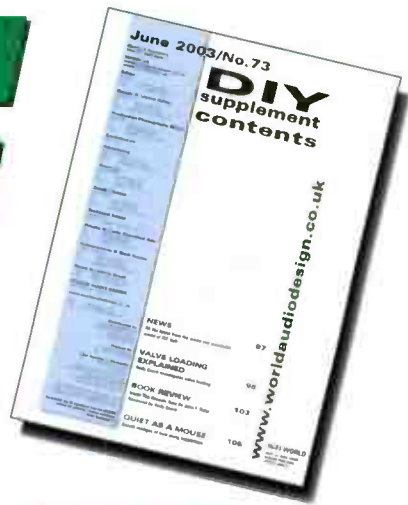


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- Perigee FK-1F ribbon loudspeakers
- The Audiophile Guide to AV
- Michell TecnoArm tonearm
- Toshiba SD520E DVD-Audio player
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- Remembering Eighties Hi-Fi: How was it for you?

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david price

Question: How do you get the best sound from CD? Answer: Buy a CD player! It may be stating the blooming obvious, but many magazines would have you believe that the latest DVD spinners play 16bit better than original 16bit machines!

Frankly, there's no substitute for the real deal, which means Naim's new CDX2/XPS2. It is awesome, and if you have a sizeable collection of Compact Discs then you owe it to yourself to hear it.

CD is of course very much an eighties technology, and this month we're running a tribute to the decade that hi-fi forgot. True, minimalist black boxes might not be the word upon everyone's lips right now, but there was a lot of serious kit that sprang forth from the age of red braces, shoulder pads and "greed is good".

One name indelibly stamped on that decade is Epos, but the good news is that it has a budget blockbuster for the new century in the shape of the ELS-3 loudspeaker. Not quite the classic ES14 we grant you, but it offers a true taste of the high-end for peanuts... read all about it inside

This month sees Pink Floyd's *Dark Side of the Moon* hit the shops in full 5.1 channel SACD glory. To help you get the best from this multichannel marvel, we've taken an in-depth look at surround sound. And erstwhile valves'n'vinyl aficionado Noel Keywood has even found an AV receiver he likes, in the shape of Marantz's new SR6300. It gets the full test bench treatment within.

There's so much happening in (the) hi-fi world right now. In quieter times, Michell's stunning new TecnoArm (possibly the best budget tonearm ever made) and Perigee's mouth-watering FK-1L ribbon loudspeaker would have topped the bill. But they're here nonetheless, with exhaustive, in-depth profiles. Factor in a special feature on vinyl on the internet, a tube-tastic DIY supplement plus much, much more, and you've got the best British hi-fi magazine by far. Enjoy!

David Price

how we test the products

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

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We only review interesting products, so don't expect too many low scores. Likewise, five globe awards are few and far between because there's only one superlative product of its type. The £ sign means great value for money.

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A RICHER FOR POORER!

A trifling £199.99 buys you Cambridge Audio's new DVD57, a fully specified machine housed in a sleek 48mm casing with brushed aluminium front panel. The heart of the unit is a Crystal CD4360 six channel DAC giving up to 24bit, 192kHz resolution. Full video including NTSC and PAL Progressive Scan is featured too. It's available exclusively through Richer Sounds stores – for your nearest store call...

Tel: +44 (0)870 900 1000

NEW ORIGINS

Origin Live has announced what it calls its rival to Michell's Orbe at half the price. The new Aurora turntable, which comes in at under £1,000, offers many of the components of Origin's reference Resolution Turntable, including an advanced subchassis design, acrylic platter and two box DC power supply. It's also available as a package with the acclaimed Origin Live Silver tonearm at £1,495.

The superb Illustrious tonearm now gets a Signature version – a £2,495 cost-no-object variant said to offer a significant improvement in performance over the original.

In more affordable climes, the DC motor kit has been revised with a new motor that runs silently and gives significantly better performance than previously. A straight replacement for the old one as the fastening holes are the same, it's very simple for people to replace. The kit price remains the same, but those wishing to upgrade to the new spec can do so for £79.



Tel: +44 (0)2380 578877

www.originlive.com

BOXING CLEVER

NAD's new PP2 replaces its original phono preamplifier, adding a high gain moving coil input, grounding terminal and gold plated RCA phono socketry. Improved overload margins and better noise and distortion performance are claimed too, thanks to redesigned circuitry. Point your web browser at

www.NADelectronics.com





POCKET ROCKET

This month's cutest DAB portable award goes to PURE's new PocketDAB 1000. Retailing for £169, it boasts striking anodised aluminium casework complete with a blue backlit display. The absence of a cumbersome telescopic aerial is a major advantage over its Perstel rival - in fact, the PocketDAB 1000's twig is built-in to the headphones for maximum usability. Based on the Diablo DAB digital radio module developed by Frontier Silicon and The Technology Partnership (TTP) using licensed technology from Imagination Technologies' Metagence and Enigma divisions, this radio enjoys the smallest and most power efficient chipset currently available. Three AA batteries give over sixteen hours of playing time, and there's a DC jack for the external 4v power supply. Vital

statistics are 170g weight (including batteries) and 110x65x20mm - very impressive!

www.pure-digital.com

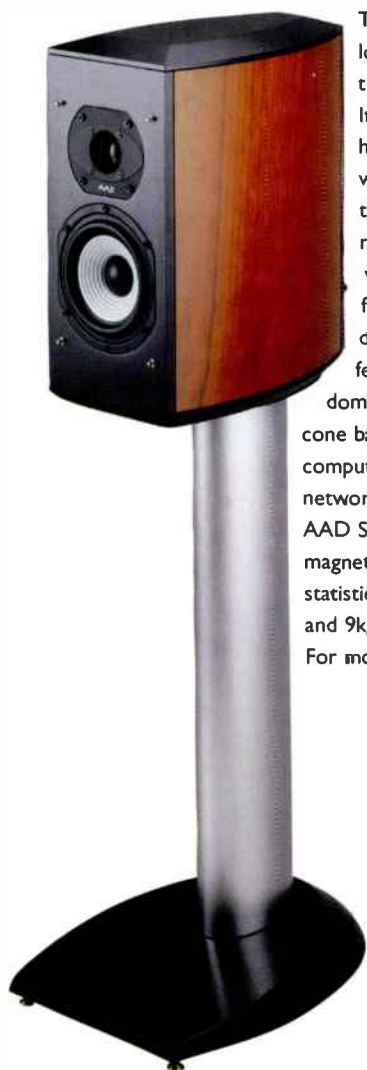
IMPROVED SONICS

Panasonic's new DVD-S75EBS high-end DVD-video/DVD-Audio player is out. Inside its slimline 52mm high case lie a wealth of new features, such as 'HighMAT' (High-performance Media Access Technology) which is claimed to offer a consistent way of navigating PC-originated multimedia content on consumer electronics devices, as well as improved disk start-up times. In keeping with the latest generation of Japanese high end machines, upsampling processing is offered - in this case called 'Re-Master Technology'. On the video side, Progressive Scan and Depth Enhancement are offered. Available in British shops from May, the DVD-S75EBS costs £1699.99. For more information, phone

Tel: +44 (0)8705 357357

www.panasonic.co.uk

AAD MASTERING



The new AAD S1 loudspeaker is the first in the company's new S Series. Its curved enclosures, which helps diffuse internal sound waves, are finished in two-tone textured black and real English Cherry wood veneer. High gauss magnetic field motors with optimally developed voice coils feature in the 1" titanium dome tweeter and 5" paper cone bass driver, along with computer optimised passive filter networks. As with all the new AAD S Series speakers, the S1 is magnetically shielded. Vital statistics are 335x190x315mm and 9kg. Price is £399 per pair. For more info, call

01327 706560 or click on www.aadsound.com.

PC AUDIO GETS CERTIFIED

Underlining the way in which computer audio products are finally coming of age, NVIDIA Corporation and Dolby Laboratories have unveiled details of a comprehensive validation programme for motherboards and PC systems that offer a higher level of audio functionality, fidelity, and performance. The new SoundStorm Program ensures that NVIDIA nForce motherboards and PC systems must pass a rigorous testing process conducted by Dolby Labs before they will be validated as being Dolby Digital 5.1 and NVIDIA SoundStorm compliant. They'll only be approved if they offer support for: Dolby Digital 5.1 real-time encoding, discrete front left, right, rear left and right, centre and subwoofer analogue outputs, discrete S/PDIF digital outputs, discrete line-in and microphone analogue inputs and a minimum 85dB signal-to-noise ratio on all analogue outputs, and 80dB on all analogue inputs.

FAIR FUN

This year's Vintage Valve Technology Fair is the brainchild of two friends, Trevor and Steve, who have been keen collectors of tube technology for many years. This event represents the culmination of eighteen months of planning to bring vendors and customers alike a great fair at a great venue. It will be held at Haydock Park Racecourse, Newton le Willows, Merseyside WA12 0HQ on July 27th 2003. Public entry is from 10am to 4pm.

Entry charge is £2.50 per person, with bored wives and kids free. Parking is also free, and access is easy as it's only five minutes from M6 Junction 23. And in case you were wondering, there's even a bar!

COPYCODING DEBATE RAGES...

According to Macrovision, its anti-copying technology has now been applied to more than 100 million CDs world-wide, the bulk of which have been released in Europe and Japan. It says that over the past six months, 10 million copy-coded discs have been shipped per month inside the markets. This contrasts to the United States, which is proving a far tougher nut to crack for advocates of copycoding. There, protected CDs are scarce, but Macrovision's CEO Bill Krepick hopes the increasing 'acceptance' in Europe will ease its ingress into the US. "People are getting used to the idea (in those areas)... I think the sense is that consumers in those countries tend to be a little less vocal than American consumers".

The US experience has thrown up problems with unplayable discs, easily broken copy-protection (in some cases using felt-tip pens!) and angry consumers. This has spurred the development of 'second session technology' which allows two versions of the album to be stored on the same CD – copycoded CD music plus pre-encrypted MP3 or Windows Media Audio equivalents for storage on computer hard drives.

However, the *Campaign for Digital Rights* claims that several major record companies are using their market position to stop online retailers telling customers which CD titles are copy-protected. Such discs don't play in many computers and CD players, and in extreme cases have caused permanent damage. A spokesman from CDWow is quoted as saying, "Even though (record companies) have now conceded to label their discs accordingly, they are not eager for us to advertise such a thing on our site." The group says this is anti-competitive, and urges people to visit its website at <http://ukcdr.org/issues/cd/retail/> which is monitoring retailer policies.



CHIPS FOR EVERYTHING

Developments in the chip world signpost which way the audio market is going, so it's interesting to see the launch of two new high performance Cirrus Logic chips with direct applications for DVD-Audio. Its new flagship CS5381 is a 192kHz stereo analogue-to-digital converter (ADC), and is hoped to be the converter of choice for cutting-edge audio applications such as digital mixing consoles, multi-track recording systems, flagship audio/video receivers, and effects processors. The chip delivers 120dB dynamic range and THD+N performance of -110dB. With 24-bit resolution and support for 192kHz sample rates, the CS5381 is ready for next-generation audio formats such as DVD-Audio, while consuming 50 percent less power and requiring 80 percent less board space than ADCs available today. The CS4398 stereo DAC is claimed to set a new standard for sound quality, using an advanced, proprietary multi-bit, delta-sigma modulator with integrated mismatch noise shaping technology. For SACD applications it includes a patent-pending Direct Stream Digital processor so manufacturers have the ability to add SACD at no additional cost in the analogue section of their products. A dynamic range of 120dB is claimed, along with 0.0005 percent THD+N. For more information, contact Cirrus Logic on

Tel: +44 (0)1491 414030 or click on www.cirrus.com.

DVD-A GOES UNIVERSAL

The world's largest music company, Universal Music Group, has announced its commitment to roll out DVD-Audio titles. Twenty US releases are slated for the second half of 2003, with a plan for an ongoing series of best-selling artists and core catalogue titles. Most recordings will be re-mixed and remastered from the original multi-track masters to take advantage of the superior Advanced Resolution surround and stereo sound. Many will include bonus enhanced content including photos, biographies, lyrics, discographies and videos.

PORTABLE POWER

The cult of Tivoli continues, this time thanks to arch tweaker Russ Andrews, who according to a RATA insider, "just couldn't resist doing something for it – you know what he's like!" The item in question is a special power supply, cunningly entitled PowerPak. A "hi-fi quality" 12V DC PSU



designed to replace the internal power supply on the range of Tivoli radios, it's claimed to give better dynamic range and a more natural sound. Two versions are available: PowerPak 1 features a superior switch mode power supply and standard link cable; PowerPak 2 is an upgraded version with a KIMBER link cable, and either are attached by plugging into the Tivoli's 12V DC input. Interestingly, they're also perfect for phono stages and headphone amps that require a separate power supply, according to Russ. Prices are £39.95 for PPI and £59.95 for PP2, both including free UK delivery.

Tel: +44 (0)800 373467 www.russandrews.com

next issue

So what's in July's edition?

SIXTEEN BIT SUPERTTEST

Compact Disc blockbusters from Arcam, Marantz, NAD and Rega get the treatment - find out which gives the best sound per pound.

FOUR PLAY - 4.0 VS 5.1!

Only Hi-Fi World could bring you this - we compare original analogue quadraphonic against the latest multichannel digital surround. You'll be amazed at our findings!

MONITOR AUDIO B4 LOUDSPEAKERS

With its bespoke metal drive units, this budget floorstander packs a real punch - read all about it here.

LINN CLASSIK DI

This new baby boasts technology used in Linn's forthcoming Unidisk 1.1 flagship Universal disc player - how will it sound? Find out soon!

next issue

IN THE



Panasonic's brand new DMR-HS2 DVD is one of a new wave of crossover products reaching the market. Not only does it record and play video on its internal hard drive, but does the same with audio too. Very clever, but can it cut it in the hi-fi world? Noel Keywood finds out...

In the great Pantheon of DVD formats, this new recorder from Panasonic adds another acronym: HDD. You may have heard of audio jukeboxes by now, able to store huge amounts of music on an internal computer drive. Well here's the video equivalent, able to store "52 hours of recording" it says on the box, on an HDD, otherwise known as a Hard Disc Drive. You don't need a tape, you don't need a disc; this Panasonic will record television or video directly to a 40GB internal drive. Hi-fi buffs prone to a bit of TV viewing might

like to know that since cassette died

every other box of electronic tricks coming from the Far East nowadays, it will do at least half a dozen other things except – possibly – dance the Fandango.

Most of these other things are plastered over the box, in a riot of logos. Slide in a normal Compact Disc and the Panasonic will play it. It will also playback CD-Rs and lower reflectivity CD-RWs, so there's no problem playing music discs that have been recorded. The DMR-HS2 also provides stereo from DVD-A discs as a mix down of Dolby Digital surround, but won't play the CD layer of SACDs. Finally, this player gives full bandwidth from high resolution (24/96) DVD video soundtrack. So, in an nutshell the Panasonic - although a video recorder - will still output a lot of audio nicely, thank you very much. This makes it a 'possible' on the buying list of any hi-fi buff, especially one with a family that may just prefer Coronation Street or Bear in the Big Blue House to Flight of the Rat.

Needless to say, a good number of the legends on the packing allude to various video feats, such as being able to record video either to DVD-R discs, or DVD RAM cartridges. The former will (should!) play on DVD-R players from the likes of Pioneer, but

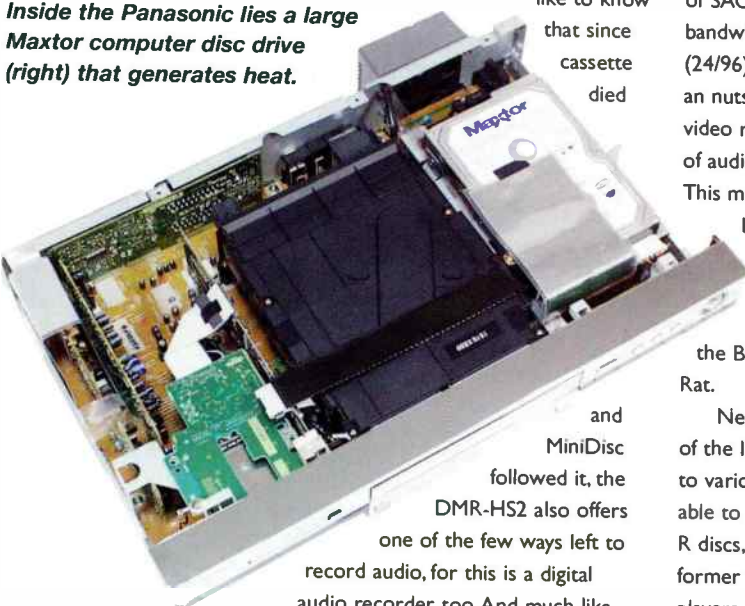
they will not play on Philips DVD+RW format machines. DVD-RAM cartridges will play on little other than Panasonic recorders able to accept them. Nevertheless, programmes can be continually recorded and erased to these cartridges much like a video tape, so they do have their uses for short term storage and, being protected by a caddy, they are robust. Of course, with a large capacity hard disc on-board I suspect many users will never even bother to buy a disc, so to remind them of the format they have striven to develop, Panasonic include two DVD RAM discs in the box (and yet another logo!)

GET YOURSELF CONNECTED

On the front lies a PC card slot, a worryingly general description to anyone who has encountered all the various types of cards available nowadays. Before I list them, the idea of this is to allow still pictures (JPEGs) to be viewed on a TV. They can also be stored to the hard disc. The slot actually takes only an ATA flash card direct. For all others, like Sony Memory Stick, or Multimedia card (and even Panasonic's own SD card) an adapter must be used. Panasonic do not supply an adapter; it must be bought separately.

Hidden behind a flap at left on

Inside the Panasonic lies a large Maxtor computer disc drive (right) that generates heat.



and MiniDisc followed it, the DMR-HS2 also offers one of the few ways left to record audio, for this is a digital audio recorder too. And much like

PICTURE

the front panel lie camera inputs, with analogue S-Video plus accompanying stereo audio, as well as a 4-pin digital DV (IEEE1394, or Firewire)

connector. As Panasonic point out, you can plug a video cassette recorder in to transfer tape to disc, or connect up a movie camera, digital or analogue. Since digital video cameras are popular, I suspect this will see a lot of use. A second flap at right hides transport controls like fast forward, more for use if the remote gets lost than anything else.

The rear panel is surprisingly uncluttered. It has a TV aerial input (RF in) and an RF output that goes to the TV. It also has two Scart sockets that carry video (RGB) and audio. For audio purposes the DMR-HS2 is connected up like a tape recorder: it has stereo audio out and audio in. The audio-in part is marked AV4 and the AV4 input must be selected using the remote control unit before the machine will record audio, which it will do in the absence of a video signal, unlike Philips recorders. These stereo audio channels were really meant for audio accompanying video (i.e. soundtrack) but in this machine the audio has been allowed a life of its own. To wit, press and hold an Audio button for a few seconds and up pops a giant, full colour record level display on the TV screen. This can be set to adjust each channel independently or both simultaneously,



settings except the highest (XP) the machine records in Dolby Digital, which means audio (2 ch.) compressed by around 10:1, much like MP3. Set to XP, it records Linear PCM, measurement suggesting 16bit and 48kHz.

Accompanying these audio terminals are S-Video terminals providing an analogue in and out for video signals as an alternative to Scart. There is also a large fan box with powered fan that blows out a good amount of warm air. Similarly, discs come out feeling toasty so it would seem Panasonic are dissipating quite a lot of power within the heart of this machine, likely from the Maxtor HDD.

A DVD recorder like this carries an on-board TV tuner (PAL). The RF feedthrough connection allows the TV (PAL or NTSC) to be used as normal, whilst the video can record another channel. Or the TV can work via Scart from the Panasonic's tuner. It will recognise Satellite Video Plus codes for easy pre-programmed recording, using a fully wired 21 pin Scart, by the way. I had no trouble with set up; the machine worked immediately and properly into a

connections.

ON THE RECORD

Panasonic provide no fewer than four video quality levels when recording, from EP (low) up to XP (highest). Video signals undergo a lot of data reduction before being recorded to disc in order to maximise playing time. As a result the hard disc will hold 8.5 hours of XP programme, or no less than 52 hours of EP. A single sided DVD-RAM or DVD-R disc will hold 1hr of XP or 6 hours of EP. For casual time shifting of TV programmes the HDD is incredibly convenient, turning external discs into an archiving or interchange format. The video section will perform a host of tricks, like play from the start of a recording whilst it is being made, so if the internal timer kicks in to catch the start of the footie, then you'll be able to see that start 20 minutes later when you fly in through the front door. Recordings can be transferred at high speed from the HDD to DVD RAM, so if you like a programme, you can archive it quickly.

Panasonic use Variable Bit Rate together with various compression schemes to optimise picture quality, but fixed bit rate can be selected. The XP mode introduced little obvious degradation, as I rather expected from my previous experience with Panasonic DVD recorders. The surprise came more with EP, which gave some noise and jerkiness to fast motion, but not the serious loss of detail that produces waxworks faces and fuzzy digital edges that generally characterise low quality video. As a result, EP was a lot easier to watch than I expected, so that 52hrs figure isn't wishful thinking.

The HDD goes direct into record mode from TV, each new recording simply incrementing the



A simple recording level display appears on TV, allowing level and balance to be adjusted manually.

such that overload (2V or more) does not occur, which when recording digitally leads to sudden and severe distortion. At all quality

Philips TV. However, the European model has no Component inputs or outputs, only RGB via Scart and S-Video (Luminance and Chrominance)

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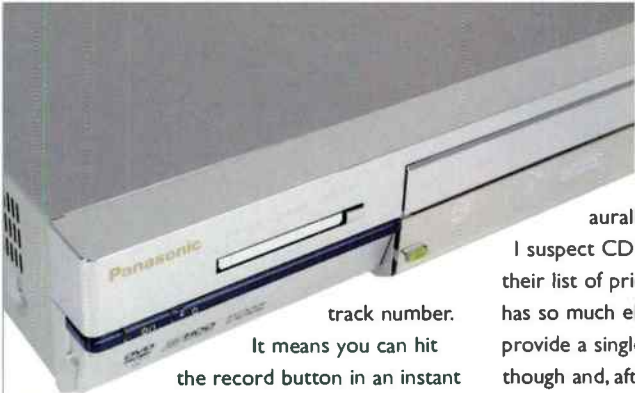
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track number. It means you can hit the record button in an instant to get a wanted piece of TV footage onto disc. Recordings simply pile up until erased from the HDD, achieved by going into an erase menu and correctly answering repeated questions about whether you really, really want to erase. With more recording modes than I could conceivably explain in one article of reasonable length, described in a 97 page, single language handbook no less, the DMR-HS2 will surely meet most people's needs as a video recorder. Of special interest is the ability to compile sequences on the hard disc for transfer over to DVD-R as a final assembled programme, so home videos can be edited. It does of course also play video DVDs.

Audio quality varied across the many different formats this player would handle. I was hardly surprised to hear a fairly hard and congested midband with bright treble when playing CD. As a CD player the DMR-HS2 is none too pleasant quite

frankly. If Panasonic had rolled its top end off even a little it might have been

aurally more acceptable, but I suspect CD was way down on their list of priorities on this player, it has so much else to do. Panasonic provide a single optical digital output though and, after menu setting to PCM, sound quality improved usefully from the Marantz SR6300 that I test in this issue, using its on-board convertors.

With downsampling off, 24/96 stereo from a DVD Video disc gave dramatic quality from either the Marantz's own convertors or from the DMR-HS2 direct (analogue out). The Panasonic manages well here because it gives full bandwidth to 48kHz our tests showed, plus minimal distortion. What a pity there's so little of this sort of material, since it gives wonderful stereo even from a DVD Video player like this one. Panasonic say the machine won't play DVD-A, but in reality it will retrieve Dolby Digital from these discs, if not the high resolution 24/96 sound tracks, and feed it to the analogue output terminals. The optical digital output will feed either Dolby or DTS out to an accompanying receiver, amplifier or convertor to yield full surround-sound for those who wish to go in

this direction.

Audio recording quality was quite good, with noise inaudible. There is a little coarseness in there but only real enthusiasts would worry about this. In the context in which it will likely be used, for storing the odd radio programme or two I would imagine most users would be happy with the quality achieved. For regular use or committing LP to DVD (via an external phono stage of course) the sound is a little edgy and none too well founded. Bearing in mind this recorder isn't a specialist audio device, it manages to do quite a lot on the audio front all the same, even if quality isn't on par with today's real hi-fi standards.

SOUNDING OFF

If you've got a need for a good video recorder and DVD video player, the DMR-HS2 is a capable machine. The internal disc drive with its huge capacity is an enormous convenience – a 'must have' in fact. The audio performance of this machine is respectable enough, but if you intend to play a lot of CD beware of a rather edgy sound.

Panasonic DMR-HS2 £849.99
Panasonic (UK)
Tel: +44 (0)8705-357357
www.panasonic.co.uk

MEASURED PERFORMANCE

The Panasonic has a high noise floor. The IEC A weighted noise figure does not reflect this well, but our distortion analysis clearly shows it. The problem wasn't great however and a little noise, providing it stays below audibility, usually helps digital. CD replay was linear enough, distortion figures looking respectable.

Playing a 24/96 DVD Video sound track test disc the machine proved to have a ruler flat frequency response to 48kHz, so it will provide better sound quality here. 24bit distortion levels were low, although noise again worsened results.

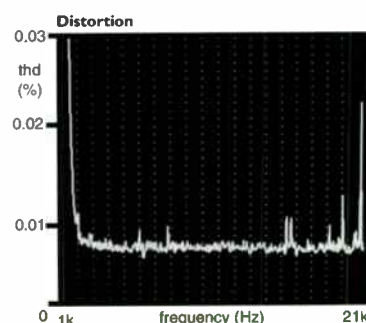
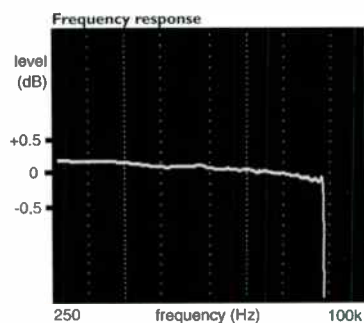
As an audio recorder the machine has a response that runs flat within 1dB from 9Hz up to 22.2kHz, an upper limit set by the analogue-to-digital convertor I suspect. Distortion was low, but again noise was a problem, max.

output 2.1V and sensitivity a useful 500mV.

The audio performance of this recorder is neat enough, as is replay performance, but noise and spurious signals limit its seriousness. For most purposes though it will give great results, although with a ruler flat response it will likely sound a bit brittle. **NK**

Frequency response		
Record/CD	9Hz- 22.2kHz	
24/96	15Hz 45.2kHz	
	left	right
Distortion (rec/replay)		
-6dB	0.006	0.006
-30dB	0.03	0.03
-60dB	0.7	0.8
-90	21	22
Separation	left	right
1kHz	101	108
20kHz	89	92

Noise (IEC A) -92dB
Output 2.1V



World Verdict

A flexible and convenient video recorder and player with good picture quality, even on Extended Play. Tidy stereo audio recording quality, but bright and brittle sounding with CD.

RECORD BREAKERS

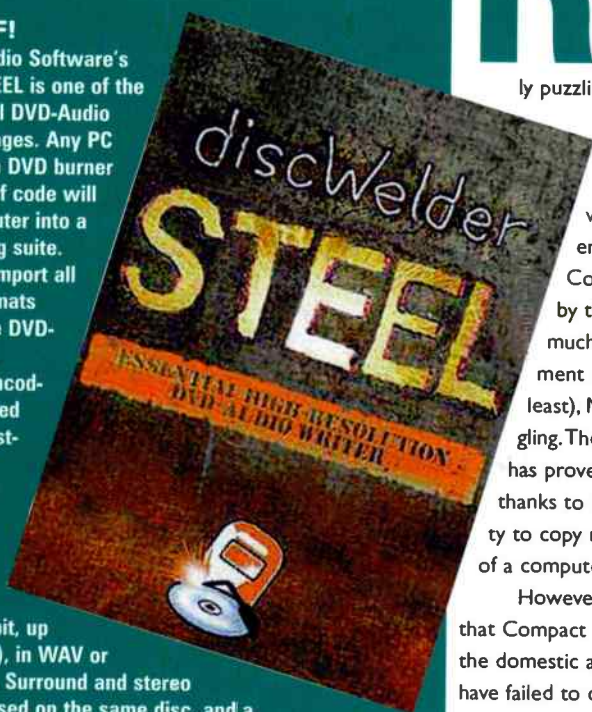
Fifteen years ago, the world's most popular music carrier was Compact Cassette, a recording medium. Since then we've seen DCC, MiniDisc and CD-R step in to fill the gap with varying degrees of success. Right now, DVD-Recordable is staging an entry too - Noel Keywood investigates...

WELD IT YOURSELF!

Minnetonka Audio Software's DiscWelder STEEL is one of the first commercial DVD-Audio authoring packages. Any PC equipped with a DVD burner and this piece of code will turn your computer into a DVD-A authoring suite.

Users can import all Linear PCM formats supported in the DVD-A specification, including non-encoded/uncompressed surround (consisting of up to 6 channels of 24-bit, 48kHz audio), and/or high-resolution stereo (two channels of 24-bit, up to 192kHz audio), in WAV or AIFF file format. Surround and stereo tracks may be used on the same disc, and a discWelder-burned disc will play on any DVD-A player that supports DVD-R/RW. Cost is \$495 US.

A professional version of this software, DiscWelder CHROME is also available, offering an extensive feature set for the production of interactive DVD Audio discs for release to market, including import of all Linear PCM formats supported in the DVD-A specification, including Meridian Lossless Packing, user-defined menu graphics, a hierarchy of multiple selections menus, slide show graphics to accompany audio tracks, DLT output, and video. ts import for "hybrid" DVD-A / DVD-V formatting capability. Price is \$2495. Check out www.discwelder.com/ for more information.



Ranking alongside the peculiar and unexpected disappearance of the common sparrow from our gardens is the equally puzzling disappearance of the audio recorder from our homes.

Two decades ago, the world couldn't get enough of the Compact Cassette, but by the mid-nineties, its much vaunted replacement (according to Sony at least), MiniDisc, was struggling. Then came CD-R, which has proved undeniably popular thanks to its low cost and ability to copy music CDs at a click of a computer mouse.

However, it cannot be denied that Compact Disc recorders of the domestic and computer variety have failed to capture the public's imagination in the monumental way that cassette once did. Part of the reason is that since the inception of CD-R, rumours of its replacement haven't been far away. As CD-R hardware sales took off back in 1998, so too did DVD players, instantly giving the buying public the Next Big Thing to contemplate.

At last, recordable DVD is with us, and it's cheaper than you think, Panasonic's DMR-HS2 tested in this issue gives us a taster of recordable

audio DVD, albeit on a video DVD. Never ones to miss out on a new format however, the DVD Forum are beavering away to bring us recordable audio DVD. Will they revive the audio recorder at last? And if they do, will anyone understand how to use it?

The Panasonic lays down a stereo audio track on a DVD Video disc in real time, so it isn't a pure audio recorder. Much of its complexity is devoted to video processing; a pure audio recorder could be smaller, simpler and cheaper.

Given the right software (such as Minnetonka Audio Software's DiscWELDER [above]), it is now possible to compile a DVD-Audio disc at home on a PC, but this means recording the audio beforehand, either direct onto the computer or, more likely, onto an external – perhaps portable – recorder.

So we can record audio to DVD today. What we don't have though is a dedicated real time DVD audio recorder, one that could capture the sound of sparrows in glorious 24/96 - should they ever reappear.

Obviously aware of this, and perhaps of the hassle associated with recording to CD, the DVD Forum specifically state that the new format will be designed "to satisfy Real-time recording". By this they mean the machine will be able to lay down successive recordings, start and stop

points being identified by chapter numbers only, just like the Panasonic.

ON THE RECORD

There are many things a digital audio recorder using DVD as a recording medium could do. Let's look at these.

As far as hi-fi enthusiasts are concerned, a decent replacement for the cassette would be a two-track recorder much like MiniDisc. DVD could be quite easily configured to provide simple two-track recording, using 24/96 analogue-to-digital convertors. With a data rate 4x that of CD, but a disc capacity 8x larger, playing times of 2hrs or so would be possible at this high resolution, or 4hrs with Meridian Lossless Packing. Both DVD Video discs and DVD-Audio discs are standardised to hold and play 24/96 stereo, so a disc recorded like this could, in outline at least, be played back on any DVD player. However, DVD-R and DVD-RW discs would need finalising first. Any forthcoming DVD Audio recorder would likely offer this sort of ability for straightforward home use. Such a recorder would capture analogue sources like LP and radio almost perfectly, and give long recording time.

To many people a recorder specified to this high standard would be overkill for home use. However, with inexpensive blank recordable discs like DVD-RWs or DVD+RWs and not too costly Delta Sigma A/D convertors such a DVD Audio recorder would be inexpensive to buy and run.

A bigger question arises about the provision of multi-channel (surround sound) recording on DVD-A. Professionals would want it, but most audio enthusiasts prone to making the odd recording or two would probably be horrified at the thought. Funnily, recording full surround-sound isn't difficult in simple outline; it requires just two stereo microphones combined to form a sound-field mic., the main requirement being that they are placed close together to be coincident and therefore phase coherent up to high frequencies. At present such microphones hardly exist and this is a relatively untouched area of surround-sound, even though for the average enthusiast recording surround-sound using mics is easier than trying to

LIVE SURROUND SOUND

Most surround-sound is mixed in the studio. Surround-sound microphones are rare at present, but in the UK Soundfield (www.soundfield.com) have a range that show just how it is done. This is true soundfield encoding. Note that the Soundfield mics need up to six discrete channels, something recordable DVD-A is likely to provide. Shown below is the new SPS422B microphone and control unit, with company details below.



"SoundField introduce the new SPS422B Microphone System which can record mono, stereo and 5.1 surround from a single microphone and 1U control unit. The microphone's unique four-capsule design enables it to accurately capture a three dimensional acoustic event. The 1U control unit provides simultaneously both stereo and four SoundField B-Format outputs allowing the user to store mono, stereo and surround on just six tracks of a recorder. The SPS422B features continuously variable polar patterns, stereo width control and an End Fire switch to re-orientate the stereo perspective when the microphone is pointed 'rifle style' directly at sound sources as opposed to its conventional side address mode.

The SPS422B, used in conjunction with the SP451 Surround Processor, provides full 5.1 surround monitoring, recording and post production. A further two outputs on the SP451 facilitate expanded surround formats such as 6.1, 7.1 and ambisonics."

SOUNDFIELD (www.soundfield.com) Tel: 01924 201089

mix it artificially on a computer mixing desk. Weddings and live events, including music concerts, would all benefit from a surround-sound microphone feeding a multi-channel DVD-A recorder. Alternatively, such a recorder could be used as a simple semi-pro multitrack, each track coming from a different feed from an instrument or mic.

Whilst a portable DVD-A recorder may well have alternative stereo and surround-sound analogue inputs, a fixed domestic recorder may well be fitted with digital inputs. This immediately raises the prospect of digital copying. However, since all DVD-A and SACD players do not have digital outputs at present, precisely to prevent copying, the fear is academic. When the High Definition Multi-Media Interface (HDMI) appears, with Copy Protection (HDCP), then DVD-A recorders may well go digital too. One industry observer suggested the music business would not be happy about the appearance of recordable multi-channel DVD-A or SACD because of music industry fears. Early machines may well have only analogue inputs as a result.

So does the world need recordable DVD-A? There may well

be a market for easy to use machines, especially in the semi-pro field. In the average hi-fi system the idea of recording seems to have gone the way of the house sparrow. Whether a large 12cm disc like DVD could revive its fortunes may well depend upon price and complexity. Irrespective, the DVD Forum have issued specifications for "developmental use" and so recordable audio DVD is on its way!



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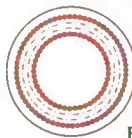
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PHOTO FINISH

When Michell's exquisite machining meets the genius of Rega's RB250, you're in for a treat. David Price auditions the TecnoArm.

If, as LeCorbusier said, "design is intelligence made visible", then Roy Gandy, creator of the Rega RB300, is not short of a braincell or two. This tonearm, first launched in summer 1983, is a seminal design. You can criticise its tracking weight spring for adding a touch of coloration. But the cost-cut RB250 did without it altogether, removing one of its biggest weaknesses. You can criticise its internal wiring, but for its (then) £90 retail price, there was nothing much wrong. Of course, it's easy to replace the standard bellwire, and the results are most encouraging.

The main problem was the counterweight. The original Rega plastic end stub was perfectly okay for that 1983 arm, but the the 'chassis' of the RB300 is capable of so very much more. The new Michell TecnoArm addresses all three points – bearing housing (an RB250 chassis is used), wiring (Moth Incognito wiring) and end stub. The nasty plastic is binned and in its place a beautifully hewn metal stub is fitted, on to which a counterweight carrier slots.

On to this bolts the counterweight itself. The reason for a two-piece arrangement is that two weights are supplied. One is heavier than the other, catering for cartridges weighing between 13g and 6g. The other, smaller affair balances cartridges between 6g and 3g. When you've selected the counterweight appropriate to your cartridge and bolted it to the carrier, you screw up

the tracking force adjuster to the desired weight. When you've set this, the final thing to do is tighten up the securing screw that mates the counterweight to the new end stub.

If all this seems complicated, then it isn't. In fact, it's so elegant that you wonder why it wasn't done twenty years ago. The counterweight(s) have the additional benefit that they're underslung, like panniers on a motorcycle, making for a far low centre of gravity than the standard Rega counterweight (hence enabling the arm to ride record warps far more faithfully, taxing the cartridge cantilever's suspension far less). And there's more, because the TecnoArm also includes the most elegant VTA adjuster you've ever seen for this particular arm. Suffice to say that it wouldn't look out of place on a Michell turntable – it's brilliantly simple and beautifully machined from aluminium. The end stub, carrier and weights are also available separately by the way, for around £100.

How then does it sound? Outstanding at the price, the TecnoArm is dramatically better than the standard Rega RB250. UB40's Food For Thought proved a revelation, the new Michell spewing out vast tracts of detail, with a consummately tuneful bottom end that was both far tighter and better articulated than the stock arm. Vocals had real depth and lustre, where the standard Rega is grey. Percussion was truly fluid, with a beguiling, almost unipivot-like flow, yet there was real oomph when those kettle drums were hit in anger. Hi-hats were airy and spacious, with real subtlety too – the Moth cable is obviously doing its job.

Indeed, Zero7's Simple Things showed the midband to be where all the action is - there's a far wider and more open

soundstage, with more confident image articulation. This is most obvious with female vocals, which have a purity of tone that's a joy to behold; seamless, grain-free and just on the sweet side of neutral. With De La Soul's A Rollerskating Jam named Saturday, it takes you right into the heart of the mixing desk. It has brilliant incision, yet strings all this new detail that it brings to the party together with real aplomb. Image articulation and soundstaging were superb, pushing elements of the mix such as vocals right out of the speakers (which themselves virtually disappeared). If ever there was a 'hear through' budget tonearm, then this is it.

That's the key to the TecnoArm. By accident or design, it sounds quite akin to Michell's turntables – open and even yet confident and powerful to a fault. How does it compare to its rivals? Watch this space for our forthcoming tonearm shootout, but suffice to say all its rivals will have a serious fight on their hands. I have only one question - why on earth did John Michell take twenty years to come up with something like this?

Michell TecnoArm £346

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LOUD AND CLEAR



Looking for a budget AV receiver? Noel Keywood reckons you'll find few better starter packages than Marantz's new SR6300.

For those contemplating a move to multichannel, this new Marantz receiver may be of interest. For just £499 it packs a wealth of features, including no fewer than six identical power amplifying channels, each producing 125W into 6ohms, plus FM/AM radio. If that sounds like good value, you may be surprised to learn that you also get on-board 24bit, 192kHz digital-analogue conversion for seven channels (six + subwoofer) and - although Marantz don't say so - on-board analogue-digital conversion so stereo inputs can be digitally processed if desired. This allows ordinary stereo to be processed into various surround-sound schemes, one of which I found to give impressive results. Factor in THX Certification, Dolby Digital, Dolby Digital Surround EX, Dolby Pro Logic II (Movie, Music), DTS 24/96, DTS ES (Discrete 6.1, Matrix 6.1, Neo: 6) and Circle Surround II

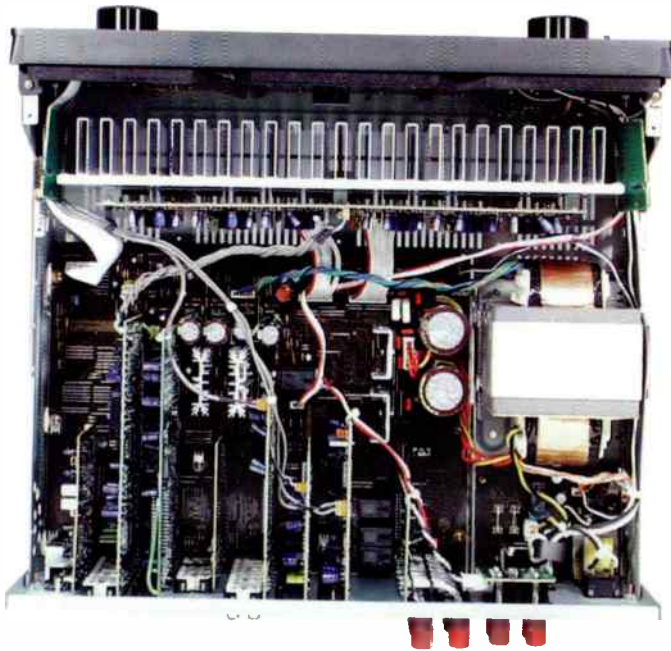
processing, and you've got a heck of a lot for your money!

Being an AV receiver means the SR6300 does video as well as audio. It has no SCART sockets, using S-Video inputs from sources and S-Video out to a monitor (e.g. TV), with CVBS as an alternative. A monitor must be connected to access the SR6300's many set-up menus. The audio signal can be accepted via optical or coaxial digital links, or through analogue stereo inputs or a direct six channel input. The latter is really intended for high quality DVD-A or SACD signals, which cannot at present be digitally linked, a problem that affects all DVD-A/SACD systems because of music industry objections to unprotected high-resolution digital code.

The digital audio inputs will accept PCM or Dolby Digital or DTS, since on-board decoding is provided for these systems. A CD player outputs PCM so it can be

digitally linked here. DVD video players will commonly be connected digitally too, to take advantage of the Marantz's on-board decoding. And this is where we come to this receiver's peculiar 6.1 channel description. Conventional surround-sound is known as 5.1, meaning front left and right, centre, rear left and right and subwoofer (0.1). The SR6300 has an extra channel to feed a rear centre loudspeaker - and this is the sixth channel. Dolby and DTS now both offer centre rear information in Digital-EX or DTS-ES systems respectively, derived during recording or artificially from a 5.1 signal.

Most of us have stereo collections and the SR6300 handles them well, with artificial surround-modes processed from stereo, like DTS Neo6, giving a more spacious presentation of stereo, if one that is sometimes messier in its imaging too, depending upon source material. Whether you like it depends upon



taste. Additionally the Marantz has some more extreme modes like Stadium and Hall, where long reverb times are added. These might suit Sports broadcasts and such like, but they don't suit music. Subwoofer information is derived in most of these artificial modes too, backing up the mains. These surround modes are selected by a spin wheel at top left.

Whilst the digital and analogue stereo inputs all pass through on-board bass management, time delay ('speaker position) and level compensation circuits, plus tone controls, the 6-channel analogue inputs get level compensation only. If you want bass management and loudspeaker position compensation with DVD-A or SACD, then it must be provided in the digital domain in the player (and few provide this). This avoids extra processing in the SR6300 of high quality DVD-A and SACD signals.

For those who want the best from their stereo sources like CD, there is a Source Direct button that switches out tone control processing, bass management and artificial surround-sound processing and associated A/D, D/A conversion. This assumes you've connected via analogue in; it's best to connect digitally if the CD has a digital output.

Two sets of loudspeakers can be connected, one stereo, one six channel, and all six channels are output protected. There are pre-amp outputs, two digital outputs for MD/CD-R, and even 6-ch pre-amp outputs for external power amps.

There are sub-woofer ins and outs too, with adjustable on-board subwoofer gain (10dB). The loudspeaker terminals accept bare wire or 4mm plugs, the latter being best as they allow channels to be quickly assessed individually during set up. This big 14.9kg, 440x150x425mm box is very nicely built and finished – especially considering its modest price.

SETTING UP

There are no fewer than seven set-up sub-menus on the main menu, with three sub-menus for loudspeakers to adjust for Size, Distance and Level. The loudspeaker set up menus are comprehensive, with +/-10dB level adjustment in 1dB steps on each loudspeaker; loudspeaker distance compensation in 1ft steps from 1ft to 30ft from the listening position. There's bass management too, but in a hi-fi set-up everything should be full range (i.e. Large).

Some weirdness creeps in with a Surround menu where the surround loudspeakers (but not the mains) can be adjusted for level with each of the processed surround-schemes, which is needed. Yet doing this also alters the basic settings, which affects Dolby 5.1 and DTS sound quality, when it should not. The handbook acknowledges this odd strategy.

The problem here is that each surround-scheme gives different loudspeaker levels from the SR6300 and some, like Multi-Channel Stereo, really blast out. A means of setting

levels to counteract this is needed, overall and on the surround loudspeakers alone, but it must not affect the system's basic settings which provide fundamental balance between all the loudspeakers on Dolby 5.1 or DTS.

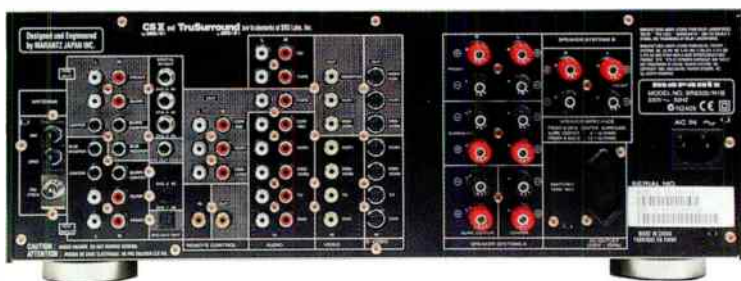
SOUND QUALITY

For processing stereo to artificial surround-sound, Dolby Pro Logic II (Music) gave the best results and in many cases smoothed and clarified old CDs in an impressive manner. Front-back balance can be set and retained in a sub menu, without affecting anything else, enhancing its basic ability. Pro Logic II was convincing, giving good frontal stereo, accompanied by plausible rear channels usually free from pianos, drums or lead vocals! It isn't perfect but strengths outweigh weaknesses.

I used the SR6300 to reproduce both DVD-A and SACD, using its 6-channel analogue inputs. Hooked up to a Pioneer DV656A, the SR6300 was nothing other than impressive. Its sound is forceful and, being a valve man, this isn't usually my preference. However, the SR6300 stays clean, so even with the challenging Fleetwood Mac Rumours DVD-A, Go Your Own Way was tolerable, cymbals being undeniably bright, but not fierce. Other 'bright' discs, like The Corrs In Blue (DVD-A) remained a bit jangly but were again listenable.

