

HI-FI CHOICE

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**WORLD
FIRST
TEST!**

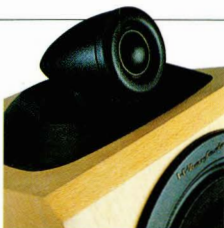
SACD TAKES ON DVD-A

OUR EXPERTS PICK
THE ULTIMATE
SUPER CD
PLAYERS!

PLUS!

MP3 SHOOTOUT

How six new models are
taking internet music by storm



HOT NEW KIT RATED!

Great gear from
Wharfedale, Linn,
Rega and more

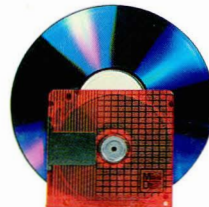
GO WITH THE GLOW

Quad valve amps
and electrostatic
speakers reviewed



DIGITAL RECORDING

We reveal the
UK's best CD-Rs
and MiniDiscs



OVER 1000 MODELS RATED!

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APRIL 2001
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Music was original then
Now you need the speakers to match*



The best speakers are the ones who listen

E 870



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Fax: +44 (0)1480 437715

www.cyrusaudio.com

email: info@cyrusaudio.com

CONTRIBUTORS



Tim Bown likes dance and indie music and plays it on an Arcam FMJ CD player, Roksan amp and PMC speakers.



Dan George likes rock music and plays it on a Naim CD player, Bryston amps and B&W Matrix 801 loudspeakers.



Christian House is our web site Editor. His induction into the world of hi-fi is not yet complete but we live in hope.



Paul Messenger likes dance, folk, rock and classical music on vinyl and uses Linn, Naim and Rehdeko kit with gusto.



Paul Miller is the king of the technical world when it comes to hi-fi. He uses DPA amps and Audio Note speakers.



Alvin Gold prefers serious classical music and has a predilection toward Krell electronics and JM Lab speakers.

HOW WE TEST THE PRODUCTS

Our reviewing process is the most rigorous in the business. We focus on transparency and resolution, mixing traditional hi-fi values with the latest technological developments via a blend of subjective views and scientific analysis.

BENCH TESTS Our main group test each month concentrates on a key area, with products from across the separates market. The testing consists of three stages: 'blind' listening, hands-on subjective testing and scientific measuring. The latter phase is conducted by our Technical Editor using computerised measuring equipment custom designed for the purpose. He is recognised as the leader in his field.

GROUP TESTS Each issue features a number of additional tests aimed at narrowing the field in a specific product area. Here the testing involves just the reviewer concerned with no lab or panel testing, but plenty of comparisons.

SOLO REVIEWS As well as group tests we also review single components. In our First Impression section, you'll find brand new products that warrant early exposure, while High Performance concentrates on the latest aspirational, high tech components.

AWARD TAGS



BEST BUYS are considered to offer an excellent standard of performance at an attractive price.



RECOMMENDED products are first class components, losing out to Best Buys only because of a higher price or less competitive sound quality.



A third award, **EDITOR'S CHOICE**, is reserved for those products reviewed solo and awarded where the Editor is convinced that a product offers exceptional quality for the price.

"Digital recording is not quite as simple as we've been lulled into thinking. A digital copy is not the clone that many of us assume it to be..."



audio technology seems to have been accelerating since the turn of the century and has now exploded into a bewildering variety of formats and systems. This month we've decided to explain what's going on and how each new technology fits into the musical jigsaw puzzle.

Paul Miller has given us the definitive history of the optical disc, why the original CD format turned out the way it did and how today's high density discs compare. I suspect that you'll learn a thing or two from this piece - I know I did.

Tim Bown meanwhile has taken on the task of explaining where things are at in the world of compressed audio; primarily MP3, but increasingly more formats too. Find out what's happening on this rapidly changing scene and how it might affect music on the move and in the home.

We also have reviews of six new media players, a genre that is so broad it was virtually impossible to find a suitable title for the group. The common factor is the ability to play MP3 files, but the ways in which each player does so are nearly as varied as the number of machines on test.

Digital recording is not quite as straightforward as we've been lulled into thinking either. Our group of blank discs for MD and CD recording prove that a digital copy is not quite the clone that many of us assume it to be. In the case of MD the difference between brands is big enough to affect the perceived quality of the recorder...

The main thrust of this issue is new technology, and the area where this will most affect the hi-fi enthusiast is the clash of DVD-A and SACD. We have put together the first group of players to include representatives of both camps. Testing them proved more than usually complex, not least because of the availability or otherwise of software. SACD has got the lead at present, DVD-A discs of anything other than manufacturer's demo persuasion only became available mid test. Fortunately Alvin was able to pick up a few at the CES show covered last issue. Without jumping the gun, it would seem that the deciding factor looks to be the ability to operate in multichannel mode. There's usually more to the success of a hi-fi medium than absolute sound quality - and one of these formats has a head start...

Jason Kennedy Editor



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HI-FI CHOICE
Future Publishing Ltd, 99 Baker Street,
London W1U 6FF

EDITORIAL
020 7317 2600
Fax 020 7317 1125
Regrettably we can't speak to readers or
answer queries on the phone. Please
send a letter, fax or e-mail instead

Editor Jason Kennedy
jason.kennedy@futurenet.co.uk
020 7317 2496
Deputy Editor Tim Bowers
tim.bowers@futurenet.co.uk
020 7317 2495

Art Editor Del Gentleman
del.gentleman@futurenet.co.uk
020 7317 2494
Production Editor David Bailey
david.bailey@futurenet.co.uk
020 7317 2493

Staff Writer Dan George
dan.george@futurenet.co.uk
020 7317 2497

Online Editor Christian House
christianhouse@futurenet.co.uk
020 7317 2490

Consultant Editor Paul Messenger
Technical Editor Paul Miller
Contributors Richard Black, Alvin
Gold, Jimmy Hughes, Wes Phillips,
David Vivian, Reg Williamson
Photography Chris Foster,
Hugh Threlfall

ADVERTISING
Fax 020 7486 5676
Group Ad Manager
Rob Debenham: 020 7317 0239
rob.debenham@futurenet.co.uk
Ad Manager

Andrew Goldsmith: 020 7317 0202
andrew.goldsmith@futurenet.co.uk
Senior Sales Executive
Gina Fontanarosa 020 7317 2684
gina.fontanarosa@futurenet.co.uk
Sales Executive
Richard Dappiano 020 7317 0278
richard.dappiano@futurenet.co.uk

Sales Executive
Mark Smith 020 7317 2643
mark.smith@futurenet.co.uk

PRODUCTION
01225 442244
Production Coordinator
Diane Ross

Production Manager
Sam Clements

MARKETING
01225 442244

Product Manager Racheal Beasley
Marketing Manager
Bronwyn Stubbs

MANAGEMENT
Publisher Simon Davies
020 7317 2600
simon.davies@futurenet.co.uk

Creative Director Paul Kurzeja
Group Publisher Andy Sutcliffe
Managing Director Mike Frey

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Tel: +44 1225 442244 www.thefuturenetwork.co.uk
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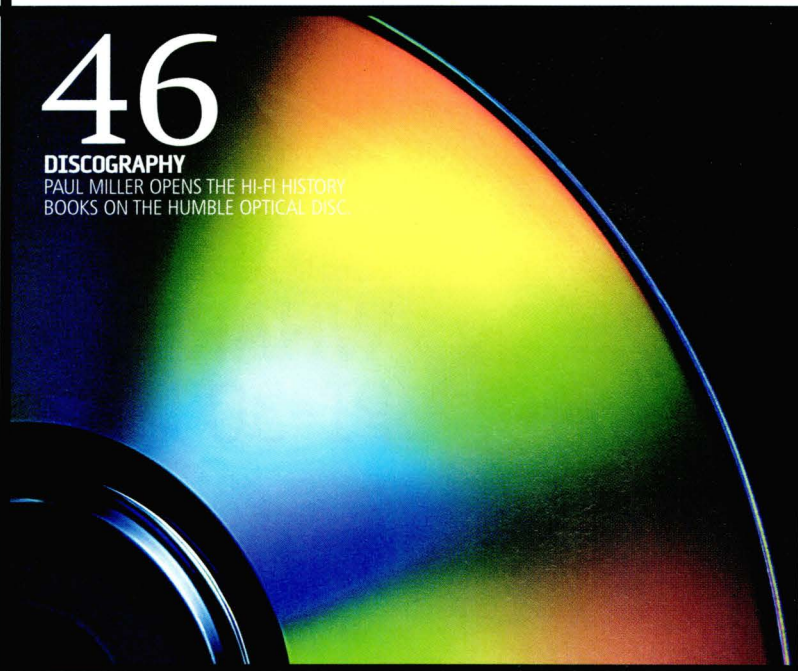
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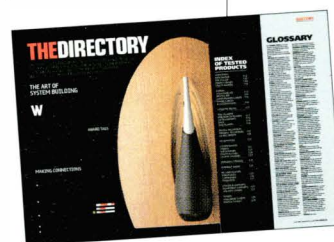
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Looking for a past review? This page tells you how to obtain a back issue or order a review reprint.



FIRST IMPRESSIONS

TIM BOWERN, DAN GEORGE AND JASON KENNEDY LISTEN TO THE FRESHEST FRUIT ON THE HI-FI GRAPEVINE



"CLEARLY, THIS NEW WHARFEDALE IS A CAPABLE AND ENTERTAINING DESIGN"

WHARFEDALE PACIFIC PI-30 LOUDSPEAKER

★★★★★ £449.95

The box and back panel of this speaker make great play of the British heritage of the brand – a fact that extends to the design of the Pacific range, if not manufacture, which is carried out in the company's Chinese facility. And it also explains why such a substantial design can be marketed at such a reasonable price

The Pacific range distinguishes itself in a number of ways, the most obvious being the little tweeter pod that reminds one of a certain other British brand. Elsewhere it features Kevlar coned mid/bass and bass drivers and multiple voice coils in a real wood veneered cabinet with built-in plinth. The veneer is one of the least convincing examples of the art yet encountered, but this is a reflection of the plasticky surface finish rather than the wood itself, which is rare in this market sector.

This is a lot of loudspeaker for the money. As the measurements in the Datastream prove, it is about the biggest that we've seen under £500. But size brings both advantages and shortcomings.

The likely pluses are bass extension and efficiency, which translates into power handling. The drawback is usually that the box makes itself felt by joining in with the music.

The Pacific PI-30s manage to take advantage of their size without suffering too many of the limitations. What's more they sound extremely open thanks to that tweeter pod, which provides a big soundstage that's not short on detail or dynamics.

The bass seems to be best balanced with about a foot (30cm) between speaker and wall; the wall mounting suggested in the manual proved a bit bass-strong for our room. Once the right position had been found, the quality and depth of the lower octaves was most gratifying. The high sensitivity providing a real sense of ease and power.

Clearly this new Wharfedale is a capable and entertaining design, and will certainly take some beating when it gets to group testing with its peers. If your musical tastes run to the robust we suggest you audition a pair forthwith. **JK**

DATASTREAM

TWO AND A HALF way operation, double wound voice coil on mid/bass driver and quad coils on the bass driver, 89dB at 6 Ohms, 93.2x22x32.5cm (HxWxD), light beech and rosewood veneers.

WHARFEDALE
☎ 01480 447715

DENON UD-M30 MICRO SYSTEM PLUS CDR-M30 CD RECORDER

★★★★★ £599.99

Smart little component systems have long been a speciality for the chaps at Denon. Heck, the company practically created this market in the UK, a sector that has grown to become one of the most important in home audio.

Of course, there's no substitute for proper separates for out-and-out sound. But if you're looking for something small and affordable, perhaps as a second system for the bedroom or home office, try Denon's latest little cutie for size.

The base unit is the UD-M30, a CD player, radio tuner and amp in one smaller-than-a-shoebbox case. On its own it costs £230, or you can buy it with a matching pair of SC-M50 speakers for £300. These are made by Mission: not the usual tat supplied with micro systems but smart, solid boxes with more than a nod towards real hi-fi. To that you can add a recorder should you require one, either cassette, MiniDisc or CD. We've gone for the latter by adding the £300 CDR-M30.

You can't fault the resulting system in the looks department. For £600 you get AM/FM radio plus the ability to play and make CDs, wrapped up in

the most stylish and diminutive of packages. It feels good too – fit and finish are exemplary for this kind of product, with a strong metal case, immaculately laid out controls and a smooth-acting volume knob.

But we haven't even got to the good part yet. Where this system scores most over its direct competition is in the quality of its performance. Comparatively speaking, its sound is tight, focused and unusually detailed, delivering music with a sharp articulation unexpected of a system so small and inexpensive. It has its limitations, of course: it's not particularly smooth or dynamic, and more aggressive musical strains sound a little brittle and glassy. But for a beast of its type it is exceptionally informative and above all musically enjoyable; good with radio, even better with CD.

As for its CD-making ability, there are no qualms to report. We recorded directly from the UD-M30's CD transport to the CDR-M30 via an optical link and found the results virtually indistinguishable from the originals. As a package it is a cut above the competition; a shiny little jewel in Denon's lustrous systems crown. **TB**



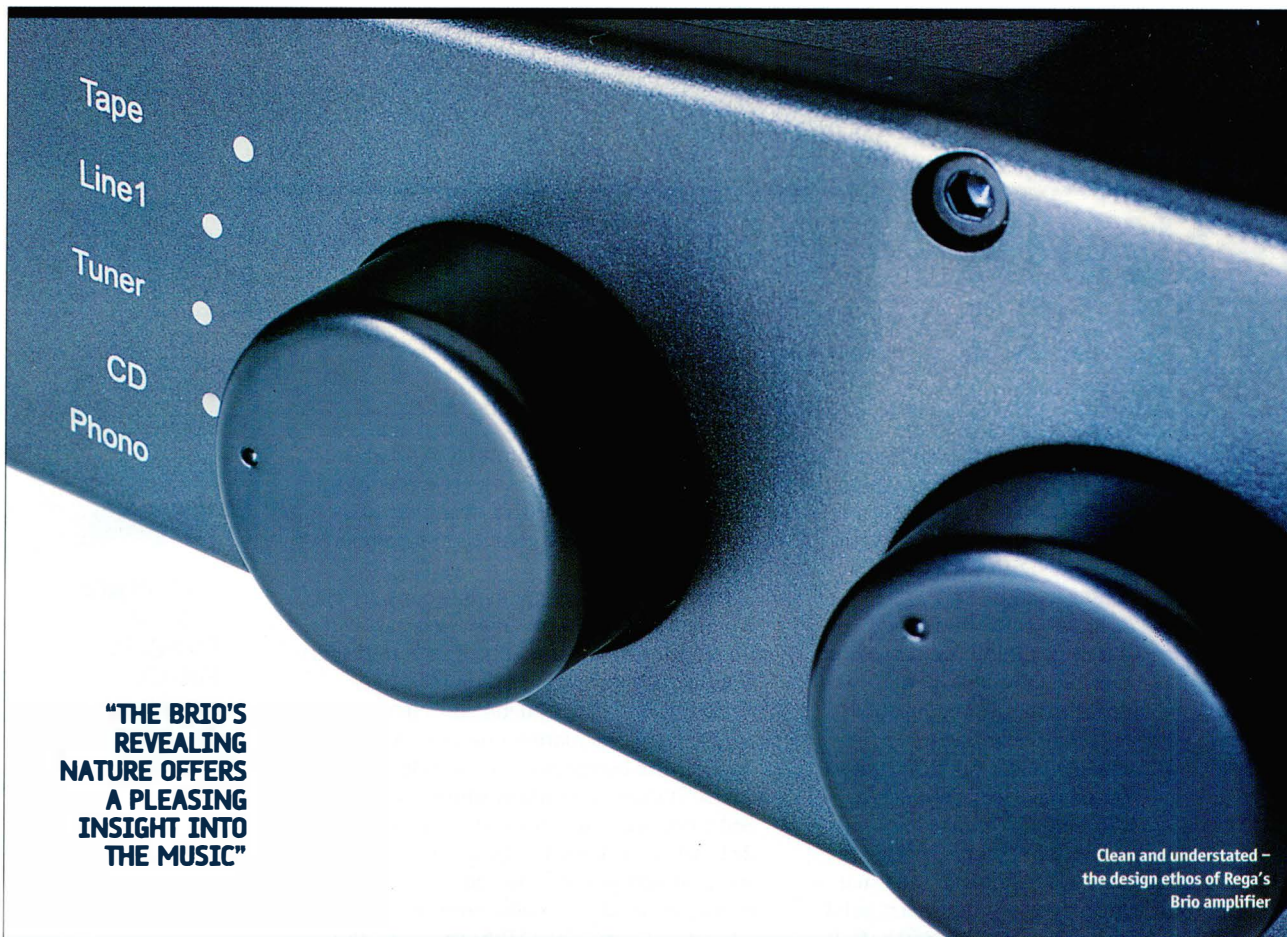
"THE DENON SYSTEM'S SOUND IS TIGHT, FOCUSED AND UNUSUALLY DETAILED"



DATASTREAM

CD/RECEIVER: measures 21x9.5x32.5cm (WxHxD), optical digital output, 40 preset AM/FM RDS tuner; **CD recorder:** sample rate conversion, one-touch recording, compatible with CD-R and CD-RW; **speaker:** measures 14x24x20cm (HxWxD), 110mm mid/bass driver, 25mm soft dome tweeter

DENON ☎ 01753 888447



"THE BRIO'S REVEALING NATURE OFFERS A PLEASING INSIGHT INTO THE MUSIC"

Clean and understated – the design ethos of Rega's Brio amplifier

REGA BRIO STEREO INTEGRATED AMPLIFIER

★★★★★ £298.00

Rega sure has been burning the mid-night oil recently. A whole host of new products has got us excited here at *Hi-Fi Choice*, and catching our eye this month is the Brio 2000 integrated amplifier, which is looking particularly fresh-faced. It would appear that the original Brio has been under the surgeon's knife, and is now sporting an all-new stylish aluminium case. Rega feels that after many years the time has come for an overhaul, and although the machine adopts some significant internal and external changes, the product's character and design direction remain the same. The concave upper casework and sparsely decorated front panel make for a very individual look. Sparseness continues at the rear, with two pairs of speaker outputs, five line inputs, and one tape loop. The tidy lack of tone controls, balance etc, may appeal depending on your outlook. Rega is clearly quietly confident.

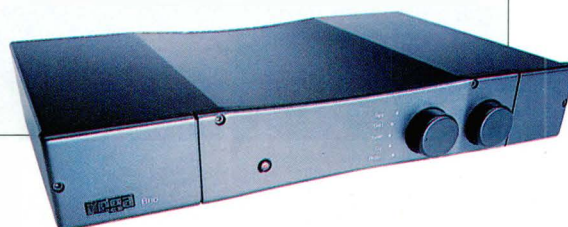
Fat rubber feet support this machine, helping isolate the electronics within. This new circuitry

includes an improved output stage thanks to claimed higher grade transistors and new protection electronics. Preamplification has been improved too, with new capacitors in the signal path.

Rega's new integrated pumps out a likeable warm bass, albeit one that perhaps could extend a little more. The midband excels, with vocals and percussion appealingly open, if a little forward. Laid-back partnering speakers will bring the most smiles with this machine, if smoothness is your bag at least. The Brio's revealing nature offers a pleasing insight into the music and Rega really has put some effort into re-designing the product. If style is an issue for you, but you still like to hear what's going on in your music, have a listen to the new Brio amplifier. **DG**

DATASTREAM

RATED 38 Watts into 8 Ohms; four line inputs; tape loop; two pairs of speaker outputs
REGA ☎ 01702 333071



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unbelievable
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VIVANCO FMH-8080 FM HEADPHONES

★★★★★ £100.00



**"LET IT BE SAID
THAT ROAMING
AROUND WITH
YOUR TUNES IS
GREAT FUN"**

Headphones seem to be popular again. Perhaps it's due to the explosion of DJ culture, or the increasing number of portable formats around today.

Late night use is also commonplace, 'cans' allow you to continue your ear bashing sessions into the early hours or catch graveyard slot TV. Ever-present, however, is the issue of getting tangled in wires, or having to sit in the immediate vicinity of your equipment's headphone socket. Unless, that is, you've got some wireless FM headphones.

Vivanco has a new pair on offer, the FMH 8080s, which will give you a 100 metre range. After charging (which takes five to eight hours), simply plug the headphone's base unit into your hardware's headphone socket, or tape outputs, and you are ready to start.

You need to tune the headphones to the base unit, using a single button press on the headphones themselves. Once locked on, you can

wander out into the garden, or anywhere you please, with up to eight hours of audio to accompany you. Something called PLL synthesised tuning improves the sound quality over a distance, which incidentally was particularly good, with only mild occasional interference. There is a slight weight penalty because of the batteries in the phones, but the fit is particularly snug due to the self adjusting headband design. Soft velvet cushions cup your ears but, although reasonably comfortable, the weight and close fit can sometimes be a bit much.

Musically, vocals are pleasantly smooth and the Vivancos display a good sense of warmth which should make prolonged listening easy. Less inspiring though was the lack of detail in the instrumentation; bass was overemphasised and tended to repress subtle aspects of the music. Let it be said, though, that roaming around with your tunes is great fun. **DG**

DATASTREAM

**THREE CHANNEL FM
HEADPHONE;** 100m range;
PLL synthesised tuning; AAA
Rechargeable batteries
VIVANCO ☎ 01442 403020

LINN KATAN LOUDSPEAKER

★★★★★ £635.00

Linn's new Katan is an extremely cute loudspeaker. This is largely due to its attractive shape, diminutive stature and gorgeous finish: a factor enhanced by the real wood veneer and enamel badge.

Designed as a replacement for the Tukan this fully shielded, reflex design is aimed at stereo and surround duties and could be used as a centre or rear channel as required, its angled flanks suiting a placement below the screen.

The explanation for the high price lies in build quality, driver selection and flexibility. The tweeter is a 'wide dispersion' 19mm unit while the mid/bass driver is a 125mm device with cast frame and polypropylene cone. The latter are driven by what are described as 'dual field shaping magnets' and designed to be able to sustain high volume levels without duress.

Flexibility is provided by the sockets on the back, eight in all, which by switching link boards can be used to bi-wire/amp or to run the speaker actively with an outboard crossover and amp.

Compact loudspeakers of the well constructed variety have a better chance than most of disappearing from the picture, their lack of cabinet resonance enabling better imaging than bigger boxes. The Katan falls into this camp, its ability to produce large scale images is extremely good, you'd not guess it was a small speaker unless you saw it. Until something with heavy bass come along that is. The genre's limitation is in the rumble department and the Katan makes no pretence to breaking the mould here, the manual quoting a very conservative figure for extension (70Hz, -3dB). It's not a thin-sounding speaker however, and there's no problem playing rock or similarly inclined material.

It thrives on power and the Bryston and Linn power amps I tried elicited a more controlled, solid sound than the integrated Arcam that got them started. But they never sounded as ragged or bright as previous Linn tinies have (any one remember the original Kan?), the balance remaining even at all times.

While inevitably not the most dynamic sounding speaker the Katan is capable of drama and superb imaging. Add a subwoofer and you've got full bandwidth and great looks. **JK**

"THE KATAN'S ABILITY TO PRODUCE LARGE SCALE IMAGES IS EXTREMELY GOOD"

DATASTREAM

CHERRY, MAPLE, WHITE and black real wood veneer, passive or active operation, 34x17x23cm (HxWxD), optional stands (£135), sensitivity 85dB at 8 ohms, weight 6kg.

LINN ☎ 0161 280 5115



Deceptively small, the Katans certainly sound much bigger.



MISSION M73 LOUDSPEAKER

★★★★★ £199.90



Popular speaker manufacturer Mission has put a new pair of speakers our way this month. Standing tall from the new M70 range is the M73 floor-stander, the most affordable full size speaker in the range at £200. Its neutral colours and swanky looks should help it to bond with any listening room or lounge environment. A couple of months ago, we warmed to its younger counterpart the M71 standmounter, and it would appear the M73 enjoys the same value for money charm. In comparison, you should expect the larger cabinets to give you noticeably more bass, and historically Mission has achieved this aim, often at modest price points. Such low end prowess, 48Hz is claimed, is clearly designed to appeal to home cinema lovers too, who could use the M73s as front channels.

The ubiquitous MDF makes up the cabinets and the baffle, which supports an ABS moulding that houses the glass fibre mid/bass driver and soft dome tweeter. The rear mounted bass port means that the supplied foam bungs will be required for close to wall placement. Speaking of which, spend some time experimenting with positioning, it really will pay off on the satisfaction front.

The cabinet volume certainly does wonders for the bass, which is faithfully solid and punchy. The cabinets are mass-fillable, which should tighten up the bass a shade if required. Despite the slightly forward treble and an overall brightness, the speaker's musicality was never in question - neither was the timing, bass guitar and kick drum making good progress throughout Led Zeppelin's *Nobody's Fault But Mine*.

An informative midrange helps cement the sonic capabilities of the Missions, the looks and good build quality ultimately earning them our approval. Had the M73s been around when I had a £200 speaker budget, I think I would have been very tempted indeed. **DG**

"HAD THE M73s BEEN AROUND WHEN I HAD A £200 SPEAKER BUDGET, I THINK I WOULD HAVE BEEN VERY TEMPTED INDEED"

DATASTREAM

MEASURES: 20x85x30cm (WxHxD); MDF cabinet; 160mm woven glass mid/bass cone; 25mm soft dome tweeter; sensitivity 90dB at 8 ohms; Can be mass loaded.

MISSION ☎ 01480 541777

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NEWS

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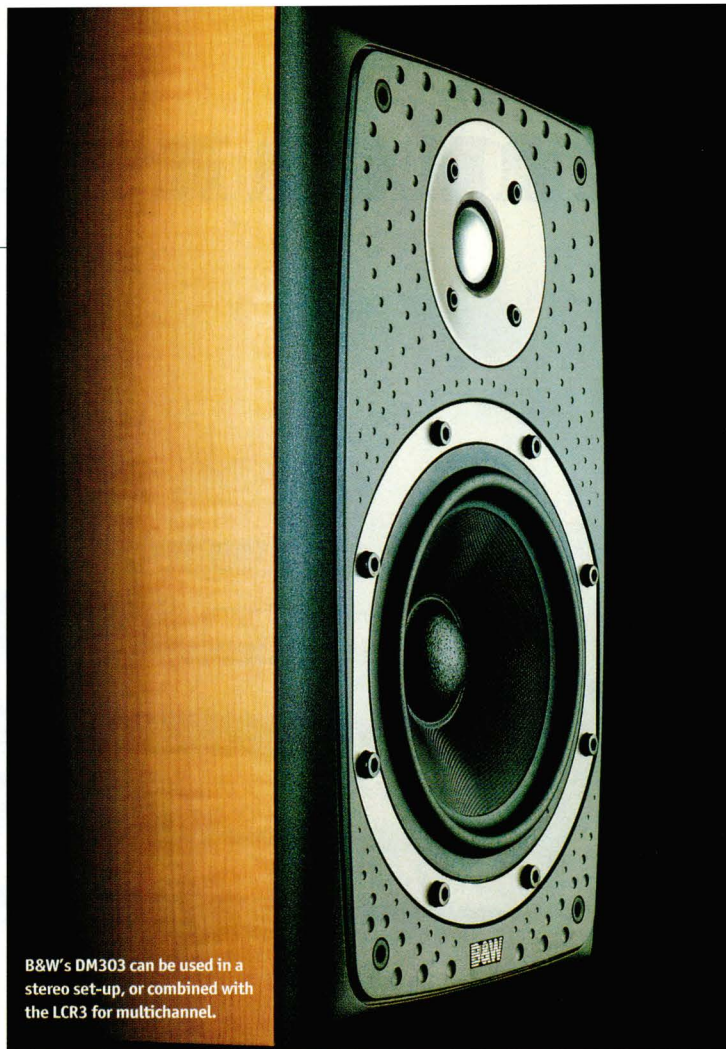
B&W'S NEW BUDGET SPEAKERS HIT THE STREETS

B&W continues to filter aspects of its high-end Nautilus technologies to lower price points with the launch of the 300 Series – a new entry-level range of speakers.

First to emerge is the DM303, a stand-mount speaker priced at £180. It incorporates a 25mm metal dome tweeter with Nautilus-style tube loading, and a 160mm mid/bass driver with a woven fibre-glass cone. Dimpled Flowport vents are also employed.

In multichannel systems it may be partnered with the LCR3, a £150 centre channel speaker of similar specification. "The era of 'budget speakers', with all their implied compromises, is over" says B&W. Bold words indeed...

B&W ☎ 01903 750 7448



B&W's DM303 can be used in a stereo set-up, or combined with the LCR3 for multichannel.

NAIM THAT TUNER

NEW FM RADIO SEPARATE PROMISES EXCEPTIONAL SOUND

Naim's revamped entry-level line-up has been joined by an FM tuner. The NAT 05 comes clad in the firm's new garb, with low vibration aluminium casing and "special" compliant feet for isolation. To further the cause, individual circuit boards are supported by rubber mountings, while separate transformer taps feed individual, fully regulated power supplies for the analogue audio and digital tuning circuits.

Considering its price tag of £725, it may seem

surprising that Naim has developed a costly analogue tuner when the talk at higher price points is all DAB digital radio. But with the cut-off date for analogue broadcasts still far from set, Naim feels its 20 years of experience with FM has allowed it to make one of "the best sounding tuners in the world." And yes, where would the company be without a tuner that wears its fresh new look?

NaimAudio ☎ 01722 332266

Naim Audio's NAT 05 FM tuner for superior airwave surfing.



The Roksan Caspian DVD.

MUSICAL MOVIES

ROKSAN'S DVD PUTS HI-FI SOUND FIRST

Roksan's long awaited entry to the world of DVD is almost with us. The Caspian DVD video player is part of a growing line-up of AV products including the Caspian DSP processor and 5-Channel A/V amplifier.

It's priced at £1,195 and employs a dual laser mechanism to aid both audio and video performance, decoupled from the chassis and controlled by the main PCB. Mains filtering is described as state of the art and the main power supply is shielded to eliminate interference. The DAC is 24-bit/96kHz compatible.

As you'd expect from a company with a purist hi-fi heritage, Roksan makes great play of its audio performance. "It's a mistake to assume that watching films does not require high-end audio quality equipment to support it," says the company. "In fact, we highly recommend you audition any AV system based on its musical and emotional merits."

Roksan ☎ 020 8900 6801



A PAIR OF NADS

NEW CD PLAYER AND AV RECEIVER FROM UK STALWART

NAD's product portfolio continues to bulge with the news of two additions. The CD player ranks are boosted by the C521, a £200 machine with CD-R playback and a 20-bit Burr-Brown DAC. It uses separate power supplies for digital and analogue sections, and employs a variety of high quality components including metal film resistors and polypropylene capacitors. The digital output is of the superior coaxial variety, buffered and tailored to a precise 75 ohms to help minimise jitter.

For multichannel enthusiasts there's also the T751, a 5.1 channel integrated AV receiver featuring 5x60 Watts and Dolby Digital/dts decoding. It also sports an AM/FM tuner with 30 presets, and NAD's Impedance Sensing Circuitry to optimise performance according to speaker load. It costs £600. Lenbrook UK ☎ 01908 319360



CAMBRIDGE BLUES

A BRACE OF NEW PRODUCTS FOR BUYERS ON A BUDGET

Cambridge Audio exploits the current trend for silver boxes and blue LEDs with its latest line-up of gear. Hot off the blocks is the A5 integrated amp, a stereo model boasting 60 Watts per channel and straight-line topology for a short, direct signal path. A low noise toroidal transformer and high quality Sanken transistors also feature, but the price is just £120.

Also new is the D500 SE CD player, an updated version of the standard D500, recipient of a Best Buy Award in *HFC* 202. It incorporates a 24-bit Crystal DAC, separate power supplies for analogue and digital circuits and proprietary jitter reduction technology. It costs £230 and like the A5, it's available in black as well as natty silver. Richer Sounds ☎ 0500 333 500



NAD'S C521 CD player is gunning for hi-fi buyers with tight budgets.

NEW WAVE SPEAKERS

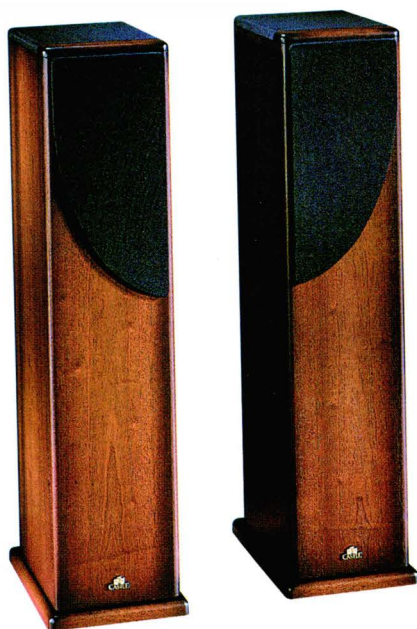
CASTLE'S HARLECH GETS NEW DRIVE UNITS

Castle's much respected Harlech floor-standers have had a revamp. The result is the Harlech S2, a speaker that looks much the same as its *HFC* Best Buy-scooping predecessor but is actually substantially revised.

It still features the same downward firing twin-pipe, quarter wave cabinet internals, which helped the original conjure up its grand sense of scale. But the drive units have been upgraded: its two 130mm mid/bass drivers now feature a new diecast chassis and carbon fibre cone, with a 30mm dual-layer voice coil for improved handling and dynamics. Also, the crossover now sports iron-dust cored inductors said to dramatically effect sound.

It's available now at £999 per pair with Castle's customary choice of nine wood veneers, or you can plump for the premium-priced Santos rosewood or yew options for an additional £200. Check next month's issue for a review.

Castle Acoustics ☎ 01756 795333



A pair of Castle Harlechs, now in S2 guise.

IN BRIEF

THE CHORD COMPANY'S fabulously purple Siren analogue interconnect has received an upgrade. The new Silver Siren (pictured) features revised geometry with two stranded, silver plated oxygen free copper conductors, insulated with Teflon in a twisted pair configuration. It also sports 'single signal path technology' and better screening. Price is £75/1m pair. ☎ 01722 331674



NXT'S latest licensee of its flat speaker technology is Germany's Glas Platz. The firm has created the Techno Sound, a speaker which appears to be formed mainly from a plate of glass with an 'exciter' attached. It can be wall-hung or mounted on a stainless steel stand. ☎ 020 7343 5050

LAURI VOLPI CORK PADS are tiny circular slices of cork designed to be placed between speaker and floor or stand in place of spikes. With the addition of a centrally located blob of tack, the result is apparently better bass, rhythm and sound-

stage focus. A pack of eight plus tack costs £10. ☎ 0113 2522820

PLAYBOY'S US edition has come up with some interesting findings on the relationship between our sex lives and consumer electronics (CE) devices. In a survey of 750 men and 250 women, they found that one in 12 male respondents said they're having less sex because of the time they spend with CE products. And only 75 per cent would give up their CE device for the company of a woman if stranded on a desert island. See? Who needs sex when you've got gadgets?

IN BRIEF CONTINUES ON P.19



BE READY

when the
mood takes
you

THE PLEASURE JUST GOES ON AND ON WITH OUR LATEST PERSONAL MINIDISC RECORDER. ENJOY YOUR FAVOURITE TRACKS LONG INTO THE NIGHT THEN PUT IT BACK IN ITS DESKTOP CHARGING STATION SO IT'S READY WHEN YOU WANT IT NEXT. GIVING YOU ANOTHER 12 HOURS OF PURE LISTENING PERFECTION FROM OUR SMALLEST-EVER MD RECORDER. SO COMPACT, YET SO RICH IN ADVANCED FEATURES. THE NEW SHARP MD-MT866H. YOU CAN'T HAVE TOO MUCH OF IT.

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FOR MORE INFORMATION ON THE FULL RANGE OF SHARP MINIDISC RECORDERS, VISIT OUR WEBSITE AT WWW.SHARP.CO.UK OR FREEPHONE 0800 262958



GOLD STANDARD

ALCHEMIST CONJURES UP A NEW RANGE OF ELECTRONICS

Alchemist is a firm well known for its distinctive looking gear. Indeed, the company was experimenting with hefty aluminium front panels and gold-coloured adornments when most other brands were still stuck in the dark ages – black and nowt else.

So it's no surprise to find the firm's latest Product 8 range looks as 'Alchemist' as ever. It consists of six separate components, each in the £950 ballpark and designed to take over where the long-running Forseti range left off.

The Product 8 source is a two-box CD player – a CD Transport and separate DAC, both priced at £949. The latter component is claimed to upsample all lower sampling rates to 96kHz, with HDCD and claimed 192kHz decoding available as options.

The matching Pre Amplifier also costs £949, with a dual mono, 150 Watt per channel stereo Power Amplifier at £1,099 (pictured with the Pre) and a Multi-Channel Power Amplifier delivering 100 Watts to each of its five channels at £1,199. For those who would prefer a more cost-effective amp solution, the Product 8 Integrated Amp is also available at £949. Alchemist ☎ 01707 664607

TWEETER BEATER

CYRUS LAUNCHES ITS ENTRY-LEVEL SPEAKER

Cyrus has unveiled an entry-level speaker to sit alongside the CLS 70, the first speaker to be sold under the Cyrus brand name for years. The new CLS 50 will be priced at £450 per pair and features a tweeter said to be far more advanced than is typical at the price.

