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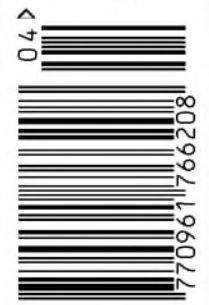
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- REGA ANIA PRO CARTRIDGE **EXCLUSIVE!**
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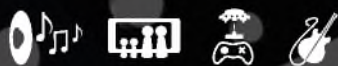
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David Tutt



I guess a lot of people fancy the thought of being blown across the room by a studio monitor. You know – by a loudspeaker with real bass power, something that has a donkey's kick to it. Wharfedale's new Evo 4.2 isn't quite that but it carries the essence – in a small cabinet. Bass unit and midrange dome are tailored to give a fast sound in everyday living rooms, much as this arrangement does in recording studios. But then Wharfedale go and use an Air Motion Transformer tweeter – unknown in studio monitors. Why? This is a fascinating loudspeaker – reviewed on p11 of this issue.

Streamers that play music from internet streaming services – Tidal, Spotify, Amazon Music and so many others – get ever more complex as manufacturers try to add value over those of rivals: the one that ticks most boxes looks best. Japanese manufacturers have played this game for decades. NAD have moved this approach into new territory with their C 658 streamer reviewed in p38. It offers a stunning array of ability – beyond all else. You even get loudspeaker tuning.

But the market for portable audio is far bigger than rooted domestic high fidelity. Headphones walk one major path – think Beats – and in-ears another. It could well be that in-ears will get a larger grip on the market as they tech-up to send sound straight into your ear without hindrance. FiiO think so, delivering the FH7 box set that you'll find on p14.

NAD deliver it all in their C 658 Streaming DAC it would seem, until you look at what Klipsch have to offer in their Reference R-51PM loudspeaker that offers an alternative view. A broad swathe of ability in a modest package, this little loudspeaker is worth knowing about. Go to p53 to find out more on what a small active loudspeaker offers today. Why is it like the NAD? Well, you can play LP through it!

Today's audio products get ever more complicated but we cover them in fine detail. I hope you enjoy reading about hi-fi today in Hi-Fi World.

**Noel Keywood**  
*Editor*



## hi-fi world

Audio Web Publishing  
Studio 204,  
Buspace Studio,  
Conlan Street,  
London W10 5AP  
[www.hi-fiworld.co.uk](http://www.hi-fiworld.co.uk)

## 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.

## verdicts

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●●● GOOD  
●● MIEDIOCRE  
● POOR  
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extremely capable  
worth auditioning  
unremarkable  
flawed  
keenly priced



## ELECTRONIC MAGAZINE

Go to our website [www.hi-fiworld.co.uk](http://www.hi-fiworld.co.uk) to buy an electronic version of this magazine, individual issues, back issues or a subscription.

Distributed by Select Publisher Services Ltd. P.O. Box 6337, Bournemouth, BH1 9EH UK Tel +44 (0) 1202 586848

Printed by Precision Colour Printing Halesfield 1, Stirchley, Telford TF7 4QQ, United Kingdom Tel: +44 (0) 1952 585585

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# news

## And now...in stereo!

First came Chord Electronics flagship £30,000 'Ultima' monoblock amplifier. This imposing beast was based on the dual-feedforward error-correction ideas of Essex University emeritus professor Dr. Malcolm J Hawksford, as refined by Bell Labs' Bob Cordell and Chord Electronics' own John Franks - who described the Ultima as the Kent firm's "most accomplished amplifier yet".

Those who like the idea but want a lower price tag might be interested in the two new stereo versions that Chord Electronics have just announced - the Ultima 6 (180W per channel, £5,995) and its bigger brother the Ultima 5 (300W per channel, £9,250).

The advantages of Ultima "bring astonishing dynamics, timing accuracy and...unrivalled musicality" Chord Electronics claim. The precision CNC-machined aircraft-grade solid aluminium casework is fronted by a striking 28mm-thick fascia.

Both new models feature balanced and unbalanced inputs, high-quality loudspeaker terminals, 12V triggering and a C19 IEC mains inlet.

Contact: *Chord Electronics*, (01622) 721444. [www.chordelectronics.co.uk](http://www.chordelectronics.co.uk)



## CORNWALL HERETICS?

Distributor Henley Audio is now bringing Klipsch's latest 'Heritage Series' speakers, the Heresy IV and Cornwall IV Speakers, to the UK. The £3,500 Heresy IV is "entirely re-voiced and re-worked" although that iconic '50s styling remains. To a new crossover network are connected a 25mm K-107-TI titanium-diaphragm tweeter with wide-dispersion phase-plug, a 45mm polyamide-diaphragm'd K-702 midrange compression-driver feeding a Tractrix horn and a K-28-E 305mm woofer working with a rear port to extend the low-frequency response.

The Heresy IV delivers "even high-frequency dispersion and astonishing detail and dynamics in the midrange, across a wide listening area for easy speaker placement".



But what about the £6,500 Cornwall IV - all 33.1kg of it? It can be positioned in either a CORner or against a WALL - hence the name. The Cornwall is a three-way design with horn-loaded compression drivers for the midrange and treble, but in this case a direct-radiating K-33-E 381mm fibre-composite coned woofer serves the low frequencies.

Both new models are available in American walnut, natural cherry and satin black ash finishes, the Heresy IV benefitting from an additional distressed-oak option.

Contact: *Henley Audio (UK distributor)*, (01235) 511166. [www.henleyaudio.co.uk](http://www.henleyaudio.co.uk)



## MAKING A DIN

DIN connectors are not the best when it comes to audio. They thrived in the 1960s and 1970s, notably with equipment imported from Europe, but were a cheap connector and eventually disappeared. However some manufacturers - notably DNМ, B&O and Naim - persisted with improved DIN connectors.

Now Chord Company has announced its "first-ever Epic-range DIN cable". Epic DIN, we are told, benefits from "wide-bandwidth silver-plated oxygen-free copper conductors, as found in the company's higher-end cable ranges", and comprehensive "multi-tiered foil shielding systems for all conductor pairs". This technique "reduces interaction between all the different signals that DIN cables need to carry".

DIN-to-DIN, DIN-to-RCA and DIN-to-XLR versions are available, prices starting at £500 for a 1-metre length.

Contact: *Chord Company, (01980) 625700. [www.chord.co.uk](http://www.chord.co.uk)*



## DRUNK ON MUSIC

Master of miniature music monitoring iFi has added yet another mini marvel to its melodic menagerie. The hip-dac is a portable USB DAC/headphone amp with support for hi-res (PCM up to 32-bit/384kHz and DSD64/128/256). Designed to "slip discretely into a pocket", the hip-dac plugs into the USB port of a compatible smartphone, tablet, PC or Mac.

The result, reckons iFi, is "vastly-improved headphone sound". Core to the hip-dac is a Burr-Brown converter chip. Other features include a rotary analogue volume control, in-house programmed XMOS USB 3.0 interface, up to 700mW per channel of headphone amplification, format/sampling-rate confirming LEDs, bass-boost, switchable 'PowerMatch' gain to accommodate different headphone sensitivities and - to keep jitter at bay - iFi's GMT "femto-precision clock-locking" technology.

Interestingly, users can download and install different firmwares. As well as keeping the hip-dac up-to-date this encourages experimentation with, for example, the subtle changes in presentation wrought by different digital filters. The hip-dac can drive balanced (4.4mm socket) and standard (3.5mm socket) headphones. Seems like excellent value for £149.

Contact: *iFi, (01704) 227204. [www.ifi-audio.com](http://www.ifi-audio.com)*

## ACTION REGA REPLAY

Filmmaker Steve Clarke spent "two long days" observing Rega's employees at the "incredible facility". What he captured has been edited into a beautiful little movie that you can see for yourself at <https://youtu.be/3hgwnB09dyk>. Witness turntables, cartridges, amplifiers and speakers being painstakingly developed, built and tested there.

More details: *Rega Research <http://www.rega.co.uk/>*



## IN FINE VOICE?

Black Rhodium's Operetta interconnect now has a variant of "much higher performance" for "customers who seek high-end audio performance without a high-end price". The Operetta DCT 2 uses "high-quality conductor wires" subjected to "deep cryogenic treatment" for a "more natural and detailed sound". They are insulated with a combination of low-loss PTFE insulation and air that reduces the possibility of "time-smearred sound".

Operetta DCT 2 also features a closely-woven silver-plated copper screen to resist external radio-frequency interference, and gold-plated connectors that have been specially manufactured for Black Rhodium. Prices are 0.5m (£500), 1m (£600) and 1.5m (£700) for stereo pairs with RCA phono plugs that are 'stock', although the 1.5m length can instead be supplied with BNC terminations if desired. Other lengths are available on a pro-rata basis.

Contact: *Black Rhodium, (01332) 342233 [www.blackrhodium.co.uk](http://www.blackrhodium.co.uk)*







## VIKING RAIDHOS...

New in the UK, courtesy of distributor Decent Audio, is the range-topping TD Series from Danish loudspeaker manufacturer Raidho. Among the six models are the TD1.2 2-way standmount, TD2.2 2.5-way compact floorstander, TD3.8 3-way floorstander and TD4.2 TD4.2 2.5-way floorstander, all of which feature drivers of proprietary design.

First of these is Raidho's unique "reference-standard" sealed-ribbon tweeter, with "powerful magnet system and a new acoustically-optimized rear chamber".

The mid and bass drive units of the TD Series have hi-tech five-layer composite cones exploit the properties of the rare metal tantalum in order to meet Raidho's objective of being "the stiffest and best inner-damped in the world". A 1-micron layer of tantalum is added to a ceramic layer, readying them for the subsequent deposit of a diamond layer.

Tantalum, a good conductor (it's also used in electronic components like capacitors) will dissipate heat from the driver's new "patent-pending motor system". These "striking...and beautifully-finished" speakers are available in piano-black, walnut...or for that matter "any colour to order".

Naturally, this stuff ain't cheap. The cost of ownership starts at £20k for the TD1.2, and goes all the way to £102,000 for the TD4.2. And as for the range-topping TD4.8 3-way floorstander? If you have to ask the price...

Contact: Decent Audio (UK distributor) +44 (0)5602 054 669. [www.decentaudio.co.uk](http://www.decentaudio.co.uk)



## LEARN TO PLAY DAY 2020 FREE MUSIC LESSONS ACROSS THE UK

A nationwide initiative to get people of all ages and abilities playing a musical instrument will take place on Saturday 28th and Sunday 29th March 2020 at venues across the UK. Go to <https://musicforall.org.uk/learntoplayday/> to find your nearest venue, or Google 'musicforall.org.uk'.

Supported by Jools Holland OBE, and run by charity Music for All, the event sees music shops, teachers, venues and schools throughout the UK partner with leading musical instrument brands to offer thousands of free music lessons across the weekend.

Jools Holland said: "As Patron of the Music for All charity, I'm delighted to lend my support to National Learn to Play Day on March 28th and 29th. It's a pleasure to be able to share the joy of music, and this special day allows thousands to get involved as venues all over the country offer music lessons for free".

## TWO PLAY SOLITAIRE!

New from T+A is the Solitaire P - the German firm's first ever set of headphones - and, to drive it, the Solitaire HA200 headphone amplifier.

Described as "planar-magnetostatic", the over-ear Solitaire P has an ultra-lightweight air-shifting membrane, which is positioned within the planar drive system. The sonic properties are said to have a "spacious, airy feel...unique even for planar headphones". But then again you should expect nothing less, considering that a pair will set you back £4,800!

The busy metered fascia and £6,600 price tag of the equally-esoteric Solitaire HA200 demonstrates that it's more just than a headphone amp. Also onboard is T+A's proprietary "True 1 Bit" DAC technology, which supports 32-kHz/768 kHz PCM and DSD1024. The HA200 boasts two analogue inputs, digital connectivity plus USB, Bluetooth and provision for optional HDMI.



There are three headphone outputs, one of them balanced, plus a high-quality power-supply with separate toroidal mains transformers for the analogue and digital circuitry.

Contact: The Audio Business (UK distributor), (01225) 704669. [www.theaudiobusiness.co.uk](http://www.theaudiobusiness.co.uk)

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\*Reviews of the original Nucleus+, which has the same technical performance of the 2019 revision but a different look.



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**Is Wharfedale's new Evo 4.2 three-way loudspeaker the route ahead? Likely, thinks Noel Keywood.**

# 3 Way Ahead

**O**ur pictures show Wharfedale's new Evo 4.2 loudspeaker is a compact stand-mount, one I could lift easily at 13.4kg.

Yet it is a three-way! I was taken aback when I first saw it. Even more surprising was the use of a mid-range dome at centre of the drive unit array, and an air motion transformer (AMT) tweeter at top.

Quite a radical line up – especially for the £599 asking price. So what's going on here?

I'll go over the thinking behind it and the sonic implications first, since long ago I started to research

use of a dome midrange for very specific reasons.

A dome puts more energy into the room and sounds open, detailed and forward as a result.

Long ago, however, domes had problems. Those I heard gave forward vocals, but with one drawback – sharpness, especially as volume went up. That’s because they have – or had – a tendency to ‘break-up’, especially at high volume. They were popular in studio monitors for engineers wanting everything thrown at them, but for domestic listeners a tad overwhelming. Measurement showed Wharfedale have used a modern design that avoids this old problem.

Alternatively, it could be that Wharfedale prioritised use of a ‘ribbon tweeter’ and found themselves having to use a dome to match it – another problem I faced when designing loudspeakers. Ribbons give lovely treble quality: I’ve always been smitten by them – but they don’t go low, 4kHz being a typical lower limit for

small ones. The AMT is a folded ribbon in effect and reaches down to 3.9kHz Wharfedale say. The problem this poses is of finding a drive unit that works up to 3.9kHz to match it – and this demands use of a midrange unit. A cone or a dome are options and in the Evo 4.2 Wharfedale use a dome, ‘cos they reach higher.

The Evo 4.2’s bass/midrange unit must reach up to 1.4kHz to meet the dome and it has a central parasitic dome – the chrome plated item at centre of bass unit cone – to help do this.

Ideally, drive units should be less than half a wavelength apart at the crossover frequency, explaining why they are usually packed together closely. In the Evo 4.2 half a wavelength at 1.4kHz is 12cm and the dome sits around that distance from the central radiating zone of the bass/midrange unit – acceptably close.

So there you are, a brief explanation of the logic behind drive



**An unusual drive unit line up comprising folded ribbon Air Motion Transformer treble unit at top, fabric dome midrange at centre, and bass unit with central parasitic dome to cover lower midband at bottom.**



**The rear view shows a curved cabinet to discourage internal standing waves, bi-wire terminals with mono wire links, and a small gap between base and cabinet. This provides clearance for a down-firing port, the narrow gap providing a measure of acoustic damping.**

"really good loudspeakers are drama free – they just let the music through without embellishment"

unit choice in the Evo 4.2. And, providing the drive units work well in themselves, what you can expect to hear from such an arrangement are apparently solid and obvious vocals from the dome, with smooth almost character-free treble from the AMT tweeter. Yes, the AMT tweeters I have heard had less of the sheen of a conventional ribbon, coming over as almost peculiarly “quiet”. I know that’s a funny way of putting it, but really good loudspeakers are drama free – they just let the music through without embellishment. With an AMT expect nothing rather than something!

I admit my description is

general and has flaws. Vocals in particular start at 200Hz (male chest cavity) and have components (sibilance) up to around 3kHz, so a dome ‘mid-range’ (as they are termed) does not cover the human vocal range, only higher bits. But in this line up it does a good job in keeping the drivers all working together in-phase so you get a solid and consistent sound overall.

The loudspeaker cabinet measures 455mm high, 250mm wide and 340mm deep, not including terminals with 4mm banana plugs protruding, for which add 30mm or so. Bare wires and spades don’t protrude of course. The front grille is held magnetically

and is acoustically transparent so can be used on or off without affecting frequency response, our measurements showed. The cabinet is solid and quite heavy, but liftable. Wharfedale call it a 'bookshelf' design but it requires a large 14in deep shelf, making stand mounting a more likely option.

**SOUND QUALITY**

To drive the Wharfedales I used our Creek Evolution 100A amplifier hooked up with Chord Company Signature Reference cables. A 48 hour run in was needed to smooth the silk dome since it has strong influence. Sources were an Oppo BDP-205D Universal player to spin CD, as well as process hi-res from an Astell&Kern portable player connected by optical cable, making it fully isolated.

Dave Brubeck's classic Just Take Five (CD) quickly identified the projective properties of the Evo 4.2, his trumpet standing forward of the cabinets with solid presence. It was smooth edged and free from rasp: I immediately sensed a gentle approach here. And that is how it went, at least in outline. Similarly, saxophone in the Pink Panther Theme was big, fruity and forward.

Holly Cole crooned at me about her station antics in The Train Song (CD) and she loomed large: it was almost embarrassing. The 4.2s project – almost alarmingly at times.

However, whilst treble balance is mild to self-effacing there were occasions the Evos still jumped at me, notably with Willy DeVille's Spanish Harlem where "It...s" had force in "it starts a fire there". The dome pulls out upper mid diction but you don't get high-end spit from the AMT tweeter. Here I understood why domes are used in studio monitors.

Like Dave Brubeck's trumpet, Willy DeVille had big, firm presence in front of me. Wharfedale have gone a different route with this loudspeaker, but have kept the drive units nicely balanced relative to each other for a tonally balanced sound. The Evo 4.2s will on occasion jump out with vigour though, throwing not vocals but vocalists at you!

As an almost strange counter-balance the refined AMT tweeter is so mild I didn't get to notice it much. I span Nils Lofgren's Keith

Don't Go (CD) with its close-miked lacerative guitar work and the strings were solid rather than lacerative, Lofgren's guitar taking on body, weight and timbral texture. Similarly, Nigel Kennedy's Stradivarius violin was more big and rich, rather than sharp or edgy, bringing a different character to the sound of most else.

Methinks that here Wharfedale have come to terms with the fact that their potential audience prefer 'the BBC sound' to anything associated with Red Bull and Vodka shots. Additionally, the smooth high end doesn't draw attention to distortion from CD, making silver disc an easier listen.

But the sheer projection of these 'speakers carries its own challenge. Saffri Duo's Samb Adagio was tightly timed, vivid in its leading edges with volume turned right up but mild up top all the same. This track, which is challenging for any loudspeaker, showed the Evo 4.2s have well controlled bass, not overly heavy in our (large) room of 6550 cu ft. They are meant for a medium sized room, 15ft-20ft in major dimension, with placement close to a wall and

in such conditions will match in well, giving fast strong bass.

Playing Tchaikovsky's Waltz of the Flowers (24/96), from our Astell&Kern AK120 portable, the Bruckner Orchestra took big form in front of me. Opening horns were meaty and sonorous, having conspicuous presence. Strings were smooth and mild by contrast. The performance was clear yet relaxing, no digital nasties here.

Similarly, with the London Symphony Orchestra playing Mars from Holst's The Planets (24/48) there was scale, a broad sound stage and again a feeling of solid presence. Kettle drum strikes had strength but did not overwhelm.

**CONCLUSION**

Wharfedale's Evo 4.2s are interestingly different and appealed to me. What you get here is solid presence where vocals and solo instruments have power, projection and a sense of weight. What you do not get is sharpness, or edginess: highs are there but refined. At the price these loudspeakers are different and – I feel – ridiculously good. Get a listen if you can.

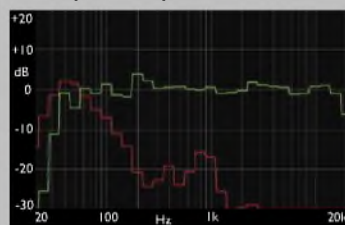
**MEASURED PERFORMANCE**

Our frequency response analysis of the Evo 4.2 shows a broadly flat characteristic across the audio band from 40Hz to 16kHz, making the 'speaker fundamentally accurate. There is no treble lift as is now so common, so no emphasis of distortion harmonics, from CD for example. The sudden dip and peak around 160Hz is due to floor return, so not an intrinsic

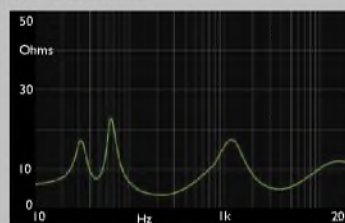
'speaker characteristic. The dome midrange comes in just above 1kHz and its contribution is smooth and well integrated. The AMT tweeter contributes above 4kHz and again its output has been kept in check to avoid treble emphasis. The grille is acoustically transparent, having no impact on these results, so can be left on or off.

**FREQUENCY RESPONSE**

Green - driver output  
Red - port output



**IMPEDANCE**



Bass extends down to a low 40Hz, the port (red trace) being tuned to 45Hz to add some extra weight in the low bass region. Cut off below 40Hz is sharp as expected for a stand-mount, with no sub-sonics. Also, bass output is restrained for near-wall placement in a medium sized room, helping avoid room boom; this is not a bass heavy design.

Sensitivity was average at 86dB sound pressure level at 1metre, from 1 Watt input. Amplifiers of 60 Watts or more would best suit. Impedance measured a nominal 6 Ohms like most modern loudspeakers, the bass unit having a relatively high motional impedance below 100Hz our impedance trace shows and this likely keeps sensitivity down a tad. **NK**

**WHARFEDALE  
EVO 4.2 £599**



**OUTSTANDING - amongst the best.**

**VALUE - keenly priced**

**VERDICT**

Strong, projective sound with super-smooth highs. Big bodied yet accurate. A "must hear" – especially at the price.

**FOR**

- smooth but solid sound
- firm bass
- projective mid-range

**AGAINST**

- heavy for a bookshelf
- artificial veneer

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# Package deal

Despite their £450 asking price, Martin Pipe reckons that FiiO's FH7 IEMs still represent fine value.

I've never come across a more complete package for in-ear monitors (IEM) than the FH7s that top FiiO's range. At £450 a pair these 'phones may be pricey, but they are far from being the most expensive examples of their genre.

You don't just get a pair of buds (IEMs) and detachable cabling. There are comprehensive collections of ear-tips and filters that tailor both their fit and sound to the wearer's requirements and tastes. There are 30 ear-tips in all: balanced, memory foam, vocal, 'spin-fit', bi-flange and

bass in a variety of small, medium and large sizes. And as if all this wasn't enough, FiiO provide you with two carrying cases - soft (fabric) and hard (faux leather).

The IEMs they work with are themselves sculpted objects of beauty, their unusual shape





**Some of the accessories featured in FiiO's impressive FH7 package – hard and soft carrying cases, a Velcro cable-tidy, a small brush for removing wax and gunk from the sound pathways, and a giant collection of eartips – 28, plus the pair attached by default.**

influenced not only by acoustics (FiiO refer to this aspect of design, with internal 'acoustically-optimised sound pipes' as S.Turbo) but the auricle cavities they must fit into. With the appropriate tips, they should be a snug and comfortable fit.

Also of interest is what's inside those aerospace-grade aluminium-magnesium alloy enclosures. Each contains two balanced-armature drivers from Knowles, a firm that produces transducers for upmarket hearing aids. A SWFK-31736 BA for the highs and a FiiO-tweaked 30017 for the mids are complemented by a 13.6mm FiiO dynamic driver with beryllium-plated diaphragm to cover the bass end of the spectrum.

As with a multi-way speaker, these drivers and the "sophisticated crossover" that feeds them presents a 16 Ohm load and accepts 100mW maximum. The crossover splits the incoming audio signal into the frequency bands each driver is optimised to handle. But with the 'Hi-Res Certified' FH7 there are acoustic filters too! Three pairs of these tiny circular devices, supplied

in a metallic lozenge, screw into the business end of the bud; the tips fit over them. In FiiO's words, they allow you to "create your own sound". The red filter is recommended for 'dynamic bass emphasis', while the green one emphasises treble detail. If neutrality (a balanced sound) is important, screw instead the black filter into position. A sensitivity of 111dB/mW is claimed.

FiiO's micro-engineers should be congratulated for fitting it all into a bud that weighs a mere 8.15g. Even the supplied 1.2m cable is a high-tech wonder, of which specialist firms would be proud. According to FiiO, it consists of 152 strands of "high-purity Litz monocrystalline copper-plated silver wire" arranged into eight individually-insulated bundles - four for each channel. They snap into the base of each bud courtesy of MMCX miniature connectors, and are reinforced with extra 'ear-guide' sleeving at the point of contact with the top of the auricle, thereby providing extra bud support.

At the other end of the cable is a substantial 3.5mm stereo jack plug, right-angled to minimise protrusion. A balanced cable with 2.5mm plug is available for players with balanced 2.5mm output.



**The acoustic filters screw over the ear pieces of each bud as seen here. The red filter is recommended for 'dynamic bass emphasis', while the green one emphasises treble detail. Screwed into the FH7 here is the black filter, which is said to deliver a 'balanced' sound. Filters unused are stored in a natty screw-capped metal lozenge - another example of FiiO's attention to detail. Note the use of a gold-plated MMCX connector for the signal leads.**

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### Use and sound quality

Thanks to the comprehensive collection of tips, it was easy to find ones that presented a comfortable and snug fit with my auditory canals; as with the filters (I stuck for the most part with the 'black' ones) there are subtle differences in terms of how your music is presented, and I'm sure FH7 owners will have a lot of fun experimenting with them.

These 'phones proved comfortable over long periods of listening and the good ear seal was effective at keeping ambient noise at bay. Not only that, but they stayed put during gym workouts; as with most devices of this sort though, the occasional push is needed to restore bass reproduction. Thanks to its ability to rotate around the earbud connector, arranging the cable guide so that it 'loops' over the ear could be a rather 'fiddly' operation.

I tried the FH7s with a number of devices - an Audirect Beam 'micro-DAC', connected to a Dell laptop or Google Pixel 3a phone (both running VLC), and an ADL A1 USB DAC/headphone amplifier driven by a desktop PC. I also used my FiiO X3 portable player, and a Chord Hugo TT and Prism Callia 'desktop' DAC/headphone amplifiers.

Even the diminutive USB stick that is the Audirect Beam managed to drive them, usable sound levels being attained without unacceptable distortion. All players proved that the FH7s are startlingly-revealing; I don't recall hiss lurking behind Pye Corner Audio's *The Mirror Ball Cracked*, and Can's somewhat primitively-recorded classic *Tago Mago* was rather gritty in places. Yet the FH7s managed to deliver music in a compellingly-enjoyable manner.

You'd expect guitars to feature heavily in a song by a band called the Red Guitars - and the one-time Peel fave Good Technology is indeed full of them. The individual characters of its different guitar parts were clearly and cleanly resolved, as was the characteristically-1980s boxy drum sound. Bass and lower-midrange were in fact remarkably uncoloured, vocals - sung or spoken - being correctly-proportioned. Bass went satisfyingly deep, too, as the synths of the aforementioned Pye Corner Audio track (a CD FLAC rip) reveal.

