FINELY BALANCED
Shanling CD3000 & Audia Flight CD Two CD players...

EXCLUSIVE!
LINN SONDEK LP12SE turntable - see supplement

EXCLUSIVE!
ONKYO D-TK10 novel standmounters

APPLE TV wireless media player

7 PAGES OF YOUR QUESTIONS ANSWERED

DENSEN B-410 CD PLAYER
MARANTZ ST-15S1 TUNER
LEEMA ANTILA CD PLAYER

COMPREHENSIVE 12-PAGE BUYING GUIDE INSIDE - see p85
The Italians enjoy life to the full. Everything they make expresses the full experience and their Hi-Fi is no exception. Zingali loudspeakers present music with an authenticity unrivalled even by other so-called Italian loudspeakers. Let's just say that exceptionally Zingali crafts his loudspeakers organically within Italy; using his drivers, his cabinets, his reflex chambers, and his horns. Most loudspeakers are designed subtractively: cabinets are damped, crossovers are subtractive, and components are OEM.

Until now, Zingali loudspeakers have been exclusive and expensive. Now they are just exclusive!

Celebrating the company's 20th year, the company has moved to the largest and most modern loudspeaker factory in Europe. The economies of scale permit the launch this Spring of a range of affordable speakers which use the unique and patented Omiray horn design. Never one to escalate costs by marketing and distribution you will not find these on the High Street but you will pay High Street prices for a crafted product.

Check the used markets worldwide and you will confirm our boast and Zingali's pride. Few people feel the urge to upgrade when the variations within your chosen music ensure that you will never tire of these loudspeakers; and having made the discovery, you will never switch brands.

Besides, "she" would never allow it!

She would never allow it!

**Zingali Loudspeakers has been my passion. A crusade since I heard them nine years ago...**

Jack Lawson
According to Matt Phillips of the British Phonographic Institute, “vinyl is now very much a niche market with total sales around 1 million compared to some 170 million for Compact Disc”.

He’s right: the world is never going to go back to 1975, with twelve inch black plastic copies of Mike Oldfield’s ‘Tubular Bells’ falling off the shelves of your local WH Smith. However, what the ‘big picture’ misses is that changes are afoot, and against all odds, vinyl is undergoing something of a resurgence.

“More and more, companies are releasing stuff on vinyl singles, so sales are going up markedly”, he told Hi-Fi World. “Indie bands, such as The Libertines, Artic Monkeys and Kaiser Chiefs, just like the vinyl format – there’s almost a badge of cool about it. It’s as if there’s a digital backlash amongst some music fans, especially younger fans - because everything’s digital these days”.

The way we consume music is going in a direction none of us thought possible back in the nineteen eighties, when the future of music seemed to be coming to us on a five inch optical digital disc. Now, that very format is becoming common currency for cheap digital data transfer (photographs and the like), and all the sexy, cutting-edge music carrying is done on (or via) computers and the Internet, or – bizarrely perhaps - ye olde black plastic!

“Vinyl appeals to music fans in niche markets,” adds Phillips, “and there’s certainly a significant niche market for a higher grade vinyl”. And so we’re seeing the reappearance of ‘audiophile vinyl’ reissues...

Things are moving on pace on the hardware side too, with more new turntables coming out than CD players right now. To reflect this, we’re delighted to bring you the very first issue of Vinyl World, free with this month’s issue!

It has an exclusive review of the latest and greatest update of what’s arguably the most important hi-fi turntable of all time – the Linn Sondek LP12SE. It still polarises opinions after thirty five years, and you can bet online forums will be full of posts seeking to praise it or to bury it!

Elsewhere in this issue of the magazine, you’ll find surely one of the most comprehensive reviews of the new Apple TV – one of the most important digital media players to date. This, along with vinyl, is how well be consuming our music in years to come. Right now, the world of hi-fi is an interesting place.

verdicts

OUTSTANDING  extremely capable
EXCELLENT  simple the best
GOOD  worth auditioning
MEDIocre  unremarkable
POOR  seriously flawed
VALUE  keenly priced

testing

To ensure the utmost 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.
Does Shanling's new CD-3000 CD spinner get the balance right?

Orkys D-TK10 with cabinets designed by Takamie.

Podium One - ingenious speakers designed by a concert pianist.

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SHANLING CD-3000 VS. AUDIO FLIGHT CD TWO 14
Noel Keywood pits two balanced CD players against one another.

APPLE TV 26
Uber-geek Patrick Cleasby gives you the low down on this amazing new wireless media player.

DENSEN B-410 30
Channa Vithana is beguiled by this excellent £1,000 silver disc spinner.

LEEMA ANTILA 52
David Allcock thinks this is one of the best ‘affordable high end’ CD players around.

FLYING MOLE DAD-M310 46
Adam Smith goes green with these new Japanese Class D monoblock power amplifiers.

AESTHETIX CALYPSO 56
This high end US behemoth gets the treatment from David Allcock.

PODIUM ONE 10
These striking, innovative high end panel speakers are auditioned by David Price.

ONKYO D-TK10 20
David Price thinks these mini-monitors designed with guitar maker Takamine can really play!

JAS ORIOR GRAND 48
Adam Smith auditions this impressive pair of floorstanders.

KUDOS C2 59
These exquisite looking loudspeakers get the treatment from Adam Smith.

ONE THING DECODER 32
Radio fan Noel Keywood puts this special Leak Troughline decoder through its paces...

MARANTZ ST-15SI 62
Noel Keywood auditions this beautiful new Japanese mid-price tuner.

www.hi-fiworld.co.uk JULY 2007 HI-FI WORLD
What’s remarkable about the new series of LP12 SE upgrades is not that it’s taken 35 years to develop them, or that they can be retro-fitted to any Sondek LP12 turntable, but the fact that they retrieve even more music from your vinyl collection than ever before.

Experience a revelation in turntable performance.
For more information and details of demonstration events in your area visit www.linn.co.uk, or call 08000 277 181.
**SAIL ON**

Marantz has a new flagship silver disc spinner, in the not inconceivably sized SA-7S1 'reference standard stereo Super Audio CD player'. The princely sum of £4,999.90 buys you what Marantz call their 'most refined product to date'. The 22kg behemoth follows in the footsteps of the legendary SA-1, which this magazine still holds in extremely high regard. Its full-metal chassis employs a double-layer bottom plate and is completely copper-plated. All key internal components are also copper shielded, and there's a segmented power supply that includes a high-capacity Super Ring toroidal transformer entirely shielded by an aluminium shorting ring and copper-plated case. There is also rectification by Schottky barrier diodes and oversized storage capacitors custom made to Marantz specifications. The disc mechanism sits in a 10mm case of extruded aluminium and is coated with a non-reflecting material to prevent light reflection. A pair of mono DACs - each comprising four separate processors for both DSD and 24bit PCM audio playback – work in tandem with Marantz's latest HDAMs (High Definition Amplifier Modules). These devices replace the single chip, 'off-the-shelf' op-amps that many other manufacturers use. The output buffer amps are HDAM-SA2 modules, and circuit topology is direct and fully balanced dual-differential. A switchable digital filter completes the package. Click on [www.marantz.co.uk](http://www.marantz.co.uk).

**GOLD STANDARD**

Goldmund's Telos 200 is the smallest mono amplifier of the Goldmund 'High-End' line of products. Only slightly bigger than the Mimesis 18.4 it replaces, the Telos 200 (costing a cool £11,790 per pair) uses a Telos circuit derived from the one in the Telos 400. It provides a built-in digital input, auto-start circuit with signal-sensing and input attenuator. The latest version of the Telos circuit makes for 200W into 8 ohms or twice that into 4. "Ultra-high speed" is claimed, and a DC to 2MHz bandwidth at full power before protection. There are unbalanced and balanced inputs available, with thermal grounding construction which means the power output MOSFETs are assembled on a large gold-plated pure copper heat-transmitter to achieve an ultra-fast heat transfer and so limit temperature-related dynamic losses. The "ultra-fast power supply design" means four built-in high-speed transformers with new rectifiers and low capacitor values for "the fastest possible signal amplification without power-supply-induced contamination". Vital statistics are 210x240x380mm and 18kg apiece. For more information, click on [www.goldmund.com](http://www.goldmund.com).

**HOUSE MUSIC**

After fifteen years as Linn's PR supremo, Brian Morris is opening House of Linn. Described as "an independent Linn reference location and true centre of excellence", House of Linn's five demonstration rooms feature Linn stereo and multichannel components and systems, as well as offering expert advice, service and sales for all things Linn. Featuring Linn's best stereo system, Komori Aktiv, LP12 SE and Linn digital sources on permanent demonstration, Manchester-based House of Linn offers by appointment demonstrations and caters for all existing or potential Linn customers from the UK and beyond - and can even arrange accommodation for those wishing to make a day (or two) of the audition experience. For more information, email info@houseoflinn.com.
RESEARCH MACHINES
Rega Research Limited has a new Planar 3, with “most areas of the turntable changed” no less! The new plinth is said to be rigid thanks to phenolic resin laminates, with a high quality edging. A “high performance motor” is fitted, the same low vibration unit found in the P5 and 9 turntables. The controlling circuitry can be adjusted for phase angle of the motor coils resulting in “very low vibration levels”, said to give a considerable performance increase over the outgoing P3. The new deck can now take Rega’s outboard turntable PSU first developed for the P7 turntable, a synthesised low distortion AC supply which is crystal controlled, and with the convenience of electronic speed change control. The famous RB300 has been modified to improve production and give a higher musical sound performance. A better vertical bearing housing has been used, which gives improved rigidity in the tonearm’s mounting, reducing the stresses in the main 13mm bearings - plus improved RB700 bias housing and phono cable. The newest P3 costs £398 and is also available with the Rega Elys cartridge fitted for £498. For more information click on www.rega.co.uk.

SILENT RUNNING
Advanced Acoustics offer acoustic treatment from as little as £70. Their room treatment solutions “drastically improve the sonic performance of the room taking away the negative influences the room has on both the equipment and the music”, it is claimed. Installed in the corners behind the speakers their Corner Sound Trap Panels reduce the low end build up that congregates in the corner giving the room a better response at the low end. The Wall Sound Trap Panels let you “experience a massive soundstage that before you could only dream about”. Visually their panels need not overwhelm a room and to further help them integrate aesthetically they are able to finish the panels with a design based on a picture provided by the customer. For more information, click on www.advancedacoustics-uk.com/highendaudio or call +44 (0)1623 400660.

VITAL SIGNS
Following in the footsteps of the Tivoli-troubling Vita R1 table radio, the new £219.95 R2 adds an extra channel, making it a stereo FM/DAB Digital radio with RDS. The walnut finished beauty boasts two switchable line inputs, a front mounted headphone output, two 3.5" drivers with a 2 x 10W nominal power output. There’s a compact remote controller and gold plated phono inputs and outputs on the rear. Dimensions are 120x340x170mm and weight is 3kg. For more information, click on www.vitaoudio.com.

FOUR PLAY
German loudspeaker specialist Quadral has an unusual new pair of digital wireless hi-fi speakers. The new Argentum O2WL is a wireless hi-fi loudspeaker, which claims “a high quality digital transmission process” and two 50W digital amplifier modules per speaker to “guarantee CD quality sound”. It sports a 25mm soft dome tweeter claimed to stretch up to 45kHz and a 130mm mid/bass driver in a bass reflex cabinet. Transmission range is said to be at 30m, and the speakers themselves measure 310x168x251mm. For more information, click on www.quadral.co.uk.

NOW EAR THIS
Chasing the high end portable market is Denon’s brand new AH-C700 ear-canal earphones. £139 buys you a very high quality ‘earplug’ design that insulates the ears from outside noise. Whereas its rivals use lightweight plastic capsules, the AH-C700 uses ultra-rigid machined aluminium housings that are said not to resonate. Advanced 11mm diaphragm drive units and audiophile cables complete the technology picture, and soft silicone adapters in three sizes let the C700s sit comfortably in most ears. There’s 1.2 metres of cable, made of durable elastomer with pure-OFC (Oxygen Free Copper) conductors for best sound, and a gold-plated aluminium-bodied 3.5mm stereo mini jack plug. There’s a choice of silver and black finishes. For more information, click on www.denon.co.uk or call +44 (0)1234 741 200.
RADIO GAGA
Tangent's Quattro is a svelte looking new internet radio and wireless music player. The display shows the names of all internet radio stations, which are automatically gathered by genre or location, “so the only difficulty users may have is deciding which one to listen to”, says Tangent's Torben Kristensen. No computer is necessary, but a Wi-Fi broadband connection is needed. The powerful 3” upfiring driver unit and rigid cabinet is said to prevent resonance. For more information, visit www.tangentaudio.com.

METAL MACHINE MUSIC
KEF describe Muon as “a remarkable two-metre high loudspeaker” created by KEF and Ross Lovegrove. A materials and technology-led industrial designer, Lovegrove’s work features in permanent collections in design museums globally including the Museum of Modern Art in New York (MOMA) and the Design Museum in London. He has worked on projects for Airbus, Apple Computer, Tag Heuer and Japan Airlines, to name but a few. The Muon loudspeaker is fabricated from super-formed aluminium, which uses a similar moulding process to vacuum forming. The concept uses malleable sheets of heated aluminium to achieve otherwise impossible shapes, says KEF. A UK based company that has strong links with the aeronautics and automotive industries milled the first prototype from enormous billets of solid aluminium. Using state-of-the-art computer-aided manufacturing software, the machines precisely cut away the excess material from the six-foot long block of solid metal to reveal the final form — in total the milling took about a week. Muon’s four-way speaker system sports KEF’s Uni-Q drive unit array, and two additional bass drivers mounted at the rear. The 6mm thick, heavily damped aluminium shell provides a totally rigid structure that minimises any sound-distorting vibrations. KEF’s senior Acoustic Engineer, Andrew Watson said, “we wanted to take our technology to the limit and then develop it further”. Muon comes as a limited edition of one hundred pairs, and price is in the region of £70,000. For more information click on www.kef.com.

SUMMER SPECIAL
Those sunny folks at the Chord Company are running a limited period trade in offer giving £150 off Chord Signature Interconnect. They’d like everybody to have the chance to hear the multi-award winning cable. All you have to do is trade in an interconnect, regardless of brand, to get a £150 reduction on the price of a brand new Chord Signature RCA interconnect cable. Just take any interconnect along to any participating retailer during May, June, July or August 2007 and you’ll get £150 off the normal selling price of £550. Check www.chord.co.uk or call 01980 625700 for a full list of participating retailers.
One of the most interesting loudspeakers to debut at last September’s Heathrow Hi-Fi Show was the Podium One, designed by an international concert pianist of considerable repute. David Price gets a virtuoso performance...

High fidelity music reproduction is where science meets art. As many a giant Japanese corporation has shown, it is perfectly possible to make a hi-fi component that measures very well—almost perfectly, even—and yet it still doesn’t ‘play music’.

Loudspeakers are surely where this is most pronounced. There’s the need to understand the mechanical and electrical engineering processes involved in the cabinetry, driver and crossover systems, and also the necessity to be able to ‘voice’ the whole package so it’s able to communicate on an intuitive emotional level. No surprise then, that if ever there was aspect of hi-fi design where ‘the black arts’ come in, this it.

Interestingly, almost without exception, all production loudspeakers are firstly designed by clever people with the appropriate engineering qualifications, and then voiced often by the very same people, sometimes with input from the company’s marketing men.

In the case of the Podium Ones, the design process has taken a slightly different trajectory: Whilst Shelley Katz, the man behind both the speakers and the company, has had considerable previous design experience with electric pianos, he is—first and foremost—an accomplished professional classical musician who has worked at the highest levels.

He began his studies at the Conservatoire de Musique in Montreal, and went on to the world renown Juilliard School in New York. As a soloist, chamber musician and accompanist, he played under Bernstein, Solti, Oszawa and was the pianist for New York Contemporary Ensemble under Skrowaczewski.

He then spent eight years based in Germany, recording with some of the great international singers including
Maestro

Nicolai Gedda, Dame Gwyneth Jones and Jochen Kowalski. A PhD at Cambridge in psychoacoustics, which probably explains why the £6,895 Podium Ones are not like most loudspeakers. They are panel speakers, like electrostatics, ribbons and NXT SurfaceSound designs, but are different to all three. A flat horn, floating tapered line array dipole, using a novel application of compliant surround loudspeaker technology, they share some things in common with NXT panels (they actually use the very same ‘exciters’, or ‘drivers’ as Katz calls them), but to assert that they’re the same is like saying a 1979 Ferrari 308 GTB and a 2007 Honda Civic are one and the same because they both run on fifteen inch alloy wheels.

Katz explains that NXT speakers are constrained panels; their outer edges are held rigid by the frames of the speaker – in a sense akin to the way that an infinite baffle has its moving coil drivers constrained by the air on the box, which can’t get in or out. The Podiums work on precisely the opposite principle: the panels are able to ‘float’ in air like woofers in bass reflex speaker boxes. Essentially then, the Podium panels are free floating, rather than being reigned in and controlled as per NXT. With the Podium Ones, the speakers energise the room, just as a concert grand ‘drives’ a hall.

Being panels gives them some tremendous advantages, as there is effectively no cabinet to interfere with the proceedings. No matter what loudspeaker manufacturers say about how inert their boxes are, they are always there – the devil in the room whose name they dare not speak. Instead, the Podiums have frames, and unlike the Quad 989s which I have used as a long standing reference, these are not wobbly structures. Rather, the 72x24x0.66″ affords arc made of the finest English birch, rigid and beautifully finished as per the very best marine applications.

Running down the centre rears of the Podiums is a tapered spine containing the five ‘drivers’, which are coupled to the vast metal honeycomb panels. The drivers are linked in such a way that the panels will move a centimetre or two forwards or backwards (if you push them, or the drivers excite them). The drivers are wired with fine grade silver wire, running down to a single pair of binding posts at the bottom. The stands are Sheffield stainless steel shafts, which insert into a recess at the base, and provide a stable resting place for each 15.6kg speaker. Despite being of Canadian extraction, Shelley Katz is emphatically proud to say that, ‘drivers’ aside, the Podiums are entirely made in England – even down to the fine quality front grille cloth (available in black or white)!

**SOUND QUALITY**

These loudspeakers are unlike anything I’ve ever heard – which is to pass absolutely no judgement, merely a statement of fact. Logically, this could only be the case, because they are a unique design – like Quad’s ESL-57 or Apogee’s Scintilla, they do things in a very different way to the moving coil driver and box brigade.

So they are highly distinctive, but I warn you now – if you like big behemoths which assault you with a fat, sumptuous sound, then you’ll be left wanting. Podium Ones are even less fulsome than Quad 989 electrostatics for example, meaning that the 99% of hi-fi folk who’ve never heard loudspeakers without boxes will find them odd at first.

The situation is made stranger by their sensitivity to placement - in short, they’re bloody fussy to position. Shelley Katz told me they’d work almost anywhere, but I have to disagree. In my room at least, they were unusually – almost unprecedentedly – room sensitive. Yes, they’ll make a noise anywhere, but to extract from them the performance they’re capable of, don’t think you can just plonk them either side of your chimney breast and forget them...

I actually got my review pair singing when they were at either end of my listening room, some ten metres apart, toed in at nearly 45 degrees and pulled out by about 30cm from the rear walls. Furthermore, I found they really don’t like cool rooms; they need at least 20 degrees centigrade to really sing. They also don’t like cheap ancillaries and, like my Geraniums, definitely prefer residing on the warmer side of the street – valves and vinyl, enough said...

Next on the list of caveats is the fact that they are unusually music dependent, really shining with classical, electronic or acoustic material, but being less convincing with rock and reggae. Once again, this is often the case with high end loudspeakers, and the same observation can be made of Quad 989 electrostatics, for example. Likewise, not even JBL would pretend that their K2 59800 is as clean across the midband on classical as a Quad. At this price, you pays your (not inconsiderable sum of money) and takes your choice...

In my system, in my room and when finally positioned properly, the Podium Ones imaged better than any loudspeaker I’ve yet heard, and that includes B&W £10,000 801D and Meridian’s £16,175 DSP7000s which have resided with me for many months over the past few years. The ability of these speakers to fill a room with sound, and place images in space, is peerless in my view. Rather like placing a grand piano in your front room, they simply take over and turn your whole space into part of the performance.

Much has been written about the ability of Quad electrostatics, for example, to disappear into space, but you’ve got to hear these to know what it really means – they’re in a gang of one in the way they melt into the room. ELO’s ‘Living Thing’ on LP assumed massive physical proportions, effortlessly pouring out all around my very ears.

This brings me onto their next striking characteristic – transient speed. Again, my reference Quad 989s were left sounding ponderous and ever-so-slightly ‘wrong footed’ when asked to reproduce Kraftwerk’s ‘Techno Pop’ from their 1986 opus ‘Electric Café’. The Podiums

REVIEW

World Radio History

www.hi-feworld.co.uk
Join a great team!

Owing to the strength of our people, Cambridge Audio has rapidly become one of the world’s most successful hi-fi and home cinema brands. Following expansion in key overseas markets, we wish to strengthen our 70-strong team with yet more ambitious, flexible, hard-working colleagues.

Business Development Executive

This key role will focus on helping to grow our global distribution. Reporting to our busy Business Development Director, you’ll be a flexible, high-performer with strong commercial awareness. You’ll be tenacious and energetic, possessing the ability to divide your attention across numerous clients. A genuine passion for products and the ability to transmit your enthusiasm to others are vital. Possibly ideal for someone currently in retail. A valid passport and an interest in travel are also absolutely critical!

Software Design Engineers – Embedded

Our successful candidates will be experienced in; C and assembler programming for both low level ‘bit bashing’ and higher level processing techniques with a good appreciation of hardware design and schematic capture. Experience of developing consumer products would be highly advantageous.

Electronic Design Engineers (A/V products)

To qualify for one of these exciting roles you’ll be experienced in the following; high performance analogue audio design, amplifier, digital audio, DSP; radio systems, digital and analogue video. Experience of consumer electronic product development is essential as is the desire to squeeze the maximum performance out of any given budget!

Electronic Design Engineers (Audio products)

We’re looking for candidates with a background in the following; Crystal/Cirrus Logic DSP systems, HDMI, analogue and digital video systems, video upscaling, surround-sound processing/room EQ, AV receivers, DVD players, schematic capture/PCB layout, design for LVD/EMC compliance. Experience of A/V product development is essential as is an in-depth knowledge and interest in the features, technology and specifications that characterise these products.

Test Development Engineer

Responsible for creating hardware and software test systems for our manufacturing sites, the successful candidate will develop testing regimes and fixtures for both complete products and individual PCBs and sub-assemblies. You will be expected to specify test plans and to design, build and commission the test fixtures delivering hardware, software and documented procedures for use by our manufacturing partners.

Product Design Manager

We’re seeking a product designer – probably from an engineering background – who wishes to move to a product management/architectural design role. The successful candidate will need a strong appreciation of analogue and digital audio design techniques and in-depth knowledge of high performance audio/video systems along with their features and specifications. A desire to create innovative products coupled with strong commercial awareness is crucial. The successful candidate will also possess the ability to research and absorb new technologies. The ability to select and manage relationships with technology providers, development partners and Asian factories is a prerequisite for this pivotal role.

Got another skill to bring to our team?

We’re constantly on the look-out for new people across all disciplines—from product development to sales to marketing– so if you’re looking for a new career, why not drop us a line?

To apply, please send your CV together with a covering letter — stating the post for which you are applying and your salary expectations — to: careers@cambridge-audio.com. All applications will be treated in the strictest confidence.

For more information on Cambridge Audio visit: www.cambridge-audio.com

Audio Partnership is an Equal Opportunities Employer and welcomes suitable male and female applicants irrespective of religious belief, political opinion, marital status, sexual orientation, disability, race, ethnic or national origins or age.
are startlingly fast in the way they can catch the first milliseconds of a transient, making them - in their own unique way - great for heavily syncopated music. They're able to eke their way into the most complex of mixes, and 'unwrap' everything so you can hear right into the music. I found myself hearing rhythms in the song's bass sequencing that I hadn't previously come across. By contrast, the Quads sounded a tad wooden and woolly; their less-than-rigid cabinetry damping down the attack transients that their electrostatic panels had captured.

Another example of this was the ultra tight percussion on Haircut 100's 'Love Plus One'; there was no denying the brilliance of drummer Blair Cunningham (Paul McCartney later asked him to session for him) and his blistering snare work. Again, the Podiums were especially adept at capturing every last rim shot from beginning to end, allowing the listener to marvel at the speed and complexity of the song's percussive work.

With this in mind, you might imagine that the Podium Ones were brilliant with rock music, but here I found them less convincing. In my room, the Quads sounded more lightweight (if cleaner) than the Quad 989s and lacked the physicality of the Yamaha NS1000M. The Podium One's bass is nicely deep and even but can't be considered over-generous, and in my system didn't seem muscular enough to give a truly moving account of this song.

The Podiums gave a very particular rendition of Supertramp's 'School' on LP, with that wonderful multi-dimensional soundstaging, oodles of detail and insight into Roger Hodgson's vocals, plus smooth sounding ancillaries.

My well-worn DG pressing of Beethoven's Pastoral Symphony (Dresdner, Karajan) showcased the Podium Ones at their very best. A vast, concert hall-sized recorded acoustic beckoned, massively airy and spacious like no other loudspeaker I've yet heard in my listening room. They hung the image back seemingly for miles, and allowed every instrument a great deal of space to breathe. Tonal dryness without a hint of bloom, the strings were rendered in a highly realistic manner, and the innate sense of timing the Podiums possess made for a fast and vigorous listening experience, fully communicating the majesty of the music.

CONCLUSION
One of the most focused loudspeakers I've ever heard, some will love the Podium Ones and others won't. If you sit on the 'electrostatic' side of the fence, and demand the absolute minimum in colouration and the maximum detail retrieval, you'll likely adore them. Others who crave cream in their coffee, so to speak, will seek more beguiling and ultimately less incisive designs elsewhere. Rather like a pair of Stax Electrostatic EarSpeakers, this is the sort of product that polarises opinion, so those wanting a general, 'do-it-all quite well' sort of speaker will find them unforgiving. Rock fans may not like them, whilst classical music aficionados will regard them as amazingly capable. I personally have never come across such a difficult product to rate (some would award them six globes, others three!) - so the best thing is for you to listen carefully for yourself with your favourite music. One thing is certain - as debuts go, the Podium One is a veritable show-stopper.

**REFERENCE SYSTEM:**
- Michell GyroDec/TecnoArm/vdH Frog turntable
- Note Products phono stage
- Marantz CD63Kx DP CD player
- MF Audio Silver Passive Pre
- World Audio KS811 power amp
- NuForce Reference 9SE amps
- Yamaha NS1000M speakers
- Quad 989 loudspeakers

**VERDICT**

Exceptionally capable imaging, speed and insight makes them brilliant classical music transducers, but unusually music dependent.

**PODIUM ONE**
- £6,895

**FOR**
- peerless soundstaging
- speed, musicality
- insight, detail
- design, build, finish

**AGAINST**
- unusually music, room and system dependent
- brightly lit midband

**MEASURED PERFORMANCE**

The Podium Ones are an interesting loudspeaker to measure, and not only because they only just fitted into our recording to be ruthlessly revealed. Whereas the Quad 989s sit on the warm side of the fence, the Podiums err towards the opposite, with a vivid midband that casts a penetrating light on every aspect of the recording. It makes for startling clarity in some senses, but also means you'll do well to ensure they're partnered with smooth sounding ancillaries.

My well-worn DG pressing of Beethoven's Pastoral Symphony (Dresdner, Karajan) showcased the Podium Ones at their very best. A vast, concert hall-sized recorded acoustic beckoned, massively airy and spacious like no other loudspeaker I've yet heard in my listening room. They hung the image back seemingly for miles, and allowed every instrument a great deal of space to breathe. Tonal dryness without a hint of bloom, the strings were rendered in a highly realistic manner, and the innate sense of timing the Podiums possess made for a fast and vigorous listening experience, fully communicating the majesty of the music.

CONCLUSION
One of the most focused loudspeakers I've ever heard, some will love the Podium Ones and others won't. If you sit on the 'electrostatic' side of the fence, and demand the absolute minimum in colouration and the maximum detail retrieval, you'll likely adore them. Others who crave cream in their coffee, so to speak, will seek more beguiling and ultimately less incisive designs elsewhere. Rather like a pair of Stax Electrostatic EarSpeakers, this is the sort of product that polarises opinion, so those wanting a general, 'do-it-all quite well' sort of speaker will find them unforgiving. Rock fans may not like them, whilst classical music aficionados will regard them as amazingly capable. I personally have never come across such a difficult product to rate (some would award them six globes, others three!) - so the best thing is for you to listen carefully for yourself with your favourite music. One thing is certain - as debuts go, the Podium One is a veritable show-stopper.

**REFERENCE SYSTEM:**
- Michell GyroDec/TecnoArm/vdH Frog turntable
- Note Products phono stage
- Marantz CD63Kx DP CD player
- MF Audio Silver Passive Pre
- World Audio KS811 power amp
- NuForce Reference 9SE amps
- Yamaha NS1000M speakers
- Quad 989 loudspeakers

**VERDICT**

Exceptionally capable imaging, speed and insight makes them brilliant classical music transducers, but unusually music dependent.

**PODIUM ONE**
- £6,895

**FOR**
- peerless soundstaging
- speed, musicality
- insight, detail
- design, build, finish

**AGAINST**
- unusually music, room and system dependent
- brighty lit midband

**MEASURED PERFORMANCE**

The Podium Ones are an interesting loudspeaker to measure, and not only because they only just fitted into our recording to be ruthlessly revealed. Whereas the Quad 989s sit on the warm side of the fence, the Podiums err towards the opposite, with a vivid midband that casts a penetrating light on every aspect of the recording. It makes for startling clarity in some senses, but also means you'll do well to ensure they're partnered with smooth sounding ancillaries.

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Achieving Balance

Ever more hi-fi products now sport a set of balanced XLR signal connectors. Built to survive the loving attention of roadies at rock concerts, Noel Keywood looks at their impact upon the gentler world of high fidelity. Do two new CD players, the Shanling CD3000 and Audia Flight CD Two, achieve balance through XLR he wonders?

Designed to withstand abuse of every type in stage PA. equipment and still deliver the sonic goods, Canon’s bulky XLR connector is now appearing on hi-fi equipment, from CD players to amplifiers. The reason isn’t to make rock stars feel at home with their hi-fi, so much as improve sound quality. Two brand new, quality CD players arrived at Hi-Fi World recently and both had balanced outputs. I thought I’d use these players to illustrate the benefits of going balanced.

To use the high quality balanced signal lines you will need a connecting lead with an XLR plug at one end and a socket at either end, as by convention sources such as CD players output a signal through a chassis plug, whilst amplifiers accept an input through a socket.

The XLR plug is a big, cumbersome device, usually equipped with three pins. Its socket is even bigger, and takes up large amounts of panel space. They were designed to withstand constant connection and disconnection, as well as heavy handling. However, their real benefit lies in separating a pristine audio signal from outside interference of many sorts. Quite how can be a little technical, so we’ve put it in a separate box. The primary benefit for ordinary mortals is simple: improved sound quality.

Another little mentioned benefit I discovered recently when re-wiring my SME312 pickup arm lead with XLRs is that each plug can easily cope with large diameter audiophile cables. Not that good cables necessarily need be vast, which is another discussion, but that many are and, where the RCA cannot cope, the XLR can. Just as well though, because balanced signal cables are a step up in complexity from unbalanced ones! See our separate explanation on this.

The XLR output of a CD player, or any source if it comes to that, is the high quality output. It isn’t fitted for any other purpose, certainly not to keep roadies happy, so if you buy a top quality CD player and use its conventional phono outputs you may well be missing out on what it can really do.

Whilst an increasing number of players arrive at our offices fitted with balanced XLR outputs, they’re not matched by the number of amplifiers fitted with XLR inputs as...
yet. Which is a trifle unfortunate, as you do ideally need an XLR equipped balanced input on the amplifier as well. One reason I suspect is that amplifiers have multiple inputs, whilst sources have just one output. The XLR socket is such a huge device that fitting many of them is impractical, but it is possible to fit a few and switch them, as Lux do in their L-550A amplifier. It wasn’t the Lux that spurred me into this subject though; I design and build balanced amplifiers for our test bench, where balanced lines are these days obligatory, yet balanced test equipment is rare.

Over the last few years I have watched the subject make slow headway everywhere in electronics, its emergence in hi-fi being eased by the presence of balanced line driver chip sets from major suppliers such as Burr-Brown. Not everyone uses these: transformers are a perfect way to derive balanced lines, but audio transformers give most designers nightmares because they are an art as much as a science - and like a lot of art, pricey as well! Within CD and SACD players modern audio driver chips are commonly used, with balanced line receiver chips in amplifiers.

The quality CD players to recently arrive at our offices so equipped were a Shanling CD-3000 tube output CD player priced at £1100 and an Audia Flight CD Two at £2000. Both offer 24/192 upsampling conversion, normal phono outputs (i.e. unbalanced connection) plus a pair of XLR outputs. So just what benefit does the balanced output offer over the usual unbalanced one with these players? Do sources sound better through their balanced outputs, and if so, in what way? Both players offered an interesting picture of what to expect.

The Audia Flight CD Two has normal unbalanced phono output, plus a balanced output through XLR sockets (but no digital output). Audia tell us they use discrete devices (i.e. individual transistors) to develop the balanced signal, not a chip, which a look inside confirmed. They also use a Crystal Semiconductor CS43122 converter and Analogue Devices AD1896 upconverter. The circuit board was crammed with small power transistors, acting as regulators I suspect, suggesting Audia like to use the not uncommon approach of separating the power lines of circuit blocks. The CD Two also has substantial main power supplies in the centre of the board.

Shanling’s CD-3000 is very different. A Philips CD711 servo system is used in the transport, which sits in the heavy alloy lid. The casework is, as always with Shanling, hewn from solid aluminium to form a massively rigid construction. On the circuit board lie a Burr-Brown PCM1794 convertor chip and Burr-Brown SRC1492 24 bit/192kHz upsampling processor. Where Audia use discrete transistors to derive their balanced output, Shanling choose to use four OPA627 chips. In both cases the preceding circuitry will be single ended, which is why I say the balanced output is "derived", through extra active devices. But the CD-3000 also sports a pair of Electro Harmonix 6922 (ECC88) valves and these feed the phono outputs, so in this player the unbalanced outputs are very different from the balanced, just one example of the many differing arrangements that can be used to feed audio output sockets.

When the internal circuitry differs like this then obviously the whole point of having different outputs is that they should sound different; the balanced output not necessarily being better than the unbalanced, just different. This isn't the only situation in which the choice
CABLES & PLUGS

Music venues, recording studios, broadcast studios and such like must send audio over long distances and here balanced connection rules, to combat hum and noise pickup. They comprise twin conductors surrounded by an overall screen. Most effective at resisting interference is a Star-Quad arrangement of inner conductors, where two pairs of tightly twisted conductors are used. When you add in foil and braid screens, drain wires and such like, cables like this get very complex.

Nigel Finn at The Chord Company confirmed that their balanced hi-fi cables were physically complex and difficult to make. They use a variety of different materials and constructions, including Star-Quad, telling us that the shielding arrangements had a significant impact upon sound quality. The Chord Company use PTFE and Polyethylene dielectrics, copper and silver plated copper conductors, braid and foil screens in various arrangements, for best sound. So if you decide to go balanced your cabling becomes decidedly complex.

Fortunately, the Canon XLR plug is large enough to accommodate large, complex cables and anchor the screens firmly to a strong solder tag. The signal pins are strong and have a large contact area. The outer body is metal and screened, and the earth makes contact before the signal pins, avoiding crashes and bangs from the hum area. The outer body is metal and screened, and the earth makes contact before the signal pins, avoiding crashes and bangs from the hum area.

Finally, the AES/EBU balanced digital interconnect uses special 1100ohm cable, so they differ from normal analogue cables, another example of the extra sophistication of balanced connections.

BenEFITS AND DRAWBACKS

Balanced signal leads suppress noise and interference from outside sources. This is "common mode noise" as it is common to both lines and cancels out in a balanced system. Interference is a catch all term for hum and radio interference from a variety of sources, including motors, transmitters and even nearby micro-processors. Balanced connections do not cancel hum, distortion and noise from preceding circuitry though.

Arguably as important is the fact that balanced signal lines carry only the audio signal, not earth currents. In so doing they eliminate hum pickup from this mechanism in unbalanced lines, offering a conceptually purer connection methodology. Directing audio down an earth connection is an idea that has had its day.

Beneath using balanced and unbalanced is unclear. McIntosh and Melody use balanced internal valve circuitry in their products, for example, so you must use fully balanced connection here for best results. Shanling also fit an AES/EBU balanced digital output, as well as an SPDIF phono output. A small additional wrinkle of balanced line complexity comes in the form of the AES/EBU digital input, which requires special 1100ohm 'characteristic impedance' cable, with XLR plug and socket. At present few transports or players have such an output, but as the trend everywhere is toward better worked out connection technology with appropriate cabling, balanced digital connections are likely to become increasingly common too.

SOUND QUALITY

As listening progressed I began to identify why I was so immediately attracted by the Audia Flight CD Two player, via its balanced outputs. This player's presentation is nothing other than conspicuously dramatic. The sound stage was wide and instruments at extreme left and right on the soundstage had sufficient power and definition to totally capture my attention, be it a single horn at extreme left in Mercury, from Holst's 'Planets' suite, or accompanying vocalists in Angelique Kidjo's 'Wombo Lombo'. This subjectively widened the sound stage in comparison to the unbalanced output, painting a large picture between the loudspeakers, heightening impact generally.

With strongly etched cymbals, rim shots and the like piercing out strongly, accompanied by bass with enormous impact, the CD Two was a gripping player to hear. There was perceptibly less muddiness around instruments and singers, setting them out in greater relief against a quiet background, where subtle ambient cues could be heard. As the orchestra died to a faint whisper in Saturn, a single clarinet and a plucked bass played mournfully in peaceful solitude. With Rock music the Audia was fast paced, sharply defined and unforgiving, yet able to tease out the finest details.

With quite some time the attention grabbing dynamism of the Audia had me convinced it was able to justify its £900 margin over the Shanling CD-3000. Via its balanced outputs the latter player offers a slightly gentler presentation. Rim shots in Steve Earle's Back To The Wall had a tad less power and the sound stage, although wide, wasn't as strong at extreme left and right. However, where I found strings via the Audia attention grabbing, via the Shanling they were slightly smoother, described by a broader tonal palette and generally easier to accept as real.

With Rock music I found much
the same. Strummed guitar at the start of Santana’s Put Your Lights On was wonderfully rich and resonant, and as Santana slips into using the wah wah pedal and feedback the Shanal remained easy on the ear, yet wonderfully clear and easy to sit in front of. It lacks the drama of Audia Flight’s CD Two, but its slightly gentler sound is easier to relax to, whilst remaining impressive by modern standards. Where the Shanal gets almost worrying is its valve output. Initially I preferred the panoramic sound stage and tighter composure of the balanced non-valve output, but changing from balanced to unbalanced on the Lux was a dodgy and encouraged me to spend a long time going from one to the other with a wide range of music. Generally, the unbalanced valve output doesn’t image as hard at stage extremes and it lacks the ability to pick out individual instruments with the surety and precision of the balanced output, yet the sound stage develops depth and performances take on a liquid ease that makes them enjoyable. In effect, Shanal’s CD-3000 offers two different performances, each with its own merit, so you have a choice. Whilst at present not many people will be able to use its balanced output, the unbalanced phono socket output offers a great valve sound at a sensible price. The Shanal is a class act in its sound, finely honed and beautifully presented.