The company claims to have invested more than four times the price point norm on this unit, which features a silk dome and neodymium magnet. It's coupled with a 127mm mid/bass unit with a cone chosen for its open midband quality. Its British made cabinet is real wood and finished in black ash, cherry or maple veneers.

Cyrus ☎ 01480 435577



DAC MAGIC CHORD

NEW D/A CONVERTER OFFERS "UNPARALLELED RESOLUTION"

Just when we're getting used to 24-bit/192kHz resolution as the state of the digital art, along comes Chord to up the stakes again. Its latest digital to analogue converter, the DAC64, is claimed to be the world's first to reach a whopping 64-bits/384kHz.

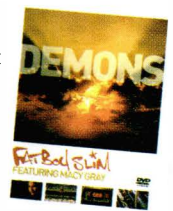
It contains a new type of filter called the Watts Transient Aligned filter (WTA), with 64-bit filter/DAC architecture and a new digital receiver chip. Though 384kHz resolution is far beyond the boundaries of human hearing, Chord claims it's not the extra bandwidth that's important – it's the effect it has on the timing transients within the audio picture. The DAC64 costs £1,900 and is the first in a series of digital products to feature this technology. A CD player and multichannel processor will follow later this year.

Chord Electronics ☎ 01622 721444

DVD SINGLED OUT

DVD SINGLES HITTING THE SHOPS

DVD-Audio isn't the only DVD music format worth watching. There have also been some interesting DVD-Video releases of late, including a gradually expanding clutch of short-form DVD single releases.



The last big name artist to dabble with this format was Fatboy Slim, who followed the CD and vinyl release of his recent *Demons* single with a DVD version in January. As a format, it provides a useful experimental canvas for artists to explore the possibilities DVD brings: all have video content, some include 5.1 surround mixes, some have additional features like DVD films. Prices currently range from £5-£8.

For more information on DVD Singles check out the March issue of our sister publication, *What DVD?*.

IN BRIEF CONTINUED

SPENDOR AUDIO SYSTEMS, has been acquired by Audiolab co-founder Philip Swift. Swift had been away from hi-fi manufacturing for two years, following the sale of Audiolab to TAG McLaren. ☎ 01323 843474

DTS has announced plans to ship its first batch of DVD-Audio discs produced by the dts Entertainment music label. The discs include stereo and multi-channel DVD-A tracks, plus a dts multichannel soundtrack

and stereo Dolby Digital track to ensure DVD-V compatibility. Initial titles are

inevitably a touch obscure and 'audiophile', including Flamenco A Go-Go and

Larisa Stow, but they should be in the UK sometime before spring. ☎ 0118 934 9199

MONITOR AUDIO has banded together its entry-level Bronze loudspeakers to create two five-speaker-plus-subwoofer A/V packages. Option 1 is a stand-mount combination at £760, while Option 2 (pictured) includes Bronze 3 floorstanding loudspeakers at the front for a total of £900.





After the movies, thrill to the music.

Introducing the ProAc Home Theatre system. We introduced it to Home Entertainment magazine and they gave it a five star rating (May 2000).

Apart from the centre-channel unit, we didn't just set out to make a dedicated cinema system. We reasoned that if our highly successful Tablette 2000 and Studio 125 hi-fi systems were capable of great performance with music, they should be equally potent with movies. And we were right.

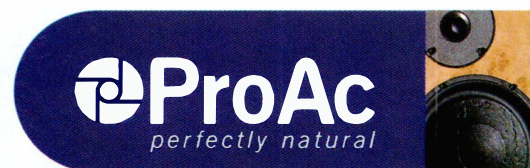
This exceptional blend of carefully matched drive units and crossovers provides the ultimate in total sound experience, producing an unfatiguing, smooth, natural and dynamic performance from film or music

Whichever way you want it, fasten your seat belts.

This system will fire your senses, providing a compelling and unforgettable audio experience. Every time. On DVD, CD or vinyl.



Studio 125 - Best Buy Loudspeaker £600-£1000



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TESTING TIMES

WES PHILLIPS BRINGS US A REPORT ON CES – AND THE TECHNOLOGY JUST WAITING TO BE UNLEASHED...

The first weeks of any New Year here are overshadowed by the Consumer Electronics Show (CES), but this year the sense of suspension continued into the show itself. With one or two exceptions, nobody seemed willing to bet on the future – most companies seemed content to refine existing product lines and watch the format wars that seem to attend any new technology launch.

Digital Radio, for instance, is finally coming to the US. The biggest player in the digital radio league is iBiquity Digital Corporation, formerly USA Digital Radio, which merged last year with its major competitor, Lucent Digital Radio. The National Radio Systems Committee (NRSC), in conjunction with representatives from both the broadcasting and manufacturing sectors, will test the company's technology during the first six months of 2001. If approved by the joint committee, iBiquity's technology will go before the Federal Communications Commission for formal consideration as the national standard for digital radio.

The first prototype digital radio receivers were on display at CES, including Motorola's iRadio, which has analog and digital capacity as well as the ability to connect to the Internet through cellular networks. A radio seems to need all the extras it can get these days; other models incorporated GPS transceivers.

Two companies are already hawking competing broadcasting systems. Sirius Satellite Radio is currently operational and offering 100 channels of non-commercial programming for \$9.95 per month. XM Satellite Radio's offerings sound similar to Sirius's: 100 channels of digital programming available for a monthly \$9.95 subscription. Tuners for both services are expected to debut in



The Mark Levinson No.40 Media Console is the company's first home theatre product and incorporates the facility to drive up to eight channels.

cars, where they will be a several-hundred-dollar option.

WAIT AND SEE

Recordable DVD was also a hot technology at the show but again, incompatible competing systems – DVD-RW and DVD+RW – have muddied the waters. So far, Philips, HP, Sony, Ricoh, Yamaha, Mitsubishi, and Thomson have all endorsed DVD+RW, and Philips has pledged to ship DVD+RW products to retailers by late spring.

This was the show where DVD-Audio finally got off the ground. Denon and Panasonic both ran demos featuring multichannel DVD-A, while Enlightened Audio Design provided 5.1-channel DVD-A surround demos from their Ultra DVD-A player (\$5,000). Several surveys here have shown that most audiophiles are waiting for “universal” players before they commit to higher resolution digital formats – Pioneer now promises the impending release of the DV-AX10, “a universal DVD-A/V/SACD/CD machine”.

Catering to this wait-and-see attitude, many companies are offering upsampling D/A converters to consumers who

want better sound *now*. Birdland Audio showed its Odeon-lite, a 24-bit/96kHz upsampling DAC which offers an analogue volume control for direct connection to a power amplifier. The unit costs \$980 and provides RCA, AES/EBU, BNC, and optical inputs, as well as separate transformers and power supplies for the analogue and digital circuits.

Mark Levinson had a prototype on display that suggested the future of hi-fi might involve up to eight channels. The two-chassis, \$20,000 No. 40 Media Console incorporates surround-sound processing and video switching, in addition to a full palette of audio features. This is the first Mark Levinson home theatre product, but it seems to be the result of a genuine no-holds-barred design approach rather than a ‘me too’ addition to the line.

HALL OF FAME

Following a tradition established last year, the Consumer Electronics Association (a coalition of over 600 electronics companies in the US, aiming to monitor the development of new standards and policies as technological development accelerates) inducted seven new candidates into its Consumer Electronics Hall of Fame. This year's honours went to:

- Emile Berliner, inventor of the flat phonograph disc and founder of the Gramophone Company
- Sir John Ambrose Fleming, developer of the vacuum tube
- Hugo Gernsback, popular science and science-fiction journalist
- Peter Laurits Jensen, car stereo and loudspeaker inventor
- Earl Muntz, television and auto sound marketing visionary
- Alexander Poniatoff, magnetic tape pioneer and founder of the Ampex Electric Manufacturing Company
- George Westinghouse, founder of Westinghouse Corporation

“SURVEYS HAVE SHOWN THAT MOST AUDIOPHILES ARE WAITING FOR ‘UNIVERSAL’ PLAYERS BEFORE THEY COMMIT TO HIGHER RESOLUTION FORMATS.”

Wes Phillips is our US news correspondent, Muddy ‘Mississippi’ Waters is his musical hero.

RING ANY BELLS?

YOU BOUGHT THE VINYL. YOU BOUGHT THE CD, AND THEN THE 25TH ANNIVERSARY RE-MASTERED VERSION. BUT THE STORY OF *TUBULAR BELLS* DOESN'T END THERE...

It was a late-teen-locked-in-the-bedroom-alone scene. Me, my first real hi-fi system (loved those Koss Red Devil headphones, couldn't afford speakers) and a copy of Mike Oldfield's then brand new *Tubular Bells*. Vinyl, of course. It was 1973. I had so much hair I often couldn't see where I was going and CD players wouldn't be on sale for another 11 years. But, as an introduction to the stereophonic wonders of hi-fi, this LP more than passed muster.

Tubular Bells went on to become one of the most successful and enduring albums of all time (10 million sold and still counting) – an achievement that continues to perplex many people, since it's basically the work of someone that the Virgin Manor Studio boss at the time, Tom Newman, described as “a funny little hippy” relentlessly noodling away on a bewildering collection of acoustic instruments. Overdubbing one on top of another on top of another until Newman and his co-producer, Simon Heyworth, ran out of space on the tape. For all that, the piece is touched by something – possibly genius, though I've never been sure – that the musically gifted but remarkably shy teenager was never quite able to reproduce later in his career, though apparently *Songs of Distant Earth* (1994) comes close.

I can't confirm that myself. *Tubular Bells* is my one and only Oldfield album – as, I suspect, it is most people's. Respectful of its iconic status, I bought it on CD, too. Then as a sonically spruced up CD (care of re-mastermeister Heyworth) for the 25th Anniversary issue. I even bought *Tubular Bells II*, and quickly wished I hadn't. No, the original is the one. Just consider. As well as ensuring Oldfield could stay a funny little hippy forever if he so wished, *TB* launched the Virgin record label and, by extension, Richard Branson's entire empire. Ironic that he was so unconvinced by the project, he had to be coerced into releasing it by Newman.

Entirely fitting, though, that Virgin (which Branson sold to EMI in 1992 for £560 million) should make *Tubular Bells* its first release on Super Audio Compact Disc (SACD). Not only that, it's

the first multichannel SACD produced by a major record label from an original multitrack master.

Re-mastered by who else but Heyworth, who these days – after stints in the movie business and recording some of the world's great orchestras – is senior mastering engineer at Sanctuary Mastering in London. Which is where I've joined him to have a sneaky earful of the world's first mainstream multichannel SACD and discuss what seems to be a mutual obsession with *Tubular Bells*.

The multichannel release was Heyworth's idea, assisted in no small measure by the ease with which he could put his hands on a pristine four-track master, mixed in 1975 as a stillborn quadraphonic project. Already a big fan of SACD – “I think that at last we can actually hear the analogue world again in the digital domain” – he's delighted with how well the transfer has worked.

“I think it works because it's instrumental and because of the musical content. It's all acoustic instruments; it's a piece of music that seems to gel in surround. It doesn't really matter that it's only four channels because most amplifiers have a bass management system in them so you will still get your 'point one' (4.1 if you like). The absence of a centre channel in this case is irrelevant because the centre image is so rock solid.”

Heyworth is tall, lean and sounds a little like whispering Bob Harris of *Old Grey Whistle Test* fame. He's disarmingly modest, too. For someone who's mastery of recording and mixing techniques is clearly so complete, his approach toward re-soundscaping *Tubular Bells* is surprisingly cautious.

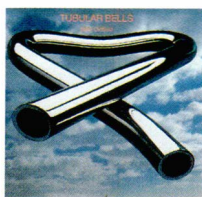
“I really had no idea how the SACD would turn out. The fact that I loved the sound of SACD is what got me going. I knew that side of things wouldn't be a problem. As for content, and how it would be in the mastering situation, I just did my best. I didn't have a clue what to expect. I just followed my nose.

“But first day in the studio and it was great. All I really needed to do was rebalance the rear channels. Phil Newell (the original four-channel mix producer) had put a note on the box saying that



David Vivian talks to the movers and shakers in the hi-fi industry about the subject that's close to our hearts.

"I THINK IT WORKS BECAUSE OF THE MUSICAL CONTENT. IT'S ALL ACOUSTIC INSTRUMENTS, AND IT SEEMS TO GEL IN SURROUND."



From top: Simon Heyworth, re-mastering whizz; Does that album cover look familiar to you?; London's Sanctuary Mastering, where the multichannel deed was done.

they should be boosted by 2dB. I followed that but felt it needed a bit more, especially in certain passages.

"The majority of the mix is at the front, but there are lots of answering passages in the back. The reverbs are all around you, though. They're only plate reverbs but they're beautiful. The feeling of space is terrific. It's a really nice feeling, like being with the artist. Like having your own personal concert and sitting in the middle. You really feel the air and the presence of the artist.

"It was mastered at Airshow Mastering in Boulder, Colorado. I bypassed the electronics of the ATR tape machine and went straight into some Air Acoustic preamps. The path from there was Grace levelling amps, then a bit of analogue EQ – I used Millennia twin topology EQs – and finally the analogue-to-digital conversion and onto the DSD recorder. This version of *Tubular Bells* has never been anywhere near PCM."

We play the first side. I'm astonished. Simon is right. If ever a piece of music was made for surround, this is it. And it isn't just that the tangle of instrumental threads has been unknotted and spread out through 360 degrees. The sheer realism of the experience is dizzying. And I thought those Red Devils were a hard act to follow...

Heyworth is unequivocal that this is the definitive version of *Tubular Bells*. "The four-channel version on SACD adds an extra dimension to the album that we could never achieve in any of the stereo mixes or re-masters that have been done over the years. Each instrument now has a space of its own, even though it was Mike Oldfield playing them all. I think Mike's fans will finally be able to hear the album as he intended it to be heard.

"Moreover, this is a proper hybrid disc," he continues, keen to espouse the true versatility of his new toy. "It has the stereo PCM layer so you can play it in your normal CD player. And it has the SACD stereo layer which is taken from the 24-bit master. It's not dithered, it's upsampled for DSD. And there's the multichannel thing as well, of course.

"So let's invent a project for a well-established artist. You could have, for the sake of argument, the original masters in mono, the stereo remasters (from whenever it was), and three tracks of the artist's best ever songs re-mixed in surround. That's fantastic flexibility – and it's a pure music format."

Did I mention that Simon Heyworth's a bit of an audiophile?

h

ere's an upmarket amp/speaker combo from the most famous name in British hi-fi. Quad hewed out a formidable international reputation through the 50s and 60s, not only for its amazing Electrostatic speaker, but also for valve amps of quality, longevity and reliability. The company stayed solid up until the mid-90s, since when various changes in

REVIEW PAUL MESSENGER

ownership and management have led to some waywardness in direction. The arrival of the ESL-989 speaker and QC-24/II-40 pre/power amp provides evidence that things may be back on track.

Few, if any, loudspeakers can match the reverence that surrounds the Quad Electrostatic. The original (often referred to as the ESL-57) caused such a sensation when it was launched back in the 1957 that some rivals reportedly retired from speaker building. Its successor, codenamed the ESL-63 (work started in 1963) didn't actually appear until the late 1981, and remained perpetually back-ordered right through until the mid-90s when new European safety legislation forced a redesign, around the time that Quad went through changes in management and ownership.

We knew work was going on to re-introduce the ESL, as prototypes had been at shows for the last couple of years. The design once more is on sale – but now there are two models rather than one. The ESL-988 (£3,500/pair) follows exactly the same basic formula as the ESL-63, albeit with numerous detail improvements, while there's also the new £4,600 989 model reviewed here, which uses many of the same elements but with a significantly larger (i.e. taller) panel.

Accompanying the ESL-989 in this review is a considerably more retro project, consisting of the QC-24 stereo preamplifier plus a pair of II-40 monoblock power amps, totalling £4,000. These use valve devices and take their inspiration from Quad's classic 22 plus II combo, which was highly regarded through much of the 50s and 60s, and remains in demand even today – indeed, in 1995 Quad created a limited edition replica Quad II. The new 24/II-40 combo retains many of the styling cues of the original; the power amps use the same basic circuit layout, but the componentry used and the preamp as a whole are virtually brand new, and largely the work of Andy Grove.

The styling is excellent, combining key cues from the originals with modern minimalism in a



NEWBORN

QUAD HAS REBUILT ITS CLASSIC 1950S SPEAKERS AND AMPS WITH THE AID OF MODERN

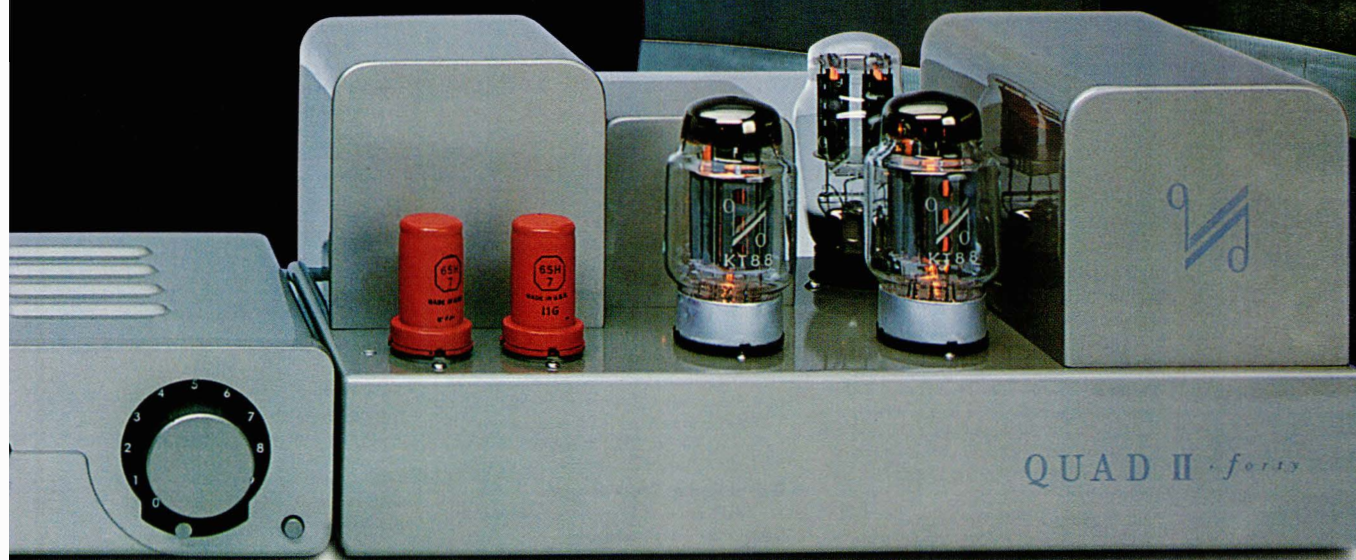
delightfully classy champagne gold finish, though the input labelling has little contrast and is difficult to read. Sadly, there is no remote control. The QC-24's compactness, shape and the look (though not the feel!) of the volume/balance control are strongly reminiscent of the vintage 2 and 22, but there the resemblance ends: the QC-24 is self-powered (rather than running off the power amps), has no tone controls, filters or mono option, nor even a vinyl disc phono stage (an outboard unit is promised). Instead, there's just a row of phono sockets, providing seven line-level input pairs, two as tape monitors, plus two tape- and two pre-output pairs.

The II-40 power amp's layout mimics the original II, and while the overall circuit remains the same, the componentry is revised, upgrading the power output to a nominal 40 Watts (against the II's 15 Watts) by using KT88 output valves.

Curiously, the terminals are now located on the side rather than the end, making it awkward to place the monoblocs side by side on one shelf.

Fans of Kubrick's *2001* might disagree, but I reckon the matt-black monolith speakers are about as unattractive as the amplifiers are pretty. (Indeed, I actually preferred them visually and

"THE ESL-989 IS UNQUESTIONABLY AN EXTREME LOUDSPEAKER, VERY DIFFERENT FROM THE NORM."



CLASSICS

TECHNOLOGY AND MATERIALS, THE RESULT IS AS INDIVIDUAL AS EVER.

Award winning home cinema
when the total is more than the sum of its parts



five channel amplifier 100x5R

av processor AV32R



dvd player DVD32R

dvd player DVD32R

Europe's first DVD player which exceeds the high THX® Ultra standards for PAL and NTSC and allows reference standard replay of CDs.

High-mass Transport for Low Jitter

The DVD32R uses a top loading transport, allowing its drive motor and servo electronics to be mounted to a heavy, mass loaded sub-chassis. The result is improved data integrity and reduced jitter.

Precise Clock for best Sound and Video

The low phase noise single frequency master oscillator ensures that all video and audio clocks are synchronous, with clock signals being transferred using independently buffered and precisely terminated traces.

Field-leading MPEG Decoder

TAG McLaren worked closely with National Semiconductor's field-leading subsidiary Mediamatics, in finding the best MPEG decoder. After long evaluation Pantera-DVD™, the first IC to integrate all back-end functions of a DVD player onto a single chip, was selected.

Test-Patterns

In-built test-patterns and test signal circuitry assist in calibrating the tv for best picture quality.

TAGtronic Link T'L for Minimal Jitter

T'L allows the DVD32R to lock its data output to the low noise, ultra low jitter DAC reference clock in the AV32R.

Multiple Power Supplies

Separate power supplies reduce interference between the processing stages, right down to having separate windings on the large toroidal transformer.



AV32R 'THX Surround EX Plus'

The AV32R can now be upgraded from its standard 5.1 channels to the new 'THX Surround EX Plus' specification, with 7.1 channels.

THX Surround EX™

THX Surround EX™ brings a new dimension of depth, spacious ambience and sound localization. Available exclusively for THX-licensed products, THX Surround EX™ is a process that decodes a back surround signal from the left and right surround channels.

Processing Formats

THX™, Dolby Digital™, Dolby Pro Logic™, DTS Digital Surround™, TMS 5. The '7.1' also supports THX Surround EX™, DTS™+matrix and TMS 7. DTS-ES 6.1 Discrete™, DTS-Neo: 6™ and Dolby Pro Logic II™ are in preparation.

Digital Radio (DAB) Upgrade

The AV32R can soon be upgraded to the very latest Digital Radio (DAB) technology.

Automation & Action Switches

Two rear panel mounted remote control connectors and three trigger switches allow easy system automation.

Latest DSP Technology

The AV32R features the revolutionary, field-leading 32-bit 66 MHz Analog Devices ADSP 21065L SHARC™ Digital Signal Processor.

96 kHz/24-bit DACs

The AV32R is equipped to handle the finer resolution and more spacious sound of high data-rate recordings.

Forget printed user manuals

Setting up your system for optimum performance, without reference to the installation manual, is extremely easy: Simply follow the on-screen instructions of the AV32R's and DVD32R's unique Set-up Wizards.

five channel amplifier 100x5R

The 100x5R is a remote controlled, multi-room capable, powerful, high-performance, five-channel power amplifier with an output of outstanding clarity and purity. It is the perfect partner to the AV32R and DVD32R, delivering the drama and excitement of home cinema without compromising its truly audiophile sound quality.

True Monobloc Design

Experts have long known that for the ultimate in spatial sound reproduction it is necessary to use independent 'monobloc' amplifiers as only these guarantee that the sound of each channel is unaffected by the others. The 100x5R amplifier provides five true 'monobloc' amplifier modules in a single chassis. Each power amplifier module contains its own mains transformer, bridge rectifier and energy storage.

Ample Power

The 100x5R power output is 120 Watts into 8 ohms. This impressive figure is unaffected by the number of channels used as the 100x5R is a true monobloc design.

Fully Remote Controlled

In addition to being able to switch the 100x5R in and out of standby, the user (or the AV32R if the TAGtronic Bus is connected) can switch off any unused channels.

Enhanced TAGtronic Bus

Connect the TAGtronic Bus between DVD32R, AV32R and 100x5R and these products form an information sharing system. Remote commands are exchanged, display brightness and standby status synchronised, and channels not required by the selected decoding format can even be automatically switched into standby.

Growing with your Needs

The 100x5R may be ordered with 2, 3, 4 or 5 channels, with extra modules fitted as required.

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THX

QUAD ESL-989 SPKRS, QC-24/II-40 PRE/POWER AMP

HIGH PERFORMANCE

sonically with the cloth stocking rolled down.) These new ELs feature improvements in materials throughout, for greater mechanical integrity and sonic transparency. At its heart is still Quad's clever 'delay line' approach, in which the flat diaphragm imitates the characteristics of a pulsating sphere, maintaining fairly consistent directivity right across the band and avoiding the 'beaming' problems normally associated with panel speakers. As with all 'statics, a mains connection is required to energise the panels.

In-room measurements show that the 989 has an impressively smooth and even midband but is a little dull at the top end (above 8kHz), and rather strong (though notably smooth) through the mid-bass (50-150Hz). As theory predicts, there's no really deep 'bottom octave' bass (below 40Hz). On my far-field, in-room measurement, sensitivity registers a very low 82dB/W, while the impedance also dips to a low 3 Ohms in both the low bass and the mid treble (<10kHz) too, though it's fine through the broad midband.

SOUND QUALITY

The ESL-989 is unquestionably an extreme loudspeaker, very different from the norm. It's strong points are unequalled in my experience, especially in the midband's delicacy, transparency and freedom from 'boxy' colorations. This can be a characteristic of dipole panel speakers, but the Quad maintains its beautiful evenness consistently across a wide listening window. (Most panel speakers, including the original ESL-57, show balance shifts even with quite small head movements.)

ELECTROSTATIC SPEAKERS

Electrostatics operate on a very different principle from the moving coil drive units in conventional speakers. Instead of applying the signal to a coil/diaphragm operating in a magnetic field, it's fed via a transformer to large area, perforated, high-voltage electrode plates, either side of an ultra-light, charged, thin-film diaphragm. Where moving-coil drivers are normally mounted in boxes to absorb radiation from the back of the drivers, electrostatics are invariably mounted on large open panels, unobstructed front and rear, in the dipole configuration.

In a dipole, sound radiation is created equally from both sides of the large diaphragm, but the front and back are out of phase with each other, so where the two soundwaves meet, round at the sides, they cancel each other out.

That has many implications. Dipole panels

can be placed close to side walls without generating serious reflections, but must be kept well clear of rear walls to avoid the out-of-phase signal coming back too quickly and cancelling with the signal from the front. Dipole bass extension is also limited by the width of the speaker; adding extra height to the panel will tend to increase bass weight, but not extension.



There's no doubt that the reduction in room reflections generated by these dipole speakers results in significantly improved stereo image precision. Indeed, the Quads seem reminiscent of listening to headphones.

It stands to reason that if you increase the ratio of the direct sound to the room-reflected sound, you'll hear more of the recorded music and less of the listening room, but we're getting into a philosophical area here – do you want speakers that provide a window onto the recording environment, or speakers that try to bring the musicians into your front room? There's no easy answer – it comes down to personal preference.

Take care where you place these speakers, keep them at least a metre from a rear wall. Coloration is low and the top end is notably clean and commendably free from 'fizz', but also sounds a shade dull and shut in. There's still plenty of delicacy and detail, but some lack of 'air' and 'sparkle'.

The bass is equally distinctive. It lacks ultimate scale and can sound a bit thumpy on heavy rock/dance material, and a little lacking in drive and 'punch'. But its smoothness, evenness and wonderful freedom from overhang ensures great clarity and analysis, that's particularly welcome with more delicate acoustic instruments and voices.

Above all, one can't fail to be impressed by how clean this speaker sounds through the midband, and that of course is where the valve amplifier excels. The two make a most felicitous combination, particularly effective at retaining the subtle tonality of acoustic instruments. Against all these points must be set the fact that this speaker doesn't go particularly loud. It's fine with acoustic material, but it mightn't satisfy the hard rock fan.

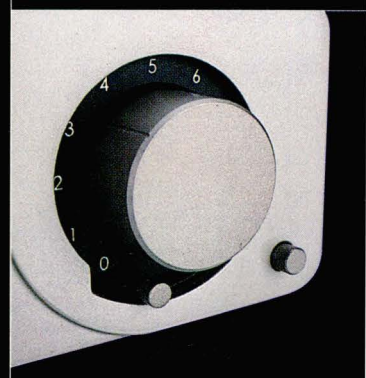
CONCLUSIONS

Whatever the amp, this electrostatic speaker will deliver a listening experience very different from the norm. It has strengths and weaknesses, including a magical midband that some will find irresistible – especially with classical material and on the end of a classy set of valve amps, as here. Those who favour more aggressive styles may find its gentle delivery, and lack of serious loudness, less appealing. And I'm not entirely convinced by this 'stretched' ESL, and believe the 'standard' 988 might well avoid this 989's mid-bass excess, and leave money over for a pair of stands and/or a decent subwoofer. But it's great to have the ELS speakers back on the market, because they offer a unique alternative, especially for those with room problems.

QC-24 + pair of QII-40s £4,000 / ESL 989 £4,600/pair
Quad ☎ 01480 447715



Above: the reborn Quad pre/power amp combo. Below, from top: The power amp's KT88 valves give it a healthy 40 Watt output; The QC-24's volume control is reminiscent of the original 22; Modern components help the new Quads shine.



"IT HAS STRENGTHS AND WEAKNESSES, INCLUDING A MAGICAL MIDBAND THAT SOME WILL FIND IRRESISTIBLE."

HEAVY DUTY

CAN YOU BUILD A DECENT PROCESSOR AND MULTICHANNEL POWER AMP FOR LESS THAN THE PRICE OF A SMALL CAR? IF ANY BRAND IS UP FOR THAT CHALLENGE, IT'S ROTEL.

R

otel has never been averse to marrying a solidly engineered preamp to a monster power amplifier, and for very sound reasons. Separating high-voltage power stages from sensitive preamp electronics minimises signal degrading crosstalk between the two sections. Apply this philosophy to a multichannel set up, where you are also dealing

with high-speed digital processing and the occasional video signal, and the potential benefits are even greater. Enter the RSP976/RMB1075 five-channel processor/power combo.

The RSP976 processor follows a strict Rotelian philosophy of investing in build quality and sonic performance rather than frills – and frilly it certainly isn't. For your £900, you get basic Dolby Digital and dts processing (no EX or ES here) a handful of DSP modes and an analogue direct function... and that is about it in terms of digital trickery.

Physically it is better specified, offering wholly confidence-inspiring build quality throughout and a good spread of gold-plated connections around the back. These include component video switching for high-end AV sources and multi-room (zone 2) outputs in case you have a hankering for music and movies around the house.

The supplied remote control feels plasticky in comparison but it packs in an LCD display, learning ability for your other AV components and a vivid green backlight. Unfortunately even with fresh batteries, it has a rather lax attitude to

working and the volume control is especially sluggish – which is a pain when the phone rings.

Meanwhile, the RMB1075 power amplifier is a 120 Watt, five-channel beast, fully THX Ultra certified (unlike the processor) and straight out of the Ming the Merciless school of design. It is a massive black box, built like a battleship and finished with an outrageous rack of cooling fins across the fascia. Sadly, these are purely cosmetic accoutrements as the power transistors are miles away and the heat actually escapes from the top.

Powered up, the processor's display is functional if not a work of art, and this ensures the combination loses none of its brutish charm. The on-screen display is similarly rudimentary in nature but this does make setting it all up child's play.

BRUTE FORCE

From aggressive looks and paper specification alone, it is difficult to imagine that the Rotel combo is going to sound anything but big, bold and brash. But not so! With a wide range of material, this duo's articulate power is quite a revelation. Bass presentation is heavyweight and warm but manages to avoid boominess, and the upper frequencies show sprightly neutrality from female vocal right up to the extremes. Even when the volume is pushed to obscene levels, the sound retains this poise without getting ragged.

With Dolby and dts movie soundtracks, this presentation works well on simpler material, such as dramas and comedy, as it creates a

"IT'S DIFFICULT TO IMAGINE THAT THE ROTEL COMBO IS GOING TO SOUND ANYTHING BUT BIG, BOLD AND BRASH. BUT NOT SO!"

ROTEL RSP976/RMB1075 PROCESSOR/POWER AMP HIGH PERFORMANCE



highly believable soundstage with near real-life dynamic range. However, it is a little too reserved to extract the very best from full-bore action epics like *ML2*, the processor suffering for the lack of THX post-processing which adds a little grunt and sparkle.

Rotel's hi-fi heritage certainly shines through the design of this combo when playing multi-channel music. The Dolby Digital 5.1 DVD of Beethoven's *Symphony No. 3* has wonderful dynamic scale and the sort of stunning ambience that could get even the staunchest of stereophiles thinking about getting a few more speakers.

The processor's own PCM conversion (digital to analogue) for CD stereo offers a much more lucid presentation than the analogue outputs of most DVD players – despite the analogue source direct function on the RSP976. However, use a high-end CD, SACD or DVD-A player with this function and the Rotel combo shines. Wynton Marsalis' SACD recording of *Creole Contradanzas* is sharply focused, lively and well balanced and falls only just shy of laying bare every bow movement and inflection of the string quartet.

At the other end of the musical spectrum, Limp Bizkit's *Chocolate Starfish* CD (probably the most dynamically compressed recording in his-

tory!) comes across every bit of the urban assault on the senses it is meant to be. Get the power amp working for its money and you just can't help but leap around the room to the potent *Rollin'* – even if the amp does little to differentiate between instruments.

The RSP976/RMB1075 partnership is certainly a powerful and capable pairing. What it lacks in action-movie aggression or in getting beneath the very last musical veil, it makes up for with a superb overall balance.

While agonising over whether the negative or positive of these traits had the greatest influence on the sound – and listening to an acoustic guitar solo from Fleetwood Mac's *The Dance* DVD – an innocent passer-by made the decision. They popped their head into the room, looked around in amazement and said, "Wow, I thought someone was playing live in your living room."

Can't argue with that – well worth an audition. RSP976 £900.00, RMB1075 £800.00
Gamepath ☎ 01908 317707



Above: Just one or two inputs in this amp, then... The Rotel multi-channel monster will happily deal with films and stereo music from a variety of sources.

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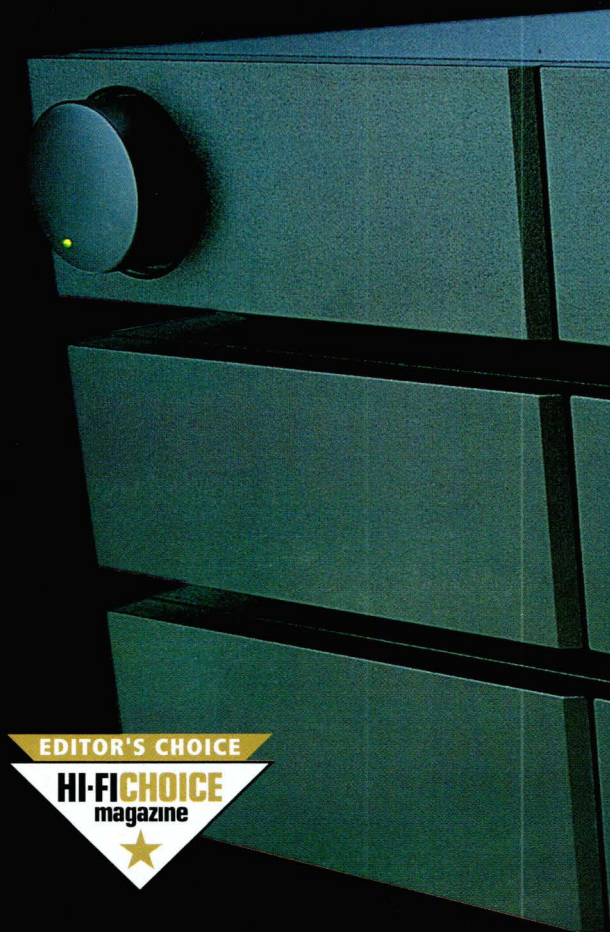
REVIEW PAUL MESSENGER

Naim Audio doesn't change its equipment very often, but the company's bread-and-butter range of hi-fi electronics has recently undergone something of a revolution, cosmetically and internally. The NAC 112, NAP 150 and FLATCAP 2 components (which together form the subject of this amplifier review,

and effectively replace the earlier NAC 92R, NAP90/NAP 140 and FLATCAP units), all belong to Naim's new 5-series, and adopt a number of ideas from the company's flagship NAP 500 power amp (HFC 208), as well as its attractive 'triptych' front panel styling.

You don't need all three units to amplify your sources and drive your loudspeakers. The £625 NAC 112 preamplifier and £750 NAP 150 power amp will do the task without any help from the £425 FLATCAP 2 twin power supply. But external multiple power supplies have always lain at the very heart of Naim's amplifier design philosophy, and adding a FLATCAP 2 is claimed to produce a worthwhile improvement in sound quality. And this doesn't only go for the NAC 112; Naim also claims that it will improve the sound of any of their components, such as a CD5 CD player or Stageline phono stage.

The combination of alloy castings and extrusions not only makes the styling more interesting and distinctive than before, but also provides a more rigid 'mechanical earth', while the inter-



WHAT'S IN A NAIM?

SAY HELLO TO NAIM'S SERIOUSLY UPGRADED PRE/POWER AMP AND POWER SUPPLY

nal PCBs are now mechanically decoupled from the casework, the better to resist the effects of external vibrations. As a result, the sockets seem slightly 'loose', which is initially disconcerting, though in fact build quality is first class, inside and out – even down to the well thought out packaging.

Because Naim likes to keep high mains voltages and currents away from the much smaller and more delicate signals, the NAC 112 preamplifier has no mains lead or internal transformer, and takes all its power at low voltage (24V DC) either from the NAP 150 or the FLATCAP 2.

