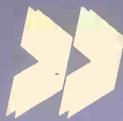


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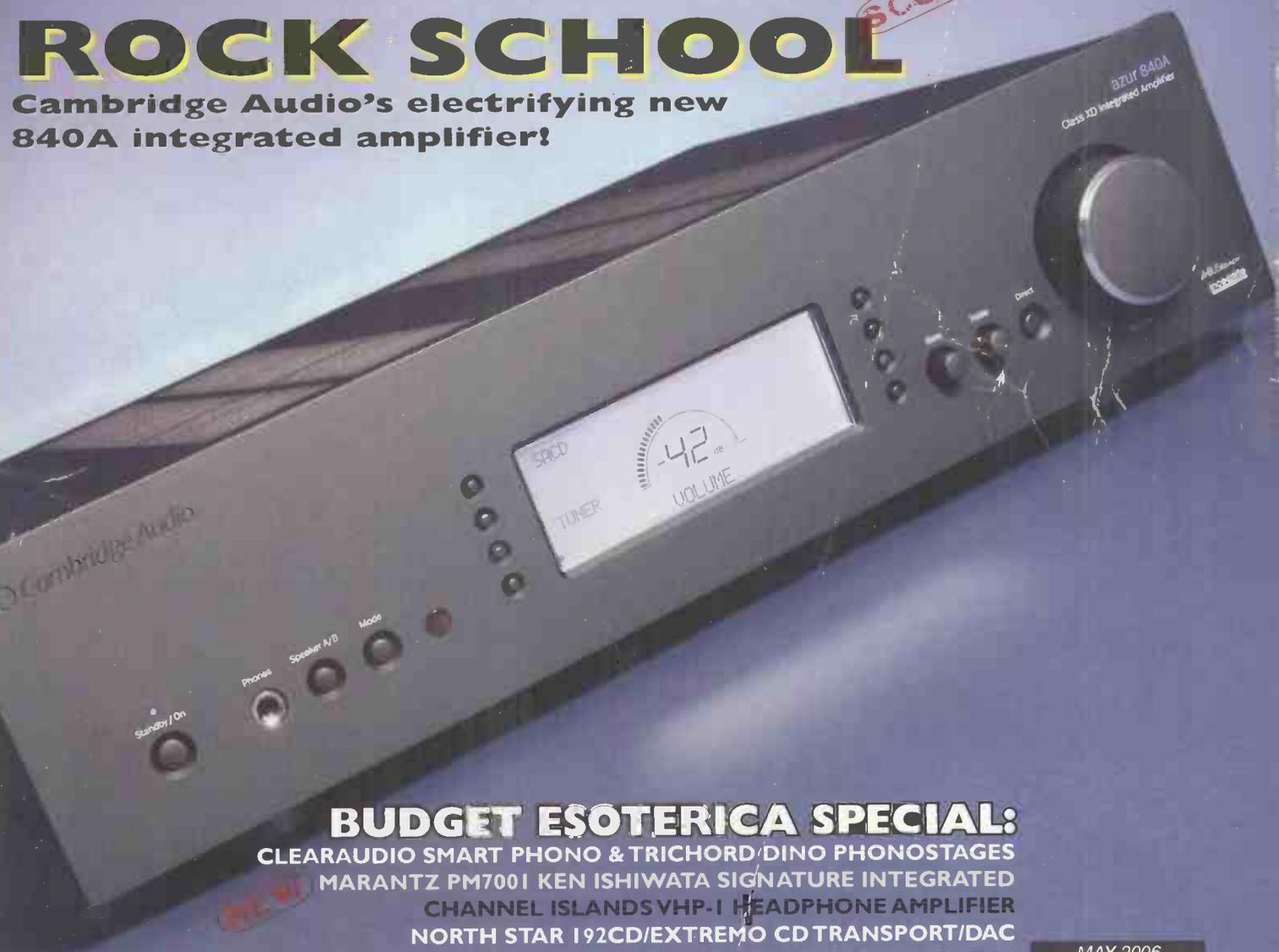
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SCOOP

ROCK SCHOOL

Cambridge Audio's electrifying new
840A integrated amplifier!



BUDGET ESOTERICA SPECIAL:

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MARANTZ PM700I KEN ISHIWATA SIGNATURE INTEGRATED
CHANNEL ISLANDS VHP-1 HEADPHONE AMPLIFIER
NORTH STAR 192CD/EXTREMO CD TRANSPORT/DAC
MODWRIGHT SWL 9.0SE VALVE PREAMPLIFIER
FEATURE: THE ART OF SYSTEM BUILDING
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MAGNA ACUSTICA LOUDSPEAKERS
GOLDRING DR-150 HEADPHONES
ROGERS LS603 LOUDSPEAKERS
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MAY 2006



BRISTOL SHOW REPORT * COMPUTER AUDIO

10 PAGES OF HI-FI QUESTIONS & ANSWERS * CLASSIFIED ADS



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The problem with being male is that whole areas of the human retail experience are cruelly closed off to you. Whereas our wives, girlfriends, sisters and mothers have countless opportunities to spend money on exotic jewellery, expensive handbags and other such essentials, us poor blokes are limited to the occasional new watch and a pair of cufflinks you just know you'll never wear...

That's where hi-fi comes in – for some of us, at least. There's a sizeable minority of audiophiles who, like Oscar Wilde, can resist anything except temptation. The first sight of an exquisitely finished CD spinner or pair of beautifully hewn loudspeakers has them reaching for their credit cards with the wide-eyed glee of their spouses at a Harrods till on sale day.

It's only when they get their new purchase home, plug it in and listen that their enthusiasm begins to wane. After all (shock! horror!), hi-fi has another altogether more useful role – to play music.

Stunningly styled, beautifully built, expensive designer hi-fi is all well and good if you like that sort of thing, just don't expect to get musical satisfaction or value for money. Your friends might be impressed, and your self-esteem might go up a notch or two as you look at that lovely bit of kit languishing in your very own listening room, but the chances are you'll end up looking more than listening...

That's why *Hi-Fi World* prefers 'ear candy' to 'eye candy'; we're not particularly impressed by looks that could kill; rather, we're always on the lookout for heart-stopping sonics – and this issue shows why.

May's magazine is about *budget esoterica* – products that offer something truly special in sonic terms, without having to spend a mint. On p10 we scoop the brand new Cambridge Audio 840A, a brilliant budget integrated for under £750. Starting from p16 we've assembled three systems (from Eastern Electric, Marantz and Rega) that sound better even than the sum of their illustrious parts. On p34 yours truly pontificates on the art of system building on a budget. We have a fantastic NorthStar CD transport and DAC combo for you on p42, an exotic yet affordable ModWright tube preamplifier on p46 and an amazing Class A power amplifier from JungSon on p50.

You'll find these products will leave your pockets surprisingly full, which in turn will give your other half an excuse to go on her very own shopping spree – surely the only downside to not splashing out on expensive hi-fi...

David Price, Editor

verdicts



OUTSTANDING
EXCELLENT
GOOD
MEDIOCRE
POOR
VALUE

simply the best
extremely capable
worth auditioning
unremarkable
seriously flawed
keenly priced



testing

Hi-Fi World has its own advanced test laboratory and acoustically treated listening room, and a dedicated team of experienced listeners. We review thoroughly by extensive auditioning, rather than by quick-fire group listening tests. Our engineering team designs a wide range of products in-house. No other hi-fi magazine is so expert and dedicated.



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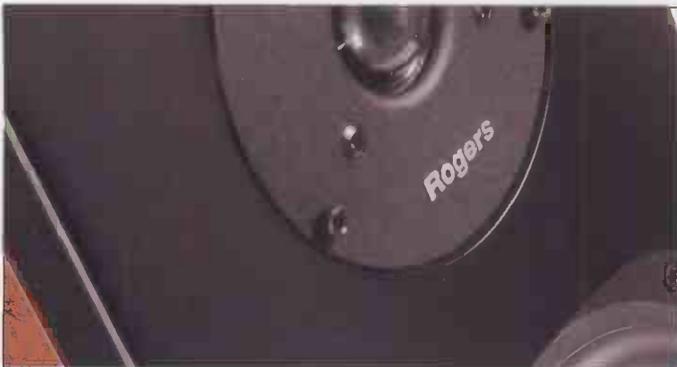
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Rogers LS603 - an old name with a new product...



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JungSon JA-88D - 80W of pure Class A for under £900!



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Cambridge Audio 840A - truly, affordable esoterica

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RETAILERS WELCOME

natural beauty

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MBL 101 Speakers, 9011 Power Amps, 6010 Pre Amp, 1621CD Transport and 1611 DA Converter



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GLENAIR WAYS

Much as we love Tannoy's massive high end Dual Concentrics, the styling is not everybody's cup of tea. Interesting then that the company has come up with the new Glenair, claimed to "bring a fresh and modern styling approach to the Tannoy Prestige range". Utilising the proven acoustic benefits of a trapezoidal cabinet design, Glenair bears all the hallmarks of bespoke loudspeaker craftsmanship, but with a more contemporary feel. Plywood manufactured from birch grown in slow-growing cold regions of the world and selected for its denser quality is used for the main structure of the speaker cabinet. Externally, it's finely crafted with American Cherry veneer and solid wood mouldings hand finished and polished. As with all other Prestige models, Glenair benefits from the unique advantages of the Tannoy Dual Concentric drive unit. With the HF unit mounted behind, and concentrically with the 15" LF unit, low and high frequency sound radiation is generated on the same axis. High frequency sound radiates from the centre of the low frequency unit through a carefully designed high frequency exponential horn. Low and high frequencies are therefore fully integrated at source. Tannoy says that, "each component part of the new Glenair complements one another to deliver an audiophile loudspeaker that runs true to the highly respected pedigree of the Prestige range and maintains Tannoy's leading position as an innovator of premium audio solutions". Retail price is a surprisingly modest £3,999 per pair. For further information, call Tannoy on +44 (0) 1236 420199 or click on www.tannoy.co.uk.



SYMPHONY ANGEL

Black Rhodium's new Symphony interconnect benefits from improved innovations in production, and the sophisticated use of high quality materials to deliver a musical performance characterised by a wonderful revelation of detail, says

designer Graham Nalty. Every pair of new Symphony Interconnects is twisted together, sporting 2 core 19 strand 0.2mm silver plated copper conductors insulated in low loss PTFE, screened in a silver plated copper braid. Hourglass silhouette, high quality phono plugs are used, for easy insertion and extraction from equipment. Price is £95 per metre. For more information, call 01332 342233, or click on www.blackrhodium.co.uk.

IT'S MAJIK!

Bristol Sound & Vision 2006 saw the debut of Linn's new MAJIK System – a dedicated, analogue music system for the purist audiophile. The new MAJIK System will revitalise any CD or vinyl collection through its sheer simplicity and focus on delivering the best musical performance possible, says Linn. It comprises the MAJIK CD player £1950, MAJIK KONTROL preamplifier £1750 and MAJIK 2100 power amplifier £1,450. The MAJIK CD player boasts technologies derived from Linn's acclaimed SONDEK CD12. The MAJIK KONTROL preamplifier has six stereo analogue inputs, allowing connection to and control of various sources such as CD player, turntable and tuner and a phonostage for MM and MC cartridges to suit any turntable and independent record path for continued enjoyment of the music without interrupting the recording. The MAJIK 2100 power amplifier includes Linn's proprietary CHAKRA amplifier technology and 4mm binding posts ensure solid electrical contact. All units boast Linn's proprietary Switch Mode Power Supply, which "runs much more efficiently and quietly than other power supplies and does not detract from the enjoyment of your music", says Linn. Modular and expandable, the system performance can be enhanced over a lifetime and can be upgraded to go AKTIV and further enhance the performance, and it is multi-room enabled so that the best sound quality can be enjoyed throughout the home as part of a Linn KNEKT multi-room system. For more details, call Linn on +44 (0) 161 766 1021 or click on www.linn.co.uk.



HEAVY SHIFT

OmniMount SAT3 loudspeaker stands are £150 monsters weighing in at a formidable 40kg per pair (and that's before you've added any acoustically deadening materials!). They sport a number of features including a sturdy cast-metal, three-point base (the most stable platform-possible) with adjustable spiked feet. Available in two heights, the loudspeaker stand also has three compartments in the tear drop-shaped column: two can be used for cable management, enabling easy biwiring, while the third can house acoustically deadening materials, such as lead shot or sand. For more information, click on www.omnimount.com.



COURTESY OF APPLE

APPLE GOES HI-FI!

Inventors of the iPod and general purveyors of superior quality computers (we think!) have made an audacious move into 'hi-fi' with the iPod Hi-Fi, an all-new speaker system that works seamlessly with the iPod. The company claims it delivers "breathtaking acoustic performance and room-filling sound unlike any other speaker system designed for the iPod in an innovative, all-in-one design that can be powered from a wall socket or by six D-cell batteries". "Its all-in-one design features a unique isolated enclosure system that includes two custom designed wide range speakers and a tuned, ported bass system. iPod Hi-Fi features handles to easily transport your stereo anywhere, a removable front grille with precision-mounting clips, touch-sensitive volume control buttons, the Apple Remote for easy song and volume control from anywhere in the room, a universal power supply incorporated into the all-in-one design so there's no bulky power brick to

weigh it down, and the ability to power iPod Hi-Fi from six D-cell batteries for true portability. It automatically recharges the iPod while docked and displays features of iPod that maximise the iPod Hi-Fi experience such as Tone Control, Large Album Art mode and volume mirroring. It also includes a dual-purpose 3.5-mm auxiliary input that accepts either analogue or digital signals for easy connection to a wide range of audio sources. Price, including the Apple Remote, a removable grille, an AC power cord and 10 Universal Dock adapters, is £249. For more information, click on www.apple.com/uk. Customers in the U.K. can buy direct from the Apple Store www.apple.com/ukstore or 0800 039 1010.

Sennheiser CX300



IN DEPENDENT

Thanks to the likes of Etymotic, in-ear headphones have a big following these days, and so it's surprising that the kings of on-ear headphones haven't entered the market - until now. Meet Sennheiser's new CX 300 Ear-Canal earphone, available in either black or silver for £39.95. The company says it's a massive quality upgrade for iPod, MP3, CD, DVD, Video and Gaming Portables, as they are "perfect travel headphones which reduce background noise, have minimal sound leakage and great sound". Additionally, their very high efficiency helps prolong battery life on iPods and all portable devices. The CX 300 employs an advanced, miniaturised driver, tailored by Sennheiser for smooth, acoustically correct in-ear operation; this provides the CX 300 with an extended response of 18Hz-21 kHz. It is supplied with three different sized ear adapters in soft, silicone rubber that ensure long-term comfort, as well as the excellent in-ear seal necessary both for ambient-noise reduction and deep-bass.

Sennheiser HD415

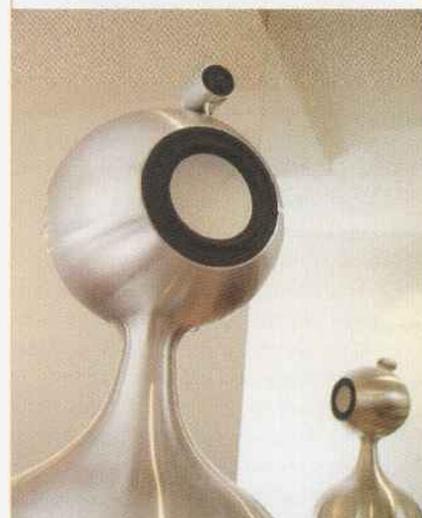


The company also has a new range of entry level 'Four Series' hi-fi headphones. The HD 415 at £29.95 is claimed to offer excellent sound and features an eye-catching design. It is suitable for portables and for home hi-fi and is fitted with a handy cord winder to allow the cable to be individually adjusted for usage. The HD 435 at £39.95, has a cleaner sound and comes equipped with an in-line volume control, a detachable single-sided cable and a protective pouch. Both the 415 and 435 offer good wearing comfort and strong, yet lightweight construction, that ensures they remain comfortable even after the longest listening sessions, says Sennheiser. Both models utilise an ultra-fast, low-mass dynamic driver that delivers transparent sound, with defined and extended smooth bass response.

For more information, call 0800 652 5002 or click on www.sennheiser.co.uk.

LOST IN SPACE?

Conclusive proof that aliens have indeed landed on Earth comes from the spy-shot showing the invaders in 'seek and destroy mode', in a fashionable, bijou West London apartment. When questioned, it turned out that both aliens answered to the name O'Heochia, which by strange coincidence is also that of an innovative Irish loudspeaker brand...



VIDEO STAR

The princely sum of £2,699.99 buys you the new Denon DVD-A|XVA Reference Class THX-ULTRA Universal Disc Player. Video fans should note: if bought separately today, the high-definition technology from Teranex and DVDO in this player would cost around £35,000, but those awfully nice Denon people have bundled "studio-grade picture enhancement with the best 1080p scaler", for a superb picture from standard DVD. Denon says, "this is also a world class high-end music player for CD, SACD and DVD-A, and digitally linked by DenonLink3 it gets even better". As expected, the feature list is as long as a very long arm: HQV - from Silicon Optix (from the \$60k Teranex Xantus box), DVDO 1080p 10 bit Precision Video Scaling II technology by Anchor Bay Technologies, Denon Pixel Image Correction (DPIC) for custom picture enhancement and Denon's Advanced AL24 and DenonLink3 for superlative sound from all sources. With every output - HDMI, DVI, FireWire, DenonLink3, Progressive Component, Composite, S-Video, RGB SCART - it's very well connected. For more information, click on www.denon.co.uk.



SIXTY FOR YOU

Alphason Designs AG60 loudspeaker stand is claimed to "bring high-tech, audiophile innovation and super high quality finish to the budget loudspeaker stand market". This 600mm tall design is ideal for today's more compact loudspeakers and is priced at £79.90 per pair. A stronger structure than the already well regarded AG50, rigid tri-point coupling, differential material technology, heavy steel bracing and a unique filler material chosen for its acoustic properties mark out the AG60 as a thoroughbred high-end design, says Alphason. An additional £10 buys you a striking mirror chrome finish. For more information, click on www.alphasondesigns.com.



SPOTTED:

At Bristol's Sound & Vision 2006 show, your intrepid editor was accosted by two public relations people in puffa jackets touting large mobile telephones and at least £5 in petty cash. Despite vehement protestations to the contrary, he was forcibly muscled to the bar and made to drink pressurised ale by the curiously clad twosome. "Do I have to", he pleaded. "Yes", said the polyester pair. "Oh go on then", he retorted...



TRIDENT TRIUMPH

Like its acclaimed predecessors, the Gryphon Cantata and Poseidon, the new Gryphon Trident is based on rare insight into the true needs of the music enthusiast, says the company's founder Flemming E. Rasmussen. The Gryphon Trident achieves the theoretical ideal of all drivers operating in phase at all times at all frequencies, says the company, via dedicated onboard 500 Watt bass power amplifiers in conjunction with 7 extensively modified Danish drive units per speaker (four 8" woofers, two 5" midrange units, one Scan Speak Revelator ring radiator high frequency drive unit), hand-adjusted Constant Phase crossovers, proprietary Q Control room integration and a non-resonant enclosure weighing in at 195 kg per channel with a carefully calculated time-aligned front baffle curvature. Trident side panels incorporate Gryphon SideSpin, an innovative modular construction that makes removing and replacing them child's play, offering the Trident owner the option of re-dressing and updating the exterior of the loudspeakers at any time. This also opens up the possibility of having multiple panels to match changing moods. Price is a cool 70,000 Euros! For more information, click on www.gryphon-audio.com.



INDIGO VIOLET

The Indigo RCA is The Chord Company's most advanced interconnect, designed in response to the extended bandwidth speakers that are becoming so common and because Chord could, they say. It is produced to an extremely high tolerance and optimised for analogue signal transmission. It is a low capacitance design with extremely minimal high-frequency attenuation, making it ideal for accurate wide-bandwidth signal transfer. The shielding system is similar to the award-winning Signature RCA cable but all components are silver-plated for improved conductivity. The central conductor is comprised of unique, stranded, silver-plated oxygen-free copper conductors and is surrounded by a Teflon dielectric. The impedance is completely stable along the length of the cable, says Chord. The shield, based on the ideas used in Signature interconnects and speaker cable, has been left fully floating. The most striking visual feature of the new Chord Indigo RCA is the unique machined acrylic plug casing. Precision machined to an exacting tolerance from bonded solid acrylic block and diamond polished, the plug casing shrouds an ultra low-mass silver-plated earth connection and is designed to fit so that it damps any resonances. Available from Chord stockists now at a suggested retail price of £925 for a 1m cable. For more information click on www.chord.co.uk.



School of Rock

Fresh from the pen of electronics sage, Douglas Self, comes Cambridge Audio's new mid-price 'Class XD' integrated amplifier. If ever there was budget esoterica, it is this, thinks Noel Keywood...

The trouble with amplifiers is they're perfect. Unlike loudspeakers, which completely fall apart under close technical scrutiny, amplifiers survive all you can throw at them under test and come out smelling of roses. All the same, that didn't stop one reviewer famously calling a Japanese amplifier "boring" and was promptly threatened with legal action. At issue here wasn't just the description, but the impossibility of attaching it to something substantially free of any detectable blemish. Had there been something - anything - measurably wrong with that amplifier then there might have been some basis for his contention, some slight justification for the description

- but there wasn't.

Amplifier design has gone around in circles ever since, no one quite being certain why an amplifier should sound "boring", but knowing they often do. Listening to music through them is no more exciting than peeling potatoes. It should not be like this; the idea that a piece of hi-fi equipment should discourage listening rather than encourage it is bizarre.

These days effort is put into getting solid-state amplifiers to display a bit

UK we tend to stick to tried and tested formula circuits, often based on manufacturer's application notes, embellished with tiddly bits, such as high current power supplies.

This approach isn't unsuccessful, but neither is it ground breaking. Today's amplifiers generally sound tidy and clean.



Cambridge Audio

Standby/On

Preset

Speaker A/B

Mode

FM 93.7

TUNER

42
VOLUME

of brio, to bring at least a smidgen of life and soul to music. But because they are seemingly perfect in any case, how to do this isn't clear. There are a lot of ideas, especially in the USA. In the budget conscious

Cambridge Audio recently weighed into this difficult field with a new £749.95 model, the 840A reviewed here. This, they say, gives the low distortion of Class A, without its drawbacks - mainly excessive heat production. Nominally a 100W amplifier, if this amount of power was delivered by a conventional Class A it would stream heat from large heatsinks. To avoid this the 840A uses a new bias scheme they term Class XD

(crossover displacement). It produces better results than Class B, which typically suffers crossover distortion, and Class A/B which distorts at the transition between Class A and B working (they say).

Class XD uses a Displacer that draws current from one arm of the output pair, moving the output stage into asymmetric current conditions that moves the crossover region. Cambridge have developed the idea into a sophisticated form that uses active control circuitry, driven by the signal, to move the crossover region dynamically. In effect it is a form of super

undertray and aluminium side panels.

Where many manufacturers use an Alps Blue volume control these days, Cambridge use their own resistive ladder attenuator switched with relays - a very high quality solution. The relays make a clicking noise when adjusting volume.

Input selection is through relays too, an increasingly popular choice these days. These aren't those clunky old P.O. jobs by the way, but modern,

There are two pairs of loudspeaker outlets, a preamp out, and tape in and outputs. The rear panel carries an RS232 port and Infra Red emitter in and control bus in/out for custom install systems. There's also an A-Bus for their own Incognito multi-room keypads. The amplifier has a remote control and even a pair of fixed gain inputs so it can be used for front channels in a home cinema system.

SOUND QUALITY

This amplifier saw service in a variety of systems on a fairly casual basis before close scrutiny, hooked up to a pair of Spendor S8es. This helped run it in, as well as give us some idea of how it behaves driving a range of loudspeakers. My initial impressions were of an amplifier with real force, stemming from fulsome bass delivery and a generally engaging dynamic, yet its high frequency performance was curiously elusive.

Spendor S8es driven by a Sugden A21a Class A amplifier are a lovely combo if there ever was one. The A21a's absence of harshness nicely complements the smooth delivery of the Spondors, its treble sheen working well with the easy going nature of the S8es, gently lighting cymbals and strings to make them sparkingly clear on the soundstage. I compared the 840A to a Sugden A21a pure Class A amplifier. This was a no brainer - an amplifier claiming to be close to Class A against the real thing. There's a massive power gap of course, 120W to 18W, but the Spondors are sensitive enough to allow this and I don't review at particularly high volume levels; 18W is plenty enough in my 16ft by 14ft lounge.

The harp is a trying test of any hi-fi when closely recorded, and Malaguena from Andalucia, and 'Suite Espagnol' is one of those popular pieces that we all know if cannot name perhaps. From an SACD, the Telarc Classical Sampler 2, this instrument had real scale through the 840A, with fullness and body in the lower octaves that gave it force. There's was a sense of space around the instrument too that seemingly came from a dark background and fine resolution of low level decays. Yolanda Kondonassis is known for the vitality of her approach and this wasn't lost through the 840A; it was neatly timed and kept a strong grip on rhythmic progression, if not a razor sharp one. There was a subtle rounding of leading edges



gold plated low current jobbies, usually sealed in an inert atmosphere. This approach offers short signal paths and minimises active devices. This is the best way to do it; solid-state switching and attenuators are not ideal in hi-fi amplifiers.

The 840A has eight inputs, each of which can be allocated a name, which explains the front panel LCD. At its centre lies a symbol showing volume control position.

There is no phono stage; Cambridge have an external unit in their product range, the 640P. There is, however, one pair of balanced inputs for easy connection of a source with balanced outputs.

As most amplifiers and all CD players are basically unbalanced in their circuitry, using this connection method puts no fewer than two extra unbalanced-to-balanced circuit stages in the signal path, something that has to be weighed up against the benefits of improved hum and noise rejection of a balanced connection. The benefits aren't clear cut, but it is usually felt that balanced connections are better.

Class A/B. It is quite an innovation, significantly complicating the output stage.

Class A amplifiers often distort quite significantly in practice, but it isn't nasty crossover, it is relatively innocuous second and third harmonics at acceptably low level. But distortion isn't the only factor affecting sound quality, as Cambridge themselves acknowledge. Most manufacturers fit high current power supplies in order to ensure there's plenty of grunt to cope with low impedance loudspeakers, which most are these days.

The 840A is no exception, as you find when lifting it. It has totally independent power supplies for the power amplifier and preamplifier, as well isolated left and right channel power amplifier supplies. All this weight is held in place by a substantial chassis that uses a steel

CYRUS

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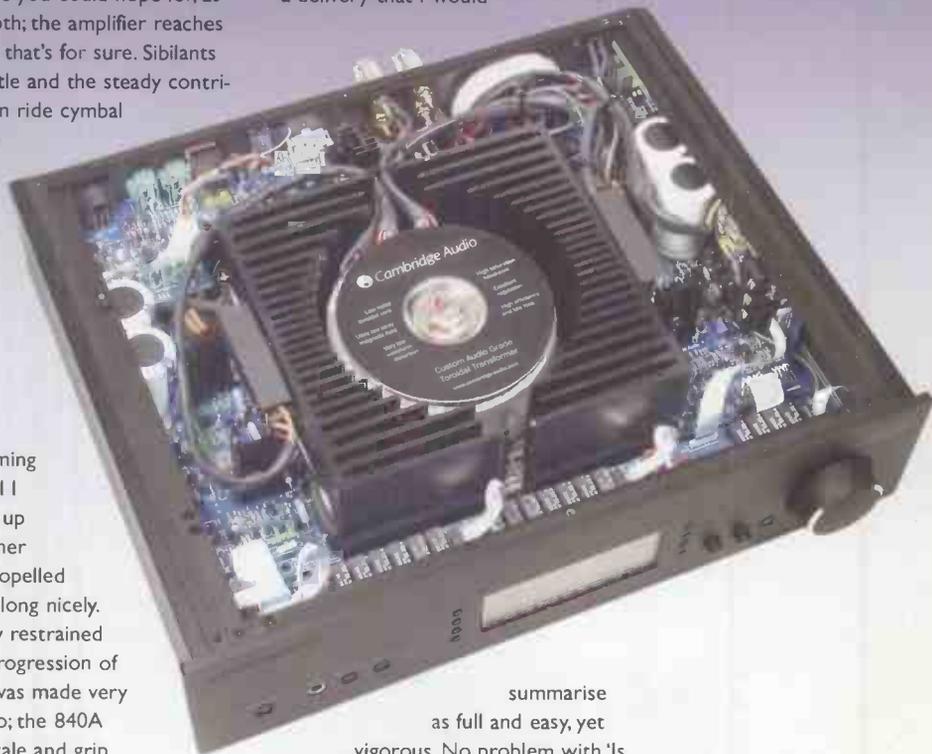
that smoothed what was, through the A21a, sharply defined events as the strings were plucked. This subtle softening of transient edges gave the 840A an almost warm feeling to its highs. Whilst the vibrant - almost lacerative - attack of the strings wasn't so strongly supported, there was a sense of weight to the instrument the Sugden couldn't sustain.

I was left more confused by these differences when listening to another equally vigorous and engaging player of stringed instrument: Nigel Kennedy. The A21a breezed through Vivaldi's 'Spring', from Kennedy's Greatest Hits CD. The 840A didn't have its sweetness of tone and at times I felt there was a slight fluttering or sense of modulation to strings, that diluted their tonal stability. Whilst Kennedy's violin inarguably had body and scale through the 840A that made it sound more a real instrument than a representation of one, as time stretched out I realised the A21a was easier and more stable to live with.

So Massenet's Meditation, the next track, was going to be a repeat performance I felt. I was wrong. Where it drifted by politely through the Sugden, Cambridge's 840A discovered an altogether more gripping and emotionally charged performance in which Kennedy's violin seemingly developed extraor-

Moving on to Rock, and the Scissor Sisters' 'Laura', the 840A showed its mettle. The track's muscular, metronomic bass line had all the force you could hope for, as well as depth; the amplifier reaches down well, that's for sure. Sibilants hissed a little and the steady contribution from ride cymbal was a trifle jittery I felt. There was lovely insight into vocals though, and again the strong sense of timing and control I had picked up on with other material propelled this track along nicely. The artfully restrained rhythmic progression of this track was made very obvious too; the 840A has both scale and grip beyond anything price rivals can muster. It's here, as a solid-state amplifier, that it really excels. Put the 840A against rivals and they will sound retentive by way of contrast. Here's an amplifier with scale, albeit quite easily presented.

Ms Dion and her vocal inflexions were delightfully resolved in front of me, in all naturalness. It was a delicious performance, made so by a delivery that I would



summarise as full and easy, yet vigorous. No problem with 'Is It Just Me?' from The Darkness either; power chords come through with a force that'll have all neighbours, except the must hardened headbangers, going apoplectic. Here's an amplifier that Rocks.

At a time when amplifiers still commonly sound dynamically restrained, Cambridge have produced a well honed powerhouse in the 840A that forges along. Its rich and lustrous presentation is gripping, yet often forceful; it's not often I am frightened by a violin! There's something in this package for everyone, classical and Rock listeners alike. Much of its ability comes from careful engineering - you can hear it in the all-round refinement of its delivery, from rock solid imaging to propulsive dynamics. The diamond lacks a little polish at high frequencies perhaps, but this seems a small price to pay for all its other strong qualities I feel. It's a gripping listen.



dinary powers! This wasn't what I had expected; the recording was strong in energy lower down the audio range and the 840A was resolving it with a sense of textural richness and dynamic force that was startling, yet really exciting.

Celine Dion's 'I'm Alive' was the track this amplifier had been waiting for. The simple synthesiser beat was delivered with impressive muscularity, whilst vocals stood out beautifully on the sound stage, locked into position. There was both air and space around

ANOTHER CLASS?

"It is indisputable that Class A power amplifiers have the potential to give best linearity when well designed" Cambridge say, "but they are impracticable".

Class A produces a lot of heat, because the amplifier is working flat out all the time. Getting rid of it means big heatsinks and hot running, which is why they are "impracticable". The output transistors don't

Does Class A give best sound quality? Noel Keywood investigates...

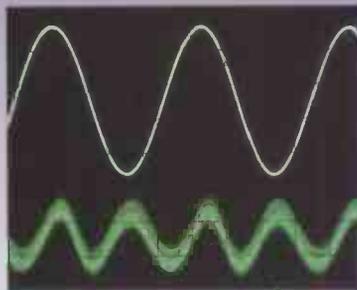
"crossover" to one another, as in conventional amplifiers, so much as share the load, one conducting more whilst the other conducts less, eliminating crossover distortion. As crossover distortion sounds nasty this is a good thing. All the same, they do distort.

How much a Class A amplifier distorts depends upon the linearity of, and matching between, output

devices, as well as the amount of feedback applied. They are not in theory any more linear than any other amplifier and in my experience Class A amplifiers usually distort quite significantly, certainly more than standard A/Bs, especially when the latter use wideband (fast) output devices and mountains of feedback.

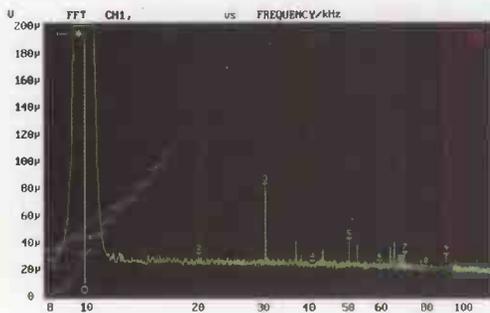
Take a look at the distortion from our classic Sugden A21a, a

benchmark for the breed. At high frequency, there's 0.03% distortion, a figure that is commonly bettered nowadays. It isn't the level of distortion that is important though,



Class A distortion from the Sugden A21a of 0.03% at 10kHz - no nasty bits, just second harmonic.

so much as what it contains, for there's innocuous distortion and nasty distortion. The Sugden produces solely second harmonic - and this is the most innocuous distortion going. In fact, it is the only distortion you can barely hear unless it exists in



Distortion of a Lux L-505f, a Class A/B. There's just 0.003% at 1W output, 10kHz. Third harmonic dominates.

large quantities, around 1% or more. Even then, second only produces a lightening of timbre. Better still, as output rises, the characteristic is resolutely maintained, so even when close to full output the amplifier still isn't producing nasty sounding distortion. All the same, by any standard it is not distortion free.

However, Mission and Musical Fidelity, to name but two examples, both make amplifiers that produce almost no measureable distortion at any level or frequency - and they aren't Class A. So do most Japanese companies: look at our Lux L-505f distortion analysis. This has been the case for the last fifteen years or so. Such amplifiers have lower distortion figures than the Sugden and negligible crossover distortion at high frequencies too, showing Class A amplifiers have no special advantages nowadays, when looked at from the distortion viewpoint at least.

You can argue though, that because Class A amplifiers don't in themselves produce nasty sounding distortion, there is more leeway

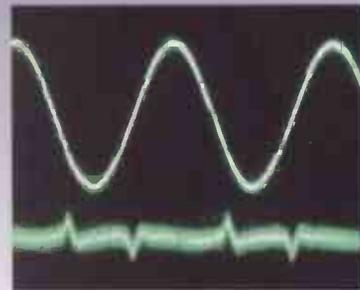
to experiment with various design parameters that may affect sound quality, especially feedback.

Class A amplifiers like our own Sugden do usually sound very good. But they are specialised audiophile designs using quality components and expensive design options such as high current power supplies. And Class A may also sound good because it is thermally stable, like a valve amplifier. There are no short term heating effects at the current junctions because the whole thing runs hot.

A good compromise between Class A and Class B is the most popular design choice for modern amplifiers: Class A/B. This gives good linearity at low levels by operating in Class A, banishing the great weakness of pure Class B, whilst switching to Class B at higher levels, for cool running. In practice Class A/Bs run warm, but acceptably so. Cambridge's new XD circuit is a sophisticated form of Class A/B in truth, one that gives a smoother transition between the two methods of operation. Unfortunately, it doesn't seem to be without its own problems our measurements showed. At high frequencies it doesn't look like a Class A at all, so much as a mediocre Class B.

The sound quality of an amplifier isn't determined by distortion alone. There are plenty of near-zero distortion amplifiers around, like the Lux L-505f I am using as an example in this discussion. Even when this state of apparent perfection has been reached, substantial sound quality differences remain between such amplifiers, one reason for this being poor quality components. Manufacturers

now even feel that models they've sold in the past may have been quite severely compromised by this little appreciated factor in amplifier behaviour; Quad once told me



Spiky distortion of 0.04% from the 840A at 1W, 10kHz; it looks like classic crossover.

that capacitors within their 405 amplifier were likely poor when new and deteriorated quickly thereafter. In their view this is why it received a lukewarm reception. A small industry has been building up offering replacement of duff parts to revive old faithfuls and the general consensus is sound quality is transformed. Better componentry brings better sound. Cambridge acknowledge this, using in the 840A a solid, vibration resistant chassis, high quality volume control, remote input switching, multiple power supplies and good components.

It isn't distortion alone that determines amplifier sound quality so much as a whole rake of factors, some of which we know about, some we suspect and likely many that are little understood. So as interesting and fertile a subject as it may be, the Class of operation of an amplifier doesn't say too much about how it will sound in use.

MEASURED PERFORMANCE

The Azur 840A produces 128W into 8ohms under test and 210W into 4ohms. In the midband at least, it managed this without strain, producing just 0.0003% distortion when close to full output, into 8ohms.

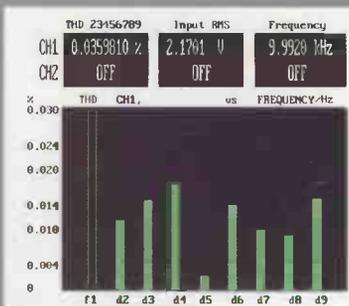
The XD circuit was less happy at high frequencies though, classic crossover distortion with an extended harmonic structure affecting output under all conditions. The structure varied with level, but happily the total distortion value did not rise above 0.03%, somewhat less than other designs with unusual operating schemes. Our analysis shows output at 1W, 10kHz as usual, where harmonics are extensive. This is likely to tinge treble slightly.

Frequency response was normal enough and noise low, helped a little by low sensitivity.

The Azur 840D measures satisfac-

torily, if not being up with the best in this respect. NK

Power	128watts
Frequency response	4.4Hz-77kHz
Separation	84dB
Noise	-107dB
Distortion	0.02%
Sensitivity	0.45mV
d.c. offset	3, 4 mV



VERDICT

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AGAINST
- jittery high treble



Doug Self interview

Cambridge's new 840A amplifier was designed by Doug Self, author of many respected books on amplifier design. Noel Keywood asks him what's important.

Q What factors do you think affect the sound quality of modern amplifiers?

The vast majority of amplifiers are solid-state Class-B, and for these there is always the issue of crossover distortion. You have a bit of non-linearity right at the zero-crossing, where even tiny signals traverse it, and the uncomfortable possibility that distortion might go up as level goes down. Different designs handle this challenge with different degrees of success, but there is no question that getting rid of it altogether is desirable.

If traditional Class-AB is used to trade off to a degree between efficiency and linearity by turning up the quiescent current, an area of Class-A operation, with both output transistors conducting, is created around the zero-crossing. Performance may be superior to Class B below the AB transition level, but once the signal exceeds the limits of this region, distortion worsens abruptly due to the sudden gain-changes when the output transistors turn on and off, and linearity is inferior not only to Class-A but also to Class-B. It would be much more desirable to have an amplifier that would give Class-A performance up to a certain level, with excellent Class-B linearity after that; this is what the Azur 840A XD (Crossover Displacement) system does.

One important factor is how amplifiers are used; it is easy to advance the volume control until there's significant clipping going on at times. This is why the Cambridge Audio 840A has a rather sophisticated system for controlling clipping; it detects both positive and negative peaks, allowing for changes in supply-rail voltages and so on, and if the excursion is other than very short it turns down the volume by a step or two. You can of course turn this facility off if you wish.

Q What are the common problems holding solid-state amplifiers back in terms of sound quality?

I often go to the Royal Opera House, and usually find myself sitting very close to the orchestra; this probably has something to do with the fact that the seats are cheapest there. The acoustic experience is just in a different world from listening to even the best hi-fi system; but I am pretty sure this is down to the impossibility of producing a true 3D sound stage with a reasonable number of loudspeakers - in these terms I don't think that amplifier quality is the biggest issue.

Looking at the amplifiers themselves, one of the biggest questions is one that has now been around for a long time - why is it so hard to correlate perceptions with measurements? Another issue, as I said just now, is that most amplifiers are solid-state Class-B, with the potential for crossover distortion problems. We've tried to do something about that.

Q Why is it amplifiers can measure perfectly, with no distortion under any condition, yet still not sound any better than amplifiers that seem blemished in comparison?

It all depends how blemished is blemished. An obvious possibility is that when the distortion falls below a certain level, it is no longer perceptible at all, so further reductions cannot make a difference. However, I would be very wary of saying that an amplifier is then "perfect" in that respect. An important question is how you're measuring the distortion. Amplifiers are very often measured by THD (total harmonic distortion) methods because it is an extremely effective way of checking correct operation and homing in on any imperfections. But when you listen to music, with hundreds of frequencies being handled simultaneously, the actual harmonic distortion is much lower than

the intermodulation distortion energy produced by all these frequencies interacting in permutations and combinations. It's the intermodulation that sounds unpleasant. There are of course tests that apply two, or any more, frequencies to give some measure of the intermodulation energies, but correlating these with people's subjective impressions of amplifier performance has always been problematical.

Q Do you personally have any particular preference, like Class A working, for example, for an amplifier's basic topology, irrespective (within reason) of how it measures?

Homing in on the example of Class A for a moment, there is no argument that if price, convenience, efficiency and gobbling up the earth's resources are of no account, it is the best way to build an amplifier. It can be beautifully linear, but... it really is dishearteningly inefficient. That is why there has always been great interest in combining the efficiency of Class-B with the linearity of Class-A, and that's what led us to the Crossover Displacement concept.

As for basic topology, the first step in amplifier design has to be getting the engineering right, and fixating on one topology, regardless of how it measures, doesn't seem like the way forward.

Q Do you have any particular views on Class D, which is fast being committed to silicon in packaged solutions by companies like Texas and Zetex? Is this the future?

Class-D has a long history, stretching back to the 1950s and probably beyond, but only now is it making a serious impact, driven by the need for efficiency in portable and multi-channel amplifiers. Linearity is still not equal to that of the best conventional amplifiers, but there's a lot of work going on in the area and this should improve. Class D is currently best suited to subwoofer applications, where it can perform extremely well.

One and All

Channa Vithana, John May and David Price assemble great budget audiophile systems from Eastern Electric/JAS, Marantz/Pinsh and Rega/Monitor Audio respectively...

Your hi-fi speaks volumes about you. It's perfectly possible to assemble a serious sounding system for next to nothing, but unfortunately it's much easier to put together an expensive, well reviewed (and often beautiful looking) collection of components that totally misses the mark musically.

Ultimately, which of these two categories your system falls into comes down to how much time you invest in choosing the components, and not how much money you spend. Find a good dealer, then go in and listen - simple as that.

This month's group test attempts to give you the best of all worlds; we have 'one make' electronics for visual and sonic matching, while we've hand picked the speakers using our ears (rather than the

manufacturers' recommendations). In one case, we've spent far less money on the source than is customary, simply because the system sounded so good despite the lower outlay.

All three are great 'off the shelf' combinations that you could buy today and be amazed by; they'll give a level of musicality that's far in excess of what you'd expect, simply because we've invested serious time (rather than money) in running through countless combinations beforehand. You should too. The lesson is simple - don't just buy from

magazine reviews and awards, but listen for yourself instead. That's how to buy esoterica on a budget...



Eastlife

High end systems usually bring telephone number price tags, unless they're from China. Channa Vithana assesses a superb, yet surprisingly affordable Eastern Electric and Jas Audio tube CD player/pre-power amplifier and loudspeaker system.

Thirty years ago, there was no small amount of sniffiness about Japanese products, and in hi-fi this manifested itself as snide comments from a number of magazine reviewers who just couldn't possibly get past the idea that British wasn't automatically best.

Well, I think history is repeating itself now, with Chinese hi-fi. In no way am I saying there's the same amount of (what could only be described as) xenophobia now as then, but still there's some reticence on the part of many audiophiles to accept Chinese kit as bona fide. Perhaps it's the amazing perceived value that puts them off?

Of course, there's good and bad Chinese hi-fi, and Eastern Electric fall into the former camp (witness the excellent £1,539 M520 valve integrated featured on the cover of our November 2005 issue). The MiniMax range uses a very attractive gloss-metallic, gunmetal grey finish to the top covers and a nicely fabricated, gently curved silver-coloured metal front plate. The amplifiers and CD player are all non-standard sizes, and look the more appealingly distinctive for it, when compared to the sea of black or silver regulation size hi-fi boxes. Build is first-rate all round, with no flaws in the panel fit or construction, the units also have high-quality switches and sockets to complete a finely crafted set of hi-fi instruments.

THE SYSTEM

This diminutive 6kg silver disc spinner is nicely styled, and compactly



formed, measuring in 316x338x95mm high. For its asking price of £879, the MiniMax CD is well specified and offers excellent value - as it features a Phillips CD12 transport (instead of the usually inferior CD-ROM drive typical of a player at this price and above), CD7II servo circuit and can handle the excellent HDCD (High Definition Compatible Digital) format for appropriately encoded CDs. Eastern Electric have utilised a custom designed toroidal transformer, fabricated from scratch.

There two 6922 valves in the analogue output stage and these are usefully located, and protected, at the rear panel - for easy access, to enable the fitting of upgraded replacements. The silver-coloured metal remote control is excellent and very solidly constructed. It is not crudely finished either and the buttons do not rattle or wobble and are firmly located and operable.

The reasonably priced £769 MiniMax Preamplifier is quite different from most valve designs in that it only weighs 4kg and is attractively diminutive in size at 316x145x115mm, small enough that it could be balanced on the palm of my hand with ease. The slim

proportions, say Eastern Electric, are used for the shortest possible signal paths to be maintained for better sound-quality. For valves, it features two 12AU7/ECC82s and one 6x4/EZ90, for which the review sample was supplied with JAN WA models. At the rear panel, are very high-quality gold-plated phono sockets that work with slick precision, when connected. There are three line inputs and two preamplifier outputs. The front panel controls are equally well built and finished, as the volume control for instance - glides with a satisfyingly well-oiled precision.

The MiniMax Power Amplifier at £989, like its preamplifier counterpart, is also smaller than average for a valve amplifier as it measures 316x205x150mm. It follows a similar philosophy by using no printed circuit boards and short signal paths - hence the 205mm external depth of the casework. The valves in this review sample consist of four 6BM8/ECL82 Mullard Great Britain types and one Sovtek Russia 5AR4/GZ34. The power output is rated at a claimed 8W per channel into 8ohms, which may not seem like much, but matched with a suitable loudspeaker like the Jas Audio Orsa,

it



made for a convincing power delivery that I found entirely sufficient to fill the 6x4m listening room with music.

Hong Kong based Jas Audio has an extensive range of luxuriously appointed high-end loudspeakers and the Orsas used here are their entry level models. The 'Makorje' Orsa (Piano Black, Poplar and Rosewood finishes amongst others are also available) looks even better in the flesh than in photography alone. This is partly to do with the lavish piano lacquer over wood veneer finish that has a glossy sheen which looks lustrous as you walk around them.