Conventional bass guitars fared well too, and I thoroughly



**The ear tips provided by FiiO allow wearers to achieve a favoured balance of snugness and sonic delivery. Among them are balanced, memory-foam, vocal, 'spin-fit' (described as a "premium soft silicone material"), bi-flange (which make contact at two areas, thereby achieving a better seal) and bass, all in small, medium and large sizes.**

enjoyed listening to the Beatles albums *Rubber Soul* and *Sgt. Pepper* (24-bit/48kHz). The sheer detail imparted to McCartney's bass-playing was little short of astonishing; I could also make out some of the more unusual additions to Ringo's percussive armoury.

that brought Dvorak's *New World Symphony*, played by the Hallé Orchestra under Sir Mark Elder, into our homes during the 2017 Proms was a detailed, balanced, rhythmically agile and involving experience. Each instrumental group retained its natural tonal colour, the

"the dynamics were given sufficient room and the sheer presence - right down to string scrapes"

Sometimes, presentation is a little too bright, with cymbals and their like to the fore; oddly enough, the red bass-boost filters can help tame them.

Also faring well was the rich 'twang' of the sitar in *Norwegian Wood*. Some of this is down to a slightly 'forward' character that brings lead instruments to the fore; the unusual synthetic instrumentation that defines Ryuichi Sakamoto's *B2-Unit* album (CD FLAC rip) benefits as a result.

I can't fault the FH7s with classical music, either. A capture of the lossless 48kHz/16-bit stream

dynamics were given sufficient room and the sheer presence - right down to string scrapes and the most subtle of audience mutterings - managed to convince.

### CONCLUSION

These high-tech wonders are not the cheapest earbuds...IEMs on the market, but they nevertheless represent tremendous value for money. FiiO should be congratulated not only for its engineering achievement and the comprehensiveness of its offering, but the sheer standard of sound that the FH7s can pour into your ears.

FIIO FH7 £450



**OUTSTANDING** - amongst the best.

**VALUE** - keenly priced.

### VERDICT

Quite a sound, from quite a package!

### FOR

- expansive scale and stunning clarity
- impressive customisation
- comfortable

### AGAINST

- a tad bright on occasions
- reveals warts and all
- can be a fiddly ear-fit

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"The PG-1 turntable with this system is a two speed (33, 45rpm) belt drive design that, judging by its arm, comes from Pro-Ject of Austria. It has an internal phono stage (MM only) that will feed any amplifier

direct, but it can be switched out if an external stage or amplifier with its own phono input is used.

Unusually, there's a digital output in the form of Bluetooth wireless transmission, but only Bluetooth and nothing else – there's no S/PDIF digital output in optical or electrical form. The Bluetooth stream is 16bit / 44.1kHz – CD quality.

Bouncing cartridge onto LP always was a big problem with vinyl, resulting in bent cantilever and the cost of a replacement stylus. Audio

Technica have a good remedy in their AT-3600 MM cartridge; it has a carbon composite cantilever able to withstand such heavy use – and that is what Blue Aura fit to the PG-1. Yep – it's a workhorse that tracks at 3.5gm but the use of carbon fibre in the cantilever gives it a wonderfully smooth and deep sound that is entirely in-character with LP – and preferable I feel to the brighter sound of metal cantilevers, which most are".

For a chance to win this great prize, just answer the four easy questions at right. Send your entries on a postcard only, by 9th April 2020 to:

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## QUESTIONS

**[1] How many turntable speeds?**

- [a] two
- [b] twenty two
- [c] reverse
- [d] variable

**[2] The digital output is -**

- [a] DSD
- [b] I2S
- [c] Bluetooth
- [d] semaphore

**[3] The cartridge is a -**

- [a] VDH Grasshopper
- [b] Shure M3D
- [c] Goldring 1042
- [d] AT-3600 MM

**[4] The cartridge cantilever is -**

- [a] steel
- [b] brass
- [c] carbon composite
- [d] wood

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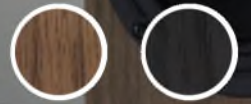
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The improved two-plinth design utilises Thermo Plastic Elastomers (TPE) to isolate the metal-finished inner-chassis, rather than the traditional method of a spring-loaded sub-chassis, but this construction effectively decouples the motor from the main bearing and the tone-arm, reducing unwanted interference between the components.



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Answers by: **NK** - Noel Keywood; **JM** - Jon Myles; **PR** - Paul Rigby; **MP** - Martin Pipe.

## LETTER OF THE MONTH PRIZE



### KEF Q150 BOOKSHELF SPEAKER

<https://uk.kef.com/products/q150-bookshelf-speaker>

[subject to availability - Satin Black / Satin White]

**A PAIR KEF Q150 LOUDSPEAKERS are on their way to DR. ROGER SIMMONDS, Letter of the Month winner in our March 2020 issue.**

## Letter of the Month

### STREAMING ECONOMICS

It was interesting to read Malcolm Watts' letter in *Hi-Fi World* (February 2020 issue) and his call on other readers for what they would pay for their music.

Cost is a factor, but it is also related to availability, changing habits and attitudes towards music. If you can obtain music for a nominal sum (e.g. stream/download) or watch and listen to it free from the Internet (e.g. YouTube) you will have no need to pay for it. If you won't pay much or at all for music, it develops into a situation that it no longer has much value.

As a hobbyist musician I know of the extremely poor returns on streaming sales of online albums. One stream of a track retailing at around eighty pence results in typically less than one penny in royalties.

The BPI and the ERA (Entertainment Retailers Association) have recently reported streaming sales far outstrip any physical format sales. Just like DVDs of films and TV shows, I've seen full album release CDs for sale at less than fifty pence (even if they were second hand). I still remember my weekly pocket money of a pound as a school boy in 1979 was still not enough to buy a second hand LP.

**You can "watch and listen to it free from the Internet – from YouTube" says Tony Bilny of music today. The artists here have over 3 billion views between them.**

As someone who is part of the small market who likes to buy original copies of old vinyl albums and singles, I would love to get them at the price of new re-issue LPs. My main interest

is in buying 1960s to early 1970s pop and rock music by artists whose records never sold many copies new. They have now become collectables and as such, many are out of reach for me because

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Music. Literally the first word in 'music streaming', and always our top priority. Our network players feature cutting-edge technology – developed over 3 years by 25 expert engineers at our Salisbury HQ – but more importantly stay true to our founding mission, to take you closer to the authentic emotion of the music you love.

So, whether you're listening to your own digital library, commercial music services such as TIDAL, Spotify, Qobuz and internet radio, or exploring the world of Roon, you'll enjoy music streamed with our signature pace, rhythm and timing. Handmade here

in England, the slimline ND5 XS 2, Classic superstar NDX 2 (pictured) and flagship ND 655 players are winning Awards around the world. Hear the difference with your favourite music at your local Naim specialist retailer.

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[naimaudio.com/streaming-awards](http://naimaudio.com/streaming-awards)

Awards for NDX 2





**Beats headphones – massively popular with younger listeners.**

they can command four figure prices.

However, if I can find them and afford to splurge out, I will as I still prize the originals as the best way to listen to what was created back in its day, in my opinion when they knew how to make records.

It's strange to me as a music lover but many people I talk to, usually younger than myself, have no interest in music. Those that say they do are mainly of my age group (fifty plus) but most say they never listen to music at home on what they still call a stereo. If I mention I still buy and enjoy vinyl records there's no response or interest, apart from a grin. Sometimes its followed by statements like, its just a fad or records are for old people!

I've often replied to this with what seems like, on reflection, a prepared statement. It goes as sound is an analogue wave form and records are analogue media, I find them the most enjoyable way of listening to music. This usually results in a continuing grin and nothing else.

Talking to my ex hi-fi retailer made me think again about trotting out my neat little statement. He told me that when he was a dealer in the 1980s, only five per cent of the population were interested enough in music to invest in hi-fi. He reasoned if most people didn't understand or care about sound quality then, why should they do so now?

Thanks,

**Tony Bilny**

Hi Tony. Then there is the Beats headphone phenomenon and the whole portable audio market that is now far larger than that for traditional hi-fi. Its users are consuming music so presumably enjoying it – and they are mainly young. My son (20) has

an encyclopedic knowledge of all music from yesteryear to today but listens mainly on headphones, even though he plays electric guitar as well as keyboards through a traditional Fender valve powered loudspeaker cabinet (that, I am assured, is on another plane to transistor cabinets!).

So listening habits have changed it seems to me, but not necessarily appreciation of music.

Why young people think a hi-fi is for old people I do not understand at all; it is agnostic as a technology. But it could enjoy trendy revival, like the flat cap.

Potentially, all those headphone listeners would appreciate a full size hi-fi so the market is still there, as well as that amazing back catalogue of 'old' music of the sort you collect.

I admit to being fascinated by YouTube, mainly for its historical material. Seems like there's no past performance not on there – and you get to see the artists perform. As you note, with music for free it would appear to devalue performance, yet even with – or

perhaps because of – the billions of downloads achieved by Adele, for example, she still packed the Royal Albert Hall.

A miserable situation for most artists, as you explain in cruel economic terms, but some do well out of it. **NK**

**OLD WISDOMS**

*I'm an old hand at hi-fi, by which I mean I was au-fait with hi-fi up until the early nineties at which point family and responsibilities meant it fell by the wayside. I am now in the enviable position of having time, space and money to re-indulge an old interest but the world has moved on a pace and my old system is now decrepit and only fit for the junkyard.*

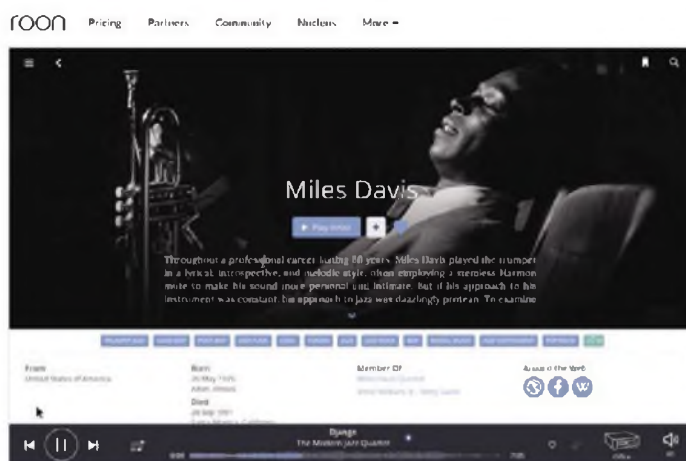
*For the last year or so I have been reading the five major publications in the UK and I feel I need disabusing of my old assumptions and would benefit from some informed advice.*

*The prevailing wisdom was to invest in a quality pre-amplifier and power amplifier but now there are many high power integrated amplifiers that seem to punch the same weight. Working on the assumption that I want to invest in quality amplification, am I better off with one box or two?*

*I understand that recommendations are frequently based around source and speakers but all those are up for grabs too so I am looking to buy quality*



**For big traditional sound brought up to date the Wharfedale Linton is a fine choice and would likely suit an attic room.**



**Roon collects data from the internet, including pictures and histories, to accompany the music it stores and delivers, either on a computer or from a dedicated server.**

amplification and then build a system around that. I have budgeted around £5000 for an amplifier but I can be flexible.

My son-in-law demonstrated his Naim NDS network device which was spectacular to listen to and conjured up a convenience that was utterly seductive to a creaky old goat as myself; my days of bouncing off the sofa every twenty minutes to flip vinyl are long gone. I would like to preserve my 500+ collection of CDs which represent a golden time in my life but I am not wedded to the idea of a CD player.

Finally, a choice in speakers will take much trial and error to find something that works well with my attic room and the amplifier so I am only looking for recommendations for source and amplification. I recognise how nebulous this must all sound but I need pointing in the right direction. I think once I have the electronics in place I can enjoy the process of auditioning speakers. Thanking you in advance for whatever advice you can offer.

**Tony Kingston  
Rugby**

Hi Tony. The last bit seems more important than the first bit: "an attic room". Can I presume this is of limited dimensions/volume? Most are.

If so, then it's likely 60 Watts will suffice, especially as you probably won't be head banging any more. These days Watts come cheap so let's say 60-100 Watts for your amplifier. If you bear in mind most loudspeakers are now nominally 6 Ohms, amplifiers give more power than their 8 Ohm spec, so if you bought a 50 Watter you'd be getting around 70 Watts in practice.

As a general approach I'd suggest you consider a lower power

amplifier and larger, more sensitive loudspeakers. Wharfedale Linton's (reviewed December 2019 issue) with 87dB sensitivity will give you more than enough volume and a sound you'll appreciate from a 60 Watt amplifier for example – and you can probably fit them into an attic room.

For this sort of power an integrated amplifier will do perfectly well and I'd suggest you look at a Quad Vena II or a Creek Evolution 50A. They are easily within your proposed budget but transistor amplifiers are well worked out these days and don't differ hugely in sound, so not to panic. Both these amplifiers are smooth sounding and an easy but fulfilling listen, their linear power supplies giving solid bass.

It's common to archive (rip) CDs to a computer master file, using dBpower amp or XLD software. You will need a computer with a CD player, or one with an external CD drive. It will take a while but from this point on the digital files can be played by any number of means that won't get you bouncing off the sofa to change a CD (let alone an LP – heaven forbid!). An easy way is to copy them to a flash drive and play from a Naim Uniti or a Cambridge CXN, for example, both of which provide streaming services as well.

Also, Roon may suit you. A Roon server will give you a very nice experience, with artist and album info, cover artwork etc, on an iPad

that is used as remote control. See our April 2019 issue for running Roon on your computer and May 2019 issue for a full blown Roon network attached server based on an Intel NUC computer.

There are so many ways to play digital files nowadays it's impossible to list them all here. But I would suggest you first decide upon the loudspeaker, then the power needed to drive it. In an attic room I doubt you truly need a pre/power combo.

## DAP LIFE

I have been a regular Hi-Fi World reader for many years and thoroughly enjoy reading the magazine. The article this month regarding the FiiO M11 Pro got me thinking about what we can expect regarding longevity of DAPs generally.

I have an IBasso DX50 which has given me good service for the last five years (its quality is not particularly high-end but it was good value for money with a smooth sound and fine for portable use), but its battery is now no longer holding its charge for very long.

It takes a Samsung S3 mobile phone battery, so I do have the option



**"Does my experience mean that for the majority of DAPs we just have to accept that their batteries are not likely to last for longer than 5 or 6 years" asks Russell Hawkins.**

to replace the battery. The retailer I bought the DAP from has said they have no idea whatsoever where I can procure a new battery, but my own research has identified a number of good possible sources. Unfortunately the Samsung S3 batteries advertised on eBay seem in the main to be either fakes or duds.

Does my experience mean that for



**"I think the Pro-ject Pre Box S2 Digital is actually a solid gold serious DAC" says Mike Tartaglia Kershaw.**

the majority of DAPs currently available (and especially those that do not have consumer replaceable batteries), we just have to accept that their batteries are not likely to last for longer than say 5 or 6 years, after which, unless returned to the manufacturer for repair, the DAP then becomes useless?

Best regards,

**Russell Hawkins**

Hi Russell. Good point. Tektronix say "The typical estimated life of a Lithium-Ion battery is about two to three years or 300 to 500 charge cycles", although that seems a tad pessimistic to me. It's still not a lot though and most DAPs are not built to be taken apart for battery replacement as far as I can see. In your case there are plenty of suppliers of the Samsung S3 on-line and at £10-£20 you'll have to order and hope for the best. Or ask a mobile 'phone repair shop if they can help. **NK**

### CLEVER BOX

I have now been listening to the Pro-ject Pre Box S2 Digital for 48 hours (almost non stop!). I un-boxed the insanely tiny unit, loaded the driver software, plugged the USB into my Windows 10 PC and phono cables into my Prima Luna Dialogue Premium HP and Monitor Audio Gold 200 speakers. I started up J River Media Centre 26 and faffed about with settings. It all worked. I even got the blue light for MQA files. But who thinks up all these ridiculous names? Give me 'Vena' and 'Artera' any day.

Straight out of the box the sound is special. I am trying not to let my knowledge that John Westlake was involved colour my judgement. The instant response to a wide range of music was the wonderfully wide sound-stage with instruments located precisely, and good clean deep bass. Add to this lots of subtle detail highlighting the sound and texture of different instruments and vocalists.

It was love at first hearing. I could go on and on about the subtle sound quality.

I tried not to compare the Pro-ject to all my other DACs but to keep my feet on the ground. I did do a back to back comparison with the Audiolab 8300CD as it uses the 9018 Sabre DAC. Yes, The Audiolab did perhaps add some power and warmth and solidity – especially in the bass – but much of the sound quality was very similar, as you would expect.

However the dual mono 9038 Sabre DACs in the Pro-ject did seem to produce a slightly deeper if lighter bass and a smidgeon more separation of instruments and sense of space and air around instruments and voices. In fact the lingering sensation with the Pro-ject is a transparent airiness to vocals and instruments and deep and wide sound stage in all types of music. The Pro-ject also seems to focus on rhythm: with clean, deep bass drums can be quite visceral (Joss Stone - Right to be Wrong). Separation of massed and solo orchestral strings is amazing (Respighi - Ancient Airs - Raudales). It even makes free Spotify and MP3 sound OK. I just love it.

Perhaps the Audiolab wins for a more overall 'weighty' sound but the delicacy of the Pro-ject can be mesmerising at times. So, for a mere £300 you can turn any PC/laptop/netbook into a hi-fi source equal to, or perhaps in some ways better, than a £1,000 Audiolab CD8300. I haven't yet compared it to my (John Westlake) Audiolab M-DAC+ or even my (John Westlake) Cambridge Audio Dac Magic Plus.

I think Pro-ject have released the Pre Box S2 Digital disguised as a tiny headphone amp so that it does not compete with items higher in their range. It is actually a solid gold serious DAC that easily fits into a good quality hi-fi system, a bit like the Chord Mcjo. I have not yet compared the sound to my Mcjo. I might not bother. I just love this

silly little miniature DAC for what it is - another piece of John Westlake magic. Best wishes,

**Mike Tartaglia Kershaw**

Hi Mike. Thanks for the comparisons that I hope readers will find interesting. John Westlake is a larger-than-life character and a very nice person too – charming but sincere. In my experience you are right to admire his creations. I certainly do.

**NK**

### CLAMP DOWN

Thanks for your comments following my original letter about RF interference from LED bulbs – and thanks also to Mike Bickley who followed up on the topic.

Soon after I wrote, I thought about trying ferrite clamps to reduce this noise – which I used many years ago – and so bought three different sizes from RS components, for cables of maximum diameter of 5.2, 6.5 and 7.5 mm. I also bought via eBay a cheap job lot of 10 medium size clamps from a Chinese source which arrived very quickly. Then the Russ Andrews catalogue arrived and I saw he too was following the same line



**A low voltage (12v) LED bulb that gives '50 Watts of light' but consumes just 5W and will not produce RF noise, unlike high voltage (240v) bulbs.**

of thought.

I've done a little experimentation since – and yes there is an improvement, but my power supply to the workshop is jury-rigged and the aerial on my radio is not well set up, so there's room for significant optimization on this side of things I'm sure, to stop the LED bulb transmitting noise to the radio and perhaps the hi-fi.

I did wonder if using a 3-core power feed (i.e. with an earth wire) might also lower the radiated noise, but it may be that the (inductive) impedance at RF is too high for an earth wire in the supply to make much difference. I need to improve my layout and supply in the workshop, and now should also consider



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**\*0% Finance examples above are subject to status & conditions**

what needs to be done inside the house itself, with the plethora of power-saving LED bulbs which have been installed.

Also, I take the point about wall-warts, and suspect these should all be treated in the way Russ and others recommend. I'm not ready to install a DC feed though Noel, and then I suppose you would have to find genuine LED-only bulbs to run from this. Anyway it's got me thinking, and in the new year I will be investigating and experimenting further.

I am also now motivated by having just bought a stand-alone valve preamp, the first preamp I have ever had that I didn't make myself. It is a thing of beauty, and now I will have to do justice to its potential for sound quality!

In the meantime, thanks again and if there are any further ideas on this topic, I am happy to learn.

Best regards,

**Dr Richard H. Barton**

Hi Richard. Thanks for raising what may seem to readers an abstruse subject, but we do now have conflicting standards where hi-fi equipment is mandated not to produce RF noise whilst LED bulbs and switch-mode power supplies are free to produce such noise. Your Medium Wave radio did a great job in detecting it.

I was not seriously suggesting, when replying, that you turn your lighting circuits to d.c. and install bulbs that I then thought unavailable,

so much as ponder on an old argument about whether we should be using a.c. or d.c. power supplies in the home or for transmission purposes.

All the same, it would be fairly easy to convert domestic lighting circuits to d.c. feeding LED bulbs direct. This makes the bulb smaller, simpler and cheaper, eliminates transmission of RF noise and improves safety. There are MR10/11/16 base low voltage LED lights available, plus suitable power supplies – see the Elite 12V/5W LED bulb at BLT Direct (£5.59) for example. A few of these would light your garden shed workshop I guess and eliminate radio interference. Also see the next letter for LED lights in the house, not just the shed.

In the meantime RF clamps on lighting circuits and wall warts make good sense and offer a way to cut down all the radio frequency rubbish that ideally we should not be producing. **NK**

**NEW HOUSE**

I am currently in the throes of building a new house and could really do with a bit of advice regarding the mains supply. I have a fairly competent system that has taken me 30 yrs to achieve and would like to give it the best chance to



**Russ Andrew's dedicated ferrite clamp suppresses RF noise in power supply lines, d.c. or a.c. They have them for wall warts too.**

perform.

There is a fair bit of advice available on specialist cables, sockets etc but not a huge amount on the actual consumer units themselves. My question is, are there sonic differences between the various makers' and types of consumer units and where can I find out the information?

Best regards,

**John Price.**

Hi Jon. Sadly, I have to tell you we have never auditioned domestic consumer units – and I doubt anyone has! They must all have 60A pass-through ability so large connections and a reasonably pure path.

I suggest you consider installing a balanced line to the hi-fi, as some studios do for their power supplies. Airlink Transformers have a whole section devoted to them, plus fact sheets that any electrician would need since this is a left-field subject (although well understood). If electrical noise comes in through the outside feed, or perhaps from the consumer unit itself, look to use a balanced mains supply with RF filtering that Airline also offer.

Check out their BPS3120 that comprises transformer in steel case. price £330. It provides 13A current delivery and can be used by any mains powered equipment connected to the usual UK 13A socket, so you could plug in a vacuum sweeper for example.

A balanced line cancels out noisy earth leakage currents as well as being inherently safer, hence its use in site transformers. An electrician could install this transformer close to the mains distribution board / consumer unit and run a spur to the listening room. With a balanced mains supply each line runs 120V above ground so it's intrinsically safer as well as quieter.

Also, in your new house I would suggest you consider its lighting circuits. This is a subject in flux. Old incandescents were replaced



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**Properties**

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Colour	Cool White	Neutral White	Warm White
Voltage	24v	24v	24v

**Another form of low voltage LED lighting that is safe and does not produce RF noise – a tape you can cut to length with scissors. At 1500 Lumens per metre it is bright too – enough for John Price and Dr Richard H. Barton?**





**Airlink BPS3120 that comprises balanced transformer in steel case, price £330. It's for permanent installation and would suit a new home. You get two 120V a.c. supplies relative to ground, so safer than a 240V line.**

by fluorescents, then halogens and now we have LEDs. But LED light bulbs have internal switch-mode power supplies that are electrically noisy: they radiate RF that all other electronic equipment, from vacuum sweepers to hi-fi, are mandated not to produce. See our letter from Dr Richard Barton in the November 2019 issue where he picks up interference from them on a Medium Wave radio, and also his letter preceding this one.

You could consider moving to low voltage/current LED lighting to eliminate RF noise, improve safety (low voltage, low heat) and of course minimise power consumption. The high street currently has little to offer here, most LED bulbs being high voltage, so fitted with internal supplies – a fact most retailers fail to clearly and consistently mention in the specs.

However, Leyton Lighting (UK) have an extraordinary (pdf) catalogue of products, with operating voltages clearly and consistently stated. There is a section on Drivers and Controllers that covers 12V and 24V supplies, for connection to the consumer unit, and there are fascinating new forms of LED strip lighting now becoming available. By

this I mean lighting tapes where a tape is cut to length and connected it appears; stick it along ceiling wall or floor to provide light. There are also low voltage down lighters.

I had my house re-furbished in the 1980s and much installed back then is now redundant, including TV and Radio (VHF/FM) co-ax cabling and low power consumption PL Series fluorescent hall ceiling lights. I'd suggest you bear in mind that whatever you install now may have to be changed in future so keep accessibility in mind. Have access floorboards screwed down, for example, don't let the builders nail them. And perhaps run ethernet cables. I hope your new house doesn't slide out of date as fast as mine did! **NK**

### DIGITAL VINYL

*Adam Curwin seems to have issues when digitising his vinyl collection. Here is my method for any analogue source. You will need a PC running Windows, an ADC, a fixed output such as a tape loop, which the Musical Fidelity M8 preamp has I think.*

*The ADC is connected to the output of the preamp, then the ADC is connected to the PC via a USB cable, Windows may already have the drivers for ADC, depending on the make of ADC.*

*The recording software is a matter of choice. I use LP Recorder by CFB Software which, compared to Audacity, is delightfully easy to use see <https://www.cfbsoftware.com/>. Also required is ripping software such as LP Ripper also from CFB, the reason for this is LP Recorder records say an LP, as one file, so it will need chopping up into its tracks.*

*Some tweaking in Windows Sound Options is usually required. The advantage of the method above, is that any source that uses the preamp is recordable, such as a tuner.*

Regards

**Mike Bickley.**

Hi Mike. Thanks for your helpful comments. Audacity isn't so user-friendly I must admit. You fail to mention what the mystery ADC is



however!

It needs to be a decent 24bit convertor and there are plenty of PC sound cards / breakout boxes that would work in such a situation. Alternatively, see the following letter where Furutech's ADL GT40a is used. **NK**

**Creative Blaster Audigy Fx 5.1 PCIe sound card with 24bit ADC can be hooked up to a phono stage direct, or to an amplifier's Tape output, to record LP.**

### DIGITISING VINYL

*Re: Adam Curwin's letter in the February edition about digitising vinyl, I have very successfully used a Furutech/ADL GT40a USB analogue to digital converter and am extremely pleased with the results. This little box of tricks is also a USB DAC and includes a phono stage (MM and MC) which can be switched to RCA line-in so your own pre-amp can be used instead. This switching provides an effective set of options, as I use the line-in for a Rega RP10/Rega Aria and the ADL's MM input with a Pro-Ject Essential III (for really damaged/dirty/car boot etc. finds).*

*Using free Audacity software and 24 bit/48kHz quality, the files sound great and are of manageable size when in FLAC format. This allows me to listen to my ever-growing collection anywhere via a NAS; I don't think for the money anyone would be disappointed. Sure there are more expensive options available but for me it produces a balance of excellent results for reasonable outlay. Oh – and the DAC itself is pretty good as well. Win, win, win I think (apart from the time editing files and adding metadata!).*

**Mark Eley**

Hi Mark. Furutech ADL's GT40a 24bit convertor has to be one of the best solutions currently available for sending LP to digital, as you explain. I found it gave great sound quality, free from the greyness and compression of cheap 16bit 'CD quality' convertors. And very easy to set up and use.