The 112 looks very like Naim's integrated Nait 5, and the two do share the same basic preamp

architecture and features, although the 112 has more elaborate phase correction networks. A microprocessor switches between the six line inputs and adjusts volume, waking up when you point the remote in its direction, and then 'going back to sleep' automatically during listening.

There are no tone controls of course; channel balance is only adjustable via the remote; and the on/off switch is on the rear (to encourage you to leave it powered up for optimum performance). There are three different record outputs with off-tape monitoring, plus a socket to supply DC power to a Stageline phono stage.

The volume control, accessed by a proper knob with LED as well as via the handset, uses a resis-



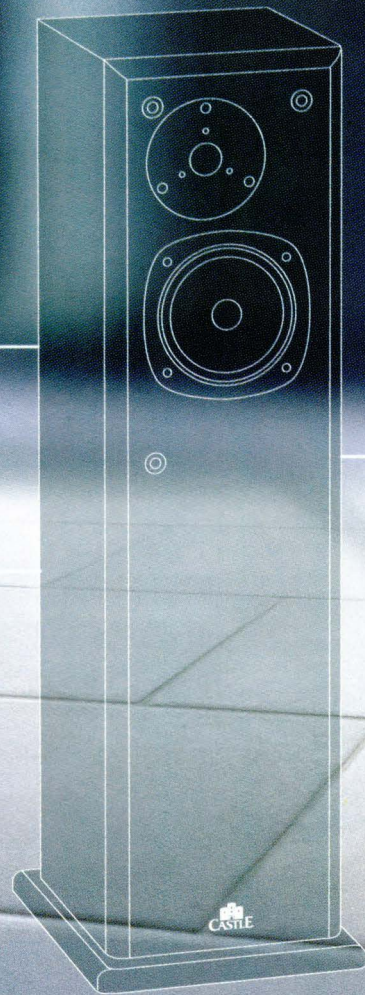
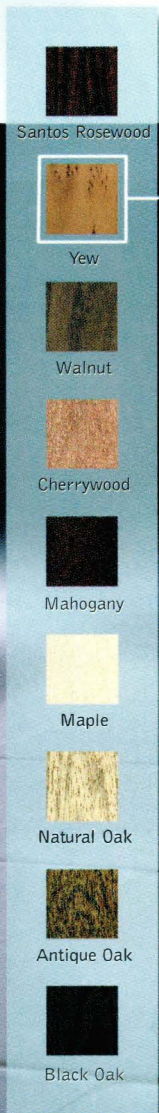
tor ladder, giving good vibration immunity and fine low level channel balance tracking. You are also able to preset each input's sensitivity individually, and so match up the perceived volume from all sources. It's an absolute delight to use – much more so than the one on my NAC 52.

The balance control is trickier, as there's no knob to tell you where you are. Instead the micro controller has a protocol that lets you get back to the centre position (keep the manual handy!). You can't re-centre the balance by switching to mono either, as the 112 doesn't provide mono switching, despite the appropriately labelled button on the handset (which operates the tuner only). Said remote handset, codenamed

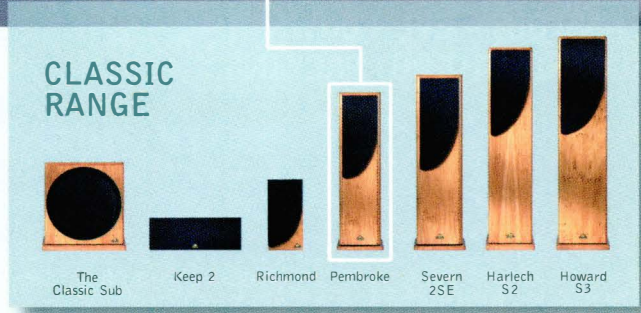


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NAIM NAC 112/NAP 150/FLATCAP 2 PRE/POWER AMP

◁ NARCOM 2, handles Naim's CD players and tuners as well as the preamp, and is the usual prosaic affair, with more than thirty small buttons to master. Automatic source selection is a further sophistication, but fortunately one that's optional.

Round the back is Naim's most enduring idiosyncrasy – a neat but mildly intimidating row of DIN sockets. The company justifies its continued adherence to DINs on the very logical grounds that, if pulled out accidentally, the signal is broken before the earth – and then uses locking plugs which won't pull out anyway! Whatever, the practical upshot is that it's quite awkward to mix'n'match Naim with other gear, and you're likely to be using the factory cables too (though The Chord Company and Russ Andrews offer alternatives for experimenters).

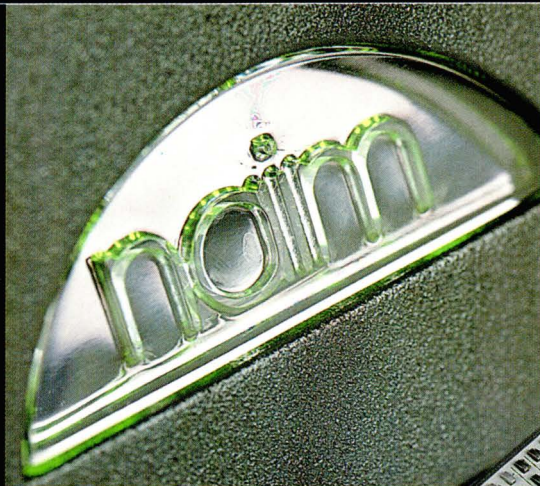
There's little in the way of features to discuss on the NAP 150 or FLATCAP 2. The power amp is based substantially on the NAP 500, though without the bridging technique used to achieve the latter's high power. Rather the 150 is rated at 50Watts per channel into 8 ohms (a worthwhile increase over the NAP 90's 30Watts).

In the real world, Naim encourages and trains its dealers to perform high quality home installation, so you can leave all that nonsense to the dealer. But even to an experienced Naim aficionado like yours truly, the extensive collection of different kinds of DIN sockets – some 4-pin, most 5-pin, some 180 and some 240 degrees – was a little intimidating. Many carry the legend 'refer to manual', which in the best reviewing tradition I naturally ignored, and therefore got no sound. A few minutes later, having 'referred to the manuals', everything was set up and working fine.

SOUND QUALITY

After a couple of days of warming up, the listening began, initially simply by substituting the NAC 112/NAP 150/FLATCAP 2 for my regular top-of-the-line Naim gear (NAC 52/NAP 500, at some eight times the price). Speakers were the relatively modest B&W LCR6 (a 2.5-way stand-mount), and Naim cables were used throughout.

Changing the amp inevitably brought a reduction in musical resolution, although these components still have much of the character of their big brother – which is actually very little character at all, except for a sweet and delicate top end. The fine communication skills for which Naim amps are renowned are in evidence, but the NAP 150 clearly comes out of the NAP 500 mould, with a cleaner and more open balance than the company's earlier amps. Such character as there is consists of a slight forwardness, and upper-mid projection, which adds a little extra 'bite'.



Left & below: the latest generation of Naim amps are a lot slicker if no less grey than their predecessors. Below: the multi component remote for the NAC 112 preamplifier.

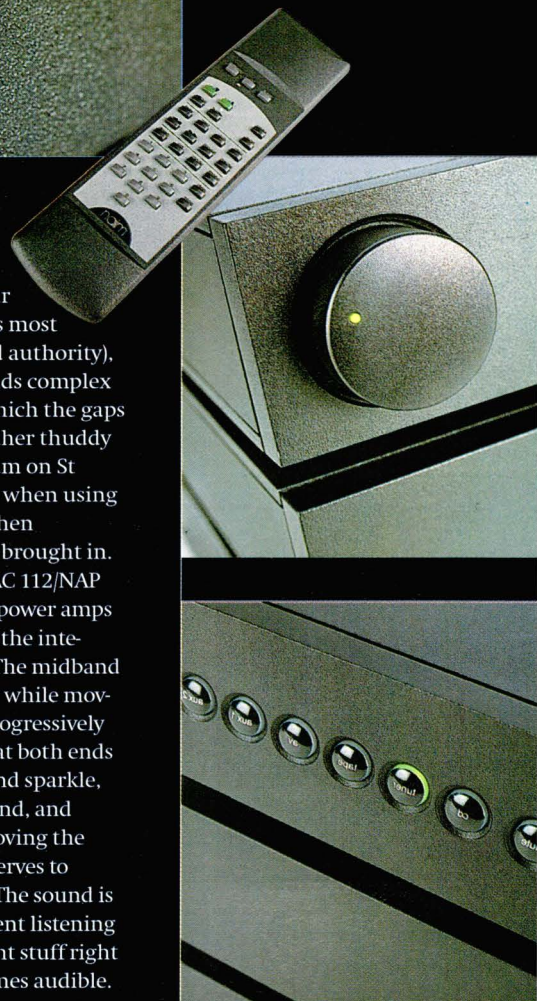
Where this smaller Naim package loses out to its bigger brother is in a generalised loss of incisiveness, in overall dynamic range and behaviour at the bandwidth extremes (which is most obvious in a lack of some weight and authority), in the lucidity with which it expounds complex figures, and in the precision with which the gaps between notes are portrayed. The rather thuddy and synthetic quality of the bass drum on St Germain's *Tourist* was not as obvious when using the less expensive amp, especially when Tannoy's Kingdom 12 speakers were brought in.

By the same token, compare the NAC 112/NAP 150/FLATCAP 2 combo with the pre-/power amps alone (no FLATCAP) – or indeed with the integrated NAIT 5 from the same series. The midband remains very consistent throughout, while moving up the ladder of improvement progressively enhances the perceived bandwidth (at both ends of the spectrum), adding openness and sparkle, tightening things up at the bottom end, and expanding the dynamic range. Improving the sources and/or the speakers merely serves to make the differences more obvious. The sound is also impressively consistent at different listening levels, from whisper-quiet late-at-night stuff right up to the point where clipping becomes audible.

CONCLUSION

I don't have the experience to put this amp combo into context with its marketplace competitors, but it does slot very persuasively into Naim's own hierarchy, while providing more than a taste of the extra midband neutrality introduced with the NAP 500. The FLATCAP upgrade is particularly convincing, and the complete package proved a fine match for the matching CD5 CD player, and seems well suited to speakers costing up to £1,500 per pair.

NAC 112 £625.00 / NAP 150 £750.00 / FLATCAP 2 £475.00
Naim Audio ☎ 01722 332266



“THESE COMPONENTS HAVE MUCH OF THE CHARACTER OF THEIR BIG BROTHER – WHICH IS ACTUALLY VERY LITTLE CHARACTER AT ALL.”



KINGDOM

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ot from the launch at last Autumn's hi-fi show, Plan A was to get hold of one of Tannoy's new and strikingly styled Dimension models for this issue of the magazine. Although early samples are close to coming

REVIEW PAUL MESSENGER

off the Coatbridge production lines, Tannoy isn't rushing to production engineer such a costly and complex loudspeaker design, and the deadline is looming ever closer. Execute Plan B.

Tannoy has another range of loudspeakers called the Kingdoms, even more expensive than the Dimensions, and none (to our knowledge) has yet been reviewed in an English language magazine – partly, it must be said, because demand from Far East markets was the main spur behind the development of the range. The original Kingdom uses an 18-inch bass driver, the Kingdom 15 a 15-incher, so both are monstrosously large and heavy affairs. However, this Kingdom 12 is the most recent addition, launched early in Y2K, and although it's no lightweight, it is just about luggable, and looks the more likely prospect for British rooms and budgets.

The £6,000/pair price-tag is certainly considerable, but not that unreasonable when you consider the sheer quantity and complexity of the ingredients involved. This is a three-and-a-half-way design, with a monumentally massive DMT (differential materials technology) type enclosure, the whole caboodle registering a back-breaking 75kg. I managed to unbox the beasts, as my stomach muscles continued to remind me for several days thereafter, and from then on it was plain sailing, as these are floorstanders fitted with castors so that they're easy to move around. (Purists might note that a more rigid cone alternative is available.)

Make your own mind up about the styling. One man's old-fashioned is another's timeless classic period reproduction. Speaking personally, I rather like them – but then I've always been fond of loudspeakers with attitude. The Kingdom 12's size and proportions are an awfully long way from the speakers you'll normally find in today's marketplace, and indeed are much more reminiscent of big port-loaded dual-concentrics like the Yorks and Lancasters of the late 1960s. Although the fashion trend since then has led to the progressive narrowing of front panels, there are still sound reasons for using a wide front panel – if only to accommodate decent diameter drive units. You simply can't put a 12-inch bass driver into a modern 'slimline' enclosure (short of mounting it in the side), and that represents its own compromise.

Whatever you think of the bulk and proportions, Tannoy has done its best to make the end result interesting and imposing. With a cunning combination of American Cherry and Black Ash real wood finishes, linked with matt black painted MDF. Under the heavyweight grille, the front panel is a busy affair, with three drive units, a gilt badge, and pre-set bolts for adjusting the relative level of the tweeter and super-tweeter to taste. Foam bungs perform a similar function for the two large rear ports. One key feature of the enclosure is that it combines birch plywood and MDF to assist resonance control.

The heart of this speaker is the 10-inch cast-frame dual-concentric driver (incorporating a horn-loaded tweeter firing through the middle of the main cone), which operates from the low bass well up into the high treble. The 12-inch bass driver provides supplementary welly and weight at the bottom end of the spectrum, while a 25mm metal dome 'super-tweeter' augments

AT 75KG, TANNOY'S KINGDOM 12 LOUDSPEAKER IS HARDLY A LIGHTWEIGHT. BUT DOES ITS SOUND LIVE UP TO ITS SIZE?

OF HEAVYOSITY

HIGH PERFORMANCE TANNOY KINGDOM 12 LOUDSPEAKER

◁ the high treble above a nominal 16kHz. Interestingly, both the cone drive units use doped paper cones, terminated by 'old-fashioned' pleated fabric surrounds. Twin terminals provide a bi-wire/amp option, separating the bass driver from the rest, and there's also an extra earth terminal, which can be used to earth the driver chassis' to the amplifier if desired.

A brief run through some basic measurements yielded some interesting information. The overall in-room balance looks pretty well judged through the mid and treble, though it isn't particularly smooth. There's some tendency to exaggerate the upper bass (around 100Hz), while the low bass is a shade lacking considering the size of the box. (20Hz registered -8dB in-room ref the midband).

Tannoy's quoted 90dB sensitivity is very conservative – I'd give the K12 a 92dB overall rating, but the company's claim for an 8 ohm impedance seems even further from reality, since the impedance drops below 3 ohms around 80Hz (where power demands are high), and does so again above 10kHz (which might affect amplifier stability margins). The main dual-concentric driver isn't the problem, but adding the extra bass unit and supertweeter in parallel pushes the margins – this speaker looks an excellent candidate for bi-amplification.

SOUND QUALITY

Whatever else one might say about the Kingdom 12s, the sound that they make is enormous fun, very engrossing and involving in the way it drags you into the music, which it delivers with considerable drama and impact. This is neither a particularly smooth loudspeaker, nor one with unusually low levels of coloration, but rather its excellence lies in the dynamic domain, where it does indeed stand out way ahead of the pack.

Drive it as hard as you like, and it just goes louder and louder, and never seems in the slightest danger of losing its composure. Play it at whisper-quiet levels in the middle of the night, and it remains totally and very impressively articulate and informative. There are some boxy and cuppy effects in the midband, and I daresay the main enclosure probably accounts for some of the warmth and richness of the sound, but by absolute standards this box behaves itself exceptionally well, delivering bass of considerable power and agility, and an unusual freedom from 'waffle' and 'overhang'. There is a slight lack of ultimate weight, but the wonderful headroom,

freedom from distortion and accurate dynamic tracking is more than fair recompense.

The considerable clarity through the bass region leads to an unusual degree of overall transparency for a box loudspeaker, while the low time-smear, wide dynamic range and excellent low level detail all add up to a very invigorating and communicative listening experience. And that super-tweeter really does work, subtly smoothing out and opening up the top end. There's lots of headroom here, so the speaker never really sounds strained at normal listening levels, though when attempting to explore its loudness capability on heavy dance material, that wicked low frequency load did upset the Naim NAP500 power amp I was using much sooner than expected.

CONCLUSION

The Kingdom 12s might be a bit of a throwback visually, but they're also a powerful reminder of some of the sonic virtues that are rarely found these days, especially in the dynamic domain. A warm, rich sound with fine communication skills and considerable grip and authority seem more than fair compensation for a measure of coloration, though the severity of the amplifier load remains cause for some caution.

£6,000 Tannoy ☎ 01236 420199



Top: the Kingdom's supertweeter and tweeter levels can be individually adjusted to taste. Above: the 12inch dual concentric with central tweeter. Below: note the earth post next to bi-wire speaker sockets.



“WHATEVER ELSE ONE MIGHT SAY ABOUT THE KINGDOM 12s, THE SOUND THAT THEY MAKE IS ENORMOUS FUN.”

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AWARD WINNING INTERCONNECTS

FORUM LETTERS

LETTER OF THE MONTH WINS A TDK GOODIE BAG

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"WHEN YOU GO TO A LIVE CONCERT, OR A RECORDING STUDIO, TONE CONTROLS ON EQUIPMENT ARE THE NORM"

NICK CLARKSON – LOWERING THE TONE

"IT HAS BECOME CLEAR TO ME THAT RECORD PRODUCERS ARE DETERMINED TO HALT DIGITAL RECORDING BY THE CONSUMER. COME ON, BOYS!"

DESSIE – THE RECORDING CONSPIRACY

"I HAVE LONG SUSPECTED THAT THE HI-FI PRESS SUBSTITUTE MUMBO-JUMBO FOR EXPERTISE"

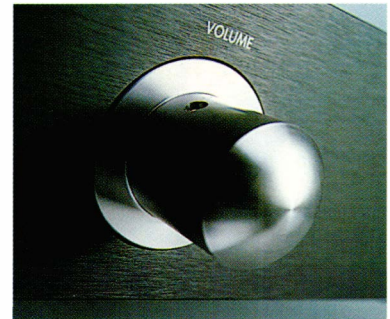
TONY STIRLING – MAINS BLOCK BULL

LETTER OF THE MONTH

LOWERING THE TONE

Hello, great mag as usual! Just a note on the issue of tone controls on hi-fi amplifiers. When you go to a live concert, or recording studio, tone controls on equipment (be it desks, mixers, amplifiers, even guitars) are the norm. What you are listening to has had the sound source manipulated at some point during the recording/mastering process and is never a totally neutral signal. Hence tone control on your amp on the bookshelf is only another link in the chain. If everything was recorded neutrally there would be possibly no need for tone controls, but due to the tastes of the person mixing the source it becomes necessary for you to shape the sound to your own taste. As K. Fonseka pointed out in the March issue, a tone defeat switch is probably the best option. I sometimes think purists have lost the plot and no longer listen to the music and simply froth at the mouth over the hardware. Please don't take my filters away!

Nick Clarkson, via e-mail



Is this really all that you need?

The Editor replies...Ultimately tonal balance is not the fundamental issue with music. What really counts is the message being put across by the creator of that music. The point of good hi-fi is to hear that with maximum clarity. Using tone controls on sound is a bit like shining different types of light on a painting; the colours you see change a little, but the painting's composition and overall impression do not.

The only reason we don't like tone controls is because they reduce transparency, but if you listen to more music because of them that is a good thing.

A RETURN TO SCIENCE

Please could we have an engineer writing for your magazine, describing the technical attributes that distinguish one speaker cable or interconnect from another – in terms that the engineering fraternity could appreciate? If there are differences in performance, it must be down to the physical properties of the cable. Away from hi-fi speak, frequency, waveform, distortion, phase shift and impedance are all relevant terms, so is purity of copper... But I

think the magazine should explain why all that matters.

Robert Ferguson, Middlesex

The Editor replies...Scientific cable measurement has been carried out by HFC in the past. But though the results may have proved useful to the technically minded, the data was often difficult to correlate with the sonic characteristics of each cable. In the end sound quality is more important to the music lover than electrical parameters.



Letters page sponsored by



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THE RECORDING CONSPIRACY

It has become clear to me that record producers are determined to completely halt digital recording by the consumer. They want us to buy a separate copy of the each title we want on each different format. Come on, boys! I agree that pirating has to be stopped, but instead of trying to destroy what the music engineers have so painstakingly tried to perfect, help the fraud police catch the culprits. What will happen is that most people will revert to the humble cassette. Though the quality is not that of digital, people will still want to make compilations for their own private use. Does this mean all the companies making digital recorders are wasting their money? I don't think so! One or two big name companies have their feet in both camps.

There is another way of ripping digital music: the computer. The quality on computers is nothing to write home about, but for most of what it is used for, it is sufficient. So I say; welcome back cassette.

Dessie from Lisburn, via e-mail.

The Editor replies...Digital recording is still going strong with both Minidisc and CD-R formats dominating the market. Check out our blank media review this month. The watermarking of high resolution audio formats, such as DVD-A and SACD, could mean the party's over on that front, but there hasn't been any widescale copy protection scheme applied to CDs as yet.

DISTORTION, THE DAMAGER?

I'm not sure whether this topic needs much research but I think it is something that would make an interesting *Technology* topic in *Hi-Fi Choice*. My question is this: can distorted tones in music damage the hi-fi equipment of today? There are two types of distortion I have in mind, heavily distorted electric guitars, and the really hard distortion that you occasionally hear on modern records, typically as sound effects because I think there's little you could do with it musically! I've heard many rumours about how distorted tones can damage hi-fi, but I'm hoping that you'll finally be able to shed some light on the matter, and in great detail I hope.

Mike Dommsett, via e-mail

The Editor replies...No. Distortion in music does not harm your hi-fi equipment.

MAINS BLOCK BULL


I'm now 63 and have been interested in high quality sound since the age of 16, and in the past I worked as a BBC sound engineer for many years. With this background I feel I must comment on a certain issue affecting sound quality. I have long suspected that the hi-fi press substitute mumbo-jumbo for sound technical expertise and this is confirmed by the ludicrous claims made for high-end distribution blocks. The only way a mains distribution block can possibly affect the sound quality of the equipment connected to it is by filtering out strong radio frequency interference signals which may be present in the mains supply. It is well known that strong interfering RF signals in the electronics can have an adverse effect on the operation of the system. However, any well designed piece of audio equipment should be capable of providing sufficient filtering and screening to eliminate this problem. Listening tests are very important, but can we please get away from the 'black magic' approach to hi-fi and return to evaluations which are based on known principles and common sense.

Tony Stirling, Southampton

The Editor...It's difficult to prove scientifically why mains leads affect the quality of components that run off them, and you're right that RF noise is the most likely area for them to have an effect. But some mains blocks do seem to make enough of a difference to warrant their purchase, and many people swear by their effectiveness.

"I'VE HEARD RUMOURS ABOUT HOW DISTORTED TONES CAN DAMAGE HI-FI. CAN YOU SHED SOME LIGHT ON THE MATTER?"

MIKE DOMMETT – DISTORTION, THE DAMAGER?



High quality mains cables? Pah!
I mean, what's the point?

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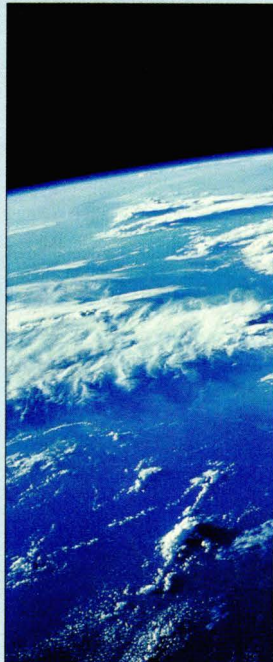


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Want to get *Hi-Fi Choice* free for a year? Well, here's your chance. Our new online competition is giving away a year's free subscription to six lucky winners. And all you have to do is answer these questions on our competition page at: www.hifichoice.co.uk/competition.asp

- Q1. In what issue did we review the Marantz SR7000?
 Q2. What does SACD stand for?
 Q3. Which band had an amp that went 'up to 11'?
 Good luck!

POLL NEWS

We have our first online poll tie! The most recent poll asked users to select the source component they'd like to purchase next. Both SACD and DVD-A won, each scooping 41 per cent of nearly 2,000 votes. DAB tuners staggered into second with only 12 per cent. And we have a loser's draw between MP3 players and satellite radio receivers, which chalked up a paltry 3 per cent each.

TRUST US

THIS MONTH'S HOT TOPICS ON THE CHOICE WEB FORUM

Hi-Fi Choice's very purpose is currently being debated by forum members. Tinkering with the notion of subjectivity, one member wonders what you should do if you "like an amp and it matches your speakers perfectly, but the mag says it's no good?" Others commented that with varying combinations of separates, opinions would inevitably differ.

Whilst one lauded us for having the courage to publish contributor's conflicting convictions, another believed it was "frustrating and misleading" before, thankfully, pronouncing HFC "accurate". Using our reviews as a guideline would be our suggestion, followed by a spell of auditioning.

FORUM TOP TOPICS

These are some of the latest forum conversations. For these, and dozens of others, log on to www.hifichoice.co.uk and click on the forum to join the chat:

CABLE BUDGETING: Cables are fundamental to a

Like chillies, HFC's web forum is hot, spicy, and it's best not to touch your eyes after use.

system's performance, but how much should an owner of a budget system spend to know that the cables are not limiting quality?

ALBUMS OF THE YEAR: What was the best new album of 2000? HFC's contributors had trouble with their choices, but how about you?

HIGH-END WARS: SACD and DVD-A are vying to be the next high-end format, which one do you think will still be around in five years' time?



WEBSITE HI-FIVE

WE LOOK AT SOME AUDACIOUS SITES FROM ACROSS THE POND...

ROCK AND ROLL HALL OF FAME www.rockhall.com

The museum's online home has information on exhibits, events and how to become a member. You can also check out what happened 'on this day in the history of rock'.

Y'ALL.COM www.yall.com

This fantastic site promotes the culture, cooking and most importantly the music of the American Deep South. Complete with information and sounds from Dixieland, including swing, jazz, gospel and Elvis.

ALL ABOUT JAZZ www.allaboutjazz.com

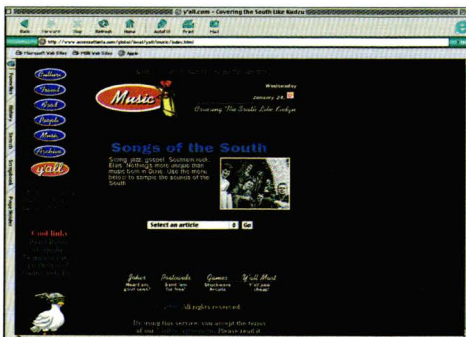
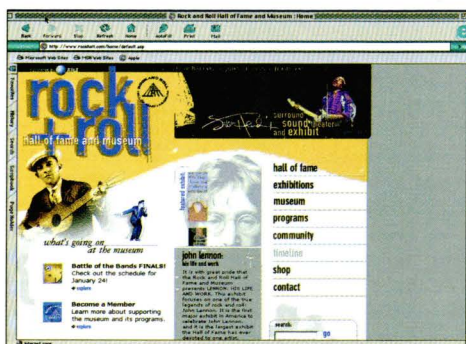
As befits the musical genre it idolises, this is an eclectic, random and smooth site. Playing styles, festival updates, artists, reviews and news from the global jazz scene all inform and educate.

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FORUM HELP

IS IT ALL GETTING TOO MUCH FOR YOU? JOIN HI-FI PSYCHIATRIST TIM BOWERN ON HIS COUCH, AND LET HIM GUIDE YOU...

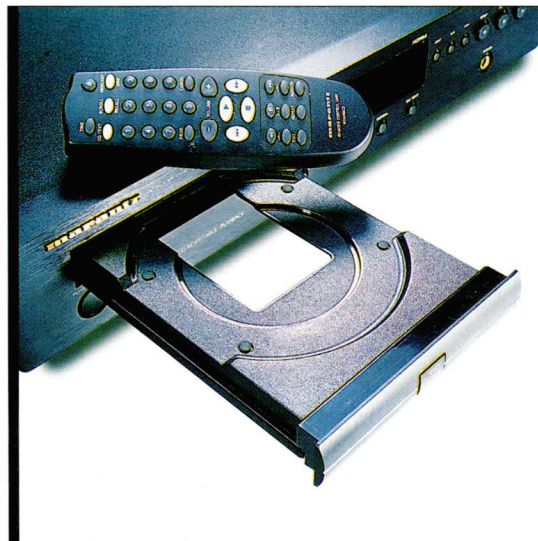
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CD PLAYER

STEP TWO

I want to upgrade my Arcam Alpha 7 amp and Marantz CD-65IIE CD player. I'm using Tannoy R2 speakers with Kimber 4VS speaker cable for the bass and Straight Wire Quartet for the treble. I'm going to audition the NAD C370 and Roksan Kandy KA-1 on the amp front, but what about the CD player?
K. Goringe, Wiltshire

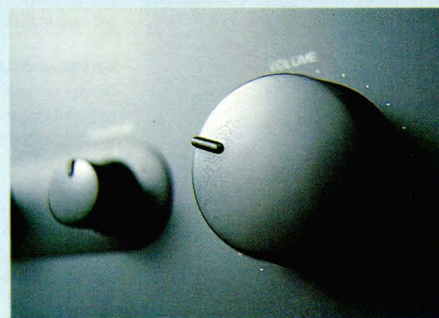
Taking a budget roughly similar to the price of the amps you're considering (£450-£500), our first recommendation would be the Marantz CD6000 KI (pictured), a smooth yet punchy player. We'd also suggest the ever-green Arcam Alpha 7SE and the Cyrus dAD

AMPLIFIER

POWER SHORTAGE

I recently won a pair of B&W CDM-1NT speakers in a competition. I'm using them with my existing Rotel amp, an RA-930AX, but I'm wondering if an upgrade in that department would make a difference? If so, I've got up to £300 to spend. I listen at lowish volume levels and listen to Kraftwerk and Sinatra.
Nico De Letter, Belgium

The simple answer to your query is yes – the Rotel was a great little budget amp but your speakers will thank you for an upgrade, as will your ears. With your budget you could stick with Rotel and go for the RA-971 MkII, which should significantly improve clarity and dynamics. Or you could switch to NAD with the C350 (pictured), which might just be favourite in our book for a little more body and scale. Audition both in tandem with your B&Ws, and perhaps try a more expensive option alongside, like the Roksan Kandy KA-1 or Primare A-10 – just to see if you feel it's worth saving up the extra.

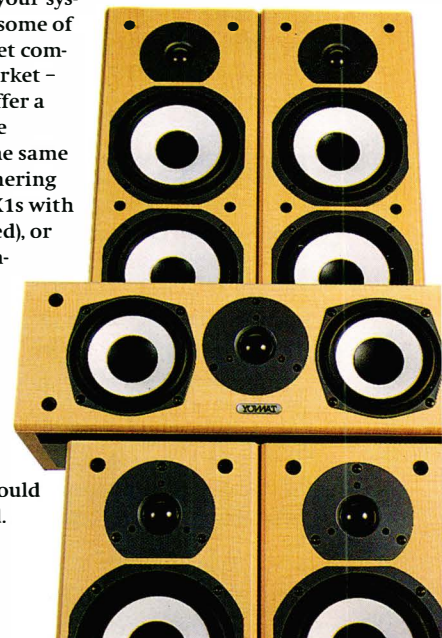


SURROUND SOUND PACKAGES

BUDGET SURROUND

I am interested in buying Sony's SA-VE505 surround sound speaker package, which includes a subwoofer. Is this a good choice for around £300, or would you suggest another package up to £500? I have limited space so the speakers need to be small.
Wayne Kiff, Devon

One of the problems with multichannel sound is that it's difficult to buy sufficient speakers of a reasonable quality if you're on a tight budget. The package you mention is in the Pascal range, which is affordable and style-led but not the epitome of high resolution sound. We recommend you try one or two other options, especially if you're planning to play music through your system. Check out some of the better budget compacts on the market – most of them offer a matching centre speaker from the same range. Try partnering four Tannoy mX1s with an mXC (pictured), or check out a compact Mission package. You won't get a sub as well with your budget, but you could add that later, and the mid-treble region would be better served.





CD RECORDER

DJ CHOICE

I'm a bedroom DJ and I want to record mixes on to CD for distribution to interested agencies. There are two CD recorders I'm interested in – the TEAC RW-800 (pictured) and Pioneer PDR-509. Which should I buy, or is there something else?

Martin Irwin, via e-mail

Because of the nature of the beast, there's little to choose between CD recorders if you're recording direct from a digital source. However, differences are more marked if you want to record from an analogue source like vinyl. Of the crop below £500, the best we've heard so far is the Marantz DR 6000. Of the two you mention, the TEAC has a few studio-style features that might come in handy but as a CD player it's not great (if that's important to you). The Pioneer PDR-509 is being replaced by the PDR-609, which is claimed to make better analogue recordings than the competition.

MULTICHANNEL AMPLIFIER

PRIORITIES

I'm in the market for an integrated multichannel amp. Would you buy the NAD T761, the Marantz SR-7000 or the Denon AVR-3801?

Jerry Z, via e-mail

We have yet to review that particular Denon but on past evidence it is likely to be a strong contender. We can certainly vouch for the other

two you mentioned – the Marantz currently holds a HFC Best Buy Award, while the NAD is broadly similar to the T760 it replaces, also a Best Buy recipient.

Between the two, we'd edge towards the NAD if music has a slight priority over movies, while the Marantz would be our choice if films have the edge.

LOUDSPEAKERS

DEEP BASS

I own a Roksan Caspian amp and a Rotel RCD-971 CD player, and I'm looking for a pair of speakers to match. I listen to pop, rock and blues, and I want a warm yet detailed sound and a deep bass. I've been thinking about B&W DM603 S2 (pictured), Dynaudio Audience 50 and Tannoy R3. Do you think the power of the Roksan (75 Watts) is enough to drive the Audience 50 (4 Ohms impedance, 86dB sensitivity)?

Celso Raduan, via e-mail

The B&Ws offer the broadest range with a good midband and the deepest bass, though the sound is particularly quick and suited to relatively large rooms. The Tannoy offers perhaps the most refined and laid-back sound, while the Dynaudio is punchy and dynamic. Given your music taste, and subject to audition, we reckon the Audience 52 (which replaced the 50) is your best bet. Don't worry about it being a tough load – its impedance curve is relatively smooth and your Roksan amp will cope just fine.



EQUIPMENT SUPPORT

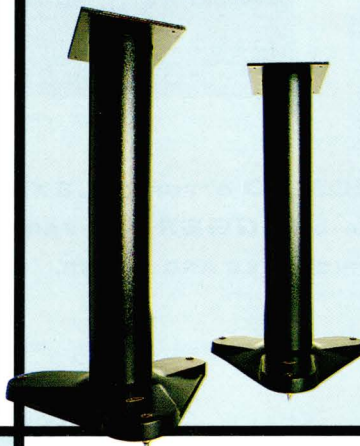
SUPPORT ISSUE

I'm currently using a Micromega Stage 3 CD player with a Linn Intek amp, both of which are among the most natural-sounding components I've heard. They're hooked up to B&W CDM1 speakers with Audioquest Type 4 speaker cable and Nordost Blue Heaven interconnects. Can I

improve the sound for around £300? I tried a Mana equipment support but I didn't like the effect.

Nick, via e-mail

Supports are probably the obvious way to go with that kind of budget, particularly as you seem so happy with your existing electronics. If you didn't like the Mana sound, try the likes of Optimum and Quadraspire whose designs tend to sound more relaxed. Kudos speaker stands (pictured) (now associated with Neat Acoustics) would also be a wise purchase.



"CAN I IMPROVE THE SOUND FOR AROUND £300?"

LOUDSPEAKERS

TOO TALL!

I've heard a pair of Dali Evidence 870s (pictured) and loved the sound, but they're a bit too tall for my room. Can you suggest an alternative that's no more than 30 inches (76cm) high?

Aydin Kudu, via email

Most floorstanders in the same price bracket as those Dalis (c£1,300) are taller than 76cm – the majority of compact floorstanders are lower priced and wouldn't match what you've heard. Your best bet might be to audition Mission's 782 (£699), which is only a little taller than you specify at 82cm and is also very slim, with a side-firing woofer to supply the deep bass.



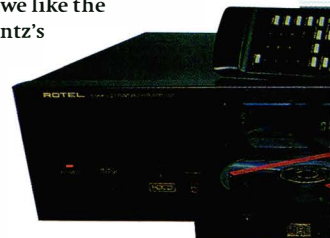
CD PLAYER/CENTRE SPEAKER

DEDICATION

I'm currently using a Samsung DVD player to play back my CDs, coupled to a Nakamichi AV-10 multichannel amp and B&W Matrix 805 speakers. I want to add a dedicated CD player and I'm looking at Rotel, Marantz and Arcam. Perhaps the Rotel RCD-971 or 991? I also want to add a centre speaker. Which do you think?

Hitarth Shah, United Arab Emirates

Adding a dedicated CD player is a good idea if you play a lot of music. You mention three excellent brands. Either of the Rotels make good purchases at their respective price points, and if you can stretch as far as the RCD-991 (pictured) it's well worth a listen. Arcam's Alpha 7SE is great value and we like the new DiVA CD92 too. Also good value is Marantz's CD6000 KI – superb sound at very reasonable cost and it would fit well with your system. It's also good enough to live with an upgrade to your amp in the future. As for the centre speaker, think B&W to ensure consistency across the front three; consult your B&W dealer for the best match.