In spite of its technical weaknesses SACD sounds more natural and analogue like, yet equally dynamic and clear, and through the SR6300 Eleanor McEvoy's Isn't It a Little Late, from Yola, highlighted this receiver's ability to expose sound quality differences between recordings. It wasn't all good news, as the track actually sounded less smooth and silky than I have heard it through other equipment, because more was being revealed, yet it retained its dynamic punch.

Many times I was made aware that the SR6300 has very strong resolution, even with old CDs like Gerry Rafferty's On A Wing & A Prayer. This early '90s all-digital recording isn't the best around, usually sounding hard and congested across the mid-band. In stereo the SR6300 unraveled and exposed the many instruments in use, whilst Pro Logic II Music actually managed to build on this by disentangling them,



placing backing vocals toward the rear with pedal steel guitar and bottleneck at front, accompanying Rafferty's lead vocal. Quite how Pro Logic II also managed to smooth the sound, making it almost warm and silky I don't know, but one great benefit of artificial surround-sound – done properly – is that it provides very cohesive wrap-around effect. Surprisingly perhaps, I actually preferred this artificial surround-sound to stereo.

The same sense of cohesion came from DTS ES 6.1 surround-sound mix on B.B. King's *Riding With the King* (the disc label says 5.1, but it isn't!). The sixth channel added little of consequence – possibly a little extra rear spaciousness, for what that's worth. Otherwise the SR6300 gave a clean and lively

presentation with a joined up sound field. Swapping over to the DVD-A track brought both hard-edged attack to transients, great richness of detail and better resolution of dynamic contrasts, as well as more tonal colour. I could hear right into B.B. King's gravelly vocals at front right. Steel guitar strings had a vibrant strength to them beyond that displayed by CD, Dolby 5.1 or DTS. Good 24/96 is quite an experience and the SR6300 conveyed its strengths well.

Orchestral strings of the Berliner Staatskapelle had both richness and bite, enormously detailed vibrancy and even – at times – strong dynamic push on Teldec's DVD-A of Beethoven's *Eroica*. It was interesting to compare this with the Dolby Digital 5.1 track, which was soft and

bland in comparison, although very listenable, aided by the more cohesive sound field that results from delay compensation of the loudspeakers. So how did the radio sound? Very Marantz! Clean as a whistle but punchy – well above that possible by DAB I should note.

Six channels of 100watts from a well-designed receiver like this gives a sound that majors on dynamics – without strain. The SR6300 offers a vivid sound from all sources, and it has enough on-board processing to keep the most demanding technophile satisfied. Marantz's engineering, particularly of contentious areas like A/D processing, is good enough to avoid criticism. In practice I was impressed that some of my dodgy old CDs could be processed into tidy, modern form. A great product – providing you can understand it!

Marantz SR6300 £499

Marantz (UK) Ltd.
Tel: +44 (0)1753 680868
www.marantz.com

MEASURED PERFORMANCE

Each channel delivers 120watts into 8ohms and no less than 200watts into 4ohms, so if all six channels were to peak simultaneously the SR6300 would deliver around 1000watts into six loudspeakers, hence its apparent dynamism in use.

Distortion figures were low, a worst case figure of 0.1% (1watt into 4ohms at 10kHz) appearing under measurement. Generally, levels hovered around 0.05%, being worse at low power than high power (crossover distortion), with extended harmonics our analysis shows. This might add a brittle tinge.

Marantz use an AK5380 Delta-Sigma analogue-to-digital convertor that is linear enough, but produces massive amounts of noise above 20kHz (like SACD!). Although spec'd as 24/96 it has a bandwidth to 22kHz in the SR6300. Noise measures –100dB IEC A weight, but just –60dB wideband to 100kHz. Conversion from analogue to digital and back again produced little

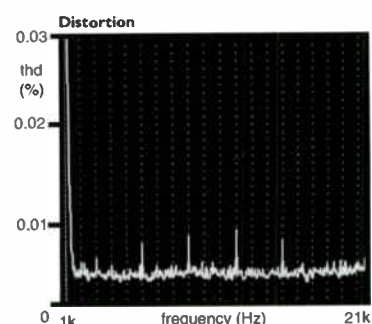
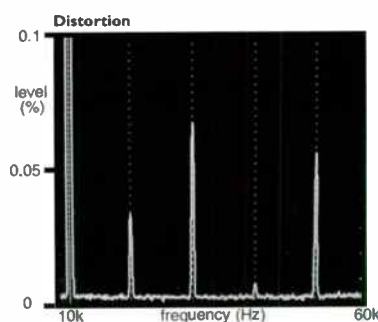
distortion providing the stereo analogue inputs received no more than 2.1V maximum. Above this, convertor input overload distortion was severe, eliminated only by switching to Direct input. It's best to feed CD in digitally; tuners and LP preamps should not cause overload here, since they produce 1Vmax.

Pre-amp gain was x2 (+6dB), but the subwoofer channel provides +10dB gain to –15dB attenuation through sub-menu sensitivity adjustment.

The SR6300 measures well enough. It is massively powerful and can generate huge acoustic levels through six full range loudspeakers. Distortion and (supersonic) noise could usefully have been lower, but this is a 'budget' product. **NK**

Power	120watts/ch
CD/tuner/aux.	
Frequency response	15Hz-82kHz
Separation	108dB

Noise	-100dB
Distortion	0.05%
Sensitivity	500mV
dc offset	1.1 / 9mV



World Verdict £

A staggering amount of facilities and signal processing options allied to plenty of power and a smooth, detailed sound make this a budget audiophile bargain.

Things are not always what they appear to be.



Heart CD 6000 LE in Black



Heart CD 6000 LE in Champagne



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Record players: SME models 10, 20 and 30; Kuzma Stabi, Stabi Reference; Nottingham Analogue Interspace, Space Deck, Hyperspace and Dais; Michell Orbe; VPI AriesScout; Avid Volvere, Sequel and Acutus.

Arms: Rega 300/600/900; SME Series IV and V; Kuzma Stogi; Triplanar.

Cartridges: VanDenHul Grasshopper and Colibri; Kuzma KC Ref; EMT; Reson Reca and Elite; Cartridge Man Musicmaker; Benz-Micro including Ruby Open Air; Kondo lo J.

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CD Players: Wadia; Sugden; Primare; Resolution.

Loudspeakers: Living Voice; Vitavox; Lowther.

Cables and Tables by Living Voice.

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	Sale	New
SME Model 20 / 2 - 5 years old	£1500	£3658
Dynaudio Confidence 3 - Rosewood - perfect, boxed - giveaway	£2300	£4800
Horning Agathon - 98dB 2 way horn - Mahogany	£1500	£3800
Mirage 8901 - fine condition - giveaway	£200	
Art Audio Vinyl 1 - moving magnet phono stage - chrome - fabulous	£1100	£1550
Art Audio VP1 - line pre-amp - chrome	£1000	£2000
Art Audio Concerto - 6550 line integrated	£1200	£2650
Art Audio VP1 special - line pre-amp - full of Hovlands.	£1150	£2250
Canary Audio CA 301 - 300B - 22 big watts - very good	£3400	£5400
Canary Audio CA 303 - 300B monos - 22 lovely watts - better	£5400	£7400
Canary Audio CA 309 - 300B parallel p.p. - 45 mad watts - superb	£9500	£13500
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Canary Audio CA 300 - single ended monos - valve rect. - 8 watts	£2000	£3500
Nottingham Analogue Hyperspace - turntable - 2/3 years old	£1000	£1700
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THE AUDIOPHILE'S GUIDE TO AV

Are you a stereophile who's confused by surround-sound? Noel Keywood explains audio-visual from a hi-fi viewpoint.

Traditionally, there has been home cinema and there has been hi-fi – and never the twain should meet. Now though, the new wave of SACD and DVD-Audio music releases has meant that multichannel systems are required to do more than play movie soundtracks. Now, many serious hi-fi buffs may feel tempted to stray from the path of stereo and try out the new technology. This look at surround-sound comes from the perspective of those wanting real hi-fi but with the benefits of surround.

DIGITAL DETAIL

Being an audiophile disc, DVD-A was given six full frequency range audio channels, coded in uncompressed digital (unlike Dolby or DTS) – and that's what you will find in the shops today.

Each of the six channels of DVD-A is coded at 24bit/96kHz resolution. How these are used is optional, but in most cases they feed Left, Centre and Right frontal loudspeakers, two rear loudspeakers now commonly referred to as Left and Right Surround, plus a Subwoofer. DVD-Audio players can play this, but they usually play DVD video too, so when you buy a DVD-Audio player DVD video will benefit from the way you hook it up as a hi-fi.

One channel of DVD-Audio has an analogue bandwidth stretching to 48kHz (half the 96kHz sampling rate) with 24bit resolution, meaning just about infinite dynamic range as far as humans are concerned, without any distortion. DVD-Audio has six of

them, and if they all go from zero to max at the same time you'll go through the roof! The total acoustic pressure change from a DVD-A system can be frightening when it is working properly.

SPEAKER TALK

If you want the full benefit of DVD-Audio, each channel needs to have a high quality, full range loudspeaker attached to it. The only exception is the subwoofer channel. Don't think about home cinema satellites; they are not fit for DVD-A at all. Studios are busy putting super quality sound on all channels, expecting it to be appreciated in the home. You cannot do this with mini satellites of low quality. It is better to stay with stereo and two high quality loudspeakers.

All proper hi-fi loudspeakers are 'full range' and that's what you need for a decent DVD-A or SACD system. It's like combining three stereo systems. If a decent pair of hi-fi loudspeakers costs £200, say, then for DVD-A you need to spend no more than £600 on loudspeakers. You also need to find somewhere to put them, and placement is another issue (of the many!).

Let's look at these loudspeakers in more detail. In commercial surround-sound packages, Left and Right frontal loudspeakers are usually conventional boxes. The centre loudspeaker is commonly a slim horizontal box with central tweeter and bass units either side, whilst the rears may be conventional like the fronts, or dipoles that fire forward and backward or

wall mounts that fire left and right. Rears can get quite exotic.

Much of this springs from cinema practice, especially the use of dipoles. In DVD-A, specific instruments may be placed in the rear speakers. It's best if they are given the same firm location as frontal images; in other words directional monopoles should be used at the rear, like the front speakers. You don't need special loudspeakers and, for matching purposes, are better off without them, no matter how fancy they look.

The centre front speaker will handle drums and vocals in equal measure in many recordings. It sometimes carries a heavier load than left or right speakers, unlike a stereo system. So the centre front must be good; a cheap speaker dragged out of the loft should not be put here. This speaker should be at normal height (not on the floor) or a little above left and right, and it should be slightly



behind the left and right, so all lie on an arc equidistant from the listener. That's the ideal at least. If the system is used for video as well, you will generally need a shielded loudspeaker above the TV. Organising this may not be easy - consider a wall shelf.

Hi-fi loudspeakers traditionally get to 20kHz and little further, so they cannot reproduce DVD-A's full bandwidth. Both Tannoy and KEF now produce loudspeakers with super tweeters able to reach up farther and the general view is that they do provide airier sounding treble, greater insight and even tighter sounding bass! DVD-A and SACD benefit from extended response loudspeakers, where home cinema does not; the two have different requirements. At present, wideband DVD-A compatible Tannoy Sensys 1s cost just £150 per pair, so DVD-A/SACD loudspeakers don't necessarily cost a lot!

With a signal of great range and quality in each channel, to hear what DVD-A is capable of really demands the use of very good loudspeakers, ones that go low as well as high. Mediocre loudspeakers smother quality differences between DVD-A and CD, which is why home theatre packages are completely wrong for DVD-A. But a DVD-A hi-fi system will make home theatre sound amazing.

SPACE AND TIME

Surround sound inevitably comes

with a layout mantra for the loudspeakers which is wildly impractical. All loudspeakers should be equidistant from the listener to ensure identical sound arrival times. The rears should be at 110 degrees from centre-front. In most homes this would put them in the hall, or the garden alongside the gnome. If it did not, they would still be firing into the back of the settee, which does little for sound quality. At this level surround-sound isn't really thought through for domestic purposes; layout recommendations just reflect studio arrangements. Users should experiment. Rear loudspeakers at 90degrees will often make more

“ In my view it is better to use five good shelf mounted loudspeakers for surround-sound, than stay with two high quality floorstanders for stereo

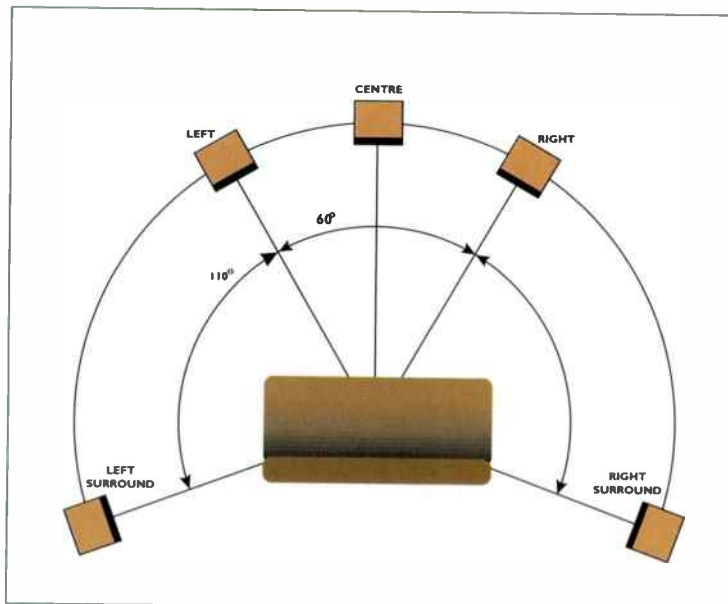
sense and give better sound simply because they are firing at the front of the ear, not the rear of the head or the settee. However, this pulls the rear soundfield forward and a centre rear behind the listening position then becomes useful to pull it back.

If loudspeakers are not equidistant from the listener then differences between them result in differing arrival times of approximately 1ms per ft. So if the rears are 4ft from your ears and the fronts 9ft, the difference is 5ft and sound from the rears will arrive 5ms early. The

rears need a 5ms delay applied to compensate for this. Such delays are applied digitally, so whilst DVD-A and SACD cannot be linked digitally to receiver or amplifier any such delay must be applied in the player and few offer this at present.

Does it matter? Yes and no. With rock music, largely 'no' because each channel carries discrete information. Whether a drummer hits a drum 5ms earlier or later makes little difference if that drum is confined to the centre front channel alone (say). With classical, where microphones have recorded both level and phase information, timed loudspeakers usually do provide a detectably more cohesive and enveloping sound, one less confined to individual loudspeakers. In practice, even most Rock benefits from a timed speaker set up, as comparison of a timed DTS track to an untimed DVD-A version demonstrates (B.B. King's *Riding With the King* disc offers this comparison), if less so than classical. At present only Meridian, Pioneer and Denon offer digital linking and loudspeaker time delay compensation on DVD-A. Philips claim their DVD-963SA player provides SACD loudspeaker time delay compensation.

Bass management directs heavy bass from weedy satellites to the subwoofer. It is for home cinema systems, to prevent the cones of satellites evaporating when trying to reproduce engine ignition in Apollo 13, for example. By using full range hi-fi loudspeakers able to handle this sort of material bass management



Here is the "ITU" recommended loudspeaker layout for surround-sound. Recording engineers need guidance and a standard, and this is it. All loudspeakers are 'equidistant' so time delay is not needed. The rears (called 'surrounds') lie only slightly behind the listener. The front left and rights are positioned at 60degrees, as for stereo. Note that the Centre sits further back than Left and Right.



becomes unnecessary in a hi-fi system. It is unwanted in DVD-A and SACD but again, absence of a digital link usually means it is not applied in an amplifier or receiver in any case. However, the subwoofer channel may still be used to carry subsonics, even though the five main channels can carry enough bass to shake a house - and five full range loudspeakers are better able to do this than two of a stereo system. What goes into the subwoofer channel depends entirely upon the whims of the producer; if you want to hear what he has done a subwoofer is needed. But equally you could just not bother at all with this channel!

If you want the drama of surround-sound, as well as the clarity of instruments and singers being handled by five loudspeakers instead of two, then loudspeakers are the

main issue - and a big one of course. In my view it is better to use five good shelf mounted loudspeakers for surround-sound, to make it domestically acceptable, than stay with two high quality floorstanders for stereo, placed in front of a rear wall for best imaging. Bearing in mind that surround-sound pulls images forward and into the room through the use of rear channel information, wall mounting is made more acceptable. It means you can use five loudspeakers yet not consume more floor space with extra boxes and stands. This way, surround-sound can be made less intrusive than stereo, rather than more intrusive, yet still provide superb results.

BETTER STEREO?

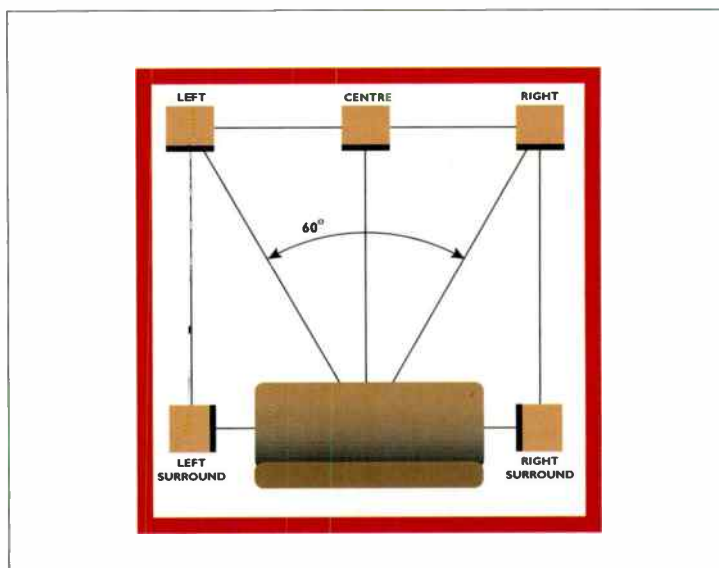
Not convinced? Many people are not and would prefer to stay with stereo. Fortunately, both DVD-A and SACD can cope with this. Most DVD-A discs offer a two-channel 24/96 mix of the surround-sound, specifically

for stereo systems. So if you buy a DVD-A player you can still enjoy super quality stereo from DVD-A discs. Discs lacking a stereo version can be mixed down in the player by setting it to stereo. All DVD-A and SACD players offer this, and since they also play CDs, any high resolution player will integrate into a stereo system and still provide the benefits of better sound quality (except with CD, depending upon the player).

An irony is the inclusion of an even higher quality 24/192 audio standard within DVD-A, because this is stereo only. At present 24/192 stereo recordings are rare and, if the music business goes to 24/96 surround-sound big time, they may remain so. SACD offers similar performance to 24/192 now, but with full surround-sound. SACD has six full channels of 100kHz analogue bandwidth and enormous dynamic range. The drawback is the presence of severe noise above 20kHz. It is inaudible, but not necessarily inconsequential. All the same, SACD can sound superb, being easier and more analogue like than DVD-A.

Both DVD-A and SACD are high quality surround-sound formats that can give dramatic results through a good multi-channel hi-fi system if properly configured using the information I've set out here. A decent multichannel system need not be expensive or intrusive. Add in a TV and you have a great home cinema system. Think hi-fi first and home-cinema jargon second and you can come up with a nice, simple audio set up that plays thrilling music.

Here is a likely arrangement in the home, constrained by walls. The Centre is at the same distance as the ITU arrangement we show, but the Left and Right have been pushed back to be equidistant from the wall, whilst remaining at 60 degrees. The Surrounds are now positioned to be equidistant from the side wall and rear wall. In this likely arrangement the rears are very close, and the Centre closer than Left and Right. All should, ideally, be time delayed to synchronise arrival times with Left and Right (i.e. the most distant 'speakers').



HI-FI WORLD'S GREAT COMPETITION GIVEAWAY

WIN A PAIR OF REVOLVER R33 LOUDSPEAKERS IN THIS MONTH'S SUPERB COMPETITION

Those with long memories may well remember Revolver for its fine budget turntables. Times change of course, and vinyl is no longer the world's primary music medium, so the brand is now specialising in loudspeakers instead. Now owned by The Acoustic Partnership (telephone: 087 0047 0047) based in Cornwall, Mike Jewitt has his hand at the helm. He's an ex-Heybrook man, a name synonymous with fine loudspeakers from yesteryear.

In the February 2003 issue of Hi-Fi World, Dominic Todd gave the R33 on offer here a great review. A £500 standmounter, he declared them to be very well made. "The MDF cabinet is solid and internally braced. The hardwired crossover uses some decent quality components... there's a custom designed glass fibre woofer, accompanied by an aluminium tweeter with ring magnet... It's a competent design".

DT was most impressed with the sonics, "Tom Jones and The

Stereophonics' Mama Told Me Not To Come revealed a vibrant, upfront sound that appealed to me from the off. Much of this appeal lay in sheer transparency. Vocals were wonderfully open and projected well into the room, clear of the rest of the mix.

Separation and sound staging were excellent, even for a design of this price range. There were times when I could easily believe it was a speaker of twice the price I was listening to, such as the R33's insight into the music."

He continued, "Thankfully, their bass response had plenty of weight, otherwise the balance could have tipped just a little too much towards being forward. As it was, I found the balance ideal, at least for the average UK sized living room. Excellent timing was a characteristic of Richard Thompson's Hand on Me. There was just enough bass to push the strong rhythm through, without it becoming bogged down and soggy, a problem with poorer floorstanders. In addition to the tight, focused bassline, my enjoyment was further enhanced by the texture and delay afforded to percussion. Thompson's vocals, too, benefited from the R33's open and honest representation. With all these aspects combined I found a great sense of realism and



very little to grouch about here."

So impressed was he that the famously picky Dominic admitted, "as you've probably gathered by now, I came to the conclusion that Revolver's R33s are sonically pretty special. Not surprisingly, they reminded me of the best characteristics of Heybrook 'speakers. In terms of transparency, separation and staging they are amongst the best in their class. Furthermore, they manage to achieve such insight without sounding anaemic or at all harsh." He ended his review by awarding these loudspeakers the ultimate Hi-Fi World accolade, a full complement of globes. Blimey - steady on DT!

Winning a pair of these superb loudspeakers couldn't be easier. Simply answer the questions on a postcard and send it to our address on the left by 31st May 2003. The first correct entry out of the bag will receive this superb prize.

Competition Questions

[1] What was Revolver's original product line?

- [a] hi-fi turntables
- [b] spinning tops
- [c] Beatles LPs
- [d] railway signalling equipment

[2] What cone material does the R33 use?

- [a] paper
- [b] glass fibre
- [c] metal
- [d] plaster of Paris

[3] Which R33 characteristic did dt especially enjoy?

- [a] insight
- [b] foresight
- [c] hindsight
- [d] night sight

[4] What is revolver's website address?

- [a] revolver
- [b] revolver audio
- [c] revolver audio UK
- [d] www.revolveraudio.co.uk

June Competition

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Hi-Fi & Computer Audio World Competition rules and conditions of entry

1. Only one entry per house hold.
2. Multiple entries will be automatically disqualified.
3. Purchase of the magazine is not a pre-condition of entry.
4. No correspondence will be entered into.
5. The Editor's decision is final.
6. No employees of Audio Publishing Limited, or of any companies associated with the production or distribution of the prizes may enter.

CONGRATULATIONS

...to Mr. Gordon Ristal of London, the winner of our April competition. A Michell TechnoDec Turntable is on its way to you!

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Sevenoaks Sound & Vision stocks a wide range of DVD players, amplifiers, speakers, plasma monitors, televisions and projection systems from all the leading manufacturers.

From starter systems to custom designed multi-room and home cinema installations, our friendly staff are available in all outlets to advise, demonstrate and guide you through the home entertainment jungle. If you're interested in home entertainment and want to avoid the confusion, contact your local Sevenoaks Sound & Vision outlet and experience more. 0% interest free option* is available on most products. *Written details on request. Licensed credit brokers. Minimum balance £400. Subject to status.

B&W Bowers & Wilkins



Combining cutting-edge technology with contemporary styling, the VM1 delivers the kind of uncoloured clarity and crispness of sound for which B&W is famous. Place it anywhere using the speaker's optional tall stand or its wall bracket and it looks the part from any angle. Magnetically-shielded, this multi-application speaker can occupy all five positions in a home cinema system, including the centre channel, when laid horizontally or mounted on its supplied foot on a television, but is equally at home within a two-channel hi-fi system.

Recently, when partnered with the AS1 Subwoofer, the combination received top honours in a What Hi-Fi? Sound and Vision supertest (February 2003).



Leisure Monitors



CYRUS

British company Cyrus has been developing high performance hi-fi systems for nearly 20 years, winning numerous accolades and awards along the way. The latest range of hand finished products offer stunning performance, build quality and upgradeability.

The new 'entry-level' Cyrus 6 amplifier shows how the range has evolved. Awarded five stars by What Hi-Fi? Sound and Vision magazine (February 2003), the 6 delivers 40w/p/c, has six line-level inputs, a tape loop, remote control and a headphone socket. In addition, it can be upgraded to the full specification of its bigger brother, the Cyrus 8 which, according to Hi-Fi Choice (January 2003), "effectively puts a pre/power combo in the same box and is up there with the very best below £1000".

Custom Installation

Are you looking to neatly and seamlessly integrate a Home Cinema or Hi-Fi System into your home? Our Custom Installation experts are fully trained in all areas and provide a prompt, reliable and professional service. Whether you're looking for lighting control systems, a dedicated home cinema installation with a retractable screen and built-in speakers or an integrated control system, Sevenoaks Sound & Vision has the solution.



48 Outlets Nationwide

Aberdeen • Bedford • Birmingham • Brighton • Bristol • Bromley
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Plymouth • Poole • Preston • Reading • Sevenoaks • Sheffield • Solihull
Southampton • Southgate • Swansea • Swindon • Swiss Cottage
Tunbridge Wells • Watford • Witham (Essex) • Wolverhampton

Please refer to Page 7 for full address and telephone number details.

PRO-JECT



Debut II Turntable (Black) £119.95

"The original Debut turntable romped away with a Product of the Year Award in 1999, and the MKII version continues the extremely good work. It's a simple affair, that's easy to set up, but don't let the price fool you - it sounds a whole lot more expensive than that."

Turntables & Tuners

Arcam DIVA T61 Tuner.....	£199.95
Cyrus FM X Tuner.....	£499.95
Denon TU260L MKII Tuner.....	£99.95
Marantz ST4000 Tuner.....	£109.95
Michell Gyro SE/RB300 Turntable.....	£1049.95
Michell TecnoDec Turntable.....	£599.95
Project Debut Phono SB Turntable.....	£169.95
Project Debut II Turntable (Colours).....	£134.95
Project RPM4 Turntable.....	£349.95
Pure Evoke 1 DAB Radio.....	£99.95
Sony ST-D777ES FM/DAB Tuner.....	£499.95
Pure DRX-701ES DAB Tuner.....	£229.95



This is a fine turntable, and it clearly reveals the benefits of listening to vinyl, with a rich and detailed soundstage, and a good dynamic response.

It's available in six funky colours, so you should find one to suit your decor, and at just a smidge over £100, you can have no excuse not to keep that old vinyl collection in employment for a good few years yet."

WHAT Hi-Fi? ★★★★★ Awards 2002

Selected outlets are Project Turntable Centres. Colour Options are available at additional cost



Michell Gyro SE/RB300
£1049.95

STARTER SYSTEM

marantz
CD4000 (Black) CD Player
PM4200 (Black) Amplifier

MISSION
m71i Speakers

List Price £400

£299.95 • SAVE £100

TOP BRAND NAMES AT A BARGAIN PRICE!



RCD-02 CD Player £379.95 RA-02 Amplifier £349.95

RA-02 Amplifier "The amp has a fast, detailed and yet satisfyingly full presentation. That allows it to make a fine job of the beats of Groove Armada's *Goodbye Century* set without losing sight of the fine details of the mix, and also husking out Marianne Faithfull's deliciously smutty vocals on *Kissing Time* with real relish. Add in decent levels of equipment - and the convenience of remote control, and we reckon Rotel has a winner on its hands."



WHAT Hi-Fi? ★★★★★ August 2002

CD Players

Arcam DIVA CD62T.....	£369.95
Arcam DIVA CD72T.....	£449.95
Arcam DIVA CD82T.....	£599.95
Arcam FMJ CD23T.....	£999.95
Cyrus CD6.....	£599.95
Cyrus CD7.....	£799.95
Cyrus CD8.....	£999.95
Denon DCD485.....	£119.95
Linn Genki.....	£994.95
Linn Ikemi.....	£1949.95
Marantz CD4000.....	£89.95
Marantz CD6000Ki Signature.....	£369.95
Meridian 507.....	£1194.95
Musical Fidelity A308 ^{RF}	£1999.95
Musical Fidelity Tri-Vista SACD.....	£3994.95
Quad 99 CD-P.....	£999.95
Roksan Caspian.....	£994.95
Rotel RCD1070.....	£494.95
Sony CDPXE570.....	£99.95

Please Note: Some products may not be available at all outlets. Advertisement valid until at least 9th May 2003. E&OE. *From our selection in-store - Not in conjunction with any other offer.

(((AE))) Aegis Evo One Speakers £179.95

"The original Aegis Ones were great speakers, to the extent that they were category winners in our 1998 awards. Since then a host of new models have raised the standards in the sub-£200 category, and the Aegis Ones soon went from stunner to also ran. AE's response to that is an EVO version.



The Aegis Ones genes are clearly evident. The original's refinement and bass weight are preserved and backed up with better openness and more free-flowing dynamic ability. The old speakers would have delivered a cool and calm version of Pink's *Missundaztood* set - they'd be enjoyable, but would lack a little drive and excitement.

The new speakers, however, address those limitations. Add authority and good stereo imaging to the list of plus points and it comes as no surprise to find these speakers at home with classical, too. Indeed, running



Also Available
KEF Q1 • £249.95

through our test room's extensive CD library we couldn't find a genre that these AE's weren't happy playing." WHAT Hi-Fi? ★★★★★ July 2002

experience **more**

World Radio History





Amplifier Selection

Arcam DIVA A65 Plus Amplifier	£369.95
Arcam DIVA A75 Plus Amplifier	£469.95
Arcam DIVA A85 Plus Amplifier	£799.95
Arcam FMJ A32 Amplifier	£1149.95
Cyrus 6 Amplifier	£599.95
Cyrus 8 Amplifier	£799.95
Denon PMA355 Amplifier	£179.95
Harman Kardon HK670	£299.95
Linn Kolektor Pre Amplifier	£494.95
Linn LK85 Power Amplifier	£494.95
Marantz PM4200 Amplifier	£139.95
Musical Fidelity A3.2 Pre Amplifier	£999.95
Musical Fidelity A3.2 Power Amplifier	£999.95
Musical Fidelity A308 Amplifier	£1999.95
Musical Fidelity Tri-Vista 300 Amplifier	£3994.95
Quad 99 Power Amplifier	£549.95
Roksan Caspian Amplifier	£894.95
Rotel RA-01 Amplifier	£249.95



ARCAM
SOUND & VISION

GRAND SYSTEM £999.95 Save £190

CD72T CD Player
A75 Plus Amplifier
T61 RDS Tuner

List Price £1189 • Arcam Grand System not available in conjunction with any other offer.

Claim Free

MISSION
m71i
Speakers
Worth £129



Claim £200 Off the Speakers* of your choice

When purchased together with any Arcam CD & Arcam Amplifier combination
Min Spk Value £410 • Offer excludes 'Grand System'



WHAT HI-FI?
Best Buy
2002
BEST HOME ILLUMINATION AWARDS
5 STARS
£201 £350

B&W Bowers & Wilkins
DM602S3 Speakers £299.95

Free
Speaker Cable*
worth £50 with **ALL**
Speakers over £280

"But the B&W 602 S3 are our winners. They're big and not particularly beautiful, yet if it were our money they're what we would buy. No rival can match the wide ranging dynamics or low frequency performance of these not so compact standmounters. Add all-round sonic excellence and the choice is easy. Give them sufficient space to breathe, then sit back and enjoy the music." **WHAT HI-FI?** ★★★★★ Supertest Winner August 2002



Also Available (Pictured Right)
B&W CDM NT Series • Prices start from £749.95

PURE DIGITAL DRX-701ES Digital Tuner £229.95 Save £20

This new tuner from the recently renamed Pure is based on the 2001 Award-winning Videologic DRX-601ES, but under the lid is an all-new third-generation digital radio engine, in the form of Frontier Silicon's Chorus FS1010. Its biggest advantages are lower energy consumption and above all cost - it's the major reason why the DRX-701ES is £100 less than last year's model.

The tuner uses 24-bit/192kHz conversion with 4x upsampling and data interpolation, and is powered by a low-noise toroidal transformer - such attention to sonic detail pays off. Digital outputs are provided on electrical and optical feed, but most people will use the analogue out, and these sound very good indeed. As usual the tuner is subject to the signal quality off-air, but when it's fed from a high-quality outdoor aerial and a good signal it's capable of a crisp, powerful and detailed presentation. Even more populist music stations like Radio 6 benefit from the mix of a neutral balance and fine weight, while speech is also neutral and easy to follow... If you want a quality home tuner for digital radio, you need look no further."



WHAT HI-FI?
Product of the year
2002
5 STARS
Pure DRX-701ES

WHAT HI-FI? ★★★★★ October 2002

pricing policy

We always try to ensure our prices are highly competitive. In the event you can find the same products and excellent service at a lower price, please bring it to our store managers' attention.
World Radio History



Claim £150 Off the Speakers* of your choice

When purchased together with any Cyrus CD & Cyrus Amplifier combination. Min Spk Value £300

CYRUS

CD8 CD Player £999.95
8 Integrated Amplifier £799.95

Cyrus has been developing high performance hi-fi systems for nearly 20 years. Today their upgradeable, modular product range includes multi-room systems, home cinema and some of the world's finest hi-fi systems. Cyrus products are hand finished, half size die-cast enclosures and include a hidden digital command system that allows simple operation of any size system.

Joining the new Cyrus 8 amplifier is the stunning new high performance, upgradeable CD player, the CD8. Other new models in the 8 series include the AV8 digital AV processor and a new disc player, DVD8, featuring specially tuned video and audio circuitry.

Cyrus 8 Amplifier "The 8 is a large step forward from older generations of Cyrus amplifiers, and takes the company back into the leading pack in the sub-£1000 integrated amp sector... The Cyrus 8 is a must-audition product." **WHAT HI-FI? ★★★★★ January 2003**

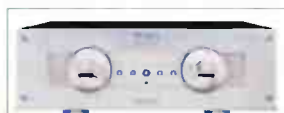


ROKSAN

Kandy KA1 MKIII Amplifier £544.95

"When we last reviewed Roksan's Kandy integrated amp in February it fought off serious competition to come top in a *Supertest*. This is its replacement, the MkIII. Internal changes include an updated power supply for the preamp section and identical mono modules for the left and right power amp sections. Roksan also claims 50 percent lower distortion on line-level inputs and a whopping 150 percent less on the phono input. The rated power output is an impressive 120 watts per channel into 8 ohms, and this amp has a confident, muscular way with music that bears this out. But don't be fooled into thinking this amp is raw but unrefined. With Van Morrison's *Down the Road* the Kandy has the guts to render the performance exciting and dynamic, but also the guile to deliver subtle details.

The upgraded Kandy MkIII is an excellent amp; the MkII version was impressive, but MkIII is a stunner. It betters all the amps here in the timing department, and has a wonderfully robust character that works well with all types of music. It manages to retain the good points of the MkII while adding extra resolution and subtlety. All the amps here have a place in the market. It's just that at £550 the Kandy really does set the pace." **WHAT HI-FI? ★★★★★ October 2002**



Also Available
Musical Fidelity Tri-Vista 300 Amplifier • £3994.95

Speaker Selection

Acoustic Energy Aegis Evo Three.....	£349.95
Acoustic Energy AE1 MKIII from.....	£1699.95
B&W CDM 1NT.....	£749.95
B&W CDM 7NT.....	£1249.95
B&W DM303.....	£179.95
B&W DM601 S3.....	£249.95
Cyrus CLS70 (Black).....	£799.95
KEF Q1.....	£249.95
KEF Q3.....	£399.95
KEF XQ1.....	£999.95
Linn Katan (Maple).....	£634.95
Linn Ninka (Maple).....	£894.95
Mission 780SE.....	£349.95
Mission 782SE.....	£899.95
Mission m74i.....	£299.95
Monitor Audio Bronze B2.....	£199.95
Monitor Audio Silver S1.....	£299.95
Monitor Audio Gold Reference 10.....	£799.95
Monitor Audio Gold Reference 20.....	£1499.95
Quad 22L.....	£895.95
Ruark Epilogue II.....	£344.95
Ruark Etude.....	£649.95
Wharfedale Pacific EVO 30.....	£649.95

Please Note: Some products may not be available at all outlets. Advertisement valid until at least 9th May 2003, E&OE.
 *From our selection in-store - Not in conjunction with any other offer.

Free Speaker Cable* worth £50 with ALL Speakers over £280

11L Speakers £379.95

QUAD

"Quad is best known for its superlative electrostatic designs, which start at £3500. So any £379 pair of speakers that carries the company's name has to be going some to avoid tarnishing the family reputation. The first surprise is that the 11Ls come in real-wood veneers covered with piano-gloss lacquer. This type of finish is almost unheard of at the £1000 mark, let alone at this price. Has anything been sacrificed for such a luxury finish? Here's the second surprise: apparently not.

The final surprise? Well, saving the best for the last, the sound quality of the 11Ls is phenomenally good. These are small speakers at just 33cm tall, but the scale and authority of their performance is terrific. The laws of physics dictate



Acoustic Energy AE1 MKIII
 Prices From **£1699.95**

bass extension limitations, but thanks to a clever dual rear firing port arrangement the 11Ls plumb the depths with the determination of a rottweiler, even when placed in free space.

If you're in the market for a pair of top quality standmounters these Quads are a must listen. Quite simply, they're good enough to scare the competition big time." **WHAT HI-FI? ★★★★★ August 2002**



page four

experience **more**

World Radio History





MUSICAL FIDELITY A3.2 Series

A3.2 CD Player £999.95

A3.2 Amplifier £979.95

Replacing the **WHAT HI-FI? SOUND AND VISION** Award Winning A3 CD and Amplifier, the new A3.2 models have been further refined and re-styled. The A3.2 CD Player now incorporates the same DAC, filter assembly and control mechanism as the highly-acclaimed Nu-Vista CD Player. The A3.2 Amplifier draws on experience gained through the development of the Nu-Vista M3 amplifier and as such has inherited many of its qualities, producing a sense of ease and flexibility that is normally only associated with far more expensive designs.

Claim £250 Off the Speakers* of your choice

When purchased together with any MF CD & MF Amplifier combination. Min Spk. Value £500



MONITOR AUDIO Silver S6 Speakers £599.95

Free Speaker Cable* worth £70 with ALL Speakers over £500

British loudspeaker manufacturer Monitor Audio has introduced a replacement series for its acclaimed and award winning Silver Series speakers. "The aim has been to offer real advances in performance and value", says technical director Dean Hartley. "New models include the S1 and S2 standmounters, the S6, S8 and S10 floorstanders.



Also Available Gold Reference GR10 & GR20

"With a close-miked track such as James Taylor's *Line 'Em Up* from SACD they really deliver the character of the singer's voice and they're just as expressive with the cultured rhythms of Groove Armada's latest outing, having just the right mix of rhythmic control and fluidity. But amazingly the best is yet to come - these are simply beautiful speakers for classical music, once a few days' thrashing has tamed their initial rawness. With the latest release of Holst's *The Planets* on DVD-Audio, they thunder out *Mars* with true conviction.

These are rather magical speakers, with a poise and grace that belies their ability to turn on the power when required. Pair them with a good CD player and suitably accomplished amp, and you won't go far wrong."

WHAT HI-FI? ★★★★★ October 2002

Pioneer

PDR609 CD-RW Recorder £199.95



Also Available Marantz DR6000 CD Recorder • £279.95

"While it looks simple, the Pioneer has an impressive array of features, including the handy double-speed disc finalization and CD-Text compatibility. Internally, the PDR609 is a big step up from the Award-winning PDR-509 it replaced: the DAC is now a 24-bit/96kHz number, aided and abetted by Pioneer's Legato Link conversion technology, and it has 24-bit A-to-D conversion, which is ideal for copying your vinyl onto CD. If this is your plan, you'll appreciate that the Pioneer makes it easy to create first-rate copies from any source, helped by the manual recording-level controls. It was hard to tell our copy of Jim White's *No Such Place* from the original.

While the Pioneer's replay quality can't match the Marantz, it costs £120 less, which would buy you a lot of blank discs. If you've already got a dedicated CD player, we'd go with this recorder."

WHAT HI-FI? ★★★★★ August 2001

Recorder Selection

- Harman Kardon CD-R30 CD-RW.....£499.95
- Marantz DR6000 CD-RW.....£279.95
- Sony RCDW3 CD-RW.....£219.95
- Yamaha KX393 Cassette Deck.....£119.95
- Yamaha KX580SE Cassette Deck.....£199.95
- Yamaha CDR-HD1300 CD-RW.....£499.95



pricing policy

We always try to ensure our prices are highly competitive. In the event you can find the same products and excellent service at a lower price, please bring it to our store managers' attention. **World Radio History**



(((AE)))
ACOUSTIC ENERGY

AE1 MkIII Speakers *Prices From* **£1699.95**

Best remembered for introducing innovative metal cone driver technology, the original AE1 was met with much critical acclaim and has since become a classic among hi-fi enthusiasts.

Introduced in the late 1980s, the AE1 was originally designed to satisfy the needs of the professional audio sector where it quickly gained a reputation among studio engineers and recording artists world-wide. However, audiophiles soon discovered its transparent and accurate sound, and so the hi-fi market rapidly became the focus of attention.

During the mid 1990s a Series II version was developed introducing relatively small-scale revisions and enhancements. The new MKIII model, however, is the borne out of an intensive R&D programme, it completely re-appraises the design and technology and brings significant performance improvements in all areas. The result is an ultra-compact, two-way speaker of exceptional quality. Sensitivity is 87db/w/m and impedance 8 ohms. The custom-built tweeter uses a 32mm ring-dome radiator and a doped-fabric diaphragm, while the mid/bass driver has a 120mm magnesium die-cast chasis with a ceramic coated alloy cone. Frequency range is from 38Hz to 30kHz. Standard finish is black ash, with cherry, maple and piano black finishes available at extra cost.



TAG McLaren

AV30R AV Processor **£1799.95** 100x5R Power Amplifier **£2994.95**

TAG McLaren's AV30R AV Processor is aimed at the home cinema enthusiast who is concerned with keeping up-to-date with the latest surround formats. When partnered with TAG's 100x5R Power Amplifier it makes an exceptional combination.

According to What Hi-Fi? Sound and Vision magazine in their October 2002 issue: "In use, the AV30R, connected to TAG's 100x5R power amp, is superb. True, it can't quite match the clarity and power of the latest-specification TAG flagship, the AV32Rbp-192, but by any AV standard this is a very high-end piece of kit, with excellent impact and fine detail across a range of movie soundtracks from Once Upon A Time In America to the explosive actionfests. Channel steering is immaculate, and the sense of a soundfield wrapped around you - even in 5.1-channel mode - entrancing, with spine-tingling rear-channel effects. The fine Pro Logic II implementation serves music as well as it does non-discrete AV soundtracks, and with an SACD machine hooked up via the 5.1 channel inputs, the lack of coloration and sheer bass oomph is extraordinary." [www.avip.it](#) ★★★★★ October 2002



ACOUSTICS
REL

Strata III Subwoofer (Wood) **£799.95** Q150E Subwoofer **£499.95**

REL is an audiophile company who take great pride in designing and building their highly acclaimed subwoofers. Because of their total commitment to performance, REL sometimes adopt unusual solutions to otherwise straight-forward problems.

"The aggression of Rage Against The Machine's Take The Power Back is near-tangible, the midrange a spitting, spiteful companion for the tight, deep, air-agitating bassline. As for the more deft creations of Chick Corea, the REL's articulate nature serves subtly to underpin basslines, rather than swamp them. The adaptability makes the Strata III a highly recommended subwoofer - it's a very versatile, musical piece of kit, and it doesn't cost the earth." [www.avip.it](#) ★★★★★ July 1999



Claim Free

Tivoli Model One Radio worth £99

When You Purchase any REL Subwoofer over £700*



Please Note: Some products may not be available at all outlets. Advertisement valid until at least 9th May 2003, E&OE.
*From our selection in-store - Not in conjunction with any other offer.

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outlets nationwide

- Aberdeen** 491 Union Street **01224 587070**
Bedford 29-31 St Peters Street **01234 272779**
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Brighton 57 Western Road, Hove **01273 733338**
Bristol 92b White Ladies Road, Clifton **0117 974 3727**
Cambridge 17 Burleigh Street **01223 304770**
Cardiff 104-106 Albany Road **029 2047 2899**
Cheltenham 14 Pitville Street **01242 241171**
Crawley 32 The Boulevard **01293 510777**
Edinburgh 5 The Grassmarket **0131 229 7267**
Exeter 28 Cowick Street **01392 218895**
Glasgow 88 Great Western Road **0141 332 9655**
Guildford 73b North Street **01483 536666**
Hull 1 Savile Row, Savile Street **01482 587171**
Ipswich 12-14 Dogs Head Street **01473 286977**
MOVED Leeds 62 North Street **0113 245 2775** Open Sunday
Leicester 10 Loseby Lane **0116 253 6567**
Lincoln 20-22 Corporation Street **01522 527397**
Liverpool 16 Lord Street **0151 707 8417**
Maidstone 96 Week Street **01622 686366** Open Sunday
Manchester 69 High Street, City Centre **0161 831 7969**
Newcastle 19 Newgate Street **0191 221 2320**
Norwich 29-29a St Giles Street **01603 767605**
Nottingham 597-599 Mansfield Road **0115 911 2121**
Oxford 41 St Clements Street **01865 241773**
Peterborough 36-38 Park Road **01733 897697** Open Sunday
Plymouth 107 Cornwall Street **01752 226011**
NEW Poole Latimer House, 44-46 High Street **01202 671677**
Preston 40-41 Lune Street **01772 825777** Open Sunday
Reading 3-4 Kings Walk Shopping Centre **0118 959 7768**
Sevenoaks 109-113 London Road **01732 459555**
Sheffield 635 Queens Road, Heeley **0114 255 5861** Open Sunday
NEW Solihull 149-151 Stratford Road **0121 733 3727**
Southampton 33 London Road **023 8033 7770**
Swansea 24 Mansel Street **01792 465777** Open Sunday
NEW Swindon 8-9 Commercial Road **01793 610992**
Tunbridge Wells 28-30 St Johns Road **01892 531543**
Witnam (Essex) 1 The Grove Centre **01376 501733**
NEW Wolverhampton Burdett House, 29-30 Cleveland St. **01902 312225**

within the M25

- Bromley** 39a East Street **020 8290 1988**
Chelsea 403 Kings Road **020 7352 9466**
Croydon 369-373 London Road **020 8665 1203** Open Sunday
Epsom 12 Upper High Street **01372 720720** Open Sunday
Holborn 144-148 Grays Inn Road **020 7837 7540**
Kingston 43 Fife Road **020 8547 0717** Open Sunday
Southgate 79-81 Chase Side **020 8886 2777**
Swiss Cottage 21 Northways Parade, Finchley Rd **020 7722 9777** Open Sunday
Watford 478 St Albans Road **01923 213533** Open Sunday

Please call to verify hours of business.
 Contact our outlets via **E-Mail** outlet@sevenoakssoundandvision.co.uk

who are sevenoaks?