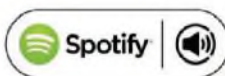
The free Audacity sound editor must then be used to chop up a continuous LP side into individual tracks and it takes some learning. Interesting to hear about a simpler alternative – LP Recorder by CFB Software – from Mike Bickley's previous letter. **NK**



**"For digitising vinyl, I have very successfully used a Furutech/ADL GT40a USB analogue to digital converter" says Mark Eley.**

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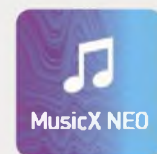


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## LEVEL PLAYING FIELD

Just getting through Jon Myles review of the Cambridge CXA61 amplifier in your January edition. What I noticed was a little odd, remembering this is a £750 amplifier. The review included a pair of PSB T20 speakers at £599, which could be a considered match. But then Jon also includes a pair of Titan Nemesis interconnects in the review at £1500 – twice the cost of the amp itself, and almost three times the speakers. Why, when the likelihood of this would be so remote? Laziness, just happened to be kicking around!! I'm pretty sure Jon has many more cost effective cables to demonstrate the worth of these products... All were given excellent reviews. Level playing field please Jon.

Regards

**Ashley Trafford,  
Winchester.**

Hi Ashley. Personally, I feel many people misjudge the effects of cables on their system. The Titans definitely justify their cost. They brought a new sense of vibrancy to the sound. Worth the money? Matter of opinion. But I've found frequently that you can unleash more of your system by investing in cables than upgrading an amplifier/CD player/streamer. Give it a go with your own system. You might be surprised.

**JM**

## NEW MUSIC ON TV

I have just been reading with interest, the article penned by Jon Myles in the January 2020 edition, regarding the lack of TV programmes featuring up and coming music acts. He makes some very good points but I feel he has done Jools Holland a great disservice in not giving him at least a mention. His programmes may not give the fully comprehensive exposure that new music requires, but he deserves some credit for bringing some new acts to the attention of the greater public.

Personally, I feel that there is greater opportunity for finding new music via the myriad of online radio stations. I think I have investigated and invested in more bands and artists this way than any other medium.

Regards,

**Derek Gooding.**

Hi Derek. I agree. Jools Holland has done a great deal to introduce new bands. It was through his programme that I first discovered The Blind Boys Of Alabama who were actually formed in 1939! A more prominent role on television would really be better for

him and us all.

As for internet radio – yes, you can search but that can take a good while since there are so many of them. This makes it lengthy and, for me, rather tiring. No doubt that there's variety however and some stations offer intriguingly different fare from standard Western output. **JM**

## CAMBRIDGE CXA61 AMP

Regarding Jon Myles review of the Cambridge Audio CXA61 amp in the January 2020 issue...

I was surprised to read "The PSBs sounded good on the end of a Creek Evolution 100A but with the CXA61 they came alive in a different, more vibrant way".

The Creek 100A appears to be your current reference amp for reviews and was originally tested in March 2015 at a price of £1499...

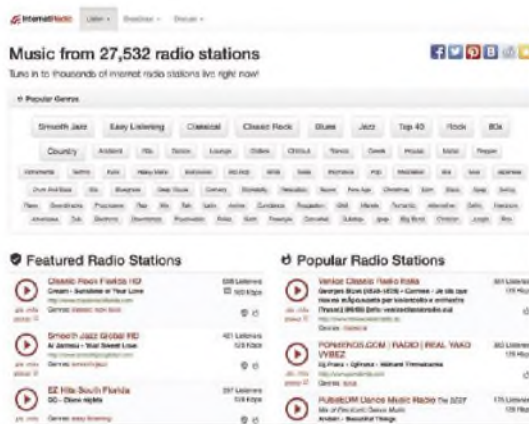
The Creek was Outstanding – Amongst The Best – and gave 136 Watts into 8 Ohms and 225 Watts into 4 Ohms. Meanwhile distortion was minuscule at 0.002% into 1 watt.

Meanwhile Jon says the £750 CXA61 gives 72 Watts at 8 Ohms and 110 Watts at 4 Ohms and has distortion of 0.005%...

I know specifications aren't everything (although you publish them with every review). Just curious how your reference Creek amp ended up to sound worse than the poorer specified and half the retail price Cambridge amp? Maybe it is just some weird synergy with the PSB speakers.

I was thinking of buying the Creek 100A but maybe I should reconsider and buy the much cheaper Cambridge CXA61?

I currently run a Creek 50A amp



**"I was thinking of buying the Creek 100A but maybe I should reconsider and buy the much cheaper Cambridge CXA61?" says Adam Tate.**

with a Creek 50CD CD Player / DAC with fairly inefficient AVI Neutron IV bookshelf speakers in a small listening room.

Regards,

**Adam Tate,  
Hertford,  
Hertfordshire.**

Hi Adam. Our Creek Evolution 100A amplifier is a hard working review machine that copes well with all we throw at it – it is very consistent. It is also smooth and powerful. The Cambridge had a faster sound as I recall. Amplifiers can perform wonderfully in sonic and measured terms – but sound different all the same. It's impossible to say what is correct, or 'definitive' perhaps.

Measurement reveals flaws, characteristics and design intentions: it is vital. However, below a certain threshold differences become irrelevant to the listening experience and – with amplifiers – Harold Leak's age old criterion of 0.1% is about right. The difference between Creek 0.002% and Cambridge 0.005% is not subjectively important.

Best to audition alternatives to your Creek Evolution 50A – ask your nearest dealer to see if they can help. I would suggest you don't jump too fast since your Creek 50A is a fine amplifier. **NK**



**"There is greater opportunity for finding new music via the myriad of online radio stations" says Derek Gooding. Internet Radio has 27,532!**

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# Make Tea?

**NAD's C 658 preamplifier cannot make tea, but it does most else, finds Noel Keywood.**

**T**he most unlikely idea ever is surely to play LP through a streamer, is it not? Like letting a steam roller loose on a F1 track: somehow the two just don't go together.

A contradiction like no other it would seem, but that's what NAD's C 658 offers – and more bizarrely it has loudspeaker room correction! Eh? It's best to think of the C 658 as a Swiss Army knife pre-amplifier that does everything except make the tea. Well, what do you expect for £1499?

Although there's plenty of

analogue ability this is basically a deeply digital device. The analogue inputs are converted to digital (there is an analogue bypass) and it's run by a BluOS app on a 'phone or iPad, although you get remote control also, if not of all functions. Its software comes with Dirac LE (light) loudspeaker room correction and a microphone for set-up. As a streamer it's connected to the internet via ethernet cable or wi-fi. Since the outputs are feed a power

perhaps active loudspeakers, there is an on-board DAC and it is from ESS no less. Amazingly, there's also Bluetooth output so it will link with Bluetooth loudspeakers or headphones wirelessly.

This is one big bag of tricks then. So there's a User Manual of equivalent proportions, plus numerous additional set-up leaflets that do have to be read! The User Manual is available on-line and is needed to understand update firmware, or



Dirac etc. Setting up the C 658 isn't plug'n'play – more plug'n'ponder. I updated our review sample to latest (Nov 19) 3.6.12 firmware before starting the review.

There are two Line inputs and a Phono input for a turntable purposed for moving magnet (MM) cartridges – no great limitation since today's MMs are pretty sophisticated. All inputs are through RCA phono sockets; there are no balanced XLR socket inputs. However, there are balanced outputs as well as unbalanced with RCA phono sockets. With very high maximum gain the C 658 is a capable preamplifier that can handle all analogue inputs, even a moving coil cartridge. It has a headphone output and volume can be adjusted by remote control or app, as well as a front panel rotary control.

Bass, treble and balance can be adjusted on the preamp only, not the app, but the remote has a tone defeat function. Surprisingly, the bass

and treble controls are not switched out by selecting Analog Bypass, but the internal ADC (type unspecified) is, eliminating its 2.3V input overload headroom limit should a source exceed this (few do). As NAD say and our measurements showed, their bass and treble controls affect spectrum extremes only and there was very good resolution so fine changes could be made, top limit being a sensible +/- 7dB.

The digital section has an 'ESS Sabre 32bit DAC with 118dB Dynamic Range' they say, but the model is unspecified. Our sample managed this on one channel but not the other, average being 115dB (see Measured Performance). There are electrical and optical digital inputs (S/PDIF) but not a USB B for computer connection, since BluOS can read both PC and Mac (iTunes) music libraries via network connection using Windows SMB file sharing, in what is termed Network shares on the app.

More conveniently perhaps, there is a USB A socket at rear for reading a flash drive, so music files can be played from there without a computer being on, but this function is available only on the app – somewhat less convenient. Even a simple USB drive track list on the front panel display, of the sort used by Cambridge in their streamers, would have helped, in conjunction with access by remote control. Selecting USB on the remote flags up a message to use BluOS, but the front panel display does show track information.

BluOS will however give access to a wide range of streaming services including Amazon Music, Spotify, Qobuz, Tidal, Deezer, Napster, radio stations and much else. Inputs can be selected from the app too.

Dirac room correction proved a little challenging. Where AV receivers carry on-board software for set-up and 'room tuning' the C 658 does not. Instead Dirac must be run on



# Heresy

Titanium Diaphragm Hi-Frequency Driver

Polyimide Diaphragm Midrange Compression Driver

12" Fibre Composite Cone Woofer

Stylish Magnetic Woven Grill

MDF Cabinet With Four Fine Veneer Finish Options

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**HERITAGE**  
LOUDSPEAKERS



*A little heresy is*  
**good for the soul...**

The Heresy IV offers unparalleled sound quality from a relatively small speaker. Utilizing Tractrix geometry, the all-new Heresy IV ports allow for the most efficient, fastest air transfer in their class, which reduces port noise for punchier low frequencies. In addition to delivering smooth, dynamic and low distortion sound, the Heresy IV is available in a high-quality Natural Cherry, Distressed Oak, American Walnut, or Satin Black Ash wood veneer finish. A removable slant riser base is included for ideal floor placement.



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a separate computer (PC or Mac) on the network. An active internet connection is needed too.

The computer sends test signals (frequency sweeps) to the NAD and a connected (USB) measuring microphone collects data from the listening position and sends it back to the computer for processing.

Dirac on the computer then produces a correction curve and sends that back to the C 658. Up to five correction curves can be stored. The LE version of Dirac covers 50Hz-500Hz and there is an upgrade (\$99) for the full frequency range. It's a very complicated process I found, not for the faint of heart.

The final response and its correction curve were much as I expected from a sine wave sweep of a room and the correction curve can be manually tweaked to suit taste. Correction is digital and will not function with analogue inputs if Analog Bypass is selected.

Although it uses compact switch-mode power supplies so lacks a heavy mains transformer, the C 658 is quite heavy at 8.2kg and measures 435mm wide, 100mm high and 405mm deep. It's built on a standard pattern pressed steel chassis, sombrely finished in NAD style. A master power switch lies on the rear panel but there's a front power button that puts the unit into standby, duplicated on the remote control, but not the app. The app will control volume through all inputs though, which is important.

I had no problems operating the C 658 once I had acclimatised to the fragmented structure of its user interface, where some functions are handled natively but others by BluOS alone – with the remote control sitting somewhere in-between! Dirac loudspeaker compensation took this



**There are external wi-fi and Bluetooth aerials for efficient radio connection. Inside lie densely populated circuit boards full of huge chips, including the ESS DAC (near centre). Switch-mode power supply (screened) so no mains transformer visible.**

to an extreme in set-up complexity; on-line guides are available from NAD and Dirac but are poorly structured and written. It was all a bit scrappy.

**SOUND QUALITY**

I connected the NAD to our Creek Evolution 100A amplifier through Chord Company Epic balanced cables. With balanced inputs selected the Creek's volume control is switched out, so volume was controlled by the NAD. An Oppo BDP-205D Universal Player acted as CD transport supplying an optical digital signal through QED Quartz glass optical cable. I played hi-res and CD from a rear flash-memory drive (Memory Stick) and this offered best sound so was my preference. Other sources come in through cables that add jitter and noise, whilst ripped files to flash

drive are re-clocked to sound cleaner and more stable, as well as being cable-limitation free. Loudspeakers were Martin Logan ESL-X hybrid electrostatics, connected with Chord Company Signature Reference cables.

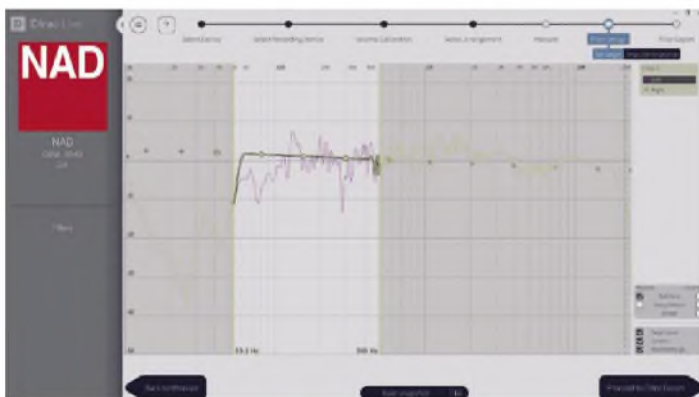
Running through a broad selection of uncompressed



CD tracks that I use regularly, it was obvious from outset that the C 658 has NAD's characteristic warm'n'easy sound balance. Since this is also characteristic of ESS Sabre32 series DACs, hardly surprising the C 658 should sound open and big chested with Misa Criolla, where the choir was spread large, wide and deep between our electrostatics, with a smooth almost enveloping warmth. ESS DACs have deep insight into low level information and this allowed the NAD to retrieve atmosphere from this live performance.

With Nils Lofgren's Keith Don't Go, with its cutting close-miked guitar strings, the C 658 was mild mannered rather than sharp and fast. Lofgren's vocals were big-bodied and the performance atmospheric, the whooping audience wrapping

**The Dirac loudspeaker correction microphone with long cable to listening position, plus an adaptor for connection into the rear USB A socket.**



**The Dirac loudspeaker response correction screen, with measurement of a small bookshelf loudspeaker, suggested correction curve and manual tuning options.**

# SOUND WITH STYLE

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**HI-FI WORLD**

ISSUE MARCH 2016



5 OF 5 GLOBES

Test: HI-FI WORLD, 03/2016

„Verdict:  
A refined sound from a  
sophisticated product.  
**Superb!**“

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At left are MDC expansion slots, for HDMI and future upgrades. Then come digital inputs including the all-important LAN RJ45 ethernet network connector (wi-fi is also available).

Big XLR balanced analogue output sockets sit centre-right, offering best sound quality, but there are RCA phono socket alternatives.

around behind our loudspeakers, but there were no sharp edges. Think: big, warm, smooth.

Moving on to hi-res I heard the same with Fleetwood Mac's Dreams (24/96) where cymbals in Mick Fleetwood's drum kit were rich rather than raucous, as they can be from this old recording – but there was good low end heft to his drumming. Bass was weighty, rather than speedy.

Cyndee Peter's singing House of the Rising Sun (DSD) had large presence: her slow drawl eased out through the loudspeakers. She sounded weighty enough to be real so I paid due attention. Slow cymbals strikes were sweet in tonality but

mild in manner, with no spotlight on them.

Spinning LP on our Timestep Evo modified Technics SL-1210 turntable with SME 309 arm and Audio Technica VM750SH Shibata tipped MM cartridge worked well. The cartridge is on the brighter side of audio life, fast and detailed. This suited the C 658 nicely; it was a symbiotic pairing. Fast drum work in Sing Sing Sing, from the Syd Lawrence Orchestra (180gm, Direct Cut), had visceral power and the musicians sat in broad panorama in front of me. The C 658 images well but it isn't showy about it, more gentle and beguiling. I enjoyed spinning LP through it, but best to use a cartridge

with fast, forward sound, Audio Technicas filling this bill well.

**CONCLUSION**

NAD's C 658 preamplifier does so much it is hard to take in. In classic NAD fashion all works well at basic technological level, ensuring good sound quality of a nature expected from this company: full bodied, warm and smooth – not a speedy sound. Operationally, the user interface is fragmented and awkward, and with Dirac loudspeaker tuning challenging. But once acclimatised I found it all worked well. If you want a preamplifier that does it all, sounds good and does not cost a fortune then the C 658 is well worth considering.



NAD's SR9 remote control covers many but not all functions.

**MEASURED PERFORMANCE**

Frequency response reached 45kHz before rolling down sharply, our analysis shows, with a 192kHz sample rate digital input via Coaxial 1, where the usual limit is 96kHz. The optical input accepted 192kHz sample rate and gave the same result.

Left and right outputs differed in quantisation noise level and therefore dynamic range, Right measuring 113dB and Left 118dB (EIAJ Dynamic Range) – a large difference. The average of 115dB is mediocre, behind the 120dB+ result becoming more common, if still enough to reveal the benefit of hi-res over CD (100dB dynamic range). The ESS Sabre32 series DAC (model unspecified) is spec'd at 118dB NAD say. Harmonic distortion at -60dB (24bit) measured 0.04% – good but 0.02% is now possible.

Preamp gain measured a high x12 (22dB) with volume turned to maximum (12dB), from phono socket Line 1 in to both phono and XLR output sockets, where XLR commonly gives double gain and output. Both sets of outputs overloaded at 4.7V – quite low. Volume is best set to 0dB where gain is a conven-

tional x3 (10dB). The analogue inputs overloaded at 2.3V in, just good enough to accept 2V from a silver disc player – but Analog Bypass bypasses the ADC, eliminating this issue.

Phono stage equalisation was accurate, giving flat frequency response from 10Hz (-1dB) to 20kHz. Gain measured x200 at 0dB volume setting and x760 (58dB) at full volume – more than enough for all MM cartridges. With 47k input this stage is purposed for MM but gain is just about usable with MCs with volume turned up.

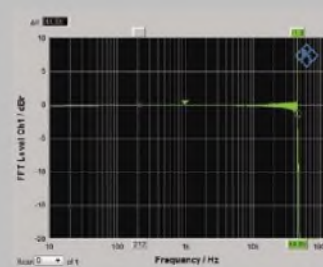
The C 658 performed well under measurement, but its digital section is slightly beneath highest standards. NK

**DIGITAL**  
 Frequency response (192kHz, -1dB) 3Hz-45kHz  
 Distortion (-60dB, 24bit) 0.04%  
 Dynamic Range (EIAJ) 115dB  
 Noise -113dB

**PREAMP**  
 Frequency response 3Hz-100kHz  
 Gain x12  
 Output max (unbalanced/bal) 4.7V

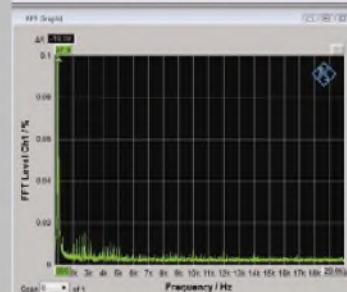
**PHONO STAGE**  
 Frequency response 10Hz-20kHz  
 Gain (max) x760 (58dB)

**FREQUENCY RESPONSE**



**DISTORTION**

THD at 0dB	Level [dB]	Frequency
0.0348 %	5.9257 mV	996.97 Hz
OFF	OFF	OFF



NAD C 658  
 STREAMING DAC  
 £1499



OUTSTANDING - amongst the best.

**VERDICT**

Massively capable digital preamplifier with streaming and loudspeaker correction. Complicated, but fine sound.

**FOR**

- breadth of ability
- warm smooth sound
- loudspeaker correction

**AGAINST**

- fragmented user interface
- complex Dirac set-up
- USB drive via BluOS only

NAD  
 nadelectronics.com



# WORLD STANDARDS

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

## TURNTABLES

**AVID INGENIUM** £800  
Great bass response and upper midrange detail allied to clarity makes this a must-hear at its price-point.



**CLEARAUDIO INNOVATION** £6400  
Expensive, but offers great results from a finely honed and beautifully finished belt drive turntable, with servo control from the platter to keep a grip on tempo like few others. Can be fitted with a Clearaudio tangential arm, or any conventional design. Awesome.



**INSPIRE MONARCH** £4,350  
A rebuilt from the ground up Technics Direct Drive, having blistering pace and dynamics allied with smoothness, sophistication and purity of tone. A true reference.



**LINN LP12SE** £3,600  
The UK's most iconic turntable, the legendary Sondek goes from strength to strength. New Keel sub-chassis and Radical DC motor add precision and grip to one of the world's most musical disc spinners. Expensive though.

**MICHELL GYRO DEC** £1700  
Wonderful styling coupled with great build and finish make this turntable a delight for friends and family. It has an attractive clear acrylic dust cover and you can mount just about any arm. A current design standard.



**PRO-JECT ESSENTIAL DIGITAL** £300  
A budget turntable that turns in a great analogue performance, but also has a hi-res digital output. Send 24/96 across your lounge via optical cable to a DAC and get great audio quality. Or record LP to your laptop.



**REGA RP3** £550  
The first of the super-quality Regas, little compromised by price and featuring Rega's outstanding RB303 tonearm, suitable for MM and MC cartridges. A standard at the price point.

**TIMESTEP EVO** £2100  
The famous Technics SL-1210 MkII Direct Drive but with improved plinth, isolation, main bearing and power supply, plus an SME arm (add £1500). DD convenience, rock steady pitch and fab sound at a great price. Our in-house reference.



## TO NEARMS

**ORIGIN LIVE ENCOUNTER MK3C** £1,745  
Origin Live combines carbon fibre and ebony to marvellous effect in its new 12-inch arm. Creamy and rich in presentation, the Encounter delves deep into the mix for a satisfying listen.

**HADCOCK GH-242 EXPORT** £810  
Consummately musical, lyrical sounding tonearm, but needs the right turntable.

**ORIGIN LIVE DNYX** £450  
Easy, smooth, creamy nature that reminds you why you're listening to vinyl in the first place. Essential audition at the price.



**REGA RB303** £300  
A one piece tapered casting makes this arm's structure almost unrivalled. Great dynamics and superb imaging, for MM and MC. Reference quality for peanuts.

**SME 312S** £1,600  
Twelve inch magnesium alloy tapered arm tube plus SME V bearings. An insightful yet smooth and relaxed sound. Superlative build completes the package. Our Editor's steed.



**SME 309** £1500  
A one-piece tapered 9in arm finished like a camera and slick to use. Superlative SME quality and sound at affordable price.

**SME V** £3000  
Offers rapid fire timing and a sense of precision, plus rock solid dynamics. Top dollar for deep pockets.

## CARTRIDGES

**AUDIO TECHNICA AT-OC9 MIII MC** £420  
A fine sounding MC with strong bass and super fine treble from a great stylus – yet inexpensive.



**AUDIO TECHNICA AT-F3/III MC** £150  
Great value entry level moving coil with detail and grip you just can't get from similarly priced moving magnets.

**BENZ MICRO ACE SL MC** £595  
Smooth, lucid and full-bodied, award-winning, hand-made cartridge from Switzerland.

**BENZ MICRO WOOD SL MC £945**  
Highly finished Swiss moving coil that plays music with riflebolt precision.

**DENON DL-103** £180  
A popular and much loved budget MC with big bass, smooth treble and deep sound stage. Fantastic value.



**LYRA TITAN I MC** £3,500  
Breathtaking speed and dynamics from LP, helped by diamond coated, boron rod cantilever.



**ORTOFON 2M MONO SE MM** £80  
A mono cartridge purposed for The Beatles in Mono microgroove LPs. Fitted with a top quality Shibata tip. Fab for the four.



**ORTOFON 2M BLACK MM** £400  
As good as it gets from MM. Fabulous detail and insight from a Shibata stylus, good bass and excellent tracking.

**ORTOFON CADENZA BRONZE MC** £1,400  
A mid-price MC with a slightly livelier presentation than the super smooth Cadenza Black. High-end sound at midband price – great value.



**ORTOFON CADENZA BLACK MC** £1,800  
Ultra smooth and dimensional moving coil with bass and punch aplenty. Lovely stylus.

**ORTOFON A95 MC** £3,750  
Fast and extremely detailed, this is an MC cartridge that sets standards.

**REGA CARBON MM** £35  
Budget price for a competent cartridge with a fairly unflappable nature. Ideal for beginners.



**GOLDRING 1012GX MM** £250  
A glorious sounding cartridge with solid bass and strong dynamic punch, plus excellent treble from its Fritz Geiger stylus. Fun and affordable.



**SHURE M97XE** £80  
Big warm sound, but great tracking and bullet proof stylus protection from damped guard. A survivor.

**VAN DEN HUL DDT-II SPECIAL MC** £995  
Long-established cartridge from Holland with an open and dynamic sound.

## PHONO PREAMPS

**CAMBRIDGE AUDIO 651P** £200  
Clean, concise sound from MM and MC cartridges at a very low price. A real bargain.

**ICON AUDIO PS3 MKII** £2,500  
All valve MM phono stage with MC transformer option, graced by big, spacious and relaxed sound.



**LUXMAN EQ-500 PHONOSTAGE** £4,495  
A fully-equipped phono stage from Japanese manufacturer Luxman that offers comprehensive cartridge matching allied to superb sound.



**LEEMA ACOUSTICS ELEMENTS ULTRA** £1,199  
Smooth and detailed sound with the ability to accommodate most modern cartridges. Exceptional value for money.



**PRO-JECT TUBE BOX DS** £425  
Compact MM and MC phono stage with valve output circuit and a big sound.



**QUAD QC24P** £995  
MM and MC, oodles of gain, a volume control – and valves! Looks superb and sounds even better: smooth, atmospheric and big bass.

**TIMESTEP T-01MC** £995  
New, minimalist phono stage that sonically punches well above its weight.

## PREAMPLIFIERS

**ICON AUDIO LA-4 MKIII** £1,400  
Uses early 6SN7 triodes for liquid sound. Has plenty of gain and a remote control into the bargain.



**MF AUDIO CLASSIC SILVER** £4,500  
One of the best preamplifiers we've heard at any price, this transformer-coupled marvel does very little wrong. It's powerful, clean and open, yet delicate. Its sound is unmatched at or near the price.

**MING DA MD7-SE** £1,520  
A valve preamplifier with an open, effortless sound and a big soundstage. It has plenty of gain so will accept any source and drive any power amp. A real beauty.



## INTEGRATED AMPLIFIERS

**ARIAND PRO845SE** £1,499  
Pure single-ended valve magic. Low powered but immediately gorgeous, easy-going yet forcefully dynamic at the same time.



**AUDIO RESEARCH VS160** £3,500  
Power house sound with enormous pace and punch from traditional U.S. muscle master Audio Research. Breathtaking, but expensive.



**CAMBRIDGE AUDIO AZUR 651A** £350  
Dual-mono construction and meaty toroidal power supply combine to produce a solid and sharp sound with sonics far beyond its price point.

**CREEK EVOLUTION 100A** £1,500  
Superb build and smooth confident sound make this powerful amplifier a benchmark.



**CYRUS 8DAC** £1,400  
Trademark shoebox-sized Cyrus integrated now offering 88Watts per channel, plus DAC. Svelte delivery from a dainty case that fits in anywhere – and isn't Class D!

**EXPOSURE 1010** £495  
Entry-level integrated from Exposure has excellent upper mid-performance with an almost valve-like sound.



**ICON AUDIO STEREO 60 MKIII** £2,800  
Excellent tube integrated with plenty of power and an expansive soundstage, plus KT150 tube option and bias meter for easy adjustment.



**NAIM NAIT 5Si** £925  
Naim's fabled entry-level integrated amplifier is updated to si status. Demos Naim's superbly muscular sound at entry level.

**SUGDEN A21SE** £2,480  
Class A amp with fantastic sound quality producing hard, sculpted images, deep detail and tight bass. Just don't expect disco-like sound levels!



**POWER AMPLIFIERS**

**AUDIO RESEARCH VS175** £7,498  
Powerful, fast valve sound that makes everything else look weak at times. Needs careful matching but well worth the effort.