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"ONE OF THE GREAT PLUSSES OF THE JUBILEE IS ITS REMARKABLE RHYTHMIC PORTRAYAL. EVERY TWIST AND TURN IN THE MUSIC CAN BE HEARD."



A mazing! Incredible! Fantastic! Over-worked superlatives, undoubtedly. But these were the words that sprang to mind when auditioning the London Jubilee pick-up (£999, available from Presence Audio ☎ 01444 461611). Having been a fan of London (née Decca) cartridges for almost 30 years, I had an inkling of what to expect. Nevertheless, the sheer detail and vividness of the Jubilee bowled me over.

The Jubilee's superior mechanical integrity and improved rare-earth magnet system mean greater refinement and cleanliness over previous London designs – the removable plastic fixing bracket of earlier versions has been replaced by a solid two-piece metal body. This maximises the strengths of the London design, while minimising weaknesses.

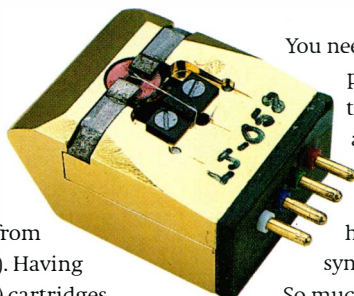
Nevertheless, it still isn't a 'kind' pick-up. Surface noise is low, but the incredible sensitivity of the stylus to transient detail eliminates the slight softening that occurs with virtually all other cartridges. It's like pointing a searchlight on your records.

London pick-ups operate differently to typical MM/MC cartridges. Agreed, it's a fixed coil design that works by moving a powerful magnet in a coil – like other magnetic pick-ups. However, there's no cantilever as such; stylus movement is read directly, close to the tip itself. This system, called Positive Scanning, is responsible for the remarkable detail and sharpness that characterises London cartridges.

SLOW MOTION

All pick-ups are delicate, needing careful installation, a London even more so. Care must be taken when checking alignment with a protractor. Ditto when measuring tracking weight using stylus scales. Stylus downforces of 1.8g to 2.2 grams are specified, with 2g suggested as optimum.

One caveat: hum. London cartridges, by virtue of their unique design, are not as well shielded from stray hum fields as others.



You need to take extra care over positioning; avoid putting the turntable near power amps or any components that produce a large hum field. It's even sensitive to hum from the turntables' AC synchronous motors.

So much for the drawbacks, but what of the virtues? One of the great pluses of the Jubilee is its remarkable rhythmic portrayal. Every twist and turn in the music can be heard; the slightest change of emphasis in timing or dynamics seems to register. But curiously, music can sound subjectively 'slower' with this pick-up compared to others.

'Slower' doesn't mean things drag or sound leaden. Rather, there's an enhanced sense that each moment is packed with incident. Instead of the music breathlessly rushing by, there's deliberation behind each note. Rhythms are more solidly inflected, making it seem as though there's more to listen to, more going on, more that catches the ear.

COME AND ABBA GO...

Not surprisingly, technically good recordings benefit enormously from this. But big differences can occur on less impressive material. For example, compressed multi-track 70s pop albums can take on a whole new lease of life when reproduced via a Jubilee cartridge.

Playing tracks from various Abba LPs, I sat back amazed as the Jubilee magically created vivid soundstaging from material that can sound flat and two-dimensional. It's exciting and involving – making it seem as though everyone's singing and playing to the limits of their ability, rather than simply coasting along.

At its best, the Jubilee is a pick-up that brings music to life like no other. It's fussy and needs careful handling and installation, and the right kind of tonearm – preferably one with some kind of viscous fluid damping. For reasons already given, living with a Jubilee isn't a 'comfortable' experience. But if you like hi-fi in the fast lane, there's arguably nothing better...

Jimmy Hughes is the king of hi-fi tweaks, his quest for the absolute sound knows no bounds.

DISCOGRAPHY

PAUL MILLER REVEALS THE HISTORY OF OUR CIRCULAR SILVER FRIEND, STRAIGHT FROM THE PAGES OF THE RED BOOK. OR IS IT THE GREEN BOOK? OR THE YELLOW...?

Initially viewed with wary scepticism by the consumer and outright hostility by disaffected quarters of the hi-fi industry, 19 years on the compact disc and its silvery offspring now represent the technological lynchpin of the entire audio/visual industry. In this brief appraisal we'll look at the development and impact of the CD and how one format went on to spawn variants like CD-ROM, CD-R and CD-RW, CD-I, Video and Photo-CD and provided the engineering expertise to launch the centre-piece of the current AV revolution: DVD.

IN THE BEGINNING...

The prehistory of CD starts with Philips' Laservision in the 1970s, a veritable dinosaur by today's standards but still the first commercial realisation of an optical disc technology. Storing (video) information as a series of pits embedded in a continuous spiral to be read by a laser was a key innovation. So too was the implementation of a non-contact replay mechanism. Unlike a stylus dragging through a vinyl groove or tape speeding over a magnetic head, the disc would never wear out. And unlike tape, track access was lightening fast.

Nevertheless, this optical disc stored *analogue* information. The goal of storing audio in digital form only came about through the collaboration between engineers from Sony and Philips in the mid to late 70s. Philips had gained considerable experience with laser optics and disc transport systems with Laservision, while Sony had already ploughed considerable resources into developing PCM adaptors (digital recording on video tape) together with powerful error-correction schemes to deal with losses in data. By 1979, the stage was set for a breakthrough.

At this point much that's written concerning the size, format, resolution and

playing time of the CD has already entered the realm of folklore. It's not uncommon to see the famous conductor, Herbert von Karajan, quoted as the inspiration for CD's maximum playing time in order to accommodate Beethoven's 9th Symphony. In reality, the CD format evolved in line with both convenience and practical engineering tolerances. For example, the 120mm diameter of the disc was pretty much determined by the (diagonal) size of the Compact Cassette. After all, any new audio carrier could hardly be bigger than the compact reference of the day!

The choice of 16-bit resolution was forced through by Sony (Philips argued the case for 14-bits) while the selection of a 44.1kHz sample rate was derived from Sony's earlier PCM/video tape recorders. This unusual frequency was dictated by the need for compatibility with the NTSC video format used by the VCR tape decks in Sony's early PCM experiments (PCM or Pulse Code Modulation is the method of coding and storing digital data used by CD). Furthermore, as the maximum permissible recorded frequency span can be no more than half the sample rate, a figure of 44.1kHz allows the notional range of human hearing (20Hz-20kHz) to be

data and, therefore, the ultimate playing time of the disc. In 1980, miniature, solid-state lasers with a wavelength of 780nm could be manufactured at moderate cost. They were Hobson's choice.

OPENING THE BOOK

This would give a focus spot of about 1µm (1,000 millionths of a millimetre), corresponding to the smallest pit structure that could be reliably pressed of 833 millionths of a millimetre (assuming a 74-minute disc spinning overhead at 1.2m/s). A track pitch of 1,600 millionths of a millimetre could also be accommodated by the technology of the day, yielding a spiral of some 22,200 turns, 5.7km in length. This amounts to a capacity of 650MB which, with a scanning speed between 1.2 and 1.4m/s, provides 16-bit quality audio at a 44.1kHz sample rate for between 75 and 60 minutes, respectively. This, together with full details of the data encoding, was enshrined in a document known as the 'Red Book' - the bible for CD-Audio.

Compact disc was launched in 1982 and just one year later its portfolio extended to the storage of computer data. Three years later came the practical realisation of the CD-ROM (Read-Only Memory), whose full specification

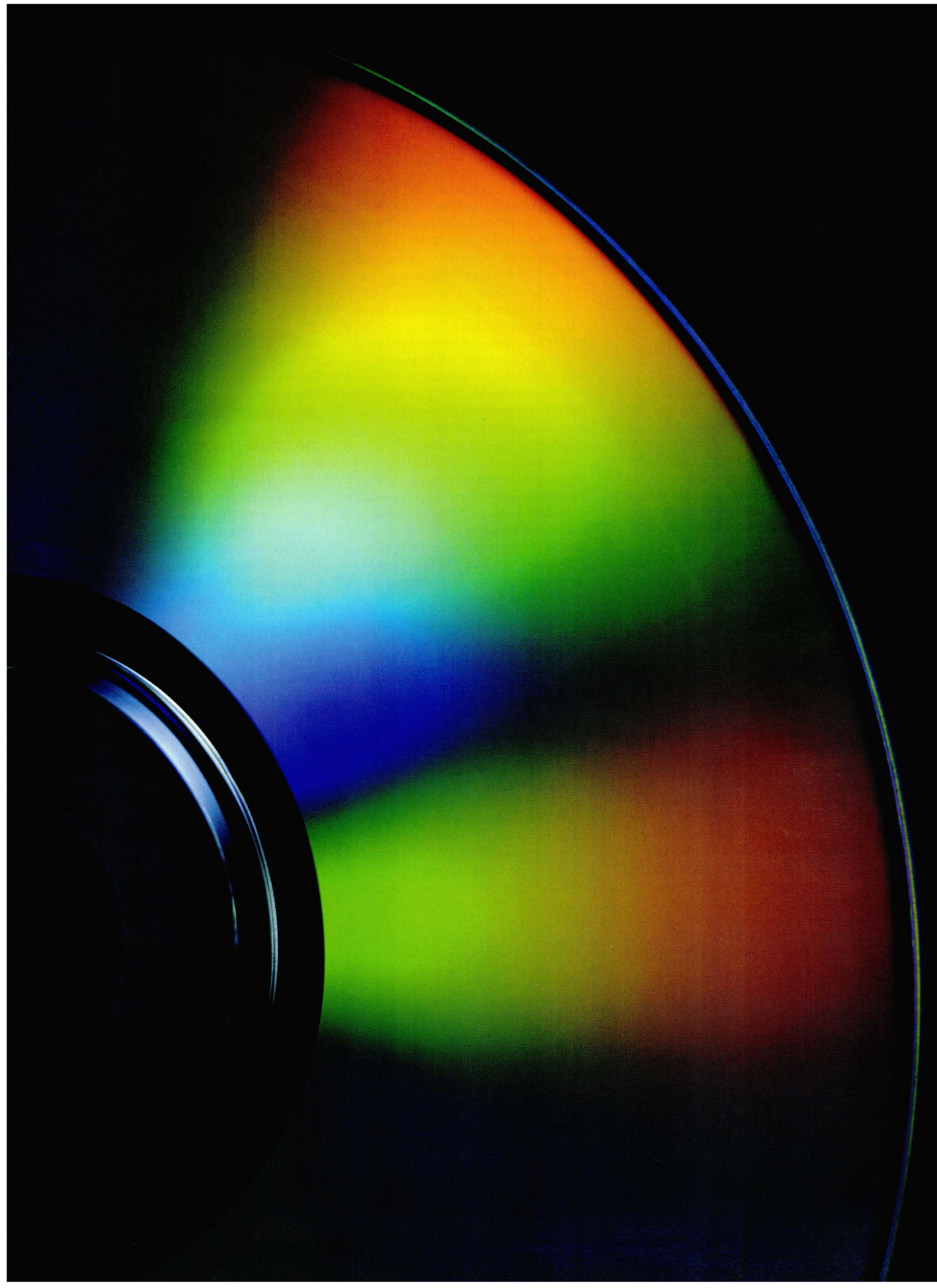
"COMPACT DISC WAS LAUNCHED IN 1982, AND JUST ONE YEAR LATER ITS PORTFOLIO EXTENDED TO THE STORAGE OF COMPUTER DATA."

accommodated with a whisker to spare.

In *Hi-Fi Choice*, February 1999, we looked at how a music signal is converted to a 16-bit code which is then represented as a series of pits that are pressed into a spiral groove that radiates from the inside to the outside of the disc. For a given rotational 'speed', the pitch of the spiral track, the size of the pits and the wavelength of the laser all determine the maximum amount of

is defined in the Sony/Philips 'Yellow Book'. CD-I (Interactive), described in the so-called 'Green Book', was conceived as a kind of user-friendly CD-ROM, containing a mix of sound, graphics, animation and compressed video as games and 'infotainment' accessible via a CD-I player and TV set.

CD-I players with a Digital Video extension would also handle Video CDs, yet another subset defined in the



◁ Sony/Philips 'White Book'. The MPEG1 video compression standard does not offer the quality of today's DVDs, but Video-CD is still used in the Far East, and particularly as a convenient multi-platform 'open standard' for content publishers. Eventually, the capabilities of the original CD-ROM format and CD-I were merged into today's CD-ROM XA (Extended Architecture) PC format.

FROM MO TO MD

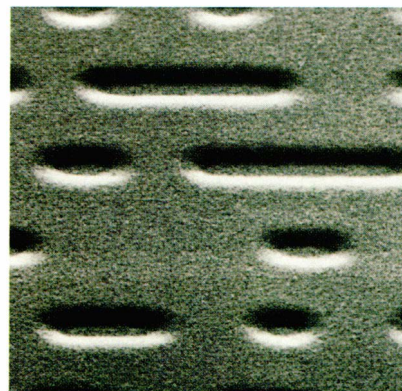
Of greater interest to audiophiles is what came next. The early 90s saw the development of recordable CD and the splitting of the Sony/Philips 'Orange Book' into three distinct subsets. These included CD-MO (Magneto Optical), CD-WO (Write Once, now known as CD-R) and CD-E (Erasable, now known as CD-RW). CD-MO uses the same phase-change technology as Sony's MiniDisc to store data and is used principally as an archival medium for computer data. MO discs use a special substrate that alters the plane polarisation of the reflected beam, in place of the pits and lands found within the spiral of a conventional CD. The format of the data is unchanged, but its physical representation on the disc is different and so requires an adapted playback system.

Examples of CD-R and CD-RW are alive and kicking in this very issue. Data is stored and read from CD-R discs via a similar spiral of pits to those found on silver CDs. However, this spiral has a slight meander or 'wobble' built-in, giving the player some measure of absolute recording time and position as the laser scores its way through a blank disc. In other respects, the CD-R disc is also more complex than a CD.

It includes a coloured dye layer between the reflective layer (innermost) and transparent polycarbonate surface

(outermost). During recording the laser power is increased to between 4-8mW, heating the polycarbonate and dye layers in its path to around 250 degrees Centigrade. Point by point, the dye layer collapses and the polycarbonate swells to fill the void, leaving an opaque 'pit' that diminishes the brightness of the reflecting layer behind. During playback it's the transition from these less to more reflective areas, and vice-versa, that represents the digital data.

Obviously, once the data pattern is melted into the spiral groove it becomes permanent. But CD-RW (re-writable) discs permit the over-writing of unwanted data. Instead of the bright blue or green dye used by CD-R, CD-RW discs contain a thin layer of grey metal alloy known as a 'phase-change material'. In this instance, as the higher-powered recording laser momentarily heats a 'spot' within the CD-RW spiral groove, the polycrystalline alloy is melted and, almost instantly, re-solidified.



Data pits on a CD.

discs, not all CD players will accept them. DVD players, by contrast, are tuned to the lower reflectance of DVD discs and often make a better stab of playing CD-RW material as a result.

THE FUTURE IS NOW

19 years have passed since the launch of CD and life without the 120mm silver disc seems unimaginable. Indeed, the 120mm 'form factor' looks to be set in stone. But the demand for increased capacity, whether to accommodate MPEG compressed video, high-resolution multichannel audio or as a bottomless archive for PC data never ceases.

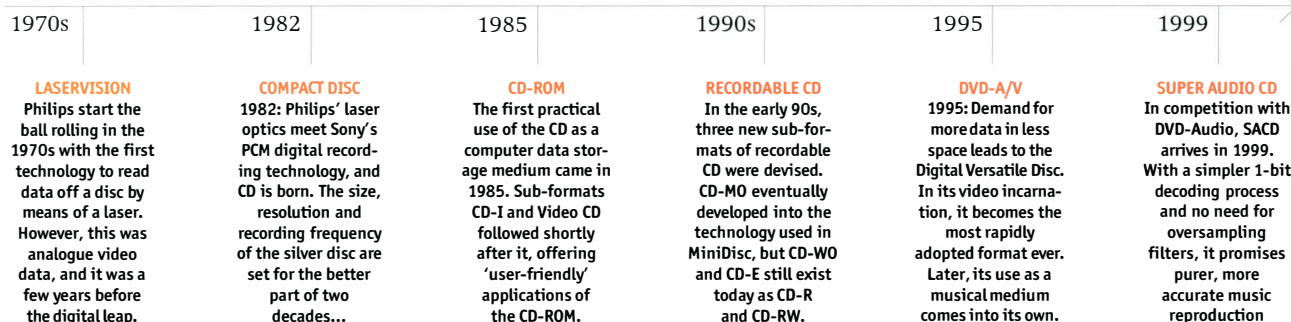
“FOR THE FIRST TIME IN ITS HISTORY, WE HAVE TWO FUNDAMENTALLY INCOMPATIBLE FORMATS OF THE SILVER DISC VYING FOR THE SAME MARKET.”

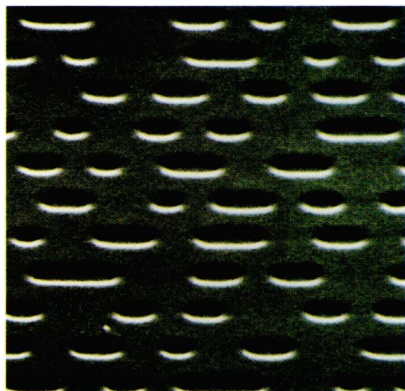
During playback, the laser is reflected more intensely from polycrystalline regions of the groove than from the amorphous regions. The end result is exactly the same pattern of data that might be recovered from the pit (non-reflective) and land (reflective) surfaces of a conventional CD. By passing the CD-RW through a lower-temperature 'record' phase, the amorphous patches re-crystallise, effectively 'erasing' the data and returning the spiral groove to its original, blank state. Because of the lower overall reflectance of CD-RW

Since 1995, the development of the DVD (originally known as the Digital Video Disc but now referred to as the Digital Versatile Disc for its multifarious applications) has forced advances in capacity.

The packing of data has been made more efficient by removing CD's sub-code and streamlining the error correction process, but it's only by enhancing the physical properties of the disc and laser that substantial improvements in capacity have been possible. Reducing physical margins such as the track pitch, the minimum size of data pits

A BRIEF HISTORY OF CD





Data pits on a DVD – note the smaller size.



Discs might be jam proof but don't try this at home.



One little disc, so many formats...

and laser readout wavelength while enhancing tracking performance at higher rotational speeds enables the DVD to store around seven times the information of a standard CD, without changing the basic 120mm dimension.

TAKING UP THE SLACK

Using a shorter wavelength laser with a wider Numerical Aperture provides a more powerful focus onto DVD's smaller pit lengths but it also demands that the disc (or at least the distance between the laser and substrate) be made thinner. This could make a DVD more sensitive to surface scratches, dirt and fingerprints but the enhanced error correction regime is more than capable of taking up the slack. Moreover, by halving the thickness of the readout layer, two information layers may be sandwiched together on one 'side' of the DVD. In such a multi-layer DVD, the two layers are separated by a partly reflective, partly transmissive coating.

The coating is sufficiently reflective to allow data to be read from the layer closest to the disc's surface but also sufficiently transparent to permit the laser to be re-focussed through onto the disc's innermost data layer. Naturally, reading through a DVD's transmissive coating does present its difficulties, so the practical capacity of this innermost layer is slightly reduced at 3.8GB. This explains why a single-sided, dual-layer DVD offers 8.5GB (4.7GB + 3.8GB) of storage space while a dual-sided, single-layer disc provides 9.4GB. The latter option also requires the disc to be turned over, though the former does not.

DVD-Video discs contain MPEG-encoded component video, compressed from some 167Mbps down to a maximum of 10Mbps with an average data rate of just 3.5Mbps. The actual figure varies according to movie length, picture complexity and the number of audio channels required. Even at an average 3.5Mbps, the DVD format still

has the capacity to accommodate 5.1 channels of audio, typically encoded using Dolby Digital, dts or MPEG schemes in up to three languages. Even with multilingual subtitles bringing the total average data rate to 4.96Mbps, a single-sided, single-layer DVD can hold a two-and-a-quarter hour movie.

The DVD-Video format also has provision for linear two-channel audio at 16, 20 or 24-bit resolution and at 48kHz or a 96kHz sample rate. This is quite distinct from the more recent DVD-Audio variation, which gives over the bulk of its capacity to purist audio. The capacity and physical description of both single and dual-layer discs remains unchanged though the format is flexible enough to hold two channels of uncompressed PCM digital audio (like CD) but at sample rates as high as 192kHz and a resolution of 24-bits. Multichannel audio is also supported with six channels up to 96kHz/24-bit but without the need for 'lossy' Dolby Digital or dts compression.

CLOSING THE BOOK?

Competing against DVD-A, Super Audio CD is the latest joint venture between Philips and Sony whose performance is described in the 'Scarlet Book'. The phys-

ical parameters of the disc and laser readout, even down to its dual-layer or hybrid construction, are all but identical to that of the DVD. The music signals are not encoded as linear PCM, however, but by a new process called DSD or Direct Stream Digital. Here both two-channel and uncompressed, multichannel audio is represented as a high speed stream of single bits rather than as a sequence of 24-bit 'words', for example.

The decode process is notionally a lot simpler and does away with the need for oversampling filters. Just as the physical tolerances of the new DVD disc could not have been entertained at the birth of CD, so too would DSD have been viewed as wholly unachievable from the standpoint of available microelectronic technology. (See my column in *HFCs* September and October 1999.)

Otherwise, and for the first time in the history of the 12cm silver disc, we have two variations vying for the same market that are fundamentally incompatible. The last time something like this happened was when Sony's Betamax took on JVC's VHS video system. The originators of the silver disc revolution must surely have everything crossed that history does not repeat itself.

THOSE GIGABYTES IN FULL...

COMPARING THE MAIN PARAMETERS OF THE CD AND DVD FAMILIES

	CD family	DVD family
Laser Wavelength	780nm	635-650nm
Laser NA (Numerical Aperture)	0.45	0.6
Disc (substrate) thickness	1.2mm	0.6mm (x2)
Minimum pit length	0.83µm	0.4µm
Track pitch	1.6µm	0.74µm
Reflectance	15% (CD-RW), >70% (CD)	45-85%
Data capacity, single layer	0.65GB	4.7GB
Single side, dual layer		8.5GB
Dual side, single layer		9.4GB
Dual side, dual layer		17GB
Readout speed (Constant linear velocity)	1.2-1.4m/s	3.27-3.84m/s
Data rate (User Bit Rate)	1.41Mbit/s	11.08Mbit/sec

Pioneer

DVD PLAYER DV-959A

STANDBY

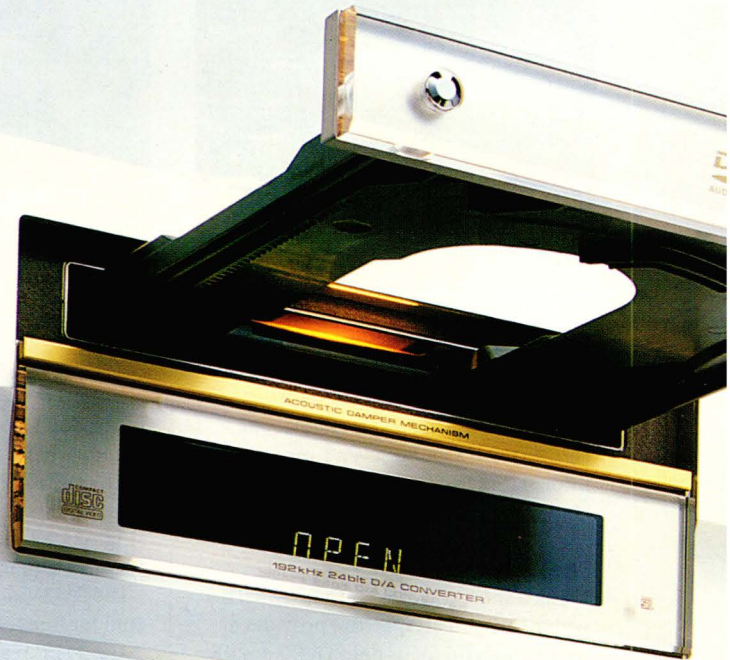
POWER

PROGRESSIVE SCAN

DVD AUDIO

DIGITAL DATA OFF

PL OFF



ARCAM

DVD VIDEO

dts DIGITAL OUT DOLBY DIGITAL MPEG MPEG-2 DVD VIDEO

LOAD PLAY STOP PAUSE

SONY

POWER

R

PHONE LEVEL

MIN MAX

PHONES

TIME/TEXT FILTER DIGITAL OUT SACD/CD

REPEAT OPEN

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

SUPER ALI

DVD-A, DVD-V & SACD PLAYERS

ALVIN GOLD AND PAUL MILLER TAKE A LOOK INTO A FAST-APPROACHING FUTURE, AS THEY CHECK OUT A GROUP OF NEW FORMAT DISC PLAYERS

Compact disc has been the standard music carrier for so long, it's easy to forget that it was preceded by what eventually became LaserDisc. Now things have come full circle. LaserDisc has been reborn as DVD, now DVD-Video, and that higher density format has in turn spawned DVD-Audio, which refocuses attention, and much of the available bandwidth, on two-channel and multichannel audio, which now offers greater bandwidth and resolution than CD. Meanwhile, from stage right – from Sony and Philips, in fact – comes an incompatible sound carrier, SACD, which offers broadly the same characteristics as DVD-Audio.

The lowest common denominator of these disc formats is 16-bit 44.1kHz PCM audio – CD in fact. DVD players, SACD players and CD players all play CDs, which remains the numerically and commercially dominant quality music carrier, and whatever happens this will not change for many years to come, however well its presumed successors perform. But it is now possible to buy one of the new technology players, both for use with new technology discs, and to play 'legacy' CDs. We have assembled ten of the best of these players here. Seven are DVD-Audio players, two are DVD-Video, both of which will probably eventually be upgradable to DVD-Audio, and one is an SACD player.

The format situation remains fluid, though it is certainly clearer than it was quite recently. DVD-Audio has been stymied by a shortage of native recorded material, and SACD was still up in the air until halfway through the test, when the multichannel variant was finally announced. No such player was available for this test, but test results with the new Sony player make more than interesting reading.

As usual for our Bench Tests, each model was run in over an extended period, and warmed up prior to each listening session. Volume levels were normalised using test tones between listening sessions, though this was not possible with the DVD-Audio extracts as no appropriate test tones were available. Where available, the video bypass modes provided by many of the players was used. Each model was used in blind listening tests, where it was presented to our listening panel. The players were then examined in intensive hands-on listening tests.

THE PLAYERS

ARCAM DIVA DV88	£899.90
DENON DVD-3300	£999.99
KENWOOD DVF-R9030	£899.95
PANASONIC DVD-A7EB	£699.99
PIONEER DV-939A	£1,200.00
SONY SCD-555ES	£1,199.99
T+A DVD-1210R	£1,699.99
TECHNICS DVD-A10	£899.99
TOSHIBA SD500E	£699.99
TOSHIBA SD900E	£1,299.99

OTHER EQUIPMENT USED

JMLab Mezzo Utopia speakers
Marantz PM7000 amplifier
Lavardin IT amplifier

MUSIC USED DURING TESTS

Pink Floyd – *The Wall* (CD)
Bartok/Budapest Festival Orchestra/Ivan Fisher – *Danse des garçons from Concerto for Orchestra* (CD)
Gaudeamus directed by Paul Halley – *Beati quorum via* from *Sacred Feast* (Stereo/multichannel SACD)
Pantom (*Assez vite*) from Ravel Piano Trio – The Florestan Trio – Hyperion (SACD)
Beethoven/Daniel Barenboim/Berliner Staatskapelle – Extracts from *Symphony No 7* (DVD-A)
Natalie Marchant – *Wonder*
Miles Davis – *Tutu*
Dvorak/New Japan Philharmonic/Yokinori Tezuka – *Symphony No 9* (The above are from Technics DVD-Audio samplers)
No 24-bit/192kHz material was used due to an absence of correctly mastered material
Bonnie Rait – *Road Tested* (dts)

THE LISTENING PANEL

Alan O'Rourke (Ruark)
Colin Hinkins (Mirage, Energy)
Gary Mardell (Gamepath)
John Bamford (Pioneer)





ARCAM DIVA DV88 DVD-V PLAYER

SOUND ★★★★★ **VALUE** ★★★★★ **£899.90** **CONTACT** 01223 203200 www.arcam.co.uk **GUARANTEE** 2 YEARS

One of only two DVD-Video players in this report not capable of playing DVD-Audio discs, the DV88 comes with an explicit migration path to DVD-Audio “once the specification concerning copyright protection is fully confirmed and a reasonable selection of software is available” – and at a reasonable price too. These are not just warm words. Arcam’s record in this respect is exemplary. The essence of the DV88 is to achieve standards of CD replay commensurate with that of their own entry-level CD players. To this end, it uses four dual differential mode

96kHz D/A converters, which incidentally are already capable of working at 192kHz sample rates, so that the upgrading strategy is already laid down in silicon. Additionally, the player uses separate low-jitter master clocks and power supplies for audio and video, rather than deriving one from the other as usual. The DV88 supports component, RGB and S-Video and uses professional quality parts in the video output circuitry. Add modular construction and flash programmable firmware, and compatibility as standard with CD-R and RW discs, ‘most’ MP3 discs (untested here) and HDCD replay compatibility,

and the makings of a powerful, flexible design are there.

SOUND QUALITY

There are some minor operational shortcomings: an inability to pre-select tracks on the player with the drawer open for example, and some limitations in the design of the remote control, which are currently being addressed. On the plus side, the electrical digital output will feed up to 24-bit/96kHz signals.

Perhaps unexpectedly given Arcam’s background, the single most impressive feature of this player is its extraordinarily solid and vivid picture quality, which was difficult to fault in the test set-up, and which has been seen working even better elsewhere, with minimal artefacts via more exotic display devices. Dts recordings were equally well handled using an external processor. But the DV88 didn’t quite have it all its own way when used as a CD player. The consensus

A great DVD player, but the DV88 isn’t a spectacular CD player in its own right.

was that it sounded rather forward and dry, with a suggestion of stridency at times, in the more complex passages from the Bartok test recording in particular. With the Pink Floyd, the panel drew attention to a lack of weight and detail, and a lack of expansiveness, factors also identified in the hands-on testing.

CONCLUSION

The DiVA DV88 failed to shine as a CD player on test, though it is probably fair to say that it was in keeping with Arcam’s own entry level DiVA CD72 player. The modular construction of the player makes it a particularly good long-term prospect and even as it stands, it is a much more than routinely good DVD-Video player. The fact that it failed to excel as a CD player is, for now, something of a mystery.

“THE MODULAR CONSTRUCTION OF THE PLAYER MAKES IT A PARTICULARLY GOOD LONG-TERM PROSPECT.”



THE LAB REPORT

THE WOLFSON DACS employed by Arcam tend to produce lower levels of ultrasonic noise than the popular AD1853s used by various other players in this test, though the latter are hardly compromised in this area. What this means, quite simply, is that partnering amplifiers that betray any sensitivity to VHF noise will have an easy life with the DV88. Jitter, too, is exceptionally low at 155psec and serves to demonstrate that, with the proper engineering, DVD players need not be massively compro-

mised as audio (CD or DVD) carriers. This is one hidden, though audible, benefit of spending slightly more than tuppence on a DVD player! The overall S/N is good at 105.9dB and stopband images are well suppressed at -97dB relative to the full, and slightly high, 2.2V output. Distortion is a little higher than expected at this 0dBfs level, however, at ~0.0025%, particularly as it drops to a spectacularly low 0.0006% at slightly lower (-10dBfs) signal levels.



DENON DVD-3300 DVD-A/V PLAYER

SOUND ★★★★★ **VALUE** ★★★★★ **£999.99** **CONTACT** 01753 888447 www.denon.com **GUARANTEE** 2 YEARS

It is typical of Denon to enter new markets with thoroughly endowed models with mainstream specifications, and its first DVD-A player is just such an animal. In a choice of champagne gold and black finishes, the DVD-3300 looks more engineered than styled, and it comes with a conventional, but usefully colourful, remote control. The player features on board dts and Dolby Digital decoders, with twin RGB compatible Scarts, and a full set of discrete audio analogue and digital, and video outputs. Although not an unusual provision in itself, the Denon's video bypass mode is well worth exploiting.

SOUND QUALITY

The Denon is an above average DVD-Video player with some useful features, such as the ability to pull the dialogue up in the overall mix. The leanest sounding player of the sessions, the Denon clearly had strong,

propulsive timing in the Pink Floyd. The same was evident in the very differently balanced Bartok too, which tends to reinforce the finding, and here too the player gave a forward, rather dry and explicit balance. "It could use a little more warmth," as one put it, while another described the Denon as "strong [sounding], but a little too aggressive and strident". A third panellist felt that the Bartok became more "confused" as the music got progressively more complex, and he too remarked on the Denon's generally open sound, while commenting on a touch of constriction at times. Perhaps surprisingly, as no similar correlation was identified with the other players, and the audio processing involved is quite different, dts encoded DVD-Video discs reproduced with a broadly similar dry, explicit feel and hint of aggressiveness as conventional PCM CDs.

With DVD-Audio software, the Denon appeared to gain disproportio-

nately, suggesting it is well optimised for this role. Curiously, there was still a hint of stridency, though generally the bass was praised for its quality, and the player for its large scale, positive imagery. What criticisms there were related to the early panel tests, based on flaky source material, and later results with recordings bought back from the States generally gave more lucid and open results, with less stridency and glare when the music became complex.

CONCLUSION

The Denon is a quite difficult machine to sum up. There was a hint of almost

Denon's DVD-3300 is particularly strong with DVD-Audio material.

wilful character in this player, irrespective of the type of source material it was fed – dts, stereo CD and DVD-Audio (stereo and 5.1) alike – and the presumption must be that this is related to the aural signature of the Denon's output stage. On the positive side, the DVD-3300 was a little clearer and more transparent than some of the other players in the test, and there were signs that it could pull a little more detail off a high resolution DVD-Audio disc than some other players.

"THE PLAYER WAS PRAISED FOR THE QUALITY OF ITS BASS, AND ITS LARGE-SCALE, POSITIVE IMAGERY."

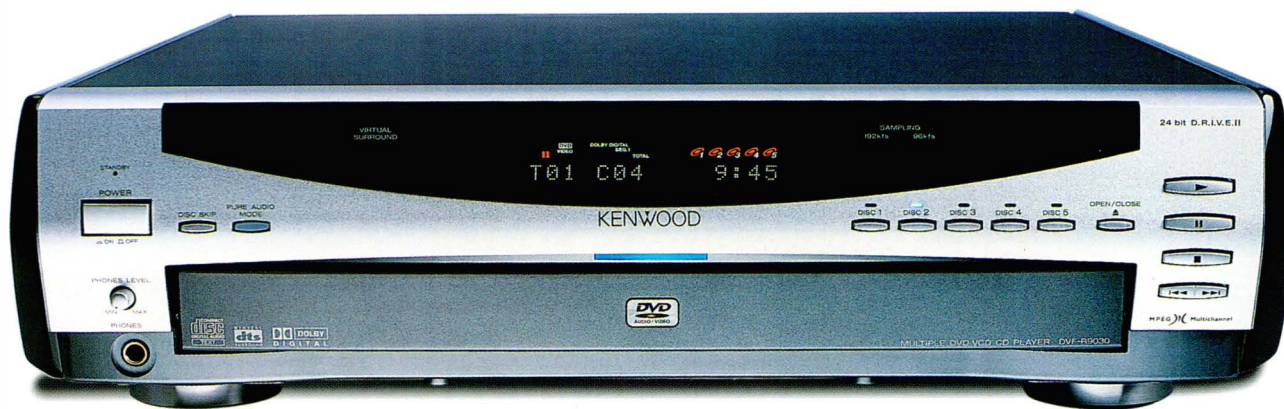


THE LAB REPORT

EXTERNAL APPEARANCE

notwithstanding, Denon's DVD-3300 is actually based on the same chassis as Panasonic's DVD-A7. It shares the same DVD transport, power supply, MPEG video decoder and DD/dts decoder boards as the cheaper DVD-A7 but is equipped with the extra screening found in Technics' DVD-A10. It does lack the A10's extra widgets (like Re-Mastering) but this is no bad thing, in my view. Differences are very few, and include an alternative variety of capacitors in the final ana-

logue output stage. The hallmark below average separation and clock error remain, as does the low (260psec) but highly characteristic pattern of jitter. Distortion matches the DVD-A7 closer than the DVD-A10, though its 100.8dB S/N ratio is anomalous at 5dB short of both its competitors. The DVD-3300 also has the flattest response (0.0dB from 1kHz through to 20kHz and 45kHz with 96kHz DVD-A). Distortion at 45kHz (!) is lower than most amps (and all speakers) at just 0.01%.



KENWOOD DVF-R9030 DVD-A/V PLAYER

SOUND ★★☆☆	VALUE ★★☆☆	£899.95	CONTACT 01223 203200	www.kenwood-electronics.co.uk	GUARANTEE 1 YEAR
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One sure sign that a new disc format has made it is when the first multi-disc players arrive. The DV-F9030 is a five-disc carousel player, which allows four discs to be loaded while a fifth is in play. CDs, DVD-Video and DVD-Audio discs can be mixed freely, but the control logic seems convoluted, and some early tests had to be aborted.