MEASURED PERFORMANCE

SHANLING CD-3000
Shanal have directed valve output through the unbalanced phono socket outputs, giving 0.7% distortion at full output (6dB), purely second harmonic. At -6dB this subsides to 0.33% then to 0.03% at -30dB before converter non-linearity comes into play, causing distortion at lower levels to rise.

The balanced output bypasses the valve stage, producing much less distortion at high levels as a result, but the same results at low levels. Extended distortion harmonics and quantisation noise were present below -60dB, analysis showed, but the balanced outputs still gave an exceptional EIAJ dynamic range figure of 113dB. Curiously, selecting balanced outputs still gave an exceptional EIAJ dynamic range value of 110dB, around 3dB off the best. Results were identical on the unbalanced and the balanced outputs. As there is no digital output jitter could not be measured. Output from balanced was double the unbalanced, suggesting balanced is the primary output from which unbalanced is derived and therefore best used.

The CD Two should sound firm and smooth. It may lack the delicacy and detail of the best, but in exchange it might well sound fast and hard hitting. NK

Frequency response (-1dB) 8Hz - 20.6kHz

Distortion (%) Bal Unbal
0dB 0.0004 0.7
-6dB 0.0005 0.33
-60dB 0.25 0.38
-80dB 2.3 3

Separation (1kHz) 112dB
Noise (IEC A, Bal/Unbal) -121.5/-104dB
Dynamic range 113dB
Output (bal/unbal) 4.4/2.2V

FREQUENCY RESPONSE

MEASURED PERFORMANCE

AUDIA FLIGHT CD TWO
The Audia Flight CD Two player has a small upward trend in response toward low frequencies and a roll down above 10kHz to -0.5dB at 20kHz. Both these effects look small but they are sufficient to contribute to the player’s character in a subtle way, to ensure firm bass and smooth treble. This player is unlikely to sound sharp or bright.

Distortion levels were on par with the best, our analysis showing a value of 0.0043% measured at -30dB - a typical music level. There are some higher order components and further analysis at lower levels revealed the presence of high order distortions - not so common nowadays - albeit in smallish quantities. This set the EIAJ dynamic range value to -110dB, around 3dB off the best. Results were identical on the unbalanced and the balanced outputs. As there is no digital output jitter could not be measured. Output from balanced was double the unbalanced, suggesting balanced is the primary output from which unbalanced is derived and therefore best used.

The CD Two should sound firm and smooth. It may lack the delicacy and detail of the best, but in exchange it might well sound fast and hard hitting. NK

Frequency response (-1dB) 4Hz - 20.6kHz

Distortion (%) Bal Unbal
0dB 0.0012 0.012
-6dB 0.0014 0.014
-60dB 0.23
-80dB 2.7

Separation (1kHz) 96dB
Noise (IEC A) -100dB
Dynamic range 110dB
Output (bal/unbal) 4.88/2.46V

FREQUENCY RESPONSE

VERDICT

Easy going, clean and natural sound with great balance and flow.

SHANLING CD-3000 £1,100
Real Hi-Fi
(+) +44 (0)787 966 6777
www.shanling.com

FOR
- Easy, natural sound
- Realistic timbral palette
- Valve & transistor outputs

AGAINST
- Large and heavy
- Top loading only

AUDIA FLIGHT CD TWO £2,000
Henley Designs
(+) +44 (0)1235 511166
www.audia.it

FOR
- Fast, punchy sound
- Wide sound stage (balanced)
- Clean low levels (balanced)

AGAINST
- A little ‘enhanced’
- No digital output
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FOR OUR ON-LINE MAGAZINE SEE P26

FOR OUR ON-LINE MAGAZINE SEE P26
Axe Hero

Onkyo's D-TK10 mini monitors have cabinets designed in conjunction with Japanese guitar specialists Takamine, and the result is a soaring performance, says David Price...

"It is not for cars to have character, it is their owners who should possess this". So said the late great LJK Setright to me one afternoon outside a Maida Vale eatery, wearing a dapper grey and white bold pinstripe suit, with carnation in buttonhole, drawing on his French cigarette like Marlon Brando in 'On The Waterfront'...

He was standing opposite his anonymous looking Honda Prelude, a car which I soon discovered he never drove at anything less than full throttle everywhere, and very skilfully I must add. Given that his previous vehicles included a Bristol 409 and Suzuki Whizkid, I wondered if there was a dash of irony in what he'd just said, but it was an interesting point all the same!

You see, his epithet pretty much sums up the hi-fi Holy Grail these days, which is the never-ending pursuit of neutrality — or lack of character. Every new loudspeaker promises ever greater levels of resolution, ever more transparency, ever increasing amounts of detail. But to what end, I ask myself? Given that so many people use CD as their source, which is hardly 'the highest of fi', and to make matters worse we have had DAB and MP3 joining the party too of late, what's the point of 'speakers that tell you how bad everything is? Why not give loudspeakers a good tone', as people used to say?

Personally, I've gone increasingly far down the 'transparency' route (although I must confess it mustn't be at the expense of musicality, which is why I'll never be running Celestion SL6s - sorry DT!) so Onkyo's D-TK10 was a fascinating proposition to review. Here are little boxes that break all the rules — no massively braced cabinets weighing ten tonnes here. Rather, their cabs are designed to resonate (in a very controlled way, might add) just like an acoustic guitar. No surprise then that they were designed in conjunction with Japanese guitar specialists Takamine — who know a thing or three about making nice noises from wobbly bits of wood.

The D-TK10 is a two way bass reflex design that's very small (133x276x220mm) and light (2.9kg), finished in beautiful rosewood cabinets which — contrary to all rules of hi-fi loudspeaker design — do not produce a dull thud when you 'rap' them with your knuckles.

The woodwork is beautiful, curved like a guitar, and the front baffle has a slight cant back from bottom to top. The so-called
Takamine Acoustic Voicing Technology results in very thin sidewalls - like a guitar — but are well braced in strategic places. Curvatures in the wood were used to add strength without having to resort to thicker materials like MDF.

Takamine is a Japanese guitar maker of forty years standing and great repute. The company was approached by Onkyo some four years ago for advice on implementing their idea of making a speaker enclosure from the body of an instrument, and needless to say it became a collaboration that finally hit Japanese shops in December 2005, although the D-TK10 was premiered in the UK as recently as the Bristol show February 2007.

It sports a 100mm ‘Onkyo Micro Fiber’ bass unit (which looks a bit like glass fibre to me, but is actually three layers, comprising an outer polyethylene naphthalate (PEN) layer and an inner Aramid layer sandwiching a flexible cotton weave layer. This crosses over to a 25mm ‘Ring Drive’ tweeter at 3.5kHz, fashioned from aluminium. There’s a single front slotted bass port made of rosewood which is a long narrow duct that Onkyo calls an ‘Aero Acoustic Drive’ to underline the fact that it’s very different to a conventional circular port.

SOUND QUALITY
I have to say this is one of the most obviously characterful loudspeakers I’ve reviewed in a long time, if ever. It is not especially accomplished in some ways, but possesses tremendous talents in others which make it well and truly stand out from the crowd.

First and foremost, the D-TK10 does TARDIS-like tricks with size and space. I have never heard any small (almost tiny, in truth) loudspeaker drive my largish listening room with such ease. After fiddling around with Atacama 24in stands, I eventually dispensed with them and sat them on top of my Yamaha NS1000Ms (themselves on Custom Design frame stands). Sitting over a metre high then, the little Onkys sang like a bird, and sounded as free as one too.

The next thing that strikes you is the ‘tone’: it is rich and mellow, but doesn’t get this richness from the simple expedient of bumping up the bass port’s contribution to the proceedings (which makes for full bass but also a boom, and the tendency to ‘one note’ low frequencies, which in turn slows down rhythms). Indeed, the Onkyo D-TK10 is the first ‘fruity’ sounding loudspeaker I’ve heard in a long, long time. This colouration is like none other I’ve encountered, because it is from those guitar-like sidewalls thrumming gently and benignly in the background. If you’re unclear about the effect those cabs have on things, then take an acoustic guitar: pluck the bottom string and listen — then stuff a T-shirt inside the aperture at the bottom of the neck (to damp the body) and do the same. This clearly shows how, if done correctly, resonance can be a good thing!

The next most dramatic aspect of the D-TK10 is their timing; they time like few loudspeakers at any price. This is, as an ex-Linn Kan owner, a very important facet of any speaker’s performance for me. Once again though, the little Onkyo doesn’t sound like your average well-timing loudspeaker. Naim’s similarly priced Allie floorstander is a great example; it’s lightning fast yet tonally a tad thin, whereas the D-TK10 is lightning fast yet fruity as a raspberry and banana smoothie.

Bring that supernatural spaciousness together with the wonderful tone and superlative timing, and the result is an immensely enjoyable loudspeaker: Indeed, it is one of the most exuberant, joyful sounding devices I have ever heard. It is a consummate good time, party speaker — but not because it makes a loud booming sound, but rather because it injects power, passion and joie de vivre into everything itouches. I never thought I’d say this, but so upbeat it is that I could even manage a minute or two of Norah Jones before diving for the off’ button...

JULY 2007

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Great... Greater... Greatest...

The affordable G06: "...assured, detailed and refined... this is a really music-loving piece of hi-fi equipment. Meridian has achieved a high and consistent standard with this player... a highly recommendable item."

—Richard Black, Hi-Fi Choice, July 2006

The impressive G08: "I've not heard a more elegant sound emanate from a transistor-based system in quite some time."

—Sue Kraft, The Absolute Sound (US), February/March 2005

The incomparable 808: "I've had a Meridian 808 in my reference system for about three months and frankly, I can't imagine my system without it."


There's a Meridian CD for you.
The Bee Gees’ ‘How Deep Is Your Love’ kicked off with a delicious Fender Rhodes sound, reminding me what a beautiful instrument it is. Then the vocal harmonies kicked in, sounding as smooth as Bailey’s Irish Cream. Although the snare drums seemed a tad recessed in the mix, the song shifted along much faster than usual, with hi-hat cymbals having a real ‘connectedness’ and sense of life. Moving to ‘Night Fever’, the wah-wah guitar, often lost after the opening two bars of the song, was playing prominently right throughout its tuning frequency of 50Hz and so punch considering their diminutive proportions.

The Onkyo D-TK10s have a hint of unevenness in the midrange and the large peak in port output at the same frequency suggests that this may be causing a certain amount of colouration. This is in the 700Hz-900Hz region which may rob a little impact and detail from vocalists. Other than this, they have a very well sorted frequency response, being largely flat through their midrange and treble region, with just a slight lift at the very top end to add atmosphere. Overall, I would expect an even and smooth sound from the Onkyos.

Bass output tails off below 100Hz, but the port helps things along with its tuning frequency of 50Hz and so the D-TK10s should have reasonable punch considering their diminutive proportions.

The impedance curve is largely flat and quite well damped with an average measured value of 5.9 Ohms. This drops to a minimum value of around 4 Ohms, so the Onkyos require a 4 Ohm-capable output. Sensitivity is 93dB, which is fine for their size, but would make a 60 watt or more amplifier a sensible proposition for good listening levels. AS

CONCLUSION

It’s tremendously tricky to assess Onkyo’s D-TK10s using conventional criteria. They are coloured, and serious dyed-in-the-grain audiophiles are taught to believe this a bad thing — but these loudspeakers prove that it ain’t necessarily so... Okay, on classical music, those used to electrostatic levels of clarity will find the Onkyos a tad ‘muddy’ and rose-tinted in their tonality. But on almost every other type of music, I found — in the specific case of the D-TK10s — that this was a joy. Then there are the frequency extremes; speakers this small don’t have any real low bass, and the treble was less precise and atmospheric than some similarly priced rivals (such as Yamaha’s Saavo 1). They’re not flawless, but having lived with them, I found myself forgiving them their foibles. It’s not just their euphonic colour that sets them apart; by any standards they are exceptionally musical and time beautifully, and going back to a ‘normal’ speaker makes the music seem to slow down and falter. The closest I can compare them with in this respect is the original Acoustic Energy AE1 (Classic), which made everything sound like the musicians have swallowed ‘pep pills’ just before the performance. The Onkyo D-TK10 repeats this trick, and makes music sound wonderfully upbeat and exuberant with it. I personally loved them, but am not going to give them the full five globes because they are simply not capable enough as all rounders. However, those interested in the baby Onkyos will regard this as precisely part of their charm - if a loudspeaker is going to have character, they’ll find few better than this.

REFERENCE SYSTEM:

Michell GyroDec/TecnoArm/vdH Frog turntable
Whest Audio PS.20/Msa20 phono stage
Marantz CD63Ki DP CD player
MF Audio Silver Passive Preamp
NuForce Reference 9SE power amplifiers
Yamaha NS1000M loudspeakers

THEME:
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VERDICT

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Handmade in Britain
Like natural musical instruments, Denon’s superb new AH-D5000 high end headphones use wooden bodies for superior resonance control. David Price heads off in the sonic sunset with them...

The fact that Japan’s headphone market is one of the most developed in the world might come as a surprise to the average European. We rarely – if ever – see anything interesting coming from the Land of the Rising Sun, but the likes of Sony, Denon and Stax all make very high end designs, using either innovative materials and/or transducers that justify their very high prices. The problem is, these companies are often of the view that we won’t buy them in large enough numbers to justify the long boat ride over.

The reason for this can be largely summed up in the two magic words - ‘Sennheiser’ and ‘Beyer’. These two German brands are very strong in the European market, and they don’t have such a long way en route to the UK, hence prices can be significantly lower. The result is that the likes of Sennheiser’s HD650 has pretty much sewn up the UK audiophile market at around £300 (or less when discounted), and you’ll have to pay at least three times that for anything substantially better from Stax...

Enter Denon’s AH-D5000, a £499.95 design using housings made of natural wood. Like Onkyo’s D-TK10, rapping them with the knuckle yields a dull ‘woody’ sound, albeit very well damped. It is certainly a different, deeper note to striking the plastic bodies of, for example, the Sennheiser HD650s. The finish of these housings is superb, as you’d expect from entry-level Stax electrostatic designs. Isaac Hayes’ ‘Café Regios’ showed these headphones to have wonderful tonal accuracy, highlighting the richness of those superb strings, capturing their every harmonic. By comparison, the HD650s sounded a little drier and less interested in conveying the shimmering textures in this rich recording. Overall balance was just a touch on the bright side for my tastes, although bass was decently warm and strong too, and certainly more sumptuous than any of the German competition.

The earpads are also beautifully soft and comfortable, and despite the not inconsiderable 370g weight, they proved extremely wearable over long periods. Leather in place of vinyl would have been nice though, as a double album’s worth of listening can feel a little sweaty. In this respect, the felt-feel earpads of the Sennheiser are preferable. In every other case though, the Denons are more comfortable, the tighter, more firmly padded German headphones feel like wearing a vice by comparison. Despite this being a closed design, Denon say they have adjusted “the sound pressure balance in front of and behind the diaphragm”, to avoid that ‘under water’ sensation you get from non-open back designs.

The diaphragms are formed from ‘microfiber’ for lightness (giving speed and sensitivity), with 50mm Neodymium magnets. Three metre runs of high quality OFC cables with a cloth mesh jack, are fitted. This terminates in a 3.5mm gold plated stereo mini plug, with a 6.3mm jack plug adaptor – disappointingly, this last item was not included. The company claims an input impedance of 25 ohms, sensitivity of 106 dB/mW, 1.800mW maximum input signal and a frequency response of 4-45,000Hz.

SOUND QUALITY

All this attention to detail pays sonic dividends, as the AH-D5000s sound quite superb. They’re a tantalising blend of the insight and detail of the aforementioned Sennheiser HD650s, but with the fuller body you get from entry-level Stax electrostatic designs. Isaac Hayes’ ‘Café Regios’ showed these headphones to have wonderful tonal accuracy, highlighting the richness of those superb strings, capturing their every harmonic. By comparison, the HD650s sounded a little drier and less interested in conveying the shimmering textures in this rich recording. Overall balance was just a touch on the bright side for my tastes, although bass was decently warm and strong too, and certainly more sumptuous than any of the German competition.

4hero’s ‘Morning Child’ showed the Denon’s excellent rhythmic alacrity, giving a large scale ‘widescreen’ sound that captured the lush orchestrations of the track beautifully. Bass was full and a tad warm – very welcome as far as I’m concerned – while the midband was crisp and clean, and sported real ‘hear-through’ insight into the quality of the recording. Once again, the track sounded superb, with soaring vocals and a truly euphoric feel to the proceedings – those wooden earpiece housings certainly invest these phones with musicality and tonal colour alike. Treble was crisp and subtle, with just a slight ‘zing’ to CD. Move to vinyl though, and things smoothed right out and sounded even better still.

CONCLUSION

Overall then, a delightful sounding pair of headphones, and one that sounds quite unlike the German competition that we’re used to in this country. Partner carefully with high end ancillaries though – they won’t work wonders with your iPod!
Alternative TV

On first appraisal, traditional audiophiles may find the brand new Apple TV hard to fathom, but Patrick Cleasby thinks this wireless media player could usher in a whole new way of playing music (and video) media. And no, it’s not a television...

It has been slightly surprising that, in the two years since Apple’s Airport Express was released and reviewed in these pages, Apple have done little to develop further the idea of media streaming around the home. The Airport Express was a handy enough means of getting music from a computer into your hi-fi, but lacked any interface or control mechanism, leaving iTunes to the job of controlling it...

However, going back a year to the tail end of G5 iMacs and the launch of Intel-based Mac Minis, Apple subtly shifted the paradigm. They began supplying a small simple infrared card remote control which controlled the full screen media management interface called Front Row, which came bundled with new Macs, and started to advocate hooking the DVI output of your Mac Mini to your TV. The idea was to put the dinky little computer under your TV, and presumably often adjacent to your hi-fi (digital audio out was also added). The side benefit for Apple was their increasing colonisation of the living room as well as the office or the lap.

The idea really never took off in a big way, requiring as it did (Apple Remote aside), a Bluetooth keyboard and mouse to be on hand somewhere to get general utility out of the computer. Hardcore Mac IT geeks might regard such computer positioning as logical, but many more normal and/or female folk might object to the idea.

It is this issue that the Apple TV goes a huge way to addressing. Unusually trailed six months ahead of release under the working title iTV, it was clear that what obviously excited the usual geeks immediately could also have what it would take to drive the wireless entertainment concept into the mainstream.

So, asked what it is, I frequently have to tell the complete novice that it is not a TV, and I tell those familiar with the Airport Express concept that it is Airport Express on steroids with an internal hard disk, a remote and video capability. Even so, it is still a very complicated thing to conceptualise and explain, so even dyed-in-the-wool Mac-heads will often ask, "what exactly is it for? Convince me..."

SWITCHING ON

First things first, and it is almost essential that you have an HD-ready flatscreen TV to run with your new purchase. Those of us with lower than component analogue-fed tube TVs will have to investigate the third party component downconversion options available, but the Apple TV does have both interlaced and progressive SD settings, so a new TV purchase can be avoided if you really want to.

What you get in the stylish folding box is the Apple TV itself, an Apple Remote (which is so tiny and slim it just seems to seek out the cracks in your sofa in which to hide), a power lead (standard figure of eight mains lead only—a nice touch as Mac Minis have large external power supplies to clutter the rear of your setup) and an exhaustive manual. The unit itself is a smallish (197x197x28mm, 1.09kg) box, looking not completely dissimilar to a Mac mini of yore. It’s a bit slimmer and sleeker, but you get the general idea. You plug it in to the mains, to your TV (via HDMI or Component video) and your hi-fi via the pair of RCA phono sockets and/or the optical digital output, switch on and you’re off...

The Apple TV needs a PC or Mac running a wireless network, and iTunes. As soon as it detects these, it is up and running. First, your...
"you might suddenly start wondering how you lived without it"

The Apple TV, which then triggers a Bluetooth-like key code input on the iTunes concerned. Once linked, the lengthy process of transferring your music and video media from your main computer to the Apple TV begins...

(Normally, this is done automatically, but you can set-up the rules by which your media is updated to the Apple TV's 40GB hard disk. These function much like iPod loading rules for music, movies, podcasts and photos and are pretty flexible. Photo syncing requires iPhoto on Mac and Photoshop Elements or similar on the PC.)

On an 802.11g-based network, you will be waiting all evening to fill your disk up – I now have a strong yen for a new Mac and a new Airport Extreme for speed reasons! These would also serve the other method of operation, which is that the Apple TV can stream media from up to five other iTunes libraries (which must be left open on those machines).

Maximum spec 720p 24 frame per second pseudo-HD files (a nice way to watch the latest Sopranos!) can struggle to stream across an 802.11g network, so if you want to do that, consider an 802.11n upgrade...

When your media is finally transferred, it suddenly all becomes available at the touch of the Apple TV's remote control button – all watchable and/or listenable on your television and/or hi-fi and very easily accessible without any need for clicking a mouse or touching a computer keyboard – ultimately this is point of Apple TV.

The on-screen interface is superficially Front Row-like, minus the DVD player option – Apple TV has nothing to do with DVD, unless you're ripping yours to an Apple TV/iPod friendly format (more of which later). So, with its 40GB drive, Apple TV is more like a flattened, under-capacity iPod with HDMI and Component analogue output much a video-centric v1.0 product with the audiophile bells and whistles not thought through - shame! It is very good, but could be better still.

Via the standard analogue outputs, don't expect fireworks – it's a clean and dry sound with no nasties, but the likes of a Cambridge Audio 540C CD spinner (£200) would shame it. Basically, if you want great sound from your computer audio, you'll have to hook up the Apple TV to an external DAC such as the superb Russ Andrews DAC-1i USB (£600) reviewed in Hi-Fi World May 2007, or your CD's digital input (if it has one) or AV receiver.

You may recall from Hi-Fi World's previous reviews of wireless audio players, from the Acoustic Energy and Roku Soundbridge to the Slim Devices Squeezebox and Transporter, they have all occasionally struggled to play the high bandwidth quality (24/96 PCM or Apple Lossless (ALAC)) material with which I choose to test them to the limits.

Well, there's a reason that the Apple TV should exceed the performance of these 802.11b and g offerings, which is that it's an 802.11n (draft specification) capable device. Apple had to do this to try and get their highest permitted bandwidth (almost) HD video files streaming across a home network. To fully exploit this capability you would need a 2007 vintage Intel Mac, and crucially the product released at the same time as the Apple TV, the similarly new, flat and square 802.11n Apple Extreme router.

This is not to say that the Apple TV won't downshift to the infinitely more common 802.11g wireless standard that almost all of us use (even the older slower 802.11b is permitted, but will only suffice for music). I have been through the setup process both on Belkin wireless routers on cable, and on the super fast Be There Bebox (badged Thomson Speedtouch) modem/router, and it simply works with typical Apple efficiency; just make sure you know the SSID (network name) of your home network, and you have your encryption password.

Apple fit analogue audio output sockets (right) and an SP/DIF digital output for connection to your hi-fi DAC or AV receiver.
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It is of course that you don't have a lot of digital media on your computer already (all catalogued and organised by iTunes – which is by far the best tool available for this task!), and you buy Apple TV out of interest, then you might suddenly start wondering how you lived without it. Essentially it's a very slick 'front end' for all that digital media you have, from videos to CDs to Podcasts, and it works very well. However, as interesting as it might be, it still lacks the drivers necessary to force mass market take up, particularly in the UK. But as soon as Apple launches their Movie and TV downloads here (and material in the 720p 24fps h.264 Apple 'HD' format – with surround please! - on both sides of the pond), depending on your media consumption preferences, this could be a very useful way to get those programmes onto your flat screen TV. The market-dominating strength of iTunes suggests Apple are well-placed to shape how this market develops in this country.

If you're assessing whether to get one, pay no heed to in-store Apple presentations – in a slightly clueless coup they are frequently dinned with 320x240 pixel 1st Gen iPod video stuff, which does them no justice, but 2nd Gen and HD flavours look great!

Overall then, a very interesting product, opening up a world of possibilities (or rather – to be more precisely, opening up existing possibilities to the world). If you compare what it does over and above a competing audio-only device like the Slim Devices Squeezebox for a only a few tenners more at £200, this should be the clear way to go, as long as you have a flat screen telly beside your hi-fi! On the other hand, the annoyingly non-achieved implementation of surround and 96kHz capability has to result in the docking of one globe and the ungeeky UK reviewer's commonplace complaint is that they can't see the point of Apple TV until the UK store sells TV and movie content (mooned to be later this year/early next), but I beg to differ. The short-sighted viewpoint obviously ignores its fully rounded music capabilities, surround-sound aside. But it also ignores the reality of modern media consumption. Firstly, it is inevitable that the same impetus for us to store easily accessible digital archives of our music will cede to video (DVD in the place of CD) in time, as cheaper storage and greater bandwidth permit. Secondly, how do you think most people in this country are watching Heroes? Not as badly encoded 4:3 on the Sci-Fi channel, but as high quality HD-sourced Divx AVI files is the true answer!

Now those won't play on the Apple TV unhacked, but the whole software widget ecosystem around the video iPod has moved to embrace Apple TV formats, from Quicktime Pro's basic export option, to Splex's ViddyUp file conversion utility, to the freeware Handbrake DVD ripping/h.264-ing tool. This one now includes the option to turn 5.1 DVD soundtracks into Pro Logic II-encoded Apple TV files. Handbrake-ripped 640x480 files look every bit as good as current SD broadcasts, possibly better.

GECK CHIC: TELLY ADDICTS ARE USING HANDBRAKE TO RIP DVDs TO THEIR COMPUTER, WHEREUPON THEY CAN WATCH THEM VIA ITUNES ON THE IPOD AND NOW, APPLE TV...

VERDICT

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AGAINST
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- non-achievable

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Beat Master

Densen's striking new B-410 Beat CD player claims substantial improvements over its predecessor, but does it deliver? Channa Vithana listens in...

It wouldn't be the first time that a hi-fi manufacturer has claimed better performance for the new model supersedng the old – the industry sort of works that way... It is a little more original however, for Densen to claim that their new B-410 silver disc spinner comprehensively outperforms the previous B-400 Plus, which was no less than £ 450 more expensive.

Densen says that the reduced price has been reached by using more sophisticated production methods. "by making a more effective design in all parts of the player." Indeed, while using the same 'Plus DAC' 24bit DACs as the B-400 Plus, the B-410 now has a much shorter digital signal path, where the length from the servo to DAC is 150mm instead of approximately 500mm previously. Also for better sound quality, the isolated DAC section is shielded to avoid digital interference with the analogue stages.

Densen have now written all the software to control the transport, the user interface for the optional Gizmo remote and to match the displays of their amplifiers. Further transport modifications include a clock controller that allows the motherboard to control the system clock, to avoid jitter by using the same clock at both sending and receiving end of the data stream. The circuit boards are made from double-sided Teflon and solder is applied in a sealed, nitrogen atmosphere to avoid oxidation, improving signal transfer.

In comparison to the previous more expensive B-400 Plus and (£2.500) B-400 XS models, Densen's linear power supply for the B-410 has almost doubled with a 90VA rated transformer instead of 2x20VA and has 40,000 micro-Farads storage now, versus 25,000 before. Consequently, the B-410 features seven regulators for the independent power supplies, including ones for the DAC, positive and negative analogue stages, microprocessor and digital receiver. The B-410 uses the company's application of zero feedback (neither global nor local feedback) and a Class-A output which is capable of 6 Watts.

The B-410 is upgradeable to the £ 1,400 B-420 which features a superior power supply with a 300VA rated transformer and the forthcoming sub-£3,000 B-440 which has the B-420's power supply and a more advanced DAC board. Available in either black or 'Albino,' the beautifully designed and built aluminium casework reduces the amount of energy stored in the cabinet (compared to steel). A knuckle tap to the casework confirms that it doesn't have any ringing resonances either, although the disc tray was less than impressive, feeling flimsier than many computer CD-ROMs! Vital statistics are 440x310x64mm and 8kg.

SOUND QUALITY
No sooner had the review sample been properly run in and warmed through did it become obvious that the B-410 was able to match all the claims made by Densen. Here is an exceptionally musical silver disc spinner, with a very clear and free flowing sound. For example, the phrasing of the violin was excellent on the Cho-Liang Lin's 'Sibelius & Nielsen Violin Concertos' disc, where I could follow the instruments effortlessly. The musical structure was wide and deep, with excellent violin timbre. The orchestra had definition and scale, while demanding crescendos were handled with aplomb.

'Wild Flower' by The Cult showed the B-410's excellent timing; the bass lines and drum track flowed effortlessly while the separation of instrument and vocals was so explicit that I could easily appreciate what the different band members were doing.

'Kiss From A Rose' by Seal was deep and widely revealed, the superb separation allowing every strand of music to open out the convincing three-dimensional soundstage. The Densen didn't sound out of control here, and capably held all the differing musical strands together. Seal's voice was similarly radiant and revealed with life-like timbre.

Miles Davis's trumpet on 'Teo' (1961) from the Miles Davis & John Coltrane CD 'The Complete Columbia Recordings' sounded clear with great air around it, while also having first-rate definition and phrasing. The player's insightful nature again enabled the music to flow in a natural manner. When Coltrane's tenor saxophone appeared, it was clearly distinct yet cohesive within the musical structure of 'Teo.'

In isolation the Densen proved extremely capable, but how would it compare to a class-leading rival machine? The Vincent CD-S6MK
Jamie Stewart's bass lines were, with the 'Sibelius & Nielsen Violin Concertos' piece with deeper atmosphere to the violin and cello. However, the Densen had better bass tunefulness and instrumental intelligibility. The Naim had a quieter musical background to the 'Sibelius & Nielsen Violin Concertos' piece with slightly veiled bass quality by comparison. With 'Teo', the Vincent was more free-flowing and clearer with better phrasing to the stringed instruments. The biggest differences were with the Seal and Davis/Coltrane recordings. Here the Vincent structured the music, with the bass lines and phrasing of instruments and vocals organised within a strictly regimented order, presented slightly forward. The Densen sounded more free-flowing, with a wider, less obviously structured presentation, allowing better instrumental and vocal tunefulness, if no outright bass extension — an exceptional result.

CONCLUSION

Thumbs aloft then for an extremely capable silver disc spinner. I have always respected Densen products for their understated looks and beguiling sound, and the B-410 continues the theme in earnest, bringing redoubtable performance to the £1,000 price point. To my ears, the new Densen showed a clean pair of phono sockets to the excellent Vincent CD-S6MK, and gave the Naim CDX2, at three times the cost, a harder time than it might like. As such, the Densen B-410 is one of the best Compact Disc players at or near its price — a true grand design.

VERDICT

Tuneful, class-leading sound and exquisite styling make this a formidable mid price CD spinner.

DENSEN B-410

£1,000

Densen

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www.densen.com

FOR

- outstanding timing
- tuneful bass
- lucid, free-flowing sound
- upgradeable

AGAINST

- flimsy disc tray

MEASURED PERFORMANCE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
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<tr>
<td>Frequency response (±1dB)</td>
<td>2Hz-21kHz</td>
</tr>
<tr>
<td>Distortion</td>
<td>0.017</td>
</tr>
<tr>
<td>Noise (IEC A)</td>
<td>-93dB</td>
</tr>
<tr>
<td>Dynamic range</td>
<td>-103dB</td>
</tr>
<tr>
<td>Output</td>
<td>1.97V</td>
</tr>
</tbody>
</table>

Frequency response has a slight downward trend at high frequencies, so the B-410 will not sound sharp. Non-harmonic distortion components were visible and, because of the way our analyzers work, they are not fully accounted for in the recorded distortion figures. The B-410 could have been better in this area. The Beat B-410 measured reasonably well, but it does not match the best, as both distortion and noise values were higher than usual. NK
Stereo had not arrived in Britain in the age of steam, but you can add it easily enough with a One Thing Audio external VHF/FM stereo decoder for the Leak Troughline tuner, says Noel Keywood...

My dear Leak Troughline tuner slowly faded away some time ago and I have not had time to restore it to good health. I'm a bit retentive about things like this: either I do it or it doesn't get done! This isn't particularly sensible though, as One Thing Audio and GT Audio offer expert repair and restoration services for this venerable wonder, and since I'm busy soldering other things I should be asking them to return it to health. Luckily, when One Thing recently sent in a repackaged version of their Troughline stereo decoder for us to look at, we still had a restored Troughline Stereo tuner on our shelves, awaiting return to Graham Tricker of GT Audio. It was purloined for this review.

Not only does a Troughline give amazing sound quality from VHF/FM radio, but a good working model is worth a tidy amount these days. Like most classics its value goes up, in gratifying contrast to much of today's mass market products with a lifespan of just a few years, after which they are worth zilch. So owning and using an old classic like this makes nothing but the greatest sense! Mine is a Troughline Stereo from the 1960s, making it around forty years old now, and the oldest piece of hi-fi I use.

Since the BBC commenced stereo radio transmission from Wrotham in 1962 using the American Zenith GE system, Leak's own stereo decoder, fitted to the Troughline Stereo model was fairly crude, using early transistors; there was insufficient room in the compact chassis for a valve circuit. It's a relatively easy task to add a modern decoder to bypass the original decoder, or as an upgrade to earlier Troughline monos. Modern decoders are based on silicon chips, by the way, making them small and inexpensive.

My experience with the One Thing was initially a little shaky as set up instructions were not included and the front panel stereo width adjustment pot was loose. But I doubt this is going to be representative and One Thing are easily contactable by phone. Fitting a stereo decoder like this is easy enough if you have a tuner with an mpx output, just plug it in using a phono lead. Our GT Audio model did not have an mpx out, so I had to tap in internally, using the feed to its internal GT Audio decoder. This carried 85V d.c. as well as a relatively strong audio signal that overloaded the OTA until its internal input adjuster (VI) was turned down. The OTA has an input blocking capacitor to cope with the d.c. voltage present, but is sensitive enough to work from a lower level signal available from the internal discriminator coil T4 as well as this high level output.

If you have to open up the tuner in order to pick up the multiplex signal (comprising mono baseband + difference on a 38kHz subcarrier) you will need the circuit available at Kiewa Valley Audio (www.werple.net.au) website. I would recommend, however, that this work is left to One Thing Audio or GT Audio, as dangerous voltages are present, including exposed mains. As the OTA decoder includes 50μS de-emphasis (as does the GT Audio decoder) this must be removed from the tuner feeding it, or you'll get a very dull sound.

Our review decoder worked perfectly after being set up. You have the option of Stereo, Mono or Stereo with variable blend to reduce noise. As a side note, the Troughline needs a strong aerial signal of 2mV or more if hiss is to become almost inaudible. If you live close to a transmitter, then with a large aerial you may well get 6mV-10mV and -64dB hiss, from this decoder and the GT Audio unit too. I get 2mV maximum in Central London with a large outdoor array pointing at Wrotham with a small bias toward Crystal Palace.

SOUND QUALITY

The One Thing Audio decoder reflects the Troughline's classic properties of smoothness and neutrality. I felt when listening to it. It has a balance and a presentation that brought to mind my Quad Electrostatic ESL-63 loudspeakers, that is a sound completely free of its own character, one that you cannot easily pin a label on. Modern ears may find this "BBC" balance dull, wishing for something more conspicuous and challenging, but that's not the OTA's metier. It is totally neutral and it is meant to be. I spent a lot of time switching between
The composite stereo signal, comprising mono + stereo subcarrier can be picked up at T4, One Thing told us. I used the high level point shown by our red arrow. Note this is at 85V and may give a small belt (I didn't try it!), so exercise caution if you do this yourself. Best to let One Thing instal and set up.
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brand new high end MM

HEED QUESTAR MC
super new phono stage

ALL THE LATEST AUDIOPHILE VINYL RELEASE NEWS - see page 3
"So compelling, so completely authoritative that it threatens to make every other cartridge I've heard sound (dare I say it?) wrong, washed out; has-beens." Edward Farrelly, 6moons Internet Magazine

"Simply: A great phono cartridge".
Paul Szabady, The Stereo Times

"This cartridge has become my reference"
Geoff Husband, TNT-audio Internet Magazine

"In the right combination this cartridge gives an ear boggling account of itself - the one to beat"
Richard White, Hi Fi World

The all new Music Maker III now in its latest and best guise, is a truly beguiling Cartridge. As a moving Iron Cartridge it has none of the drawbacks of low output moving coils, and yet offers the listener the chance to experience music in a truly sublime way. No wonder some reviewers have described this as one of the best pick up cartridges available, period.

Technical Specification

<table>
<thead>
<tr>
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</tr>
<tr>
<td>Bias (anti-skate) requirements</td>
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</table>
FEAR FALLS BURNING
One of the great things about vinyl is its cult nature - small record labels can easily produce limited run records of often superb music, suitably marketed in a package worthy of its niche status. Take Fear Falls Burning's 'I'm One Of Those Monsters Numb With Grace' via Equation Records. A US import, the music can be described as a soundscape nirvana. Imagine Tangerine Dream and Klaus Schulze starting out with guitars instead of synths and you get the idea...The gatefold sleeve contains a single album on grey vinyl. There are only 399 copies in existence (50 of which are on gold vinyl), so get one while you can.

CURE GO AUDIOPHILE
The Cure is about to be launched upon the audiophile vinyl market for the very first time. Published on the Lillith label, the first album to hit the market will, rather suitably, be the band's debut album 'Three Imaginary Boys' which was originally released in 1979. The reissue will mimic the original UK pressing – the US version had a different title (‘Boys Don't Cry’) and a re-jigged track listing.

CLASSICS FROM CLASSIC
Recently emerging from a hiatus which has seen the label undergoing an internal reorganisation that has resulted in several new vinyl releases being delayed somewhat, the label has announced three new vinyl releases: Mike Oldfield's 'Tubular Bells', Benny Green's 'Soul Stirrin' and Lou Donaldson's 'Swing & Soul'. Mastering engineer, Chris Bellman, has been drafted in to work on the original master tapes to create the 'Tubular Bells' issue, using Classic's 'all tube' cutting system whilst Bernie Grundman has been working on the original full track mono master tapes for the Blue Note classic, Lou Donaldson's 'Swing & Soul'. Grundman has also been assigned to the Benny Green album, 'Soul Stirrin'. The new reissue will not only feature an authentic laminated cover art, but also the 'deep groove' in the centre label.

BEATLES ON BLACK PLASTIC
After being asked by the remaining Beatles, Ringo and Paul, along with Yoko Ono Lennon and Olivia Harrison, to make experimental mixes from their master tapes for a collaboration with Cirque de Soleil, Sir George Martin, The Beatles' legendary producer and his son Giles Martin worked with the entire archive of Beatles recordings to create the album, 'Love' via Parlophone. Using the master tapes at Abbey Road Studios, Sir George and Giles created a unique soundscape. The CD version has been out for some time, but now the album's out on vinyl. It's limited to just 5,000 units worldwide, is printed on two 180gm discs with printed inner sleeves and a 28-page booklet including all the imagery and photos from the CD, but on a far more sensible and civilised 12" square size... www.parlophone.co.uk

STRANGE SOUL
Aldemaro Romero and Monna Bell's 'La Nueva Onda En Mexico' proves that audiophile vinyl can involve joys of discovery. Romero was a musical innovator who in the very late 1960s created the Onda Nueva (or 'New Wave'), which was nothing less than a mixture of modern jazz orchestrations, the hypnotism of the Bossa Nova guitar, Venezuelan folklore melodies and original and complex vocal structures set to the fast-paced 3/4 rhythm typical of some Venezuelan traditional music. This album is rare even for Romero fanatics. If your tastes extend as far as Ennio Morricone, then check this one out via Vampi Soul. www.vampisoul.com

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THIS PAGE IS AVAILABLE IN PDF FORM ON OUR WEBSITE.
Shine On

Thirty five years since its inception, Linn’s ubiquitous Sondek LP12 turntable has just received one of its most profound upgrades in the shape of the Keel subchassis, Trampolin base board and Ekos SE tonearm. In this exclusive review, David Price details the differences...