The design features an intriguing drive unit arrangement where both the 110mm aluminium ribbon tweeter and 160mm treated paper cone mid/bass driver are ported towards each other within the small gap between the separated drive unit enclosures, in a manner described by Jas as "opposing venting ports". Jas state that this ported design "helps eliminate interference between drivers while optimising use of capacity of both cabinets". The drive unit enclosures are attached to, but delineated from, each other by four "specially designed metal rings to fix together and hold tight the upper and lower cabinets at a distance (calculated by computer) that allows a "breathing space" for the 360-degree air dispersion venting ports".

The distinctive form of the Orsas is governed by the top tweeter enclosure being tilted downwards at 5 degrees while the bottom mid/bass enclosure is tilted upwards at 70 degrees. Jas says that these drive unit arrangements enable, "remarkable improvement in rectifying differential treble and bass phasing that might occur in sound transmission... made possible by tilting the front panels

of the two stacking cabinets. This helps eliminate to a great extent image (blurring) and sound contamination that might occur in a traditional form of cabinet."

The Orsa crossover is switchable, using a special key, at the rear, where 'Reference' or 'Dynamic' settings can be selected. In practice, I found that the Reference setting was preferable where it had a seamless, even flow to music in comparison. The crossover incorporates silver plating for the PCB and silver-plated internal connecting wires. The superb and chunky binding posts at the rear accommodates independent fixing and tightening of spades and banana plugs, which proved very useful when connecting the upgrade super-tweeters. The cabinet is made of MDF, weighs 11kg and measures 230x420x340mm. The claimed specifications are; frequency response at



45Hz-60kHz with sensitivity at 88dB and impedance at 8ohms.

The £649 Super Tweeter 100K is cylindrical and aluminium-bodied which is an upgrade to not only the Orsas but, say Shadow, for other loudspeakers also. Apart from the obvious wider, spatiality to the music, these Jas supertweeters, subjectively, improved the response,

attack, timing and articulation of the lower-mid to bass frequencies of the Orsas. Consequently these lower frequencies in all the recordings used were revealed with much better resolution and in a tauter, more tuneful manner - which was very enjoyable considering the Orsas as standard were excellent. The key to the best performance is in their positioning, which is crucial. I preferred them placed behind and within the loudspeaker aperture, rather than on top of them.

Completing the system, Shadow supplied a set of Jas Audio Zion cables. The £159 (1.5m) Extra Power MK mains lead, which is composed of three silver plated 12 AWG 6N OCC/OFC (copper) conductors. The line and neutral conductors are separately insulated with Teflon and individually shielded with close-lapped 6N OCC/OFC braiding providing 100% coverage for RFI/EMI avoidance. A 100% cotton cord is used in the centre for resonance and vibration damping". The £289 S3 interconnect consists of "six individual conductors. Teflon is used as dielectric around each conductor. Each individual conductor is made up of 30 strands of 0.002mm 6N (99.99997% purity) continuous cast silver". The Super Tweeters have a dedicated wire called Link Cable which costs £69 for a 1m pair. For speaker cables, the SP3 used in the review are £795 for a 2.5m pair. There is no data for them as yet from Jas; however, they are physically imposing at approximately 25mm wide and 20mm thick. Shadow also does a much lower cost Zion

cable range, which they say features the same construction and design philosophy.

SOUND QUALITY

Surprising, in a word. Here's a truly transparent and tonally faithful system that excels with a variety of musics. Naoko Imai's '7 Organs' recording is a very simple one,

just Imai playing one of the seven antiquated organs, in different churches across Sweden. Thus it is a very atmospheric compilation, which this system revealed with aplomb, where it was able to eek out the shifting, creaking qualities of the old organ pedals, for instance. Indeed, I was struck by the delicacy and extension of the leading edges from her superb keyboard playing. Then as the deeper harmonics appeared, and as the composition became complex, the Eastern Electric/Jas system ably revealed and delivered the music in very high resolution. Indeed, the ability of this system to reproduce the complex layering of notes, through the struck keys of the organ, was truly special. There was an enjoyable combination of clarity and low-frequency agility, with a taut, focused and well ordered music making ability. Importantly, there was no flaring-out of the upper-mid to treble frequencies with this system, as these can be rather overwhelming when going into dynamic peaks or crescendos.

As the opening drum track from title song 'Hounds Of Love' by Kate Bush blasted through into the listening room with superb timbre and expression, the system clearly had no problem dynamically, to convey the power from this emotionally charged song. The cello-like rhythmic sub-melody was fantastic as it had excellent tone, phrasing and feel to convey emotional gravitas into the greater structure of the music. The multilayered vocals nicely offset the dark rhythmic stance of this song, sounding sublime in surface and extension.

Playing the visceral, punk-rock department of 'Go' by grunge group Pearl Jam was a thrilling slab of grinding, growling, bass-led ferocity through this system. This was a

surprise as I thought the MiniMax amplification with 'only' 8W of power would struggle, but it was clearly not the case. Occasionally, on other systems, I find some of Pearl Jam's recordings (not the music) splashy and compressed on CD. However, with this system, instrumental separation and timbre was excellent. The amp also displayed great low-frequency agility and tunefulness, too. Eddie Vedder's earnest yet emotionally fragile vocal style combined beautifully with the powerful rhythms and well expressed instrumental timbre on 'Even Flow' which made for a brilliant musical concoction.

The pulsing, slippery rhythms of 'Foreign Affair' with vocals by Maggie Reilly from Mike Oldfield's HDCD remastered 'Crises' were fluidly reproduced by the system in a well balanced manner. Low frequencies were well timed with the vocals and higher frequencies of the percussion. The subtle melodies were easily discernible within the complex layering of this ostensibly simple composition. Every musical element was opened out, cohesive and well-structured. Maggie Reilly's vocals were a thing of beauty through this system, as they were expansive, delicate and atmospheric.

CONCLUSION

I would recommend auditioning the £649 Super Tweeters first with your existing loudspeakers, as I have found that they worked superbly out of a JAS system, when I connected them to my reference £2,000 Waterfall



Victorias for instance. I also have to sing the praises of the £879 MiniMax CD player, as it offers a musical performance I've yet to hear from any other silver disc spinner at or near the price. In mine and editor DP's opinion, it's recognisably better even than this magazine's beloved Shanling CD-T80! Next would be the Jas Orsa loudspeakers, as I have found them working superbly driven by a £1,595 Moon Audio i-3 integrated amplifier or £6000 Densen B-250/B-330 system. The Orsas with their demonstrably easy load would then make it trouble-free to add the 8W MiniMax amplifiers which can drive them brilliantly, and then finally,

EASTERN ELECTRIC MINIMAX CD PLAYER	£879
EASTERN ELECTRIC MINIMAX PRE AMPLIFIER	£269
EASTERN ELECTRIC MINIMAX POWER AMPLIFIER	£989
JAS AUDIO ORSA LOUDSPEAKER	£1,399
JAS AUDIO SUPERTWEETER 100K	£649

the Zion cables to complete the system.

So here we have an exceptional system that

pushes all the right buttons - because build is excellent, the design is equally pleasing to the eye and the sound quality was never less than musically engaging yet revealing. This Eastern Electric/Jas Audio system presents music that is clear, crisp, informative and powerfully agile. It reveals sweet and warm tonalities

when present in individual musical instruments and vocals but doesn't 'colour' the music artificially. Together, the system gives a lot of sound per pound, making it true budget esoterica.

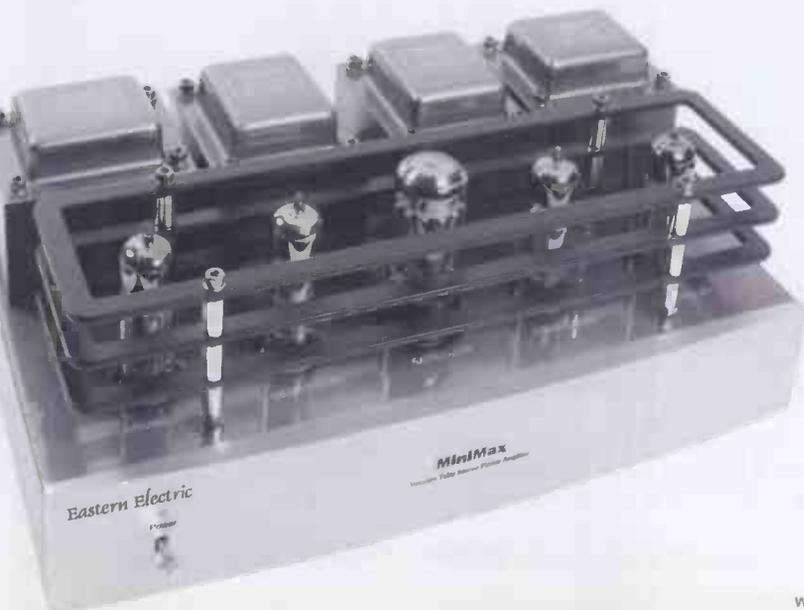
MUSIC

Naoko Imai '7 Organs' (2004)
Kate Bush 'Hounds Of Love' (1985/1997)
Pearl Jam 'Rear View Mirror' (2003)
Mike Oldfield 'Crises' (1983/2004)

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Shanling

Some of the most stunning products in recent years have come from this small specialist manufacturer, from the flagship limited edition CD-T300 "Omega Drive" at £3999 to the humble but extremely popular (and superb sounding) CD-T80 at only £650. All their products use valves for a natural but exciting sound, and, in this age of "plastic" products, all feature sturdy metallic construction finished to a very high standard irrespective of cost.



Hørning

The Hørning SATI Ultimate Transference turntable, only just available in the UK shows what can be achieved by a dedicated specialist manufacturer when not constrained by price. As well as being highly exclusive (it is only possible to make very small numbers) this turntable is one of the finest we have ever heard, having a neutrality coupled with incredible detail retrieval which has to be heard to be believed.



A2T

We have the amazing A2T Mezzos on demo now. These beautiful French made compacts (with a studio pedigree) offer wonderful detail levels whilst sounding utterly natural at a price lower than the performance would suggest. These just might be the answer to all your speaker problems!



Solid Tech

Radius

It looks like other smart modern stands do, until you realise that virtually concealed between shelves and frame is a cunning and flexible adjustable suspension system which really does isolate individual components from each other, and from the outside world!



Solid Tech

What we really don't need is another brand of equipment stand! Agreed, unless it's very special as we believe Swedish made Solid Tech to be...

Solid Tech

Rack of Silence

The ultimate in equipment isolation. No solid shelves to resonate, and up to three stages of isolation.

A totally modular design which can be expanded as your needs grow. There is no better stand.



The Hørning Sati 300B amplifier (one chassis is the amp, the other the power supply) is equally impressive. Even jaded cynics (like ourselves) will be hugely impressed by the refreshing neutrality (a Hørning trademark) together with the insight available into the performance. We really are very pleased to be able to demonstrate these superb products!



Funk Firm

The new Funk V (V means Vector, not "five") is a stunning looking and affordable turntable (£750 without arm) that some of us have been waiting eagerly for since the sad demise of the designer's previous company, Pink Tr..! Looks are striking, performance is stunning, well worth waiting for. Come and hear it now whilst it's still easily available.



What else is Hot right now?

Stirling Broadcast 3/5a, marginally updated version of the classic BBC monitor
Tannoy Autograph Mini, a delightful scaled down Autograph, only 14" high!
Graham Phantom tonearm, proving itself one of the top arms in the world
Audio Aero's latest CD and SACD players are absolutely stunning
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Another Way

Traditional wisdom says you should lavish the lion's share of your system spend on the source, and then work downwards. Well, the thing about great budget CD players is that nobody told them this. John May builds a superb system around Marantz electronics and Pinsh loudspeakers...



Warp back twenty five years, and we were being told that the source (i.e. the turntable) was the most important component in your system – and so the majority of your budget should be allocated to this. Well, with vinyl it still really does hold true, considering all that precision mechanical engineering required. Linn once commented that a Sondek LP12 turntable coupled with a budget amplifier and speakers would, in fact, sound better than a cheaper turntable with more expensive amplifier and speakers – and they were right.

Fast forward to present day. Many use CD as a source these days, despite the fact vinyl sales are on the up again. Mass production of components needed for CD replay has pushed prices way down, and we are now faced with the interesting situation where budget CD players often use the same basic chipset as pricier alternatives. Of course, although DAC choice is obviously not

the be-all and end-all of CD player design, the gap between high-end and budget players is closing daily and there are some fantastic bargains out there now which do not cost an arm and a leg.

So we decided to try reversing the traditional system hierarchy rule, so here the speakers are the most expensive component, followed by the amplifier, followed by the CD player. Crazy? Perhaps. But the results were interesting...

THE SYSTEM

Dominic Todd reviewed the Marantz CD5001 OSE CD player enthusiastically in our April 2006 issue. As the name suggests, it's a subtly tweaked version of the cooking CD5001, rather than the full on tweak-meistery of a Ken Ishiwata Signature. It's a fairly lightweight machine – certainly no Shanling CD-T80 this – but is attractively finished with a silver painted chassis, and a real brushed aluminium front. Superfluous legends are thankfully kept to a minimum, and the front panel is an

exercise in keeping things simple and straightforward. There's the usual plethora of transport controls, plus – usefully – a headphone socket with its own internal amplifier for improved sound quality for those late night listening sessions. There is also the provision of CD Text reading capability which is also of use especially for those compilations you may have created on a PC or Mac and – if you're anything like me – never got around to labelling up! Intriguingly there is also a variable pitch control – karaoke anyone?

Internally the situation is pretty respectable for a machine costing £250. Parts quality is fairly high with a smattering of the perennial favourites like Elna capacitors, popular with both manufacturers and DIYers alike. Moreover, many of the components have been either tweaked and/or custom designed to meet their highest standards. According to their literature the engineers know how to 'design with their ears', as well as 'on paper', and they have built up a wealth of knowledge on how best



to exploit each individual component for its particular purpose, e.g. one brand of capacitor might work very well in the PSU stages, but give only mediocre performance in the output stage for example.

RFI noise control is also an evident concern judging by their use of ferrite rings around certain areas of cabling which might otherwise introduce noise into the sensitive audio circuits, namely the display and headphone cabling. Elsewhere little touches such as the copper plated screws reveal an audiophile attention to detail rarely seen on machines in this price sector. The lid is also lightly damped for vibration control. A Sony transport takes care of reading the numbers off of the discs, while a Cirrus Logic CS4392 24/192 DAC turns the code into music (vinyl junkies stop sniggering!). So nothing particularly earth shattering then, but nevertheless a respectable collection of parts and build which bodes well for the resultant sound quality.

Sticking with our 'reverse expenditure hierarchy' then the PM7001 KI Signature amplifier is some £300 more than the CD5001 OSE at £550. Immediate impressions are certainly favourable when hefting 10.5kg worth of amplifier from the packing carton! It feels and looks like a far more expensive model in that traditional 'high end' Japanese way. Like the CD player the front panel is brushed aluminium, and has been carefully designed to fool you into thinking – upon first inspection – that it's nearly 20mm thick. Closer inspection reveals that it's really only 5mm deep – tricky! Still, it looks nice and blends in well with a variety of equipment racks and surroundings. All knobs are handsomely finished and possessed of a positive and smooth action.

The amplifier on test here has had the famed 'KI Signature' series of mods, which take the OSE

tweaks another step forward. Rather than having component price dictate the tweaks used, the KI series designers are free to do what they wish to get the ultimate fidelity out of each design, though the price is still more than reasonable. Every aspect of this amplifier has received personal attention from Ken Ishiwata himself.

The chassis and back plate have been copper plated to reduce stray electromagnetic currents that can muddy the sound. The chassis is a dual layer item and this, in tandem with the solid front panel and vibration absorbing feet are said to virtually nullify sound degradation through microphonic resonances within the chassis. The circuit design uses a symmetrical 2-stage current feedback amplifier for 'perfect image balancing'. High quality customised components are used widely in this design, including Elna capacitors, film capacitors, and Schottky diodes in tandem with a 18000uF block capacitor and a respectably large and low impedance toroidal power transformer. New HDAM output amplifiers have been employed for a claimed "more dynamic, accurate and detailed sound". There's also a quality MM phono stage included as standard.

So to the most expensive bit by far - £1,500 worth of loudspeakers. Manufactured by Pinsh, they're the latest versions of the well-received 2003 standmounters. Although not a name you may instantly recognise, they have been engaged in audio research for some twenty five years now, and have been at the forefront of ribbon tweeter design for twenty one years, no less. The original models were available in a variety of attractive real wood veneers, and were nicely understated in appearance. The new version is only available in black-ash which – to my eyes at least – looks a tad dated, but is undeniably well finished. A front baffle has also been added which kind of adds a Gothic hint to its visual appeal. In addition to this, the curved

sides on this baffle should reduce diffraction effects and result in greater imaging and a clearer sound.

The 1.2s are a 12 litre rear-ported design. Dimensions are 200x300x360mm so you need a stand with a fairly large footprint upon which to rest them. Impedance is quoted as 8 ohms, and sensitivity as 88db at 1 metre/1 watt. Crossover is a simple 1st order passive that should result in less signal degradation than a more complicated affair. Changes to the original versions include additional internal bracing to reduce the cabinets singing along with the music and the bass driver has undergone additional refinements. Unusually (these days) this is a single wire design. Indeed many believe that bi-wiring has no serious audible advantages over single wiring designs, but just results in increased sales of speaker cable for certain manufacturers! I must admit that I tend to favour the single wire approach myself [steady on John, the cable manufacturers won't like it! – Ed.]. The bass driver is a 5-inch OEM design, but it's the ribbon tweeter that immediately grabs one's attention, and is something you just couldn't expect to find in a cheaper design.

SOUND QUALITY

I must confess I had my reservations about this system from the beginning, after all, we're talking a £250 CD player paired with a £1,500 pair of loudspeakers! Well, after a good two days warm up time, I slipped Roxy Music's 'The Early Years' disc into the CD5001 OSE and prepared to be underwhelmed. Wow - somebody Pinsh me (sorry)! The bass drum on 'Re-Make / Re-model' really kicked me in the gut, just as it should. It was a little on the lean side, but was fleet-footed and extremely tight. Impressive stuff, and counter pointed by the very earthy and organic sounding rendition of the saxophone emanating from the right-hand speaker. That ribbon tweeter showed its presence by not drawing attention to itself, like so many peaky dome types can. Treble was slightly splashy,

but this was the only nit I could pick in the CD player's performance. Piano was full-bodied, and tinkled away deliciously in the background. The overall presentation was very open and unflustered. Quite simply, this did not sound like a budget source – it was closer to my mid-price Shanling CD-T80 reference in fact. No mean feat!

I turned my attention to Classical next and a fantastic DDD recording on the Naxos label of Stravinsky's 'The Rite of Spring'. The detail retrieval of this system was really quite exceptional, though the treble performance was again a little on the hard side. I also found myself wishing for a little more bite to brass instruments in particular. Experimentation with other CD players proved this was the Marantz CD5001 OSE showing its slight limitations here, but moving onto the soundtrack from 'Lord of the Rings' by Howard Shore again highlighted how accomplished this budget CD player really is. The trace of hardness I mentioned was again evident, but unless you were used to listening to much more upmarket gear (three times the price, or more) it wasn't an issue. The soundstage was pretty expansive, and there was a fair impression of depth as well.

Part of the reason that the budget silver disc spinner flourished with such open loudspeakers was the super smooth 7001 KI Sig amplifier. So couth and dimensional was it that the temptation was there to just keep turning up the volume, which I did. Rock music in particular sounded awesome through this combo. Budget speakers can show their flaws here with cabinets waffling along with the music, tweeters posing a risk of instant tinnitus, and woofers huffing

and puffing more than yours truly attempting more than ten press-ups. No such foibles here – this is serious high fidelity, and will get better and better as your source improves. The fantastic PM7001 KI really is the heart and soul of this system, and provides just the right amount of muscle to really do justice to the Pinsh 1.2s. Ishiwata-san does it again!

Of course a source component at this price is not without its flaws, especially through components this revealing. There is a trace of upper-midrange dryness and coarseness that is quite obvious through the extremely revealing Pinsh 1.2s. The sound doesn't blossom and fill the room in quite the same way as a more upmarket machine, or sound quite as 'analogue', but it is still close enough to make one question the logic of spending a small fortune on the source. What's more with a just a few little tweaks here and here the sound can further be improved without having to re-mortgage the house! [see TUNING].

CONCLUSION

I was quite taken aback as to just how capable the budget Marantz source was in the company of its more upmarket components. Certainly there was nothing that immediately screamed out 'budget sound' when listening. Once you upgrade to something three or four times as expensive, you will hear a definite improvement, as a brief spell with my Shanling CD-T80 and Naim CDI showed, but this shows the untapped potential of the superb PM7001 KI Signature amplifier; I cannot think of anything more accomplished that I've heard at this price level [watch out for a full review soon – Ed.]. As for the

TUNING

I tested this system using my favourite DNM interconnects and speaker cable, but there is scope for experimenting here, depending on your own preferences and depth of wallet! Speaker stands can be tweaked with filling them with sand, which could well result in a more 'solid' sounding performance. The CD player can be improved by placing it atop a granite chopping board (£14 from Argos item no. 8407454) atop rubber feet or spikes. This results in an immediate improvement to the sound, and takes it a step further away from its budget origins. The same can be done to the amp though you'll require a larger board! Lastly, never underestimate the improvement wrought by properly positioning your loudspeakers; a good few hours should be spent on this. Take the manufacturer's guidelines as a starting point rather than a guarantee of immediate success. Have fun!

Pinsh 1.2s, they are an 'affordable audiophile' bargain akin to the Sugden A21a. You could comfortably throw six thousand pounds at a CD source and amplifier and still get gains, so good are they.

Looked at from this perspective this system looks like great value, and has plenty of upgrade potential. With Blu-Ray just around the corner and offering the promise of awesome audio fidelity, perhaps it makes sense right now to purchase a budget source for the moment, and wait and see how this format pans out in the meantime. At any rate, this system questions the logic behind the established system hierarchy 'rules', and offers an alternative approach to building a system that allows for far more flexibility than was previously the case. With exceptional components such as these, truly the earth is no longer flat!



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Weekender



There's nothing like this; an amazingly musical budget system to make your weekends, and carry you through the week too. David Price tries Rega's sublime P3/Brio turntable-amplifier combination, driving Monitor Audio's diminutive diamonds, the Radius 90s...

What's the point of being an audio aficionado, I ask myself, if it isn't to enjoy dynamic combinations such as this? These three bits of kit cost next to nothing in the great scheme of high end hi-fi things, but unlock musicality that some systems costing £100,000 plus fail to find – I kid you not. For me, it's what it's all about.

This month's group test isn't the usual 'we tell you the best £600 amp' fare; rather, we're trying three very accomplished, special combinations that major on musicality. For me, you can take your 'extended frequency extremes' and shove them up your bass port; where the ear is most sensitive is in the midband, and our brains are kind enough to offer 'digital signal processing' the like of which no chip manufacturer has even come close to. This means that, despite the lack of any real discernible bass extension, this £1,019 system sings like few others

anywhere near the price. Meanwhile, your grey matter obligingly fills in the gaps, and you don't miss what you don't get.

THE SYSTEM

I'm going to start back to front, if you don't mind. John May's system shows how important serious speakers are, assuming you've got a half decent source, and this only reinforces the point. At 190x120x140mm, Monitor Audio's £250 Radius 90 loudspeakers are so ridiculously small, you wonder if they even qualify as hi-fi. I've seen far larger boxes sit beside PCs, performing gaming sound effect activities. They make Linn Kans look like Isobariks - they really are that tiny.

Why even go near them? Even Monitor Audio rather apologetically 'strongly urge' the use of subwoofer, they're that bass light. Well, what little bass you do get is as fast as the superb Acoustic Energy AE1 Classic (which is really saying something) and they're oh'so-close to the (in

my humble opinion) best sealed box speaker in the world in terms of speed (yes, yawn, you've guessed it; the Yamaha NS1000M). This is really saying something; they are truly terrier-like in the way they run at bass transients; it's hell-for-leather. They don't stop to think about what's happening to the next bass note; they're off out of the traps like it's their only chance to ever win the race, and they do it note in, note out. Oh, did I mention they're fast?

Okay, you say, they're microscopically small, so they would be quick wouldn't they? Well, I suppose they would, but unlike every other 'sub-miniature', they're brilliant in the midband too. You just can't do this without serious drive units, and MA have pulled out the stops here. The unique drivers are designed and tooled for this speaker; the cast chassis of the 101mm mid-bass unit is made from high-tech glass loaded engineering polymer that provides better damping than metal and increased overall strength. Monitor

and adding some subtle but truly worthwhile improvements. For my money, the Rega Planar is/was the best value turntable ever made. It is/was by no means the best turntable, but it was the very cheapest 'real hi-fi' turntable you could buy. Just like the Brio, it hides its failings with the guile of the best secret agent; there are problems, but you just don't really notice them until you substitute it for something dramatically more expensive. It is – in itself – utterly musically convincing, and just brings you into the music in a way that makes you wonder 'why bother' with anything more expensive. Petrol heads should think of it as something like a Fiat X1/9 or Honda CBR-600; drive the thing and you're in a true bit of budget esoterica, totally engrossed in the process and never once dreaming of something bigger or (allegedly) better.

The latest P3 version carries some new innovative changes in design, such as an ultra low mass micro-fibre plinth laminated with highly rigid phenolic resin laminate. The P3 motor assembly uses a high quality AC synchronous motor; Rega says it is found in turntables five times the price of the P3 (i.e. the Linn LP12, mentioning no names), and this is indeed true – although I'm not convinced this is the strongest suit of the P3 (or indeed the LP12). Significantly, the motor gets Rega's new electronic circuitry, which – says the company – results in this already low vibration motor running almost totally vibration free. The platter is hand crafted from fluted plate glass 2mm in thickness, and the tonearm is of course the superb Rega RB300 – which as any *Hi-Fi World* reader knows is an excellent bit of kit that can be made even more excellent by no small number of aftermarket mods...

A quick word about the P3's sound in isolation, before we string it together with the others. It's the cheapest turntable you can buy that does nothing seriously wrong. I know this doesn't exactly sound like a glowing recommendation, but it is. Go any cheaper and you're really aware of what the record player isn't quite getting right; so much so that it detracts from the enjoyment of what is basically the highest resolution consumer music carrier we have available to us. The Rega does not do this; rather, you're able to clearly hear what's on the disc, and in the

music. For the purposes of this review, I used the supplied Rega Elys 2 (£109), which was superbly tight and grippy, but ultimately opted for a Goldring 1042 (£143) which has a slightly rolled off treble and a smoother nature – this complimented the MA Radius 90 speakers better.

SOUND QUALITY

Judging by the number of letters we get every month outlining people's long, tortuous and invariably unsuccessful upgrade paths – usually involving buying "bargains" from ebay, this system must be virtually unique – inasmuch as it's cheap but works brilliantly together. Yes really – and all you have to do to assemble something such as this is go to a good dealer, use your ears for an hour or two then pay then full retail price (which isn't so much, leaving lots of cash for another ebay "bargain").

It is brilliantly musical. It just plays music, in an unfettered way the like of which any digital user won't be familiar with. It dives into rhythms, sprints along basslines, throws out oodles of detail and dimensionality, hangs images in front of behind the speakers and goes curiously loud with little signs of compression.

Cue up 4hero's 'Escape That', and you'll hear how the fulsome bass of the Rega Brio compliments the lightweight lows of the MA loudspeakers, by making the system sound surprisingly rich. In no way am I trying to claim the system goes low, but neither does it sound shrill or topky in any way. The lovely squelchy Moog basslines on 'Cosmic Tree' show that, if it doesn't have the physicality of a floorstander based system, it sure has the legs on it. Even at high volumes, the MAs don't give up, sit on transients or groan and moan. Yes, a REL Strata 5 helped enormously on the size of the bass, but in my room I actually preferred the MAs all on their lonesome

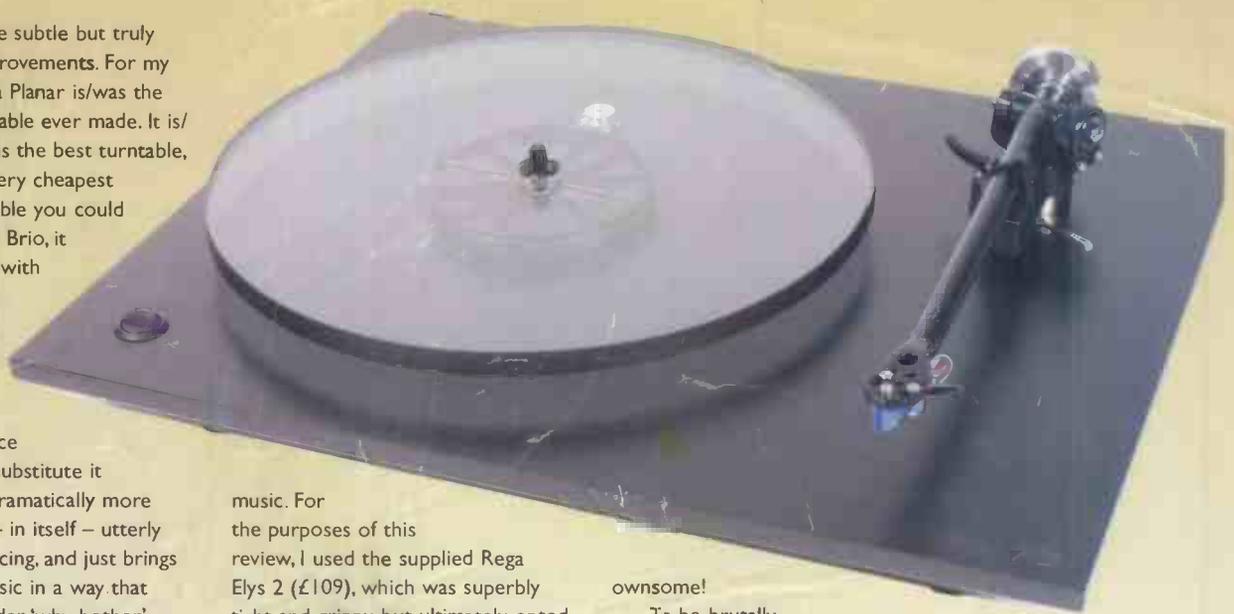
ownsome!

To be brutally frank, the midband is where this system gets its mojo working, not the bass. The Rega Brio is a brilliantly engaging thing; it isn't the most transparent or dimensional thing around, but as I've said, it covers its tracks brilliantly, even with super-revealing speakers. The way it drives the Radius 90s is a joy; it's like long lost friends rediscovering one another; they work together on making a brilliantly expressive midband that's emotionally engaging and direct like few others, and yet couth and smooth too. There's a decent degree of tonal colour (even if the system couldn't exactly be described as sumptuous), and the Rega shows real courage in the way it projects dynamic accents; even at high levels it never fails to remind you when a snare is being hit rather than just touched.

Treble is nice too; the gold domes on the MAs aren't brilliantly sweet and delicate in absolute terms, but they're almost as good as you'll get this side of a Pinsh ribbon (at £1,500). They're a little splashy by the standards of the best, but never ever show any propensity to get harsh or screechy. Allied to a fundamentally smooth treble from the Brio amp and the silkiness of the Goldring cartridge I eventually chose, this made for a very natural, sophisticated sound – again, remarkable for the way it belied its price.

CONCLUSION

Well, I liked it. For me, this sort of system is what hi-fi is all about; you can spend thousands on interconnects if you like, but this makes massive amounts of music for £1,019 – and you can listen to it after you've just heard a system at ten times the price and still enjoy it.



REGA P3	£298
GOLDRING G1042	£143
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MONITOR AUDIO RADIUS 90	£250

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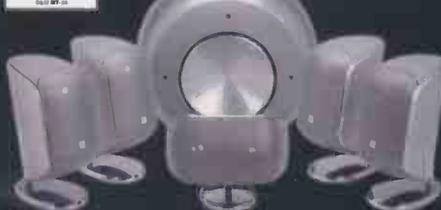


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Building a serious sounding system on a budget isn't as hard as you might think, says David Price, but first you've got to get your head straight...

HEAD FIRST

One of the things that takes up far too much of my time is answering readers' system queries. I don't say "too much" because I resent doing it (quite the opposite, although it's not always possible due to time constraints), but because I am often greeted with reluctance to accept my advice, for a number of reasons.

Why, I wonder, go to the trouble of writing or calling someone who has spent far too many of his waking (and sleeping) hours experimenting with all things audio, to ask for his advice, and then ignore it? Well, you'd be amazed at the number of reasons people give.

Let me give you an example. Reader X writes in and wants the best CD transport and DAC money can buy. I come back with the answer CD transport A and DAC B. He writes in next month to tell me he bought CD transport F and DAC G, and now he doesn't like the sound, so what should he do? I reply, why on earth didn't you buy A and B? He says, because he wanted something that was an aesthetic match, or that he didn't like the styling of one, or that he got them cheap, ex-dem and/ or secondhand...

Well, at this point, I'm forced to wonder why on earth he's writing to me asking for more advice, if he ignored my last lot? Is he going to ignore this considered response too? Or is he writing simply for the sake of it (maybe he wants to try out his new printer, or his wife bought him a Parker for his last birthday that's been in the box 'til now?)

Now, don't get me wrong. I'm not claiming any unique, guru-like insight into the audio upgrading problematic, it's just that I'm always happy to try to help readers by sharing my experience. I don't know it will work, but it's logical and based on deductions born of many years of upgrading, downgrading, sidegrading and the general squandering of my hard earned cash in the sake of superior sound. That's fair enough, isn't it?

So why do so many folk go to the trouble of asking my opinion and then ignore it? It's obviously because

CHAOS VS.



if you're building an analogue system, you'll need to spend at least 50% of your budget on a serious turntable, such as Michell's GyroDec...

they don't like what they hear; cynics would say this is because it's rot, but I'd wager that these same enquirers haven't actually decided in their own minds what it really is they want after all...

Many people will initially insist that they're after "the best sound", but – if it's a phone conversation – a few pointed questions soon disabuses me of this notion. Do they mind if it looks like the bottom of a bathtub? Is it an issue if the thing is, variously, as small and subtle as an iPod or as big as a barn door? Do they really need a perfect visual match with their partnering ancillaries? When they say they want "a sharper sound", do they really want their earlobes sliced off by the end of the first bar or not?

Many questioners come into the debate with one strong notion, and I often sit aghast as it crumbles before my very eyes. For example, a reader who wants "the best CD transport ever made, cost-no-object" is probably going to have to scour Hong Kong or Singapore for a secondhand, late nineties Esoteric P0 (or better still Japan, if he can speak Japanese). He'll have to find and contact dealers over there, email wants lists, and keep a close look on those countries' native ebay sites, possibly for six months or more. He'll have to arrange international payment, shipping, insurance and import duty, and possibly get the mains transformer changed to a 230v 50Hz one. If I tell our enquirer this, then suddenly – surprise, surprise – he doesn't really want "the best",

but "one of the best, one I can buy tomorrow"...

See what I mean? So my first and most important point is that, above all, get your head straight first. If you don't decide exactly what it is you want (and why), you could easily spend twenty years throwing good money after bad, with not a jot of real musical satisfaction.

Do you want the best sounding system, or the best sounding system featuring new and old bits of top Sony equipment? Can your "ultimate DAC" only be one with upsampling technology, because some journalist somewhere said it's vital? Does the amplifier really have to be solid-state? Do you have one component (turntable, amp, speakers) that you want to build the rest of the system around, or do you want to start from scratch? Dear reader, I beseech you, make your mind up before you spend money. If you can't identify what you want, how can you find a solution?

IN THE BEGINNING...

The second most essential part of system building is hierarchy. Back in the sixties (and before), it was no-brainer; the speakers were the most important part of your system's sound – by a country mile. All your turntable had to do back then, if you believed the audio experts, was to revolve at the correct speed and not produce any noises that weren't part of the original musical performance (admittedly, as the Americans would say, that was a 'big ask' back then!). As for amplifiers, well if you believed

THEORY

Quad's Peter Walker, they were "a piece of wire with gain". Then came one Ivor Tiefenbrun from Linn Products, who in the mid nineteen seventies rather unfashionably, but absolutely correctly, asserted that with hi-fi, it was "garbage in, garbage out" (meaning that if the source wasn't right, then the rest of the system could never be). This is where I still think we should be.

I say that – if at all possible – start with the source. Now, there will be some who are extremely attached to, say, a pair of speakers, and wish to keep them as a 'constant'. Okay, but you've already just tied one hand behind your back; so recognise this and act accordingly. By this, I mean that you'll no longer be going for absolute ability in a hi-fi component; rather, the overriding factor for you now is the ability of any new purchase you make to work with your speakers. With this in mind, you'll find that – more than ever – a 'four star' amp may actually give dramatically better results than the super new 'flavour of the month' '5 star' one being splashed all over this month's hi-fi mags like a rash, simply because the latest 'best' shows up the failings in your beloved speakers, or just plain isn't synergistic...

So, aim for 'source first' if possible, and if not then tailor the source to what you want to keep. Whatever you do, keep as close to the hierarchy of source-amplification-speakers-stands-interconnects as possible. This gives your system a logical structure, makes fault-finding (sonic faults, that is, not electrical ones!) easier and eases the future upgrade process.

MONEY TALK

From this, comes the issue of budget allocation. In the days before CD, it was absolutely right, in my opinion, to throw the lion's share of your system's budget to the source. For example, the sonic gains to be had from a £600 Linn compared to a £200 Rega Planar 3 warranted the extra expense, even in the context of a £1,000 system. By this, I mean that a £600 turntable, £200 amp and £150 speakers (with £50 on interconnects) gave a palpably more musical sound than a £200 turntable, £350 amp and

£350 speakers (with £100 on extras). Now though, CD has skewed this somewhat.

How so? Well, turntables are about good old mechanical engineering, where better bits cost (and weigh!) a lot more. With

differences, informed by ye olde mechanical engineering costs, still apply.

How much then to spend? Well, if you're running a £2,000 vinyl system, I'd still counsel around 50% of your budget on a turntable; the Michell

"synergy isn't just hi-fi 'hocus pocus', it's the process of matching the sound to the listener – and the bad news is, ebay freaks, is that it demands that you try before you buy..."

CD, most digital disc spinners use variations on the same transports, DACs and digital filters, and the monetary differences are often more down to the casework, packaging and marketing. For example, the £250 Cambridge 640C CD spinner uses virtually the same internal electronics as £1,000 Musical Fidelity and Cyrus machines. It doesn't sound (quite) as good, but it's less pronounced that the price would suggest... Ultimately, all CD players sound like CD players, whereas the performance envelope between turntables is much wider. Logically then, you can 'get away

GyroDec SE is a brilliant entry level superdeck at £1,000. The advent of two superb 'budget' tonearms – the Michell TecnoArm 'a' and the Origin Live OLI – means that surprisingly fine sound is possible with just 10% (or less) of your budget now going on a tonearm, and the new breed of cartridges (Goldring 1042 moving magnet at around £100 or the Ortofon Rondo Blue moving coil at £400) mean that even a modest outlay on these will get special sound, and so you've around 40% or more for your amp and speakers (split evenly), and if you've got more cash



If your system is based around CD, then you can get away with spending as little as 25% on your front end. Why? Because top budget CD spinners, such as Cambridge Audio's 640C are sometimes similar inside to designs at three times the price!

with' spending just one quarter of your total system budget on a really good value digital source, but with analogue disc those traditional price

still, then this can all go into these ancillaries, as the Michell t/t is so capable, even in £5,000-plus systems.

With CD, your £2,000 system



Sugden's A21a is one of the best integrated amplifiers we've heard - but don't expect it to work in your system; that's why you MUST find a good dealer to audition it with your own loudspeakers!

can work brilliantly with just 30% on the source; think Shanling's CD-T80 (£650) turning in a great sound, then put about 40% into the amp (Sugden's superb A21a springs to mind) and the rest into the speakers, stands and cables. Again, I'd be tempted to allocate the remaining £350 into speakers (Revolver's R16, considering the Sugden's low power), and balance them on flowerpots for a month, until I could afford some superb stands and cable (Custom Design and Chord Company Odyssey 2, respectively).

As far as biwiring's concerned, I believe it does make a difference, but it's far, far, far better to buy the best single monowire cable you can afford rather than get a middling biwire type; you'll actually get a better sound for the same money this way, and you can always biwire when your proverbial ship comes in. Likewise, live with rubbishy bundled mains cables until you've got a few pounds going spare, and then buy the best budget audiophile stuff you can find (we like Missing Link mains leads; not necessarily the best, but the performance-price combination is exceptional).

All well and good then, but there's more to shrewd system building than getting the sums right; synergy is one of the most intangible

yet vital components in the equation.

IN THE MIX

Synergy isn't just hi-fi 'hocus pocus', it's the process of matching the sound to the listener – and the bad news is, ebay freaks, is that it demands you try before you buy. Now, I'm sorry if this means that amazing bargain you're staying up till 3am to bid on may not actually be the right thing for you, but is it music you want to listen to, or what? Well, I suppose there's the thrill of chase, the manic pleasure of saving massive numbers off retail price, on an item that one hi-fi reviewer (invariably in a hurry to file copy, by the way) once said was "even better than sex" (yeah, like he'd know)?

Again, at this point, I refer you back to my first point. Get your head straight. Do you want to save vast sums on something somebody else somewhere else some other time said was "stunning", or do you want to listen to music in the most enjoyable way your pockets will permit? Why is it that so many people think that their great ability to 'snipe' on online auction sites, or pick up the local paper and 'grab a bargain', will bring them closer to the original sound? All this will do is fill your house with old hi-fi; some of it may be amazing, some of it not

so, and some of it will become junk when it goes kaput when the courier throws it into the back of his lorry on the way to its new owner (i.e. you).

Having a house full of old hi-fi (of whatever original price or position in life) that a hi-fi magazine once recommended does not make for a great sound. Rather, it makes a great talking point amongst your audiophile mates and a lot of extra dusting for her (or him) indoors – or if there is no such person, it makes your chances of finding one considerably smaller...

Synergy is where you've got to get your head pointing. It's the reason that, for example, a certain £2,000 system on dem at the Bristol Sound & Vision 2006 show sounded vastly, mind blowingly, life changingly better than a certain other one at £200,000. Even if you bought every last piece of that £200k system at one tenth of retail price, it would still sound a thousand times worse than that well matched £2k one, and no amount of mouse wielding online auction activity would change that fact. What I'm driving at is that (and this might sound kind of obvious in a hi-fi magazine), ermm, it might help if you listen to what you buy first. I'm into hi-fi for its sound; I want to be brought closer to the music. I like owning cool kit too, but actually, I prefer music. If you do too, then see someone who can bring you closer. No, that's not some guy on ebay who says what he's selling is "the best xxx in the world", it's a specialist hi-fi dealer.

Hi-fi dealers aren't all perfect (shock horror!), but it's not them you have to listen to, it's the music – and if they don't stop talking when the dem starts, then make your excuses and leave. If they do, then congratulations, you're now hearing how different bits of kit work with each other, and something you'll find very quickly is that it's [a] not how you'd imagined and [b] not what hi-fi magazines necessarily think. That's really all that needs to be said on this; given that, much as I'd like to (or be able to), I can't explain how well (or not) every permutation of source, amplification and loudspeaker ever worked with one another.

LAST BUT NOT LEAST...

And finally, there's the small matter of longevity. I'm afraid this another one in the eye for ebay, the classifieds and the whole cult of classic hi-fi. It doesn't please me to say this, for no one is more enthusiastic and advocate of collecting this than me, but when buying audio components,

SIX APPEALS

- [1] identify what you want and seek a logical, step-by-step solution
- [2] work to the source-amplification-speakers-stands-interconnects hierarchy
- [3] allocate budget proportionally; it's different with analogue and digital sources
- [4] don't obsess over cables, stands and interconnects until you've got the cash to do so
- [5] synergy will make or break even the most carefully selected system: find a dealer, use your ears
- [6] don't buy something that you can't fix in five years time, assuming you want to fix it, that is...

you have to remember to ask yourself, "will it be working in five years time, and if not, what do I do?" The good news is that analogue sources and many classic loudspeakers (many sixties and seventies KEF-based designs) are well catered for with spare parts, and if not they can be replaced with modern bits (i.e. DC motors replacing old AC ones on turntables, loudspeaker drive units being reconed, etc.) Other brands, such as Linn, Naim, Meridian and Quad provide brilliant spares and servicing capabilities. However, many of the fly-by-night, 'flavour of the month but gone within a year' brands do not, or will not. And then there's the tedious question of legacy CD player parts support [see FOR WHAT IT'S WORTH]. If your CD spinner uses a mechanism, or a laser, that will be forgotten about by its OEM manufacturer within a year or two, you'll have an expensive piece of junk when it fails (and believe me, every bit of hi-fi fails one day).

Hi-fi is an amazing hobby in itself, and I suspect many *Hi-Fi World* readers are utterly wrapped up in it (just like its writers!), but let's not forget why we're here – because we love music and we want to get as close as we can to the original sound. The only way you do that is by cautious, measured, steady, logical upgrading, using your friendly (or not so, as the case may be) local dealer. If you haven't got one, then find one. Only then will your system bring you closer.



Spendor's S8 is a brilliant, multi-award winning loudspeaker - all the mags have given it a gong. But this does NOT mean it is right for you and your system; again, go and try before you buy!



FOR WHAT IT'S WORTH...

"Dear Hi-Fi World,

I wonder if you could offer some advice? I have had for the last eight years or so a Philips LHH2000 Professional CD Player, which I love to bits, that dates from the mid eighties. To my ears, even on my system, it sounds superb, open and accurate through its analogue XLR connections. I have not thought anything of it until I recently decided to find more out about its origins by searching the internet for information. To my surprise it seems that it is a very rare and sought after machine that fetches prices of £4,000 plus in Japan especially.

Herein lies my dilemma, I have now decided that I wish to sell the player to help fund my wedding to my fiancé Sara in June 2006 but have no real idea how to go about selling such an expensive piece of audio equipment. I have telephoned numerous establishments featured in your magazine but because of its rarity no-one has heard of it or is willing to try. Can you offer any advice? Would you like to feature it before I sell it, in maybe a Vintage CD player review. I have the instruction manuals and the player is in very good condition and works superbly. If you could offer any advice I would deeply appreciate it, I am by no means an audio expert so am a little like a fish out of water on this one."

*regards,
David Giles*

Hi David – I have good and bad news. First the good; your LHH2000 is indeed something of a find. It's a very high quality semi-pro machine (costing a staggering Y2,400,000, or £10,000, when new in 1985) and does indeed sound superb in the way that many early Philips machines do, thanks to its combination of excellent first gen. CDM0 transport, classic TDA1540 DAC/digital filter and superb audio electronics. It's also an extremely cool artefact to have around the house (although I suspect Sara might prefer a new kitchen). How much is it worth? Well, you're right that it's a cult machine in Japan (as are most high end Philips designs, many of which never actually went on sale much closer to home in the UK!) However, whether it's worth £4,000 is anybody's guess – literally. My guess is that its true worth is far less, and the reason for this is that early Philips machines are not supported now for spares; in particular the laser assembly in the transport. If this goes, you're lost in space. Simon Matharu of NSS Ltd. [tel: 0208 893 5835, www.nsslimited.co.uk] says that CDM0 lasers are simply unobtainable now, so when that goes, it becomes something for a museum... The good news is that many early Philips transports fail, but not because of the laser (which is actually quite long-lived compared to classic Japanese designs), but because of the motor, which is still replaceable, so don't lose hope all ye classic Philips users who have experienced grief. The point is, however, that the aforementioned "£4,000" value is utter rot - like every classic car, it's only worth what someone else is really prepared to pay. I personally wouldn't give you 4,000p for it (sorry!), but there may be someone deranged enough to increase my derisory offer dramatically. If you really believe 'the internet' (amongst other things, a repository of rumour and balderdash on a scale hitherto unimagined by humankind), then I'd jump on a plane to Tokyo Narita airport with the Philips as 'hand luggage', get the 'Airport Limousine' bus to nishi-Shinjuku and tout it around the hi-fi dealers in Kabukicho. My serious financial advice is take some nice pictures and put it on ebay – there may be someone somewhere enthusiastic enough. My own personal advice; keep it, play it and enjoy it... then give it to that museum. DP

Character Building

Reputable US speaker brand Now Hear This are now manufacturing in China in a bid to offer the best value. Dominic Todd listens in to the charismatic and controversial new Classic 2 standmounter...