Founded in 1972, Sevenoaks Sound & Vision is one of the largest and most successful hi-fi and home cinema retailers in the country.

Each Sevenoaks Sound & Vision outlet stocks a wide range of quality products, covering all categories of specialist home entertainment, from DVD Players to Widescreen Plasma Televisions and Projection Systems, all at highly competitive prices.

Friendly staff are available in all stores to advise, demonstrate and guide you through the home entertainment jungle.

new outlets now open

We are delighted to announce that we have opened new stores in the following locations.

Poole 01202 671677 • **Solihull** 0121 733 3727 • **Swindon** 01793 610992 and **Wolverhampton** 01902 312225. Also, our **Leeds** store has re-located to larger premises.

custom installation

Sevenoaks Sound & Vision's Custom Installation Service enables the integration of a home cinema or hi-fi system into your home as neatly and seamlessly as possible. All electronics can be hidden away, speakers discreetly mounted either in the wall or ceiling and the complete system operated via remote control.



Retractable Screen and In-wall Speakers

Our installation experts are fully trained to the highest standards in all areas and provide a prompt, reliable and professional service. Whether you're looking for a multi-room system, a dedicated home cinema installation with a retractable screen and built-in speakers or an integrated control or lighting system, Sevenoaks Sound & Vision has a diverse range of products available to cater for all your requirements.

sevenoaks online

The Sevenoaks Sound & Vision website has news and information on the Sevenoaks group and its 48 outlets nationwide. The website is designed to provide you with answers to the questions you may have when buying new equipment.

There are regularly updated stock clearance lists with hundreds of products on offer and detailed pages to help you locate your nearest outlet.

For impartial advice and information, just click on sevenoakssoundandvision.co.uk

stock clearance

With 48 outlets nationwide, the Sevenoaks Sound & Vision group stock and display a wide range of products. As individual models and product ranges are changed or superseded, the preceding models are made available at a reduced price, for clearance. Visit our Website for an up-to-date list of the clearance stock, listed by outlet, within the Sevenoaks Sound and Vision group.

0% finance option†

Spread the cost of buying. 0% finance option is available on the vast majority of products we stock. †Written details on request. Licensed credit brokers. Minimum balance £400. Subject to status.

pricing policy

Whilst we do not claim always to be the cheapest, we try to ensure our prices are highly competitive. Take into account the expert advice, unrivalled product selection, demonstration facilities and excellent pre, during and after sales service and the lower price might not look such good value.

In the event you can find the same products and excellent service at a lower price, please bring it to our store managers' attention. We will always endeavour to offer you the best deal.

6 INTO 2 = NIRO!



One of the hi-fi industries most revered names enters the AV market with a highly distinctive and simple solution to home cinema. Enter the Niroson Two6.1 AV cinema system. . .

In September 1998, Niro Nakamichi - after some thirty five years in the audio industry - started a new company (Mechanical Research Corporation) with the idea of creating a free-thinking environment for the development of innovative electronics. The results of this project range from the extreme - his bizarrely styled £20,000 'amplification engine' - to this, the Niroson Two6.1 AV receiver and integrated loud-speaker package.

One of the most prevalent and justified moans about home cinema is the hassle buyers must endure to set it up. Thankfully there are options now available from the likes of Linn and T&A that aim to make the dream of plug 'n' play home cinema a reality. The Two6.1 is the latest of the breed.

EASY DOES IT

So how does the Niroson Two6.1 attempt to make life easier for the committed AV fanatic? Well, first of all, and most significantly, it does away with the need for six 'speakers' to be placed around the room. The main AV receiver unit comes with a subwoofer and two weighty, semi-circular, 'super' speakers that are all you need for Niro-style surround sound. Instead of filling the listening environment with more traditional style 'speakers, one of these special 'speakers is positioned to the front of the listener and the other directly behind. They are connected to the main processor/amplifier unit through special cables.

Each Super 'Speaker contains three pairs of 3.5" midrange units partnered with metal dome

tweeters. In the front unit, there's also a built-in IR sensor for remote control capability, which means the main receiver unit can be tucked away out of sight. The left and right channels of each of the units fires out at an angle of 45 degrees.

Bass duties are fulfilled by the supplied 150 watt active subwoofer which consists of three 8" drive units (one powered, two passive) in a compact and unintrusive cabinet measuring only slight more than 12" each way.

The 6.1 system receiver is elegant. On the outside there are four simple buttons and a volume control. There's a clean display window and a drop down panel for connecting games consoles, video cameras, etc.

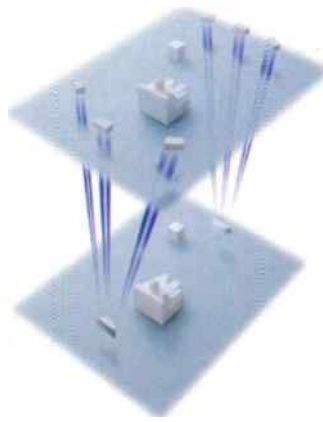
In contrast to the front panel the

system remote is very comprehensive and a read of the manual doesn't go amiss here. One good thing to note is that the 'speaker and subwoofer levels can be adjusted from the remote. Inside there is auto-decoding of Dolby Digital, Dolby Digital EX, DTS, DTS ES and Dolby ProLogic II. There are a number of selectable music and cinema modes, too. Being a receiver, there's also both FM and AM radio with 30 presets.

GOING LIVE

Basic set up is a doddle. And to make life even easier the front 'speaker comes with around 7m of dedicated cable and the rear with at least twice as much. There is no Scart. Video is delivered via RCA coaxial (CVBS) or S-video connections as is fully and clearly explained in the manual. I used the rear 'speaker just above head height and also down on the floor level. In both case the effect was well executed.

There's none of the 'oh well, it was a good idea' mentality here. It actually works, and very well. The whole effect is more greatly exaggerated with movie soundtracks as opposed to music discs. Playing the Dolby Digital multichannel soundtrack of *Crouching Tiger, Hidden Dragon* the action scenes were highly engaging. Sounds come from where they physically shouldn't and you find yourself head scratching as the metallic brush of a sword



The two Niro Super Speakers simulate a full surround AV speaker package

emanates from the left wall but is actually coming from the cabinet directly in front of you! It's an amazing effect.

Dialogue was impressive, too. Words in *Mulholland Drive* were clean and crisp and the trademark David Lynch spooky bass undercurrents and uneasy sonic effects showed that the sub could deliver, too.

The sub is a highly important part of the package. Take it out of the equation and it sounds like four very tinny transistor radios are all playing at once. Turn it back on and you have a superb three-dimensional sound with depth and roundness.

If you like loud and powerful battle scenes don't expect to be swamped in by the Niro system – there's only so much these boxes can

handle. This said, they do give a great sense of spatial breadth.

A session of Diana Krall's Paris concert DVD with both DTS and Dolby soundtracks showed that whilst the Niro system is subtle and refined it doesn't match up to audiophile standards. However, it was still quite involving and musical. For music I needed to tweak the subwoofer a little; too high produced an over synthetic sound and too low resulted in lack of body in both instruments and voices.

Overall then the Niro is a highly effective and entertaining bit of kit that goes one large step towards making home cinema and multichannel audio less troublesome to the average buyer. You get a true spatial sound from the two 'super speakers'. Two thousand pounds may seem a lot of money but add up what a budget receiver and 'speaker package would cost, then factor in the cable cost, design and space economy angle and it begins to make a lot of sense!

Niroson Two6.1 £1,999

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SPECIFICATIONS

- DVD/CD/CD-R/CD-RW/VCD/SVCD/MP3 compatible
- Dolby Digital 5.1, Dolby Digital EX, Dolby ProLogic II Music/ Cinema, DTS and DTS ES 6.1 processing
- 6x 150W
- 30 radio presets
- dimensions: AV receiver: 80x430x380mm; subwoofer: 300x280x280mm; speaker units: 145x456x184mm
- weight: 8.5kg

MEASURED PERFORMANCE

With an output of 25watts per channel into 4ohms the Niro doesn't look so powerful. However, it has six channels: three at front and three at rear. That's equivalent to a stereo amp of 75watts per channel, which doesn't sound so bad. The loudspeakers are quite sensitive too, so the system as a whole will go loud enough.

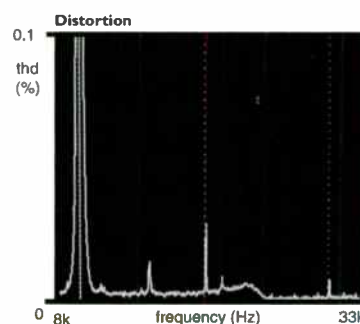
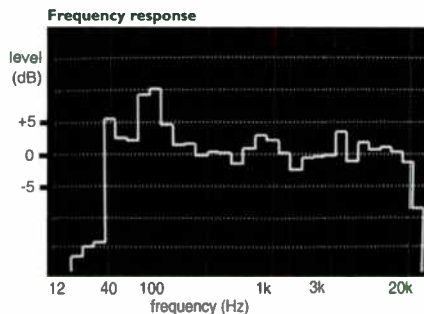
The stereo inputs go through a analogue-to-digital convertor (A/D) and are digitally processed (bass management, time delay, equalisation, pseudo-surround etc) before going through a D/A and out to all six loudspeakers. The amplifier's output isn't flat; it's equalised. Consequently the amp can work only with the speakers supplied and no others.

Distortion levels from A/D and D/A conversion were low, as was noise at -100dB (IEC A). There was no supersonic noise, suggesting the convertors are multi-bit.

Amplifier distortion into 4ohms was acceptably low, measuring 0.03% in the midband and 0.13% at high frequencies.

The loudspeakers manage to give a reasonably even frequency response right up to 16kHz. This system will sound smooth and quite accurate, but have heavy bass unless adjusted.

The Niro system measures reasonably well. **NK**



World Verdict

Great idea that works well and is consummately easy to use. Not the ultimate multichannel music system at the price, but surprisingly convincing nonetheless.

A KICK UP

David Price takes a nostalgic trip back to the days when the earth was flat and hi-fi came in any colour you wanted, just so long as it was black...

The Eighties – how was it for you? Big hair, red braces, shoulder pads, Ferrari Testarossas, Golf GTis – looking back now, it was certainly a decade of extremes, and that holds true for hi-fi too.

To appreciate the significance that the decade had on hi-fi, it's best to remember the audio scene of the seventies. This was truly another world, a time when turntables ruled the roost, and were considered – open-reel apart – as the only serious way to listen to music. The trouble was that, with the exception of a select few, most were appallingly lo-fi. Rumble, hum, snap, crackle and pop was what you got from your BSR BDS 95 'autochanger'. Amplifiers were making the transition from valves to transistors, and the first designs – even from respected manufacturers – were often hard and steely sounding things. Power was low and distortion high.

Then there were the loudspeakers, massive things with a multitude of drive units that usually sat on the floor. If they had stands, then they were invariably of the castor variety for wheeling out at fondue parties! Speaker cable and interconnects came straight from leftover doorbell wire.

THE LOOK OF LOVE

The eighties – love it or loathe it – changed all that. By the end of the

decade, when Margaret Thatcher was at the height of her power and the first Poll Tax demands hit Scottish doormats, hi-fi was a very different place. Previously the exclusive preserve of Wireless World-reading tweaky types, it had become Big Business. Buyers flocked to High Street dealers to get a piece of the new technology.

Forget valves and vinyl, what buyers wanted was anything with DIGITAL writ large on its gaudy black front panel. Second only to the silver disc was POWER, and loads of it. As the saying went, 'Greed is good', and most punters wanted more. To wit, the good old integrated circuit stepped in to offer oodles lots of sound per pound, and to heck with the quality.

For eighties man, image obsessed and beguiled by 'high tech', hi-fi was the way to express himself. The black art of advertising fuelled the feeding frenzy, with campaigns from the likes of Technics and Philips showing bright, lithe, angular young things pouting ridiculously next to the latest digital dreamboat. The message was as clear as it was crass – CD players were for yuppie wannabes, power recreation for go-getters. Pete Murphy, ex-Bauhaus frontman, became an icon with the 'Is it Live or is it Memorex' TV commercials. Hi-fi was, for a good long time, a sexy and chic vocation.

The industry boomed, fuelled by the shop traffic that CD generated. Manufacturers responded. As the terracottas, greens and mauves of seventies interior design gave way to a new 'minimalist' design language – all stripped pipe, black ash furniture, white walls and chrome embell-

ishments – hi-fi design responded with the black box. The eighties was when lifestyle and hi-fi first intersected – one was an expression of the other.

Whereas the seventies icon was a massive, knob-festooned, wood panelled receiver, the eighties brought a wave of slimline separates finished in black with the minimum of facilities. Somewhere on the sparsely populated feature would lie the

legend 'digital ready', and somewhere else would be a button marked 'source direct'.

NEW MONEY

Further up audio's evolutionary scale, hi-fi nuts scoffed at the swinish multitudes' embrace of CD, for they knew what was what. Just as Maggie Thatcher had insisted 'there is no alternative', large sections of the specialist

UK press spread the gospel about 'the only way to listen to music' – a Linn Sondek LPI2 turntable, Naim amplification and Linn Isobarik loudspeakers. The cult of 'flat earthers' duly sprung up, and rarely has hi-fi seen the like of it since. In addition to the aforementioned Glasgow and Salisbury companies, brands such as Rega, Inca Tech, Epos, NAD, Creek, NVA, Onix, Exposure, Nytech, Roksan and ProAc became associated with the movement, whether they liked it or not. They shared one idea – less is more. Gone was the clutter of seventies design to



Style Statement - early CD.



Classic 80s Naim ad.



THE FLAT EARTH

Fuelled by a band of opinionated hi-fi writers, an entire subculture grew around a handful of manufacturers who declared that 'pitch accuracy' was the only important thing in music reproduction. The high priest was one Chris 'Christ' Frankland, hitherto editor of Popular Hi-Fi and arch proponent of the Linn lifestyle. He went onto launch his own magazine, *The Flat Response*, which he declared to be "totally prejudiced in favour of equipment that works." Eleven issues were published between March 1984 and December 1985, when he railed against, variously, valve amplifiers, Japanese and American high end and of course the dreaded Compact Disc. *Hi-Fi Review* followed, which ran until 1990.

THE EIGHTIES



Diamond Life:
Wharfedale's gem.

be replaced by very simple circuit design (sometimes with no protection!) and minimalist crossovers (often with just a couple of components).

This led to a 'cold war' between flat earthers and the rest of the specialist hi-fi scene. Manufacturers, dealers and buyers lined up into two camps, and rarely did they meet. Great names like SME, Quad, Sugden, Rogers, Harbeth and Michell found themselves overlooked by much specialist UK hi-fi press, simply because their engineering, design or marketing approaches didn't fit. Likewise, the eighties desire for new products meant that classic hi-fi as

been fronted by a turntable. The Rega Planar 3 was all things to all men, a great deck in so much demand that for much of the decade there was a waiting list to actually buy it! Manticore's Mantra and Heybrook's TT2 were popular upmarket upgrades, again with the great Rega RB300 arm. If you could afford any more, you'd be politely asked to 'buy a Linn'.

Amplification was an interesting question. In the seventies, the only way to get serious sound had been to go the pre-power route, but the eighties gave birth to a range of 'super integrations' that claimed better sound and less clutter than their two-box rivals. Mission's Cyrus 2 was a case in point, a brilliant shoebox-sized Henry Azima design that even had the facility to connect up an external PSX power supply – very eighties! Exposure's X, Inca

Tech's Claymore, Naim's NAIT and NVA's A30 were all top of the flat earther's wish list, but perhaps the ultimate eighties amp was the Audiolab 8000a. Contrary to the trends of the day, it had

lots of facilities, but its striking 'black box' design, generous power output and (unlike many of its rivals) tendency to not blow up won it many friends.

Loudspeakers were one of the most contentious areas of hi-fi design (as ever!), and saw dramatic changes throughout the 'greed is good' generation. Celestion's SL6 was an incredibly important design – it set a blueprint for eighties loudspeakers that were followed for many years to come. First, its metal dome tweeter ushered in a love affair that saw this type of treble transducer reach almost every popular eighties speaker. It was almost a badge of status. The fact that most metal



Nakamichi Dragon - we are not worthy!

domes sounded harsh and tizzy (just perfect for the new digital audio technology!) was largely ignored at the time. Second, the SL6 was a smallish, two-way design – and so became every other loudspeaker, from the humble £60 Wharfedale Diamond to the £600 Acoustic Energy AE-1. The idea was that fewer drive units equals better imaging (mostly true) and simpler crossovers for better sound (true or false, depending on the design!).

The result was that small, power hungry mini monitors made their way into so very many hi-fi homes. Linn's Kan was the most extreme example, so inefficient that it needed thousands of pounds worth of transistor amplification to get a squeak from it, and even then the bass was practically non-existent. This created a whole new market for speaker stands. Bits of crudely black painted welded steel started springing up in the nation's listening rooms – much to the horror of spouses, no doubt. The 'frame stand', as evinced by Heybrook's archetypal HBS-1, had arrived.



Cassette had a record year in 1988.



NAD3020: the best budget amp, ever!

such didn't really exist. People, it seemed, simply were not interested in reading about Leak valve amplifiers or Quad ESL-57 electrostatic loudspeakers. Garrard and Thorens turntable motor units would routinely sell at car boot sales for a fiver. And all forms of Japanese machinery, which had so dominated showrooms the decade before, were largely spurned by the British audiophile cognoscenti regardless of whether they sounded good or not.

SYSTEM ADDICT

Eighties stereos looked very different to those of just ten years previous. A typical 'real hi-fi' system, bought from a specialist dealer, would still have

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- the amps are easily bridged to give at least 3 times the power

Stereophile's opinion on the 2-channel amp: "an absolutely first class amp...remarkable talents."

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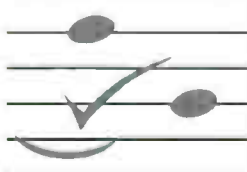
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EIGHTIES UNPLUGGED

some high points from the decade that hi-fi forgot



Exposure: the quintessences of 80s cool.

SOUND AFFECTS

The sight of a black Linn LP12 turntable, Ittok arm and Audio Technica cartridge sitting on a Sound Organisation stand, feeding a stack of black Exposure pre and power amplifiers, driving a tiny pair of black Acoustic Energy AE-1s could only mean one thing. Bold, forward, dynamic, engaging, punchy, musical – or thin, anaemic, painful, grating and with absolutely no tonal colour or finesse – depending on your point of view.

Maybe the eighties is best left in its box? However, there's no denying how it changed the hi-fi world forever, rather like the decade's politics, technology and historical events. By 1990 it was as good as over. The Berlin Wall came down, Maggie left Number Ten, Nelson Mandela was released and suddenly it was okay to like valve amplifiers, horn loudspeakers and Garrard turntables once more. This all happened pretty much about the time that this magazine launched to an unsuspecting world – coincidence, or what?



Celestion SL600: metal for the masses.

DUAL CS505 TURNTABLE

MOMENT: 1980

REASON FOR BEING: Dual's stripped down bargain basement belt drive.

CLAIM TO FAME: Second only to Technics' SL1200 in vinyl's best seller list? Hi-fi's Ford Escort - cheap, effective and everyone seemed to have one in the eighties. Early versions had silly cartridge mountings and mats, later versions' inflated prices.

COSMIC IMPORTANCE: Many of today's Sondek, PT and Roksan owners started out with them.

WHAT TO PAY: £40

WORLD VERDICT: £ 4 4 4 4

MISSION CYRUS ONE AMPLIFIER

MOMENT: 1983

REASON FOR BEING: Mission's first foray into budget transistor amplification, and what a debut!

CLAIM TO FAME: A giant-killing David to the Goliath of A&R et al. Its £150 purchase price bought you more performance than most amps at twice the price.

COSMIC IMPORTANCE: "I can still remember every last detail of its circuit topology now", its designer told me last year. It brought a lot of musical satisfaction to a great many people.

WHAT TO PAY: £70

WORLD VERDICT: £ 4 4 4 4 4

MERIDIAN MCD CD PLAYER

MOMENT: 1984

REASON FOR BEING: The world's first 'audiophile CD player', allegedly

CLAIM TO FAME: Brought hi-fi respectability to a new format which was previously proved sonically very hit and miss. Put Britain on the map as a manufacturer of Compact Disc players, although in truth it was just a lightly breathed on Philips CD100. Still, the tweaks really worked.

COSMIC IMPORTANCE: Gave specialist hi-fi magazines a reason to take digital seriously, well almost...

WHAT TO PAY: £100

WORLD VERDICT: 4 4 4 4

AUDIOLAB 8000A AMPLIFIER

MOMENT: 1984

REASON FOR BEING: Cambridge Systems Technology's answer to the ubiquitous A&R A60.

CLAIM TO FAME: At the time of its launch, Hi-Fi Answers' David Praker said you'd need to spend upwards of £3000 to better it! Mega sales for the whole of the next decade, and a particular favourite in Germany. Early versions just couldn't live up to the hype, sounding sterile and uninvolved. The last incarnation was very good for the money, however.

COSMIC IMPORTANCE: Offering excellent build, reliability and facilities, it was one of the first British products to out-Japanese the Japanese.

WHAT TO PAY: £150-£300

WORLD VERDICT: 4 4 4 4

ACOUSTIC ENERGY AE-1 LOUDSPEAKER

MOMENT: 1986

REASON FOR BEING: The ultimate eighties 'less is more' loudspeaker

CLAIM TO FAME: Metal drive units bolted rigidly into tiny cabinets gave superb imaging and transients, but next-to-no bass and a continual headache for the amp that had to drive it. Painfully shrill or brilliantly fast, depending on your point of view.

COSMIC IMPORTANCE: Gave Hi-Fi Review magazine a non-Linn/Naim product to recommend, at last!

WHAT TO PAY: £250

WORLD VERDICT: 4 4 4 4

LINN AXIS TURNTABLE

MOMENT: 1986

REASON FOR BEING: 'Sondek on a budget'

CLAIM TO FAME: 'The Linn turntable that works out of the box', with no setting up required.' Easy to set up, use and maintain. Sounded great, tonally more neutral than the Sondek at a third of the price. Less potential for pointless tweekery and indulgence in the cult of Linn. Little scope for fellow owners to discuss the latest suspension grommet upgrade. Even less for dealers to convince owners how much happier they'd be if they had new grommets.

COSMIC IMPORTANCE: Trounced equivalently priced CD players, giving a real incentive for people to stay with vinyl.

Came a year or so too late though, as the march of the silver disc was by now unstoppable.

WHAT TO PAY: £230

WORLD VERDICT: 4 4 4 4

WHAT TO PAY: £230

WORLD VERDICT: 4 4 4 4

CELESTION SL700 LOUDSPEAKER

MOMENT: 1987

REASON FOR BEING: Celestion's staple upmarket speaker for the eighties, descended from the much vaunted SL6.

CLAIM TO FAME: Power hungry, hard to drive design typical of the last decade. Complicated crossover network made for flat response and neutral tonality, but many found it painfully analytical and musically unrewarding. A hit with Gramophone reading Quad owners. Very 'high tech' in an eighties sort of way.

COSMIC IMPORTANCE: The loudspeaker equivalent of red braces and a filofax.

WHAT TO PAY: £250

WORLD VERDICT: 4 4 4 4

GRAND DESIGNS

David Price listens to Perigee's svelte new FK-1F loudspeakers, complete with superb ribbon tweeters.

Audiophiles have long appreciated ribbon drivers for their incredible sense of speed, accuracy, and detail. They are rare though, usually being used as a tweeter. In the FK-1Fs Perigee use a ribbon that operates over a substantial part of the audio range to make ribbon benefits more prominent.

There's no denying that Perigee's ribbon tweeter is an exquisite bit of kit. A multiple layer aluminium/ steel/ neodymium magnetic ribbon assembly, it is set in a monopole configuration, with no transformers or resistors needed. The static parts of the driver are extremely solid and rigid, with the faceplate being precision CNC machined aluminium. Effective mass is just 0.2g, with the driven area covering more than 90% of its mass. Power handling is high and efficiency is very good at over 92dB. The bass drivers use twin tuned ports to control low frequency cone behaviour.

These are set into a massive 25mm MDF cabinet that's painted using a multi-stage two-pack paint process, and held securely with TORX fixings. Internal wiring is matched to the drive units to ensure maximum integration, and all circuit joints are silver soldered and hard wired. Inductors and capacitors are claimed to be tight tolerance, high-grade types with no resistors are used. The FK-1Fs are offered with an optional PERISER platform, designed to couple the speakers firmly to the

floor – but frankly these things are so heavy that they can do the job by themselves. A lower enclosed cavity for sand filling increases the static mass of the speaker to approximately 50kg. Thick level adjustable spikes are provided, with optional spike cups for tiled or timber floors.

High quality gold plated brass binding posts are provided for bi-wiring. For the purposes of this review, these were driven by a Pioneer SPEC1/ SPEC2 pre-power, able to serve up 250W without complaint. Whilst the high sensitivity of the FK-1Fs is such that you can use higher powered valve designs, those with big rooms will need something with serious solid-state wallop. I found they worked best about 30cm out into the room, whereupon the bass integrated best with the rest of the sound. Source was a Michell GyroDec/SME Series IV/ Linn Akiva, courtesy of Trichord's Delphini II.

SOUND QUALITY

The FK-1Fs are deeply impressive loudspeakers, even at their elevated price point. Switch on and by the end of the first bar you'll be well aware of the fact that they are ribbon designs, simply by virtue of the general lack of grunge coming out of the high frequency unit! In a sense, a loudspeaker like this is fantastic – but



also worrying because it tells

you, clear as day, what all other designs are doing wrong.

For example, The Crusaders' Street Life. The opening few bars, complete with jazz piano and Randy Crawford's sublime vocals, showcased that brilliant transducer to best effect. Here is air and space that you'll rarely hear even through an electrostatic, sheer unconstrained out-of-the-box imaging and articulation that no moving coil can do, and sublime rendition of female vocals, capturing every last inflection and accent, possessed of the most incredible smoothness right up and down the scale. Best of all is when the band kicks in a proper - then the speed of a ribbon becomes obvious. They are dazzlingly fast yet totally

PERIGEE

"The point nearest the earth's centre in the orbit of the moon or a satellite. The point in any orbit nearest to the body being orbited".

devoid of grain or edge. This is quite eerie, as many metal domed loudspeakers achieve an impression of speed thanks to a clang or zing - but the FK-1Fs have neither. The result is that music bounds along with a seamless smoothness that filled me with wonder!

Although tonally ever-so-slightly coloured (ultimately, those ribbons invest hi-hats with just the smallest amount of extra silk), they're essentially very open. For example, Tom Tom Club's *Genius of Love* brings an altogether different sound - far thicker and more fulsome - as these speakers really spotlight the difference in recorded acoustics like few others. They image very well out of the box - there's a definite sweet spot and in this respect they're a good way behind Quad 989s. Yet that hear-through midband (projecting well forward and hanging well back from the plane of the speakers) puts them head and shoulders ahead of most conventional designs. There's that same brilliant speed, total lack of edge and tremendous alacrity with rhythmic accenting, but an altogether different studio sound.

Interestingly, although the Perigees are so transparent, this never detracts from the experience - they seem to let the instrument's flavour flood out no matter how bad the recording may be. This is the

difference between true transparency and adding an attractive sonic footprint - the Perigees do the former and many of its high-end rivals the latter.

However, don't think they're perfect because they're not - far from it. Going back to what I said about all 'speakers being their designer's view of what particular compromises should be made, it's fair to say that the FK-1Fs score straight As on treble and midband, but are merely B+ on bass. It is the sublime clarity and ease of the mid and high frequencies that shows up the bass as being a little slow and lacking in articulation. Even with the best set-up and positioning, I simply couldn't get away from the feeling that I was listening to a 'hybrid'. In this sense, the Perigees are less successful than, say, Quad's 989 - which of course are not a hybrid!

The bass units do what they're there to do with style - they lend weight to the ribbons' sublime highs, serving up serious amounts of low frequency punch with sledgehammer weight. They go very low and are even all the way down - there's no obvious hot spot or boom. Decently tuneful, they reproduced the left hand piano cadences of Herbie Hancock's *The Prisoner* with panache. Indeed, bass guitars from Thomas Dolby's *Flying North* had

WHY RIBBONS?

What differentiates a ribbon from any moving coil driver is its amazingly low mass. A thin conductor is etched onto a light foil suspended in a magnetic field. Passing a signal through the conductor generates a magnetic field, causing it to move. Because there is no heavy metal or cloth dome, it offers tremendous transient speed and great sensitivity to the tiny inflections within audio signals.

Once you've heard a good ribbon tweeter, very few moving coils can compete, but the critical problem is getting it to interface properly with the mid/bass units, which generally have to be moving coil designs thanks to reasons of physical size and cost.

plenty of weight and a good tonality too. It's just that they simply don't integrate seamlessly with the ribbons. It's just a subtle sensation that you soon get used to, but it is there all the same.

The FK-1Fs excel in clarity, transparency, detailing, transients, smoothness, sweetness and openness. They're not perfect but all the same remain one of the very best loudspeakers I have ever heard.

Perigee FK-1F £5,000

Perigee Acoustics
www.perigee.com.au

MEASURED PERFORMANCE

Measurement shows the ribbon works from 800Hz right up to 20kHz, three octaves more than most ribbon tweeters. This shifts the usual 3kHz crossover frequency downward to where longer wavelengths make integration less critical.

The ribbon has an acceptably flat frequency response our analysis shows, it reaches 16kHz with no difficulty.

The unit has very low impedance, reaching just a few ohms at 4kHz and above. Many amplifiers will produce twice as much distortion when required to deliver the current demanded by the Perigees, so amplifier choice is important. Counterbalancing this is very high voltage sensitivity. These speakers deliver a healthy 88dB SPL from one nominal watt (2.8V) of

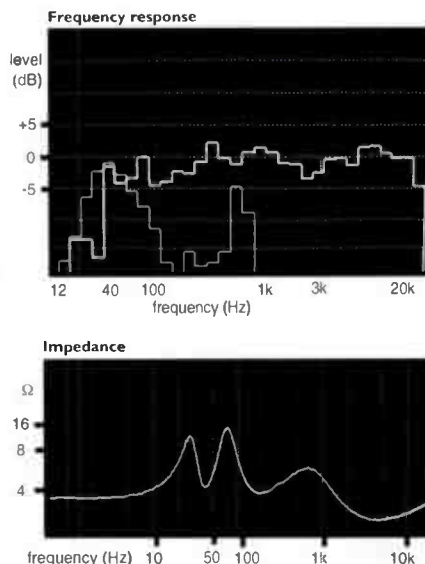
input, so they don't need to be pushed hard for high volume. Overall impedance measured 3.8ohms. A valve amp set to 4ohms will handle this elegantly, revealing what a good ribbon can do.

Passing full range through two cone units smears the acoustic centre vertically, expanding image size artificially; these are not point source loudspeakers.

The bass drivers look well damped, as their output falls away gently, and they will likely sound tight and clean, whilst good cone area will move air without distortion. The lower limit of forward radiation is 40Hz, the two large rear ports working a little lower to around 25Hz. I would

expect, clean but solid bass.

The Perigee is a cleverly engineered, high quality ribbon loudspeaker. **NK**



World Verdict Exquisitely smooth, fast and detailed, the FK-1Fs are a convincing argument for ribbon loudspeakers but are not without flaws.

letters & emails

Letter of the month

GETTING SURROUNDED

I have recently ventured into home cinema with a Toshiba 32ZT29B iDTV and a Pioneer DV-656AS DVD player.

The TV comes with a set of four discrete speakers and internal decoder to provide surround sound. I have bypassed the internal subwoofer and am using an existing REL Q100e. Sound quality is important to me as I watch a mixture of films and music (mainly opera) on DVD and want to be able to get the most out of the DVD-A and SACD capabilities of the Pioneer.

Although I am impressed with the picture quality the sound of the Toshiba speakers is poor: congested and uneven. I wish to upgrade with a separate receiver and better quality speakers. Unfortunately, as I don't have room for floorstanders or stand-mounted speakers, I'm looking for five (or six) identical satellite speakers, though I realise it will be difficult to get the sound quality I'm looking for from satellites. I would greatly appreciate your advice about suitable receivers and satellites to audition. They would need to integrate well with my existing equipment, be suitable for both film and music, within a budget of £2,000. Am I asking too much?

Dr. Alan Turner

Ah yes - future problems! I too am grappling with listening to classical via multi-channel and there are some unusual technical problems here. However, they're not insurmountable and the benefit is when the thing flies, Opera and all music recorded with microphones can sound quite magical.

What you have to consider is that surround-sound in all its forms (DTS, PCM, DSD and to a lesser extent DD) can deliver really high quality, and the DV-656SA is able to convey this in a competent manner. Consequently, you need five full range loudspeakers of high quality. It is impossible to get this from small, non-specialist loudspeakers, and it is also contradictory to mate cheap satellites with SACD or DVD-A, both digital systems of enormous

dynamic range and bandwidth. To get the benefits of Opera via surround-sound you must get decent loudspeakers; there's really no compromise that can be made here.

Luckily, there's no shortage of really good small loudspeakers. Smooth and detailed, Mission's new 780SEs are one possible choice. Five of these, well timed in surround-sound will send you to Heaven (that's assuming you're ready!). Or you could try Mordaunt Short MS912s - they are lovely too. I could live with either and love both. If you want to hear loudspeakers that are small and have a tweeter that extends past 20kHz, then read our Tannoy Sensys 1 review (May issue). They are budget, but try not to be. Another small-ish loudspeaker with enough bandwidth is KEF's XQ-1, but at £1000/pair these are beyond your budget.

Whatever you do, forget about cheap satellite 'speakers for Opera; you must have real hi-fi 'speakers to cope with high quality vocals. The human ear/brain is so highly tuned to vocals and speech that few loudspeakers are convincing. The trick is to sit back and work out how to accommodate good 'speakers physically in your room. Time to dust off the Black & Decker! Finally, on this matter of Opera, for convincing results you need to set loudspeaker time delays. This is possible with Dolby and DTS, but not possible with DVD-A and SACD.

There are so many 'receivers' available now, choosing one would seem to be easy enough. However, they are designed (sloppily) for A/V use and can sound quite crude if you have a sophisticated hi-fi ear. Most sound hard, steely and bright. For what you get (six channels) they are also

cheap. There are no magic solutions here yet. Marantz make various models that sound good (clean but bright), such as the SR6300.

You will need a subwoofer for the LFE channel, even with five full bandwidth main 'speakers. This is how the system will cope with music (using the mains) and movies (low frequency effects). So no trade off is necessary. With five matched, full range hi-fi loudspeakers properly timed in you will get great sounding Opera, and it won't cost a fortune!

NK

I'd go for five Mordaunt Short MS912s and your REL sub, or buy ELAC's Cinema Three package (£1,299 including sub) - the latter have ELAC's trademark aluminium sandwich cones which make a very tight clean sound. The MS912's will give a bigger, smoother, looser sound with greater bass depth, but take more space. It's important to partner either 'speaker package to a smooth sounding receiver, such as Denon's AVR-3803 (£950) or NAD's brand new T762 AV receiver. The latter is less powerful and flexible but still gives a good, strong 6x100W and boasts NAD's characteristic rich sound for a reasonable £1000. **DP**



'Continuous Profile Cones' gives the MS912 a tight but expansive sound

RETRACTION

In our May issue Feature on Tweaking (p74) we suggested you replace 3A fuses with 13A fuses "for better sound". As readers have pointed out, this compromises safety, so it's wisest not to do it! Our apologies.

BURNING ISSUES

First of all I would like to thank Simon Pope for his excellent stewardship of the magazine and wish him well for the future in his new career. Secondly, I would also like to say that I am quite happy with my hi-fi, all things being considered! So why am I writing? Well, there are a few bits of advice that would help me along the way and I just know you will have the answers for me.

It is standard advice to keep your turntable well away from your speakers, but I am not entirely sure why this is. I can understand that the turntable might pick up sound, feedback, or interference with the cartridge, but does it make a difference if the speakers are shielded for AV use? And what would be considered a minimum separation in this situation?

Next point is on burning to CD where there have been several articles on copying vinyl, but I don't recall seeing an article on copying cassettes. I have quite a few of these from the days before CD and would like to copy them, but am not entirely sure how. Is there a quick explanation or is it worth an article?

Final point concerns my need for a virtually invisible sound system for occasional use in another room. The Denon M30 seems to have had good reviews (including one by SP), but I would need to have NXT speakers for the room in question. These seem to be either relatively expensive or to require more power than the Denon can produce, so I wondered if the TDK S80 system described by DP in this month's mag would give a reasonable sound quality with the Denon system? If not, can you recommend a suitable alternative? Wishing you continued success for the future and many thanks in anticipation.

Peter Black
Inverness

Simon is a great music lover and enjoyed answering your letters, so although he's got his feet up at this very minute and is likely to be listening to his beloved Quad electrostatics (no pipe, but possibly carpet slip-pers!), he'll be back.

The shielding in loudspeakers is magnetic. It constrains the magnetic field in order to prevent it interfering with the electron guns of a nearby TV tube. This is entirely different from the loudspeaker's acoustic (sound) output, which can upset a turntable. Pickup cartridges are vibration transducers of extraordinary ability, being able to read move-

ment down to extremely low levels, even molecular levels. It is best to isolate them from loudspeakers, as well as bouncing floors and what have you. The further away from the loudspeaker, the better, with 6ft being a minimum I would suggest. Ideally they should also be kept away from corners. Half way down one wall and half way up it, plus a foot or so in either direction to insert asymmetry, and mounted on a firm wall shelf is good, since it avoids room mode peaks (except width mode), as well as floor movement. A good, thick dust cover also helps to keep out noise.

Cassette decks give a line level signal of around 300-500mV. This can be plugged straight into the audio inputs of any sound card, to be



directed to its Analogue-to-Digital (A/D or ADC) converters. After that, simply (ha!) follow the instructions for your computer's CD-R/RW drive on how to burn an audio CD.

TDK's S80 NXT loudspeakers sound gorgeous. They're a superb example of NXT technology, which gives a sweet, smooth and fatigue free sound that's both easy to listen to and convincingly natural. The only thing that seems to confuse a lot of people, including hi-fi journalists, is that NXT panels, like Quad electrostatics, don't come at you with a clout around the ears and kick up the backside (aka boom and ting). They're supremely civil and yet also every bit as capable as any standard box jobby. In fact, distortion levels and phase coherence are much better, so NXT is more advanced – and you can hear this. But you may need to re-adjust a little. The S80s won't go super loud with your M30 but you will get a fine sound from this combo. Just do it! **NK**

There's little to choose between Denon and TEAC Reference Series mini systems – they're both very good and a step or three up from the rubbish you find in most high street stores. A classic alternative would be an Aurex Microsystem, although you'd still need to buy a CD player as they hadn't been invented when it was new back in 1979! Lavish £250 on a good one, and you'll be amazed how good small systems can be! Agreed about the S80s – they're no JBL Studio Monitors in the bass department, but the midband will stun - despite being under £90, I'd say they're better in some respects to most £900 designs! Yes, really. As for articles on copying cassettes – there's one coming soon in this very magazine... **DP**

The latest generation NXT panel makes these TDK S80s perform like baby Quad Electrostatics

JUKEBOX JURY

I moved to Spain about a year ago and my beloved system was packed up into an ex-girlfriend's attic together with 300 CDs awaiting the time when I felt stable enough to move it (Nu-Vista preamp, XA200 power amps, X-Ray CD Player, Gallo Acoustics Nucleus Reference Speakers). I've been making do with my PC, Musicmatch Jukebox software and some reasonable (for a PC equipment) speakers. Quite a come-down!

What it has opened my eyes to though is the benefit of storing my collection on a hard disk. In uncompressed .WAV file format I could store the whole of my collection on a 200GB hard drive or in compressed MP3 Pro format in 20GB. Each track would be classified by tempo, genre, artist and mood, and then I could play random selections from the lot or one

particular selections from a classification. I'd get to hear a lot of things I haven't heard in years, could let it run during parties and in fact all week without listening to the same track twice, if I felt that way inclined. It also means the CDs can be stashed away out of sight. Producing a compilation CD for the car would take as long as it takes to click on the selections and burn the CD which with a modern DVD/CD writer could be as little as four minutes.

And now the problem, I'd like to use the PC to drive the pre-amp. There are many sound cards that output analogue signals but the signal quality will have been ruined by the noise in the PC. What I think I need to do is output a digital signal to a DAC outside the PC (X-DAC perhaps - just love those aluminium tubes). I think that this way I'll minimise the damage to the sound quality. The question though is how do I connect up my PC to the DAC.

Jason Ellis

Hi Jason – many people are now doing this, for precisely the reasons you list. The answer is to buy either a superb soundcard, or a half-decent one with a digital output hooked up to a D/A convertor. Personally, this is what I do – my Zefiro ZA2 Digital Interface Card drives a Cambridge Audio DACMagic convertor with fine results. Frankly, I don't want the last nth degree of sound – just good hi-fi basics – so the Cambridge more than suffices for under £100. What you need then is any of the latest generation of digital soundcards, such as Philips PSC605 Sonic Edge. It only costs £40 and doesn't sound too hot via its analogue outputs, but this makes no difference as you're piping the digits straight out. You can then hook it up to the aforementioned DACMagic or your preferred MF X-DAC (which is a better design, but pricier) for some serious sounds... **DP**

BLOW THE HOUSE DOWN

The Goodmans 12in 'speakers you mention in your column still exist; I have two with Decca Romagna Kelly ribbon tweeters (crossover 2500cps) and my RAF wartime colleague also has two in sand filled cabinets (Briggs design), with Stentorian tweeters. In my case, in reflex cabinets, there is some colouration to be sure, but with a Leak amp, SME arm, Garrard turntable and Shure cartridge there is surely no better sound – superb for our Opera records

from Puccini to Wagner – and also for a big Ray Conniff sound. In our 21ft lounge, in a detached house, we could almost blow the walls down and sometimes it seemed as if we were trying! Unfortunately, I lost my Leak amp through overheating and the replacement Arcam 10 is not as good.

Another friend has Radford with Lowther horns – a great sound but not as warm as Leak and Goodmans. He now has Quad/Castle/CD. We both agree we have never had a better sound than our original equipment in the late 1950s, early 60s. For the best you need big speakers in big rooms, or even a hi-fi house! Thank you for some excellent articles over the years – very interesting and helpful.

Eric Wright

Sorry to hear your Leak was lost in action Eric. In case it received honourable retirement in your loft, you may care to know that all things Leak can be revived these days and such is the reverence for these amplifiers that a good condition working sample is worth a bit. Not a fortune mind, but enough to make it worth saving. An acknowledged expert here is Graham Tricker of GT Audio, tel: 01895 833099. They are at Higher Denham, Berkshire, UB9 5EJ. Go to www.gtaudio.com for more info. Graham has been restoring hi-fi tuners and quality valve amps for over a decade and has a great reputation. **NK**

PLAY THEM AGAIN, SAM

I have been looking through your 'olde worlde' pages and was very interested by the products you've looked at which I own. I was wandering whether you could tell me anything about a few other things I have too, such as the Pioneer SX-1250 receiver, Yamaha CR-1000 receiver and Luxman R-800EII receiver?

Sam Leah

Hi Sam – these are all worthy products. The Pioneer and Yamaha are high end receivers from pretty much the same model year – 1978. Both offer oodles of oomph and consume more power from their panel lighting alone than your average electricity sub-station. Sound isn't quite so hot (a little lean and fuzzy) by today's best standards, but still pretty musical nonetheless. The tuners are of interest though. Several Jap companies made some serious radio receivers at this time and both Pioneer and Yamaha were right at

the top – admittedly however, their very best stuff went into their top-of-the-range tuner separates only. Can't say much about the Luxman, other than that it was of excellent quality and probably more expensive than the others, and likely sounded sweeter too. **DP**

ON THE EDGE

I am fairly happy with my hi-fi but there are some areas that I would like to improve and I would welcome your advice. The set up is a Meridian 506 20-bit CD player, Sugden A21a amplifier and Mission 752 Freedom speakers, with fairly expensive Transparent interconnects and budget QED Qudos speaker cable. I also have a Linn Sondek LP12 with an Origin Live DC motor, Origin Live Silver arm and a Dynavector DV20X-H cartridge. On the plus side the system sounds good and lively, with plenty of punch, but to my critical ear there is a bit of thinness there too, and a tendency towards a sharp edge to vocals. This is the case both with LP and CD as the source, although LP fares a bit better.

Is there any way I can retain the lively nature of the system but smooth off the sharpness and maybe get a 'fatter' sound at the same time? Would better speaker cables help? Or better speakers? I have only recently bought the Sugden so I wouldn't want to change that yet. If a change of speakers is called for, they would have to look good and be able to work fairly close to a wall as our listening room is not huge. As far as budget goes, the less spent the better, although I would be prepared to spend what is needed to get the change I want.

Dave Clarke

Since you find your system 'sharp' with both vinyl and CD it is likely the Missions in conjunction with the budget QED cables that are the cause, since the Sugden A21a amplifier is rarely accused of this characteristic. However, both the Dynavector cartridge and Meridian CD are also quite 'forthright', shall we say! You have a fairly modern combination of items that, much like many of today's components, sound both detailed but quite sharp.

There are a few things you can do here. Since the Missions are bi-wireable putting a 1ohm, 1/2watt, carbon resistor in series with each high frequency section (that is, a resistor between the positive (red) tweeter cable and input socket, with bi-wire links removed of course, will

pull treble level down by a small amount. If the reduction is too small, add another 1ohm resistor in series, and keep adding until you get what you want. This will step tweeter output down. Suitable resistors are obtainable from Maplin. **NK**

I lived with Mission 752 Freedoms for a while, and decided that – despite the soft dome tweeter, they were far harder in the upper mid-band than the earlier 752s, which I still use in my second system! So yes, I'd put your woes down to your loudspeakers. If Noel's tweak doesn't work, and I suspect it may, it will be time to get some smoother loud-speaker cable such as Chord Company Odyssey 2, which has a very deep, velvety sound. We used this with Quad ESL988s at the Bristol Show with great success – and if anything will tell you about a 'speaker cable, it is a modern Quad electrostatic! If this doesn't work, then it's time to consider the likes of Mission's excellent 782SE which will offer slightly better sonics in a far more tonally amenable package than the 752Fs. Better still, Castle's Conway 3 are so rich and warm that you'll probably start hankering after a pair of the original Linn Kans! Seriously though, the extra few hundred quid spent on the Castles will pay dividends. **DP**

GARRARD ACROSS THE POND

Hi to the UK from the USA!

My name is Becky Hosselrode and I'm the assistant manager at the NAMI (National Alliance for the Mentally Ill) Thrift Shop in Kensington, MD. We recently received as a donation, the Garrard Swindon Turntable Model RC121/4D. It is housed in a Pilot Radio Corporation cabinet Model 1015, manufactured in Long Island, NY. We would greatly appreciate any information you can provide for us such as year of manufacture, any pricing guidance (in US \$), and any interesting history.