Features include a six-channel version of Kenwood's proprietary 24-bit DRIVE II (Dynamic Resolution Intensive Vector Enhancement) circuit which addresses quantisation distortion as a means of enhancing low level resolution, and usefully all video

circuitry can be switched off (Pure Audio mode). The player includes integral dts and Dolby Digital decoders, as well as PCM and six channel analogue outputs, and component video outputs in addition to a doubled-up complement of composite and S-Video outputs, and twin loop-through Scart connectors. CD Text readouts are available from the (dot addressable) fluorescent display, and wood side cheeks are fitted.

SOUND QUALITY

There were hints of excess with this model: the bass was fuller and fruitier than most, which worked well with the Bartok (which can sound dry). The

bass made the Pink Floyd sound unusually powerful, with plenty of space around the instruments, but it was so lush it sometimes became overblown. Sometimes the DVF-R9030 also lacked a little refinement, and the rich bass tended to detract from dynamic range.

These broad findings were quite consistently identified. The bass in particular attracted a mixture of reactions ranging from admiration, to "I don't know if I could live with that" as one put it. There were times when this region seemed to overshadow the midband which ended up sounding "not quite right" according to one, and "congested" according to another. Nevertheless, a fluid, laid-back quality was identified in the hands-on tests with the latest DVD-Audio material. The feeling of an open, organic musical style was a constant that made listening to the Kenwood a pleasure, even when it was apparent that it wasn't perhaps

The Kenwood is a big player, thanks to its five-disc carousel, and variety of features.

as disciplined or as technically correct as some of the others.

With DVD-Video material, the Kenwood came across as a typical modern player, with good colour, acceptable resolving power and reasonably constrained motion artefacts. It delivered a clean dts signal to the outside world, giving palpably if not hugely better results, with sharper defined imagery and more separation than the internal processor.

CONCLUSION

Although it is possible to be a little sniffy about the DVF-R9030's ergonomics and its enormous shelf footprint, this is a well-equipped model with extensive play features, and an impressive range of interconnection possibilities. It also sounds attractive, while being reasonably priced to boot.

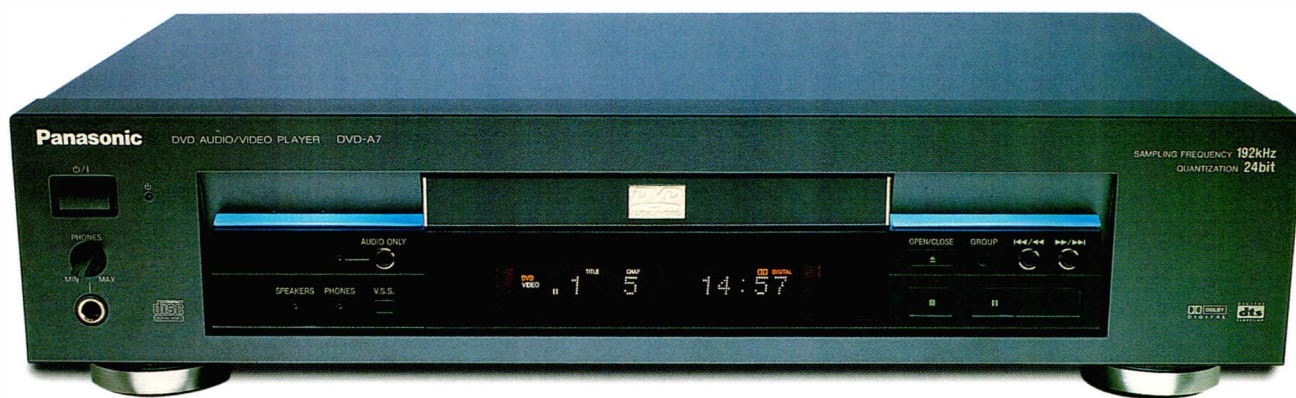
"THE PLAYER SOMETIMES LACKED REFINEMENT, AND THE RICH BASS DETRACTED FROM DYNAMIC RANGE."



THE LAB REPORT

BASED LARGELY ON Panasonic MPEG video and DD/dts decoders, the Kenwood still incorporates a deal of proprietary technology, not least the three KAN06 DRIVE processors designed to 'enhance' the retrieval of low-level detail. Frankly, with a mix of 24-bit/96kHz and 24-bit/192kHz DACs on board (AK4393 and AK4394) this strikes me as overkill. In practice, errors in low level linearity are exaggerated (+0.6/-2.0dB over a 100dB range). The front L/R outputs offer lower distortion than the down-mixed

pair (0.0017% versus 0.004% at 1kHz/48kHz Fs) and superior rejection of digital images (50dB versus 36dB). With 96kHz material, distortion increases from 0.0015% at 1kHz through to 0.012% at 20kHz and 0.028% at 44kHz where the response dips by -0.6dB. Jitter is reduced slightly from the original figure of ~270psec (see HFC 206), though 2nd-order data-induced peaks have 'grown' in place of the power-supply related distortions that are eliminated in this sample. You win some, you lose some.



PANASONIC DVD-A7EB DVD-A/V PLAYER

SOUND ★★★★★

VALUE ★★★★★

£699.99

CONTACT 08705 357357

www.panasonic.co.uk

GUARANTEE 1 YEAR

So far, in the UK at least, Matsushita is unique in producing a hierarchy of DVD-Audio hardware at different prices and quality levels, using its prestigious Technics brand name as well as the mainstream Panasonic one. This of course is the clearest indication possible of the importance that the company attaches to the new format.

Ostensibly a chip off the old block, the DVD-A7's capabilities are broadly similar to those of the Technics DVD-A10, including built-in converters for Dolby Digital and dts, and all outputs higher than 48kHz are available only in analogue form as usual. This player could therefore be used in a 'dumb' decoder-less six-channel system for audio and video purposes if required, and loop-through SCART sockets are available for easy connection to televisions without enough inputs, with RGB as the best video interface. Many of the audio related features of

the DVD-A10 have been retained here, including a 'virtual battery' power supply, quality capacitors, anti-resonance feet and so on, but the player is much more lightly built than its Technics opposite number.

SOUND QUALITY

As a video player, the DVD-A7 is a slick operator, with crisp picture quality and bold colour, and with dts material the Panasonic was almost indistinguishable from the Technics DVD-A10 in practice, which is no bad thing. As a CD player, however, the DVD-A7 was clearly not in the same league. With the Pink Floyd recording it offered a winning combination of refinement and menace, and a naturally detailed character, while the powerful bass line was carried along with real conviction if not the ultimate in power. But the Bartok lacked grip and had a characteristic rawness that was reminiscent of the Technics, though clearly inferior to it.

DVD-Audio results were arguably superior to the Technics model, in terms of musical resolution and the sense of space. One listener described this model in glowing terms as "a refined player with good detail" and with a "restrained, natural character". Another, whose view was closer to my own, described the DVD-A7 as "slightly veiled" and "bland", while describing the bass as "bleary and congested" – and these findings were mirrored in the hands-on results. There was also a certain stridency to the midband, a lack of lower frequency grip and an impression of low level, but ever present, coloration artefacts that meant that

Broadly similar to the Technics DVD-A10, this player is a slick video operator.

string quality from the Beethoven DVD-A was sometimes ill-defined, and that prevented the Panasonic being completely transparent.

CONCLUSION

Although not the most powerful musical advocate in the group, the Panasonic is a good all-rounder at a reasonable price, with the simpler physical build quality (which does have musical consequences) and the deletion of digital remastering being the main factors that distinguish this model from the Technics DVD-A10.

"ALTHOUGH NOT THE BEST IN THE GROUP, THE PANASONIC IS A GOOD ALL-ROUNDER AT A REASONABLE PRICE."



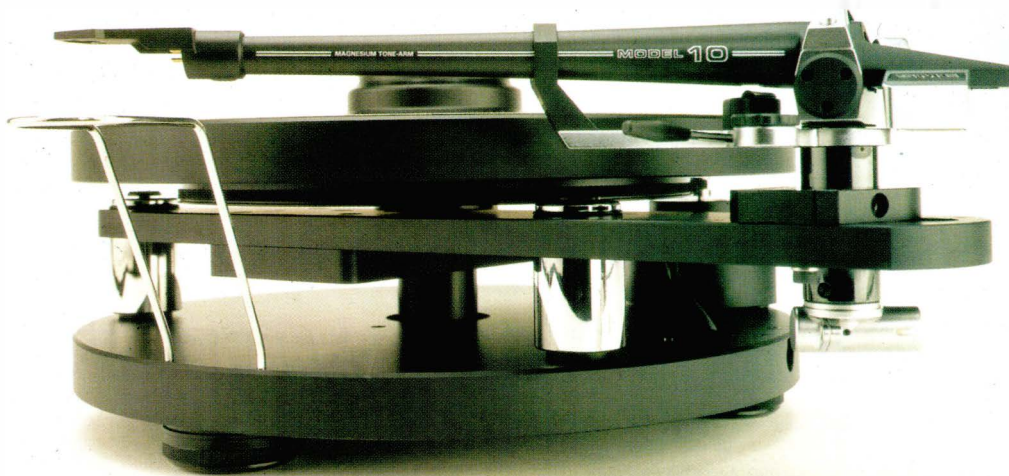
THE LAB REPORT

THIS IS THE BASE MODEL for both the higher priced DVD-A10 from Technics and the DVD-3300 from Denon. I would hazard a guess that all three are equipped with an integrated CODEC for D/A conversion. Certainly the increase in ultrasonic noise and uniform 74dB stopband rejection (with both 48kHz and 96kHz software) is inconsistent with any of the popular, discrete DACs from either Burr-Brown, AD or Crystal. This model, in common with the Denon, has a slightly below-average 1.9V peak

output but its response lies in-between the flatness of the Denon and the slight brightness of the Technics (+0.05dB at 20kHz and +0.25dB at 44kHz with 96kHz DVD-A). Stereo separation is a little weak at 68dB (20kHz), while the mild 280psec jitter shows a very characteristic, low-rate pattern that's shared by all three players. Peak level distortion is very low at 0.0006% midband, rising to just 0.005% at 20kHz, the S/N is good at 105dB and errors in linearity held to +0.0/-0.5dB over a 100dB range.

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PIONEER DV-939A DVD-A/V PLAYER

SOUND ★★★★★ **VALUE** ★★★★★ **£1,200.00** **CONTACT** 01753 789789 www.pioneer.co.uk **GUARANTEE** 1 YEAR

This player arrived late in the test programme, one of only two samples in the country, hotfoot from Heathrow. It is billed as Pioneer's universal player, but that description belongs to Pioneer's CD/DVD/SACD model which will probably never be sold in the UK, as it will too quickly be overtaken by multichannel SACD.

Nevertheless, this is a pretty impressive player. It's something of a ringer for previous upmarket Pioneer DVD-Video players, and it has a satin gold finish to match the VSA-E07 multichannel amp. It's equipped with on-board Dolby Digital and dts decoders, powerful random and block video noise reduction, a 10-bit 54MHz video DAC, a sophisticated on-screen menu system and CD-R and CD-RW compatibility. A number of construction features are included to improve performance: a damped chassis for example, a sophisticated power supply design and separately screened

audio circuits, along with Analogue Devices AD1852 and AD1854 D/A converters to process the DVD-A data.

Society includes twin Scarts, twin S-Video outputs and component video with progressive scan (NTSC only), a facility that could not be tested, and features include smoother reverse play, an area in which some Pioneers have tended to be deficient.

SOUND QUALITY

This is a smooth and easy-going player, uncomplicated in its way, and never less than enjoyable, though even with DVD-Audio material, it never sounded quite like an authentic high-end player. It doesn't quite have the grip or the gravitas of the best players in this test, and if there is a global criticism that can be levelled against this player, it is that the range of darker tonal colours and sonorities seems slightly foreshortened.

Where the Pioneer does score is in its lightning speed and attack. There

is plenty of texture and pace, but without brittleness or brightness. With the Bartok CD, which can be spoilt quite easily, the sound was extremely detailed, but also smooth and refined. Uncharacteristically it was the Pink Floyd recording that sounded a tad undernourished.

With DVD-A material, the Pioneer retained its natural clarity and poise. Brass sounds were strong without being strident, and the Miles Davis recording was clear and refined, but again there was something missing: dynamically, the player seemed slightly but significantly soft-centred. Nevertheless, the newer recordings (Beethoven, etc) acquired towards

The new DVD-939 is packed with an impressively flexible range of features.

the end of the test programme sounded very promising – and clearly more physical and realistic than anything available from DVD-V.

CONCLUSION

This is a good player, whose closest competitor in this group is probably the Toshiba SD900E, which on consideration is the marginally better. They are similarly priced, have similar sound quality, and both benefit from particularly refined picture quality, with excellent impulsive noise suppression and resolving power.

THE LAB REPORT

PIONEER'S SOPHISTICATED main board is populated with its own MPEG video decoders, though the DD and dts 'engine' appears to be on a daughter board running with dual Motorola processors. 24-bit/192kHz-compatible AD1852 DACs feeds the front/main channel outputs while a pair of 24-bit/96kHz AD1854s service the centre, sub and two rear channels. The response is just -0.07dB down at 20kHz and -0.85dB at 45kHz with 96kHz DVD-A material while distortion is fractionally higher than aver-

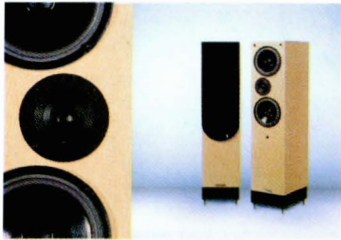
age at 0.002% (re. 0dBFs). Low-level resolution is poor with errors of +0.0/-1.5dB over a mere 90dB range. Stopband rejection varies with sample rate, yielding 107dB suppression with 44.1kHz CD, 77dB with 48kHz DVD and just 24.8dB with 96kHz DVD-A. Jitter is also rather higher than expected at 810psec and is linked to a complex power-supply interaction. Indeed, even without my jitter analyser, it's possible to 'see' obvious jitter patterns associated with all high-level, high frequency audio signals.

"WITH DVD-AUDIO MATERIAL, THE PIONEER RETAINED ITS NATURAL CLARITY AND POISE."



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SONY SCD-555ES SACD PLAYER

SOUND ★★★★★ **VALUE** ★★★★★ **£1,199.99** **CONTACT** 01932 816000 www.sony.co.uk **GUARANTEE** 1 YEAR

Billed as Sony's entry-level ES model, this SACD player doubles as a CD player, but there are no video attributes, DVD or otherwise, and the digital outputs are only connected when playing compact discs as digital outputs have yet to be mandated for either SACD or DVD-Audio.

Operationally, the SCD-555ES is like any CD player, except that there is a switchable variable coefficient digital filter for CD use, and hybrid discs provide the option of being played in SACD or CD mode. Another point of note that the new front loading mechanism is the smoothest and quietest of any on the market, SACD or CD, and incidentally is now as quick-acting as most others, unlike early Sony top loading SACD mechanisms.

SOUND QUALITY

Compared to DVD-Audio, we were almost spoilt for choice for worthwhile recordings, and so we concen-

trated on the hybrid options. This allowed SACD to be compared directly to standard CD transfers of the same music, including a recording of the second movement of Ravel's *Piano Trio* (The Florestan Trio on Hyperion) in the panel tests, and later a recording of choral music from *Gaudaemus* (DMP) which is one of the first two/six-channel CD/SACD hybrid discs.

The Rolls Royce operational feel is matched to a standard of music making that was sumptuous and smooth almost to a fault. There were even times when the player sounded so utterly lacking in grain and edge that it practically disappeared into the woodwork, but still with no noticeable loss of detail or subtlety. There were occasions when the difference between CD from SACD was somewhat less than that between chalk and cheese, but on the whole the SACD transfers had an almost palpable texture. There was a feeling of

blackness between notes that gave an extra frisson of naturalness and vibrancy, and of greater image depth and ambience. These qualities were not achieved by downgrading CD replay quality either. On every count the SCD-555ES is an exceptionally musical CD player, using the standard setting of the switchable digital filter, which was not only the most consistent musically with a range of recordings, but was also most consistent with SACD replay using hybrid discs where a comparison could be made.

CONCLUSION

The problem with this player became apparent halfway through the test,

It may only be 'entry-level ES', but the SCD-555ES puts many others to shame.

when the first multichannel SACD players and software were launched at CES. Unlike DVD-Audio, there is no multichannel mode with this player, and although the early multichannel SACD players may not be as refined as the SCD-555ES (Philips' SACD-1000 is expected soon but it will cost more than this – Ed), the idea of two channel SACD is one whose time is limited. But the performance and engineering of this player are clearly exceptional, and in its way it is something of a landmark product that does a limited job quite brilliantly.

"THE ROLLS ROYCE OPERATIONAL FEEL IS MATCHED BY A SUMPTUOUS AND SMOOTH STANDARD OF MUSIC MAKING"



THE LAB REPORT

FOR A FULLER DESCRIPTION of the only SACD player to grace this test, see *HFC* 210. Sony's latest circuit architecture reduces harmonic distortion in the SCD-555ES to as low as 0.0003% at 1kHz/0dBfs and 0.008% at 20kHz/0dBfs. With SACD material, the 20kHz figure increases to 0.015% because of the additional ultrasonic noise suffered by the DSD (Direct Stream Digital) process. Nevertheless, unlike with linear PCM (used by CD and DVD alike), there is no need for any digi-

tal filtering to remove stopband images. Jitter is low at 180psec and would have matched the ~140psec or so achieved by its best CD players if it were not for a slight interaction from the power supply. The S/N, meanwhile, is up with the best of DVD-A at 110dB (A-wtd) though the response is rather tailored, falling by -0.5dB at 20kHz but reaching -2.8dB at 50kHz (-32dB at 100kHz). Frankly, at these frequencies, nobody should hear the difference though it should give the partnering amplifier an easier ride.

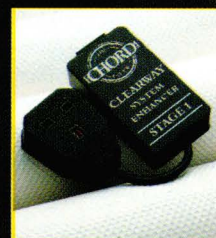
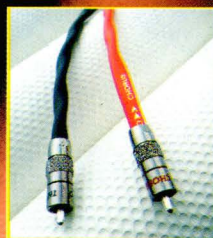
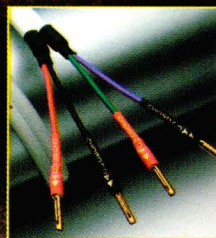
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GUARANTEE 1 YEAR

Billed tellingly as an audio device with pictures rather than a video device with sound, this slightly arcane distinction may be lost on those who realise that this is not a DVD-Audio player. In fact it is straight DVD-Video, and unlike the only other example in this group, from Arcam, there is no definitive promise that the DVD-1210R will be upgradable to full DVD-Audio status. But such an upgrade is at least technically and economically feasible.

The claims for audio excellence spring from the player's rigid, closed aluminium diecast chassis, a strategically positioned servo/decoder, elaborate high capacity digital and analogue power supplies, and serious power line filtering.

The player also employs a variable coefficient digital filter using a Motorola 56362 DSP programmed with five proprietary algorithms, and an Analogue Devices AD1853 dual

differential D/A converter whose best case resolution on paper matches the requirements for DVD-Audio (24-bit 192kHz x 2 channel), with extensive use of audiophile grade op-amps and passive components to suit. Twin lasers allow the T+A to work with CD-R and CD-RW discs, but control logic and disc handling are inconsistent and obstructive.

SOUND QUALITY

Testing concentrated on CD compatibility mode using the standard digital filter, and also Mode 3 (Bezier – IIR), on balance probably the two most useable settings; and DAD replay (24-bit/96kHz DVD-Video). Generally both types gave good results with some “grit and congestion” and “aggression” in the Bartok (standard filter), though there was plenty of praise for the strong, articulate sound, the “solid, rhythmic” bass (although one panellists thought it overblown) and the large image

scale. The other favoured filter setting sounded a little less obvious, and slightly more relaxed than the sometimes glassy standard setting, though the generally up-front, sometimes aggressive feel seems to be part of the furniture and was not easily tuned out. The natural warmth and fullness of recordings like the Pink Floyd suited the T+A particularly well, but the explicit way it dealt with the Bartok Concerto recording was also a clear, if less euphonic, success.

DAD 24/96 recordings, which are in danger of becoming a historical oddity, were if anything a little more impressive than usual, implying that the player's (presumed) unusual

The T+A player is expensive and extremely well made but not DVD-A ready as yet.

resolving power for a DVD Video player stands it in good stead. There was more than the usual sense of air and properly constrained space, and dynamics were particularly strong.

CONCLUSION

The snags are obvious enough: a slightly over-emphatic sound (mitigated to an extent by careful choice of filter) and, above all, the price, which is well above that of the full DVD-Audio players in test, some of which are at least as good musically with non-DVD-Audio material.

“THE PLAYER'S UNUSUAL RESOLVING POWER FOR A DVD VIDEO PLAYER STANDS IT IN GOOD STEAD.”



THE LAB REPORT

DESPITE BEING NO MORE compatible with DVD-A software than the Arcam DV88, this T+A DVD-1210R is still equipped with two 24-bit/192kHz-capable AD1853 DACs in a dual-differential mode. With a combination of AD and BB op-amps in the analogue stage, this yields a high 2.5V (+2dB) peak output and an exceptionally low 0.0005% distortion at -10dBfs (a higher 0.0012% at peak output). Distortion in Dolby Digital mode (5.1 down-mixed to 2ch) is very low indeed at ~0.002% through the

upper bass/midrange and just ~0.001% through the upper midrange/lower treble (all re. -20dBfs). Jitter is on a par with the lowest levels ever recorded at 139pssec while the S/N ratio, somewhat ironically, is wider than any of the true DVD-A players in our test at 114.6dB. With the standard FIR digital filter, its response shows a mild treble shelf (-0.6dB at 20kHz), though this is more strongly modified by the other filter options (see *HFC* April 1999 for a full description).



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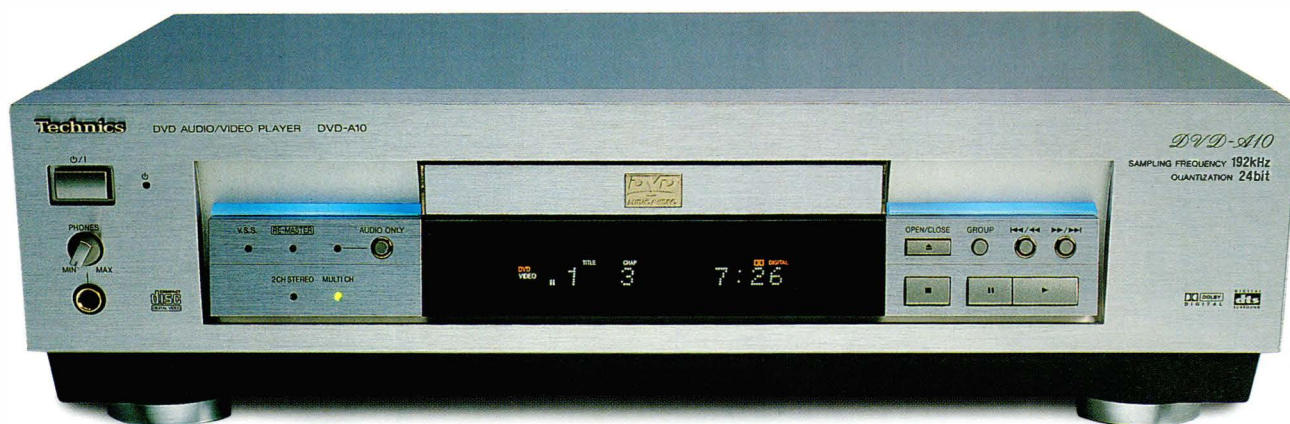
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TECHNICS DVD-A10 DVD-A/V PLAYER

SOUND ★★★★★ **VALUE** ★★★★★ **£899.99** **CONTACT** 08705 357357 www.technics.co.uk **GUARANTEE** 1 YEAR

I've spent longer with this model than any other DVD-Audio player, but then it's been around longer than any other, a symbol of parent Matsushita's belief in the format. It is unfortunate that there has been an absence of worthwhile DVD-A recordings to exploit its potential. Even the company's own demo material has been mastered incorrectly – see 'DVDisastrous' in *HFC* 210.

The DVD-A10 is solid, heavy and has an attractive pale champagne finish, with a low resonance composite base construction, and it gives every indication that corners have not been cut. The only gimmick is the pair of illuminated blue horizontal strips – a styling device that has been used in previous Technics hardware. The player's list of capabilities extends to full DVD-Audio, DVD-Video and CD replay, with integral dts and Dolby Digital decoders. Component and RGB video outputs are missing, which

will take the shine off for videophiles, and digital outputs are available downsampled to 48kHz maximum (a common restriction), 96kHz and 192kHz outputs being available in analogue only.

SOUND QUALITY

As CD player the DVD-A10 was a moderately refined example of the breed, which offered clearer insights than some of the others, especially into multi-track vocals. At the same time, the orchestral string sound in the complex Bartok was slightly raw and shut in, and there was never quite the sense of expansiveness or space, or the dynamic freedom in CD mode, that characterised the best players in the group. The Technics was described as "lacking light and shade" in the classical track, and overall there was some loss of fine detail.

Subject to the caveats that affected all the DVD players during the panel

tests, DVD-Audio material also sometimes had a rather airless quality, but there was plenty of detail, depth and range to the sound. With new discs in the hands-on testing, the Technics at last showed signs of growing wings. The player began to demonstrate some of the class that was clearly built in at ground level (and that the early recordings tried to hard to conceal), the classical (Beethoven) recording especially being atmospheric and physical.

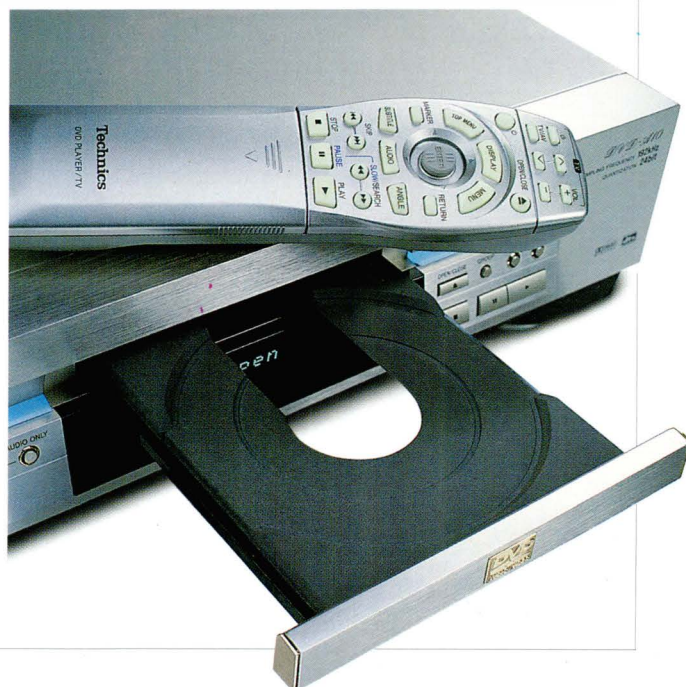
CONCLUSION

The Technics DVD-A10 is one of the

Great build quality matches the player's impressive ability with DVD-Audio.

better players in this test group, but it was never in danger of equalling the Sony SCD-555ES (for example) in those areas in which they could be compared. It is a moderately good, but not outstanding CD player, and a good DVD-Video player to boot, capable of powerful, expansive results with good dts recordings. But there is still a sense of restraint meaning that it was never as musically compelling as it should have been.

"THE TECHNICS IS ONE OF THE BETTER PLAYERS HERE, BUT IT'S NOT IN DANGER OF EQUALLING THE SONY SCD-555ES."



THE LAB REPORT

THIS 'TOP-END' VERSION OF the Panasonic DVD-A7 includes a number of additional facilities, most notably (or notoriously) the CD 'Re-Mastering' processor which, as I explained in *HFC* 209, is best left disengaged. Otherwise, as near as makes little or no difference, this is a DVD-A7 chassis mounted atop one of Technics' heavy hybrid bases. The output level is fractionally higher than either the Denon or Panasonic players at 1.94V (as opposed to 1.90V) while the S/N ratio matches the Panasonic at

~105dB. The same boards and digital processors yield the same 'fingerprint' of results, including low 0.0007% distortion at 1kHz/0dBFS (44.1kHz CD, 48kHz or 96kHz DVD) and the characteristically below-average 68dB separation at 20kHz and +135ppm clock error. The principle differences include a brighter treble response (+0.15dB at 20kHz and +0.9dB at 44kHz with 96kHz DVD-A) and a proportionally higher HF distortion (0.012% vs. 0.005% at 20kHz). In my view, Panasonic's DVD-A7 represents the better value.

Sound looks

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Inner value



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TOSHIBA SD500E DVD-A/V PLAYER

SOUND ★★☆☆☆ **VALUE** ★★☆☆☆ **£699.99** **CONTACT** 01932 828828 www.toshiba.co.uk **GUARANTEE** 1 YEAR

This is the more straightforward of the two Toshiba DVD-Audio players included in this test. It has many of the same features as the senior SD900E, and an almost identical remote control, though it does not have the 'straight line' video muting facility of the senior model, and it is much more lightly built – and incidentally has a significantly reduced audio specification. The loading drawer is more obvious than the curiously disguised article on the SD900E, but this does give the SD500E an additional capability. It can accept two discs at once – even two discs of different types, such as a CD and a DVD.

Otherwise the headline feature sets of the two players are quite similar. They both offer integral Dolby Digital and dts decoders and Scart interfaces, but the SD500E has a straight interlaced component video output rather than the SD900E's potentially (note

the caveat) superior progressive scan. CD-R discs can be accommodated (but not CD-RWs), and an HDCD digital filter is fitted.

SOUND QUALITY

Although it's a thoroughly respectable video player, the SD500E is no equal for the SD900E in this respect. More significantly, it is much less thrilling as an audio player too, whether the sound is from CD or from DVD-Audio, or even DVD-Video derivatives like DAD (24/96 x 2). There was plenty of weight to the sound, and an attractive tonal balance, which gives the impression of being slightly lacking in top end detail and presence. The bass however was heavy handed, and the musical effect thick and slow. These findings varied little with the type of source material, though there were problems achieving any result from the player with DVD material in the panel tests, and the tests here from

DVD-Audio refer to hands-on listening towards the end of the project. Given the problems involved with the early discs, and the inability to guarantee accurately matched replay levels in the DVD-Audio sequences, little was lost in practice.

The Beethoven DVD-Audio sounded full-bodied, but lacking in detail and space, and the Miles Davis recording too was lacking in grace and subtlety. The player's balance was clearly ill-judged for the Pink Floyd or indeed the Bartok test CDs: the former sounded heavy, and the latter lacked air and analysis. At no time was there anything overtly unpleasant about this player; it was simply

If you're serious about sound (and vision!) this player's price is its only attraction.

unable to get to the core of the music. In the end, it was simply unmemorable.

CONCLUSION

The best feature of this player is the price: for now this is the most affordable DVD-A player around. But it lacks the special analysis and delicacy needed to make the most of the new DVD-Audio medium, and in the end it begs that most fundamental of questions. Why bother including compatibility with a new format, if your hardware can't measure up to it?

"THE TOSHIBA SD500E IS MUCH LESS THRILLING AS AN AUDIO PLAYER THAN THE SD900E."



THE LAB REPORT

DESPITE USING THE same Zoran processor for DD and dts decoding, the SD-500E is not a 'lightweight' version of the SD-900E. In particular, its main (front L/R) analogue outputs are fed via an AD1852 24-bit/192kHz DAC while the auxiliary (centre, LFE and surround) channels are serviced via two dual-channel AD1854 24-bit/96kHz DACs. Distortion is a little higher than with the SD-900E (0.0018% vs. 0.0005% re. -10dBFs) while the S/N ratio is markedly weaker at 99dB (versus 111dB in

the SD-900E). Jitter is no worse at a very respectable 185psec. Interestingly, unlike the Panasonic-derived players, stopband rejection performance with the Toshibas scales with sampling frequency to give a good 110dB suppression with CD audio but just 77dB with 48kHz DVD and 25dB with 96kHz DVD(A). Otherwise, the response with 96kHz DVD-A material rolls off gently to give -0.1dB at 20kHz and -0.85dB at 45kHz where distortion is still surprisingly low at 0.007%.

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TOSHIBA SD900E DVD-A/V PLAYER

SOUND ★★★★★ **VALUE** ★★★★★ **£1,299.99** **CONTACT** 01932 828828 www.toshiba.co.uk **GUARANTEE** 1 YEAR

Cleanly styled and extremely solidly built, the CD900E has a sophisticated DVD-Audio player menu structure that takes you deeply through a thicket of progressive scan settings. There's contrast, brightness, tint, sharpness, black level, gamma, Y/C time bass correction, edge enhance settings and more, making this a player that can be finely tuned to the capabilities of the host system. There is some powerful assistance, for example in an on-screen remote control simulation, and the ability to recall preferred settings.

The disc drawer is invisible at first, but press the right button and a thin loading drawer projects forward rapidly as the central Perspex display window drops out of the way, a complexity that appears to be designed to inhibit acoustic feedback. Principal features include on-board dts and Dolby Digital decoding, an HDCD digital filter and the previously men-

tioned progressive scan for NTSC material only, not forgetting a distinctly superior picture noise reduction circuit and anti-aliasing filter. The player will cope with CD-R and CD-RW recordings. One good point is that the video can be turned off when playing DVD-Audio, to the benefit of sound quality.

SOUND QUALITY

The SD900E offers superb performance all round, and the longer it was used, the stronger the impression it made. Although the menu system is daunting, the defaults are well chosen, and the adjustments well catalogued.

As a video player, there are few to match this one: only the top of the line Pioneer and Sony models provide any real competition – and Sony's top DVD-Video player is SACD and not DVD-Audio. Picture quality is exceptionally sharp and subtle, noise levels extremely impressive, and there are

virtually no visible signs of digital processing in the system. Perhaps on a really big, projection screen it might be different. Similarly, Dolby Digital and dts recordings were handled well by the internal decoders.

The Toshiba is also a fine CD player, and an even better DVD-Audio player. As a CD player it is essentially the equal of the Pioneer DV-939A, and both benefit from using the CD bypass/direct switching, which helps open out the sound a little, thanks presumably to a quieter internal electrical environment. The Pink Floyd recording was powerful and propulsive, and the Bartok finely disciplined, allowing detail to come through

Powerful with CD, DVD-A and DVD-V, the Toshiba SD900E is a real winner.

without intrusiveness. And although it is early days to make definitive judgements of its highest resolution DVD-Audio sound (24/192 x 2), the multi-channel recordings to hand really did sound special, with a very firm, solid foundation, a coherent impression of detail and first rate soundstaging.

CONCLUSION

A disciplined and capable player, the SD900E is arguably the finest all round DVD-V/A player on the market today, with extensive facilities, and superb results in all operating modes.

"THE SD900E IS ARGUABLY THE FINEST ALL-ROUND DVD-VIDEO/AUDIO PLAYER ON THE MARKET."



THE LAB REPORT

OUTSIDE AND, ESPECIALLY, inside this is a beautifully constructed player with a sealed DVD mechanism and proprietary video and audio boards. A Zoran processor provides Dolby/dts decoding while a total of three AD1853 24-bit/192kHz capable DACs feed both the two-channel and decoded 5.1-channel outputs. The latter must be switched via Toshiba's on-screen set-up menu. Distortion is very low (<0.0025%) across all five of its 5.1 channels with DD-encoded material and bettered by

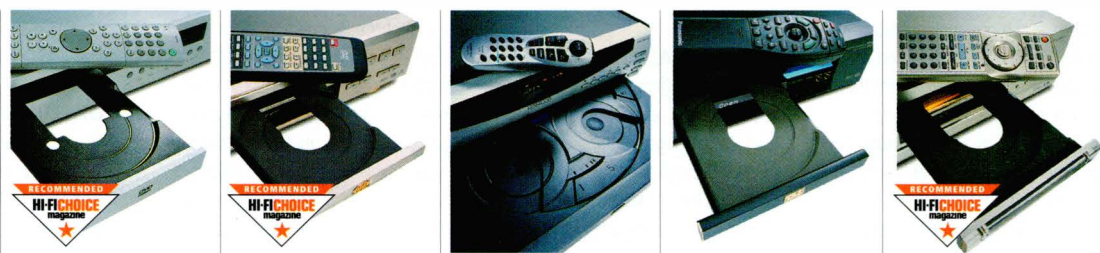
figures of 0.0006% in both two-channel CD and DVD-A modes (1kHz/-10dBFs). At the -30dBFs level, distortion is still very low at ~0.003%. Jitter is also exceptionally low for a DVD player, not quite in the Arcam or T+A class but still very respectable at 175psec. Low-level resolution shows a +0.0/-0.9dB 'blip' around the -90dBFs point but, otherwise, all is very well. The response, incidentally, is +0.2dB up at 20kHz before falling back to -1.3dB at 45kHz (DVD-A mode).

CONCLUSIONS

This test threw up more than its fair share of excitement, and a growing realisation, articulated initially by one of the panellists, that the general standard of CD replay has suddenly become surprisingly good.

