion of Young's delivery.

Changing the LP for the jazz-infused track, Anita O'Day's 'Stompin' At The Savoy', which has a lifting midrange that adds unsettling peaks to the vocals and brass crescendos, the Vermouth cables added its bass infusion along with a touch of midrange veiling. In terms of truth and transparency, the cables seemed a tad coloured, giving a heft to the lower registers that bled into the mids and treble but, in this case, that's exactly what the doctor ordered. The brass blaring was toned down a touch while the warming glow of the cable added balance to the sound stage.

Moving to my XTZ CD100 CD player and Elgar's 'Cello Concerto – Adagio', the Vermouth added a warming wooden timbre to the cello that produced an emotive resonance, enabling the soloist to talk directly to the listener. The violins that swayed behind added pathos and a bleak, bereft quality which the Vermouth's 'colour' was in sympathy with.

Moving to the Ultimate speaker cables and using the Black Rhodium Sambas as a reference, I listened to David Crosby & Graham Nash's 'Another Stoney Evening' CD. Spinning the classic 'Déjà Vu', the Ultimates offered quite a forward delivery. Mids were pushed with the assistance of a slight lift that enhanced the attendant detail within the upper mid arena.

On the edge of the soundstage, the two Martin guitars dominated, producing a mass of detail with added emphasis. Those that prefer a

more balanced, neutral delivery might balk at enhancement but those that love a slight edge to their upper mids and detail emphasis will wallow in the arrangement. Similarly, the Martin guitars' own bass tones were emphasised, added heft and weight to the lower frequencies.

On Anita O'Day's energetic and lively jazz rendition, the upper mid lift was not so welcome, as the pressing incorporated its own bright edge. That said, the cable seemed to enjoy the vigour of the performance. The piano presented an enhanced emotive delivery, percussion proved to be a passionate accompaniment and O'Day's own performance was full of energy and verve.

### CONCLUSION

The Vermouth revealed that it is a 'horses for courses' cable, being ideal for classical music with a richer, string laden content, Rock with a smorgasbord of frequencies or, indeed, to rebalance a mid-lifting hi-fi chain. As such, it requires careful demonstration.

The Ultimate cables have been designed as if with built-in tone controls which have all been tweaked upwards to provide a louder, harder presentation evoking dynamism and guts.



### VERMOUTH AUDIO MINI BLACK CURSE SPEAKER CABLES

£85

PER 3 METRE PAIR



#### VERDICT

An admirable cable that can correct hi-fi chain imbalances to enhance your musical experience.

#### FOR

- warm delivery
- rich upper mids
- bass heft

#### AGAINST

- a tad coloured
- veiled mids

### ULTIMATE SPEAKER CABLES

£395

PER 3 METRE PAIR



#### VERDICT

Providing oodles of oomph, vigour and drive with a enhanced detail edge, these cables are suited to high energy recordings.

#### FOR

- detail emphasis
- enhanced bass
- deep soundstage

#### AGAINST

- slight stridency

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# POWER CABLES

## MAINS CABLES R US NO.27 & NO.92 POWER CABLES



**T**wo new power leads from Mains Cables R Us include the No.27 which features Oxygen-Free Copper (OFC) and an active earth shielding system and is terminated with a gold-plated IEC on one end with a gold-plated MK plug plus a gold-plated fuse on the other.

The No.92 cable uses silver plated OFC cabling with silicon insulation plus an IeGO silver-plated IEC connector on one end and a Furutech Rhodium-plated plug with a Rhodium-plated fuse on the other.

Sound tests began with the No.27 cable, a XTZ CD 100 CD player, Rega Brio-R amp and Spondor S3/5R2 bookshelf speakers with Black Rhodium's Libra interconnect cable as reference, playing 'Déjà Vu' from David Crosby & Graham Nash's 'Another Stoney Evening'.

### SOUND QUALITY

Sound tests produced a real 'up and at 'em' first impression from the No.27 power cable. All frequencies were enhanced: louder and emphasised. That is to say that all were finely etched and bolder in their presentation. This meant that more light was shone upon the mix as a whole. While this effect reduced subtlety and tipped the soundstage balance, it proved ideal for those looking to explore the whole of a typical master.

Another side effect was that, on occasion that extra light

resulted in a lifting of the upper mids which, admittedly on rare occasions, did encourage the odd squawk on crescendos. There was plenty to life from this cable, however, guitar strings had a cutting edge during strumming, while finger picking was honed and precise.