We are a small shop that provides the majority of the funding for the NAMI Montgomery County Chapter. We are an advocacy group for the mentally ill, providing educational courses for family members with mentally ill individuals in them, provide support groups, and do many other things. Again, let me say we appreciate any help you can give us.

Thank you,

Becky Hosselrode

Hi Becky. This is a four-speed autochanger with tube amplifier slung underneath – or in other words, a 'record player'. With three 12AX7 (double triode) tubes and a pair of 6V6s in push-pull, plus a 5Y3 rectifier, it will produce around 20W we'd guess – in mono of course.

Both valves and circuit manuals are available in the US for this American-made model built by the Pilot Corporation circa 1950s. Sorry we can't advise precisely on its value, but I'd guess it would be around \$200 in good condition, but only if you can find the right buyer. **NK**

ON THE MOVE

I have a Sony D-EJ1000 Discman feeding Grado SR60 headphones. Upgrading to



the Grados were a revelation – I was astonished how good the sound was. But I do still think I can get more out of the system with a dedicated headphone amp. However, it seems that of the few that are available, are all mains powered. Do you know of any that can run on both mains and battery? I love my music and would love to get more out of the system I have.

Ian Dixon

In a word, no. But this is not to say that one of the existing designs (from the likes of Creek, Musical Fidelity, etc) may be able to work from a 12v battery – have any readers tried this? As such, my advice would be to buy some cans better suited to the 'modest' headphone output driver in your Sony Discman, such as Sennheiser's PX100. The company's cheapest conventional headphone sounds stunningly good for its £30 retail price. Aside from excellent build quality and a nifty lit-

tle carrying case, it has a very fast, detailed and musical sound that's also smooth and refined. You'll find it more efficient than the excellent SR60s, making for a more synergistic match and thus higher volumes. **DP**

TWICE AS NICE?

I'm after a bit of advice on speaker cables. I have recently upgraded my system to the following:

Vinyl: Gyrodec/RB300/MC25FL/Trichord Delphini Mk11

CD: Marantz CD67 OSE / Perpetual Technologies P3-API-A 24/96 DAC

Amp: Chord CPM2600 integrated

Speakers: B&W Nautilus 803

I currently use a Linn K5 bi-wire cable and want to upgrade to better suit the system. The cable runs are long

Sennheiser PX-100 - the best headphone bargains around right and ideal for portables.

at 7.5m approx. and do suffer from RF interference. I've pretty much decided to use Kimber cable as this has greatly reduced the RF when I've used their interconnect and power cables, but my dilemma is this:

Should I bi-wire (using, say, Kimber 8TC) or single-wire using a better cable (such as Monoc-X)? The price difference is negligible but as all my previous speakers have been bi-wired I'm having difficulty getting my head round the single wire option. Russ Andrews' general advice is to use single runs of better cable. Your advice would be much appreciated.

**D. Barnard
Sutton, Surrey**

I agree with Russ Andrews – although I think it's not possible to legislate for every permutation, I think the benefits of biwiring are

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overstated. It's true, it does generally introduce an air and space and effortless to the sound, but so does serious loudspeaker cable! Ultimately, it's a cost-benefit equation – given that in your circumstances, the two options involve roughly the same expenditure, I'd go for the better cable. My only evidence for this is simply my own experience – as a result of which, my Yamaha NS1000M monitors are still monowired. Personally, I'd only seriously get into bi or tri-wiring when the option of bi or tri-amping is available, when things really start to sing. **DP**

SEARCHING (S)PRE

I am approaching the realisation that my hi-fi is trying to tell me something. My pre-amp in particular must be in an extreme state of depression and it has again given up one channel in order to make me believe I have suddenly gone deaf in one ear. I have been happy with the following system for some time now, but still seem as though it 'could do better'. I appreciate that it is a bit of a mix and match, but it works well for me. Naim CD2, Michell Argo/Hera Pre with all factory upgrades possible, Michell Alecto monoblocks and Heybrook Sextet speakers. Chord Solid Inters and Nordost Blue Heaven cables complete the picture.

I listen to all types of music, especially Jazz, Classical and Prog Rock. I like the space and openness of the present sound, although it is not the last word in clarity. I sometimes feel there is a slight veil over the music.

With my pre-amp playing tricks once more, I am thinking that maybe an upgrade may be overdue, at first of the pre-amp, which should fit into the current system, and then perhaps matching power(s) probably leading me into an entire equipment upgrade over the next couple of years. I know that Trichord have a replacement for the Argo in the Orca, but have not been able to audition this pre-amp. Also, I feel it may not offer much over the existing Argo. Also, I have listened to Naim systems before and although I like the CD players, I'm not quite so taken by their amplification... sorry Salisbury.

I am quite happy to buy second hand/ex-demo. Looking around, it seems that products from Chord, Krell and Levinson seem to be popular and also plentiful to purchase (is that a contradiction), but I'm unsure how they will suit my existing system, and how they will change the openness and staging of the sound to a better / worse degree. My budget is up to £2000 for pre-amp

only. I am aware that it can cause a major change in sound when replaced, so I intend to tread carefully. Any suggestions as to which direction I might start my auditioning would be very welcome.

Marcus Wilson

Whoa! Hold on there Marcus. I have spent time with most of these items, especially the much loved Heybrook Sextets. The veil you mention is almost surely coming from the latter, not your amplification, which quite frankly is as good or better than the items you are proposing to buy. At least get a very long listening tests first before spending £2k on an upgrade that may sound different, but not necessarily better. In my experience solid-state amplifiers and pre-amps really aren't going anywhere at present. Component quality has improved, giving a tidier sound, but basic circuit topologies remain the same. And you'll not get much more spacious a solid-state amplifier than Alecto monoblocks. My advice is to get the preamp fixed and ensure all connections are clean and well made.

Now on to those lovely Sextets. At top you have the superb Tonigen ribbon tweeter, against which little compares – except another ribbon tweeter. You'll cry if you have to go back to fizzy, tizzy domes – especially wayward metal ones. Below this lovely device, which gets down to 4kHz or so, lies a mediocre cone midrange that isn't able to reach up high enough to crossover properly. And that was always one difficulty of using this tweeter; it just didn't reach down low enough to work well with bog standard midrange units. The result is a dip at the crossover frequency, a fairly sharp change in off-axis dispersion, and output from the midrange unit in its break-up region. It's the dip in response, as well as the off-axis loss of H.F. from the cone midrange, that causes the softness and veiling in this loudspeakers midrange that you hear.

What to do? As lovely as the Sextets are there may now be better alternatives. The loudspeakers that spring to mind are those from Elac, because they enjoy the benefits of a good 'ribbon' tweeter (Heil Air Motion transformer). And, perhaps not surprisingly, because Elac know a thing or two about loudspeakers, theirs are very well engineered. They don't have the German 'Ooompha' sound that inflates bass drum and emphasises cymbals, so much as

good levels of real accuracy – and no gap in the upper midrange between mid and tweeter. The ribbon tweeter is superb, with less of the Wilkinson Sword in its approach to one's ear drum than the Tonigen, but with all the insight, neutrality and sense of precision that ribbons can have. Elac have quite a range, but the 205s are £699 and 310s £799. For a dealer and a demo, call Sennheiser (UK) at 01494 551535 and ask for Rosy, who handles Elac. **NK**

Agreed – I'd say the Sextets are flawed gems, which are probably the source of your difficulties, especially when you remember the great talents of the equipment higher up the chain. The Orca, by the way, is a good few percent better than the Argo, but would not dramatically improve your sound. Expect a tighter, cleaner, more neutral and transparent performance all right, but not a night and day transformation. Still, it's definitely worth sending it home to Michell for a service, unless you like mono, that is! **DP**



The Tonigen tweeter gives Heybrook's Sextet highs to die for, but the midband is soft.

LIKE IT OR LUMP IT!

I have always bought your magazine and found it a great reference to what is on in hi-fi. But I was shocked and surprised at one of your reviews of the Audiovox A3. While I can see that there may be a strong case in Mr Keywood's comment about the look of the monitor I cannot agree with him about its sound quality. I have listened to this speaker on different amplifiers and have found it an amazing piece of equipment. It is detailed, fast, musical and has beautiful bass for a speaker of its size. I find it difficult to imagine that so much music could come out of so small a piece of equipment. It may be possible that Mr Keywood received a damaged monitor or was simply listening to something else.

**Mr T. Miller
Catford.**

For every critical loudspeaker review there is a reader (and a distributor!) who says "unfair, because I really like it". In this case measurement quite clearly showed this loudspeaker was inaccurate and this was aurally obvious. I could find little else of merit in the A3, especially at the price and compared to what is available today. But as we are at pains to point out, ultimately if you like it, then buy it!
NK

SWEETNESS AND LIGHT

My system comprises a Sonneteer Byron CD player, Unison Research UNICO transistor amplifier and Mission 753 Freedom loudspeakers.

I quite like the sound as a whole, it being lively and detailed with good depth, but the Missions could be criticised for their lack of high treble. My problem comes from a steely greyness that pervades the sound, which can become quite aggressive as the volume goes up. I believe the amp is to blame, as I've heard the other components sounding fine with different equipment, but have noted this quality when trying the amp with other CD players and loudspeakers.

I am interested by three other amplifiers - the Sonneteer Alabaster, Cyrus 8 and Unison research UNICO with the valve preamp stage. I would like to retain the basic very musical character of the system, whilst replacing this steely greyness with a sweeter sound. I would also prefer the amp to match the CD player in looks. Perhaps the valves in the new Unico would do the trick? Would the Alabaster or Cyrus 8 be the better choice, or would you recommend something else? Funds are

around £1000, but could be stretched a bit if necessary.

**Chris Palmer
France**

Hi Chris – you're right to identify the UNICO as the cause, or should I say a cause. The steely greyness you talk about is, I'm afraid, pretty much par for the course for any transistor amplifier – it's only valves which offer real tonal colour, but even many valve amplifiers simply substitute greyness for warmth whilst not actually expanding the size of the tonal palette. Frankly, good as the UNICO valve amp is, I'd say it would simply do this.

Ideally, you should go for an AudioNote OTO SE (£1,200) which does have a truly varied tonal range. This is the class of the valve field at the price, but if you need more power, detail and incision then you'll have to go to Sudgen's A21a Class A transistor integrated (£1,000). The Sonneteer is almost as good, and would be a fine option if you want a visual match. The Cyrus 8 is excellent, but more in the classical mould of tranny amps – albeit very much on the warm and sweet end of the scale. **DP**

TEAC TWEAK?

I bought a Teac VRDS-T1 transport a few years back and have found the digital output is no longer comparable with a medium quality DVD player of today, which outputs 24bit, 96kHz digital even with a simple disc tray. The sound is much clearer and faster than the T1. I wonder if there is any way to upgrade the Teac's transport to match today's chip technology? It would be a shame to not be able to make use of machine's more solidly built chassis. Any advice would be appreciated.

Finsen Cheng

Hmmm... interesting! While it may be theoretically possible to do this, unless you have some serious resources at your disposal I'd say no. Obviously, Teac's VRDS transport was designed to read CDs and not DVDs, so it would be a complex operation to replace the laser, tracking and servo circuitry to work with the new generation of discs – to say the least! Best leave it as a CD spinner, but this does not mean its 16bit performance can't be improved. The simple process of sending it to Trichord Research (telephone: 01684 573524) at 6 Woodlands Close, Malvern Wells, Worcestershire WR14

4JD, for a Clock 3 modification will bring substantially improved sound – firmer, stronger bass with a far cleaner and less mushy midband and treble. I would then be very surprised if any DVD spinner could beat it in pure 16bit playback capabilities. **DP**

UNBEATABLE SACD

I've just (unintentionally) upgraded my system from Marantz CD63 II K1, Pioneer A400 and Kef Q 90s, which I've enjoyed for several years. With a big room and listening at fairly high levels, I felt that the wonderful Pioneer was perhaps a little brash and congested on transients and that more power was the answer. So after careful auditioning I opted for the Musical Fidelity A3.2 for its bass grip (compared to the opposition) and some magical moments further up the register.

Then, per chance, I came upon a nearly new pair of Kef Reference 3.2s which I hastily snapped up. These improved the sound further, although I now thought I could hear a lot of grain in the treble, which I don't understand given the reviews which say the 63 K1 is a smooth player at the top end. So along came a Musical Fidelity A3.2 CD which removed all the grain (imaginary or otherwise) at a stroke, although some of my favourite discs which were "just right" previously, lost a bit too much edge and excitement, whereas others could now be enjoyed at volume in the room.

Then I read your new review of the Philips DVD963SA which you described as being "unbeatable" playing SACDs. Now I wouldn't mind spending the reasonable price of the Philips to get audiophile SACD replay (alongside the MF for CD) if it is that good, but what does "unbeatable" mean? Is it as good as the MF Trivistor SACD or is it just better than any CD replay? Please help, because if its SACD performance is a league above my CD replay, I'd like to have one.

Mark Bawman

Ah yes, the trials of CD listening! Some (many?) can be challenging, to put it mildly. This is where the DVD963SA scores: it has a bright balance, but its treble is finely detailed and clean too. There's no grain, coarseness or such like.

I haven't reviewed the Musical Fidelity Trivistor CD/SACD so I cannot make a direct comparison, but by unbeatable I meant that its SACD quality was superb at the price and considerably better than Compact Disc. You should be well able to

appreciate this through KEF Reference loudspeakers. A league above CD? I would say so, providing you have a good recording. At £400 you would not be disappointed especially since the thing also plays DVD videos! However, a Philips representative has just told me dealers are buying them in large batches in anticipation of demand and that Philips UK are at present out of stock. All of us want to hear the best from our CD collection whilst moving ahead and this is one good way of doing it. **NK**

I'd agree with Noel – as £400 do-it-all machines go (i.e. CD, SACD, DVD video) is it utterly untouchable. Of course, it isn't a patch on the Musical Fidelity, but at several grand more no one would reasonably expect it to be! The point is, if you're going to make SACD your primary source from now on, then this is the budget bargain of the moment and when playing SACD would easily better the Marantz CD63 KI playing ye olde CD. As to whether it would better the KI in a straight CD-to-CD fight, that is a bone of contention which you'll read all about next month! **DP**

INFLUENCE

Your magazine gets better and better. It caters for all tastes – and I do buy other magazines occasionally. My purchases have been influenced by Hi-Fi World tests. I am into kit systems and run a Connoisseur record deck with SME/AT110E, but have acquired a Linn Basik plus Akito. Apart from building a Kef Kit 3 many years ago, I and a friend built Kel34 with help from Mr Lucas, who has been very kind.

I have acquired many amps over the years but currently use an XA200R and an X PRE and four XA50s in biwiring mode. My first amp was a Rogers Ravensbourne. Speakers include Opera Operettas and REL Strata II.

Last February I bought a pair of Canton Ergo 900s (made in Germany). With an aluminium midrange and tweeter and two polypropylene bass drivers in each cabinet they have a very clear and natural sound.

If I had to start all over again I would purchase a decent amp and tuner, adding a set of synergistic 'speakers such as KEF Q1s. I am a Radio 4 and Classic FM listener; my last upgrade was an X-Ray and Xplora for the airwaves.

I think Hi-Fi World makes a real contribution for us who are audio

freaks. I understand you speak Japanese, but to keep up to date with changes must be a real headache – there is so much good gear being offered to the consumer. So please keep up the good work. My thanks to all the staff.

Unsigned!
Exmouth, Devon.

Aw shucks! I just wish you had 'come out' and revealed your identity, so I could be sure it wasn't a member of my immediate family who wrote this whilst holidaying in the West country. The cheque's in the post if you do own up...

Oh, and are there really any 'other magazines'? **DP**

VOICE OF THE GOOD

Jesus H. Blumlein! With the industry having already shot itself in the foot once, they are now taking careful aim, tongue protruding with the effort of concentration, at the remaining pedal extremity.

I am speaking of the many and (of course!) mutually incompatible arrays of channels described in your article Voice Of The Gods, about providing height information for the by-now confused and poverty-stricken consumer.

I say boycott these bums! If they want us to buy their products then they should stop swindling us. It's not as if LP and CD are bad formats; two-channel stereo is pretty damn wonderful when it is done right. I for one can live with it for a few more years until we get to a situation where a good-sized record collection no longer needs half a dozen different players.

Can we just kidnap the heads of the major software and hardware companies, and lock them in a room until they agree on a single solution? An ultra-high quality player/recorder that plays everything on the digital smorgasbord from MP3 to Blu-Ray – and gives us a selectable choice of either 2-channel stereo or a single surround configuration – would do nicely.

This one-stop player would be a godsend to the smaller manufacturers, as there would be fewer unnecessary risks to take regarding exactly what the companies should be designing and building. It would also benefit those delusional jabbering witchdoctors of the High End (you know who you are), who would have us believe that a preamp or integrated with only three inputs and no recording loop is in any way adequate for a typical hi-fi system

assembled since the middle of the last century.

Daniel Emerson
London

Sound from above is a wacky idea, if perhaps an impractical one for most of us. I hope we didn't give the impression this is a forthcoming format. Three small specialist record labels, Chesky, Telarc and MDG all record height information on some classical discs, both DVD-A and SACD. It's there if you want to experiment; I suspect some readers may be able to put a couple of small loudspeakers on wall shelves and will give it a try. Reproducing height info is in Meridian's genetic makeup and they sometimes use height 'speakers in demos, should you be interested.

Pioneer seem to be doing well with their multi-format players, notably the affordable DV656A and it looks as if universal players will become more widespread as a result. They can be set to mix everything down to stereo and as you say, there's nothing wrong with stereo.

NK

Agreed – while Noel's article was only about possible future formats, the general point is that some sections of the recording industry (and hardware manufacturers) seem hell-bent on filling every single listening room the world over with flipping loudspeakers. Two, as you say, do perfectly well and five is the maximum I can justify in my mind.

Still, who am I to take a principled position against audiophile clutter when my house is a shrine to redundant hi-fi paraphernalia? **DP**



...and this is just one corner of the editor's bedroom!]

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As good as it gets - the B2.2 Revelation



The Beahorn Virtuosos simply manage to make music of all kinds more interesting and involving than conventional speakers.

-Paul Messenger Hi-Fi+

Verdict: Sell everything. Sell the family. Buy Beahorns.

-The Times [B2 review]

The new B2.2 Revelation (right) is a greatly enhanced B2 plus VibraPlinth package. With startling transparency and detail, it delivers accurately the full range of instrumental textures, with the full weight of orchestral climaxes. Reality Audio is here - at a realistic price! If it's the music that you care about, then these are most certainly the speakers for you. Dare to be different. Seek information now



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CLASSIC DIGITAL



Okay, so DVD-Audio and SACD are all the rage, and suddenly plain old 16bit Compact Disc is about as fashionable as red braces, shoulder pads and Golf GTis. Yet CD has a massive presence in people's music collections, and the best way to hear it is still through a bespoke CD player. This, says David Price, is why Naim's new CDX2/XPS2 is an important product...

Naim's CDX2 CD player costs £2,650 plus £2,300 for its partnering XPS2 power supply - a lot of dosh to lavish on a dying format. But the fact remains that if you have several thousand Compact Discs and you want to get as close as you possibly can to the music within, then you'll need to be ready, willing and able to spend this sort of cash on a digital disc spinner. To get right to the point, I believe this to be one of the very best 16bit machines available, and no less enjoyable a listen than Linn's £12,000 Sondek CD12, which makes it something of a bargain I guess!

THE TECHNOLOGY

The CDX2 is part of what Naim calls its 'classic' line up - pure Salisbury heartland stuff that is claimed (it says here) to rival the sound of "the finest analogue turntables". Well, I don't know about that - but even coming from the point of view of a hard-bitten analogue addict, I can't deny how deeply impressed I am with every facet of this player.

Naim's chief engineer, Roy George, has paid extensive attention to both mechanical and electrical aspects of the CD problematic. To wit, an intricately suspended transport and low mass magnetic clamping system are used. A glass

reinforced front-loading drawer mechanism along with a new cast and extruded anti-magnetic chassis protect from resonance and microphonic vibration. Improved internal shielding, shortened signal paths, separate regulated power supplies for each stage of the circuitry are featured. Correct earthing is used throughout and there are no digital or headphone outputs. The new HDCD decoder/digital filter is only activated when playing encoded discs. Eight-times over sampled data is then sent to two (one per channel) Burr Brown PCM mono DACs. A separate, fully optimised master clock controls all main digital functions, and

the clock configuration and layout are engineered to minimise jitter. A seven-pole analogue filter follows the DAC to remove spurious noise. All main control functions are handled by a microprocessor running bespoke Naim software directing the SAA7376 servo controller/ decoder.

The CDX2 has a fully double-regulated power supply with twenty low-noise, regulated power supplies on the main circuit board, plus a separate supply on the servo control board and another on the display board. A stand-alone, mains powered machine, it may also be used with the XPS2 power supply which sports six separately regulated, ultra low noise outputs, and it features a toroidal transformer and six power regulators.

The revised styling looks good. There's no denying the exquisite quality of the 87x 432x 314 mm casework (for both the CDX2 and XPS2). It's sleek and purposeful in its black brushed aluminium finish. A world away from the quaint CDX I reviewed a few years back, it feels as exotic as any flashy Japanese player at the same price. Round the back can be found both RCA phono (shock horror!) and DIN sockets, and RC5 and RS232 ports are included, for seamless integration into home installations. The front panel is an object lesson in ergonomics, and in common with the new flagship NAC552 preamplifier, the CDX2 has



user-configurable outputs. The simple display goes into sleep mode after a few seconds, automatically switching off for better sound.

THE LISTENING

The reference system comprised a Naim NAC252/SUPERCAP 2 preamplifier, NAP250/II and SL2 loudspeakers. The system was allowed to warm up properly, and the locking rings of the DIN interconnects were unscrewed for proper mechanical decoupling. A brand new CDS3 was on hand for comparison's sake; more of which later.

Kicking off with 4hero's *Universal Love*, my first taste of the CDX2 was unremarkable. It wasn't half bad, but I'm not sure if I'd splash out nearly three grand on one. Admittedly, and in fairness, the partnering ancillaries were far too good (a £3k source with £5k speakers isn't how I'd divvy up my budget). However, the fact remained that this machine gave a largely underwhelming performance in this context. I'd say, for example, that the CD section of Musical Fidelity's Trivisor SACD would come very close – if not bettering it completely.

Essentially, what it gave was a very 'nice' sound. It was less silky than the aforementioned MF on CD, but surprisingly warm and smooth nonetheless – especially considering the way Naim kit is voiced. Still, it had a touch of the Salisbury magic, for it was quite explicit about the track's rhythms and made for a very satisfying listen. Bass was actually quite warm and full for a Naim, but had the company's trademark fluidity. Midband was fairly open, with a decently good portrayal of stage depth. I was also surprised by the smoothness – female vocals weren't

creamy but they were genuinely even and devoid of hardness or steel. Treble was a tad splashy, the CDX2 displaying the classic signs of 16bit.

Moving to UB40's *King*, I began to get the measure of this machine more completely. Given a music that lives or dies by its rhythmic prowess, the Naim pulled away from the likes of the MF SACD machine, which sounds a tad pedestrian and ambling by contrast. Here we had a very enjoyable and communicative sound that seemed to make a virtue out of the spaces between the notes. I really began to feel the atmosphere of the recording studio, and marvel at the musicianship, despite the relatively rudimentary recording techniques.

Running the gamut of my CD collection, I found the CDX2 a grower. It doesn't have much in the way of tonal colour and doesn't sound 'expensive' like much Japanese high end. But it was a clear advance on classy kit like Marantz's SA12 (playing CD) – it simply played music in a beguiling, smooth and matter-of-fact way. Even The Smiths' *This Charming Man* came over with aplomb – I found myself focussing on Morrissey's clever phrasing and rhythmic punctuation marks that define his distinctive (!) singing style. Many price rivals may have warmer bass, silkier treble, etc., but this was altogether more involving. Dynamics weren't in your face, seat-of-the-pants stuff, but still managed to come over with an alacrity that none of the CDX2's rivals can manage. The best way to sum up this machine is Naim Lite – it does all the stuff the brand is famous for, but is also very palatable and unfussy too.

The more I listened to the CDX2, the more I wanted to hear it with the matching XPS2 power supply, simply because experience has

THE BIG ONE

£4,750 buys you Naim's brand new CDS3, but you'll need to splash another £2,300 on the partnering XPS2 which the CDS3 requires to work. It's an obviously more couth design than the CDX2, lacking that ever-so-slightly chrome-plated upper midband. In its place is an eerily inky-black silence that seems to drop back for miles. The CDX2/XPS2 is more aggressive, and in some respects a more charismatic performer, showcasing the CDS3's incredible smoothness from bottom to top. There's more detailing from the '3 too, with an altogether more sophisticated take on tonal colouring – yes, Naim's top CD spinner has real textuality. Overall, a brilliant effort, but in a sense it's too couth for its own good, and serves to emphasise the CDX2's relatively fast, furious and happy-go-lucky nature. Watch this space for the full review!

taught me what these admittedly expensive boxes of tricks can do. Duly plugged in with the internal power switched off (via the rear-mounted power switch), it was hold on to your hats time!

If the £2,650 CDX2 is a good solid four glober, then the £4,950 CDX2/XPS2 hits the magic five. The transformation it wrought was incredible, and far more than the sum of the parts. Bass grew subtly in stature, but the impressive bit was the grip it suddenly assumed, and the way this grip was able to fill in the dots to the extent that suddenly the whole mix and instrumentation of the track made perfect sense. Suddenly bass drums had clout, and the nebulous generic low frequency thudding I'd heard through the CDX2 became a living, breathing acoustic double bass.

Moving up to the midband and this was where things really started to fly. There was an incredible increase in clarity; low level detailing suddenly took centre stage, vague percussive embellishments (rim shots, hi-hats) became key parts of the mix, vocals assumed clearly defined positions in space (left-to-right and back-to-front), and treble gained in clarity and rhythmic cohesion. The result was an altogether more uplifting presen-

tation. Interestingly, I'd expected far better 'hi-fi' with the XPS2, but it really worked at an emotional level. True enough, it peeled through layers of low level sounds in The Associates' *Party Fears Two*, but what really amazed me was the sudden power and passion given to singer Billy McKenzie's voice.

This was brilliantly evinced by Kate Bush's *Moving*, which is precisely what the Naim CDX2/XPS2's portrayal was. The way in which the bass guitar, rhythm guitar, vocals, pianos, etc. came together to make an emotional event was incredible. This combo supplies speed and dynamics in great measure, but is able to do it with tremendous subtlety and grace, making for a gripping listen that gets your head pounding as much as your feet tapping. Once more I sat there in awe at the performance going on in front of my very ears. By contrast, no DVD-A or SACD spinner comes close to the passion this machine can summon up.

Everything about the CDX2 impressed me when properly aspirated by the XPS2. Without it, it was an incomplete experience, rather like a Jaguar without leather and wood or a Ferrari running on remoulds. Interestingly, the XPS2 affected the tonal colouring more

than I'd expected – things became harder and more forward. Although in no way shrill, it was back to the old Naim sound of yore – tonally lean, brightly lit and very propulsive. By contrast, the CDX2 alone sounded over smooth and a tad non-committal.

Partnered with an XPS2, this machine achieves greatness. I have heard no other machine at or near its price that takes you so deep in to the music. It's a truly electrifying listen. I believe it is Naim's most characterful CD spinner – the sheer energy, commitment, and insight that this machine exudes is striking. As usual, it all gets very subjective at this price point, but for me at least this is one of the best CD players money can buy, yet not one of the most expensive. That, in my book, makes it excellent value.

Naim CDX2 £2,650
Naim XPS2 £2,300

Naim Audio 01
www.naim-audio.com

Thanks to Chris Barnes and the staff at *Audio Excellence* (65 Park Street, Bristol; telephone: 0117 926 4975) for their help with the preparation of this review.

MEASURED PERFORMANCE

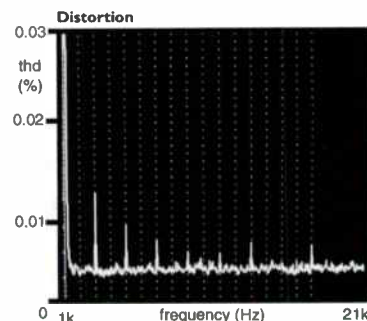
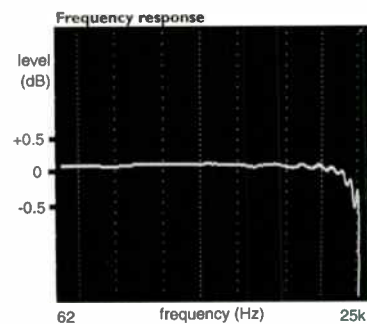
The CDX2's frequency response rolls off a little above 10kHz, as expected, since Naim like other UK manufacturers usually avoid peaking. This helps keep the tonal balance away from the prominently bright tonality of so many Oriental players. All the same the measured upper limit was a normal 21kHz, as usual for CD.

The presence of distortion products in both channels suggest Naim use a multi-bit convertor. Measured distortion wasn't high all the same, being a reasonable 0.02% at -30dB and a so-so 0.4% at -60dB. Better is possible nowadays, but the CDX2 is satisfactory in this area all the same.

With good channel separation and normal output level the CDX2

measures conventionally well in all areas. **NK**

Frequency response	5Hz-21kHz	
Distortion	left	right
-6dB	0.004	0.004
-30dB	0.02	0.022
-60dB	0.4	0.38
-90	28	29
Separation	left	right
1kHz	114	115
20kHz	92	93
Noise (IEC A)	-104dB	
Dynamic range	110dB	
Output	2.1V	



World Verdict

An inspirational way to listen to CD, this machine scavenges vast amounts of detail and strings it together in a brilliantly coherent and musical manner.

PLUS POINT



Haden Boardman is pleasantly surprised by Arcam's A65+ integrated amplifier. It's well worth the extra over its cheaper oriental competition, he says...

Arcam's successful DiVA range has been with us for more than a couple of years now, taking up from where the old Alpha models left off. In later years the Alpha's plastic fascia came in for some criticism, which was a shame because it didn't affect the sound quality. Still, with the DiVA range, Arcam has clearly listened. A gorgeous aluminium front panel, anodised in either silver or black complete with matching silver knobs, gives a classier feel.

At £370, this amp is a little above the "budget" entry level, but is below the bulk of the 'Brit pack' (Cyrus, Roksan, et al) kicking in at the £600 mark. Last year the original A65 matured in to this, the A65 Plus model, mildly revised and reworked. A healthy 40 watts per channel is on offer - more than enough power to get decent levels out of most sensible loudspeakers - and of course Arcam can offer matching CD players in the form of the popular CD72 and newer CD62.

The A65+ is one of Arcam's series of three well specified stereo amplifiers, fitting in below both the A75+ and the A85. It is the company's most affordable, with the mantle of being one of the best value British built amplifiers on the market. A well specified little beast, it features a proper phono stage, plenty of line inputs including a tape monitor, defeatable tone controls, second speaker switching and a headphone socket. Casework is solid, and under the lid reside good quality components mounted on a high quality PCB, with a decent sized mains transformer. Clearly all those years spent building and refining the various Alpha model have taught Arcam a thing or two about the features customers require.

It is quite a while since I have had a serious listen to amplifiers at this price point, so my love of valves and all things paper coned had to be put to one side while I got to grips with this little transistor amplifier. My NAD C541-based system was left running for forty eight hours, as although the unit had been run-in I

wanted to make sure I was being totally fair. Interconnects comprised XLO Reference and Chord Company Rumour speaker cable. Upgraded RATA mains cables were used from the start.

The A65+ seemed much happier with loudspeakers needing a little less driving. To my ears, it became unsettled when asked to drive small 4 ohm Dynaudio 42s, but was much happier with big, easy loads like B&W 602.3s.

Kicking off with Nora Jones' latest album, I was amazed just how good this little set up sounded, far better than my previous experience with older Arcam Alpha models - some of which I have found to be a tad lumpy and leaden sounding. The little A65 had none of this - there was plenty of punch and decent dynamics, without the sense that it was trying too hard.

Moving to more familiar material in the form of Miles Davis' Kind of Blue, I learned more about the amplifier's capabilities. This simple set jazz piece does a real good job of sorting out the men from the boys!



The Arcam A65+ has a well featured rear panel with a proper phono stage and plenty of line inputs including tape monitor.

The contrasts between loud and soft were very well executed, with all the subtlety this particular recording offers conveyed with a fine sense of depth and occasion.

Moving to the newly remastered Pink Floyd Dark Side of the Moon CD underlined the Arcam's essential nature. Sometimes it could feel a little too smooth, like it was trying to hide something. Dynamics on this complex recording could be a trifle softened, lacking that hard, fast edge that this disc requires. Bass was firm, without overstatement, and treble smooth, polite, and ever so slightly rounded. Arcam have managed to engineer a very polite amplifier here, and no matter how rough and ready the recording, somehow this product manages to keep things gently in control.

Trying my best to catch it out, I resorted to Ground Zero's Plays Standards, a Japanese combo whose recordings can only be described as total chaos - and a must for any would-be audiophile anarchist out there! (catalogue number: ReR Megacorp RER GZ3). Again, the amp

smoothed itself over the challenge, letting enough of the anarchy through to make the recording's point, but just keeping the lid on the last degree of that hard and nasty edge. The tone controls were usable, but I simply did not need them, and they remained by-passed for serious listening. Switching them in circuit didn't do a thing for the sound, so best leave them defeated.

To test out the phonostage, I hooked up a Nottingham Analogue Hyperspace deck, Space arm and high output Denon Moving Coil, whereupon I heard a clear amount of grain. Swapping the source for a Project RPM4 with a higher output Ortofon 510 cartridge improved things noticeably, though. Back came the amp's underlying smoothness - Jimmy Smith's upfront Walk on the Wild Side LP (a recording with too much brass for most people's tastes, but amazing dynamics and the fastest Hammond B3 sound ever), left a great impression of this little amplifier's capabilities.

Throughout my time with the Arcam A65+, I was more than

pleasantly surprised by just how well this little amplifier held things together.

As a budget amp it is somewhat expensive, but as a home grown British amplifier it is somewhat cheap, so I suppose Arcam are aiming to convince people to spend that bit extra from the run-of-the-mill mass produced Far Eastern fodder, and move up just a little. Like any amplifier, it is far from perfect, and some may find its smoothness a trifle disengaging. Yet I feel Arcam has scored a clear winner here; it is well worth the extra compared to the lower priced competition with an excellent blend of features, facilities and a typically smooth British sound. Highly recommended.

Arcam A65+ £370

Arcam
Tel: +44 (0)1223 203200
www.arcam.co.uk

THE EDITOR SAYS:

Arcam has a great tradition of budget amplifiers, going back to its very first Alpha Plus of the mid 1980s. This grey plastic box gave a surprisingly sweet and couth sound - and the DiVA A65+ continues the theme. It's light years ahead of its distant ancestor - build and finish are strikingly better - with oodles more detailing and grip to the sound. Yet the really impressive thing about it is the way it works in a budget system - it's not too revealing or analytical to point to problems with ancillaries, yet still has plenty of power and punch. A lovely little budget product, easily surpassing its Japanese competition.

MEASURED PERFORMANCE

The A65+ is a neat stereo amplifier with 50watts output into 8ohms, rising to 80watts into 4ohms. Since most loudspeakers these days are the latter, in practice this amp has plenty of power. Distortion levels did not rise significantly as current draw increased, hovering around 0.005% in the midband, the figure increasing to 0.025% at 10kHz (8ohms) or 0.04% into 4ohms. Our analysis clearly shows third and fifth harmonic dominate. I would expect the A65+ to sound smooth enough all the same.

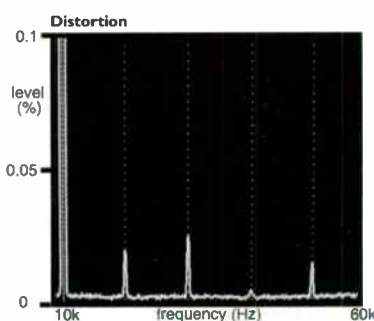
The main inputs all have a frequency response plenty wide enough for SACD and DVD-A, reaching up to 64kHz (-1dB). This amp also has a phono stage option though and ours measured flat to 56kHz.

Below 30Hz a warp filter comes into play, providing a useful -12dB attenuation at 5Hz - enough to stop cone flap with warped records. Hiss was very low and sensitivity high at 2.2mV.

The A65+ measures well all-round. It is a tidy stereo amplifier, fine for real hi-fi use. **NK**

Power	50watts
CD/tuner/aux.	
Frequency response	5Hz-64kHz
Separation	64dB
Noise	-87dB
Distortion	0.03%
Sensitivity	320mV
dc offset	2.2/1mV

Disc	
Frequency response	30Hz-56kHz
Separation	55dB
Noise	-70dB
Distortion	0.03%
Sensitivity	2.2mV
Overload	67mV



World Verdict £

A combination of smooth, refined sonics, fine build and sensible facilities makes this an excellent budget buy.

THE PRICE IS RIGHT

An unashamed budget loudspeaker, the ELS-3 marks a departure for the much-revered Epos brand. Dominic Todd listens in.

The moment I lifted the new ELS-3s from their box I knew that this wasn't going to be the type of loudspeaker one would normally expect

from Epos. The poverty-spec vinyl wrap finish and lightweight cabs aren't what we're used to from this brand – but then again, never before have we been able to buy an Epos product for just £200. This, you see, is Epos entering new territory.

It isn't difficult to make a fine sounding speaker given enough money, but getting a decent sound from next-to-nothing is not easy. For this reason, this product's perceived build and finish are rather disappointing in relation to Epos's earlier products, but the company has evidently spent real money on the drive units. The polypropylene cone of the bass/midrange unit sits inside a solid, die-cast aluminium chassis, and the aluminium tweeter with front phase plate is Epos's own design. Both are mounted on a double-thickness MDF baffle and fed by a traditionally minimalist crossover. The real let down is that the 12mm chipboard cabinet is covered in the type of drab black vinyl that I thought had died out with red braced yuppies. It should also be

noted that they're not bi-wirable, unlike most rivals.

The competition at this price point isn't exactly thin on the ground, the current cream of the class being Mission's M71 and Wharfedale's Diamond 8.1. To see if the ELS-3 could compete, I began by listening to Dido's Thank You. Despite the beer money price tag, the famous Epos sound was still there, although not quite as much as I'd hoped for. Transparency and definition of string detail were good, but by no means exceptional. Vocals were projected well forward, yet the aluminium tweeter couldn't help but betray its construction by adding a wispy edge at particular frequencies.

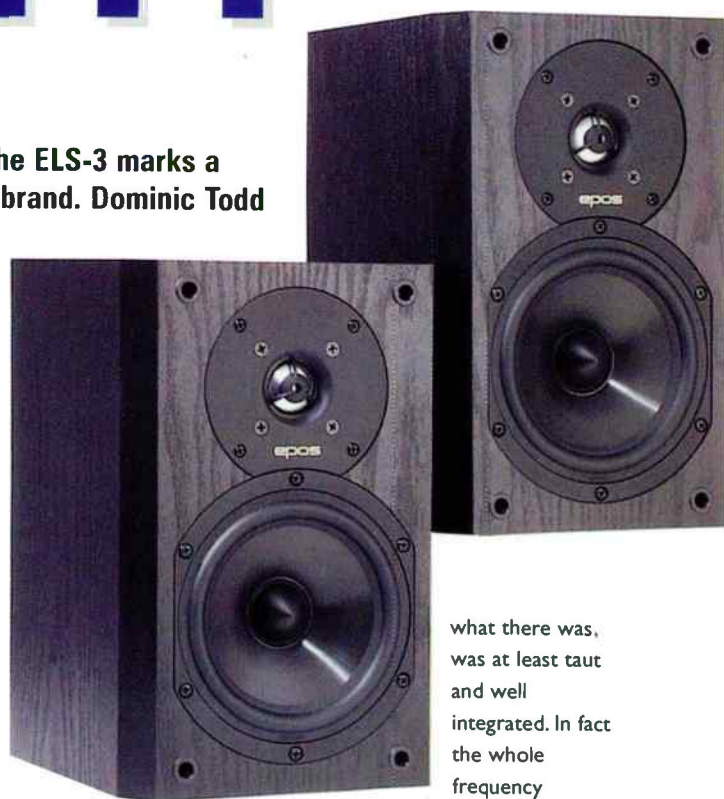
As is to be expected there wasn't a great deal of bass, and they struggled with sustained notes, yet

what there was, was at least taut and well integrated. In fact the whole frequency

response appeared to

flow smoothly, even if there was perhaps just a slight peak in the mid-range. Piano sounded rather lightweight, but there was a broad sound stage with decent imaging, if not quite as holographic as Eposes of old.

A similarly broad and cohesive sound stage was provided with the busy sounding Avenging Angels by Space. This loudspeaker's balance suited male vocals better, with the tweeter's colouration less obvious here. Vocals were certainly well projected, and the balance did seem very much geared towards a forward mid-band with less dominant bass. Whilst cohesive, the timing wasn't exactly lightning-fast either, although only with the warmest of amplifiers would this prove to be a problem. My main concern was that the track



just wasn't especially engaging. The lack of serious punch and three dimensional sound staging was noted, too. It's not that the ELS-3s did anything wrong in particular, but just that they failed to light up the track.

Eagle-Eye Cherry's *Been Here Once Before* suited the Eposes better. The opening guitar had a fine rasp to it, avoiding the smothering influences of a few rivals. His vocals were also accurately portrayed, and well separated from the rest of the mix. The backing vocals were also well placed so that they could be clearly heard in the mix, without distracting from the lead. As expected the bass guitar did lack a little weight, which could mean that the song could lose some of its drive at times. However, a crisp attack from drums and percussion meant that the listener's attention was held and foot kept tapping.

With Rimsky-Korsakov's *Sheherazade* conducted by Valery Gergiev, the sweet violin tone also showed the treble quality in a better light. The natural, earthy sound was in direct contradiction to the metallic source from which it originated. By contrast, the brass section sounded rather flat and not especially engaging. Unsurprisingly, there was limited dynamic scale, although it did at times also feel as though the sound was somewhat compressed.

The smaller scale sections were well staged and showed plenty of insight, yet as soon as things became a little more complex, the ELS-3's limits were somewhat exposed. Whilst the stage width was fine, there was some muddle in the mid-range during more complex passages not helped, no doubt, by the brass sections lack of a strong identity.

It's not hard to understand the commercial sense that the ELS-3 must make for Epos. They are an ideal tool with which to tackle an ever burgeoning multichannel market, whilst simultaneously kick-starting a new range of budget designs to broaden the brand's appeal. Yet Epos is a revered brand and one that has a loyal following that it can't afford to alienate. With such expectations, the ELS-3s begin with one arm tied behind their back yet prove largely successful. They give a degree of the insight and musical sympathy that the ES14s, for example, were once renowned. Yet this comes at the expense of a lack of depth of bass, and is further compromised by rather inconsistent treble quality.

It's hard to pin the ELS-3s down to a particular type of music - which is good thing, yet it can also be rather frustrating as it makes them difficult to recommend to a particular kind of listener. Although

these baby Eposes are a perfectly acceptable budget design, they really do have their work cut out when facing consummate all-rounders as the Wharfedale's Diamond 8.1 and Mission's M71.

Epos ELS-3 £200

Epos Acoustics
Tel: +44 (0)1442 260146
www.epos-acoustics.com

THE EDITOR SAYS

For this money you either have a pretty wood finish or decent drive units, but not both and I think Epos has made the right call by opting for the latter. You do not get ES14 levels of transparency and grip, but those were altogether pricier products - in truth, in real terms the ELS-3s probably cost less than the ES14 stands did!

I reckon these are very good performers at the price - in my opinion better than the Wharfedale and Mission competition! They're very musically enjoyable, making a good fist of whatever you throw at them. You can feed them with cheap ancillaries and they'll sound good, but have sufficient depth of ability to respond well to a serious source. Indeed, stick these on the end of, say, a Michell TecnoDec and Cyrus 6 and you've a very nice little system. Oh, and they don't work too bad with Creek electronics either. Value for money, I feel. DP

MEASURED PERFORMANCE

The ELS-3's frequency response displays good flatness from 80Hz right up to 20kHz, with no roll down at high frequencies at all; the metal dome tweeter reaches above 20kHz. However, its output has been pulled down slightly to prevent the loudspeaker sounding too shiny bright. With no crossover suckout and good phase matching between the drivers the ESL-3 will reproduce everything thrown at it and is likely to sound detailed, avoiding dullness or warmth.

The bass driver works into a small enclosure with a narrow port that appears to be over-damped. Bass rolls off smoothly as a result and the loudspeaker is likely to sound dry and tight at the bottom end, rather than fulsome and large.

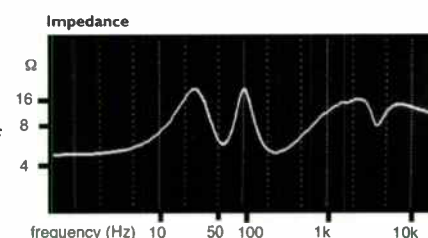
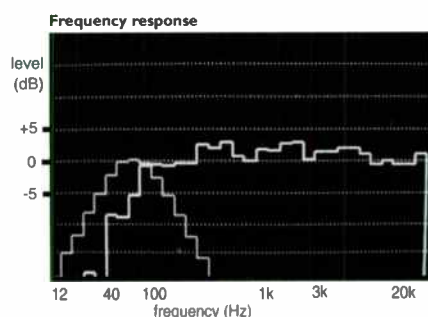
All this suggests the ESL-3 has been tailored for near-wall mounting, even bookshelf use.

Forward output reaches down to 40Hz (-10dB), although low frequencies are curtailed. The pink noise test signal showed deep bass was absent.

The ESL-3 is an 8ohm loudspeaker, measurement showed, with a smooth, largely resistive characteristic. Unfortunately, it is also insensitive, producing just 84dB SPL from one watt input. It needs amps of 60watts minimum.

This Epos measures well and will give good

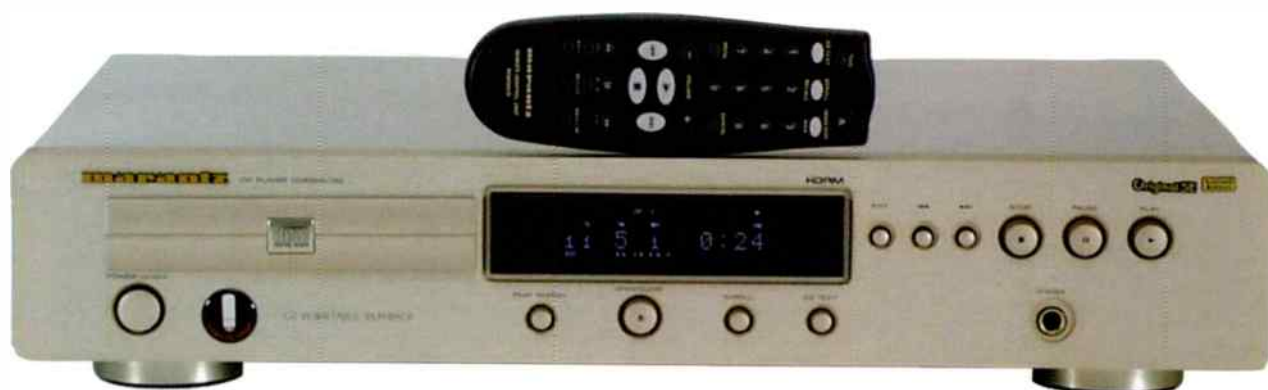
results, but it needs power. Wall mount is a must to support bass. NK



World Verdict £

A refined and musically enjoyable sound that's voiced for all types of source and music. Superb budget buys - but competition is stiff at this price nonetheless.