In one sense this test came at a particularly opportune moment, as it allowed us to put together for the very first time a representative group of DVD-Audio players from several major manufacturers. In another sense the timing presented difficulties, partly because the quantity of recorded DVD-Audio material was negligible, and the quality – music and sound alike – was even worse. This problem was only addressed, partially, at the Consumer Electronics Show in Las Vegas,

DVD-A, DVD-V & SACD PLAYERS AT A GLANCE



MAKE MODEL	ARCAM DIVA DV88	DENON DVD-3300	KENWOOD DVF-R9030	PANASONIC DVD-A7EB	PIONEER DV-939A
PRICE	£899.90	£999.99	£899.95	£699.99	£1,200.00
SOUND VALUE	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
CONCLUSION	A DVD-Video player built with evolution in mind, but picture quality exceeds musical quality as a CD player.	Sometimes slightly inconsistent and strident sounding in all modes of use, but it pulls a little more off disc too.	The first multidisc DVD-A player is physically large and obstructive, but it is a smooth, slick operator.	Chopped down Technics DVD-A10 retains most of the features with well-balanced, but less refined sound.	Fine player with near state-of-the-art video performance and attractive music making from CD and DVD-A alike.
GUARANTEE	2 YEARS	2 YEARS	1 YEAR	1 YEAR	1 YEAR
THE LAB REPORT					
LOW DISTORTION?					
LOW JITTER?					
WIDE DYNAMIC RANGE?					
EFFECTIVE DIGITAL FILTER?					
OVERALL RATING					
MEASUREMENTS					
CHANNEL SEPARATION @ 1KHZ	97dB	92dB	111dB	93dB	104dB
FREQ. RESPONSE @ 20HZ/20KHZ	0.0dB/-0.15dB	0.0dB/0.0dB	0.0dB/+0.1dB	0.0dB/0.0dB	0.0dB/-0.1dB
THD VS. LEVEL, -90 dBFS @ 1KHZ	2.5%	2.35%	2.95%	2.45%	3.5%
OUTPUT LEVEL, UR	2.22V/2.23V	1.89V/1.89V	1.96V/2.00V	1.9V/1.9V	1.95V/1.94V
S/N RATIO (A-WTD)	105.9dB	100.8dB	108dB	105dB	109.9dB
TOTAL CORRELATED JITTER	155PSEC	256PSEC	185PSEC	280PSEC	810PSEC

SO WHERE NOW FOR THE SILVER DISC? IS ANY FORMAT WORTH INVESTING IN MORE THAN THE OTHERS? ALVIN GOLD ROUNDS UP...

halfway through the test, which provided the first opportunity to acquire limited numbers of worthwhile DVD-Audio titles. At the same time, the rival SACD camp chose CES to announce the imminent arrival of multichannel SACD, which also coincided with the release of the first wave of music titles. For the first time, the gloves were off, and the battle between DVD-Audio and SACD could be joined.

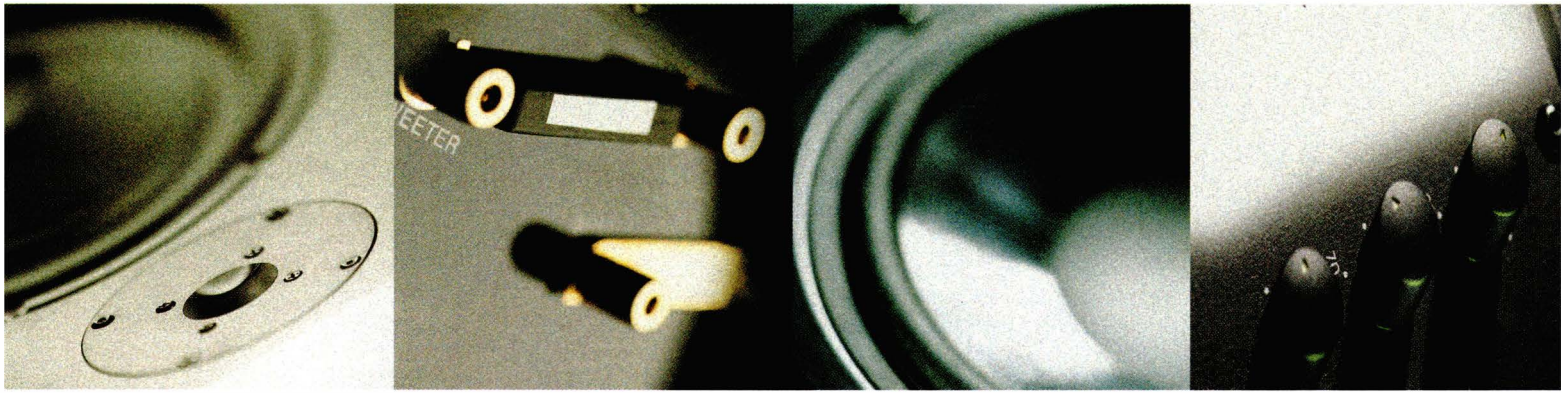
These developments have combined to change the landscape, and we've attempted to reflect this in print. For example, there is no doubt that the finest standard of music making of the ten players was achieved by the Sony SCD-555ES, both as an SACD and as a CD player, and this model earned itself a Best Buy, which on

musical merit it richly deserves. But from what has been heard from DVD-Audio and dts during the test, and at CES from multichannel SACD, the musical significance of multichannel music reproduction is not to be underestimated. It is emphatically not just another gimmick, and in this respect it is worth reminding the reader that stereo was originally conceived as a three-channel process, rather like current five-channel systems without the surround channels. It was a historical accident, namely the limitation of technology at the time, that led to the association between stereo and two channels. Done right, multichannel audio delivers a sense of involvement and realism that two-channel stereo cannot match.

DVD-A, DVD-V & SACD PLAYERS AT A GLANCE



SONY SCD-555ES	T+A DVD-1210R	TECHNICS DVD-A10	TOSHIBA SD500E	TOSHIBA SD900E	MAKE MODEL
£1,999.99	£1,699.90	£899.99	£699.99	£1,299.99	PRICE
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	SOUND VALUE
Fabulously built and fine-sounding two-channel SACD player; but not multichannel yet...	Ergonomically a mess, but detailed and dynamic, though there's no guarantee of a DVD-A upgrade path.	Well-built, early generation DVD-A player with full in-board DVD-V decoding and a good sound.	OK DVD-V player, but lacklustre with music, especially when reproducing high resolution DVD-A material.	Top class DVD-A player and also a superb DVD-V player; in this context pricing is competitive.	CONCLUSION
1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	GUARANTEE
THE LAB REPORT					
					LOW DISTORTION?
					LOW JITTER?
					WIDE DYNAMIC RANGE?
					EFFECTIVE DIGITAL FILTER?
					OVERALL RATING
MEASUREMENTS					
104dB	105dB	93dB	105dB	107dB	CHANNEL SEPARATION @ 1KHZ
0.0dB/-0.5dB	0.0dB/-0.6dB	0.0dB/+0.15dB	-0.1dB/-0.1dB	-0.2dB/-0.2dB	FREQ. RESPONSE @ 20HZ/20KHZ
1.25%	2.4%	2.5%	3.2%	4.1%	THD VS. LEVEL, -90 dBFS @ 1KHZ
2.11V/2.11V	2.53V/2.52V	1.94V/1.94V	1.97V/1.97V	2.08V/2.06V	OUTPUT LEVEL, L/R
109.5dB	114.6dB	104.5dB	98.3dB/100.7dB	111dB	S/N RATIO (A-WTD)
180PSEC	139PSEC	230PSEC	186PSEC	175PSEC	TOTAL CORRELATED JITTER



Five Stars For Value

Paul Messenger explains why you should visit an independent specialist dealer if you are searching for real hi-fi satisfaction

Why use a specialist hi-fi dealer? The short answer is because he knows one hell of a lot more about hi-fi than you do. And if you've gone to the trouble of picking up a specialist magazine on the subject, you're obviously interested in something rather more than a mini system from the nearest electrical superstore.

You've probably bought this magazine for one of two reasons. You're looking for advice (presumably unbiased and good) on choosing and using your hi-fi system, and/or you're checking out the ads to decide where to go and buy it.

The independent specialist dealer doesn't know everything, and he doesn't know much about you, but if music's an important part of your life, he's the only guy around who's able (and hopefully willing) to help you choose the equipment which will give you the best long term satisfaction.

Power of the Press

Dealers sometimes moan to me about the power of the press, and the disproportionate influence of its 'Best Buy' and multi-star ratings. Well, I've been in the press for twentysomething years, and still feel more ignorant than powerful.

The more I mess around with hi-fi gear, the more I become aware of our lack of real understanding of the subtleties involved, and the more I appreciate the importance of the dealer's skills and experience, in bringing together components so that the whole is greater than the sum of its parts.

We hacks get paid to write words, often about components in isolation, because individual product reviews are still the staple diet of the press. They can sometimes provide a useful guide to the way a product performs, but only under the particular

circumstances in which the review was conducted.

The hi-fi reviewer attempts, with varying degrees of success, to evaluate a particular component, and find something interesting (and hopefully positive) to say about it. That's about the end of it, and it's on to the next product.

The magazine prints the review, and that very process magically confers a measure of authority. Experienced hi-fi enthusiasts, who read reviews over a period of years and try out various products themselves, soon start to realise the limitations of that approach. Some reviews are better than others, but none can get to grips with the real heart of the problem - whether a given product will improve your musical satisfaction, in your system and your room.

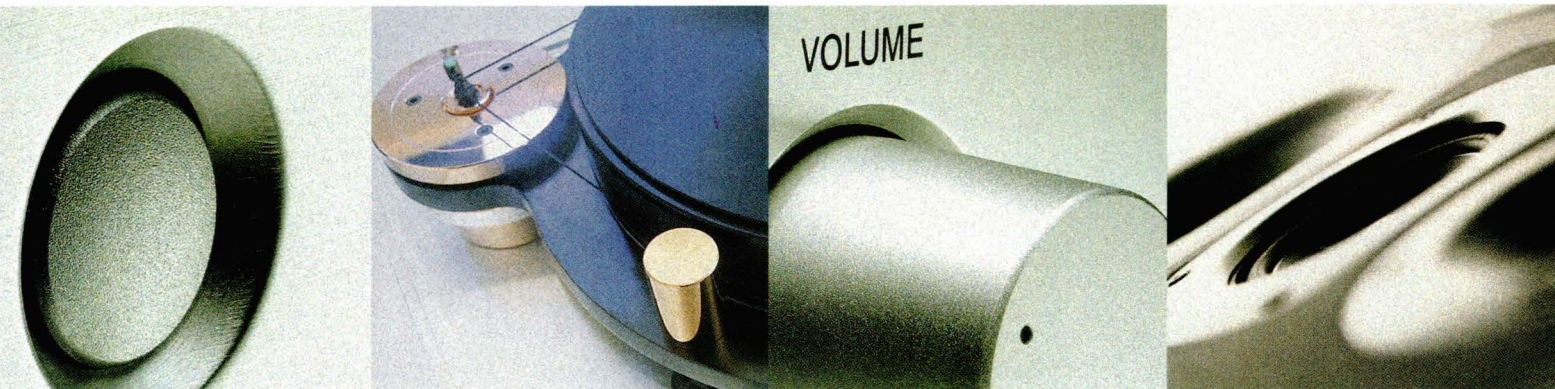
The Role of the Dealer

The dealer's role is very different, and potentially much more valuable. He has the chance to talk one-on-one. If he's good at his job, he'll use that opportunity to find out what you as an individual are looking (or listening) for.

His motivation is very different too. Sure he wants to make a sale. That's the lifeblood of any shop. But he also knows that if something he sells really does deliver long term satisfaction, there's a very good chance you'll come back again to see if he can repeat the trick some time in the future.

STAR QUALITIES

value for money	★★★★★
service	★★★★★
facilities	★★★★★
verdict	★★★★★



If you go into a shop and demand a particular CD player, on the basis that it got seven stars (out of five) in last month's magazines, the shop will probably simply take the line of least resistance and sell it to you. (Or switch-sell you to a similar price alternative, if he's fresh out of stock of that particular flavour-of-the-month.)

If you go in and say you're looking for a CD player, and want his advice on what to choose, things are liable to become more interesting. The onus is now on the dealer to show what he can do. His first task is to ask the right questions to try and get some idea of what you might be after.

Asking the questions is the easy bit. The real skill comes in using the information to come up with a shortlist of likely contenders, and then conducting a demonstration so that you have a real chance to play a central role in the decision making process.

Putting together a successful hi-fi system might not be as difficult as it was twenty or thirty years ago, but it's just as easy to make a mess of things. Put the 'wrong' combination of components together and it'll still sound a lot better than any cute little mini system package. It might even rate a five star review. But it won't match the potential of a carefully balanced and properly installed system, and it

certainly won't cater for your own particular preferences and personality.

We British are notoriously indiscriminating consumers, at a mass market level at least. The majority of the population don't even bother to drive a car they're thinking of buying, never mind take the trouble to listen to hi-fi equipment.

The majority will therefore end up with hyperstore mediocrity, and hi-fi that's about as tasty as supermarket bread. But if music is an essential ingredient in your daily diet, you owe it to yourself to become a member of the discriminating minority.

You know full well that your music collection is as individual as your wardrobe, and just as precious too, so it's worth taking the time and trouble to search out the dealer and equipment that will make that collection come alive, and give you a new buzz every time you play your favourite discs.

The independent specialist may not beat the chain store on price, but he continues to thrive in a hostile environment because real hi-fi is so much more than a matter of price. The people who work in these shops are themselves enthusiasts, often with many years of experience in meeting customer's needs, and the very necessary expertise to ensure that the whole thing is properly set up to deliver the best results.

The better the hi-fi, the more important it is to get the fine details right at the installation end of things, but even the least expensive equipment can be made to sound a whole lot better if good care is taken over the fine details - the support furniture, the cabling, the positioning of speakers and so on.

Without expert assistance even high class hi-fi can give mediocre results. With it you'll stand a very good chance of ending up with something rather more than a consumer durable - something which will be a source of considerable pleasure and genuine emotional satisfaction for decades to come.

I agreed to write this signed piece, irrespective of the specific sponsors, because I believe the independent specialist dealer plays a vital role in giving customers long term hi-fi satisfaction. The views and opinions expressed here are my own and not necessarily those of Hi-fi Choice.

Paul Messenger

[The specialist Dealers listed here are professional and enthusiastic. Give your nearest a ring for a demonstration.](#)

TOP 20 UK SPECIALIST HI-FI DEALERS

LONDON

N1 GRAHAMS HI-FI
190a New North Road
020 7226 5500

SW11

ORANGES & LEMONS
61/63 Webbs Road, Battersea
020 7924 2040

W4 MARTIN-KLEISER
109 Chiswick High Road
020 8400 5555

SOUTH

Ashford, Kent
SOUNDCRAFT HI-FI
40 High St. 01233 624441

Chelmsford
RAYLEIGH HI-FI
216 Moulsham Street
01245 265245

East Grinstead
AUDIO DESIGNS
26 High St. 01342 314569

Kingston-upon-Thames
INFIDELITY
9 High Street Hampton Wick
020 8943 3530

Lakeside Retail Park

RAYLEIGH HI-FI
Dansk International
Furniture World
01708 680551

Rayleigh, Essex
RAYLEIGH HI-FI
44a High St. 01268 779762

Ringwood, Hampshire
PHONOGRAPHY
Star Lane 01425 461230

Southend-on-Sea
RAYLEIGH HI-FI
132/4 London Road
01702 435255

Uxbridge
MARTIN-KLEISER
278 High Street
01895 465444

Worthing PHASE 3 HI-FI
213-217 Tarring Road
01903 245577

MIDLANDS

Banbury OVERTURE
3 Church Lane
01295 272158

Birmingham
SOUND ACADEMY
152a High Street, Bloxwich
01922 493499

Leicester CYMBIOSIS
6 Hotel St. 0116 262 3754
Northampton LISTEN INN
32 Gold St. 01604 637871

Shrewsbury
CREATIVE AUDIO
9 Dogpole 01743 241924

NORTH

Cheadle AUDIO COUNSEL
14 Stockport Road
0161 428 7887

Oldham AUDIO COUNSEL
12/14 Shaw Road
0161 633 2602

Sheffield
MOORGATE ACOUSTICS
184 Fitzwilliam St
0114 275 6048

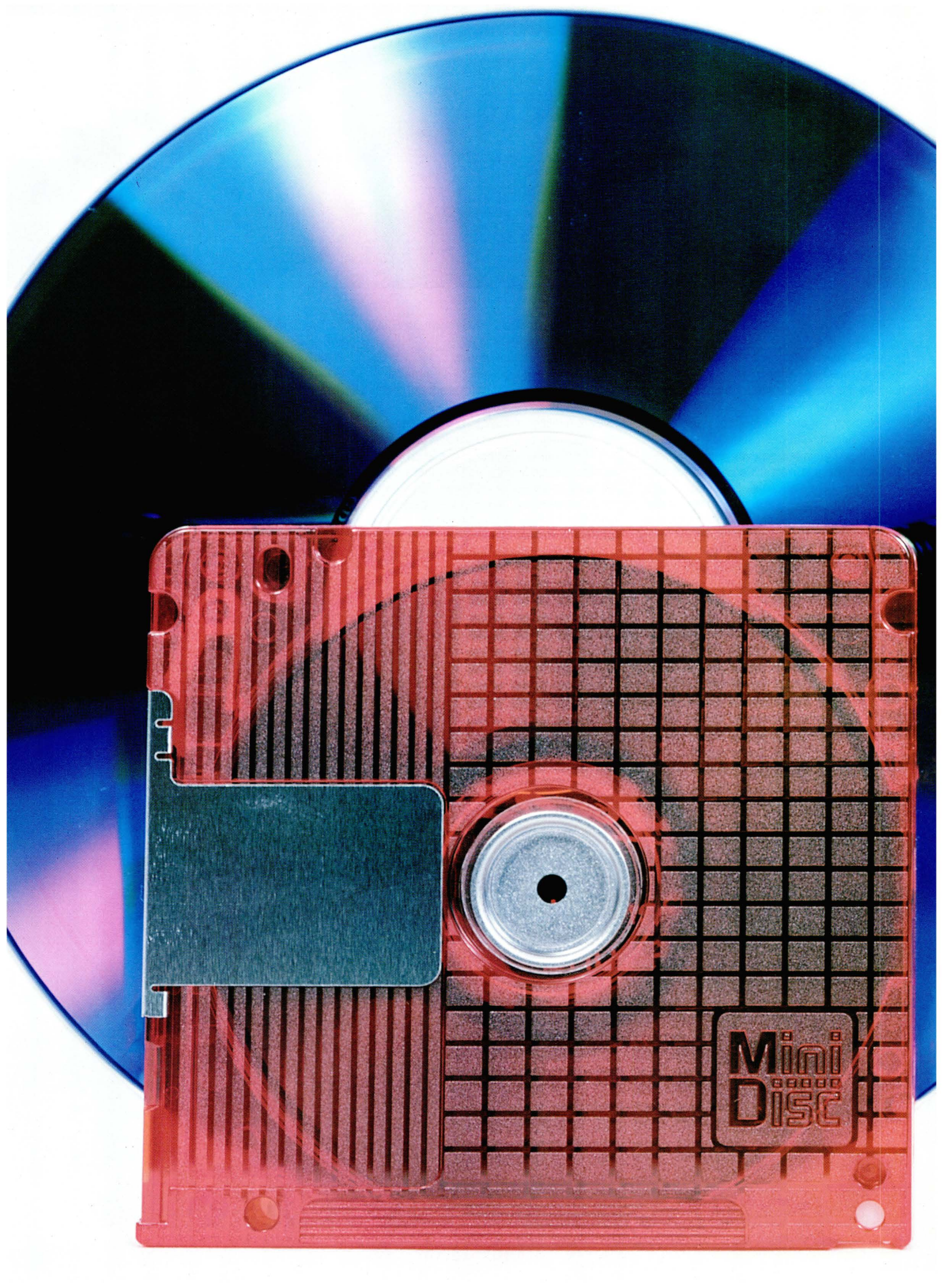
York SOUND ORGANISATION
2 Gillygate 01904 627108

SCOTLAND

Edinburgh
RUSS ANDREWS HI-FI
34 Northumberland Street
0131 557 1672
Glasgow STEREO STEREO
260 St. Vincent Street
0141 248 4079

N. IRELAND

Belfast LYRIC HI-FI
161 Stranmillis Road
028 90 381296



Mini
Disc

BLANK DIGITAL MEDIA

LIKE PETROL TO A CAR, CD AND MINIDISC RECORDERS ARE ONLY AS GOOD AS WHAT YOU PUT IN 'EM. HERE, PAUL MILLER FINDS THE BEST DISCS TO DICKER WITH.

Fifteen years ago, the phrase 'blank audio media' meant one thing: the compact cassette. The intervening period has seen DAT (digital audio tape) and DCC (digital compact cassette) rise and fall as potential challengers to the familiar analogue tape. But the knockout blow has only been delivered by the convenience of Sony's MiniDisc (MD) combined with the 'lossless' digital recording quality offered by both CD-R (one-time recordable CD) and CD-RW (re-writable CD).

Along with the spread of this new technology, a myth has developed that digital recordings onto CD-R and CD-RW are indistinguishable from the original (CD). Furthermore, that MD, despite its use of invasive data reduction, offers what is blithely described as "CD sound quality". If this were the case then there would be no difference in competing CD-R/RW and MD media save for its price and branding. And that's an illusion we intend to shatter in this test.

More recently, the Orange Book standard for CD-R and RW media has been relaxed to accommodate longer 80-minute recording times. This is achieved by tightening the pitch of the pre-groove, allowing a longer spiral of data to be squeezed onto the disc. Disc manufacturers rely on the improved tracking performance of modern CD transports to 'find their way' through this pinched channel of data, though some compromise in performance seems inevitable with some CD players.

Compatibility is also an issue. While MD and CD software are not interchangeable, neither will many CD players purchased more than a year ago successfully recognise a CD-RW disc. This is because the reflectivity of the CD-RW substrate is far lower (15-25%) than that of CD-R discs (typically >65%). Ironically, many older DVD players will load and play CD-RW audio discs while failing to play CD-R. Obviously, a CD-R/RW recorder will playback all CD types but it's worth checking the relative compatibility of your next CD (in-car or domestic) or DVD player purchase if you're intending to amass a collection of CD-R/RWs.

If you're interested in a deeper exploration of CD-R and MD technology, please refer back to my articles in *HFC* June and October 99, respectively. The lab together with the blind, level-matched listening tests performed here, follow the form of those earlier reviews.

THE DISCS

RECORDABLE COMPACT DISC

BASF CD-R MAXIMA (CD-R)
FUJI CD-R AUDIO (CD-R)
TDK CD-RXG (CD-R)
TRAXDATA SILVER TXA80 (CD-R)
HI-SPACE CD-RW AUDIO (CD-RW)
MAXELL CD-RWMMU (CD-RW)

MINIDISC

BASF MD MAXIMA
FUJI MD
MAXELL MD
SONY PREMIUM MD
TDK XS-IV
TRAXDATA MD80

OTHER EQUIPMENT USED

Pioneer PDR-609 CD-R/RW Recorder
(full review next month)
Sony MDS-JB930 MiniDisc Recorder
Connected via a digital link to: Theta
DSPro Progeny DAC
DPA 100S pre/power amplifiers
Audio Note EII loudspeakers

MUSIC USED DURING TESTS

Carmen Lundy - *Self Portrait*
Christy Moore - *Collection*
Leftfield - *Rhythm and Stealth*



BASF CD-R MAXIMA

CONTACT: 01295 227800 www.basf-plc.co.uk **LENGTH:** 74/80 MINUTES

SOUND ★★☆☆☆☆ **£6.99 for 10 (74 minute discs)**

Now marketed under its new EMTEC brand name, BASF's familiar line of video, audio, CD and MD media continues apace. This CD-R Maxima disc is available in 74- and 80-minute lengths, employs a bright silver reflective layer and a light blue (cyanine) dye layer. According to my measurements, however, the smallest spots of data melted into this layer are potentially less well-defined than with our other 74-minute CD-R discs. Nevertheless, there appears to be less change in the resultant digital output from the CD player than expected, while digital jitter was the lowest of the group.

During the listening tests, our panellists were aware of BASF's CD-R adding some emphasis through the presence band. This enhanced the rustle of percussion but over-shadowed the natural hue of vocals, which typically sounded slightly darker, albeit still intelligibly phrased. Christy Moore's voice was now a little more nasal, while the guitars were slightly de-focussed or, as one listener put it, "grey". In this instance, the general slowing of pace and rhythm, the added gruffness of his voice worked perfectly well, although other styles of music fared less convincingly.



FUJI CD-R

CONTACT: 020 7586 5900 www.fujifilm.co.uk **LENGTH:** 74 MINUTES

SOUND ★★☆☆☆☆ **£2.28 each (approx.)**

This disc was originally tested back in HFC 191 where both its technical and subjective performance earned it a recommendation. Re-tested here, the close similarity of all results is a tribute to the consistency of Fuji's manufacturing process. The disc uses a thick (opaque) silver reflecting layer and what appears to be a rich green (phthalocyanine-based) dye layer. Pit definition is second only to the TDK disc but with fractionally lower jitter.

Nearly two years ago, Fuji's CD-R was praised for its bright and lively sound, qualities evidently retained – witness the free-sounding vocals and excellent sense of diction and range enjoyed by digital copies onto today's samples. Bass percussion generally sounded very clean and well-defined, underpinning tracks much as it had in the original. There is a forwardness to vocals and just a hint or edge of brightness at the extreme top, a feature more noticeable with busier rock tracks where vocals can sound slightly more sibilant and percussion more alive. This emphasis of midrange detail affects male, rather than female, vocals that are typically pitched at a higher register. Overall though, Fuji's CD-R was well liked.

HI-SPACE CD-RW

CONTACT: 020 8600 3900 www.hi-space.com **LENGTH:** 74 MINUTES

SOUND ★★☆☆☆☆ **£2.99 each**



Sourced from the MPO plant in France, this CD-RW disc incurred the highest increase in audio data jitter, though at just +8.5%, and with a recorder of Pioneer's quality (base level jitter is ~190psec) this is far from serious. On the other hand, the nature of the SPDIF digital output derived from copies on Hi-Space's CD-RW looked far closer to the original than with Maxell's CD-RW. For all this, and rather than there being some localised distortion or coloration associated with the Hi-Space disc, our listeners suggested its rendition was almost uniformly less transparent than its CD-R brothers.

"Have the musicians eaten too many Easter eggs?" quipped one listener in response to the slightly lazy and staid performance of this disc. Carmen sounded rather like she was going through the motions, her backing group lacking drive and commitment. Our other recordings were also free of sibilance and obvious shifts in tonal balance but, consistently, sounded 'fatter' than the original. By way of dismissal, it was concluded that "the musicians have all pulled on puffy duffel coats".



MAXELL CD-RW

CONTACT: 01923 494400 www.maxell.co.uk **LENGTH:** 74 MINUTES

SOUND ★★★★★ £4.99 each

Having passed, unceremoniously, out of our listening tests with its CD-R disc, Maxell's Re-Writable equivalent proved a comparative success. Not without some controversy, though, for while audio data jitter was low there was still some obvious difference in the player's digital output when compared to that derived from the original, silver CD.

In line with the technical data obtained from this disc, the sound of its recording was also very slightly skewed. The balance of instruments in the mix was seemingly re-ordered, with the piano taking precedence over percussion, for example, though the end result was still very listenable in its own right. At least this CD-RW copy retained the spontaneity of treble detail, even as far as faithfully reproducing the analogue tape hiss from AAD/ADD CDs. The two guitars from our Christy Moore selection were obviously more forward in the mix, sounding busier and with plenty of engaging detail that failed to dampen the natural gruffness of his voice. Once again, there was a sense of the music having been re-mixed along the way, but we were all very content with the result.



TDK CD-RXG

CONTACT: 01737 773773 www.tdk.com **LENGTH:** 74 MINUTES

SOUND ★★★★★ £2.49 each

From the opening bars of the first test track, the ability of CD-RXG to provide inherently smooth-sounding, richly detailed copies was obvious. Unusually, the analogue tape hiss audible on the (original) CD of Carmen Lundy's *Better Days* was seemingly *less* obvious on the TDK copy without denting the resolution and spontaneity of the percussive hi-hat. Intriguingly, our digital dubs sounded uniformly warmer and smoother than the original without appearing detrimental to the performance itself.

This mirrors the opinion voiced in reaction to the very first CD-R recordings way back in 1992 (see *HFC* 106) where copies were often preferred over the silver original! Technically, the blue dye layer offers the sharpest pit definition of any disc in this test, precisely in line with TDK's claims. And yet recordings on this disc invoked the biggest change in the nature of our test player's S/PDIF digital output. The fact that the seemingly more coherent, relaxed and free-flowing sound of CD-RXG could be repeatedly identified under blind conditions indicates the results are no fluke. Frankly, digital copies on CD-RXG sound *different* from the original, but in all likelihood, you'll prefer them.

TRAXDATA TXA80

CONTACT: 01494 511010 www.traxdata.com **LENGTH:** 80 MINUTES

SOUND ★★★★★ £12.99 for 10



Traxdata did very well for itself in *HFC* 191 with its 74-minute CD-R. However, this 80-minute derivative with its silver reflective layer and bright blue dye bears closer resemblance to BASF's Taiwanese-sourced CD-R Maxima than the green dye layer and gold reflective surface of Traxdata TXA74. Recordings certainly sounded lighter and marginally softer than the original CD. Bass drums had less attack and weight to follow through, though the performance as a whole remained both coherent and 'light on its feet'.

But as the intensity of the music increases, the TXA80's grip becomes less convincing, losing both poise and subtle detailing. Christy sounded a little more sibilant, just as his partners, in common with the soundstage as a whole, were a little constricted. Appropriately, bearing in mind the tighter track pitch of an 80-minute CD-R, the busiest recordings were described as "slightly pinched and lacking the space to breathe". Whether this compromise is worth the extra six minutes recording time depends on the destination of the CD-R. With in-car or portable players, it's unlikely you'll hear the difference.

Question: Is this the best amplifier ever built?

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haan, ken, evet,
chai khan, ano,
da, hai, ia.....

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BASF MD MAXIMA

CONTACT: 01295 227800 **LENGTH:** 74 MINUTES

SOUND ★★☆☆☆ **£6.99 for 5**

The blue packaging suggests that BASF's MD Maxima is the sister product to its CD-R Maxima, though the magneto-optical substrate within the MD disc arguably bears far closer comparison with CD-RW technology. Otherwise, this MD formulation has the remarkable distinction of suffering the highest record/replay jitter of any MD in our survey – over 3000psec with the Sony MDS-JB930 recorder. Unaware of this fact, our listeners' initial impression was of a light and airy sound, "a musical picture painted on a broad canvas with a surprising deal of up-front detail".

Before long, they also commented on a "sense of coarseness" that contrasted with the smoothness and subtle refinement of the original CD. Strings and percussion certainly enjoyed a decent sense of space, but the transient nature of individual notes was altered, giving a slightly 'clanky' effect that was neither as naturally rich nor as believable as the CD source. Much of this was down to the potentially strangling effect of the MD process, though BASF's media still brought a cooler air to its recordings that detracted from the warmth and impact of the music.



FUJI MD

CONTACT: 020 7586 5900 www.fujifilm.co.uk **LENGTH:** 74 MINUTES

SOUND ★★☆☆☆ **£11.99 for 10**

Produced by Fuji Magnetics in Germany, this MD features a familiar translucent red case. Indeed the entire package looks unchanged from the sample reviewed back in *HFC* 194. Audio data jitter is the third highest in the group at 1435psec via the MDS-JB930 recorder. Despite this, and the pervading quality of MD notwithstanding, recordings on Fuji's MD sounded inherently more robust, with better sense of instrumental shape and texture from bass to hi-hat than they had on the BASF MD.

Much the same opinion was voiced back in October 1999. During our most recent listening tests, vocals were typically pushed a little forward but there was no obvious increase in any naturally occurring sibilance. Nevertheless, rather like painting by numbers, the natural hues of vocals and strings alike are "segmented rather than blending or flowing with the tide of the music". Male vocals are treated similarly, escaping added sibilance, but diluted of any original depth or character. Considering the potential violence done to the music by MD's ATRAC compression system, recordings on Fuji MD are good, but still far from the best available.

MAXELL MD

CONTACT: 01923 494400 www.maxell.co.uk **LENGTH:** 74 MINUTES

SOUND ★★☆☆☆ **£1.59 each**



Made in England for Maxell/Hitachi in Japan, this new range of MDs features a revised shell and matching plastic, rather than metal, shutter. Reductions in static, effects of vibration and reduced egress of dust are all claimed for the new system. Either way, my measurements showed record/replay jitter only just behind the BASF MD at 2795psec.

Recordings on this Maxell MD possessed what were described as a "slightly recessed and spindly quality", subsequently explained as a lack of warmth and a feeling of the music sounding cool and processed. Whereas the Fuji copies sounded relatively bold and forward, the Maxell disc adopted a more 'concave' character, pushing the boldest of mixes to the back of the room. Similarly, vocals typically had a slightly lacklustre sheen, failing to capture the attention or draw our listeners into the music. Frankly, the Maxell MD was not greatly appreciated. "Shouty, hard and wiry," remarked one panellist, "this disc would make a good coathanger." An interesting notion, but hardly practical.

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- **WARRINGTON:** 88 Bridge Street / 01925 632179
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- **BOLTON:** Knowsley Street / 01204 395789

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YAMAHA

TEAC

marantz



SONY PREMIUM MD

CONTACT: 01932 816000 www.sony.co.uk **LENGTH:** 74 MINUTES

SOUND ★★★★★ **£1.75 each**

Our last test (*HFC 194*) saw Sony's top ES MD earning its colours with a well-deserved Best Buy and this, intermediate 'Premium' MD follows suit just as convincingly. It employs an enhanced, laminated version of the 'Shock Absorbing' mechanism used in the cheaper 'colour MD' series, though I do not believe Sony is suggesting that Premium MD is any more 'jog proof'. Leave that to the solid-state memory that acts as a buffer in all portable MD players.

Technically, Premium MD enjoys a lower (though hardly low) 1355psec jitter in the MDS-JB930 player where its recordings were described as "light years ahead". The inherently more composed and smooth sound of its recordings were a delight to hear. Carmen's vocals now soared more naturally with a freedom and range previously only heard with the better CD-R copies. Bass resolution was impressive and clean-sounding, while the top-end suffered rather less at the hands of the 'MD strangling effect' than its competition. More importantly, it was the overall sense of integration and wholesomeness of the recordings, capturing the performers vigour and intent, that proved so impressive.



TDK XSIV80

CONTACT: 01737 773773 www.tdk.com **LENGTH:** 80 MINUTES

SOUND ★★★★★ **£1.99 each**

An extension to the so-called Rainbow Book specification for MD media now permits a finer track pitch (just 1.5 millionths of a metre) and, as a consequence, a longer 80-minute playing time. TDK's XSIV is just one of a handful of 'lifestyle' MD packages to stretch to 80 minute record and playback while suffering very little added jitter (a total of 1300psec in the Sony player). The nature of the digital data transmitted via the Sony's digital output *does* differ quite substantially from that of the 74-minute discs, however.

Our panel thought the TDK sounded good, but not quite as impressive as Sony's (74-minute) feat. Recordings on this 80-minute variation don't quite have the impact or poise of the original. Bass notes sound a little 'fluffy', a softness that mutes the impact and weight if not the volume and shape of low frequency detail. To some extent this leaves the stage open for a stronger vocal performance, though the extreme treble still has a suggestion of the 'clangy' quality endured with lesser MDs. The general softening and slight lack of focus might give the impression that the "musicians were playing on a bouncy castle", but the trade-off was judged to be acceptable.