Now Hear This is a quirky and charismatic company, one that's rather Northern Californian, don't you know. As they say, "the wine, the food, the weather, even the music around here is full of a light and life that's hard to find anywhere else". By all accounts, everyone in the company is involved in playing or recording music in some capacity, and it shows in the speakers – which, if nothing else, are unerringly fun to listen to.

They've come a long way from 1987's Model 1, however. Here was a bouncy, rough and ready budget box that – in some ways – was reminiscent of the old AR designs. The latest Classic 2 is world's apart; now made in China (but still designed in Benica, California, of course) with a superb finish, it promises a substantially more sophisticated sound.

NHT make quite a feature of the Classic range being environmentally friendly. The cabinets are all made from "low virgin tree wood" MDF, and no real wood veneers are used in any of their models. Indeed, it's a well built 'speaker - but with a price of £515.36 (no that's not a misprint, that is 36 whole pence!) I suppose the Classic 2 should be. Variable radius edges are designed to randomise refraction, thus improving imaging. Because of their circular bottoms, the base of each speaker sits on aluminium "skis" with rubber inserts. For those who prefer to wall mount, there are also twin threaded inserts set 75mm apart. In practice I found the Classic 2's sounded best about 30cm from a rear wall, so wall

mounting is not ideal.

Whilst not being real wood, the Classic 2 receives seven coats of polyurethane before being sealed with 2 coats of, environmentally friendly, clear coat lacquer. The cabinet is internally braced in three places and is of the sealed, infinite baffle, variety. NHT call this an "air suspension" design and say that whilst this design is not so good for efficiency, it helps produce a faster bass response - but then I guess we kind of knew that already about sealed designs, didn't we?

Moving on to the bass unit itself, you'll find a fairly standard looking 6.5in polypropylene cone mounted to a BMC chassis. BMC stands for Bulk Moulding Compound, and turns out to be a compound material that is stiffer than pressed steel but not as expensive as cast aluminium or magnesium. To give it its due, though, the magnet is hefty and benefits from being shielded, too.

Just above the larger than average woofer you'll find a pretty standard looking 1in aluminium dome tweeter. There's little extra that can be said about this except that it features a small plastic guard that isn't removable. The crossover is of a non-biwireable design, which is interesting as more and more manufacturers seem to be moving this way now...

SOUND QUALITY

NHT claim the Classic 2 gives a "room-filling sound", and upon listening it's hard to disagree. With Royksopp's, 'Alpha Male', the powerful and sustained bass response had no



"a physically impressive and musically engaging sound which is all about riding the dynamics of the music..."

absolutely no problem filling what is quite a sizeable listening room. Indeed, so powerful was the bass that I found it best to pull the 'speakers a good 30cm away from the rear wall to get the best from the boxes. When positioned so, the listener was also treated to a broad, yet precise,



sound stage that demonstrated the effectiveness of the cabinets' careful shaping.

It's a very American sounding loudspeaker, with a character that JBL fans will know and love. Power and punch is the name of the game here, at the expense of neutrality so beloved within these shores. If you want a super smooth treble, for example, you'll be disappointed, as the highs from the Classic 2 have real bite. This gives the music good pace – and in conjunction with that big, strong bass it's impressive alright – but fans of finesse should look elsewhere. The treble can sound a tad brash with the wrong ancillaries and/or music.

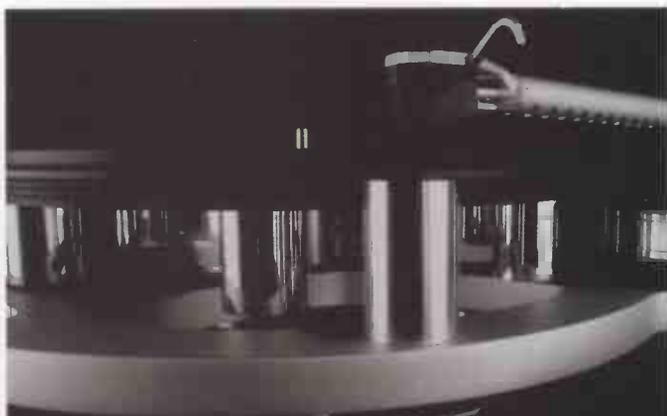
For example, with Kate Bush's 'Why Should I Love You?', the Classic 2s sounded a touch too

sibilant and lacking in colour for my European ears. Still, the image size and precision of these boxes across the midband was a joy, guitar being portrayed with plenty of energy, and the accurate soundstaging was easily up to the standards of the best in the class. Below this, bass grumbled menacingly, making for a striking, upfront and visceral listen – not to everybody's tastes, but distinctive all the same!

Moving to Classical music in the shape of Mussorgsky's 'The Destruction of Sennacherib', and for such a small 'speaker the scale of sound was superb. They had no trouble coping with the wide dynamic range needed to do justice to full-scale orchestral music. I was happy with the reproduction of the instrumental timbre too, proving that

THE EDITOR SAYS:

An interesting one, this. These are the sort of boxes that polarise opinion. If you're a faithful follower of 'the UK sound', then don't even bother to read to the end of this sentence, as you won't like them. Myself, I am more into 'rock' loudspeakers with sealed boxes and a bit of bang for your buck, and this is why I love the NHTs. With Metallica, they know how to mix it with the best of them, but with Mozart you'll be running for the exit door. Don't for one minute think they're sweet and smooth (they're not), but if you've a couth front end with a seriously powerful and sweet mid-price transistor amp (Marantz PM7001KI Sig, anybody?), then you'll really be able to extract some fun from these boxes. Buy with caution, get a good dem, and see if you love or loathe their obvious character. DP



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THE RIVALS

If there's one speaker that makes the NHT Classic 2 look expensive in the UK, then it's the Quad 11L. Priced at £389 it actually has much in common with the NHT. Like the Classic 2, it too is an in-house design and has bespoke drive units that are made especially for the model range – in this case, though, it's a Kevlar woofer with soft dome tweeter. Where the two differ, however, is in their choice of finish. The Quads use real wood veneers that are exquisitely lacquered to a piano gloss finish. Thanks to their environmental stance, NHT would doubtless be horrified, especially by the limited edition ebony versions! When it comes to sound quality, whilst the Quads don't have the same bass punch as the Classic 2s, they are smoother in the treble and better balanced throughout the frequency range. If quantity of bass from a small cabinet is really important to you then it's worth remembering that Quad's next model up, the 12L (with the same size woofer as the Classic 2) are still cheaper than the NHT Classic 2s. Still not everybody likes the 'Quad sound', and if you can stretch your budget to £650, at this price there are several small 'speakers that truly beguile. In my opinion, the best of these is probably the Neat Motive 3. Although tiny in size – smaller than the NHT – there's little that can match it for its ability to involve and entertain. Once again, bass isn't in the same league as the NHTs, though. Like the Quads, it's finished in real wood veneers, if not as glossily so as either the 11Ls or Classic 2s.

these aren't as uncouth as I'd first feared. Dynamic contrasts were excellent; this is the key to these speakers – they'll tell you when musicians go loud and when they go quiet, rather than sitting on transients and sucking the power and passion out of the music. Changing genre again, and I found a slight lack of engagement with the Scissor Sisters' 'Take Your Mama'. Bass was a little lumpy in my room, but again the soundstage had fine depth and it was well able to depict the different instruments and where they lay within the sound stage.

CONCLUSION

Here's a charismatic little loudspeaker that some will love and others hate. It's not from the 'Quad' school of dry, even neutrality. Rather, it is voiced for a physically impressive and musically engaging sound which is all about riding the dynamics of the music, rather than covering its minutiae with unerring accuracy. Its treble is a little too lively for my tastes and the big bass didn't quite convince in my system, yet still the NHT Classic 2 endears through its character. Whether you like it or not depends on you and your music tastes; I'd suggest that rock and jazz fusion fans would dig it, while classical fans would politely look elsewhere.

MEASURED PERFORMANCE

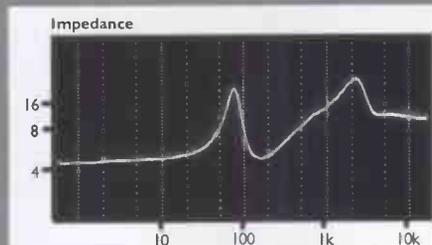
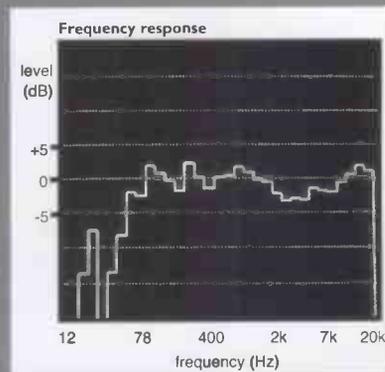
The Model 2s lack low bass, as you would expect from a small sealed cabinet, but all the same work smoothly from 60Hz upward through the audio band. The relative lack of variation about the median 0dB axis indicates low colouration, as well as accurate tonal balance. It is typical of a well designed small bass/midrange drive unit with controlled cone behaviour and usually results on clean sounding vocals at least.

Above 2kHz there is a dip at crossover between the drive units, a fairly classic effect not much seen these days. With output -3dB down to 10kHz this will give the Model 2 a warm, easy presentation somewhat less challenging than what has now become common in loudspeakers. The down side is an apparent reduction of detail. The treble peak at 16kHz may well be apparent, becoming noticeable when a CD contains strong highs.

Sensitivity of 85dB from a nominal watt (2.8V) was normal enough for a box of the size and impedance measured 6.6ohms with pink noise. Our impedance analysis shows a fairly classic shape for an IB, with a single peak at 70Hz due to bass resonance, a steady rise above

this due to voice coil inductance, then a fall as the tweeter kicks in. It's an easy enough load.

The Model 2 is a straightforward IB that should sound clean, fast, well damped and quite smooth. It measures well and should sound good. NK



VERDICT ●●●●

A truly charismatic, if slightly flawed, loudspeaker, this will win many friends but others will recoil. More Metallica than Mozart.

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- FOR
- powerful bass
 - fine soundstaging
 - excellent finish

- AGAINST
- too characterful for some
 - forward treble
 - relatively expensive



Twenty years ago, Italian hi-fi wasn't even on the audio map, but the past decade has seen the likes of Audio Analogue, Graaf, Unison Research and Pathos make real strides into the hi-fi world. North Star is another name that's now trying to put itself on the map, offering what has become the familiar combination (for Italian hi-fi at least) of fine build, innovative aesthetics and sweet sound – at a surprisingly low price. In short, the brand promises 'affordable esoterica', but does it deliver?

Well, whatever you think of the swish styling, the most important aspect of the £1,249 Model 192 transport is that it features a proper heavyweight Phillips PRO 2 CD transport (typically only seen in exotically priced, high-end designs, like the £4,195 Chord Electronics BLU transport and the new £8,000 Audio Research CD7 player for instance), complete with compliant suspension in its chassis.

The second interesting specification which differentiates the Model 192 from most CD players/transports – is the option of using a 12S digital output. Denon use a

similar digital signal transfer called DenonLink which allows uninterrupted 24/192 signal transfer from DVD-A for instance, without the need for extra D-A and then A-D conversion. When, in the February 05 issue (p45), I compared the DenonLink connection to the phono analogue output – from a Denon 3910 universal player into a Denon AVR3805 AV amplifier – I found the DenonLink to be less upfront and ultimately superior, with a subjectively wider dynamic range, lower noise and minimal or no digital glare. Moreover, having now compared the North Star 12S digital output to its phono socket coaxial digital output (into the Extremo DAC), there was a very similar outcome, with the 12S output being subjectively superior to the coaxial one. This then is a worthwhile feature, and not just 'emperor's new clothes' type hype...

Like the Denons previously, the standard (blue) North Star 12S CAT-5 cable is a fairly nondescript affair and nothing like a typical hi-fi interconnect. However, North Star supplied an upgrade £350 12S cable for the review, made exclusively for them by Italian cable company White Gold, and – as we'll see – it easily took the performance of the Model 192 and Extremo DAC (with the standard blue cable) into another league – and thus, in its performance

context with the two components, its (claimed) £350 cost is justified. It is the first, specially designed, hi-fi audio application of this type of cable I have seen, and is a good example of lateral thinking that works.

Finally, for the Model 192 power supply, North Star employs a filter and two toroidal transformers. The filter is said to reduce incoming radio frequency from the mains and one transformer is used for the transport and display while the other is used for digital audio processing. North Star says this arrangement allows the supply of "the right (high) current to the CD-PRO2 mechanism without (the) affect of spurious signals (going into) the power supply dedicated to the digital processing". The two toroidal transformers have a shield between (the) primary and secondary sections. The Model 192 transport features SPDIF phono, AES/EBU balanced XLR and 12S digital output with switchable upsampling at the rear panel. It measures 433x170x75mm and weighs 6.5kg.

Next is the £1,669 Extremo DAC. This is generously equipped, as it can accept five digital inputs which are switchable; two SPDIF coaxials via high-quality WBT Nextgen phonos, optical, balanced XLR AES/EBU and the 12S connection. The Extremo can output its analogue signal through either WBT phono or balanced XLR sockets. Two TEXAS PCM1792 DACs are used inside, for which North Star says "the most

Star Quality

Italian company North Star Design manufactures a stylish transport and DAC combination that uses a specially implemented 24/192 12S cable connection between them. Channa Vithana listens in...

important parameter is the dynamic range, 132dB in mono mode, which allow(s) this DAC to have an extremely high resolution at low level signal value."

The analogue circuit, says North Star, is DC coupled with no capacitors in the signal path, and uses a DC-servo to avoid any DC component

at the output. Surface mounting (SMD) is utilised for the short signal paths and Vishay resistors and Wima film capacitors are also used.

The Extremo upsamples digital signals to 24bit/192kHz before analogue conversion. It uses an Analog Devices AD1896 which North Star claims is "the (best) upsampler in the market with 140dB dynamic range" and that "the upsampling function allow(s) (the translation of) the digital signal frequency from 44.1kHz to 192kHz without any spectral difference; the increased sampling frequency allows (the) design (of) a simplified analogue stage with an higher low-pass filter frequency; (therefore, a) harmonically correct decay is the most important result achievable with the upsampling technique".

The Extremo, like the Model 192 transport, uses two toroidal transformers and a filter for its power supply. Here, one transformer is used for the digital and the other for the analogue section. The digital transformer has three different windings; one each for the digital receiver, digital signal processing and the analogue part of the DAC, which North Star say is for best performance. In total, there are eight, DC regulated, power supplies for the Extremo (three analogue and five digital). The Extremo measures 435x170x65mm and weighs 6.5kg.

Both the Model 192 Transport and Extremo DAC are well-built and well screwed together. The Model 192 Transport is also rather non-resonant in construction,

which should minimise vibrations. It features a thick, damped and chamfered manual lid with attractively deep-machined triangular indents for finger-push operation. Aesthetically, they strike a different chord also, as their slimline 170mm-deep proportions and horizontally machined thick aluminium front plates (reminiscent of the vertical style, utilised by high-end American amplifier manufacturer Jeff Roland) make for an attractive pairing placed side by side.

SOUND QUALITY

Considering this is a totally unknown brand to me, and I suspect to much of the hi-fi world, I have to say how (pleasantly) surprised I was at this transport/DAC combination. The layering of the violins and stringed instruments from 'String Quartet I 'Metamorphoses Nocturnes' by György Ligeti from his 1997 release 'String Quartets And Duets' was most impressive, as the North Stars ably handled the rather demanding and dynamic music with aplomb. Resolution of the stringed instruments was excellent, very similar in quality to the £6,190

"the North Star Design combo majors on subtlety, finesse and texturality, rather than explicit rhythmic ability..."

Chord Electronics BLU/DAC64 transport/DAC I reviewed last year. The timing relationship between the precisely composed dynamic shifts between the vibrant violins during the manic parts of 'Metamorphoses Nocturnes' was superb, engaging me emotionally in the music, while the higher resolution of the North Stars ensured there was no stridency or forwardness either. As the vibrancy of the music very quickly and abruptly changed direction into gentle, delicate melodies and structures, the North Stars did not get flustered, and played everything with real finesse. Additionally, I could easily appreciate the secondary elements

of shifting, whisper-quiet music with equal enjoyment as the dynamic parts before.

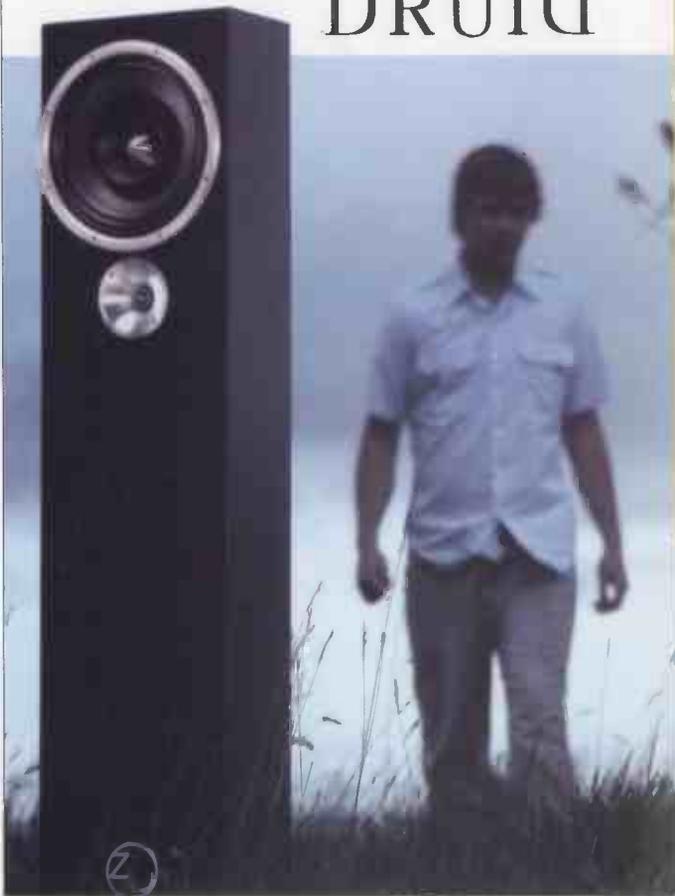
The sheer energy and stamina required to power through the tumultuous 'Happiness In Slavery' from 1992 release 'Broken' by the darkly-industrial Nine Inch Nails was not lacking via the North Stars. Here the first set of mechanically sustained screams gave way, like going through a tight narrow tunnel and coming out into a wide expanse, as the instinctively fluid melodies took over and flooded the loudspeakers and out into the listening room. The rhythms were deftly placed while the bass and upper-mid was nicely cohesive with the higher frequencies, to provide a suitably enjoyable low-frequency definition without any dislocation or wallowing lumpiness. The instrumental separation, which is very important in a hectic and busy mix, typical of Nine Inch Nails, was also well established.

The low-frequency extension on 'Erotic City' by Prince from his 1993 compilation 'The Hits/The B-Sides' was agile, enjoyably tuneful and nicely in time with the upper-mid and treble frequencies which enabled an

engaging yet high-resolution musical presentation. The lascivious singing by Prince and sultry female vocal backing delivery were especially good as a combination, as they were interwoven within the music with skill. As a whole, the North Stars ably communicated the groove-led, electro-funk rhythms of 'Erotic City' very well, without any harshness or blandly smooth rolling-off of frequencies.

Comparing my current reference (£1,350) Densen B-400 Plus to the £2,918 North Stars was interesting. The Densen was even better when it came to powerful rhythmic musical presentations. For instance it grabbed

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the musical structure of 'Moonlight Shadow' from Mike Oldfield's 'Crisis' by the jugular and was superior with Maggie Reilly's vocals. However, one of the Densen's special talents, where it illuminates music with widescreen spatiality, was slightly, yet discernibly, better through the North Stars on 'Moonlight Shadow'. The North Stars had more finesse with the timbre (if not the attack and execution) of the musical instruments also.

The Densen went even further than the North Stars on 'Happiness In Slavery' by Nine Inch Nails, as it was able to exploit its rhythmical strengths and deceptively astute finessed ability where it unravelled the hectic electro-industrial mix and gripped the frantic beats while opening out spatially wide vistas to the main melody. The Ligeti

String Quartet I 'Metamorphoses Nocturnes', proved most interesting though, as the North Stars were clearly superior here when it came to an authoritative portrayal of the stringed classical instruments. The shimmer and timbre of the violins was first-rate, while the accumulative aspect of all the instruments was handled superbly by the North Stars. The Densen wasn't quite as capable in comparison here, as the violins seemed to be a little upfront, which was rather surprising as the Densen usually excels in cohesion, spatiality and finesse allied with grip and rhythm. The Densen grabs the music by its heart from the inside and beats pulsatingly outwards; the North Stars, on the other hand, caresses and seduces from the outside and then inwards - taking longer to appreciate their strengths.

CONCLUSION

An excellent, world class transport/DAC combination, the North Star Design combo majors on subtlety, finesse and textuality, rather than explicit rhythmic ability, although let it be said that it's no slouch in this respect either.

Both transport and DAC are extremely competitive at their respective price points; for example, the £1,699 Extremo DAC makes a brilliant upgrade to a fine mid-price CD player, such as the old (£500) Rega Planet CD player. It upgrades the venerable Rega, an outstanding budget priced player, into super-star high-end status. It was transformed by getting rid of a subjectively wayward, hollow sounding midrange and the music opened out with a superb, free-flowing, high-resolution presentation. Bass was more powerful, and had

a finer, more tangible agility, while the vocals were better connected to the music. The £1,995 Chord Electronics DAC64 did a very similar thing, however it is more expensive and not as versatile as the Extremo.

As a combination, the Model 192 Transport and Extremo DAC secure a very finely detailed sound quality, full of revealing subtleties, and worked to an excellent standard with the music by Mike Oldfield, Nine Inch Nails and Prince. Where they really excelled however was with the string quartet music by György Ligeti, as they revealed very fine tonal shading and timbre to all of the stringed instruments. The North Stars will provide a fatigue-free music making experience. To my ears, they have almost all the redoubtable ability of the £6,190 Chord Electronics BLU/DAC64 combination but at approximately only half the cost and therefore, in a high-end context, represent superb value.

Superbly finessed and loquacious sound allied to excellent build and finish make for a brilliant value high end buy.

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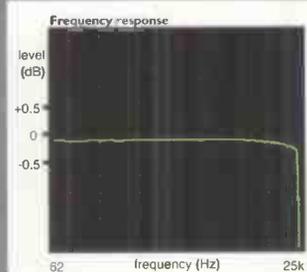
- Densen B-400Plus CD player (£1,350)
- Rega Planet 2000 CD player (£500 when new)
- Densen B-250/B-330 amplification (£6,000)
- Bosendorfer VC-2 loudspeakers (£4,750)

MUSIC

- György Ligeti Edition 1 'String Quartets And Duets' (1997)
- Nine Inch Nails 'Broken' (1992)
- Prince 'The Hits/The B-Sides' (1993)
- Mike Oldfield 'Crisis' (1983/2000)

MEASURED PERFORMANCE

Frequency response of this player is conventional enough, stretching from 2Hz up to 21.7kHz (-1dB), with just the slightest roll down at high frequencies, registering -0.2dB at 20kHz. This was maintained with standard 44.1 CD or when using 192kHz upsampling.	Distortion	0.01%
	-6dB	0.014%
	-60dB	0.22%
	-80dB	9%
	Separation (1kHz)	112dB
	Noise (IEC A)	-111dB
	Dynamic range	111dB
	Output	1.8V



Frequency response (-1dB)
 CD2Hz - 20.7kHz

WHAT IS THE 12S STANDARD?

According to North Star, "the 12S...is a Philips standard used for the connection of digital audio IC inside of a unit. The difference between the standard digital connection (S/PDIF, AES/EBU) and 12S is the different type of signal used to transfer the digital information; serial for S/PDIF and AES/EBU, and parallel for 12S. With the standard (S/PDIF, AES/EBU) connection the master clock and the data are mixed (using only) one signal out coming from a CD-Transport; on the DAC a digital receiver reconstructs the clock and the data from the incoming signal; this reconstruction could be jitter affected. With 12S (the) master clock, serial clock, left/right clock (and) data are on different cables so the DAC doesn't need to reconstruct anything. Note: the native signal (output) from a CD mechanism is in 12S standard; so with 12S transmission we can avoid the double conversion (of) 12S to S/PDIF to 12S (unlike) the standard digital transmission. The main difference between (the) upgrade 12S cable and the (standard blue) 12S is the Litz construction. The Litz construction (uses) a cable of 0.1mm diameter; 3 of those cables are twisted together and insulated with Teflon. Each cable (of) 3 conductors) is twisted with two other cables until the (appropriate) diameter (is reached) for the different applications (signal, power, etc.)." You can contact North Star at, www.northstar.it, for more technical information on their 12S data.



The Wright Stuff

Born in the USA, the ModWright SWL 9.0SE preamplifier is the first complete product from modification ace Dan Wright. What began as a passion has now evolved into a seriously well-specified preamp that's designed to take on the best from the Far East. Dominic Todd listens in...

You've got to feel sorry for the humble preamplifier. Despite contributing to a system's sound as much as - if not more than - the power amp, it's the latter that focuses the attention and wins the glory. Power amps are huge beasts with ear-splitting power outputs. They are formed of back-breaking casings that squat menacingly on low stands just above the floor. They dominate a hi-fi system. Preamps, on the other hand, sit meekly on a shelf and are often the last product to be acknowledged in a system. Yet to ignore the preamp is total folly. However good the power amp' may be, it can't possibly make up for what has gone before, and thus choosing the right preamplifier is vital to achieving audio nirvana.

Fortunately it seems that some of our Stateside friends are all too

aware of the importance of this. ModWright is a company that was born, as the name suggests, out of modifying equipment [see box]. The SWL 9.0 SE is the culmination of everything learnt by its designer, Dan Wright. It took several years to complete and taking a more thorough look at the amp', it soon becomes clear that the SWL 9.0 SE has been a real labour of love.

Essentially the SWL 9.0 SE is a Class-A, valve, line level, preamp using a pair of triode 5687 tubes in a "mu" gain stage designed by Alan Kimmel. For good measure the power supply is choke regulated and particular attention has been paid to low noise, shielding and quality build.

That's the theory, at least, but the key question is how the SWL 9.0 SE shapes up in reality? The answer is pretty darn well. For a first product the initial impression I got

from inspecting the 9.0 SE was just how professionally finished it was. The quality of soldering was superb - bettering many established brands, and the neatness of the wiring, quality of PCB (chosen for consistency over hard-wiring) fit, and associated component alignment was as good as I've seen in electronics costing twice this amount.

Of course, as you'd expect from a "modder" the component quality is mouth-watering. Metal-film Vishay and Caddock resistors, Teflon film Sonicap capacitors, and FRED and Schottky diodes are all from the top-draw of component suppliers. Equally, the substantial toroidal transformer, complete with the aforementioned choke regulation, is of high quality and looks meaty enough to drive a respectable integrated. An Alps volume pot, ceramic valve holders and "high-end" cabling complete



a comprehensive spec that leaves nothing to chance.

Given the heritage of the company, a high quality component count is perhaps no surprise. What is, however, is just how well finished the casing is. There's nothing especially flashy about the steel casing, but it's beautifully finished with crisp corners and even paint. The thick aluminium front panel is perhaps a little clichéd these days, but few could grumble at the quality of its engraved legends. Likewise, the look and feel of the toggle switches is good enough to convince you that this is an amp' from a class or two above and from a more established brand.

After the excellent impression given by the amp', the "One For All" remote control looks a little sorry for itself. Where you'd have expected a sleek aluminium "tomb" your hand instead falls on the disappointingly plasticky universal affair. That said, at least the amp' comes with a remote control, which is more than can be said for many rivals. As the manufacturers quite rightly point out, a bespoke remote control would have also added considerably to the final cost. With its single tape loop, twin pre-outs, four inputs, home cinema bypass and mute switches rounding off the feature list, its £2,000 price ticket doesn't appear all that bad when you take the quality of construction into account. Whether such quality transfers itself into the sound output, though, is the real test...

"it would be hard to think of another preamplifier of this price that could sound so intimate..."

SOUND QUALITY

With the SWL 9.0 SE wired up to a pair of Roksan power amps I began by listening to The Brand New Heavies 'Soul Flower'. Within seconds, any preconceptions that this might be another valve amp' with a relaxed, melodic pace were dispelled. Instead, the SWL 9.0 SE proved something of a Rottweiler. Vocals were sharply edged and articulated with a conviction that would more usually be expected from a, quality, transistor design. This combined with an upbeat timing that, excuse the cliché, was Naim like in its speed and precision.

Perhaps more typical of a triode valve amp', was the slight emphasis given to the upper-mid range. This wasn't an altogether unpleasant experience as it did give the vocals a great sense of presence, but to those used to a passive preamp the balance may come as something of a surprise. Whilst not in the seismic league, bass was plenty deep enough and, more importantly, seamlessly integrated with the rest of the mix. Backing vocals demonstrated the SWL 9.0 SE's excellent layering of sounds and, whilst not especially expansive, the soundstage gave each musician their own sense of space and location.

Switching to Mussorgsky's 'The Destruction of Sennacherib', (Berlin Philharmonic – Claudio Abbado) I was struck by the amp's very low levels of background noise. Even at high volume levels I was as untroubled by background noise as I would have been with a decent transistor design. Such low levels of noise only aided the superb dynamic response, which handled the crests and falls of the music with aplomb. String tone was well portrayed although, again, perhaps a little too forward for some, in the upper midrange. Personally I didn't mind this trait and found that the smooth treble response meant that the amp' never lapsed into harshness. In terms



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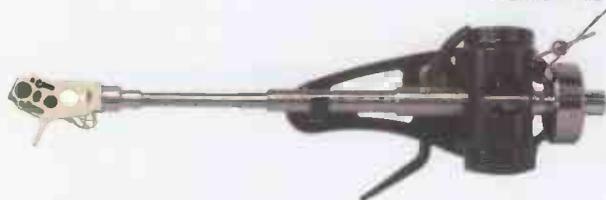
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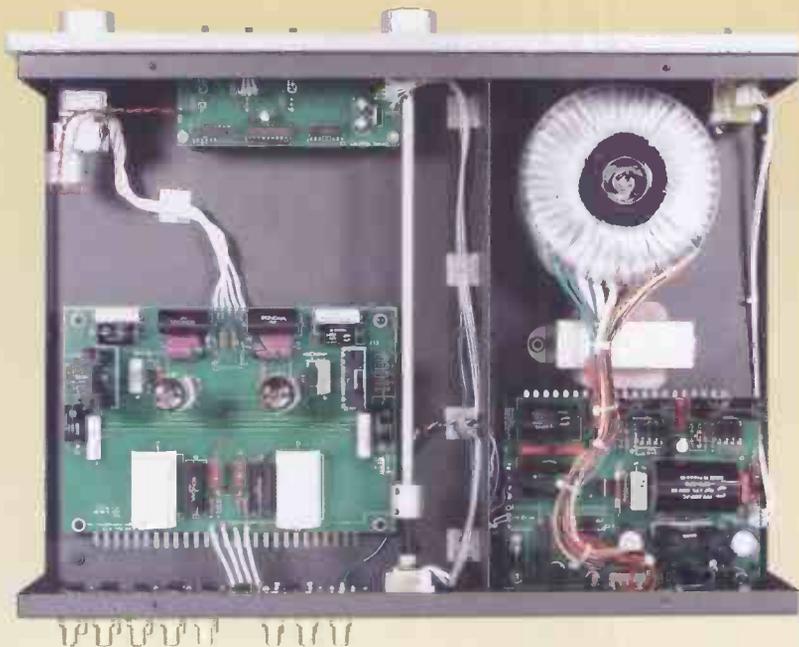
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ABOUT MODWRIGHT

ModWright was established by audio engineer, Dan Wright in 2000. Initially Dan was a hobbyist and worked mainly with digital electronics including Pioneer DVD players and the MSB Link DAC. Later he worked on modifications, mainly to the power supply, on the Perpetual technologies P-3A DAC. It was this work that really got him noticed, and it's here where he began his business in earnest. Later work adopted valve technology and it was his valve modded Sony SACD players that really drew attention in the US. Following on from this came "Universal Truth" modifications for Pioneer and Denon universal DVD players and then, finally, the SWL 9.0 SE preamp. All that work with analogue valve stages has culminated in this preamplifier design and, as the review shows, it's experience that tells...

of transparency this proved an intriguing amp' to listen to. At first it didn't sound especially open, but the more I listened, the more I felt I could almost "see"

the music which, as well as one of the first signs of madness, is also the sign of a truly open soundstage!

Staying on a Classical bent I turned my attention to Max Bruch's, 'Scottish Fantasia' (David Oistrakh violin). Listening to this was a soulful and captivating experience. It's been a while since I've heard the violin of Oistrakh combine the high-frequency sweetness with the sharp, metallic strokes of the midrange, quite so effectively. Once again, contrary to many expectations, the SWL 9.0 SE didn't coat the violin strings with syrup, but simply "played it how it was" demonstrating a rare talent in getting to the heart of the music.

Various tracks from Kate Bush's latest album only went further in proving the talented SWL 9.0SE's abilities. Complex percussion sections were unpicked with great confidence and Bush's vocals really benefited from the forward stance of the amp'. Underpinning this was a powerful bass response that cracked the songs along in a pacy manner and meant the listener couldn't help but become involved with the music. It would be hard to think of another preamplifier of this price that could sound so intimate with Kate Bush's 'Little Brown Jug'.



CONCLUSION

Not everyone will warm to the SWL 9.0 SE. It has a slightly pronounced midrange that some could find just a tad intrusive in the wrong system. Nevertheless I, and I think many others too, will forgive this preamplifier that, for its other qualities are utterly captivating. For pace, rhythm and precision it has the measure of a decent Naim – which is really saying something. Yet those triode valves and choked power supply also imbue it with some very unique qualities. It has the kind of transparency and presence that, whilst maybe coloured, simply compel the listener to sit and listen to the music. And that, at least in this reviewer's opinion, should be what great hi-fi is all about. Had this been the product of an established high-end manufacturer and priced around £4,000 I would have recommended it.

For a first time effort, and with a price ticket of £2,000 the SWL 9.0 SE is simply stunning value. This is one preamplifier that is fully deserving of your attention.

VERDICT ●●●●● £

Captivating sound quality that will transform your system. Build quality is equally impressive and value top-notch. Highly recommended

MODWRIGHT SWL9.0SE £2,000
Angel Sound Audio
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FOR

- engrossing sound
- excellent value
- flawless finish throughout

AGAINST

- tacky remote
- forward-sounding for some

MEASURED PERFORMANCE

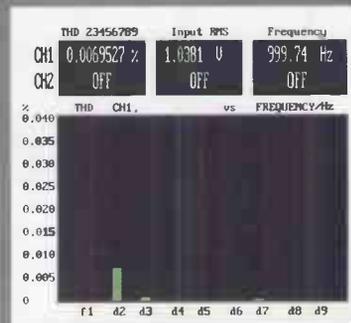
This preamplifier has a useful gain of x4.7. Anything above x3 is about right, being able to match most sources (300mV or so) to most power amps (1V or so). The SWL 9.0SE will handle 200mV sources, which embraces old tuners, cassette decks and such like. The volume control lies ahead of the first gain stage, so when faced with a 2V input from CD, with volume set for 1V out total measured distortion was a small 0.006%, second harmonic only, the sort of performance to be expected from a well designed valve preamp stage. Our analysis shows this situation.

Use of d.c. heaters keeps hum down to negligible levels. Bandwidth measured a wide 8Hz-54kHz up to half volume. Above this setting it decreased steadily to 11kHz (-1dB) at full gain, which is too low. As the unit is unlikely to be used at full gain this will rarely be a problem in use.

This is a sensible basic design using good modern components inside. It measures well, providing no more

than about 2/3 full gain is used. This is due to a simple internal impedance matching problem and is easy to sort. NK

CD/tuner/aux.	
Frequency response	8Hz-54kHz
Separation	-88dB
Noise	-88.6dBV
Distortion	0.006%
Sensitivity (1V out)	200mV
Gain	x4.7



Heavy Metal

It's not often that you find an integrated amplifier promising 80W RMS per channel of full Class A power, for under £900. So David Price couldn't resist trying the massive JungSon JA-88D...

What is wrong with transistor amplifiers, I think, can be summarised in two words – “switching distortion”. The sound of those little three legged semiconductors turning themselves on an off on demand is omnipresent, and most people get used to it – rather like rain in winter. It has a similar effect on the sound too; it becomes grey and dull, and less than pleasant to be out in.

Indeed, switching distortion creates a kind of ‘hash’ or ‘mush’; it’s like a dreary, cloying fog that simply takes the fun out of life. In most of the better designed solid-staters, it’s relatively benign. For example, in the little Rega Brio reviewed earlier on in these pages, it manifests itself as a sort of gentle cloudiness, a bit like twiddling your camera lens out of focus slightly and knocking the shutter speed up a bit, as if to create an ‘underlit’ photograph.

Often, in good mid-price amplifiers such as the Naim Nait 5i, you really don’t notice it so much, enjoying instead the bits of the sound that the amp gets very right, such as bass grip and transient speed. Still, move to the likes of a full Class A Sugden A21a, and again the Naim (et al.) sounds a tad dull and mushy...

So why not use Class A, like the Sugden, all the time? Well, one twiddle of the volume control holds the answer. In order to run full Class A, you need the output transistors constantly switched on (hence no switching distortion, geddit?). This creates vast amounts of heat, and so your output power is chronically limited by the amount of heat your casing can dissipate. As most amps are just 430mm wide (and not half as deep), then you’ll be lucky if you even get the 20W the Sugden squeezes out. The result then is that you seem to be stuck between high powered and punchy Class AB amplifiers like the Naim, or (to be brutally frank) deliciously open and spacious sounding, but weak-kneed curios like

the Sugden.

The result then is that Class A amplifiers are low powered – because of real physical cost and engineering constraints, and the only way to get real wallop is to throw vast amounts of money at the problem by building a massive powerhouse of a thing, such as a Krell, capable of dissipating several bonfires-worth of heat without so much as an expired output device.

Well, imagine my surprise when I heard about the JungSon JA-88. It runs 80W per channel (quoted – see MEASURED PERFORMANCE) of pure Class A, for just £899. I kid thee not. And it’s not as if it’s a chimera, like its 80W come with a following wind and only for nanoseconds before the whole thing goes up in smoke. No, this is the real deal – 29.5kg of it, with an impressive measured performance and best of all – fantastic sound.

True budget esoterica then, so what’s the catch? Well, for some, the catch will be that it’s Chinese, which, for some, seems to be shorthand for ‘rubbish’. Well, don’t let this fool you; the Chinese are doing some truly accomplished kit now. It has rough edges, and I wouldn’t for a moment suggest they’re as consummately well made as Japanese products, but the Japanese manufacturers (by virtue of their size, if nothing else) chase relatively conservative sections of the market. After all, it’s not as if everyone wants to buy a vast, swingeing box that’s as big as a kitchen sink (literally) and likely to bend your floorboards, and that raises the ambient temperature of your listening room to sauna levels within minutes...

Chinese products aren’t badly made as such; one look at an Apple PowerBook shows how well they can mass produce intricate electronic equipment. It’s just that often they are well built in the sense that they’re big and heavy, and you get a lot of metal for the money. Contrast that to Japanese kit (admittedly more expensive), which is exquisitely

finished and (these days) very tastefully styled too. Okay, and so to the JA-88D. It is built like the proverbial outdoor lavatory; its sheer bulk and weight makes you think it’s superbly made (kind of like a

1970s Volvo estate), until you look closely... At 470x430x190mm it’s so big and brash that you’re instantly impressed; even Krell owners will look twice. The trouble is that upon closer inspection, it feels like its thick sheet aluminium casing has been beaten by a big bloke with a hammer – kind of like, one imagines, they used to make Land Rovers. Specifically, the cooling slats have a slightly rough, abrasive edge – something you’d not find even on seventies Japanese jobbies.

Of course, given its almost unbelievably low price, it’s churlish to complain, so I’m not - I’m merely drawing attention to the fact, so you know what to expect. Another thing to expect is the garish fascia. It’s big, and sports large bright blue backlit VU meters (which thankfully are defeatable). I think it’s a shame; if only these had been deleted, and the two dollars or so it cost to fit these went towards a better finished top-plate... My point is that here is what you will soon find is a remarkable product, but spoilt (slightly) by some rather poor detailing. If JungSon had the maturity not to pander to button pushers in Beijing showrooms, it would find it far easier to garner the audiophile credibility it so desperately warrants. Another thing is the volume control, which is a little noisy as it runs up from 0 to 99 – there’s



the odd click and pop through the speakers, and disappointingly at close to full whack some feint signs of mains hum too. Again, it's a shame – spoiling the ship for a dollop of tar, so to speak. In practice, neither of these problems intrude; you're not constantly changing volume and by the time the mains hum intrudes, the thing is driving so loud that it's the least of your worries.

Other detail touches are lovely; not least the natural hardwood remote control (something of a nod and a wink to some illustrious Italian brands there, methinks). The massive chunk of brushed aluminium used for the fascia is also rather breathtaking – it looks thick enough to resist the best efforts of a sniper rifle. On a lightly sarcastic note, I think the Chinese-English instruction manual (well, 'bit of paper') is also good value – for entertainment's sake if nothing else – and reminiscent of the worst excesses of 'Japlish' manuals from the seventies...

SOUND QUALITY

Okay, so I've had my fun; after all the carping, the spectre of 80W (or more) of pure Class A and no negative feedback (it is claimed) will soon show it's a serious bit of kit. My advice is switch off the disco lights (sorry, "ocean blue LED power

metres" [sic]), light the blue touch paper and go! Well, give it twenty minutes, then go – as it's not great until it's at full operating temperature.

We're off, and the first thing you notice is that clarity of this thing across the midband. Just as with Sugden's A21a, it's glass clear in a way that no Class AB amplifier is. Some, very special, tube amplifiers also possess such a 'see through' sound, but we're talking massive price tags here. Note that although all tube amps run Class A, often their myriad failings elsewhere (usually the output transformers and poor passive componentry) prevent them from

Or rather, because of the way it was recorded, it sounds murky and cloudy on anything that isn't relentlessly transparent. With serious amplification, it becomes a crisp, no-nonsense rock album. Whereas Steely Dan's great outings are very well recorded but obviously mixed for 'FM radio' (as they used to say), 'New Gold Dream' is just straight and live sounding – through the JungSon.

It's a tribute to this amplifier's lack of switching distortion that this album sounds as it does; virtually every other similarly priced bit of kit goes muddy and dull when called to reproduce this album's labyrinthine

"tune your system around this amplifier and you'll get startling results..."

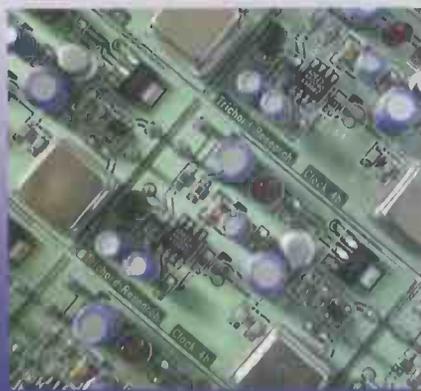
sounding anything but rose-tinted and euphonic. Back to the JungSon, and it has a wonderfully open and even slightly brightly lit sound. It's not 'brightly lit' in the sense of harsh or forward, and not even 'glassy' or 'chrome plated', just that it throws the soundstage into sharp relief.

A great example of this is Simple Mind's 'New Gold Dream'. This is a brilliant album, but (ironically) sports a rather murky, cloudy production.

It scythes through all those layers of swirling analogue synthesizers, and cuts right to the heart of the music. Vocals are smooth, not in the euphonic, valve-sense, but in the sense that there's no discernable glare, brittleness or grain – and through the reference Yamaha NS1000Ms I used with the JungSon, this is rare. For example, even surprisingly velvety (for a Class D amp) Lyngdorf Audio SD2175 power

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DL 110	£79 £69	EX	N/A	Dual DN 145 E, DN 165 E	£17
DL 160	£95 £83	EX	N/A	JVC DT 55, DT 60	£13
DL 304	£210 £190	EX	N/A	National EPS 24 CS, P 30 D, P 33 D	£13
Grado				Ortofon FF15/VMS20 EII, DM20	£17
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amplifier actually sounded a little edgy by comparison.

Indeed, the Lyngdorf proved a fascinating reference. It was obviously less dynamically expressive than the JungSon; where there was a powerfully struck snare, the SD2175 seemed to sit on the accent, while the JungSon bashed it out for all to hear. It is this amp's alacrity with microdynamics, allied to its 'hear through' clarity, that made it such a joy.

The next challenge was 4hero's 'Cosmic Tree', which has great swathes of bass energy running through it (not least thanks to the Moog bass synth); the JA-88D was brilliantly articulate. Unlike the Sugden A21a, which took one look at the 12 inch bass cones of the Yam and made its excuses and left, the JungSon was well up for it. The SD2175 was too, with lots of lovely clean, well controlled and tidy bass, but again it sat on the microdynamics, and just didn't want to come out to play when called upon so to do. So here we have a truly transparent, smooth and couth transistor amplifier that is both powerful and punchy enough to aspirate my Yams in my large listening room. Better still, its midband is truly emotionally articulate, and doesn't shy away from dynamic contrasts.

Moving to Bob Marley's 'Jamming', and the JungSon set up a wonderful groove; warm, tuneful and confident in the bass like few other amplifiers I've heard at any price, in simply did not show any signs of stress even approaching full volume. The Yams, which never seem especially bothered to do their best when driven by lesser amps, really picked up their proverbial skirts and ran. Bass was truly tuneful, as opposed to workmanlike (which is how the Lyngdorf can sometimes appear), and the overall effect was exquisite.

The smiles continue as you move your concentration up the frequency band; the midband is truly open as I've said, but is also tuneful and truly musically engaging. Now, Sugden fans will be heartened to hear that I think the A21SE still has the legs on the JungSon in this respect. The latter can't quite muster the former's carefree, joyful, insouciant playfulness here; the A21a and SE both sing their little hearts out in the midband and it really hits home. The JungSon

certainly has most of the (cheaper) A21a's enthusiasm, but can't compare to the pricier A21SE (£1,995, in case you didn't know) in the way it gets into the swing of things. Still, put it (or the Sugdens for that matter) against any of the excellent Class AB transistor amps (the aforementioned Nait 5x, Musical Fidelity A5cr, Lyngdorf SDA2175) and it's a veritable troubadour.

In essence, it sounds like a Sugden A21a on steroids; one that's been working out in the gym for a very, very long time and has emerged a very different, yet still recognisably similar beast. The JA-88D lacks that last one tenth of the A21a's joyful tunefulness in the midband, but the extra dynamic confidence more than makes up for it.