HEART OF GLASS



What exactly are the problems inherent in the sound of Compact Disc, and

how are they to be addressed? I suppose the most common complaint is that of a grainy, glassy sound, especially in the high frequency regions. But in general although any good player will have precision and detail, plus a background free of clicks and pops. In spite of this achievement CD is often musically less communicative and can lack the natural elegance of a good vinyl setup.

There has been much cranial muscle (and ego) flexing over the years trying to squeeze as much as possible from 16bit to improve its sound. A great deal of work has been applied to the DAC itself, bringing laser trimmed multi-bit DAC chips from the likes of Burr-Brown and Analog Devices and the high oversampling low bit chips from Crystal, NPC and Philips. Used properly these devices offer performance more or less equal to the theoretical resolution of the format itself.

Then there's the digital filter and its affect upon the time domain response of the musical signal. To

avoid the purported problems associated with FIR brickwall filters, certain manufacturers have resorted to either eliminating the filter altogether or to designing their own digital filter using modern digital signal processing (DSP) chips and bespoke algorithms.

Now, that leaves the output stage of the player, the interface between the DAC section and the outside world. There was a time when all one could expect in this area was a cheap operational amplifier (op-amp) chip, however it has been recognised that this area is critical to the overall sound quality of the player. No matter how good the transport, digital filter and DAC are, a poor analogue section will let the player down.

Class A discrete output circuitry is considered superior for audio, whether valve or transistor, and the best machines incorporate this technology into their analogue sections. Enter the Heart Audio machine you see before you.

From the outside this looks like a Marantz CD6000, and in operation there is no difference between them, as far as I could tell. However, take off the lid and take a peek inside and you'll see the softly glowing heaters of two Russian 6922 valves (a

military ECC88/6DJ8). These valves are used in the analogue section of the player and as an output buffer/amplifier, with the promise of a more organic sound.

The special Marantz buffers in the little gold plated boxes are bypassed, the signal after the DAC passes only through a vacuum (well almost). The valves themselves are mounted on a sub-assembly at the side of the unit together with a pair of what look like transformers or chokes. Possibly they are there for matching or filtering purposes - I didn't probe too deeply!

Doctoring an existing unit in this way is the only real option for small manufacturers like Heart, as designing and manufacturing a CD player from scratch is no small undertaking. Heart obviously chose a unit with an already established reputation for build quality, reliability and sound, hence the CD6000 platform.

SOUND QUALITY

Starting with Jeff Healey's Confidence Man the player demonstrated an intricate and detailed midband. Healey's deceptively complex pick and fretwork was eloquently portrayed. His amp, pushed hard, growled and barked out of the

'speakers creating a sense of compression. The rest of the band seemed less well portrayed, vocals and guitar taking precedence. Cymbals in particular had a curious quality, being bristly rather than metallic in character.

The revealing midband worked well too, with Chris Isaak's voice on Blue Spanish Sky oozing into the room like melted chocolate. Again there was midrange structure and complexity by the bucket load, almost as if there was a magnifying glass enlarging things. The brushed cymbals of that track had detail and relevance but did sound a bit divorced from the rest of the mix, and again they didn't shimmer and sing like a struck metallic object.

The Mediaeval Baebes' complex vocal harmonies were glorious. There was little blurring of the girls' voices, and soloists had a breathy life to them. The zithers, dulcimers and other instruments possessed character and detail, and it was with big acoustic drums that the Heart demonstrated its power in the bass region. There was good resonance and realistic pressure created in the room.

Scriabin's Poem of Ecstasy, conducted by Golovanov, was heady and mysterious, but the orchestra lacked space and atmosphere and there was a slight artificial or electronic tinge to the sound. In terms of involvement the music lacked the nth degree of effortless



ebb and flow.

Most acoustic recordings have an energy concentration in the midband with spatial clues at lower levels, while electronic music has a wider bandwidth but with a smaller dynamic range - everything is loud! I gave The Casio Samples' superb demo CD Cutting Age a blast. The sound opened up into a full colour widescreen image - juicy and punchy with loads of energy everywhere. Exactly the same occurred with Funf D's No Promises, the sound having a kind of funky precision. Rhythms and timing snapped into focus and really got my feet tapping.

Being a valved machine I was expecting a slightly more organic, natural sound overall, but the beastie actually seemed more at home with electronic music, when it really rocked! However, I strongly suspect a change of valves would help, as the

ECC88 series of valves can sound sterile and the Russian 6922 device also adds hints of greyness and grain. With new tubes it may be a most striking CD player.

Indeed, Heart Audio offer new, old-stock Siemens 7308 tubes for an additional £50 premium - well worth trying. Even in standard Sovtek 6922 form however, this machine boasts a supremely intricate and revealing midband which really puts it ahead of it any price rival I can think of. It's not perfect, but it's a characterful and 'exotic' performer - which is a most unusual occurrence with CD spinners.

Heart Audio CD6000 £750

Real Hi-Fi
Tel: +44 (0)870 9096777
www.heartaudio.nl

MEASURED PERFORMANCE

This modified player has plateau lift of output below 1kHz - just enough to lessen the thinness of CD and give it a little added body, warmth and even timbre. That's not to say the player will sound dull or warm; there is no top-end roll off and, since such a characteristic is easy to engineer the designers have likely avoided the move toward softness this can bring.

Not surprisingly distortion was higher than usual, by a factor of 2x approximately. This was solely second harmonic though, imposed by the valves on what is otherwise a distortion free (within the limits of 16bit) output.

Noise was low at -93dB (IEC A wtd) in spite of the valves, and

output normal at 2.2V. The CD 6000 OSE is tidily engineered and should sound interestingly different. **NK**

Frequency response 5Hz-21kHz

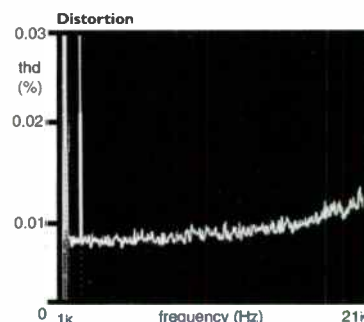
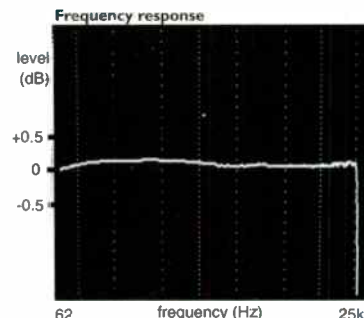
Distortion	left	right
-6dB	0.5	0.5
-30dB	0.036	0.038
-60dB	1.06	1.1
-90dB	38	36

Separation	left	right
1kHz	-83	-83
20kHz	-60	-61

Noise -93dB

Dynamic range 102dB

Output 2.2V



World Verdict 
A truly lucid midband makes this a joy to listen to - an unusually beguiling performer at the price.

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Hi-Fi World 2003 on Illustrious Tonearm



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Paul Szabady, Stereo Times 2003 on Encounter Tonearm

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CHEAP AS CHIPS!



Intrepid bargain hunters will be interested to hear of Toshiba's new SD-520E DVD player, which not only spins videos but full blown DVD-Audio discs too! David Price listens in.

Back in the late nineties, Linn launched its £12,000 Compact Disc player, the Sondek CD12. It was a lot of money for a silver disc spinner, prompting some to question the worth of such a product in a post-16bit digital world. They wondered why on earth anyone would lavish twelve gees on a soon-to-be defunct audio format, when affordable DVD-Audio was just around the corner? The argument went that Linn's CD12 made a fine art of making a silk purse out of the digital sow's ear that is CD, but DVD-A negated the need to polish the proverbial 'solid' in the first place. With 24bit, 192kHz resolution, it was digital with a far better start in life - so why waste time with Compact Disc at all?

Well, warp forward a few years and yes, DVD-A is now within reach of everybody. The software has fallen in price and the players are getting cheaper by the week. Last year, Pioneer's DV-747A seemed a miracle at £800, but now machines such the Toshiba SD-520E you see before you are already available for less the £200

discounted. Yes, really. Offering DVD-Audio, DVD-Video, CD, CD-R, CD-RW and MP3 playback capabilities in one slim-line case, not to mention Dolby Digital and DTS compatibility, it's a lot of sound per pound.

It's also an illuminating insight into the very question we were asking a few years back - can a budget machine playing a theoretically far superior format beat a 'statement' product playing an older, inferior digital format? In this case the answer, ladies and gentlemen, is a resounding 'no'. Frankly this doesn't surprise me, as comparing any £200 Toshiba with a £12,000 Linn is taking things to extremes...

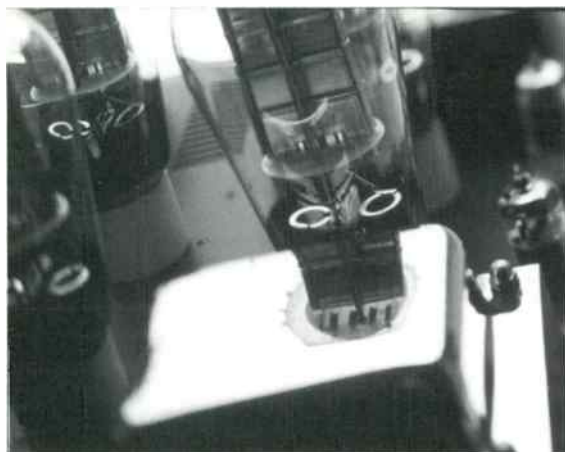
As you'd expect at this price, the SD-520E is simply a smart, slimline affair (measuring 430x69x224mm) that's notable for squeezing so much into such little space. The front panel looks elegant and is relatively uncluttered. The authoring on all DVD-A discs these days is such that all you need to do is stuff the disc in the drawer and press play - so you can use the SD-520E as an audio-only machine without so much as a SCART lead in sight. Round the back,

there's a host of connections, including a downmixed two-channel stereo output, six channel audio output and optical and coaxial digital outs. There's a liberal amount of signal processing gadgetry including 'Enhanced Audio Mode' (which, ermm, 'enhances', variously, stereo, virtual surround and Dolby Digital).

SOUND QUALITY

Starting with its Compact Disc playback abilities, don't expect the baby Toshiba to give the likes of NAD or Arcam anything to worry about in the £250 zone. It is not, frankly, a particularly gripping listen - any £99 bottom-of-the-range Sony will give it a fair drubbing. In a nutshell, it's bland. Put on The Dandy Warhols' 'Bohemian Like You' and you'll not really get any sense of the music's phrasing and accents. It simply feels like a greyish wash of sound rushing past. Not that it's particularly unpleasant, it's just boring. In fairness though, this isn't really where the SD-520E is at.

Stick in America's 'Ventura Highway' in DVD-Audio mode and it's an altogether more engaging performer. You notice a dramatically



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EDITORS CHOICE

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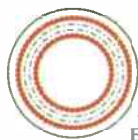
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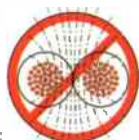
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Total	£1900



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Quad 22L	£895
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SYSTEM 3

Copland CDA 822 CD	£1500
Audio Research SP 16	£2000
Copland CTA 520	£1300
Kef XQ 3	£1500
Total	£6300



SYSTEM 4

Musical Fidelity Tri-Vista CD	£4000
Musical Fidelity Tri-Vista amp	£4000
Martin Logan Aeon	£3150
Total	£11150



SYSTEM 5

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Krell KPS 28 C	£9000
Krell KCT	£10000
Krell FPB 350 MCX	£14000
Wilson Audio Sophia	£12000
Total	£48400

All of the above systems are currently in stock and available for demonstration

Brands stocked: Artcooustic • Audio Access • Audio Analogue • Audisquest • Audio Research • Barco • BCD Engineering • Beyerdynamic • Brylston • Bose • Boston • Chord Cables • Clearaudio • Copland • Crestron • Definitive Technology • Denon • Draper Screens • Final • Fujitsu Plasma • Graaf • Integra Research • Krell • Harman Kardon • Integra Research • JVC plasma • LAT • Lexicon • Linn Classic • Living Control • Loewe televisions • Michell Engineering • Miller & Kreisel • Monitor Audio • Musical Fidelity • Martin Logan • Nad • Nordost • Nakamichi • Onkyo • Opera • Panasonic plasma • Parasound • Pioneer plasma • Primare • Proceed • Project • QED • Quad • Quadraspire • REL • Revel • Revox Screens • Roksan • Runco • SME • Sonus Faber • Spondor • Stands Unique • Stewart Screens • Straightwire • Sumiko • Tact Audio • Tag McLaren • Transparent Audio • Theta • Unison Research • Vienna Acoustics • Vutec Screens • WBT • Wilson Audio and other leading components and accessories.

larger and more capacious soundstage, the music really leaping out of the speakers. There's a real sense of speed and dynamics – suddenly it's as if a thick woollen curtain has been pulled away from in front of your speakers. Unfortunately, however, you also notice the cheapness of the machine's digital converters. It's not too obvious on the America DVD-A, but Fleetwood Mac's 'Don't Stop' (itself a particularly fierce recording) shows it to be very, ermm, 'out there'. Although there's no real sense of distortion, it's tonally very brightly lit – meaning careful system matching is essential.

Bass is fast and bouncy, with a useful sense of zip and propensity to boogie. Still, even playing DVD-As you'll not find it the deepest or most extended. The Eagles' 'Life in the Fast Lane' was a blast, with oodles of midband detail and a very engaging sound that was thanks in no small part to the connectedness of the bassline to the lead guitar parts. Although it the Toshiba gave a very upfront rendition, it was still enjoyable. Interestingly though, despite this 'advanced resolution'

digital format's wonderful 96kHz bandwidth (in two channel at least), this player didn't have a particularly inspiring treble. Without doubt more extended than CD, it still proved rather coarse and unlvely nonetheless. There's atmosphere and space, but little in the way of smoothness or finesse. Rather, the Toshiba seems just to be going through the motions.

Imaging and soundstaging is initially impressive compared to both its CD performance and the likes of Philips' similarly priced DVD763SA SACD player. However, put it against a decent mid-price machine such as Pioneer's DV-656 and you'll notice that the Toshiba is distinctly two dimensional. It images out of the speakers well enough, but doesn't let the recorded acoustic of Miles Davis's 'Tutu' hang back as well as it should. This rather reinforces the impression of a player that's good on big, bold brush strokes but with a polite disinterest in the conveying a recording's subtle detailing and nuances.

Overall then, this is not the answer to every impoverished

audiophile's dream. If it was my money, I'd save up an extra £200 and go for a Pioneer DV-656, which is an altogether more refined, musical and cultured machine when playing DVD-A (and SACD) and CD alike. However, at its price there's little to touch the Toshiba. It doesn't make a bad fist of 'advanced resolution' discs, just so long as you have suitably smooth and forgiving amplification and loudspeakers. Oh, and DVD video discs don't get too bad a time, either. It's just that this won't take 'legacy audio' formats like CD any further than the most humble of modern purpose-built machines will. Considering that many people routinely pay more for a metre's worth of interconnects than this machine costs, it has to be considered great value – but if it's decent sound you want then I'd recommend you save your cash and go for something altogether more refined.

Toshiba SD520 £299

Toshiba UK

Tel: + 44 (0) 8704 424 424

www.home-entertainment.toshiba.co.uk

MEASURED PERFORMANCE

As initial developers of DVD, Toshiba like to ensure their players give flagship results and the SD520E is a good enough example of this. It has an audiophile roll off in frequency response with both CD and DVD-A, as our analysis of 24/96 shows. A

-1dB upper limit of 44kHz was recorded, with a slow smooth roll down evident. The player will have a smooth sound on CD and DVD-A.

Distortion figures were very low too, again with both CD and DVD-A – unlike many players. Where CD usually records 0.4% or so at -60dB the SD 520 managed 0.18%, which is quite exceptional. With 24bit resolution this fell to 0.05%, showing just what a difference high res. quantisation makes.

The only peculiarity of this player, apart from its irritating lack of simultaneous on-board track and time display, was that Scart connection mono'd the audio outputs. I suspected my small Philips test bench monitor was feeding mono audio back into the player, suggesting mis-connected internal

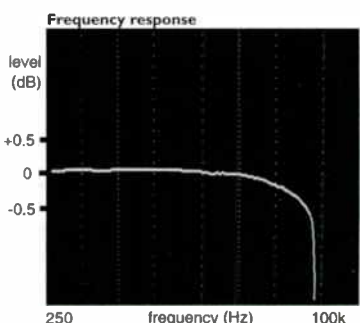
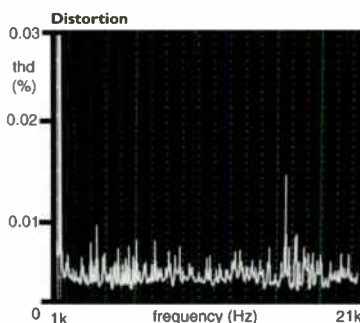
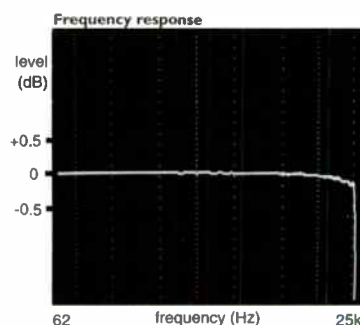
Scart on the Toshiba (use S-video). Otherwise, this player measured unusually well. **NK**

Frequency response 5Hz - 21kHz (24/96) 5Hz 44kHz

Distortion	16bit	24bit
-6dB	0.007	0.003
-30dB	0.008	0.005
-60dB	0.18	0.05
-90	21	1.8

Separation	left	right
1kHz	101	108
20kHz	89	92

Noise (IEC A) -112dB
Output 2.1V



World Verdict **£**

With good DVD-A sound at the price, only its middling CD playback precludes a warm recommendation.



DEMONSTRATION ROOM AT 12A SPRING GARDENS, NEWPORT PAGNELL, MILTON KEYNES, BUCKS MK16 0EE BY APPOINTMENT ONLY - CALL FOR DETAILS ON 01908 218836

KECL82 VALVE AMPLIFIER KIT

The Kecl82 is our latest introduction for the true beginner and designed by Andy Grove. A simple and elegant design based on the classic ECL82 valve, a triode and power pentode sharing the same glass envelope. The amplifier consists of two ECL82s per channel, the triode sections work as the input/phase splitter and the pentode sections work in push-pull for the output stage. The amplifier offers 8 watts into an 8 ohm load, the hum level is extremely low, comparison to solid state standards. The chassis is constructed of 1.6mm mild steel with a black powder coat finish, there is only one signal input pair controlled at the front by a volume control for that simple touch. The speaker connects are the standard 4mm banana type, positioned at the rear, as are the mains input which is received through an IEC lead, mains switch and earth post. We have made the construction as simple as is humanly possible with comprehensive instructions. The circuitry is based on a single printed circuit board. Ultimately this kit is for the guy who has always fancied a go at building a kit, but never dared. Simon Pope says, "It's a great introduction to the valve sound. For it's humble price it delivers a full and rich sound with great detail and good depth." Kecl82 weighs 9kg. External dimensions are 30cm(w)x23.5cm(d)x11cm(h)

NEW KIT

£195



KIT6550 VALVE INTEGRATED AMPLIFIER KIT & KAT6550 VALVE POWER AMPLIFIER KIT

£615



**KIT6550
upgrade kit now
available £130**

£580



**KAT6550
upgrade kit now
available £120**

These are our new 6550 series amplifiers. A pure class A design providing 40 watts into a 8 ohm load. (available in a 4 ohm version if required) A truly high end design by Andy Grove, using Svetlana 6550Cs in push-pull (any 6550 or KT88 tube can be used with this amp). It features valve rectification (5U4) a choke pi filter power supply and is hard wired. Weighs 19kg with dimensions 390mm(w) x

330mm(d) x 190mm(h) with valves or 220mm(h) with cage. Simon Pope says - "If you favour attack and rhythmic grip, together with a smoothness of sound that's incredibly easy to live with, the KIT6550 could well be the kit amp for you. The 6550 is one for those who like a valve sound married to the attack and clout of a good quality solid state design".

KeI84 VALVE INTEGRATED AMPLIFIER KIT

The KeI84 features a pair of EL84 valves per channel in push-pull configuration. They give 15 watts into an 8 ohm load. The output transformers are Ultra Linear. Up front the ECF80 input/phase splitter valve has an extremely smooth sound. The KeI84 has very low hum, for simplicity the kit is built on a printed circuit board. A strong steel chassis is fronted by a 3mm anodised front panel and attractive chromed custom made knobs. There are five line level inputs, plus one monitor input, with a tape output included, all controlled from the front panel. At the rear is a mains switch/IEC power input, earth post, phonos, and 4mm banana sockets. Simon Pope says, "The quality that can be gleaned from this amp is a fine introduction to the joys of the valve sound. The KeI84 will highlight all the intricacies and depth of detail in your favourite recordings whilst retaining a warmth and fullness that is almost exclusive to pure valve amps and is rare at this price point." KeI84 weighs 10kg. External dimensions with valves are 300mm(w) x 270mm(d) x 150mm(h).

£298



2A3 PSE INTEGRATED AMPLIFIER KIT

The 2A3 PSE integrated amplifier offers a seriously hi-end sound, but without the cost usually associated with single-ended amplifiers. The stereo chassis houses, on the output, 2 x 2A3 in parallel single ended configuration and a single 6SN7 as the driver tube per channel. The valve rectified power supply consists of a 5U4 and a 10h choke. This feedbackless design provides 8.5watts into an 8 ohm load, so a good sensitivity speaker is required above 90dB. It can accept 6 line-level inputs fully controllable from the front panel. We provide the excellent Alps Blue potentiometer as standard. The amplifier is hard wired so plenty of scope for tweaking in the future. Simon Pope says, "The 2A3 PSE is extremely impressive piece of kit, good imaging, wide sound stage, nicely extended on the high frequency and tremendous bass thump. Weight - 20kg, external dimensions with valves fitted - 390mm(w) x 360mm(d) x 220mm(h)

£570



DIY KITS IN THE WORLD

ALL NEW SERIES II MODULAR PRE-AMP KIT

The PRE-II is a valve pre-amplifier with six inputs, tape monitor and two sets of output sockets. It utilises a high quality line driver transformer and x5 gain. The PHONO-II is a dedicated valve phono stage that incorporates a step-up transformer for MC users. Finally, PSU-II is a power supply unit that feeds both the PRE-II and PHONO-II.

Power Supply Unit (PSU-II)	£205.00
Pre-amplifier (PRE-II)	£215.00
Phono Stage (PHONO-II)	£110.00
Moving coil step-up transformer	£77.00
Passive pre-amplifier (PAS-II)	£235.00



KAT34 VALVE POWER AMPLIFIER KIT & KIT34 VALVE INTEGRATED AMPLIFIER KIT

£480



**KAT34
upgrade kit now
available £120**

£515



**KIT34
upgrade kit now
available £130**

KIT34 is a 32 watt stereo valve integrated amplifier, featuring a pair of EL34s, in push-pull mode, per channel, plus an ECF80 pentode/triode as input/phase splitter. The power supply is valve rectified (2 x 5U4), using a heavy duty choke to achieve exceptional smoothing. The output transformers are 14% Ultra Linear tapped to keep distortion down to its lowest level and the kit is totally hard wired utilising three tag boards. It has five line level inputs, plus a tape-in and tape out, all

controllable from the front. Simon Pope says, "This integrated brings together the best sonic virtues of our Kit88, kel34 and top of the range 300B PSE in an affordable package. The highlights of the sound are a deep and taut bass response, together with an open and highly detailed mid and high frequency response that only the best valve designs can achieve... a true valve classic." Weight 22kg, External dimensions with valves fitted - 390mm(w) x 360mm(d) x 210mm(h)

300B PSU MONOBLOC KIT

Our Parallel Single Ended amplifiers offer ultimate sound quality. Each monobloc has two of the beautifully linear 300B directly heated triode in its output stage, producing 20 watts into an 8 ohm load. At the front we have a 6AU6 pentode and an ECC82 as the driver valve. This design utilises a 5U4 rectifier valve in the power supply, in combination with a 10H choke, giving an extremely quiet supply. Both mains and output transformers are E/I pattern.

For purists, feedback is switchable and the kit is totally hard-wired. For those that require valves we provide the superb Tesla 300Bs, Russian 5U4s and European 6AU6s & ECC82. Simon Pope says, "Not to put too fine a point on it, the sound these monoblocs create is among the finest that can be encountered in hi-fi." Our 300B PSE kit bears an affordable price of £895.00 (UK price) excluding valves. Each monobloc weighs 23kgs., external dimensions with valves: 25cm(w) x 38cm(d) x 22cm(h) per monobloc.

**300B PSU
upgrade kit now
available £150**

**£895
A pair**



HD83 VALVE HEADPHONE AMPLIFIER KIT

The HD83 headphone amplifier is a beautifully simple design using Mullard ECL83 valves, a triode and power pentode housed in the same envelope. It works directly from any source, be it CD, tape, tuner etc., or from an amplifier's tape out or pre-amp out sockets. The circuit uses high specification E/I output transformers that will drive any headphone load from 16 ohms to over 300 ohms depending on how the secondaries are wired up. The HD83 is a single-ended design with the power pentode wired up in triode configuration for added sonic purity, and it is as quiet as a mouse. For sound quality Jon Marks says, "The bass is punchy and controlled without becoming artificial, while treble has the crispness of the best solid-state, with the tonal purity, delicacy and speed associated with valves." External dimensions 18cm(w) x 30cm(l) x 8cm (h) weight 4kg.

£195





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4 x 4700uF, 16V

£150



"KIT34 Upgrade Kit"

BARGAIN BASEMENT

2A3 PSE chassis and base plate (without face plate), slight flaw on paint work, can hold 1 x 120 lam, 2 x 78 lam E/I transformer, 3 x octals and 4 x UX4s, hardwired. **Price - £50.00**

Kel84 chassis and base plate (Without face plate), slight flaw on paint work, can hold 1 x 78 lam, 2 x 29 lam E/I transformers and 6 x B9A. **Price - £40.00**

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5687 valves, double triode
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to order

Mains transformers & Chokes

KIT6550/KAT6550 mains transformers
2 inch stack, 130mm(h)x120mm(w)x135mm(l) drop through fitting with zinc cap. Secondaries: 0V-240V 300mA, 3.15V-0V-3.15V, 0V-3.15V, 9A. Suitable for 120V & 240Vac operation

KEL84 mains transformer
1.5 inch stack, 90mm(h)x 80mm(w)x 95mm(d) drop through fitting with zinc cap. Secondaries: 0V-240V 300mA, 3.15V-0V-3.15V, 5.5A, suitable for 120/240V operation

KIT88/KAT88 mains toroidal transformer
120mm dia. x 60mm(h). Secondaries: 195V-0V-95V, 450mA/0V-27V, 100mA/3.15V-0V-3.15V, 9A, suitable for 120/240V operation

KIT34/KAT34/KIT6550/KAT6550 choke
1.25 inch stack, 65mm(h)x105mm(w) with fitting holes x 60mm(d), clamp fitting, 2.5 H, 350mA

300B PSE mains E/I transformer
130mm(h) x 95mm(w) x 115mm(d).
drop through fitting with zinc cap.
Secondaries: 380V-0V-380V, 180mA/150-0V-150V, 25mA/0V-5V, 1.2A/0V-5V, 1.2A/0V-5V, 3A/3.15V-0V-3.15V, 0.4A suitable for 120/240V operation

KEL80 mains toroidal transformer (encapsulated)
130mm dia. x 65mm(h). Secondaries: 195V-0V-195V, 390mA/0V-27V, 100mA/3.15V-0V-3.15V, 7.5A, suitable for 120/240V operation

HD83 mains toroidal transformer
80mm dia. x 35mm(h). Secondaries: 0V-165V, 75mA/3.15V-0V-3.15V, 1A, suitable for 120/240V operation

PSU-II mains toroidal transformer
80mm dia. x 35mm(h). Secondaries: 0V-270V, 60mA/0V-10V, 2A, suitable for 120/240V operation

TRANS1 mains toroidal transformer
95mm dia. x 50mm(h). Secondaries: 0V-370V, 150mA/0V-6.3V, 3.5A
300B E/I choke 65mm(h) x 70mm(d) x 80mm(w) open frame fitting, 10H, 180mA.

KEL84 E/I choke
0.5 inch stack, 40mm(h)x 35mm(d)x 70mm(w) clamp fitting, 1H, 250mA

PSU-II E/I
40mm(h) x 35mm(d) x 70mm (w) clamp fitting, 15H, 20mA

KIT34/KAT34 mains transformer
2.5 inch stack, 120mm(h)x115mm(w)x95mm(d), drop through fitting with zinc cap. Secondaries 365V - 0V - 365V, 300mA/0V - 5V, 6A/3.15V - 0V - 3.15V, 7.5A. Suitable for 120/240V operation.

Output transformers

KIT6550/KAT6550 E/I 16% TAPPED UL push-pull output transformer
2 inch stack, 80mm(w) x 95mm(l) x 100mm(h), drop through fitting with zinc cap. Primary-secondary 4.5K, 16% UL tapped. Secondary 4 or 8 ohm, pls specify on order. max output: 45 watts, max current: 180mA, valves, KT88, 6550 etc

KEL84 E/I Ultra Linear push-pull output transformer
1.25 inch stack, 76mm(h)x 65mm(w)x 76mm(d) Primary - secondary, 8K with 12.5% UL tap - 8ohms, max o/p-15watts, max current: 150mA valves EL84 etc

KIT88/KAT88 E/I push-pull output transformer
80mm(w)x95mm(l)x100mm(h). Primary-secondary 10K - 8ohms, max o/p-40watts, max current-160mA valves-KT88, 6550, EL34

KIT34/KAT34 E/I 14% tapped Ultra Linear push-pull output transformer
2 inch stack, 80mm(w)x95mm(l)x100mm(h), drop through fitting with zinc cap. Primary-secondary 6.4K, 14% UL taps. Secondary 8ohm, max output 34watts, max current 150mA, valves EL34, 6L6, 6CA7

HD83 E/I single ended output transformer
40mm(w)x50mm(l) x55mm(h).
Primary-secondary 4K - 4 x 64ohms
windings, max o/p-1watts, max current-25mA valves-ECL83 etc

Pre-II E/I driver transformer
80mm(w)x60mm(l) x65mm(h). 6:1 step down transformer, max current-10mA, valves-6922 etc pre-amp stage
300B PSE E/I parallel single ended output transformer
130mm(h) x 95mm(w) x 115mm(d).
drop through fitting with zinc cap.
Primary 1K5 Secondary 8R, output .

Printed circuit boards

- Kel84 Printed Circuit Board 280mm(w) x 135mm(l) x 1.6mm(d).
- KIT88/KAT88 Printed Circuit Board** 140mm(w) x 310mm(l) x 2.4mm(d)
- Kel34 Printed Circuit Board 140mm(w) x 310mm(l) x 2.4mm(d).
- KEL80 Printed Circuit Board (a pair)** 120mm(w) x 215mm(l) x 2.4mm(d)
- HD83 Printed Circuit Board 140mm(w) x 160mm(l) x 1.6mm(d).
- PSU-II Printed Circuit Board** 105mm(w) x 130mm(l) x 1.6mm(d)
- PRE-II Printed Circuit Board** 105mm(w) x 130mm(l) x 1.6mm(d).
- PHONO-II Printed Circuit Board** 105mm(w) x 130mm(l) x 1.6mm(d)



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by Rainer Zur Linde
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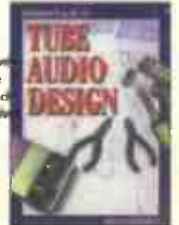
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THE EIGHTIES: HOW WAS IT FOR YOU?

Haden Boardman gives a personal account of the decade when digital arrived...

I can hardly believe we are talking about the nineteen eighties as "the past". My goodness, it was the decade in which I discovered the world of hi-fi; surely it is not that long ago...? Heck, 1980 is nearly a quarter of a century ago! Doesn't time fly when you are having fun!

For me, the eighties was a very special time. In 1980, I was fortunate enough to get hold of my first hi-fi year book, covering 1968/69 - and I was hooked. I discovered hi-fi magazines, and even discovered there were shops dedicated to selling the

£8,000... probably higher than the value of my parents' house at the time! But what fun those musical evenings were, they simply don't seem to happen anymore and remain one of those warm memories from the period!

However, as a wet-behind-the-ears young lad, the most fundamental thing I wanted was a CD player. Aged thirteen, I had clapped my eyes on one of these new-fangled devices at Cleartone Hi-fi's Last Drop Village Show. CD players had yet to be released; it was six months before the official launch. As a result it was

helped re-vitalise the Consumer Electronics industry. Even normal non hi-fi customers fancied a taste of the white heat of digital technology...

Looking back, it was quite an amazing decade - frankly, much more interesting than the 1990s. The LP versus CD debate, the beginning of the valve revival, the almost complete domination by Linn and Naim as "the" reference system to have - which even the arrival of American high-end such as Audio Research amplifiers, Magneplanar speakers, Oracle turntables failed to shift. Even budget audio was becoming much more serious, the rise of the Rega Planar (horrid thing), and the downsizing of loudspeakers. Remember Wharfedale's earth shatteringly good Diamond speaker at £79 per pair, if memory serves me correct?

Let us not forget tweakery. How many readers used good quality speaker cables and stands in 1980? But by 1990 there was a veritable cornucopia of cable choice, plus proper hi-fi stands, mains cables, and even the voodoo magic of Mr Peter Belt and his folded pieces of paper and foil! The eighties was a brave new world.



Sony's CDP-101 was the first 16bit machine...

amazing, wonderful things of the worldwide hi-fi business. I must have driven every hi-fi shop within a bus ride of Wigan completely mad! Poor old Cleartone - being one of the biggest and best stocked stores, it was a regular stomping ground.

They must have taken pity on me, because despite my never ceasing questions, and never managing to actually purchase anything, I was given a ticket to a musical evening, whereupon the guy promised that I would hear real music for the first time. Accompanied by my long-suffering father, we duly arrived at one of the Last Drop Village's suites, for an evening of Linn and Naim entertainment.

It was amazing. All those crazy boxes, huge pairs of Isobariks, and the blessed LPI2! The system they were demonstrating was "only"

nearly impossible to get near the Marantz room, never mind in it, but there it was, a CD player...

At this time it wasn't so much the concept of digital audio that fascinated me - frankly I had not got a clue about sound quality back then - but this thing used a laser! I mean, come on, this was still science fiction! Now not only could you own one,

but it played music as well.

The appeal to a nerdy teenager is pretty darn obvious. CD gripped the entire nation (I thought), and whatever our thoughts on the pesky machines' sound quality, CD players certainly



...and Naim's classic CDS one of the last



I was excited at the news that, finally, Blu-Ray is coming to market. This next generation laser technology gives us 27GB from a single side/single layer disc (nearly seven times more storage than DVD!) and 50GB from a dual layer, making plenty of space available for both video and music in one high performance disc.

Strange as it may sound, the problem that DVD always had was lack of capacity. To get two hours of video with full surround sound onto a 4.7GB disc meant compressing both the video signal and the audio signal. Dolby 5.1 compresses audio to a typical data rate of 384kbps. Compare this to five channels at CD quality, which would have a max data rate of 3.5Mbps and you can see there is a lot of compression, around x10. This makes Dolby equivalent to MP3 and indeed stereo Dolby has a 192kbps data rate – identical to MP3.

DTS offers less compression, hence its improved sound. But with a Blu-Ray disc we may well be able to enjoy five channels of high quality uncompressed audio, with video if need be. We only need compression because of limited disc capacity. With bigger discs Dolby and DTS become unnecessary, removing them from the long list of options facing users.

I don't want to make too much of this because if movies come with Dolby sound, then we will have to listen to compressed audio whether we like it or not! But Blu-Ray will allow more latitude. A press release notes that "Blu Ray disc is a technology platform that can store sound and video while maintaining high

quality and also access stored content in an easy-to-use way". I'm reminded here of computer data compression programs like *Disc Doubler* that were once valuable in cramming as much as possible into limited storage space. They have faded away as fixed storage capacities have increased dramatically, and I can't help but believe

“ We only need compression because of limited capacity... with bigger discs, Dolby and DTS become unnecessary.

Blu Ray will have a similar effect.

Knowing how Philips and Sony try to avoid consumer confusion, I strongly suspect it will also come with some natty new techniques for accessing decent audio without having to switch on the TV and sit there punching the remote control until the right disc menu appears. I am not surprised to read, under the heading *Main Features of Logical Format*, that the Blu-Ray group will use the "Best data structure for disc recording", for "improvement of searching and playback list functions". It's difficult to know in what manner things will be improved, but I would hope discs feed information back for display on the player so an agreed system can be put into place, one that does not demand use of a TV. We should be able to load a disc, be given sound track options on a small display and be able to make a selection quickly.

This forthcoming format contest has a commercial dimension that is of more concern to the contestants perhaps. At present DVD looks to be the stronger of the two audio media – SACD has very low penetration in

the U.S. at present, with around 1 million players sold. I have no doubt that Philips in particular are worried about losing their license stream income from CD to the DVD Forum group, with SACD unable to claw it back.

The only way to counteract DVD's success is to sideline it. Blu-Ray is just the technology to do this - and it has powerful backers. No wonder that Philips and Sony have been so fast at making details public and that Sony, as rumoured last year, have been so quick to launch an actual product. With Panasonic and Pioneer on board the Blu Ray group looks powerful.

There is one last detail to Blu Ray that may turn out to be valuable in its long term commercialisation – a miniature recordable disc able to hold 2GB. This harks back to the launch of CD and the 8cm disc. A small disc is needed for cars and portables. Integrating a mini audio disc into the overall specification, one that would play on a home video player, may just be a powerful way to make the format attractive to a very wide range of consumers, rather than a fiddly and niche high-technology product that scares the average Joe as DVD Audio is today.

Not to be sidelined so easily, the DVD Forum also have a Blue Ray disc (spelt properly they are at pains to point out!) which, they say, will have the benefit of being backward compatible with today's DVD.

My interest in Blu Ray isn't who wins so much as who uses all that capacity to give us fantastic audio without all the hassle. Even I like to sit down and press just ONE button to listen to a disc at the end of the day – and not end up on the floor wrestling with the remote! ●

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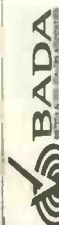
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It wasn't all that long ago that the radio, or at least the hi-fi separate tuner, was very much an afterthought for most people. A few true radio devotees would perhaps take the plunge and splash out on one of Naim's fabulous NAT tuners, but otherwise it tended to be a Denon TU260 to pass the time whilst ironing. Not anymore - as radio is cool again and very much enjoying a renaissance!

This is primarily due to DAB. Despite the unfortunate levels of compression, the format really appears to have caught the public's attention. Much of this has of course to do with the BBC's relentless advertising of their new, digital only, radio stations.

Speaking as one involved within retail I can honestly say that Radio 1 Xtra, 6 and 7 have brought new customers into the store, who wouldn't have considered changing their old clock radio, Roberts, or boom box, had it not been for the new stations. Of course, events have also led to an increased interest in the portable and personal units, yet it's the products themselves that can take much of the credit for the new found radio enthusiasm.

After the great success of Pure's Evoke 1, they've now brought out a stereo version unsurprisingly called the Evoke 2. As before it's a super piece of kit that will run through a hi-fi separates system via the mini-jack output. Yet the new 2 also has a digital output which kind of makes sense for any digital format source. At the full size side of the market they've also brought out the new DRX-702ES which also includes an FM tuner

for those few local stations that may take years to go digital. Of course the proof is in the sales figures, and anyone who doubts the dominance of DAB in the separates market should note that the Pure DRX601 was last year's best selling tuner, finally knocking the Denon TU260 off its long held perch. True, sales of just over 10,000 may not be that great in

How often is it these days that one hears of hi-fi companies being built from the success of semi portable radios, and analogue ones at that?

the scheme of things, but when one considers that there are an estimated 100 million analogue tuners knocking around the UK, then the future for digital tuner manufacturers has to look rosy!

Yet it's not only DAB tuners that are basking in the glow of radio's new found friends. Oddly enough, one of the products that impressed many a hi-fi reviewer most last year was actually an analogue semi-portable unit called the Tivoli Audio 1. It really doesn't look much and would have caused hoots of derision had it been launched before retro styling made a comeback at the turn of the century. It actually looks like something Leak may have produced had they ever produced a portable version of the Troughline! Yet public

reaction has been so good as to encourage the company to go on in making a matching 'speaker system, sub woofer and even a CD player in a matching wooden case!

How often is it these days that one hears of hi-fi companies being built from the success of semi portable radios, and analogue ones at that? Of course, to the armchair tactician and product planner, such as myself, it would appear that the ideal course for Tivoli to pursue would be one of DAB. They have already established a reputation for portable radios to challenge Roberts, and by adding DAB circuitry this would be the icing on the cake. Some radio fans however may of course point out that the reason for the success of the Tivoli is that this may be the last chance you'll get to hear the best of this particular technology. This time though, it won't be a finite supply of valves available that limits supply, but the eventual switching off of the analogue transmitters.

Whatever the outcome for radio, I do hope that its current popularity doesn't just prove to be a fad, and that it does sustain. Speaking as someone who hasn't owned a TV for four years, I'm well aware of the joys of radio, and think its about time more people tuned in and tried a night in front of the radio instead of the box. Like they always say, the pictures in your mind are always far better than those on TV anyway. Happy tuning. 🎧





Against the relative blandness of the nineteen nineties, the eighties was dramatic decade. In politics, music, fashion, sport and culture it polarised opinion like few others. In some ways it now seems quite over the top – enduring images of London's Blitz club, New Romantics, Dallas and Dynasty and some seriously pompous pop music (Reflex's 'The Politics of Dancing', anyone?) ensure this. But at the time, we rather thought we were being very tasteful and stylish in contrast to the seventies, which we famously used to call 'the decade that fashion forgot'. Quite how shoulder pads, Buggles-spectacles, and angular grey-flecked polyester suits ever seemed stylish is something for cultural historians to struggle with in years to come...

It was in some ways a great time for hi-fi. Many British manufacturers that were small independents in the seventies grew into big, powerful companies in the eighties – effectively coming of age. True, a variety of brands have enjoyed a bumpy ride on the way – Quad and Pink Triangle to name but two. But we witnessed the growth of British hi-fi into a world-class business bristling with interesting products. If only our car industry had gone the same way.

The eighties' most famous moment was the launch of Compact Disc. Love or loathe the format, you can't help but admit the dramatic effect it had on everything that came after. For aficionados of the format, it brought technology that – ironically – has never been bettered. Even now, there's nothing like those early Philips sixteen bit players if it's powerful, rousing and stirring sound

that you like. Both the Philips CDM-1 Pro mechanism and the TDA1541 DACs are classic bits of kit, and not even the very best of today's technology can reproduce their brilliant, characterful sound. Funny that, in 2003, we're remembering twenty year old tech that many feel has never been surpassed!

“ Many British manufacturers that were small independents in the seventies grew into big, powerful companies in the eighties.

This brings me to this month's cover star – Naim's CDX2/XPS2. Why make such a song and dance about a CD player when they're very much yesterday's news? Well, one of hi-fi's greatest ironies is that the best products from any given format often arrive after the fact. Take, for example, vinyl. It's certainly not moribund – quite the reverse – but no one can deny that it is no longer the world's primary music carrier. Funny then that, virtually from the first year of its sales decline – 1987 – a wealth of new products arrived on the market that pushed its performance radically forward. From SME's Series V tonearm to Michell's seminal Orbe turntable, as LP sales fell back then so the hardware advanced. Other examples abound – DCC got 18bit coding just before its death, DAT gained Super Bit Mapping, MiniDisc got ATRAC DSP-Type R. See what I mean?

Compact Disc is unquestionably on the back foot. Sales aren't declining dramatically, but the unit cost (essentially the amount of money that record companies can charge) for CD albums is. This means that the profits from 16bit

silver discs are falling, and the music biz either has to sell more units (tricky, with the state of modern music!) or invent a cunning new wheeze (i.e. 'value added' DVD-A and SACDs) that it can sell for more in order to break even. As a result, CD players are simply not where it's at these days – they're about as 'cool' as car cassette decks or housebrick-sized mobile phones. The world is moving on and leaving two-channel stereo 16bit machines out to grass.

Why then would anyone possibly want to buy a new Compact Disc player? Well, in my experience, every single DVD-Audio and SACD machine I've heard (which is almost all of them) cannot hold a candle to a decent high end CD spinner when playing back CD. Yes, of course, DVD-A and SACD decks playing their 'advanced resolution' digital discs will leap ahead of CD machines playing the CD version of the same recording (assuming they're any good, and many aren't!). But, when it comes to an out and out fight for CD supremacy, it is the CD machines which win the day. And here's the punchline – the number of DVD-A and SACDs available is a fraction of that of CDs – so if you want to listen to most music digitally right now, CD is still your only hope.

For this reason alone, it is still worth buying a high end CD spinner. The Naim CDX2/XPS2 is very probably the most musical Compact Disc player money can buy right now – in my humble opinion even Naim's new top-of-the-range CDS3, which although an awesome performer, lacks some of its brio and bite. That's why, all these years after Margaret Thatcher, Spandau Ballet and Tiswas on TV, CD can still cut the mustard if done well. ●

BARGAIN BULBS



If you've always thought of valve amps as temperamental and expensive beasts, think again. World Audio Design's latest kit is designed with the budget conscious beginner in mind.

The Kecl82 was created from a brief that demanded simplicity, ease of build and a super low cost. In order to achieve a reasonable power output we went for a push-pull amplifier.

We chose the ECL82, a triode/output pentode. This tube is readily available and has a good sound. In push-pull mode it delivers 8Watts. Realistically you need a speaker of around 89dB or above. This is possible at a budget price - try the smaller Triangle models, or a Tannoy mX3 or even one of the older Missions like the 773e, or if you like building your own speakers, try the Adire Audio HE10.1, as reviewed in HFW October 2002 issue.

You will see that the front has only a volume control, and it is fed by one pair of phono sockets. A selector and tape/source switch were not used in this amplifier as they are tricky to wire up, and the aim was to make it easy to build. In fact, in many ways the Kecl82 would be great powering a second system, using a CD player as a source, and will definitely give you a taster of what valves can offer. Measuring 30cm wide, 23.5cm deep and 11cm height with feet, it is entirely self-enclosed. The valves are visible through the four upper circular vent holes (one directly above each valve). We have kept the look simple with the minimalist front panel holding the volume potentiometer. The two-part chassis is constructed from 1.6mm mild steel with a durable black powder-coat finish. The whole unit is very sturdy, weighing in at 9kgs.

The signal input is in the form of a pair of gold plated RCA phono sockets that sit at the rear of the chassis. The speaker sockets accept 4mm banana plugs as well as bare wire. The mains switch is positioned at the rear of the amplifier, on the right hand corner for easy access. Mains power is received via an IEC lead. The Kecl82 is based on a printed circuit board (PCB). The PCB is easy to follow with all component names, locations and orientations shown clearly. The amplifier requires no set up, you just turn it on. The kit will come with comprehensive instructions taking you through the build step-b-step.