Plugging the No.27 cable into the Rega Brio-R amp and playing Anita O'Day's 'Stompin At The Savoy' via the Avid Ingenium turntable confirmed the frequency enhancements with brass and vocals being spotlighted, sometimes to the extreme, during crescendos. Other areas of the mix, which is a mite bright at the best of times, were picked out for special attention. For example, the percussion showed a wealth of detail, from the delicate cymbal work that showed how light and flighty the treble can be to the larger drum types that offered speed, power and force. The complicated amalgam, that is a typical jazz orchestra, never foundered or bled into each other. Frequencies knew their place with this cable.

Playing the No.92 cable, with the Black Rhodium Cratos as a reference, via the same O'Day track provided far more frequency space for the music. The greater space meant that there was much more elbow room for vocals and instruments. Previously irritating frequencies, such as the lifting upper mids on both vocal and brass crescendos, were now largely suppressed. Brass offered a complex presentation. Instead of the blaring effect that combined all of the brass into a single, rather harsh, component the brass now separated into a harmony of interlinking

instruments.

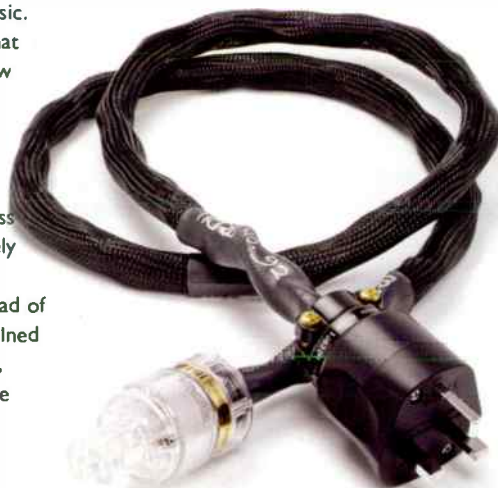
Similarly, instead of the ear almost bracing itself in anticipation of O'Day's lifting mids during crescendos, the richer, more mature flow, encouraged via the No.92 cable, meant that the vocal was now broad, textured and full of new information.

Changing the cable to power the XTZ 100 CD player and spinning Elgar's 'Cello Concerto – Adagio', the opening up of the detail from the cello solo created a palpable addition to the zones of detail that were exposed for examination. The extra tonal information was but one level of information that the No.92 presented to the ear. Others included a sense of air and space to allow the backing orchestra to play with silence and complex instrumental cameos.

### CONCLUSION

First up, the lower cost No.27 power cable offers great value for money. OK, it might not provide a broad balance of tone or the light and shade of complex presentation but, with this cable, every aspect of the master is clarified which means that detail fans will love it.

Offering a wholly mature and rich output, the soundstage from the No.92 cable widened and was filled with complimentary frequencies that added an immense array of new detail.



### MAINS CABLES R US NO.27 POWER CABLE £95 PER METRE [£10 PER METRE THEREAFTER]



#### VERDICT

Offering a sprightly pace along with a precise nature, the No.27 cable provides a broad illumination on a typical master.

#### FOR

- fast performance
- enhanced frequencies
- etched detail

#### AGAINST

- lifting mids
- unbalanced soundstage

### MAINS CABLES R US NO.92 POWER CABLE £385 PER METRE [£70 PER METRE THEREAFTER]



#### VERDICT

A cable that combines audiophile-friendly, sonic complexity with basic, out-right entertainment.

#### FOR

- midrange complexity
- broad soundstage
- mature presentation

#### AGAINST

- nothing at the price

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CELESTION DITTON 15, £20 pair. Wanted: remote for Marantz CD52. Tel: 01494 451 089 (High Wycombe)

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LINN LP12 Valhalla power supply, no switch. Offers please. Dynavector 20XL cartridge, fair condition, £50 ono. Tel: 07515 128 910

PAIR MELODY top quality 90 watt valve monoblocks, rich spacious sound, bass aplenty, suit insensitive panel speakers, superb combination. P.I.O. caps, 1% resistors (metal film) throughout. Were £8200 new, pristine condition, triple boxed. Asking £1900 or any reasonable cash offer. Tel: Solly 020 8451 0353 (London NW6)

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# NEXT MONTH APRIL 2013 ISSUE



Canor make wonderful valve amplifiers and here's their latest, the TP134 PRECISION TUBE amplifier. Read about it in our next issue.