**AUDIO RESEARCH VS115** £5,000  
Oodles of power with enormous punch. Rafael Todes said it provided "shock and awe" while retaining incredible smoothness and texture.

**ICON AUDIO MB845 MKII** £7,600  
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.



**ICON AUDIO MB81PP** £15,000  
Big Russian transmitter valves deliver 200W from these massive monoblock amplifiers. Frightening in every sense.

**MCINTOSH MC-152** £4,995  
Stunningly insightful sound with enormous bass punch from a uniquely designed transistor amp. Amazing audio, a league up, if expensive.



**QUAD ELITE QMP MONOBLOCKS** £2400 PR  
The proverbial iron fist in a velvet glove. Plenty of power but delivered with an assured and confident nature. Smooth on top and easy on the ear but can rock out when needed.

**QUAD II-EIGHTY MONOBLOCKS** £6,000 PR  
Powerful and expansive sound from modern design monoblocks that also look lovely. Superb – used by us as a reference.



**LOUDSPEAKER FLOORSTANDER**

**B&W 803 D3** £12,500  
B&W's updated statement floorstanders deliver depth and definition with breathtaking speed and authority, aided by a diamond coated tweeter. Expensive – but enormously impressive.

**CASTLE AVON V** £1,600  
A big floorstander at a modest price that suits the average room. Refined ribbon treble and deep bass give it a great delivery.



**EMINENT TECHNOLOGY LFT-8B** £2,500  
Excellent U.S. planar magnetic loudspeaker at bargain price. Utterly superb – a must hear.

**EPOS K2** £1,000  
A fun sound that is tidy all round and very engaging, with solid bass. Music as you hope it to be.

**FOCAL ARIA 926** £1,400  
Simple, clean, neutral sound – easy going but well engineered and affordable.

**MARTIN LOGAN SUMMIT X** £16,698  
Matches Martin Logan's XStat electrostatic panel to a powerful subwoofer to provide extended, powerful bass. Dramatic sonic purity. Awesome – all but unmatched.



**MARTIN LOGAN ELECTROMOTION** £2,500  
Martin Logan's budget baby XStat hybrid electrostatic. Fits into any lounge to give electrostatic levels of clarity and imaging.



**QUADRAL CHROMIUM STYLE 8** £1,700  
A supremely smooth yet open sounding loudspeaker. Clean and detailed treble from a fine ribbon tweeter. Accurate yet informative and enjoyable. Pure class.

**QUADRAL ORKAN VIII AKTIVS** £6,200  
Active loudspeaker with tight, powerful bass, perfect accuracy and detailed treble from a ribbon tweeter.



**Q ACOUSTICS 2050i** £480  
A large floorstander at a budget price. Offers high sensitivity and big sound and has very few flaws for the price.

**SPENDOR SP100 R2** £6,495  
Retro looks but a sound that's hard to match. Spendor's 12" bass unit provides massive low-end grunt with a room-filling sound.



**SPENDOR A3** £1,300  
Fine little floorstander with a smooth, natural midband and even tonal balance. Ideal for smaller rooms.

**TANNOY DEFINITION DC10 Ti** £6,000  
Enormous power with great projection. Glorious subsonics too. Need little power to go very loud and have superb finish into the bargain.



**TANNOY KENSINGTON** £9,950  
Big but not overpowering, punchy modern sound from classic cabinetry. Need little power to go very loud and suit a traditional home, or castle.



**LOUDSPEAKERS STANDMOUNT**

**ACOUSTIC ENERGY NEO 1 V2** £225  
Civilised sounding speaker with fast and tuneful bass.

**ACOUSTIC ENERGY AE1 CLASSIC** £845  
Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.



**ELAC BS243** £1,000  
More transparent and spacious than they've a right to be at this price, these refined mid-price standmounters represent top value.



**EMINENT TECHNOLOGY LFT-16A** £1,200  
U.S. planar magnetic bookshelf loudspeaker with unrivalled mid-band and treble. Hear it before all else.

**WHARFEDALE DIAMOND 220** £200  
Builds on the success of previous Diamond ranges with better bass, more detail and a greater sense of scale.



**KEF LS50** £800  
Supremely musical mini-monitors which sound much bigger than they look.



**MARTIN LOGAN MOTION 35** £1,300  
Folded Air-Motion tweeter gives a taste of Martin Logan's electrostatic sound in a standmount. Different from the standard mini-monitor and all the better for it.



**PMC TWENTY.21** £1,575  
Transmission line loaded standmount with a big box sound from a compact cabinet. Punches well above its weight.



**Q ACOUSTICS 2020i** £165  
Great little bargain-priced stand-mounts with a friendly, fun yet surprisingly refined sound. Hard to better for a pair of starter loudspeakers.

**WHARFEDALE DENTON** £500  
A beguiling mixture of retro looks with modern, high-technology drive units. The Denton has an easy-going, big-hearted sound with a touch of trad warmth that should appeal to many.



## HEADPHONE AMPLIFIERS

**CREEK OBH11** £150  
Designed specifically for low to medium impedance (30 Ohm – 300 Ohm) headphones the little Creek has a marvelously well-judged sound.

**CHORD MOJO** £399  
Class leading portable DAC and headphone amp with ability beyond all else. Big, open spacious sound.



**EIPHANY EHP-02** £99  
PP3 battery-powered portable gives great sound quality at an almost giveaway price. Happy with the output from an iPod or CD player, the little epiphany is a true bargain.



**ICON AUDIO HP8 MKII** £650  
The HP8 MKII valve-based headphone amplifier brings the spacious sound of valves to headphones. And it matches 'em all.



**FIDELITY AUDIO HPA 100** £350  
Great little headphone amplifier with a lively yet refined and open sound.

**MUSIC FIRST PHONE BOX** £276  
Brings a big stage, plenty of detail and rich, deep colours to the sonic spectrum.



**OPPO HA-2** £250  
Remarkable performance and sound from ESS Sabre32 DAC in a slim portable package.



## CD PLAYERS

**AUDIOLAB 8200CQ** £949  
Inspired CD player and DAC with price-performance ratio like no other. Capable of matching designs costing much more.



**CANOR CD2+** £3100  
Musically coherent and tuneful valve-driven CD player from Slovakia. Lovely liquid sound.



**CAMBRIDGE AUDIO AZUR 651C** £410  
Snappy modern presentation from this budget CD player. Cracking audiophile entry point for any digital fan.

**CHORD RED REFERENCE MKIII** £16,000  
A unique and massive engineering exercise that could well be the best CD player available. Chord's Pulse Array DAC technology produces a musical experience like few others. A true reference player.



**ESOTERIC K-03** £9,495  
Superb high-end silver disc spinner that is beyond criticism. Devoid of its own character but has a flawless presentation.



**EXPOSURE 101** £395  
Detailed player with fine sense of timing should be an automatic entry on any demo list at this price.

**ELECTROCOMPANIE EMP-1/S £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.



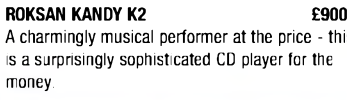
**OPPO BDP-105D £1200**

Universal player and DAC that makes CD and Blu-ray (+DVD) sound deep, spacious and full bodied. Reference quality that's affordable.



**REGA APOLLO-R £550**

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**ROKSAN KANDY K2 £900**

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**TUNERS**

**CAMBRIDGE AUDIO AZUR 651T £299**

Value-packed AM/FM/DAB and DAB+ ready tuner. Precise and detailed with excellent resolution of spoken word.



**CREEK DESTINY 2 £550**

Creek's tuner expertise shines through in the Destiny 2. This AM/FM receiver is wonderfully three-dimensional and smooth.



**MAGNUM DYNALAB MD-90T £1,900**

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**DACS**

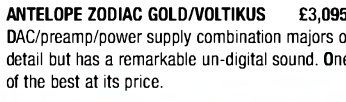
**AUDIOLAB M-DAC £600**

Excellent sound from ESS Sabre32 DAC and impressive flexibility with a unique range of filter options make this a stand-out product. Low price is the icing on the cake.



**AUDIOLAB Q-DAC £250**

Stripped-down version of Audiolab's M-DAC loses some features but retains much of the sound, making it a veritable bargain.



**ANTELOPE ZODIAC GOLD/VOLTIKUS £3,095**

DAC/preamp/power supply combination majors on detail but has a remarkable un-digital sound. One of the best at its price.



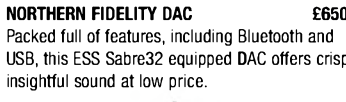
**CHORD 2QUTE HD £990**

Superb build quality and exceptional sound from this compact unit. Boasts the ability to handle DSD direct via USB and has an exceptional soundstage. One of the best DACs you can buy.



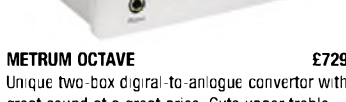
**DCS DEBUSSY £8,000**

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**NORTHERN FIDELITY DAC £650**

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**METRUM OCTAVE £729**

Unique two-box digital-to-analogue converter with great sound at a great price. Cuts upper treble, though.



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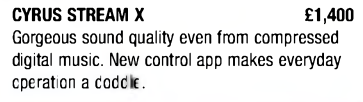
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# Magic rope trick

Martin Pipe samples the virtues of some pricey Furutech speaker cables.



Let us not beat about the bush. These beautifully-finished but, at £342 a metre, expensive DSS-4.1 speaker cables from Furutech are big. Really big. With an outer diameter of no less than 19mm, we're talking bigness of towing-boats proportions. And they're heavy.

What makes them so big and heavy is what makes them so expensive. The Tokyo firm kicks off proceedings with the finest copper it can lay hands on. The conductors that carry the precious audio signals are made of "DUCC Ultra Crystallized High Purity Copper...supplied and regulated under strict quality control by Mitsubishi Materials Industries".

The Mitsubishi manufacturing-process "optimally-aligns the crystals while reducing the number of crystal-grain boundaries, resulting in a tremendously-efficient conductor". Furutech refines the high-grade metal with its proprietary "Alpha Super Cryogenic and Demagnetizing treatment" and the end-product is "Alpha OCC". All clever stuff.

At the centre of each independent signal-carrying conductor is a 0.8mm-diameter black polyethylene core. Furutech's 'wonder-copper' is then applied in no fewer than three layers, each of which is wound in a slightly different way. These constructions are wrapped in two insulating layers, one fluoropolymer and the other colour-coded polyethylene.

Dealers can fit any choice of Furutech-designed spade terminals and 4mm banana plugs. Our three-metre review samples were fitted with £130-per-pair CF-201(R) spades intended to mate with an amplifier's output connectors and CF-202(R) banana plugs – £172 per pair – at the speaker end. Robust and good-looking, they feature rhodium-plated alpha pure-copper centre conductors, composite "damping rings" and non-magnetic stainless-steel/carbon-fibre body construction designed with resilience and stability in mind.

I used an Arcam A49 and Cambridge Edge W amplifiers with them. Completing my signal chain

was a Cambridge Edge NQ, the W's matching streamer, fed a diet of 320kbps AAC digital radio, CD rips and hi-res material.

Compared to my existing cables orchestral material, even from Radio 3 broadcasts, sounded noticeably more open and cleaner. With well recorded rock material improved treble clarity was evident.

Bass tautness and definition, though, proved to be even greater beneficiaries.

These refinements were noted with upper mid-range hi-fi; I wonder what might be achievable with truly high-end kit; the review samples do, after all, cost more than two grand for a three-metre stereo pair.

## CONCLUSION

These sturdy and well-engineered Japanese cables turned in the performance improvements that are to be expected, given their sheer expense. They are very heavy, and their size might make them difficult to conceal. It's just as well, then, that they look as good as they sound.

**FURUTECH  
DSS-4.1  
£342 A METRE  
PLUS  
TERMINATIONS:  
£130 PER PAIR FOR  
CF-201(R) SPADES  
AND £172 PER  
PAIR FOR CF-202(R)  
BANANA PLUGS.**



**OUTSTANDING - amongst the best.**

## VERDICT

The DSS-4.1 cables must surely rank among the world's finest – necessary for super-fi.

## FOR

- astonishing attention to detail
- improve clarity, resolution and low-end solidity
- beautiful construction

## AGAINST

- very heavy

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**WHARFEDALE EVO 4.2 loudspeakers**

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**DESCRIPTION**  
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**INFORMATION**

Developer audio web publishing ltd  
Category Entertainment  
Updated 7 Dec, 2014  
Version 1.0  
Size 9 MB  
Rating Rated 4+  
Family Sharing Yes  
Compatibility Requires iOS 5.0 or later. Compatible with iPhone, iPad, and iPod touch.  
Languages English

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# Small but large

Small price but large sound from these Klipsch active 'speakers has Noel Keywood listening.

**T**hey may look like small loudspeakers but in fact the Klipsch Reference R-51PMs are a complete hi-fi system, with 60 Watts per channel plus an array of inputs and remote control, all for £500. Unbelievable. But can they be any good at this low price? I measured them and listened to them and came away surprised. They are definitely worth knowing about if you fancy a

budget all-in-one with some interesting strengths.

What you get at this price is a pair of compact MDF cabinets measuring 338mm (13.3in) high, 178mm (7in) wide and 232mm (9.12in) deep, finished in artificial black ash veneer. With a modest weight of 4.8kg they're easy to move around and can stand on a 10in deep shelf, for example, although 12in would give easier rear access since

there's quite a lot at rear including a rotary volume control. However, these 'speakers are meant to be remote controlled from a small, light, plastic handset. It is very easy to use, being dedicated to the 'speaker only, not to other Klipsch products, so there are no superfluous buttons to clutter the fascia.

One loudspeaker (Right) is powered and needs a mains connection, the other is a slave. A



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slim cable connects them through ordinary loudspeaker terminals; there's no dedicated connector as with some interconnected loudspeakers, and this makes linking easy, the cable supplied measuring 4metre (12ft) long.

With no app or such like, set-up is quick and easy, the only slight puzzle being that if you want to use a turntable to spin LP then it will have to be placed close to the Right loudspeaker cabinet. I did this by placing the 'speakers on stands, one being next to a rack system with our turntable at top. Best not to place a turntable on a shelf next to the Right speaker because it will suffer

connector, as well as Bluetooth wireless input from a smartphone, tablet or portable player.

Inside there is a "60 Watt all-digital amplifier" driving each channel Klipsch say, confirmed by measurement (see Measured Performance).

The treble unit is a 1in (25mm) aluminium dome behind a Tractrix profiled horn (see Wikipedia on this). Below lies a 133mm bass/midrange unit with spun copper front on what Klipsch describe as an IMG cone drive unit, so presumably a layered cone with frontal copper on a IMG base. This drives a rear ported cabinet. The grilles are magnetically

"The Tractrix horn of the tweeter delivered a massively spacious sound that engulfed the area beyond the loudspeakers"

feedback.

So as you've now guessed, these active loudspeakers can accept a turntable, with moving magnet (MM) cartridge. But they can also accept much else, having analogue line inputs through phono sockets when LP is not used (switch selected Line/Phono), analogue line input via a 3.5mm jack, digital input via an optical S/PDIF cable or USB B computer

attached and acoustically transparent our measurements showed, so can be used on or off.

**SOUND QUALITY**

I started out by running the digital optical output of our Oppo BDP-205D Universal player to the Reference R-51PMs for CD from a good source. This 'sort of' went well and was impressive, showing

immediately that the 'speakers have a grippingly large sound stage that makes them stand out. The Tractrix horn of the tweeter works well here, delivering a massively spacious sound that engulfed the area beyond the loudspeakers at left and right. There was a sense of height too, images occupying area rather than being pin-point. As I span a stream of uncompressed review tracks and moved around the room to grab CDs, I also became aware that the stage was vertically phase consistent, sounding much the same wherever I was in the room.

All went well with CD, Antonio Forcione's guitar in Tears of Joy was large and forward, strongly lit but not spitty up top. Josefine Cronholm singing In Your Wild Garden was also pushed right out and took on big presence; there was almost a glare here. Klipsch's R-51PM 'speakers are detailed and insightful, forward and with large scale.

The bass line in this track was reticent until I selected bass EQ, but



At top a conventional 1in aluminium tweeter drives a Tractrix flare horn. Below sits a spun copper fronted composite bass/midrange unit with indicator LED at top right.



Simple, light plastic remote with volume and input selection, as well as bass EQ.



One loudspeaker (Right channel, seen at left from rear) carries 60 Watts per channel Class D amplifiers, a digital-to-analogue convertor, Bluetooth wireless and a phono stage for a turntable. A computer can be connected via USB B. The Left channel is an unpowered slave, connected by a slim cable.

# The Blackline Home Audio System



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this was in our large listening room. In smaller rooms, for which the R-51PMs are designed, and near-wall placement they will better match work with room modes to give a balanced result that avoids room boom.

There are no tone controls, only dynamic bass EQ that lifts bass at low volumes, but less so as volume rises to avoid overload. It was easy to use and effective, adding obvious extra 'boing' (a slightly bouncy quality) without overdoing it, so the speakers remained in control – free of bass wallow. A matching sub-woofer is available.

It was when I got to Nigel Kennedy playing Vivaldi's Spring that I felt the strings of his Strad, and those of the English Chamber Orchestra behind him, were a tad on the hard side. This property was there with Rock but less intrusive. So I jumped up and connected the Oppo's analogue output to the Aux input, in effect bringing in the player's ESS ES9018 Sabre32 Series DAC – and what a difference! Now there was tonal colour in the sound as if sunlight had flooded in, violins taking on an altogether livelier and natural quality, whilst still being strongly embodied on the big sound stage.

The message here is, then, that the digital section is not the sweetest and most tonally rich – but that's what we know from budget digital. To get the most from these 'speakers – and they really are very good – best to drive them from their analogue inputs. Bringing me to LP.

With an Audio Technica VM750SH Shibata tipped cartridge in our SME309 arm on Timestep Evo modified Technics SL-1210 Mk2 Direct Drive turntable, the R-51PMs came alive, throwing out a huge stage with nicely solid bass. Hand drums were dryly controlled, stabbing at me in Hugh Masekela's Uptownship (180gm analogue) and his trumpet blared out in big form. There was some slight glare again; the tweeter is forward but that's where all the detail and projection comes from.

Similarly, Cheryl Porter singing God Bless America on Two Countries One Heart (180gm analogue) was dangerously close at times (!) when I turned volume up, but the images and the sound stage were so high and wide anyone would be impressed. For such a small loudspeaker they deliver a spacious sound unrelated to their size. The dryness of the sound (no bass waffle) kept LP neat but sweet

– and certainly impressive. The two went together very well.

**CONCLUSION**

These little loudspeakers outperformed themselves! The Klipsch Reference R-51PMs were beyond good at the price. Impressively large and open sounding, their huge sound stage suited Classical and Rock equally. Where small speakers

commonly sound pinpoint focussed, these put up a massive display. Being used to a large stage from our Martin Logan ESL-X electrostatics I was quite taken aback to hear the R-51PMs attempting to go there.



*The aluminium dome tweeter has a front phase plate to smooth its output, before being guided into the room via the Tractrix horn.*

They're not electrostatics – far from it – but at the price they manage absurdly well. With so many inputs and such ease of use, plus a low, low price – well worth getting an audition.

**MEASURED PERFORMANCE**

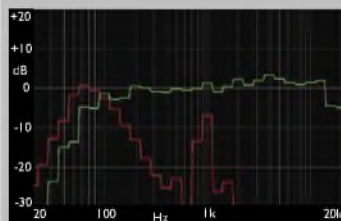
Through analogue Aux input (3.6mm jack), frequency response of the R-51PM showed some small upper mid-band lift of a few dB around 4kHz. Measuring 20 degrees off-axis lessened this a little, but our third-octave analysis of pink noise (green trace) shows the 'speaker still has a peak here and will sound forward as a result. It will also very detailed, especially as high treble is strong up to 12kHz.

Output below 1kHz slopes gently

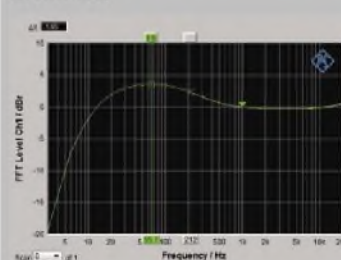
**FREQUENCY RESPONSE**

*Green - driver output*

*Red - port output*



**BASS EQ**



downward to 60Hz where it is -5dB down. This means it will be lacking in warmth unless placed close to a rear wall in a small-ish room (up to 14ft long or so). The port (red trace) provides extra output around 60Hz, giving fast if not deep bass. There will be no subsonics, as you might expect from such a small cabinet. Selecting EQ provided bass boost of +5dB at 70Hz at low volume (1 Watt out, 1V in) to lift deep bass and add a little warmth by lifting the lower midband.

Fed an analogue signal via its sensitive Aux input (3.5mm jack) the R-51PM delivered a loud 90dB sound pressure level (SPL) at 1m from just 66mV in, well within the output of a mobile 'phone headphone socket (typically 800mV).

Unusual is the addition of a MM phono stage for direct turntable connection to this loudspeaker. Applying RIAA pre-equalised pink noise showed the R-51PMs were perfectly accurate here.

The amplifier delivered its rated power of 60 Watts into 6 Ohms and frequency response was as shown, with deep bass below 20Hz curtailed.

The R-51PM loudspeakers measured well, having a forward upper midband that will make them sound vivid. **NK**

**KLIPSCH R-51PM**  
**£500**



**OUTSTANDING - amongst the best.**

**VALUE - keenly priced.**

**VERDICT**

Small size but large scale sound stage. Detailed and forward. Impressive, especially at the price.

**FOR**

- capacious sound stage
- multiple inputs
- easy to use

**AGAINST**

- some glare
- lacks deep bass
- analogue better than digital

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# Style and substance

Martin Pipe enjoys these good-looking early-90s speakers from the Mordaunt-Short stable.

**M**ordaunt-Short may now be part of the South London-headquartered Audio Partnership, where it's a sister company to Cambridge Audio, but its late-1960s beginnings couldn't have been more different. After Norman Mordaunt and Rodney Short joined forces in 1967, the duo's first ever speakers enjoyed exclusive distribution through a famous retailer in a better-known part of London – namely Harrods of Knightsbridge. In between, Mordaunt-Short brought us three ranges of speakers – Festival, Carnival and Pageant – and moved into the 1980s with its radically-different MS series.

The speaker described here – the two-way medium-sized bookshelf-type MS3.30 – is a later example of the MS series, appearing in the early 1990s. Mordaunt-Short, like most audio companies, was by then coming to terms with the impact of globalisation. Its speakers had to be innovative, affordable, capable of strong performance and styled in a manner that would appeal internationally. The 8.2kg MS3.30's technology was certainly interesting, for a pair of British speakers that sold for £200 (by the time they had crossed the Atlantic, US buyers were being asked to pay approximately \$460...plus a further \$130 for the matching stands). To this end the MS3.30's drive units employed unusual materials, the crossovers featured protection circuitry and the enclosures were constructed differently.

Let's start with the cabinet, which measures a domestically-acceptable 460mm x 240mm x

260mm. It may be made of a 15mm-thick particleboard-type material, as seen in countless other speakers of the time, but the baffle that fronted it was not machined from wood. It is instead a lightweight plastic moulding that achieved its strength through ribbing. Doing so offers many advantages. Over long production runs, injection-moulding is much cheaper than traditional woodworking methods. Furthermore, it becomes easier to accommodate features – notably ports (the MS3.30 is a bass-reflex design) and rounded edges. The latter reduce diffraction effects, thereby improving imaging. Finally, these mouldings can be given an attractive contemporary appearance that would otherwise be difficult to achieve.

Get this right, and your product will have timeless appeal – it has to be said that Mordaunt-Short's designers did a great job with the MS3.30. Chances are, you won't feel a need for the edge diffraction-free frameless cloth grilles.

Note the absence of visible screws – indeed, the 200mm bass-midrange driver looks like an integral part of the moulding. It isn't, of course; the four screws holding it in place are hidden by a clever circular trim with tabs that neatly slot into the baffle. Said drive unit is built around a cast-aluminium basket. It features a polypropylene cone, coupled to a 32mm voice coil wound onto an aluminum former. The black cone visually-complements the baffle, an injection-moulded dust-cap



contributing further to the MS3.30's neat lines.

Its surround is made of a synthetic rubber material, which has much greater longevity than the foam used by some manufacturers. Mordaunt-Short had plenty of free rein here, having designed and built this MSB-200 woofer specifically for its products (as opposed to simply buying in drivers from third-party companies). The engineering team could therefore optimise it for the task at hand; a natural 60Hz bass roll-

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**BY TRAIN:** Temple Meads Station is a short distance from the Marriott.

**BY CAR:** From the M4 take J19 (M32 - Bristol). Follow signs for City Centre and RAC signs to the Show. For those using satellite navigation systems the hotel post code is BS1 3AD. Easy local parking in Cabot Circus car park and Broadmead and Bond Street NCPs.

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**WHAT HI-FI?**

off that simplified crossover design, for example.

Also attached to said crossover – which features a resistive device called ‘Positec’, to protect the drive units from being driven beyond their capabilities – is the 25mm tweeter, which goes up to 22kHz and features a dome made from aluminium instead of plastic. If the specs are anything to go by, the overall system has a sensitivity of 90dB (1W/1m) – pretty good even by today’s standards.

The recessed binding-posts – which present the nominally 8 Ohm load of the speaker to full-range signals from amplifiers rated at 100W or less – are gold-plated



**Although bi-wiring isn’t accommodated, the nominally 8 Ohm MS3.30s still manage to yield a good standard of performance from their full-range input terminals. Mordaunt-Short recommended amplifiers rated up to 100W.**

and substantially-built. They will take bare wire or 4mm banana-plugs. Four threaded holes on the base of each speaker are provided for the matching optional stands, which raise the MS3.30s a half-metre or so above the ground. Mine wasn’t accompanied by these, but any decent furniture of this sort should be fine. Mordaunt-Short’s advice was to position each MS3.30 “approximately 20-50cm from the rear wall”, and at least half a metre from a side-wall.

And who are we to argue? Such advice was followed when setting up my particular MS3.30s, which had lain dormant for a while. They were hooked up to a Marantz PM66-SE Ki, as featured in a previous Olde Worlde and a Cambridge CXN v2 streamer with access to Internet radio and losslessly-compressed music

both CD-derived and hi-res.

Mordaunt-Short’s cleverly-designed plastic baffle and custom drivers got listening off to a good start, Radio 3 live concerts (320kbps AAC stream) benefitting from a wonderfully-spacious yet natural stereo image. More artificial pop/rock studio concoctions, such as Talking Heads’ Remain With Light, also fared well. I was left with no doubt as to where the engineer had positioned the musicians.

That Talking Heads album, notably pacy tracks like Born under Punches, demonstrates that the MS3.30 can cope well with punchy and complex rhythms. But one cannot expect everything from a small speaker. The monster synth bassline of Stevie Wonder’s Living For The City loses its impact here, although its definition emerges largely intact. A slight warmth, bordering on mellowness, was however noted with male speech (Radio 4 announcers, for example). There’s also an upper-treble bias, which gives percussion and the overtones of some instruments more ‘bite’. Great though the MS3.30 aluminium-domed tweeters were in their day, they can on occasion sound a tad brittle at higher listening levels; modern tweeters are noticeably more open and detailed.