SOUND QUALITY BY SIMON POPE

Purity is the key to this amplifier's design and sound. Because there's very little to get in the way of the signal what you get is an exceptionally sweet and simple sound that also has a superbly wholesome roundness to it. A high quality recording of Mahler's Das Lied Von Der Erde on Reference Recordings showed that the Kecl82 faithfully reproduced all the depth and space of a full symphonic orchestra without any problems. Violins were smooth and sweet, as was percussion (which virtually sparkled) and the woodwind section was especially impressive, with a spacious and airy sound.



A run through Miles Davis's Kind Of Blue saw the little integrated delivering a detailed and precise sound that highlighted the warmth of Coltrane's tenor sax and the rich, deep sound of the upright bass. Rock and Pop records such as Radiohead's 'Lucky' demonstrated that the valves inside the amp, whilst small, are quite robust sounding, with commendable clout and bass depth for a humble budget 8W valve amp. This is a great introduction to the sonic art of the valve amp and a big upgrade for anybody with a mid-price solid-state amp that wishes to swap over to something more musically engaging, for a price that's virtually as cheap as chips!

MEASURED PERFORMANCE

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FANTASTIC PLASTIC

Plastic perhaps, but Philips fourth-generation CD players had a fine performance, Haden Boardman explains . . .

Launched in late 1986, Philips' midi-sized CD160 was the first 16bit player from the Dutch giant to utilise its own chipset. The first generation CD100 is a design classic with good sound, but used a Sony 16bit DAC and no oversampling. The following CD101 used Philips' own 14bit DAC with 4x oversampling, a chipset Philips continued to use and supply until the 16bit chipset was ready.

The introduction of the budget CD150 model, still 14 bit, caused some mild psychological problems amongst reviewers at the time! Build wise, these machines were light weight to say the least! Compared to the CD104 which the '150 replaced, it was plain nasty - the use of plastic mouldings for everything bar the lid did not inspire huge confidence. Press the eject button, and the world's worst tray grated its way out of the plastic fascia!

Even so, these machines all used the Philips classic swing-arm laser system, which frankly has never been bettered in many people's opinion. The same basic mechanism and chipset were also used in the sister Marantz machines, and by companies such as Rotel, Mission, CAL and AR. Still, despite the cheesy feel, the CD150 and its many derivatives offered much improved sound quality over the better built earlier models like the CD104. More attention had been paid to reducing jitter, and where the earlier machines had more than a dozen or so chips in the digital domain, Philips had been working hard to reduce errors and chip count, greatly simplifying and improving the performance.

By the end of 1986, the 16bit

Philips "plastic" range consisted of CD160, full size CD460, remote controlled CD260 and the CD360. Marantz versions of the same included the CD273 (a CD160) the CD273 "SE" (the first special edition machine from Marantz), and the classic CD65 and CD75.

The CD160, CD260, CD460, CD273 and CD65 (non "SE") all sound the same - detailed, transparent and up there with most of today's £200 players (which isn't bad after fifteen years). For some strange reason, the little CD360 sounds much better than the standard machines, with more authority and a tad more bass slam and weight. It is not quite as good as the CD273 SE, which Ken Ishiwata tweaked up with better capacitors and copper screws. Hot on the heels of the CD273 SE was the CD65 SE, but despite the premium in price (£380) it was still really competing with the midi-sized CD 360 and CD273 SE.

Marantz's top of the plastic range CD75 was, however, somewhat much more refined - and by a handsome margin. Priced at £450, the machine had been modified by Marantz UK in a similar fashion to the CD273 SE, but also included a prettier fascia than the very similar CD65. Sonically, of all the plastic machines from Philips and Marantz, this one is 'the daddy'. Even comparing the machine

to a brand new £500 CD player, it holds its own. Bass is a trifle light and lacking in impact, but if anything it's more detailed and engaging than many moderns! Plastic it might be, but this guy has a heart of gold.

These machines are incredibly reliable and invariably cheap as chips. Spare parts are simply not available, and if the laser is knackered then so is the machine. They do suffer dry joint problems, but as a rule of thumb most non-mechanical problems can be fixed. If the machine refuses to read a CD, you can be confident the laser has failed, and the machine is effectively dead. Any machine pushing fifteen years old must be considered to have had its life, but with the interchangeability of the mechanisms, a working CD160 could be used to save a dead CD75. All these machines turn up for much less than £50, and there is a plentiful supply.

Eventually, Philips changed the ultra cheap looking mechanism for a more robust looking job, but these later machines are not actually as reliable as the lasers seem to die much earlier. Marantz launched Mk II CD 65 and 75 machines around this mechanism, and then by 1989 Bitstream came along, which offered a completely different presentation on the sound. That, however, is another story!



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KISS THIS

KISS Technology's new DP-500 is the first DVD player to offer an Ethernet connection and DivX support. This lets users view their previously downloaded DivX, Xvid, MPEG 4, MP3 and Ogg Vorbis files directly through their television, using the Ethernet connection attached to their PC - the first time this type of



technology has been available directly through the television. It introduces a series of new features including playback of DivX, the ability to listen to Internet web radio, and PC connectivity for music files, pictures and video material direct from your PC. Users will be able to download files from their PCs and

watch downloaded movies, listen to hours of recorded music or listen to Internet radio stations without anyone realising a PC is involved. The Scandinavian designed and built product also boasts progressive scan, MPEG-4 support and DVD, DiVX, Xvid, SVCD, VCD, CD, MP3, Ogg Vorbis, JPG, CD-RW and DVD-RW playback. Click on www.kiss-technology.com/ for more details.

BBC MP3

The Beeb has announced a range of popular audiobooks on MP3 CD. Six best-selling titles will be released on MP3-encoded CDs, which give around ten times the playing time of conventional Compact Discs. Initially six titles will be introduced, all retailing at £19.99, comprising: The Hobbit, Dead Ringers Volume 1, 2 and 3, The Complete Fawcett Towers, The Complete Hitchhiker's Guide to the Galaxy, Doctor Who: Web of Fear and the Abominable Snowman, Doctor Who: The Dalek's Master Plan. BBC Audiobooks is the only publisher in the UK to be releasing MP3 CDs in this way. Check out www.bbc.co.uk/.



M-POWER

M-Audio's new Revolution 7.1 lets you record music in surround sound with 24-bit/96kHz digital resolution, or playback in two-channel stereo at 24/192, giving a claimed 107dB signal-to-noise ratio and 0.003%THD. This PCI sound card also supports DTS output and Dolby Digital 5.1/EX (6.1 DVD) decoding and offers real time stereo to surround sound conversion via SRS CircleSurround II technology. There's even Bass Management, Speaker Optimisation and Input Metering via a software control panel.

If you don't have a 5.1 or 7.1 speaker system, TruSurround XT provides multi-channel virtual surround sound on your stereo or even headphones. Over \$200 of high-quality software is bundled, including MixMan Studio, VJ Lite and WinDVD 4 (Dolby Digital EX version). For more information, click on <http://www.m-audio.com/>.

PHILIPS' NXT STEP



Philips Consumer Electronics new Acoustic Fusion 310 (2.1) and 610 (5.1) multimedia loudspeaker systems feature the very latest NXT soft flat-panel transducers. The 310s, which retail for approximately £50, have two 6W satellites and a 20W down-firing subwoofer, with a broad frequency response of 40 Hz-20kHz thanks to a specially patented 3D SFP tweeter. The 610, which sells for around £150, has five 20W flat panels and a powerful 100W eight inch side-firing subwoofer. This is designed for use with Philips Sonic Edge soundcard, as reviewed in the May 2003 issue of Hi-Fi World. Both the Acoustic Fusion 310 and 610 loudspeaker systems will be available from May. Check out www.philips.com for more details.

CYBER-VI

It is one of the life's great ironies that the world's most technically unsophisticated music carrier is so well represented on the bustling new information superhighway. David Price risks being lost in cyberspace to bring you some choice snippets from the cult of black plastic...

ANALOGUE ADDICTS ARCHIVE

<http://www.analogue-domain.org.uk/>

"We are members of an internet mailing list dedicated to getting the absolute best out of our home audio systems and strive to recreate the illusion of a live musical performance in our homes (or at least get the most out of every recording). And we all feel that one of the key components involved in this is a record playing system. There's

something about analogue that just makes music, whereas digital just seems to reproduce sound. We have fun doing it, and it shows."

Amen to that! This site has been around for quite a while now, and is one of the most interesting and varied for devotees of the black vinyl disc. While it lacks pretty pictures, it packs a wealth of information amassed over the years from some very knowledgeable professionals and amateurs alike. Here you'll find discussions, arguments, rants and raves from some deeply knowledgeable folk – plus show reports, white papers and DIY projects. Several hi-fi hacks have been known to add their two cents, and more importantly you'll find postings from a variety of specialist manufacturers who - after a hard day's work - bash away at the keyboard arguing over the relative merits of boron and aluminium cantilevers. That's dedication!



ANAROGUE PLAYERS CORNER

<http://www.niji.or.jp/home/k-nisi/anarogue.html>

No format has the cult appeal of vinyl, and no country has cultists like Japan. It is perhaps not entirely surprising then, to find an awesome slice of cyberspace dedicated to the great Japanese direct drive turntable such as this. To use the webmaster's own words (translated), "They used to be in the centre of audio systems. We used to have a lot of really good ones and bad ones, but nowadays the record players are forgotten items. So lets go and review the Japanese record players in those days".

Which is just what he does. Although most British disciples of black plastic may not be over-familiar with Japanese hiragana and kanji characters, the pictures alone are worth a visit. To wit, you'll see snaps of some stunning late seventies and early eighties kit, from Kyocera's PL-910 and Diatone's LT-1 to Pioneer's PL-7L and Nakamichi's TX-1000 – all of which make even the best of British vinyl spinners look like dog-eared Dansettes. These things are awesome, and it's all the more depressing that most never got outside Japan. Forget issues of site navigation and content – just gawp at these stunning pics!



BACKSPIN

<http://www.backspin.org/terms.html>

"Nuff respect in de area!" The Unofficial Technics Turntables Pages are a great resource for arm, Technics decks - but that's Technics as in SL1200 and variants - not the rare (SP15) or interesting (SL10) stuff. Nonetheless, given that the SL12 is the world's best selling deck ever and that a not-inconsiderable number of folk aspire to owning one, then this is well worthwhile. There's a nice range of content here, from a potted history of the marque to some specific service info (SL1100 and SL1200 2 in particular) and an impressively complete FAQ.

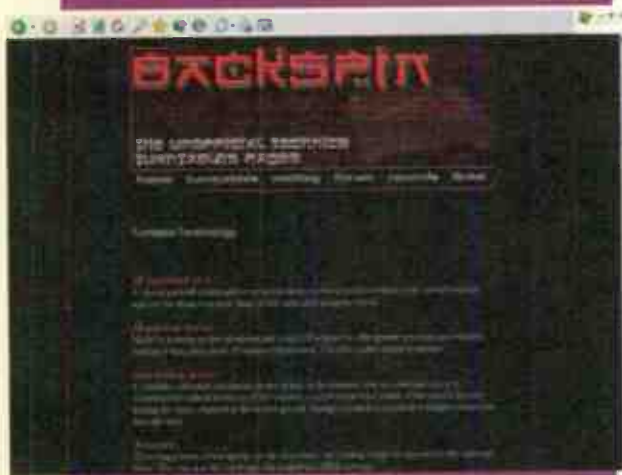
There's also a good section of turntable terminology for raw recruits, some worthwhile advice about the kit needed to DJ, and a piece about 'turntablism'. Factor in a forum, stuff on records, a good links page and a mailing list facility and it's a very nicely rounded little site. The easy navigation and fine design help, too. As the first port of call to many future analogue addicts, its existence and breadth (given its narrow remit) are to be applauded.

THE ANALOGUE DEPT

<http://www.theanaloguedept.com>

Over to the site's originator, Steve Clarke. "I originally started the page as I became interested in doing DIY modifications to my old Thorens TDI160. I thought that if I simply posted several photos of my projects to the site, the pictures would gather comments from people more experienced than myself. In this way I would benefit from their input, gathering insight. It worked better than I could have anticipated. I still operate the site this way. I encourage readers to comment and to also post articles on their own projects and areas of expertise that will fit within the scope of the site. It's all non-profit.

The main focus is Thorens turntables - I would like to encourage anyone with production history, specifications or owners manuals to get in touch with me. It's a community effort by Thorens owners helping others to maintain and improve their old turntables, but not just about Thorens. The site wants to entertain its viewers with photos about other readers' audio systems in the Systems Gallery. I began to notice the diversity among us hi-fi nuts out there - the photos are coming in from all over the planet. I like to play up the country of origin, and prominently mention the nationality of the contributors. The net serves to bring the peoples of planet earth much closer together and I want it to happen at my website. I love this aspect."



PINK FISH MEDIA FLAT EARTH PAGE

<http://freespace.virgin.net/tony.lonorgan/flatearth/>

In true eighties style, this site starts with a mission statement - make of it what you will: "Why 'flat earth'? The term was originally used in a somewhat derogatory manner by many in the UK hi-fi press when the Linn / Naim axis that had dominated the industry during the 80s gradually began to lose momentum. It is used by those who like pretty sounding hi-fi that usually can't hold a tune or play in time, more of which later on. Things now have moved on to the stage where 'flat earthers' are rather proud of the term! How can we take offence? Our hi-fi actually plays music!"

Yes, folks - this is pure eighties-tastic nostalgia! It brings back the days when The Flat Response flew off magazine racks faster than Golf GTis from your local VW dealer. Essentially a paean to the days when large parts of the British hi-fi press believed that only a tiny range of select brands could make decent hi-fi, you'll find reviews of Linn's LP12 (no - surely not!), Kan (I don't believe it!) and Isobarik (getaway)! Then there's the Naim stuff (IBL, NAIT and CDS II), you may be surprised to know. It may be narrow in scope (where's Nytech and IncaTech, guys!) - but it's very incisive stuff. I may mock, but this site is still spot on and I applaud its creators.



MULTI-PLEX

Want an external CD burner that can do it all – David Price has an option for you in Plextor's new PlexWriter 24/10/40U.

A year or two ago, the extra cost of an external CD burner over an internal unit was almost prohibitive. At best, your couple of hundred quid bought you an old clunker that was little more than an old internal drive stuffed unceremoniously into an awkward plastic case. Invariably, the mech itself would be a pre-historic first generation unit, complete with geriatric write speeds (4x if you were lucky) and at very best, a USB 1.1 connection.

Then, in 2001, came Sony's Digital Relay. The first of the sleek, svelte, lifestyle portables – it was more than just a re-heated old internal unit. Small, slimline and even boasting a headphone socket and level control, it could even double as a CD spinner. The trouble with it was – unusually for Sony – frighteningly light and fragile build quality, the expected slow speeds and a price that was simply too high to make it worthy of real consideration.

Fortunately, a couple of years on and there's a wealth of sleek portables out there, such as the Plextor you see before you. Although not FireWire compatible, it does do USB 2.0 which makes for very healthy transfer speeds and the backwards compatibility of USB 1.1, which has been fitted to just about every PC since 1996. The result is a very pretty and sleek bit of kit which

offers 24x write, 10x re-write and 40x read speeds. Like the aforementioned Sony Digital Relay it's made of plastic, but this doesn't feel like it's going to break off in your hand.

This new unit also offers Plextor's PowerRec II (PlexOptimised Writing Error Reduction Control) facility. A variation of the technology offered by many optical storage manufacturers these days, it checks the quality of the CD media being used and automatically selects the optimum (maximum) writing speed, giving the highest quality results. The machine also has BURN-Proof – preventing the dreaded buffer under-run which causes computer crashes and wasted CD-R media. A healthy 4MB buffer, claimed high quality digital audio extraction (DAE) and wide CD-R and CD-R/W media compatibility and easy Firmware upgrade through FlashROM are also included. Plextor's comprehensive two-year on-site warranty completes the package.

The box comprises the PlexWriter 24/10/40U itself, plus one CD-R and one CD-R/W disk, plus the USB interface cable, sixteen page manual, Plextools utility software and the much vaunted NERO v5.5 CD authoring package (plus InCD for packet writing). Installing the machine proved difficult (but do-able) with Windows 98, but no problem with all subsequent editions of Bill Gates' finest (?)... With Plextools and Nero suitably

installed, we were ready to go.

The machine works beautifully – it's quiet, smooth and elegant to look at, and resolutely refused to crash. It performed reliable burning with all manner of cheapo computer fair-sourced blanks. I listened to some TDK CD-Rs with WAV file recordings of my favourite vinyl LPs burned at 4x speed. The result was excellent, with virtually no deviation from the original, save that very slight softening of the tone and flattening of the soundstage which you get with even the best burners and media. Certainly it was a good result, and I'd have no hesitation to recommend this for computer audiophiles. As claimed, Digital Audio Extraction worked superbly – quickly and without any appreciable sonic degradation, it was a fine partner for the keen MP3 user. Overall then, a very nice external drive that will plug in and go with any PC. Factor in superb software, fine design and good performance and it's well worth a look – especially if you can find it at a discount.

Plextor PlexWriter 24/10/40U £180
<http://www.plextor.com>



USB 2.0 INTERFACE

Universal Serial Bus interfaces arrived on the scene some seven years ago now, and at the time were a serious advance on the norm. Although not particularly fast even then, for the first time they offered 'hot swappable' technology – you could plug in and unplug peripherals without having to reboot the computer! The ideal technology for external storage devices, digital cameras and webcams, it soon caught on. Soon came USB 2.0, offering far greater speeds (up to 480 Mbps) and the ability to connect up to 127 devices to one host.

MY, OH MY

Self confessed computer audio-phobe Simon Pope is let loose on Steinberg's latest software for the cyber music lover, MyMP3.

Too many years of desktop publishing have taught me that your trusted PC pal will let you down when you need it most. I'd like to think I'm computer literate, but I have a habit of taking a very long time to execute or install anything. So imagine my surprise when newly enrolled editor Price suggested I should be let loose with some computer audio software. All I can say is that he's a sadist for asking me and I'm a gullible fool for accepting the offer. It doesn't help when the load up page of MyMP3 shows what appears to be a German girl of around eleven years old who's presumably far more fluent than I with such applications!

The MyMP3 4.0 is an all-in-one MP3 and CD burning package – "turn your PC into the ultimate jukebox". Speaking personally, that would be a 1950s Wurlitzer that chilled your beer and was stuffed full of early Cure and New Order tracks, along with various Bruckner and Mahler excerpts. Not quite what Steinberg had in mind, I suspect.

Once installed, with MyMP3 you can listen to, convert, organise and burn music onto CD. You can also upload playlists onto external MP3 players or download music from the 'net. Add to this the fact that you can also edit MP3 files, play and record internet radio at the same time and add professional standard effects and you have an awful lot for a relatively small outlay. There are two versions of the program, the other being the Pro (pictured) version in which you can encode and decode MP3Pro files and create a surround mix from a stereo mix.

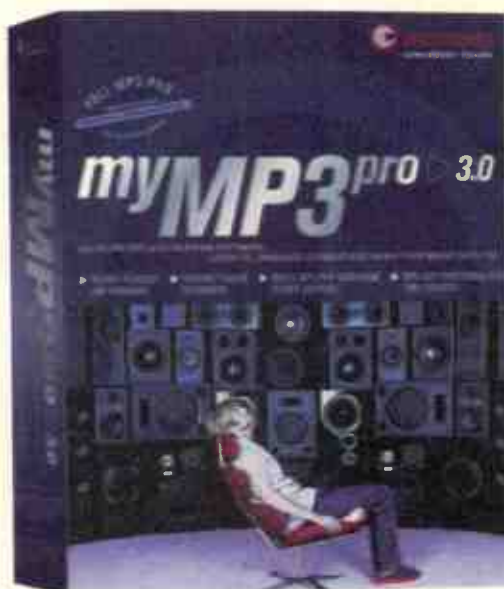
CUT AND BURN

The default 'skin' of the MyMP3 is a little bland but very clear; with

effective three-dimensionality. It's also pretty self explanatory – essential for the likes of me since I don't usually have the patience to read manuals and prefer to click and hope for the best. For the sake of this test though, I referred to the very comprehensive PDF manual that reveals itself with a quick click on the top menu icon.


To get my head round the operational basics, I used the program first as a basic CD player from my CD-RW drive and gradually moved upwards to more demanding tasks. MyMP3 consists of four main sections: the player (which contains the song information scroll bar and the time display), the EQ section (which includes individual graphic sliders as well as presets and effects) the playlist and the database 'pool' section (where files are located in folders).

Most basic tasks such as burning and recording are executed from 'one-touch' buttons on the fascia. For example, if you already have MP3 or wave files on your computer, a click on 'search' soon has them speedily collated in the display window. From here you can then do what you want with them. Due to this, and a little read up of the manual, I was soon importing files from CD and burning a range of tunes as well as searching for Chilean Heavy Rock radio stations to record for posterity (and a laugh). It's a quick utility too, nothing takes longer than anything I've previously done and the layout is clear and easy to navigate. There's also a very handy and easy to use Label Editor which helps you create both CD and jewel case labels for a real professional touch.



A little secret: I'm used to burning my CDs on a very basic Nero program and having the luxury of both a DVD and a CD-RW drive, burning CDs is very easy – I simply copy from one drive to the other. It was a good lesson to discover how it's usually done from a program such as this. It offers great versatility and endless options and editing levels that will have you stuck to your seat for hours. It's a shame that there are only three dullish skins, and that some of the graphics are a tad naff. This apart MyMP3 is a very powerful and extremely comprehensive addition to the jukebox catalogue. It's also easy to use and a very handy program to have loaded for the electronic music hoarder and burner.

Steinberg MyMP3 £29.95
www.steinberg.com

World Verdict 
Powerful and versatile, the latest MyMP3 is an easy to use do-it-all application for the computer audiophile

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welcome to world favourites

Here's a list of products that are a good buy. We've tried to cater for a range of tastes, identifying strong products in every area. We're agnostic so you'll find a wide range of products, from valve pre-amps through to MiniDisc players. Products marked * are recently out of production but make a good second-hand buy.

Prices shown are those at the time of the review



Sonic Frontiers Transport Cutting edge design and technology.

COMPACT DISC

ARCAM FMJ CD23 £1100
This British-built player is extremely versatile. Controlled and detailed with a musical insight that few match. (Jul 2000)

CAMBRIDGE CD45E* £200
A touch soft in the treble but outstanding in every other respect. (Feb 98)

KENWOOD DP-3080/II* £180
Has great clarity and presence for the price. Not as naturally expressive as the CD45E though. (Feb 98)

LINN KARIK III* £1775
Under rated and overlooked, the final Karik was a gem. Superb transport gives a brilliantly tight, grippy dynamic sound, albeit tonally rather dry.

MARANTZ CD-17 KI-S £1100
The Marantz excels in all areas. Without doubt this is one of the most involving CD players on the planet. Build quality is also exemplary. (Sep 97)

MARANTZ CD-63 MKII KI-S* £400
Similar to the CD-63SE but more powerful bass and an all-round smoother sound. The famous KI tweaks pay off again. Whether or not it is still pre-eminent against the vastly improved competition is a matter of opinion.

MERIDIAN 506 20-BIT* £1100
Very detailed and revealing player. More cerebral than visceral sounding, however. (May 95)

MUSICAL FIDELITY X-RAY £800
Commonsense sturdy CD player of exceptional ability. Clear and detailed with high quality internal processing system. The X-Ray is inclined to show up poor recordings, but it's only doing its job! (Feb 99)

NAD S500 £1000
This dynamic top of the range Silverline spinner delights with any type of music. Exciting, sophisticated sounding and highly recommended. (Jun 2000)

ROKSAN CASPIAN £895
The Caspian has a smooth, slightly bright sound with some of the clearest treble in the business. Very engaging, dynamic character. (Aug 97)

ROTEL RCD 951 £300
HDCD capability at a midrange price. Plain Jane looks but solid construction. There is some higher than average measured distortion which may take the edge off this otherwise tempting product. (Aug 99)

COMPACT DISC TRANSPORTS

SONIC FRONTIERS TRANSPORT £6999
Cutting-edge design and technology combine to make this one very desirable product. The only problem is the fantasy hi-fi price. (Sep 98)

TEAC P-30 £2500
Cheap it isn't, but then it sounds like a million digital dollars. Nothing short of superb. (Jun 97)

TEAC VRDS-TI £600
Excellent mid-price silver disc spinner with a powerful, expansive and warm sound. Easily beats most sub-£1000 designs. A good choice for the budget conscious who want the best. (Feb 95)

DACS

CAMBRIDGE AUDIO DACMAGIC 3* £99
Superb value for money with extensive facilities and solid, detailed sonics. Upgrades any sub-£300 player.

DCS ELGAR £8500
Future-proof convertor which will handle 24/96 and 24/192. Extremely open and natural performer. (Nov 97)

DPA LITTLE BIT 3* £299
A taste of the high end on a budget. Rich, clean, punchy sound transforms budget CD players.

MIDIMAN FLYING COW £299
Excellent as a DAC and doubles as an ADC for archiving to CDR. (Jun 98) Great value, as is junior version Flying Calf at £109. (Feb 99)

MUSICAL FIDELITY X-DAC* £300
A bargain for normal CDs and even better with HDCDs. (Nov 97)

SONIC FRONTIERS PROCESSOR 3 £6999
Quality never comes cheap! This DAC oozes class and when matched with the Transport 3 is certainly up with the best. (Sep 98)

TURNTABLES

LINN SONDEK LP12 BASIK £1100
Off the pace these days in many respects but still an extremely sweet and engaging listen with a quintessentially analogue sound.

MICHELL GYRODEC SE £775
Exquisitely built, infinitely upgradeable deck that gives true high end sound at mid-fi prices.

MICHELL ORBE £2000
Fantastically capable all rounder with commanding, powerful, detailed sound that gets the best from almost any arm and cartridge. Supreme build, brilliant value. (Apr 95)

ORIGIN LIVE STANDARD (KIT) £145
Good in standard form with AC motor; frighteningly good with a DC motor and battery PSU.

PINK TRIANGLE TARANTELLA £680
Not only does the Tarantella have more style than a catwalk full of models, it also combines PT's usual clarity with real authority. (Oct 97)

PRO-JECT DEBUT £110
Straight out of the box and onto the shelf! Nothing short of a bargain. Vinyl's never had it so good, so cheaply!

REGA PLANAR 2 £214
Brilliant starter deck with extremely polished manner. Better built £274 Planar 3 is a great all-in-one package that eats mid-price CD players for breakfast.

ROKSAN XERXES X £1295
DSU or XPS 3.5 power supply £150/170 extra. Excellent pitch stability from a new Swiss motor and outboard power supply. Very tight bass, fine dynamics and revealing clarity. (Jan 97)

SYSTEMDEK IIX900*/RB250 £330
A fine all-rounder and easy to upgrade too. More depth and breadth than Rega Planar 3. (Sep 94)

VESTAX BDT-2000 £225
A stylish looking deck with infinitely variable speed 16-90 rpm, DC belt drive and built-in MM phono stage. Good value, with plenty of chassis room for alternative arms, if required. (Sep 99)

TO NEARMS

HADCOCK 242 SE £649
Latest of a long line of unipivot arms. Added mass makes the 242 suitable for both low compliance MCs and straw-in-the-wind high compliance types. Revised geometry and chromium plating completes a first-class job. (Jun 2000)

NAIM ARO* £975
Truly endearing and charismatic performer - wonderfully engaging mid-band makes up for softened frequency extremes

REGA RB300 £180
Some may prefer the simpler RB250 at £130. Detailed, tight, rhythmic sound but tonally rather grey and cold-sounding. Still excellent value, though.

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Ex-dem (Ex-D) or Used (s/h)

Digital

Naim 3.5 CD Player £1300 £595

Amplifiers

Art Audio Diavolo monoblocks 300B chrome/gold £5995 £3995
Audio Research's classic SP9 111 £2850 £995
Mark Levinson No. 335, 250 wpc (s/h, mint) £8495 £4750
Mark Levinson No. 335 (New, sealed box) £8495 £5495
PassLabs Aleph-5 (s/h) £3350 £1750

Loudspeakers

Revel Performa F-50 Ceramic £6500 £3250
Sonus Faber Grand Piano Home £1699 £1250
Wilson Audio 6.1 £20000 £9995

Other

Nakamichi Dragon Tape Deck £1195

For an updated and comprehensive list of equipment and audio cables, please visit www.audiosalon.co.uk

List No 83

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World Radio History

Prices shown are those at the time of the review



Project Phono Box. Provides an inexpensive introduction to all that vinyl has to offer.

SME 3009SII £309
Once state of the art, but no longer. Weak at frequency extremes and detail, but its legendary serviceability makes it a cult in Japan. Can be picked up for peanuts second-hand. (Jan 93)

SME 309 £689
A down-market version of the IV and V with aluminium armtube and detachable headshell. Tight, neutral sound with good tonality, but lacks the IV's pace and precision. Like the older SME 3009 series, this arm is also available in 10" and 12" versions. (Jan 93)

CARTRIDGES

AUDIO TECHNICA AT-110E £30
Great starter cartridge that's refined, detailed and musical beyond its price. Best value MM under £50

GOLDRING 1012GX £74
An accomplished MM with a solid bass, slightly forward midband and clean transients. Very reasonable price for such an able performer. (Jul 93)

DNM MICA £185
Better than Goldring's 1042 and costs only £135 on trade-in. An assured and transparent MM. (Feb 98)

DYNAVECTOR DV20X-H £299
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 £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. (Feb 99)

ORTOFON MC 7500 £2000
Conclusive proof that there's hope for the world. It's a long time ago now but this high-priced favourite still earns its niche - CD lovers would die if they heard it. (May 94)

ORTOFON MC 15 SUPER II £140
Not quite as good as the dearer Supremes but the Super II is a splendid introduction to the joys of moving-coil cartridges.

GOLDRING 1042 £130
One of the best Moving Magnet cartridges going, with beautiful treble and muscular bass. New low price makes it a bargain.

ORTOFON ROHMANN £1000
In a way it's MC 2000 meets MC 7500 with great tonal strengths and a dynamo sound. (Apr 96)

INTEGRATED AMPLIFIERS

AUDIO ANALOGUE PUCCINI SE £595
This superbly-built Italian integrated has a lucidity and control which leaves others nowhere. Sound stage a wow. (Dec 97)

AUDIOLAB 8000a * £495
Well rounded integrated with smooth and detailed sound plus a huge feature count. Great build makes later versions a top used buy.

DENON PMA-250SE £160
It might not have bags of grunt but the Denon can sound exceedingly natural and open. (Feb 97)

McINTOSH MA6800* £3735
The MA6800 not so much plays music as takes control of it, with effortless bass drive. (Sep 95)

MISSION CYRUS 2 * £299
Classic eighties minimalism combines arresting styling with clean, open, lively sound. Further upgradable with PSX power supply.

MUSICAL FIDELITY X-CANS2 £160
Warm, sumptuous, sweet sound h/phone amp. gives startling results with a decent set of headphones.

NAIM NAIT 3 * £575
Superb rhythms and dynamics make for great music making, but tonally monochromatic. Super optional phono stage makes it ideal for vinyl junkies.

ROKSAN CASPIAN £695
Smooth, warm integrated with remote control that works happily into most 'speakers. (Dec 97)

SONNETEER ALABASTER £995
Builds on the strengths of the Campion with ample control, colour and drive. (Oct 97)

PHONO STAGES

CREEK OBH-8 SE £180
Punchy, rhythmic character with oodles of detail makes this a great budget audiophile product.

LFD MISTRAL PHONO STAGE * £300
The Mistral has a warmth and involvement that make many pricier stages sound overpriced.

MICHELL DELPHINI MONOBLOCS £1995
Analogue tour-de-force gives supremely clean, detailed and finely resolved sound with breathtaking dynamics. Great value, even at this price.

MUSICAL FIDELITY X-LP £125
One of the famous MF X series. Full marks throughout for clarity and detail. Switchable between MM and MC. Indestructible build! (May 99)

PRO-JECT PHONO BOX £39
Not the last word in many respects but a thoroughly honest piece of work. Inexpensive introduction to all that vinyl has to offer. MM and MC provision plus choice of two impedances.

ROKSAN ARTAXERXES X £950
With the Atessa PSU the Artaxerxes X MM/MC stage still shines. Great stage depth, neutrality and tonal colour. (Oct 97)

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The AV8 Preamp Processor offers Dolby Digital, THX-EX, Pro Logic II & DTS decoding with THX Ultra II certification, it is a true audiophile powerhouse and the 7 channel P7 Power Amplifier delivers over a kilowatt of power from seven channels.



The Arcam FMJ AV8/P7 Cinema Powerhouse

SONNETEER SEDLEY £399
Combines transparency and fine dynamics with excellent rhythmic ability. (May 98)

PRE-AMPLIFIERS

AMC 1100 £150
Suffers from un-defeatable tone controls but an extremely good value piece of kit. Partners the similarly budget level AMC 2200 power amplifier, also at £150. Comfortable beginners' choice. (Mar 99)

AUDIO ANALOGUE BELLINI £475
Showcases AA's characteristic mix of clarity and musicality and blasts the competition. (Apr 98)

CHORD CPA1800 £1800
Clarity, insight and control are second to none - an addictive mixture. (Mar 98)

CROFT VITALE £350
A modestly priced valve pre-amp with exceptionally transparent performance. MM phono stage plus three line stages are standard. Volume controls are separate for each channel, thus giving balance adjustment. A remarkable item in all respects. (Feb 2000)

XTC PRE-1 * £1000
Almost valve-like in its smoothness, the line-level Pre-1 is warm and seductively clear. (Nov 96)

POWER AMPLIFIERS

ARCAM 9 * £400
With 70W on tap, the 9P will drive most loudspeakers with a spacious and detailed sound. Good bass welly too. (Dec 96)

CHORD SPM400 £1400
There's a sense of effortless power to the Chord that gives music real scale and presence. (Mar 98)

MARANTZ MODEL 9 * £8000
Authentic reproduction monoblocs still more than cut the sonic mustard. Highly expensive and highly sought after. (Mar 97)

MICHELL ALECTO £1989
Crisp, clean and beautifully controlled with gorgeous styling. Partnered with the £1650 Orca this is a superb winning combo. (Oct 98)

MUSICAL FIDELITY X-A200£1000/pair
200W of high-end monobloc power in a grooved tube. (Aug 98)

NAIM NAPI80 £1060
Partnered with a NAC82, this has classic Naim control, and a superbly rhythmic presentation.

TUNERS

CAMBRIDGE T500 £180
An extremely engaging tuner with a performance at odds with its low price. Not exactly a Troughline, but you may not notice.... (Feb 99)

CREEK T43 £399
Excellent detail, separation and dynamics. A great little tuner and unbeatable at this price. (May 98)

MARANTZ ST17 £600
A positive dreadnought of a tuner. Sweet and refined but with a heavy punch when needed. A tuner of this quality demands a decent aerial. (Jul 99)

MISSION CYRUS FM7* £300
Clear and lucid sound puts it up with the best. Superb build too. (Apr 94)

NAIM NAT03 £595
The NAT03's warm, atmospheric sound is further proof of Naim's proficiency with tuners. (Sep 93)

SONY ST-SA3ES* £250
Beguiling RDS tuner for the sonically discerning. Good ergonomics and sensitive too. (Apr 97)

CASSETTE DECKS

AIWA AD-S750* £200
Sonically a very decent machine at the price. Comes fitted with Dolby B, C and the dead handy Dolby S. (Apr 96)

AIWA AD-S950* £300
A stable transport, superb head and Dolby S make the AD-S950 an excellent all-rounder. (Feb 95)

KENWOOD KX-3080* £160
A simple deck, but excellent-quality head and transport give top quality sound. (Oct 96)

PIONEER CT-S740S £430
A great piece of engineering from Pioneer, with first-rate sound. (Jun 96)

YAMAHA KX-580SE* £250
The 'SE' tag is more than a marketing gimmick. Sound is solid and clear with Dolby S. (Sep 97)

LOUDSPEAKERS



Kef Cresta I loudspeakers
A very musical sound

CASTLE EDEN £469
Impressively vice-free 'speakers that offer great transparency and involvement. One of a select band that simply makes music regardless. (Mar 97)

EPOS ES12 * £495
Strong, punchy bass is allied to finely detailed, articulate midrange and sparkling treble. (Oct 96)

KEF CRESTA I £100
Delightfully sophisticated presentation for the price. Won't blow the roof off, but will deliver a very musical sound. (April 2000)

KLIPSCH HERESY II £1100
An outstanding high sensitivity loudspeaker with midrange and treble horns coupled with infinite baffle 12" bass driver. Effortless, fast and accurate. (May 99)

MISSION 752 * £495
Cracking mid-price mini towers combined HDA drive units and metal dome tweeters with surprisingly warm results. Benign load characteristics makes them great for valves.

MISSION 771 £170
Characteristically fast, punchy Mission sound from the Aerogel mid/bass and silk-dome tweeter. (Jul 98)

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Arcam DT26 DAB Tuner (2Yr G/tee)	£999.00	Lexicon MC1 Processor (2Yr G/tee)	£5500.00	£2795.00
Arcam FMJ CD23 CD Player (1Yr G/tee)	£1199.00	Marantz RC5000 Prog remote (1Yr G/tee)	£299.00	£195.00
Arcam FMJ DV27 DVD Player (2Yr G/tee)	£1599.00	Marantz DV7000 DVD Player (1Yr G/tee)	60% £599.00	£239.00
Celestion Compact A Spkrs R/nut (1Yr G/tee)	£600.00	Naim CDS/2 Player (2Yr G/tee)	£6256.00	£4595.00
Elac CL82 Speakers (1Yr G/tee) 50%	£399.00	Naim 72 Preamp (2Yr G/tee)	£767.00	£399.00
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Linn Classik K CD system (2Yr G/tee)	£999.00	Naim Credo Speakers (2Yr G/tee)	£1350.00	£890.00
Linn Classik Movie System (2Yr G/tee)	£1995.00	Rotel RV985 DVD Player (1Yr G/tee)	60% £625.00	£249.00
Linn LK85 Power Amp (2Yr G/tee)	£495.00	Sugden A21 Amplifier (1Yr G/tee)	£949.00	£675.00
Linn Klout Power Amp-As New (5Yr G/tee)	£2400.00	Sugden Bijou Cd Master (2Yr G/tee)	£1299.00	£879.00
Linn KAN Speakers (2Yr G/tee)	£325.00	Sugden Bijou Ampmaster (2Yr G/tee)	£689.00	£495.00

QUAD ESL 63 * £3450

A reference against which all other loudspeakers are judged, the '63s have superb imaging and genuine transparency.

TANNOY AMS8 * £2700

Bold sounding pro active monitor with solid bass, clear midrange and delicious treble. (Aug 96)

TANNOY MERCURY m2 * £140

A true audiophile bargain which embarrasses many more expensive boxes. Never mind the price, let your ears decide. (May 97)

MINIDISC PLAYERS

KENWOOD DM-9090 £500

One of the best MD players yet. ATRAC 4.5 gives clean and very musical recordings from this Kenwood. (Jan 98)

SONY MDS-JB930Q £250

Great mid-price machine that adds better build and facilities to the '530's already excellent sonics.

SONY MDS-JA50ES * £1300

This Sony can put the wind up Nakamichi cassette decks when used with better blank MDs. (Apr 98)

SONY MDS-JE55ES £520

The best sounding MD deck made so far, thanks to awesome build and heroic ATRAC-DSP Type R coding.

SONY MDS-JE510 £300

An impressive sound and unmatched convenience make this MiniDisc player an excellent buy.



Pioneer DVD-717. A well built and solid performer.

DIGITAL RECORDERS

ALESIS MASTERDISK £1400

A groundbreaking hard disc recorder with a built-in CD drive. An amazing bit of kit, and a glimpse of the future. (July 2000)

KENWOOD DMF-9020 £500

An excellent tool for home recording, combines convenience, superb sound and a fair price. (Aug 99)

MARANTZ DR-17 £1100

Probably the best sounding CD recoder on the market. Built like a brick out house with a true audiophile sound. HDCC compatible. (July 2000)

PHILIPS CDR-765 £360

One of the first twin deck recorders/players that boasts high speed dub facility. Playback could be warmer, but still a bargain. (Oct 99)

PIONEER PDR-555RW £480

Excellent mid-priced CD recorder that both plays and records with equal panache. (Oct 99)

SONY TCD-8 DATMAN * £599

Super clean and detailed sound makes this an amazing portable. Not as robust as it should be though.

DVD PLAYERS

DENON DVD-5000 £1600

Monster build, as you'd expect at this price. Facilities and gadgets galore and drop-dead high end looks. A very smooth and sophisticated sound, although not as good as similarly-priced CD players. (Mar 99)

PIONEER DV-717 £700

Well built and a solid performer, with a 'true' 24/96 digital output. Facilities in abundance and a controlled, exciting way with CD replay. Shame it lacks a Dolby Digital decoder! (Sep 99)

SONY DVP-S725 £490

One of the best buys in the DVD market. Available in a dodgy white case, but the facilities and performance more than make up for this. Excellent with both music and visuals, and a whole host of up to the minute facilities to keep you occupied. (Mar 2000)

HEADPHONES

JECKLIN FLOAT MODEL TWO £99

Wonderful panel-like and open sound from these esoteric-looking headclamps. Do not wear in public unless you like being made a fool of!

SENNHEISER HD-490 £50

Good value cans with an exciting and bassy sound. Everything one should look for in headphones at a sensible price.

INTERCONNECTS



**Nordost Blue Heaven
A simple and effective upgrade**

CHORD COMPANY CHAMELEON 2 £90/m

One of our favourite favourites, the Chameleons are musical performers with a smooth yet open sound.

DNM RESON £40/m

Neutral and transparent, and a steal at forty quid!

NORDOST BLUE HEAVEN £150/m

Some of the fastest and most transparent cable around. A simple and effective upgrade.

VAN DEN HUL ULTIMATE THE FIRST £260/0.6m

Carbon interconnects that help you forget the electronics and concentrate on the music. Miraculous transparency.

LOUDSPEAKER CABLE

CHORD COMPANY RUMOUR £9.95/m

The Rumour is our reference at the price. Tight and tuneful bass mixed with air and space results in a cracking cable for the money.

DNM RESON £6.95/m

This cable has a transparency of sound that's rarely heard at the price. Excellent value for money.

NORDOST BLUE HEAVEN £375/3m pair

This isn't cheap, but it sounds absolutely fab. An open and spacious sound that simply carries music.



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Linn Numerik D A Converter (6Mth G/tee)	(1100.00)	£529.00	Naim Hi-Cap Power Supply (1Yr G/tee)	(799.00)	£395.00
Linn Wakonda Preamp (1Yr G/tee)	(845.00)	£489.00	Naim PSX Power Supply-CDX (1Yr G/tee)	(2100.00)	£1695.00
Linn Kaim Pro Preamp (1Yr G/tee)	(1400.00)	£599.00	Naim NAP 135 Power Amps (1Yr G/tee)	(3200.00)	£1600.00
Linn Kaim Phono Preamp (1Yr G/tee)	(1700.00)	£799.00	Naim SBL Speakers-Black (1Yr G/tee)	(2362.00)	£1095.00
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CASSETTE

NAKAMICHI DR-2

A great machine with Nakamichi's legendary heads. The lowest cost 'true' Nakamichi at the time, retailing for £600.

NAKAMICHI CR-7

The last of the great ones, and definitely the best Nakamichi ever (yes, better than a Dragon)

YAMAHA TC-800G

Early classic in serious cassette. Its ski-slope looks got it a cult following once it had ceased to be simply ugly.

CD PLAYERS

MERIDIAN 207

Beautifully-built two-box with pre-amp stage. Very musical although not as refined as modern Bitstream gear. No digital output.

PIONEER PD-91

Built-to-last player with easy upgrade routes for modifiers. Not knockout as it stands but get one cheap and have a go!

CAMBRIDGE CD1

The first two box player with weighted mechanics and even an optional Dropout/error counter. Radical and effective at the time - a classic.

AMPLIFIERS

LEAK POINT ONE, TL12 & TL10

Ancestors of hi-fi, consequently expensive nowadays. As with all vintage valve stuff, overhauling is de rigeur before use, using original parts if possible.

LEAK PRE-AMPS

Line of 'good for their time' pre-amps. Use of EF86 pentode valve for high gain rules out ultra performance. Not the highest-fi.

LEAK STEREO 20

Excellent workaday classic valve amp. In good order the 20 will not disgrace itself. Various upgrades are available from specialist repairers.

LEAK TL12+

Plentiful monobloc equivalent of Stereo 20. Reasonably inexpensive and a tweakers' dream. Genuine valve hi-fi on a budget.

NAD 3020

You can't argue with success! NAD's budget transistor integrated gave thousands their first taste of hi-fi and remains great value.

QUAD 33/303 PRE/POWER

Great style and construction, also bullet proof. Warm and wooly sound, but easy going. A good introduction to early transistor audio classics.



Garrard 401
A legendary turntable.

QUAD 22/II PRE/POWER

One of the all-time classic valve amplifiers. Unusual circuit but it works beautifully. 22 pre-amp not up to today's standards.

SUGDEN A21

Seventies transistor integrated has an eminently likeable smoothness and musicality. Limited inputs via DIN sockets.

TECHNICS SE-A5 Mk2

Nice transformer and electronics, shame about the casework. With tweaking, this 150watter can sound sweet.

LOUD SPEAKERS

KLIPSCHORN

Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!

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LEAK SANDWICH

Rather warm sounding big infinite baffle but cheap with it. With a reasonably powerful amp can sound quite satisfying.

LOWTHER PM6A

High quality full-range driver; still manufactured. High sensitivity, as fitted to many classic horn designs.

MAGNEPLANAR SMGa

Touch dry in the bass but a technological loudspeaker with genuinely musical abilities.

MISSION 770

Father of the 77 range which continues to this day. Well mannered with a warm sound and a kind load to amplifiers.

QUAD ESL57

Unrivalled. Properly serviced there is nothing like them. Their natural presentation may make them caviar to the general.

YAMAHA NS1000M

Hi-tech favourites of the Japanese and Americans. Viewed more warily in the UK but can give excellent results.

TANNOY GRF & AUTOGRAPH

Folded horn monsters which certainly sound good if you have the space. For Tannoy vintage see HFW November 1998.

WHARFEDALE SUPER 8 RS DD

Ideal experimenters' driver. High sensitivity ~14,000 Gauss magnet and extended frequency range. Inexpensive too!

TANNOY YORK, LANCASTER

Many similar models of infinite baffle or reflex design. Not the last word in tautness but the drivers work well in modern cabinets.

VINYL

ACOS LUSTRE

Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.

ALPHASON HRI00S

First class arm, up to present-day standards. Buy carefully, though, as there's no service available now.

ARISTON RD11

A one-time king of turntables very similar to the Linn LP12. Now deposed but worth a look at the right price.

LINN AXIS

Uncomplicated, lower-price version of the famous Sondek. Less expensive than some of its stablemates.

GARRARD 301 & 401

Legendary turntables, once fairly plentiful. Excellent back-up available; many different custom plinths available. High quality.