So it's a brilliant, almost perfect thing then is it? Well, no, because up top the JungSon is ever so slightly sharp; Noel Keywood explains this by the slightly high third harmonic distortion figure, which indeed tends to create 'zing'. The JA-88D's figure isn't excessive, I hasten to add, but I've still heard sweeter. Still, for me it's the absence of crossover distortion that more than compensates. The effect is a beguilingly clean amplifier right across the frequency band, with a very marginal treble rush. The fact that its bass is so stunningly strong and powerful counter-balances it nicely; you could almost say it's a sort of natural 'loudness' button...

So to the 'budget esoterica' bit; yes, if you tune your system around this amplifier's brightly lit treble with careful choice of interconnects (which are surely the noughties equivalent of the tone controls and filters that used to come with seventies amplifiers), you can get startling results. It is a diamond that needs

a tiny degree of extra polishing, but this done, you can see (and hear) how beautiful it really is. (I'd counsel Chord Company RCA Signature interconnects and Townshend Isolda DCT speaker cables, plus the best Black Rhodium mains cable you can afford – I used this combo to great effect).

CONCLUSION

What can I say; it's not perfect, but its foibles are marginal and relatively easy to ignore (finish, volume control, slightly bright top). These aside, you have here before one of the best budget audiophile buys in a long time. Power, pace, punch, clarity and insight – it has them all – and for just £899. Enough said.

VERDICT ●●●●●

Minor foibles aside, a stunning audiophile bargain - clarity and power allied to fine musicality make it a joy to hear.

JUNGSON JA-88D £899
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 www.shadowdistribution.co.uk

FOR

- power and punch
- clarity, lucidity
- stunning value

AGAINST

- tacky power meters
- noisy volume control

MEASURED PERFORMANCE

This is another 'unusual' amplifier with its own peculiar output arrangement concocted to overcome the drawbacks in solid-state. Output is modest for the size, measuring 112W into 8ohms and 182W into 4ohms. However, the Jungson clips very softly and symmetrically, just like a valve amp., and totally unlike a solid-state amp. - at least, one with feedback.

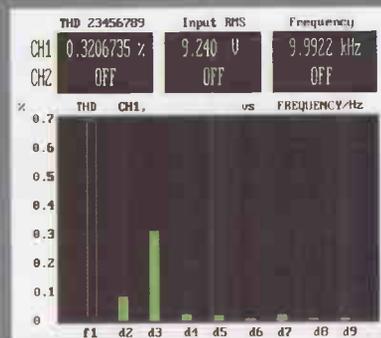
There is a price to pay, and that is steadily increasing distortion with level. The JA-88D distorts quite heavily by solid-state and even valve standards, measuring 0.3% just below full output into 8ohms and 0.6% into 4ohms, at all frequencies. The upside is that the distortion produced was not crossover, comprising mainly third harmonic, as our analysis shows. This has a sharpening effect in practice, making an amplifier sound glassily hard but clear. When run at low levels, however, the Jungson produces very little distortion, just 0.005% into 8ohms, so providing it isn't run too hard, it should sound relaxed enough.

Bandwidth is limited to 22kHz, but the amp runs to below 1Hz. A slow protection circuit ensures no

d.c. appears on the output even when applied to the input, our tests revealed.

This is an interesting amplifier, not perfect under measurement by any means but with no crossover. It will likely sound 'interesting'. NK

Power	112watts
CD/tuner/aux.	
Frequency response	1Hz-22kHz
Separation	113dB
Noise	-106dB
Distortion	0.005%
Sensitivity	600mV
d.c. offset	16/3mV



Fixing It?

Buying products that give great sound per pound is the essence of budget esoterica, but what if - no matter where you buy them - they cost the same from every dealer? A couple of months back in our letters pages, reader Anthony Carroll asserted that there is 'price fixing' going on in the British hi-fi market. This prompted Noel Keywood to investigate further...



suppliers should be prohibited from publishing, or otherwise notifying to dealers, the prices that suppliers recommend or suggest that dealers advertise, display or charge when they seek to resell the reference brown goods;

IT'S A FIX UP

Thank you for publishing and responding to my letter in the March edition... why is it that prices of the individual pieces of equipment you write about do not vary across the country? Is this not evidence that the market is not subject to competition between retailers, but is weighted in favour of the manufacturers?

And secondly, why is it apparently editorial policy not to promote the interests of the said consumer by raising the matter in your magazine? I surmised it is for unavoidable, commercial reasons, not least reliance on advertising revenue from manufacturers you would be sensible not to antagonise. I made no moral judgement and I certainly do not suggest you are kissing butt. Your job is to excite your readers interest in the stuff between your pages, is that not so? In doing this you are promoting it, whether consciously or not. I may be wrong in my surmise. I may even be suspicious. But you didn't answer the points.

I am not talking of competition between manufacturers, but competition between retailers, of which there is precious little it seems to me. There might be a few small reductions at sale time and, of course, the ex. dem. stuff available from the dealers who advertise in your columns, but if I want to buy a record player, for example, it's no use phoning round to find the lowest price is it? We know the price quoted will be the same everywhere, whether this be in Edinburgh or London. Why is this? What explanation do you think will occur to

your readers?

By cartel I understand the meaning to be price fixing by manufacturers. Not one manufacturer putting another out of business through subsidy. The manufacturers fix the prices the retailers sell at. That is why the price is the same no matter what retailer I contact. We cynics have long ago realised that politicians avoid answering questions by attacking the questioner rather than the question or answering a question that was never actually asked. It was with some amusement, then, that I noted you had written A Little Bit of Politics... above my letter. I couldn't agree more. Yes, you were behaving like politicians. Rather than answer my points you chose to attack me personally - bizarre, alien abductions and so on, or misrepresent what I had said. Disappointing. I had thought much more highly of you.
Anthony Carroll

Recommended retail prices were abolished after an MMC report in 1997 made this recommendation. Manufacturers have been unable to suggest or recommend retail prices since then, except to journalists and such like, to whom they supply a typical selling price. Were they to do this it would be illegal.

I see no sign of price fixing quite frankly, as I said in my original reply. Prices will sink to a minimum when competition is fierce, this being the lowest price that can sustain profitable trading. So similarity between prices doesn't indicate illegal price fixing, the reverse in fact. It

suggests competition has reduced retail prices to the lowest possible level. You must accept, Anthony, that prices cannot fall below a certain level, determined by the manufacturers price to the dealer.

Whilst penning my reply to your letter I began to recall that I had read something on a similar matter some months ago and that this likely was the source of your extreme claims about conspiracies, of which *Hi-Fi World* was a part. Methinks you'd make a good novelist Anthony or better still, a journalist! The Times might have you, as it was they who published an article last year on this subject, in 15th November edition, that was - er - somewhat inflammatory in its wording. Consequently, the said matter "is subject to legal dispute. It should not be relied on or repeated" according to a warning appended to an archived version we downloaded. All the same, the piece wasn't without interest or merit I feel, but Sony don't see it that way, so let's take a closer look at this touchy topic.

In a style I'd like to use but think better of, the old Thunderer said consumers could look forward to "a rip off Christmas", because internet sellers of hi-fi products were deliberately being charged more than high street retailers by manufacturers. The Times were in fact quoting James Roper of the IMRG, who specifically named Sony as being guilty of this practice. Unfortunately, he was ill and out of the office when I phoned to

check this statement. I'll note here though that the Monopolies and Mergers Commission reported on retail pricing in consumer Electronics back in 1997 and likewise picked out Sony at the time, but for no other reason that they hold the greatest market share. By and large, manufacturers use very similar trading policies, influenced strongly by consumer law, so what Sony do, others do.

The justification for this practice, clearly explained by Sony, was that "Sony offers a common basic selling price to all resellers. This price is then affected by different types of discounts. There is a discount scheme that provides discounts for resellers that invest in building the brand and marketing our products in a way that provides the consumer with confidence in the Sony products' quality features and support. For example, these discounts incentivise resellers that have staff that can demonstrate our products, have dedicated Sony sales areas and concentrate on our most cutting-edge, innovative products".

I contacted The Office of Fair Trading on this little matter, since it is they who adjudicate on consumer affairs in the UK, these days after consultation from the European Commission I believe. This is their position on the matter: "The Office has considered the issue of dual pricing by electronics goods manufacturers under the Competition Act of 1998. We have taken the provisional view that, based on the information made available to us, dual pricing does not, in itself, raise concerns under the Competition Act 1998.

In this case there are a number of efficiency arguments to support a dual pricing policy. They are:

Physical outlets (as opposed to websites) provide a service to customers, which is valuable to suppliers who wish their goods to be on display with the benefit of appropriate technical advice to potential purchasers.

The costs associated with providing this service and keeping a high quality retail environment are likely to be higher than the costs of running an internet based business.

If a supplier benefits from physical outlets stocking its products then it has an incentive to reward these outlets to ensure that its products continue to be stocked and displayed."

So the OFT do now clearly support Sony's position. So where does that leave the IMRG, who seem

whereas those champions of low price, Tesco, offer it for £190 via the internet or through a store. Amazon's price for a Sony STRDE598 receiver was £137.38 against Tesco's £180, or 24% less, so buying from the internet is cheaper according to these examples. This rather suggests the IMRG's fears aren't as yet justified.

As for *Hi-Fi World* being part of this conspiracy - as you see it - to rip off consumers, by not fighting it, I'd like to think we had the power to right wrongs, real or imagined,

"consumers could look forward to "a rip off Christmas"...

to have triggered the squabbling. They recently issued a statement too, which I found somewhat ambiguous. In it they say that they "intend to ensure that any such practices are lawful" and that they will do this "in cooperation with the Office of Fair Trading and European Commission".

Who makes the law on such matters? I think the OFT and EU are rather more consequential in this process than the IMRG, so we can safely say for the time being at least that if the OFT and EU say this is a justifiable and lawful practice, then it is so - period. The law can be changed of course, and perhaps it will under pressure and representation from the IMRG, but this would only be after considerable further debate and I can't help feeling they may not get a lot of support for their cause, unless perhaps the OFT change their mind. They do, somewhat ominously, say their view is "provisional". Even the IMRG's position isn't likely to be clear cut because it represents members who sell both on the internet and through retail stores.

Contrary to the suggestion that internet retailers would not be able to offer lower prices because of Dual Pricing I noted that Amazon, who are online only, can sell you a Sony STSDB900 receiver for £180,

but I'm afraid Sony, the OFT, EU and many others are unlikely to agree! It's a matter for the OFT and various trade bodies, like the IMRG to regulate the terms and conditions of retail trade and, ultimately make recommendations to the Government. We are able to report on such matters though, to inform readers, and have done so here. It looks like an ongoing argument, so perhaps there'll be more to say in future.

Dual Pricing is not retail price fixing, the practice you complained about Anthony, on the basis that retail prices are too alike. As I explained earlier this is indicative of strong competition rather than the operation of a cartel, as you seem to think. However, just to be sure I asked the Office of Fair Trading about your assertion and whether they were aware of any action or circumstance that could explain it. They told me they had no evidence of price fixing, nor any complaints or allegations about it either.

I can only assume you or others have been influenced by The Times article of November 15th telling us there was to be a "rip off Christmas" and you suspect this applies more widely. If so you will need to find evidence, Anthony.



Sony's STRDE598 receiver - cheaper on the internet.



Mag

Whilst no one can agree on what a good loudspeaker really is, giving rise to one of mankind's most ingenious pastimes as he tries to solve the riddle, a high sensitivity loudspeaker like the Magna Acusticas can find a place in the world.

What you get here is a loudspeaker based around an old but simple idea that has some distinct attractions. One full range drive unit acts as a single source for the sound and, being made of lightweight paper it moves with lightning speed. With a claimed sensitivity of 96dB the Magna Acusticas need just a few watts of power to blow your head off. They actually sound loud even when the volume is turned right down, for heavens sake!

Lightning fast, with a spry sound that seems to have thrown off the shackles restraining more conventional loudspeakers, the Magna Acusticas inhabit a niche world that some enthusiasts swear by.

Magna Acustica use two 10in full range, paper cone drivers in this design, one facing forward, the other backward and up. It is tilted to fire sound at a rear wall, from where it should be deflected up to the ceiling somewhere over or just behind the loudspeaker. This all depends upon their exact position in a room, especially in relation to a rear wall, and ceiling height will affect matters too. But there's plenty of guesswork, approximation and specious theorising in loudspeakers, so what the heck! Bouncing energy off room boundaries (i.e. walls, floor and ceiling) gives an open, airy sound. It also helps raise the soundstage somewhat, helping

it arc as a rainbow over the loudspeakers, rather than run in a tight line between them.

The speaker cabinets are tall, measuring 125cms (49ins), with the drive unit centre set at a high 104cms (41in), above ear height. This puts the image high up, which always seems more ethereal to me than lower down. Cabinet depth is a modest 36cms (14in) and the whole assembly sits on three spherical wooden feet, ensuring the speaker is stable on uneven floors. Connection terminals are single wire, as a single drive unit requires no internal crossover, and the terminals sit underneath, so cable trail beneath the cabinet, which sits high enough to allow this. You might think laying these speakers down to connect up would be a strain, but the cabinets are made from plywood and are surprisingly light.

At the top is a vent - another unusual idea. This puts the drive units effectively atop an open ended pipe, that peaks at 200Hz measurement shows. It isn't a bass vent (port) as such, although there is some output at 50Hz. There is a deep dip at 160Hz in the forward output of this loudspeaker, which corresponds to the half-wavelength distance of drive unit to cabinet bottom, giving me the suspicion that cabinet design has been a bit ad-hoc, without recourse to measurement.

The standard of finish was reasonably good, certainly acceptable, even if the paper cone drive units are hardly pretty, and there is no cover for them. What you see is a large, but light paper bass cone, at the centre of which is a parasitic tweeter. It's called this because it comprises a small additional cone attached to the main

nificent?

Noel Keywood tries the weird and wonderful Magna Acustica full floorstanding loudspeakers...

cone. In truth it is attached to the top of the voice coil, from which the main cone decouples at high frequencies, being unable - because of its mass - to follow its accelerations. The mini-cone manages better, extending output up to 10kHz, above which output rolls down fast. So the Magna Acustica's single drive unit covers a satisfactorily wide part of the audio band, but its output is extremely ragged by today's standards. And this you can hear...

Angelique Kidjo's 'The Sound of the Drums' started nicely enough, her lightly accompanied vocal hanging clearly between the loudspeakers, forward and strongly outlined. Those normally rich tones sounded weakened though, concise and clear yes, rich and natural no. When the powerful electric bass line kicked it made little impact through the Magnas. A strong bass line is weakly supported by them, as measurement shows. Positioned close to a rear wall in 14ft room would have them driving the room's main resonant modes at 40Hz and above, bringing up bass level usefully. An owner may end up with what seems like a light but satisfactory balance, yet it will always be much weaker than a conventional modern floorstander.

Yet you do get nice tight sounding bass with no overhang; it makes your average ported design sound bass heavy and ponderous, an admirer would say in defence. True, but this is partly an inevitability; as bass level is cut the sound will seem less weighty and slow. However, as some of the Magna's character here is attributable to its fairly extensive cone area too, I can't help feeling it could have been better exploited than by the rather simple and peculiar cabinet used.

The emphasis on high frequencies brought forth cries of "tinny" from an audience listening to Celine Dion then Carlos Santana. The imbalance of these loudspeakers was often very obvious, although there were always good moments when they could become captivating. It was lovely with vocals, making it suited to light classical perhaps. There was some cabinet colouration too, a vague clothiness, not veiling vocals so much as trailing in their wake.

That the Magnas are fast is

undeniable. That they are sensitive is pretty obvious too. At any level they exude life and vitality; music isn't boring through a loudspeaker like this. Although high frequencies are emphasised they do not sound spitty or bright in the usual sense of the word, insofar as we have a precise definition of course. They had a light tonality, and at times were thin because of this.

The sweeping expanse of the Berliner Philharmoniker as it enters to accompany Leif Ove Andsnes playing in Rachmaninov's always beautiful Piano Concerto No2 filled a broad canvas, but piano sounded hollow because of box colouration and violins sounded distinctly confused. I well know the positions of the various sections in EMI's fine recording, but the Magna Acusticas were less sure. There was a general lack of purity too. Modern orchestral recordings are getting quite good as the horrors of early digital abate, forming quite a severe test of sound stage resolution, and this was a little more than the Magnas could successfully handle.

We reviewed them with our resident Quad II-fortys, hooked up with Van den Hul Royal Jade cables to give them appropriate partnering equipment. In fact, low power valve amplifiers (6W-20W or so) are the target market for these loudspeakers and will soften the sound further, but I do not feel the large response variations could ever be fully tamed, so much as ameliorated by choice of partnering equipment.

The Magna Acusticas have strengths and weaknesses in equal degree. What they do well so convinces some that little else comes close. I'm not one of those listeners, but I understand their viewpoint, since they're properties I value too, if not with the compromises.



VERDICT

A fast sound with great imaging and little waffle appeals, but weak bass, colouration and muddle with violins are drawbacks.

MAGNA ACUSTICA £1,600

VNW Limited

+44 (0)845 833 6939

www.magna-acustica-loudspeaker.com

MEASURED PERFORMANCE

The forward response of this loudspeaker was as ragged as expected from a lightweight, paper cone, full range, 10in driver, fitted with parasitic cone. This makes it very difficult to establish a reference level around which to hang figures but, relative to level at 800Hz, treble rises steadily to peak at 6.3kHz by a large +8dB. Above this frequency, output rolls down steadily, measuring -13dB at 20kHz - quite a drop. The Magna will have a bright balance as a result and under test it was obviously a little fierce.

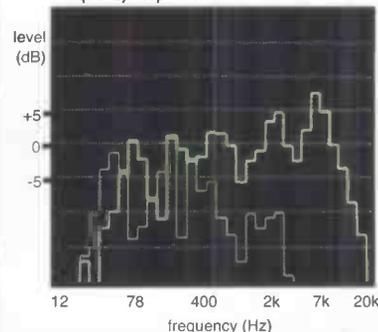
Two drive units face each other back-to-back and operate in-phase to give omnidirectional radiation. Being 3ft above the base I suspect a half wavelength mode inside the open box is responsible for the strong dip at 160Hz in our analysis. Bass output rolls down below 63Hz (-6dB), although the top vent contributes a little lower down. However, placing a vent here least drives the vertical mode of a room, losing the extra oomph this can bring.

Sensitivity is quoted as a high 96dB but we measured 93dB. That's still good though, especially in light of the fact that this is a 9ohm loudspeaker under measurement. Our impedance curve clearly shows this, and the fact that the Magna is largely

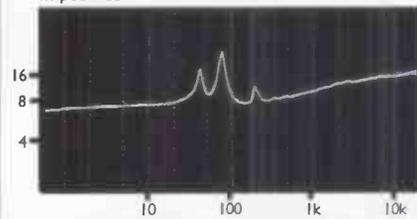
resistive as a load. So it suits 8ohm valve amps perfectly and is an easy load for transistor amps too.

The Magna Acustica measures much as expected, with light bass, a ragged response indicative of colouration and little high frequency extension. It is sensitive though and a very easy load. NK

Frequency response



Impedance



Name that tune

Here's a once great British name that's been acquired by a Singaporean company and relaunched; Noel Keywood tries the surprisingly enjoyable new Rogers LS603 floorstanding loudspeaker...

As Wo Kee Hong tell you on their Rogers website, this old Brit name has resided with them since 1993. As I recall they were Rogers Singapore agents when the company was manufacturing from their South London base, but took over after the company drifted into difficulties. Since then little has been heard, so we were surprised to be sent a new pair of inexpensive floorstanders for review, the LS603s. As I recall Rogers products being neatly engineered, and possessed of a suave sound that usually fell easily on the ear, their arrival was intriguing. Would this be the Rogers of old, revived into a form fit for a new century, or would it be a piece of cynical badge engineering, an old and trusted name attached to a cheap box sourced from one of the Far East's numerous manufacturers?

In appearance and finish the LS603s are smart enough - in fact they're very smart. The veneering is top quality and the routed front baffles have smooth curves and a thick, satin sprayed finish. The drive units are well made too, a Mylar dome tweeter sitting above a bass/midrange unit possessing what appears to be a clear Polypropylene cone. At least that's how it sounded when I flicked it with a fingernail - well damped and free from any tendency to ring or overhang. Polypropylene was always noted for its clean sound, if a tendency to quack a little when pushed hard. The lower driver is a bass driver, and being placed low will strongly drive a room's vertical mode (resonance). Low ceiling rooms have a tendency to boom with this arrangement, but high-ish ones add a boost right where most recording engineers like to put it for supple, but plentiful bass: 60Hz.

At 95cms high the LS603s are not shorties; the tweeter is at or slightly above ear height. But at 20cms wide they don't impose visually and a depth of 33cms is normal enough. The rear panel carries a port, so this is a bass reflex design like most loudspeakers nowadays; it also carries a bi-wire connecting panel fitted with gold plated screw terminals that accept 4mm banana plugs, spades or bare wire. The cabinets are not especially heavy, weighing 17.2kgs.

After measurement, *Hi-Fi World* reviewer Martin Wolszczak spend a couple of weeks with the 603s and was mildly impressed, but harboured reservations. They were nice a clean with vocals, he felt, but there was too much treble and often boomy bass. His suspicion was that Rogers had gone for a sound that would impress in the showroom but could become tiresome over a longer period. I wasn't sure I was going to enjoy the LS603s!

There were some factors I suspected might better suit these speakers to my old Victorian home, compared to Martins modern flat. Suspended floors, a high ceiling and lath and plaster walls all help keep bass levels down; Martins late 1990s London apartment of solid brick and concrete is sturdy all right, but not the best match for a loudspeaker balanced - or unbalanced perhaps - as the LS603s. His low ceiling would put the highest room mode at around 80Hz where in my room it would be at a

less obvious 60Hz. I mention all this so you can get some idea how this loudspeaker might perform in your home.

SOUND QUALITY

Measurement had shown the LS603s tweeter was peaking strongly and even though the loudspeaker was measured grille off, but listened to grille on as recommended in the instruction leaflet; the grille affected matters little, certainly not enough to provide useful correction. Spinning a nice, innocuous modern recording, James Blunt's 'Wisemen' got my listening off to a good start. This isn't a recording that makes a case for itself; the relatively stark production is laid back in approach yet fairly clean, letting Blunt's assertive voice hold centre stage. Into this performance the 603s shone light and injected vitality; suddenly the lyrics were clarified as if by magic, taking on extra presence and cogency.

With a squeaky clean delivery and no loss of definition in any remote corner of the performance, I wasn't unhappy at the result. Suddenly there was a bass line, still not much of one, but then this isn't a recording that majors on frequency extremes. And that's why the LS603s fared well; they provided useful extra zest in areas where it wouldn't sound unnatural. After a while cymbals did start to ring a little too brightly perhaps and sibilance began to make itself a trifle obvious, bringing just a little too hard an outline to the leading edges of transients. The way the LS603s clarified and livened this recording was an interesting example of how they could seemingly work magic. But where was that excessive bass measurement had picked out and Martin had heard?

The hypnotic bass beat behind Alison Goldfrapp's 'Lovely 2 CU' has enough energy to set bass cones into a wobble, so much so that her trance like vocals and the raw buzz of the synthesiser almost become swamped by it. Just where I was expecting the LS603s to fall down, they did precisely the opposite. They put extra power into the bass beat but didn't lose control whilst doing it. Nor did this in any way affect the midband. Quite the reverse, the sense of separation of Alison Goldfrapp's vocals from the rest of the instrumentation was heightened, both in the way her lilting, drifting voice could move freely through its full expressive range and its tortuous but intriguing inflexions. I was made very aware of every nuance of expression in her voice and it was exciting to come so close. The synthesiser buzzed like a swarm of angry bees, sawing up and down

with an almost jarring presence. The 603s really excelled with this track - and with the rest of 'Supernature'; okay, they were a little "Technicolor", but not obviously or obstructively so; my enjoyment was heightened, not diminished.

It was the 'Good Ol' Boy' that did it. Slightly frustrated that the 603s had so obviously erred under measurement but not in use I turned to an unarguable test, the incisive steel guitar of Texan Steve Earle. The opening strummed chords of 'Someday' were too brittle to be acceptable; any ear would at this point notice that something wasn't quite right with the 603s. Earle's voice sounded thin and reedy, where it normally sounds nasal but enriched by an obvious Southern drawl. So much for a 1980s recording, albeit one made with care. Reeling forward to a DVD-A of Clapton and King, 'Riding With The King', again put the testing twang of steel guitar strings through the LS603s and this time the result was more favourable. The emphasis was there but it wasn't unacceptable. Firm but enthusiastic low frequency reproduction had bass guitar sounding large but controlled, lazing along in a nicely timed fashion that well conveyed the general laconic feel of 'Key To The Highway'. At all times the LS603s sounded full bodied, lively and fast - an engaging combination of properties.

With a none-too-insightful recording of the London Philharmonic busily working their way through 'The Flying Dutchman', I did feel that strings were well lit, but that's not to say harsh or unpleasant. Brass had a little extra edge but a pleasant enough timbre, whilst kettle drum stood clearly at centre stage, at suitable moments sounding foreboding in typical Wagnerian fashion, its power strongly conveyed, as the rapid roll of strikes punched cleanly from the speakers.

A clean and convincingly balanced Naxos recording of The Planets was handled in much the same fashion, trumpets and trombones rasping out clearly and with satisfying fullness of body. The LS603s may be unbalanced but it was often apparent they do a lot very right, picking out instruments cleanly and

portraying their timbral and dynamic properties clearly being one. The complex conclusion to Saturn, with the entire orchestra hard at work, saw the LS603s remain unfazed.

CONCLUSION

In the end I enjoyed these loudspeakers much more than I had anticipated. There was a lot that suited them however, from my room, to the amplifier. This was my 300B valve amplifier with feedback switched in to make it more like an everyday sound. The LS603s have an insightful tweeter and this worked well enough with an amplifier tuned with special components, but I strongly suspect a bright transistor amplifier wouldn't be very suitable. A softer sound of the sort provided by Rega would suit, as would any valve amplifier. Run from a bright, hard sounding solid-state amplifier the Rogers may well sound unpleasant, for they are revealing. I suspect they are not a loudspeaker for all situations, but they will suit a good number unusually well, all the same. And I can imagine that anyone becoming accustomed to them would have to be dragged away by a team of horses; they are addictively entertaining, with some unique properties. Not all of them are entirely correct, but that doesn't stop the LS603s being - to me at least - a wickedly enjoyable listen. At the price I'd say they're something special in many ways.

VERDICT

A quirky, characterful and highly enjoyable loudspeaker to listen to.

ROGERS LS603 £899
 Royal Hifi
 ☎ +44 (0) 1276 489939
 www.rogershifi.com

FOR

- dynamically engaging
- concise and well timed
- clear

AGAINST

- overly bright
- tonally inaccurate

MEASURED PERFORMANCE

The frequency response of this loudspeaker is fairly 'distinctive'. Although the port is tuned to exactly 50Hz and seems to hold the bass drivers in control, according to the impedance trace, the twin bass units all the same deliver generous low frequency output above this frequency. The lower unit in particular will couple into, and drive, the room's vertical mode strongly, explaining much of the 90Hz peak in our analysis. Higher ceilings will lower the frequency of this peak, a 9 footer putting at 60Hz for example (the half-wavelength frequency).

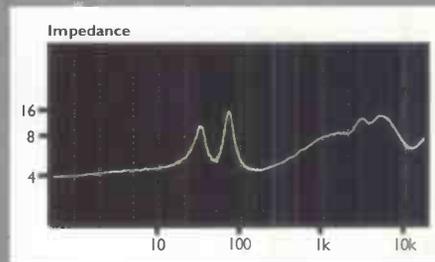
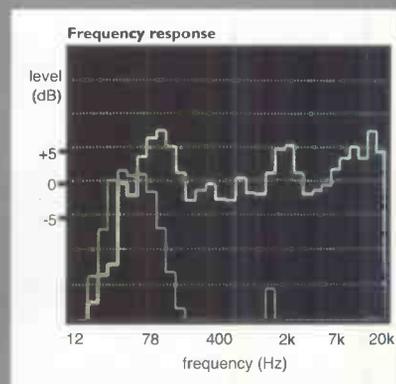
Another peak at 2kHz is almost certainly due to excessive driver overlap at crossover, suggesting the crossover network needs attention.

The tweeter peaks up strongly, by +7dB, at 16kHz and this will certainly make itself known as 'sting' in the treble.

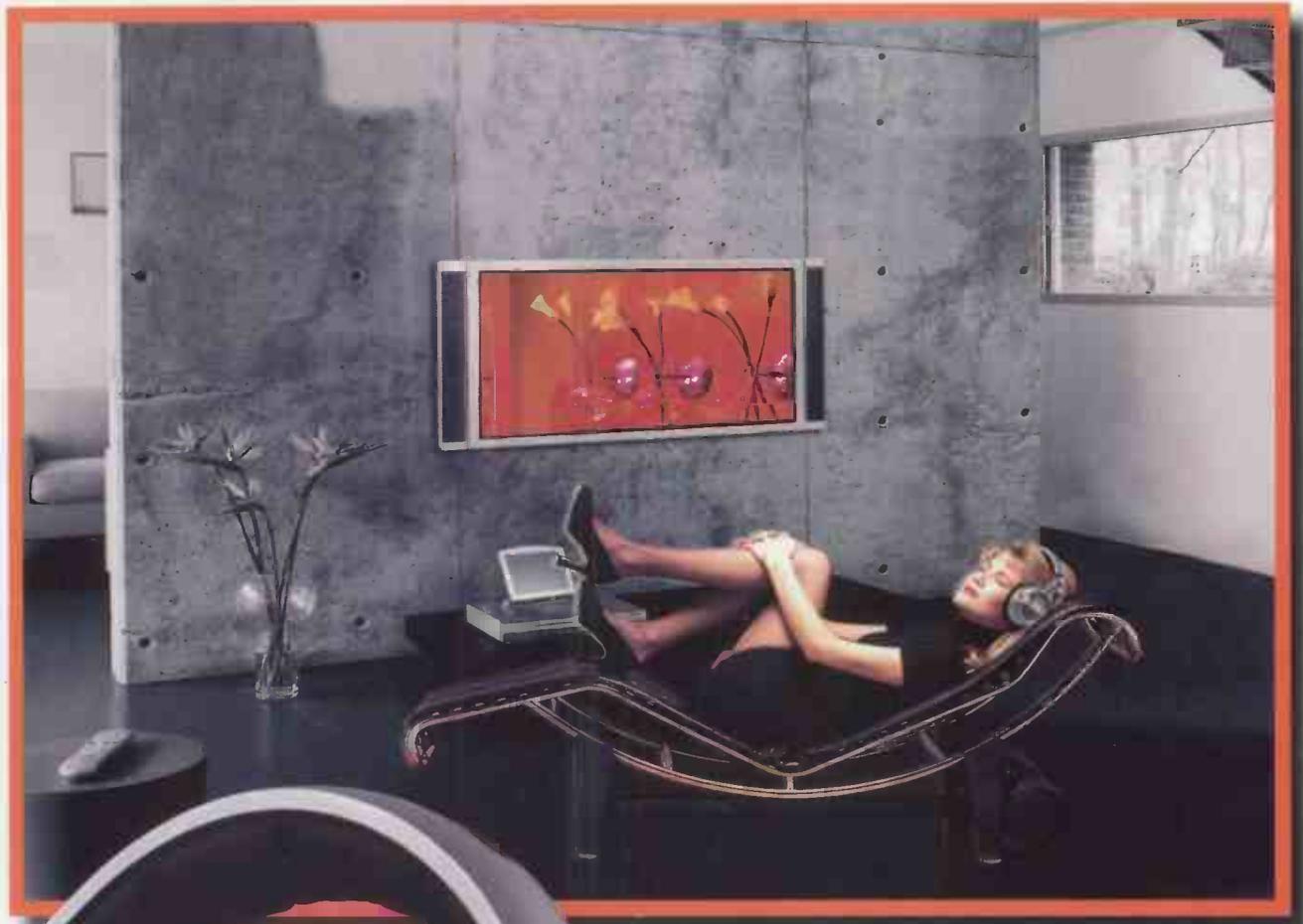
Sensitivity measured normally enough at 87dB and impedance 5.5ohms. The impedance curve is fairly flat, showing the LS 603 is fairly unreactive.

The basics of the LS 603

look good under measurement, but it could be usefully smoothed out by very simple modifications, something it would benefit from. NK



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Headmasters

Budget phonestages are getting better and better, thinks Channa Vithana, as he auditions Clearaudio's new Smart Phono and Trichord's latest Dino...

There are a few integrateds with decent phonestages, but not many. In truth, if you want real hi-fi sound from your black plastic, you'll have to shell out on an offboard solution. But the good news is that they're getting better, and cheaper – more markedly than you might think. So we decided to try two of the best new budget designs.

CLEARAUDIO SMART PHONO

This little £265 box has outstanding build and finish in the classic tradition of this German hi-fi company. It features very high-quality Clearaudio phono sockets and a substantial turntable ground (earth) connection at rear. At the base of the casework are two switches for MM/MC selection, one per channel. At the front, Clearaudio's nomenclature is cleanly and attractively machined into the aluminium faceplate with a discrete blue LED in-between. The faceplate features a very fine horizontal brushed grain, while the main casework has an opposite grain direction that provides a nice design detail contrast. There is a fixed mains lead terminating within a Clearaudio black plastic moulded plug-in transformer rated at 21V DC. The Smart Phono is tiny, measuring 50x74x31mm and weighing only 200gm. Clearaudio uses surface mounting technology (SMD) inside which is more efficient (using machines) to manufacture than standard lead-in construction (done by hand) and also usually results in using less space and shorter signal paths for theoretically better sound quality.

TRICHORD DINO

The latest version of the £329 entry level Trichord phono stage comes in a grey, gloss-metallic, acrylic case. It has separately adjustable MM/MC cartridge and gain loading settings per channel through dip switches on its undercarriage. Trichord says the circuitry is signal non-inverting and constructed using high performance, audio grade bipolar and JFET operational amplifiers, metal oxide resistors and ultra low impedance capacitors throughout. This latest Dino iteration features new capacitors, which Trichord say are superior in comparison to the previous version. The Dino comes as standard with an 820gm, ABS moulded, 40VA external power supply that uses a toroidal transformer. Trichord says, "AC current is fed to the Dino (from the power supply) where it is rectified to DC and regulated with two high performance, wide (bandwidth) Super Regulators". The Dino measures 130x58x112mm.

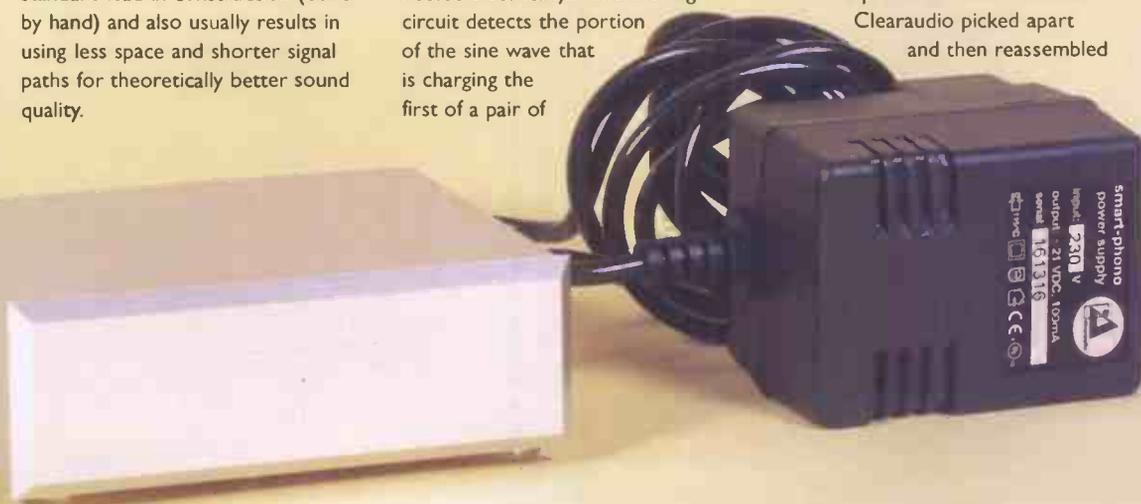
The £449 NCPSU is the top upgrade power supply for the Dino. Trichord says it sports completely different electronics to the standard 'Dino+' power supply. Instead of an oversized toroidal transformer, there is a PCB mounting variety followed by "the revolutionary noise reduction circuitry that is called 'Never Connected'" Although the regulation circuit is physically connected to the incoming mains, it is disconnected electrically. A monitoring circuit detects the portion of the sine wave that is charging the first of a pair of

electrolytic capacitors. Once this first capacitor is fully charged, the diode bridge rectifier turns off and a mosfet switching circuit transfers the charge from the first cap to the second. This cycle is repeated continuously. At no (point) in time is the regulation circuitry electrically connected to the incoming rectified mains - hence the term 'Never Connected'. The Dino and NCPSU can be bought together for £749, saving £29 on separate prices. The NCPSU can also be used with a £140 High Performance Power Interconnect, which is a more substantially constructed cable than the standard one. The cost of this interconnect, is reduced to £130 if bought with a Dino+/NCPSU power supply and a Dino. A Dino+ power supply can be upgraded to NCPSU for £224.

SOUND QUALITY

With the £265 Clearaudio Smart Phono connected, the music was powerful and yet utterly composed on my 1977 copy of 'Beethoven: Piano Concerto No.3' LP. The violins had very fine layering, and I could exactly follow the melodies with ease. There was good weight also to the lower-frequencies, and when the piano part came in, the Clearaudio ably conveyed a deep and finely resonating timbre to the struck keys. At all times, it was truly convincing in its emotional impact. The Clearaudio had, subjectively, vanishingly low surface noise with the Beethoven LP.

The precision with which the Clearaudio picked apart and then reassembled



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MISSION

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Tel 01480 447700 Fax 01480 431767

the wayward yet fluidly melodic '4,' by the Aphex Twin from the 1996 release of the 'Richard D. James Album' was actually quite a surprise, as this recording is multilayered in composition but also demanding and unpredictable at times with some rough frequency extremes. However, the music from '4' had impeccable speed and detail and was never less than composed. Basslines from 'Vertigo' via U2's 2004 'How To Dismantle...' release were superb, being taut yet agile and therefore tunefully communicative. The guitar harmonics came out really well and the Clearaudio had excellent instrumental separation which enabled it to extract maximum information from this exhilarating recording.

Through the standard Trichord Dino, the leading edges of the violins were superb on the 'Beethoven: Piano Concerto No.3' LP. There was a wonderful sense of fluidity to the layering of notes from the stringed instruments for which the Dino provided a more free-flowing presentation in comparison to the Clearaudio. However, I found that it could not match the Clearaudio's low-frequency ability and especially its deeper instrumental timbre. This aspect to the timbre was a little more obvious due to the standard Dino's comparatively higher surface noise. The piano also had less timbral acuity than the Clearaudio, but like the stringed instruments before, was more fluidly expressed.

Considering the Dino's ability, I was expecting a surging, swaggering, musical attitude to be expressed on '4' by the Aphex Twin from his 'Richard D. James Album,' but the Dino was a little flat and reticent here, which was surprising.

The dynamics of

the Clearaudio previously, were minimised and the whole sound was somewhat disappointing. However, with the U2 track 'Vertigo,' from the 'How To Dismantle...' LP, the Dino's swagger returned, with appropriate augmentation to this recording's own exhilarating vibe. There was a full-on thrust, with full-bodied dynamism to the music - the rhythm and pace was also now excellent.

With the NCPSU connected to the Dino, there was a very silent background to the music. The resolution was much higher now, banishing the variable quality of the standard Dino, with a superb high-definition consistency for all the recordings used. Interestingly, the Dino with NCPSU was more in line with the sound quality philosophy of the Clearaudio. It seemed to close in on instruments and tighten things up massively, which resulted in less of its free-flowing musical swagger, but I could discern and appreciate different instruments for their particular timbre, and this was done compellingly. The NCPSU provided clean, dynamic power and finesse too, for both vocals and instruments.

Utilising the upgrade £140 High Performance Power Interconnect between the Dino and NCPSU resulted in superior low-frequency weight and even better definition and resolution with all the music. Most importantly however, was that it improved the attack response and speed inherent in the recordings and brought back some of the free-flowing quality of the standard Dino as well.

CONCLUSION

The £265 Clearaudio Smart Phono works to an excellent standard and did so without fuss even in a high-end £5,500 Origin Live/Linn LP source system. It has an unflappable ability and proved this by never sounding bright, rolled off in the treble or dynamically wanting. It has

very low surface noise and superb timbre and bass tunefulness.

The Trichord Dino at £329 offered a wider aperture to music than the Clearaudio, which made for a more fluid and engaging stance, but it struggled with some recordings, as it ultimately sounded looser. The £449 NCPSU upgrade utterly transformed the Dino though, by revealing its inherently good capability, and reproducing a continuously high-resolution sound quality for all the recordings. Add the £140 High Performance Power Interconnect and things get even better, with deeper, more agile bass and some of the standard Dino's spatially wide ability.

Things have never been so good in the affordable phonostage stakes, and this is surely a result of stiff competition. This is good news for us consumers, but it makes Trichord's Dino look more mortal than it did several years back, when nothing came close. Now, the likes of the Clearaudio outrun it without its NCPSU option, and even with, it has the likes of Naim's £750 Stageline/FlatCap2 (HFW April 2005 p51) to contend with, which sounds bold, structural and full-bodied. The latest Graham Slee Era V Gold at £480 is wonderfully fluid and lucid, but lacks a moving coil input. Then there's the £700 Cyrus Phono X (HFW October 2005 issue p54) that is sweeter and slightly warmer, to think about too. Still, the Dino NCPSU is unerringly high in resolution and neutral in character, and many will choose it for this reason. Happy decision making!



VERDICT ●●●●£

Superbly designed and built entry-level phonostage with an extremely clean, yet surprisingly full-bodied sound.

CLEARAUDIO
SMART PHONO £265
 Clearaudio Electronic GmbH
 ☎ +44 (0)1252 702 705
 www.audioreference.co.uk

FOR

- peerless build
- superb value
- excellent sound

AGAINST

- nothing at the price

VERDICT ●●●●£

Wonderful with the NCPSU, it offers a consummately engaging musical performance - but without it competition is stiff.

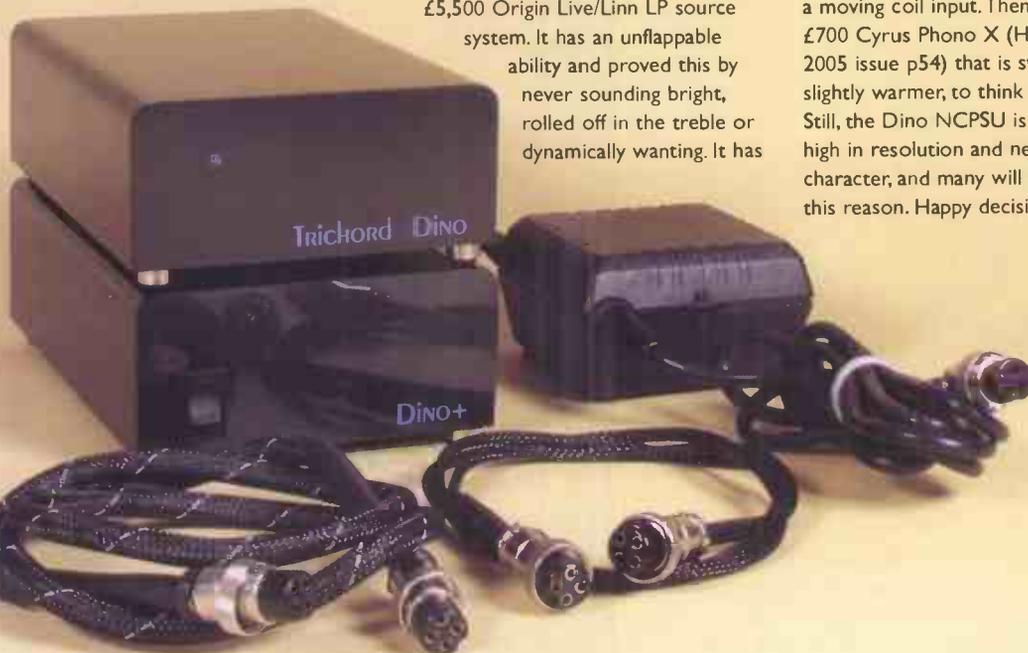
TRICHORD DINO NCPSU £749
TRICHORD RESEARCH LTD.
 ☎ +44 (0)1684 311 600
 www.trichordresearch.com

FOR

- true high resolution sound
- clever upgrade path
- adjustability

AGAINST

- fierce price competition



Heads Up



CHANNEL ISLANDS VHP-1/VAC-1 £390

The hand-crafted VHP-1 Headphone Amplifier is touted by C I Audio as being of 'studio quality' – a bold claim indeed, but one that would appear to be backed up by the rapidly increasing collection of rave reviews from all over the world. Key to its success is the use of a current feedback circuit rather than the commonly used and sonically inferior op-amps. The VHP-1 works with just about any headphone you care to throw at it, from 30-700 ohms. This is an exceptionally low noise design, and with a quoted 120dB dynamic range. Parts quality is reasonable, though C I Audio appear to have developed this unit with tried and tested parts. The unit measures a dinky 4.40in wide, 2.65in high and 4.40in deep, in old money.

The performance is augmented by the matching upgrade VAC-1 High Current Power Supply unit, supposed to improve bass definition, yield more powerful dynamics and lower the noise floor; 120v or 240v operation is selected internally.

Construction of both units is excellent – the circuit boards are high quality glass/epoxy double-sided affairs, featuring 1 oz copper tracks. The chassis and knobs are aluminium

The cheapest way to serious sound is to bypass loudspeakers altogether; after all, they're big and expensive and riddled with problems. What better way than a high quality headphone amplifier and cans to match? John May tries C I Audio's VHP-1 and Goldring's new DR150 combo for size...

alloy, and the fixings are stainless steel. The front panel is stylishly finished in brushed aluminium, while the main body sports a crackle-black finish.

The VHP-1 features a single volume control, along with the headphone socket and a high/low gain switch to ensure compatibility with a wide range of headphones. The low gain setting provides 6dB of gain, while the high gain position increases this to 15dB.

At the rear there are two sets of gold-plated phono sockets, and a 14v AC input. One of these sets of phono sockets is for direct connection of a CD player – or any line-level source – whilst the second set is labelled as 'Loop'. This allows the source to be output (unaltered) to your main amplifier or pre-amplifier. The VHP-1 may also be connected to a tape or processor output for use with multiple sources.

SOUND QUALITY

I left my pair of Sennheiser HD570s connected up to the VHP-1/VAC-1, running on repeat via my Naim CDI for 48 hours before assessing the sound quality. Listening kicked off with some fantastically well-recorded film soundtrack music in the shape of John Williams' 'The Towering Inferno' on the PrimeTime record label. I was immediately impressed by the silence – before the music began that is! There was not a jot of hiss or other nasties to intrude. When the music did begin that same sense of an inky-black background in quiet passages of music was again prevalent. String tone was agreeably free from any hint of grain or roughness, and sounded quite 'valve like' in its delivery. This shouldn't be confused with

smooth and syrupy however, merely accurate and faithful to the original recording.

Dynamic range also proved one of the VHP-1's many fortes, and had me jumping. There was a wonderful sense of the acoustic space within which this performance was recorded, and one could easily see 'into' the venue without difficulty.