For all their limitations, though, these speakers make for enjoyable listening. They would be great in a starter system, second speakers in another room or quadraphonic/surround rears. I’ve seen second-hand pairs go for between £20 and £50; they crop up on eBay and at audio jumbles fairly regularly, suggesting that they sold well to start with. Be warned, though: in the words of the present-day operation “all Mordaunt-Short products built before 1994 were manufactured by a different company”. As a consequence, this present-day incarnation of Mordaunt-Short “cannot supply spare parts”, as they are not its “intellectual property”.

How did I find this out? Sadly, one of my MS3.30 bass/mid drive units failed somewhere between photography and restoration to my listening room; somehow, its voice-coil had gone open-circuit. Thankfully, I found a reasonably-priced ex-equipment driver at short notice on eBay, and was thus able to continue this article. If you have no such luck trying to find replacement



**This is the MS3.30’s MSB-200 bass-mid drive unit. Note the use of an aluminium casting for rigidity. For best results, you’ll need to replace a failed unit with the same model, as Mordaunt-Short designed it specifically for this speaker.**

parts for proprietary Mordaunt-Short products, there’s another option. My attention was drawn to Lockwood Audio ([http://www.lockwoodaudio.co.uk/mordaunt\\_short.htm](http://www.lockwoodaudio.co.uk/mordaunt_short.htm)), which holds “all remaining spares and information for pre-1994 Mordaunt-Short spare parts, produced before the brand was acquired by the Audio Partnership”.



**The 200mm polypropylene-coned bass/mid driver (top) and the aluminium-domed tweeter. They were advanced for a modestly-priced speaker of the era.**



THE ASSOCIATES

Perhaps  
Cherry Red

**B**illy Mackenzie and Alan Rankine, straight from Edinburgh, Scotland, managed to pull it off. They produced a creative entity that was, to my eyes and ears at least, unique. Even for the time – a time of upheaval in broad terms and especially in music – where boundaries were being pushed and innovations determined, The Associates managed to stand apart. This art rock, glam, synth pop duo, a sort of OMD production mixed with Roxy Music and Marc Bolan with operatic overtones, landed on Earth with 'The Affectionate Punch', the duo's 1980 debut.

With 1982's hit single Party Fears Two, from the album 'Sulk', the band were trying to be reeled in by the New Romantic movement but, again, I never saw them in that vein, despite the makeup et al.

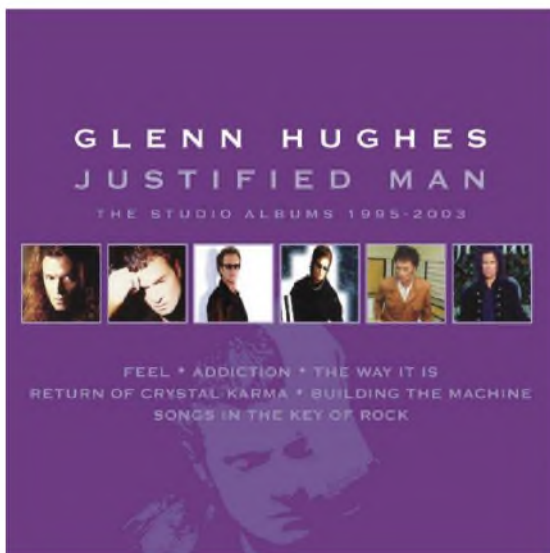
Then Mackenzie split up the group and started to create trouble with his label, Warners. He hated the industry and rejected the notion

of repeating the same hits formula. Drugs didn't help.

Mackenzie teamed up with Dundee punk guitarist Steve Reid, co-wrote ten songs, brought in a backing band and started a new 1984 Associates LP, 'Perhaps'. The LP was a chaotic experimental mess (drums filled with water, anyone?), fraught with delays, ran horrendously over budget, said hello and goodbye to five producers, gave several people at Warners nervous breakdowns and never made a dime.

Now presented in a gatefold sleeve, over two CDs and a host of bonus tracks plus booklet, is Perhaps classic Associates? Not really. The first four tracks have a camp, on a Tenerife beach sipping a red drink, mono tempo, synth pop-by-numbers, Soft Cell rip-off feel. That said, devoted fans will still love it and there are highlights: 'Helicopter Helicopter' plugs into thought, 'Thirteen Feelings' plugs into imagination while the rest are 'fine'. Great mastering, though.

AUDIOPHILE CD



GLENN HUGHES

Justified Man: The Studio Albums 1995-2003  
Purple Records

**Y**ou might know him for his time with Deep Purple (from 1973 to 1976), Black Sabbath, Trapeze (for which he began musical life as bassist and vocalist) and slightly bizarre appearances with the likes of the KLF (the 1991 single, America - What Time Is Love?), but Hughes also made a host of solo albums. This collection of six CDs, available in a clamshell box plus fold-out mini-poster plus notes, packs each album in a card sleeve with a generic style and unique cover image.

'Feel' (1995), the first album here, was actually Hughes' fourth solo release in total. Including slices of pop, soul and funk, it included Guns N' Roses and Velvet Revolver drummer Matt Sorum and a collaboration with his Hughes-Thrall partner, Pat Thrall. The funk might put hard rockers off but it's a worthy outing from the man himself.

'Addiction' (1996) returns to hard rock. Guest guitarist, Marc

Bonilla performed, co-produced and co-wrote nine of the ten original songs. An excellent collection of hard hitters.

'The Way It Is' (1999) includes two versions of the Hendrix track 'Freedom'. Mixing rock with funk, it tones down the 'Addiction' vibe.

As does 'Return Of The Crystal Karma' (2000). Featuring a guest cameo from The Cure's Lol Tolhurst.

He's there on 'Building The Machine' (2001) too that includes a version of the Deep Purple classic 'Highball Shooter', features Pat Travers, who duets with Hughes on the Rare Earth cover 'I Just Want To Celebrate' plus Toto's Bobby Kimball.

'Songs in the Key of Rock' (2003) keeps the funk in the rock, includes bassist Billy Sheehan and Red Hot Chili Peppers' Chad Smith. Oddly, the rock outings are arguably the weakest parts of the album. Nevertheless, it's one of the best releases of the entire box set. Thumbs up for the mastering too.

**J**osh White sang a combination of blues and folk but he was also part of the New York scene populated by the likes of Woody Guthrie, Sonny Terry and Brownie McGhee. He may have been a folk revivalist but he was also a free thinking bohemian who supported civil rights in the USA. Just flip over the included booklet in this single CD issue to see the sincere face of the man himself, shirt open, the neckline plunging.

A due to his diversity perhaps but there was also versatility there and the fact that he could adapt his creativity to many directions, including acting.

Despite this rather hip, nay trendy image, White had hardcore roots with his associates including Willie Walker whom White saw as the Art Tatum of guitarists and Blind Blake, a pioneer of the finger-style ragtime guitar.

White never took the easy

path, though, as his clashes with the corrosive McCarthy political movement attests. Accused of being a Communist sympathiser (he wasn't), he was blacklisted. He then moved to Europe, only being able to work again when JFK invited him to appear on American TV in 1963.

It was during those dramatic years that both of these LPs appeared. 'Volume 1' was created over two sessions in 1956, backed by pianist Sam Benskin, Leonard Gaskin on bass and Panama Francis on drums. From 1956 to 1957, 'Volume 2' was created with Benskin again, Al Hall on bass, J.C. Heard on drums plus White's daughter, Beverley, on guest vocals. Both LPs appeared under the ABC Paramount label.

This release is well presented with admirably intimate mastering that well reflects White's smooth, easily digestible vocal delivery. His guitar supplies a tight, rhythmic backing that accompanies rather than dominating.



THE JOSH WHITE  
STORIES VOLS: I & II

Jasmine

AUDIOPHILE CD

**N**o, this is not another review of a classic album from the band's catalogue. This is – wait for it – a new album! In fact, the release helps to celebrate the band's 50th anniversary (that can also be found on vinyl). The twin lead guitars are there and there's even a single 'We Stand as One'. A worthy title if ever there was one. In this incarnation of the group, you'll find founder member, guitarist and vocalist Andy Powell, drummer Joe Crabtree (who joined in 2007), Bob Skeat on bass and relative newcomer Mark Abrahams on guitar who was apparently playing Wishbone Ash ditties since he was nine.

This new album appears in a digipak with a colour glow booklet stuffed in the available pouch, packed with lyrics for all eleven songs.

Mastering is very nice indeed, encouraging the broad soundstage

into an epic state of presence. The midrange has also been enhanced with both air and space that allows guitar reverb tails to roam easily. Percussion is big, bold and bombastic from the lower end but the ear can still pick out delicate cymbal taps from the treble area.

The songs here are admirable in lyrical terms. Apart from the usual 'luv thang', hopes, dreams and security, there's a measure of sentimentality relating to the band and its journey, raging against politics, raging against corporations and the powerful who ride roughshod over the ordinary geezer, as well as the weaknesses of our fellow man. 'Twas ever thus, eh?

Of course, there is a little bit of the 'old man shaking his fist at the sky' thing going on here and the words are sometimes more impressive than the music covering it but I'm happy that the group itself actually has something to say.



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"I have considered buying a hard hat and attaching the mic to that"



Noel Keywood

**O**ur music reviewer Paul Rigby made the comment recently that "I don't know why live music should be seen as a quality standard because it's rubbish". Er – yes! And very true. But there's live and live in very different surroundings: and live is rubbish but also the best.

I came across the problem when wrestling with camcorders. Just try to capture live sound with one of these and you soon realise that it's a challenging process that fights the notion of quality.

The big issue is the baby in the background. I know because they infect all my otherwise wonderful videos shot in super HD with me concentrating furiously at the controls, trying to get it all right. Stand against a lamp post to prevent camera shake, don't breathe 'cos the mike will hear you, but don't faint either – and hope wind, birds and babies are all absent at the same time. Some hope! There's always a baby that creeps up behind and is impossible to suppress. All videographers should carry a bag of dummies perhaps and throw 'em out when this racket starts.

But that's just my suffering with the subject. What Paul was lamenting was quality of much live concert material, or just live in general where the considerable challenges of recording had not been addressed satisfactorily. You have to put effort into live recording and this very much draws you into the whole subject of live sound, where technology and technique must come together in glorious unison for even a half-decent result.

I am not a live recording engineer but the subject fascinates me, mostly with regard to cinematography where the sound track

is vital. Film sound tracks are carefully controlled or dubbed: it's a big issue. Live Rock concerts vary from very good (The Who at Kilburn State, a carefully arranged 'live' performance) to very bad – and there are no end of these. Prompting Paul to declare live "rubbish".

But what is live? An artist playing live in a studio captured on a microphone is surely live. The studio acts to keep out noise, as well as giving a tailored acoustic. It helps if there is some reverb for a 'live feel' or the sound comes across as dead (unsurprisingly!) – and none of us like dead.

Once you get out of a studio and into the open air the amount of noise surrounding us all comes as a surprise when you start live recording. The human ear and brain do a great job in filtering most of it out, but directly you set up a mic and listen on headphones this filtering mechanism collapses and the noise from wind, birds, traffic and aeroplanes is high to overwhelming. With live concerts there is the audience to cope with and here microphones have to be close to their subject – instrument or singer – to stand any chance of capturing decent sound.

What I quickly learnt is that in most circumstances surround-sound is not what's wanted. It picks up noise from all around, especially from the camera operator. Yet consumer camcorders commonly boast such microphones.

Better is a frontal mono microphone that's directional, can be attached to the camera and plugged into its external mic socket (which most have). The trouble here is bulk: it can be difficult enough just trying to handle a camera and all its controls, especially zoom, without having a microphone in the way. I

have considered buying a hard hat and attaching the mic to that.

Live recording can alternatively be tackled with the interesting M/S (mid/side) microphone arrangement where a single directional forward microphone (Mid) picks up the subject being filmed – a singer or musician – whilst the Side mic picks up stereo information that can be used later if desired, but this needs a dedicated mixer and post-processing.

I love using a camcorder because good footage can be great to watch. But getting even half decent sound is a real struggle. Common audio quality criteria like wide bandwidth are not very helpful. Good low frequency response makes deep noise from vehicles and machines overwhelming so a high pass filter is useful. And there's not much point in trying to capture exquisite highs either, meaning a low pass filter is also useful. You can use wide audio bandwidth mics in a studio, but only if there are no trains nearby, something Decca suffered in their Kilburn studios.

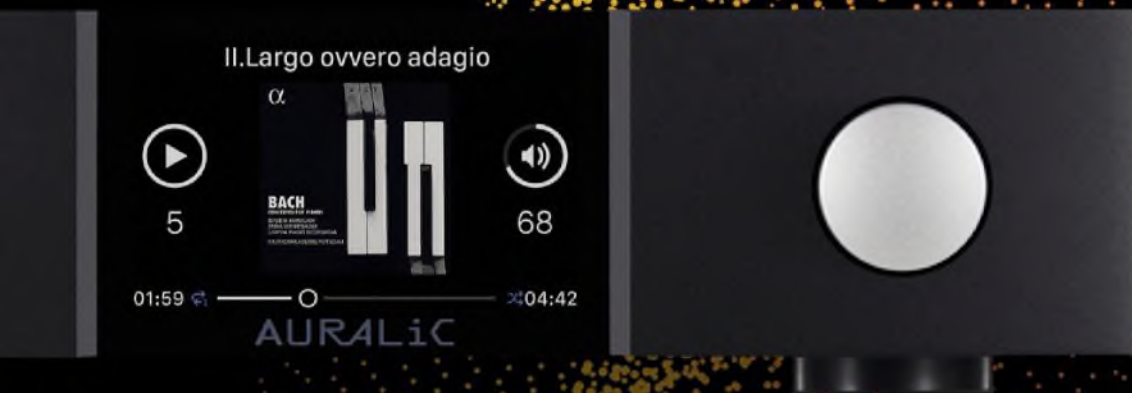
One solution is a bulky semi-pro video camera with microphone on carrier at top, complete with sound level meters, balanced XLR connectors and what have you. Not my idea of fun, especially when you are filming on the move.

I notice people nowadays shoot short HD sequences on compact still cameras, something Geoff Marshall manages well on his journeys around Britain's rail network (YouTube). Check out the mono microphone strapped to his camera when you see it in a reflection.

Live recording is nothing other than challenging. Modern cameras can do a great job picture wise, but the sound – oh dear! As Paul says it is so often rubbish. I know why. ●

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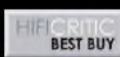
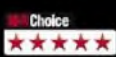
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AURALIC PRESS AWARDS



# "A wretched ditty from the original artist, Lobo. One I would loathe for all time"



Paul Rigby

There's a distinction to be made, I feel. When looking back on your life and the music that infused it – how to describe the distinction? Well, you know when people say that you can choose your friends but you can't choose your family? I feel that there are two similar kinds of music, at least there was in my musical history. I wonder if you're the same and I'd like you to tell me if I'm right or even close on this one.

There's the music that we loved. The music that we gravitated to. The music we sought out and cared for. The vinyl we bought, the tapes we gathered and the CDs we collected. The music we purchased after hearing concerts or after watching TV programmes like 'Top of the Pops'. There's the music we loved from friend's recommendations. Music that represented how we thought, how we acted and even, how we dressed. Music that said a lot about how we thought and acted. That paralleled our own philosophies. That represented our frustrations. That reflected how we saw the world. The lyrics from these songs were our mantra. They explained, possibly in a more poetic manner, our inner most thoughts and feelings.

And then there was the other kind of music. The music that was around you, unbidden and unrequested. Uninvited and barely tolerated. This was music that blared at you from the family radio, that blared at you from the car radio, that blared at you from parent's record players and siblings cassette players. It was there as muzak in shops and supermarkets. It was there in adverts. It was there in films. It was there.

The sad thing is, such music

became a focal point of the negative on more than one occasion. I say negative, that sounds so finite, but it wasn't really. Such thoughts roamed on a sliding scale. Hearing these records you may have tapped the odd foot or even hummed a choral snippet. But no more. And hearing it too often would have been plain annoying, of course.

It's odd but now, looking back, the entire situation seemed unfair. I was unintentionally painting a creative artist's entire career and reputation on a three minute nightmare. Or so I often thought, at the time. If not a nightmare then a song that grated or, at least, triggered less than positive thoughts.

Three (well, three and a half) things dovetailed, at least in my case, to create this unhealthy situation. The recipe was this: the seventies, my school age and BBC Radio 2.

The seventies were a problem because 'that' music was prevalent, popular and played. My age was a problem because I had very little control over 'that' music, where it was played and when it was played. I also had no power to remove it. The BBC were a problem because 'that' music seemed to emerge more from BBC Radio 2 than just about anywhere else. Oh and maybe I should have added the DJs, Terry Wogan and Jimmy Young. Lovely guys and both Radio 2 legends but they played this stuff. BBC Radio 2 was everywhere during my childhood. In my home, in the car, piped into local shops. Everywhere.

Now, as much as I love Matt Munro and I have many of his original pressings on vinyl in my personal collection, if I ever hear his rendition of 'Born Free' again, you will find me a shaking wreck in a dark corner. I

noticed it on a new issue, 'Stranger in Paradise: The Lost New York Sessions' (Universal) which couples the same with a 'Best of...' The former releases treasures from the Capitol vault, complete for the first time. Even so. Born Free? Hmmm.

Then there's Stonewall Jackson. I saw his name on Jasmine's ([www.jasmine-records.co.uk](http://www.jasmine-records.co.uk)) excellent 'Singles As&Bs 1957-1962'. A highly talented country singer, his country hit 'Waterloo' hit was so big, it also made it into the pop charts and launched the man on TV.

But then he had to release his 1971 rendition of 'Me and You and a Dog Named Boo'. A wretched ditty from the original artist, Lobo, never mind Jackson. One I would loathe for all time for its happy, clappy, toothy-grinned, nicey, nicey, momma's apple pie, saccharine decay. The song made David Gates sound like John Lydon.

Even poor Bobby Charles' who penned 'See You Later Alligator' riled me after Bill Haley's quiff took up the reins. A superb song-writer who worked with The Band and wrote for Fats Domino but had little success as a solo artist, Charles' 'Later Alligator' can be found on the Jasmine 2CD release, 'Alligators, Sprockets and Bended Knees'.

Trouble was, my parents would shout out the title to each other whenever one of them would leave the house. Good grief. Once is funny. Twice is cute. The fifty-seventh time?

Now? I wouldn't care less. But aged 12? Another matter.

The three are a tiny, tiny tip of a very large iceberg. I should list them all as the sort of primal scream therapy variation that Lennon would have been proud of. So, dear readers, spill. Tell your Uncle Paul about it all. ●

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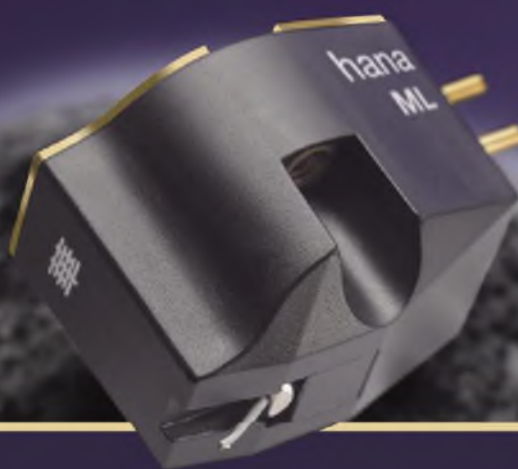


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"in their heyday, some were so busy they had to turn away clients"



Martin Pipe

**T**he Who's reassuringly-angry new album WHO may be redolent of past glories like Baba O'Riley, Magic Bus and My Generation. But much has changed since the early 1960s when The Who entered a recording studio for the first time.

Studios play an important role in this band's story; the album's sleeve notes reveal that at least some of WHO was recorded at British Grove and Metropolis. It's reassuring to know that these two iconic Chiswick (London) studios, the first of which is owned by Dire Straits guitarist Mark Knopfler, still exist.

Elsewhere in London is Abbey Road, made famous by another '60s band...thankfully, that's still around too. I've been fortunate enough to visit all three; hi-fi companies regularly-launch products there.

In their heyday, some studios were so busy they had to turn away clients. So it wasn't uncommon for major bands to acquire their own fully-blown facilities, not simple home-recording affairs, where they could be assured recording time that suited them, not others.

Among them was The Who, whose Rampart Studios was established in a derelict Battersea church. By the mid-70s, it boasted a Neve 40-channel mixing desk, 3M 24-track recording and a fancy digital clock in the reception area (but, to the best of my knowledge, no pinball machine).

The Who's original intention, according to a December 1974 Studio Sound feature, was to set up Rampart exclusively for its own rehearsal and recording activities. As the costs mounted, though, The Who had no choice but to run Rampart commercially on a 24-

hour basis – and that meant selling time there to others. Among the classic albums recorded at Rampart were Supertramp's Crime of the Century and Thin Lizzy's Jailbreak, as well as The Who albums Quadrophenia, Tommy and Who Are You?

Recording studios flourished in the sixties, reflecting the growth in music consumption. Some were owned by record companies (CBS, EMI and Virgin etc), but most were independent operations that competed with each other. They contained one or more of the acoustically-treated rooms in which musicians performed, associated control-rooms with mixing desks, effects-racks and recorders, all interconnected by miles of balanced wiring. Potential customers were presented with a rate-card that listed the kit at their disposal – desks (and the attendant engineers), recorders (and how many tracks they had) off-board effects, musical-instrument collections and microphones.

Out-of-the-way residential studios based in the countryside (like the Manor of Tubular Bells fame, started by Richard Branson in Virgin's early days) became popular. For stars with sizeable budgets to blow, overseas studios in exotic locations were an option, like the Montserrat sister to George Martin's AIR, and the quaint Château d'Hérouville near Paris.

Studios tended to be converted from cheaply-acquired property that was in need of substantial renovation. This was an eminently-sensible measure. Given that so much work was needed to make them suitable for their new roles (acoustic isolation, for example), they had to be reduced to shells anyway. Studio owners hired

specialist consultants like Eastlake to help them with the work. That wasn't cheap – and neither was the high-tech hardware with which they were equipped. The August 1976 issue of Studio Sound, which features Abbey Road, reveals that a used Neve 24-input/8-output desk could have been yours for £12,500. A second-hand 16-track Studer A80 tape machine, meanwhile, was a snip at £8,750. To put things in perspective, the average UK home then cost £10,520.

Today, you can do this stuff on a computerised home studio or a laptop loaded with the right software like Apple's Garage Band. All you'll need are musical instruments and the skill to play them, plus microphones for vocals.

Thanks to globalised mass-production and distribution, even once costly microphones are uber-affordable. Take for example the Lyra Ultra-HD. Aimed at the modern-day user who creates content on a laptop, this multi-mode hi-res USB condenser mike can be yours for a mere £139. No wonder expensive-to-maintain dinosaur studios are disappearing.

Metropolis, British Grove and Abbey Road may still be with us for now – but what of the others? The Manor, the Château, Rampart, Townhouse, Trident, Olympic, Townshend's Eel Pie and countless other studios large and small have been lost to developers. AIR London relocated from its original Oxford Street base to Hampshire in 1991, while its Montserrat counterpart was put out of action by a hurricane in 1989.

Next time you listen to an old classic album, perhaps from The Who, spare a thought for the recording studios that helped make such music possible. ●

# ortofon

accuracy in sound



# 2M

The 2M Series, named after the abbreviation of Moving Magnet (MM) technology, is an affordable range of pick-up cartridges with first-class audio design principles throughout. Featuring Ortofon's trademarked split-pole pin technology for a flat frequency response, all 2M cartridges have a high output for easy integration into any turntable system.

Ortofon's philosophy is to play the record sound as accurately as possible, without colouring the sound in any way. Both the 2M Bronze and 2M Black have diamonds which are cut and polished to the highest standards of the industry. The 2M Bronze and 2M Black also have interchangeable stylus units, and replacement styli are readily available in the UK.

The 2M range has been structured in the same way as the popular Rondo and Cadenza Moving Coil series, with ascending quality as you move from Red - Blue - Bronze - Black. The spectacular 2M Black has become the flagship of 2M, and all Ortofon moving magnet cartridges. 2M was also the last product designed by Ortofon's former chief engineer, Per Windfield, who developed the 2M series over the final 2 years of his 30 year tenure with Ortofon.



## Red

A hugely popular all-purpose cartridge with a Tipped Elliptical stylus that delivers an open, dynamic sound with a slight touch of warmth.



## Blue

An affordable step up in the range, which adds a greater resolution, dynamics, and detailed sound thanks to the Nude Elliptical stylus.



## Bronze

Featuring a superior body, the Bronze picks up even the highest frequency information for a rich, detailed and deep soundstage, and can be further upgraded with ease.



## Black

The musician's choice and flagship of the range, the 2M Black features a Nude Shibata stylus which guarantees a true-to-life sound performance. This is truly the best MM has to offer.

"this does directly affect the repairability and whether the customer wants to have the work done"



Dave Tutt

**N**ow that I have moved house several things have happened. The first involves several Cambridge Audio amplifiers in for repair, one of which is mine.

When I put my own system back together after moving it became clear that I needed to do some work on my Cambridge C500 preamp. It has been intermittent for best part of three years – but since I tend to use a home built system in the workshop this hasn't really been too much of an issue. But now I wanted to get it right for my new workshop. With the need for test facilities not yet available it wasn't helpful to have a faulty amp, even though I could have swapped it for any number of others in storage including Rotel, JVC, NAD, Technics, Pioneer and Harman Kardon, as well as more consumer audio gear. My preference was the Cambridge.

When not used for months on end it deteriorated, requiring an hour or two to pick itself up. This made trying to listen to anything, with one channel dropping in and out or with irritating distortion over the first hour far too long to be acceptable – and sometimes it was much longer than an hour.

A change of the two capacitors in the final output stage screened module was called for. The right channel had been a pain but the capacitor change brought both back to normality.

The original 47µF 16 volt components look pretty ordinary to me. I didn't bother working out where they fit in the circuit, but using better quality higher voltage ones seemed appropriate, so in they went. The diagrams of other amps in the range show these items as non-polarised electrolytics very much like those fitted to loudspeaker

crossovers, but with a lower voltage rating. But the C500 uses standard polarised style caps here. If the similar amp circuits are anything to go by these caps couple the final IC to the output connectors. The C500 circuit diagram doesn't seem to be an available download but I am sure it is likely to be only slightly different to any of its close cousins. Connected back to my home made speakers proved what a good match they were.

I have to say, having got used to the metal dome tweeter tweeters in my home built speakers, comparison with a pair of Castle loudspeakers that I have been working on showed them to be rather metallic and hard due to that metal dome. More on this in a future column!

Meanwhile, the Cambridge capacitor change cured not only the faulty channel but the other left one seemed to benefit too. Must have been the character of the old caps that I have now removed that gave the C500 its sound. I may well investigate the circuit and when I next get the chance to open it I will probably change the others as there is another screened module that has them too.

I wonder if much larger polyester type capacitors will change the sound significantly in this position? But they would be far too large to fit in the screening can. Polyesters are also relatively rare and expensive at £15-£40 each. Further circuit investigation required first I think.

I gave the switches a quick squirt with Servisol just to be sure and whilst it was out of the rack ran a quick FAT certification on it. My C500 has the standard phono MM module internally which is really the only alteration I have made to it until this repair.