GOLDRING Lenco 88 & 99

Great deck for the kitchen table enthusiast. Garrard fans won't look at 'em but cheap and capable. Servicing available.

HADCOCK 228

Recently out-classed by Hadcock's updated 228 Special Edition but a proper hi-fi arm for all that. Makers still service.

MICHELL FOCUS ONE

20 years and still going strong. Early runner in the 'modern' turntable cycle with a first class arm. Factory servicing available.

SHURE M75

Recent line-contact improvements have left the M75 behind but the wide range of needles make it a handy tool.

SME 3009 IIS

Everlasting classic tone-arm. Spares permanently available from SME. No longer the last word but peanuts second-hand.

THORENSTD124

Best classic deck ever? Judging by the prices they fetch it's possible - 78rpm too!

THORENS TD150

Mid-price deck with a keen following. No real difficulty with servicing - novices may find the suspension system unnerving.

TRIO L-07D

Knockout heavyweight from 1980 with stainless bearing and 11lb platter! Not a give-away and beware! - spares scarce.

LEAK TROUGHLINE (ORIGINAL)

Interesting ornament but no longer hi-fi. Limited coverage of 88MHz to 100MHz only.

LEAK TROUGHLINE II & III MONO

Arguably the best-sounding tuners ever. Adaptation for stereo easy via phono multiplex socket.

LEAK TROUGHLINE III STEREO

Excellent tuner with indifferent stereo decoding circuit. Best when adapted to use modern outboard decoder.

MARANTZ ST-8

Possibly the ultimate Tardis console, including an oscilloscope for checking the strength of signal. Expensive even now.



Leak Troughline II Mono
Arguably the best sounding tuner ever

beyer dynamic



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AT OC 9 ML	£330	£280 EX		PN 210, PN 220, PN 240	
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Cenac				N 95 ED, N 95 EJ, N 75 S (78)	
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Rhodes	£837	£742 EX		SR-125 £152	
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Cenac				RS-1 £411	
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Magnum Dynalab P 200 Pre	£695.00	£1,900.00
dpa Enlightenment DAC	£595.00	£ -
VII pre + XII psu	£595.00	£1,200.00
Harmon Kardon AVPI	£175.00	£ -
Magnum Dynalab P 200 Pre	£695.00	£1,900.00
dpa Enlightenment DAC	£395.00	£ -

New this month

	Our Price	Original Retail Price
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Rowland Model 12 (4 chassis)	£2,995.00	£14,000.00
Jolida J302A Integrated 45wpc	£695.00	£1,750.00

	Our Price	Original Retail Price
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Croft Super Micro A mk III	£1,395.00	£ -
Audible Illusions P3A Pre MM mk II	£1,995.00	£2,250.00
DNM 3c Primus Pre (3c psu)	£1,495.00	£2,000.00
Audio Research SP14 (Bik)	£1,395.00	£ -

	Our Price	Original Retail Price
LOUDSPEAKERS		
Sonus Faber Electa Amator + Stonewood Std	£1,695.00	£3,700.00
JM Lab Alto Utopia BE	£On Dem	£9,999.00
Wilson Wvtt mk I	£3,750.00	£9,000.00
Avante Gard Duo (White)	£2,995.00	£8,000.00
JM Lab Utopia	£9,995.00	£18,000.00

	Our Price	Original Retail Price
CD PLAYERS & DACS		
Theta Data Pro Basic IIIa	£1,795.00	£3,495.00
Bow Vizzard	£2,995.00	£4,000.00
Theta DS Pro Prime II a	£2,495.00	£1,800.00
Alchemist Kraken cd player	£795.00	£1,800.00
Mark Levinson ML 3	£3,750.00	£9,000.00
Audio Alchemy Digital Drive III/DDE III/PS III	£695.00	£1,495.00

	Our Price	Original Retail Price
TURNTABLES, ANALOGUE, VARIOUS		
EAR 834p phono stage	£350.00	£500.00
Transparent Ref 20ft Spk	£3,295.00	£5,000.00

	Our Price	Original Retail Price
AV COMPONENTS		
Lexicon MCB Processor	£On Dem	£5,000.00
Lexicon RT10 DVD Player	£On Dem	£2,300.00

Power amplifiers

Michell Alecto Monoblocks	£1,195.00	£2,000.00
Rowland Model 8 (Silver)	£5,995.00	£10,000.00
Chord SPM 1203 (3 Channel)	£3,995.00	£5,500.00
Cary 805 C Monoblocks "new"	£4,995.00	£8,250.00
E.S. Lab DX-58	£On Dem	£2,995.00
Plinius SA50	£1,795.00	£2,995.00
Cary	£3,495.00	£5,995.00
Trilogy 958 Monoblocks	£1,495.00	£3,000.00
Plinius 8200P	£On Dem	£1,550.00
Krell FPB 200	£3,995.00	£8,000.00
Krell FPB 600	£6,995.00	£12,998.00
Meridian 558 (5-channel)	£1,995.00	£3,500.00
Plinius SA 102	£On Dem	£3,750.00
Audio Research D200	£1,495.00	£3,400.00
Musical Fidelity P180 (x2)	£395.00 each	£900.00
Musical Fidelity CRPS	£395.00	£900.00
Vincent T.A.C. SV 236 Integrated	£On Dem	£1,495.00
Bryston 4 B5ST	£On Dem	£2,350.00
Michaelson Audio Odysseus	£695.00	£1,500.00
Jadis Dely 7 mk III	£2,750.00	£6,000.00
Mark Levinson No 27	£1,995.00	£6,000.00
Linn Bass Active Card	£69.00	£120.00
Audio Research V 150se Monoblocks	£7,995.00	£16,800.00
Gamut D200 "new"	£On Dem	£3,250.00
Musical Fidelity F15	£1,395.00	£2,500.00
Audio Innovations S1000 mk III monos	£1,395.00	£3,000.00
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Krell FPB 300	£5,995.00	£9,990.00
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Boulder 1060 Power "new"	£On Dem	£1,650.00
Primare 30.1 mk II Integrated	£1,350.00	£1,500.00
YBA Passion Stereo "new"	£3,995.00	£5,995.00
Sunfire 300 Power Amp	£995.00	£2,400.00
Plinius 250 mk IV "new"	£On Dem	£6,350.00

AV components

	Our Price	Original Retail Price
AV COMPONENTS		
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SIM 2 HT 300	£7,500.00	£9,000.00
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Linn Klassik DVD	£On Dem	£2,000.00
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Lexicon MC1 "new"	£3,500.00	£5,500.00
Lexicon MC12 / MC12B	£On Dem	£810.00/£890.00
Loewe Xemix DVD "new"	£On Dem	£495.00

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From NEC/ Panasonic/Pioneer/Sharp from	£4000.00	POA
Electrograph Delphi/Seleco/Sony/Sanyo		POA
Panasonic TH-42 PWD5 "new"	£4,995.00	

Pre amplifiers

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Graff 135 Pre	£1,495.00	£3,000.00
Chord D5C 1500E (dac/pre)	£3,995.00	£5,000.00
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YBA Passion Pre (inc Phono)	£3,995.00	£5,595.00
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Plinius 16L "new"	£On Dem	£3,200.00
C.A.T. ultimate reference Pre Amp Inc/Phono "new"	£On Dem	£5,750.00
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Vienna Acoustics Mozart	£On Dem	£1,700.00
Vienna Acoustics 5.1	£On Dem	£3,500.00
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JM Lab 5ib & Cub (5.1 spk sys)	£On Dem	£89.99
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JM Lab Cobalt 826	£On Dem	£1,279.00
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Audio Physic Virgo III "new"	£On Dem	£4,000.00
Audio Plan Contrast 3	£1,395.00	£3,200.00
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Audio Physic Tempo III "new"	£On Dem	£2,000.00
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SME 30Z A "new"	£10,495.00	£12,289.00
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Ortofon Rohmann	£On Dem	£1,050.00
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Michell Gyro SE/ RB300 "new"	£On Dem	£1,100.00
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Audio Synthesis Phono Eq mm/mc	£795.00	£ -
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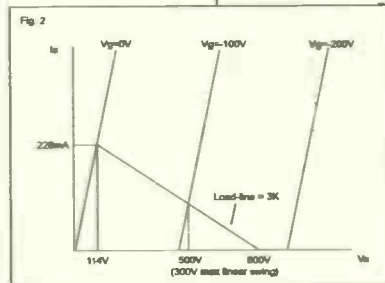
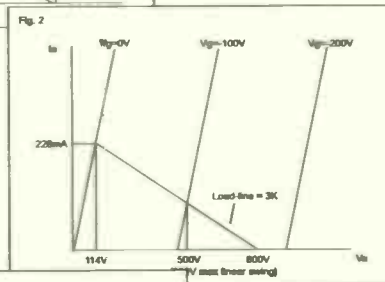
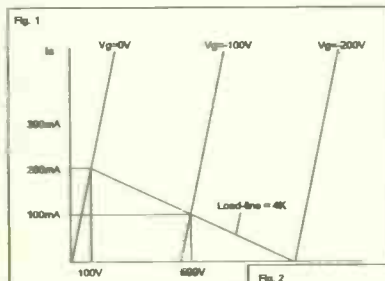
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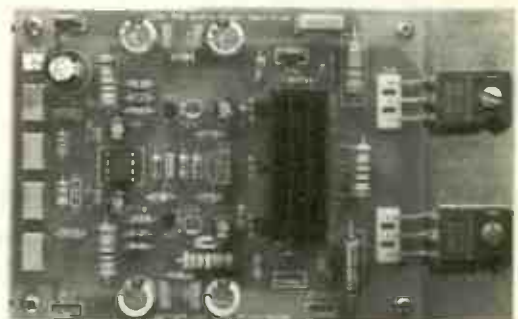
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diy news

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Also, new from Audio-links are the Nakamichi Phono plugs, gold plated high purity copper alloy, smooth, firm fit with bevelled outer-ring ensures minimal damage to phono-socket. Teflon insulated and can accept cables up to 6mm diameter. Special price if you quote this reference "HFV0603" £4.80 exc. p&p each, available in red or white.



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LOWTHER ACOUSTA 115

These pages tell the story of Derek Walton's rebuild of an Acousta 115. Being a great fan of the single driver concept he got busy with a rather battered pair and made these (see picture) that not only look superb, they apparently, sound dynamite. Great for a single-ended triode amp.

<http://indigo.ie/~walton/Lowther1.html>



MATTIJS' TUBE CIRCUIT ARCHIVES

This site does exactly what its title suggests with at least a hundred circuit diagrams from all amp genres: pre-amps, phono stages, single-ended, guitar, output transformerless and others. On the single-ended front I spied a great 211 amp with a 950Vdc heater voltage. If you like to experiment try:-



<http://www.geocities.com/mattij1970/>

TUBE LOVERS ANONYMOUS

This site is dedicated to the marvellous looking 6C33C-B tube, an indirectly heated triode output tube that once showed great promise, but did it live up to the hype?

The site features the COVI Mark II 100watt OTL amplifier that uses this triode. It has a brilliant Paper that explains the selection process and trade-offs involved in choosing the circlotron as the optimal topology for a high-power OTL amplifier. The issues involved in making this selection include circuit simplicity, balanced performance under small and large-signal operation, and achieving low output impedance. But at the end of the home page it states "Tired of failures, the 6C33C-B gets replaced with 6AS7.....details coming soon" !!



<http://members.cyd.com.au/33/index.html>

VALVE LOADING

How do valve amplifiers react to today's low impedance loudspeakers? Designer Andy Grove runs through the theory to show just what to expect, and how to cope with it.

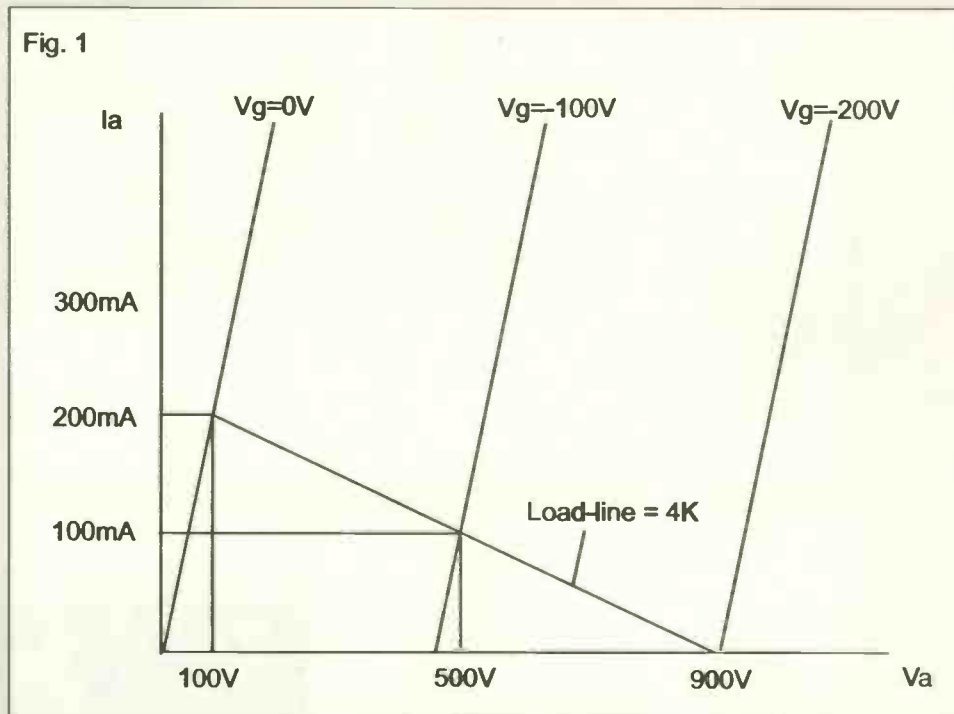


Figure 1 graph shows characteristic curves of an ideal triode in single ended mode with a primary load of 4K ohms.

As a single-ended output stage must operate in pure Class A (it must always be conducting) it must operate into a specific load impedance to deliver maximum power output. For valves this can be Class A1 where the control grid is never driven positive or it can be Class A2 where the grid is driven from a low impedance source and can be driven positive up to what is known as the 'diode line'.

To illustrate the first instance with a perfectly linear triode and a perfect transformer or choke coupled load, see fig 1. Note that the $V_g=0$ line has a certain slope, which is the anode impedance (r_a) in our triode. Our valve may be perfect in

its linearity but it has a maximum anode voltage of 500V, which we are running the valve at here. And it has a maximum anode dissipation of 50W, and we are running the valve at 100mA anode current (I_a) $0.1A \times 500V = 50W$, or full tilt. This corresponds to a grid bias voltage of 100V for our triode. Now, we can't drive the grid positive in this case so our load line must take us from the two extremes of $I_a=200mA$ and $I_a=0mA$. The valve swings up to twice its idle current at $V_g=0$ and down to the point of cutting off, a swing of $\pm 100mA$ which was our idle current. Our triode happens to have an r_a of 500ohms and a μ of 4.5 and it needs 100V across it when $V_g=0$ in order to pass the 200mA required. Therefore, the anode has swung neg-

ative by 400V to get to this point and the anode current has gone up by 100mA therefore our optimum load for this operating point is $400V / 100mA = 4k$ ohms.

The other half of the story can be seen where the grid voltage is driven to 200V, the anode swings positive by 400V to 900V and the current drops by 100mA down to zero. These are the limits of our anode voltage and current swing and where symmetrical clipping would occur. The total anode voltage swing is therefore 800V peak-to-peak, and the total anode current swing is 200mA peak-to-peak, the RMS power output is $1/8 (I_a \text{ pk-pk}) \times (V_a \text{ pk-pk})$ which is 20W. That gives an efficiency of $20W / 50W$ (our idle dissipation) $\times 100 = 40\%$.

EXPLAINED

DECREASING THE PRIMARY LOAD

Now lets see what happens if the load is decreased from 4k to 3k with Fig.2 . Our idle current is still 100mA which means that the anode can only swing positive by $100\text{mA} \times 3\text{k} = 300\text{V}$ to 800V before the valve cuts off. The negative going swing before $V_{g1}=0$ is reached can be found either graphically or by calculation using the valve's mu. Anyway it turns out that the loadline crosses the $V_{g1}=0$ line when the anode voltage is about 114V which gives a negative going anode swing of 386V. This 386V isn't much use in our single-ended example because this would only occur with extreme distortion. So the actual swing we

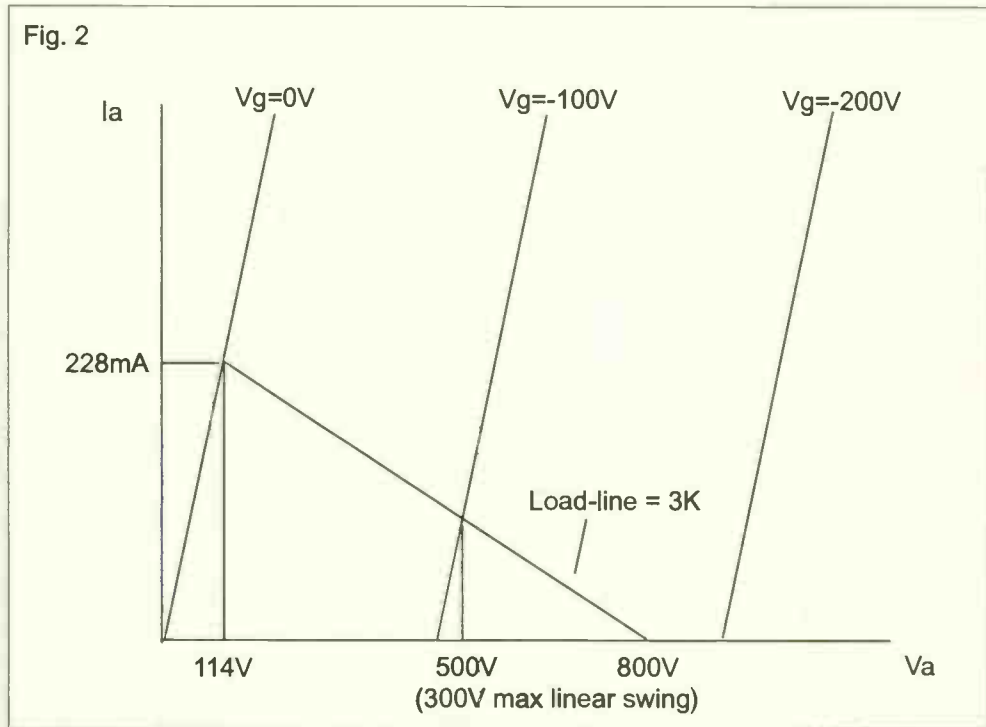


Figure 2 graph shows characteristic curves of an ideal triode in single ended mode with a primary load of 3K ohms

can use is plus minus 300V to remain in class A and to avoid distortion. Therefore the power output is now

$1/8 \times 600\text{V} \times 0.2\text{A}$, 15W with asymmetrical clipping. Efficiency is 30%.

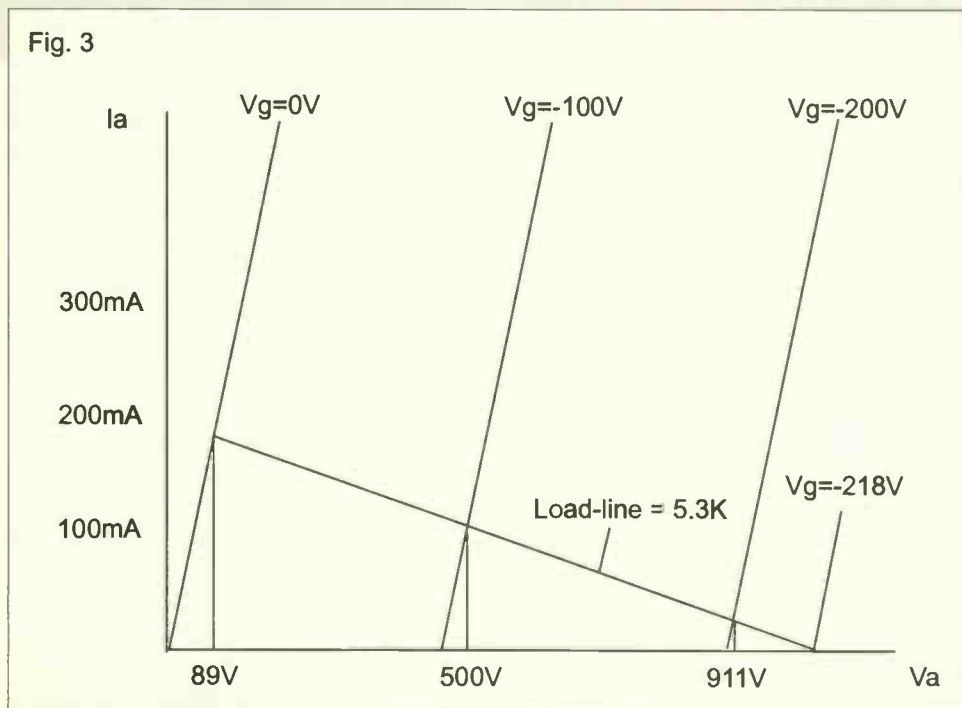


Figure 3 graph shows characteristic curves of an ideal triode in single ended mode with a primary load of 5.3K ohms

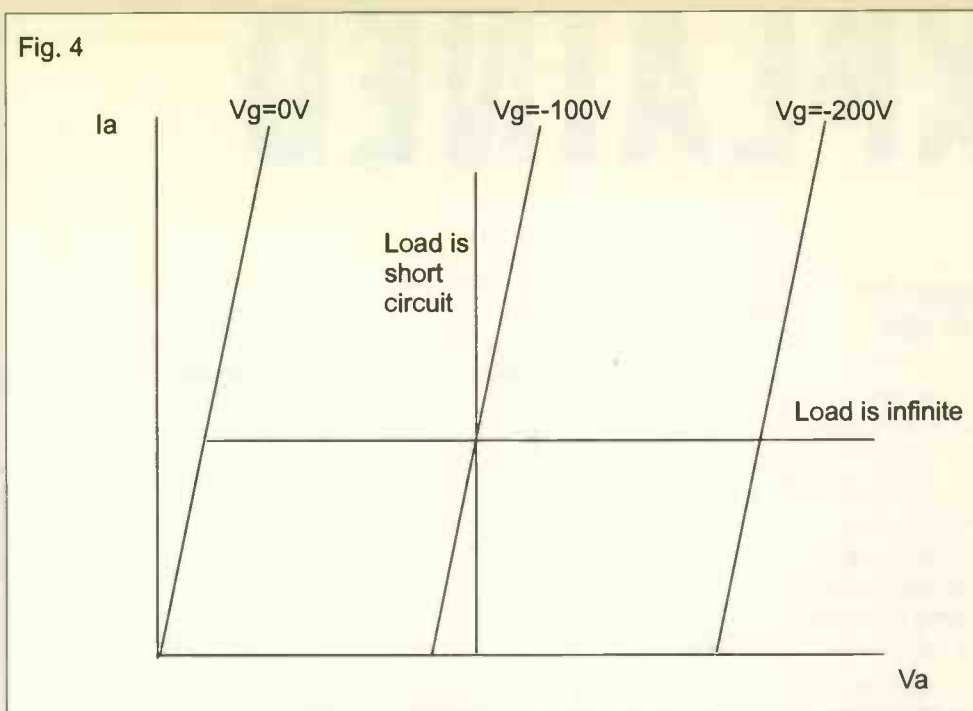


Figure 4 graph shows characteristic curves of an ideal triode in single-ended mode where the load is (a) short circuit or (b) infinite.

INCREASING THE PRIMARY LOAD

Fig. 3 shows what happens when we increase the load by the same ratio to 5.3k. Now the anode can swing positive by $100\text{mA} \times 5.3\text{k} = 530\text{V}$ to 1030V at cutoff. But our useful swing before clipping occurs on either half of the waveform is 822V peak to peak and approximately 155mA peak to peak, giving a power output of around 16W. Efficiency is 32%. It can be seen from the diagrams that

conceptually if we were to take each case to its limit, in other words a short circuit on one hand and an infinite load impedance (or no load) on the other, one would swing only current, and the other would swing only voltage.

What does all this mean? Well lets assume your preamp is putting out a signal which, after our triode's driver stage, is amplified to 200V peak to peak, in other words just before clipping when driving a purely

resistive load. Now we know that loudspeakers aren't purely resistive and they have dips and peaks. A quick look back at the diagrams shows that if the load impedance drops at that signal level then the output clips. If however the impedance rises there is no clipping, the power level being to delivered drops, which is correct, but there is no clipping. The case is just the same for single-ended pentodes and tetrodes as well, the current and voltage swings will be similar. Push pull amplifiers are more load tolerant because when one of the valves cuts off, the other is there to supply the current. This is of course Class AB and Class B operation, with the attendant increase in distortion.

CLASS AB

Fig. 5 shows one valve of a push-pull pair with a class AB loadline of 4k A-A. Each valve sees an impedance of 2k, and has a gain of 3.6, until it's partner cuts off, then it's load drops to 1k. At this point the gain will drop to 3. This gives rise to odd order harmonic distortion because the extremities of an audio waveform would become flattened. So even though our push-pull pair of valves were perfectly linear, in Class AB there is distortion being produced. As we move further from Class A towards Class B this effect occurs nearer and nearer to the zero crossing point, meaning that under

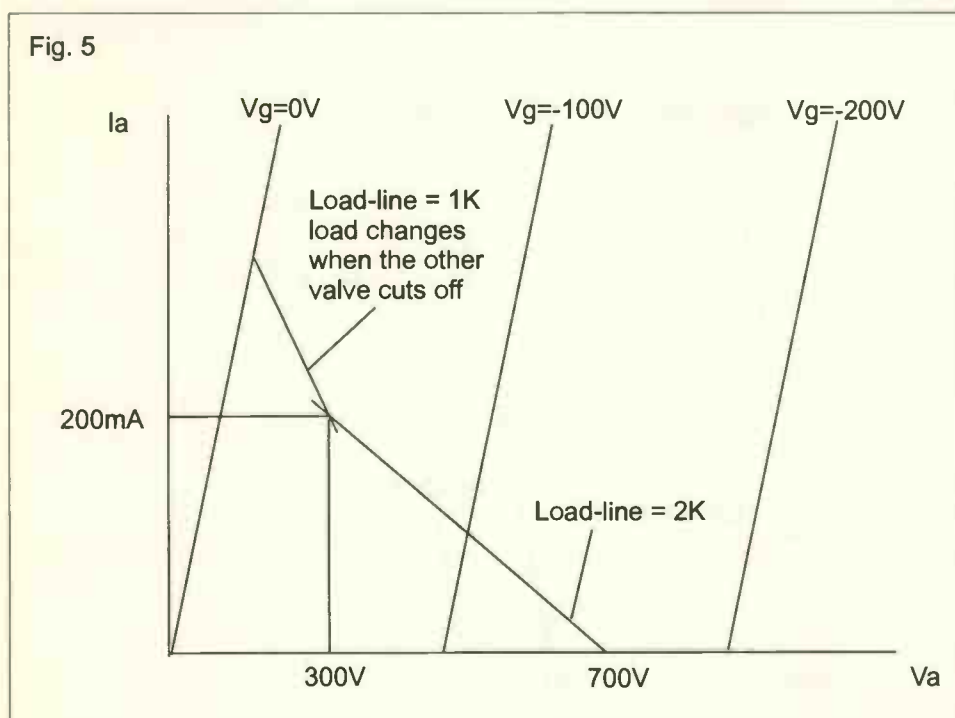


Figure 5 graph shows characteristic curves of an ideal triode in single ended mode with a primary load of (a) 1K ohms or (b) 2K ohms.

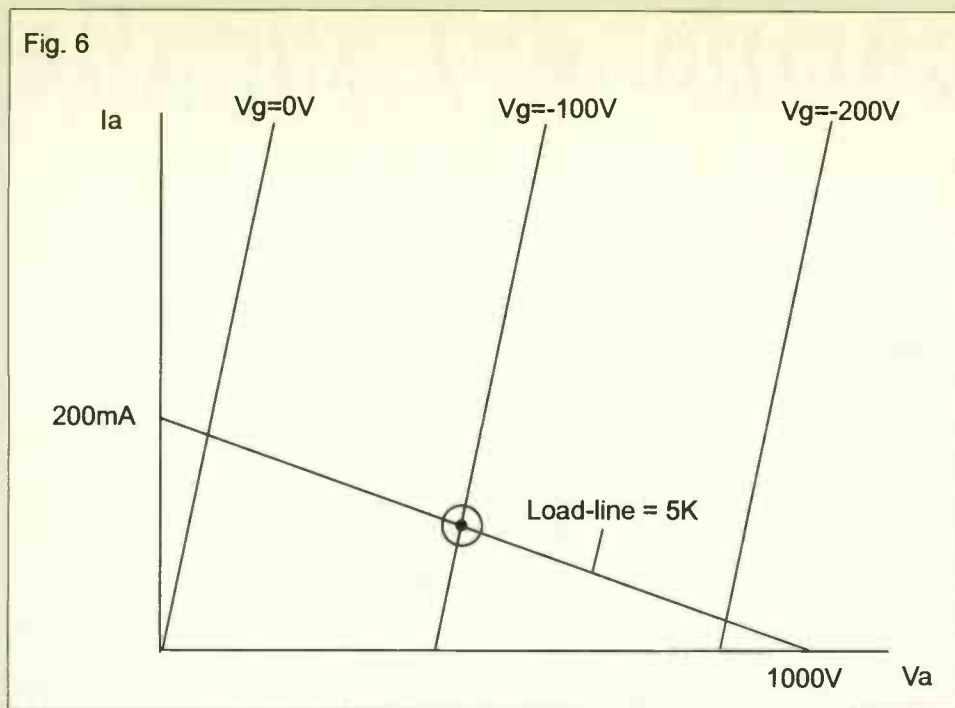


Figure 6 graph shows characteristic curves of an ideal triode in single ended mode with a primary load of 5K ohms.

normal listening conditions it's going to become more and more of a problem. However as music is inherently peaky in nature if an amp is set up for 10 to 20W of Class A and the rest in AB it's going to spend most of its time operating in Class A. Of course, an increase in load impedance brings such an amplifier closer and closer to pure Class A.

With a real world valve with its curved characteristics, the handover from one valve to the other is far from ideal when dealing with the near Class B condition giving rise to unpleasant crossover effects.

It can be seen that valve amplifiers prefer their load impedance to rise rather than to fall. This equates to either specifying a higher primary impedance for the transformer or a lower secondary load impedance.

SECONDARY LOAD: 4 OR 8 OHMS?

As many loudspeakers today are using 4ohm bass units to gain voltage sensitivity we have decided to use a 6ohm secondary on our transformers in future. It may seem a little odd not to use a 4ohm winding but remember that at resonance the unit's impedance will rise greatly. Above that the voice coil inductance and the crossover to the 8ohm tweeter increase the impedance so there isn't much 4ohm area to cover

and the extra voltage from the 6ohm winding helps volume and dynamics.

CLASS A2

Going back a bit, what about the Class A2 case? What if we could drive the valve right the way, past $V_g = 0V$, to where $V_a = 0V$, the vertical axis. Now the swing is 1000V peak to peak, the current swing is the same at 200mA peak to peak. The load impedance is therefore 5k and the power output is 25W and the efficiency is 50%. This is the maximum theoretical efficiency for a single-ended stage of any type. The problem is that we will never be able to drive the grid sufficiently to get the anode down to 0V. This is because we meet what is called the 'diode line' where the anode voltage equals the positive grid voltage and the grid effectively becomes the anode. However increases in efficiency are possible, especially with the higher impedance valves. A good driver stage is needed to avoid distortion, as when the grid is negative it has a very high impedance but when positive it has a low impedance as it is drawing current. Common solutions are step down transformers and cathode follower arrangements.

TO RECAP

This is just a quick overview to illustrate how load impedance affects

the performance of a valve output stage. Loudspeakers present a complex reactive load to an amplifier but in general all amplifiers prefer a load of higher impedance.

Some designers have used conjugate networks in the loudspeaker crossover in an attempt to keep the load impedance constant over the audio band. In my view this is a mistake as the extra components detract from sound quality and as we have seen they are just making the amplifier's job harder than it would normally be. This is especially true where the rise in impedance due to a driver's voice coil inductance. For example if a downturn in frequency response is required of an H.F. unit then a small series inductor should be used. Placing a capacitor across such a unit will present the amplifier with a difficult load at high frequencies causing unnecessary distortion or possibly instability. The capacitive load of an electrostatic loudspeaker cannot be helped easily which is why it takes a manly and stable amplifier to drive them properly. It is also necessary to keep an eye on the impedance curve at the crossover frequency of a multi way loudspeaker. The overall sound of the speaker / amplifier combination will be greatly affected by just how difficult the load is at the crossover frequency.

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book review

INSIDE THE VACUUM TUBE BY JOHN F. RIDER.
REVIEWED BY ANDY GROVE

From what I gather John F. Rider was a retired U.S. Army Signal Corps. Officer who, using his experience as an instructor, wrote a series of educational manuals and later founded a publishing company for the same. Those guys really knew their stuff, not only the subject itself but also how to transmit that knowledge into someone else's brain.

The book sets out to impart upon the reader knowledge of valve and closely related electronics starting from (very) fundamental principles. Rider opens with a Boy's Own comic book introduction to what matter actually is, molecules made of atoms made of the three main subatomic particles; the electron, the proton and the neutron. The first page of chapter one has a picture by the book's illustrator, Baxter Rowe, of an electron. This guy has wings and a visor! Presumably, if the illustrations in the book were in colour the electron would have an electric blue skin.

Rider skillfully moves through the concepts of electron charge, ionization, thermionic emission and electron flow in a vacuum, using those cute diagrams and a witty, humorous style. This is of course the foundation of the operation of an electronic valve. Rider's skill is apparent immediately, his writing style and Rowe's illustrations allow knowledge to sneak into the brain unchecked. The little guys with visors are shown jumping away from a heated surface, and being attracted to a positively charged plate gaining kinetic energy in the process. When they reach the plate or anode they smash into it, heating it. There is some simple mathematics involved at this point but nothing too scary. The movement of electrons is analysed from a kinetic point of view at first and this leads on to why thermionic devices behave as they do.

It is chapter six before we come to the subject of actual, recognisable valves. I think this illustrates just how

detailed the introductory chapters are. The simplest valve, the diode, is dealt with in a similar manner, plenty of explanatory text and superb diagrams. Just about all of the important diode characteristics are covered from filament types to how a diode rectifies.

Next comes what is probably the bulk of the book, covering firstly how a triode works and progressing to amplification and everything in between. Firstly and logically Rider introduces a grid into the diode's electron stream and uses simple analogies to explain what it does, building upon the knowledge gained in the earlier chapters including the kinetics of the visored guys. The triode parameters of transconductance or mutual conductance (g_m), anode resistance (r_p or r_a) and amplification factor (there is no μ on my keyboard), are derived right before the reader's eyes. The mathematics here does get a little bit more complex, but electronics is a mathematical subject and to understand one is to understand the other - almost anyway.

The chapter on the Static Characteristics of the triode ends on the note of the interdependence of g_m and r_p and, as if by magic, the next chapter is entitled Triode Dynamic Characteristics and Load Lines. It is in this and the following two chapters that the reader is introduced to voltage amplification. Graphical and algebraic methods of determining amplification are described in detail using plenty of clear diagrams, with an emphasis upon the graphical methods.

Chapter twelve brings in tetrodes and pentodes using the little blue men to show how an extra grid can be used to shield the grid and cathode from the changing electrostatic field (maybe that should be electrodynamic then?) to secure a lower input capacitance and higher amplification at the expense of a higher anode impedance. This chapter is brief, but contains most of the necessary information. The methods for determining amplification are the same

as those for the triode.

Next comes the cathode circuit and biasing of the various valve types, how to calculate the necessary resistance for the bias resistor and how a bypassed capacitor affects an amplifier's performance. Graphical and algebraic methods are both given in detail.

Chapter 14 Power Amplifiers - and now the little blue man has biceps! This is quite a short chapter but all of the necessary info is there and the 2A3 is used as one of the worked examples. Here various points are chosen on the valve's characteristic curves and the power output and anode dissipation are calculated. Next in this chapter are, of course, pentodes and then beam tetrodes with the ubiquitous diagram of the inside of a 6L6.

The final chapter of the book briefly covers Miscellaneous Tubes such as vari- μ valves, thyatron and such like.

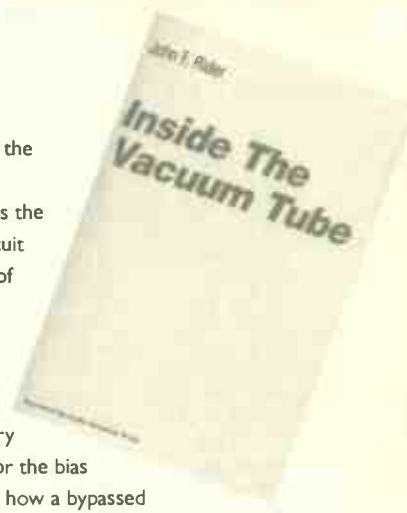
This is a wonderful book. Essentially it covers all of the valve basics from electrons to 2A3s. The text is very amusing and the accompanying diagrams are priceless, apparently the original edition came with bicolour glasses as some of the diagrams were viewable in 3D! Rider and Rowe manage to explain what is really a complex subject in an easy to read manner. This is another gem of a book reprinted by Audio Amateur Press.

This book is available from World Library P68-P69. You can also order on-line through our website www.worldaudiodesign.co.uk

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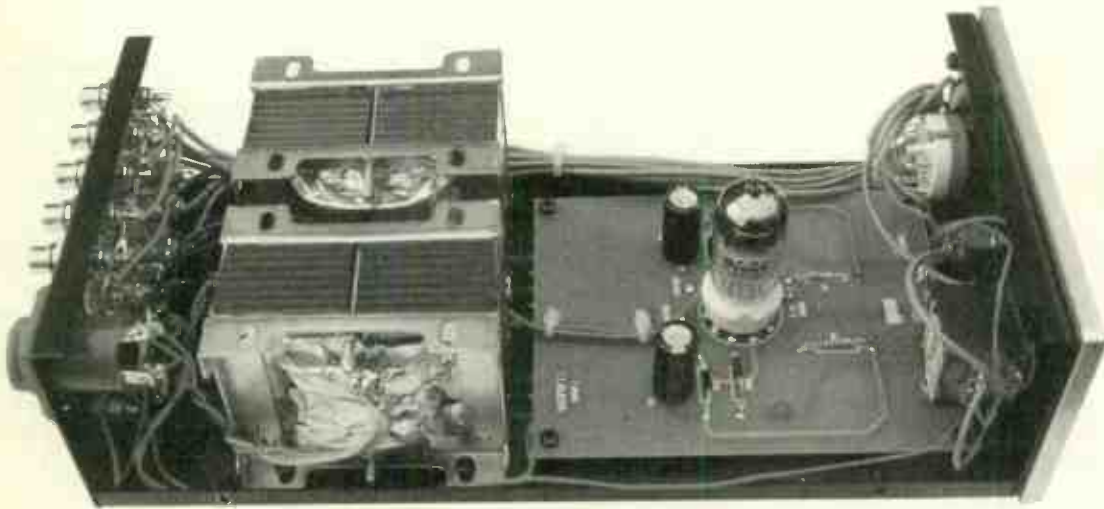
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QUIET AS A MOUSE

UDO'S GRIPE



Here's how to reduce hum from power transformers - useful for quietening valve amps, as Nick Lucas explains.

This mini-project was inspired by the work of Udo Stensitzky from Saudi Arabia. An enthusiast who had built our upgraded KaT34 power amp with the whole set of the Series II Modular Pre-amp - PSU II (power supply), PRE II (pre-amplifier) and PHONO II (phono stage) with step-up transformers. Udo was impressed with his new sound. However, he had a slight gripe: there was a slight hum from his speakers when all the units were connected. It didn't help that his speakers were around 92dB and he was a recent convert, stepping into valves from the silence of the solid state genre. Not the kind of constructor to let things lie he began work on solving his problem.

HUM IN PRE-AMPS

Those of you who have had valve experience will know valve pre-amplifiers do have a tendency to hum slightly compared to their solid state counterpart. The main reason is that there are high gains coupled with high impedances. Also, valve

equipment tends to run at a much higher voltage supply, anything from 100Vdc to 1500Vdc (211 amplifiers). Solid state amplifiers tend to stay under the 30Vdc mark.

Now an important factor to hum output levels is the cleanness of the power supply. Solid states operating at sub 30Vdc can employ huge capacitors, anything up to 10,000uF and above to give an extremely low ripple of the supply line. If you tried to use a 10,000uF 1500Vdc capacitor on a valve amplifier it would be the size of an oil drum. Hence reservoir capacitors in valve equipment are usually up to 100uF.

Similarly, chokes play an important part to smoothing a power supply. Unfortunately, though, the higher the current the bigger they get. Also, if you are valve rectifying your supply, valve rectifiers do not like huge capacitance and inductance.

Another problem is that transformers through the nature of their operation have long been known for their ability to inject both radiated and conducted noise into a



Fig.1 Heavy duty magnetic shield.

system. The magnetic field it generates can be a source of hum. It is this effect that Udo has concentrated upon. As the driver transformers are quite large, a 1 inch stack on 29 lamination, and the chassis only 130mm wide they both fit within the chassis with a 15mm gap between the two, so indeed you do get some interaction of the fields. The first prototype had transformers half the size, but to achieve the excellent bandwidth the PRE II has, we had to go up a notch or two. With hundreds of these units in operation in the world, I must point out that the minimal hum from the PRE II has never been a huge issue, it was just the response that Udo achieved that required my immediate investigation.

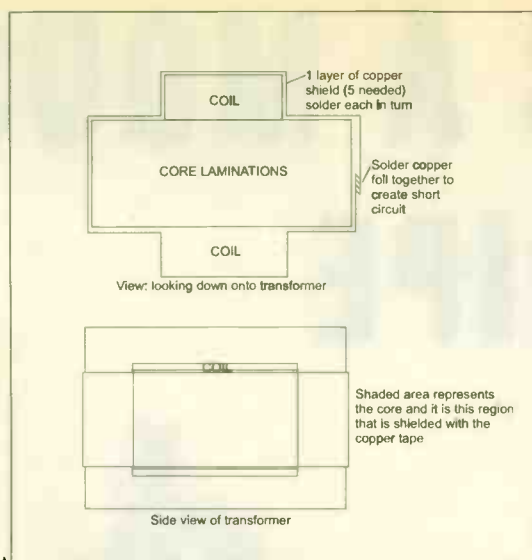


Fig.2 Shielding the PRE II driver.

TRANSFORMER SHIELDING

There are numerous ways to shield a transformer. During the construction of the transformer you could reduce the flux density of the transformer by increasing the number of turns and increasing its core area. As size is of a premium this was not an option.

Also, there is the electrostatic shield, placed between the primary and secondary windings of the



Fig.3 Finished transformer ready for refitting.

transformer. This can be effective in reducing noise and hum, but can increase the capacitance of the nearby windings and affect the frequency response. The best method in this case is using a magnetic shield. Such shielding usually consists of an enclosure that surrounds the

transformer. With the limited space we could not employ the normal casework used as shown in fig 1. So a more minimal approach was required.

The way shielding works is that a short circuited loop of suitable thickness around the core creates a magnetic field in opposition to the unwanted field generated by the

transformers. Thus, cancelling out all the nasties.

TRANSFORMERS

This is where Chomic's EMI shielding tapes with conductive adhesive came into play. I purchased a reel from RS. It is copper foil with adhesive on one side. The copper is 0.036mm thick with a width of 25.4mm, slightly short of the width of the bobbin. So with this copper tape you are trying to create a shield.

The best way of doing this with the PRE II driver transformers is to take the whole transformer out of the chassis, then remove the transformer frame. The transformers are dipped in varnish during production, so the bolt, nut and frame are covered. It is vital that you use a good, tight fitting screw driver to undo the two fixing bolts. You will need to apply a good force to undo them.

Once undone the frame needs to be separated from the transformers. If you have a Stanley knife, gently push the blade in between the gap of the frame and nearest lamination and tease them apart. Go easy here - you do not want to slip when using a Stanley knife.

Once separated, refer to fig 2. You are basically wrapping layers of the copper tape around the core and to make sure these are short circuited loops solder down the join. The tape is very malleable and needs to follow the form of the transformer. Be careful the tape will cut you, as I experienced, right down my thumb.

I built up five loop layers. Once done I put the frame back together

and put it back into the chassis. The shields do not need to be earthed. You will see from fig 3 that I wrapped the whole of transformer. In hindsight this was not really necessary, you only really need to do the core.

OTHER MODIFICATIONS

As part of Udo's mods he created a floating output coming off the driver transformers. So he cut the connection that joined the left and right channel outputs together and in turn cut the connection to the chassis earth.

Copper tape from Chomerics.

Doing this is fine, but ensure the amplifier's signal input is earthed. As a result of this mod you have to earth the printed circuit board differently. Basically you have to connect the left channel ground to the PCB ground to the right channel ground.

CONCLUSION

Comparing two PRE IIs, one with the modifications and one without, connected to a pair of our 300B PSE monoblocs wired up to Audionote E at 93dB I notice immediately the reduction in hum levels, by over a half. A very effective trick.

Sonically there was little difference, though the new version had a touch better separation, probably due to the floating earth method. Also, note that this shielding method can be applied to mains transformers and output transformers.

The tape comes in a 16m reel from RS and costs about £45.00. You only need 2.5m. As I have some spare I am selling the tape at £12.00 inc. vat and postage for 2.5m length, from www.worldaudiodesign.co.uk or alternatively use our order form in p67 of the magazine.

Special thanks for Udo Stensitzky and Ted from Morite for their assistance in compiling this article.