Vocals on Kate Bush's 'The Kick Inside' were superbly relayed through my Sennheisers. Again the terms which appeared most on my notepad were 'valve-like' and 'grain free'. Everything was crystal clear and spread out in front of me on a vast soundstage. That 'ball of sound' effect which can sometimes mar headphone listening was kept in check.

A brief spell with The Pixies and their wonderful 'Doolittle' showed the VHP-1 could rock with the best of them as well and – surprisingly – showed there was more bass than I'd thought possible still to be mined from my 570s. Obviously the VAC-1 power supply was doing its job superbly well, ensuring the performance never ran out of steam. Neither was it fatiguing to listen to for long periods, unlike those middling headphone stages which are often part and parcel of many budget to midrange amplifiers.

Quality such as this had me questioning the need for spending huge sums on speakers that will seldom achieve the low colouration and open sounding performance achieved by this relatively low cost pairing...



VERDICT

A truly exceptional headphone output stage; the best at the price and an essential audition.

CHANNEL ISLANDS VHP-1/VAC-1

£390

Angelsound Audio
+44 01923 352 479
www.angelsoundaudio.co.uk

FOR

- fantastic sound
- highly compatible design
- price

AGAINST

- nothing

GOLDRING DR150 £69.95

The Goldring DR150s are the top performers in the company's new range of headphones, released as part of their 100th Anniversary, no less. Judging by looks alone I'd say the DR150 looks considerably more expensive than its £70 retail price. Indeed, construction isn't a million miles away from my reference Sennheiser HD570s which cost considerably more. The DR150s are an open-backed design that is said to bring a superior level of sound staging and imaging. The drivers used are pricey 40mm neodymium magnet types, and feature titanium film diaphragms. The frequency response is consequently nice and extended, ranging from 18Hz-20kHz. Impedance is 32 ohms which makes them just compatible with the VHP-I headphone amplifier.

At this price point you wouldn't expect a reference quality cable, but the cable for the DR150 is designed by no less a cable authority than QED, and features a 3m length of 99.999% pure silver-plated OFC cable. The signal return path has an increased cross-sectional area that is claimed to minimise crosstalk, which should result in a better-defined sense of left to right separation, and imaging. This cable also features nylon filament fibres to minimise handling noise and deliver maximum cable strength. The connectors are gold-plated. The ear pads are felt circum-aural types for maximum comfort. A very impressive set of specs then for a £70 pair of 'phones. Would they offer the promise of 'reference sound' as Goldring suggest?

SOUND QUALITY

I started listening again with the 'Towering Inferno' theme tune after another two day running-in period.

Again I was struck by the lack of any noise emanating from the VHP-I headphone stage. A stage such as this gives any headphones attached a chance to shine, and the Goldring DR150s certainly did this. Whilst the performance wasn't quite as open as the substantially more expensive Sennheisers, it was still a huge step

comfortably exceeded the capabilities of my Sennheiser 570s. There was a solid and firm foundation to the music which really gave it body and substance, no matter what the musical genre. Rock music really boogied with the DR150s and had me waving my air drum-kit like a maniac – quite a sight to behold so I'm told! The Pixies hammered out of those earpieces with alacrity. The sound was a tad dynamically compressed and a little too sharp-edged and bright compared to the Sennheisers, but it was still a more exciting listen in many ways... think a Quad II Forty vs a Naim NAP250 and you get the general idea...

Kate Bush again fared well with this pairing – the soundstage was a little narrower and closed-in than the Sennheisers, but the 'vibe' of the music was transmitted without any hitches and had me listening to the entire CD. The only caveat here was the rather tight headband, and adjustment didn't seem to help. My ears ached a little after an hour of constant listening, but this would likely diminish the more the phones were used and 'worn in'.



up from other budget phones, and had me double-checking its price it was so good. I was taken by their exuberant and bubbly nature with music. The performance was brightly lit, but seldom painfully so. This accentuated the detail in this recording magnificently – you very rarely get this level of detailing from a pair of loudspeakers, unless they are of the electrostatic variety. Tonal colour was very good – and got better the more I used them. It helped in giving the impression I was actually there when the performance was recorded.

Bass performance was also impressive and – truth be known –

CONCLUSION

Both the Goldring and Channel Islands VHP-I/VAC-I make a strong case for themselves. The headphone stage in particular is a gem, and represents a huge step up in performance from most built-in stages, and is a steal at the price.

The Goldring phones are also star performers, at this price point. Whilst I'd hesitate in calling them absolute 'Reference Quality', they're surely the best budget pair of 'phones out there and deserve to sell well. Coupled with a headphone stage as revealing as the VHP-I/VAC-I combo you'd be hard pressed to think of these headphones as mere budget items, so accomplished is their performance. As ever, this magazine is always looking for great synergistic combinations, and in this pair we have found another!

VERDICT  £

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

GOLDRING DR150 £70

GOLDRING

+44 (0)1279 501111

www.goldring.co.uk

FOR

- reference budget design
- great bass performance
- build

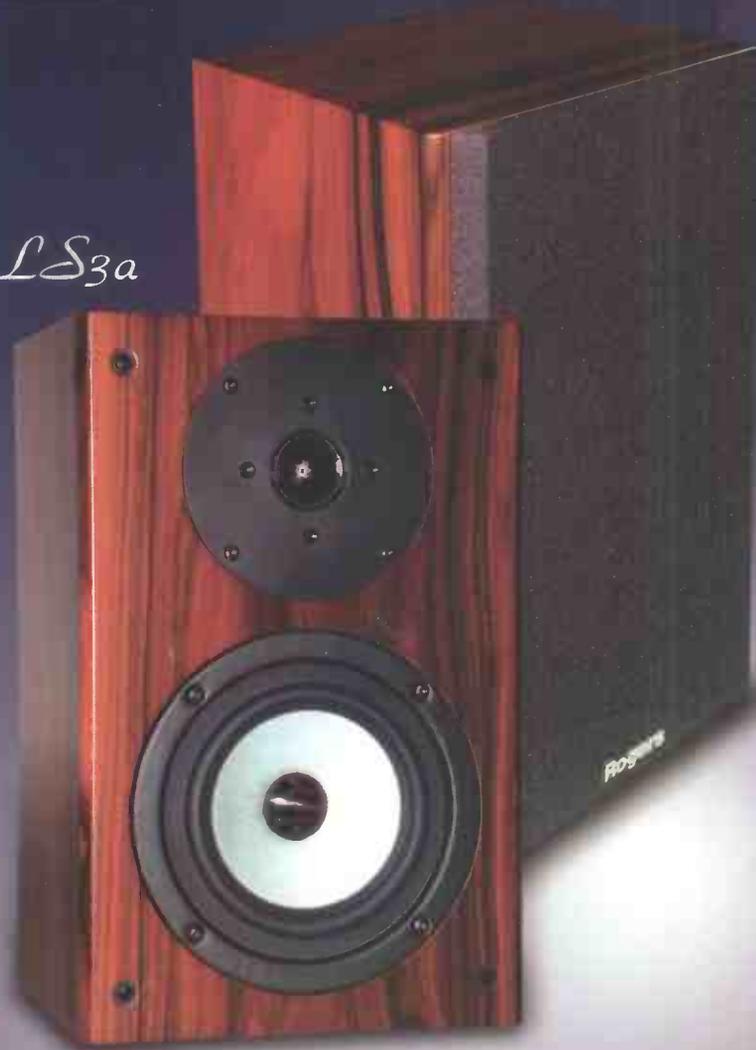
AGAINST

- slightly bright tonality
- tight headband



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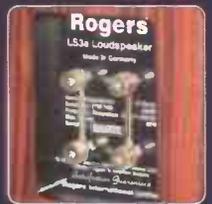
LS3a



"Once run-in and matched to a sympathetic amp, the Rogers LS3a turns out to be a wolf in sheep's clothing"

Ken Kessler

(Hi Fi News, June 2005)



LS3a Loudspeaker

System Type	: Bass reflex
Impedance	: 8 Ohms
Sensitivity (1W/1m)	: 88 dB
Frequency Response	: 60Hz-22kHz
Nominal Power Handling	: 50W
Maximum Power Handling	: 80W
Recommended Amplifier	: 30-60W
Dimensions	: 197(W) x 302(H) x 194(D)mm

LS5 series



AS501 AS502 AS503

RC series



RC350

Subwoofer series



L6SW1 L6SW2 A5SW1

Marquis series



Marquis 1 Marquis 3

LS6 series



LS602 LS603 LS611 LS612 LS613

RC series



RC450

Satisfaction

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ABBEY ROAD MONITOR STARQUAD INTERCONNECT £149/M

Now there's a name to conjure with! Pro audio specialist Moving Air's professional association with EMI Abbey Road Studios has now switched over to the consumer sphere with a range of 'Abbey Road' branded interconnects and loudspeaker cables. The rather esoterically entitled Monitor Starquad Interconnect is the cheaper of the two interconnects in the range, and boasts "Starquad" construction with "low capacitance, fast insulation" signal lines with seven 0.1mm pure oxygen-free copper (OFC) conductors. It comes terminated with Neutrik Gold plated Chuck Loaded RCA phono connectors. Interestingly, the cable is pretty bland looking – going against the fashion for cables as 'male jewellery', and packaging is Spartan too.

The sound is impressive; it's an excellent mid-price cable with few – if any – obvious weaknesses. Copper often has a crisp and spry sound, but the choice of dielectric and construction has certainly pulled



the characteristic 'sonic footprint' of the OFC conductors towards real neutrality; if anything, it's a little silky! It presents a nice, taut bass with clearly etched rhythms; it's not over warm tonally, but there's certainly plenty of dynamic impact. Moving up to the midband and it's open and spacious, with good amounts of detailing and a smooth-ish, almost velvety sound (certainly at the price, anyway) that gives decent insight

into the tonality of the recording. Importantly, it also shows great rhythmic alacrity, being somewhat reminiscent of VdH's The First in the way it keeps everything tight and musical and propulsive. Treble is smooth and dark and satisfyingly sophisticated, although it's lacking space compared to pricier designs. All in all, here's an excellent, even and open sounding cable from a welcome new name.

IXOS IX2 INTERCONNECT £280/M

Ixos has traditionally been associated with budget audiophile speaker cables, where it has been an extremely strong performer. This is the middle interconnect of its new high end range, and very nice it looks too. In fact, on looks alone this piece of wire is likely to sell well; from the superbly finished, glistening gold RCA phonos to the shiny sheathing, finish is superb. Inside lurk pure copper oxygen-free crystal (PC-OFC) conductors, first coated in Ixos's patented APTIMUS polymer which, it claims, allows a stranded cable to act as a solid core; then each conductor is aligned side-by-side around an empty dielectric inner core. An outer foamed polyethylene insulates each conductor and finally the two conductors and the ICC (Inner Control Core) are woven together to form Ixos's Gamma Geometry. This, says the company, gives the cable extremely low capacitance.

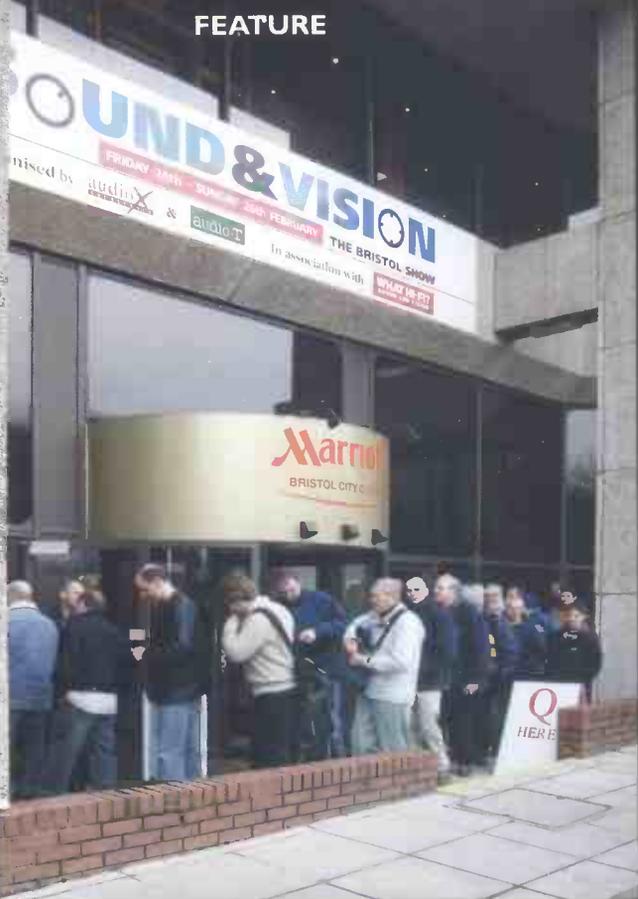
Some cable anoraks might find it surprising that Ixos is using 'just' copper, as opposed to silver plated copper, or pure silver, or even carbon (à la vdH) at this price point, but talk to the experts and they'll tell you that so much of the sound is down to the dielectric and geometry, which is where Ixos has obviously spent the money. The result is an



extremely transparent, almost 'glass clear' cable that scythes through the mix with tremendous alacrity; it's not obviously smooth or silky sounding, but nor is it ever hard or bright. Rather, think of it as looking out at the morning sunshine; bracing and even a little stark for the eyes, but beautifully detailed all the same. Bass is very subtle; no crash-bang-wallop here, just a big, capacious sound that's rhythmically 'sewed together' with real dexterity. Midband is expansive and explicit, with oodles

of detail and great dimensionality. Tonally it's certainly 'well lit', but nor does it over exaggerate sibilants (like cheaper copper) or make things too silky (like some silver); it's best described as being on the analytical side of neutral. Treble is dripping with air and space, yet remains (just) on the sweet side of neutral. It's not splashy or smeared in any way. Overall, an absolutely super product that's ideal for those with smooth systems, and want to get to the heart of musical matters.

Show Me



The Bristol Sound & Vision Show is one of this magazine's favourite audio events of the year, not least because the people who attend are invariably a broad mixture, which makes for a convivial and buzzing atmosphere. This year's show was reportedly bigger than the preceding one, with 197 instead of 165 brands exhibiting. Channa Vithana recounts his personal high points of the 2006 show...

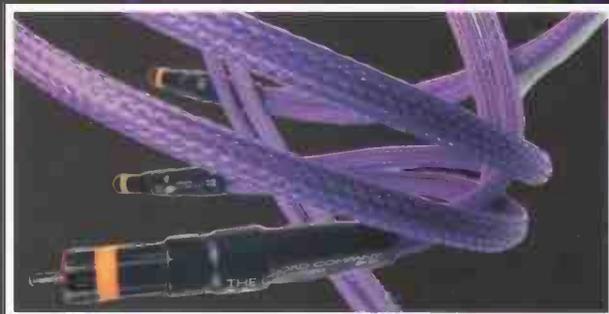


Danish loudspeaker brand Jamo reproduced some outstanding music at the show utilising their high-end R909 speakers. They are, in my opinion, brilliantly acoustically-engineered approximately £7500 and are very different to the norm in that they have no cabinet behind the front baffle, yet accommodate two 15 inch (380mm) paper cone woofers! They feature a stainless-steel bracing mechanism from behind the top of the front baffle down to the substantial cast-iron base containing the crossover.

Linn's sleekly-styled Majik system was debuted and comprised a Majik KONTROL preamplifier (with MM/MC phono-stage), Majik 2100 power amplifier (based on their recent Chakra technology) and the new Majik CD player replacing the Ikemi, at a lower price.



In the Spendor room, a new advanced prototype loudspeaker called the Aero was displayed. It features Spendor's 'Sound Engine' technology which promises deep, clean low-frequencies. It utilises an acoustically transparent and very thin mesh film (not shown) which is stable in extreme temperatures and does not distort or ripple in surface as a result. The Aero will feature side panels of interchangeable finish that are integral to the sound-quality.



The Chord Company were doing rapid trade during the show. Chord says that during its first month of production, their new high-end Indigo interconnect had sold exceptionally well, and considering its near £1,000 price tag, this is seriously impressive!



Naim audio were spread out over many floors. They presented their new n-VI integrated movie and music player as well as the high-end 555 series CD player in a dedicated room. A rarely seen and massively constructed flagship Naim DBL loudspeaker was a delight as it sounded powerfully musical and engaging, as only Naim know how.

I could instantly recognise the Lyngdorf Audio sound quality even before I knew it was their room. The Lyngdorfs made eerily clear yet inherently tuneful music with a high-resolution musical identity all to themselves. Lyngdorf featured their new integrated £1,545 CD player which becomes a transport when connected to one of their True Digital amplifiers.



The Audio Reference room had a Clearaudio turntable, Gamut's new integrated amplifier and speakers (which were supported by very smart all-wood German Tabula Rosa hi-fi furniture) and the esoteric Shun Mook sound-quality enhancing disks, strategically placed of course! The new, singularly styled, Vivid V1 speaker was demonstrated and its creator (and B&W Nautilus designer) Laurence Dickie was also there. Leaving the show I caught a glimpse of Naim chief Paul Stevenson driving off in a beautifully designed 'high-end' Mercedes CLS, so I guess Naim are doing alright then?



Eclipse UK featured their superb new iterations of the TD (Time Domain) speakers alongside the beautifully designed A-502 single-input integrated amplifier. The Eclipse TD speakers are as distinctive to listen to as they look, and when you are cast within the 'total eclipse,' the music really becomes convincingly enveloping.



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Acoustic Signature

Hand-crafted masterpieces of music making, which are developed, produced and made for natural listening. Ask us to tell you about the 'Mambo' model...



ASR

Have a very definite idea of how an amplifier should sound. The musical reproduction should be homogeneous and natural, combining the harmony and musicality of a superb tube amplifier with the accuracy and power distribution of modern transistor amplifiers. The perfect



Basis

The philosophies underlying Basis designs are sound principles of physics; provable concepts that result in the most accurate replay of records possible. Did we mention that they look visually stunning?



Kings Audio

We are the south coast main dealer for this exciting new range of electrostatic speakers from Kings Audio. If you love full-range electrostatics you must audition these!



Luxman

A range of products are available and we just have to mention the L-509F Integrated model.

Falling in love with the sound of the L-509F Integrated Amplifier is easy but leaving our place without one could prove rather more challenging!



Music First

David Price says, "The MF Audio pre is extremely open and sophisticated musical performer that betters a number of even more expensive designs." We definitely agree!

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Clear Audio master reference	£5000
Conrad Johnson Premier 8A Mono	£6500
Krell FPB25M	£4500
Musical Fidelity CDPRE	£1000
Nagra P-PL Pre	£4500
PMC BB5 Speakers	£5500
Resolution Audio CD55	£1200
Ruark Accolade Speakers	£850
Sim Moon Eclipse	£2700
Sony SACD1	£1700
Sound Lab A1 speakers	£6000
Tannoy Canterbury	£4995
Tom Evans Groove	£1000
Transparent Ultra 8ft speaker cable	£900

**WIN A SUPERB
QINPU
A-8000/2
AMPLIFIER WORTH
£1,300 IN THIS
MONTH'S GREAT
COMPETITION!**



Here's your chance to win a fantastic slice of budget esoterica in the beguiling shape of Qinpu's A-8000 mk 2 integrated amplifier! This is what Dominic Todd said about this beautiful bit of kit in the April 2006 issue of *Hi-Fi World*...

"With a depth that's far greater than its width, it has the stature of countless exotic and expensive valve amplifiers that, more often than not, cost well over £2,000. Under closer examination the A-8000 Mk2 in fact turns out not to be of the tube variety but actually transistor. The chassis is made from aluminium and capped by solid, drilled aluminium billets that act as heatsinks... This is a transistor amp' that uses a dual mono, heavily Class-A biased, format to produce a claimed 100W. The twin transformers, which account for much of the weight, make this figure look highly feasible, whilst the other components should ensure decent quality. Four Sanken AI215/C2921 output transistors and no fewer than six, per channel, Rubycon output capacitors show that the quality of materials is more than skin deep. Closer inspection reveals a quality ALPS volume control and Burr Brown op-amp. In addition to the solid heat sinks, the amp' is kept cool by twin mini fans located

on unit's base.

Listening to Kate Bush's, 'Somewhere in Between', I found the sumptuous styling to be matched by an equally luxurious sound quality. The staging was broad and bold... vocals had a great sense of body and were projected with confidence and weight. Whilst lacking the final degree of impact and control of some, the bass response had both depth and solidity in equally impressive measure. The A-8000 Mk2 works extremely well with fast paced Rock or electronic music. With Daft Punk's, 'Aerodynamic', loaded into the CD drawer, the Qinpu drew upon a deep reserve of power to offer an uninhibited dynamic range. The electric guitar sounded raw, but was alive with vitality and remained on just the right side of being over exuberant. Unlike some similarly priced Class-A and tube designs, the A-8000 Mk2 won't overly smooth

the sound, but neither does it sound brash. In short, it remained true to the music. There is still very much to recommend the A-8000 Mk2 - its intimate relationship with the recording alone is enough for me."

If you'd like to win one, then all you have to do is answer the following four easy questions. Send your entries on a postcard by 30th April to:

**May 2006 Competition,
Hi-Fi World Magazine,
Unit G4, Argo House,
Kilburn Park Road,
London NW6 5LF.**

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- 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

QUESTIONS

- [1] Of which variety is this amplifier?
[a] transistor
[b] tube
[c] V-FET
[d] 57
- [2] What type of output transistors are used?
[a] Sanken
[b] Nippon Denso
[c] Hitachi
[d] GEC
- [3] What keeps it cool?
[a] two mini fans
[b] a propeller
[c] a rotor arm
[d] large bellows
- [4] DT said the Qinpu doesn't...?
[a] "overly smooth the sound"
[b] "wait around"
[c] "hitch up its skirts and run"
[d] "float my boat"

May Competition
Hi-Fi World Magazine
Unit G4 Argo House
The Park Business Centre
Kilburn Park Rd.
London NW6 5LF

entries will be accepted on a postcard only

**FEBRUARY 2006 WHEST AUDIO PHONOSTAGE WINNER:
Alex George of Hants**



Meridian's multi-award-winning 800 Reference Series has a new stable-mate: the 808 Signature CD Player, shown right.



Meridian's 808. Hear how good your CDs really are.

Meridian's 800 Reference Series has come to be regarded as the pinnacle of audio and video playback, with a level of quality so high that *Stereophile* had to introduce a new category for the 800 Optical Disc Player and 861 Digital Surround Controller.

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Each 808 is individually signed by the designers and co-founders of Meridian, Bob Stuart and Allen Boothroyd. Each is optimized for the ultimate in CD playback. Quite simply, we think the 808 is the best CD player ever made.

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Reference Transcription

Time was when home recordists would stick a fresh TDK MA90 in the Nakamichi CR-7E, cue the LP and hit the 'record' button. Then came real digital copying with DAT and MiniDisc, grappling with SCMS and overload margins. Nowadays however, new age music transcription is all about slipping in a CD and clicking on 'copy', and taking care to get the codec and bitrate right, says David Price...



PICTURE COURTESY OF APPLE

While most nineteen seventies teenagers spent their time and money on wholesome pursuits like stealing motorbikes, under age smoking and drinking warm cans of Heineken in shopping malls, much of my meagre income was devoted to the noble art of analogue audio transcription.

Equipped with an early Rega Planar turntable, NAD 3020 amplifier and Videoton Minimax speakers, plus Pioneer CT-F500, many of my waking hours were occupied illicitly copying friends' Sex Pistols and Boomtown Rats LPs, using the very best tape I could afford – you understand (one month it was TDK SA, the next BASF Chromdioxid). Then there was the 'Radio One Top Twenty', which – due to FM radio's limited bandwidth – I committed to lowly ferric tape (the best, of course: TDK AD).

Then, as an eighties student not happy with the nasty noises coming from Compact Disc, my record collection swelled, and when the time came to head East to Tokyo,

I elected to dump much of it to DAT via a Sony TC-D3 'DATman' portable from my Linn LP12/Ittok/Supex SD900 – and very nice it sounded too. Occasional dalliances with CD versions of LPs I owned further convinced me that 48kHz uncompressed PCM from a serious vinyl front end was the best way to go; the CD equivalent sounding edgy and two dimensional.

Nowadays, the recorded music world has changed, and – whether we like it or not – many (nee most?) of us use 'computer audio' in one form or another. The idea of storing music on PC or Mac hard disks is no longer anathema, it's the norm. Maybe it's not so bad; although I got great results from my various recording set-ups, most people were using seventies Sanyo music centres (with automatic recording levels!) or later those dreadful eighties twin 'dubbing decks'. The nineties brought MiniDisc to the masses, but with the notable exceptions of two high end Sony recorders, it wasn't a true hi-fi format.

Now, PC users can go to [\[apple.com/itunes\]\(http://apple.com/itunes\) and download iTunes for free \(Mac users get it pre-installed\). Although 'other products are available', to all intents and purposes this is all you need for computer audio \(along with the computer\). This elegant application will store and catalogue vast quantities of music, and 'record](http://www.</p>
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"The idea of storing music on PC or Mac hard disks is no longer anathema, it's the norm..."

it' from CD whenever you stick a new disc in your machine. It can record in MP3 and the sonically superior AAC compressed audio formats, plus uncompressed WAV and Apple Lossless (the latter is data compressed, but not reduced). iTunes goes online and downloads all your track names and album titles, lets you choose the quality and speed of your recording and even burns it all on to



THE PROCESS

Committing your precious silver discs to the care of CDlabs isn't as difficult as it may seem. You contact them, they send you a mailer (including a CD spindle; you put your discs on it – no need to post the jewel cases), they organise collection by courier and your discs go to CDlabs. A week or so later, the spindle of discs returns, complete with discs containing your music files, or a portable hard disk drive, depending on how many/the type of files specified. All done with the minimum of fuss, and no – they didn't lose any of my discs at all!

PRICES

Conversion to FLAC or MP3 costs 99p per CD. CDlabs will encode to both FLAC and MP3 (providing the best of both worlds) for £1.26 per CD. CDlabs also encode to custom formats and bit rates, pricing for this is available on request.

CONTACT:

www.cdlibs.co.uk

a CD for your car or friends and family. The days of azimuth setting, bias adjustment and record EQ setting are well and truly over...

Now, the problem with all this

convenience is that it encourages some of us to take it very seriously. Whereas it would take me many, many years to archive my 5,000 plus LPs on to CD, if you have 5,000 CDs, it's actually perfectly do-able. You then have several hard drive's worth of music that's there even if your precious CDs rust or get stolen; it's a brilliant backup system and of course, being computer data, is easily copyable (purely for your own uses of course). Trouble is, you'll have to spend a lot of rainy Tuesdays doing 5,000 of the blighters...

For this reason, various 'music archiving services' are springing up; offering the promise of 'digital music' at your fingertips (i.e. on your iPod), not to mention turning your iTunes into a genuinely massive music library, as opposed to the just three digitised discs you got last Christmas. An iTunes library commanding thousands of tracks, plus a wireless music player such as a Roku Soundbridge, routed through your hi-fi, suddenly turns your PC or Mac into a vast, massively powerful 'music server' – and if you do it right, it should give excellent sonics too. The secret is in the encoding...

EXTRACTING THE TRUTH

Although the idea of using a 'CD ripping' service was tempting (all that time saved, no faffing around, and only modest expense), I wasn't sufficiently interested until I discovered that one company was promising 'superior sound quality'. I assumed this to be the usual hollow hyperbole; I presumed this referred to them performing (what used to be called) 'digital audio extraction' at a whopping 192kbps instead of the usual 128, or suchlike. But speaking to CDlabs' technical whiz, Chris Smith, it soon became clear that they were using some fancy algorithms, not just for codecs (i.e. the COders/DECOders that compress or decompress the music), but actually before this at the data extraction level itself. Knowing the difference that a good CD transport can make to CD sound, I wanted to

hear more...

True to hi-fi convention, CDlabs have come up with an appropriately cheesy name for their procedure - Hi-Pro Encode. The ripping software is bespoke and optimised for optimum bit by bit transcoding; it takes longer to rip and encode one CD using this encoding engine than it does using iTunes *et al* – CDlabs says that this extra time is necessary to ensure a true bit-for-bit copy. The process starts with audio extraction, then goes to encoding, and then tagging.

If the quality of the extracted audio is poor, then the next stages will be working with bad data, so it's critical to get this right. This is where domestic computer-based audio extraction, via iTunes falls down, as it's working with a 'combo drive' with a servo that's also designed to read data CDs at 64x, or play DVD movies from all around the world. Most commercially available ripping software does not privilege error correction, because it is (rightly) assumed that it's all for squashed audio files which lose some quality anyway. Watch iTunes rip a disc and it can easily spin up to 12x (i.e. 12 times faster than real time), which isn't exactly reassuring when many hi-fi CD spinners struggle with getting clean reads at 1x...

CDlabs starts from the beginning, which means dedicated CD drives to extract the audio from the CD, specifically chosen to ensure they do not cache data in hardware and have a proven track record of accurate data extraction. The drive read offset can also be corrected during the extraction process, which is important as during the extraction of the audio data, nearly all CD drives will add an offset to the read position of the laser, which is usually around 500-700 audio samples (1/75 second), so when the program queries a specific sector it doesn't receive exactly that sector but the shifted position by the number of samples of the offset, resulting in an inaccurate copy of the audio stream.

It's interesting to note that this is precisely the same reason why some manufacturers write their own servo software for their CD transports; the mechs bought in from Philips, Sanyo, Sony *et al.* are all optimised for speed rather than read accuracy, and rely on CD's error correction to 'guesstimate' (admittedly very accurately) what was supposed to be on the disc. While it may be able to patch back together a data CD, error correction circuitry is audible on music CDs, as is the extra drain from the CD transport's servo. (It's also

important to note that CD mechs are much happier at 1x, whereas DVD-ROMs are not; this is precisely why Quad has designed a 'lazy servo' for its new 99 CD-P2 CD spinner, which uses a CD mech with bespoke software, a la CDlabs.)

The software at CDlabs double-checks every sector it reads off the disc; it will re-read it if there are any inconsistencies (which is why they don't want the drive to cache the audio, otherwise it would re-read the same potentially incorrect data from the cache). It's important to note that many CD drives cache audio by default or do not provide error-free extraction. This first stage of the process generally takes from five to twenty minutes per CD, depending on the CD's surface condition. Once complete, the extracted audio is stored on the server in .wav format ready for encoding.

CDlabs uses the LAME MP3 codec, at 320kbps VBR (variable bitrate). This is generally regarded to be one of the very best sounding MP3 codecs, and obviously 320kbps VBR is squeezing it till the pips squeak – it's the ultimate guise. The variable bitrate setting simply means that the codec varies the resolution (i.e. amount of data reduction) in accordance with complexity of the signal; if there's a very dense section of music, it goes at full whack, whereas simple signals take up less space on disk. CDlabs believes this is best compromise between sound quality and file size, and it is right to do so.

Of course, although MP3 is still the world's favourite compressed music carrier, the company can offer superior encoding options. It can encode AAC to ABR (average bitrate) of 192kbps. This is a Fraunhofer developed codec, and sounds as good as MP3 at approximately twice the bitrate (okay, I know this is a contentious claim, and anoraks will be emailing in, so I use it only as a rule of thumb). The result is that 192kbps AAC is comfortably up to 320kbps MP3 quality, but obviously using a lot less disk space. For this reason, Apple use AAC too.

Any serious archivist should not go the evil way of compression, however, which is why CDlabs offer the option of FLAC. This, in my view, is the only realistic option for Hi-Fi World readers. Frankly, if you're going to the trouble of spending serious money on a premium ripping service such as this, with all its clever digital audio extraction technology, you might as well get it in uncompressed form and preserve it all as such for posterity; you can then easily rip

MP3s or AACs from the high quality audio data you've just paid for.

Although I personally rip to WAV, and latterly Apple Lossless (I'm now a fully paid up member of the shiny Mac brigade, for my sins...), CDlabs are 'platform neutral' and opt for FLAC. This is their default lossless codec, and they recommend all customers to seriously consider having their collection encoded to this format, not least because a lossless format provides a digital archive of their CD collection at the same audio quality as their original CDs, therefore providing a backup if they scratch or otherwise damage their CDs in the future. FLAC files take up approximately half the amount of space of WAV files, and the code is also open source. The files can be transcoded to Apple Lossless, or even MP3, AAC or OGG without having to go through the re-ripping process again. There's also a growing number of hardware devices that support the playback of FLAC (see flac.sourceforge.net for details).

Finally, after extraction and encoding comes tagging. One of the most important areas of managing a digital music library is the accuracy of the 'metadata', or the information about the information. Accurate, consistent tagging of metadata is essential to take full advantage of one of the major benefits of digital music - the ability to easily find the music you want to listen to. Often the metadata available from online CD databases is inconsistent, or even completely wrong, due to the many of thousands of people who have helped compile the databases. CDlabs have an Intelligent Tagging engine within the Hi-Pro Encode software to error check, normalise, groom and

standardise file names and ID3 tag data, simplifying management of large digital music collections. They cross reference three CDDB databases to ensure each CD is assigned the correct artist and album, and scan for proper file name length and universal character usage to ensure that all files are compatible with both Mac and Windows operating systems. Duplicate CDs are eliminated. Album art is applied to each album folder as folder.jpg and .folder.png files. This allows for operating systems to display the album art for each folder when in thumbnail view and is also used by MP3 hardware to display album art when playing the albums. Additionally MP3 files are individually tagged with the album art embedded in the ID3V2 tag.

CONCLUSION

As you'll read in our LISTENING box, I was deeply impressed with the sonics from CDlabs-ripped files; there's no doubt they're head and shoulders above homegrown rips. The service, efficiency and attention to detail are all absolutely excellent. Whether you regard it as worth spending money on (when your own computer will do a (literally) half decent job, is up to you. I'd say that if you're a serious computer-audiophile, with a heavy duty music collection and a regular user of iPods or other digital music portables, then yes - it's well worth it. In fact, it's practically essential, as the CDlabs service shows just how compromised basic homegrown digital audio extraction is. If you have three songs on your iPod, two of which were free downloads from the iTunes Music Store, I'd respectfully suggest you keep your hands in your pockets.

THE LISTENING

The moment of reckoning came when a LaCie hard drive arrived on my doorstep from CDlabs, containing a sizeable percentage of my CD collection, but neatly transcoded into Apple Lossless and AAC. Having already 'ripped' the same CDs to these aforementioned formats on my own Mac via iTunes (at minimum speed and maximum quality, with error-correction on), it was a fascinating opportunity to 'hear' CDlabs' transcription abilities, or lack thereof...

Well, I have to say that I expected and hoped to hear a difference, as I'm all too aware that a computer in a hurry is not the best way to eke digital audio data off a disc (let's face it, most hi-fi CD spinners have a hard enough time at 1x...), and I wasn't disappointed. In fact, I was surprised by just how much better the CDlabs extracted audio files sounded on subjective listening. Most obvious was the improved focus and clarity, both on squished and unsquished audio data. The other big surprise was the bass - which interestingly is where high end CD transports triumph over also-rans too - which was obviously stronger, tighter and more musically convincing.

Overall, Apple Lossless from CDlabs sounded more right than my homegrown ripping attempts; there was greater solidity, image depth, bass articulation, treble resolution, midband dynamics. By contrast, yours truly's Apple PowerBook G4 ripped iTunes tunes were fuzzy, two dimensional, emotionally disconnected. As far as AAC was concerned, the differences were eerily similar; a looser, more vague sound from my Mac with a flatter, leaner and more lifeless midband. By contrast, the CDlabs AAC files sounded sparkingly bright and engaging, bristling with life and delicacy and finesse.

VICTIMS

- moribund music storage formats



1963 COMPACT CASSETTE

Didn't really catch on as a mass music medium until the mid seventies, and Nakamichis aside, was generally pretty iffy sounding - but oh so convenient compared to vinyl records!



1987 COMPACT DISC-RECORDABLE

Although a late eighties technology, prices only came down to sensible levels in 1998; but the hi-fi separates soon died as cheapo PC recorders did the job and came bundled free on computers.



1988 DIGITAL AUDIO TAPE

For a moment it looked like DAT would wipe out CD, or at least cassette, but high prices and squabbles over copy protection (sound familiar?) soon put paid to that. Ended up in recording studios, until cheap HD recording arrived.



1992 MINIDISC

If they'd got the sound right five years earlier, this could have been a world beater. A lovely format, but early codecs were nasty and by the time Sony had sorted it, MP3 was rearing its ugly head. Close but no cigar...



1992 DIGITAL COMPACT CASSETTE

Proof positive that the Dutch are even more eccentric than an Englishman out in the midday sun, DCC was greeted with collective bewilderment when it arrived; it actually sounded quite nice and was backwards compatible with cassette - but frankly, the world wasn't listening to Philips.

shadow audio :)

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Roksan Caspian CD player (£1100)	£395
Cyrus CD8 in silver, excellent condition, stunning	£495
Marantz CD94, boxed, manual 9/10 condition	£299
McIntosh MCD205 5 disc cd player, outstanding performance, do not be fooled by the 5-disc part as this is a serious high end player. ex-dem. (£2405)	£POA
Sugden Bjiou CD Master, unmarked. (£1299)	£695
Shanling CDT-100 (3D acc UK model) (£1600)	£990
Copland CDA 289 cd player (£1850)	£849
Marantz SA-1151 Flagship SACD player (£2000)	£1595
Audio Analogue Maestro CD player (£1795)	£695
Musical Fidelity X-10v3 Tube buffer stage (£299)	£195
Meridian 508 20-bit cd player, as new (£1500)	£695
Talk Electronics Thunder 4 + Whirlwind 3, cd+ upgrade PSU (£1900)	£695
Naim CDi, boxed in excellent condition (£1999)	£499
Wadia 302 CD player, boxed as new, (£4000)	£2995
Advantage CD15 in black, just fully serviced (£4595)	£1395
Cyrus CD6, crackle black finish, unmarked (£650)	£395
Bel Canto PL-1, boxed as new, ex-dem. (£6990)	£POA
Bel Canto PL-1 Universal CD/DVD-A/SACD (£9490)	£POA
Audio Analogue Paganini (£950)	£695
Roksan Kandy MKIII silver/black ex-dem	£450

Amplifiers

Musical Fidelity kW (6112) Tube Pre (£3000)	£1995
Musical Fidelity kW750 power amplifier (£5999)	£3795
Croft Syntegra hybrid Integrated, ex-d (£2500)	£1250
Croft TS1 with Epoch Pre (£3000)	£1595
McIntosh MC501 Monoblocks(pair), ex-d (£7800)	£POA
Roksan Caspian Integrated amplifier (£1000)	£395
Consonance Cyber 800 Monoblocks(Valve) (£3k)	£1995
Mark Levinson 26s 2-box ref pre-amp (£8000)	£2495
Graaf GM50 Integrated Valve Amp (£4000)	£2795
McIntosh MA6900 Integrated amp (£4549)	£2895
McIntosh MC252 power amp (£3852)	£2495
Conrad Johnson PV14L pre (£2500)	£995
Electrocompaniet AW220 power amp (£1500)	£895
Shanling STP-80 integrated amp (£1300)	£895
EAR 834L de-luxe line stage valve pre (£1123)	£695
Musical Fidelity A3cr pre and power (£2000)	£795
AVI Lab Series amplifier, boxed as new (£1500)	£995
Cyrus 3 integrated amplifier, black (£500)	£195
Musical Fidelity A308cr pre-amp (£2000)	£795

Krell KAV500i integrated, very very rare	£1995
Musical Fidelity kW500 (£4000)	£2999
Audio Analogue Primo Setanta, silver, ex-dem (£475)	£295
Audio Analogue Puccini Settanta (£950)	£695
Musical Fidelity A3cr pre. Unmarked condition	£395
Stello M200 Monoblocks, silver, NEW unused	£POA
Unison Research Unico SE int amp, ex-dem (£1395)	£895
Croft TS1 hybrid power amp, ex-d, unmarked (£2000)	£995
Bow ZZ1 int amp, unmarked, black, (£3350)	£1495
Pass Labs X350.5, supplied by us new (£7600)	£4995
Chord CPA2200 pre amp, silver, unmarked (£3710)	£1895
Rogue Audio 99 Magnum pre boxed, silver (£2495)	£995
EAR V20 integrated amplifier (£3595)	£1995
McIntosh MA2275 valve int (£5773) as new, ex-dem	£POA
McIntosh MA6500 int amplifier, ex-dem (£3361)	£POA
Pathos Classic One mkII, boxed as new (£1400)	£995
McIntosh MHT200 8x140 watts, ex-dem (£6503)	£3950
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Loudspeakers

Zingali Overture 3S, boxed, as new condition. (£4000)	£1595
Quad 11L speakers, premium birds eye maple	£249
B&W 805s loudspeakers, ONLY 2 MONTHS OLD!, boxed as new, latest, mint. Price inc stands - Parking-ton Dreadnaught broadside(ask for details) (£2k)	£1195
Zingali Prelude 2 speakers (£1400)	£695
ATC SCM-20A 5Towner speakers, walnut (£5177)	£1995
Merlin VSM MM in exc condition 10/10 (£8000)	£2595
Harbeth Compact 7ES, Eucalyptus finish (£1500)	£795
REL Q400E subwoofer in premium maple (£1200)	£4995
Dynaudio Contour 1.8 mkII, in beech (£1900)	£899
Gershman Acoustics Avantgarde speakers, finished in Piano Black Laquer, only few weeks old, (£7900)	£2995
Wilson Benesch ARC's with stands, silver finish (£2.5k)	£1699
Living Voice Auditorium II in Cherry (£2195)	£1495
ATC SCM-50ASL, in Cherry, 4mths old (£7947)	£4895

Wilson Benesch Discovery, 8 months old (£5700)	£3895
GamuT L3, in Rosewood, boxed as new. (£3750)	£2750
ATC SCM-35, cherry, boxed as new (£1999)	£1395
Wilson Benesch Curve speakers, 4 mths old (£5000)	£3495
Dali Helicon 400, boxed as new (£3300)	£1995
Ref 3a Dacapo I, as new, maple, 2 months old. £2700	£1650
Triangle Heliade, Champagne finish (£595)	£395
Living Voice Avatar OBX-R in Cherry	£2895
Quad 989 ESL Vintage, new £5000	£3600
Quad 988 ESL in Nouveau, cost new £3750	£2999
Audio Physic Virgo III, Cherry	£2895

Analogue

Bluenote Bellaria Reference Tonearm (£1500)	£895
Mark Levinson JC-1 phono stage, very very rare	£1495
SME 10a, boxed as new 9mths old only (£3600)	£1995
Michelle Gyrodeck, Origin Live Tonearm, Trichord Never Connected PSU+DC motor, boxed, manuals, one owner, excellent. (£2000+)	£495
Tom Evans Micro Groove Plus Phono Stage (£800)	£1595
Pro-Ject Perspective Turntable, boxed, ex-dem (£750)	£450
Krell KPE Reference Phono Stage	£1395
SME 10, boxed AS NEW (£2800)	£1895
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Nottingham Analogue Spacedec	£695
Trichord Dino - silver front	£199

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Isotek Substation mains distribution (£1200)	£549
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Musical Fidelity X-10v3 Tube buffer stage	£195
AVI S2000 tuner, excellent	£149
Purist Audio Dominus 10ft speaker cable (£7000!!)	£1495
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Vertex AQ Roraima Plus, mains lead + filter (£490)	£395
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Want to part-exchange your Hi-Fi? - talk to us!!!

"the success or otherwise of the Dixons Warehouse could significantly affect the hi-fi retail industry..."



dominic todd

As the summer nears, the hi-fi industry tends to go into something of a slumber. The "season", as it were, runs from September to April. Come the summer time, most people, even hi-fi devotees, tend to be thinking of holidays and the great outdoors. So, with the 2005/2006 season now over, how has the hi-fi retail industry performed and, perhaps more specifically, how has the web affected trade?

Perhaps not surprisingly, a recent report by the trade body, Interactive Media in Retail Group (IMRG) has measured the value of goods sold over the internet to have risen by 50% over the Christmas period compared with last year. Over the year as a whole, sales rose by 34%, with the prediction being for a further 36% rise this year. Overall, and this is the key figure, they believe that 10% of all retail sales are now carried out online. Given that over 55% of all households are now believed to be "online" the figure of 10% appears to be rather low. It should also be borne in mind that this figure is an average, with some areas recording far higher percentages and some lower. For airline tickets, books and CDs, for example, the percentage bought online is far higher, for antiques and fashion clothing it's a good deal less.

With many products being bought from auction sites or from abroad, internet sales are already tricky to measure accurately, and trying to measure the trend amongst hi-fi retailers is next to impossible: we really only have anecdotal evidence. Having said that, such evidence from retailers that have both high street and online stores or, bricks and clicks as they're known, would be inline with the IMRG figures. That is to

say, sales have risen online but not as dramatically as some might have predicted.

If you're buying hi-fi separates, the spectrum of stores is likely to range between a typical Dixons/Currys high street store all the way to a consultant with a locked door in some smart period, city, house. Unsurprisingly, the higher end you go, the more business tends to revert to stores but at the budget end of the market, and especially with products such as MP3/iPod players, online sales count for a significant presence. Therefore, it can hardly come as a surprise that it's this end of the market that's having to react hardest and fastest.

Although most retailers saw a slight rise in business last year, it was tough, to say the least, for Dixons/Currys – collectively known as the DSG group. They are being hardest hit by online only stores such as Amazon and are having to respond. Their response is to begin trialing a new, no-frills, warehouse format. These, out of town, warehouses have no sales staff, merely helpers and stackers, and the minimum of Point Of Sale (POS) such as posters and displays. Go online and whilst you can't actually buy anything, it is possible to view and reserve goods. Crucially, they guarantee to beat online prices from Amazon, Tesco, Comet and the like. At the moment there are no hi-fi separates being sold, but there are dozens of MP3/iPod players. Whilst the current offer doesn't look all that interesting to most readers of this magazine, the success or otherwise of the Dixons Warehouse could significantly affect the hi-fi retail industry.

First of all, if the new out-of-town format is a success it does rather call into question the future

of the current Dixons high street stores. Should these dwindle then the retailers for mid-range hi-fi products could either suffer or benefit. If the public perceives a lack of high street, multi-national electrical stores, then they might not associate shopping in "town" with electrical purchases at all. We can already see in cities from Edinburgh to Bristol that the middle market is slowly leaving the centre to be replaced by either more prestigious stores or, at the fringes, bargain-basement stores.

The retail meat, for want of a better term, is located out in the retail parks or, of course, conducted online. The upside for hi-fi retailers is that whilst city centres may be quieter places to be, people now make more of an occasion of shopping. In many respects, hi-fi is just as much a boutique product as any other item of fashion. Provided retailers concentrate on providing the sort of innovative displays and welcoming service that people expect, then they could thrive within the new city centres. Another helping factor for the inner city hi-fi retailers is the resurgence of "city living" in many of our urban areas. Such a lifestyle also very often brings about a car-less existence, which can only help the obliging independents still further – especially when many flats come pre-wired for multi-room sound.

So, as the summer beckons, hi-fi retailers face another slightly uncertain season. I wouldn't like to venture an opinion on where we'll be next year, but my hope is that it will be the year when some of the internet hi-fi retailing cowboys go under whilst the best bricks and clicks stores grow in recognition on both the web and the high street. The rest, dear reader, is very much down to you. Happy shopping! ●

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"is it really too much to ask for the BBC to provide better audio quality than FM?"



steven green

As I've mentioned in this column before, the use of low bitrates for BBC radio stations on DAB means that audio quality is poor. The only solution to this problem is for the BBC to acquire additional national capacity on DAB. But the BBC also transmits its radio stations on the digital TV platforms; and as I explain below, the BBC could very easily provide its radio stations at high audio quality on these platforms.