The next Cambridge was a Azur 540 which is the second one I have

had with a missing channel on the Aux input – and about the 6th with odd channels missing on inputs. It is a matter of using a multimeter and discovering where the missing link is. Often a case of a track on the printed circuit board being broken, probably where the solder pad wasn't quite good enough to do the job. A clean up and some solder did the trick on this 540 but they are rather a pain to get to pieces to work on – and of course to put back together – but no worse than many other amps I must say.

The final amplifier was an A5. These are an amplifier that Richer Sounds seem to have sold in the thousands. I have had at least 20 of them through the workshop, usually killed when in party mode as you might guess. Pushed too hard and often with the same fault – a channel blown up.

The A5 is not a cheap amp to repair as the cost of the output transistors and the resulting damage to the rest of the circuit means that few people actually bother once they have gone bang. All the same, they are quite a nice budget amp.

I think just about every Cambridge Audio amp I have repaired has had the same output transistors which have all been updated to SAPI6 compound Darlington types and at around £10 each they are 4 times the price of what other manufacturers use. This does directly affect the repairability and whether the customer wants to have the work done. Much depends on how the customer values the product.

I think for its price the A5 is a cracking little amp. Meanwhile I have two in the workshop as standby items for my customers. Seems Cambridge Audio past amplifier products are eminently repairable if my work is anything to go by so I hope it stays that way! ●

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# WORLD CLASSICS

Here is our list of the great and good from audio's glorious past, products that have earned their place in hi-fi history. You'll also see some oddities which aren't classic as such, but are great used buys. The year of introduction is given, alongside the original UK launch price.

## TURNTABLES

**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.



**FUNK FIRM VECTOR II** 2009 £860  
Innovative engineering gives a nimble, pacey and musical sound that's one of the best at the price.

**REGA P2** 2008 £300  
Excellent value for money engineering, easy set up and fine sound.

**MCINTOSH MT10** 2008 £8,995  
Big, expensive, controversially styled and glows more than some might consider necessary, but an astonishingly good performer.

**REGA P3-24** 2008 £405  
Seminal affordable audiophile deck with fine bundled tonearm. Tweakable, and really sings with optional £150 outboard power supply.

**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...

**AVID VOLVERE SEQUEL** 2007 £4,600  
Stylish high end vinyl spinner with industrial strength build quality and a sound to match. Sound is edge-of-the-seat stuff.

**MICHELL GYRODEC SE** 2005 £1,115  
Design icon with superlative build. Sound is beautifully smooth, effortless and exceptionally expansive.

**MARANTZ TT-15S1** 2005 £1,299  
Cracking all in one deck/arm/cartridge combination, this must surely be the best sound plug and play package at this price point.

**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.



**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.

**SME MODEL 10A** 1995 £4,700  
Exquisitely engineered deck and SME V tonearm combo that's an extremely accomplished performer with classical music.

**LINN AXIS** 1987 £253  
Cut-price version of the Sondek with LVX arm. Elegant and decently performing package. Later version with Akito tonearm better.

**ROKSAN XERXES** 1984 £550  
Super tight and clean sound, with excellent transients. Less musical than the Sondek, but more neutral. Sagging plinth top-plates make them a dubious used buy.

**DUAL CS505** 1982 £75  
Simple high quality engineering and a respectable low mass tonearm made for a brilliant budget buy. Polished, smooth and slightly bland sound.

**MICHELL GYRODEC** 1981 £599  
Thanks to its stunning visuals, this bold design wasn't accorded the respect it deserved. Clean, solid and architectural sound.

**TOWNSHEND ROCK** 1979 £ N/A  
Novel machine has extremely clean and fluid sound. Substantially modified through the years, and capable of superb results even today.

**MARANTZ TT1000** 1978 £ N/A  
Beautiful seventies high end belt drive with sweet and clean sound. Rare in Europe, but big in Japan.



**REGA PLANAR 3** 1978 £79  
Brilliantly simple but clean and musical performer, complete with Acos-derived S-shaped tonearm. 1983 saw the arrival of the RB300, which added detail at the expense of warmth. Superb budget buy.

**SONY PS-B80** 1978 £800  
First outing for Sony's impressive 'Biotracer' electronic tonearm. Built like a tank with a clean and tidy sound, albeit lacking involvement. Scarily complicated and with no spares support - buy with caution!

**TRIO LO-70** 1978 £600  
The best 'all-in-one' turntable package ever made. Clean, powerful and three-dimensional sound, ultimately limited by the tonearm.

**ADC ACCUTRAC 4000** 1976 £300  
Bonkers 1970s direct drive that uses an infra red beam to allow track selection and programming. More of a visual and operational delight than a sonic stunner.

**PIONEER PLC-590** 1976 £600  
Sturdy and competent motor unit that performs well with a wide range of tonearms. Check very thoroughly before buying due to electronic complexity and use of some now-obsolete ICs.

**PIONEER PL12D** 1973 £36  
When vinyl was the leading source, this bought new standards of noise performance and stability to the class, plus a low friction S-shaped tonearm. Later PL112D was off the pace compared to rivals.



**TECHNICS SP10** 1973 £400  
Seminal Japanese engineering. Sonics depend on plinths, but a well mounted SP10/II will give any modern a hard time, especially in respect of bass power and midband accuracy.

**LINN SONDEK LP12** 1973 £86  
For many, the Brit superdeck; constant mods meant that early ones sound warmer and more lyrical than modern versions. Recent 'SE' mods have brought it into the 21st century, albeit at a price.

**ARISTON RD11S** 1972 £94  
Modern evolution of Thorens' original belt drive paradigm, Scotland's original super-deck was warm and musical, albeit soft. Still capable of fine results today.

**GOLDRING LENCO GL75** 1970 £15.6S  
Simple, well engineered motor unit with soft, sweet sound and reasonable tonearm. Good spares and servicing support even today.

**GARRARD 301/401** 1953 £19  
Tremendously strong and articulate with only a veiled treble to let it down.



**THORENS TD124** 1959 £ N/A  
The template for virtually every 1970s 'superdeck', this iconic design was the only real competition for Garrard's 301. It was sweeter and more lyrical, yet lighter and less impactful in the bass.



**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 counter-weight modification.

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

**AUDIO ORIGAMI PU7** 2007 £1,300  
The classic Syrnix PU3 updated to spectacular effect. Hand made to order, with any mass, length and colour you care for. Fit, finish and sound truly impressive.



**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.

**MICHELL TECNOARM A** 2003 £442  
Clever reworking of the Rega theme, using blasting, drilling and rewiring!

**SME 309** 1989 £767  
Mid-price SME comes complete with cost-cut aluminium arm tube and detachable headshell. Tight, neutral sound with good tonality, but lacks the IV's pace and precision.

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

**SME SERIES V** 1987 £2,390  
Vice-like bass with incredible weight, ultra clear midband and treble astound, although some don't like its matter of factness!

**NAIM ARO** 1986 £875  
Truly endearing and charismatic performer - wonderfully engaging mid-band makes up for softened frequency extremes.



**ALPHASON HR100S** 1981 £150  
First class arm, practically up to present-day standards. Buy carefully, though, as there is no service available now. Totally under priced when new, exceptional.

**SME SERIES III** 1979 £113  
Clever variable mass design complete with Titanium Nitride tube tried to be all things to all men, and failed. Charming nonetheless, with a warm and inoffensive sound.

**TECHNICS EPA-501** 1979 £ N/A  
Popular partner for late seventies Technics motor units. Nice build and Titanium Nitride tube can't compensate for middling sound.

**LINN ITTOK LVII** 1978 £253  
Japanese design to Linn specs made for a muscular, rhythmic sound with real dynamics. The final LVII version worth seeking out.

**AUDIO TECHNICA AT 1120** 1978 £75  
Fine finish can't compensate for this ultra low mass arm's limited sonics - a good starter arm if you've only got a few quid to spend.

**HADCOCK GH228** 1976 £46  
Evergreen unipivot with lovely sweet, fluid sound. Excellent service backup.

**ACOS LUSTRE GST-1** 1975 £46  
The archetypal S-shaped seventies arm; good, propulsive and involving sound in its day, but ragged and undynamic now.

**SME 3009** 1959 £18  
Once state of the art, but long since bettered. Musical enough, but weak at frequency extremes and veiled in the midband. Legendary serviceability and stunning build has made it a cult, used prices unjustifiably high.

**PHONO STAGES**

**CREEK OBH-8 SE** 1996 £180  
Punchy, rhythmic character with oodles of detail makes this a great budget audiophile classic. Partner with a Goldring G1042 for an unbeatable budget combination.

**MICHELL ISO** 1988 £ N/A  
This Tom Evans-designed black box started the trend for high performance offboard phono stages. Charismatic, musical and punchy - if lacking in finesse.



**LINN LINNK** 1984 £149  
Naim-designed MC phono stage built to partner the original Naim NAIT - yes, really! Fine sound, although off the pace these days.

**INTEGRATED AMPLIFIERS**

**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.

**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.

**SUGDEN A21A S2** 2008 £1,469  
Crystalline clarity, dizzying speed and forensic detailing. Power limited so needs sensitive speakers.

**CREEK OBH-22** 2008 £350  
Brilliant value budget passive, with remote control, mute and input switching, plus an easy, a neutral sound.

**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 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-integrateds.

**NUFORCE P-9** 2007 £2,200  
Impressive two box preamp with superb resolution and an engaging sound.

**MELODY PURE BLACK 101D** 2007 £3,295  
The clarity and openness of valves plus firm grip and fine detail make this a preamplifier masterclass.

**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.

**MCINTOSH MA6800** 1995 £3735  
Effortlessly sweet, strong and powerful with seminal styling to match.

**DELTEC** 1987 £1900  
Fast, dry and with excellent transients, this first DPA integrated is the real deal for eighties obsessives. Ridiculously punchy 80W per channel from a tiny, half-size box. Radical, cool and more than a little strange.

**EXPOSURE VII/VIII** 1985 £625  
Seminal pre-power, offering most of what Naim amps did with just that little bit extra smoothness. Lean, punchy and musical.



**AUDIOLAB 8000A** 1985 £495  
Smooth integrated with clean MM/MC phono stage and huge feature count. Extremely reliable, too. Post '93 versions a top used buy.

**VTL MINIMAL/50W MONOBLOCK** 1985 £1,300  
Rugged, professional build and finish allied to a lively and punchy sound (albeit with limited power) make them an excellent used buy.

**MUSICAL FIDELITY A1** 1985 £350  
Beguiling Class A integrated with exquisite styling. Questionable reliability.

**MISSION CYRUS 2** 1984 £299  
Classic 1980s minimalism combines arresting styling with clean, open, lively sound. Further upgradeable with PSX power supply.



**NAIM NAIT** 1984 £350  
Superb rhythms and dynamics make it truly musical, but tonally monochromatic. Fine phono stage, very low power.

**CREEK CAS4040** 1983 £150  
More musical than any budget amp before it; CAS4140 loses tone control, gains grip

**MYST TMA3** 1983 £300  
Madcap eighties minimalism, but a strong and tight performer all the same.

**ROTEL RA-820BX** 1983 £139  
Lively and clean budget integrated that arguably started the move to minimalism.

**NAD 3020** 1979 £69  
Brilliantly smooth, sweet and punchy at the price and even has a better phono stage than you'd expect. The archetypal budget super-amp.

**ROGERS A75** 1978 £220  
Lots of sensible facilities, a goodly power output and nice sound in one box. The later A75II and A100 versions offered improved sonics and were seriously sweet.

**A&R A60** 1977 £115  
Sweet and musical feature-packed integrated; the Audiolab 8000A remains a classic.



**SUGDEN C51/P51** 1976 £130  
Soft sounding early Sugden combo with a plethora of facilities and filters. A sweet and endearing performer but lacking in power and poor load driving ability.

**SUGDEN A21** 1969 £ N/A  
Class A transistor integrated with an eminently likeable smoothness and musicality. Limited inputs via DIN sockets.

**ROGERS CADET III** 1965 £34  
Sweet sounding valve integrated, uses ECL86 output valves, even has a half useable phono stage, sweet, warm a good introduction to valves.

**CHAPMAN 305** 1960 £40  
Smooth pre/power combo with a sweet and open sound. Not quite up to Leak/Quad standards but considerably cheaper secondhand.

## POWER AMPLIFIERS

**ELECTROCOMPANET NEMO** 2009 £4,995 (EACH)  
Norwegian power station as cool as a glacier tonally, yet impresses with sheer physicality and fleetness of foot. 600W per channel.

**NUFORCE REFERENCE 9SE V2** 2006 £1,750  
Brilliant value for money monoblocks with massive power and super-clean, three dimensional sound.

**QUAD II-80** 2005 £6,000 PER PAIR  
Quad's best ever power amplifier. Dramatic performer with silky but dark tonality, blistering dynamics, serious power and compellingly musical sound.



**QUAD 909** 2001 £900  
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.

**NAIM NAP 500** 2000 £17,950  
Flagship amplifier will drive just about any speaker with ease. Factor in the company's trademark pace, rhythm and timing and it all adds up to one effortlessly musical package.

**MARANTZ MODEL 9** 1997 £8000  
Authentic reproduction monoblocks still more than cut the sonic mustard. Highly expensive and highly sought after.

**MICHELL ALECTO** 1997 £1989  
Crisp, clean and beautifully controlled with gorgeous styling. Partnered with the £1650 Orca this sounds delicious!



**MUSICAL FIDELITY XA200** 1996 £1000  
200W of sweet smooth transistor stomp in a grooved tube! Under-rated oddity.

**PIONEER M-73** 1988 £1,200  
Monster stomp from this seminal Japanese power amplifier, complete with switchable Class A and Class B operation. Clean, open and assured sounding, albeit a tad behind the pace on high speed dance music. Rosewood side cheeks and black brushed aluminium completes the experience.

**KRELL KMA100 II** 1987 £5,750  
Monoblock version of the giant KSA-100 is one of the seminal 80s transistor power amplifiers. Massive wallop allied to clean and open Class A sound makes this one of the best amplifiers of its type.

**RADFORD STA25 RENAISSANCE** 1986 £977  
This reworking of Radford's original late sixties design was possessed of a wonderfully rich, old school valve sound with enough power (25W) and lots of subtlety.

**QUAD 405** 1978 £115  
The first of the current dumpers is a capable design with smooth, effortless power and a decently musical sound. 606 and 707 continue the theme with greater detail and incision.

**HH ELECTRONICS TPA-50D AMPLIFIERS** 1973 £110  
Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain.

**LECSON AP1** 1973 £ N/A  
Madcap cylindrical styling alluded to its 'tower of power' pretensions, but it wasn't. Poor build, but decently clean sounding when working.

**QUAD 303** 1968 £55  
Bullet proof build, but woolly sound. Off the pace, but endearing nonetheless. Some pipe smoking slipper wearers swear by them!

**LEAK STEREO 20** 1958 £31  
Excellent workaday classic valve amplifier with decent power and drive. Surprisingly modern sounding if rebuilt sympathetically. Irrepressibly musical and fluid.



**LEAK STEREO 60** 1958 £N/A  
Leak's biggest valve power amp offers 35 Watts per channel and more low end welly than the smaller Stereo 20. Despite concerns over reliability rarity value means high price.

**QUAD II** 1952 £22  
The all-time classic valve amplifier, with a deliciously fluid and lyrical voice. In other respects though, it sounds hopelessly dated. Low power and hard to partner properly.



**LEAK POINT ONE, TL10, TL12.1, TL/12 PLUS** 1949 £28  
Early classics that are getting expensive. Overhauling is de rigueur before use, using original parts if possible. Surprisingly crisp and musical. Deeply impressive in fine fettle.

## PRE AMPLIFIERS

**AUDIOLAB 8000C** 1991 £499  
Totally grey but fine phono input and great facilities make it an excellent general purpose tool.



**CROFT MICRO** 1986 £150  
Budget valve pre-amp with exceptionally transparent performance.

**CONRAD JOHNSON MOTIV MC-8** 1986 £2,500  
Minimalist FET-based preamplifier is brilliantly neutral and smooth with a spry, light balance in the mould of Sugden. Something of a curio, but worthwhile nonetheless.

**AUDIO RESEARCH SP-8** 1982 £1,400  
Beautifully designed and built high end tube pre-amplifier with deliciously sweet and smooth sound. Not the last word in incision or grip.

**LINN LK-1** 1986 £499  
A brave attempt to bring remote controlled user-friendliness to hair-shirt audiophile hi-fi. Didn't quite work, but not bad for under £100.

**NAIM NAC 32.5** 1978 £ N/A  
Classic high end pre. Brilliantly fast and incisive sound that's a joy with vinyl but a tad forward for digital.

**LECSON AC-1** 1973 £ N/A  
Amazing styling courtesy of Allan Boothroyd can't disguise its rather cloudy sound, but a design classic nonetheless.

**QUAD 33** 1968 £43  
Better than the 22, but Quad's first tranny pre isn't outstanding. Responds well to tweaking/ rebuilding though...



**LEAK POINT ONE STEREO** 1958 £ N/A  
Good for their time, but way off the pace these days. Use of EF86 pentode valve for high gain rules out ultra performance. Not the highest fi!

**QUAD 22** 1958 £25  
The partner to the much vaunted Quad II monoblocks - cloudy and vague sound means it's for anacrophiles only.

**LOUDSPEAKERS**

**WHARFEDALE DIAMOND 10.3** 2010 £290  
Great small standmounters for audiophiles on a budget; dry punchy sound with impressive sound-staging at the price.



**YAMAHA SOAVO 1.1** 2009 £3,000  
Musical, transparent with impressive dynamics and cohesion. Excellent build and finish.

**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...



**SPENDOR A5** 2009 £1,695  
Multi-talented floorstanders with generous scale and punch and Spendor's classic mid-range detail. Deliver a sound that thoroughly engages whatever you care to play

**MONITOR AUDIO PL100** 2008 £2,300  
The flagship 'Platinum' series standmounter has a lovely warm and delicate sound with superlative treble.



**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.

**PMC OB11** 2008 £2,950  
Cleverly updated floorstanders give scale and solidity in slim and well finished package.

**ISOPHON GALILEO** 2007 £2,100  
Big standmounters that really grip the music and offer quite startling dynamics and grip.

**ONE THING AUDIO ESL57** 2007 £1,450  
One Thing Audio's modifications keep the good old ESL57 at the very top of the game.

**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&W 686** 2007 £299  
Baby standmounters offer a sophisticated and mature performance that belies both their dimensions and price tag.

**B&O BEOLAB 9** 2007 £5,000  
Technically impressive and visually striking loudspeakers with sound quality that more than matches their looks



**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.

**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.

**B&W 801D** 2006 £10,500  
In many respects, the ultimate studio monitor; dazzling clarity and speed with commanding scale and dynamics.



**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

**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

**USHER S-520** 2006 £350  
Astonishingly capable budget standmounters that offer detail and dynamics well beyond their price and dimensions.

**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.



**MISSION X-SPACE** 1999 £499  
The first mass production sub and sat system using NXT panels is a sure-fire future classic - not flawless, but a tantalisingly unboxy sound nevertheless!

**MISSION 752** 1995 £495  
Cracking Henry Azima-designed floorstanders combined HDA drive units and metal dome tweeters with surprisingly warm results. Benign load characteristics makes them great for valves.

**TANNOY WESTMINSTER** 1985 £4500  
Folded horn monsters which sound good if you have the space. Not the last word in tautness but can drive large rooms and image like few others



**CELESTION SL6** 1984 £350  
Smallish two way design complete with aluminium dome tweeter and plastic mid-bass unit set the blueprint for nineteen eighties loudspeakers. Very open and clean sounding, albeit course at high frequencies and limp in the bass. Speakers would never be the same again...

**HEYBROOK HB1** 1982 £130  
Peter Comeau-designed standmounters with an amazingly lyrical yet decently refined sound. Good enough to partner with very high end ancillaries, yet great with budget kit too. A classic



**QUAD ESL63** 1980 £1200  
An update of the ESL57, with stiffer cabinets. Until the 989, the best of the Quad electrostatics.

**MISSION 770** 1980 £375  
Back in its day, it was an innovative product and one of the first of the polypropylene designs. Warm, smooth, clean and powerful sound

**ACOUSTIC RESEARCH AR18S** 1978 £125  
Yank designed, British built loudspeaker became a budget staple for many rock fans, thanks to the great speed from the paper drivers. Although finesse was most definitely not their forte...

**YAMAHA NS1000** 1977 £532  
High tech Beryllium midband and tweeter comes and brutish 12" woofers in massive sealed mirror image cabs equals stunning transients. Speed and wallop allied to superb transparency and ultra low distortion. Partner carefully!



**JR 149** 1977 £120  
Cylindrical speaker was ignored for decades but now back in fashion! Based on classic KEF T27/B110 combo as seen in the BBC LS3/5a. Doesn't play loud, needs a powerful transistor amplifier but has clarity and imaging.

**KEF R105** 1977 £785  
Three way Bextrene-based floorstander gave a truly wideband listen and massive (500W) power handling. A very neutral, spacious and polite sounding design, but rhythmically well off the pace.

**IMF TLS80** 1976 £550  
Warm and powerful 1970s behemoth with transmission loading and a mixture of KEF and Celestion drive units. Impressively physical wideband sound but rhythms not a forte.

**SPENDOR BC1** 1976 £240  
 Celestion HF1300 tweeter meets bespoke Spondor Bextrene mid-bass unit. The result is a beautifully warm yet focussed sound. A little bass bloom necessitates careful low-stand mounting.



**HH ELECTRONICS TPA-50D AMPLIFIERS** 1973 £110  
 Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain. Not exactly stylish, however.

**BBC LS3/5A** 1972 £88  
 Extremely low colouration design is amazing in some respects – articulation, stage depth, clarity – and useless in others (both frequency extremes). Came in wide variety of guises from various manufacturers building it under licence.

**LEAK SANDWICH** 1961 £39 EACH  
 Warm sounding infinite baffle that, with a reasonably powerful amplifier can sound quite satisfying.

**QUAD ESL57** 1956 £45 EACH  
 Wonderfully open and neutral sound puts box loudspeakers to shame. Properly serviced they give superb midband performance, although frequency extremes less impressive. Ideally, use in stacked pairs or with subwoofers and supertweeters.

## SYSTEMS

**MERIDIAN SOOLOOS 2.1** 2010 £6,990  
 Crisp styling, bright, colourful touchscreen, plus excellent search facilities. This is one hard disk music system with a difference. Best partnered to Meridian active loudspeakers.



**NAIM UNITIQUE** 2010 £995  
 Great little half width one-box system with truly impressive sound allied to a wealth of source options.

**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.

**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. Just listen.

**MARANTZ 'LEGEND'** 2007 £22,000  
 The combination of SA-7S1 disc player, SC-7S2 preamp and MA-9S2 monoblocks delivers jaw-dropping performance.

**SHANLING MC-30** 2007 £650  
 Quite possibly the cutest all-in-one around with fine performance from the CD player, tuner and MF3 player input. Very low power, though.



**AURA NOTE PREMIER** 2007 £1,500  
 Lovely shiny CD/tuner/amplifier with fine sound quality and dynamic abilities.



**ARCAM SOLO NEO** 2006 £1,100  
 Excellent all-in-one system, with a warm, smooth and balanced sound to match the features and style.

**PEACHTREE AUDIO IDECCO** £1,000  
 Excellent sounding iPod dock, impressive DAC and fine amplifier section make this an excellent one box style system.



## TUNERS

**ARCAM FMJ T32** 2009 £600  
 Excellent hybrid FM/DAB+ tuner with a smooth, engaging sound. Factor in its fine build and it's a super value package.



**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.

**MYRYAD MXT4000** 2005 £1,000  
 Sumptuous sound and top-notch build quality make for a tempting AM/FM package. Warm and richly detailed on good-quality music broadcasts.

**NAIM NAT03** 1993 £595  
 The warm, atmospheric sound is further proof of Naim's proficiency with tuners.

**CREEK CAS3140** 1985 £199  
 Excellent detail, separation and dynamics - brilliantly musical at the price. T40 continued the theme...

**QUAD FM4** 1983 £240  
 Supreme ergonomics allied to a pleasingly lyrical sound with plenty of sweetness and detail made this one of the best tuners around upon its launch.



**NAD 4040** 1979 £79  
 Tremendously smooth and natural sound allied to low prices and good availability make this budget analogue esoterica.

**MARANTZ ST-8** 1978 £353  
 Marantz's finest radio moment. Warm, organic sound plus an oscilloscope for checking the signal strength and multipath.

**YAMAHA CT7000** 1977 £444  
 Combines sleek ergonomics, high sensitivity and an explicit, detailed sound.

**SONY ST-5950** 1977 £222  
 One of the first Dolby FM-equipped tuners, a format that came to nought. Still, it was Sony's most expensive tuner to date, and boasted good sound quality with brilliant ergonomics.



**ROGERS T75** 1977 £125  
 Superb mid-price British audiophile design, complete with understated black fascia. Smooth and sweet with fine dimensionality.

**SANSUI TU-9900** 1976 £300  
 A flagship Japanese tuner. It boasts superlative RF performance and an extremely smooth and lucid sound.



**TECHNICS ST-8080** 1976 £180  
 Superb FM stage makes for a clean and smooth listen.

**REVOX B760** 1975 £520  
 The Revox offers superlative measured performance although the sound isn't quite as staggering as the numbers. Fine nonetheless, and surely the most durable tuner here?



**SEQUERRA MODEL 1** 1973 £1300  
 Possibly the ultimate FM tuner. Massive in terms of technology, size and features dedicated to extracting every ounce of performance from radio, including impressive multi-purpose oscilloscope display.

**LEAK TROUGHLINE** 1956 £25  
 Series I an interesting ornament but limited to 88-100MHz only. II and III are arguably the best-sounding tuners ever. Adaptation for stereo easy via phono multiplex socket. Deliciously lucid with true dimensionality.

HEADPHONE AMPLIFIERS

**GRAHAM SLEE NOV0** 2009 £255  
Dynamic headphone amplifier with a great sense of timing. Crisp, clear treble and warm midrange gives an involving sound.



**MUSICAL FIDELITY X-CAN V8** 2008 £350  
Open and explicitly detailed sound plus serious bass wallop. A great partner for most mid-to-high end headphones.

CD PLAYER/RECORDERS

**MUSICAL FIDELITY TRIVISTA** 2002 £4000  
When playing SACDs, the sweetest, most lush and lyrical digital disc spinner we've heard. Old school stereo, pure DSD design. CD sound is up in the £1000 class, too! Future classic.

**MARANTZ SA-1** 2000 £5,000  
The greatest argument for SACD. This sublime Ken Ishiwata design is utterly musically convincing with both CD and SACD, beating most audiophile CD spinners hands down.



**SONY MDS-JE555ES** 2000 £900  
The best sounding MD deck ever, thanks to awesome build and heroic ATRAC-DSF Type R coding.

**PIONEER PDR-555RW** 1999 £480  
For a moment, this was the CD recorder to have. Clean and detailed.

**MARANTZ DR-17** 1999 £1100  
Probably the best sounding CD recorder made; built like a brick with a true audiophile sound and HDCD compatibility.



**CAMBRIDGE AUDIO CD4SE** 1998 £200  
A touch soft in the treble and tonally light, but outstanding in every other respect.