The best way to conceptualise the LP12 is to think about what Porsche have done with the 911 sports car. Like this evergreen automotive icon, superficially it’s pretty much the same product that it was when it launched all those years ago. Underneath the skin however, vast engineering changes have meant that the new LP12SE shares little – if anything at all – with that first 1972 production version. The result is that this very latest LP12 like the 911, performs very differently to the original article yet curiously, in some elemental way, still provides a very similar user experience.

The Sondek is more than a turntable, it’s an audiophile icon with a passionate – almost religious - following from many owners, who consider the LP12 to be more a way of life than a mere record player. Having “committed” to the deck, many owners have simply left it as is, and got on with the process of listening to music. Others camp outside Linn dealers waiting for the next upgrade, an event which was a surprisingly regular occurrence throughout the nineteen seventies and eighties. We had the Nirvana suspension kit, Valhalla motor control mod, Lingo motor power supply and Cirkus bearing kit, plus a vast number of minor motor, chassis and plinth mods, all of which invariably made a small but appreciable difference to performance, and made the Sondek move slowly from a big, fat, euphonic sounding device to a much tighter, tauter and more incisive tool. Arguments have always raged in Linn circles about the relative merits of each upgrade, and so it shall be with the Keel subchassis LP12SE you see here!

Personally speaking, I thought those rolling upgrades were essential to keep the deck on the pace, but by the mid nineties to my ears the LP12 no longer sounded comprehensively better than the superdeck opposition anymore – just different. Since then, it has been a case of recommending readers to buy one if they like the sound (which is still quite lovely), rather than simply because it is the best outright. After the excellent Cirkus bearing upgrade of the mid nineties, the mods seemed to slow down, but not before time we have three brand new LP12 upgrades (with more promised) - and yes they really do make a dramatic difference.
taking the Sondek right back to the top of the crop.

**SPECIAL EDITION**

One of the few parts that has remained constant in the LP12 over the years is the subchassis, the part that links the bearing housing to the suspension mounting points and armboard. This is a decent steel affair that has done the job effectively enough. However, the new £1,950 Keel is the centrepiece of the three upgrades that constitute the LP12SE package. It is a combined subchassis, armboard and collar, machined from one solid piece of aluminium to provide the most rigid support to the tonearm and platter possible. There are no screws, fixings or joins to the part, and it is ribbed for extra strength. It has also been balanced to maintain the same mass and centre of gravity as achieved with the separate subchassis, armboard and collar, and comes in a matt black finish.

The second of the three upgrades is the new metal Trampolin base board (£140). The enclosed plinthed design of the LP12 has both advantages and disadvantages. The plinth can actually catch a lot of the mechanical vibrations going into the turntable (rather than letting them go straight for the tonearm and cartridge), but if it doesn’t dissipate them properly then it’s effectively acting as a ‘voice box’, amplifying all those unwanted resonances. The Trampolin base board is manufactured from aluminium for increased rigidity, and acoustically deadened for reduced vibration.

It’s the same price as the old (also optional) Trampolin, and – intriguingly has metal slots machined into its underside. One possibility is that these are for extra rigidity, another is that Linn is planning some sort of mod that requires wires going into the underside of the plinth – some possible forthcoming electronic motor control upgrade perhaps?

Last but by no means least is the brand new Ekos SE tonearm. This in itself would have been a major launch event, but the fact that it’s tagged on to the end of the Keel/Trampolin mods show how important the former two are in Linn’s estimation. This new (£2,950) flagship tonearm is claimed to set a new performance benchmark, thanks to a range of detailed materials upgrades – not least of which is the use of titanium for the armtube. There’s also a new stainless steel bearing housing and new ultra-low friction bearings, plus temperature-compensated precision springs. Low-loss cable and gold connectors complete the package.

**SOUND QUALITY**

Any comments about the sonics of this upgrade package have to be referenced to the standard LP12 Lingo/Ekos, which is why I spent
two days at Linn's exclusive new retail environment House of Linn (www.houseoflinn.com) where I was able to properly A/B the non-SE and SE variants of the Sondek, before having them set up a full LP12SE in my own listening room.

Those who've never heard a stock Sondek before will find it quite an intriguing device. It is, by the standards of 2007 sub-£2,000 turntables, quite characterful sounding. More diffuse in terms of detail rendition than many rivals, it nevertheless sounds highly compelling. You're aware of a slightly compressed left-to-right soundstage, although the LP12 goes nicely far back behind the plane of the speakers, and you'll also think it's a tad warm and wooden in the bass compared to the likes of Michell GyroDec, for example. However, what it does, it does brilliantly, and that is to very cleverly tease out the tiny rhythmic inflections in the music that rival decks — whilst sometimes giving you the big picture more explicitly — miss. The result is that many find the LP12 quite beguiling, despite its obvious lack of analytical transparency.

The LP12SE changes all that. Starting with the Keel subchassis mod (with the standard Ekos/Akiva tonearm/cartridge combination) plus new Trampolin, and you're struck by the deck's greater focus and wider soundstaging. Rather than appearing as a very pleasant, euphonic layer between the original recording and your loudspeakers, the LP12SE seems more like a shortcut between the original recording and your loudspeakers, the LP12 seems more like a shortcut between the two. There's far less sense of there being a turntable there at all, the LP12SE digging extremely deep into the groove and seemingly beaming it all directly to your loudspeakers.

The basics are all so much better — left to right soundstaging is far wider and more expansive front to back too. Within the recorded acoustic, instruments appear far more explicitly located and better rendered. There's a lot more midband detailing, with plenty of air to treble instruments which was previously absent. Bass is perhaps the most dramatic area of improvement though, with a far tighter and bolder performance. It isn't just louder and/or more boomy, it is louder when called upon to so be, and boomer only if that was on the original recording. Indeed, on some songs, the Keel mod can make the LP12 sound more bass-light — it all depends on what you're listening to; the point being, however, that you're no longer listening to the LP12! The fascinating thing about the Keel mod is that it exists as a 'hi-fi' upgrade — it gives you all that extra scale and depth and detail, but it also enhances the LP12's inherently musical nature. The upshot is that on tracks such as UB40's 'King' (from their superb first album), there is notably a deeper, tighter and tauter bassline, but a far more fluid one too. At the same time, the percussion becomes far more pronounced, as does its interplay with the keyboards. Likewise, the vocals become closer, more 'breathy' and more arresting — making this plaintive song a genuinely emotional experience.

Going back to the non-Keel Trampolin but with the new Ekos SE tonearm, and there was an equally dramatic improvement, but of a different kind. The differences between the old Ekos and new Ekos SE are, in my opinion, far greater than that between the old Ittok LVIII and first generation Ekos. In fact, they're so great that I felt a real sense of disappointment, because I'd previously held the Ekos in very high regard, whilst the new SE version was making it sound rather lame and lackluster.

Essentially, the new flagship Linn arm takes the basic Ekos sound and puts it into far sharper focus. The Ekos SE simply sounds cleaner, crisper, more incisive, more dimensional and dynamic. On the stock LP12, it makes a big difference, strangely giving quite similar subjective improvements to the Keel — odd considering one is a flat piece of aluminium under the deck, the other a tube of titanium on top! Basically, there's more grip to the bass, and a substantially more tuneful nature — you can really feel what the musicians are doing, and where they want to go with the song. Midband is more brightly lit than with the old Ekos, but there's no glare and a lot more tonal variety — warm instruments sound warm, cold ones cold. Treble is actually the most profound improvement to my ears, the new arm giving a deliciously incisive yet silky sound. Rhythms and dynamics are also a step change upward.

Together as a package, the LP12SE/Ekos SE/Trampolin is a superb sounding device, one that would not flinch against any £6,000 turntable. Moving to classical music in the shape of my beloved DG pressing of Beethoven's Pastoral Symphony (Karajan), and the LP12SE/Ekos SE ran rings around the stock version. The result is an extremely musical device, one that is more insinuantly rhythmic than ever before. Whatever disc you put on the LP12SE, it just goes straight for the rhythmic jugular and sings like a canary. Bass lines, which seem powerful and well articulated on other similarly priced turntables are also this on the LP12SE, but they start bouncing like a rubber ball. The midband now has class-competitive insight to any other deck of the price, and imaging to match, but the difference is that it boogies along with unfettered joy. The treble is now as open and clear as it can be at the price, but those gentle hi hat cymbals have an exquisitely rhythmic 'float', where the LP12SE's rivals would simply sound matter-of-fact.

Like the latest Porsche 911, the new Linn won't be for everyone — choice is wonderful thing, and some fifteen years after LPs were officially supposed to have died, there are more high end turntables around than ever. However, the new LP12SE is now thoroughly class-competitive in every technical hi-fi respect, but retains its trademark rhythmic alacrity (what Linn's Ivo Tiefenbrun calls 'pitch accuracy'), and indeed improves on this very thing dramatically.

Opinions vary on the respective performance gain from the Keel and Ekos SE, but I'd say the Keel does about sixty percent of the work, and the Ekos SE about forty, but others think it closer to fifty-fifty. Either way, individually or as a whole, I can confidently recommend the new Linn Sondek LP12SE as a modern, state-of-the-art turntable once again. The pricing has raised a few eyebrows on certain anti-Linn online forums, but before you hurrumph too loudly in public I would seriously advise you to go listen for yourself — you might be surprised. As for me, my only complaint is — why did it take so bloody long?
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David Price talks to Linn Products’ Ivor Tiefenbrun

Anyone who maintained more than a passing interest in audio should know the Linn story by now – in 1973 an outspoken young Glaswegian launched a turntable, with matching work by his father’s engineering company. It made the hi-fi world take notice and builds up a huge consumer following in the process, and he grows his company up into a three hundred person strong powerhouse in one of the most deprived areas of the United Kingdom. In great international acclaim. In the process, he makes many enemies and accumulates countless detractors, earning himself the reputation as something of an audio maverick... “I was in a struggle with people more interested in themselves or their success,” confesses Tiefenbrun in his trademark high comic, “English” burr. “Age has not withered Linn’s defiant attitude – it’s a solid occupation – but despite the eye-wakening frankness of his words, they’re not said with malice. Indeed, his voice is soft and his words crisply instead – there’s a calm, contemplative tilt to his voice. That he adds almost ‘everything you say is used against you by cretins!’

The Linn story is remarkable. It shows how a few basic examples of how to build up a successful company from nothing exist. And despite Linn’s abrasive edge the Linn factory at Waterfoot seems a happy place with plenty of unprovoked smiles on staff faces. There’s plenty of excitement and enjoyment of these "linear pitch relationships," and as such is the key to live music is the experience and enjoyment of these "linear pitch relationships," and as such is the key to live music. This is evident in the Riot - a miracle of life is lost on us.

Hi-fi is, of course, one place where mechanical and electrical engineering meet and partners are the most expressive art – music. As such, it’s a unique occasion. "Buying a hi-fi is one of the most important purchases of your life – it’s something you can’t rush," says Tiefenbrun, "and the hi-fi industry is about getting a better sound from your stereo/television software." Back at the time of our meeting, Linn's advice is offered whether it's asked for or not: "Employees told me in the Linn factory canteen, with a smile on his face, ‘Today’s innovation is tomorrow’s commodity, and trash triumph. If you want to make money, then your product is to sell a commodity product in volumes,” confides Tiefenbrun. "Lini over dinner he elucidated, explaining how much he loves the manufacturing industry per se, and how important it is for him to be an engineering company designing and making hi-fi products, rather than chasing far more lucrative margins like mass-market consumer goods sourced from wherever. “Lini addresses a discriminating minority; we can’t compete with the high-end and sell them cheap merchandise.”

"You are what you are and you do what you do,” he adds, suggesting that there are easier ways for Linn Products to proceed than the design and engineering approach they’ve used since their inception some twenty-four years ago. For him personally, engineering is what it’s all about. His passion for this is obvious, and again he lays the fact that fifty-first century Britain has a tragic lack of passion for this is obvious, and again he lays it’s asked for or not, it’s asked for or not”, one employee elucidates, explaining how much he loves the manufacturing industry per se, and how important it is for him to be an engineering company designing and making hi-fi products, rather than chasing far more lucrative margins like mass-market consumer goods sourced from wherever. "Lini addresses a discriminating minority; we can’t compete with the high-end and sell them cheap merchandise.”

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"The fully funked LP-12 is my favourite LP format, and its future prospects. Comprising five models, they span a price range from £70 up to £185, with the 2400 being one from the top and recalling it at £160.Whilst the styli for all models are interchangeable it is worth remembering, before you add a 1500 stylus to your 2100, that the 2400 and 2500 models use metal bodies, whereas those of the lesser three models are a composite plastic. Style range from the straightforward ellipsoidal types of the 2100 and 2200, through the Guyer III of the 2300 and up to the 250 of the 3500. The 2400 here uses a Vital type. Unwrapping the 2400 from its stylish packaging, the cartridge reveals itself as a very solid stem and complete with a sturdy pair of Allen bolts for fixing, plus the requisite Allen key. Installation is straightforward, thanks to the cartridge body having tapped holes, and these mean that it can be cramped into your headshell nice and tightly."

I listened to the 2400 in a few different arms, but the majority of auditioning was carried out in a Rega R8/250 arm on a Goldring GR3 turntable. I also took the opportunity to make a few comparisons to the Ortofon 2M and our old friend, the Goldring 1042, to see how the newcomer stacked up.

SOUND QUALITY

As measurement shows, the 2400 is a thoroughly modern cartridge and this is reflected in its sound. There is no soft fullness or woolly warmth here; the 2400 delves into music with the sensitivity of a terrier and pulls absolutely everything out, particularly across the midrange. Eleanor McEvoy's album 'Yola', is one of my favourite recent LP discoveries and, although well recorded, does have a slight cloudiness to the vocals - some warmer sounding cartridges can make it sound a little dull. The Goldring did not suffer this fate, and the vocals were superbly clear - in fact I think it is one of the best renditions of the track 'The Get

You to See Me Through' that I have heard from any cartridge, regardless of price.

The good impressions continued with a bit of classic rock, courtesy of Be Bop Deluxe's 'Axe Victim' album. The track 'Adventures in a Yorkshire Landscape' has a magnificent electric guitar solo, but the 2400 ensured that the acoustic rhythm guitar was right up there in the mix, and added a superb spatial sense to everything, with each instrument having plenty of room to breathe. Classical music reinforced this impression, with the Boston Symphony Orchestra's rendition of The Planets being presented with magnificent scale and precision, the individual timbres of each instrument being immaculately represented.

The 2400's treble is very clean and clear without resorting to the harshness that can sometimes accompany such a character - a testament to its quality stylus.

This was aptly shown by Emyr Orchard's 'Sailortown' which was given a brightly lx performance by the Goldring, but without making sibilants spitty, something that can occur all too often with this track. The rise in output at higher frequencies [see MEASURED PERFORMANCE] seems to be at a
sufficiently high frequency to impart good detail without adding any midrange forwardness, although we did find during measurement that a rise in output lower down the range can be induced by capacitive loading. Goldring recommend a maximum value of 200pF including leads and amplifier input capacitance, and this would seem a sensible value to stick to, in order that the midrange does not start to become dominant.

Down at the bottom, the Goldring has a big and solid bass that digs superbly deep and offers a positively visceral punch with the right material. Bass drums pounded, double basses had a lovely fulsome bloom to them and bass guitars set up rock solid rhythms. The only area in which I found the 2400 to be a little lacking in this respect was in terms of pace. While generally it is a very tuneful cartridge, it did seem to struggle a little with faster dance type music. As a result, this had a tendency to rob recordings like the Scissor Sisters' "Ta Dah" of a little of their impact and sheer gusto. Never falling over itself or becoming confused, the Goldring nonetheless may require careful auditioning if you spin plenty of 'phat choons' and occasionally like to recreate Ibiza's finest clubs in your living room.

CONCLUSION
A very well designed and built cartridge, the Goldring 2000 series is a welcome addition to the affordable moving magnet cartridge market, and if the rest of the range is as good as the 2400 then they should have no problem at all racking up formidable sales figures.

The 2400 is a beautifully balanced cartridge, offering good bass depth and impact and an almost moving coil-like smoothness and insight to its midrange and treble. It brings a touch of sophistication and polish to vinyl reproduction that, until recently, was seldom heard at this price point.

Going back to my dear old nan, one of her favourite pearls of wisdom was "You get what you pay for". Well, I'm not so sure about that - with the Goldring 2400, you get a whole lot more besides.

VERDICT
A well designed and sturdy made cartridge that brings new levels of almost MC-like clarity and detail to its price bracket

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£160
Armour Home Electronics
+44(0)1279 501111
www.goldring.co.uk

FOR
- magnificent clarity
- superb imaging
- build, ease of fitment
- exemplary tracking ability

AGAINST
- bass not the fastest around

MEASURED PERFORMANCE

The 2400 uses a low impedance generator that gives a ruler flat generator response to 8kHz. Above this, tip mass resonance forces output up to +5dB peak at 18kHz our graph shows. The 2400 will have a super clear mid bass, that's for sure, but the peak may give it obvious brightness or spit. The low frequency end is flatter than usual, so it may well have tighter bass. Inner groove tracking losses were low, due to effective stylus geometry.

Channel separation was a good 28dB and lateral distortion around average at 1.1%, primarily second harmonic. A high vertical tracking angle gives plenty of disc clearance but makes distortion high at 5%. Luckily this is mainly second harmonic and affects left and right images equally. Tracking ability was excellent at 300Hz where groove amplitude is important and at 1kHz where acceleration dominates, the 2400 clearing the most challenging test grooves. Output was fair at 5mV at 5cm/sec rms, although this is not a high output type.

The 2400 is very much a modern design benefitting from a low impedance generator with few coil turns, meaning less wire, a flat frequency response and greater insight.

NK

Tracking force 1.8gms
Weight 8.2gms
Vertical tracking angle 32degrees
Frequency response 20Hz - 12KHz
Channel separation 28dB

Tracking ability (300Hz) lateral
90/μm
vertical
45/μm
25cm/sec/sec.

Distortion (45μm) lateral
1.1%
vertical
5%

Output (5cm/sec rms) 5mV

FREQUENCY RESPONSE

Red - outer grooves
White - inner grooves
Adam Smith takes a look at the latest incarnation of a truly classic turntable - the Dual CS505-4...

This isn't an 'Olde Worlde'!

You may be as surprised to learn, as we were, that this is in fact a current Dual CS505-4, fresh from the factory in St. Georgen, in the beautiful Black Forest area of Germany and reintroduced to the UK courtesy of RPM Audio.

Upon researching this situation, I was intrigued and surprised to learn that the CS505 has never actually gone out of production, but disappeared from the UK market, and most people's awareness, in the late 1980s. It was 1988 in fact, when Dual was bought by Schneider, who used the name as a brand on various consumer electronics and by 1993, they had undertaken the decision to terminate the selling of Dual record players, although production did continue at a very small level for the local market.

Moving forward to 2006 saw the creation of the company 'Dual Phono GmbH' following the bankruptcy of Schneider: This came under the careful guidance of Alfred Fehrenbacher, who was the original Production Manager for Dual. As a result, a small production line of fifteen workstations produces the decks, using locally sourced parts and all the original tooling, which had been carefully stored. Finally, towards the end of last year, German distributor Sintron added Dual to their impressive portfolio, which already included Thorens and Dynavox, as well as Sintron's own brand, Vincent. Currently, the Dual range comprises five models, with all but the cheapest being made in Germany, and there are rumours of two brand new decks coming next year.

The CS505 was always a very successful product and marked the first step on the ladder for many audiophiles. The current model will surely a case of, 'if it ain't broke; don't fix it'. However, for those of you who are lucky to be young enough not to remember the original, the deck is a two speed belt drive unit with end of side auto stop and lift, and around 6% speed adjustment through a clever segmented motor spindle whose effective diameter is altered by the speed adjustment knob.

The tonearm is a fairly straightforward type, using gimbal bearings and a detachable headshell. Tracking force is applied via a spring and a calibrated knob, and bias has separate settings for: spherical and elliptical styls, with the handbook adding recommendations for both 'Dry' and 'Wet' playing settings, which was a nice trip down memory lane!

The CS505-4 is supplied pre-fitted with an Ortofon OMB-10 cartridge and really is simplicity itself to set up. Simply unpack, fit platter, mat and counterbalance weight, set tracking force and bias, release suspension transit bolts, connect up and play. Available in both black and silver, the CS505-4 is as beautifully made as it always was and feels reassuringly well engineered in use.

**SOUND QUALITY**

Cueing up the CS505-4 was like revisiting an old friend, and the sound that results was equally familiar. Dual decks always had a reputation as being smooth and composed in performance terms and the latest incarnation of the CS505 is no different.

Across the midband, the Dual was as lovely, fluid nature that means and punch. Upper bass detail was commendable and acoustic basses came across with good body and scale. The CS505-4 took faster, more complicated bass lines happily in its stride, but it didn't really get down and groove with the best of them. Once again, that composed and smooth nature came through to make sure nothing became too wild and crazy - all very well but, if you are playing a wild and crazy track at the time, perhaps not ideal.

Where the smooth nature really came to the fore, and worked well, was in the treble. Here, the Dual does stand out from its contemporaries by being much softer and far less harsh than some. Whilst a side effect of this is that it did not dig as much high frequency detail out of the grooves, it turns in a sweet performance and never becomes harsh or strident.

Ultimately, the word that kept on coming back to me as I listened to the Dual was 'nice' and this is not necessarily a bad thing. The CS505-4 has a lovely, fluid nature that means you could listen all day long, and
to any sort of music, without ever becoming tired of it, or suffering any sort of harsh assault on your ears. The Dual maintains the character of its predecessors, has that much-talked about 'vinyl warmth' in spades and may well come as a welcome relief to anyone used to the more challenging listening experience of some harsh budget CD players.

CONCLUSION
For those wanting a nice (there it goes again!) and easy record playing solution, the Dual makes a good case for itself. As a complete package that is easy to set up and use, and with a cartridge that matches the nature of the deck well, it can be up and running and making pleasant noises very quickly. However, I feel that it has two main problems.

Firstly, whilst it really is enjoyable to listen to, the Dual doesn't really dig into the very heart of what vinyl is about - LP is capable of more than just a 'nice' sound and the Dual does not really explore this.

The biggest problem, however, is quite simple - price. In the olden days, the CS505 was a budget unit that was an excellent stepping stone to a Rega Planar 3, for example. However, for the current £450 cost of the Dual, you can buy the Rega's modern incarnation, the P3, plus the likes of a Goldring 1042 cartridge and still have enough change to buy an LP to play on it.

Personally, in a 'head versus heart' tussle, the Dual CS505-4 still exerts a strong pull on my ticker as it's lovely to use, and sounds pleasant. Ultimately, however, my head says that, for £450, this is not enough.

VERDICT
A likeable, pleasant-sounding and easy to use unit that is never harsh, but the level of performance is at odds with the price.

DUAL CS505-4
£450
Distributed by RPM Audio
£ +44 (0)7790 907737
www.sintron-audio.de

FOR - composed and fluid sound - build quality - ease of use and setup
AGAINST - price - sound lacks insight - cartridge compatibility
Heed Audio are a relatively new name to many people, but they have been around since 1991 under the leadership of chief designer Zsolt Huszti. The company’s first product was a pre/power amplifier, designed with the help of Richard Hay, formerly of Ion Systems, and the family connection has been maintained, as it is Richard’s son, Robert, of T Source, who now imports the products into the UK.

The current lineup consists of the unusual Envoy loudspeakers, with their upward firing drive units, plus a range of electronics including amplification, the Orbit power supply for the Linn Sondek LP12 and similarly-motored turntables, and a couple of phono stages, of which they refer to the Questar as the ‘MVP’, or Most Valuable Product!

A simple one box unit, the Questar is available in MM or MC variant and it is not possible to convert one to the other. The MC version comes preset for 220uV input sensitivity and a load impedance of 100 Ohms and is powered by an external ‘wall wart’ type power supply, although this can be upgraded to the PSU used by the £550 two-box Quasar MM/MC phono stage. Connections are simple, with one pair of inputs, one pair of outputs, PSU connector and an earth terminal.

**SOUND QUALITY**

Budget phono stages, particularly MC types can sometimes be a little challenging on the ears, especially for those of us who commonly use a silky Eastern Electric valve phono stage, but the Questar MC was a great relief in this respect. It has an immaculately smooth treble that removes the stridency from harsh recordings without falling into the trap of muffling anything. Somewhat less detailed than some, the Questar MC has very good levels of treble ambience and space, although it does have a tendency to gloss over the metallic ring of cymbals and hi-hats a little, and a little more treble energy would not go amiss.

Midrange from the Heed is very fluid and composed. Although obviously lacking the insight of valves, it is still commendably detailed and atmospheric, giving a good sense of realism to instruments, and setting up a stable and deep soundstage in which they are firmly located. The Heed spreads orchestrations out well before the listener, and plays smooth vocalists with good atmosphere and feeling. This melds smoothly into the bass, which is where the Heed really does score.

At the bottom end, the Heed has surprising depth and grunt, thanks to the measured rise in output level [see MEASURED PERFORMANCE] and fortunately, this does not result in a wallowy boom. The Questar MC is fast, taut and throws bags of detail in for good measure. Bass lines could rumble the sofa with suitable material, but the Heed never became less than well controlled, and it tracked complicated bass lines, whether from a bass guitar or a synthesiser, with the skill of a bloodhound.

**CONCLUSION**

For its selling price of £225, the Heed Audio Questar MC is something of a bargain. Briefly, and somewhat unfairly, comparing it to a £1,200 Trichord Diablo we had available showed that, although the Trichord had a definite edge in terms of soundstage, atmospherics and treble insight, the Questar MC was able to show it a clean pair of heels in terms of bass depth and detail - I came away impressed with this little black box!

Although the lack of fine tuning of gain and loading is a slight disadvantage in terms of getting the most out of your cartridge, the fit-and-forget nature of the unit will appeal to many. For £225, it warrants a firm recommendation.

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**MEASURED PERFORMANCE**

<table>
<thead>
<tr>
<th>Frequency response</th>
<th>12Hz-70kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separation</td>
<td>62dB</td>
</tr>
<tr>
<td>Noise (e.i.n. A wtd)</td>
<td>0.08uV</td>
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<tr>
<td>Distortion</td>
<td>0.006%</td>
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<tr>
<td>Gain</td>
<td>x1930</td>
</tr>
<tr>
<td>Overload (in / out)</td>
<td>3mV / 6V</td>
</tr>
</tbody>
</table>

**FREQUENCY RESPONSE**

- bass weight and detail
- overall cohesion
- smooth, fluid nature

**VERDICT**

- Simple but effective MC phono stage that turns in a smooth and weighty performance at a bargain price.
- smooth, fluid nature
- overall cohesion
- bass weight and detail

**AGAINST**

- treble could be more detailed
- no cartridge loading options

---

Adam Smith hears Heed Audio’s Questar MC phono stage...
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Basis Audio. There is no comparison.
about Buxtehude I initially wondered whether a channel imbalance existed, as McLeod was off centre, but then Koopman cut in, showing both were neatly positioned either side of centre, precisely located.

Troughlines are strongest with this sort of live studio material, conveying a great sense of atmosphere. Solid-state tuners tend to obliterate ambience and it was an area where the Marantz didn’t excel. However, the Marantz was always sparklingly clean and concise, making the OTA sound a little dark and short of see through clarity. I suspect the slight opaqueness came from distortion, including intermod against the pilot tone. I say this because the GT Audio decoder was cleaner and transparent, sounding more like the Marantz in this respect and stage width, yet without the Marantz’s weak retrieval of ambient information; Radio 3 studio ambience was still audible via the GT Audio decoder.

Where the GT Audio decoder either pulled ahead or slipped behind, according to taste, was its slight emphasis on the upper harmonics of strings, making them sound vivid and incisive. This wasn’t unpleasant, but it was a slight enhancement that with Rock programmes, gave it the most exciting sound of all three. Throughlines are not short of bass either.

CONCLUSION

The One Thing Audio decoder offers BBC monitoring accuracy with a sound stage that is more expansive than that of almost any tuner available. It isn’t the most squeaky-clean sound, but it has properties that are unique and impressive. Of course you need a decent Troughline to appreciate this, plus the very best aerial you can find, but given these the inexpensive OTA does a great job of maximising this classic tuner’s natural stereo sound.

The composite signal from the tuner connects to the single phono socket. Audio is output from the stereo pair.

The One Thing decoder has a three position switch, for Stereo, Mono and Stereo Blend. The rotary control varies Stereo Blend.

MEASURED PERFORMANCE

The OTA decoder’s frequency response is smooth and extended, our analysis shows, measuring 30Hz-12kHz within tight 1dB limits. Above 12kHz there is little roll down though, as there is no mpx filter to remove 19kHz pilot tone. The GT Audio has an mpx filter, which limits its high frequency extension, but also removes supersonic rubbish from the output.

Distortion from the OTA measured 0.8% second harmonic at full modulation, and 0.4% at 50% modulation. The latter figure being most relevant to listening. Distortion figures depend upon tune accuracy and this is always a bit variable on a Troughline, but the above figures are after tuning in using the Magic Eye, not tuning for minimum measured distortion, which can go as low as 0.3% or so. The GT Audio decoder produced less distortion, around half that the OTA.

The One Thing Audio decoder worked nicely in all areas. Expect a smooth response balance and an open sound, as there’s no mpx filtering and associated phase shifts. But there is more unwanted supersonic mush. A lot of signal is needed for low noise, as usual with the Troughline. Distortion is rarely a problem in use as it is second harmonic, but Troughlines must be carefully tuned for best results. NK

VERDICT

Smooth, neutral sound and great stereo sound staging from Leak Troughline tuners.

ONE THING AUDIO MPX2 STEREO DECODER £169

One Thing Audio  +44(0)247 627 4573
www.onethingaudio.com

FOR
- monitoring neutrality
- wide sound stage
- revealing ambience

AGAINST
- no mpx filtering
- some opaqueness
- needs initial adjustment

Our Troughline came from:

GT AUDIO
Cherry Hollow
5 Upper Road
Higher U,enham
Buckinghamshire
UB9 5EJ
UK
+44 (0)1895 833099
Hi-fi isn't the only thing that's benefited from the rush of new digital coding technologies of late, because recent developments in television are also really moving the game forward, says Steven Green...

The last couple of years have seen the introduction of some new technologies and services that will radically alter the quality of broadcasts and the way people access television over the next few years. The quality aspect I'm referring to is of course HDTV, and the good news is that HDTV really does deliver a much better picture quality than on the standard-definition TV (SDTV) fare we see today.

Such higher definition is the result of using almost four times as many pixels (short for 'picture elements') to make up an HDTV picture as an SDTV picture, which translates into the resolution being almost four times higher than with SDTV. This means that much finer detail can be revealed, so the picture looks much sharper and more vivid than on SDTV.

However, in order to see the improvement in quality it is necessary to watch it on an 'HD ready' TV, which signifies that the TV meets the minimum requirements necessary to display an HDTV picture. Bear in mind, though, that the vast majority of 'HD ready' TVs in the shops can only natively display 720 or 768 picture lines whereas the HDTV picture format we're using in the UK uses 1,080 picture lines, so if you want to take full advantage of the higher definition you really need a TV that can natively display all 1,080 lines.

GOING HI DEF
The only way to watch a range of HDTV channels at present is if you're a Sky customer, and to get the service you have to pay £299 for the Sky HD box, £60 for installation and an additional £10 per month on top of your Sky subscription. For this you can watch HD versions of Sky Movies, Sky Sports, Sky Arts, National Geographic, the History Channel, Discovery, Sky Box Office and the BBC HD channel.

The Sky HD box supplied is actually a PVR (personal video recorder) rather than a standard set-top box. PVRs contain a hard disk to record programmes onto, but they're far more than just a replacement for a video recorder, as they allow programmes to be set up to record with a single press of a button via an electronic programme guide (EPG); live TV can be paused or rewound; and they allow you to fast-forward through the adverts in recorded programmes.

Despite the significant costs involved, the Sky HD service attracted 244,000 subscribers in its first ten months since being launched in May 2006, making it Sky's fastest-selling "additional TV product" ever.

The only HDTV channel available on Virgin Media (the new cable operator) at the present time is the BBC HD channel, which is available to subscribers of the V+ service. The V+ service costs either £10 or £15 per month (depending on which pay-TV package you have), for which subscribers are provided with an HD-enabled PVR. ITV, Channel 4 and Five are at least gearing up for HDTV, though, as they all took part in an HD over Freeview trial in London recently, so maybe the BBC HD channel won't be the only HD channel on Virgin Media for much longer...

The Beeb's HD channel is also freely available on satellite to anyone with a suitable receiver, and one such example is the Humax HDCI-2000, which costs around £200 (Richer Sounds), and it supports the MPEG-4 H.264 video codec, Dolby Digital 5.1 surround sound and DVB-S2 satellite transmission formats necessary for HDTV broadcasts on satellite.

The BBC HD channel will be made available to a wider audience...
next year though, when the new Freesat system is launched. As its name suggests, Freesat is a satellite version of Freeview, so it will only require a one-off payment to get it, and it has already been announced that Freesat receivers will support HDTV as standard and PVRs will be available.

Just to confuse matters, Sky already has its own free satellite package called 'Freesat from Sky' (which costs £150 for the equipment and installation), but the problem with this is that users are forced to use Sky’s equipment, which means that if they want to watch the BBC HD channel or use a PVR they’re forced to pay Sky £10 per month for the privilege! There is a question mark hanging over Freesat at present, however, which is that Channel 4 and Five are encrypted by Sky, which means that although they are free to watch they can only be viewed on a Sky digibox. However, Channel 4 recently said that it would like its channel to be freely available on Freesat when it launches, so this issue might be resolved by the time Freesat launches.

Altogether there are 206 TV channels available on 'Freesat from Sky', and all of these channels will be available on Freesat apart from a handful of channels that are encrypted by Sky. There are also 98 digital radio stations freely available on satellite, and many of these stations use higher bit rate levels than on DAB so the audio quality is better.

The reason why there are so many channels available is that transmitting a TV channel on satellite costs a tenth as much as it does on terrestrial TV (£700,000 for a standard definition TV channel on satellite compared to £7m on Freeview, according to the BBC) and there is an abundance of bandwidth available. For these reasons, it is likely that we will see a significantly wider choice of free HD channels available on Freesat than we’ll see on Freeview in years to come...

**NET TV**

All well and good, but the cheapest way to distribute (and receive) television is of course via the Internet, costing just £70,000 – or 1% of the cost of transmitting on Freeview – and Internet bandwidth will continue to get cheaper over time as broadband speeds increase. The reason these costs are so low is due to the use of a highly efficient Internet distribution technology called ‘multicasting’, which only requires a broadcaster to send one stream of each TV channel to each Internet Service Provider (ISP) instead of having to send one stream to each user – where there could potentially be tens or hundreds of thousands of users – which is how Internet streams are distributed at present using the inefficient ‘unicasting’ method.

The BBC, ITV and some of the commercial radio broadcasters have been trialling multicast over the last year, and the BBC iPlayer, which is due to launch later in the summer or early autumn, will include live multicast streams of all of the BBC’s TV channels and radio stations.

Unfortunately it is looking likely that only the relatively low quality streams of the TV channels will be available when the iPlayer is first launched, but once it is fully up and running there should be streams of the BBC TV channels with a similar level of picture quality to that available on Freeview, satellite and cable. The number of ISPs that support multicasting remains relatively limited at present, although this number should rise once the iPlayer has been launched, and it is encouraging to see that Virgin Media is currently testing it – including testing HD over multicast as part of its 50Mbps broadband technical trial in Ashford, Kent.

The BBC has also successfully tested sending HDTV over multicast, but we will probably have to wait a couple of years before we see the BBC HD channel being delivered "compared to what it is now, television will be unrecognisable in five years' time ..."
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What is HD TV?

HD or HD TV stands for high-definition television, and it's a new development in digital TV. HD gives very clear, crisp pictures with vivid colours and much more detail than ordinary standard-definition TV. Some programmes are made with cinema-style "surround sound". HD broadcasts are particularly suited to the larger flat TV screens (LCD and plasma).

HD TV frequently asked questions

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HD TV frequently asked questions

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The beauty of Naim separates is their very well delineated, effective upgrade path. With this in mind, Channa Vithana tries three different ways of hearing the CDX2 CD player...

Naim Audio is probably unique in the hi-fi world for its upgrade path, which, rather than being an afterthought, is an integral part of the whole company's philosophy. For example, you could buy the reasonably-priced yet capable Stageline phono-stage and external iSupply (about £315), then replace and upgrade the iSupply via the Flat-Cap2x (£550) or Hi-Cap2 (£985), or even the Super-Cap2 (£3,000) power supplies if desired. As such, this philosophy has engendered tremendous brand loyalty amongst Naim customers, and ensures the products are rarely, if ever, obsolete.

With their new flagship CD555 CD player retailing at over £14,000, Naim extended its upgrade philosophy further by releasing its accompanying PS555 separately for use with the CDX2 and CDS3 players (and possibly some older models; please check with Naim about this). Several years earlier, the company did precisely the same thing when the CDS3 CD player, the company's previous flagship digital disc spinner, was released and its accompanying XPS2 appeared as a standalone product. This very combination was reviewed extremely favourably by editor DP back in June 2003, when he found the CDX2 CD player really came into its own with the XPS2 PSU.

Recently, Naim has moved into interconnects too. The company has traditionally not been terribly concerned with them, arguing that their supplied wires are fine for the job, and saying that they'd tried many other types but not found an outright improvement. Well, in 2006 the £495 Hi-Line arrived, to universal acclaim – the verdict was that it was expensive, yet effective. To wit, this feature looks at how the company's various upgrades (the £495 Hi-Line, £2,550 XPS2 and £3,995 PS555) can improve the excellent Naim CDX2 CD player.

THE SOURCE
The £2,995 CDX2 is a justifiably popular seller in Naim's range, being an effective bridge between the company's 'entry level' CD5 model and the high end CDS3 and CD555. It's an elegant design, not least because it features the manually-operated swing-arm disc loader - which I think is one of the very best industrial design solutions yet devised for this operation. It carries within it the decoupled and suspended Phillips CD transport. The CD mechanism is suspended on elastomer springs to provide isolation from external vibration and this also has the added advantage of minimising the effect of mechanism-generated noise on the player's internal electronics. CDs are loaded with a stabilising magnetic puck.
There's also HDCD (High Definition Compatible Digital) function for suitably encoded CDs, which many believe sound superior to the standard versions. At the rear panel are phono and DIN sockets, RS232 and RS5 sockets for home automation or wired remote, a switched IEC power socket and finally a large socket to attach the hefty Burndy-plugged cable from optional XPS2 or PS555 power supplies. When not connected this large socket is fitted with a chunky link plug. With the CDX2 you have the option of using it in DIN or phono mode, or with both active, Naim says for best sound quality, it is better to use just one option and not both — this is easily selected via the remote.