For these reasons I've started a petition on the home page of my website (www.digitalradiotech.co.uk), asking the BBC to try and acquire additional capacity on DAB and to increase the bitrate levels of the radio stations on the digital TV platforms.

The reason why it would be so easy for the BBC to provide its radio stations at high audio quality on the digital TV platforms is due to the amount of bandwidth at its disposal on these platforms: on digital satellite the BBC has 231 Mbps (million bits per second) of bandwidth; on Freeview it has 36.2 Mbps; but on DAB it has only 1.2 Mbps. The reason for such a disparity in capacity levels is due to the fact that TV channels require around 20 – 25 times as much bandwidth as one radio station.

The bitrates – and hence the audio quality – of the BBC radio stations are already higher on the digital TV platforms than they are on DAB. But out of the 231 Mbps of capacity the BBC has on digital satellite, only 1.76 Mbps is currently used for the national radio stations – just 0.76% of the total available! The remaining 99% of the BBC's

bandwidth is used for the BBC TV channels and the BBCi interactive services – almost a quarter of the satellite bandwidth is allocated to the little-used BBCi video services.

In order to transmit the national radio stations at near CD-quality level (this would require bit rate levels of 256kbps for stereo music stations; 224kbps for stereo speech stations and 112kbps for mono stations) it would only require an additional 0.42 Mbps of capacity to be allocated to them, which is just 0.18% of the total BBC capacity.

As an example, if 0.18% of the BBC's satellite bandwidth were reallocated to the radio stations, the current 5.0Mbps bit rate of a regional BBC One TV channel would be reduced to 4.991Mbps. No human could ever perceive the difference in picture quality following such a minute reduction in bitrate.

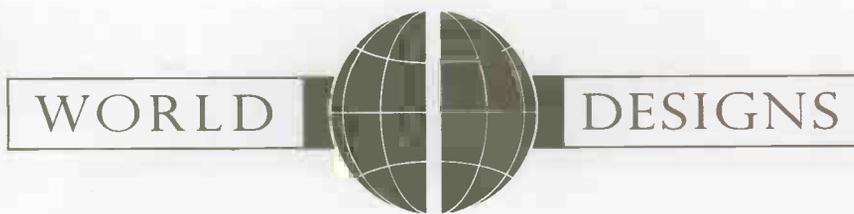
And it's hardly like it's demanding too much for the BBC to increase the bit rate of its music stations to 256kbps. The German public service broadcaster ARD provides fifty-four stereo radio stations on digital satellite using a bit rate of 320kbps; numerous European classical music radio stations are transmitted on satellite at a bit rate of 256kbps; and even the four main BBC TV channels use 256kbps for their audio streams. And last but not least, 256kbps is the lowest bit rate at which it is widely accepted that the MP2 audio codec (MP2 is the audio codec used on DAB and on all of the digital TV platforms) provides better audio quality than FM – is it really too much to ask for the BBC to provide better audio quality than on FM on at least one digital platform?

The situation on Freeview is slightly different to that on satellite due to the smaller amount of capacity at the BBC's disposal. But the BBCi channels 301 and 302 permanently consume 10% of the BBC's Freeview bandwidth between them, yet for the vast majority of the time both channels only display a still image (which only requires a minuscule bitrate). This is a complete waste of bandwidth, a small fraction of which could be used to increase the bitrates of the radio stations.

However, when I asked someone at the BBC why they hadn't increased the bitrates on the digital TV platforms, I was told that the issue had been discussed but the BBC wanted to "maintain platform-neutrality". In other words, the BBC is limiting the audio quality of the radio stations on the digital TV platforms because the audio quality on DAB is poor...

In reality, the BBC isn't platform-neutral in a number of areas as it is. For example, the BBC will be launching some of its TV channels in HD (high-definition) on satellite and cable either this year or next, but people on Freeview will have to wait for these services until digital switchover in 2012.

The BBC should try as hard as it can to acquire additional national capacity on DAB. But the BBC should also strive to provide the best possible service on all platforms, not limit the quality. We pay for this bandwidth, and it should be allocated to provide the maximum benefit for licence-payers – which is most certainly not the case at the moment. Hopefully the petition I've started will help them see reason. ●



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" Hi-fi from China is reviving the whole experience of listening to music... "



noel keyword

There's a wealth of excellent products flowing from the Far East, many of which amaze me. There has never been a better time to own real hi-fi on the cheap as prices get relentlessly pushed down, whilst quality goes steadily up. The attitude and approach of the Chinese in particular fascinates me. Whilst the internet and, specifically ebay, gives us access to everyone's loft around the world and one source of inexpensive esoterica, China is another, often better one. At least what you get doesn't arrive knackered!

Like much of the Far East, especially Taiwan, large scale manufacture of consumer electronics and electrical goods is something the Chinese have an affinity for. At the Bristol Show this year yet another designer told me he had been told to pack his bags and go, along with a small design team, to China.

British brand names are swallowed up with alacrity too, as they become available, Mission being the latest. But what comes back is very much in keeping with our own tastes: budget high fidelity that offers great performance at real world prices.

Better, unlike so much Japanese product, which is designed by the book and manufactured by robot, there is plenty of imaginative design work within good Chinese product, based on solid audio experience. In spite of ubiquitous presence of computer based design programmes like Spice and Thiele & Small loudspeaker programs, computer designed hi-fi is a recipe for formulaic product that sits tightly within a specific pre-programmed mould. This is where boring audio comes from.

Imaginatively designed products, ones that appeal in every area, from sound to design, flow from a more hands on approach. When the man

at Shanling decides to use a milling machine to cut a three dimensional part from a billet of aluminium, he joins the man from Chord who does likewise, who follows the man from Cyrus who decided a solid cast chassis was the best way to package an amplifier, who got this idea from Peter Walker at Quad who did it back in 1952 with the Quad 22 preamplifier. And when the Chinese today looked over all this, as they surely did when coming up with the latest Quad QC twenty-four preamplifier, did they move to an easier, cheaper and much more convenient method of production? No. It has a cast front panel.

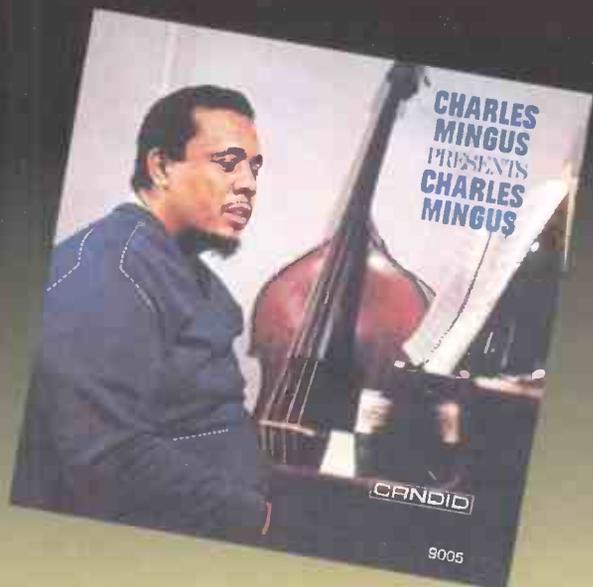
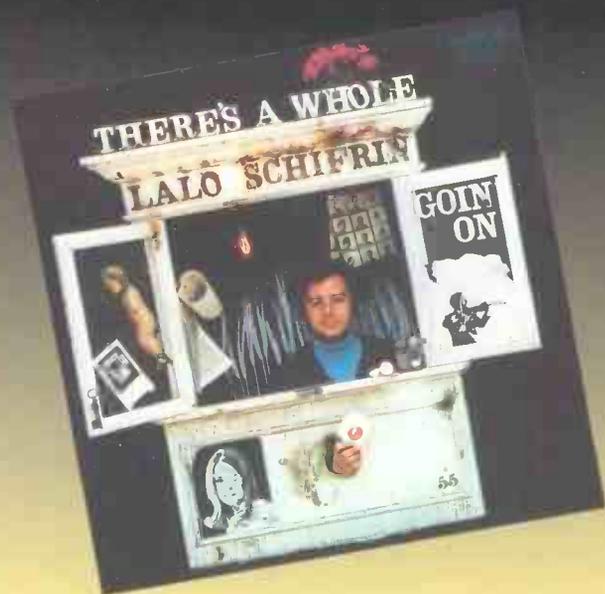
The way a chassis and front panel are put together may not seem like much of a way to assess something designed to reproduce music. And I won't try and link physical construction with sound quality right here, because that's not really what interests me. Behind a truly innovative hi-fi product lies a wealth of skill and experience but, perhaps most of all, a set of key decisions made about its nature that are almost read instinctively by end users. At this level a product communicates more to users than just music. It's an experience shared between designer and user providing, that is - it is! No point in expecting this to be the case if you designed your widget on a computer and got it churned out cheaply by a massive Panasert machine in some anonymous factory.

There are plenty of "artistic" decisions to be made about any hi-fi product, many of the them totally counter intuitive. For example it makes little sense to cast a front panel unless you intend to sell very large quantities of a product. Casting has high initial costs, but low unit costs. The initial cost gets amortised over the production run, but since you don't know in advance how

many you will sell, choosing to cast seemingly makes little sense. Or does it? That's the simple view, the one you'll see in a text book or get thrown at you on a production engineering course. And the answer to that view by a few experienced veteran engineers is - rhubarb!

A cast front panel can have a three dimensional form unobtainable by any other method. The front panel of the Quad 22, and the subsequent 33, were art forms in this respect, combining wonderful curves with steps and ledges, plus a cohesive wrap around shape that doesn't leave the exposed ends of an extrusion for example to be stuffed with - well - stuffing. This ranges from bits of plastic to lumps of wood; they all look wrong, the odd ones they are. A well designed cast front panel will have a form and a feel that is satisfying to the eye and the touch. That's why owners retain a memory and a love of such things. It's the magic of "a brand", which encapsulates a set of values, although not appreciated as such.

Methods of construction like this, not in the rule book, illustrate my point about today's hi-fi from China. The Chinese seem every bit as enthusiastic about imaginative engineering, read: hi-fi engineering, as we are in the UK. It isn't just the chassis work that gets serious attention, but increasingly all parts, including circuit topologies and quality of internal parts. Just look at the unusual but impressive Jungson JA-88D amplifier we review this month. It's an excellent example of what I am talking about. Hi-fi from China is reviving the whole experience of listening to music, one that was apparently sinking beneath a sea of gruesome Japanese A/V product just a few years ago. How quickly things can change, happily for the better. ●



LALO SCHIFRIN
There's A Whole Lalo Schifrin
Goin' On
 Speakers Corner/Dot

I only interviewed Schifrin, famed for soundtracks such as Bullitt, Mission Impossible, Dirty Harry et al, once – and it didn't go well. I asked an impudent question: for soundtracks, is there a procedure, a template that you follow? "I studied music!" Schifrin snapped through a half ingested sandwich (he was lunching, at the time). "I don't want to sound like a snob or arrogant but you really should study classical music, get yourself The Rite of Spring by Stravinsky." Blood filled his cheeks. He discarded the sandwich. "I have a technique, yes. I have influences but I have my own personality. I write a soundtrack from the beginning to the end, in one unified way. I don't do films that fit my style, I adapt my style to films. I like the challenge. I am a chameleon. I am sorry to disappoint you. You are not going to be able to pin me down because I am a chameleon!" That word again. Then we both counted to 10...

Producing this record, was more difficult than normal for reissue specialists Speakers Corner. A request was put through to Universal for the master tapes. However, Universal couldn't supply the usual, original, final mix-down tape, which should have been stored in a West Coast facility, obtained when Polygram was purchased. That tape was lost. Universal had

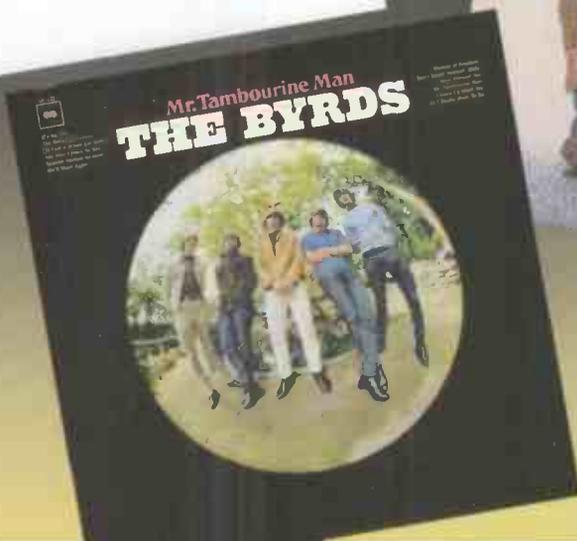
to move backwards a step and supply the original session tapes, the pre-mix tapes. For the audiophile, such sources are, arguably, purer and even nearer to the original source. So does this reissue sound the same as the original album? "I always hope that our release sounds better," quipped Kai Seemann, MD for Speakers Corner. "However, the sessions were reassembled to produce a new mix-down tape which we used for our production. This was successful because the original sessions tapes were originally transferred without any post production effects being applied." With this album, Schifrin certainly shows his chamelelic qualities. Unique but, arguably, this non-soundtrack album is the best thing he ever did – and that's saying something.

CHARLES MINGUS
Presents Charles Mingus
 Pure Pleasure/Candid

An amazing session, Mingus is on top form along with Eric Dolphy, Ted Curson and Dannie Richmond. The most controversial track, 'Original Faubus Fables', has been restored on vinyl for the first time. It focuses on an Arkansas's governor of the time who was infamously racist. "Why is he so sick and ridiculous?" cries Mingus, at one point. UK-based, Pure Pleasure, is fortunate in having the pick of all the Candid masters still available – a label, trivia fans, once owned by singer Andy Williams who, at that time, owned CBS in its

entirety. This particular Pure Pleasure release was, however, a mystery. The reason is that the catalogue number on the cover is 9005, a stereo number. The record is undoubtedly mono, however. Pure Pleasure MD, Tony Hickmott, explained that, for each Candid release there is, "... a mono and a stereo master tape for each album". What's more confusing is that it is sometimes difficult to know which tape is the first generation tape because the attendant label sometimes changed hands on several occasions during their travels.

"For this release, 1000 sleeves had already been made prior to the record being cut. That sleeve had a stereo number on it – 9005. When we came to cut the lacquer, we had both the stereo and mono tapes to hand. Subsequently, the stereo tape was found to be in very bad condition. No amount of restoration would have saved the original master, in this case." The mono, with a 8005 number, was far superior so the final cut was a mono recording. "The tape problems were not evident before the sleeves were manufactured. I'm now making sure that the records are mastered before the sleeves are manufactured," reassured Hickmott. The master for this album, as with most Candid releases via Pure Pleasure, was cut by the Graeme Durham, the MD of The Exchange. Durham, with in excess of twenty years of experience, also handles many digital formats. However,



with this example, he handled the mastering himself, "I wouldn't call this work – this is fun time," he smiled. This 'mono' release is simply breath-taking – perfect Mingus.

ELLA FITZGERALD
Sings The George And Ira Gershwin Song Book
Speakers Corner/Verve

It was Norman Granz who created Verve, just one of the legendary labels this celebrated impresario forged. Others included Clef, Norgran and Pablo. For the most part, as with the original masters for this new Ella Fitzgerald re-release, Verve master tapes are in perfect condition. The issue of condition partly depends on the age, those made before the mid-'50s suffer – so Granz's older Clef label masters are a problem, for example. "From the late-'50s to the late-'70s, Verve used pretty good tapes," commented Kai Seemann, MD for Speakers Corner. Incidentally, after that time, Verve tapes often show excessive ageing because cheaper quality tapes were utilised. The present day condition of all of these tapes, however, is based on pure luck. For these Ella releases, the masters were sourced from the Universal tape library based in New Jersey, USA. The latter contains all of Granz's Verve and Mercury Jazz original masters.

A legendary set of records showing Ella's vocal talent at its most interpretive with class plastered all over them, these recordings took her

talent away from just the jazz fan and introduced it to a wider audience for the first time. Remastered from the original masters, the latest issues have been reissued in its original format, as five separate gatefold albums plus a promo 10" (which you will receive free if you buy the full set), replete with artwork by the artist, Bernard Buffet. With this re-re-release, Speakers Corner has done a wholly professional job. This is an essential set of records for fans of Ella, the American Songbook as a genre and for anyone who enjoys the popular song in all its forms.

THE BYRDS
Mr. Tambourine Man/
Younger than Yesterday
Sundazed/Columbia

Part of a wider Sundazed mono release schedule that also includes: 'The Notorious Byrd Brothers', 'Fifth Dimension' and 'Turn! Turn! Turn!' The Byrds releases were, originally, simultaneously released in both mono and stereo versions. So why release the series in mono? Bob Irwin, MD for Sundazed explained that, "Each record offers a unique listening experience in mono, different enough from the stereo to warrant issue in both configurations. The monos and the stereos live different lives - they sound very different from each other. I feel as though we perfectly captured the feel, warmth and texture of the original Columbia 1A pressings of these records. Also, the artwork

closely mirrors the original album covers - that, too, is a part of the equation that we take very seriously." Soundwise, there are differences too. The monos contain some parts, sonic attributes and even the occasional lyric that are not found on the stereos and vice versa. Also, the original engineers spent a lot of time working and perfecting the dedicated mono mixes. At the time, mono was how most were going to hear this music.

To my ears, the mono did present a more homogenised stage performance. Stereo separation could be arbitrary, almost as if the original engineers were still learning their stereo trade. However, stereo is a lot warmer and balanced in tone. Mono is very treble heavy – a result of increased compression during mixing - obviously aimed at both portable radio play and Dansette record player use. For a decent quality system, however, the mono mixes were too harsh for my ears. However, this new series of mono mixes should still be investigated by any audiophile interested in The Byrds. They are historical documents in the band's history, they give a flavour to how the Byrds sounded in the '60s (loud!) and they are priceless components to any Byrds completist..

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bass-ic instinct

PART 4 - Floorstander

Designer Peter Comeau describes the floorstanding version of World Design's WD25A loudspeaker, the WD25T.

For those who haven't read the first three articles, the WD25A kit loudspeaker is based on an aperiodic cabinet design that first achieved popularity in the Dynaco A25.

Why aperiodic? This type of cabinet loading offers the good bass clarity of a closed box (so-called infinite baffle) system, but with a much lower resonant peak, in other words it gives you bass without the boom.

The first three parts described a stand mounter. Here is a floorstanding version.

Whenever we have demonstrated the WD25A there have been more than a few of you who have asked 'Are you doing a floorstander?' Here, then, is the solution you have been waiting for – the WD25T.

There are further opportunities with the floorstanding version to achieve an extended bass response whilst keeping the bass unit fully under the amplifier's control. If you look at the cross sectional diagram of the cabinet you'll see that the upper part is roughly the same volume as the WD25A. The aperiodic vent has now moved to a shelf about half way

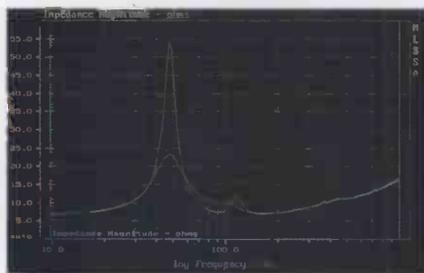


Fig 1. Impedance peak (red) is reduced by aperiodic foam loading (blue).

down the cabinet and 'ports' into a lower chamber.

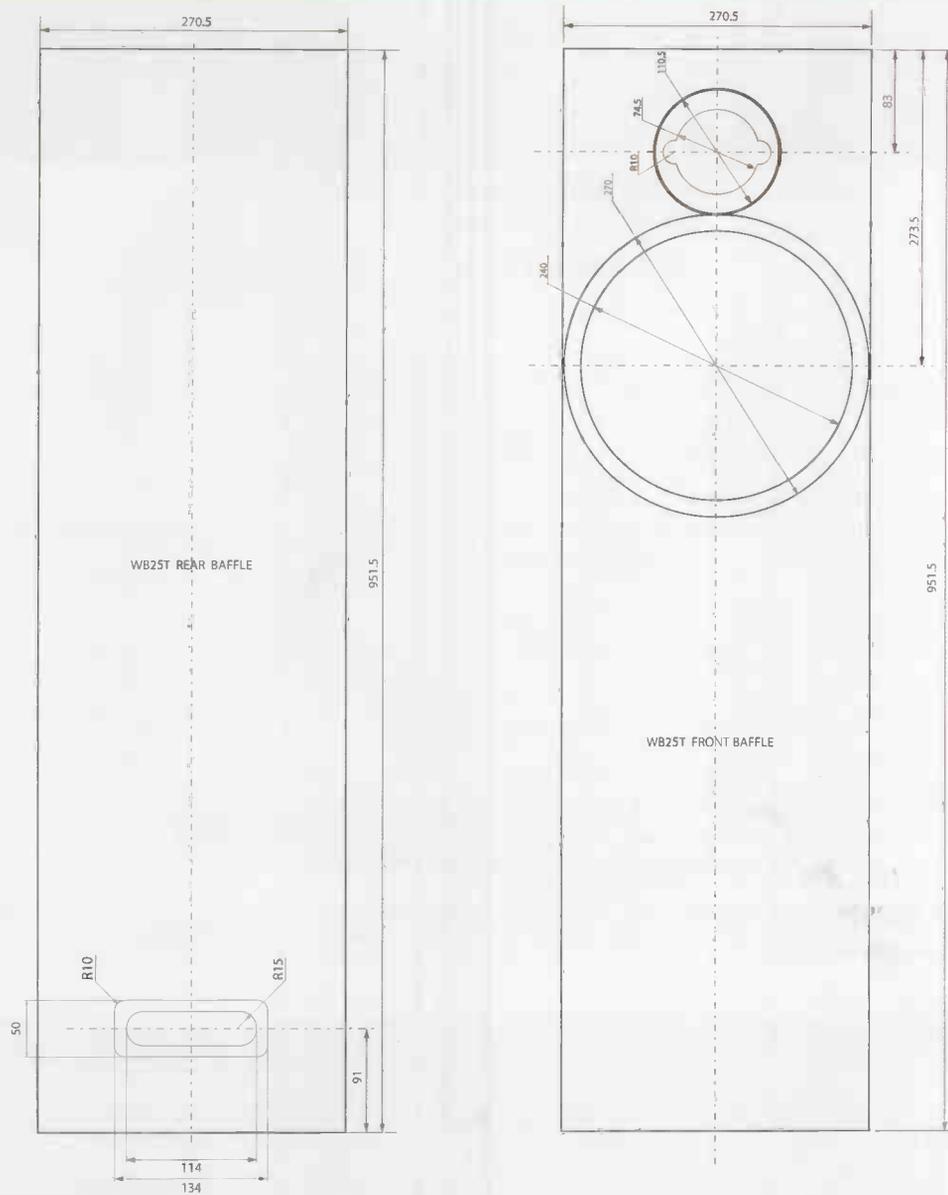
At first sight this seems an odd thing to do – surely the cabinet should 'port' into open air? The point here is that we are doing something entirely different to the stand mount design. In the WD25T the whole of the cabinet is loading the driver and this would normally result in a fundamental resonance, and peak in the impedance, as shown by the red line in Fig 1. By dividing up the cabinet into two chambers and adding the aperiodic vent we can control this resonance as shown by the reduced impedance peak graphed as the blue line.

What appears to happen is that the bass unit 'sees' only the upper



Fig 2. Better integration between the drivers with the new crossover giving a smoother response.

chamber throughout the upper bass and midrange, resulting in the clean, tightly controlled and detailed performance one expects from smaller cabinets that are free from low frequency standing wave modes.



Front and rear baffle dimensions



Fig 3 - The impedance curve of WD25T is relatively smooth; it is an easy load.

As the driving frequency reaches the fundamental resonance the bass unit starts to work with the whole cabinet volume but is resistively damped by the increasing air velocity through the reticulated foam in the aperiodic vent. This helps keep the bass under the control of the amplifier and smooths the 'knee' in the low frequency response as the bass output starts to fall away.

Below resonance the air velocity

through the aperiodic vent is low so that the bass unit 'sees' the whole cabinet volume and behaves like a critically damped closed box system with a classic roll off of 12dB per octave. The key to keeping the bass tightly controlled and free of resonant booming is to let the aperiodic vent decide the damping and use just enough fibre filling in each chamber to absorb internal reflections.

One added bonus is that the aperiodic vented shelf half way down the cabinet also minimises the full column standing wave mode that you normally see in a floorstanding speaker in the 150 – 200Hz area.

Of course we could achieve a similar result by using a well damped closed box, but the point is that, in order to lower the Q at resonance and reduce the impedance peak to the same level, we would have to use a greatly increased box volume

with a fibre fill of around 70%. The aperiodic vent between the chambers gives us the same low Q but in a much smaller cabinet.

The result is a speaker which plays bass notes evenly all the way

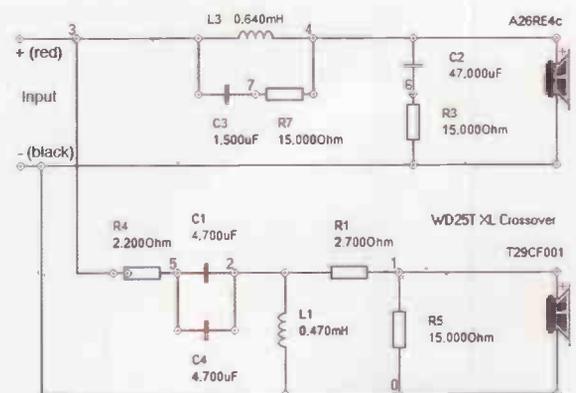


Fig 4. Crossover diagram of the WD25T; a neat solution to driver integration.

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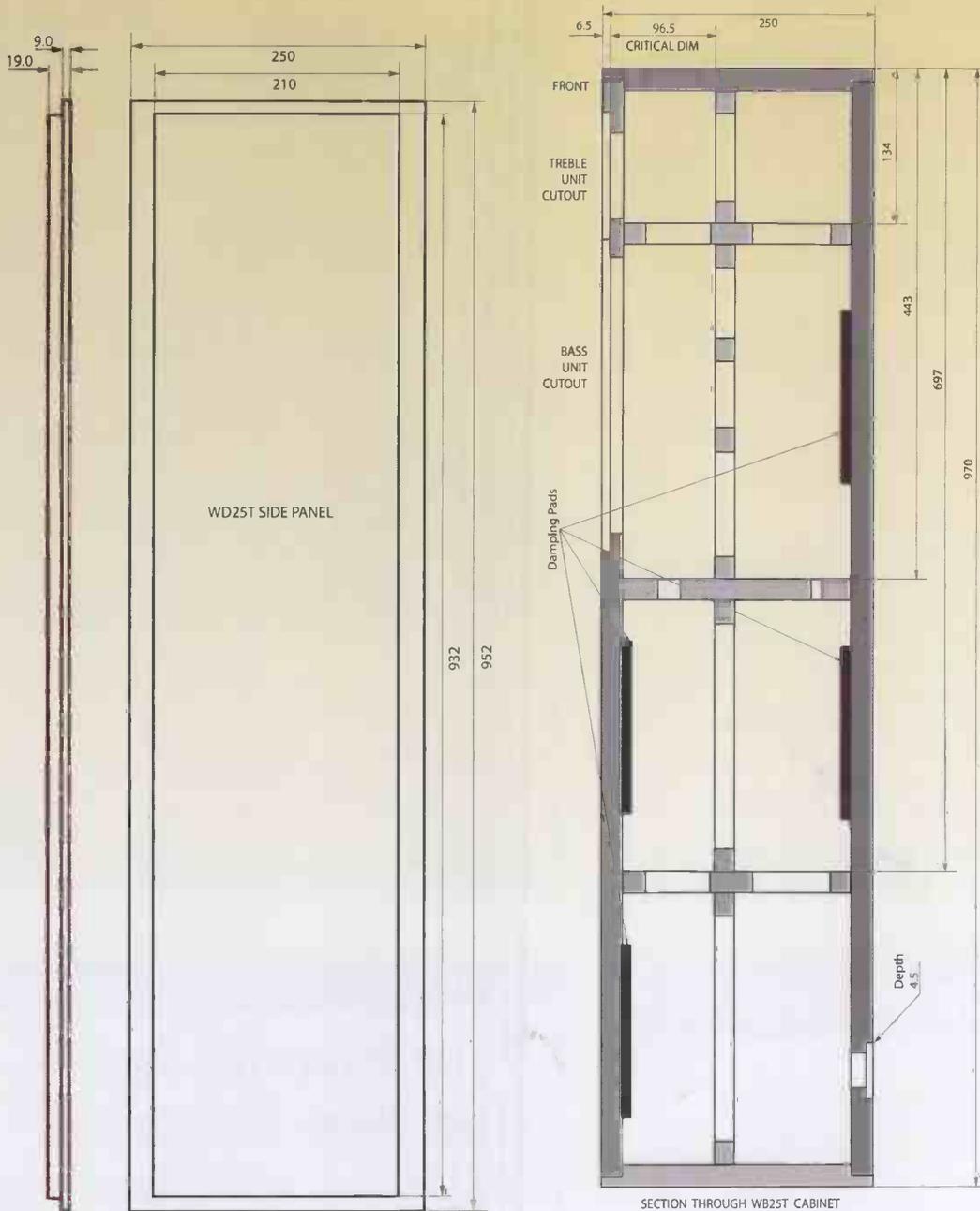
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Side panel dimensions.

A cross section through the cabinet showing positioning of braces and baffles.

down to the lowest fundamental of bass guitar and reproduces drums with excellent transient impact and no overhang. It also integrates with room acoustics well and is ideal stood close to a rear wall where you can expect good bass extension down to 32Hz. Obviously the power developed down here is not as great as you would achieve from a Transmission Line enclosure, but then the cabinet size is far more manageable!

Another benefit of the floorstanding cabinet over the stand mount is the larger baffle area 'seen' by the bass unit. This significantly smooths the cabinet diffraction effect giving a more even midrange response. So much so that we made small changes to the crossover to



Top and bottom panel dimensions.

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- Silver plated phono plugs: £4 each
- Silver plated 4mm plugs: £3.50 each
- Silver plated binding posts/4mm sockets: £4.25 each

- Eichmann Gold Bullet phono plugs: £26 for four
- Eichmann Silver Bullet phono plugs: £65 for four
- Eichmann Cablepod binding posts: £30 per pack
- Eichmann Gold Bayonet banana plugs: £30
- Eichmann Silver Bayonet banana plugs: £90

- Furutech IEC plugs from £19.95
- Furutech IEC chassis sockets from £4.95
- Furutech FI-1363 mains plug, perfect for large cables: £50

- Inca gold plated mains plugs: £20 each
- Wonder Solder £2.25 metre

- uninsulated 0.5mm pure silver wire: £2.25 metre
- Gold plated 13 Amp mains fuses: £2.50 each
- Deoxit contact cleaner/enhancer: £13.95

- B9A ceramic gold plated valve sockets: £2.95 each
- UX4 ceramic valve sockets (for 2A3/300B): £5.95 each

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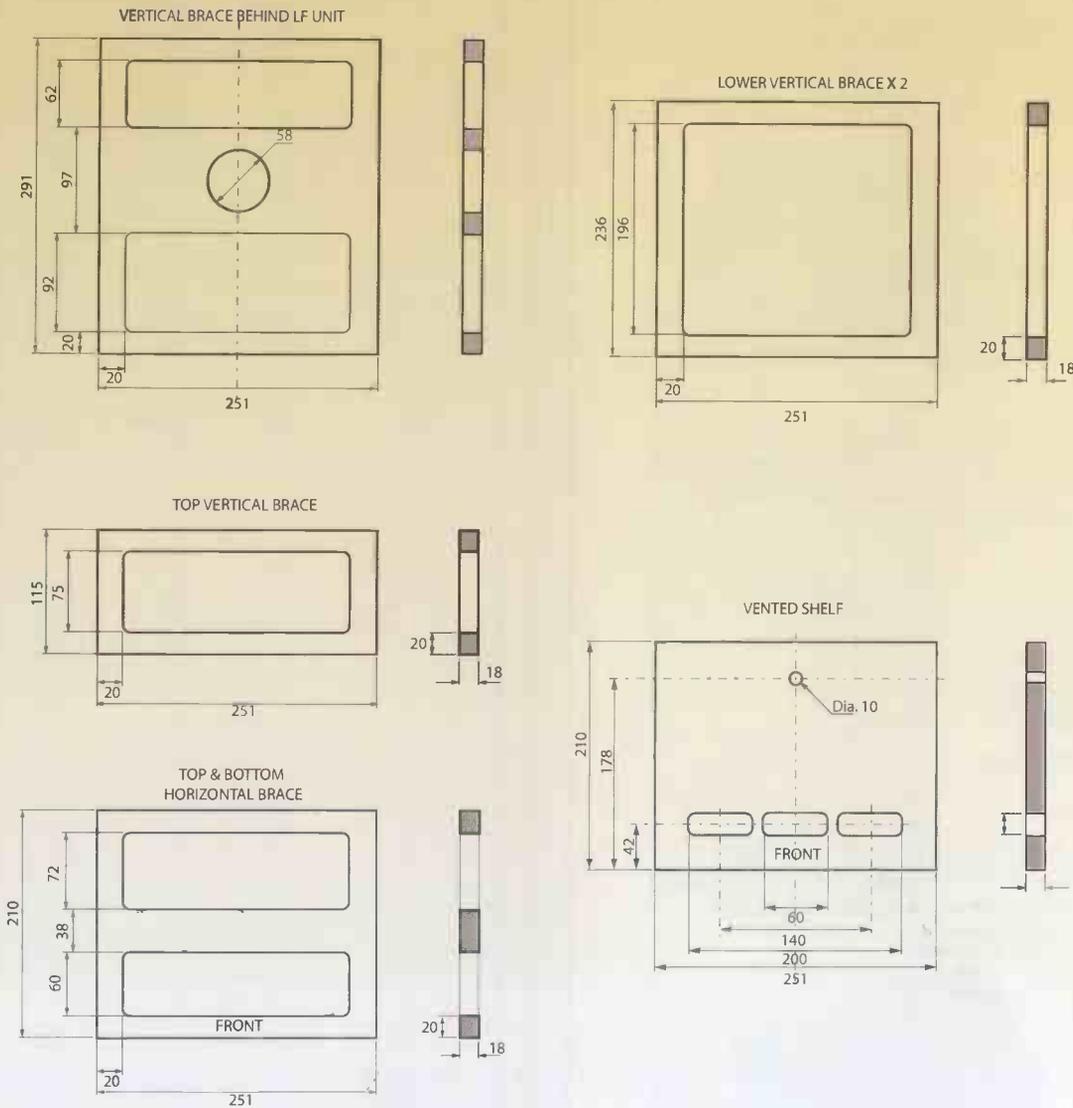
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Internal baffle and brace dimensions.

accommodate the fuller midrange output.

Fig 2. shows the overall performance of the system 'in-room' and the crossover slopes. With the benefit of a bit more work, both in LspCAD and in the listening room, we were able to refine the slope of the bass unit so it adheres more tightly to a Linkwitz 3rd order acoustic filter response. This is the result of the added filter elements across the bass coil which allow the removal of the coil in the impedance compensation across the bass unit. The treble crossover has been adjusted to match and the phase response through the crossover region is now excellent. Altogether I feel that this is a much neater result conceptually and certainly improves the midrange coherence, giving the added bonus of more precise stereo imaging, and is musically very lively and engaging.

As for cabinet construction, we've kept to veneered MDF as the cut edges are so much easier to edge band with self-adhesive veneer

strip. In response to other questions yes, of course you can use birch ply, Baltic ply or high density chipboard if you've a mind to. Notice from the cross sectional diagram that we have added damping pads to control the cabinet panel resonance that tends to add coloration in larger cabinets. We have used 6mm thick butyl rubber sheet but you can also use bitumastic pads built up to the same thickness, or anything else you prefer. Overall pad size is 150mm x 165mm and you will need four per cabinet.

Fibre filling consists of one piece of fibre positioned as a 'U' behind the bass unit, plus some bits lining the sides of the cabinet, and two 'U' shaped pieces in the bottom chamber. Each piece of fibre is 250mm x 660mm. As before, we used reticulated foam, (a 215mm x 38mm x 12mm strip of 80 ppi reticulated foam) for the aperiodic vent, stuck down firmly all round to avoid 'flapping'.

Due to the bottom chamber being sealed you will need to insert the crossover and cables through

the terminal panel hole before fitting the front baffle and feed the cables through the 10mm dia hole in the shelf below the bass unit, making sure this hole is sealed tightly with mastic.

All joints have to be fully airtight, so don't skimp on the glue when building. A fully oak-veneered cabinet kit, with pictorial instructions, is available from World Designs if you don't fancy cutting the woodwork (and judging by our correspondence many don't)! Full details of all the components required are available on the World Designs website, www.world-designs.co.uk.

Next month: Tuning WD25 - how to get the sound you have always wanted.

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TURNTABLES

AN TT I/ARM ONE/IQ1 1998 £725
Redesigned Systemdek IIX now off the pace, but the arm and cartridge are both star performers.

LINN LP12/ LINGO 1973 £2100
The quintessential belt drive superdeck offers a beguilingly musical midband at the expense of lumpy bass and nebulous imaging. Latest Lingo brings a new lease of life, with even more punch and polish.

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 right now.

MICHELL GYRODEC SE 2002 £870
Its beauty is more than skin deep - superbly build and finish allied to clever design equals class leading performance. Latest DC motor with 'Never Connected' PSU make it all the more unassailable.

MICHELL ORBE SE 2002 £1916
Cost-no-object 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



PRO-JECT DEBUT II PHONO SB 2002 £170
Fuss-free all in one starter turntable, complete with built in phono stage. Not a star performer, but a fine midi system upgrade all the same.

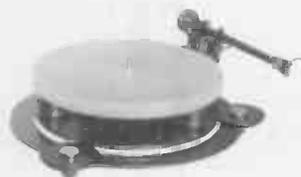
REGA P3 2000 £298
Great entry level audiophile deck with fine bundled tonearm. Tweakable, and responds well to careful siting on a Base platform.

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

SME MODEL 10A 1995 £3333
Exquisitely engineered deck and arm combo, but dry and clinical sounding compared to rivals. Accomplished performer with classical music, nonetheless.

CLEARAUDIO REFERENCE 1996 £4,070
Fine bass articulation and power allied a stunningly open and atmospheric midband and beautifully etched treble makes this one of the very best sounding turntables at any price. Michell's Orbe offers marginally more impactful bass, but can't touch that amazing mid. Exquisite.

ORIGIN LIVE AURORA GOLD 2004 £1,470
Seminal 'entry level high end' deck showing Mark Baker's characteristically obsessive attention to detail. The result is an extremely wide open and natural sounding machine that lacks the Michell GyroDec's slightly 'mechanical' nature - along with some of its scale and accuracy. Ideal for those seeking that classically beguiling vinyl sound.



GOLDRING GR-1 2004 £140
Essentially a Rega P2 built down to very low price and bundled with a decent Goldring MM, this is cracking value for money. Head and shoulders above its immediate rivals, it offers a surprisingly musical and detailed sound that will stun those new to vinyl - which is precisely what it was designed to do.

THORENS TD190 2003 £290
Ease of set up and use, allied to fully automatic operation mean that, although hardly the last word in performance, this deck is most certainly a model of convenience.

ROKSAN RADIUS 5 2003 £750
Fantastic value allied to intelligent, interesting and 'out of the box' design makes for a wonderful entry-level superdeck. Open and musical sound is more inviting than Michell TecnoDec rival, and the bundled Nima Unipivot arm is a superstar.



MICHELL TECNOARM A2003 £399
John Michell's brilliant reworking of the Rega RB250 theme, using blasting and drilling techniques usually seen in motorsport! The result is the best sounding arm at £400, and as good as most at four times the price. Runs SMEV very close in all except bass, and betters it for musicality. Stunning.

ORIGIN LIVE AURORA 2003 £1600
Cleaner than a Linn LP12 and warmer and more mellifluous than a Michell GyroDec - but lacks the latter's incision and dimensionality. When fitted with an OLI arm, this package is all many will ever want...

CLEARAUDIO REFERENCE 2003 4,000
The company's best value vinyl spinner; good enough to get the best from almost any tonearm and cartridge combination. Brilliantly open and neutral sound; superlative pitch stability; stunning build and styling - Michell Orbe does most of this at half the price, however.

TONEARMS

TECHNICS SL1200/III 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.



HADCOCK 242 SE 2000 £649
Latest of a long line of unipivots, with added mass, revised geometry and better finish. Musical like few others at or near the price.

LINN EKOS 1987 £1700
Subtle mods 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 slam, the OL's clarity or the ARO's emotion, but has a feisty musicality all of its own.

ORIGIN LIVE ILLUSTRIOUS 2002 £1570
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.



NAIMARO 1987 £1425

Charismatic unipivot is poor at frequency extremes but sublime in the midband; truly emotive and insightful.

ORIGIN LIVE SILVER 2502001 £625

This fully developed and expertly fettled Rega boasts a superbly even, transparent and tuneful sound. Gives away only a small degree of finesse and dimensionality to top arms.

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.

SME 309 1989 £767

Entry level SME complete with cost-cut aluminium armtube and detachable headshell. Tight, neutral sound with good tonality, but lacks the IV's pace and precision.

SME SERIES IV 1988 £1127

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

SME SERIES V 1987 £1614

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.

CARTRIDGES**ORTOFON KONTRA' B 1999 £720**

Surprisingly articulate performer by Ortofon standards. All the brand's usual polish and detail allied to real vim. Loves making music!

**AUDIO TECHNICA AT-110 1984 £29**

Great starter cartridge that's refined, detailed and musical beyond its price.

DYNAVECTOR DV10X5 2003 £250

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

GOLDRING G1042 1994 £135

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

LYRIA LYDIAN BETA 1998 £600

An altogether more beguiling listen than the MC30S, although not quite as incisive. Superb all rounder, nonetheless.

SUMIKO BPS 1995 £250

Charismatic performer with rhythm aplenty, but in other respects way off the pace – lacks smoothness and sophistication of the DV10X5.

LYRA PARNASSUS DCT 1997 £1895

Jonathan Carr's masterpiece is a brilliantly lyrical and fluid performer, with a deliciously sweet tone and immense subtlety and polish.

ORTOFON MC25FL 1994 £285

Strong budget MC with a cleaner and more detailed sound than the Dynavector; more sterile and less emotive, however.

ORTOFON MC30 SUPR' 1995 £550

Beautifully clean and detailed device with real finesse, albeit a tad mechanical sounding.

DYNAVECTOR DV20X-H2003 £395

The best modern budget MC combines deliciously sweet sound with fantastic get-up-and-go. High output version works a treat with valve phono stages too.

**MUSIC MAKER 1999 £575**

When mated with a good quality arm, this hand finished high-output pick-up gives an ear-boggling account of itself. Very high compliance ensures maximum information retrieval. An absolute (grain orientated) gem.

SHURE V15XMR 1994 £350

The most musical MM yet made – brilliantly dynamic and punchy in the classic Shure mould, yet refined and tidy too.

KOETSU RED 2004 £1,600

Although the new Koetsus have lost some of their 'romance', you'll not hear a more lyrical and emotive performer. Startlingly 'analogue' nature makes rival Ortofon and Clearaudios sound frigid.

ORTOFON KONTRA PUNKT C 2004 £1,000

The most secure tracking MC we've heard; its super clean, fast, detailed and neutral sonics make it a brilliant partner to warmer sounding turntables.

DIGITAL DISC PLAYERS**CREEK CD50II 2004 £699**

Extensive revisions make this an altogether more beguiling machine, and one of the best at its price. Extremely musical sound that's surprisingly upfront for a Creek design. Excellent mid-price purchase, with only its Marantz rival to challenge it.

CYRUS CD8 2003 £1000

Highly incisive, engaging, grippy and dynamic sound, but needs careful matching to smooth ancillaries. Optional PSX-R adds bass and dimensionality.

LINN GENKI 1999 £995

Undeniably fast, lithe, musical and fun - but some won't take to its dry, wry character. Works best in all-Linn systems, where it really rises to the challenge!

ARCAM FMJ CD33T 2003 £1,300

Superbly detailed midband allied to excellent bass extension makes this a powerfully musical machine in the best traditions of Arcam CD spinners. Nothing to criticise at the price, everything to recommend it!

**LINN IKEMI 1999 £1950**

Has the brilliant focus and clarity of the previous Karik III with a dose more tonal richness and polish. More grip and poise than most at any price - still superb!

MARANTZ CD17 II 2002 £800

Oft-overlooked middleweight boasts a truly beguiling sound with lots of tonal flavour. Sits awkwardly between the £600 and £1000 price points, where some brilliant value buys reside, though.

NAIM CDX2-XPS2 2003 £4950

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

NAIM CDS3 2003 £7050

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

PHILIPS DVD963SA 2003 £400

Creamy CD sound allied to superb SACD and DVD video playback makes this brilliant value for money.

REGA PLANET 2002 £498

Rhythmic and beguiling performer, although lacks the warmth of tone needed to better its Marantz rival. Superb ergonomics and design, nonetheless.

MARANTZ SA-17S1 2003 £1400

Brilliant CD playback comes close to the best at any price, while SACD performance is almost as convincing - superbly warm and three dimensional nature makes listening a joy. However, the lack of DVD-Audio decoding and poor feature count makes it look middling value compared to some of the universal players here.

**REGA JUPITER 2002 £1000**

A Planet on steroids, this machine adds depth and breadth to its baby brothers already impressive sound. Good, but facing stiff competition.

MUSICAL FIDELITY TRI-VISTA21 DAC 2003 £1,200

Superbly neutral and expansive sound makes this offboard digital-to-analogue convertor an excellent upgrade to any mid-price CD player – fed by a decent transport, few 16bit players at any price come close.

**CAMBRIDGE AUDIO 640C 2003 £250**

Tremendously well-rounded yet engaging sound makes this the best budget silver disc spinner by far. Build quality is excellent at the price, and the styling bang up to the minute. Blistering value for money.

CREEK CD50II 2004 £699

Extensive revisions make this an altogether more beguiling machine, and one of the best at its price. Extremely musical sound that's surprisingly upfront for a Creek design. Excellent mid-price purchase, with only its Marantz rival to challenge it.

DENON DVD-2200 2003 £499

Superb do it all mid-price player; fine DVD-A and SACD sound allied to excellent video performance will be all many could ever want. Ultimately it's a little bright and mechanical sounding, but you have to go into high end territory to truly better it. Stunning value.

PANASONIC DVD-S75 2002 £120

Real ability and fine measured performance for an unbelievably low price. Impressive in its own way, if not truly audiophile. If you just want a cheap DVD spinner with DVD-Audio as a bolt-on goodie, this is the one.

PIONEER DV-868AVI 2003 £799

Pioneer's most accomplished mid-price machine to date, this boasts full DVD-A/SACD playback, a welter of facilities and the all-important HDMI video and I-Link audio digital outputs, making it nigh-on future-proof. Factor in fine – if not outstanding – sound and superb pictures and it's practically impossible to fault.

SONY SCD-XB790 2003 £250

Quite unlike any other budget Sony CD spinner we've heard, here's a very 'analogue' sounding machine that's smooth and warm and even. Factor in fine SACD playback and this machine is a brilliant budget buy – unless you want DVD-Audio that is, which it lacks.

**ORELLE CD100EVO** 2003 £1,200

Extremely engaging and musical sound, but maybe a tad too bracing for some tastes. Superb aesthetics complete an attractive package.