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Cyrus Quattro & Cyrus Stereo Power Amp & CLS		Naim Nut 3 with 92 Pre. Boards fitted	£395.00
SF's Cherry	£900.00	Pink Triangle Cardinal & DuCapo with 1307	
Cyrus daD 3 with Q DAC Fitted, Remote	£495.00	& 24 Bit Filters, Serviced	£1500.00
Cyrus 2 Int. & PSX, Serviced, Inc QED Silver		Quadraspire A.V. Rack 3 shelf, Cherry	£150.00
Spiral I/Connect	£ 300.00	Rega Planet CD Black Inc. Remote	£ 325.00
Daron AVR 3802 Surround Receiver		Sonic Link Vermillion Interconnect 1m	£100.00
Amp. Black	£475.00	Sonic Link Mains Leads from	£ 30.00
Daron TU425RD Tuner, Black	£100.00	Sugden CD21 Latest Spec	£ 595.00
Ixos Ixotica Aptimus Gamma Evolution I/Connects		Totem Model 1's Cherry Inc. Dedicated	
1m Wire £295	Now..£195.00	Stands	£1050.00
Ecosse Ref. MA2 The Maestro 0.8m	£120.00	Trichord Dino Photo Amp, MM/MC	£260.00
Ecosse Ref MS2.3 S/Cable Bi-Wire 3m Pair	£ 200.00	Wadia 6i	£1600.00

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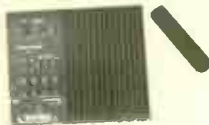
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MUSICAL IMAGES

PRODUCT	LIST	NOW
ARCAM CD72 Silver CD Player	EX/DEMO £450	£280
ARCAM CD92 Silver CD Player	EX/DEMO £900	£650
ARCAM DIVA DV88 DVD Player	EX/DEMO £1,000	£500
ARCAM T61 Silver Tuner	NEW £250	£180
DENON AVR1602 Black AV Receiver	EX/DEMO £350	£280
DENON AVC A1D Gold AV Amp	EX/DEMO £2000	£1000
DENON AVR 2802 Gold AV Receiver	EX/DEMO £650	£550
DENON DVD 2800 DVD Player	EX/DEMO £750	£600
HARMON KARDON AVR4500 AV Receiver	NEW £650	£475
HARMON KARDON AVR5500 AV Receiver	NEW £750	£550
HARMON KARDON HK3370 Receiver	EX/DEMO £250	£150
HARMON KARDON TU940RDS Tuner	NEW £180	£135
KEF REFERENCE 4-2 Cherry Speakers	EX/DEMO £3,650	£2,800
LINN AKTIVMOD Aktiv Modules	EX/DEMO £125	£50
MARANTZ ECLIPSE 70 DVD Combi System	EX/DEMO £1,500	£750
MERIDIAN 568 Digital processor	EX/DEMO £3,885	£2,500
MERIDIAN DSP33 DSP Active Speaker	EX/DEMO £2,595	£2,200
MERIDIAN DSP5000 Cherry Speakers	EX/DEMO £3,885	£2,500
MERIDIAN DSP5000C Black Centre Speaker	EX/DEMO £1,995	£1,000
MERIDIAN DSP5500HC Centre Speaker	EX/DEMO £3,750	£2,500
MISSION 782 Speakers	EX/DEMO £600	£300
MISSION 78C Centre Speaker	EX/DEMO £300	£150
MISSION 78DS Speakers	EX/DEMO £300	£150
MUSICAL FIDELITY A3CR Pre Amp	EX/DEMO £1,000	£800
MUSICAL FIDELITY HTP AV Pre Amp	EX/DEMO £2,000	£1,000
MUSICAL FIDELITY NUVISTA 3DCD CD Player	NEW £3,000	£2,000
MUSICAL FIDELITY XA100R Amp	EX/DEMO £1,000	£500
NAIM BRUNDY Super Logical Interconnect	EX/DEMO £245	£100
NAIM INTRO Black Speakers	EX/DEMO £790	£395
NAIM NAIT5 AMP	EX/DEMO £825	£410
NAIM NASBL Speakers	EX/DEMO £2,360	£500
PANASONIC NVFJ630BS Silver VCR	NEW £150	£120
PANASONIC DVDRV32EBS DVD Player	NEW £150	£120
PIONEER NS DV1000 Home Cinema System	NEW £1,300	£975
ROTEL RB951 Power Amp	EX/DEM £300	£200
ROTEL RB985 Power Amp, 5 channel, THX	EX/DEM £625	£450
SELECO HT300DG Projector	EX/DEMO £9,000	£6,750
SONY DVPNS 900 Silver DVD Player	NEW £450	£250
SONY SLVD900 VCR/DVD Combo	EX/DEMO £300	£200
SONY STRDB1070 Black AV Receiver	EX/DEMO £600	£375
SONY STSA3ES ES Tuner	EX/DEMO £300	£150
SONY STSE370 Tuner	NEW £110	£80
SONY VPLHS1 Projector	EX/DEMO £1,800	£1,200
SONY VPLW11HT Projector	EX/DEMO £5,300	£4,000
SONY KLV17HRIS 17" LCD 16:9 TV	NEW £1300	£1200
YAMAHA DPX-1 Projector	EX/DEMO £6,500	£4,500
YAMAHA RXV620RDS AV Receiver	EX/DEMO £450	£300

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Hifi News Cartridge Alignment Gauge £5		Audio Technica Stylus	
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CD PLAYERS		B&W CDM1(rosenut)	£600 £299
Exposure 2010	£599 £499	Harbeth HLP3ES mkII cherry	£999 £649
NAD C54i	£330 £250	Mission 752 black	£499 £125
NAD S500 Silverline	£1000 £850	Monitor Audio Silver 4i in wall speakers	£399 £299
Sugden CD21	£995 £895	Monitor Audio Silver Si rosemah	£450 £300
AMPLIFIERS		Monitor Audio Gold Reference 20 black	£1500 £1100
Arcam Alpha 5 plus	n/a £80	Neat Petite III	£845 £699
Bryston BP20/4BST	£3375 £2800	Neat Yito	£2700 £2199
Crimson 610/6200 pre/poweramp	£795 £595	Royd RRI maple	£799 £599
Krell KAV250 preamp	£2500 £1000	Royd Sorcerer SE	£695 £549
LFD Mistral preamp	£550 £299	Sequence 300 beige mc cherry plinths	£299 £200
Myryad T50/T70 pre/power with pro logic S.1 input	£949 £650	MISCELLANEOUS	
Myryad MP100/MA120 pre/power	£1100 £899	Myryad MDP500 processor	£1799 £1399
NAD C370 integrated	£450 £299	NAD TS31 DVD player	£329 £250
NAD S300 silver series integrated	£1500 £1099	Onkyo TXDS595 AV amplifier mc pro-logic II	£495 £299
Roksan Kandy mkII	£450 £299	Rega Planar 3	£174
Sonneteer Campion integrated	£699 £499	Teac AGD9300 Dolby Digital amplifier	£349 £200
Sugden A21a	£1050 £899	Teac DW3000 DVD player (new)	£229 £150
Unison Research S2X valve integrated	£1295 £949	Videologic DRX601E digital tuner	£350 £199
		Misc. equipment racks and speaker stands	from £45

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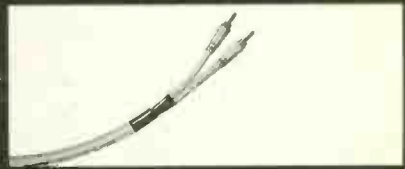
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Pathos Classic One	795	1275																																																																																																																																																																																																																																				
In Control - PreAmp	2399	3500																																																																																																																																																																																																																																				
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EAR V20 Integrated	1799	2800																																																																																																																																																																																																																																				
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EAR 869 Integrated	1499	2300																																																																																																																																																																																																																																				
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Wilson Benesch Actors Cherry	2499	4000																																																																																																																																																																																																																																				
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EAR 864 Pre-Amp	1075	1530																																																																																																																																																																																																																																				

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AUDUSA

AUDUSA - OOM Silverlink Mono Crystal balanced speaker cable - conductor of 3mm diameter (approx 8 gauge), stranded silver on OFHC, plus three strands of Mono Crystal Copper for improved bass performance. Mylar infill and with designed in protection against RF and EMI. Cable OD 14.72 mm Priced at £12.95 per metre



AUDUSA EUPEN CSA 2.5 MAINS CABLE - HI FI CHOICE SEPT 2001 BEST BUY

GNLM 05/04 and GNLM 05/2.5 (CSA 2.5) Cable with FERRITE TECHNOLOGY - A polymer material mixed with a considerable quantity of homogeneously fine high quality ferrite powder is extruded around the copper conductors. As a ferromagnetic material, it will go through hysteresis loops whenever it is under influence of an alternating magnetic field. Consecutively magnetizing and demagnetizing the material will cause considerable losses of high frequency energy. This energy is absorbed in the ferrite grains and converted into heat. This effect is more or less proportional to the field frequency; high frequencies will be strongly attenuated, because their energy will be absorbed by the ferrite powder. The GNLM cables which in addition to the above described ferrite technology is further protected with a foil shield and a drain wire and specifically manufactured for High End audio use. **Said by some to be the most neutral sounding mains cable on the market**



AUDUSA - Eupen GNLM 05/2.5 (CSA 2.5) shown with Marinco IEC 320

Fitted with IEC (Martin Kayser) and MK Tough Cable can be supplied fitted to our all steel 4, 6 and 8 way distribution blocks We can rewire the distribution blocks with Eupen cable as an extra cost option. Refer to our web site for details.



AUDUSA EUPEN GNLM 05/04

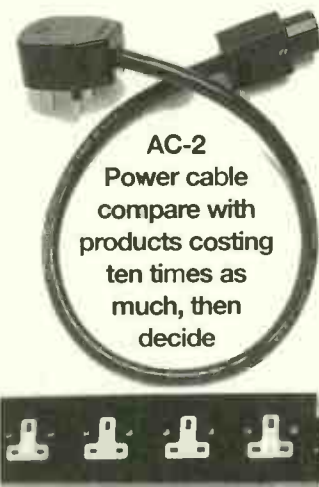
GNLM 05/2.5 (CSA2.5) £48 for 1.0m, £58 for 1.5m, £68 for 2.0m, Off the reel £30 for 1st meter, £20 per m thereafter. GNLM 05/04 £58 for 1m, £68 for 1.5m, £78 for 2.0m Also off the reel. Both GNLM cables available for export

AUDUSA Eupen and LAT AC-2 mains cable available with 16 amp IEC (for certain models of amps by Krell MF Levinson etc), Marinco 320 IEC, Figure of eight, Bulgin, USA Hubble, European Schuko, Australian, Swiss, Danish, and Neutrik plugs.

SILVER SILVER SILVER - Upgrade the cable with silver plated contacts on IEC and and MK plug for an extra £6. IEC's and MK plugs with silver plated contacts available seperately at £6, £8 and £9 Why Silver plated contacts? Simple, silver is THE BEST conductor of electricity.

LAT AC-2 HI-FI CHOICE - SEPT 2001 - RECOMMENDED MAINS CABLE

We have developed a cabling (weaving) pattern along with an unusual shielding/filtering system that gets rid of the garbage that contaminates your components. The difference you hear with our cord is astounding. Our power cord takes advantage of silver in its design through use of our proprietary Silverfuse conductors. The conductors are 10 gauge and with PTFE; the best insulation available. Fitted as standard with IEC / MK Toughplug. . 60cm £62, 90cm £75, 1.2m £88, 1.5m £101, 1.8m £112 etc Other lengths available and off the reel. **4,6 and 8 way all steel mains distribution blocks fitted with UK, Schuko or USA sockets. CE tested & approved mains distribution units manufactured of heavy gauge steel. finished in black and fitted with high quality 13amp sockets. It has no filters, circuit breakers, surge protection, transformers, resistors, capacitors, LED's, on/off switches, chokes, regulators, just fitted with 1m of AC-2 mains cable. From £166 for 4 way, £198 for 6 way, £229 for 8 way.**



SILVERFUSE is a near alloy of silver and copper. IT IS NOT SILVER PLATED OR SILVER CLAD. Plating (or clad, which is the same thing as plating) causes a dioding effect when signal is passed through resulting in brightness and distortion. The Silverfuse process starts with seven nines OFHC copper wire with a diameter that is slightly larger than the required size. It is then pulled through a trough of molten silver. The wire with a silver deposit, is then forced through a compacting die where it is subject to tremendous pressure. The silver and the high purity copper are fused together into a near alloy. The compacting fusion also reduces the wire diameter to the desired size. No dioding subsequently occurs with this process. The result provides for the benefits of silver; which are excellent definition and clarity, with the high purity copper benefits of warmth and mellowness.

LAT INTERNATIONAL - Analogue, Digital and Video interconnects and Speaker cable- better than most others at double the price Refer to www.audusa.com for further details or ask for reviews

SUNFIRE CORPORATION - Snohomish USA

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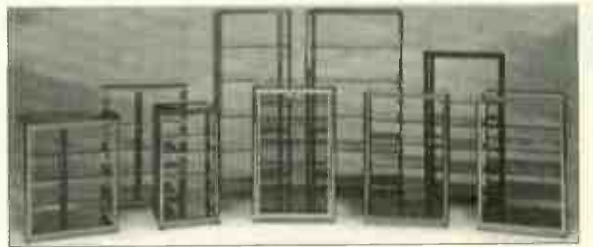
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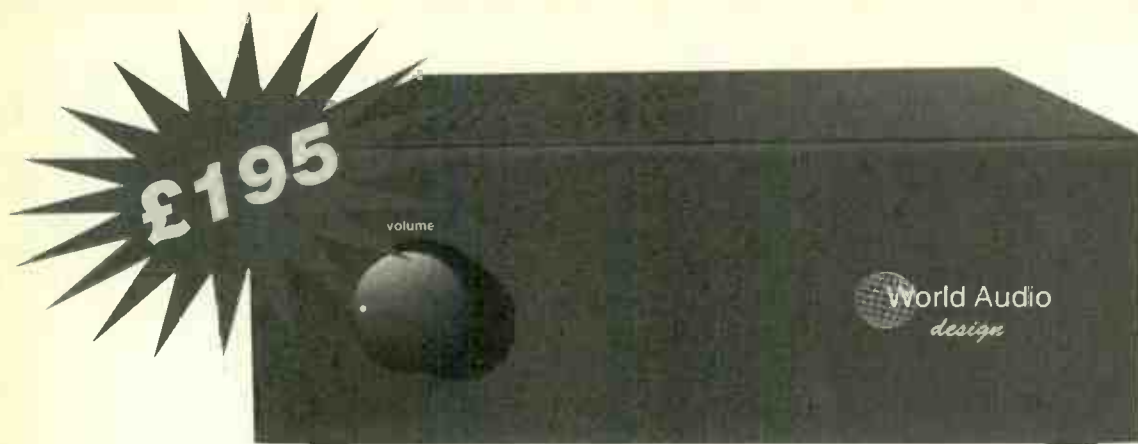
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COMAG
MAGAZINE MARKETING

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If you've always thought of valve amps as temperamental and expensive beasts, think again. World Audio Design's latest kit is designed with the budget conscious beginner in mind.

The Kec182 was created from a brief that demanded simplicity, ease of build and a super low cost. In order to achieve a reasonable power output we went for a push-pull amplifier.

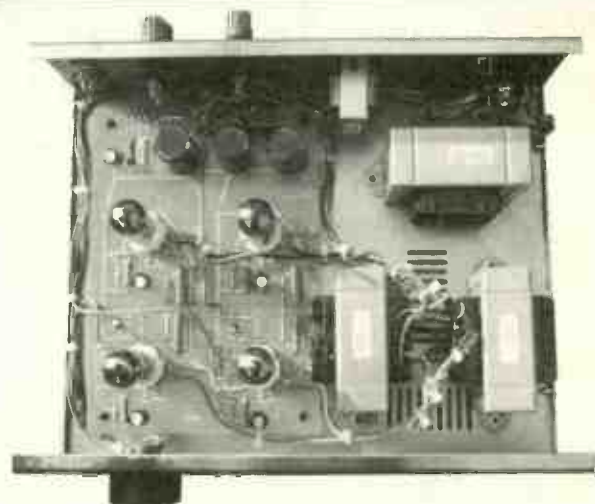
We chose the ECL82, a triode/output pentode. This tube is readily available and has a good sound. In push-pull mode it delivers 8Watts. Realistically you need a speaker of around 89dB or above. This is possible at a budget price - try the smaller Triangle models, or a Tannoy mX3 or even one of the older Missions like the 773e, or if you like building your own speakers, try the Adire Audio HE10.1, as reviewed in HFW October 2002 issue.

You will see that the front has only a volume control, and it is fed by one pair of phono sockets. A selector and tape/source switch were not used in this amplifier as they are tricky to wire up, and the aim was to make it easy to build. In fact, in many ways the Kec182 would be great powering a second system, using a CD player as a source, and will definitely give you a taster of what valves can offer. Measuring 30cm wide, 23.5cm deep and 11cm height with feet, it is entirely self-enclosed. The valves are visible through the four upper circular vent holes (one directly above each valve). We have kept the look simple with the minimalist front panel holding the volume potentiometer. The two-part chassis is constructed from 1.6mm mild steel with a durable black powder-coat finish. The whole unit is very sturdy, weighing in at 9kgs.

The signal input is in the form of a pair of gold plated RCA phono sockets that sit at the rear of the chassis. The speaker sockets accept 4mm banana plugs as well as bare wire. The mains switch is positioned at the rear of the amplifier, on the right hand corner for easy access. Mains power is received via an IEC lead. The Kec182 is based on a printed circuit board (PCB). The PCB is easy to follow with all component names, locations and orientations shown clearly. The amplifier requires no set up, you just turn it on. The kit will come with comprehensive instructions taking you through the build step-by-step.

SOUND QUALITY BY SIMON POPE

Purity is the key to this amplifier's design and sound. Because there's very little to get in the way of the signal what you get is an exceptionally sweet and simple sound that also has a superbly wholesome roundness to it. A high quality recording of Mahler's Das Lied Von Der Erde on Reference Recordings showed that the Kec182 faithfully reproduced all the depth and space of a full symphonic orchestra without any problems. Violins were smooth and sweet, as was percussion (which virtually sparkled) and the woodwind section was especially impressive, with a spacious and airy sound.



A run through Miles Davis's Kind Of Blue saw the little integrated delivering a detailed and precise sound that highlighted the warmth of Coltrane's tenor sax and the rich, deep sound of the upright bass. Rock and Pop records such as Radiohead's 'Lucky' demonstrated that the valves inside the amp, whilst small, are quite robust sounding, with commendable clout and bass depth for a humble budget 8W valve amp. This is a great introduction to the sonic art of the valve amp and a big upgrade for anybody with a mid-price solid-state amp that wishes to swap over to something more musically engaging, for a price that's virtually as cheap as chips!

MEASURED PERFORMANCE

Frequency response	+/-3dB 15Hz - 75kHz
power output	8 watts into an 8 ohm load
sensitivity	850mV (suitable for CD)
hum	0.5mV

**The Kec182 amplifier kit is available from World Audio Design
Tel/fax: 00 44 (0) 1908 218836 or order on-line at
www.worldaudiodesign.co.uk**

**Kec182 amplifier kit (UK price) £195.00
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Second hand & ex dem deals

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Jamo Concert Eight loudspeakers. American cherry veneer. Unmarked, boxed, S/H (€1400) **€795**

Densen B200 preamplifier. Black anodised aluminium case with chrome controls. Remote controllable with Densen "Gizmo" handset (not included). S/H, boxed, unmarked (€1000) **€650**

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Go Betweens	Bright Yellow Bright Orange	£11.90
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Jayhawks	Rainy Day Music	£TBC
Lucinda Williams	World Without Tears	£TBC
Placebo	Sleeping With Ghosts	£15.90
Stephen Malkmus	Pig Lib	£13.90
Style Council	Sound Of The Style Council	£12.90
The Kills	Keep On Your Mean Side	£13.90
White Stripes	Elephant UK 2LP (XL)	£13.90
White Stripes	Elephant US 2LP (V2) coloured vinyl	£16.90
Yo La Tengo	Summer Sun	£TBC

REISSUE OF THE MONTH:

Pink Floyd "Dark Side Of The Moon"
30th Anniversary Edition
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mix - released 03/03
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Arcam Alpha 10	£799.00	£519.00	D
Arcam FMJ P25 power amp	£750.00	£489.00	N
Arcam FMJ CD23 Cd player	£1099.00	£699.00	N
Arcam FMJ A22/Dave AC3 - DTS amp	£1849.00	£1,199.00	N
Arcam FMJ A22	£1,100.00	£769.00	D
Arcam FMJ P35 power amp	£830.00	£539.00	N
Cyrus SL Amp	£400.00	£199.00	D
Cyrus AV Master Processor	—	£195.00	D
Krell KAV 500i Int. Amp.	£5,498.00	£2,495.00	D
Linn Kaber	£1,995.00	£695.00	D
Meridian M33 Active speakers	£1,495.00	£995.00	N+D
Neate Mystique	£735.00	£499.00	D
Neate Elite	£1,200.00	£779.00	D
ProAc 3.8	£3,990.00	£2,299.00	D
Rotel RX965RDS A/V receiver	£950.00	£595.00	D
Mission 781	£399.00	£219.00	D
Mission 773 SE	£399.00	£239.00	N+D
Mission 78AS subwoofer	£699.00	£449.00	N
Mission 783	£995.00	£649.00	D
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D = EX DEMONSTRATION, N = NEW, S/H = SECOND HAND

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KEF	1.2 REFERENCE SPEAKERS	1350	950	BOXED
ELTAX	LIBERTY 5 LOUDSPEAKERS	250	100	PRE-OWNED
REGA	ELA FLOORSTANDERS BLACK	500	200	PRE-OWNED
KEF	2.2 REFERENCE CHERRY SPKRS	1750	1200	EX OEM
KEF	4.2 REFERENCE ROSEWOOD	4000	2000	EX DEM
LINN	AV2150 LOUDSPEAKERS	2000	1200	PRE-OWNED
ROTEL	RSP985 THX AV PROCESSOR	1750	1200	EX DISPLAY
ROTEL	RDV985 MULTIREGION OVD	625	350	NEW SEALED
TALK	CYCLONE 1 AMP SILVER	550	400	EX DEM
TALK	THUNDER 1 CD PLAYER	550	400	EX OEM
CHORD	SPM1200 POWER AMP	3790	3000	EX DEM
CHORD	SPM600 POWER AMP	2050	1600	EX OEM
CHORD	CPA2200 PRE AMP	2740	2200	EX DEM
CHORD	SPM1900 5 CHANNEL POWER	4210	3400	EX DEM
CYRUS	CYRUS 5 INTERGRATED	500	260	PRE-OWNED
JBL	TI2K SPEAKERS AND STANDS	1900	1350	EX DEM
LEXICON	MC1 CONTROLLER	5500	3500	EX DEM
PARASOUND	HCA2205 5 CHANNEL POWER	2500	2000	EX OEM
RUARK	EQUINOX SPKRS AND STANDS	2200	1000	PRE-OWNED
ROTEL	RC971 PRE AMP	175	125	EX OEM
ROTEL	RB971 POWER AMP	250	125	EX-DEM
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Special Internet offer see page 130 for details

WANTED: PAIR of LS3/5a loudspeakers in good condition. Rogers, Spondor or similar. Tel: 01394 388399 or Email: drjh@btinternet.com (Jun/1)

TARGET 4 Tier equipment rack £80. The Sound Organisation turntable rack £40. Kef PSW2000/HTS 2001 Sub/Sat speakers £250. NHT 1.3A speakers £160. Sony CDP 715E CD player £100. Tel: 020 8531 5979 (Jun/1)

ARISTON RD II in Linn Sondek plinth SME 3009 Shure VIS/III. Interesting hybrid. Needs tweaking. £100 cash or exchange for JR149 MkII speakers Tel: 020 8451 3093 (London NW) (Jun/1)

THORENS 125 S.2 turntable teak plinth AT1100 arm £250. OTO phono SE amp £850. Nakamichi 582 cassette deck boxed £200. B.O. model 1100 turntable £40. Tel: 01522 820179 (Lincs) (Jun/1)

TAG MCLAREN T20 tuner FM, MW, LW. Excellent condition, superb sound, complete with pair Chord Cobra 2 interconnects. Cost originally (1999) - £1100. Will accept £495 ovno. Tel: 02380 671366 (Southampton) (Jun/1)

MISSION 782 rosewood (£700) £300. Castle Severn 2 black ash (£600) £200. Tel: 0161 345 2017 (Lancs) (Jun/1)

MARANTZ CD7 Limited Edition CD player mint condition £2650. Mark Levinson 380 pre-amp mint condition £3000. Tel: 01843 584030 (Jul)

WANTED LP noise reduction unit. SAE 500, Garrard Music Recovery Module, Burwen Transient Noise Eliminator TNE - 7000A, or the Penfold design of Scratch Eliminator. Details please. Tel: 01260 252942 (Cheshire) (Jun/1)

ROKSAN CASPIAN CD player Roksan D.S.P. pre amp 4 channel AV amplifier + leads and Monitor Audio floorstanders Silver 9's + speaker cable, 4 grands worth. 2 years old, £1500 the lot. Tel: 07970 420058 (Jun/1)

WANTED: NAKAMICHI CA7E PA5/7E and matching tuner ST7E. Must be exceptional mint condition, also any sales literature from the same era Dragon CR7E et al. Tel: (work) 07798 737274 or (home) 020 8397 7274 (Jun/1)

RARE OPPORTUNITY Canellto walnut Diapason Admantas II loudspeakers with luxury walnut stands pure Italian panache, your for £1199. Tel: Kevin 01245 251235 (Jun/1)

PAIR LEAK TL25 plus Histab resistors and quality capacitors fitted throughout. Both sound great, test well, look good. Ready to use. Ideal vintage valve project starter. £550 pair. Tel: 0161 456 4649 (evenings) (Jun/1)

WANTED ROTEL RB850 power amplifier. Must be in excellent condition and fully working. Preferably boxed. Will consider more than one RB850 and/or matching preamp. Please phone Neil 07990 562579 (Jun/1)

MICROMEGA T-DRIVE, hi-end performer, mint, £500. Arcam Alpha 6/ Trichord output board £400 ono, mint. Pioneer PD-S707, mint £150. Moth record cleaning machine w/lid, never used, sealed £350 (£450). Tel: 0118 967 1909 or 07740 866218 (Jun/1)

ARCAM NICAM tuner boxed £95. JVC XM-DI MiniDisc boxed £125. Sony TCD-D7 plus remote system £190. Pioneer 717 multi region boxed £195. Pioneer CL-J75LD system, 300+ DVD/Laserdiscs. Tel: 01704 833601 or Email: sneale68@aol.com (Jun/1)

MICHELL SYNCRO deck (without arm). Recent full service by Michell. New springs, mat £200, immaculate condition. Can demonstrate. Tel: 01480 811697 (evenings) 0207 542 7158 (daytime) Cambridgeshire (Jun/1)

MUSICAL FIDELITY A300 integrated amp in mint condition £550 ono. Meridian 506.20 CD player in A1 condition £450 ono. Tel: Phil 01962 851 233 or 07941 849 601 (Jun/1)

RUARK CRUSADER II floor-standing speakers finished in walnut. Boxed and in very good condition. Tel: Mark (01840) 261 030 or E-mail: mark.j.pike@ntlworld.com (Jun/1)

OFFERS INVITED: Mk2 Rock Excaliber Merlin Seismic Sink MC25FL all on Target wall shelf, approx. 2000 albums mainly rock. All playable some never used. Only sensible offers please Tel: 02392 753833 (Jun/1)

KRELL MD10R Transport & Krell SBP64X DAC £4000 (£25,000). Krell KBL pre-amplifier £1200 (£5000). Musical Fidelity P180 £300 each (£900 each). Silicon Image iScan Pro & 10m component cable £550 (£850). Tel: 0773 603 6805 or 0121 628 4643 (evenings) (Jun/1)

UNISON RESEARCH Simply Four integrated valve amplifier, excellent condition, packaging, manuals £600. Rega Planar 3 without tonearm excellent condition £50. Tel: 020 7794 6676 (Jun/1)

LINN NINKAS, cherrywood, polymer bases £720. Matching Aktiv crossovers £125. Kairn phono £500. Art D I/O D to A converter with leads £120. D.C. motor and fittings for Sondek £50. Tel: 0113 266 0160 or 0113 393 0361 (Jun/1)

COLLECTORS ITEMS: Reel-to-Reel recorders (1960's), Leak and Quad pre-amps, Shackman and Lowther speaker cabinets + drivers, Acos arm and heads, Sansui tuner/amp etc. List. Tel: 020 7281 9849 (Jun/1)

LIVING VOICE Auditorium, not yet run in, £1000 ono. Tel: 07739 374 620 (West Sussex) (Jun/1)

COMPLETE NAIM System For Sale. CD3.5, Nait 3 amp, black ash Intro speakers, Quadisphere stand, all Naim cables £1400. Can deliver. Tel: 01384 830746 (Jun/1)

NVA P60 pre-amp A60 and Phono I NVA interconnects and speaker cable £600 ono. May split. Tel: 01636 611677 or 07802 312896 or Email: davidefrost@yahoo.com (Jun/1)

KIMBER AGDL solid silver digital cable 0.5m £99 incl. P&P. NAD C350 amplifier £185. Soundstyle XS310 AV rack £199 Atacama Staticstage's £30 each. Tel: 07786 853301 or Email: danielhassany@uw4452.freeserve.co.uk (Brighton) (Jun/1)

AUDIO RESEARCH CA50 remote integrated valve amp re-valved boxed, mint (£3945 when new) asking £1745. Also Pink Triangle Da Capo DAC superb (£1945 when new) asking £375. Tel: Rhys 07866 503270 (Jun/1)

MUSICAL FIDELITY A3 amp A3.2 CD in A3 casework silver trim less than year old, mint condition £450 each £850 for pair. Move forces sale. Tel: David 07747 603850 (Hampshire) (Jun/1)

NAIM NAIT 5 amp 3 months old unwanted gift boxed with receipt, £600 ono Tel: Mr Davies on 07734 801089 (Birmingham) (Jun/1)

Upgrade Your Turntable



"It's value is nothing short of tremendous"
Listener Magazine

"The single most important upgrade you can ever make to any record deck concerns the motor drive....Nothing can compare you for the shock of going DC, in a word, Gobsmacking"
Common Ground Magazine

"...if you are thinking of upgrading your system.....the Origin Live DC-motor kit should be high on your list for consideration" TNT Audio

Whatever your current turntable, the results in upgrading to the Origin Live DC motor and power supply are simply astounding. Designed as a drop in replacement for almost all turntables, the Origin Live upgrade kit offers vast improvements to all versions of Linn turntables, as well as Ariston, Rega, Systemdeck, Roksan, Rock, Oracle, Thorens, Well Tempered etc. With only a 12 Volt power supply and a full set of illustrated instructions our upgrade is both easy and safe to install. The upgrade is also offered with a full money back guarantee if you are not satisfied. The kit consisting of a high grade dc motor, soldered regulator board and power supply is only £262. This provides an extremely cost effective route to truly high end audio and is significantly superior in performance to other power supply upgrades costing 4 times the price. A larger purpose built transformer is also available as an optional extra at £175.

Turbocharging your Rega arm

"Nothing less than total dynamite" Hi-Fi World



If you are the proud owner of any Rega tonearm, you are now in the enviable position to transform it's performance into the league of super arms with modifications offered by Origin Live - the Origin live structural modification at £75 will enable your Rega to perform at a level exceeding that of arms costing over £1200. High performance rewiring with high grade litz cable is also offered at an additional £70 and external rewiring is £70 this further increases the performance.

"I have to say the Rega modifications turn this humble arm into a real Giant killer. Gone is the rather grey, sterile sound of the cooking Rega. Instead, tonal colour is fresh, dynamics have great speed and impact, and the sound stage is huge."
Hi-Fi World, Nov 97 (structural modification on RB250)

What Hi-Fi? gave this modification 5/5

Structural Modification - £75

Internal Rewiring - £70

External Rewiring - £70

For arm modifications we normally return your arm in 2 - 3 days.

Origin Live Ultra Turntables Build & setup in an hour



Modern



Classic

"...this Vinyl front end had my jaw heading towards the floor with the solidity and transparency of the music it was making....with all these goodies in place the Standard would give turntables at the £1200 -1400 mark a hard time..."

"...Overall a deeply impressive deck....brilliant value for money ...component quality is superb and the build process is a doddle."

Hi-Fi World

"the best sounding deck here (group comparison test of 8 leading turntables)...sounds fantastic."

What Hi-Fi?

"One of the most enjoyable and musically involving turntables I have ever heard ...Regardless of make or reputation"

Audiophile

Now you can own a professionally built, high performance turntable at a fraction of the normal cost. Origin Live turntable kits are supplied in 3 different specifications:

1. A standard kit of parts to enable you to build your own plinth at £282
2. The complete standard kit offered with a non-suspended pre-drilled & finished plinth at £349
3. The complete ultra kit comes in two options. The Ultra Kit Classic offering a truly high end suspended sub-chassis turntable with beautifully finished solid wood plinth. The Ultra Kit modern offers the performance of the Ultra Kit Classic combined with the modern day skeletal styling of our sensational resolution turntable. Both options available at £538.00

All kits are supplied with well illustrated instructions and are easier to assemble than many of today's pre-built turntables.

FOR MORE INFORMATION SEE WEBSITE OR CONTACT

Origin Live, Unit 5, 362b Spring Road, Sholing, Southampton, SO19 2PB, U.K.

Tel: 023 80578877 / 80363249 Fax: 02380 578877 e-mail: originlive@originlive.com

<http://www.originlive.com>

REGA PLANNER 3 turntable RB300 arm vgc £150. Pioneer SA7800 amp 1980 silver battle-ship build! £150. Helius tone arm 9" mint £95. No cartridge London platter pad mint £45 Tel: 01273 299718 (Jun/1)

TEAC VRDS 7 +10 CD players boxed £275, £375. Pioneer PDS703 CD player £105. Thorens 125 turntable no arm £95. Thorens 160B MkII no arm £45. Tel: 01273 299718 or Email: dudfamily@supanet.com (Jun/1)

KEF REFERENCE 3/2 award winning speakers, immaculate cherrywood, boxed, manuals, 18 months old. Bargain £1250 (£2250 new). Kimber Select 1030 0.5m interconnect. Amazing performance, boxed £370 (£670 new) Tel: David 0191 454 6657 (Jun/1)

AUDIO PHYSIC Avanti III speakers, as new, boxed, cherrywood, no offers, £4500. Tel: 07973 128355 (North London) (Jun/1)

LP12 AFROMOSIA, Valhalla, Cirkus, Ekos, £1100. Rata PC5 Excel passive pre-amp silver wired ultralate sockets £325. LFD MCI phonostage £425. Naim Nac 32 pre-amp 72 boards upgrade £95. Tel: Eddie 01925 723301 (Warrington) (Jun/1)

AUDIO NOTE ANJ/SP speakers black with Target 6 pillar stands £700 (£2000). CR Developments Romulus valve integrated/pre/power £650 (£1800). Counterpoint DA10a DAC £600 (£2300). Counterpoint HC808e pre-amp/prologic processor outstanding £400 (£1800). Yamaha DSPE800 dolby digital processor £200 (£350). Transparent Music WavePlus speaker cable 15ft £400 (£1200). Offers welcome. Tel: Bill 01993 851508 (Jun/1)

MUSICAL FIDELITY A3 dual mono integrated amp new finish boxes as new £480. Monitor Audio silver 8i spks mahog finish boxed £480. Tel: 01482 508389 answerphone (Jun/1)

LINN LP12 turntable Ittok arm and cartridge original boxes £350. Tel: 01772 334469 (Preston, Lancs) (Jun/1)

FERROGRAPH LOGIC 7 open reel tape record model 7622H: pushbutton controls (plus remote) integral amplifiers/speakers, 3 3/4" 1/2/15 I.P.S. 10 1/2" reels, walnut case, excellent condition, serviced, many tapes, very rare £695 ono. Tel: 01625 861728 (Jun/1)

KRELL KAV300i integrated amplifier £1250. Martin Logan SL3 electrostatic speakers £1350. Meridian 565 AC3/DTS controller £950. Meridian 200 transport £250. House forces sale! Tel: Nick, mobile 07909 523299 or Email: nick@druk.co.uk (Jun/1)

SNELL TYPE E Mk 3 speakers cost £2200 15-150 watts biwirable treble control rear ported and rear tweeter. Walnut original boxes ex. condition £595. Tannoy Jupiter speakers mint £195. Tel: 01923 224 404, Mobile: 07930 524246 or Email: briansl@aol.com (Jun/1)

MO-FI AND other Audiophile records for sale, either mint or sealed. Also SME 20 turntable and Ortofon MC3000 MkII cartridge, as new, £2300. Tel: 01623 423 389 (Jun/1)

NAIM NAXO 3-6 new style £250. Linn Isobarik, black X-Overs in stands £500. Rega Planet CD player £250. Naim 42-110 £250. Cosmic 7 tier rack £250. Sony 10.5 inch reel to reel tape deck £150. Various tripod stands. Tel: 01225 461148, mobile 07729 805 575 (Jun/1)

CHASSIS VERSION of Garrard 401 with SME 3009 Mark II (detachable headshell) bolted to wooden top plate, Both in excellent condition £175 ovno. Tannoy Lancasters with 12" HPD Monitor Golds in very good condition £300 ono. Tel: 020 8450 9698 or Email: jjk@classic-choice.co.uk (Jun/1)

LINN SONDEK LP12 Turntable in original unmodified condition. Linn Ittok LVII pick-up arm and Troika MC cartridge. In superb condition. £750 ono. Quad ESL 57 Electrostatics £450. Quad 34 control, 306 Power Amp & FM4 Tuner - £225. Tel: 020 8450 9698 or Email: jjk@classic-choice.co.uk (Jun/1)

CREEK P43/52SE pre power amp mint condition boxed cost £800 sell £350 ono. Tel: Tom 01244 347728 (Jun/1)

ORBE D.C/V.C Pro-Ac Response 2.5, Thorens TD-124Mk2 mint! Ortofon Rohmann SME 309, Thorens TD-126, Rega RB1000 RB300 Incognito Delphini Mk2 new! Sony SCD-XA333ES Originlive silver AE-I NK1 Grace 707-Mk2 Tel: 0117 955 6555, Mobile: 07979 514450 (Jun/1)

QUAD II L speakers piano-black £320. Yamaha DSP-E800 adds quality cinema sound to your Hi-Fi DD/DTS £225. Hehringer professional 24 bit digital 31 band graphic analyser/equaliser kit £250 ono. Tel: Richard 020 8991 0762 (Jun/1)

WANTED: PAIR of LS3/5a loudspeakers in good condition. Rogers, Sendor or similar. Tel: 01394 388399 or Email: drjh@btinternet.com (Jun/1)

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ARISTON RD II in Linn Sondek plinth SME 3009 Shure VIS/III. Interesting hybrid. Needs tweaking. £100 cash or exchange for JRI49 MkII speakers Tel: 020 8451 3093 (London NW) (Jun/1)

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WANTED LP noise reduction unit. SAE 500, Garrard Music Recovery Module, Burwen Transient Noise Eliminator TNE - 7000A, or the Penfold design of Scratch Eliminator. Details please. Tel: 01260 252942 (Cheshire) (Jun/1)

GUIDELINES FOR BUYING AND SELLING SECOND-HAND EQUIPMENT

FOR THE BUYER

1. Not everyone is honest - Buyer Beware!
2. **Don't send cash!**
3. Accept no verbal guarantees.
4. Have you heard the item or something similar? If not, why do you want it?
5. Don't pretend to have knowledge - it's your fingers that will get burnt!
6. Is it working? If not, why not?
7. Has it been modified and, if so, have notes been kept?
8. Was it any good in the first place?
9. **Don't send cash!**
10. If you are in the slightest doubt, arrange an audition (see point 5). If it's too far, wait for another time.
11. Either buy it or don't: vendors are excusably impatient with 'consultation' exercises.
12. **Don't send cash!**

FOR THE SELLER

1. Not everyone is honest - Seller Beware!
2. Make no verbal guarantees.
3. Even 'nearly new' is still second-hand. If the manufacturer's guarantee is no longer in force, your price should reflect this.
4. There is very little intrinsic value in second-hand hi-fi; it's only worth what someone will pay for it.
5. The best guide to pricing is last month's Classifieds: that a 'classic' was worth £xxx a year or two ago is no guide. Values fall as well as rise.
6. Amateur second-hand dealing is not a big money game: you win some, you lose some.
7. Be prompt with despatch. If in doubt about buyer's bonafides, either wash out the deal or send C.O.D.
8. There will always be time-wasters; be tolerant within reason!

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dCS Delius 1394 DSD 24/192 Ring DAC S/H	6500	3999	Cogan Hall EM-D 0.6m S/H	199 99
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Basis 2000/RB300 Turntable x-Demo	1999	1299	Roksan HA01 1M Interconnect S/H	99 49
Benz Micro LP New& Boxed	2200	1799	Roksan HAO1D 0.5m Digital Interconnect S/H	49 25
Electrocompaniet ECP1 S/H	599	299	Target HR60 Silver Stands S/H	199 109
Graham Engineering 2.2 Tonearm with IC box X-demo	2350	1599	Target R1 Stands S/H	299 175
Heed Audio Quazar 2 Box Phono Stage New and Boxed	599	399	Target R2 Stands S/H	329 199
Lehmann Audio Black Cube SE New& Boxed	650	420	Transparent Music Wave Plus 2x 8ft S/H	499 279
Lyra Lydian Beta New& Boxed	599	499	Transparent Music Wave Ultra 2x10ft S/H	2120 995
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Krell KAV-S Processor/Preamplifier DTS/AC3/Pro Logic S/H	14989	2999		
Roksan L2 preamplifier S/H	1295	399		
Sugden Masterclass Line preamplifier S/H	2300	1299		
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Musical Fidelity Nu-Vista 300 Power Amplifier S/H	4000	2795		
Parasound 1205 multichannel amplifier x-demo	1695	1199		
Roksan Rok S1.5 Power Amplifier S/H	1499	745		
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Avalon Eclipse Maple x-demo	9800	7249		
AVI Pro9 Plus Cherry S/H	799	599		
BKS 107 MKII Supreme Ribbon Hybrids x-demo	2199	1599		
Indigo Model Two Centre Channel Cherry S/H	199	129		
Jm Lab Micro Utopia Dark Cherry/inc stands New and Boxed	4500	3799		
Martin Logan Scenario x-demo	1795	1199		
Martin Logan Aeon x-demo	3148	2799		
Martin Logan Ascent x-demo	4500	3799		
Sonus faber Amati Homage S/H	12000	8999		
Sonus faber Minima Amators S/H	1599	795		
Sonus faber Iron Wood stands S/H	480	275		
Wilson Benesch Orators Cherry S/H	2800	1599		
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Special Internet offer see page 130 for details

WORTHING AUDIO True Sound Series Crossoverless monitors 96dB efficiency, single 8" driver, perfect for low powered tube (S.E.T.) and solid state. Audionote OTOSE, integrated line amplifier, boxed, latest version, £875. Amphion Argon loudspeakers £599. Musica Collins loudspeakers by Bernard Thiel & Partners (German) £1000. Audionote AN-ESEC lacquered finish + stands £5000. (RRP £13,600). Tel: Worthing Audio 01903 212 133 or 07900 918 882 (Jun/I)

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Buy-Sell-Exchange. Vintage wireless and classical audio. Repairs, spares, restoration, modification to all valve equipment. Quad II, Leaks etc, shipped worldwide, best prices, call us at: 17 Bell Street, London, NW1 5BY. Tel: 020 7258 3448 Fax 020 7258 3449
Email: vwirelesslondon@aol.com
(Oct/I)

NEW VALVE Amps; powers £260; matching preamp £190; other valve related goodies at www.audioclassics.co.uk or telephone 01942 257525 for more information. Dealer enquiries welcome. (Oct/I)

THE MISSING Link, High End interconnects at realistic prices. We offer our own very high quality Silver Teflon cables, ready made leads and D.I.Y. kits. Also Eichmann products. Details and photos from Mark on 0115 877 9089 or Email: the.missing.link@ntlworld.com (Jun/I)

MUSICAL FIDELITY XLP's, Phono Stage £130. Quad II L's Original Maple finish, sealed box, cancelled order (£380) £340. Krell KAV 300i Amp, mint as new. (£2300) £1300. Telephone Jules on 01792 280061. Email: info@sounddrjuleshifi.co.uk
Web: www.sounddrjuleshifi.co.uk
(Jun/I)

AUDIO RESEARCH Classic 150 Mono Blocks, black, excellent condition, new valves, boxed, (£12000) £3500. Audiolab Transport and DAC, Mint condition C/W manual and box £970 ono. AudioTechnica OC9 cartridge brand new £270. Telephone Jules on 01792 280061. Email: info@sounddrjuleshifi.co.uk
Web: www.sounddrjuleshifi.co.uk
(Jun/I)

ELAC CL310i 'Jet' speakers, c/w matching stands, silver 2 months old, mint and boxed. (£1000) £700. Theta DaVid acclaimed CD/DVD multi region transport, 2 years, mint, inc transformer. (£4,600) £2100. Telephone Jules on 01792 280061. Email: info@sounddrjuleshifi.co.uk
Web: www.sounddrjuleshifi.co.uk
(Jun/I)

LFD MISTRAL CD player, stainless steel & gold livery, boxed, mint condition. (£1050) £450. Valve Amp, integrated, 30watts push-pull, 4 x KT88's, 2 x ECC82's, 2 x pentodes, (£1000) £650. Telephone Jules on 01792 280061. Email: sales@sounddrjuleshifi.co.uk
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NAIM NAC 32.5 pre, with phono stage, mint condition £275. Linn Karik, mint, (£1850) £950. Rotel RT 830 AL tuner £60. Telephone Jules on 01792 280061. Email: info@sounddrjuleshifi.co.uk
Web: www.sounddrjuleshifi.co.uk
(Jun/I)

HIFI HUT in Harrogate offer the following quality brands: Bryston, Creek, Custom Design, Harman Kardon, Neat, PMC, Quad, REL, Wharfedale. Phone for details, directions, 01423 810 990 or 07736 392 852. www.hi-fihut.com (Aug/I)

WOODSIDE ELECTRONICS offer a repair service for Radford, Woodside and Quad II valve amplification. Transformers manufactured to original specification for these products as well as bespoke designs. Tel: 01758 741 026 or Email: m.davis@virgin.net
Web: <http://freespace.virgin.net/m.davis>
(Jul/I)

E.M.A.S. STUDER - Revox Sales Service Spares. PR99 MkIII £1400. PR99 MkII £950. A710 £480. B760 £700. A725 £650. A810 £850. A80 VU £950. A77 HS £400. B77 £750. E36 £300. B67 VU £850. Tel: 01246 275479 or Email: j.i.tipping@amservice.net (Jun/I)

AUDIOPUBLIC, 78 Otley Road, Headingley, Leeds, 0113 217 7294. Yorkshire's newest Hi-Fi retailer, representing Naim, Rega, Creek, Totem, Quadraspire, Dynavector, Roksan, Teac and more. Used LP12's, Lingo's, Linto's stocked. Call for advice. Tel: 0113 217 7294 (Jun/I)

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Email: amps@dhaen.co.uk
(Jun/I)

CADENCE ANINA Hybrid electrostatic speakers, mint, boxed, £1700. Tom Evans Microgroove phonostage MC £350. Tube Technology Seer preamplifier, £650. Wanted: Conrad Johnson, Ear, Meridian, Naim etc. Contact: Zimaudio 07909 697 060 or 0118 981 5681 (Jun/I)

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AUDIOLAB, ARCAM, Quad, Linn, Copland, Alchemist, M.F. and most quality brands wanted for cash. I will collect or arrange collection. Email: awjoneshifi@aol.com or call 01782 267233 or Vodaphone 07799 415123 (Jun/I)

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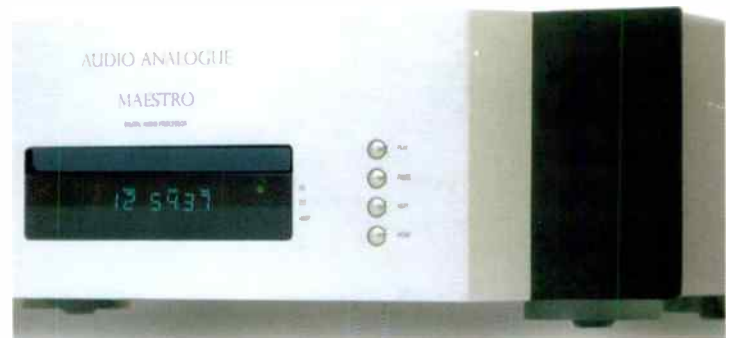
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