THE UPGRADES

Starting with the Hi-Line interconnect, and this is a departure for Naim in that it uses a new type of socket connector called the 'Air-Plug'. The Air-Plug is necessary, say Naim, to prevent vibrations from one product being transmitted, via the cable, to another product and to stop airborne vibrations being picked up by the cable being transmitted (back) to the products it is connected to. Internally, it uses a lower metal content to reduce eddy currents and is strategically held in place to the conductor cable without squashing it so that its impedance isn't affected. The flat-formed cable itself is made from twisted pairs of 80 Litz conductors surrounded by PTFE, Kapton and PTFE tape, covered by a semi-conductive shield to reduce static charges. This is then wrapped by two spiral wound copper shields and lapped PTFE tape. Two of these assemblies side by side are then wrapped in layers of PTFE tape and finally a rubber outer covering.

Moving on to the two power supply upgrades, and the £2,995 XPS2 is a very heavy standard sized Naim box housing a huge toroidal transformer (plus smoothing capacitors), with six power regulators which supply six isolated power outputs. The £3,995 PS555 has superior textured anodised aluminium casework and features seven power regulators. The 650VA rated transformer is said to be forty percent larger than the one used within the XPS2 and features five secondary windings. For the CD555 player there are two outputs; for the analogue and digital sections via the large Burndy-plug connecting sockets at the rear panel. For the CDX2 and CD53, only one socket (Output 1) is used.

THE LISTENING

On its own, Naim's CDX2 is a fine performer, utterly class-competitive and with that distinctive Naim sound that majors on timing and dynamics. It is not the world's warmest or most euphonic performer, but is able to unlock the music's essential rhythmic accents like no others at the price. It is a very impressive bit of kit, but the trouble is, when you start upgrading it, you realise how much you were missing by listening to it in standard form.

The £495 Hi-Line interconnect, in place of the standard Naim grey-sleeved version, showed an obvious improvement. This was both impressive, but disappointing too — as it highlighted the fact that Naim electronics have obviously been held back by the stock wire for many years. For example, there was superior phrasing with the interplay of the cello and violin on the 2006 release of the La Serenissima 'L'Amore per Elvira' Vivaldi recording. The music became more effortless by comparison, and the resolution of individual instruments was also superior, with more musical information on offer. Much finer detail retrieval and instrumental decay were also noted beneficiaries of the Hi-Line, and this aspect went hand-in-hand with better instrumental separation. With The Young Cannibals' cover of The Buzzcocks 'Ever Fallen In Love', the Hi-Line brought more definition to the midrange and bass. Timing was superior in comparison to the standard Naim grey interconnect, too.

Retaining the Hi-Line interconnect and adding an XPS2 power supply reaped further rewards, the sound becoming richer and more atmospheric with better detail retrieval. The music became obviously more refined and the background even quieter than with the addition of the Hi-Line interconnect on its own — there was a cleaner and comparatively less brittle quality to the music. The music on my Vivaldi piece became smoother, yet it took a little away from the animated yet high-resolution music making skills of the CDX2 and the Hi-Line, making it less convincing — if you have heard the transcendent delicacy, resolution and speed of an unamplified small classical combo live, you will know exactly what I mean because there is no need for added smoothness altering the sound.

'Ever Fallen In Love' by the Fine Young Cannibals was musically more cohesive with superior tempos and rhythmical response. Guitars were less brittle and jarring by comparison where they became more intelligible...
With jazzy female vocal music for example, the Podium Ones are truly eye-opening with the vast image that they lay before you. 

Adam Smith, Hi-Fi World, July 07

They’re able to eke their way into the most complex of mixes, and ‘unwrap’ everything so you can hear right into the music. I found myself hearing rhythms in the song’s bass sequencing that I hadn’t previously come across. 

David Price, Hi-Fi World, July 07

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as instruments. Definition to the bass lines was improved, which allowed for deeper low frequencies without any dissended looseness. The mix of guitars, vocals and electronic sounds was much clearer and convincing as the instrumental and vocal separation was superior. The powerful bass lines to 'The Big Blue' soundtrack were more defined now and audibly ahead of the addition of just the Hi-Line previously. There was even greater low frequency decay which made the music and resultant atmospheric quality of the soundtrack more enveloping, and the tension created by the tempos and rhythms was not lost with this improvement in bass resolution. With 'Going Back To Cali' by L.L. Cool J, the bass lines were more tuneful than with the already great Hi-Line, and there was a wider more powerful musical structure overall. Like the Vivaldi piece though, I discerned some added and unwanted smoothness overall which substituted some of the free-flowing impact and power of this song.

Moving to the mighty PS555 power supply in place of the XPS2, the music from the Vivaldi piece was finer and more lyrical with the phrasing of the violin where the playing was deftly more expressive and vital — yet, it was also more sophisticated with superior resolution and spatiality to the whole recording. Consequently, instruments in isolation were a particular delight where the timbre was finer and they were life-like in atmosphere. On the Fine Young Cannibals recording there was more bass power with superb propulsion and expression. Thus, rhythms were tauter and enjoyably more together. The music was clearer and wider also, while instrumental textures without falling into the 'nice-sounding' but dislocated quality of any one aspect (like the guitar or vocals) from the main structure of the piece. Roland Gift's charismatic vocals had more expression and acoustic decay, and he sounded more real in comparison to using the XPS2.

Individual elements on 'The Big Blue' soundtrack had superior resolution. The scale of the music was now huge in scope, and the sound was more powerful. Here, as with the L.L. Cool J and Vivaldi pieces, the music was not only deeper, wider and spatially enveloping but also more tantalising. Bass extension was now both tunefully and powerfully superior. Yet it was most intriguing listening to 'Going Back To Cali' by L.L. Cool J with the PS555 installed. The music had higher resolution with the additional benefit of sounding even cleaner. Bass lines were more three dimensional with a fuller and deeper presentation. The powerful bass lines was superior. The powerful bass lines of the addition of just the Hi-Line to 'The Big Blue' soundtrack were more defined now and more powerful. Here, as with the L.L. Cool J and Vivaldi pieces, the music was clearer and more powerful. Here, as with the L.L. Cool J and Vivaldi pieces, the music was clearer and more powerful. The music was not only deeper, wider and spatially enveloping but also more tantalising. Bass extension was now both tunefully and powerfully superior. Yet it was most intriguing listening to 'Going Back To Cali' by L.L. Cool J with the PS555 installed. The music had higher resolution with the additional benefit of sounding even cleaner. Bass lines were more three dimensional with a fuller and deeper presentation. The

CDX2 into a truly 'high end' design, class-competitive with any rival from anywhere in the world — and better, if you like 'the Naim sound'. Personally, I'd recommend that you bite the bullet and go straight for the £3,995 PS555 over the £2,550 XPS2. Alternatively, buying a well looked after second-hand XPS2 would nevertheless be a financially attractive upgrade for owners of compatible older Naim players. Personally, I found that the XPS2 plus CDX2 was ever-so slightly flawed with the Vivaldi and L.L. Cool J pieces, sounding artificially smoother.

With the PS555 there was resolutely no question mark over any aspect of the sound, however. It was quite spectacular in its ability to excavate fine detail and reproduce brilliant instrumental and vocal textures without falling into the high end trap of sounding 'hi-fi' - its flawless dynamic range made the CDX2 sound sublime. An extremely impressive, well delineated upgrade path then, but as ever a visit to the dealer is recommended to choose the right addition(s) for your Naim CDX2.

CONCLUSION

This was an interesting experience for me — because as I went through these different upgrade options for the CDX2, I was struck by how each made a tangible improvement, and how this was in direct relation to the relative price differences between the upgrades. First and foremost, the Hi-Line is an outstanding upgrade over the standard Naim DIN interconnect. It transformed the CDX2 making it sound like a new and improved CD player — it really was that good.

Most impressive was how it revealed the inherently wonderful phrasing, tempo and rhythm of the instruments and vocals for all the music used. It brought the usual refinements in resolution and timbral superiority one expects from

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HIAudio - UK Distribution
This month, it's the turn of assistant editor Adam Smith to tell all about his hi-fi history...

I suspect that there are not too many hi-fi reviewers out there using much less than modern, 'state-of-the-art' equipment, and I would wager that I am probably in a unique position in that my main system consists of a 45 year old turntable, through 25 year old amplifiers and into 30 year old loudspeakers! As my hobby has been repairing, restoring and collecting hi-fi equipment since my teenage years, to run you through the full complement of equipment I have used since then would fill the entire magazine, so I shall attempt to restrict myself to the 'highlights'.

In the beginning, when my father bought some shiny new Yamaha equipment, I inherited his Hitachi turntable, Eagle International amplifier, tuner and loudspeakers, and Technics cassette deck. My school friends were suitably impressed, mainly because the 'speakers were quite large, and this system did me sterling service for a couple of years until the first upgrade came along - I haven't stopped since...

This first change was my uncle's Garrard 301/SME 3009S2/Shure M75ED, and the 301 has been my absolute pride and joy ever since. The next big change came when I spotted an unwanted pair of big, ugly loudspeakers at an audio fair. These were Ferrograph Sis - hefty three ways with a quarter-wave loaded KEF B139 bass driver, Goodmans midranges and tweeters. They were in poor condition, but complete with their matching stands and carrying a price tag of £55. Needing some behemoths for upcoming party duties I grabbed them, complete with non-working tweeter in one, and a truly evil replacement Soundlab unit in the other. I was surprised to hear that they were rather good so I stripped them down, repainted and rewired them, and fitted new Audax tweeters - they never went to any parties!

Shortly afterwards, I married my girlfriend and moved into her one-bedroom house. She accepted my hi-fi rack with good grace but not the Ferrographs, so into storage they went. A pair of Mission M71s impressed me at a show, but at 'terraced house' listening levels I found them rather lifeless and so they stayed just two weeks. Luckily this coincided with an old stock clearout at Goodmans Loudspeakers, where I worked, and I snapped up a pair of GLL Imagis IC258TIs - floorstanders with two bass drivers in a transmission line in addition to GLL's proprietary ICT driver. They had fabulous bass and superb midrange and imaging, thanks to the ICT, however those two additional bass drivers tended to overpower the ICT's treble unit and they did sound rather dull.

At this time I stumbled across a set of Quantum Electronics amplifiers, namely a 102 preamp and two 202 power amps for £60 and they helped to open up the GLLs, but their treble was still hardly crisp or detailed they were replaced by a pair of Monitor Audio Silver 51s.

We finally moved to a bigger house in 2005 and I was granted a listening room. The Ferrographs duly came out of storage, and now reside atop a pair of dedicated stands. The Quantum 202 power amp's 45 watts struggled to drive the 82dB SIs effectively but finding a top of the range 207 model with 80 watts per channel has perked things up nicely. I still use my Garrard 301, now in a custom-made, lead-lined plinth with an Audio Technica AT1130 arm and a temporary AT110E cartridge whilst I ponder which new moving coil cartridge to buy to replace my recently deceased Ortofon MC10 Supreme. Other sources are a Marantz CD94 CD player and a Bang & Olufsen Beocord 5000 cassette deck for the few dozen radio comedy cassettes I have. These play through the Quantum Electronics 102/207 into the Ferrographs.

As to the future, I have the Marantz's matching CDA94 DAC upgrade awaiting repair, a Cardas-rewired Alphason HR-1005 arm waiting for a new mounting plate to be made and have also been pondering a new preamplifier. Then there are also the other systems in the lounge and dining room to consider...

My strange collection of 'old bangers' make a noise that I thoroughly enjoy, and I often tend to lose hours when I just intend to 'quickly play something' - always a good sign.
Adam Smith helps prevent global warming by listening to Flying Mole's eco-friendly DAD-M310 monoblock power amplifiers...

Buzzwords like 'carbon footprint' and 'global warming' seem to be on everyone's lips right now. Regardless of which theory of the global warming situation that you subscribe to, it makes sense to minimise our energy consumption if at all possible as, regardless of the environment, most of our fuel sources have a finite lifespan.

This was brought home to me as I connected up the Flying Mole DAD-M310 monoblocks into our reference system here at Hi-Fi World towers. It was a warm day and, leaning over the top of the Luxman L-550A amplifier that Noel reviewed last month and that we have grown rather fond of, I was aware that the huge draughts of heat that it produces turned me into a sweating wreck in a short space of time. The problem is that the Luxman is a Class A device with an efficiency of around 30%. Good for sound quality, maybe, but bad for the environment!

One distinct advantage of digital amplification is that it is far more efficient than conventional Class A, AB or B types and this, together with the improvements in the designs of such units over recent years should now mean that we eco-aware audiophiles can enjoy our high quality sound whilst maintaining our environmentally friendly credentials.

The Flying Mole corporation are rightly proud of the eco credentials that come with their digital designs, of which the DAD-M310 monoblocks are their reference product for audiophile use. Quoting their efficiency as 85% at full output and 60% at normal listening level shows just how much energy can be saved by changing over to these little units.

Very well specified, the DAD-M310s are quoted as delivering 180W per unit into 8 Ohms and 300W into 4 Ohms. Although having just a volume control, on/off switch and status LEDs on the front panel, a poke around the back reveals a little more than might be initially suspected. Firstly, inputs can be of the balanced or unbalanced variety and the unbalanced one can be routed through the volume control, or at a fixed level straight into the amplifier. Also provided is an input to allow the unit to be remotely switched on and off (by a preamplifier for example) as well as a similar 'daisy chain' type output so that one amplifier can switch the other one as well.

I was also relieved to see that Flying Mole have fitted 'proper' loudspeaker terminals to the DAD-M310s, rather than the stylish and sturdy, but rather awkward types fitted to the CA-S3 amplifier that we reviewed back in our January 2007 issue. Measuring a compact 214x91x405mm (HxWxD) and weighing 4kg each, the DAD-M310s have a physical footprint as small as their carbon one and the fact that many of the company's engineers are ex-Yamaha employees is quite obvious from the next, but familiar curve of the fascia on the units.

**SOUND QUALITY**

It seems that the bad old days of hard and unpleasant digital amplifiers has now, mercifully passed, and the Flying Moles sound well balanced and detailed from the moment you start listening. Where they really shine is in picking out the minutiae within...
Trying all the different connection methods offered by the DAD-M310s showed that the fixed, unbalanced inputs offered an improved sense of space and solidity over the variable input and this is how most listening was carried out. A listen with the balanced inputs added a dose of the unhalanced, fixed inputs still did lose some focus in this mode, so most listening was carried out. However, the soundstage from The Sundays' Static and Silence' was highly defined, with good form and body to cymbals and hi-hats. Where things were a little less successful was in terms of orchestral instruments like violins. These are a strenuous test for any amplifier and can be presented as a screechy mess in a less than complimentary unit. The Flying Moles were nowhere near as bad as this, but they still have a certain hardness to their midrange and treble that tends to lessen the timbral richness of such instruments. This was helped out by using the balanced inputs [see boxout], but I feel that they still fall a little short of most conventional, analogue amplifiers in this respect, and further short of a good valve design.

Bass output was healthy and weighty, and the high damping factor of the DAD-M310s [see MEASURED PERFORMANCE] gripped our Spendor S8es firmly by the midrange and treble in a tangle mess if the amplifier is played through is unable to sort it out, but the Flying Moles dissected it with almost surgical precision.

In the middle and top of the spectrum, the Flying Mole's midrange flowed mellifluously into the treble region. High frequencies were crystal clear and very well defined, with good form and body to cymbals and hi-hats. Where the soundstage between and behind the speakers, I also found the image moved little beyond them, constraining the soundstage somewhat, especially when compared to the Channel Islands Audio D100s, although the latter are £500 more expensive. The Flying Moles trade that last little spark of emotion and musical flow for precision and impact.

CONCLUSION

The Flying Mole DAD-M310 monoblocks have some great strengths, in particular the way in which they gather detail and sort through jumbled source material to extract its finer points. This sort of presentation will appeal to those who prize a clean, concise sound. Fast, tight bass is another feature many crave, especially to control wayward, under-damped loudspeakers. If this sound is to your liking, then the DAD-M310s represent good value and offer some useful facilities wrapped up in an efficient package.

MEASURED PERFORMANCE

Unlike most Class D amplifiers, this monoblock had no d.c. on the loudspeaker outputs. It produced plenty of power though, as expected, delivering 180 watts into 8 Ohms and 215 watts into 4 Ohms. Together with an extremely high damping factor of 317, this amplifier is likely to have plenty of low frequency punch and good bass control over a wide range of loudspeakers.

Frequency response varied with load, reaching 52kHz with 8 Ohms, but just 14kHz (± 1dB) with 4 Ohms. Together with an extremely high damping factor of 317, this amplifier is likely to have plenty of low frequency punch and good bass control over a wide range of loudspeakers.

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JAS Audio's Orior Grand loudspeakers boast impressive 'high tech' drive units all right, but can they boogie together? Adam Smith listens in...

It was not so long ago that any loudspeaker featuring exotic drive units carried a correspondingly high price tag. Bass/midrange drivers that used rare materials or a ribbon tweeter generally tended to be upmarket - meaning expensive. This is gradually changing as Far-Eastern manufacturers bring in their technologies, together with lower costs - a win-win situation.

JAS Audio was founded in Hong Kong in 2002 with precisely the aim of providing quality products at reasonable prices. Our very own Channa Wijithana was suitably impressed by the smaller Orsas, fitted with a ribbon tweeter, in his system feature back in our May 2006 issue. However, moving upwards in the range to the Orior and their floorstanding brethren, the Orior Grand, adds further temptation into the mix in...
the form of an Accuton ceramic bass driver.

It seems that more and more manufacturers are making use of these superb German-designed drive units, from Germany’s Isophon to Sweden’s Marten Design, so JAS Audio are in good company! Accuton state that the membranes of these drivers offer an unsurpassed stiffness to weight ratio, resulting in the “cone rigidity and hardness which is needed for speed and accurate impulse response”.

In the Orior Grands, a seven inch (180mm) version of the driver is utilised, and mated to JAS Audio’s twin aluminium ribbon tweeter, all wrapped up in very nicely finished cabinet. Ours were Birds Eye Maple, but other finishes are available, including Plain Maple and Italian Black Ash. Measuring 1050x300x430mm (HxWxD) and weighing 28kg each, the Orior Grands are heavy and well finished but not imposing.

The crossover only allows single-wiring, through some superbly sturdy terminals. Unusually, it possesses two settings - “Reference” and “Dynamic”, selected via a keyswitch, no less! The Dynamic setting apparently makes a few subtle changes in the midrange response adds fulsome detail, imparts some previously-unheard hardness in their performance, which I suspect is due to the 1.5kHz and 2.5kHz peaks in output at the top end of the bass driver’s frequency range. JAS Audio have generally done well to mate the tweeter to the bass driver with no major nasties, as ribbon tweeters rarely work much below 3kHz and the Accuton bass driver used is specified up to 4kHz. This is quite a small region to allow for successful overlap, but measurement shows that the region in which the two units mate shows no big ‘holes’. I suspect that the two peaks mentioned are the beginnings of driver breakup, which would be masked if JAS used a lower crossover frequency; however this is not possible with the ribbon tweeter.

So, the JAS loudspeakers have made a superb case for themselves so far, however there is something of a ‘but’ coming. As I mentioned, the bass from the loudspeakers is very deep, and they offer real heft and impact without ever becoming boomy. Where they did fall down, however, was in their low frequency timing.

On the Unplugged version of ‘Hey, Hey’ by Eric Clapton, the guitar maestro taps his foot along with the song and this generates two distinct events - the actual tap that you can hear, and the bass note that results from the hollow floor. With the Orior Grands, the bass note lagged very slightly behind the main ‘tap’ which is not uncommon with poorly designed or inappropriately sited subwoofers, for example. Whilst the slot port used by the Orior Grands usually gives clean output, I suspect that it is not quite tuned to the driver and cabinet as well as it should be.

My other concern here was that lower bass was not as detailed as it could have been - a result of the 100Hz ‘suckout’ shown in the measurement. The Orior Grands romped along happily at low frequencies, but without great insight. Consequently bass lines were solid and well paced but sometimes the real intricacies of stringed bass instruments were a little lost.

CONCLUSION

Generally, speaking, the JAS Audio Orior Grands are very accomplished loudspeakers, with an impressively broad soundstage, great solidity and bass power and the delightfully incisive and luxurious treble that comes from a good ribbon tweeter, all wrapped up in a sturdy and attractive package.

Their weaknesses in bass detailing and timing are mild: they remain enjoyable to listen to and merit serious consideration even at the £3,000 price point. That said, however, these minor problems are surmountable and should not be too difficult to overcome if what is already a very good loudspeaker is to become an exceptional one, better able to justify its price.

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SOUND QUALITY

I was hoping for good things from the Orior Grands, given the ingredients they have to work with, and initial impressions were very favourable. They are an impressively broad and sweet, pulling every last ounce of ambience and detail from the background. The emotion in Nick Drake’s voice as he sang ‘Northern Sky’ was palpable, making the hairs on the back of my neck stand up even more than they usually do when I play this fabulous track. Some vocalists did however have some previously-unheard hardness in their performance, which I suspect is due to the 1.5kHz and 2.5kHz peaks in output at the top end of the bass driver’s frequency range. JAS Audio have generally done well to mate the tweeter to the bass driver with no major nasties, as ribbon tweeters rarely work much below 3kHz and the Accuton bass driver used is specified up to 4kHz. This is quite a small region to allow for successful overlap, but measurement shows that the region in which the two units mate shows no big holes. I suspect that the two peaks mentioned are the beginnings of driver breakup, which would be masked if JAS used a lower crossover frequency; however this is not possible with the ribbon tweeter.

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MEASURED PERFORMANCE

The Orior Grands have an even response across the upper midrange and treble, with only a small dip at 4-5kHz, that will aid smoothness. There is a gentle rise in output towards 20kHz that will add detail. Ribbon tweeters usually measure flat, but the subtle rise seen here will help to overcome limited vertical dispersion. The Orior Grands should sound sweet and even as a result.

Bass output is good, although we did measure a cancellation dip at around 100Hz, most likely due to interference reflections from the floor-firing port. This will lessen detail and give ‘divorced’ bass. Other than this, the Orior Grands measure well, the port carrying output to below 40Hz, so they should have fine weight to their sound. Output from the slot port was clean at higher frequencies - a good result.

The impedance curve is unusually flat, thanks to a combination of ribbon tweeter and a well damped bass. Average measured impedance was 8.3 Ohms, dipping to a minimum of around 4.9 Ohms.

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VERDICT

Impressive loudspeakers that offer an exotic blend of technologies in an enjoyable and well-made package.

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FOR
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- capacious soundstage
- fine bass weight
- build quality

AGAINST
- bass timing
- low frequency detail
- occasional midrange hardness

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Answers:

1. What category could they be put into?
- [a] Dinky’
- [b] Corgi’
- [c] Matchbox’
- [d] Hot Wheels’

2. What cone material is used in the bass driver?
- [a] Glass-fibre
- [b] Kevlar
- [c] Carbon fibre
- [d] Paper

3. What belies their lack of cubic inches?
- [a] “A capacious soundstage”
- [b] “A fulsome bass”
- [c] “An airy treble”
- [d] “An expansive midband”

4. According to AS, they offer a surprisingly...
- [a] “Grand sense of scale”
- [b] “Big bang for the buck”
- [c] “Large sound”
- [d] “Wide image”

Soundstage generated by the little Revolvers is surprisingly wide and stable... Performers are well laid out between and beyond the sides of the AVFs. Coupled with lively and precise midrange, this adds excellent emotion and definition to both vocals and instruments. Mixing in to this effect nicely is the treble which, although quite forward, is nevertheless sweet and intricate, with excellent levels of information retrieval. Cymbals in particular had a real impact behind them, and high notes decayed superbly, adding to the sense of space. The Revolver AVFs are well balanced and enjoyable loudspeakers, and they offer a surprisingly grand sense of scale along with good midrange and treble, along with commendable bass weight.”

If you’d like the chance to win these stunning speakers, then all you have to do is answer the following four easy questions, and send your entries on a postcard to: July 2007 Competition, by 30th June 2007 Hi-Fi World magazine, Unit G4, Argo House, The Park Business Centre, Kilburn Park Road, London NW6 5LF.

**RULES AND CONDITIONS OF ENTRY**

- Only one entry per household
- Multiple entries will be automatically disqualified
- Purchase of the magazine is not a pre-condition of entry
- No correspondence will be entered into
- The Editor’s decision is final
- No employees of Audio Publishing Limited, or of any companies associated with the production or distribution of the prizes, may enter
As you may well have already realised, MIT cables herald from the USA, where bigger is usually better! The price tags are immediately recognisable as being American, a 5m pair of speaker cables costs £5,120 and the 1m interconnects are £809. If the intention of MIT was to intimidate their rivals with their physical presence, then they should succeed with these monsters. The MIT Shotgun MA cable is massive, measuring 22mm diameter, and then there is the termination box. MIT use a technology which they have christened ‘Multi Pole’. The theory is that all cables have a limited range in which they work optimally, and by using a network at the speaker end of the cable, this range is dramatically expanded. The network box is large, measuring 70x215x90 mm (HxWxD) and has a pair of terminals, onto which the leadout wires are attached. These wires have screw threads on them allowing a variety of different terminations to be used, but an 11mm socket wrench is needed to fully tighten the terminals and ensure a positive connection is made.

The interconnect, the Shotgun S1, is the top of the range from the Shotgun series (the MA speaker cable is from their top of the range Maximum Articulation series) and also features a termination network. This cable is unusual in the ability to allow you to adjust the cable to optimise its performance at a given input impedance. The range is wide enough (5kOhm to over 100kOhm) to allow these cables to be adjusted for almost any component.

I am fortunate in having a second pair of speaker cables (the Basis PSST) which also cost just over £5,000 for 5m, so a meaningful comparison could be made with these, and my lower cost reference cable, the Atlas Ichor. Likewise I also use Basis PSST interconnects (£1,500 1.5m) and Atlas Elektra (£450/m) interconnects, for direct comparison with the S1.

I started with the speaker cables, and it was immediately apparent that left me with a reticent high frequency range, the high setting diminished bass weight, but the low setting seemed to give me the ideal sonic balance. When matched to my system this gave a very broad soundstage with excellent illumination front to back, but the focus was still not as good as the Basis PSST or the Elektra. The high frequencies were excellent, with cymbals giving a realistic shimmer and right hand piano notes possessed a tonality which was very convincing without forwardness or hardness. The midrange was very good, with just a hint of extra warmth in the lower end, whilst the bass was extended and powerful, yet seemed to lack the absolute control of the PSST.

Ultimately I found these cables to be very good, but you cannot overlook their cost and, against some admittedly outstanding competition, I felt the interconnect to be more competitive than the speaker cable. The interconnect’s pricing slotted between my reference Elektra and PSST and, whilst it’s performance was appropriate for this price point, I feel it is a little closer to the Elektra than PSST.

The Shotgun MA speaker cable was superb, but at £5,120 it should be. The trouble is the Basis PSST speaker cable was more open with better soundstaging and greater transparency, and is only £300 more, and I still cannot get over the feeling that having those extra components in the filter networks must compromise the absolute transparency of these cables. If you are in the fortunate position to be able to purchase them, I would also listen to the high end Atlas, Black Rhodium and Basis cables, but I am sure the MIT is going to attract a significant following with its even handed performance. The ability to tune the interconnect cable optimally for your system is also sure to find many friends.

Contact Audibility on www.audibility.co.uk or call +44(0)870 777 2991
Interstellar?

Can Leema’s Antila overthrow the established high end CD player order? David Allcock thinks it shines as bright as the constellation with which it shares a name...

If there is one unwritten rule in the audio industry, it is that no manufacturer makes great products across the board. Some companies do great source components and ‘less than great’ loudspeakers, with others it’s the other way around. As such, there are precious few brands that can produce a serious system from front to back, but – with their first source component in their Constellation series of electronics - British specialist Leema Acoustics intends to swell these narrow ranks by at least one...

Big and heavy, the Antila tips the scales at 10kg in a chassis measuring 440x110x330mm. Leema believe mechanical integrity is just as important in electronics as it is in speakers, so the Antila is housed in a chassis with an 8mm brushed aluminium front panel with cast 10mm side panels, a 2mm rear panel and base plate, whilst the top plate is a 4mm thick aluminium sheet.

Delving under the skin, the Antila is no less impressive. On the left hand side of the chassis is a large 250VA toroidal transformer - which would be impressive in an integrated amplifier, let alone a CD player. The transport is a Philips VAM 1202 loader, a combination used in many players as it is one of a handful of dedicated CD playback mechanisms still in production for the audio industry, as many manufacturers have now resorted to using cheaper, more readily available CD-ROM and universal transport mechanisms. Happily, several manufacturers still believe that using a dedicated transport continues to yield superior sonic results.

The unique aspect of the Antila’s design is its DAC stage, which uses ten Crystal Semiconductors surface-mount CS4345C stereo 24bit/192kHz chips controlled by a programmable FPGA, using software designed in house by Leema. This has the aim of dramatically reducing the distortion inherent when using a single or dual DAC configuration. To ensure the hard work done by the DAC stage is not undone in the following analogue stage, high quality Analog Devices OP2775G surface mount op-amps are then used before feeding the dual outputs, with both single ended RCA and balanced XLR outputs which are driven simultaneously, allowing quick and easy comparison between the two outputs.

Externally the player has a very simple layout, with the front panel featuring an open/close button to the left, the disc tray centrally mounted over the back lit LCD electro luminescent display, and a vertical array of play/pause, next, previous, fast forward, fast reverse, display and stop to the right. Finally a power on/off button is on the far right, although this is more of a standby switch with the actual power switch on the rear panel, alongside the IEC power inlet.

On the rear panel there are a pair of digital outputs, with both Toslink and S/PDIF catered for, and pairs of both balanced and RCA outputs, both on very high quality connectors. There are also a pair of 3.5mm jacks, which look like iPod headphone outlets, but these are for the unique Leema LIPS system, the remote protocol which allows Leema components to communicate and remotely control each other. A compact remote control is supplied with basic control functions for not only the player, but also the matching Tucana amplifier, allowing the entire system to be easily driven from a single remote.

The next question was then which output to use, and as is common in my system the balanced output was preferred, though the single ended output was much closer in performance than I usually hear, with balanced having the edge in bass slam and dynamics. It should be noted that both outputs are at a 2.4V level, so ensure you level-match when A/B testing with other players, and unusually the XLR input does not have the usual 3dB increase in volume, again this should be considered when auditioning.

SOUND QUALITY

Leema products have a reputation for being revealing, but the Antila took this to new heights. This player didn’t so much put discs under a microscope as perform a dissection on the recording, yet it still managed to ‘Oceans 11’ has music from the unique Leema LIPS system, for being revealing, but the Antila took this to new heights. This player didn’t so much put discs under a microscope as perform a dissection on the recording, yet it still managed to mate this ultra revealing quality to the recording, yet it still managed to swill these narrow ranks by at least one...

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SOUND QUALITY

Leema products have a reputation for being revealing, but the Antila took this to new heights. This player didn’t so much put discs under a microscope as perform a dissection on the recording, yet it still managed to mate this ultra revealing quality with an inherent musicality and energy which is rare in any player, let alone one at this price point. The Antila, whilst highlighting differences in multiple sources (locations, studios and historical times), including...
"it presses all the right ‘hi-fi’ buttons, yet is so musical in the way it strings everything together..."

some original recordings where the different studios and recording techniques could be easily discerned. Whilst these differences are easily noticeable on other players, the Antila draws you a large diagram to illustrate the point, showing not only the placement of the musicians on the stage, but also the location of the microphones relative to the musicians - such is the precision the player is capable of.

Whilst the soundstage on ‘Boobytrapping’ could be clearly heard to extend well beyond the outer edges of the speakers, the mixing production on Madonna’s ‘Confessions on a Dance Floor’ did not record this information, and to its credit the Antila’s presentation respected this, with a very well defined and precisely positioned soundstage, with every track constrained by the position of the loudspeakers. By contrast, The Corrs ‘In Blue’, which locates several instruments far beyond the outer boundaries of the speakers, was portrayed as such, with musicians being located outside the physical boundaries of the listening room. In the depth plane this player was also superb, perfectly happy when called upon to place instruments through the front wall and well down my garden, yet recordings with little depth information in them were reproduced equally faithfully.

Bass notes were superb, with the bass line on “Gritty Shaker” from ‘Oceans 11’ not only displaying excellent dexterity, but also having greater extension than I’d heard on this track before - with real weight on the double bass being felt through furniture as much as heard. Still, when speed was called for, this player had it in spades. On ‘Future Lover’ from ‘Confessions on a Dance Floor’ the driving bass line was propelled along with incredible drive and power, yet the lightning-fast pace called for on this track sounded effortless through the Antila.

The player’s midrange is sublime, not only offering tremendous transparency but also displaying superb balance. The human voice is always difficult to reproduce convincingly, simply because we are so used to hearing it, so when I heard the lines of script delivered by George Clooney and Brad Pitt reproduced so realistically, I knew this player was good - quite simply, they sounded as if they were in the room. Likewise, female vocals were...
bloody right

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outstanding, with Enya's breathy vocal style played with gossamer-like delicacy. The track's electronics were stripped away remorselessly, allowing me to concentrate on her voice. The track 'Anywhere Is' is very busy, yet Enya's voice simply floated free of the musicians, allowing the listener to hear every inflection in her vocal delivery, free of any sonic aberrations through the midrange, the balance was that good.

Cymbals and triangle in the high frequencies always seem particularly difficult for CD players to get right, yet the Antila renders these instruments beautifully, without exaggerating the high frequencies to give the illusion of more detail, or hardening them and losing the subtle tonality and slight metallic sheen. 'Black & White X5' from 'Thomas Crown Affair OST' is recorded in a large studio with a full orchestra present, yet opens with a single piano playing the melody in the top octave, and for the first time with the Antila I could hear the rest of the orchestra present during this solo, including very low level sounds such as sheet music rustling, whilst the top octave of the piano was outstanding, lacking the hard ringing often heard when digital components try to replay this range.

CONCLUSION
Given that Leema, a relatively young and small British company, have already come up with a highly capable mini-monitor in the shape of the Xen (HFW, December 2006) and a superb integrated amplifier in the Tucana (HFW, May 2007), it is a 'big ask' to expect their company's first CD player to be of an equally high quality — but they've done it. The Antila is simply very difficult to fault - with a tremendously clean midband, extremely powerful bass and a shimmeringly smooth treble, it presses all the right 'hi-fi' buttons, but is more than this, thanks to the musical way it strings everything together. Indeed, to my ears it delivers one of the most balanced sonic performances I've heard from any player under £5,000. Then there's the fact that it offers the kind of engineering usually found in players from Wadia and Esoteric, and does so in a package which is both easy to use and stylish enough to grace any living room.

The only downside is the fact that some might find it just a little too starkly detailed for their musical tastes - shining as it does a bright light on every recording, it doesn't flatter poor source material. Still, it's never less than highly musical, and indeed with such high performance, it should worry every other machine in the sub £5,000 bracket - to my ears it takes a player like the Esoteric X-03SE to realistically compete. Overall then, thumbs firmly aloft for Leema, which now has a superb system range from source to speakers.

"the Antila is simply very difficult to fault"
Against all odds, when Jim White left Theta Digital, he opted to go in a completely different direction and launched an ultra high end valve phono stage called the Callisto. Its uncompromising design stunned the US high end community – the fully configured Calypso and Callisto made for a six box preamp weighing in at over 270 lbs, that needed most of the average British living room to accommodate! Thankfully, Jim decided to ‘trickle down’ his ultra high end designs into a more practical format, hence the Rhea phonostage and Calypso line stage.

The Calypso is a fully remote controlled preamplifier housed in a single box with an inner stainless steel ‘U’ chassis, having the front and side panels manufactured from 10mm thick steel and a 7mm brushed stainless steel front panel. The top plate is a 3mm steel panel with two large mesh grilles, secured with heavy duty Velcro allowing the user easy access to the internals.

Looking into the chassis of the Calypso you see a pair of circuit boards with three large capacitors for the local power supplies, a 12AX7LP and a 6922 dual triode valve for each channel, a centre channel carrying the mains power to the power supply stage at the front of the chassis, and a shielded module at the front containing the power supply, microprocessor control system and display. On the back panel are six inputs, each with both single ended RCA and XLR balanced inputs, whilst a tape loop and home theatre bypass are also supported on both connectors, with two pairs of outputs, again on both balanced and single ended connectors, allowing the Calypso to be integrated in any system.

The IEC power inlet and on/off switch are located in the centre of the back panel, but usually you will turn this preamp on and off via the standby button on the front panel. This sports a large blue LED display in the middle. The volume control is conspicuous by its apparent absence, but, as with the Rhea, this is actually the display itself, which is pivoted, so pushing on the right turns the volume up and the left lowers it. To overcome the possibility of digital noise from the front panel display polluting the signal path, the processor only wakes when it is actually being used.

Internally this amplifier is a fully balanced design, meaning single ended inputs are converted to balanced signals almost as soon as they enter the preamp, theoretically offering greater immunity to interference and noise if implemented correctly. As mentioned, the power supply is located in the front of the chassis, hence the reason why the majority of this unit’s weight is at the front. The power supply is fully enclosed in a Faraday cage which is designed to completely shield it from the audio circuits and prevent the intrusion of RFI (radio frequency interference) and EMI (electro magnetic interference). One of the biggest problems anyone is likely to have with this device is housing it - outside of the Boulder 1012 and the MBL Reference, this is one of the largest line stage preamps I’ve encountered, measuring 110x455x460mm and weighing in at 17.5kg!

SOUND QUALITY

Whilst the single ended output is impressive, in my system I preferred the balanced output of the Calypso driving my Bryston 3B-SST power amplifier. Whilst the balanced inputs offered their usual advantages of lower noise and improved dynamics, the sonic balance between the two input types was remarkably similar - something I’ve only encountered on one other preamp, the Mark Levinson 326S.

This was an incredibly quiet design - even turned up to its maximum volume and with an ear within 50cm of my Martin Logan loudspeakers, I could hear no hissing or humming whatsoever. Indeed, when music was actually playing through the Calypso, it was not...
obvious one was listening to a valve-based preamp, so extended were the lower and upper frequencies.

The Calypso proved extremely strong in the bass, with bass guitars, kick drums and double bass possessing greater power and depth than my reference Krell KRC-3. I knew the Calypso was obviously doing something right when I dropped on Enigma's 'Sadeness', the lower registers proving effortless. The dynamic range available from this preamp is redoubtable, with 'Like Love' from Timo Maas having a bass line which could knock items off shelves. But it's not just about bombast, as the 'micro dynamic' subtleties of the best musicians and vocalists are not lost. Subtle pedal work on Dave Brubeck's piano during 'Strange Meadow Lark' from 'Time Out' gave the track a level of realism in my room I've rarely heard.

The Calypso's midrange balance made the best of any well recorded vocals, and delivered an incredibly transparent window into the recording, Celine Dion's vocals on 'Refuse to Dance' grabbed my attention with their presence in the listening room, being completely natural yet simultaneously highly resolving, displaying every nuance and shift in emphasis. When given a slightly warmer recording, such as Diana Krall's 'A Night in Paris', the Calypso continued to impress, giving her voice the smooth, velvety richess that just draws you and leaves you wanting more.