**SONY TCD-8 DATMAN** 1996 £599  
Super clean sound makes this an amazing portable, but fragile.

**LINN KARIK III** 1995 £1775  
The final Karik was a gem. Superb transport gives a brilliantly tight, grippy dynamic sound, albeit tonally dry.

**NAIM CDS** 1990 £ N/A  
Classic Philips 16x4 chipset with serious attention to power supplies equals grin-inducing sonics.

**TECHNICS SL-P1200** 1987 £800  
CD version of the Technics SL-1200 turntable. Massively built to withstand the rigours of 'pro' use and laden with facilities - a great eighties icon.

**SONY CDP-R1/DAS-R1** 1987 £3,000  
Sony's first two boxer was right first time. Tonally lean, but probably the most detailed and architectural sounding machine of the eighties.

**MARANTZ CD73** 1983 £700  
A riot of gold brushed aluminium and LEDs, this distinctive machine squeezed every last ounce from its 14x4 DAC - super musical.



**MERIDIAN 207** 1988 £995  
Beautifully-built two-box with pre-amp stage. Very musical although not as refined as modern Bitstream gear. No digital output.

**CAMBRIDGE AUDIO CD1** 1986 £1500  
Inspired Stan Curtis redesign of Philips CD104, complete with switchable digital filter. Lean but tight and musical performer.



**MERIDIAN MCD** 1984 £600  
The first British 'audiophile' machine was a sweeter, more detailed Philips CD100. 14x4 never sounded so good, until the MCD Pro arrived a year later.

**SONY CDP-701ES** 1984 £890  
Sony's first bespoke audiophile machine used a 16x2 DAC to provide a clinically incisive sound, supreme build quality allied to the pure unadorned luxury of a paperback-sized remote control.

**YAMAHA CD-X1** 1983 £340  
Nicely built 16x2 machine with a very sharp and detailed sound, sometimes too much so. Excellent ergonomics, unlike almost every other rival of the time.

**SONY CDP-101** 1982 £800  
The first Japanese CD spinner was powerful and involving. Brilliant transport more than compensated for 16x2 DAC, and you even got remote control!



ANALOGUE RECORDERS

**AIWA XD-009** 1989 £600  
Aiwa's Nak beater didn't, but it wasn't half bad nonetheless. Massive spec even included a 16x4 DAC!

**NAKAMICHI CR-7E** 1987 £800  
The very best sounding Nakamichi ever - but lacks the visual drama of a Dragon.



**SONY WM-D6C** 1985 £290  
Single capstan transport on a par with a Swiss watch, single rec/replay head better than most Naks. Result: sublime.

**PIONEER CTF-950** 1978 £400  
Not up to modern standards sonically, but a great symbol of the cassette deck art nonetheless.

**YAMAHA TC-800GL** 1977 £179  
Early classic with ski-slope styling. Middling sonics by modern standards, but cool nonetheless!

**SONY TC-377** 1972 £N/A  
A competitor to the Akai 4000D open reel machine, the Sony offered better sound quality and is still no slouch by modern standards.

**REVOX A77** 1968 £145  
The first domestic open reel that the pros used at home. Superbly made, but sonically off the pace these days.

COMPACT DISC TRANSPORTS

**ESOTERIC P0** 1997 £8,000  
The best CD drive bar none. Brilliantly incisive, ridiculously over engineered.

**TEAC VRDS-T1** 1994 £600  
Warm and expansive sound made this a mid price hit. Well built, with a slick mech.

**KENWOOD 9010** 1986 £600  
The first discrete Jap transport was beautifully done and responds well to re-clocking.

DACS

**DCS ELGAR** 1997 £8500  
Extremely open and natural performer, albeit extremely pricey - superb.

**DPA LITTLE BIT 3** 1996 £299  
Rich, clean, rhythmic and punchy sound transforms budget CD players.

**CAMBRIDGE AUDIO DAC MAGIC** 1995 £99  
Good value upgrade for budget CD players with extensive facilities and detailed sonics.

**PINK TRIANGLE DACAPO** 1993 £ N/A  
Exquisite, the warmest and most lyrical 16bit digital audio we have ever heard.

**QED DIGIT** 1991 £90  
Budget bitstream performer with tweaks aplenty. Positron PSU upgrade makes it smooth, but now past it.

CABLES

**MISSING LINK CRYO REFERENCE 2008** £495/0.5M  
High end interconnects, with deliciously smooth, open and subtle sound without a hint of edge.

**TECHLINK WIRES XS** 2007 £20  
Highly accomplished interconnects at an absurdly low price. Stunning value for money.

**VDH ULTIMATE THE FIRST** 2004 £250  
Carbon interconnects that help you forget the electronics and concentrate on the music. Miraculous transparency. Tight and tuneful bass mixed with air and space.



**WIREWORLD OASIS 5** 2003 £99/M  
Excellent mid-price design with a very neutral, silky and self-effacing sound. Superb value for 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.

# vinyl section

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[www.hi-fiworld.co.uk](http://www.hi-fiworld.co.uk)

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A belt drive turntable with Ortofon moving coil cartridge, classic in all ways, reviewed by Noel Keywood.

**REGA ANIA PRO CARTRIDGE 85**

Rega's mid-price moving coil cartridge has its own unique sound finds Noel Keywood.

**TEAC TN-3B TURNTABLE 88**

This budget vinyl spinner comes with cartridge, phono stage and digital output. Noel Keywood listens.

**AUDIOPHILE BOOK 93**

I Just Can't Stop it: My Life in The Beat, by Rankin Roger. Reviewed by Paul Rigby.

# news



## ROCK

The Deathtrip's 'Demon Solar Totem' (*Svart; svartrecords.com*) sees this death metal outfit deliver slightly lower key metal with clean, rather epic vocals from Kvohst.

New wave revivalists, The Futureheads' 2004, self-titled, high energy, 2LP reissue (Warner) offers Wire-like spiky guitars and XTC-like vocal precision.

Between the Buried and Me's 'The Great Misdirect' (2011; Craft), over a two LP gatefold, has been remixed and remastered. From speed metal to prog metal and a host of complex variants in-between, this is a bucket of ideas thrown at a wall. Your task? Watch as they drip down the thing.

Cold in Berlin's 'Rituals of Surrender' (*New Heavy Sounds; www.newheavysounds.com*) provides jolly, sludgy, goth, doom rock while Maya's twisting open delivery makes the difference.



## RINGO

Possibly the man's last LP, 'What's My Name' (Universal) features Paul McCartney as guest on 'Grow Old With Me', from a John Lennon demo, that includes a snippet of George Harrison's 'Hear Comes the Sun'. The Fab Four connect for the last time?



## MOBILE FIDELITY

Two classics from this US-based audiophile outfit include heavy, psychedelic acid rock Iron Butterfly's 'In-A-Gadda-Da-Vida' (1968) – a paean to the gross excesses of the time and how music could represent a lack of control and direction yet remain representative of a place in history.

From 1975, Grateful Dead's 'Blues for Allah' was a huge success, in studio terms, when you look at the rest of their studio output. 'Slipknot!' offers complexity, 'King Solomon's Marbles' reflects greatly on fine keyboard work while 'Crazy Fingers' is a home for fine lyrics.



## DEMON

Tim Buckley's 'Live at the Electric Theatre Co, Chicago, 1968', is a fascinating dual LP set within a gatefold. It's described as a sort of 'thinking on his feet' performance as he sketched ideas to a variety of songs.

Watch out for Hector Rivera's Latin soul extravaganza, 'At the Party' (1966). Also, hit soul/Disco band, Change's 'Paradise: The Ultimate Collection' over two LPs from 1980-85. The early home of Luther Vandross and Jocelyn Brown.

Finally, leader of Chairmen of the Board, General Johnson's Invictus original, 'Generally Speaking' (1972), a soul LP of broad variety and commercial appeal.

## SPEAKERS CORNER

From the German audiophile outfit ([www.speakerscornerrecords.com](http://www.speakerscornerrecords.com)) comes the superb debut from the remarkable jazz pianist, Phineas Newborn, with Oscar Pettiford on bass, drummer Kenny Clarke plus Calvin Newborn on guitar. On 'Here is Phineas' (1958), he is technically flamboyant. He should have been one of the true greats but he was diverted by mental illness.

Also check out 'Mingus at Antibes' (1960), a superb live set featuring Eric Dolphy (alto, flute, and bass clarinet), Ted Curson (trumpet) and Dannie Richmond (drums) plus guest tenor, Booker Ervin.

Also look out for Warren Zevon's 'Stand in the Fire' (1980). Despite being the friend of everyone, remained an outsider, singing about outsiders. This live album proves the man could also rock out.



## MUSIC ON VINYL

From this audiophile label ([www.musiconvinyl.com](http://www.musiconvinyl.com)) comes Moloko's 'Statues' (2002; numbered on blue marbled vinyl), the band's final release: rhythmic, sad, drama, beauty and philosophy.

Also look out for 'The Best of Chapterhouse', on vinyl for the first time (2007; numbered, purple & pink vinyl) over two LPs.

## CRAMMED DISCS

Zap Mama's 'Adventures in Afropea' (1991; Crammed Discs, [www.crammed.be](http://www.crammed.be)). An intimate acapella LP of peaceful contemplation, founded by leader Marie Daulne. From Belgium, the five ladies reflected on Congolese pop, Arabic tunes and more.

Also look out for 'Kinshasa 1978 (Originals and Reconstructions)' of previously unreleased originals. Includes a CD of extra unique tracks.



## ...AND FINALLY

There is something vaguely A-Ha about Electric Litany. 'Under a Common Sky' (Apollon; [www.apollonrecords.no](http://www.apollonrecords.no)) offers clean, shiny guitar rock with synth wallpaper and some incisive lyrics.

David Norland's 'Glam Tear Stain' (Denovali; [denovali.com](http://denovali.com)) proceeds along the awfully trendy neo-classical/ambient/piano pathway. Space, isolation, introspection, a brooding meditation. It's all there. Unique? No. Consummately executed? Oh, yes.

Seun Kuti & Egypt 80's self-titled afrobeat LP was recorded direct to disc, live at Artie Studios in Holland, providing immediacy and energy to burn.

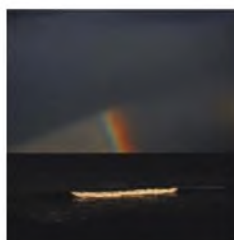
A Girl Called Eddy's 'Been Around' (Elefant; [www.elefant.com](http://www.elefant.com)) aka Erin Moran offers introspective alt-pop with a seventies-infused, earthy, thoughtful delivery.

From Lisa Stansfield, 'Affection' (1989; Ear-Music; [www.ear-music.net](http://www.ear-music.net)) offers sublime, retro R&B with a nineties recording style.

My Bus' 'Our Life in the Desert' (Onomatopoesia; [www.onophon.com](http://www.onophon.com)) is a new floaty, reverb-laden, light pop release from the guys responsible for 90s band, Butterfly Child on Rough Trade. An often contemplative journey.

From Third Man ([thirdmanrecords.com](http://thirdmanrecords.com)) comes Jonathan Fire\*Eater's 'Tremble Under Boom Lights', a 1997 reissue from this excellent 'coulda-shoulda' band with a retro Nick Cave/garage rock delivery with bonus track, In the Head.

The arresting vocal delivery of Paul Vickers and the Leg's 'Jump' (Tenement; [www.tenementrecords.com](http://www.tenementrecords.com)) will be familiar to fans of Dawn of the Replicants; Vickers was a founder of that group. Here you'll find drunken experimentalism and fractured innovation.





"Tellurium Q's Ultra Black II's can be see as one of the best loudspeaker cables on the market at their price"

- Jon Myles, Hifi World

"The differences were stunning.....What I can state is that the Ultra Black 11 cables are currently the best I have heard in my system."

- Ian Ringstead, Hifipig.com

"Tellurium Q Ultra Black II is a remarkably coherent and "well-timed" cable"

- Jason Kennedy, HiFi +

"I have yet to hear a speaker cable which delivers timing like this one."

- Chris Kelly, The Ear

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# Classic style

**Pro-Ject's Classic Evo turntable comes with a moving coil cartridge for wonderful vinyl sound finds Noel Keywood.**

**A**s its name suggests, Pro-Ject's The Classic Evo turntable is traditional or 'classic' belt drive design, with arm. There is no on-board phono stage and no automation of any sort: with this one you lift the arm manually onto an LP

then lift it off at end. The intention is to offer a relatively simple to use basic turntable of good underlying performance, free of fripperies. But it is for those who don't mind getting involved, as a prodigiously large bag of bits that accompanies it testified. I had to roll my sleeves up!

The Classic Evo is fundamentally a two speed belt-drive design – 33rpm and 45 rpm – but you can, with a belt change, get it spinning at 78rpm. However, since the arm has a fixed headshell changing to a cartridge with 78rpm stylus makes this impractical and unlikely. A





**For 33rpm and 45rpm there is a flat, ground belt. For 78rpm a round section O ring belt must be fitted to the larger pulley.**

moving-magnet (MM) cartridge with easily replaceable stylus is an option. Because old shellacs are a minority interest spinning 78s is a side issue I won't get into here.

Instead The Classic Evo comes with an Ortofon Quintet Red moving coil (MC) cartridge purposed for normal microgroove LPs, tracking at a recommended 2.3gm and fitted with a non-removable elliptical stylus. This is a peculiar choice in that it demands an MC phono stage and negates the 78rpm option. Yet at the same time it does give MC sound that was, I found, wholly appropriate for the turntable – and also classic. The Quintet Red is a budget MC, by the way, priced around £250 if bought separately.



**A one piece wrapped carbon fibre arm with flat finger lift. There is a damped cue platform for those who prefer it.**

The Classic Evo is classic in using a hub with main bearing, belt driven at its periphery, as used by Thorens long ago on their simple but effective TD160. Where Thorens suspended a pressed steel chassis on springs for isolation, Pro-Ject use a firmer suspension that simply isolates

from acoustic vibration, so there are transit screws to be removed before set-up. And where Thorens used a synchronous a.c. motor Pro-Ject use an altogether more modern d.c. servo motor driven by an internal supply, fed from an external wall-wart 15V (0.8A), with lead 2m (6ft) long. That means speed change is electronic and at the push of a button, speed accuracy and stability determined by electronic means internally. The system worked slickly, small black push-buttons selecting speed or, with a long press, turning off.

On top of the steel hub sits a heavy steel platter with thin felt platter mat. The platter only needs to be removed if the separate 78rpm belt is fitted. The standard belt is a high precision flat-ground type, whilst the 78rpm belt is a simpler O-ring type.

Pro-Ject fit their own wrapped carbon fibre arm with integral headshell. The finger lift is flat and not to my liking because it's difficult to get a finger underneath – too little clearance above the LP – and, being flat, easily slips out of a light grasp. But most people will use the damped lift/lower. It would be better if Pro-Ject dispensed with their finger lift altogether, offering an optional bolt-on type with upward curve for easier and more assured use. These cost pennies and can be left off by those who'd prefer to use the cue platform.

Now to the bag of bits! And there are plenty of them. For a start, you get two belts, plus handling gloves and a duster, and signal cables (with earth). There's a screw-on uncalibrated counterweight, bias weight on thread, alignment protractor, hook tool, three screw-on feet, three hex keys and simple stylus pressure gauge, but no bearing oil or stylus brush. The instruction manual didn't list all the bits in our box (duster, alignment gauge) so contents may vary.

Before all else the three feet must be screwed on and they are height adjustable, as well as offering a degree of isolation. Well made and a nice touch, ignored by even Rega with their Planar 10. The hex keys are for setting arm height and cartridge azimuth. The balance gauge is needed because the counterweight is uncalibrated – unlike most turntables from the Far East. Don't know what the hook tool is for: the manual makes no mention of it. Possibly to hook the belt?

A small technical note is that use of an external 15V supply means the unit is not mains earthed, making a hum loop impossible – so no hum from this source. It's now a common and effective design approach.

The arm's fixed headshell makes cartridge changing difficult. But this is a classic design aimed at those who are able and prepared to cope with such a fiddly process – so not an issue perhaps. Top quality arms from Rega and SME have similarly fixed head shells – if with better finger lifts – making Pro-Ject's arm no different from other high-end types in this particular respect.

A solid acrylic dust cover is supplied, moving on simple friction hinges. Not as smooth and slick as those with spring counterbalanced hinges, but satisfactory

Once this melange of parts had been assembled and all adjustments



**An uncalibrated rear counterweight and classic weight-on-thread bias system.**

made The Classic Evo looked good – neat and shiny. Dimensions of 462mm wide, 131mm deep and 351mm high lid closed, and 432mm high, 390mm deep (15in) lid open, make it a standard package size-wise but a deep shelf is needed. It will fit a 19in rack easily. Weight was a solid 11.5kg, due substantially to the steel hub and platter – heavier than the light, cast aluminium platters favoured in budget Far East turntables.

Raising the issue of big platters – and big main bearings to support them. A massive platter in an equally massive main bearing on a firm base resist vibration and historically have yielded best sound – think Garrard 401 here. Technics turntables also follow this constructional logic. The Classic Evo is similarly built.

## SOUND QUALITY

I connected The Classic Evo to our Icon Audio PS3 Mk2 valve phono



**Speed selection is made by a small black push button. It selects Stop when held down.**

stage, feeding an Icon Audio Stereo 30SE single-ended valve amplifier driving Martin Logan ESL-X hybrid electrostatic loudspeakers through Chord Company Signature Reference cables.

I start off vinyl play, at present, with a nicely simple but straightly balanced LP, *Two Countries, One Heart* – an all-analogue modern pressing that is right down the middle in terms of sound quality – neither warm nor bright, just neutral. And that is how it came across, although with *Fanfare for the Common Man* I heard an easy sound with no treble emphasis and little groove noise. However, kettle drum strikes were big and bold, with great insight into the drum's timbral properties. Muscular but at the same time relaxing, in good vinyl fashion.

Turning over the LP to play inner grooves had Rosella Caporale's soaring ending to *Time To Say Goodbye* hold steady and clear, with vivid power behind it. I was a little transfixed by this since on inner grooves sustained vocal crescendos can become unsteady. Not so here. However, at this point I was beginning to pick up some slight midband glare that made for a very explicit and forward delivery, full of insight and detail – impressive but not laid back.

With Hugh Masekela's *Uptownship* from his *Hope* LP (180gm all-analogue) I enjoyed a fruity blare from his trumpet, hand drums with body to them and a solid bass guitar line. This track marked out *The Classic Evo* as able to support LP dynamics, delivering a powerful sound informed by insight.

Cut into outer grooves, Neil Young's *Tell Me Why* is as good as it gets for close-miked acoustic guitar strings and here I heard a full bodied sound, guitar sounding rich detailed and resonant. There wasn't the speed/laceration I know from better stylus tips

(Shibata etc), the *Quintet* bringing a softer approach – in line with its frequency balance. I would have liked a little more speed and vivacity.

With *Big Band Spectacular*, a recent direct-cut of the *Syd Lawrence Orchestra*, the rolling drum intro to *Sing Sing Sing* had thunderous power and a strong grip on tempo. This is a masterful recording, one able to belittle CD – and that's just what I heard with *The Classic Evo*. It brought out the sheer listenability of LP as well as its dynamic power. Some hardness of tone contributed to the sense of pace and control, so think speed and drama here, rather than mellowness.



**A pair of solid gold plated RCA phono sockets at rear, with earth terminal. There are no other outputs.**

Yet at the same time our electro-statics put up a big sound stage that was both clear and deep, that sense of depth LP can provide being on full display.

## CONCLUSION

Pro-ject's *The Classic Evo* is a turntable for vinyl enthusiasts who know a thing or two about set up and are prepared to make the effort. Once up and running it gives glorious "classic" sound from Ortofon's *Quintet Red* moving coil cartridge – but you will need a decent moving coil preamp to hear this. Then you get true vinyl sound in the higher echelons of what is possible, albeit old style with mild treble.

## MEASURED PERFORMANCE

With a 3150Hz test tone (DIN 45-452 test disc) Pro-ject's *The Classic Evo* held speed both accurately and tightly, wandering from 3150Hz-3153Hz on our *Wow&Flutter* meter, making it essentially accurate in speed and with little variation around nominal. The turntable was run for 24hrs before this measurement.

As a result of low wander, speed

stability was very good for a belt drive. Wow measured just 0.1% (DIN) and Flutter of 0.06%. The total W&F value, DIN weighted, was 0.07%, our speed stability analysis showing the usual variation peak at 33rpm (0.55Hz) at low-ish level. There is little in the way of flutter peaks at right.

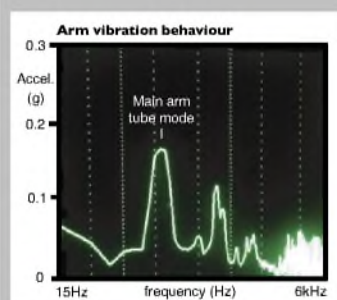
Although not an aluminium tube, the arm is still stiff and rings quite obviously under analysis with a *Bruel&Kjaer* accelerometer on the head shell, tuning-fork type resonance occurring at 220Hz. However, this apart the arm is fairly well controlled and damped, especially at high frequencies (above 1kHz) where the integral carbon fibre headshell works very well.

Frequency response of Ortofon's *Quintet Red* fell steadily toward high frequencies, measuring -3dB down at 10kHz. On inner grooves this rose to -5dB down – substantial and subjectively obvious as warmth, or dullness. Tracking was good at 2.3gm recommended VTF.

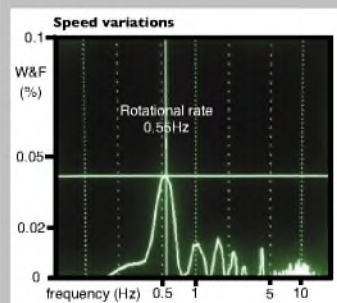
The *Classic* measured well but wasn't without small blemishes in arm and cartridge. NK

Speed error	0%
Wow	0.1%
Flutter	0.06%
Wow & Flutter (DIN wtd.)	0.07%

## FREQUENCY RESPONSE



## WOW & FLUTTER



## PRO-JECT THE CLASSIC TURNTABLE £1250



**OUTSTANDING - amongst the best.**

### VERDICT

A well aimed turntable package for those that want high-end LP on a budget.

### FOR

- muscular sound
- smooth and easy
- simple operation

### AGAINST

- flat finger lift
- no auto systems
- MC preamp necessary

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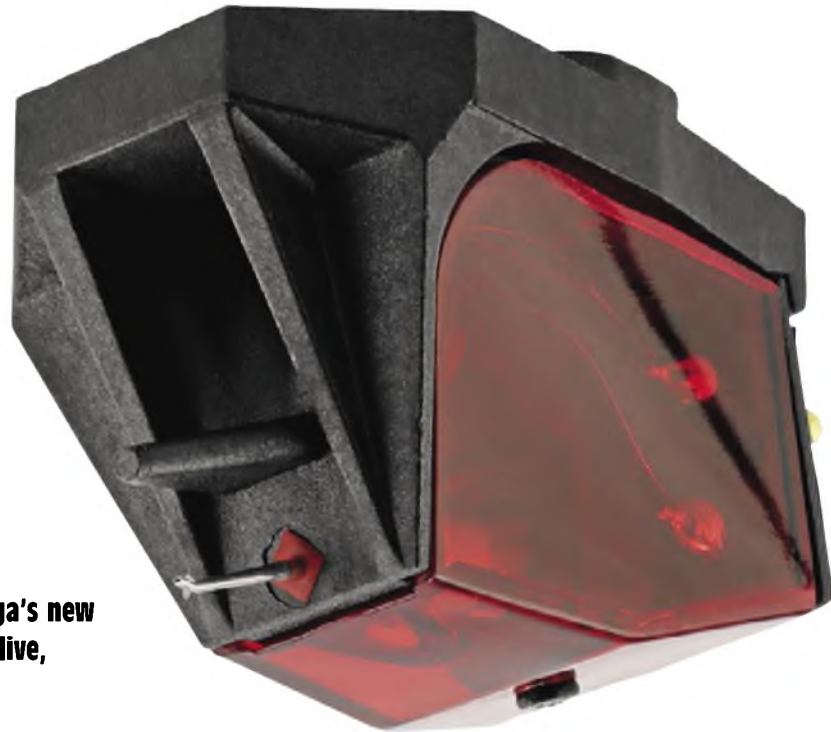


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# Gimme Three



**With three-point fixing Rega's new Ania Pro cartridge comes alive, finds Noel Keywood.**

I was surprised to learn that Rega have started making their own moving coil cartridges, rather than buying in from outside suppliers like Sumiko or Audio Technica. Not an easy thing to do: an exercise in micro-engineering. As I understand it, cantilevers and their diamond tips must be bought in from the few suppliers of micro parts around the world able to produce such items, like Nagaoka and Ortofon.

Into this exotic world of micro-manufacturing Rega have produced a range of moving coils whose bodies and motor assemblies (magnet, coil, etc) are made in-house. At top comes the Aphelion with a boron rod cantilever, then Apheta 3 (£1250) and just below the new Ania Pro (£750) that I'm reviewing here. It's up against stiff competition from Ortofon's Quintet range of budget moving coils and Audio Technica's recent OC9X series that top out at £660 (reviewed October 2019 issue). But Rega have their own ideas on how hi-fi should be engineered and how it should sound, so Ania Pro differs from much else.

To kick off, this cartridge is very light at 6gm, due to use of a lightweight moulded body with aluminium internal mounting block. Our SME309 test arm barely managed to dial on 2gms downforce before the rear weight hit its forward end stop, so arm compatibility is a potential issue.

Then there is use of a third fixing screw ahead of the traditional screws (M2.5) set half-an-inch apart. The only arm that can accept this screw to give three-point fixing is – as you might guess – a Rega arm. Blind captive nuts are moulded into the body to make fitment easy, but they are shallow and Rega supply just three very short stainless steel screws for them. Again, suitable for a Rega arm but otherwise – with thicker non-countersunk headshells – you'd need to buy a screw set with longer screws.

And then there is a peculiar issue of height that Ortofon say is lower than industry standard by a few millimetres. Rega arms suit but others must be lowered at the pillar. A 1mm mounting plate is provided to compensate.

Put all these issues together and you can see that Rega cartridges are purposed for Rega arms. They can be used in other arms, by adding weight to the headshell and lowering the arm pillar. I am not aware of other arms with three point fixing but a removable bayonet fitting headshell could conceivably have a third hole drilled into it.

So before getting past even a simple basic description of the Ania Pro you can see it is different and Rega-ish.

But there is another significant issue to bear in mind: sound quality. Rega products are consistently mild mannered and that's very much the case with their pickup cartridges, including this one. If you want strong treble "just walk away Renee". More later.

The Ania Pro comes in a small clear acrylic case with its three fixing screws holding it to the packaging. There was a short hex key for them too. A Rega arm will, I believe, cope with it – ours did.

The stylus guard terrified me so I barely used it. There's very little clearance between it and stylus, so

miss when trying to locate it onto the frontal spigot and that's the stylus gone.

However, this apart the rear signal pins are well spaced and unobstructed by bodywork, as well as colour coded, making attachment to a Rega fixed headshell arm easy I found. Stylus tracking force is quoted as 1.75-2gm with no optimum stated so I used 2gm.