## MARTIN LOGAN ELECTROMOTION

Next month we will be listening to the old and the new, all at once! Yes, the Spendor SP100R2 is a recent update of a loudspeaker whose lineage stretches back to the famous BC3 studio monitor. That means it has a massive 12in bass unit, a polymer cone midrange and dome tweeter. This speaker is for those who want a traditional sound brought up to date – and who better to do it than Spendor?.

Martin Logan's Electromotion electrostatic loudspeaker has been attracting interest from around the world on our website. We're taking another look at this amazing yet affordable high end loudspeaker. Perhaps this is the one you should get? Find out. We are the electrostatic kings.

In the tablet wars Sony recently launched their new Xperia S. Does Sony's mighty reputation in music make a difference to how well it handles music? Can Sony shade Apple, Samsung and Motorola? We take a close look – only our advanced measurements can tell.

Here are some of the products we hope to bring you in the fab April 2013 issue –

### LOUDSPEAKERS

SPENDOR SP100 R2

### VINYL

ORTOFON MONO 78 CARTRIDGE

FUNK FIRM TURNTABLE

### DIGITAL

SONY XPERIA S TABLET

PIONEER SC-2022 AV RECEIVER

### AMPLIFICATION

ARCAM FMJ A19 AMPLIFIER

MUSIC FIRST POST BOX

CANOR TP134.

### FEATURES

MARTIN LOGAN ELECTROMOTION



We either have, or are about to receive these products, but can't guarantee they will appear, most commonly due to failure under test.

**PICK UP THE APRIL 2013 ISSUE OF HI-FI WORLD ON SALE 28TH FEBRUARY 2013, OR SUBSCRIBE AND GET IT DELIVERED TO YOUR DOOR: p66**

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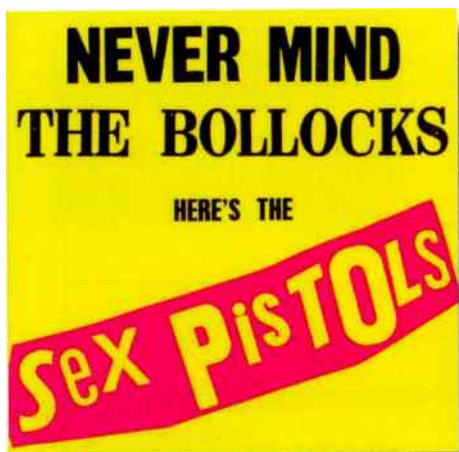
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# SEX PISTOLS

## NEVER MIND THE BOLLOCKS

### UNIVERSAL



"the reason that the album is so good is because it required very little thought."

**T**hey were together for just two years but they changed the face of music as we know it today. They were The Beatles of the post-hippy generation, although they would hate me for saying that, I'm sure. They appeared to threaten the very essence of society but they changed rock and how we perceive rock. They also opened the door to a massive underground movement which spawned many well-known bands and spin-off movements. They offered anarchy and buckets of cynicism and revolutionary ideas coupled with a magnetic attraction for violence – often from their fans.

As lead vocalist, Johnny Rotten, said in 1977, "When they push you into a corner like that, what are you gonna do? You either kill them or give up, which is very sad, because we're fighting people who ought to be on our side...or are on our side, but don't know it. They say we're using them, but the real people who are using them they don't even know about."

They were also a centre of sensationalist publicity. The UK press loved them, especially the tabloids. They were hate figures sent from heaven that allowed a Conservative press to use the band as a stick to hit an entire class with, "You see?", said the Daily Mail to the fidgeting, nervous Middle England, "This is what the working class get up to if we give them freedom to do so".

They were also seen as a novelty, a toy, a new fad, something to prod like zoo animals. TV presenter, Bill Grundy, thought so. In fact, he launched the band to a new level of public awareness when he encouraged the Pistols to swear on prime time TV, catapulting the band to superstardom status and ruining his own career in the process. "Before that, we were building momentum in the music world," said Pistols' bassist, Steve Jones, "but as soon as we did the Grundy show, it wasn't about music – it became who's going to swear here, who's going to throw up now. It became a bit of a joke, but you couldn't buy that publicity".

The accompanying album, 'Never Mind The Bollocks Here's the Sex Pistols', re-wrote the rock template. Featuring seminal songs like 'God Save The Queen', 'Anarchy In the U.K.' and

'Pretty Vacant', the album stands as one of the greatest rock albums of all time.