The Calypso refused to impart any kind of personality on the proceedings, allowing each recording to stand or fall on its own merits. Whilst this doesn't make the Calypso one of the most forgiving components around, its honesty is unquestionable.

In the high frequencies the Calypso offered excellent focus and resolving capabilities, bringing out a very high level of detail without over-emphasis. Even when provoked with a somewhat lively recording in the upper registers, such as Timo Maas's 'To Get Down' where there is a definite forwardness to the cymbals, the Calypso never allowed things to turn hard and forward. Joe Morello's cymbal work on 'Take Five' showed just what it could do given a truly exemplary recording, the incredible dexterity and subtlety of playing was laid bare, with even minute shifts in weight on the cymbals clearly audible, whilst the upper registers of Dave Brubeck's piano were simply sublime.

Imaging was equally impressive, not only was the soundstage huge, effortlessly removing the walls of my listening room in both planes, but it offered excellent scaling, with all instruments and performers in proportion to the rest of the soundstage.

Lateral imaging was outstanding, whilst the depth plane gave very good layering with the back of the stage fully illuminated and extending back to the physical boundaries of the listening room. Image focus was excellent, with the edge definition of each performer very well defined, separating the musicians from each other with only a very slight haziness around the edges, though I felt my reference Mark Levinson 326S could better this, albeit at a higher price. Even beyond the outer edges of the speakers, imagery was still consistently very good, with musicians sonically located beyond the physical boundaries of the listening room and maintaining focus.

CONCLUSION
A very fine preamplifier then, offering a great user interface, proper build quality, real versatility and super sound for an admittedly serious price. Indeed, the only cloud on its horizon is the competition from MF Audio's considerably cheaper Silver Passive Preamplifier, which at £2,650 offers no less impressive sonics - albeit in a very different and far less user-friendly package. Then there's the NuForce P9 which at some £1,000 than the Aesthetix less offers the convenience and microprocessor control of the Calypso and runs it close in sonic, albeit with a different, more 'solid-state' character once again. Competition is stiff, and my only counsel is to go out and audition them all with your ancillaries - the Aesthetix offers a lot, and you will surely enjoy the experience.

MEASURED PERFORMANCE

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REVIEW

Excellent build, superb connectivity and feature count plus a spacious and powerful sound make this an essential audition - if you've got the house room!

AESTHETIX CALYPSO £3,395 Audio Reference Ltd.
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FOR
- build
- connectivity
- powerful sound
- even-handedness

AGAINST
- size
- competition

The Calypso uses a 12AX7 in its input stage and a 6922 in the output stage, but this preamp is able to use most variations on this valve, and this makes a considerable difference to its tonality. I found the 12AX7WB to have a lower mid richness which did not entirely suit my system, whilst the 12AX7LP and 12AX7LPS both gave the Calypso greater extension in the higher registers and a more even sonice balance throughout the frequency range, whilst substituting ECC83s tended to fill out the midrange somewhat and make the lower registers a little looser. I personally preferred the Sovtek to the Teslaw valves, though I have heard both Telefunken and Siemens NOS valves can bring further improvements in transparency and resolution. The 6922 valves again can alter tonality, though not as dramatically as the input valves, but very accurate matching of these items is critical, otherwise a channel imbalance may result, as I discovered when I tried a pair of unmatched 6922 and found a significant imbalance in output levels. Whilst this review used Sovtek valves, I would urge owners to try alternatives to suit personal taste.
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Adam Smith lends his educated ears to the new Cardea C2 loudspeaker from Kudos Audio...

If my rather dusty memories of the equally dusty Classics room at my school serve me correctly, according to Roman mythology Cardea was mainly famous for being the goddess of thresholds and door hinges. Now, personally I cannot remember any shrines or churches dedicated to any deity of door furniture, although I could be wrong, but upon poking round the Internet to confirm my memories, I discovered that one of her secondary roles was as benefactress of craftsmen, no less.

I was especially interested to learn of this secondary role for Cardea, having just unpacked the Kudos Cardea C2 loudspeakers under consideration here. Whether the chaps at Kudos have been praying or sacrificing small mammals to the aforementioned celestial being I do not know (and am not sure I want to, if the latter is the case...) but, as the Cardea C2s are some of the most immaculately built and finished loudspeakers I have seen at any price, it appears that she has suitably rewarded their use of her name!

Kudos Audio will be a familiar name to many readers, as they have been around since 1991 and gained a good reputation for their well designed and sturdy loudspeaker stands and equipment supports. Now, it would seem to me that a reasonably logical next step for such a manufacturer would be to make...
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- Cambridge Audio Azur 440c, new, 2 months old, mint, fully boxed (£750)
- GAmy TD-C1, mint condition, only 8 months old, fully boxed (£2995)
- Audio Research CDS 1 MKII, excellent condition, black faceplate (£5500)
- Linx Classic, CDS+Tuner, all in one system, only 6 months old, black (£995)
- Musical Fidelity DX2 DAC + Transport, only 1 month old (£4995)
- Musical Fidelity MX620, 2 x line inputs, boxed, black (£4995)
- AWL Series CD, current spec, boxed, unmarked condition (£1499)
- Shading CDTX330 Omega Drive, ex-HiFi, immaculate condition (£4995)
- Resolution Audio Quintet, 2 x line inputs, boxed, black (£495)
- Manley Labs S-115, mint, original, all original, boxed (£1995)
- Manley S-115, silver finish, unmarked condition, high end (£1100)
- Krell Standard S2 SACD, silver, mint, few months of use, original box (£4095)

**AMPLIFIERS**
- Krell 3900 AMP silver, immaculate, only a few months use, fully boxed (£3995)
- Mark Levinson 380 Pre, mint, fully boxed with manual. 3 years old (£6500)
- Canaïa 4803 Integrated, black, immaculate cond, just over a year old (£2700)
- Brystro 5 ST Power Amp, silver, like new, 300hrs (£2750)
- EAR Yoshino ET4 Hybrid I, boxed, mint, 8 months old (£2800)
- Oppo A-10, ex What Hi-Fi review model, boxed as immac cond (£830)
- A-8000 MK I & II Hi-Fi World review model, boxed as new (£1320)
- Musical Fidelity A5, 25W, 6 months old, boxed as new (£1499)
- Musical Fidelity A5, mint, only a few months old, fully boxed (£4999)
- Brystro E-100 STT line amp & DAC, unmarked condition (£2350)
- McIntosh C2200 Pre, only 2 months old, boxed, simply stunning (£1330)
- J Mascost 3200 value integrated, mint, 6 months old, boxed (£4999)
- Bel Canto Evo 2 Integrated, boxed, mint cond (£2800)
- Primare 141 Integrated, black, immac, boxed with manual, 1 year old (£750)
- Musical Fidelity XD550 Integrated, only a few months, £9995
- Linn KX100 Power Amps, 2 available, both in excellent condition (price each)
- Pathos Logos, boxed, new sealed box, cancel order (£7200)
- Eastern Electric M-250, boxed, new, 2 years (2000)
- McIntosh MA257, immaculate condition, only 1 year old (£7500)
- McIntosh MC600 Monoblocks, mint cond, £7500
- Manley Labs Neo Classic 3060 Monoblocks, 24wpc, mint condition (£5895)
- Nagra PSA Power Amp, very rare, only 6 months old, immac, stunning (£2495)
- Moon P5, pre, immac, boxed, aluminium finish (£325)
- Musical Fidelity AS Int, 250wpc, 6 months old, boxed, as new (£1499)
- JE Audio P1 Amp, mint, with original packaging (£3099)
- Musical Fidelity ASX Integrated, £4099
- Primus XD P1 Pre, mint, with box, only 6 months old (£6495)
- Krell 3900 AMP silver, immaculate, only a few months use, fully boxed (£3495)
- Musical Fidelity DM25 DAC + Transport, only 1 month old (£4000)

**LOUDSPEAKERS**

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something to sit on top of those stands and this is exactly the route Kudos have taken, recently branching out into loudspeaker manufacture with a four-strong range.

Consisting of the Cardea C1, C10, C2 and C20 models, retailing for £1,450, £1,950, £2,450 and £2,950 respectively, Kudos have been cunning in the use of virtually identical cabinets for the C1 and C10 standmount units and C2 and C20 floorstanders. Where they differ is that the C10 and C20 use even higher specification SEAS drive units than the already good quality units used by the C1 and C2.

In the case of the C2, these comprise a seven inch (180mm) coated paper cone woofer and the SEAS Excel one inch (25mm) tweeter, the latter being mounted in its own dedicated sub-enclosure within the cabinet. These units are connected using a simple, low-order crossover and two pairs of terminals are provided for bi-wiring duties. In fact, Kudos lead you toward this connection method as no jumper links or connection bars are provided to join the terminals for single wiring duties. The cabinets are resplendent in real wood veneers, with a choice of Rosenut, Cherry, Walnut and the supplied Sycamore.

At 925x200x270mm (HxWxD), the C2s are compact and these dimensions include a plinth fixed to the bottom of the sturdy-braced cabinets, creating a gap through which the downward-facing bass port fires. Kudos say that this arrangement allows for greater flexibility of placement within the listening room and also confers extra stability upon the C2s.

**SOUND QUALITY**

What we have here is an ostensibly simple loudspeaker - no outlandish cabinet design, no outwardly high-tech drive units and no complicated crossover trickery. It is always interesting to audition a loudspeaker of this type as, very often, the result can be like the design in that it is competent and pleasant, if rather unspectacular. Consequently it is always a nice surprise to find that, once settled comfortably onto the Hi-Fi World sofa for auditioning, the first bars of the first track selected make you sit up somewhat. As the coffee stain on said sofa will now attest, the C2s did indeed make me sit up...

These are loudspeakers that are more than happy to strap on their oxygen tanks and take a dive right into the murky depths of music to dig out every little detail lurking therein. They have a magnificently clear and strong top end that picks out every last subtlety to lay out before you. Often, the downside of a design like this is that things can become harsh and ragged with unsympathetic material, but the C2s remained composed and clean, no matter what I fed them with, or how high the volume was pushed. A track I often use to try and provoke loudspeakers is The Corrs' 'Only When I Sleep' - a superb piece of music, but with a decidedly strident and forward recording. Sometimes this verges on unlistenable, but the C2s separated everything out very well, without disguising the decidedly challenging nature of the recording.

Another wise check with more forward sounding 'speakers is violins, as it is all too easy to make these resemble an alley cat committee meeting in their screeching and yowling. Luckily once again, the C2s proved themselves to be clean and unfazed by such material and Nigel Kennedy's version of Satie's 'Gymnopédie No. 1' was fabulously composed and vivid.

Even more encouragingly, the entire rest of the frequency range was more than up to matching the high standards set by the treble. The lift in output in the midrange region ensured that vocals were superbly centre-stage and right to the front of the mix, giving real body and depth to performances. Eva Cassidy singing 'Penny To My Name' had a magnificent aura of space around her, and the natural decay of the room in which the track was recorded was spot on. These are loudspeakers that have the ability to set up a large and expressive soundstage.

No less accomplished is the bass performance of the C2s. They have superb weight, clarity and pace and can follow complicated bass lines with ease. The only caveat I have here, however, is that, as suspected from the impedance measurement [see MEASURED PERFORMANCE] the C2s do need a firm guiding hand in the form of an amplifier with a highish damping factor to ensure that they do not become a little wallowly. As long as this is taken into account, the C2s are as firm and tight as could be hoped for, thumping out Jakarta's 'American Dream' with impressive gusto.

**VERDICT**

Kudos Audio

Dynamic, detailed and thoroughly enjoyable, they show just how well a simple design can work when properly implemented.

**FOR**

- superlative build and finish
- dynamic alacrity
- detail retrieval
- overall cohesion

**AGAINST**

- amplifier matching issues

**FREQUENCY RESPONSE**

Green - driver output
Red - port output

**IMPEDANCE**

The Cardea C2s are a little uneven in the midrange and treble regions, with a dip at around 2-3kHz and corresponding peaks at 5kHz and around 13kHz. The dip is where the ear is at its most sensitive however, so this should help to alleviate any midrange harshness that can arise from unsympathetic material. The rise in treble will add detail and presence to high frequencies. Bass output is also a little uneven with a drop in output below 200Hz before the rolloff proper commences at around 50Hz. The port fires through the bottom of the cabinet and onto a plinth, and so provides output over a wider frequency range than a conventional type, assisting bass down to its tuning frequency of 20Hz. This is good for a compact floorstander and so the C2s should have good weight and clarity to their sound.

The impedance curve shows that the C2s have a sensitivity of 86dB and a measured average impedance of 10.4 Ohms, dipping to a minimum of around 7 Ohms, so they are not a difficult load

**REVIEW**

No less so for the superb weight, clarity and pace and can follow complicated bass lines with ease. The only caveat I have here, however, is that, as suspected from the impedance measurement [see MEASURED PERFORMANCE] the C2s do need a firm guiding hand in the form of an amplifier with a highish damping factor to ensure that they do not become a little wallowly. As long as this is taken into account, the C2s are as firm and tight as could be hoped for, thumping out Jakarta's 'American Dream' with impressive gusto.

Overall, the C2s have a dynamic and lively character but without ever descending into harshness. They have superb integration across the frequency range and I thoroughly enjoyed my time with them.

**CONCLUSION**

A loudspeaker like this shows just how well a deceptively simple, yet carefully thought-out and well made design can work. The Kudos Cardea C2s are impressively constructed and turn in a superbly integrated performance. Across the frequency range they have an unerring ability to pick out the finest of details and present them with the sort of confidence and precision that separates a good design from an excellent one.

The Roman poet Ovid said of Cardea, "her power is to open what is shut, to shut what is open". Given the first part of this statement, I wonder if he had heard the C3s!
Marantz have released a new upmarket tuner, the ST-1551 with Medium Wave, VHF/FM and DAB on board. After enjoying Steam Radio in the form of Leak's lovely Troughline, Noel Keywood listens to this new-fangled electric jobbie...

Perhaps the idea of having just ten or so quality stations on VHF/FM in the UK seems quaint by today's viewpoint, but if you have ever heard live broadcasts through a good VHF/FM tuner it's difficult to argue with the idea. Stunning quality is possible, especially from well engineered live broadcasts, but quality is at the expense of variety. Digital Audio Broadcasting (DAB) was meant to answer this trade off by offering 'CD quality' we were told, whilst meeting today's desire for variety. The new Marantz ST-1551 tuner seeks to offer the best of both worlds: top quality VHF/FM as well as the variety offered by DAB - and you get Medium Wave too, but not Long Wave.

The ST-1551 is a hands-off design aimed at giving easy, fast access to preset stations on all wavebands. It does have manual tuning, but with no indicators for tune accuracy or signal strength it is better to use the presets. One hundred stations across the three wavebands can be set and manually named, using 63 character alphanumeric set, with an eight character word limit, but as DAB stations self identify and nowadays, so do most VHF/FM stations, there was little need. Tuning is carried out by spinning the horizontal wheel to select preset stations and a remote control is available, but ours came without one.

Marantz fit Radio Data System (RDS) to the VHF tuner so, for example, traffic broadcasts (TP) can be found, as can programme types such as Jazz, etc. DAB sends out a mass of info about such matters and the Marantz can receive and display it all, like most specialised DAB tuners, such as those from Pure. This includes the Bit Error Rate, which gives some idea of signal quality, but it lacks the signal strength indication the Pure tuners usefully provide. As low signal strength and burbling or breakup are an issue with DAB, it is handy to have some idea of what is coming down the aerial, especially at the price.

With tuners, quality is very dependent upon signal strength; ironically DAB was meant to break this link - but instead got entangled by it! So an expensive tuner with serious pretensions to quality like this one really needs signal quality monitoring of some sort. Marantz have even removed optional mono monitoring of some sort. Marantz have even removed optional mono switching on VHF, which also lifts signal muting so really weak stations can be found. So the ST-1551 is strictly for entertainment purposes, not for distant station searching. Having said that, our tests showed it is a sensitive tuner able to keep noise right down to its lowest value (i.e. full quieting) from just 0.5mV or more from the aerial, an extremely good result. Indoor or loft aerials can provide this level of signal if the transmitter is reasonably close, say up to ten miles or so away.

The DAB tuner will receive L Band transmissions, if or when they arrive in the UK, but this is a few years away yet I understand. L Band will allow higher data rates and better quality, but it is strictly for short range local reception because frequency is so high.

Marantz supply an AM loop aerial, and a short DAB stick antenna that connects through an F connector. VHF/FM connects via 75 Ohm coaxial panel plug as usual.

Weighing 12.3kgs this is a heavy tuner, solidly built and finely finished. Measuring 416mm deep, 440mm wide (17in) and 123mm high it is sizeable by any standards. The traditional Marantz horizontal spin wheel span freely, if not quite with the vigour of earlier tuners that used this tuning role. However, in this case the wheel is used for jumping between preset stations, rather than spinning across a frequency band quickly and its action suited this slightly different role.

On my aerial, a multi-element high gain array pointing at Wrotham, which serves London's BBC VHF/FM stations, the Marantz tuned in three Radio 3s, two Radio 2s and two Radio 4s, memorised into adjacent presets. These comprised the main Wrotham signal and signals from distant transmitters at different frequencies. I realised that Marantz have included a form of logic that causes the tuner to scan a waveband, like VHF/FM many times, first storing powerful stations in A1-10, then progressively weaker ones further up the alphabet. It may work with an 'average' aerial however Marantz have defined it, but it did not work with mine. It's best with this tuner, like many auto-tunes, to find local station frequencies, then tune in and preset manually.

This problem didn't occur with DAB. The ST-1551 tuned in London's DAB stations perfectly, in the same efficient manner as most DAB receivers.

**SOUND QUALITY**

Kicking off with Radio 2 on VHF/FM, a good benchmark for quality allied to high signal strength where I live,
music in The Steve Wright show was perfectly clean and concisely composed. I’d noticed from days of listening and comparison with a Leak Troughline that the Marantz was always super clean sounding on VHF/FM, even in London’s crowded airwaves at night. This reflects the tuner’s excellent selectivity in particular. Whilst Steve Wright’s voice did not sound very fulsome - probably due to the mic - Eric Clapton’s ‘Wonderful Tonight’ had strong yet supple bass, superb instrument placement and Clapton’s guitar strings had plenty of snap to them. This is a tuner with sweet sounding treble - and no lack of it. That’s not to say it has a bright tonal effect didn’t help Steve Wright sound a slight forwardness to music, This reflects the Troughline’s excellent selectivity in particular. Whilst Steve Wright’s voice did not sound very fulsome - probably due to the mic - Eric Clapton’s ‘Wonderful Tonight’ had strong yet supple bass, superb instrument placement and Clapton’s guitar strings had plenty of snap to them. This is a tuner with sweet sounding treble - and no lack of it. That’s not to say it has a bright tonal balance, just that it is sparklingly clean and open. It does have an upper midrange sheen though, that brings a slight forwardness to music. This effect didn’t help Steve Wright sound especially fulsome.

Switching to DAB was not always the shock it was once, because the BBC have upgraded its mp2 broadcast compressors, but nevertheless Radio 2 on DAB (128kbps) was a small notch down in quality, with considerably less inner detail, plus some general coarseness and confusion; it was passable for portables.

I had less luck with Heart Service had authentic crackles and some noise at 64kbit/s, it’s clean and open on DAB of course, but not all evocative like this! The ST-15S1 is a reasonably easy to use, as any modern tuner should be, if not to set up. Tuners of this price and pretension should have some form of signal strength display I feel, to let their owners know whether their expensive acquisition is able to deliver its full potential. Otherwise, this tuner is a fine example of Marantz’s very high standards of radio engineering, honed to deliver not just good tech specs but fine sound quality too. It’s a great performer and an able partner for Marantz’s high end amplifiers.

MEASURED PERFORMANCE

<table>
<thead>
<tr>
<th>Distortion (50% mod.)</th>
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<tr>
<td>Hiss (CCIR)</td>
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<td>Sensitivity</td>
<td>stereo</td>
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<td></td>
<td>signal strength meter</td>
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<tr>
<td>mutes at 11µV</td>
<td>48µV</td>
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</tbody>
</table>

FREQUENCY RESPONSE

- Superb build and finish justifies price.
- VARANTZ ST-15S1 £700
- MARANTZ UK
  - +44(0) 1753 680868
  - www.marantz.co.uk

**VERDICT**

- superb clarity
- insight
- low noise
- no useful indicators
- limited facilities
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Since I've been listening to turntables professionally for 32 years and am aware of the pitfalls of ultimate proclamations, I hesitate somewhat to make this statement. Nevertheless, it is true. The level of musical communication available from the Illustrious/Aurora Gold is in a class by itself. It sets a new reference."
Hard as it may be for many audiophiles to accept, but wireless music players such as this might one day outsell Compact Disc players. The idea is simple: more and more people are now storing their music on their Wi-Fi enabled computers (in either compressed or, more often uncompressed formats), so why not 'beam' this music from the PC or Mac to a box such as this, which is designed to plug directly into your hi-fi system, just like you would a CD player? This done, you have access — via the supplied remote control — to your entire computer music library at the touch of a button, making the idea of physically loading and/or unloading digital discs seem as quaint as dropping a needle into the groove of a vinyl record. Moreover, you also have Internet Radio, which means some 2,500-plus stations from all around the world, some streaming at considerably higher bit rates than DAB.

MagicBox market two versions of the IMP (Internet Music Player), both retailing at around £130. The standalone 'radio' was recently favourably reviewed in these pages, but this is the hi-fi-specific IMP Adapt which sports a line level audio output designed to go straight into your amplifier’s auxiliary input. The package includes a power adapter, mini-jack to RCA phono interconnect, remote control (with AAA batteries) and a user manual. The unit itself is compact, measuring 180x60x55mm and elegantly finished in silver with black trim, and black end panels. The right hand end cover can be removed to reveal the DC input socket and audio output socket. The fascia sports a good-sized blue backlit display, and for those with less than 20:20 vision there’s a Zoom mode, which doubles the size of the characters on the display.

Setting up is an easy and intuitive process involving a series of screens offering choices that can be answered using the remote control. If WEP or WMA encryption is involved, you’ll be prompted for the access code — in all cases, the Wi-Fi works flawlessly, and once you’re logged on to a suitable network you can use the remote’s navigation buttons to select stations either by location or genre. In menu mode, the screen displays the various setup options or details of the currently selected radio station; alternatively it can be used in volume mode to display and/or adjust the audio output level.

Obviously, the MagicBox IMP Adapt’s sound quality depends on the bit rate of the files it is streaming, but on high quality 320kbps CBR AAC it turned in a respectable performance at the price; not quite up with the SlimDevices Transporter (at nearly ten times the cost), but decent all the same, with good levels of clarity and a smoothish and enjoyable sound that was inevitably lacking at frequency extremes. It streams .mp3, .wma, .ra, .aac and .ogg files. Spending twice as much on the likes of a Roku SoundBridge will yield sonic rewards, but is only worth the extra outlay if you’re a serious ‘power user’ of computer audio. It’s a fine bit of kit considering the lowly price, with just one drawback — the fiddly remote control. In this one respect at least, the next generation of audio has a lot in common with the last...
Adam Smith takes a trip back to the eighties courtesy of Mordaunt Short’s System 442 loudspeakers...

It is becoming ever easier to, "remember the good old nineteen eighties", as the Electric Light Orchestra sang in 1981, thanks to the decade's revival that has been happening recently. Musical artists like ABC, Gary Numan, The Beat and Duran Duran are enjoying new levels of fame and we are even seeing the return of dubious fashion items like legwarmers and scrunchies. The Porsche 911 and VW Golf GTi are still on sale and I have even considered rummaging around in the depths of the loft for my old Filofax, ready to plan for when "my people call your people" for a spot of 'networking'.

It even seems that this interest in the decade of my youth has extended to the hi-fi circle. My regular perusal of internet forums and eBay leads me to conclude that the small, well designed 'cottage-industry' components from this era made by the likes of, amongst others, Myst, Onix, Inca Tech and Nytech are fetching healthy prices. Loudspeakers are another interesting area, as this particular aspect of hi-fi underwent something of a renaissance around this time.

The 1970s idea of lots of big drive units in a big, floppy box finally gave way to seriously thought-out design with new exotic plastic cone materials appearing, and computer-aided measurement and design giving us the likes of the Celestion SL6, covered by Dominic Todd in the May 2007 issue of Hi-Fi World. Manufacturers finally started to think 'out of the box' with their designs, however only one manufacturer took this literally...

Mordaunt Short began life in 1967 and felt that the time was right to celebrate their 20th anniversary by making something different from the worthy budget designs that made their name, such as the Carnival, Festival, Pageant, and the subsequent MS series units. The route that designer Phil Ward took was to attempt to minimise the role of the cabinet in the reproduction process, effectively isolating the drive units from it. Mordaunt Short's reasoning at the time was that the cabinet has the potential to store energy and then re-radiate it at the listener, adding colouration and distortion. As anyone who has heard a big, resonant '70s design will know, they had a point!

In the case of the System 442s, this meant constructing the whole loudspeaker around a substantial central stand assembly, to which were mounted two baffle plates. The first was set on six aluminium bars in front of the stand, and held the tweeter and main bass/mid driver. The second was at the rear supporting a second bass driver. The back driver was open at the rear of the cabinet and connected out of phase with the front unit, only operating below 250Hz. This meant that, at frequencies below this, the mechanical energy supplied by the two units into the stand assembly cancelled out, further reducing vibration. As a further aid to rigidity, both drive units were connected by a locking bar, bolted to the motor assembly of each unit and passing through the centre of each voice coil. Finally, the cabinet, designed by Roberts Weaver Design, 'floated' around this structure, supported by energy-absorbing seals and thus being effectively acoustically separated from the driver/stand assembly.

The drive unit lineup for the System 442 comprised two 6.5in (170mm) polymer coned bass drivers with rubber surrounds and a one inch (25mm) tweeter with one-piece titanium dome and voice coil former, so Mordaunt Short certainly did not take their new enclosure design and stick any old drivers in it.

All of these were connected together through a crossover that allowed for bi- and tri-wiring and -amping. Originally retailing for around £1,000, the System 442s were a suitable flagship for Mordaunt Short's 1987 range.
SOUND QUALITY

The System 442s were well liked on their launch, with reviewers at the time praising their openness and lack of colouration, suggesting that MS achieved their goals.

Listening to a well-processed pair, I was struck by how 'big' the System 442s sound. Measuring 945x260x375mm (HxWxD), they are not truly huge loudspeakers, although they are quite deep, but they do disappear superbly well when correctly set up, and it is here that prospective purchasers should be cautious.

As a result of the rear-firing woofer, the System 442s cannot be placed close to a wall - if you try this their image collapses and they sound boomy and slow. They need to be a minimum of twelve inches (30cm) away from a rear wall and can benefit from being further than this - in my room I found around fourteen inches worked best. Once positioned correctly, however, they reward with an expansive and coherent soundstage that makes it quite easy to forget they are there. Treble from my examples, which have replacement tweeters (more of which later), is very smooth and detailed, with none of the harshness that so often accompanied early metal dome tweeters.

Bass is perhaps the only area in which the System 442s are not totally convincing. Whilst their upper bass is tight, fast and detailed, they do not go very deep. Mordaunt Short originally quoted 50Hz as the lower frequency response limit, which isn't too spectacular for a decently-sized floorstander. What's more, you cannot move them closer to a rear wall to augment this, because of the rear-facing driver issue mentioned previously. Interestingly however, the System 442s respond better than most other loudspeakers I have heard to bi-wiring and bi-amping, with a further increase in depth and a tightening of soundstage.

One quirk is that the two opposing drivers do have a cancellation at one spot frequency where their distance apart is equal to half a wavelength. Although this equates to an alarming-sounding 35dB drop at 200Hz it is not something that I have ever found apparent, and so unless you like listening to sine wave sweeps you will never notice it. Overall, they are not the ultimate floorshakers but they are clean, detailed, sweet and dynamic. They are pleasingly unfatiguing to listen to and really show the benefits of their innovative cabinet design.

As a final thought, Mordaunt Short have never abandoned the isolation technologies they first unveiled in the 442s, carrying them over into the 1990s Performance 820, 860 and 880 models, and right into the current Performance series. Indeed the mighty £2,500 Performance 9 subwoofer mounts its two opposing bass drivers in a hefty metal structure, directly coupled to the floor and surrounded by a 'floating' cabinet - sound familiar?

BUYING SECOND-HAND

System 442s are not exactly thick on the ground, but neither should you have to wait too long if you have your heart set on a pair. Original cabinet finishes were Walnut and Black Ash, with the former more common - I had a wait of six months or so to find a black pair.

A big issue to watch for is the tweeter. The original unit is a German MB unit, and this is the weak link in the loudspeaker. Despite the best efforts of the 'Positec' protection system that MS fitted, the tweeters are fragile and easily blown and this is precisely how mine arrived.

Unfortunately, according to the fine people at Lockwood Audio, who provide spares for all pre-Audio Partnership Mordaunt Short 'speakers, the spares situation for the whole loudspeaker is quite simple - there aren't any! My own loudspeakers came with some replacement SEAS tweeters which work very well, but have also now been discontinued. However all is not lost, as Wilmslow Audio say that the Peerless V-Line D25AG-35-06 type is an equivalent to my SEAS equivalents, and will not break the bank at £33 each.

Replacement of any of the drivers is not for the faint-hearted, however, as the disassembly process is quite complex, owing to their design and the connecting rod between the two woofers. I have never before taken apart any loudspeaker where the first step is 'remove main driver dust cap'...

Mordaunt Short System 442s were an innovative loudspeaker that are still more than capable of showing modern designs a thing or two about imaging and soundstaging. A fully working pair should set you back around £175-£250 depending on condition, but make sure the tweeters are either working perfectly or have been suitably replaced. Haggle accordingly if not.
DIY FEATURE

Designing Speakers

Part 8 - Loudspeaker Measurements

Peter Comeau explains why you need to measure your crossover design, and how to go about it.

If you have ever looked at Noel and Adam’s measurements in loudspeaker reviews in this publication you might have wondered exactly what relevance the loudspeaker response has to the subjective comments. Indeed it is not always the speakers that have a ‘ruler flat’ frequency response that do best. In fact frequency response is only one arbiter of speaker quality. For the reviewer it is just a check that the speaker designer or manufacturer is not totally incompetent and that there are no ‘glaring’ faults. The experienced user, like Noel, can spot potential flaws and tonal inaccuracies but, in general, it is not easy to ‘see’ the character of a speaker from its response. For the designer, however, everything changes. With a little bit of insight you can quickly learn to ‘see’ potential problems from the individual drive unit response and impedance curves. How can this be?

To start with you can look at the individual ‘raw’ driver response in your chosen cabinet. If you measure the response over a range of axes, say 30 degrees horizontal and 5 degrees vertical, as well as the ‘on axis’ response, you can easily start to judge how the speaker is going to ‘sound’ in the room and how well it will integrate with other units. Combine this with the impedance plot and you’ll get a good idea of how simple, or complex, a crossover design is going to be.

WHERE TO START

Don’t let any of this preamble put you off! If you haven’t understood what I mean by ‘30 degrees horizontal’ don’t worry, I am going to lead you through it. We looked, last month, at the basics of crossover design and why you needed to be able to measure the response of the drivers in your cabinet. That doesn’t stop you selecting the best drive units for the job at the outset from the manufacturer’s data. What we are looking for are drive units that are going to make our job easier. That way we are more likely to end up with a crossover that is going to be relatively simple, not upset any amplifiers by incorporating crazy impedance phase angles, and is going to be simpler to fine tune when we start listening.

One driver I started work with last month is the SEAS H1217. This has exactly the sort of response we need from a bass/midrange unit for a two-way system. The response on axis, that is directly from in front of the driver, is nice and smooth over a very wide bandwidth. Its working response extends up to 7kHz, which is going to make crossing over at anything up to 3kHz so much easier because the crossover slope beyond 3kHz is going to be fairly linear and so will integrate much easier with a variety of treble units.

But, as we have discussed, on axis response is not everything. To obtain some idea of the true character of this drive unit, look at the frequency response off axis. To take this response the microphone is moved horizontally by, say, 30 degrees. This shows you two things. One is the response that a listener who is sitting away from the optimum listening axis will receive. The other is the frequency range that is going to be reflected from the side walls and floor and ceiling of the room. It is these reflections that largely determine the ‘character’ of a speaker in a room, so always check them, especially when you are designing your crossover. So look at the 30 degree response (the thinner line below the main response trace). Here you can see that the response is still smooth up to 3kHz and beyond. The trace below is at 60 degrees and the output here has a dip at 3.5kHz due to interference from the outer parts of the cone, but this shouldn’t concern us much at this stage.

Similarly the impedance plot (the very bottom trace, which is plotted against the index on the right hand side of the graph) shows only a small perturbation around 800-1kHz. This indicates that the cone breakup
The points at which the cone stops behaving as a true piston and only the inner sections of the cone are producing high frequency output is nice and smooth. This augers well for a clear, low coloration, midrange performance.

Applying the same criteria to a treble unit we can look at a dome unit from the same stable, the SEAS H1189. Again what we are looking for here is a smooth response to way below the crossover frequency, and no peaks in the upper treble area. H1189 extends smoothly beyond 20kHz and has a low fundamental resonance at 550Hz.

Once again the off-axis responses tell us something more. At 30 degrees the response holds up very well to beyond 12kHz, which will help maintain the 'character' of our final speaker design and deliver good quality treble to listeners sitting off the 'sweet spot'. The peak at 30kHz indicates that this is the primary dome breakup mode — well beyond the limit of audibility thankfully.

The impedance plot shows the well damped fundamental resonance (this unit has ferrofluid damping and a rear chamber). Overall this unit should work nicely with a second order or third order crossover, we hope.

MEASURE FOR MEASURE

Of course you are free to select your own drivers from the extensive range that is out there — just bear in mind the criteria I have outlined when doing so. As far as cone and dome materials are concerned it is easier to avoid the exotic unless you have plenty of experience dealing with their occasional difficulties. For example ultra stiff cones, such as aluminium, will have high frequency resonances which you will have to suppress with a notch filter. With a bit of experience you could incorporate this into your crossover, but it is a problem you could do without when just starting on the speaker design road if you ask me.

So let us get the measurements underway. As I said last month there are now several systems that you can use to generate a frequency response from your speakers. The old method was to take the speaker into an anechoic (without reflections) chamber and sweep a slowly increasing frequency range into the speaker and plot the output from a calibrated microphone on a graph paper.

The modern method is to feed a pulse into the speaker which contains every frequency we want to measure and to use a computer to analyse the output of the calibrated microphone. Now there are several advantages to this method. The major one for the home designer is that we no longer specifically require an anechoic chamber. Because we are just measuring everything from a pulse we can select only the pulse and ignore any room reflections which will arrive later at the microphone.

We mentioned last month that the great grand daddy of MLS is the MLSSA program. This has become an industry standard for speaker designers but is sadly outdated by its DOS interface and requirement for a full length ISA card which you can't put into modern computers. Another frequently used system that features an MLS option is CLIO, and this is the system that Noel and Adam use for loudspeaker measurements in the magazine. As an all-in-one solution, complete with calibrated microphone, CLIO is very versatile and will get you up and running quickly, but it is not cheap.

So to get you going I suggest a ‘home made’ system that you can use with any computer. Proper, calibrated, measurement microphones are expensive, but for our purposes we don’t need them. All we need is something that has a flat frequency response. Now you might think that all high quality mics are like that, but they are not. Mics often have a ‘presence boost,’ in the midband to highlight vocals, and rarely have an extended response at bass or treble ends of the spectrum.

One relatively low cost mic that will suffice for our purposes is the Behringer ECM8000. You can pick this up for £33 from a variety of sellers, such as Digital Village (www.dv247.com) for example. This is a condenser type microphone which is ruler flat from 20Hz to 3kHz, has a mild 1dB lift to 20kHz and comes complete with a mic stand adapter.

Being a condenser type it does require power (15v to 48v) but this can be supplied by any microphone preamp offering what the PRO boys call ‘phantom power’. Again there’s a variety of mic mixers that will give you this, but I’ve found an all-in-one soundcard and mic preamp that interfaces very nicely with the ECM8000.

SOUND CARD

For MLS measurements you need to be able to use your computer to generate the MLS pulse and receive the input from the microphone at the same time. So your computer has to have a soundcard that is ‘full duplex’, in other words it can handle input and output simultaneously. If your soundcard doesn’t do that then I have a solution for you.

The M-Audio MobilePre USB (around £89) is an all-in-one mic preamp and soundcard that plugs straight into your USB port, so it can be used with a laptop too. It provides phantom power on its XLR mic inputs, so an XLR cable will connect straight to the ECM8000 and away you go!

Now all we need is some software to generate the MLS pulse and a method of analysing the output from the microphone. There are a few systems available to download:

(1) WinMLS. Easy to use and you can try it free for 30 days — but you need the Level 4 PRO version to generate an MLS output, so not much use for the amateur!
http://www.winmls.com

(2) ARTA. Complete, and complex, program developed by Ivo Mateljan. A demo is available and the program is £69 to purchase if you like it.
http://www.shareit.com/programs.html?productid=30069215

(3) Speaker Workshop. Clunky interface but it is free! Good support via the forum, and you’ll need it until you’ve mastered its strange system.
http://www.speakerworkshop.com/SW/Download.htm

Behringer ECM8000 microphone frequency response

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http://www.speakerworkshop.com/SW/Download.htm

Behringer's ECM8000 Microphone - an ideal microphone for a budget measurement system.
New! Townshend Rock V + Excalibur II
The latest and greatest version of the unique Rock - so new, the paint's not even dry yet!

One of the finest turntables in the world...

New! Basie 2500 Signature + Vector3 tonearm
(£5495 + £2995 including micrometer VTA)

Funk Firm Vector (£750 + arm)
Original styling and performance beyond its price range ensure this lovely deck's popularity.

New! Pure Sound A-8000 (£899)
Switchable oversampling and a valve output stage offer great musicality without loss of detail.
Designed for the A30 but great with any system.

New! Kibri Naima (£1650)
A new design from Danish company Kibri. They call it "semi omni", we call it "fantastic"!

New! Hyperion HPS-938 (£3750)
One of our longer standing "evergreen" speakers which has a deserved cult following, a taste of the exotic at a fraction of the price!

New! Duevel Planets (£799)
Hot off the drawing board these cute omni speakers fill your room with high quality sound.

* Please ask about our ex-demo stock; many items are virtually as new but with large reductions

* We deliver by Business Post 24hr service (subject to stock availability) and internationally by DHL, TNT or UPS
Major credit/debit cards accepted, even known to take cash on occasions!
Please visit our website for product, technical and ordering info.

Don't forget the Isoclear filter (£51 per pair)
The Speaker Workshop forum also has a discussion about using the Panasonic electret microphone for measurement. If you are DIY capable this is an excellent way of cutting the microphone costs right down as there is a preamp circuit detailed for this too.

Of course you will also need to connect the soundcard output to your amplifier. A good soundcard will produce a line level output that you can connect to the Aux input of your amplifier in order to drive the speaker. You want to avoid a soundcard that only has a speaker output as its internal amplifier can often be very noisy.