TRAXDATA MD80

CONTACT: 01494 511010 www.traxdata.com **LENGTH:** 80 MINUTES

SOUND ★★★★★ **£14.99 for 5**

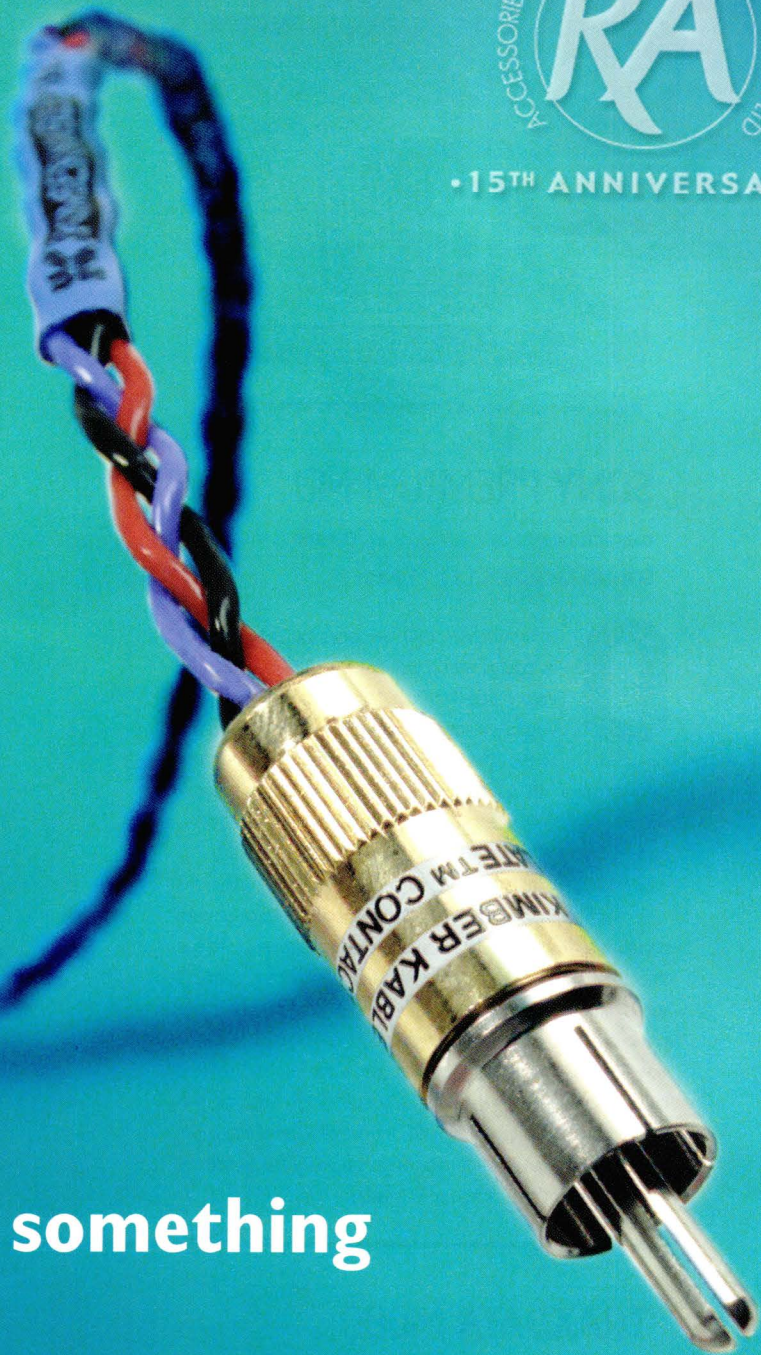


This disc was a little difficult to summarise, if I read the furrowed brows of our listeners correctly. Recordings on Traxdata's 80-minute MD are arguably a little sterile compared to the best (and the original), for while percussive detail can sound sprightly enough there is still a disjointed feel to the recording as a whole, interrupting the ebb and flow of the music. The slightly fluffy bass (once again) also robs the music of its fullest weight and impact, a loss of drive that extends through to what was described as a slightly "cardboardy" midrange. Technically, Traxdata's 80-minute variation shares the altered digital output and, thankfully, low jitter enjoyed by TDK's formula but the latter still ends up making better *sounding* recordings.

Evidently there's more to making a good MD recording than meets the eye because, although Traxdata MD80 provides about the right sense of scale and soundstaging, there's simply a feeling of diminished commitment on the part of the performers. Lacking some texture, its sound is just too washed-out compared with the performance offered by TDK's 80-minute XSIV.



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CONCLUSIONS

PAUL MILLER RECORDS THE BEST BLANK DIGITAL DISCS.

While the correlation with our first CD-R and MD tests (HFC 191 and 194) confirms the validity of our procedure it also serves to demonstrate that Recommendations for media will, to a greater or lesser degree, be influenced by your choice of CD or MD player. As far as CD-R discs are concerned, it's the chemistry of the coloured dye-layer, for example, which strongly influences the shape and definition of the pits formed during recording and impacts how easily the player can read back the data. The CD recorder itself also has a role to play. These use a small, inner section of the CD-R called the Program Calibration Area to set the optimum laser power for recording (typically between 4-8mW), but any miscalculation here will also affect the 'imprint' of data left on the disc.

In our tests, Fuji's CD-R disc was arguably the more faithful but it was TDK's CD-R XG formulation that won over the ears of the panel. Figure (1) shows the output during playback of both the original silver CD (black outline) with that derived from a notionally identical copy on TDK's CD-R XG. The taller blue peaks indicate that the formation of pits on the CD-R are sharper than those on the original CD!

Then again, the differences between the various CD media seem pretty hard and fast compared to the wild variations in performance encountered during our evaluation of blank MD discs. Our test player, the Sony MDS-JB930, represents a pinnacle of the breed and yet, so disparate was the performance of the MD software that a casual review of the hardware might have varied between a Best Buy (with Sony Premium MD) to a 'worth considering' with, say, the Maxell MD.

Figure (2) shows the jitter spectrum derived from a copy on BASF's Maxima 74-minute MD. Ideally, the plot should show a single central peak. All the additional peaks (of which there are hundreds) represent distortions caused by uncertainties in the audio data coupled with entirely spurious signals. Same recorder, same test track recorded on the same position of the disc, but exchange the BASF MD for Sony's Premium 74-minute MD and you end up with Figure (3). The differences between the two plots are quite startling when you bear in mind we have simply substituted the media – the data itself should remain entirely unchanged!

Does anyone still believe that choices in blank digital media have no bearing on sound quality?

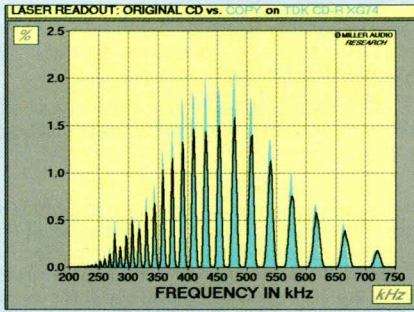


Figure 1: The black outline represents the original, and the blue is the same signal on a TDK CD-R XG copy.

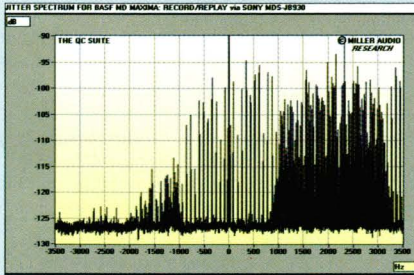


Figure 2: The proliferation of peaks show the distortion found on a recording on a BASF Maxima MiniDisc.

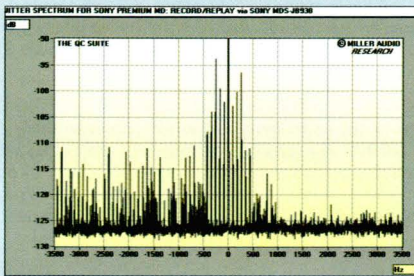


Figure 3: The same recording as above, but this time on the superior Sony Premium MiniDisc.

CD-Rs AT A GLANCE

MAKE	BASF	FUJI	HI-SPACE	MAXELL	TDK	TRAXDATA
MODEL	CD-R MAXIMA	CD-R	CD-RW	CD-RW	CD-RXG	TXA80
PRICE	£6.99 for 10	£2.28 each	£2.99 each	£4.99 each	£2.49 each	£12.99 for 10
SOUND	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
CONCLUSION	A little too much coloration to be worthwhile.	Liked by the panel, clean and well-defined.	Recordings lack drive and sound a bit flabby.	It changes the sound, but is detailed and engaging.	Coherent, relaxed and free-flowing: you'll like it.	Loses poise and detail for just eight more minutes

MINIDISCS AT A GLANCE

MAKE	BASF	FUJI	MAXELL	SONY	TDK	TRAXDATA
MODEL	MD MAXIMA	MD	MD	PREMIUM MD	XSIV80	MD80
PRICE	£6.99 for 5	£11.99 for 10	£1.59 each	£1.75 each	£1.99 each	£14.99 for 5
SOUND	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
CONCLUSION	Coarse and cool, reducing the music's impact.	Good, but still far from the best available.	"Shouty, hard and wiry" – steer well clear.	More like a CD recording than any other MD here.	Slightly soft, but still a very good option.	Sounds washed out and lacks texture.

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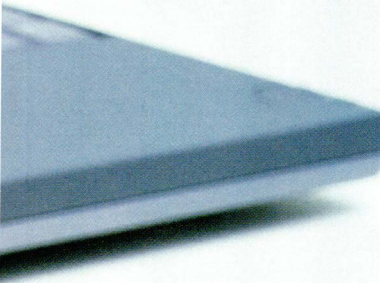
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MP3 & INTERNET AUDIO

TIM BOWERN CHECKS OUT THE LATEST PLAYERS DESIGNED FOR MP3 FILES AND COMPRESSED DIGITAL MUSIC.

These days it's hard to know what to call a test like this. Do you go for the buzzword 'MP3', or do you choose something more general like Internet Audio or Computer Music? Truth is, MP3 is just part of the picture, the catalyst for something much bigger than sceptics might imagine.

It is essentially a digital file format; one of several used to facilitate the storage of audio data where space is at a premium. It stands for MPEG-1 Audio Layer 3, a coding method able to reduce ordinary CD data to a fraction of its original size. It does this by discarding information deemed unnecessary to the end result, using repeating patterns in the file as the basis for making it smaller. However, the music's fundamentals (arguably) remain intact.

There are two reasons why this may be useful. The first is to obtain music files over the Internet, a fascinating trip for those with a PC and online access. File formats like MP3 make it possible to download an album's worth of music without racking up a huge phone bill. They also allow you to store these files on your PC's hard disc without taking up too much space.

The second reason for taking an interest in data-reduced file formats like MP3 is because of the doors they open towards exciting new music media. They have the potential to affect not just the way we obtain our music in the future, but also how it is stored and heard. Because of this technology, the dream of solid state storage for portable use has become a reality, because a useable amount of music data can be squeezed into limited flash memory.

The group test that follows shows how this sector is evolving and beginning to explore the music storage options available: solid state, CD-R and hard disc, even MiniDisc and Iomega's quirky Click! Disc are here. Most are designed to hook to a PC, from which you can transfer MP3 tracks; some are also portable playback devices. The two CD playing units are designed to play back MP3-encoded tracks on CD-R discs burned using a PC CD writer, along with ordinary CDs. Each one has its pros and cons, as you will read, but the world they open up is fascinating indeed.

For more information on the burgeoning world that MP3 is helping to create, see *HFC* back issues 195, 204 and 208. Also, turn to page 90 for thoughts on how these developments may affect our future.

THE PLAYERS

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WEBSITES USED FOR TEST DOWNLOADS

www.mp3.com
www.peoplesound.com
www.besonic.com

GLOSSARY OF TERMS

MP3: Data reduction codec for digital audio files. Over 90 per cent of music on the Internet currently uses this format.

AAC: More recently developed codec. Promises better sound and better content security. Has some powerful industry backers.

ATRAC: Sony's data reduction codec for MD.

Bit-rate: The amount of data handled per second. A higher bit-rate means better sound but a bigger file. 128Kbps is the accepted rate for 'near CD' sound.

Downloading: Saving a file from a Website to a PC, or from a PC to an external recorder.

Ripping: Copying files from a CD to a PC hard disc, ready to be 'compressed' using a codec like MP3.

Streaming: Receiving content from real time Webcasts rather than downloading it first. Will become more widespread as technology improves.

Flash memory: Storage media used by solid state personals. Cards come in various forms including MMC, Memory Stick and SD. A 64MB card will store around an hour of music at 128Kbps.



LOGIX EVZONE CLIK! DISC PERSONAL PLAYER/RECORDER

CONTACT: 01753 500400 www.lge.co.uk GUARANTEE: 1 YEAR

SOUND ★★☆☆☆☆ VALUE ★★☆☆☆☆ £219.00

Most MP3 personals use solid state storage, and that's a blessing *and* a curse. A blessing because they can be small and light, with no moving parts. A curse because flash memory offers relatively small capacities and remains costly, though this is improving over time. As things stand, you can't build a collection of interchangeable cards as you would CD-Rs or MiniDiscs because the price is prohibitive – in the region of £120 for 64MBs. Most users own only one, giving storage of around 30 minutes (32MB) or an hour (64MB) for 'near CD quality' MP3 music. If you want a change of tracks, you'll have to return to your PC and wipe some off to fit more on.

Obviously, this is restrictive for music on the move. The solution, according to LG Electronics, is Iomega's CliK! Disc format, or PocketZip if you prefer. These wafer-thin discs are smaller than MiniDiscs and available through multimedia suppliers for under a tenner. Each one has a capacity of 40MB, enough to squeeze on around 45 minutes of MP3 material at 'near CD' quality, and at that price you can afford to archive and collect.

Released by LG under its Logix branding, the EVzone claims to be the first personal to use PocketZip discs. Indeed it was – in America; Iomega's own HipZip beat it out of the blocks in the UK. It's considerably more bulky than solid state models, though exceptionally easy to operate. Once you've clicked the supplied disc into the slot at the top and hooked it to your PC via USB, it acts like an external hard drive, with negligible transfer times. The supplied software is comprehensive, and there's a useful array of additional functions like voice recording and a phone book facility.

On the down side, 40MB isn't a lot compared to the 650MB of a CD-R disc – and CD-Rs are cheaper to boot, though the rewritable PocketZip has the advantage of size. Interesting, though we remain to be convinced that this is the way forward.

FILE FORMATS: MP3, WMA



NEO-25 HARD DRIVE PORTABLE PLAYER/RECORDER

CONTACT: 020 7837 8300 www.ssiamerica.com GUARANTEE: 1 YEAR

SOUND ★★☆☆☆☆ VALUE ★★☆☆☆☆ £420.00

This is one of an emerging breed of portable jukeboxes, or 'portable' jukeboxes if the Neo's packaging is to be believed. Spelling mistakes aside, the concept is an intriguing one: stick a small, laptop-style hard drive inside a compact case and you have a high-capacity portable music storage/playback device with enough room to hold entire CD collections in data-reduced MP3 form.

The Neo-25 is one of a series of Neo audio products aimed at taking hard disc drive (HDD) audio storage into the home, car and portable arenas. It currently comes with either a 10GB (£420) or 20GB (£520) HDD, and it should be possible to upgrade to higher capacity drives down the line. The 10GB model we're reviewing here can store around 200 hours of MP3 music at a 'near CD quality'; think in terms of MiniDisc sound to get a rough idea.

We've reviewed a similar concept before, from Creative Labs (December 2000). The Neo's obvious advantage is capacity – this 10GB model will store much more than Creative's 6GB HDD, and presents it in a slightly more compact though less aesthetically pleasing case. It's supplied with a 'credit card' remote too, useful if the player's tucked away in a bag or you want to hook it up to a stereo system as well as headphone listening.

But other aspects are rather basic. There's no music management software, just the basic USB drivers to install, and the unit itself doesn't offer half the sound and content management functions of the Creative model, though it is simple to use. It acts like an external PC drive to which you drag and drop any files you want transferred.

Sound quality is fair for an MP3 player, though a little behind Creative's effort and rather messy at higher volumes. But for sheer storage of music on the move its credentials are awesome.

FILE FORMAT: MP3



PHILIPS EXPANIUM EXP103 MP3-CD PERSONAL PLAYER

CONTACT: 020 8689 2166 www.philips.co.uk **GUARANTEE:** 1 YEAR

SOUND ★★★★★ **VALUE** ★★★★★ **£189.99**

It may not be as headline-grabbingly funky as solid state, but CD-R is a great solution for MP3 on the move. If your PC set-up includes a CD writer you've already got the basics; just download some suitable 'MP3 player' software and you're away. You'll be able to download tracks from the Net and burn them onto blank CD-R discs, and if your software player includes a 'ripping' function you'll be able to take tracks from conventional CDs and convert them too.

The big advantages of CD-R are storage capacity and price. Each disc offers 650MBs of storage, which means you can squeeze more than 10 ordinary CDs onto one disc if converted to MP3, and blank discs cost under a quid. But to take these discs out and about you'll need a CD personal able to decode MP3...

The Philips eXpanium isn't the first (see December 2000), but it is the only one to emerge thus far from a major brand. It's a bit chunky and its retro styling won't suit everyone, but for personal MP3 it's really rather good. Viewed against ordinary CD personals at the same kind of price it's OK but not outstanding. Its sound with standard discs is a bit thin and murky; bass boost adds body and overall it's listenable, but others do it better.

However, with MP3-CDs it comes into its own – its the best we've heard so far, and with more than 10 hours of playback possible from an MP3-CD you've burned yourself it's an excellent portable companion for anyone with MP3 access.

Feature-wise it's a bit sparse, and its anti-shock memory isn't the best we've tried. However, it does come with in-car adapters so you can plug it through your car's tape deck – nice touch. It'll have plenty of competition this year, with just about every brand of personal stereo set to launch MP3 compatible CD players in the coming months. But right now Philips is ahead of the game and has done a decent job to boot.

FILE FORMATS: MP3, STANDARD CD



PHILIPS FW-M55 MP3-CD MINI SYSTEM

CONTACT: 020 8689 2166 www.philips.co.uk **GUARANTEE:** 1 YEAR

SOUND ★★★★★ **VALUE** ★★★★★ **£259.99**

You might be thinking this isn't the sort of product we usually review in *HFC*, and you'd be right. For the most part it's a meat-and-drink mini system, the kind that's bristling with bells and whistles and comes with ridiculous claims about power output, but usually sounds awful. However, this is a bog-standard mini with a difference. Its three-disc CD autochanger includes MP3 playback, and as such it's the first of many systems set to incorporate the feature this year.

Performance from regular CDs, its two-band tuner and twin cassette are roughly in the same ballpark – bloated and short of detail though less rough around the edges than some of its ilk. It comes with the usual array of Blackpool-trouncing illuminations, though refreshingly these can be switched off, and there's a host of sound effect modes to play with, most of which are typically horrible. It does pretty well with MP3-CDs burned using a PC, though. It worked flawlessly with the discs we tried, and its lack of resolution means MP3's sonic deficiencies aren't highlighted as they might be through a hi-fi separates system.

Ultimately, it's not hi-fi and neither would you expect it to be at £260. It packs a huge amount in for that money, and could be ideal for a MP3-literate teen. But for those with higher sonic aspirations it's hardly the perfect solution, even if you are looking to dabble with the download and storage potential of MP3.

For the majority, we'd first recommend securing a top-notch sound card and speakers for your PC, and investing in a good personal/portable to exploit the benefits of MP3 on the move. If you want to play MP3 files on a home system, away from your PC, you can plug in your portable or consider one of a growing number of separate CD/DVD players with MP3-CD playback. But whatever you do, don't sacrifice your separates system on the altar of MP3 or your ears will hate you forever.

FILE FORMATS: MP3, STANDARD CD

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SANYO SSP-PD7 SOLID STATE PERSONAL PLAYER/RECORDER

CONTACT: 01923 246363 www.sanyo.co.uk **GUARANTEE:** 1 YEAR

SOUND ★★★★★ **VALUE** ★★★★★ **£249.99**

Solid state personals are the things that have made MP3 tick on the high street. With no moving parts and exceptionally compact media they are a potential dream for music on the move, though card capacity and prices are currently too limiting to recommend use to anyone other than gadget freaks and MP3 fanatics.

But if you do use MP3 files on a regular basis, the best of the breed are staggeringly desirable little slices of technology. Brands like Rio blazed the way and the big boys have got in on the act, though you won't find many mentions of MP3 from the likes of Sanyo thanks to alleged connotations of piracy. The SSP-PD7 is in fact a Portable Digital Memory Player for general "digital music data"; it actually uses the copy-secure Liquid Audio platform and incorporates both MP3 and AAC decoding. It's also upgradeable to handle other file formats in the future.

Unlike some solid state personals, there's no built-in memory and only a single MultiMediaCard slot, so potential storage is limited. Only a 32MB card is supplied – pretty stingy these days for a £250 player. While first impressions are very good: it's small, light and exceptionally shiny, and it comes with a long strap if you fancy hanging it round your neck as its design intends, in the hand it feels rather cheaper than its price tag suggests. The display is basic too, and additional functionality is limited to bass boost and four effects modes.

The supplied Liquid Audio software package is a redeeming factor, even if its operation is a little convoluted. AAC is the compression format used for ripping tracks from CD, and playback through the personal is above average sonically: sharp and to the point, if a little glassy.

All in all, this glitzy little personal does some things well, others not so. In the light of the competition, it has talent but it's short of match fitness.

FILE FORMATS: MP3, AAC, LIQUID AUDIO



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Long before MP3 became a household term, Sony was selling a music format to the masses using its own data reduction codec. That format was (and is) MiniDisc, the codecATRAC. Using this, up to 80 minutes of sound can be squeezed onto a single MD, plenty of time to record more than an album's-worth of music.

When Sony entered the solid state personals market a year or so back, it employed a version of ATRAC coding along with its proprietary Memory Stick card for storage. MP3 files could be saved, but would be converted to ATRAC first, as would tracks ripped from CD. Quality is relatively good, so no problem there, but the constraints of price and capacity that currently hamper solid state audio storage remain.

One solution, then, could be good old MiniDisc. The discs are cheap, familiar and more portable than CD-Rs, so enter the CMD-PC3 – an external MD drive that hooks up to your PC and allows you to save audio files on MD via a USB link.

It comes bundled with excellent management software called M-Crew, Sony's operating system for its PC-connectable audio products. The hardware supports MDLP, developed to extend the storage capacity of MD by up to four times, which means you can squeeze as much as 360 minutes onto an 80-minute disc.

But there are downsides. Not much MD hardware is compatible with MDLP yet, so you'll have to restrict yourself to 80 minutes if you want to playback on an existing portable. Also, MD currently only records in real time, so saving music files takes a while. And with CD-R drives now so commonplace, £350 is a lot to pay for an additional, non-portable drive employing relatively low capacity media.

But MD does have its advantages over CD-R, namely excellent portability and supreme editing facilities. And with new high capacity discs on the way (up to 650MB), the MD concept may have some serious mileage in it yet.

FILE FORMATS: MP3, WMA (CONVERTED TO ATRAC)

AN AUDIO LIFE BEYOND...

WHAT DOES THE FUTURE HOLD FOR AUDIO IN THE HOME? MULTIPLE FORMATS AND A WORLD OF CHOICE SAYS TIM BOWERN.



If the world of MP3 is opening doors, where will they lead? Not to the demise of the optical disc; at least not for a very long time. This technology still has much to give – CD is set to remain our primary music format for years, and we're only just discovering what next generation discs like DVD and SACD are capable of delivering. Meanwhile, recordable DVD is just around the corner and development work continues apace: the Japanese giants are working on fabled blue laser technology for subsequent generations of DVD, with the potential to store up to 22.5GB of data on a single disc. Staggering...

WORLDS COLLIDE

If optical disc is to remain our main audio delivery system for the foreseeable future, notably for archiving and high performance applications, it looks set to be joined by a host of alternative platforms across the next few years. Unsurprisingly, the key to all this is the 'C' word – convergence.

This has largely been an anathema to hi-fi folk, who fear the worst as information technologies converge and pure,

simple sound quality struggles to remain on the list of priorities.

For home entertainment, the greatest catalyst for convergence since the succession from analogue to digital has been the success of DVD – a format that enables both audio/video and audio-only entertainment media to be played

back on one affordable machine. It was music that entered the digital age first, but with the DVD came a similarly compact and cost-effective disc with sufficient capacity to carry digital pictures. Since then we've seen the (stuttering) arrival of Sony's PlayStation2 games console, which uses DVD discs for its games software and also plays ordinary CDs and DVDs like any other DVD player. It doesn't do so particularly well, and it wouldn't be the machine of choice for quality music and movie playback, but it does it nonetheless.

Once we moved to digital, all this became inevitable; it was just a question of when. After all, a CD player is essentially a computer with a disc drive and D/A conversion. And today's high performance PCs are complete multimedia centres through which one can engage almost every digital entertainment application. So where's it all heading?

FORMATS, DISTRIBUTION AND STORAGE

To store data for a specific audio or video programme requires digital media with sufficient capacity to hold it. A CD has enough to carry an album's worth of stereo audio data at a resolution of 16-bits/44.1kHz; higher density disc formats like DVD have sufficient to hold audio data at a higher resolution with multiple channels, or an entire movie with surround sound. But digital data is a flexible thing. As well as developing ever increasing storage capacities over time, technological developments allow data to be manipulated so it takes up less space, albeit with different quality thresholds.

This opens up a new box of delights for personal and home-based entertainment: most controversial and (potentially) significant of all is direct digital distribution through the Internet. That's where data reduction codecs like MP3 come in; without them, downloading audio via an ordinary telephone line simply wouldn't be practical.

MP3 is the term everyone knows. It's the format of more than 90 per cent of music on the Internet, the first codec to court controversy and create a media splash over intellectual rights, revenue protection and questions of piracy and policing. The powers that be are still working on the answers, but in the meantime the pace of change is accelerating and new codecs are emerging.

Microsoft's WMA file format sports a 'better' compression algorithm than MP3 and its use is growing, while AAC promises smaller files, better sound quality and more secure content. Its backers are from both hardware and software sides of the fence, and it seems likely that Dolby backed AAC will be the first accepted industry standard for digital audio distribution.

There's little doubt digital distribution via the Internet will become an increasingly important method of obtaining audio/visual content, both in terms of downloading files to keep and real time streaming of programmes and events. But that's not the only revolution going on - we're witnessing an explosion of storage formats too.

Data reduction systems like MP3 have allowed otherwise unobtainable goals to be reached. Without Sony's ATRAC there would be no MiniDisc because it wouldn't hold sufficient data. Similarly, it's because of digital file formats like these that solid state storage has become reality. It's been a dream for a long time: sticking audio data on tiny bits of silicon and plugging them into players with no moving parts. All the big global brands are working with codecs and memory cards, integrating the technology in everything from cameras to laptops as a convenient way of transferring data between products. Over the next few years, prices will tumble, storage capacities will multiply and card formats like Memory Stick and SD will battle it out for solid state supremacy. Entire movies on a card no bigger than a postage stamp? One day, it'll surely happen.

Good old optical disc technology has a part to play here too. Currently, the vast majority of those using MP3 and similar audio files are doing so in conjunction with their PC. CD-R writers are now commonplace, and CD-R discs offer both relatively high storage capacities and low cost. If you want to create and archive compilations of digital audio files, and take them around with you, CD-R is perhaps the most practical way to do it right now. And an increasing amount of disc players on the market



From the top: Linn's Kivor is designed to form the heart of a top notch multiroom system with its hard drive music storage system. Panasonic's forthcoming solid state personal uses the AAC file format and SD memory cards, which it helped develop. In the age of digital convergence, DVD players are computers and computers (like Sony's VAIO laptops) are DVD players. Sony's blue laser High Definition DVR (bottom) is still some years from production.

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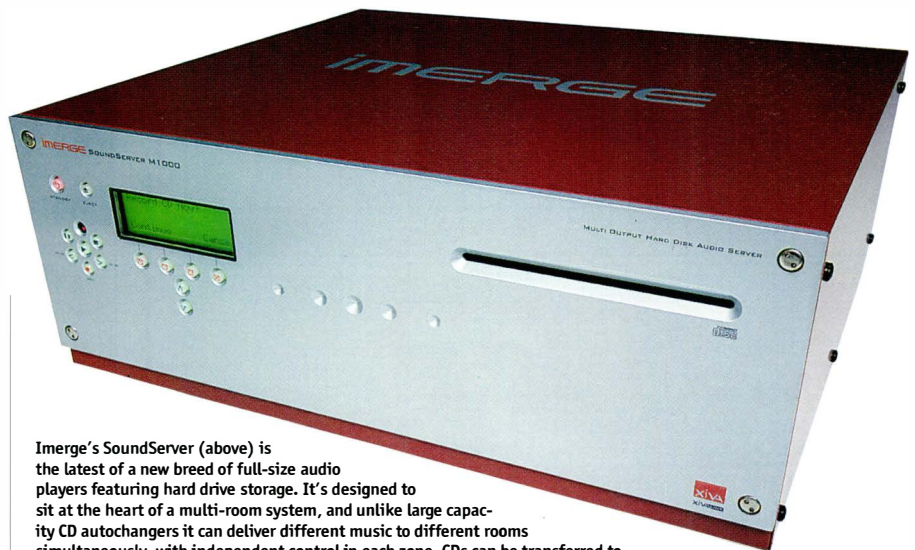
◁ are compatible with MP3. CD personals, mini systems, CD and DVD separates – it seems that MP3-CD playback is one feature every manufacturer should have in its product line-up for this year and next.

Codec technology will continue to improve over time. Data will take up less space and the lossy effects we'll be reduced, improving the sound quality of compressed digital files. As new codecs are introduced, hardware will need to keep pace. Several new media portables are already codec agnostic, which means one can download new software to keep up with the times. Perhaps this will become common for disc players too.

In the future, it seems we will have more decisions to make in terms of sound quality versus storage capacity, according to our preferences and the needs of each particular application. If you want to store large amounts of data go for a data-reduced option, or if you want optimum quality plump for no compression. We'll also have to choose the appropriate media for the task in hand – optical disc, solid state or perhaps high capacity hard drive.

HARD-WARE

Hard disc storage is already commonplace in the home thanks to the PC boom. But now it's moving into the living room with the likes of TiVo and the expected (if gradual) influx of Personal Video Recorders (PVRs), using hard disc technology to create a convenient and



Imerge's SoundServer (above) is the latest of a new breed of full-size audio players featuring hard drive storage. It's designed to sit at the heart of a multi-room system, and unlike large capacity CD autochangers it can deliver different music to different rooms simultaneously, with independent control in each zone. CDs can be transferred to hard disc with various rates of MP3 data reduction or no compression at all, with between 28 hours and 280 hours of music storable on the basic 15GB version (higher capacity drives are available). A new version of the unit is due out soon – we'll be there with a review when it happens. Imerge ☎ 01954 783600 Website: www.imerge.co.uk

multi-room market. We examined a hard-drive based home jukebox from the US called the AudioReQuest ARQ1 in HFC 208, and a similar concept called the Imerge SoundServer is now available (see above). Both these products enable you to transfer your CD collection to hard disc without the aid of a PC, with or without data reduction.

This type of non-PC reliant hard disc and solid state storage-equipped hardware is certainly an area to watch. Linn will soon be getting in on the act with its Web-enabled Knekt Kivor system – a multi-room solution claimed to trounce all with its sound quality and 128-zone flexibility. Then there's Harman Kardon's Digital Media Centre, a CD/DVD playing, Web-surfing MP3 jukebox with a 30GB hard drive in a single

Disc players compatible with all varieties of stereo and multichannel optical disc are just around the corner, and both solid state and hard drive technology may join the party. Web-enabled components will become commonplace and the mobile phones of today will evolve into multi-faceted portable communication devices with memory cards to store and play entertainment content. In the home, development of digital amp technology will continue, and the likes of the Firewire interface and Bluetooth wireless technology will change the way we hook up our systems for good. Storage capacities will increase and prices will inevitably fall, right across the board.

Not surprisingly, multimedia companies and consumer electronics giants like Sony and Philips are embracing this technological change head on. But ask smaller digital hi-fi specialists like Arcam and Linn what they think and they are equally positive. It's down to choice, they say. There will always be a demand for music, high performance and fidelity, and they will be there to serve it.

Marantz's Brand Ambassador and technical whiz, Ken Ishiwata, makes an interesting comment on future demands. "Flexibility will be even more important for the 'mosaic society' of 2005 to 2010. It will be a very individualistic society; people will live their own way. Sometimes they will demand high quality sound and vision, other times low quality will suffice. They will demand choice and we must be flexible enough to meet it."

"DISC PLAYERS COMPATIBLE WITH ALL VARIETIES OF STEREO AND MULTICHANNEL OPTICAL DISC ARE JUST AROUND THE CORNER."

versatile server system for TV viewing and recording. All the major A/V manufacturers are developing hard drive equipped video recorders, some adding a VHS or recordable DVD mechanism to which programmes may be transferred for archiving.

At the same time, hard disc storage for audio use is beginning to make its presence felt. Portable hard drive player/recorders allow entire CD collections to be carried around in data reduced form, while larger units with higher capacity drives are currently shaking up the

box. The concepts are coming thick and fast, the possibilities seemingly endless.

YET TO COME

Optical discs will likely remain the primary high performance format for those who want to collect and archive, at least until music companies start delivering their content exclusively online (years from now). There is also a possibility that pre-recorded material will be sold on solid state memory cards.

Single components sporting multi-formats would seem a racing certainty.



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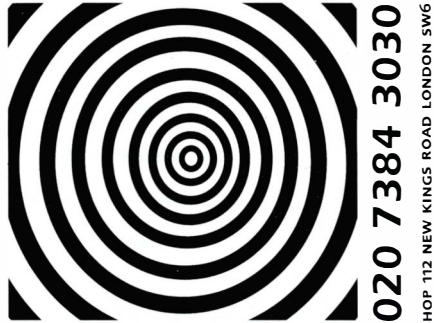
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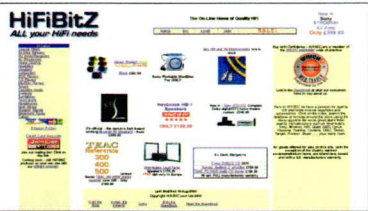
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THE ART OF SYSTEM BUILDING

HOW DO YOU GO ABOUT BRINGING TOGETHER AN IMPRESSIVE HI-FI SYSTEM? IT GOES A LITTLE LIKE THIS...

When it comes to getting together a great separates system, identifying decent individual components is fundamental, but it isn't the whole story. There is the business of system synergy to consider, which put simply means how well your components gel as a whole. The degree to which this can affect the end result tends to increase with price, thus budget components are relatively immune (a competitively priced Best Buy disc player, amp and loudspeaker pairing of almost any hue will combine to make a good system). When considering a purchase it's always good practice to listen to alternatives. It's the only way you can learn what different components sound like and find out which ones appeal to you.

So once you have shortlisted some components, the next step is to track down a knowledgeable dealer to take you through the options available. As well as getting the basic hardware right there is the question of which cables to use; should you stick with what comes in the box or pay extra for interconnects and speakers leads? Once you've established that the latter is the way, listen to a dealer's recommendations as to the right cable for your system.

And don't skimp on supports. The temptation is to use any old shelf or sideboard for system and speakers, but it's worth the outlay for speaker stands and proper system support.

MAKING CONNECTIONS

WIRING UP A SYSTEM IS REALLY QUITE STRAIGHT-FORWARD IF YOU FOLLOW A FEW BASIC GUIDELINES.

- When bi-wiring with speaker cable you will sometimes need to connect two plugs to one socket on the amp. If the amp has a binding post connection you can usually put one plug through the hole that goes across the post and one in the end. If this is not possible you may need to get both pairs of cables soldered into single plugs at the amp end.
- If a cable has an indication of directionality, i.e. if there are arrows on the casing, use these with regard to the way the signal travels. If there are no arrows you can try it both ways and see if you hear a difference or just route the signal in the direction of the writing on the cable jacket.
- In multichannel AV systems you may have the option of routing video signals via the amp, or you can bypass it. The former option gives easiest functionality if you use several sources but by bypassing you are removing a source of distortion and thus improving sound quality.
- Try to avoid lying mains cables across or beside signal cables as the field they produce can have a negative effect.
- Try to keep all cable runs as short as possible.

AWARD TAGS

Whenever HFC reviews a group of like components we have the opportunity to give the best products a Best Buy or Recommended award. Best Buys are considered to offer an excellent standard of performance at an attractive price.

Recommended products are first class components losing out to Best Buy status only because of a higher price or less competitive overall sound quality.

A third award, the Editor's Choice, is reserved for those products reviewed solo, such as you see in the First Impressions or High Performance sections. An EC is awarded where the Editor is convinced that a product offers exceptional quality for the price.



GLOSSARY

S.1 CHANNEL AUDIO: Six discrete channels, typically front left and right, centre, surround left and right, and LFE (Low Frequency Effects).

AC-3: Audio Code number 3, the compression algorithm that lies behind Dolby Digital.

BALANCE: Most loudspeakers have a characteristic frequency balance resulting from emphasising parts of the audio range and/or de-emphasising others.

BASS: The lowest three octaves of the audio band – hence 'low bass' refers to the bottom octave (20-40Hz); 'mid-bass' the middle octave (40-80Hz); and 'upper bass' the 80-160Hz octave.

BI-AMP: (sometimes tri-amp): Loudspeakers equipped with separate access terminals to each drive unit can be driven by separate (matching) power amplifiers for each driver.

BI-WIRE: (sometimes tri-wire): Loudspeakers with separate access terminals to each driver can be driven by separate cable runs between the power amp and each driver.

CD-R: Recordable CD that cannot be erased, though discs that have not been completely filled can have more tracks added later until the disc is finalised.

CD-RW: Recordable/erasable and re-recordable CD, discs must be unfinalised before they can be re-recorded.

CLASS A: Operation of an amplifying stage or device in which current always flows, as opposed to Class B, where some of the devices are effectively turned off some of the time. Class A tends to give lower distortion.

CLASS AB: Most practical amps operate in Class A for the first fraction of a watt and Class B thereafter.

CLIPPING: An amplifier's output waveform is 'clipped' if the volume is advanced too far and no more 'volts' are available to sustain ever increasing power levels. Distortion increases dramatically at this point.

CLOCK: Any electronic oscillator that is used to generate a timing reference signal.

CROSSOVER: A simple electrical network which divides the full bandwidth signal received from the power amplifier, apportioning appropriate parts of the spectrum to the various drive units.

DAC OR DIGITAL-TO-ANALOGUE CONVERTER: The stage at which incoming 16-24 bit digital data is used to reconstruct a recognisable analogue (music) waveform.

DOLBY DIGITAL DD (AC3): A compressed (10:1) digital audio format that typically contains five or more entirely discrete channels.

DOLBY PRO-LOGIC DPL: Forerunner to DD that 'steers' information to the front L/R, centre and mono surround channels via an analogue matrix.

DRIVE UNIT/DRIVER: A transducer which converts electrical energy into acoustic energy, eg main driver, tweeter.

DSP OR DIGITAL SIGNAL PROCESSOR: Integrated circuit that handles the decoding of digital audio streams. In 5.1 processors it separates the left from right and front from rear while managing the various bass options.