**SOUND QUALITY**

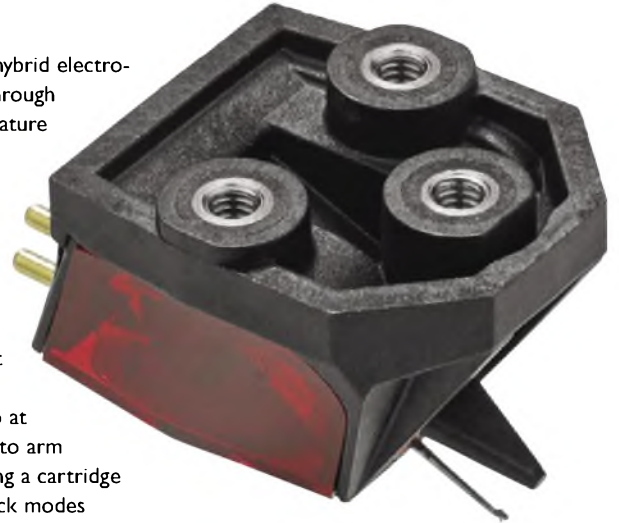
We had a Rega Planar 10 in the office, reviewed in the March 2020 issue, and since the Ania Pro with three-point fixing is purposed for a Rega arm, I felt obliged to mate the two. For measurement though I rely on the quartz-lock accuracy of our Timestep Evo modified Technics SL-1210 MkII with its SME309 arm, partly because test records must run at correct and stable speed for a spectrum analyser to lock-on.

After testing I listened to the Ania Pro in this turntable, then moved it to the Rega Planar 10 where it would receive the benefit of three-point fixing – not a comparison

Martin Logan ESL-X hybrid electro-static loudspeakers through Chord Company Signature Reference cables.

Our measurements of arm headshell behaviour with a Bruel&Kjaer accelerometer show that most are lively at front where they are unconstrained, less so at back where attached to arm tube. Three point fixing a cartridge damps these front-back modes where two point does not. Explaining improvements I heard when I used the Ania Pro in Rega's RB3000 arm.

Moving from our test platform to Rega's dedicated environment was a minor shock. In basic form, nothing changed, but underlying subtleties changed significantly, to the point I squirmed. In our test platform the Ania Pro sounded easy going as expected from measurement: no treble spit and a full bodied delivery that was different to current idiom, in keeping with Rega's preference



**Three point fixing made clear in this shot of the Ania Pro. The two rear captive nuts fit any arm, the front one is purposed for Rega arms.**

**The front spigot accepts a small plug-in stylus guard.**

position on the sound stage. Deep bass kick drums have to be mono images with LP or the needle will jump out of the groove, but hand drums can have stereo position.

I got to hear all this with Sing Sing Sing from the Syd Lawrence Orchestra, on the Big Band Spectacular LP (180gm, direct-cut). Drums had a sense of solid and stable power to them, anchored to the ground. Short breaks on side percussion were pinpoint sharp, with a lovely grip on timing, yet a great sense of time domain cleanliness: there was no blur between strikes, it was all smoothly but cleanly correct. No problem with low end dynamic strength either: think a muscular sound. I squirmed at the improvement three-point fixing made here – I should have known.

Much the same with In the Mood where slow plucked bass was firm and trumpets blasted out with a sense of stable confidence free of edginess. There was fantastic insight into timbral properties of individual instruments and the orchestra as a whole had body and was seemingly locked into position on the sound stage.

Spinning Neil Young's After The Goldrush, an all-analogue re-master on 180gm vinyl, I was taken by the sense of strong and steady imaging, as well as the sheer power of Young's acoustic guitar and the forceful expression of his vocals. The Ania Pro in Rega's RB3000 arm delivered this performance with a solid surety I've not heard before – and it was gripping. Missing was the cutting

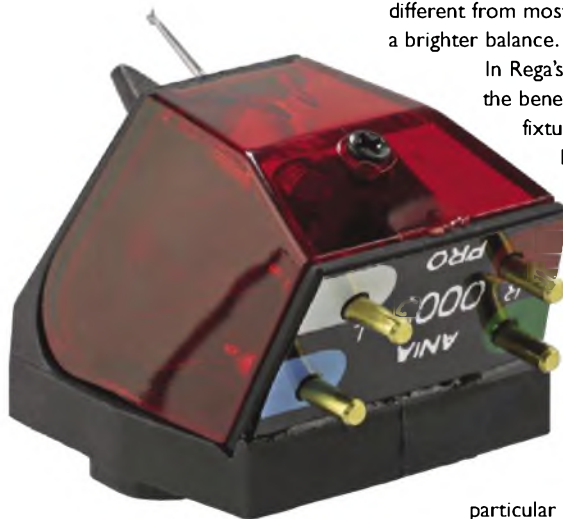
"I was taken by the sense of strong and steady imaging, the sheer power of Young's acoustic guitar and the forceful expression of his vocals"

I have made before. Preamp was an Icon Audio PS3 MkII with silent input transformers and valves, feeding an Icon Audio Stereo 30SE single-ended valve amplifier driving

for a gentle balance. But whilst highs were un-accentuated the Ania Pro had obvious low end strength and control, delivering a big-bodied sound. I liked what I heard and it is different from most rivals, which have a brighter balance.

In Rega's RB3000 arm, with the benefit of three-point fixture, the sound stage became firmer and

instruments better fleshed out, as well as stable and assured. Also, Rega arms have always drawn attention to lower midrange image stability, hand drums in particular having definable



**Widely spaced rear signal pins, unobstructed by body overhang, make connection easy. Clear colour coding, Right channel (+red/-green) and Left channel (+white/-blue) help get things right.**



**Rega arms have a third fixing screw ahead of the two conventional ones, seen here with the Ania Pro in Rega RB3000 arm. It stiffens the headshell in effect, giving a more stable sound.**

speed of his guitar strings I've heard from Audio Technica's OC9X Shibata and Special Line stylus tipped cartridges in particular, but in its place there was deep insight into the performance, to the extent I was transfixed. Almost surreal that such an old recording could come over with such wonderful sound – but that's Neil Young I guess.

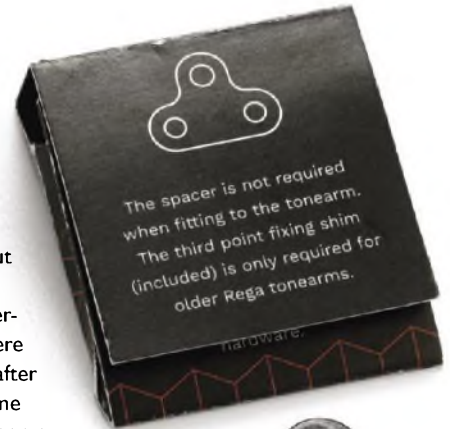
For inner groove performance I currently use Time To Say Goodbye, where Rosella Caporale holds the most astonishing vocal crescendo at the very last moment, almost into the run-out groove – and here the Ania Pro kept a grip beyond anything I have heard



**Rega make much of their stiff but light body moulding. A long stylus cantilever provides good disc clearance with correct vertical tracking angle, for low distortion.**

before. Volume right up, Ms Caporale came though our electrostatics like no other, pinning me to the settee. I was left aghast at this.

And finally, this cartridge has incredibly low output, at 0.173mV (173µV) the lowest I have ever measured. so must be used with a low noise preamp. Our Icon Audio PS3 MkII has input transformers that are super-quiet and there was no hiss after turning volume up, but with some preamps hiss may be audible.



**A spacer is provided for arms other than Regas.**

## CONCLUSION

I am reviewing not just Rega's Ania Pro moving coil cartridge here, but also Rega's RB3000 arm and the effectiveness of three-point cartridge attachment.

By any standards this is an unusual cartridge with its mellow sound balance, light body weight and low output. All the same, in a Rega arm it delivered a sound that others would struggle to match, ignoring reticent highs that rivals make more obvious.

## MEASURED PERFORMANCE

Our frequency response analysis of Rega's Ania Pro shows output falls steadily toward high frequencies, measuring -2dB down at 10kHz on outer grooves (JVC TRS-1007 test disc), enough to give a warm sound. On inner grooves (red trace) this increased to -3dB down at 10kHz and -8dB at 20kHz, from tracing loss due to stylus tip geometry, further enhancing warmth on inner grooves.

Tracking of standard 300Hz test tones on CBS-STR112 test disc was excellent, the Ania Pro just clearing a very high 90µm lateral track at 2gm VTF. At 1kHz (B&K2010) where acceleration is higher and tip mass more influential, the highest 25cms/sec band was negotiated, if with slight mistracking – a very good result.

Distortion was higher than usual at 2% on lateral modulation, mostly second harmonic, against a typical figure of 1%. On vertical modulation the figure was

unusually low at 0.4% after mod. slant angle correction, due to a measured vertical tracking angle of 21 degrees (DIN 45 452 test disc). Optimal is 22 degrees and it is rare for any cartridge to get below this figure. This brought distortion down to 1.2% overall, a low value.

Output was unusually low, measuring 167µV Left channel and 179µV Right channel – 173µV average at 3.45cm/sec (Shure TTR-109 test disc). This is 8dB below the output of Audio Technica's OC9X at 450µV for example, so a quiet MC preamp with plenty of gain is needed. Channel imbalance was 0.6dB – tolerable and separation 22dB (Shure TTR-109).

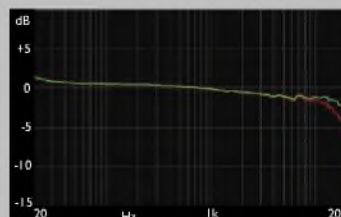
The Ania Pro will have a mild to warm sound, especially on inner grooves. Conversely it will sound full bodied and smooth. Output is extremely low so a quiet preamp is needed. Tracking was superb. **NK**

Tracking force	1.75-2gm
Weight	6gms
Vertical tracking angle	21degrees
Frequency response	25Hz-16kHz
Channel separation	22dB

Tracking ability (300Hz)	
lateral	90µm
vertical	45µm
lateral (1kHz)	25cms/sec

Distortion (45µm)	
lateral	2%
vertical	0.4%
Output (3.45cms/sec rms)	173µV

## FREQUENCY RESPONSE



## REGA ANIA PRO £750



**OUTSTANDING - amongst the best**

### VERDICT

Big bodied, mellow sound with deep insight in a Rega arm.

### FOR

- powerful dynamics
- stable pinpoint imaging
- super smooth

### AGAINST

- mellow, easy sound
- light
- best suits Rega arms

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# Keep It Simple

**A simple belt drive turntable from Teac, reviewed by Noel Keywood.**

**K**eeP It Simple Stupid – KISS – and that's what Teac have done with their new TN-3B turntable I'm reviewing here. It's nothing other than simple in outline and operation. Price circa

£395 so it won't break the bank – and you get digital too.

Where budget Direct Drives are now available, Teac stay with belt-drive here, with two speeds: 33rpm and 45rpm. Having an electronically controlled d.c. motor, speed is

switch-selectable – no need to move a belt on a stepped pulley, instead a neat little rotary switch at right has an Off position, 33 and 45 positions.

The arm is entirely manual in operation, aided by a damped cue platform; there is no auto-stop or





auto-lift, strictly DIY. In keeping with simplicity it has a conventional removable headshell with bayonet connector, balanced at the other end of the arm tube by a calibrated counterweight. This makes set up easy.

Fitted as standard is a light (6.1gm) Audio Technica VM95E budget moving magnet (MM) cartridge that can be upgraded by changing the removable stylus assembly – and the arm is good enough to do



**The removable headshell carries an Audio Technica VM95E cartridge. The green stylus carrier can be removed to fit improved stylus profiles.**

this. The VM95E comes with green stylus carrier signifying elliptical stylus profile set on a rondel, to ride fluff. Above this rugged budget fluff-rider are upgrades – to nude elliptical for better high frequency tracking (more easily upset by fluff), Shibata for better high frequency end-of-side resolution and MicroLinear for top high frequency resolution, best used with LPs in good condition – so there's plenty of leeway to upgrade here; our review in the January 2019 issue covers them in detail. As the arm can accept cartridges up to 12gms in weight other models can be fitted.

Sliding this deck into a system won't be difficult as it's fairly compact, measuring 420mm wide, just 117mm high with lid closed and 356mm deep. As always though, the hinged lid needs top clearance to open fully, 40cm here, and a shelf at least 40cm

(16in) deep is needed to clear lid rear overhang when open. Weighing 5kg (11lb) the TN-3B is quite light so it needs to be put on a firm surface, that could include a weighty marble slab. The MDF plinth feels rigid and sits on four isolating feet, but they are not height adjustable, which is a pity. It means the turntable needs a level surface. It is also microphonic: close the lid when playing and there's noise from the loudspeakers.

Build quality and finish were superb. The clear acrylic lid moved smoothly on its hinges – easy to use whilst an LP was playing. The plinth looks lustrous and the arm was easy to use, its cue platform dropping the arm smoothly but lifting it fast. I hand cued without difficulty. Platter start was almost instantaneous.

A phono stage is included, together with small by-pass slide switch so an external stage can be used if preferred. Additionally, the stage has a USB digital output for computer connection, so digital recordings can be made. Teac talk about the analogue amplifier chip in this stage, stating it is a NJM8080 (never heard of this one!) but are strangely silent in their literature about the crucial analogue-to-digital converter (ADC) so it is going to be 'budget' and is – unsurprisingly – CD quality, quoted as 16bit with 48kHz maximum sample rate.

Feet on ground with ADCs in budget turntables – they offer basic functionality rather than hi-fi sound quality. Under test this one had limited dynamic range, much like rivals, but it got the basics right. If you want good digital from LP, indistinguishable from the analogue sound, then an external phono stage with better 24bit converter is needed.



**At rear are analogue phono socket outputs and earth terminal. A slide switch selects direct output or the internal phono stage. A USB socket for digital connection to a computer offers digital recording ability.**

Power comes from a tiny external wall-wart 12V power supply fitted with 5ft (152cm) long lead. It accepts 100V-240V input and delivers 500mA out to the motor and in-built phono stage through a thin, light lead, 0.5W consumed at standby and less than 2W when playing. Won't break the bank.

## SOUND QUALITY

I connected the TN-3B, set to Line output, to our Creek Evolution 100A amplifier, driving Martin Logan ESL-X hybrid electrostatic loudspeakers through Chord Company Signature Reference cables.

Spinning our evenly balanced but cleanly recorded all-analogue Two Countries, One Heart LP, Fanfare for the Common Man was crisp and clean, rather than warm or fulsome. There's was an obvious grip on pace, the sudden orchestral episodes sounding snappy time wise. Kettle drum was firm and fast, but not weighty. Running through this track and others on this benchmark LP I found the TN-3B light in presentation, if precise and detailed. So I turned to our fuller bodied LPs and they gave a similar result. Spinning Walk Of Life, from Dire Straits on a Mobile Fidelity 45rpm all-analogue re-master, Mark Knopfler's vocals were well resolved



**A small d.c. servo controlled motor drives the platter rim by belt, putting the drive mechanism on display.**

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but the balance was on the bright side from an LP I know as fairly fulsome and weighty. My attention wasn't drawn to the bass line, being grabbed by what was going on further up the frequency scale.

Mark Knopfler again, and The Fish and the Bird, from Kill To Get Crimson. This also is a smooth, full bodied LP but the Teac focussed more on insight and pace than low frequency strength.

With an original Rumours LP from Fleetwood Mac, Second Hand

News was clean and well resolved but I wished for stronger low end resolution and a greater feeling of depth in the sound.

Switching the phono stage to Bypass at rear, I connected up our Icon Audio PS3 MkII valve phono stage and the sound changed completely. Now there was solid bass, plenty of stage depth and the cartridge



*A nicely finished plinth and arm give the TN-3B an air of elegance.*



*A single rotary control for Off, 33rpm or 45rpm selection.*

changed to sounding a tad soft in balance (which it is), allowing for stylus upgrade to get more high end definition and presence.

Best to bear in mind though that the AT-VM95E cartridge fitted does have a brighter balance than many and an AT-3600 or Rega Carbon, with their softer sound, would better suit I feel.

**CONCLUSION**

Teac's TN-3B turntable is attractive in many ways. It looks good, was nice to use and is an easy way into spinning LP without either set-up hassle or operational drawback, although it is strictly manual. Sound wise its internal phono stage has a light balance short of vinyl warmth and depth perspectives – not in keeping with the vinyl experience. An external phono stage is needed to better hear what the turntable is capable of – and a more appropriate cartridge would help too. So, good in essence – but could easily be better in sound quality terms.

**MEASURED PERFORMANCE**

From a 3150Hz test tone (DIN 45-452 test disc) the TN-3B produced 3178Hz on our Wow&Flutter meter, making it nearly 1% fast – about the limit of acceptable error before pitch becomes quite obviously high. This points to lax factory adjustment.

Although speed accuracy was poor, speed stability was very good. There was almost no basic speed wander and this resulted in a low Wow value of 0.1% (DIN) and Flutter of 0.06% – both very good results for a budget belt drive. The total W&F value, DIN weighted, was 0.08% – very good. Measured to the Japanese JIS Standard this was 0.05% (for comparison with Japanese turntables). Our speed stability analysis shows the usual variation peak at 33rpm (0.55Hz) – basic rotational frequency – but it is low. There is little in the way of flutter peaks at right.

The internal phono stage has a very low gain of x55 and overloaded early, just 7mV in / 385mV out tainted by 0.2% distortion. At 18mV in / 990mV out distortion hit 1%. These are not wonderful figures but arguably satisfactory in a budget design. Output is low so volume needs to be turned up in

an accompanying amplifier. Progressive distortion will muddle the sound a little with loud LPs.

Equalisation was accurate, making frequency response flat from 30Hz to 20kHz within 1dB limits. There is slow roll-off in gain below 30Hz our analysis shows, to suppress subsonic warp signals that cause loudspeaker cone flap.

The 16bit analogue-to-digital (ADC) converter reached maximum (0dB FS) at 16mV from the cartridge but distortion was high at 1%. At -60dB distortion measured 1.5% but it was noise; there were no identifiable harmonics. Dynamic range (EIAJ) measured 81dB – reasonable for a budget 16bit ADC. Better range from a 24bit convertor is needed for inaudible conversion but this one could at least resolve a -60dB signal. Frequency response was identical to that of the analogue output, with no change above 10kHz due to anti-alias pre-filtering.

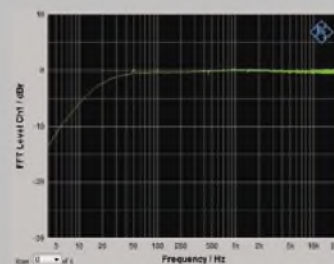
Frequency response of the AT-VM95E cartridge runs flat to 20kHz with just a slight roll off toward high frequencies so there's no sharpness. It does not suffer generator loss and resultant warm sound. Tracking is excellent too.

The TN-3B gave a basically good

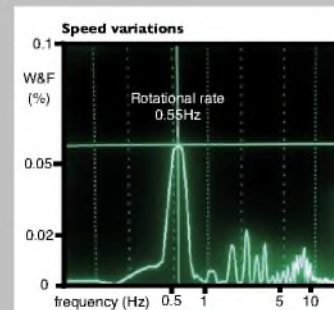
measured performance, but its integral phono stage is mediocre. **NK**

<b>Speed error</b>	<b>+ 0.9%</b>
<b>Wow</b>	<b>0.1%</b>
<b>Flutter</b>	<b>0.06%</b>
<b>Wow &amp; Flutter (DIN wtd.)</b>	<b>0.08%</b>

**FREQUENCY RESPONSE**



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# On the Beat

A book on the life of Ranking Roger, from Ska revival band The Beat, reviewed by Paul Rigby.

## I JUST CAN'T STOP IT: MY LIFE IN THE BEAT

Ranking Roger with Daniel Rachel

Omnibus

Price: £11.89

I don't know of too many people who were named after actor, Roger Moore, from his stint on the TV show 'The Saint'. Yet that's happened to Ranking Roger, a gifted 'toast-er' (i.e. lyrical chanter, a variant of rapping) as part of the UK ska-revival band, The Beat. A racially integrated pop group from Birmingham, The Beat found fame and success in the UK and in the USA with hits such as 'Tears of a Clown', 'Hands Off She's Mine' and 'Mirror in the Bathroom'.

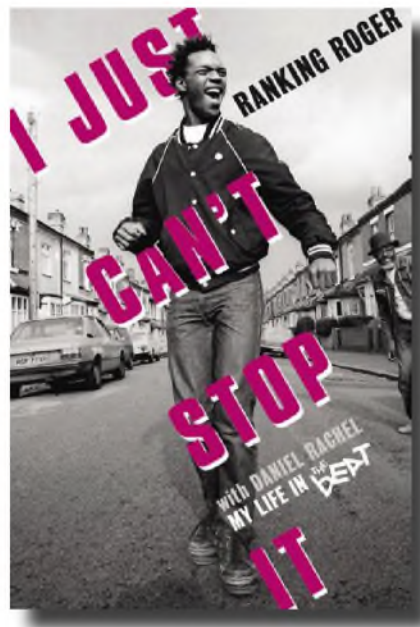
Roger's family moved from the Caribbean island of St Lucia to England in 1959, Roger was born in 1963, pushed at the boundaries of behaviour as a child and was quickly exposed to rampant racism during the seventies.

Hence, it's no surprise that this book looks at Roger's life in the band but it's also a social history of the times and the culture, as well as a reflection of the social mores back then: he conveys his emotional reaction to Nazi-saluting skinheads during a band concert, his view of a National Front march through his neighbourhood and his views on being that rare thing, a black punk. It's a timely reminder of seventies' England and how attitudes were broadcast and digested then. On that subject, it's intriguing to hear his views on the Rock Against Racism political and cultural movement, that emerged in 1976 and was supported

by the punk and independent groups of the time. "Rock Against Racism was for everybody but when I went to an event the majority of the audience was noticeably white. It always bothered me". He wondered where the black people were. He added "People were cocooned in their separate cultures, there was a lot of justifiable mistrust".

Which showed how difficult it was to build a solid and tight response to fascist aggression. Roger would exclaim that "The change would come with 2 Tone (an independent record label featuring racially mixed bands, devoted to the ska revival) and with it the first real evidence of black and white cultures mixing on the dance floor.

His toasting talent would work well in The Beat, although all of that talent was temporarily frozen when the band made its first appearance on the legendary BBC TV programme, 'Top of the Pops', to sing (well, mime) their first single, 'Tears of a Clown'. On stage, having been told to look at the cameras with red lights a-top because that would be the 'live' camera, introduced on the programme by DJ Mike Reid, Roger said, "The song started and I didn't know what to do. If you watch the footage you can see I was hit by nerves. About thirty seconds into the song I remember I had been told 'Make sure you smile'. All of a sudden I was grinning like a



Cheshire Cat".

After, the band were delighted to receive a congratulatory telegram from the songwriter of the original version, Smokey Robinson.

Later, this book tells stories involving bands like The Specials, The Police, The Pretenders, Au Pairs, The Clash, REM and more. Then covers the band's break up and Roger's later musical projects. But it's his time with The Beat that forms the core of the book and reflects that unique period of UK music when Caribbean rhythms thoroughly infused British music.

A family man and a father of five, it was in January 2019 when we discovered that Roger had undergone surgery for two brain tumours. Health issues struck him from all angles though as he was also hit by lung cancer.

Tragically, Ranking Roger died at his home in Birmingham on 26 March 2019 at the distressingly young age of 56. I, for one, am happy that this book exists to tell his story. It's a fine memoir and a perfect reflection of the times. **PR**

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TRAFOMATIC AUDIO Experience 2 Mk2 in black. The amplifier was made to a higher grade spec for me. Hard wired and with high spec emission labs 300B valves and a N.O.S. Mullard GZ34 valve. The amp is in mint condition with original crate it came in. Cost £5000 new. Sell for £2500. Tel: Andy 07731 621429.

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# THE DOOBIE BROTHERS

## MINUTE BY MINUTE SPEAKERS CORNER



"I wound up writing most of the lyrics on an aeroplane ride from New York to California. Just came to me"

**I**wonder how they really feel about the tag? It's one I'm not too familiar with, I have to admit but when a band is described as 'yacht rock', I sense derision.

So what is yacht rock? It's a sort of soft rock approach to music but distinctly Southern California in tone and normally from 1976 and 1984. The yacht part kicks in because yuppies of yore supposedly found the music appealing while they jaunted on their yachts, sipping champagne and snorting cocaine. Not the most respectful picture, I'm sure you'll agree.

Singer Michael McDonald once told Rolling Stone "The way I look at it is, it's something people love to laugh about, but they still have a certain affection for it". When he was asked about his 'Captain of Yacht Rock' tag, he replied "I'll take whatever I can get at my age".

And maybe that's the point, the tension between The Doobie Brothers and critics and the adoration between the band and the public. If ever a band survived and even thrived upon a schism, it was and arguably still is, the Doobies. "We always kind of had to look for our validation from our fans because that was really where we got it, on the road playing for people live and having that communication. As far as the media goes, we weren't referred to as a cutting-edge band" said McDonald.

I got that. Even back in 1978 when I first became aware of the group via their then hit single in the UK 'What a Fool Believes'. Being a sucker for harmonies, I loved this track – even if others didn't. Reportedly, one music industry executive from their own record label exclaimed that 'Minute by Minute' "...would be the final nail in their coffin". Then the band won four Grammys, just to spite him. The label didn't even want to release 'What a Fool Believes'.

'Minute by Minute' was a boundary. A transition. Partly because guitarist/vocalist, Tom Johnston had withdrawn due to health concerns, the band transformed from a guitar band to a smooth soulful outfit. More piano and horns than guitars. So, there was possibly less instrumental skill and mastery on offer

here but there was certainly more commercial funk flavours inserted into the mix that would enable the band to reach more ears. Three million ears, in total.

"I don't think we'd had a real strong hit for a couple of years, maybe" said guitarist Pat Simmons "so we were concentrating harder. We'd be a little harder on ourselves".

The first single from the LP, 'What a Fool Believes', was developed from three or four bars, repeated over and over. Michael McDonald was encouraged to finish it but he couldn't. "I actually wound up writing most of the verse/lyrics on an aeroplane ride from New York to California. Just came to me. But I didn't have a bridge or a chorus. I was planning to get together with Kenny Loggins and we were looking to write together and thinking that you're timid to get together with someone you've never written with. So I was playing a little bit of this piece for my sister and I said, 'Hey Kenny Loggins is coming over tonight. I was thinking of playing him this'. I was playing her that piece and he was at the door. She said 'Yea, that's a neat idea' Then the doorbell rang. The door opened and he said, 'Whatever it was that you were just playing, can you remember it?' I said 'Yea, sure. I've been goofing around with it'. He said, 'Let's work on that'".

When McDonald joined the Doobies, he moved from living in a garage to a very nice apartment. He was kicked out of the same because he was making too much noise. Musicians, eh? "My neighbours hated me" he said. Evicted, he found a less than salubrious abode. "I was on the road so didn't have the time find a new apartment so flopped in this dinky place for a while". This is where he wrote the title song for this LP with Lester Abrams.

McDonald had to project ahead on this track because, in his opinion, without the background harmonies, the track would have been dead in the water.

And that's what I also get from this LP, a sense of the group and, in every way, a sense of harmony. The music flows easily, without any effort. Music without friction, you might say.

Critics, eh? Who needs 'em. **PR**

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