Whichever software you choose will find that it uses one channel of its input for measurement and one for reference. The reference signal is an attenuated voltage fed from the output of your amplifier. The purpose of this is to make sure that any noise or frequency response errors in your soundcard and amplifier do not affect the measurement. By comparing the output of your amplifier (the reference signal) to the output of the microphone the software can dial out any errors caused by the soundcard or amplifier output.

This type of self calibration is essential if you are to see a clean signal. Although the software is working digitally, the test signal is converted to analogue through your soundcard output, amplifier and speakers as well as your microphone and mic amplifier. Any errors in the chain will screw up your measurements and give you a false reading. Both ARTA and Speaker Workshop show you how to build a suitable attenuator and wire up the inputs to obtain the reference signal.

Note that this reference signal cannot take account of your microphone performance. In particular, in order to obtain accurate sound pressure level readings you will need to enter the manufacturer's calibration figures into the software. This only matters if you want to see the true sensitivity of your speakers. For crossover design we don’t need that level of accuracy.

FROM A DISTANCE

So, armed with our microphone and software let's look at what we can do. I'm going to use MLSSA here simply because I use it all the time, but ARTA provides a straightforward interface with easy to create graphs that will give you exactly the same results.

First off we need to measure our drive unit in an enclosure for both frequency response and impedance. The standard distance for measuring speakers is at 1m distance between the front baffle of the speaker and the front of the microphone. This is to allow for a fair degree of integration from the drive units, to integrate the time of arrival of the individual wavefronts from the treble unit and bass unit, although it would be closer to the reality of most listener's typical positions if speaker measurements were taken at 2m.

But the problem with increasing the microphone distance is that you bring the time of arrival of the MLS pulse from the speaker and reflections from nearby boundaries closer together making it more difficult to 'gate' the measurement window. So I would recommend that you stick to around 0.5m or less when measuring in a room. This will give you accurate measurements of the individual drive units, and is usually good enough for working out the starting point of a crossover.

For frequency response we want to look at the on-axis response, that is directly in front of the speaker at the height that your ears are at when you are seated. With a speaker design with treble unit at the top this usually means on the treble unit axis. For a tall speaker you could be pointing the mic mid-way between the drive units. The point of choosing this axis is to find a place which will allow you to align your crossover design to give an even response. Once you've chosen your axis of measurement stick exactly to it for all future on-axis measurements.

So, find your ideal on-axis position and run a frequency response. You will almost certainly see a deviation from the drive unit manufacturer's response. For example, as outlined last month, you’ll see the baffle step for the bass driver. Also, presuming that your mic is pointing at the treble unit, the bass unit treble output will fall off a little earlier than expected. This is because you are actually measuring the bass unit off its central axis and its high frequency output will be curtailed.

Turning to the treble unit you’ll see, here, the effects of the baffle edges and any impediment to the baffle itself. Because a dome treble unit sprays high frequencies in all directions any surface edge, ridge or hollow on the baffle will cause an early reflection which can interfere with the main output of the treble unit. This is why speaker grilles are generally considered a ‘bad thing’ when listening to speakers. Interestingly, the biggest hollow on the baffle is the bass unit cone itself, and its surround and chassis cause reflections very close to the treble unit. This is one good reason to recess the chassis of the bass unit into the front baffle.

So you will probably see a dip in the treble unit response which, again, makes it look rather less smooth than the manufacturer’s spec. At this stage I wouldn’t worry about these deviations. You could spend days trying to cure them and often the cure is worse, acoustically, than the problem.

With H1217 in an enclosure with a 20cm wide baffle the baffle step becomes clearly visible. Ignore the response below 200Hz as the gating is not wide enough to show any accuracy down here, as shown by the black bars.

H1169 in the enclosure doesn’t look much like the manufacturer’s spec, does it? The dip between 3 – 6KHz is partly due to the proximity of the cabinet edges and also due to the bass unit cone below it. Again ignore the trace below 200Hz.
**FINE-TUNING THE MLS MEASUREMENT**

To measure without an anechoic chamber we need to be able to separate out the pulse received from the speaker and the reflections from the room. Graph 1 shows the first 20mS of sound received by the microphone. You can clearly see the initial pulse from the speaker, then the output settles down to a smooth (silent) period, followed by the microphone picking up the small reflections from the room boundaries numbered 1 to 5. The first, no.1, reflection is that from the floor. This is because the floor is the closest boundary to the drive units. After that the reflections will arrive from the next nearest of the walls or ceiling and, finally, from the wall behind the speaker or the microphone.

Now, just by moving the cursor on the time display, we can tell the computer only to select the part of the pulse which falls between the cursor marks. We call this 'gating'. The cursor marks form a "gate" where the open area between the cursor marks is the period we want to measure.

Although the pulse, called a Maximum Length Sequence (MLS), contains every frequency we want to measure, the system is only accurate if the time period enclosed by the gate is long enough to capture the time taken for the lowest frequency to form a half wave. The reason for this is that the MLS, although looking to us like a pulse, is actually considered periodic by the receiving software. So, unless the gate is long enough, there will be errors in the low frequency measurement.

In fact we don't have to worry about this too much. Opening the gate too wide will bring in the room reflections, so don't do that. Keep the measurement gated to remove the reflections and put up with a curtained LF response instead. The bass end of the graph doesn't really tell you what the speaker is doing in the room anyway and, as we want to concentrate on the crossover area, we really only need to look at the midrange and treble performance.

The more seasoned MLS user will mathematically splice a measurement taken close to the drive unit to one taken at 1m. This effectively gives a good indication of the bass performance in free air as the close mic technique (usually around 1cm from the driver) avoids all reflections. It doesn't tell you how the speaker works in a room, though, so the amateur designer is better off using his ears. This close mic technique can be used successfully for subwoofer design though, so it is worth mentioning.

There is one trick that you can use, however, to open the gate wider. Position the mic and speaker at opposite ends of a sofa, place lots of soft cushions or pillows on it, and you should 'lose' the floor reflections. That will be as close as you can get to 'anechoic' in your living room!

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**Graph 1 - This is the impulse response of a speaker in a room. The Initial pulse is the speaker output, followed by boundary reflections 1 to 5.**

**Graph 2 - The little trick of placing microphone and speaker either end of a sofa removes the ground reflections and subdues some of the wall reflections.**

**Graph 3 - With the time gate open fairly wide these remaining reflections still cause a very jagged looking frequency response.**

**Graph 4 - We use the cursor markers to limit (gate) the analysis and 'lose' the reflections.**

**Graph 5 - This gives us a usable frequency response but with an inaccurate bass content (shown by the yellow bar at the base of the graph).**
THE IMPEDANCE QUESTION

Now let’s turn to impedance. These traces should be fairly straightforward and, with a little bit of knowledge, will help you see what is going on inside the cabinet. Each trace will have a hump at the bottom end of the drive unit’s bandwidth which shows the fundamental system resonance Fs. For a bass unit in a sealed box you will see one major peak. For a reflex system you will see two major peaks, and here it is the valley between the peaks which shows the box tuning frequency. A transmission line should look a little bit like a reflex box but with the bottom peak so low it may well be off the end of your graph. We’ll go into these in more detail when we get to the actual design stage.

The height and breadth of these peaks will depend on the amount of damping included in the system. This is important. If the peak is low, smooth and broad (low Q) you may have overdamped the system and have too ‘lean’ a bass performance. If the peak is high, narrow and sharp (high Q) the system is probably underdamped and will sound boomy or resonant.

If you see any major deviations in the impedance trace higher up the frequency scale then these indicate other problems. What you have to remember is that the impedance trace is taken from the back EMF of the drive unit – the voltage fed back from the drive unit to your computer. So the drive unit is acting as a microphone itself.

A bass cone, for example, will pick up any resonances inside the enclosure, and these will reflect as deviations in the impedance trace. So, for a floorstanding cabinet, you will probably see a small peak in the impedance trace between 100 – 250Hz. This will be the effect of the primary standing wave set up from the bottom to the top of the cabinet.

Higher in frequency you may see another peak in the trace. This may be the reflection from the back to the front of the cabinet. If the sound from the back of the cone hits the cabinet right behind the bass unit it will bounce back onto the cone if you didn’t put any damping material in this area.

You can also look for wiggles in the trace which are due to panel resonances in the enclosure. If you have an unbraced box these can be quite severe and you’ll need to apply panel damping compound to the interior of any resonant panels (you can hear these just as well by tapping the enclosure panels with your knuckles).

For a treble unit you’ll probably just see its Fs. If the treble unit has ferrofluid in its voice coil gap then this fundamental resonance will be broad and smooth indicating the effect of the ferrofluid damping. But have a look and see if there are any wiggles in the trace at high frequencies. These can indicate resonances in, or behind, the dome.

Not much you can do about these, of course, so they are only of interest as to the ‘quality’ of the drive unit design.

So, now that you’ve made a start on your measurements and, hopefully, are feeling more confident in your use of the software, what’s next? Well next month you will be happy to know that we are starting our first loudspeaker design project and, as the easiest way to teach is by example, I’ll show you how to run through a speaker design from start to finish.

MLS ‘WATERFALL’ GRAPH

You can get a clearer picture of all these resonances if you run a ‘waterfall’ graph. Some of the software I have recommended provide this facility, otherwise called a Delayed Resonance display. What the software actually does is run an FFT analysis on different parts of the output of the speaker over time. If you like it does its own ‘gating’ and looks at the speaker output after the pulse has finished as well as the pulse itself.

So what you see in the waterfall graph is the initial frequency response of the unit, displayed at the back, and then response traces taken at increasing time intervals stacked up in front of it. A perfect speaker would only have output at the initial pulse but, of course, all speakers hang on to some energy (drive units as well as cabinets) and this is output after the pulse has finished.

These ‘delayed resonances’ are shown as ripples in the response which spread forward as the time from the initial pulse increases. Now it is going to be difficult for you to separate out the resonances from the enclosure and the resonances from the room. You will need to play around with the way you use the gate markers in order to avoid room resonances creeping into the time window for the waterfall trace and this takes a lot of experiment and experience to make any sense of what is really going on in the speaker itself. But do have a go – just don’t get worried by the results at this stage.

Waterfall delayed resonance graph of H1217 in its enclosure. The ridges at 3500Hz and 6000Hz correspond to peaks in the frequency response graph and indicate minor resonances in the drive unit.
"the cassette went on to become one of the biggest selling music formats"

adam smith

I must confess to a slight nostalgia trip this week, on reading that Currys are now to stop selling blank cassettes in their stores, following in the footsteps of Woolworths and HMV, who have already stopped. They also say that they will gradually be phasing out the sale of what they optimistically refer to as 'hi-fis' with cassette decks as well.

It was way back in 1963 that Philips introduced the 'compact cassette' to Europe and, although it was originally intended for data and speech and definitely not for music, this was the free-thinking sixties, man, and so this was promptly ignored. Consequently the cassette went on to become one of the biggest selling music formats for many years.

Now, as a vinyl fan from an early age I have never bought a pre-recorded cassette in my life, but did a fair amount of recording my own over the years, both of my brother-in-law's huge record collection and for the making of various compilation tapes for the walkman and, latterly, the car. As a result, I still have fond memories of the skills that had to be mastered in order to achieve a good result. Whether it was skipping through the louder parts of an LP (which you could easily, see, unlike on a CDJ) to set your record levels; releasing the pause button at just the right moment to avoid either that thud as the stylus landed or missing the first few bars of the track; or skillfully fading out the music as you saw the tape coming to an end whilst the music was still playing, these were techniques that took some mastering.

I suspect I am also not the only one who used to religiously spend Sunday evenings recording favourite songs from the 'charts' and the knack of swiftly fading things out just before the DJ started speaking really sorted the men from the boys in recording terms. Borrowing a similar tape from friends who had not perfected the art was always an irritating experience!

As a development of open reel tapes, cassettes were a revelation, as they were convenient, compact, self-contained and, with the advent of high speed dubbing, were easy to copy. They even started to make half decent noises eventually, thanks to chromium dioxide and metal cassette variants and the superb efforts of, amongst others, a certain company called Nakamichi.

The trouble was, their disadvantages still outweighed their advantages for many people. Cassette decks are complicated beasts, owing to the need for precisely moving the tape past the head at a precise one and seven-eighths inches per second (ips). The forerunner of cassette, the open reel tape, ran at a minimum of three and three quarters ips and more usually at 7.5 or 15ips for high quality work, consequently the frequency response offered by cassette suffered, with most decks achieving an average upper limit of around 14-16kHz.

In order to achieve this performance, many moving parts were required. One or more motors need to be combined with one or more pinch rollers and capstans to drive the tape, and then there are usually at least two drive belts (I have seen up to six...) to take care of the fast forward and rewind operations, along with a whole host of rubber drive wheels, mechanical linkages to position everything and tension springs to keep these linkages in place, until needed. As a result, even the simplest decks are relatively complex beasts, and can cause an unsuspecting engineer a considerable fright when opening the bonnet of one for the first time!

It is not even the case that a hugely flourishing second hand market for such items exists, due to this complexity. Second hand cassette decks are something that even I tend to steer clear of, whilst it is possible to stumble on a good 'un every now and then, and they are not the sort of machine that you can take a quick poke round in order to ascertain its health. Whilst an operation check will tell you if all those belts are basically OK, it is impossible to check whether the heads are damaged or even correctly positioned. Some spares are still available but they require test equipment and rare alignment cassettes to set up properly, although you can get about 90% of the way there with a well recorded tape on a known good machine and a good ear. Servicing cassette decks can be something of a challenge for even the best-prepared and I can remember occasions when a simple belt change has taken me upwards of two hours, simply because of the need to disassemble the entire mechanism to get to the thing!

With the advent of mini discs, recordable CDs and now, of course, MP3s, the writing has been on the wall for the good old cassette for some time now, and it would appear that it is finally starting to come to the end of the road. Whilst a now surpassed format, I still think that, for those of us who have ever swapped compilations with our mates, carried out the aforementioned Sunday evening chart ritual, or even loaded a game onto a ZX Spectrum, the good old cassette will have a place in our hearts, for nostalgia reasons if nothing else. A moment's silence is in order I feel..."
"imagine how we'd react to a typical hi-fi system of 1973?"

As I write, the surreal BBC drama ‘Life on Mars’ has just reached its conclusion. In a way any series that skillfully taps into the romanticism of the past can’t help but succeed: we’re all susceptible to a little nostalgia. Whilst reveling in the delights of nineteen seventies fashion, brown Cortinas and dubious ethics, I couldn’t help but wonder about the hi-fi back then. Imagine how we’d react to a typical hi-fi system of 1973? Interestingly, although loudspeaker technology hasn’t changed a great deal since then, it’s probably the one part of a typical hi-fi that we’d find the most alien to our 2007 ears.

Three and half decades ago, the typical speaker was broad of girth and short of depth. It would have had multiple drive units, a flimsily (by today’s standards) constructed cabinet and complex crossover. The sound quality was, more often than not, bassy to the point of boom and certainly not all that great in terms of imaging or insight. There are literally hundreds of designs that would fit this type but, if you really had to have an example, then look no further than the Kef Cadenza.

Finished in obligatory teak, it was a three-way design with, good quality, drive units scattered across the baffle in a manner typical of the days before computer aided placement technology. The ABR (Auxiliary Bass Radiator) or ‘ractrack’ woofer was and indeed, still is something of a Kef speciality and would no doubt have lent plenty of heft to proceedings. However, I can’t help but think that broad black baffle can’t have been too good in terms of allowing the sound to breathe. Naturally, most listeners would have been blissfully unaware of what lurked beneath the stapled on cloth grill, as those were the days before it was considered de rigueur to remove it.

Hearing this speaker recently did make me yearn for something a bit more minimalist, and that’s exactly what we got in the 1980s. Whilst interior design magazines might like to think the term was created on a wave of Feng shui inspired design ten years ago, there was definitely an attitude of less is more, well before that. From the world of hi-fi speakers, early eighties designs such as the Wharfedale Diamond, Celestion SL6 and Acoustic Energy AE1 satisfied our cravings for the more discreet and subtle.

Such designs proved that a big sound could indeed be achieved from a small box, that loudspeakers really only needed to be two-way and that it was better for imaging to keep the front baffle as narrow as possible. All-in-all, we were pretty smug with our new found intelligence, even if hindsight has shown that such boxed wonders weren’t always as infallible as we believed at the time. No matter how loud they go, small boxes do compress dynamics. Then there’s the issue of efficiency. Most struggled to achieve a figure beyond the mid eighties (dB) which directly stifled the success of sweet Class-A and valve amplifiers that struggled to provide enough juice.

Roll on ‘Britpop’, and the loudspeaker climate changed once more. By now, efficiency was being seen as a more important issue. Cabinets were also getting bigger to provide sufficient power for the increasingly bassy musical tastes of the time. Crucially, lessons had been learned from the seventies and although speakers were large again, this time they were also narrow for improved imaging and used simpler drive unit arrays. For a typical nineties speaker think TDL RTL2/3 or Mission 733 and you’ll be right on the money.

So, where does this leave us today? Well, at this point, it’s hard to define a particular trend: only hindsight will be able to provide us with that. What is it possible to see, however, is a series of small changes in design. Interestingly, many saw the domination of sub/sat speaker systems as inevitable, although this never really happened. True, the likes of KEF’s KHT ‘eggs’ and the Mordaunt Short Genie systems are popular with home cinema fans, but the sub/sat formula has yet to make a great impact on the two-channel market.

I would argue that what we are seeing is a return to smaller boxes. Given that housing is becoming increasingly dense, this is no surprise. Whilst quality slipped from the obsessive eighties to the cost-conscious nineties, we have seen a recent renaissance here; especially amongst cheaper loudspeakers. Finishes are far more lustrous than they ever used to be, and even £100 cheapis now come with piano gloss paint jobs or even real wood veneers.

Finally, the speaker shape is subtly evolving. Everywhere you look edges are rounder, and there seems to be a particular fashion for the teardrop profile that increases cabinet volume whilst keeping the baffle narrow. Whilst the hero of ‘Life on Mars’ may have felt the flawed seventies a better place to be, in terms of hi-fi loudspeakers I think that the here and now is the better option. That said, I will always make time for the odd indulgence: as I write, a pair of KEF R105s are already on my shopping list...
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R

emember Alan Whicker, that much-impersonated globetrotter who many years ago used to roam the world visiting all and sundry? One week it was a rather nasty dictator, the next a super-rich lady dripping with diamonds. In many ways, Whicker was a media prophet, opening up the Pandora's Box of what we now see as 'celebrity culture'. From David Beckham to Paris Hilton, much of society is transfixed by the life, times and movements of such people.

This 'celebrity culture' is now permeating many aspects of life, and reaching as far as the hi-fi industry and beyond. Even the studio side of the recording industry has its cult figures, and a subset of that – the vinyl industry – has its celebs too, such as big name mastering engineers. Indeed, it's a symptom of the increasing popularity of vinyl that the music industry now believes we all need to know about the movements of this select bunch of people.

In fact, Rhino thinks it should shout about them from the rooftops. "Warner Brothers records with Rhino/Reprise recently announced that they have hired Steve Hoffman, one of the world's most revered mastering engineers, to undertake the most ambitious vinyl reissue programme of any major label in recent history."

We'll get to the juicy vinyl news in a minute but, before we do, doesn't it strike you as interesting how Rhino has gone about announcing this news? The above is a verbatim copy of the very first paragraph of a 500 word press release. Back in the old days, Rhino would have announced its vinyl issue programme by jumping up and down at the titles it was releasing, shouting about release dates and possibly the fancy packaging but would never have even considered to tell us who was going to master the things.

After all, a mastering engineer is a backroom boy, the guy who messes with all of that very complicated machinery, the chap who gets his hands dirty. Who wants to know about a mere record company employee? (You could imagine a nineteen seventies besuited record label executive almost spitting out those words as if he's found a bad taste in his mouth!)

It was Dylan who talked about times a'changin' wasn't it, and boy haven't they? Because of those very seventies recording industry execs, the vinyl industry was decimated in terms of research funds, hardware budgets and the supply of talent. The vinyl industry has now become a niche – a strong niche but a niche all the same. So now that vinyl is suddenly being seen as a format that record labels want to exploit – once more, the genuine talent is thin on the ground.

Supply and demand is in favour of the workers. So, when a record label, even as big as Warners, which owns Rhino, manages to pull off a recruitment such as Steve Hoffman, it's an event. Hoffman is now a star, something to shout about. "Hey! Hoffman's here! He's working for us! Sorry! The vinyl, yea, we'll get to that but, listen, Hoffman's working for us!"

Ah, the irony...

As for Rhino and that vinyl? It all sounds rather luscious. Steve Hoffman will be working with his cutting cohort Kevin Gray, at Gray's AcousTech Mastering, an outfit that has been no stranger to Classic Cuts or my audiophile vinyl review column. The records will be pressed on 180gm virgin vinyl at RTI and all are being cut from original Warner Brothers/Reprise stereo master mixes - some of which have been untouched for thirty five years.

A confirmed list of releases is rather elusive but expect to see albums such as Fleetwood Mac's 'Rumours', James Taylor's 'Sweet Baby James', Van Morrison's 'Moondance' plus artists as diverse as ZZ Top and Frank Sinatra. The announcement doesn't just relate to classic vinyl, either. Hoffman is currently working on a vinyl version of The White Stripes' new album 'Icky Thump' - sourced from "amazing sound 30ips master tapes". There will be a dedicated website where you will be able to order these titles and much more: www.becauseoundsmatters.com.

Hoffman himself said that, "the old EQ cutting masters had compromises built in to the sound of the tapes. In the old days the tapes were routinely EQ'd, compressed and sometimes filtered to make it easy for needles to track the groove. When I bypass those tapes the original untouched master mixes will reveal a whole new scene; detailed, beautiful sounding dynamic music appears, and we can cut this directly onto a phonograph record." Can't wait...
Some decisions are just so simple

WHAT HI-FI?
SOUND AND VISION
AWARDS 2006
PRODUCT OF THE YEAR
STEREO AMPLIFIERS
ROKSAN KANDY L.III

Distributed in the UK by: Henley Designs. 01235 511166 www.henleydesigns.co.uk, info@henleydesigns.co.uk
OFCOM recently announced that they would be holding a review of FM transmission in 2012, at which point they may set a switch-off date for it. Unfortunately, certain parts of the media reported this using headlines that make it sound like FM hasn’t got long to go, which will no doubt fuel the growing urban myth that FM will be switched off at the same time as analogue TV in 2012 — which I can assure you it won’t be.

To put the situation of switching off FM into context: according to Ofcom there are around 150 million FM/AM receivers in use in the UK, and total sales of DAB receivers currently stand at 4.6 million. Despite DAB radios only accounting for a measly 3% of all radios in use in the UK, Ofcom has bullishly estimated that digital radio listening, in all of its various forms, will account for 90% of all radio listening by 2017 — a forecast that was described as being “totally delusional” in the Sunday Herald by radio expert Ken Garner. Irrespective of Ofcom’s state of mind, they’ve certainly got a mountain of Everest-sized proportions to climb before FM can be switched off.

One thing that the Digital One document predicted that hasn’t gone according to plan was that DAB sales were expected to take off in the run-up to Christmas 2005 in Germany, Denmark, Norway, Sweden, Belgium, Holland, Switzerland, Spain and Italy, but sales remained stagnant in all of these countries other than in Denmark and Norway, and they only have a population of around five million people each.

The reason why the sales in other countries are holding back sales here is that the price of receivers in the shops is dependent on global sales volumes. So with low to non-existent sales in other countries, the UK is effectively trying to drag the selling price of DAB receivers down on its own, but there’s a limit to what the UK can achieve in isolation — for example, DVD players wouldn’t be anywhere near as cheap as they are today if they were only sold in the UK.

The UK broadcasters really need to try and get sales off the ground in as many countries as they can and as soon as they can, or else in my opinion they can kiss goodbye to their hopes of switching off FM any time before 2020.

However, those European countries where DAB sales haven’t taken off will adopt the new DAB+ system, not DAB, so if the UK broadcasters want to help stimulate sales in these and other countries they need to introduce DAB+ receivers into the UK as quickly as possible, because the UK is the only country with sales high enough to bring the price of new receivers down to generally affordable levels.

Another issue they face is that all digital radio stations will have switched to using DAB+ long before FM can be switched off, so any delay in introducing DAB+ receivers into the UK will simply put back the date at which FM can be switched off.

As the broadcasters would like to switch off FM as early as possible (because, amongst other things, it’s expensive to transmit DAB and FM simultaneously), it is odd that they’re apparently taking such a laissez-faire attitude towards getting DAB+ receivers into the shops. For example, despite new DAB/DAB+ receiver modules being available, I’ve been told that only the mid-priced and higher-end models will support DAB+ at first, and the entry-level receivers that are using these new modules won’t support DAB+, even though it costs a pittance extra to add it.

However, Channel 4, which is moving into radio, has estimated that all new portable radios would support DAB+ within the next two years, but if it takes that long I can’t see how they’ll be able to switch off FM before 2020, because it would leave too little time to replace all of the FM/AM receivers in use. For instance, when exactly are they proposing that cars will be produced with factory-fitted DAB+ car stereos?

Personally, I’m not against FM being switched off, because by the time it could happen I’m confident that we will have near-CD quality - or possibly even CD-quality using lossless compression - radio delivered via Internet multicasting [see p36 for more information on this - Ed.] and DAB+ will have vastly improved the audio quality available on the DAB system as well. But if they want to switch off FM as early as possible, and I’m sure they do, they’ve certainly got a funny way of going about it.
Battery powered Sutherland PH3-D phono stages now in stock

This American phono stage has rave reviews. Batteries will last up to 1200 hours. Black Cat 2 box battery powered Phono stage. 2 versions MM and MC made to order to match any cartridge. Rechargeable batteries.

The Beatles - Love Album
From the Vegas show you like it in CD. Now really hear it £29.75

Ten Drum Art Percussion
This will show deep your system will go.

Following the success of the Hercules Power Supply, Stamford Audio are pleased to announce the Hercules is now also available from the following dealerships:

Audio T, Grahams, Doug Brady Hi Fi, Billy Vee, Sound Gallery and Cymbiosis of Leicester.

We also now stock Black Cat Panther Wire which is designed for Lowther speakers!!

Stamford Audio Ltd Tel: 0845 603578 www.stamfordaudio.com
S
o what's the most boring site on the internet? Well, how about one that features pictures of aerials? Go to www.mb21.co.uk and you will see what I mean - except that the pictures are anything but boring! Windswept moors, sunsets and even aerials with a crescent moon behind can all be found on this unusual website, as well as pictures from the tops of tall transmitters showing the surrounding countryside. I wonder whether big transmitters will continue to be imposing sentinels atop tall hills in future, because the nature of broadcasting is changing?

In the fight to reach you, broadcasters are going all out to perfect new ways of delivering movies, television and music to us all, in our homes and on the move. Aerials of the large transmitting type seen on mb21, often with romantic names like North Hessary Tor, don't easily fit this new scenario. The BBC once owned and ran them all, but those days ended some time ago when the nature of broadcasting started to change. If you are interested in this as I am (sad I know!) go to www.uk.nationalgridwireless.com who are now the keepers of the UK's aerial network and talk about the heritage.

Nowadays, we need small, pocketable radios, televisions and mobile phones. Small devices demand small aerials, which is the main reason, believe it or not, that those giant masts on distant hills are likely doomed. Small aerials are only efficient at high frequencies, and so it happens that we must use high frequency transmission to carry many channels of digital video. So where once a Roberts Medium Wave valve radio with its telescopic aerial could receive programmes from a giant transmitter a hundred or so miles away, nowadays the scene is altogether different and more demanding.

Small aerials have become big business; you can read about a new one for mobile TV at www.siano-ms.com. This tiny chip measures just 15x10mm and is designed for a new generation of mobile devices. Working across a very high frequency band from 470MHz up to 870MHz, signals of such short wavelength are easily absorbed and deflected by buildings, hills and trees. Consequently, the old scheme of placing transmitters on distant hills, such as those you can see on mb21, is slowly dying out as they transmitted much longer wavelengths. As Siano say, people nowadays are not prepared to pull out a telescopic aerial; it just isn’t cool, hovering somewhere near to 1980s brick-sized mobile phones as an inane fashion accessory.

Nowadays we need aerials for much, much more than analogue television and radio. Those old mast and new ones now carry DAB, public service transmitters, digital terrestrial television (Freeview) and much else. But all is not going too smoothly in the changeover. As the Navy’s old VLF (16kHz) submarine transmitter masts are torn down at Rugby, symbolic of the passing of the old, the new isn’t being greeted with universal enthusiasm. In place of those old masts sited far from view we now have a visible and intrusive national network of small transmitters dotted along motorways and secreted atop tall buildings in urban conurbations, including schools. I don’t blame people for being suspicious about the potential health risk posed by these things quite frankly, as powerful microwave transmissions aren’t especially friendly to living things. Whether they are directly responsible for health problems or not, I somehow wonder whether the whole idea of erecting yet more to handle L Band DAB transmissions is a good idea?

The alternatives of satellite and cable seem to offer more bandwidth together with less intrusiveness. Whether satellites will ever have enough power to feed personal mobile devices successfully is an interesting question. America has the Sirius satellite broadcasting system that offers high quality radio, and we have BSkyB of course, but both need large-ish aerials to gather a weak signal and if people are reluctant to use telescopic aerials nowadays I don’t think they will take to carrying around satellite dishes for the mobile phone.

In the home though, the picture is rather clearer. Britain will be getting much improved broadband in the next few years, offering 24Mbps download speeds and this may well tip the balance toward receiving quality broadcasts via cable, spelling the end of the roof mounted aerial. I can’t help feeling this might help improve UK broadcast quality standards to those enjoyed by the French and Germans, who have not sacrificed quality to quantity in the peculiarly crass way Britain has. Then it will take time and a lot of concerted effort from people like us at Hi-Fi World to try and convince our somewhat parochial and naive broadcast establishment that quality is valuable, which is why we are getting HDTV for example, and that it isn’t either wise or necessary to sacrifice it completely for quantity.

It is bizarre that some fifty years or more after Britain commenced VHF/FM transmissions from those huge masts on distant hills, radio sound quality has deteriorated rather than improved. Those old aerials did a good job and I will enjoy looking at pictures of them for a few more years yet.
ROB MULLENDER, WOODEN SPOON, THE EIDETIC BAND, LADYSWOODSMAN

**Free London**

Bo'weavil

A seriously leftfield record label, Bo'Veavil concentrates on folk and free improvised music. Free London' features new Avant-Garde Folk, known simply as Avant-Folk. Each of the artists, on this double album limited to 550 copies, takes a single side for themselves so this is a compilation of artists as opposed to a combined artistic project. "They use traditional instruments that are synonymous with folk but in a more improvisational format," said label boss Mark Morris. "The artists come back to traditional formats or borrow melodies from other folk tunes. It is a scene that's been around for around ten years."

Music of this type requires a sympathetic production team, "I have to sit in on the cut to see what the guy's doing, just so I know that he understands the music that he's dealing with, that later in the record there may be a louder more freer part of it that he might not take into account," said Morris.

That is just for the act of cutting the record itself. The actual mastering, especially for this album, was done by the artists themselves. "This makes sense because each side of this record sounds vastly different."

Rob Mullender's instrumental acoustic guitar is quite studio-like whilst Ladyswoodsmann's more experimental effort sounds like it was recorded in a bare room. "It was," replied Morris, "for Wooden Spoon, you can hear the air around the recording. He uses a quarter-inch tape machine and it's the sound he very much wants. It makes you feel that you're stepping into a field recording from the 1960s." It certainly helps to give this form of music a uniquely English sound.

**AUDIENCE**

**Audience...Plus**

Akarma/Polydor

Originally released in 1969, Audience (which consisted of singer/guitarist Howard Werth, saxophonist Keith Gemmell, bassist Trevor Williams and percussionist Tony Connor) can be described as 'early prog' in style. Their music on this, their debut album, showed that typical approach that many similar bands of the time were struggling with.

Audience were part of a conglomeration of developing artists: those who were immersed in the typical blues/rock style that was awash on the scene at the time and those bands, like Audience, who were wanting to move forwards and try something new and more complex – more prog-like, in fact. The tracks on this album reflect this struggle.

'Banquet' is a mixture of Genesis vocals and Van Der Graaf Generator sax-based vibes - which is odd because, when Audience would later sign for the Charisma label, they would tour with both bands. The second track on the album, 'Poe', is pastoral – very acoustic in approach with both acoustic guitar and flute. The third track, 'Waverley Stage Coach' features a blues vocal but with prog-like time signatures. Those signatures would be a little more developed in the track, 'Heaven Was...
An Island'. However, blues rock is always there, trailing the album like the tail of a comet, slowly becoming detached but still forming part of the whole.

As the band developed, they were noticed by Charisma Records' Tony Stratton-Smith who signed them up to his label. Audience went on to record three albums with Charisma. This debut effort is a welcome re-release and Akarma should be praised for making the vinyl issue available again (the 'Plus' moniker reflects the inclusion of three bonus tracks) because the album's rarity value means that original copies change hands for upwards of £200 each.

THE PRETTY THINGS
The Pretty Things
Sundazed
One of the bands that formed the British Invasion, this album from 1965 showed the Americans exactly what 'shock and awe' was all about. They even put fellow invaders, The Rolling Stones, in the shade when it came to raw, punk-like power (actually Dick Taylor, on guitar, was part of an early incarnation of the Stones). Sundazed was fortunate to grab the original master tapes when they produced this sparkling reissue, as CEO of the label and album producer, Bob Irwin, explained.

"The masters were in wonderful shape - with very little work needed. It was definitely a 'less is more' scenario. There is an art to know when not to mess around with something! Several of the previous editions of this material sounded very harsh compared to the original US releases - we strived to capture the original, authentic sound of the recordings."

When creating this new re-release, the label referenced it against the first pressing of the original US Fontana album, "we made sure that we matched the sound of that record, which was always our goal", said Irwin.

In fact, the label has been close to the band for some time, although none of the band were included in the remastering. "We've known members of the band for many years, confirmed Irwin, "but this was a very straightforward affair - not at all a complicated or involved mastering project. This was a full-track mono tape, it sonically resembled the release envisioned on the original vinyl pressings from the 1960s. In the near-future, we'll be applying the same philosophy to our upcoming 12" vinyl release of 'S.F Sorrow'." Good news for all Pretties fans, then - 'S.F Sorrow' was the first rock opera - it even gave Pete Townshend the idea for The Who's 'Tommy'.

CRAIG MOORE, RUDI PROTRUDI, THE OTHERS
Yellow, Purple And Green
Fuzztones
Salt For Zombies
Teen Sound
Both these new re-releases are limited: The Others to 300 copies and the Fuzztones to just 300 copies. Both LPs feature one Rudi Protrudi, who is also the lead singer on both. The style is garagepunk. However, in this case, not from an American suburb during the mid-1960s but from Italy during the late nineties and early noughties when the style was continuing a revival and many European bands were not only aping the music style of the early garage bands but also dressing like them too. Both have just been released via the Italian record label, Teen Sound.

Massimo del Pozzo, label boss and founder of The Others has been adamant that the aim of the label has always been to keep alive the sounds of the 1960s, and vinyl has always been an iconic part of that ethos.

"Since the start, we've always supported vinyl, as a matter of fact it's been the only format we've used until the very early '90s. To me it's simply the 'real thing', the way music should be recorded and produced for, not just listened through."

He uses Delta studios in Italy to produce his records, "Delta uses a 24 track mixing desk and analogue machines from the 1970s and early 1980s but also some vintage 1960s kit and various effects units from that era. In addition, they hold vintage organs and pianos, a 1968 Ludwig drum set and lots of exotic percussion."

Both albums have the same sixties vibe, very analogue-like in production, lots of energy - you can imagine the bands throwing themselves around the stage - and both vaguely American West Coast in direction. Recommended to garage fans, from both eras.

CONTACTS:
Diverse Vinyl
+44(0)1633 256261
www.diversevinyl.com
Stamford Audio
+44(0)1223 894999
www.stamfordaudio.com
Lucy just couldn't understand Tom's sudden lack of interest in an early night.

Superb Hi-Fi......
Just a little more desirable than the norm.

Distributed in the UK by: Henley Designs, 01235 511166, www.henleydesigns.co.uk, mial@henleydesigns.co.uk
In this heavily revised section, you'll find the great and the good from audio's glorious past. Most are seminal designs which have earned their place in hi-fi history, but 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. Think we've overlooked something? Then write in and let us know!

**Digtal**

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

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

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

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

**Marantz SA-I** 2000 £5,000
The greatest argument for SACD. This distinctive machine squeezed every last ounce from its 14x4 DAC - superb musical.

**Meridian 207** 1988 £95
Beautifully-built two-box with pre-amp stage. Very musical although not as refined as modern Bitstream gear. No digital output.

**Musical Fidelity Trivista** 2002 £4000
When playing SACDs, the sweetest, most lucid and lyrical digital disc spinner we've heard. Old school stereo, pure DSD design. CD sound is up in the £1000 class, too!

**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. Sonically, it's pure fun, with hefty bass that can still show weedy modern players a thing or two!

**Yamaha CD-XI** 1983 £140
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.

**Compact Disc Transports**

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

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

**DACs**

**Cambridge Audio DACMagic** 1995 £99
Good value upgrade for budget CD players with extensive facilities and detailed sonics.

**Dacs**

**ESOTERIC P0** 1997 £8,000
The best CD drive bar none; TEAC's Tokyo boys pushed the boat out in style. Brillantly incisive, ridiculously over engineered.

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

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**Dacs**
**CLASSICS**

**TURNTABLES**

**ARISTON RD115** 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.

**PIONEER PL12D** 1973 £36
The beginning of the end for the British turntable industry. When vinyl was th; 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.

**PIONEER PLC-S90** 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.

**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.

**GOLDRING LENCO GL75** 1970 £15.65
Simple, well engineered motor unit with soft, sweet sound and reasonable tonearm. Good spares and servicing support even today from specialists. Eminently tweakable. Similar 88 and 99 motor units are budget 301(TD124) rivals.

**LINN AXIS** 1987 £253
Simplified cut-price version of the Sondek complete with UTX arm. Elegant and decently performing mid-price package. Later version with Akito tonearm better.

**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.

**TECHNICS SP10** 1973 £400
Seminal Japanese engineering. Sonics depend on plinths, but a well mounted SP10II will give any modern a hard time, especially in respect of bass power and midband accuracy.

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

**MICHELL GYRODEC** 1981 £599
Thanks to its stunning visuals, this bold design wasn't accorded the respect it deserved until recently. Early examples sound cold and mechanical, but now right on the pace. Clean, solid and architectural sound.

**REDA PLANAR 3** 1978 £79
Brilliantly simple but clean and musical performer, complex with Alcos-derived Shaped tonearm. 1983 saw the arrival of the RBA300, which added detail at the expense of warmth. Superb budget buy.

**GARRARD 301/401** 1953 £19
Heavy metal - tremendously strong and articulate with only a veiled treble to let it down. In many respects, better than the seventies 'superdecks' that succeeded it.

**ROKSAN XERIES** 1984 £550
Supposedly the first to 'better' the LP12. 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.

**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. Slightly complicated and with no spare support - buy with caution!

**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.

**TOWNSEND ROCK** 1979 £N/A
The product of academic research by the Cranfield Institute, this novel machine has an extremely clean and fluid sound. Substantially modified through the years, and capable of superb results ever today.

**TRIO LO-7D** 1978 £600
The best 'all-in-one' turntable package ever made. Trio/Kenwood threw their 'engineering best practice' book at this one with startling results. Clean, powerful and three-dimensional sound, ultimately limited by the tonearm.