To celebrate the release of the album in 1977 – where has the time gone, eh? – Universal has released a luxurious box set containing untold goodies but, more importantly, as Jones says, "I think it's a lot better. Whenever we've remastered in the past, it's always been off a CD, as we lost the original master tapes. Miraculously, they were found in a studio vault we didn't know existed. Things are a bit brighter this time and you hear the other bits and bobs you don't usually hear on the record. I'm well happy with it".

That's right, the masters have now been found and the sound has improved immeasurably. The tapes have been remastered, for the very first time, by Tim Young under direction from original producer Chris Thomas. Along the way, a lost 1977 demo studio recording of 'Belsen Was A Gas', the only original Sex Pistols composition of the era thought not to be recorded, has been found. In the box, there's also the infamous 'Spunk' bootleg album, released for the very first time in its original, untouched form, combined with a selection of unreleased Chris Thomas demos and outtakes from the recording of the album – including tracks with Sid Vicious on bass – plus all the original B-sides, live audio and a live 1977 DVD produced by Julien Temple and featuring many previously unseen performances plus DVD extras of promo videos and radio interviews.

Then there's the hardback, 100-page 12in by 12in diary with quotes, rare and previously unseen photos, memorabilia and exclusive images. You also get a reproduction of the withdrawn God Save The Queen, 7in A&M single plus a poster, stickers and lyrics.

A magnificent box set for a magnificent album. As Johnny Rotten said in a 1977 interview, the reason that the album is so good is because it required very little thought. "We just do it, which is more to the point. Do it and when you can't do it no more, then don't do it at all. If you have to sit down in your room and go 'I've got to write a song, but what about?' ... that's rubbish. It just comes. It's there". **PR**

# USHER

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## Behind the Scene

A world renowned authority in audio and acoustics, Dr. Joseph D'Appolito designs crossovers and does the final tuning for Usher's speaker systems. Consulting to a couple of famous audio companies, Dr. D'Appolito finds the tremendous value of Usher's products a pleasant surprise in today's high end audio world.



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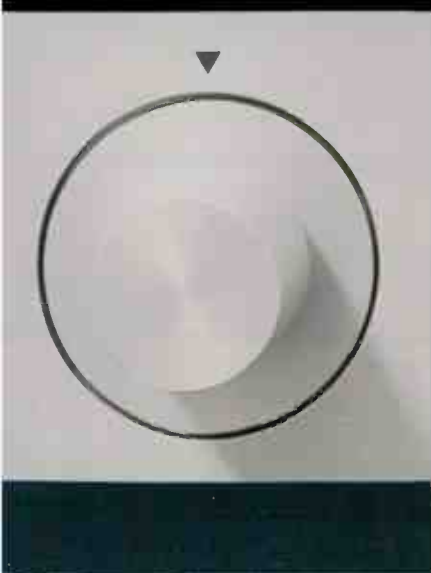
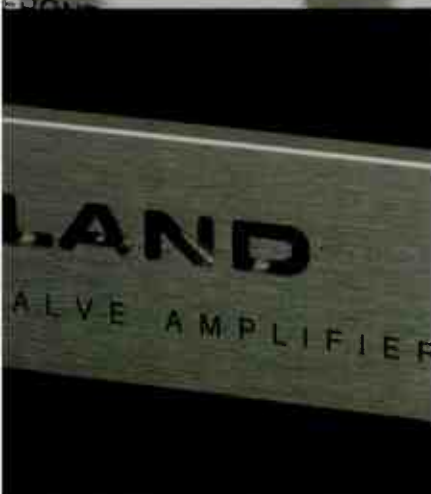
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# COPLAND

Copland Audio Products:

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CDA823 - High resolution CD player



CTA305 - High Performance valve preamplifier



CTA520 - Power amplifier (stereo or mono)



CVA306 - Multi Channel Valve preamplifier



CVA535 - 5 channel Audio Video amplifier

Copland's design team believes that its greatest challenge is to use a scientific approach to create a product which conveys art. Although music has its basis in mathematics, its raison d'etre is to communicate emotion.. Soul. Spirit.

To achieve this end, Copland has chosen to blend the best of proven technologies - the valve - with the most sophisticated of modern methodologies. Because of this, you will find a compact disc player in a range which also reverses the vinyl LP. You will find stereo playback, which has served pure music for a half-century, alongside multi-channel amplification, designed to recreate the cinematic event in the home.

All of this reaches you, the music lover and cineaste, through components which reflect the most striking of Scandinavian virtues: minimalism, simplicity, clarity.



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