ARCAM CD73 2004 £400

The best all rounder at the price; unfailingly smooth and couch sound allied to fine build and attractive styling makes this a worthy upgrade to entry-level designs.

ARCAM DV78 2004 £800

We've not found a more capable 'real world' DVD player; peerless picture and CD sound at the price, although lack of universal playback will deter some.

ARCAM FMJ CD33 2004 £1,300

Consummate smoothie with an unusually organic and natural sound, but lacks the command of some rivals. Its all round sonic, aesthetic and ergonomic polish will endear it to many.

CAMBRIDGE AUDIO**AZUR 640C** 2004 £250

The best budget CD spinner we've heard; warm and satisfyingly musical; fine build and aesthetics and that remote control make for unarguable package at the price.

DENON DVD-A11 2004 £1,600

Classic Japanese 'battleship' DVD universal machine does practically everything superbly, with no obvious weak points except the undistinguished CD sound. Top value.

EXPOSURE 3010 2003 £1,200

One of the most 'analogue' CD players, second only to the Shanling. Wonderfully beguiling balance leaves you looking for the tube output stage.

LINN CLASSIC MOVIE SYSTEM DI

2002 £2,500

Superb ergonomics and performance from this one-box beauty. The best 'home theatre in a box' you can buy.

LINN UNIDISK 1.1 2004 £6,500

Surely the ultimate universal DVD player; superb in every department, but its CD playback shines brightest considering it's not a bespoke Red Book machine.

MARANTZ CD7300 2003 £350

Superlative build and styling for the money, and the sound is as good as you'll get below £600. Smooth, detailed and engaging beyond its price.

MUSICAL FIDELITY X-RAY V3 2004 £900

Striking looking mid-price stunner with very even, accurate and even sonics; perfect for those seeking detail and neutrality over character and/or colour.

NAIM CDS1 2004 £825

The most engaging mid-price CD player on the market, but with a surprisingly velvety sound. Delightful build and iconic styling make this one of Salisbury's true classics.

PIONEER DV-8681 2003 £800

The best mid-price universal player right now; CD sound is respectable, SACD and DVD-A impressive and the video truly special. Does everything very well for the price.

SHANLING SCD-T200C 2004 £2,150

Superb SACD player with tube output stage; arresting looks and truly special sound; be sure to go for 3DAcoustics version for best sound and UK after-sales support.

SONY SCD-XA3000ES 2003 £600

Surprising mid-price SACD spinner with multi-channel capability; sweet sound; not the best at the price but certainly the most versatile.

SONY SCD-XA9000ES 2003 £1,600

Slick, beautifully built high end SACD player with very transparent, if rather dry, sound. Unexpectedly sweet CD playback but not the most gripping at the price.

STELLO 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.

DIGITAL RECORDERS**APPLE IPOD 40GB** £399

Genre-defining best of breed, thanks to supreme ergonomics and build allied to fine sound.

PIONEER PDR-609 2001 £200

Brilliant value CD recorder that makes excellent recordings from its digital inputs. Half decent digital converters, too.

PHILIPS DVDR880 2003 £370

Poor CD audio playback, but makes great DVD video recordings and boasts fine ergonomics. Top AV value.

SONY RCD-W3 2002 £250

Usual superb Sony ergonomics make for nonsense budget buy. Fine direct digital copies, 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.

**ONKYO MB-S1** 2001 £1100

An interesting machine complete with MP3 functionality, but high price, fussy ergonomics and over-smooth sound make it mediocre value against the Yamaha.

PHONO STAGES**CREEK OBH-21SE** 2003 £250

Musically enjoyable yet highly refined for the price – a superb buy. Gives the Dino a real hard time.

EAR 834P 1993 £400

Classic tube design with a deliciously warm and expansive sound – shame about the loose bass and veiled treble!

LINN LINTO 2000 £900

A musical and inclusive performer, with more speed than the Delphini at the expense of detail and tonal colour.

QED DISCSAVER 1995 £35

Rhythmic, bouncy sound via battery, although it's bright and forward. Great value, but £100 more on the X-LP is well worth it!

TRICHORD DINO 2002 £299

Great all rounder with switchable MM/MC. Fast, fluid and smooth like no others at the price.

TRICHORD DELPHINI 2003 £995

The very latest 'Never Connected' variant is easily the best, bringing velvety smoothness to an already refined and engaging performer. Neutral to a fault – some will mourn the passing of the charismatic ISO.

MUSICAL FIDELITY**XLPSV3** 2003 £249

Fine all rounder at the price, which a satisfyingly full bodied sound that's smoother than the Creek but a tad less engaging. Only Trichord's Dino, with its easy upgradability for just £50, reflects badly on this fine bit of kit.

PROJECT PHONOBOX 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. If £100 is all you're prepared to spend, then do it happily on this, but you'll get obviously better results from the £250 brigade.

WHEST AUDIO PS.20**/MSU.20** 2004 £1,000

Disarmingly clean, smooth, open sound makes this the very best phono stage we've auditioned to date, but some will still prefer the gutsier feel of the Trichord Delphin.

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.

AMPLIFIERS**ARCAM DIVA A65 PLUS** 2002 £370

Classic budget Arcam fare – decently sweet and open with sensible facilities and plenty of power.

**ARCAM FMJ A32** 2001 £1150

For those who value serious power and labyrinthine facilities over outright clarity or grip. A very impressive all rounder with an unusually muscular power amp at this price.

AUDIO NOTE OTO SE 2000 £1199

This baby tuber is beautifully sweet and creamy, but lacks solid-state's clarity, detail and incision. Low, low power means speaker choice critical.

AUDIO NOTE SORO SE 2000 £1699

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.

CYRUS 6 2003 £600
Cracking do-it-all mid price design, bringing svelte sound, good connectivity and upgrade-ability and stunning style and build.

CYRUS 8 2003 £800
Unusually warm and lyrical for a solid-stater, with decent power and punch. PSX-R adds dynamics, detail and dimensionality.



MERIDIAN 551 1994 £895
Evergreen middleweight is a serious performer even now. Tonally a tad dry, it's still very smooth and svelte with bags of power, detail and grip. Class act.

SUGDEN A21A 1993 £1020
The most musical amplifier at the price, bar none. Delicious Class A sound is smooth, sweet and wonderfully transparent with true tonal colour. Low power, so match carefully.

AUDIO RESEARCH VSI55 2003 £2,895
The Naim NAP250's tubular alter ego; oodles of power allied to a strong bass and smooth open midband makes this a brilliant all round amplifier. Lacks the subtlety and finesse of the low powered single-ended brigade but makes up for it with sheer brio.

CREEK A501R 2004 £550
Consummately smooth yet engaging sound makes it a serious player at the price, but don't expect Creek's traditional sumptuousness. Fine value nonetheless.

MONRIO MC207 2003 £1,100
Powerful, muscular sound allied to real finesse makes this unusual integrated an essential audition at the price.

MARANTZ PM-17MKII KI MODIFIED 2004 £1,500
Gloriously offbeat do-it-all design with a truly warm, smooth and three dimensional sound. Think of this as a latter-day Audiolab 8000a - with a good deal more colour and finesse - and you'll have its measure. Lowish power output at the price, but fine real world speaker driving ability.

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 ancillaries (Revolver R45s are ideal), but overall fantastic value for money.



ORELLE SA100EVO 2003 £1,200
Fine build, exquisite design and a wonderfully lucid sound make this an essential audition at the price.

MUSICAL FIDELITY X-150 2004 £800
Brilliant shoebox-sized powerhouse is sweeter and more mellifluous than Nait 5i, but less taut in the bass. Oodles of power, striking aesthetics, sensible facilities and great build make this a rare bargain.

NAD C352 2004 £300
Classic NAD mix of smooth, punchy sound with plenty of watts and sensible, real-world facilities; a great introduction to real hi-fi.

NAIM NAIT 5I 2004 £825
The most musically engaging integrated at or near the price; real sophistication in sound allied to grip and power aplenty. Iconic styling and great build complete a very pretty picture.

NAIM NAC282/NAP200 2004 £4,000
Wonderfully taut bass, lightening midband and incisive treble makes for an enthralling listen; this cracking combination looks great and is superb value too.

PRIMA LUNA PROLOGUE I 2004 £800
Unlike almost every other budget tube integrated we've tested, it's nicely built, decently powerful and engineered well enough to let the benefits of tubes shine out loud; sweet, open, liquid. Cracking value.

STELLO S200 2004 £1,495
Oodles of smooth, clean power with plenty of pace and pleasing subtlety too. Factor in exquisite build and a low price and this is true audiophile bargain.

AV AMPLIFIERS

DENON AVR-2803 2003 £650
Superb mid-price 7.1 channel extravaganza with nearly all the decoding power you'll ever need. Powerful, open and clean sound (at the price) makes it capable with music, and superb on movies. Fine ergonomics and great build makes this receiver hard to beat as an all-rounder.



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.

PIONEER VSA-AX51 2004 £1,000
The ability to hook up to Pioneer's DV-868i via i-Link (nee FireWire) means that this multichannel AV amplifier can do all the digital conversion onboard makes the a very special product, which when used with the aforementioned DVD spinner sounds better even than the sum of its parts.



HEADPHONE AMPLIFIERS

SUGDEN HEADMASTER2003 £600
Unusual combined preamplifier and headphone amplifier, this boasts a surprisingly smooth and open sound which suffers only when compared to preamps at twice the price.

MUSICAL FIDELITY X-CANSV3 2003 £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.

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?



MF AUDIO PASSIVE PRE2003 £1500
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.

NAIM NAC112 2002 £660
Affordable admission ticket to the Salisbury high end experience. Detailed and dynamic, if tonally rather lacklustre.

LINN LK140 2000 £800
Dry and grey sounding, but decently dynamic and musically engaging all the same. A worthy worker in a budget Linn system.

MUSICAL FIDELITY A308 CR 2003 £2400
Superb transistor behemoth, worth partnering with any high end CD player or preamp. Oodles of grunt served up with poise and purpose.

MARANTZ SM-17 2001 £700
Useful budget power amp with plenty of clean transistor power. Not the most transparent, but sweet and clean all the same. Fine build completes a great value package.



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.

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.

CROFT TWIN STAR 2003 £1750
With a taste of the best of both tube and transistor, this latest update of the Croft classic is a truly endearing experience.



GRAAF GM20 OTL 2003 £3,300

Awesome output transformer-less valve power amp gives dazzling speed and incision, with an ethereal soundstaging 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...

SUGDEN MUSICMASTER 2003 £1,300

Quintessential Class A Sugden sound is not 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 Revolver R45s, but many will find it underpowered.

**LOUDSPEAKERS****B&W CDMI NT** 2002 £750

Fine clarity and imaging allied to pleasing warmth and great rhythmic cohesion make these standmounters an essential audition.

CASTLE CONWAY 3 2003 £930

Superbly smooth and crisp performers, with a big hearted musical sound. Ultimately coloured though, with a slow, plummy bass.

CYRUS CLS70 2001 £800

Charismatic performer with a fast, tight and open midband, but lacks cohesion and scale..

KEF Q1 2003 £250

Highly polished and articulate standmounters at the price, but demand good ancillaries for best results.

KLIPSCH HERESY II 1997 £1100

An outstanding high sensitivity loudspeaker with midrange and treble horns coupled with infinite baffle 12" bass driver. Effortless, fast and accurate.

LINN NINKA 2001 £995

Major on rhythms and dynamics, making them an involving listen. Reasonably refined, too - but tonally disappointing.

EPOS ELS-3 2003 £200

Plenty of brio and a decent degree of refinement makes this budget baby a fine value contender.

**MISSION 782SE** 2003 £900

Bright and tight design capable of brilliant speed and grip, at the expense of warmth. Demands high quality, high powered ancillaries.

MONITOR AUDIO B4 2003 £350

An unusually smooth and lucid performer at the price, and its 3-way design means it drives rooms well. Fine engineering, but build and finish so-so.

REVOLVER R45 2003 £899

Wonderfully easy to drive floorstanders that are a dreamboat for tube amplifiers, and great for party-minded transistor users too. Great attack transients, fluid and musical bass and midband and couth treble make them fine all-rounders.

W'DALE DIAMOND 8.1 2001 £120

Still the best baby budget standmounters around. Tight and grippy thanks to Kevlar drivers, but invariably limited in the frequency extremes.

**MORDAUNT SHORT 9142002** £300

Warm, detailed and articulate performer, but a touch loose in the bass and veiled up top. Fine partner for budget valve amps.

NAIM ALLAE 2002 £1990

Taut and grippy like few others, this speaker majors on transient speed. Surprisingly smooth for a Naim box, with nicely etched treble. As always, tonally dry.

QUAD ESL-988 2001 £3400

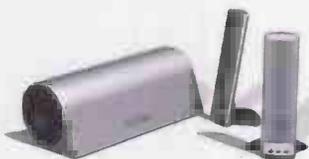
Wonderfully neutral and self-effacing with sublime imaging and projection. Treble lacks extension, bass lacks weight - although the pricier 989 answers the latter resoundingly.

PERIGEE FK-1L 2002 £5000

Charismatic Aussie ribbon design with deliciously open mid and treble, allied to fine bass weight. The right room and ancillaries essential. Engaging, musical and powerful sound. Superb.

TDK S-80 2002 £90

Ingenious NXT multimedia sub/sat system has a wonderfully even and open sound - like baby electrostatics.

**MARTIN LOGAN CLARITY** 2003 £2,895

Supremely transparent and open with brilliant depth perspective and image projection. The midband is up there with the very best at any price, while the bass and treble integrate well but don't especially shine. Dynamically limited, with middling bass punch, but that's not the point - that deliciously fluid and intricate midband wins great respect.

TANNOY EYRIS DC1 2003 £699

The combination of dual concentric treble/midband drivers plus supertweeters make for a very spacious and expansive sounding loudspeaker, albeit one that's a little bright and loose in the bass. An excellent mid-price design well worth auditioning.

MONITOR AUDIO GR60 2002 £2,295

In some ways, these come close to Yamaha's legendary NS1000Ms, thanks to their tremendous clarity, great transients and 'full-fat' wide bandwidth performance. Bright and clean, but never fatiguing or uncouth. A truly accomplished all rounder that gives a real taste of 'super-fi' at a reasonably affordable price.

TOWNSHEND MAXIMUM 2003 £800

Another brilliant niche product from Max, these ribbon aspirated supertweeters add space and atmosphere to any good high end loudspeaker, and more surprisingly perhaps make things more fluid and musical too. Superb affordable esoterica.

KEF Q4 2004 £400

Hard to argue with the value of this small footprint floorstander; very couth, even, dimensional and detailed sound works well in confined spaces and large rooms alike.

ELAC FS207.2 2004 £1,000

Deeply capable mid-price floorstanders, distinguished by superb JET ribbon tweeter which is unmatched by class rivals; engaging, slightly warm nature needs serious transistor power to sing.

EPOS M22 2004 £950

Classic Epos blend of speed, attack, power and punch will delight rock and techno fans alike, but classical and jazz buffs will crave more colour and textuality.

MONITOR AUDIO S8 2003 £800

Very few can rival this floorstander's all round ability; highly smooth, warm and three dimensional sound allied to an easy load and good sensitivity makes this hard to overlook.

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.

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.

TOWNSHEND MAXIMUM 2003 £800

The best affordable supertweeter we've heard - you'd be amazed at the difference it makes! Classy ribbon design, flexible level settings, cool styling...

HEADPHONES**JECKLIN FLOATTWO** 1998 £99

Wonderful panel-like sound from these esoteric-looking headclamps.

SENNHEISER MX-500 1999 £19

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

SENNHEISER PX-100 2002 £29

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

**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 fine comfort makes all most people will ever want. Cable upgrade yields great results.



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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.

**INTERCONNECTS****WIREWORLD OASIS 5 2003**

£99/M Excellent mid-price design with a very neutral, silky and self-effacing sound. Superb value for money.

CHORD CO. CHAMELEON 2£90/M

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

VDH ULTIMATE THE FIRST £260/0.6M

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

**DNM RESON £40/M**

Neutral and transparent - a steal!

TCI CONSTRICTOR 13A-6 BLOCK 2003 £120

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

NORDOST BLUE HEAVEN £150/M

Some of the fastest and most transparent cable around.

**TUNERS****ARCAM T61 2002 £250**

This sleek looking and refined sounding FM/AM tuner isn't the last word in musical involvement, but is fine value, nonetheless.

**ARCAM DT81 2003 £650**

A fine radio, hampered only by its seriously compromised DAB medium. Probably the best DAB tuner ever, but one for Digital Radio enthusiasts only...

CAMBRIDGE AUDIO DAB300 2003 £150

Fine ergonomics allied to great ease of use and respectable DAB sound makes this superb value.

**DENON TU-260L MK II 1998 £130**

If you want the best FM sound at the lowest possible price, then this ancient tuner remains peerless after all these years. There are better analogue designs around, but are either near-impossible to find or are now long-deleted.

CYRUS FM X £500

Great for Cyrus users, but its dry and precise sound can't match the best of the rest at the price. Worthy, nonetheless.

**MYRYAD MT 100 1999 £600**

One of hi-fi's nice surprises, this is a beautifully designed and built bit of kit with a deliciously sweet and svelte sound which really does justify its high price.

NAD S400 2003 £600

Highly accomplished specialist high end analogue tuner with a deliciously open and lucid sound, but it can't quite match the Myriad all the same.

PRIMARE T21 2002 £600

Seriously accomplished design with mature sonics, great styling and fine build.

**PURE DIGITAL DRX-702ES 2003 £249**

Great with Digital Radio, but thin a tad sounding on FM at times. It's a top hybrid, nonetheless...

**SYSTEMS****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 Onkyo. Optional speakers are mediocre.

ONKYO CS-210 2003 £300

Superb value thanks to excellent sound, great build and ease of use, but the bundled 'speakers' rather let the side down.

LINN CLASSIK 2002 £995

The best one-box stereo system money can buy; superbly musical sound beats equivalently priced separates. £2,500 Classik Movie Di deserves the same accolade, but adds DVD video playback and surround sound.

**PIONEER NS-DV990 2003 £799.95**

Whiz-bang technology fest with DVD universal playback, discrete display and NXT flat panel speakers. Superb for the spare room or study - truly intelligent and elegant design - but don't expect it to match the sonics of AV separates.

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LOUDSPEAKER KIT SUPPLIERS

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e-mail: sales@seas.co.uk
Website: www.seas.co.uk
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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Letter of the Month

NEW WORLD MAN

I like the new World Design loudspeaker article and, if it is your intention to use this format for other World Audio Design products, I think you've got a winning formula. I am certainly considering making a speaker kit myself and, if there is to be a floor-stander model in your range, then I'd be very tempted to go for it.

I have been into hi-fi for some fifteen years now and I can honestly say that your magazine has been the one of preference, especially your honest appraisal of hi-fi products and enthusiastic DIY articles, written by enthusiasts, which over the years has inspired me to build my own record deck, with help from Origin Live, with great kits of DC motor, battery power supply etc.

I have always been interested in squeezing more out of my system and DIY obviously gives benefits in more sound for your pound. This brings me onto another DIY related subject that I wanted to share with you and your readers, as it illustrates the potential you can unleash in your kit by improving the parts that were compromised to cut cost.

I have owned a pair of Mission 751 'speakers for twelve years now and wanted to replace them, but resisted due to financial constraints. However, being outdated, here was an ideal opportunity to replace the ageing capacitors and upgrade them for little financial outlay so I decided to modify the crossovers. This coincided with an article you ran in DIY audio some time ago about removing crossover components from the enclosure and touched upon the possibility of using superior components. I was also inspired by Noel's comments on speaker design, in particular that drive unit technology hasn't really progressed much in recent times and usually (drive units) are of very high quality compared to that of yesteryear. I thought that if I could improve upon the crossover with higher quality components with tighter



Mission 751 loudspeaker, a good choice for tuning.

tolerances then I could squeeze the full potential from those drivers.

With not much info to go by, I decided to start by asking Mission for a circuit diagram - and they kindly obliged. Being a competent electrician I removed the crossovers and measured the component values to crosscheck. Lucky I did, because there were some minor deviations. I then went to Wilmslow Audio and purchased the necessary capacitors (their own branded ones), some MOX type resistors (non Wilmslow) and air-cored inductors of superior quality. These were directly replaced for the original items hardwired and silver soldered.

So the reason for doing all of this: the difference in sound reproduction is profound! I would never have believed the improvement in sound quality: the soundstage is much wider, instruments and voices have more space around them and hang in the air, and bad CD recordings sound more benign and easier to listen to for long periods of time. Pace rhythm and musicality (what it's all about for me) is so superior - stuff you could swing a telegraph pole

at! This is just CD reproduction side. My vinyl front end really brings these diminutive 8 litre boxes to the fore...

The next steps are to remove the crossovers from their enclosures, mount them in component boxes (some nice transparent ones from Maplin) as near to the amplifier as possible. I'm hoping this brings further improvements. Now - what would a pair of 752 Freedoms sound like with this sort of treatment?

Readers out there thinking of improving their loudspeakers should go for it.

**D. Ottley,
Southampton.**

Yes, this is a fertile area for experiment for any DIYer, especially those lacking the skills to tackle more complex electronics. Removing the crossover and mounting it externally will help tidy up the sound quite considerably. It isn't a difficult task either.

Sand filling a lower chamber in a loudspeaker cabinet also sharpens up timing remarkably, as well as suppressing colouration. You end up with a sense of speed and precision rarely encountered in everyday product, because details like this are rarely attended to in any adequate manner, for reasons of cost, practicality and - often - lack of appreciation of what is important in the first place. There's nothing like a bit of DIY! **NK**

DEMAGIC TOUCH

I was browsing through ebay the other day and came across the attached, which I thought must be a con - or is there something to it? Worthy of inclusion in the April issue, perchance? 'DENSEN DEMAGIC' CD. The idea that playing a particular CD can 'demagnetise' the audio chain seems strange, especially when it claims to demagnetise the loudspeakers, which I thought relied on magnets! Anyway, have a laugh.

Andy Atherton

Hi Andy – well, as you know, we at Hi-Fi World are no strangers to seemingly stupid ways of tweaking your sound, and happily say so if we think they're all smoke and mirrors. However in this case, I've found the Densen Demagic CD to make a real difference. Don't go thinking it will make a £300 system outperform a £3,000, but it will make either sound ever so slightly better, with a tiny amount of extra detail and dimensionality. Whether it really does do what it says (i.e. demagnetise the residual magnetism in analogue audio circuitry), or if it's just the fact that the speaker voice coils and/or cone surrounds warm up/free up a bit, I can't say, but I've found that – unlikely as it may sound – it's not worthy of the 'April 1st' accolade. **DP**

MAT BLANK, OH!

It's heartening to find, in these digital-centric times in which we exist, that there seems to be a plethora of upgrades available for ye olde turntables. I realise that your publication has already highlighted some of these



Ringmat, an easy upgrade for your turntable.

items: DC motor upgrades, PSU's, 'phono amps, arm wiring, Origin Live gear, etc. (I know that some of those aren't strictly upgrades, but equipment in their own right, but you know what I mean). However, my interest has turned to a rather basic bit of kit – the humble platter mat. There is of course the Ringmat – now available in various guises – which has been knocking around for a good few years now. I have also noticed that there is an acrylic 'mat' available from a company called the Funk Firm – who seem to be entering the turntable market in a big way... So, turntable mats – which is the



Westminster Royal HE - parliamentary presence in your home.

best one available? I don't expect you to devote an entire edition to the subject (if only because of the offence such an edition would cause to our non-vinyl, laser loving cousins...), but it would be interesting to see just what is available and, perhaps, which mats are best suited to which spinners. Maybe a home-made concoction is the most cost effective way to support ones black plastic? As the theory goes, 'the nearer to the source, the more important the component'. As such, the platter mat, therefore, must have a pretty big influence on the signal that gets sent to the preamp... For your information, my Cirkused LP12 - with Lingo Mk I, Ittok MkIII and rebuilt Asaka - is currently "benefiting" from a Starmat and PIG 'record clamp' derived from my old Revolver, as the performance when compared to the standard felt mat is slightly better. How's that for starters. Keep up the excellent work.*

Ian Davies

*I remember attending a press conference once, many moons ago, held by Leak. They demonstrated a turntable, I believe it was the Leak 2000, that sat on oil filled spheres that provided amazing isolation from vibration. I recall that Dr Barlow hit the table it rested on with a hammer and it kept playing unperturbed. We were all mightily impressed. This was a silicone fluid that absorbed energy, I recall. A platter mat with a soft, pliant energy absorbent would be a interesting I suspect. Readers with ideas about this or anything else suitable for a platter mat might like to write in with them. **NK***

We got great results with the Sound Dead Steel Isoplatmat (www.sounddeadsteel.com) recently; it's two steel discs of differing

*thicknesses (and thus resonant frequencies) sandwiching a layer of highly absorbent polymer. It's interesting because when you tap it, it creates a dull 'thunk', and when you place it on Japanese direct drives which often have bell-like Mazak platters, they no longer make a 'ding' sound when you flick them with your fingernail. The change in sound is striking, because not only does it damp the platter but it adds mass too, helping the flywheel effect. It makes for a substantially smooth, deeper, more organic sound (a bit like when you move from 16bit PCM to SACD DSD), digital fans. I'm not sure if it would work as well on an LP12, but something I know that's well worth thinking about is the new Funk Firm mat you referred to, which is specifically designed for LP12s; I've heard the difference myself and the phrase 'night and day' springs to mind! **DP***

POLITICAL SYSTEM

Many thanks for your response to my last letter on the subject of your Quad 99 series review, which was very helpful. Things have moved since then, and on the basis of your comments, I substituted the Quad 99 preamp in my system and found that your conclusions were spot on and the 99 is indeed the major limiting factor in the 991909 partnership.

Unfortunately at this point I must have lost my presence of mind (for which I hold you personally responsible!) because, enthused by the excellent results, I was again bitten by the upgrade bug and went on to audition alternative CD players and amplifiers. As a result I tried the new Quad 99 CDP-2 and the Meridian GO7 and GO8 CD players and ended up buying the Meridian GO8, which I found to be in a

different class to the other machines.

Unfortunately, introducing the Meridian to my system raised the sound quality bar, and against my better judgement, I proceeded to test several alternative amplifiers, which convinced me that replacing the Quad was likely to be highly beneficial. I now find myself in need of your advice and views on possible replacements. You may recall from my last letter that I use Tannoy Westminster HE's in a large dedicated listening room of 4,600 ft³ (23'x 20'x 10').

So far I have tried the Meridian G01 preamp and G57 power amp, which were both excellent. I have heard the Sugden A21a at a dealer and was very impressed and I think it could fit the bill in its SE guise. I also like the Icon Audio valve gear, which made jolly and very pleasant noises at this year's London show. For guidance I am looking for elegant, high quality, well engineered kit but not of the 'male jewellery' variety, where most of the money is wasted on explosions of sculpted, machined aluminium, stainless steel and real tree wood 'hewn from the solid', that while pretty, contribute nothing to performance and functionality but which add hugely to cost.

I look for a musical sound that's natural and dynamic (definitely not 'hi-fi' which in my world is pejorative and a term of abuse) and whilst my musical tastes are eclectic, I listen mainly to classical, including a bias to choral, orchestral, organ works, and jazz. I would appreciate any guidance you can offer.

David King

Having recently reacquainted myself with the glories of the Westminster, reminding me of humongous size and parliamentary presence, as well as glorious sound, the answer to your query is to spend time auditioning good valve amps. Your Westminsters will reveal all like nothing else I have heard and in this circumstance AudioNote Kegons were in a world quite apart from the everyday experience I found. An Andy Grove designed amplifier, courtesy of Quad or AudioNote, would be an appropriate match. Contact Heatherdale about this, or AudioNote direct. By all means audition an Icon Audio too. **NK**

ATMOSPHERE

I was intrigued to read John May's review of the Atma-sphere S-30, not least because I am lucky enough to own an S-30, together with the Atma-sphere MP-1 preamplifier (big brother to the MP-3 John reviewed).

One of the principal reasons for my interest was that the review amplifier,

whilst looking identical to the one that graces my listening room, apparently used 300B giving a miserly 2W output. Surely there is something amiss here, as a quick referral to the Atma-sphere website and my own amplifier shows it to have 6AS7s in the output position? This is fortunate since 6AS7s are considerably cheaper than 300Bs and provide rather more power, 30WPC being the quoted output in the literature I have read. So, how come the confusion?

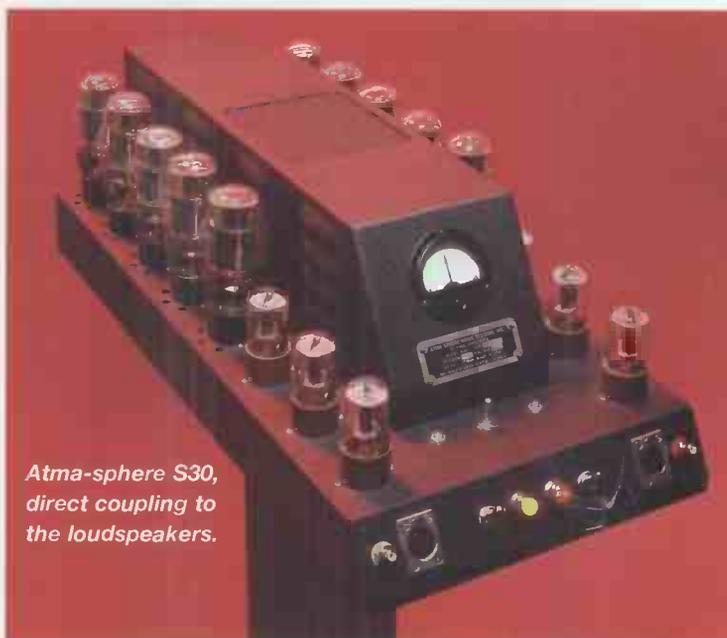
I run the S-30 with Quad ESL-63s, which is just about tenable, (although it surely wouldn't be with 300Bs) and

Thanks for the (usually) authoritative magazine.

Simon McDowell

Hi Simon. As I said in the March 2006 issue (p108) the distortion limited output (0.3% thd) was 2W, but it will produce 30W, if you are prepared to tolerate 3% distortion on peaks - and that is into 8ohms. That's why the auto-transformers are needed, especially with low loads where performance worsens. But then it isn't an OTL design.

I have comes across a few



Atma-sphere S30, direct coupling to the loudspeakers.

this combination does indeed provide a, "wonderfully clear sound free from grain". The sound has recently been given a boost by the addition of Paul Spelt 'Zero Autoformers', which act to transform the speaker impedance to a more benign load for the OTL design (don't ask me for the details- I'm no engineer). The sound with the autoformers in the system is to my mind much livelier with greater detail and an increased sense of space and air. I thoroughly recommend an audition to anyone with an OTL amplifier and less than ideal speakers i.e. anything below about 14 ohms.

Even so, my system is far from ideal, largely because when I was putting it together I was also in the process of moving home and I made the mistake of buying the hi-fi before the house. Consequently, the listening space I was allocated by the manager of the household (she is in all honesty very accommodating to my obsession) is insufficient to comfortably contain the Quads. I am, following advice from within your magazine, seeking to optimise the room acoustics, with bass traps, curtains, and other furnishings; ideally though I need to remove a wall or two. However, that is another story!

valve amplifiers that behave like this and I do not much care for them myself, feeling third harmonic audibly sharpens the sound. However, John May was impressed and your views support his, although we did not use the transformers. As you say, there will be a lack of grain and, having used ESL63s for many years, I can imagine the two work well together. Yes they are 6AS7s, not 300Bs which use a similar package.

I found the best way to tame the Quads was to hang a thick, absorptive curtain behind them, around 10cms away. I made up aluminium brackets to do this, hanging thick natural felt underlay from it, but it was a moth magnet. These days StudioSpares stock a variety of sound absorbers that should give good results. There's plenty of room for experiment here. **NK**

THE CHINESE WAY

Last month I got the rare opportunity to attend a demo organised by my local Quad dealer here in Berlin and to listen for the first time in my life to the big Quad 989 electrostatics. Driven by very good valve amplification by Air Tight!

Japan and different turntables (Roksan, VPI, Acoustic Solid) as front-end the sound coming out of the speakers was quite spectacular. It was indeed so good that I decided to upgrade my current speaker system and go for a mint second hand pair of the 989s for my home system. Which brings me directly to the subject of my enquiry. Based upon the information on the web about Quad-history, Ross Walker, son of Peter Walker, sold the company to IAG in the late nineties. The new speaker line (988/989) was developed in Huntingdon between 1997 and 2000 and introduced to the market in 2000 (your magazine tested the 988 in the December 2000 issue for the first time, I think). The 988/989s of the very early production were still manufactured in Huntingdon after the production of the ESL 63s had been



QUAD 989s, from England to China.

ceased, if some information on the web is correct. Production was then relocated to Bradford. Now these loudspeakers are manufactured in China.

All of which means, if my conclusion is right, that there are obviously different samples of the same speaker to find out there! The very early 988/989s were entirely manufactured in the UK as replacement for the ESL63s, the recent and current in-production units come from China. My questions result from the very confused situation regarding the Quad production by IAG during the last few years:

In which time period were the 988/989s manufactured entirely in the UK? Could anyone say which serial No. carry these speakers or where to find any information on it? Are there maybe even speakers produced at different plants in the UK (Huntingdon, Bradford etc.) on the market?

When exactly was the entire production of the 988/989s moved to China (year/month)?

Is there any way to distinguish the UK and the Chinese speakers if searching for the 988/989 on the second hand market (production date, serial No, etc.)?

For a Hi-Fi World reader it is no secret that nearly everyone at Hi-Fi World appears to be a big Quad advocate (hello Mr. Keywood!). Any comment and help from you on this subject will be much appreciated.

Georg Karich
Berlin
Germany

QUAD SAY

Unfortunately, we do not have a precise date when production of the 988 and 989 was transferred from Bradford to China, but it would have been mid 2002.

Identification of where they were manufactured is easy. If the serial number on the speaker starts with a 'Q' then it was made in Bradford and if the serial number starts with 988 or 989 then it was made in China.

Rob Flain
IAG group service manager for Quad, Audiolab, Wharfedale and Mission.

I have been to the Quad factory in China and stood in the very (small) room where the 989s are made; I asked some searching questions about the quality differences, and had the chance to compare my own Huntingdon 989s with the Chinese built ones, and indeed also the new Chinese Audiolabs with the Huntingdon made TAGs, and found absolutely no disparity. I know this is only 'anecdotal', but I shouldn't worry if I were you. If anything, I'd go for the Chinese ones as Quad said, off the record, they are happier with their panel tolerancing these days.

DP

OILING A PINKY

Thanks for the March issue of the magazine on vinyl. Channa's review of the Funk Firm's Funk Vector turntable prompted thoughts on squeezing the last ounce of performance from my Pink Triangle Little Pink Thing. Specifically, it was that thing about wobble, not that anything could be done about the 'drag' on the spindle that the Funk Vector's designer sought to overcome with ingenious outrider pulleys.

Although the LPT is generally fairly well built, I've never been entirely happy with the way the acrylic platter sits on the spindle. Finger tips on opposite edges of the stationary platter are capable of inducing small amounts of play. This must mean that some of the



Pink Triangle Little Pink Thing, a good budget turntable.

energy transmitted from the belt is being lost, rather than driving the platter at the right speed. A single turn of the gossamer thin white Teflon tape that plumbers use on screw-threaded joints

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has cured it. Maybe this tip could be useful for other LPT users, or users of other similar designs. Imaging and timing have been transformed.

I assume that fellow LPT users have the deck on a level surface already (mine wasn't!) and that they have fitted the Origin Live dc motor. I understand that the decks were typically sold with either a Rega arm or a Roksan Tabriz (as in my case). The OL arm mods or the Zi modifications respectively, give massive lifts in performance.

Finally, you were recently lyrical on the benefits of van den Hul's The Low Friction bearing oil. I know that you've sung the praises of Mobil One in the past, and my spanning brother was able to give me a few drops of the Castrol equivalent, which is specified by Audi and is also 0w-30. I did an oil change before the Teflon tape job to fabulous effect, and I'd love to know if you or fellow readers have any further LPT performance tips. Meanwhile it's astonishing how good records now sound.

Chris

Hi Chris - pleased to hear it! The whole thing about tweaking is that it's all cumulative, and a lot of small changes add up to one big change - which is why I think it's worth showing real attention to detail to the state of your system's tune. vdH's TLF is still better than Castrol or Mobil though, as I said in my column, because of the former's use of the best basestocks, IMHO. **DP**

HONEY IN GREECE

I have to express my gratitude for all the great advice. I have followed your suggestions twice (after judging for myself too). I have come to understand that combining good components is not enough all by itself though. Sometimes, if not most times, synergy is responsible for the end result.

My current system comprises Spendor S8e loudspeakers, Meridian 501 preamp., Tact SDA2175 power amp., Marantz SA 17S1 CD/SACD player and VDH 103mkII interconnects. Loudspeaker cable is Ultralink Excelsior 2.4 (BiWire). How many of your five globe recommended components can you see?

Problem: the Marantz came these few last days to unbalance a very musical and upbeat system, albeit a dark one. The source used to be an Arcam A8, used to feed a Musical Fidelity A324 DAC via a VDH DigiCoupler. Since the arrival of the Marantz SACD the sound became more relaxed and analytical, but less musical, rhythmical - and there is now a significant lessening in the weight of male and female voices, notable in the

Croft preamp - a sweet partner.



piano as well, which now seems like a smaller instrument. Treble on several recordings is also quite irritating.

I don't regret the purchase however, as the Arcam-MF combo tended to overblow bass and over beautify things in every recording. Too much of corrective measures I dare say lead to the other side... I enjoy the extra insight and the accuracy in timbre; all I'm looking for is a bit of extra body and maybe bass energy perhaps. Just a bit of honey please...

Lefteris Tsolakis
Greece

You could sweeten the system without unbalancing it by using a valve preamplifier. We'd recommend the Croft Vita, which is an excellent sub-£1,000 design that is creamy in the nicest sense. It has a slightly warm bass, which is just what you want, but this is no way overblown. Another, more clean sounding option is the lovely Quad QC-twenty four. I'm sure this will work the magic you are looking for. **NK**

Agreed - and also a change of interconnects and cables will help; Townshend Isolda DCT is a deep, dark, smooth sounding cable that while never dull, makes most others sound bright and glassy. Also, Chord Company RCA Signature interconnect will give a deeper and more dimensional sound than the vdH. Finally, stick your CD player on FoculPods and be amazed at the bass improvement! **DP**

POP SYSTEM

Could you please recommend an amplifier to go with Snell speakers and a Meridian CD player? I have been left with these high quality pieces of equipment after my partner, who was an enthusiast, left. Unfortunately the amplifier, which was an A.R., stopped working sometime ago and I have been unable to find anyone locally to repair it as the manufacturers no longer exist. I would be happy to buy second hand as

I can only afford £100. The system was used mainly by my teenage daughter for pop music but I like a good solid bass and a warm top end.

Kathy Kathryn

Well, it looks like you have no choice but to buy secondhand, with just £100 to spend. Fortunately, there are some decent oldies going for even less than this; go for a late model A&R (Arcam) A60. The way you can check it's a late one is that it has 'CD' written on the front panel source selector panel, instead of 'Aux'. You should get one of these for under £90, or for even less there's the late, great NAD3020 for £40 or so - loads of punch and real musicality, although it doesn't win prizes for styling. **NK**

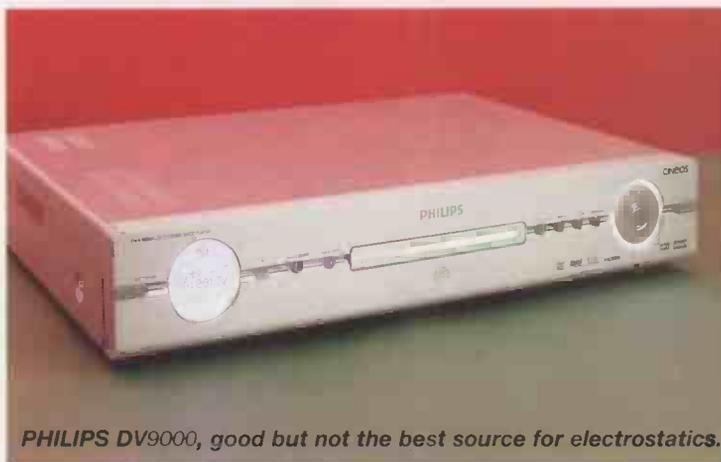
TAKE OFF

My Quad ESL -57 system has finally taken off, so much so that it merits some serious further development. It was started in the mid-eighties, with some components from the 1970s still surviving. The speaker end is now complete: Quads, Gradient subs, Townshend supertweeters and Dynavector Super Stereo. It was the addition of the last two that finally floated the boat, and I now spend hours listening with the proverbial silly smile on my face. I enjoy much more than I worry!

I listen to all kinds of music. The musical conversation between musicians is top priority, and I think that spells time coherence. I just want it even better and I'm willing to spend another £6,000. I'll take advice on all parts of the chain, but primarily on the vinyl front end and the Quad stands.

It is now also time to look at all sorts of synergy with filters, mats, clamps, cables, contacts, and supports. All interconnects and contacts are pretty pedestrian: I don't even know the makes. Mains cables are a snake-pit and I haven't used a phase pen. Everything rests on half squashed balls. The Quad power amps gotta be valve based, and

a preamp has to have two pairs of outputs for the Dynavector. As it is, the sound has a vast sound stage, is airy, highly resolved and musical. The whole space behind the speakers is filled with well separated and interacting musicians. Room, large instrument bodies and chests resonate beautifully. Voices have a tendency to hang too high up in the air, but so far it has not been possible to bring them down without significant loss of other qualities. Although the amp part is the least of my present concerns, I would ultimately want more blood, punch and bass extension with



PHILIPS DV9000, good but not the best source for electrostatics.

cleanliness, resolution and air intact.

There is really no serious problem except with vinyl, played by a Forsell Airborne from early -90ies. The deck/arm has an upper-mid emphasis, which was terribly augmented by the originally supplied Shinon Red pickup. It was later compensated by a hang-mat effect of an ATC pickup, model forgotten. The whole thing resolves okay and I can set weight and VTA by the resolution of, and space around backup vocals. Still there is something about the timing, a greyish timbre and the upper mid that I don't like, and that is hard to put into words. Result is I listen less and less to vinyl, my preferred medium. Phono stage is by another local sage (Pentti Tupainen) transistors, optimised for dynamics. Alright, I guess, but negotiable.

The Quads themselves are from one of the last production years (and could maybe be improved by that British firm...). They play in a medium damped room 12 by 4 metres, with 8 metres of the room behind them, leaning forward-downward-inward into the listening place, perched on 30 cms of 5 frigolite platters on top of the Gradient dipolar subs. Isolation works to some extent, but nevertheless the whole setup vibrates.

The crossover is a DIY Kaneda at 63 Hz (the factory supplied was far too bumpy at about 80Hz). Transition from Gradients to Quads is absolutely seamless.

The rest: mid and treble are handled by an 8watt 12SL7GT/6V6GT tube amp. by a local valve legend, Jan

Lodstrm. It is clean, clear and spacy, especially when relieved of bass duties. Maybe not as full-blooded and thwacky as I would like. But a clean, easy listen.

Bass: the power amp of a Marantz 2270 receiver. Maybe a trifle coarse and reticent, but somehow it gels and doesn't get in the way. Preamp: a Kaneda DIY transistor optimised for dynamics.

CD/SACD/MP3/DVD is handled by a Philips DV9000. Not quite as time-coherent as the preceding 963SA (that the dealer refused to repair when the transport broke). It is okay, but I'm not completely satisfied. Could you suggest

a dedicated CD/SACD player (around £1000) that would be a significant improvement? (The Philips could be moved to surround duties - or tweaked if that's worth the while).

Tuner is a Kenwood KT 8300. I greatly enjoy radio listening without even noticing it, certainly far better than the tuner part of the old Marantz and a lot of other midpriced tuners. Its going to make an antenna according to the article December issue. So, with the recent improvements at the speaker end, my audiophile dysphoria is cured! But how can I get even closer to heaven? You certainly seem to be the right guys to ask, judging from the November issue.

**Dag Krlin
Sweden**

Running ESL57s from 8watts in a room 12metres long (eh?) is expecting a lot. A long, narrow room like this is ideal though. Peter Walker (Quad's founder) would place them close to side walls to increase panel area, reducing bass roll-off, with a good amount of free space behind to 'lose' rear radiation.

You are using this arrangement it appears; it gives great bass. However, as I am sure you are aware 18W from KT66s in push-pull was considered ideal for the Quads in their time but these days you will get a supremely clean, fast sound with slam from Quad's 11-forty power amp. that is ideally proportioned for ESLs, be they 57s or 63s (or 989s if it

comes to that).

For bass drive a grippy power amplifier is needed and here there's no end of choice. Use e-bay for a budget monster perhaps. The alternative is to try a high quality powered sub-woofer such as a REL Strada 5. **NK**

With around £6k to spend, I can think of no better vinyl front end than a Michell Orbe/Origin Live Illustrious with a Koetsu Red Signature. This is a profoundly smooth, even, open and incisive tool that's also beautifully musical and tonally 'technicolour'. Of course, there are a number of other rival combos (Linn, Nottingham Analogue and Clearaudio to name but three) but for my money, this gives the best all round results.

For a phono stage, you should be looking at the Whest Audio Ps20/MSu20, although if you want a more upfront and engaging sound (at the expense of finesse and spatiality), the Trichord Diablo is ideal.

As for your CD/SACD source, I'd go straight for the brand new Marantz SA7001 Ki Signature - being sweet, open and lucid (especially on SACD) like few others, it ticks all your boxes! **DP**

IMAGINING

Just got me a copy of J. Lennon's "Imagine" album on vinyl (MFSL 1-277), only to find that the source was a digital master tape. (the remix at Abbey Road being supervised by Ms.Yoko Ono. I hope she is anywhere near as good as Mrs.W. Cozart Fine...) It would be nice of you guys mentioning minor details like that in your future reviews of LPs. (i.e. "digitally tampered with..."). Some people might then go for a digital format anyway.

**Fred Schuetz
Wales**

HELP ME IF YOU CAN

I've been reading your mag for a few years now, and I look forward to receiving it and then play at understanding it! I'm so depressed with all the changes to my system and would really like your advice in order to get the best system I can. I don't listen to the music now, as I've become so engrossed in thinking that the system is poor. No point in switching it on now.

System as follows: Pro-ject RPM4, Denon DL103 (I know, I know!), Riverside 4040 integrated valve amplifier, Riverside P2 valve phono stage with Ortofon T5, Marantz CD63, Epos M5, Chord Carnival silver bi-wire, Chord Cobra, Audioquest Hyperlitz.

I listen to all music, except reggae! Vinyl is what I want to be the best (700

LPs). I would spend up to £2,000 in stages to get what you think is best.

What do I do with the valves? They are 4x Edicron EL34s, 2x Golden Dragon E8833C-01, 2x 12AU7 no name and 2x Edicron 12AX7. What should I replace them with? Have you heard of Riverside Audio Manufacturer based in Cambridge? Should I get a Nottingham Horizon second hand or my fellow Glasgow based Linn Sondek?

Graham Black
Glasgow

Well, I think your rambling question says a lot about the way you assembled your system. I say you should rip it up and start again.