**TONEARMS**

**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.

**AUDIO TECHNICA AT120** 1978 £35
Fina 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.

**ALPHASON HR1005** 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.

**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.
INTEGRATED AMPLIFIERS/COMBOS

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.

ROGERS A75 1978 £220

The prototypical Audiolab 8000A — lots of sensible facilities; a goodly power output and nice sound in one box. The Laser A75B and A100 versions offered improved sonics and were seriously sweet and open to listen to.

EXPOSURE VI/VI 1985 £625

Seminal mid-eighties Exposure pre-power, offering most of what rival Naim amps did with just that little bit extra smoothness and sweetness. Still, it’s by no means ‘sweet’ by today’s standards, being lean, punchy, musical. It’s also possessed of that quintessentially eighties look — frumpy black steel boxes with limited inputs via DIN sockets. A sweet and endearing performer as you’d expect, but lacking in power and poor load driving ability, partner carefully.

VTL MINIMAL/50W MONOBLOCK 1985 £1,300

Budget valve pre-amp with exceptionally clean, open, lively sound. Brilliantly smooth, sweet and punchy at the price and even has a better phono stage than you’d expect. The archetypal budget super-amp.

SUGDEN CS1/PS1 1976 £130

Soft sounding early Sugden combo with a plethora of features and filters, complete with seventies-tastic DIN socketry. A sweet and delicate performer as you’d expect, but not half bad for under £100.

NAIM NAIT 1984 £350

Superb rhythms and dynamics make it truly musical, but tonally monochromatic. Fine phono stage, very low power.

NAD 3020 1979 £69

Decently clean sounding when working. Better than the 22, but Quad’s first tranny pre isn’t outstanding. Responds well to tweaking/rebuilding though.

MISSION CYRUS 2 1984 £299

Sweet sounding valve integrated, uses ECL86 output valves, even has a half useable phono stage, sweet, warm a good introduction to valves.

MUSICAL FIDELITY A1 1985 £350

Beguiling Class A integrated with exquisite styling. Questionable reliability.

NAIM NAC32.5 1978 £N/A

The Salisbury company came of age with this, their classic high end pre. Brilliantly fast and incisive sound that’s a joy with vinyl but a tad forward for digital.

LECON AC-1 1973 £N/A

Amazing styling courtesy of Allan Boothroyd can’t disguise its rather clunky sound, but a design classic nonetheless.

QUAD 22 1958 £25

The partner to the much vaunted Quad II monoblocks — cloudy and vague sound means it’s for anacrophiles only.

QUAD 33 1968 £43

Better than the 22, but Quad’s first transistor pre isn’t outstanding. Responds well to tweaking/rebuilding though.

MYST TMA3 1983 £300

Madcap eighties minimalism, but a strong and tight performer all the same.

LECON 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.

CREEK CAS4040 1983 £150

More musical than any budget amp before it, CAS4140 loses tone controls, gains grip.

AUDIOLAB 8000A 1985 £495

Smooth integrated with clean MM/MI MC phono stage and huge feature count. Extremely reliable, too. Post ’93 versions a top used buy.

ROTAL RA-820BX 1983 £139

Lively and clean budget integrated that arguably started the move to minimalism.

AUDIOLAB 8000C 1991 £499

Simply grey but fine phono input and great facilities make it an excellent general purpose tool.

MINTΟNOSH MA6800 1995 £3755

Effortlessly sweet, strong and powerful with semial stylings to match.

SUGDEN A21 1969 £N/A

Class A transistor integrated with an eminently likeable smoothness and musicality. Limited inputs via DIN sockets.

MISSION CYRUS 2 1984 £299

Classic eighties minimalism combines arresting styling with clean, open, lively sound. Further upgradeable with PSX power supply.

MUSICAL FIDELITY A1 1985 £350

Beguiling Class A integrated with exquisite styling. Questionable reliability.

AUDIOLAB 8000C 1991 £499

Beautifully designed and built high end tube preamplifier with deliciously sweet and smooth sound. Not the last word in inkling or grip, but that didn’t matter to those who aspired to it.

CONRAD JOHNSON MOTIV MC-8 1986 £2,500

Minimalist, FET-based preamplifier from the Yank valve specialists is brilliantly neutral and smooth with a spray, light balance in the mould of Sugden high end stuff. Something of a curiosity, but worthwhile nonetheless.

CROFT MICRO 1986 £150

Budget valve preamp with exceptionally transparent performance.

LECON TONE 20 1985 £1,300

A brave attempt by the Glasgow boys to bring remote controlled user-friendliness to high performance valve hi-fi. Didn’t quite work, but not half bad for under £100.

LECON AC-1 1973 £N/A

Amazing styling courtesy of Allan Boothroyd can’t disguise its rather clunky sound, but a design classic nonetheless.

LECON CADET III 1965 £34

Excellent workaday classic valve amplifier with decent power and drive. Surprisingly modern sounding if rebuilt sympathetically. Irrespirably musical and fluid.

LECON 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.

MCINTOSH MA6800 1995 £3755

Effortlessly sweet, strong and powerful with semial stylings to match.

SUGDEN A21 1969 £N/A

Class A transistor integrated with an eminently likeable smoothness and musicality. Limited inputs via DIN sockets.
"this system is something of a musical genius"
— What Hi-Fi? Sound and Vision

A new breed
Quad L2 series Loudspeakers

The Quad 99 series electronics and L2 series loudspeakers are a match made in heaven. Detail, accuracy and refinement all combine to present one of the most musical and insightful systems available – and with our new 99CDP-2, will integrate seamlessly into your digital world allowing up to 6* digital sources to benefit from our state-of-the-art DACs

* CDP-2 includes 3 x Optical and 3 x Co-axial digital inputs.
**CLASSICS**

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

**MICHELLE ALECTO** 1997 £189
Crisp, clean and beautifully controlled with gorgeous styling. Partnered with the £1650 Onza this sounds delicious!

**LEAK POINT ONE, TL10, TL12.1**
Early classics that are getting expensive. Overhauling is de rigueur before use, using original parts if possible. Surprisingly crisp and musical sound, that's far more modern than Quad II. Deeply impressive when in fine fettle.

**MUSICAL FIDELITY XA3200** 1996 £1000PR
200W of sweet smooth transistor stomp in a grooved tube! Under-rated oddity.

**RADFORD STA35 RENAISSANCE** 1986 £977
As the time, very possibly the least cool amplifier on the planet – and we’re not talking heat dissipation here. 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 dumblers is a capable design with smooth, effortless power and a decently musical sound. 606 and 707 continue the theme with greater detail and incision.

**QUAD 303** 1968 £55
Bullet proof build, but woofly sound. Off the pace, but enduring nonetheless. Some pipe smoking slipper wearer’s smear by them!

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

**MINSTER MONOBLOCK** 1988 £1,200
Monster stump 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 eighties-tastic experience.

**CREEK OBH-8 SE** 1996 £180
Punchy, rhythmic character with oodles of detail makes this a great budget audiophile classic. Partner with a Goldring GI042 for an unbeatable budget combination.

**PHONO STAGES**

**CREEK CAS1340** 1985 £199
Excellent detail, separation and dynamics - brilliantly musical at the price. T40 continued the theme...

**NAD 4040** 1979 £79
Tremendously smooth and natural sound allied to low prices and good availability make this budget analogue esoterica. Needs a good antenna to work properly, however.

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

**PIONEER TX-5500** 1976 £295
Another of the various classic solid-state tuners. Boasts the usual high end Jap package of fine sound, brilliant sensitivity and superb build.

**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. Fed by a modern outboard decoder they’re deliciously lucid with true dimensionality.

**REVOX B760** 1975 £520
More of a semi-prof machine than a domestic bit of kit, 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!

**NAID 4140** 1995 £199
Brilliant affordable digital tuner has a smooth, detailed musical sound plus sensible real-world facilities.

**ROGERS T75** 1977 £125
Superb mid-price British audiophile classic, complete with understated black fascia. Fine sound in the true Rogers mould — smooth and sweet with fine dimensionality.

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**SANSUI TU-8900** 1976 £300
A flagship Japanese tuner designed to steal sales from the likes of Accuphase and Revox, it boasts superlative RF performance and an extremely smooth and fluid sound, along with very fine build and finish.

**SEQUERRA MODEL I** 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.

**SONY ST-5950** 1977 £222
One of the first Dolby FM-equipped tuners, a format that came to nothing. Still, it was Sony’s most expensive tuner to date, and boasted a very good sound quality allied to brilliant ergonomics.
CLASSICS

TECHNICS ST-8080 1976 £180
National Panasonic's specialist hi-fi brand was a big hitter back then, and this is no exception. Superb FM stage makes for a very clean and smooth listen with lots of detail and depth.

ANALOGUE RECORDERS

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

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.

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

REVOX A77 1968 £145
The first domestic open reel that the pros used at home. Superbly made, but sonically off the pace these days. B77 better, but couldn't match the Japanese.

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

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DIGITAL RECORDERS

SONY MDS-JESSE5ES 2000 £900
The best sounding MD deck ever, thanks to awesome build and heroic ATRAC-DSP Type R coding.

PIONEER PDR-S55KW 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 outhouse with a true audiophile sound and HDCD compatibility.

SPENDOR BCI 1976 £240
Celestion HFi300 tweeter meets bespoke Spendor Bextrene mid-bass unit — and the result is a beautifully warm yet very focussed sound. A little bass bloom necessitates careful low-mounting, but these prove that the seventies did have some fine designs after all!

KENWOOD DM-9090 1997 £500
Serious and sophisticated sound thanks to well implemented ATRAC 4.5; surprisingly musical! MD recorder.

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

LOUDSPEAKERS

ACOUSTIC RESEARCH

AR185 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...

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. Partner with Rogers AB1 subwoofers for an extra two octaves of bass!

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LOWTHER PM6A 1957 £18
This seminal full-range driver is still manufactured. High sensitivity, as fitted to many classic horn designs.

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

JR 149 1977 £120
Infamous cylindrical speaker that 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 rewards with fine clarity and imaging.

QUAD ESL57 1956 £45
EACH
Wonderfully open and neutral sound just 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 superspeakers.

KEF R105 1977 £785
Three way Bextrene-based floorstander (complete with castors!) gave a truly wideband listen and massive (500W) power handling. A very neutral, spacious and polite sounding design, but rhythmically well off the pace. The quintessential nineteen seventies loudspeaker.

IMF TLS80 1976 £550
Warm and powerful nineteen seventies behemoth with transmission loading and a mixture of KEF and Celestion drive units. Impressively physical wideband sound but rhythms aren't its forte.
MAGNEPLANAR SMGA 198X £800
Technological loudspeaker with genuinely musical abilities; fast, smooth, open, dry.

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.

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

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.

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 coarse at high frequencies and limp in the bass. Speakers would never be the same again...

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

YAMAHA NS1000 1977 £532
High tech Beryllium midband and tweeter domes 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!

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!

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

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These are the best products we've heard that are currently on sale in the UK, complete with the date they were originally launched and their current retail prices.

**TURNTABLES**

**GOLDRING GR-2** 2006 £265
Rebadged Rega P3 built on the cheap and sold with an excellent Goldring MM; this is cracking value for money.

**REGA P3** 2000 £298
Great entry level audiophile deck with fine bundled tonearm. Tweaksable, and responds well to careful siting on a Base platform.

**TECHNICS SL1200/1** 1973 £395
Slick build makes it a respectable performer, although the cheapo arm limits it - fit a Rega RB250 and it's suddenly a serious mid-price machine.

**MICHELL TECNODEC** 2003 £575
Superb introduction to Michell turntables on a budget. Top quality build and elegant design make it the class of the mid-price field.

**REGA P25** 2001 £619
Unil the TecnoDec, the best mid-price turntable package. Fine build and elegant styling. Clean, open sound but limited at frequency extremes in absolute terms.

**PRO-JECT X PACK** 2005 £650
Decently musical sound, fine build and blistering value for money turntable, arm and MC cartridge package.

**MICHELL ORBE SE** 2002 £1,916
Ultimate evolution of the Gyro adds massy acrylic platter and two-stage isolation. Fantastically capable all rounder with commanding, powerful detailed sound that gets the best from almost any arm and cartridge

**LINN LP12/ LINGO** 1973 £2,100
The quintessential belt drive superdeck offers a beguilingly musical midband at the expense of lumpy bass and nebulous imaging. Lingo brings a new lease of life, with even more punch and polish.

**PRO-JECT RPM 10** 2006 £1,500
Brilliant 'fit and forget' deck that gives everything it plays a clean, warm, enjoyable sound - but not quite as effective in absolute terms as some price rivals.

**CLEARAUDIO SOLUTION/SATISFY** 2006 £1,650
Wonderfully big, powerful and enthusiastic sound is tempered by a little over exuberance on occasions. Super value, with a great upgrade path.

**TONEARMS**

**REGA RB250** 1984 £112
Sold through Moth Marketing, this is capable far beyond its price point, with a tight, lean and detailed sound. Responds brilliantly to Origin Live counterweight modification, and well to rewiring.
MICHELL TECNOARM A2003 £399
John Michell's brilliant reworking of the Rega RB250 theme, using blending and drilling techniques usually seen in motorsport! The result is the best sounding arm at £400, and as good as some at four times the price.

ORIGIN LIVE SILVER 2006 £599
This expertly-fettled Rega boasts a superbly dimensionality to top arms.

HADCOCK 242 SE 2000 £689
Latest of a long line of unipivots, with added mass, revised geometry and better finish. Musical like no others at the price.

SME 309 1989 £677
Mid-range SME comes complete with cost-cut aluminium armtube and detachable headshell. Tight, neutral sound with good tonality, but lacks the IV's pace and precision.

ORIGIN LIVE ILLUSTRIOS 2002 £1,570
A modern superarm with battleship build. Extremely strong, even and open sound in the mould of the late, lamented Zeta, plus fine tonal colouring. Exquisite.

SME SERIES IV 1988 £1,127
Offers nine tenths of the SMEV's magic at just over half price. Exquisitely built and finished, and a design classic. Faces stiff competition these days, but lovely nevertheless.

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 £1,614
The so-called Best Pickup Arm in the World isn't, but comes close. Vice-like bass with incredible weight, ultra clear midband and treble. Does everything except beguile the listener.

LINN EKOS 1987 £700
Subtle mod over the years, including revised bearings and the recent new wiring has kept it a serious contender in the superarm stakes. Lacks the SME's slant, the OL's clarity and musicality. The invariable winner in the £1,000-plus arm category.

Graham Phantom 2006 £2,495
Sonically stunning arm with magnificent bass dexterity and soundstaging. Build quality almost up to SME standards, which is saying something.

TRIPLANAR PRECISION 2006 £3,600
Stunning build, exquisite design and surely the most naturally musical and lucid sound around makes this a remarkable pickup arm.

CARTRIDGES

AUDIOTECHNICA AT-110E 1984 £29
Great starter cartridge that's refined, detailed and musical beyond its price.

GOLDRING G1042 1994 £135
One of the best MMs going, with sweet and extended treble and punchy, muscular bass.
DIGITAL RECORDER

APPLE IPOD 2006 £220
Genre-defining best of breed, thanks to supreme ergonomics and build allied to fine sound.

SONY RCD-WJ2002 £250
Usual superb Sony ergonomics make for no-nonsense budget buy. Fine direct digital copiers, but analogue input poor. Middling sonics, but there’s a digital output!

YAMAHA CDR-HD1300E2002 £600
HD means MD-style ease of editing, but compromises recording quality ever-so-slightly. Add decent CD replay and it’s a fine all rounder nonetheless - top value.

STAN DARE
HI-FI WORLD JULY 2007 www.hi-fiworld.co.uk

PHONOSTAGES

QED DISC SAVER 1995 £35
Rhythmic, bouncy sound via battery, although it’s bright and forward. Great value.

PROJECT PHONOBUS LE2004 £99
Great little box that improves on most bundled phono stages found in budget integrated amplifiers, adding detail and definition and a measure of smoothness too.

TRICHORD DINO 2002 £399
Great all rounder with switchable MM/MC. Balanced operation of real benefit. Modestly accurate, but there’s a digital output!

EAR 834P 1993 £400
Classic tube design with a fulsome, warm and expansive sound - shame about the loose bass and veiled treble!

JOLIDA JD9 2006 £400
Hybrid tubo/solid state phono stage with a good range of adjustability. Excellent value for money and a fine, dynamic sound.

Graham Slee ERA GOLD V 2004 £460
Wonderfully warm, open and musical nature makes this an essential audition for those wanting a top value mid-price phono stage.

LEHMANN BLACK CUBE SE2006 £495
Clean, smooth and even right across the frequency range, this phonostage represents superb value for money.

AQVOX PHONO 2 CI 2006 £598
Brilliantly versatile, yet affordable phonostage with a beguiling sound, but careful matching essential. Balanced operation of real benefit.

CLEARAUDIO SYMPHONIO+ 2006 £89
Superb high resolution phonostage with a tight, grippy and engagingly musical sound.

LINN LINTO 2000 £900
The most musically engaging of all the phono stages found in budget integrated amplifiers, adding detail and definition and a measure of smoothness too.

TRICHORD DIABLO + HCPSU 2004 £1,198
Highly musical performer, this is one of the best phono stages at or near the price, but lacks the polish of the rival Whets.

STEELS DP-200 2004 £1,495
Brilliant do- it- all upsampling DAC preamp with headphone output and phono in. One of the best digital to analogue converters around. Allied to mind-boggling flexibility.

MARANTZ DV9600 2006 £1,500
Impressively accomplished universal disc player, that performs superbly on CD, SACD, DVD Audio and DVD Video.

CHORD DACC64 2005 £1,995
Brilliant do- it- all upsampling DAC preamp with headphone output and phono in. One of the best digital to analogue converters around. Allied to mind-boggling flexibility.

SHANLING SCD-T2000 2007 £2,250
Updated version of original SCD-T200C standardises upgrades optional on the older model and adds a few more tweaks for good measure. The result is a stylish player that works superbly with both CD and SACD.

TUBE TECHNOLOGY

FUSION 64 2006 £2,200
Unique digital and analogue audio engineering makes for an exceptional CD player that, on some programme material, is peerless.

NORTH STAR MODEL 192 TRANSPORT/EXTREMO DAC 2006 £2,918
Superbly finessed and loquacious sound allied to excellent build and finish make for a brilliant value high end buy.

NAIM CDX2-XP52 2003 £4,950
A fine high end machine, but add an XP52 and it becomes one of the most characteristically engaging 16bit machines we’ve ever heard. Plays music with such passion!

LINN UNIDISK 1.1 2004 £6,500
Surely the ultimate universal DVD player, superb in every department, but its CD play-back shines brightest considering it’s not a superlative machine. Superbly engaging 16bit machines we’ve ever heard.

NAIM CD5S 2003 £7,050
The most polished Naim CD to date; tremendously capable and musical, but lacks the Rotweiler quality of the cheaper CDX2-XP52.

ESOTERIC X-01 2005 £8,995
Breath taking feat of digital audio engineering, and surely the best sounding combination CD/SACD phono stage money can buy.

NAIM CD555/S555PS 2006 £14,000
Very probably the best CD player yet made - certainly the most expensive; a digital tour de force.

DIGITAL RECORDERS

APPLE IPOD 2006 £220
Genre-defining best of breed, thanks to supreme ergonomics and build allied to fine sound.

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AMPLIFIERS

NAD C525BEE 2006 £550
Smooth, powerful, muscular sound with real speaker driving prowess makes this the most musical entry level integrated.

CYRUS SX 2003 £600
Cracking do- it- all mid price design, bringing svelte sound, good connectivity and upgrade-ability and stunning style and build.

MARANTZ PM7001IKI SIG2006 £850
Loud sound, warm and fulsome mid-price transistor integrated that's hard to beat at the price.

ONKYO A-7755 2006 £700
Beautifully built, usefully versatile and truly enjoyable sonics make this another great affordable audiophile product from Onkyo.

TRICHORD 8X 2006 £800
Unusually warm and lyrical for a solid-state, with decent power and punch. PSX-R adds dynamics, detail and dimensionality.

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WONDERFUL OUT-OF-THE-BOX SOUNDING TUBE AUDIO NOTE SORO SE 2000 £1,699 Wonderfully out-of-the-box sounding tube middleweight is all about sweetness and fluidity. Limited power and loose bass, but little the worse for it.

UNISON RESEARCH S6 2002 £1,625 Tremendously musical and lithe sound with real finesse and subtlety too. Very slightly upper mid forward encourages careful partnering with anacoustics (Rotulver R45s are ideal), but overall fantastic value for money.

SUGDEN A2ISE 2005 £1,995 Brilliantly musical hear-through sound makes this one of the best transistor amplifiers ever made, but be prepared to match carefully.

COPLAND CSA29 2006 £1,998 Unfailingly suave, sophisticated and smooth - both to listen to and look at - this is a truly desirable high end integrated.

VINCENT SA-TUSP-T100 2006 £2,300 Impressively built and stylish pre/power combo that take any kind of music and make the best of it.

LUXMAN L-550A 2007 £2,800 Monster Class A integrated with powerful and revealing sound and a whole host of useful features, including a highly competent MM/MC phono stage.

AUDIO RESEARCH VS155 2003 £2,895 Impressive two box preamp with superb transparency, and is superlative.

MF AUDIO PASSIVE PRE 2003 £1,500 Novel and effective pre with switchable gain via a transformer, and balanced operation. Open and incisive sound, yet makes most active rivals sound edgy by comparison. Silver version at the twice the price adds eerie transparency, and is superlative.

ROTEL RB1092 2007 £1,595 Hugely powerful digital amp with neutral midrange and a wonderfully spacious treble.

NAIM AV2/NAP 150/NAPV 175 2002 £4,190 Brilliant audiophile multichannel pre-power amplifier: combo not as good with music as a two-channel Naim set-up at the same price, obviously, but surprisingly close. Elegant control layout plus a strong, clean and brilliantly engaging sound make this a serious crossover product. Ultimately lacks power compared to similarly priced Arcam gear: but is more musically involving.

HEADPHONE AMPLIFIERS

CHANNEL ISLANDS VHP-1/VAC-1 £399 A truly exceptional headphone output stage: the best at the price and an essential audition.

MUSICAL FIDELITY X-CANS V3 £249 Mr Michaelson's best headphone amplifier to date, with an extremely open and explicitly detailed sound plus serious bass wallop and the ability to drive any phones to very high levels. Errs towards brightness with some headphones, so match carefully and use smooth cables.

SUGDEN HEADMASTER 2003 £600 Unusual combined preamplifier and headphone amplifier, this boasts a surprisingly smooth and open sound.

PREAMPLIFIERS

CREEK OBH-12 2000 £220 Brilliant value budget passive, giving little away in sonics to far more expensive designs. Connectivity and build aren't great, but what do you expect at this price?

CROFT VITA 2005 £990 Truly delightful valve preamplifier with superb tube phono stage: not the most transparent but very musical and cracking value for money.

NUFORCE REFERENCE 9SE £1,550 Brilliant value for money monobloc with massive power and super-clean, three dimensional sound.

ROTEL RBI092 2007 £1,595 Hugely powerful digital amp with neutral midrange and a wonderfully spacious treble.

NAIM AV2/NAP 150/NAPV 175 2002 £4,190 Brilliant audiophile multichannel pre-power amplifier: combo not as good with music as a two-channel Naim set-up at the same price, obviously, but surprisingly close. Elegant control layout plus a strong, clean and brilliantly engaging sound make this a serious crossover product. Ultimately lacks power compared to similarly priced Arcam gear: but is more musically involving.

MELODY PURE BLACK 101D 2007 £3,295 One of the best preamplifiers we have ever heard. Takes the clarity and openness we expect from valves and adds a staggering level of grip and detail. Stunning.

POWER AMPLIFIERS

QUAD 909 2001 £900 The latest current-dumper has a smooth and expansive character with enough wallop to drive most loads. Not the most musical, but super value all the same. Lovely build, finish and Quad's legendary service are nice.

NAIM NAP150 2002 £795 Driven by a decent source and a NAC112, this gives highly enjoyable results - providing you like the Naim sound! Taut, fast and feisty despite its relative lack of power.

SUGDEN MUSICMASTER 2003 £1,300 Quintessential Class A Sugden sound is not as warm as many expect, but extremely neutral and open with real tonal colour. By comparison, tubes sound bloated and standard solid-state hazy and brittle. Superb when partnered with efficient loudspeakers like Rotulver R45s, but many will find it underpowered.

CROFT TWIN STAR 2003 £1,750 With a taste of the best of both tube and transistor, this latest update of the Croft classic is a truly endearing experience.

NUFORCE REFERENCE 9SE £1,550 Brilliant value for money monobloc with massive power and super-clean, three dimensional sound.

MELODY PURE BLACK 101D 2007 £3,295 One of the best preamplifiers we have ever heard. Takes the clarity and openness we expect from valves and adds a staggering level of grip and detail. Stunning.

CHANNEL ISLANDS AUDIO D100 2005 £1,595 Clean and musical Class D monoblock power amplifiers in a neat, small package.

QUAD II-40 2005 £3,230PR Brilliant modern tube monoblock power amplifiers with plenty of power, wonderfully liquid and open midband and spacious, airy treble. One of the best tube power amp combos ever.
STANDARDS

**GRAAF GM10 OTL** 2003 £3,300
Awesome output transformer-less valve power amp gives dazzling speed and incision, with an ethereal soundstage and delicious filigree detail. Tremendous punch belies its humble 20W power rating. Factor in one of the most exquisite finishes this side of an Aston Martin and it’s very hard to say no...

**LOUDSPEAKERS**

**TDK S-80** 2002 £90
Ingenious NXT multimedia sub/sat system has a wonderfully even and open sound - like baby electrostatics.

**QACOUSTICS 1020** 2006 £130
The best entry-level standmounter around right now: clarity, neutrality and poise for peanuts.

**ALR JORDAN ENTRY S** 2006 £200
Small in size but not in stature, this loudspeaker’s imaging and dynamics make it a true ‘super mini’ monitor.

**KEF IQ1** 2005 £250
Highly polished and articulate standmounters at the price, but demand good ancillaries for best results.

**USHER S-520** 2006 £280
Astoundingly capable budget standmounters that offer detail and dynamics well beyond their price and dimensions.

**MORDAUNT SHORT AVANT 906i** 2006 £350
Dynamic and impressive floorstanders with excellent insight and a lively nature.

**REVOLVER RW16** 2004 £400
Outstanding standmounter with tonal accuracy and speed that totally belies its price; good sensitivity for a small box makes it great with valve amps too. A budget audiophile classic.

**AAD C-550** 2006 £500
These highly polished and controlled floorstanders have a powerful studio monitor sound.

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

**SPENDOR S3/5E** 2004 £950
A natural successor to the BBC LS3/5a, whose impressive neutrality, imaging and evenhandedness makes this a superior, if less charismatic, loudspeaker.

**LEEMA XEN** 2006 £1,000
Affordable audiophile mini monitor with grip, composer, detail and scale that belies their diminutive dimensions.

**ELAC FS207.2** 2004 £1,000
Deeply capable mid-price floorstanders. Distanced by superb JET ribbon tweeter which is unmatched by class rivals; engaging, slightly warm nature needs serious transistor power to sing.

**REVOLVER RW451** 2006 £1,199
Very musical floorstander that’s clear, concise and truthful, whilst being exceptionally amplifier friendly - a dreamboat for valves.

**SPENDOR 58E** £1,895
Generously large, silky smooth delivery, this dynamic sounding floorstander is an excellent all-rounder.

**MOUNT AUDIO GS60** £2,000
Brilliant modern rock loudspeaker with a fancassically late and engaging sound, but partner carefully with a warm front end.

**NAIM AALLAE** 2002 £1,990
A tad and gritty like few others, this speaker-majors on transient speed. Surprisingly smooth for a Naim box, with nicely etched treble. As always, tonally dry.

**PINSH 2.1** 2006 £2,000
Wonderfully neutral and self-effacing with Redoubtable low frequency articulation allied to the superlative hear-through clarity of the Pinsh ribbon tweeter makes for an extremely accomplished all round floorstander.

**YAMAHA SOAVO 1** 2006 £2,000
Musical and transparent floorstanders with impressive dynamics and cohesion. Fine build and finish.

**ARD AUDRIUS MI** 2006 £5,995
Sublime build and finish allied to an insightful, assured and even-handed musical performance makes these an essential high end audition.

**QUAD ESL-2905** 2006 £5,999
Reveler 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.

**TANNOW KENSINGTON 2004** £X
Don’t let the looks fool you: these are fiercely fast and modern sounding monitors with a stunningly musical sound - not neutral though.

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

**ISOPHON CASSIANO** 2007 £12,900
Drive units featuring exotic materials allied to superlative build quality result in an immensely capable loudspeaker. Not an easy load to drive, however.

**ACCESSORIES**

**MONITOR AUDIO IDECK** 2006 £200
Fine design, impressive flexibility and a lucidly musical sound make the iDeck the current iPod dock champion.
ISOTEK GIi VISION 2006 £550
A genuinely effective and surprisingly cost effective upgrade, but results could vary so a home dem of the power conditioner is recommended.

TOWNSEND MAXIMUM 2003 £800
Classy ribbon super tweeter with flexible level settings and cool styling - you'll be amazed at the difference it makes, especially with Quad electrostatics.

SENNHEISER MX-550 2005 £19
Our unqualified recommendation for those seeking a serious sounding pair of in-ear phones. Smooth, detailed and musical.

SENNHEISER HD-590 1998 £199
The company's best real-world cans to date. Open and smooth with plenty of detail. Brightly lit midband makes them an ideal partner for a valve headphone amp.

SENNHEISER HD-650 2004 £250
Not the best headphone in the world, but a superb all round reference all the same. Very crisp, detailed and even sound allied to superlative build and comfort makes all most people will ever want. Cable upgrade yields great results.

STAX SR-007T OMEGA 2006 £2,890
Simply the best headphones we've ever heard at any price, these sweetly translucent electrostatic earspeakers are like no other headphone, or loudspeaker for that matter.

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

CHORD COMPANY CHAMELEON 2 2007 £300/M
One of our favourites, these are musical performers with a smooth yet open sound.

TCI CONSTRUCTOR 2007 £300
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.

BLACK RHODIUM POLAR CRUSADER DCT+ 2006 £320
Wonderfully smooth, sweet yet transparent interconnect with a deliciously musical sound - hurts cables at twice the price.

DENON TU-1500AE 2006 £120
Excellent entry level analogue tuner; slick sonics and fine feature count makes it a bargain.

PURE DIGITAL DRX-702ES2003 £249
Great with Digital Radio, but thin a tad sounding on FM at times. It's a top hybrid, nonetheless...

CAMBRIDGE AUDIO £4072005 £250
Swell sounding digital/anologue hybrid with fine build and finish at the price.

MARANTZ ST-7001 2006 £999
 Stunning performance on FM (at the price) coupled with its ability to get the most from DAB broadcasts makes this the best affordable tuner.

ARCAM DTP9 2005 £450
The very best DAB tuner around, with fine sonics and styling to match; FM is less impressive though.

CREEK CLASSIC TUNER 2005 £550
No tuner offers better sound per pound; wonderfully three dimensional and smooth from bottom to top.

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.

CAMBRIDGE AUDIO £4072005 £250
Excellent all-in-one system, with a warm, smooth and balanced sound to match the features and style.

DENON D-M31 2003 £250
Excellent CD receiver package with surprising sonics and a brilliant tuner as a bonus, although its amplifier section doesn't quite match the Myryad all the same.

ARCAM SOLO 2005 £995
The very best DAB tuner around, with a deliciously open and lucid sound. but it can't quite match the Myryad all the same.

PRIMARE T21 2002 £600
Seriously accomplished design with mature sonics, great styling and fine build.

LINN CLASSIK 2002 £995
The best one-box stereo system money can buy; superbly musical sound beats equivalent priced separates.

Icy FM X 2005 £500
Great for Cyrus users, but its dry and precise sound can't match the best of the rest at the price. Worthy, nonetheless...

STANDARDS

CRAZIEST 2007 £1,500
Fantastically built and versatile DVD/CD/DAB/FM/MAM unit, designed in conjunction with Ferrari. Ignore nay-sayers who sneer that it isn't a 'proper' hi-fi product: most see sense when they listen to it...

WIRE WORLD OASIS 5 2003 £99/M
Excellent mid-price design with a very neutral, silky and self-effacing sound. Superb value for money.
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Arena Electronics was appointed official UK distributor for SEAS high performance drive units in January 2006. We offer the full range of SEAS drive units, designed and built in Norway, together with speaker kits and advice for DIY speaker builders. These include the World Designs WD25A project, complete parts for which can be purchased on our website including the cabinet kit.

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A Raw Deal

Very recently I was in a position to invest a not inconsiderable sum in a really rocking hi-fi system. I knew more or less what I wanted to buy because I have researched and dreamed about what I wanted for many years. As my wife had often commented, if I had spent as much on the hi-fi as I did on the hi-fi magazines, it would be stunning! I have always dreamed of a Linn Sondek with Naim amplification although I have never had a great desire for any particular loudspeakers. However, in order to get some advice and thoughts from a different perspective, I decided to contact several shops and ask for their system recommendations.

I sent emails to eight shops in the Yorkshire area and gave them the following specification; that I wanted an all-British system (even down to cabling and stands if necessary) comprising a turntable, CD player, amplification (either preamp and power amp or integrated) and a pair of loudspeakers. I gave them the opportunity to quote me a system up to £10,000. I also intimated that I wanted the turntable to be the top priority in the spend. Music style was to be Rock/Metal/Indie with the occasional classical piece. The results were truly surprising.

Five out of the eight shops have never contacted me or acknowledged my email; one shop came up with such a ridiculous system that I thought that they were joking - it was based on a £250 Goldring turntable, a £1,500 amplifier and a £3,000 subwoofer! Two shops did reply with great enthusiasm and came up with top-notch systems. It was extremely difficult to choose - essentially it was down to one supplying a Sondek and one supplying a Roksan Xerxes. I knew how beautiful looking the Xerxes is, but the lure of the Sondek (and the sound!) could not be beaten. Eventually I came away with a Linn Sondek (fitted with Akito tonearm, Adikt cartridge and a Lingo power supply), Naim CDX2 CD player, 112X preamplifier, 150X power amplifier, StageLine phono stage and some Linn Ninka floorstanding loudspeakers.

Incidentally, the loudspeakers were a real problem. I started off listening to some B&W 704s - and I thought that they were terrible. We then tried the 805s and I didn’t think that they were anything special at all!! At that stage we were a little stumped, until the guy in the shop asked me why I hadn’t considered the Linn Ninkas, and we were amazed at the difference when we heard them. I thought that they were terrific! Just goes to show, eh?

The system is now about two months old and more or less run in, but the main thing is that it sounds fabulous. And as for the shops that never replied to me? Well, business must be so good that they don’t have to bother with a mere £10K! Thought that you might be interested.

Jamie Straker

Happiness was a pair of Linn Ninka loudspeakers!
shops, but most hi-fi salesmen could not sell cars in car dealers...

Or maybe it is a cultural thing? One of the things I really noticed when I returned to this country after a long spell living in Japan was the service in shops, which is in stark contrast to that country’s ‘the customer is right’ attitude. Japanese sales assistants always greet the customer as soon as he or she enters the shop and ask if they can help. If not, they leave well alone, and don’t hover around in the background intimidatingly. If they can, they explain things in a very clear and polite manner. They never ever give the impression that you’re imposing on them, or that selling you something is too much trouble, and will often run (rather than walk) from one end of the shop to the other if they need to get stock to show you, for example, so as not to make you wait any longer than need be!

Once again, I must underline that there are some genuinely superb dealers in this country (many of which appear in this magazine), who will jump through a hoop backwards for customers, but if all the letters such as yours that we get are true, then sadly this seems more the exception than the rule. DP

CRITICALLY SPEAKING

I currently have a Sugden A21 amplifier, two years old, with Wharfedale Evo 30 Pacific loudspeakers, an Arcam CD82T CD player and a late Michell GyroDec turntable. This features a Michell TecnoArm A and Sumiko Bluepoint Special Evo 3 cartridge, connected to the Sugden through a Musical Fidelity phono stage. I use QED cables throughout.

I would be interested if you have any comments on upgrading this system. My own idea would be to replace the Wharfedales with either PMC GB1s or Revolver R45s, followed by the CD player with maybe a Copland. I listen to a wide range of music from rock and roll to folk, blues, and classic rock. Look forward to any comments you may have.

David Tyrrell

Hi David - having heard the Revolver RW45s with the Sugden A21a, I can confirm that it is a particularly synergistic combination, and this is the one I would unhesitatingly recommend. Furthermore, a Gyro-Sugden-Revolver system is a very nice one indeed, with real tonal colour thanks to the Gyro, clarity and musicality thanks to the Sugden and speed and punch thanks to the super-efficient R45s. My main question mark would be over your Sumiko BPS which, in my view, is off the pace these days. A Goldring 1042 (£130) moving magnet, or better still an Ortofon Rondo Bronze (£500) moving coil would really add clarity and smoothness. Also, you could do much worse than investing in a few metres of Chord Odyssey 2 (£18/m) which will open the system out whilst maintaining smoothness. DP

Personally I would tend to agree that the loudspeakers are the weak link in your system at the moment, and both the PMCs and Revolvers are well respected units. They do, however offer a rather different sound to each other, so auditioning is essential – the PMCs are big and lively sounding, which can veer towards harshness occasionally, although the innate smoothness of the A2I should minimise this. The Revolvers are rather more smooth and well damped in the bass, but with a good, insightful treble. Just to confuse you even further, you might like to also consider my personal £1,000-ish favourites, the Totem Arros. Diminutive they may be, but they are dynamic, punchy and should work nicely with the Sugden. AS

A COG IN THE WORKS

I found the article about buying second-hand equipment very informative and useful, as it reminded me of an old CD player I have. I have been looking for replacement parts for this for a while as it was quite an expensive player at the time. Do you know of, or could you point me in the right direction of people who can replace these parts?

The model is an Arcam Alpha 5+, the only issue is that the cog for the transport has worn therefore it intermittently refuses to open the tray. I assume I just need a new cog. Apologies if this is not the correct place to ask these types of question, but you may be able to advise? I tried Arcam directly with no result.

Martin Derby

Arcam Alpha 5+ CD player - spares may prove tricky to locate...
with regard to spares for their older equipment. However, are you definitely sure that it is the cog that is damaged? If this is the case I would expect the drawer to be troublesome every time you use it and not just intermittently. Consequently, it could just be a belt slipping, a situation I am very familiar with on my own player. If this is the case, then I suspect your best bet is to look out for another Alpha + to use for spares. AS

VINYL REVIVED

I have been a subscriber for the last two years and enjoying every minute of it, but this is the first time I am writing to you. After all I have been reading on how vinyl sounds so much better than CD and how lifeless digital is by comparison, I decided to go down in my cellar and dig out my very old Thorens TD 145 (built in 1975) and compare it with the Marantz CD 6000 I've been using for the last couple of years. The poor thing had a couple of injuries but, and this shows how well they were built, motor and bearing were still running like silk. Unfortunately the tonearm was broken (not much of a loss here) so I decided to give it a good DIY treatment. I dismantled and cleaned it. Rewired it completely, getting rid of all the unnecessary automatic nonsense.

Rega RB250 - a wonderful sounding arm at a bargain price.

Completely insulated it inside with damping material and bought an R8250 damping material and bought an R8250 and plugged it to my system. Wow! Total amazement. The sound was just incredible! It's not the amount of detail or the dynamics or whatever. It just sounds so real and full of life. The musicians breathe and the music is lush and vibrant compared to the exact sterility of CD. Unfortunately only some ten LPs survived from my collection and I now regret having offered about 500 of them to a very good friend (don't think he will consider giving them back and I don't blame him). It was the first time I heard vinyl for the past twenty years and, oh boy, have I been missing the essentials. I am since converted to the black plastic and have been buying LPs like mad.

Now I am thinking of upgrading the old box and would very much appreciate your opinion. I am considering the Project RPM 9.1 which sounds good and would be within my budget (they are rather cheap here in Austria). Another option could be the Michell TecnoDec. A friend of mine has one and I love it but it costs almost twice as much as the Project. Even buying it in the UK and bringing it back would be more expensive than the first option. I also thought of the Clearaudio Champion with its immense potential for upgrading but its way out of my budget and frankly I was not convinced by the sound.

I listen mostly to Jazz and Prog and technicalities of these impressive decks.

As to upgrades from the Thorens, do be aware that these old decks are remarkably capable when properly fettled and differences will most likely be quite subtle rather than 'night and day'. That said, both the Michell and Project are excellent record players and will add a certain touch of sophistication to the sound of your system. When it comes to choosing between the two, all I would say is that, if you know and love the TecnoDec, be careful of falling into the trap of settling for what amounts to a 'second best' for you. The Project is a very good deck (and looks superb!), but there is always the possibility that you might end up with a lingering doubt in the back of your mind, wondering if you would have been even happier had you bought the TecnoDec. If you really like the Michell, then I would personally save for a bit longer and go for it. AS

AN EMT SPACE?

I was wondering whether you might ever have been considering featuring reviews and opinions on the range of EMT turntables? I have four at present, using them for both work and pleasure and consider them to be the best ever made! Although EMT does not exist anymore, many spare parts are still available from Germany to keep these lovely machines working. I would be very keen to hear your comments.

Ricardo Santos

Rock and my system comprises an Arcam Delta 290 (slowly dying) and a pair of JBL XTI 100 which I love. Will the improvement be significant from my old Thorens?

Thanks and keep the good work.

John Shaw

Speaking for myself, I have spent many an hour perusing the history and technicalities of these impressive machines, and continually despairing...
at the second-hand prices they fetch, which are well out of my reach, sadly (and I have yet to see one at my local dump or car boot sale!). I gather from pretty much everything that I have read that they really are quite spectacularly good units.

Consequently you may be interested to know that we have in L80Ts, have a 10in bass driver and the difference is noticeable in comparison to the 6in bass unit on my previous speakers.

Looking at the loudspeaker market, there isn’t much about in the range of £2,000–£4,000 unless one goes to mega bucks. Can you recommend a loudspeaker that would partner the

**Coming soon, a feature on EMT turntables.**

our ‘feature bank’ a comprehensive guide to the history, purchasing and restoration of EMT turntables written by Stefano Pasini, whose website is an essential bookmark for fans of these decks. It is long, detailed and with many excellent pictures and we have so far not been able to fit it into the magazine easily. However, as the editorial team have now armed ourselves with a shoe horn and a large tub of grease I can only say, watch this space...

Incidentally, EMT are still very much alive, although no longer making turntables. We hope to be receiving one of their new cartridges for review soon.

**Hi John - indeed, we are having problems with too many features and too few pages to print them on! This is why the EMT feature has been delayed. Apologies for this - we hope to bring it to you soon. DP**

**BIG BASS, PLEASE**

I have just purchased the Musical Fidelity A5 pre and power amps, which have replaced a pair of Roksan Caspions. At present I am using a pair of 22 year old JBL L80T floorstanders and I would like to upgrade to something more modern that would better suit the MFi’s power.

Reading Noel Keywood’s reviews in last year’s April issue on the PMC IB1, JBL K2, and big bangers like the Tannoy Yorkminster, I have to agree that a large bass driver makes a serious contribution to the overall bass quality e.g. the JBL.

MFi’s and still keep the qualities of the mid and high frequency ranges without drowning them in overpowering bass? Listening material is jazz and classics so the bass sound I would be looking for is good articulation on acoustic string bass for jazz, and more weight in the bass section of the orchestra - and I like it loud!! My room is 3.5m x 9.0m in a stone house with walls 18” thick, in the country in Turkey, where I now live. The locals think I’m quite strange.

**Paul Hargreaves.**

As you rightly say, Paul, when it comes to decent bass, despite the advances in driver and cabinet technology in recent years, you really cannot beat a nice big drive unit. However I would tend to agree with you that smaller seems to be more beautiful these days and generally loudspeaker manufacturers are fitting multiples of relatively smaller drive units in order to maximise bass from domestically acceptable enclosures. Mind you, I envy your listening room and location and it would be a shame not to make the most of them.

Consequently, you may be interested to know that one manufacturer that you mention has resolutely stuck with larger drive units in one of their ranges, and if you like the ‘Tannoy sound’, then you have a wide choice in their Prestige range, namely the Stirling SE (10in driver; £2,500), Glenair 10 (10in driver; £3,000), Turnberry SE (10in driver; £2,900) or the biggest of them all, the Glenair (15 in driver; £3,995).

However, the Tannoy sound is quite distinctive and people tend to either adore it or wonder what all the fuss is about. Personally I have never really got on with the Dual Concentric presentation and so, if it were my money I think I would be most likely to take a listen to the B&V 803S (2 x 7in drivers; £3,800) and something of a wild card in the form of the Mowgan Audio Mabon (8in driver; £3,800) but I’m not sure how the latter’s availability is in Turkey at the moment.

**If you can possibly afford the extra, you might like to think about the Revolver Cygnis (£5,999), which to my ears is one of the most complete high end loudspeakers around, with a very clean and open sound, plus the physicality afforded by a high quality 10in bass driver. As Adam says, the Tannoy are very polarising loudspeakers - you love them or hate them; and they are as eccentric as they are concentric (!) - whereas the Cygnis is a far more even-handed and - in my opinion - more neutral design that still has a nicely sumptuous and smooth sound, perfect for your Musical Fidelity amplification. DP**

**AZUR THING**

I enjoyed the CD player supertest in the May ’07 issue, but must admit that I was surprised that the Cambridge Audio machine didn’t show better, especially after the great review in the Feb ’07 issue. Then the lights came on! I realised that the machine tested in February was the Azur 840C and that in the supertest was the Azur 740C.

This got the cogs spinning as the Azur 840C (at £750) also fits within the sub £1,000 limits of the supertest. The obvious question arises as to what would have been the finishing order.
Cambridge Azur 840C - a fine player and excellent value for money.

if the 840C had been part of the superest. I know that it involved two different reviewers, but would you care to speculate?

Steven Cocking

Yes, you are right that the Azur 840C would also have fitted into the group test nicely, but given that the 740C was brand new and that Cambridge do have a knack of making products that can usually comfortably take on a group above them we felt it more than merited inclusion. This was proven by the fact that it acquitted itself remarkably well and is a fine-sounding player.

To how the 840C would have fared instead, that's an interesting one, as I am providing a third opinion here! Having listened to the 840C myself, as well as listened to all the group test players with Noel, I think I would personally place it up with the Vincent but would be hard pushed to tell you which one I preferred without further direct comparisons. I feel that the 840C is a more refined player than the Vincent, with superbly smooth and silky sound, whereas the Vincent is more dynamic and forthright, adding real impact and emotion to music. Both are excellent players but present music somewhat differently - I could happily live with either.

AS

IN TUNE

Global warming and the inevitable high winds prompted me to take my 17 element Galaxy aerial off the roof and rebuild it in the loft, thus compromising the signal to a leak Troughline III Paravicini tuner. Between this component relegation and the constricting Optimod compression, I decided to sell the tuner.

It didn't take long before withdrawal symptoms developed, so I bought a Marantz 7001 on Steve Green's review (I know - listen first, then decide!). Consequently I wasn't impressed with FM so I thought I'd try the "dreaded Convection", I decided to sell the tuner.

Consequently I wasn't impressed, consequently I wasn't impressed with relegation and the constricting Optimod Paravicini tuner. Between this component and the signal to a leak Troughline II/element Galaxy aerial off the roof and even fewer with Tim De Paravicini decoder. As I suspect you must be aware, your Galaxy isn't ideal for DAB, which uses 210MHz-230MHz and is vertically polarised. However, DAB receivers need very little signal (around 30uV I recall) to work (i.e. come out of muting) and with any signal, weak or powerful, they give minimum hiss, so DAB always seems 'quiet'. DAB Radio 3 is not subject to Optimod, which is analogue compression, but instead it is subject to mp2 data reduction (digital 'compression') which doesn't help quality one little bit. Having said that, the BBC upgraded their mp2 compressors nationwide recently, in response to all the flak they were receiving about poor programme quality. Radio 3 does now seem to sound better, although I haven't recently done a careful listening comparison with full orchestral programme, which stresses DAB heavily and shows up its flaws. I still would not compare it to VHF/FM, however.

The differences between the two are subjectively unusual in nature and difficult to describe, but DAB sounds peculiarly deficient of internal detail and bland against VHF. Massed strings in particular tend to take on a homogenous sound, where with a Troughline it is more apparent that there are many instruments playing, rather than one generalised one! All the same, BBC DAB quality at least seems to have improved,

Still owning an Assemblage II DAC with all the audiophile candy your good selves recommended at the building stage and, for good measure, adding the latest Burr Brown op-amps, this gave good service until the Chord DAC64 became the new kid on the block. I dug this out and connected it up with some Chord Silver Plus coax and changing to an 'F' type aerial lead to the Galaxy, just for fun. As you know, this is not a Band III coathanger. At this stage I won't bore you with the rest of my kit lineup, but I got the best of three falls otherwise the wife would be driving a nice new family saloon...

The sound, though lacking air and timbre, still gives holographic imaging through valves. Needless to say, I'm chuffed. Roll on broadband, AAC+, DRM Mondial or any other well thought-out medium.

I am a regular concert-goer with eclectic taste and I've been around long enough to recognise hi-fi from the real deal. DAB in its present form isn't in the hunt but the lack of compression and the proliferation of choice makes it very attractive. As I write this I'm listening to 'The Jazz' coming from the Metropolite to the West Midlands - how's that for starters?

Stewart Horsburgh

There cannot be so many people around with Ron Smith Galaxy 17 aerials, and even fewer with Tim De Paravicini's decoder. As I suspect you must be aware, your Galaxy isn't ideal for DAB, which uses 210MHz-230MHz and is vertically polarised. However, DAB receivers need very little signal (around 30uV I recall) to work (i.e. come out of muting) and with any signal, weak or powerful, they give minimum hiss, so DAB always seems 'quiet'. DAB Radio 3 is not subject to Optimod, which is analogue compression, but instead it is subject to mp2 data reduction (digital 'compression') which doesn't help quality one little bit. Having said that, the BBC upgraded their mp2

Tim De Paravicini decoder - works superbly with a Troughline

although I cannot say the same for the commercial stations. It is but a small step to AAC and 256kbps data rate, which would be sufficient I believe to make DAB sound decent, giving the air and space you talk about. Personally, I am beginning to wonder whether broader broadband, that the upcoming BT 2ICN network should allow, may be the answer, mobiles being fed by satellite such as Sirius. Littering the country with transmitters for DAB, 3G, L Band and all else may not be such a good idea. NK

Antiference DAB aerial, with short elements arranged vertically for vertically polarised DAB.
It’s interesting that you mention The Jazz, because it seems to sum up DAB in a nutshell: it’s a good example of the extra choice you get on DAB, but unfortunately it’s in mono on DAB! Also, in order for it to transmit on the Digital One national multiplex, two music stations had to be reduced to mono to fit it in.

I realise that DAB has some advantages, such as the number of stations available, but the price paid for the number of stations is that the audio quality is very poor, and the reason why it is so poor is simply down to the broadcasters using bit rate levels that are far too low.

Radio 3 is the only station on DAB in the UK to use the more reasonable bit rate level of 192 kbps — apart from when it is reduced to 160 kbps — but listening to Radio 3 on DAB, it’s as if the microphones are wrapped in cotton wool. I know that R3 FM uses Optimod compression, but if it’s that or muddy, imprecise and homogenous audio, then there’s no contest, in my opinion — that’s not to say that I agree with the use of Optimod compression, though. Also note that many of the continental European classical music stations use a bit rate of 256 kbps on satellite, and there’s even a couple using 320 kbps, so you have to question why the BBC deems 192 kbps to be adequate for classical music.

As for the stereo music stations that use 128 kbps on DAB, which is 98% of them — I think they sound very poor. The problem is that they’re using a bit rate level that the MP2 audio codec was never intended to be used at, so audio artefacts are generated whenever the audio is difficult to encode, which is most of the time. These audio artefacts consist of things such as the audio sounding gritty or dull and muffled, or the treble sounds splashty, or the stereo image collapses and you’re left with a wall of mono sound — these problems are all caused by the encoder having too few bits to encode the audio, and they would be solved if higher bit rates were used.

Personally, I think it’s ridiculous that they’re providing such poor quality in this day and age, but at least DAB+ will solve the quality problems once it has fully replaced DAB, although that is a few years off yet.

If you like having a wide choice of stations and you want better quality, you can get it on the Internet already, and the quality will continue to get better over time. For example, there’s a 128 kbps WMA stream of The Jazz available on its website at www.thejazz.com, which is both in stereo and at higher quality than that on DAB.

Satellite also has a wider range of stations and higher quality than on DAB, and if you spend a bit more you can receive the European satellites, which carry the higher bit rate classical stations I mentioned above. As for the Marantz ST7001, I liked it, and it fared well relative to most of its peers in the tuners group test. I’ve never heard DAB through valves, though, so I can’t comment on what it sounds like, but my opinion on the use of good quality DACs with DAB is that if you’ve got one there’s obviously no harm in using it, but DAB is damaged at source, and DACs are unable to undo this damage. SG

FURTHER GARRARD GUIDANCE

After reading the mail in your April 2007 issue, particularly the letter under the title of “Garrard Guidance” I wonder whether you could provide me with the name and contact details of a person or company who could carry out repairs or service to a Garrard model 301 transcription turntable and model TPA10 pickup arm, along with a Laboratory Type A auto turntable?

Kenneth Thornton

Well, let’s start with the easy one - the 301 can be serviced by a whole host of worthy people, but I would say that the best candidates are Garrard/Loricraft themselves (terry@garrard501.com; 01488 72267 - be patient, however, as it’s sometimes difficult to get hold of Terry) or Dr Martin Basin (01584 823446), who performed his magic on publisher Noel’s 401.

The other two items are a little trickier. Loricraft quite clearly state that they cannot help with any models other than the 301 and 401. However, I do not know if Dr. Basin dabbles in them at all. I must say that if you are using the TPA10 on the 301, it really does deserve an arm so much better, as I’m afraid the TPA10 is an old relic best left to a museum, or a nice display on your mantelpiece!

Regarding the Type A, this is another fantastic old timer that is impressively constructed and fearlessly complicated. The spares situation for this unit is simple - there are none - but generally all they need for servicing is a good strip down, clean and some nice new lubricant. As you may have gathered, this is not a job for the faint-hearted. However - my own Type A took me the best part of a week’s worth of evenings to service a few years back.

Your best option would be to...
Garrard 301 - a wonderful piece of machinery, but one that needs regular care to run at its best.

I speak nicely to one or two of your local TV/electronics repair shops to see if any one of them would like to get their hands dirty, Sadly, however, I suspect that, as with the TPA10, any servicing cost would far outweigh the value of the item, so it depends on how sentimentally attached to them you are. AS

Linn Letter

Hi there

I assume the hi-fi press is aware of the problems at Linn, referred to in the (Glasgow) Herald article dated 18 April? See www.theherald.co.uk / mostpopular.var.1335339.most viewed. linn_staff_face_up_to_job_cuts.php

It certainly came as a shock to this reader, and I wonder whether Linn can actually remain in business, whether other hi-fi manufacturers are in equal trouble, and whether most of us will be able to afford any remaining Linn products? The latest 'SE updates for the Sondek (my only Linn product) certainly seem to set the tone for high prices!

Sondek (my only Linn product) certainly seems to set the tone for high prices! I have a Rega P3- RB300-Elys, Naim 62/90 with MM card, Myryad MXC 6000 CD, Dynaudio 140s and a whole host of upgrade possibilities.

Then if you want even more music, at about £500 comes very highly rated at Hi-Fi World - it will push the total to around £1,162. The MC route will put you in good stead for future upgrade cartridges, which the 'Michell' Rega can definitely exploit (remember, I used a Michell upgraded RB250 without a rewire and it was stunningly good with the £995 Transfiguration Spirit III MC).

At a later date, if you really want to, you can get the Michell-RB300 re wired and this will further improve things, but not as much as doing the first set of upgrades. I haven't heard the Cartridge Man Music Maker Moving iron (MM) Cartridge yet, and though it has a great reputation, I can't obviously comment on its sound quality. For practicality however, should you want to upgrade cartridges, then the MC route offers more possibilities... Do consult the very helpful people at Michell for advice on fitting their upgrades. CV

I'd go along with Channa's recommendations, but would like to add that I certainly advise spending the extra £200 over the Rondo Red for the Rondo Bronze, as I feel the improvement more than justifies the price. The Bronze brings real high end sophistication to the party, with massive amounts of detail and excellent tracking to boot. For me, this is effectively the cheapest MC worth having. Only when you move up to the Kontrapunkt b, for several hundred pounds more, do you realise that the Rondo Bronze is in any way lacking; it sounds just a tad 'flat' and mechanical by comparison. As an aside, I would personally recommend the Ortofon Rondo Bronze over the Cartridge Man Music Maker. I know the latter is held in high regard, but for me it sounds congested and lacking detail compared to the Ortofon. DP
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Roy Gregory, Pico Review, Hi-Fi+ Issue 46

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Martin Colloms | Hi-Fi News May 2006

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<tr>
<th>Product</th>
<th>Kit Price</th>
<th>Built &amp; Tested Price</th>
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<tbody>
<tr>
<td>WDKEL84 Kit</td>
<td>£369</td>
<td>£544</td>
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"It proved itself to be an engaging valve amplifier that measured well and sounded superb. Quite simply it plays music, and plays it extremely well."

Adam Smith, Hi-Fi World Dec 06

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<tr>
<th>Product</th>
<th>Kit Price</th>
<th>Built &amp; Tested Price</th>
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<tbody>
<tr>
<td>WD88VA Kit</td>
<td>£849</td>
<td>£1099</td>
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A beautifully simple stereo headphone amplifier design using Mullard ECL83 valves. It works directly from any source. The circuit uses twin high specification E/I output transformers that can be wired to drive any headphones between 16 to 300 Ohms.

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<tr>
<th>Product</th>
<th>Kit Price</th>
<th>Built &amp; Tested Price</th>
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<tr>
<td>Headphone II Kit</td>
<td>£275</td>
<td>£404</td>
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WDPre3 Modular Preamplifier System

"So there we have it, a preamplifier capable of driving any load and maintaining its linearity no matter what cables or partnering equipment you prefer to use."

This 5 input line level preamp is essentially an SE triode power amplifier in concept. WDPre3 uses an ECC82 double triode arranged as input voltage amplifier and power output amplifier stages, the latter driving large 20:1 output transformers.

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<tr>
<th>Product</th>
<th>Kit Price</th>
<th>Built &amp; Tested Price</th>
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<tbody>
<tr>
<td>WDPre3 Kit</td>
<td>£299</td>
<td>£424</td>
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</table>

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"...only a few designs meet the requirements of tonal accuracy and maximum retrieval of musical detail."

Twin input preamp with MM and MC relay switched inputs, passive RIAA equalisation and wide bandwidth MC step-up transformers.

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<tr>
<th>Product</th>
<th>Kit Price</th>
<th>Built &amp; Tested Price</th>
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<tr>
<td>WDPhono3S Kit</td>
<td>£349</td>
<td>£474</td>
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WDPSU3 Power Supply

Can be used to power either WDPre3 or WDPhono3 units individually or together.

High performance choke power supply with separate HT and Heater feeds for both WDPre3 and WDPhono3 preamplifiers.

<table>
<thead>
<tr>
<th>Product</th>
<th>Kit Price</th>
<th>Built &amp; Tested Price</th>
</tr>
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<tbody>
<tr>
<td>WDPSU3 Kit</td>
<td>£199</td>
<td>£299</td>
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NAIM CDSi CD player under guarantee. New upgraded remote control. As new, boxed, hardly used. £500. Call Chris 01395 513 529 (East Devon)

B&W 603 Series 2 floorstanding speakers. Immaculate condition with original boxes. Can demonstrate, £350 ono. Tel: 01273 589 370 (Brighton area)

KEF SPEAKERS Q Series set. Q35 2 floorstanders. Q85s surround speakers. Q95c centre speaker. All in great condition. £260 for all speakers. Buyer collects. Tel: Jake 01707 852 119 (N.London) Email: jakedenner22@hotmail.co.uk

PINK TRIANGLE Export turntable. Natural ash with Linn LVX arm, moving magnet cartridge. New main bearing. Good condition. £195 ono. Tel: 07818 058 685

LOWTHER LOWTHER Acousta Twin cabinets wanted. Made, mid to late 1960’s. Working drawings wanted. Tel: Jeff 020 8220 0380

TDK Xa-80 Active speakers (multimedia) comprising two NXT panels plus amp and subwoofer. New condition, hardly used. £40. Tel: 01341 422 111 (Dolgellau Gwynedd)

WANTED: DENON DCD 1290 or 890. I think these models matched the DAP 5500 Pre and POA 6600 mono blocks. Please ring with details 0191 471 669 after 6pm

GUIDELINES FOR BUYING AND SELLING SECOND-HAND EQUIPMENT

FOR THE BUYER

1. Not everyone is honest - Buyer Beware!
2. Don’t send cash!
3. Accept no verbal guarantees.
4. Have you heard the item or something similar? If not, why do you want it?
5. Don’t pretend to have knowledge - it’s your fingers that will get burnt!
6. Is it working? If not, why not?
7. Has it been modified and, if so, have notes been kept?
8. Was it any good in the first place?
9. Don’t send cash!
10. If you are in the slightest doubt, arrange an audition (see point 5). It’s too far, wait for another time.
11. Either buy it or don’t: vendors are excusably impatient with ‘consulta non’ exercises.
12. Don’t send cash!

FOR THE SELLER

1. Not everyone is honest - Seller Beware!
2. Make no verbal guarantees.
3. Even ‘nearly new’ is still second-hand. If the manufacturer’s guarantee is no longer in force, your price should reflect this.
4. There is very little intrinsic value in second-hand hi-fi; it’s only worth what someone will pay for it.
5. The best guide to pricing is last month’s Classifieds: that a ‘classic’ was worth £xxx a year or two ago is no guide. Values fall as well as rise.
6. Amateur second-hand dealing is not a big money game: you win some, you lose some.
7. Be prompt with despatch. In doubt about buyer’s bona-fides, either wash out the deal or send C.O.D.
8. There will always be time-wasters; be tolerant within reason!
We stock a full range of valves (tubes) from famous manufacturers. The list below is a selection of favourites. If you don't see what you want - please ring or e-mail. We are happy to match valves on request.

Valves:
- EL84M Russian (Sovtek) £11.49
- EL84 JJ (to Tesla Specification)
- 300B (popular and reliable) £83.50
- EH300B Gold Grid £69.00
- Svetlana KT88 (outstanding) £36.50
- Sovtek 6550 WE £19.49
- Sovtek 5881 £12.49
- EL34 ElectroHarmonix £11.85
- 5U4G Sovtek £11.85
- GZ34 JJ £12.49
- 5687 WB Philips NOS (gutsy) £10.25
- Svetlana 6N1P £10.25
- 6SN7GT EH (to RCA spec) £9.94
- ECF80 £4.70

Valve Amplifiers:
- by Morgan Jones £29.50
- Life & Works of A.D. Blumlein by R.C. Alexander £18.00
- Understand Amplifiers by Owen Bishop £19.50
- Audio & Hi-Fi Handbook edited by Ian Sinclair £34.50

Valve Bases:
- B7A Chassis Mount £4.70
- B9A Chassis Mount £4.70
- B9A PCB Mount £4.70
- Octal Chassis Mount £4.70
- UX4 Chassis Mount £16.98

Books:
- Valve & Transistor Audio Amps by John Linsley Hood £24.50
- Self on Audio by Douglas Self £26.50
- Valve Radio & Audio Repair Handbook by Chas E. Miller £22.50
- Building Valve Amplifiers by Morgan Jones £19.50
- Valve Amplifiers by Morgan Jones £29.50

Printed Circuit Boards:
- HD83 Headphone II £16.25
- Phono II phono stage £16.25
- PSU II power supply £16.25
- Pre II preamplifier £16.25
- KEL84 Power amp £24.98

Power Supply parts:
- UF5048 700V 3A rectifier diode ultra-fast recovery £1.25
- Cree CSD4060A rectifier diode Schottky 600V 4A £6.75
- Jensen 4700uF 16v DC £13.69
- 250µF 400V electrolytic £25.85
- Polyester 0.1uF 630v DC £4.25
- Polyester 0.47uF 630v DC £1.29
- Panasonic 220µF 500V DC £0.55
- WIMA Metalised film £0.55
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- Bridge Rectifier 25A 700V 28.5mm x 7.5mm £3.25

We stock a wide range of parts to facilitate the build of valve amplifiers. Please ring or e-mail for details. See our on-line catalogue at World Designs, 59 Main Street, Great Gidding, Huntingdon, Cambs, PE28 5NU

www.world-designs.co.uk
Tel: 01832 293320
KEF R105 loudspeakers, bought 5 months ago from Big Ears. Perfect grilles, otherwise slight marks on wood. No catches, genuine bargain. Prefer Mission 770. Callers only, £80. Also Acoustic Research 142s, tatty grilles, £20. Tel: 01843 843 145

PLINIUS 2100i, boxed (£1300) £375. Audiophi Kontrasts (£3000), excellent, £600. Talk Electronics Breeze 1 with Whirlwind - 5 M/M - M/C, boxed (£1000) £250. Tel: 0772 962 0621

AMC CVT 3030 valve amplifier, used approx. one year, stored since (see Olde World review) £150. Also Creek CAS310 tube tuner, £75. Both items excellent and boxed Tel: John 01708 344 334 (Romford, Essex)

APOGEE STAGES, fair condition, no buzz. £500 must collect (Kent) Kimber 8TC, 5m, £750 Call 01843 600722 after 6pm

PIONEER 609 CD recorder £120 (£280), immaculate, boxed as new with manual, remote, digital cable & discs. Mission 771e speakers £60 (£200) good condition, perfect working order. Atlas Qeostor interconnect 1metre. £35 (half price!) Boxed as new. Lee, West Midlands. 01384 412234, Email: lee@tyco.co.uk

PMC OB1 speakers, 300 watts £1700ono (£2700). Nordost Silver Shadow XLR lead 0.6 metre DAC to Transport, £200 ono (£360). Musicworks six way block £95 (£230). Tel: Gary 0117 962 9725

QUAD 77 integrated amplifier £325. Goldring G1024 cartridge, unused, boxed, £75. Marantz PM17 Mk3 K1 Signature, little used, £650 (£750) boxed. Marantz CD17 Mk3, £350. Tel: 020 7386 9177

TANNOY CHESTER T165, walnut, excellent condition for year, 1978, 10 inch D.C., 90dB sensitivity. Best offer around £350 secure. Tel Darren 07968 764 293 or Email: dazzert@hotmail.com

MISSION 752 floorstanders (Mk. 1.). Gloss black finish. Excellent condition, unboxed. Buyer collects or would consider delivery within 20 miles of Chester. £190. 0151 4734264 or 01978 762903 cawarra@tiscali.co.uk

LYNX TWO-A 4in 4out 24192 soundcard. Precision clock and components give punted detailed sound with sense space. Loopback records what you hear. £855 @Dophin: £450 ono hww_dav@hotmail.com 02086740678

TANOYY TD12 (£6500) £2900. Monopole 42s beige and black £450. Usher 1.5 power amp (£1500) £650, Rega Planet 2000 black £250. Musical Fidelity E100 £150. Tel: 0797473101 (Shropshire)

SYSTEMDEK IX with modded Rega 250 Arm (Michell Stud End,Weights & VTA Adjuster) plus spare belts. £150. Onavector 10x4, approx 40hrs use, perfect & Boxed. £100. Musical Fidelity 10xD stage, perfect & Boxed. £70. Ortofon T5 Inline MC Step up £40. Andrew.Burchall@binternet.com

PAIR EARLY Quad ESL57 speakers good condition. £595, immaculate boxed. SME 3009 fixed H/S, £170. Sugden A21 amp. £100. Thorens TD125, deck only immaculate £80. Tel: Steve on 01482 651677

QUAD ESL 63 Speakers, with stands and instruction booklet. Truly amazing sound quality, excellent condition, look like new. Audition welcome, first to hear will buy. £1,200. 07747697141 (Barry Adams, Essex)

B&W CDM-INT speakers and B&W FS-CDM stands - Like new condition in red cherry wood £450 - Based in Marlow, Bucks. Contact Sam - 077305 26654

CLASSIC CONTACTS
When a classic goes ‘poof’ your troubles have just started, but there may be a good ending. Replacing failing parts can improve the sound, so here is a short listing of all those companies who specialise in getting a classic up and running again after its deposited a small ring of soot on your ceiling!

CLASSIQUE SOUNDS (Paul Greenfield, Leicester) ESL-57s restored, rebuilt, fully renovated or improved. Leak, Quad valves amps etc. Tel: 0116 233 5173 / Mob: 0116 2835821 Email: classique_sounds@yahoo.co.uk www.flashbackcars.co.uk/classique

GT AUDIO (Graham Tricker, Bucks) Leak Troughline specialists. Also Quad and most classic tuners, radios and amplifiers restored, repaired. Tel: 01895 833099 / Mob: 07960 692579 www.gtaudio.com

AUDIOLAB (Phil Pimbloe, Leeds) Renovation, repair and restoration. Specialist in valve h-f-r, radio transmitters, cinema amps, kit building. Tel: 0113 244 0378 www.audiolabs.co.uk

QUAD ELECTROACOUSTICS (Cambs) Quad’s service department, able to repair almost all Quad products, from the very first! Tel: 0145 4580011 www.quad-hifi.co.uk

DR MARTIN BASTIN (Shropshire) Garrard 301/401 restoration, renovation and service. Special plinths, rumble cures, etc. Tel: 01584 823446

LORICRAFT AUDIO (Terry O’Sullivan, Bucks) Garrard 301/401 and their own 501repair, services and repair.Alo Epos and TDL loudspeakers. Tel 020 8 864 8008 www.lockwoodaudio.co.uk

LOCKWOOD AUDIO (London) Tannoy loudspeaker parts, restoration and repair. Also Epos and TDL loudspeakers. Tel: 020 8 864 8008 www.lockwoodaudio.co.uk

CARTRIDGE MAN (Len Gregory, London) Specialist cartridge re-sleeving and service and repairs. High quality special cartridges. Tel: 020 8 688 6565

TECHNICAL AND GENERAL (East Sussex) Turntable parts - wide range of spares and accessories, plus arms and cartridges. Tel: 01892 645434

REVOX (Brian Reeves, Cheshire) Revox tape recorder spares, service and repair. Accessories also available. Tel: 0161 499 2349 Email: brian@revoxservice.co.uk www.revoxfreeuk.com

SOWTER TRANSFORMERS (Brian Sowter, Ipswich) Large range of audio transformers for valve amps, cartridges, line drive, intersstage plus all associated services. Tel: 01473 252794 www.sowter.co.uk

ONE THING (Coversey) Specialist in electrostatic panel manufacture and repair. Can refurbish ESL 57s and 63s as well as Leak Trouthlines and Quad 4s. Email: one.thing@internetworld.com www.onethingaudio.com

OCTAVE AUDIO WOODWORKING (Bristol) Unit 2, 16 Midland Street, St Phillips, Bristol. Tel: 0117 925 6015 www.octave-am.co.uk

MARANTZ DV7001 DVD/SACD multi-region player black as brand new List £600 accept £495 Tel: 020 8951 3178

ATC SCM20 stand mount in cherry with Target R series speaker stands immaculate £1150 ono. Dynaudio Audience 62 cherry £375 ono. Contact Jeremy 07977254160 jeremy@datasharp.uk.com

PAIR OF Next Elite SE speakers in ash £650 (£1300). Audiolab 8000a amp £250 Arcam Alpha+ CD £120. Sound Org 3 shelf rack £50. All in excellent condition, Tel Dave 01630 685966.

AUDIOLAB 8000S Amplifier 60W £120. Monitor Audio 700 PMC bookshelf speakers £120. Energy Take 5.2 Satellite speakers including stands (1 pair) & Energy centre speaker £100. Excellent condition Tel: 01689 608 925 or 0794 1107141 (Orpington, Kent)

PROAC STUDIO 125 floorstanding loudspeakers. Finished in cherry. Good condition and sound. Selling to fund DIY habit. £650 ono. Halifax, West Yorks. 01937 863495 (work), 01422 240168 (home), nick@lurcher.org

ARKLESS ELECTRONICS (Northumberland) Specialist in repairs, restoration and modifications to all amplifiers, valve or solid state, ancient and modern. Tel: 01670 829891 Email: arkless.electronics@btinternet.com

WEMBLEY LOUDSPEAKER (Paul MacCallam, London) Comprehensive loudspeaker servicing. Tel: 020 8 743 4567 Email: paul@wembleyloudspeaker.co.uk www.wembleyloudspeaker.com

EXPERT STYLUS COMPANY (Wynham Hodgson, Surrey) Stylus replacement service for all types of cartridge. Including precise profiling for 78s Tel: 01372 276604 Email: w.hodgson@btclick.com

CLASSIC NAKAMICHI (Paul Wills, Worthing West Sussex) Restore, Repair & Service Nakamichi Cassette Decks. Tel: 01903 695695 Email: paul@bowersandwilkins.co.uk www.bowersandwilkins.co.uk
With the summer finally upon us, Hi-Fi World is having its own silly season with The Alternative Hi-Fi Awards! No, these awards aren't bestowed from on high to worthy products by a jury of thousands. Instead, they're us taking a wry look at the weird and not-so-wonderful side of all the kit we've reviewed in the past year. Gongs will be given for accolades as diverse as 'the best disc drawer' and 'the most curious remote control'! Alongside this, you'll find a wealth of worthy review kit, from Consonance's CD120 Linear CD spinner [pictured] to Koetsu's evergreen Red Signature moving coil. Don't miss it!
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**FREE READER CLASSIFIED ADS ORDER FORM**

**TERMS AND CONDITIONS:** Only one advert per reader. Maximum length per advert is 30 words. Adverts over 30 words will not be accepted. Telephone numbers and E-mail addresses are treated as one word. Model numbers are treated as one word i.e. Quad 303 = two words. Sorry, we cannot accept adverts over the telephone. The Publisher reserves the right to judge submissions.

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Hi-Fi World Free Readers Ads,
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London, NW6 5LF.

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Last issue's overview of The Andrews Sisters broached the question of 'what is a classic recording?' That particular column addressed one side of the conundrum — this one addresses another. Blue Note has just released a range of classic reissues under the 'Rudy Van Gelder' moniker. Van Gelder, engineer, was the driving force of the record label's music — in fact, the albums were recorded at his studio and he has remastered this newly reissued series.

"The concept of it came from Hitoshi Namekata", Van Gelder said. "He's the one that runs the Blue Note label in Japan for Toshiba-EMI. He wanted me to do it and he called Michael Cuscuna (boss of Mosaic Records in the USA) and Michael called me to see if I was interested and it ended up that absolutely I would be, just as long as I could get the original tapes whenever possible. It had nothing to do with Blue Note New York other than Michael as a producer. Subsequently, there are few issues being made in the United States. They are different. They have extra tracks on them. You see, the concept of this was to duplicate the original LPs as much as possible. It had nothing to do with Blue Note New York other than Michael as a producer. Subsequently, there are few issues being made in the United States. They are different. They have extra tracks on them. You see, the concept of this was to duplicate the original LPs as much as possible.

Mingus's record label at the time, Fantasy, had nothing to do with the original recording — if they had then a live album would probably have been in the offing. According to Michael Cuscuna, "students at Cornell University did [the recording] and gave the tape to Mingus. In 1988, Sue Mingus [Charles' widow] had Fantasy Studios transfer the tapes to Mitsubishi X-86 reel-to-reel digital tape. No one knows what happened to the original tapes. They are not in Sue's possession or in the Fantasy vault."

Despite the missing original tapes, Sue Mingus kept the copies in a closet where they remained in good condition until they were used for this CD issue. Of course, Cuscuna is disappointed that the masters could not be found. "I would have liked to have the analogue original because we could have transferred it to 24bit with today's A-to-D converters, and it would have been closer to analogue in sound with more detail. We also would have been able to play with the azimuth on the one tune that had a phasing effect on the cymbal in places. That said, I am pleased with the sound, overall. The Mitsubishi X-86 machine had a much warmer, more accurate sound than those horrible Sony U-matic machines."

What has been finally presented is the complete gig, with Clifford Jordan on reeds plus Jaki Byard on piano and Dannie Richmond on drums. The first CD is the first half and the second CD is the second half after an intermission. The energy and spirit of the entire concert is strong, but there are slight quality problems. For example, in addition to the cymbal phasing mentioned by Cuscuna, the trumpet is sometimes too low in the mix. However, Cuscuna has done a great job to encourage as much music to ooze out of the tape copy as possible.

For example, as a result of EQ tweaking, the team has been able to reinforce and bring out the bass to sound the way Charles sounded in a live situation. Also, that trumpet is in no way a disaster, as it has been effectively helped out in places. In addition, the tape has had a general clean where ticks or other recording defects have been addressed. All Blue Note and Mingus fans should make haste and grab this album as soon as they can..."
Those who appreciate good sound will prefer the tighter "S."

New **3010S** series:

**Tighter bottom-end, livelier sound, more drive...same price**

**CD player £1200**
- Brand-new "CD solution" - custom-made transport mechanism, servo units and control mechanisms
- Twin Burr-Brown PCM 1704 mono DACs and a discrete output stage
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**Integrated Amplifier £1000**
- Larger power supply
- 110 watts RMS (as compared to 100W for the previous model)
- 6 line inputs, bi-wiring and bi-amping compatible
- Option to fit a MC or MM phono cartridge
- Remote control

**Power Amplifier £800**
- Larger power supply
- 110 watts RMS (as compared to 100W for the previous model)
- Capable of driving sophisticated speaker systems, in bi-amping mode or monoblock mode
- Clean and extended low frequency response
We’re not trying to give the most. We’re trying to lose the least. That was John Bowers' philosophy 40 years ago, and it lives on in our new 600 Series. Speakers that neither add to, nor take away from, the original sound. That requires world-class science – and extremely experienced ears. Because once we’ve selected exactly the right components, we begin the long, careful process of tuning. Listening and refining, over and over. Until the frequencies combine to conjure a sound so true, so alive, you want to reach out and touch it. Dr John Dibb, Senior Development Engineer and Fellow of the Society of Sound, on the new 600 Series.

Visit the Society of Sound at www.bowers-wilkins.com