First your source; the Project is a fine budget deck, but you need a serious high end one. I'd counsel a Michell GyroDec SE, with TecnoArm 'a' arm (£1,400 the pair), to which you should fit a Goldring G1042 cartridge (£130). People will of course disagree, but in my opinion this is the best 'sound per pound' combination in vinyl going; LPI2s are



Epos M5s - small and accurate, but insensitive. Not for valves.

still lovely, but I think you'll have to spec it right up to even come close to the Michell, and that's going to cost you six grand.

Next, chuck your Ortofon T5 step-up transformers (they're awful by modern standards), and keep your valve preamp and integrated. Clean all the valve pins and contacts and RCA socketry with Kontak. Revalve them with new old stock Mullards (when you've won the Pools).

Now, if someone who deliberately chooses the Denon DL103 cartridge is the same one who decides to use Epos loudspeakers with a valve amp, then that merely goes to confirm my suspicions that all you 103'ers don't have both oars in the water. Please

don't take offence, but you're mad as a top to use Epos M5s with a valve amp; why, oh why, oh why? You need a very efficient pair of large floorstanders; the Eposes - excellent as they are - need transistor grunt and will sap the life out of your valve amp. So buy some Revolver R45 floorstanders (£900) and be amazed.

DP

I HATE JAZZ!

The other day I went to a large record store chain trying to expand my very limited collection of SACDs. The selection available was *dismally small and was divided equally between Jazz/Classical and Pop. I hate Jazz!* The one and only exception is 'The girl from Ipanema'. The record stores and record companies seem to mistakenly think that an audiophile would mostly listen to Jazz or classical. Not so! I am not surprised that the newer high resolution forms have not taken off at all.

The money hungry fools in the record companies have misjudged the market. The choice of SACDs is limited, they are overpriced and there is too much Jazz and Classical. If I am given a choice between Deep Purple through my Hitachi portable radio/cassette player I had as a teenager long ago, or Diana Krall (or any other audiophile approved rubbish) via the best audio system money can buy, please give me Deep Purple any day!

So called 'audiophile' magazines also have to take part of the blame for hi-res formats being a bit of a flop (your worthy magazine is less guilty than some but still guilty to some extent). First was the misinformation that higher priced CD players sounded better than cheaper SACD players playing SACD. What a load of bunkum! My trusty and cheap Pioneer Universal 676A when playing SACD sounds better than any CD player I have heard at any price. This is indeed not the case when playing CDs - I use my trusty classic Sony CDP XB920E with the Naim like puck and fixed laser CD mechanism for CD replay - a true classic that should last me at least ten more years.

Does the new hi res forms sound better than vinyl? Yes, I think so. Anyone who has heard Queen in full cry through DTS 96/24 and still claim vinyl is superior is deluding himself. Sometimes vinyl does sound better but that would have more to do with a poor transfer than anything else I think.

By the way, I don't buy DVD any more for the simple reason that it is too inconvenient. I have to switch on my precious Hitachi LCD projector each time when I want to listen to one of the few DVD-A disks I have.

Dr. K. Fonseka
Australia

Both SACD and DVD-A are hobbled in the retail environment. Retailers have been reluctant to stock either in depth as a result and this has inevitably held back sales. Now, DVD-A is all but dead and we were recently told Sony are losing interest in SACD. Blu-Ray is the carrier of the future as far as the CE industry is concerned (Microsoft may agree) and DSD recordings will in future appear on it, after DSD to PCM conversion.

NK

HEAVY METAL

Dear Sires,
I have a Garrard SP25 Mk.III model. How can I order a rubber intermediate wheel unit to fix it? Tanks in advance!

Wagner

No, put your tank into reverse Wagner - straight over it. I presume you drive a Tiger, which should do the job nicely.

All letters into this magazine suggesting the Garrard SP25 Mk.III was of any merit will be ritually burnt. **NK**

This is the same guy who likes Denon DL103s, I presume? **DP**



A useful way to modify Garrard SP25s.

SAND AND DELIVER...

Thank you for the great buyers guide. It is a real treat to have the opinions of your listening team. I recently bought some Mission m73 floor standing speakers after reading your comments. Your listening team suggested that sand filling the cabinets would tighten the bass transients and damp the cabinets, reducing boxiness. I filled the cabinets with 9 inches of sand. It appears to have reduced the bass response quite a bit.

Two opinions would be appreciated. How much sand do you recommend? (is 9 inches too much?) Should the sand be poured in loose or should it be bagged somehow? (There is a port between the main chamber and the sand fillable base.) Your comments would be appreciated.

Steve

With your m73 speakers you should have received an instruction book showing how to fill with sand. The very bottom chamber of the speaker is a sealed enclosure which can be filled via a hole in the rear that is covered with a black plug. Stand the speaker on its front, remove the plug and insert a heavy polythene bag into the chamber so that the opening of

the bag protrudes from the hole. You can then use a wide funnel to help pour dry sand into the bag. Then tie the mouth of the bag, push it into the chamber and re-insert the plug.

You don't need to use too much sand as the purpose is to add mass to the bass of the cabinet, increasing its stability and reducing cabinet panel resonance. About a kilo of sand per cabinet would do.

It is not the quantity of bass that is affected, it is the quality. Adding sand should result in a cleaner, tighter bass response with better definition of, say, double bass or bass guitar and drums. You can move the speakers closer to a rear wall to increase the overall bass level.

Peter Comeau, EX-MISSION.

You didn't pour sand through the rear port did you Steve? This certainly would reduce the amount of bass, but may sound authentic with Lawrence of Arabia.

If you did, then you must pour it out. I would remove the drive units first and do a good clean out if this is the case, because fine sand in the drivers would do no good at all. Next time you go to a filling station just be careful which pump you use Steve, as well as where you put it. **NK**

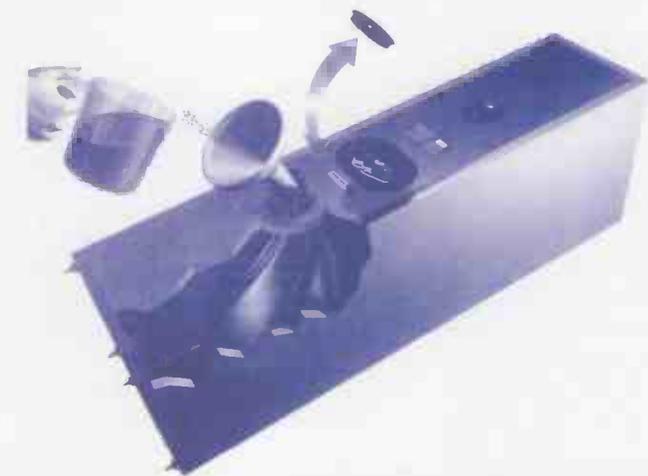
SET UP LASER

Inspired by your recent 'vinyl' edition, I thought I'd pay a bit of attention to my too long ignored Rega 3 with RB300 and Entre MCC. I dug out an alignment protractor - a cardboard job with an arrow that should point to the pivot position on the arm and a spot on which to rest the stylus, which in turn sits within a graduated box for cartridge alignment.

I overcame the possible problem of alignment of the arrow by using a small and cheap (4.99 at local petrol station)

laser level. Simply place the level on the arrow using the hole and notch on the level for alignment, switch on the laser which then casts the red line along the arrow which confirms its alignment, then up across the top of the arm. The RB300 has conveniently converging moulding marks that indicate the centre, through which the laser line passes, giving a precise position for the gauge.

Having set this stage up to my satisfaction, I ordered by e-mail, a



Pour sand into the hole with a plastic cap over it, as Mission are keen to point out in their unfortunately murky diagram.

cartridge weight gauge by Ortofon (on your magazine's recommendation). This duly arrived the following day, but without the expected instructions for use. Not being terribly technically minded I didn't have a clue to what a micro Newton was. However on enquiry I discovered that by multiplying by the power of ten that one arrives at the required grammage.

The rest as they say is history and I'm now reaping the benefits of a well set up cartridge and the sonic difference is astounding. So thanks for the advice but a very basic article on set up aimed at idiots like me wouldn't be a bad idea.

Equipment owned: Rega 3 + RB300 + Entre MC cartridge, Creek CAS 4040 and Lentek step-up amp, Rotel RCD 850, NAD 4020 tuner hooked up to MS 208 speakers. Also: Marantz CD63 sitting on Tesco granite counter protector, Cyrus One (metal bodied), A & RT 21 tuner and Kef C25 speakers.

Terry Symonds

Hi Terry - delighted that we're helping you get the best from your

kit; the great thing about hi-fi is that there's so much untapped potential in most people's systems, and you don't have to spend thousands - unless you really, really want to! **DP**

SPACE FOR IMPROVEMENT

I have just replaced my twenty five year old Yamaha PF800 turntable with a Nottingham Analogue Spacedeck/Spacearm with heavy kit option and Musicmaker cartridge. The Yamaha came with a twenty page user manual and explicit detailed easy to understand instructions and pictures and tools where required; the Nottingham came

Billy Vee
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Linn Kairn Phono Preamp S/H (1Yr G/tee)	(2200.00)	£859.00	Yamaha HD1300 H/Disk CD Player (1Yr G/tee)	(599.00)	£429.00

For latest addition to our pre-owned and ex-display bargains please visit the marketplace section of our new website at billyvee.co.uk.

with a sheet of A4 paper as instructions!

If it was not for the fact that I purchased this unit on an ex-dem basis from a dealer more than 200 miles away I would have returned it. I have picked up the March edition of Hi-Fi World specifically for the information in it on turntable set up.

Nottingham's take it or leave it attitude is quite unbelievable, no website, e-mail address, apparent contempt for the U.K. market and dealers. It is similar though not as bad to ATC, whose products I also have, inasmuch as they refuse to attend any shows even on an every other year basis. You wander around shows feeling like an orphan, everyone else is talking to manufacturers they have bought from - and you are like Oliver Twist!

These people should look to the East and see what is coming out of China quality and price wise. If they are still not sure then look to the West

**Nottingham Analogue
Space deck - a real
beauty, but not to
set up.**



and see what Toyota has almost single handedly done to the American giants GM and Ford, who also thought they were indestructible...

J | Mancha

In the specialist hi-fi business, relatively small companies often have particular views over the best way of going about business. For example, Rega rarely if ever advertise, feeling that Editorial promotion of their (good) product is enough. Musical Fidelity also value Editorial coverage, as readers will have noticed, and are unfazed about Shows, so ATC are not alone here.

Shows are costly to attend, manpower intensive (woman power in our case!) and exhausting. At Hi-Fi World we love 'em, but not everyone does. Small, specialist companies have to spend wisely and carefully and it is easy for them to conclude that Shows are poor value; many do.

Most don't of course, so buy wisely and you will always find someone to speak to. **NK**

CUTTING IT FINE

Every time you - and others - do an accessories list for turntables and talk about stylus gauges there are a recommendation for the Shure SFG-2 but... if you look for precision then... and then I always think of what's the point of a resolution of 0.02g if the tracking force is roughly stipulated?. My Goldring instructions says "1.5g-2.5g" (even Noel stays 1.8g-2g). I never hear a categorical recommendation as 1.87g tracking force, so I think I'm missing something that needs your explanation.

I'm collecting your fab mag from May 94 and as my memory must be a cache type, for me is very difficult to remember where to re-read something. So please, please, please, I need some kind of index or search feature available

convert to the true path!

On the matter of tracking force, a range is quoted to account for varying conditions of use, including arm bearing friction, record warps and temperature. If you play good condition records in a centrally heated home (or air-con for our equatorial readers) with steady temperature, around 1.8gms downforce always seems about right these days. Low compliance hinges need 1.5gms or less, but they went out of fashion largely due to the arrival of extended contact styli. Today's moving coils need 2gms or more. There is so much variability in a cartridge and the record deck it works in that specifying tracking force accuracy to less than 0.1 gms is a little academic and obsessive I feel. In practice it is best to regularly check tracking with a test disc.

Nowadays you can also feed the signal from Tape Out to the Line input (blue) or Mic Input (pink) of a PC and run inexpensive software, like that from www.trueaudio.com, that will process it into an oscilloscope trace or a frequency spectrum to see what's happening. You will need a test disc too. This is for the more technically minded. The surprise is that nowadays PCs are so powerful they can perform advanced signal processing for peanuts so, if you know what you are doing, running an analysis such as this is easy. As always accuracy is dependent upon peripherals, such as the test disc and equalisation, but this concerns us more than the enthusiast. You should still be able to see mistracking and even get some idea of frequency response. However, don't be surprised if it looks like a dog's leg, as test discs are notoriously inaccurate. What you should do is note how the cartridge is performing when new (after run-in) and then how it is faring after months of use, as cartridges wear out, usually after a couple of years. I have, in the past, sat in front of the turntable and casually wondered whether the sound is going flat or whether I am imagining it. Then the light comes on! The cartridge is wearing out. Regular checks can reveal this. **NK**

PHONO CABLE

I've just read with interest your article in the March edition of Hi-Fi World about balanced phono connection. You mention "Maplins best cable". Presumably, this is the white sheathed OFC cable, order code XX61R at £3.99/metre. After experimenting with many DIY and commercial audio cables, I feel the Maplins/Shark blue sheathed OFC cable, order code XS40T at £1.39/metre to be

on your web in order to find easily the location of articles and the like among all the magazine's issues.

Also, I want to send the best wishes to Noel in the new WD project and keeping alive the DIY supplement.

Iaki

PS. Noel, do you really think that my plumbing is as tortuous as your network's cartridge, now I'm a bit concerned about it ;)

Thanks for that Iaki. The DIY side of this magazine has always had a strong following and I desperately wanted to keep it running in unchanged form, with products carefully conceived and cleverly designed. It is the art of high fidelity. Then out of the woodwork jumps one of the few people with the necessary range of skills to do this: Peter Comeau. As luck would have it he had not too long ago heard a WAD valve amp driving one of his (Mission) loudspeakers and was a

a far superior tonearm to phono stage lead. Far preferable even than somewhat more expensive Van Den Hul MC D-502 Hybrid I had been using previously.

The white XX6 IR cable seems to bring forward the midband, somewhat masking the treble, and the bass was rather lumpy and thumpy. The blue XS40T appears to allow an unhindered insight into the music, and has a seemingly much smoother transmission and better frequency extremes. I was very surprised by the huge difference in these almost similarly constructed audio cables. The XS40T is a fit and forget cable; what more can you ask? It is just as difficult to fit a pair of these blue cables into a right-angled SME/DIN plug, as it is the white cables, though.

Russ Sceats

HOT AND COLD

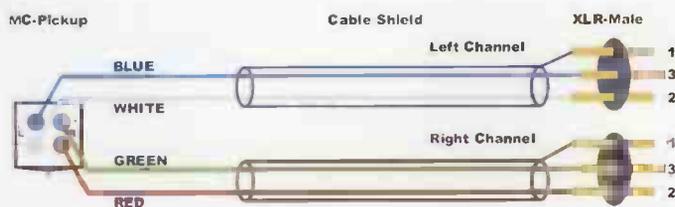
I was fascinated with your comments regarding balancing the phono cartridge input in the March edition and am considering following it up myself. In order to wall mount my TT, I need to run a longer (roughly 3 metre) cable between it and the phono stage, and in order to partially counteract the effects of a longer signal path, running a balanced cable would seem to be a likely candidate for most benefit against least difficulty to implement. Additionally it would allow me to wall mount the turntable without having to move the rest of my system, which sits in front of the window.

Would it simply be a case of connecting the hot and cold from the cartridge to the MC step-up primaries (and pin 1 drain to earth), or will I need some kind of differential amplifier stage as well? I can't see any reason why it shouldn't work if the primaries are floating.

Kenny Kerr

Hi Kenny. This is a simple - but difficult problem! A moving coil (MC) cartridge has a low output impedance (3 ohms or less) and will drive a 3metre long line with ease. You could connect the cartridge to the line and the line to your MC transformer, at the amplifier end of things - easy enough. This is differential working and it will reject common mode interference (i.e. hum and noise). The primaries can either be left floating, or referenced to ground through a pair of equal value resistors.

However! The signal from an MC cartridge is very low, down to millionths of a volt, and experience shows it is usually best to amplify this sooner rather than later in the signal chain if quality is to be maintained. Directing it down a 3 metre long cable, even one of very high quality, with low resistive losses and strong



Balanced phono connection, courtesy of Aqvox. No signal line is connected to ground, only the cable screen.

screening, may not be ideal. You will need high quality twin and screen mic cable, as I am sure you are aware. Try it and see - and let us know the outcome.

Moving the transformer to the turntable will raise signal level in the line, but may also result in high frequency loss and a dull sound, according to secondary impedance of the transformer and line capacitance.

The usual way to solve this problem is to install a quality phono preamplifier alongside the turntable, using it to amplify, equalise and line drive. Connection would be to your amplifier's auxiliary input. It's more complicated - and expensive - than you may have anticipated, but with a good quality preamp you should end up with fine sound quality. **NK**

GETTING THE MEASURE

Your comments that a good big 'un will beat a good little 'un is also my recent experience. Having found many modern systems too 'in your face' for me I have assembled a system to make modern tweakers shudder. I have a Michel Hydraulic Reference with Acos arm and Denon 301 cartridge, feeding a Fidelity Research step-up transformer. My digital source is a Sony ES777 CD/SACD player, but a Trio 917 tuner is my secret love.

These sources feed an AudioNote Kit 1 preamp. that I built to the highest standards, using paper-in-oil capacitors, decoupled circuit boards etc. This feeds a pair of Quad Anniversary amplifiers, all shiny gold. They were obtained from Papworth Audio who made the amps for Quad, as a sub-contractor.

At the end of the system sit a pair of Tannoy Cheviots, with 12in drivers.

The result is happiness. There are no harsh strings or ringing treble. The loudspeakers appear to couple into the room, making the music sound very alive.

The scary part of the story is that my wife commented to me that the sound reminds her of our first hi-fi system, comprising Heathkit

amp and tuner, driving a Stentorian 10/12 + T10 tweeter in home made box with egg carton liners. I am resisting adding up the cost of all the equipment purchased over the years to arrive back where I started as I feel this would affect my health!

My wife now keeps giving me strange looks as I wander around the house with a tape measure in hand to see if I can fit in a larger Tannoy loudspeaker system.

On another note, I recently listened to a single-ended triode 300B amplifier purchased direct from China for £409. Oh dear! How can UK manufacturers compete or charge £1,500 for a similar amp?

Pat Rickwood

Hi Pat. Thanks for that. Tannoy are understandably happy we like their Yorkys and they keep mentioning the Kensingtons and new Glenairs are other examples of traditional Tannoys with a modern sound that is uncoloured and accurate. You won't be reeling out so much of the tape measure with these - and you may just be able to sneak them past the wife whilst she's dusting! I hope to be inspecting both models more closely in future issues.

On the matter of Chinese valve amps. my measurements clearly show that most are fitted with pretty ropey output transformers. The most notable exception to date are those from Shanling. Otherwise, I feel UK amps designed by Andy Grove (AudioNote and World Design) or Tim De Paravicini are a better bet if you want unblemished high fidelity. I'm afraid that a cheapo valve amp with poor trannies is a contradiction in terms to me, a bit like a Ferrari with square wheels. **NK**



The best way to use a turntable far from the amplifier is to use a phono stage like the Aqvox Phono 2CI. With balanced inputs and outputs, it's a great choice at a reasonable price.

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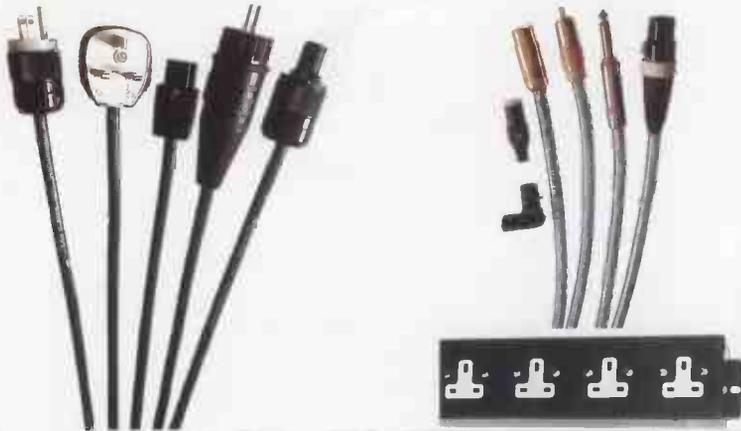
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David Price - Hi-Fi World January 2006

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Hi-Fi World measures all incoming products before sending them out to reviewers and is unique in having such a rigorous vetting system. It reflects our dedicated approach to assessing audio equipment. Nothing gets by before thorough scrutiny.

In-house measurement is costly and time consuming, yet it has always been central to our belief that both readers and manufacturers deserve it, because there is no alternative if complex technologies are to properly assessed.

Measurement achieves many things. It ensures a product is working properly before it is subjectively auditioned. We pick up problems like loudspeaker drive units wired out-of-phase by accident, digital filters that roll-off in a bizarre fashion due to design error, a transmission line loudspeaker with no bass (!), amplifiers with excessive d.c. offsets, excessive jitter and all manner of other funnies.

Manufacturers published data is then checked against our measurements. There is usually little problem here.

The reviewer is then given the results. This gives useful guidance on what to watch out for in listening tests. For example, if three CD players use the same chip set they may well sound much alike in their basic attributes, if not identical. This is useful information for a reviewer.



Hi-Fi World uses a range of test equipment from around the world, including a Rohde & Schwarz UPL for testing CD and DVD players. Amplifiers are tested with 8903B Audio Analysers from Hewlett Packard. Loudspeakers are measured with a Bruel & Kjaer measuring microphone and Hewlett Packard 3561A spectrum analysers. We use three of these for basic test work and to ensure our listening room and conditions are balanced. Tuners are measured with a Leader 30125 Lab generator and Marconi 2015 RF generator, plus external MPX filters and equalisation.

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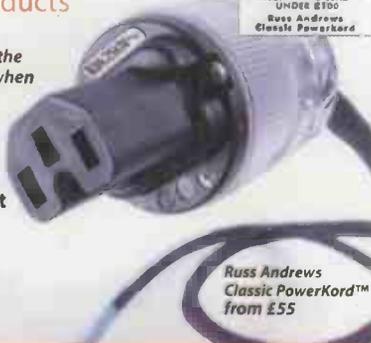
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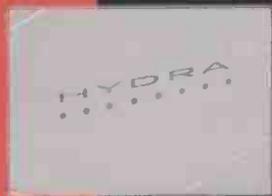
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WANTED: ANY Condition Syrinx PUI, PU2, Mission 774, Decca London Cartridges, C4E, All Arms Cartridges Considered. CD Players Original Arcam Alpha, Alpha 5, 5+, Delta 70, Blackbox, Marantz CD80. Tel: 01642 644 064 or Email: solderjunk2005@yahoo.co.uk (May)

QUAD 99 and 909 pre/power. Excellent condition. Quadlink, remotes, boxed, manuals. £1150 ono. Tel: 07905 762 363 or Email: sappleby@powell-bck.co.uk (May)

SNELL TYPE A/II with stands £800. Croft Vitale £300. Sumo Andromeda power amp £300. Adcom pre amp GFP 555 mk II £150. Project with carbon arm £100. Thorens TD160 RB 300 Michell tecno counterweight £250. Denon DL-301 moving coil cartridge £50. Pop LP's £5 each lists. Tel: 02476 327 948 (May)

FOR SALE: Tag McLaren 250MR monoblocs, mint black boxed £2000. Parasound HCA2205, vgc £900. Mission 783 MK2, beech vgc £500. Mission 752F beech vgc £125. Mission 750LE, mint boxed, £100. ATC C4 Subwoofer, vgc £600. Tel: 07754 976 443 or Email: magurrry@supanet.com (May)

NAIM CD2 CD player, Naim SBL loudspeakers (cherry), QLN Projekt equipment rack (cherry). Items purchased new from Grahams HI-FI in December 1997. Mint condition, very low usage, boxed with manuals. For prices please ring Mark 01708 224 319 or 07813 332301 (mobile) (Essex) (May)

SONY SCD777ES High-End SACD/CD player, champagne colour, new condition, sounds superb, £720. Ruark Equinox speakers, piano black, excellent, £725. Musical Fidelity A1001 Class 'A' amplifier, mint, 200w, £850. Tel: 01252 870 861 (May)

NAD AMPLIFIER C370 £115 ono. Linn Basik turntable £135 ono. Marantz CD52 Mk2 CD player £120 ono. Kef Reference Series 102 speakers £110 ono. Speaker stands £30 ono. Tel: 02476 422 967 (May)

QUAD ESL57's, consecutive serial numbers, vgc, One Thing serviced 2004, fantastic midrange, taut bass, subtle treble, offers £1000. Also Townshend Super Tweeters providing added lift and presence, £800. Email: tim@adzhill.co.uk for photos and information. (May)

THREE EQUIPMENT supports for sale. All by Stands Unique. Vertical supports cherry wood, surfaces glass. Two at 720 x 420 x 550H, One at 720 x 420 x 440H. All in excellent condition. £100 and £80 respectively. Tel: 01689 810 451, 07739 087190 or Email: james.cook@lstrillium.com (May)

NAIM C.D.I., No3 tuner, 72 preamp, 140 amp, Russ Andrews Kimber power block, Alphaston glass rack. Naim S.B.L. floor standing speakers, Sony MD. Lovely warm sound. £1800 everything. Tel: 07743 630 656 (May)

LINN GENKI CD Player. Silver. 3 months old. Boxed. Mint. £799. Tel: 0115 960 3934 (May)

MARTIN LOGAN Odyssey speakers, boxed as new. Unison Research Smart 845 power amps and Mystery One preamp. Mint and boxed. Just moved and all too large. Please phone 013397 41675 (May)

AUDIO INNOVATIONS P2 moving magnet valve phono amplifier. Boxed in absolutely mint condition. Hardly used since new. £500. Tel: 01935 702 643 (day), 01935 432 417 (evenings) (May)

TANNOY III LZs Monitor Golds £375. Ruark Sabres £150. Quad 33, 303, FM3 £275. Sansui AU217 II amplifier £70. Sansui TU200 FM tuner £30. Yamaha CA710 amplifier £50. Naim SBLs £600. All mint. Tel: 0177 334 694 (May)

SONUS FABER Grand Piano £850. Sonus Faber Solo centre £200. Sonus Faber Concertino £150. (£1100) Toshiba SD-900E DVD/A £750. Denon AVC-A10SE AV amp £500. 3VC HM-DR10000 D-VHS recorder £250 (£2400) Tel: 07801 909 912 (May)

NAIM HI-CAP. Serviced. Serial No. 78034. Olive case. Excellent condition. £290. Tel: Peter 01865 739342 (Oxford) (May)

V.P.I. SCOUT JMW 9 turntable. Excellent condition. £750. Audio Alchemy DAC-In-The-Box with Q.E.D. P75 digital interconnect. £95. Tel: 01260 295 804 (May)

TANNOY 3LZ nice pair. Original owner. Both badges and labels intact. Price £400. Also Nagra 4S, no accessories £450. Collect Kent or Northants. Tel: 01732 850 574 (May)

NAIM NAC 82 including NAP-SC £1250. NAP250 £800. HiCap £300. All excellent condition with original boxes. Tel: Andrew 01509 260 537 (Leics) (May)

TRICHORD PULSAR One DAC £300. DPA Enlightenment DAC £250. Rotel RT990BX tuner £150. Soundstyle three/four pillar stands £75/£95. Sony SCD-XB940 £100. Sony DVP-S735D DVD player £150 (£950). Tel: 07801 909 912 (May)

GRADIENT REVOLUTION speakers. Bought Feb 2006, £3400 new, £2500. Mirage OM9 speakers, one year old £500. Magnaplanar MG2c, slight fault on one. Offers. Tel: 01634 323 683 or 07901 893 982 (May)

TVA-100 AMPLIFIER, Logic deck-10 dm, Music Fidelity pre-amp, Castle Sterling speakers, Yamaha cassette. Sell as package £520. Tel: 0151 427 1597 after 7pm (May)

PIONEER REFERENCE system M-73 power amp, C-73 pre-amp, PD-91 CD player, F-93 tuner. All items mint condition £700 ono. Tel: 01252 659 058 after 6pm (May)

WANTED: ARCAM Alpha 7R amplifier and Alpha 7SE CD player. QED speaker (Tri) stands. Tel: 020 8262 7568 (evenings), 020 7377 7000 ext 2361 (day) (May)

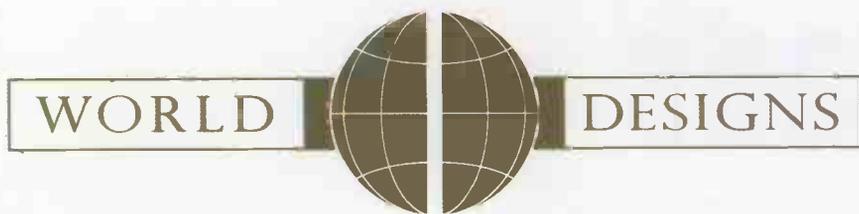


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Cabinet kit £398 per pair

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MUSICAL FIDELITY A270 muscle power amp, 175 w.p.c., 30kg. Part Class 'A'. Krell like build and sound, £395. Cyrus CD6 award winning CD player. Boxed, mint (£600) £350. Tel: 01243 863 371 (West Sussex) (May)

NAIM SBL loudspeakers. Passive, black, 1995, upgraded bass drivers. Excellent condition. £500. Snaxo 2-4 1999. Serviced December 2005. £300. Tel: 020 8566 7950 (W.London) (May)

E.A.R. YOSHINO 869 single ended integrated amplifier owned from new. Mint condition, boxed, £1350. Border Patrol prototype preamp, silver signal wiring, boxed, excellent condition, £750. Tel: 0141 339 7387 or Email: mplissi@gmail.com (May)

DNM 3C Primus preamp MC Phono stage. Boxed, excellent condition, £920. **DNM PA3S** power amplifier, 23w, boxed, excellent condition, £1230. Reson Domo 4-shelf amp stand, £100. Tel: 0141 339 7387 or Email: mplissi@gmail.com (May)

FOR SALE: 834P phono stage MM/MC E.A.R., one owner, immaculate condition. Price £350. Please call after 6pm. Ask for Graham. 01482 641 261 (May)

GOODMANS 150 TUNER Amplifier. This much loved friend is nearly deceased and will be sadly missed by owner since new, Good resting place sought. Original manual available. Tel: Brian Cox 020 8429 0427 or Email: briancox43@aol.com (May)

T+A INTEGRATED amp £1800. Audion Quattro Triode 845 single ended monoblocks 30 watts £1500 pair. Linn LP12, Ittok LVII arm, Karma cartridge, £550. NHT sub-woofer system, active crossover, 250 watts mono amp £600. NHT amplifiers 250w monoblocks £400. Tel: 020 8531 5979 (Jul)

RUSS ANDREWS Hi-Current Powerkord with Wattgate 350 (Gold) IEC. 6 feet long, £90. Tel: 01752 773 369 (May)

EPOS ELS 3 speakers. Light cherry, as new, £130. Arcam Alpha 7SE CD player £95. Arcam T61 tuner, silver, remote, £110. Excellent condition. Tel: 01323 486 216 (May)

QUAD ESL63, brown with original brown stands. Renovated with all new panels by Quad this year. Consecutive serial numbers. Sonically A1. Cosmetically excellent. £1000 ono. Tel: 020 8428 3743 (May)

WANTED: WHARFEDALE Pacific Evo 30, Unison Research Unico Line, Prima Luna Prologue One, Marantz DR-17 CD Recorder. Tel: 01395 576 644 (May)

TECHNICS SU-C3000/SE-A3000 pre and power amplifiers. Briefly featured in last year's Japanese issue, very hard to find UK 240V models. Again, great condition and sound. Manuals but no original boxes. £1100 ono. Email: russell.brown@googlemail or Tel: 07814 363 744. (Cams) (May)

QUAD 99 Series system, i/c Compact disc player, £325, pre-amplifier £400, stereo power amp £275, or £900 for complete set and including Nordost flatline gold leads, worth £110. All as new. Tel: 07940 596 955 (Warwicks) (May)

QUAD 12L Rosewood Speakers, perfect condition, 18 months old, £275 ono, Pro-ject classic 2.9 Cherry turntable, including Ortofon MC25E cartridge, only five months old and only used once, as new condition. £375 ono. Tel: 07940 596 955 (Warwickshire). (May)

NEAT ULTIMATUM MFC centre speaker. Superb condition. Figured Birch finish. £1700 ono. Cost new £2700. Call Rod on 0208 689 8750 (home) or 0800 672493 (work). (May)

ROTEL 'MICHU' RHB-10/RHC-10 pre and power amplifiers. Truly classic combination from Rotel, best they will ever make, and in great condition. Original boxes and manuals £1300 ono. Email: russellhmbrown@googlemail.com or Tel: 07814 363 744. (Cams) (May)

CHORD SPM 1200 power (250 wpc) & CPA 1800 pre amp with warranty. Both black, original boxed, mint condition with all manuals. Cost £6000, asking £1995 Tel: 01608 650 927 (May)

DELPHINI Mk2 with never connected power supply and 'super' interconnect. Pristine with original packaging and manuals £895 (£1295) Tel 07788 418 853 (May)

PMC MB2 Oak plus stands £4750 for pair (£8750). Pair Briston 4bst and pair 7bst £1250 each amp (£3000) Pair PMC XBD2A Black £1600 each (£3250). Contact: nmfrancis@btinternet.com (May)

TDL RTL 3s, black, mint condition, £200. Tel: 07813 670 129 (May)

WANTED: "RUARK Templar Mk2" loudspeakers. Fully veneered natural cherry, yew or oak. Must be in excellent condition. For Sale: Rega Alya loudspeakers, mint, boxed £175 Tel: 01943 463 510 (W.Yorks) (Jun)

WANTED: ANY Condition Syrinx PUI, PU2, Mission 774, Decca London Cartridges, C4E, All Arms Cartridges Considered. CD Players Original Arcam Alpha, Alpha 5, 5+, Delta 70, Blackbox, Marantz CD80. Tel: 01642 644 064 or Email: solderjunky2005@yahoo.co.uk (May)

QUAD 99 and 909 pre/power. Excellent condition. Quadlink, remotes, boxed, manuals. £1150 ono. Tel: 07905 762 363 or Email: sappleby@powell-bck.co.uk (May)

SNELLTYPEA/II with stands £800. Croft Vitale £300. Sumo Andromeda power amp £300. Adcom pre amp GFP 555 mk II £150. Project with carbon arm £100. Thorens TD160 RB 300 Michell techno counterweight £250. Denon DL-301 moving coil cartridge £50. Pop LP's £5 each lists. Tel: 02476 327 948 (May)



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M25 AUDIOJUMBLE. Ashted Peace Memorial Hall, Ashted, Surrey, KT21 2BE. M25 Junction 9. Sunday 11th June, 11.00am. Tel: 07730 134 973 (Jul)

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AMAZING CABLES Solid silver interconnects from £110, with air / teflon insulation and WBT plugs. Silver speaker and mains cables from £250. Fantastic performance, refund guarantee.
Tel: 0115.982.5772 after 7pm,
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AUDIO SHED. Top quality hi-fi for sale. Beauhorn, Croft, Voodoo, Headlund Horns, Experience Filtration, H-Cap, Cut Loose Audio, Canary Audio, Omega speakers etc. Blackgates and Audio Valves also available. Please call 01923 828 765 or 07900 918 882 (May)

BRILLIANCE SYNERGY Teflon interconnects. Hi-Fi Choice said 'We like these cables a lot'. AES/EBU and XLR balanced interconnects for those seeking ultimate performance. Demonstration cables available. Contact Mike on 07963 117 341 www.brilliancehifi.co.uk (May)

CORK TURNTABLE MATS are recommended by the HiFi press as an effective turntable upgrade. Vinyl Alignment offers a high quality Cork Turntable Mat at only £27.49 from www.vinylalignment.co.uk enq@vinylalignment.co.uk 01274 428070 (Jul)

RARE, DELETED and new vinyl records for sale. Free monthly 20 page catalogue. 1000s of vinyl LPs. 99% ex to mint condition. 60's & 70's Rock, Jazz, Folk, many "cult" artists & as well as "names". Do not miss out. Write or phone: Sugarbush Records (HFW), 8 Hawkenbury Road, Tunbridge Wells, Kent, TN2 5BJ, UK. 01892 541 746. Or browse website: www.sugarbushrecords.com (Jul)

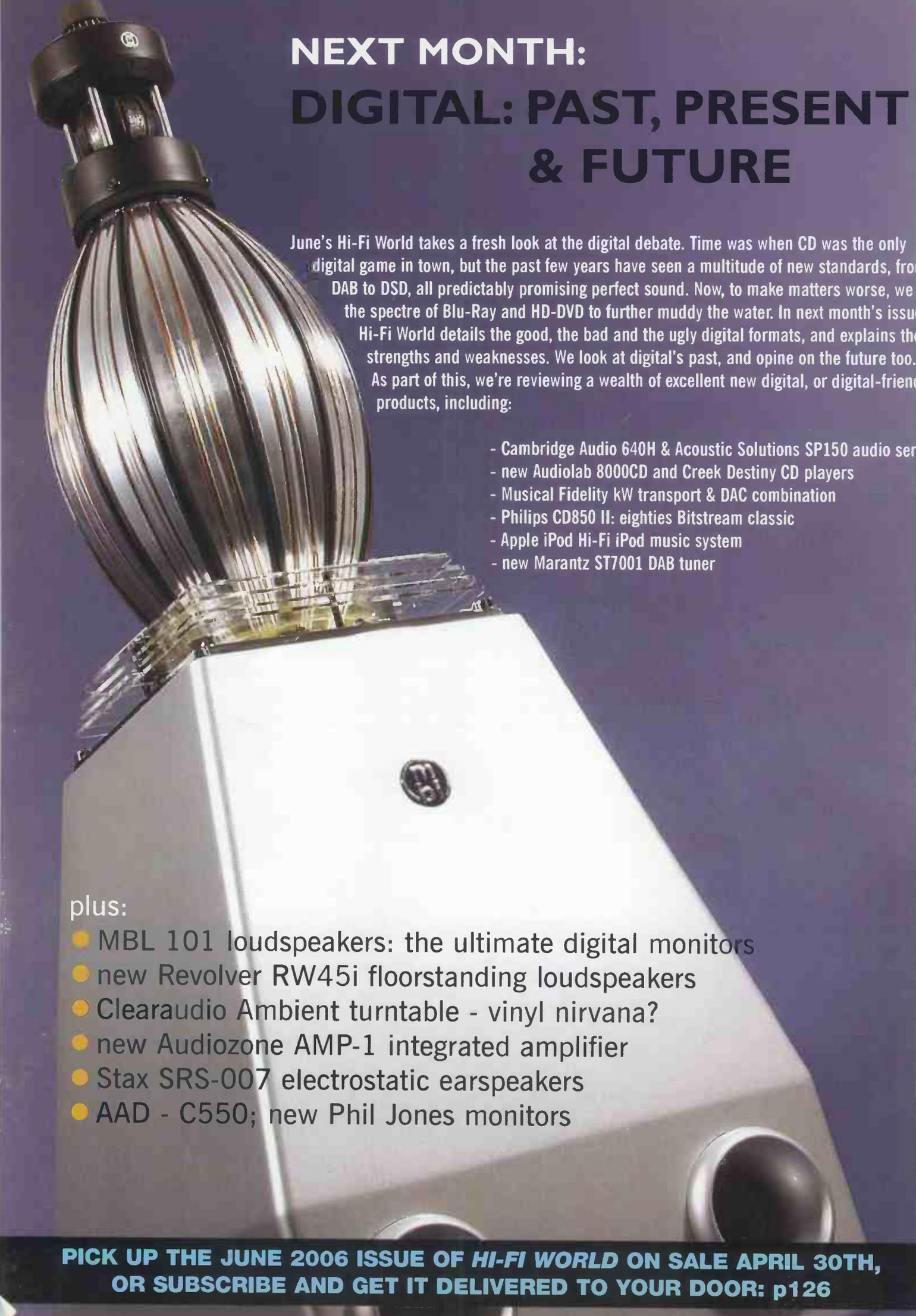
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NEXT MONTH: DIGITAL: PAST, PRESENT & FUTURE

June's Hi-Fi World takes a fresh look at the digital debate. Time was when CD was the only digital game in town, but the past few years have seen a multitude of new standards, from DAB to DSD, all predictably promising perfect sound. Now, to make matters worse, we have the spectre of Blu-Ray and HD-DVD to further muddy the water. In next month's issue Hi-Fi World details the good, the bad and the ugly digital formats, and explains the strengths and weaknesses. We look at digital's past, and opine on the future too. As part of this, we're reviewing a wealth of excellent new digital, or digital-friendly products, including:

- Cambridge Audio 640H & Acoustic Solutions SP150 audio server
- new Audiolab 8000CD and Creek Destiny CD players
- Musical Fidelity kW transport & DAC combination
- Philips CD850 II: eighties Bitstream classic
- Apple iPod Hi-Fi iPod music system
- new Marantz ST7001 DAB tuner

plus:

- MBL 101 loudspeakers: the ultimate digital monitors
- new Revolver RW45i floorstanding loudspeakers
- Clearaudio Ambient turntable - vinyl nirvana?
- new Audiozone AMP-1 integrated amplifier
- Stax SRS-007 electrostatic ear speakers
- AAD - C550; new Phil Jones monitors

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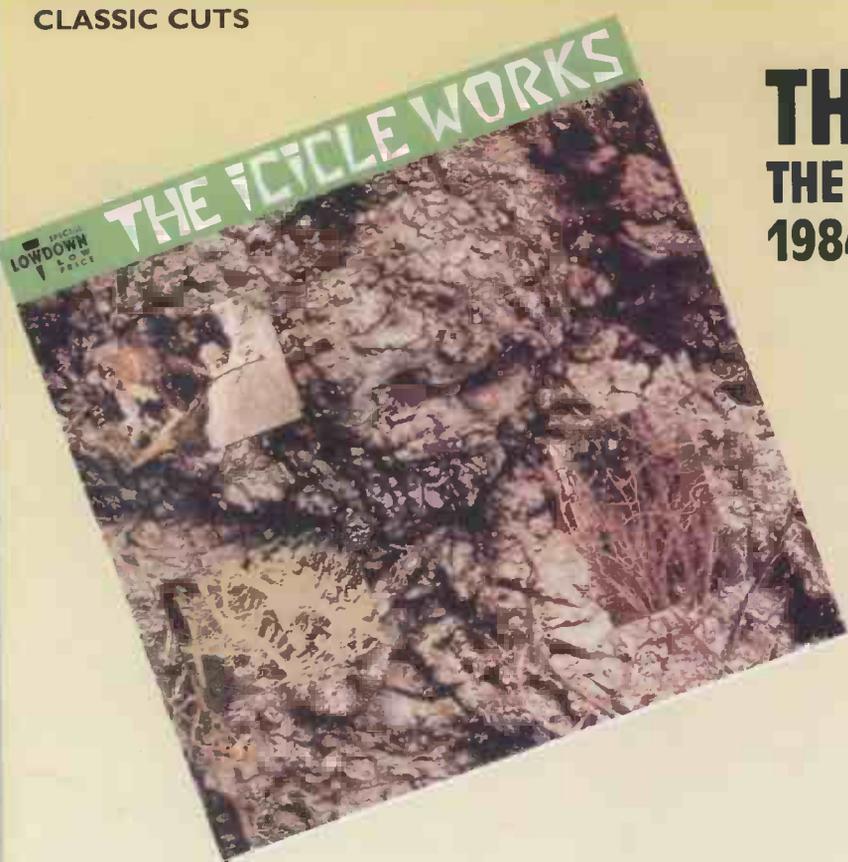
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THE ICICLE WORKS

THE ICICLE WORKS

1984

One of the major indie bands of the '80s, The Icicle Works featured the major writing talent of Ian McNabb, a wholly underrated creative force and a figure who, under the Icicle Works guise, influenced many young whippersnappers who would find fame and fortune later. McNabb was just twenty when he penned this album but the level of maturity and ability present within the songs belies that age. However, at the same time, it required a man of that youthful age to express the wonder of life plus the hesitancy of what the future might hold.

The band's roots can be traced back to the '60s and the twangy guitar noises from the likes of The Byrds but there were lots of other influences infused into their sound, most of which were explicitly stated at one time or another in the form of cover versions. On the subject of heredity, the band's name has a literary source, as McNabb revealed, "This author called Frederik Pohl had a short story called 'The Day the Icicle Works Closed'. We had to have a trendy name and I thought this would work." Icicle Works were first and foremost a guitar band but were not afraid to make regular use of synths, also trendy, at the time.

Released in 1984, the band's self-titled official debut album, there were plenty of unofficial releases on local labels before that, mind you, entered the Top 30 charts on both sides of the Atlantic and featured tracks such

as 'Nirvana', 'Birds Fly (Whisper To A Scream)' as well as the anthemic 'Love Is A Wonderful Colour'. The album was McNabb's favourite, "... mainly because we were all very enthusiastic about it and so much hard work went into it at the time. We spent so much time on it but it was worth it."

The ten tracks on the album soar. They're big, they're wide, they're enormous great things. They present an unflinching sense of melody that McNabb can't help but include in his work that immediately grabs the listener. Once alerted, instead of the normal '80s fluff – a sliver of repetitive melody and no depth – what is revealed is a glorious mixture of cultured, lyrical exploration and, for a 'mere' three piece band, an all encompassing and spacious arrangement that fills up the CD, in the same way that Earth, Wind & Fire used to bodily fill up a stage.

Although the original album was available on vinyl, the mastering for The Icicle Works on CD is surprisingly good for a 1984 transfer. One tends to assume that an indie '80s band would feel the rough end of any digital transfer in those comparatively early CD days. However, this CD is crisp, yet with a warm, tight bass represented by Chris Sharrock's superb drumming display. His personality is, literally, drummed into the CD as a whole providing a strong, stable, base for McNabb's dynamic vocal performance which is never swamped by low transients

or, indeed, the midrange encroaching bass drum performance. The master does demand a system that can handle bass extremes, however. There are moments, such as on 'Reaping The Rich Harvest', when the drumming/ bass guitar combination can threaten to make bass response 'bloom', almost become woolly. Separation is good too, with clearly plucked Rickenbacker guitar strings, cymbal tings and synth waves never encroaching upon one another's territory.

There is talk of a band reunion this year but the three piece, including Chris Layhe on bass, would only ever be two thirds full due to the drummer, Chris Sharrock (who could always hit the microphone himself, during gigs, with a mean version of The Clash's version of 'Should I Stay Or Should I Go?') being elsewhere engaged. In fact, he's Robbie Williams' drummer so, we assume, is far better paid in that job. As McNabb commented, "Chris Sharrock's in the big session man bracket now! I'm not really in touch with him, we speak, but we haven't been in a band together for like, years! I don't think you can ever say 'never again'. Looking back, I thought the Icicle Works were very much me and Chris Sharrock, although Chris Layhe did come up with a lot of very good ideas in the studio - he's very good at arrangements. I don't really know what to say about it. We were in a band. That's what we were and as for working with them again, I don't know...maybe." **PR**

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VERDICT £

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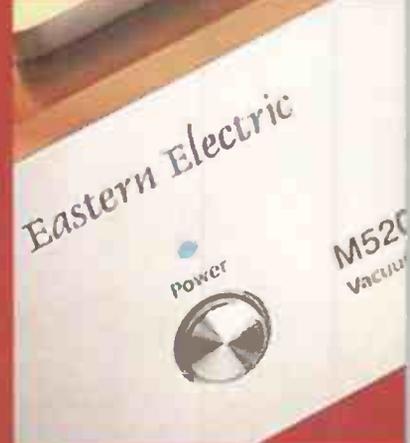


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