DTS OR DIGITAL THEATRE SOUND: Competitor to Dolby Digital with a reduced 4:1 compression ratio that, ostensibly, promises higher quality.

ELECTRICAL DIGITAL: Any digital connection that uses an electrical cable rather than optical. Includes the balanced ('AES/EBU') interface.

FILTERS: Intrinsic to digital audio is the extensive use of filters, both analogue and digital. These are often very sophisticated in design, and in total they probably have rather more to do with the 'personality' of CD player sound than most other factors.

FINALISE (CD-R): The process of copying the Table of Contents from its temporary area on CD-R and RW where it is ignored by CD players, to the final position where it is recognised by CD players.

FREQUENCY RESPONSE: The range of frequencies, from low to high, which a loudspeaker will reproduce.

IMPEDANCE: With speakers, the complex electrical load that a loudspeaker presents to the amplifier which is driving it.

JITTER: An insidious distortion specific to digital audio whereby the clock, used to regulate the conversion of data into analogue audio, carries a degree of uncertainty.

LINE-LEVEL: Practically every modern source component (except phono cartridges) give an output in the region of 1-2V, commonly referred to as 'line level'. It follows that all inputs labelled 'CD', 'tuner', 'aux' or 'tape' are usually interchangeable.

LOSSLESS COMPRESSION: A method of reducing the number of data bits (density) without corrupting the original description of the musical signal.

LOSSY COMPRESSION: Reduction in data density by recourse to a psycho-acoustical model that predicts what is, and what is not, 'audible' within a sequence of music.

MAIN DRIVER: A drive unit which reproduces both bass and midrange frequencies.

MASKING EFFECT: The audibility of distortion and/or quieter instruments in a mix depends upon the intensity of the music as whole.

MIDRANGE: The middle three or so octaves of the audio band, where the ear is most sensitive, covering the approximate frequency span from 160Hz up to 3kHz.

NETWORK: see Crossover.

OUTPUT IMPEDANCE: A measure of resistance to alternating current, a low output impedance (say, below 100 ohms or so) helps ensure compatibility with most amplifiers, even when using long or unusual designs of interconnect cables. A high impedance, especially in conjunction with an amplifier with a low input impedance (some are as low as eight kOhms, although the standard is 47 kOhms) can result in audible treble losses.

PLL OR PHASE-LOCKED LOOP: A technique by which a clock of defined characteristics is used to generate a new clock at a different frequency from the original.

PRESENCE: Critical section of the audio band at the point where midrange and treble meet.

QUANTISATION NOISE: A form of distortion or noise resulting from errors in the description of the musical signal by the digital code.

SAMPLE RATE: The rate at which the musical waveform is sliced up into discrete chunks. For CD this is 44.1kHz or once every 0.023msec. DVD will also support 48kHz and 96kHz.

SENSITIVITY: The relative loudness that a speaker generates for a specific voltage input. Expressed in decibels per watt (dB/W).

TOSLINK: The proprietary name given by Toshiba to the optical fibre signal transmission system it invented for consumer applications. The system includes dedicated connectors, transmitters and receivers.

TRANSISTOR/MOSFET: the two main types of power semiconductor used in amplifier output stages. Differences are subtle and much argued over!

TREBLE: High frequencies, the top end of the audio band, eg above 3kHz.

TWEETER: Treble driver.

WATTS (PER CHANNEL): the watt is the unit of electrical power and the WPC rating is the maximum average undistorted power that an amp can deliver to a typical speaker. However, speaker sensitivity variations can make more difference than amplifier output in many cases.

WOOFER: Bass driver.

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AMPLIFIERS



SPECIFICATIONS

STEREO AMPLIFIERS – INTEGRATED

STATUS	PRODUCT	£	COMMENTS	LINE INPUTS	MM PHONO INPUTS	MC PHONO INPUTS	REMOTE CONTROL	HEADPHONE SOCKET	POWER OUTPUT (W)	ISSUE NUMBER
	Affordable Valve Co. EL34	650	A real bargain on the face of it, but the sound is oh so soft, warm and old-valve. Too much of a good thing	4					40	202
	Alchemist Kraken APD6A	599	Compact, with Darth Vader styling, yet sound quality is meek and mild, despite strong midband dynamics	5	●				55	175
R	AMC 3025a	140	Surprisingly potent and easy on the ear, if not especially analytical — classic bargain-basement material, in fact	4	●	●	●	●	30	171
R	AMC 3050a	170	Tremendous value for money, and a full, big, if rather uninformative sound	4	●	●	●	●	45	167
BB	Arcam Alpha One	230	Rather like an Alpha 7 but without the remote control and what appears to be better sound quality still	6				●	35	186
	Arcam Alpha 7R	300	Decent, if slightly system fussy amplifier that no longer pulls all the right strings	5	●		●	●	45	196
	Arcam Alpha 8R	350	Workmanlike amplifier is well thought through, but is now beginning to show its age.	5	●		●	●	50	208
	Arcam Alpha 9	500	Not quite a match for the Alpha 9/9P combo, the solo integrated is nevertheless colourful and explicitly detailed	7			●	●	70	168
R	Arcam Alpha 10	800	Although not the best sounding in its class, the Alpha 10's modular nature demands it be taken seriously	5			●		100	181
BB	Arcam FMJ A22	1,000	Powerful, articulate, and expandable into a home cinema or multiroom amp/controller	7			●	●	100	201
EC	ATC SIA2-150	1,984	An impressive sounding integrated amp with a dynamic, open and detailed sound	4			●		150	192
	Aria S2	1,000	Glamorously packaged valve amp produces a real eyes closed, feet up kind of sound	4					12	190
BB	Audio Analogue Puccini	450	Superbly finished, the entry-level Audio Analogue per orms way out of its class	5	●	●			40	175
	Audio Analogue Puccini SE	595	Upgraded, more powerful Puccini is disappointingly sluggish and curiously lacking in musical vitality	5	●	●			40	181
R	AVI S2000MI	999	Fine, detailed amplifier with excellent timing and strong control of a wide range of loudspeaker loads	5			●		100	175
	Bryston B60R	1,249	Great build, but the lazy bass and opaque treble bracket an articulate midband. Comes with 20 year guarantee	5			●	●	60	175
R	Cambridge Audio A500RC	200	Solid value, decent build and a surfeit of watts make this an attractive proposition, but it can sound slightly loose	6					50	196
R	Canary Audio CA-608	1,495	If you value the grand scheme of things and appreciate a bit of dynamic vigour this could be the amp for you	4					24	202
R	Copland CSA8	945	Sophisticated yet transparent, this is one of those amplifiers that sounds good even when the gloss has worn off	5					60	168
R	Copland CSA 28	1,249	Elegant Scandinavian cool, abundantly detailed if somewhat system dependent	5	●		●		60	189
	Copland CTA 402	1,698	A unusually flexible valve amp with an attractive and textured sound	5	●		●		35	193
	CR Developments CR324	569	Solid and capable on paper, this is a bit of a blunt instrument when let loose on the music	5					150	181
R	Cymbal CA1	499	Lacklustre amplifier tends to underperform with complex material. Best with straightforward compact loudspeakers	6					40	178
	Creek 4330	279	Diminutive but classy amp will drive anything, and can be specified in various configurations	4	●				40	192
	Creek 4330SE	499	Somewhat perplexing, though always interesting, miniature audiophile amplifier, needs careful system matching	5			●		50	208
R	Cyrus 5	500	A enjoyable amp that is assured and unflappable, although detail is unremarkable	7			●	●	45	205
	Cyrus 7	700	Welcome return to form for the Cyrus stable: this is the best sounding audio brick around	6			●	●	60	196
BB	Denon PMA-255UK	140	Great beer-budget buy, with everything necessary for basic but decent high fidelity operation	5				●	30	208
	Denon PMA-725R	350	Warm, bold, up-front presentation, but musically unexciting	5	●	●	●	●	97	157
R	Denon PMA-1500R	500	Recommended for its outrageous power, especially with problem speakers	5	●	●	●	●	70	181
R	Densen Beat B-100 MkII	650	High 'air guitar' factor, and can punch above its weight, but check it will complement your system	5					60	175
	Electrocompaniet EC1-3	1,000	Basically good, but too many rough edges to warrant recommendation	6			●		75	201
	Ezo Aria HE	449	Quick, detailed but aggressive and sometimes coarse sounding amp. Beautifully turned out, though	5				●	40	208
	Graaf Venticinque	1,790	Smart and practical, but it just never seems to shine sonically	6					25	202
	Holfi Audis Signature	750	A 'no-feedback' circuit giving outstanding resolution, but significant load dependency	4	●				65	181
	JoLida 202	695	Well-built and technically accomplished, affordable valve integrated with subtle refined, if not quite gripping sound	4					40	168
	JVC AX-R5	200	Versatile, and lots of even-handed, articulate detail; but let down by superficiality	5	●		●	●	45	149
	Kenwood KAF-3010R	180	Plenty of twiddly bits yet weak on inputs, and basically good, but somewhat uneven sound quality	4	●		●	●	70	186
BB	Kenwood KAF-3030R	250	Highly capable amp with good treble, bass and fine detail	5	●		●	●	65	205
	Kenwood KA-5090R	300	Large, well equipped and high tech integrated, but TRAITR output still gives a harsh, unobtrusive performance	5	●	●	●	●	65	171
	Krell KAV-500i	5,000	More at home in background listening/home cinema applications than out-and-out audio maniac set-ups	5			●		250	192
	Lundahl Mag Amp	1,735	Unusual valve/magnetic amp hybrid with relaxed balance and good timbre	5					23	196
	Marantz PM-6010 OSE	229	Good starter amplifier, with characteristic smooth, low key delivery	5	●		●	●	50	196
	Marantz PM7000	300	Lots of power for the price, but detail and subtlety seem to have been sacrificed	6	●		●	●	115	205
	Marantz PM6010 OSE KI Sig	400	Well-made, but somewhat ill-balanced amplifier that doesn't slot into most systems comfortably	6	●		●	●	50	208
	Marantz PM-17	900	Probably worth it for the WBT terminals and other build features alone, but this model doesn't sing as it should	6	●	●	●	●	60	181
	Marantz PM-17 KI-Signature	1,300	Full feature audiophile amp where the end results don't quite justify the fantastic ingredients	6	●		●		60	189
	Mark Levinson No383	5,500	Extremely versatile design that thinks and acts like a serious pre/power. Sounds superb	5			●		100	212
	Monrio Asty	400	Engaging, but ill-disciplined, even OTT amplifier with unpredictable system compatibility	5					55	178
R	Musical Fidelity X-A2	500	A chip off the old block; sounds very similar to the X-A1 and XA-100R	6					75	208
	Musical Fidelity A3	849	Similar to the XA-100R internally, and a little too relaxed for some	5	●		●		85	196
R	Musical Fidelity X-A100R	999	Sings like a thoroughbred, but better with Mozart than Mötörhead	6			●		75	189
	MVL A2	970	Curiously designed, and curious sounding amplifier with Sound Sentinel circuits to address perceived weaknesses	9	●			●	100	201
	Myryad T-40	400	The T-40 is a well built and sensible, but needs more dynamics and finesse	6	●		●	●	50	192
R	Myryad MI120	600	Well styled, well built: a good, even tempered amplifier, although it can sound rather brittle	6			●	●	60	175
BB	NAD C320	200	Excellent budget amp from the maker of the seminal 3020 offers better clarity and neutrality and good build	6				●	40	186
R	NAD C340	270	A classic NAD amplifier copes with any speaker, delivers plenty of power, and does so with calm decorum	6	●		●		50	192
BB	NAD C350	300	A typical NAD: refined, warm tonality, adequate detail, and a strong power yield	7			●	●	60	208
R	NAD 317	400	Build quality aside, the current improved version is a real powerhouse, but smooth and detailed too	6			●	●	80	196
	NAD S300	1,900	Substantial integrated with loads of power and no shortage of finesse, slightly bass-strong	5			●		100	189
	Opera Aida	795	Low power (in practice) minimalist integrated amp, but the mahogany wings don't help it to fly	5	●	●			60	201
	Pathos Classic One	995	Unusual looks and even more unusual electronic design, but compromised musical potential	5			●		55	202
R	Pioneer A-407R	230	Clean, consistent, finely detailed sound, good finish and (mainly) good build	5	●		●	●	45	186
R	Pioneer A-607R	300	Lively, articulate amp with plenty of drive and a hint of brightness	5	●		●	●	60	192
	Pioneer A07	999	Curious blend of high-end attributes and inconsistent, though undeniably detailed sound	5	●		●		80	175
R	Pracisa Acustica Sonoro	1,800	It is not often that transistor amplifiers are made to sound so palpably valve-like	5			●		100	189
R	Primare A10	500	Beautifully made, smooth and easy sounding, and though not overtly detailed or dynamic, is well organised musically	6			●		50	208
R	Primare A20 MkII	799	Everything except packaging has changed in Mk II version: but ballsiest model has lost none of its refinement	5			●		70	181
BB	Primare A30.1	1,499	Superb build and aesthetics, and undemonstrably musical down to its smallest screw	5			●		100	189
	Rega Elex	398	Minimalist amplifier, derived from Elicit, is a little uninspiring, although at least it is well behaved	4	●				50	162
	Restek Fantasy II	1499	Muscular, but ultimately rather strident amplifier which needs careful system matching	6			●		100	189
R	Roksan Kandy KA-1	475	Power with control, barely compromised by a small degree of dryness	6			●	●	120	205
R	Roksan Caspian	795	Mainstream Roksan line level amp works well under most circumstances	6			●		70	201
	Rose Scion	615	Unique two-box integrated gives real subtlety and low level resolution, but the sound lacks scale and weight	5	●	●			65	168
BB	Rotel RA-931 Mk II	189	Simple, non-remote amp majors on clarity and transparency, without sounding over-analytical	4				●	35	208
BB	Rotel RA-971 MkII	275	Improved RA971 is a chip off the old block: bags of power, but with added precision and clarity	6				●	60	196

STEREO AMPLIFIERS – INTEGRATED (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	LINE INPUTS	MM PHONO INPUTS	MC PHONO INPUTS	REMOTE CONTROL	HEADPHONE SOCKET	POWER OUTPUT (W)	ISSUE NUMBER
	Rotel RA-972	400	Better in the treble than the bass, which is a little too rounded and woolly	6			●	●	90	205
	Sharp SM-SX1	3,300	Jewel like 1-bit digital amplifier with limited power reserves but offering glimpses of sonic magic	5					50	211
	Sharp SM-SX100	10,000	The world's first stable, 1-bit digital amplifier is a technological milestone that should go from strength to strength	n/a					110	200
R	Sony TA-FB740R	200	Very open and clear sound, comfortable with a wide range of musical styles	5	●		●	●	60	205
	Sony TA-FB940R	300	Technically innovative amplifier fails to cut the mustard with complex material	5	●	●	●	●	70	208
	T+A PA-1220R	1,445	Unique presentation and feature set, but sometimes rather relentless sound quality	7			●	●	100	189
	Tact Millennium MkII	7,000	This digital class D amplifier represents a bold declaration on the future expansion of digital audio in the home	n/a			●		150	194
	TAG McLaren 60i	500	Clean, slightly antiseptic sound from this beautifully turned out entry level Audiolab 8000iX replacement	6				●	60	189
	TAG McLaren 60iRv	1,000	Crisp, clean, well defined sound, arguably lacking warmth, but a good midrange purchase overall	6			●	●	60	184
R	Talk Electronics Storm 1	500	Good soundstaging and strong detail are provided by this unassuming and not especially powerful model	6					50	162
	Talk Electronics Cyclone 1	550	Much improved build quality and silver finish, but the sound lacks physicality and can sound strained	6			●		65	196
R	Talk Electronics Storm 2	650	Crisp, clean, well defined sound, arguably lacking warmth, but a good midrange purchase overall	6			●		50	175
	Teac A-E2000	180	Has the potential to cause significant damage in the budget amp sector once the wrinkles are ironed out	6					50	195
	Technics SU-A660 Mk 3	200	Plenty of wellie for the price, but the sound can be a tad coarse and lacking in fine detail	5	●			●	37	186
	Technics SU-A808	300	Intriguing amplifier, with abundant detail but dynamically rather flat	6	●		●	●	55	196
R	Token Audio K50	350	Stainless steel finish, others available. Sound is warm and attractive, though a little undynamic	5					50	186
	Tube Technology Unisis Sig	2,400	A very attractive product which combines many classic valve attributes to good effect	5	●				30	202
	Yamaha AX-392	170	Standard budget fare, and it's easy to pick holes, but in undemanding surroundings it works creditably	6	●			●	60	192
	Yamaha AX-496	179	Lacklustre, if well equipped and powerful, amplifier shows some improvements over previous amps, but not enough	6			●	●	85	208
R	Yamaha AX-492	220	Powerful, well equipped amplifier at an attractive price, offers powerful and engaging music-making	5	●		●	●	85	178
	Yamaha AX-592	280	Fine, middle ranking amplifier, with a detailed midband but performance declines at frequency extremes	5	●	●	●	●	100	171

STEREO AMPLIFIERS – PRE/POWER AMPLIFIERS

STATUS	PRODUCT	£	COMMENTS	LINE INPUTS	MM PHONO INPUTS	MC PHONO INPUTS	REMOTE CONTROL	HEADPHONE SOCKET	POWER OUTPUT (W)	ISSUE NUMBER
	Amp Flux System 2	3,000	Three-box affair with a clean, spacious sound and plenty of slam. A touch steely, but undeniably potent	5			●	●	50	187
	Alchemist Kraken APD7A/8A II	1,098	Unusual looks and unusual sound too, rather rough and lacking detail	6					55	187
R	Arcam Alpha 9C/10P	1,000	Well specified and flexible preamp with sound only just lacking in greatness	6			●	●	100	187
BB	Arcam Alpha 9P	400	Clear, colourful and well-disciplined, the Arcam is a strong all-rounder that can compete with conviction	1					60	165
	Audio Note M Zero/P Zero	998	Neat shoe box-size components. Able to impart music with real life and soul when partnered with P Zero power amps	5					8	191
EC	Border Patrol 300B SE	3,995	Single ended valve power amp with passion, grace and fire, and plenty of grunt to boot	1					8.5	186
R	Bryston BP20/3B-ST	2,850	Recommended for pretty much any demanding application	8			●	●	120	212
	Cary CAD 2A3SE	1,575	Monoblock valve power amp. Low power but gives delightful speed, coherence and transparency	1					5	196
	Chord SPM-4000	8,500	Sound is as stylish as its appearance is bold. Probably one of the best amps you are likely to hear	1					410	202
	Copland CTA-301MkII/505	2,498	Sweet sounding, but never gets bogged down in audio treactle. Refined yet never over civilised	4	●				67	151
BB	Creek P43R/A52SE	949	Excellent sound, remote control operation and upgrade options from fine value preamp.	6			●	●	100	187
BB	Creek P43R/A43	1,148	Great value and a podium performance earning a best buy	6			●		140	212
	Crimson 620C	875	Not entirely satisfactory power amp which has dynamic strengths, but underachieves when the volume is raised	1					50	181
R	Crimson CS610/CS630	1,250	Good, clear sound, including a decent phono stage, but flexibility is limited. Slimline monoblocks with grunt and finesse	3	●	●			100	187
	Cyrus Power	498	Detail and midband clarity and stand-out qualities. Smooth and refined with most types of music but bass-soft	1					50	183
R	Cyrus aCA7.5/Smart Power	1,250	Great for classical, jazz, and existing Cyrus owners, recommended	7				●	60	212
	Cyrus aCA7/aPA7	2,694	Low feedback power amp design that's a positive departure from the transistor norm, preamp is functional but not as impressive	5			●	●	150	190
	Densen Beat B-200	1,000	A versatile preamp with a high 'air-guitar' factor and Densen's characteristic styling	6	●	●				191
R	Densen B-300	800	Expensive but highly musical. Colourful and warm sound with strong timing and listener involvement	1					100	183
EC	Gamut D200	2,995	Single MOSFET pair per side gives tremendous resolution and timing (balanced only). Formerly Sirius	1					200	183
EC	Levinson 380/334	9,490	Preampifier combines precision and warmth with unusual configurability, power has refinement, authority and transparency to spare	6			●		125	195
	LFD Mistral Linestage/Power	898	Strong ergonomics, generally decent sound, but a little lacking in detail	6					60	165
	Linn Kolektor/LK85	990	Beautifully tuned out machine, yet slightly bland, aimed at an all Linn system	9	●	●			62	212
	Meridian 502	1,295	Extremely sophisticated analogue controller with tremendous flexibility and a fast and tidy presentation	7			●			162
	Michell Orca/Alecto mono	3,600	Line-level design with a gorgeous remote and focused, spacious sound	6			●		100	187
R	Moth 30 Series Monoblocks	879	Tested with Active Preamp. Demonstrated solid balance and proved adept at delivering vital musical qualities	1					100	155
	Moth 30 Active LS/60 Stereo	948	Excellent-sounding ultra-simple miniature preamp, power amp lacks finesse and control, however	4					60	165
	Muse Model Three	1,990	Natural sounding tranny preamp with useful audiophile features. Works beautifully with 160 power amp	5			●			166
R	Musical Fidelity X-P100	800	Good long-term listening prospects; detailed and a little fruitiness (tested with X-A200 power amp)	6	●		●			200
	Musical Fidelity NuVista 300	3,300	Powerful smooth sound with tremendous bass extension. Capacity to fulfil the demands of the most dynamic material	1					350	199
	Myrrad MA120	450	Based on MI120 integrated – see latter for comments, but sounds significantly better when bi-amped with MI120	1					60	165
R	Myrrad MP100/MA240	1,600	Smart finish and impeccable manners, smooth, clean performance	6			●	●	120	212
R	NAD 114	270	Beer-budget preamp which sounds focused, detailed and consistent	6	●	●		●		165
R	NAD Silverline S100/S200	2,000	Beautifully built kit that sounds as good as it looks with heaps of power	7			●		200	200
	Naim NAC92R/NAP90	1,080	Upgradeable preamp uses proprietary socketry. Power amp from Nait integrated with some improvements	5			●		30	165
	Naim NAC102/NAP180	2,122	More of a 'character act' than a neutral reproduction system, majors on excitement at the expense of subtlety	6			●		60	200
EC	Naim NAP500	10,000	Wonderful neutrality, bandwidth and dynamic range, plus Naim's traditional leading edge definition	1					140	208
	Rega Ha/Exon	2,194	Passive line stage dedicated to Exon monoblock power amps, bold outgoing, in-command sound	6	●	●	●		125	165
BB	Roksan Caspian Power	595	Excels musically and in conventional hi-fi terms. A power amp for people with long-term satisfaction in mind	1					70	183
	Rotel RC-971	150	Low price is offset by rather coarse sound quality with certain types of music. (Tested with RB-971 power amp)	5				●		178
	Samuel Johnson pca100	1,800	Stylish wood and metal fascia - precise, clean sound with an emphasis on leading edges	6			●	●		201
	TAG McLaren PA20R/125M	1,500	Clean, detailed sound but limited thrill power	6			●	●	145	184
	Talk Hurricane 2L/Tornado 2	1,249	Design of integrity which gets to the heart, if not the soul, of the music	6					65	165
	Technics SU-C3000	2,997	Price includes SE-A3000. Supremely clean and even sounding combo, though it could be more musically involving	5	●					188
	Technics SU-C1010	300	Although the sound's basically all there, it's arguable that a good integrated offers more, for less	6	●		●			200
	Thule Spirit PA100	600	More successful than matching preamp: sound is gutsy and lively, and generally clean	1					100	187
	Thule Spirit PR150B/PA150B	1,600	The limitations in the sonic performance mean that the competition has more to offer	6					150	212

PHONO STAGES

STATUS	PRODUCT	£	COMMENTS	LINE INPUTS	MM PHONO INPUTS	MC PHONO INPUTS	REMOTE CONTROL	HEADPHONE SOCKET	POWER OUTPUT (W)	ISSUE NUMBER
	Clearaudio Symphono	740	Slightly inconsistent balance mars the performance of this lively performer	0		●				201
R	Creek OBH-9	160	A neat little unit with an essentially neutral and listenable character	0		●				189
	Cyrus aEQ7/PSX-R	826	Very hi-tech product which tends too much towards smoothness except at climaxes, which can be rough	0	●	●				189
	Densen DP-Drive/DP-02	350	Quite unusual design in many ways: sound is mostly good but never quite shakes off a 'synthetic' quality	0		●				189
R	Electrocompaniet ECP-1	495	An excellent phono amp that combines well-rounded balance with detail and low noise	0		●				189
BB	Moth 30 Series Phono	249	Fine sound all round, in any kind of music, from this bargain phono stage	0	●	●				189
	NAD PP-1	40	A basic phono stage that does its job rather coarsely: a bit bass-shy too	0	●	●				189
R	Pass Labs XOno	2,995	Not absolutely neutral, but the overall result is so beguiling it's hard to resist	0	●	●				201
R	Primare R-20	500	Fights a little shy of densely scored music, but generally an enjoyable and neutral performer	0	●	●				201
R	Pro-Ject Phono Box	40	Moving-coil compatibility is a dubious extra in a way, but MM performance is acceptable at this giveaway price	0	●	●				201
R	QED Discsaver DS-1	35	It's cheap, it's cheerful, it's OK – perfectly adequate for use with a phono-less integrated, though not very refined	0	●	●				189
	Roksan Artaxerxes X/DS1.5	1,150	Delicate and well balanced, slightly congested at climaxes. Power supply expensive, but runs two Roksan components	0	●	●				189
	TAG McLaren PPA20	1,500	One of the best-equipped phono stages available. Resolution is excellent, but timing is marginally behind the best	0	●	●				187
R	Tom Evans The Groove	1,500	Plenty of detail, excellent imaging and almost flawlessly neutral: a good choice for information retrieval off any LP	0		●				201

AMPLIFIERS



SPECIFICATIONS

MULTI-CHANNEL AMPLIFIERS

STATUS	PRODUCT	£	COMMENTS	LINE INPUTS	MM PHONO INPUTS	MC PHONO INPUTS	REMOTE CONTROL	HEADPHONE SOCKET	POWER OUTPUT (W)	ISSUE NUMBER
R	Arcam Alpha 10 DAVE/10P	2,500	Packed with a diversity of electronics that against engineering odds sounds extremely good	5			●	●	110	198
BB	Arcam FMJ A22 DAVE/P25	2,850	Powerful, authoritative, great stereo, excellent home cinema - what more can you want?	7			●	●	100	210
	Cyrus AV5	1,000	Few processors are as adept with music. An effective multi-channel solution for music fans	4			●		N/A	201
	Cyrus AV5/SmartPower	2,650	Refined, detailed and attractive, but ultimately lacking in balls.	3			●		60	210
BB	Denon AVC-A150E	1,200	State of the art sound quality, a strong feature set and reasonable pricing. What more could you want?	11	●		●	●	125	210
R	Denon AVR-3300	800	Not as powerful as Denon claims, but nonetheless capable of impressive high-fidelity multi-channel sound	4			●	●	75	198
	Kenwood KRF-V7773D	800	Bold, detailed presentation, but there are some technical limitations and a slightly mannered quality, especially with music.	10	●		●	●	120	210
BB	Marantz SR5000	500	Something of a rough diamond, but a powerful and entertaining package	5			●	●	105	198
BB	Marantz SR7000	700	Excellent at the price, and almost equally effective with 2-channel music and multichannel AV.	9			●	●	100	210
	Musical Fidelity HTP/HT600	3,998	A very well matched pairing with considerable musical talents	8			●		100	207
BB	NAD T760	650	More than adequate home cinema receiver that unusually doesn't muck up the music	7			●	●	60	210
	NAD T770	1,000	Lacks both transparency and subtlety while the omission of dts will be a drawback for some at this price	5			●	●	90	198
	Nakamichi AV-10	1,000	A very powerful AV receiver that's easy to install and set-up with a civilised and subtle performance	4			●	●	140	198
R	Onkyo TX-DS989	2500	Authority personified, excellent AV signal processing, but sound quality a tad subtle.	9	●		●	●	160	210
	Pioneer VSA-E08	1,300	THX circuitry gives home cinema material a boost, but this is not an obvious first choice for music.	10	●		●	●	100	210
	Pioneer VSX-908RDS	1,000	A flexible heavyweight AV receiver whose sound is just a little too stodgy and lacking in crispness	4			●	●	80	198
	Primare P30/A30.5	3,700	No 5.1 channel input for DVD A/SACD but capable of almost uncomfortable realism with real solidity and drive	8			●	●	120	210
R	Roksan DSP/5 ch amp/VSU	2,440	Clean, powerful stereo expanded seamlessly, if without distinction, to 5.1 channels.	4			●	●	80	210
R	Rotel RSP-985/RPB-985 MkII	2,400	The hugely versatile processor is the weaker subjective link in this otherwise impressive combo	3			●	●	130	198
	Sony TA-E9000ES/N9000ES	2,300	Big, gold, powerful and remarkably versatile but fails to cut the sonic mustard	5			●	●	110	198
R	Sony VA777ES	1,500	Smart circuitry gives this model unusual precision and transparency, and it is a fine all rounder 9	9			●	●	100	210
	Technics SA-DA10	500	Lower mid-market AV amp has all the right ingredients, but fails to stir the soul	5	●		●	●	80	210
	Yamaha DSP-AX1	1,600	An anorak's delight, and one of the most flexible and effective soundfield creators ever conceived	11	●		●	●	110	210

CABLES



SPECIFICATIONS

ANALOGUE INTERCONNECTS (PRICES PER TERMINATED METRE PAIR)

STATUS	PRODUCT	£	COMMENTS	SYMMETRICAL	COAXIAL	STRANDED	SOLID CORE	COPPER	SILVER	DIG CABLE TYPE	ISSUE NUMBER
	Acoustic Precision Eikos	89	Not entirely neutral: probably best suited to upbeat music. Very stiff construction			●	●	●	●		188
	Audio Note AN-A	18	Not especially impressive: warm but well-rounded balance that restricts 'air' but is quite clear	●				●			108
	Audio Note AN-C	35	Neutral but lacking in subtle texture and unable to distinguish fine detail				●	●			131
R	Audio Note AN-S	99	Up-beat and enthusiastic sound with satisfyingly deep and grumbly bass	●			●		●		131
	Audio Note AN-V	179	15 individually insulated silver strands make up this very clean and dynamically unchallenged cable	●					●		131
	Audioquest Sidewinder	40	Suppresses the sound. At this price it's a disappointment		●		●	●			211
R	Audioquest Coral	99	Slightly forward imaging hardly detracts from its excellent tonal qualities and detail	●		●		●			200
R	Cable Talk Advanced 3	35	Good sound and great detail, but a slight brashness in the treble	●				●	●		211
R	Cable Talk Studio 2	65	A first-class performer from tonal, dynamic and rhythmic standpoints	●				●	●		160
	Cambridge Pacific	30	Lacks subtlety and bass impact but is otherwise quite serviceable for the price		●		●	●			176
R	Cambridge Audio Studio Ref	40	Dynamic cable with strong soundstaging and only a slight lack of detail		●			●			160
	Cambridge Silver Spirit 60	100	Good bass but a lack of detail and differentiation of instruments	●				●			188
R	Chord Calypso	30	Informative, clear sound at a decent price	●				●			211
	Chord Cobra 2	50	Good, strong sound with full-bodied music, less happy with smaller forces	●				●			176
	Chord Chameleon 2	90	Deep bass is fine but despite that the sound can be a bit hard and lacking body and resonance	●				●			188

ANALOGUE INTERCONNECTS (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	SYMMETRICAL	COAXIAL	STRANDED	SOLID CORE	COPPER	SILVER	DIG. CABLE TYPE	ISSUE NUMBER
R	Connections Midas HD	39	Canary yellow cable with excellent plugs and an open sound. Slight treble glare	●		●		●			160
R	DNM Reson	40	Seemed a little harsh in the test system, but can work well and should be tried	●			●	●			200
BB	Ecosse The Composer	29	A high degree of realism and delicacy, and a fantastic price		●	●		●			211
	Goertz M1 Interconnect	145	Soft sound lacking in bite, with excessive and plummy bass (NB sample used in review was only 0.5m)	●			●	●			176
	Insert Audio IC100 MkII	47	Mostly good sound is let down by pervasive dryness			●		●			176
R	Insert Audio Image 5.1	85	Very good detail and imaging: perhaps a touch bass-light		●	●		●			200
BB	Ixos Gamma Audition II	30	Detailed and neutral, with just a hint of pleasant mellowness	●		●		●			211
	Ixos Gamma 1002	39	Lumpy bass, grainy treble, and poor integration. Nice colour, though	●		●		●			176
	Ixos 1000	90	Nothing badly wrong, just a little bit bland and outshone by others at the price			●		●			200
BB	Kimber PBJ	68	Assured sound, solid and natural bass and clear treble — excellent performance all round			●		●			188
R	Kimber Hero	110	Slight roughness detracts from some music; seems well suited to rock and jazz. Lively and detailed	●		●		●			176
R	Moth Ley Line Black	100	Offers a full sound, neutral yet very solid and confident in delivery. Expansive imaging retains music's energy	●		●		●	●		108
R	Moth Ley Line Grey	200	Detailed, but there's a sense of distance between music and listener: vocals are coarse rather than liquid	●		●		●	●		108
	Nordost Black Knight	60	Flat black cable that is distinctive but slightly coloured — but not in a wholly negative manner	●		●		●			160
R	Nordost Solar Wind	85	Good tone and dynamics, with just occasionally a touch of bass-lightness in busy music	●			●	●			188
R	Nordost Blue Heaven	145	Very good bass and only slightly grainy treble add up to a well integrated, natural-sounding cable	●			●	●			176
	Precious Metals 5S35	50	Extended bass, but dry character suits electronic music better than acoustic		●	●		●			188
	Profigold PGA301 MkII	40	Mellow and well rounded, but can seem a little heavy		●	●		●			211
R	Prowire VHQ	10	This crisp cable lacks a little refinement, but it's great for the price		●	●		●			211
R	Prowire Silver	60	A good cable in every way, with just the occasional hint of coloration and coarseness			●		●	●		176
R	QED Qunex 1	20	Well balanced, and easily rivals more expensive cables		●	●		●			211
	QED Qnect 2	30	Very well balanced, refined and detailed, this is everything a good cable should be, and excellent value			●		●			176
R	QED Qnect 4S	70	Some coloration and roughness in the midrange and treble, but bass is gratifyingly solid	●		●		●			188
R	QED Qnex Silver Spiral	90	A great cable for lovers of big sounds	●		●		●			200
	Reference CS1	75	A moderate performer, with a little coloration and a tendency to lose bass at climaxes	●		●		●			188
	Silvertone Ex-Static	35	Pleasantly unfatiguing and competitively priced cable that lacks detail and insight		●	●		●			160
BB	SonicLink Silver Pink	35	Dynamically sensitive and muddle-free. We're unsure about the flesh-coloured finish, though...	●		●		●	●		160
R	SonicLink Black	49	Nickel-plated copper with a slight dryness in the bass and a hint of treble roll-off don't compromise integration	●		●		●			176
	SonicLink Lilac	65	Some dryness can affect transient sounds, though tone is generally good, especially in the bass	●		●		●			188
	SonicLink Violet	85	Better bass than treble — a little dry in the upper octaves	●		●		●			200
R	Straight Wire Chorus	40	A very confident cable with good bass, though perhaps a shade of treble loss		●	●		●			176
R	Straight Wire Sonata	80	Tonal balance favours lower frequencies but despite this it's a very listenable cable		●	●		●			188
	Straight Wire Encore II	100	Slightly variable bass performance is a weakness in this otherwise capable cable	●		●		●			200
BB	Supra EFF-ISL	80	Excellent sound in all areas — nothing to criticise	●		●		●			188
R	Tara Labs Prism 22	64	Mild tendency to plumminess offsets some hardness in complex music with mixed results		●		●	●			188
	Tara Labs Prism 55-i	195	Good with laid-back music, but seems lazy with more exciting material	●			●	●			200
BB	TCI Viper	55	Fine performance in all areas: just the smallest hint of sibilance. Very good value	●		●		●			200
BB	van den Hul PB5	50	A highly neutral cable with fine dynamic and rhythmic performance too — excellent		●	●		●			188
R	van den Hul Source HB	65	Price for 0.8m. Hybrid carbon-fibre/copper cable that is a paragon of naturalness		●	●		●			160
R	van den Hul D102 MkIII HB	80	A fine cable, but the competition has crept up and it no longer leads the pack	●		●		●			200

DIGITAL INTERCONNECTS (PRICES PER TERMINATED METRE PAIR)

STATUS	PRODUCT	£	COMMENTS	SYMMETRICAL	COAXIAL	STRANDED	SOLID CORE	COPPER	SILVER	DIG. CABLE TYPE	ISSUE NUMBER
R	Audioquest Digital One	35	A neutral and capable cable that adds little or no character to the sound			●		●		E	207
	Chord Optilink	40	Beautifully made, but performance is practically indistinguishable from other, cheaper, Toslink leads					●		O	207
R	Chord Prodac	50	Price for 0.6m length. Lively detailed treble, drives music along confidently with no hint of fizz		●			●		E	131
	Ixos 1051-100	39.95	Plenty of bass, and detail seems good, but there's a loss of involvement		●			●		E	207
	Moth Leyline Datalink	120	A thin, coaxial version of Leyline Black with a rather hard and unforgiving character. Too expensive		●	●		●		E	108
BB	QED Qunex P75	25	A superbly capable interconnect that's highly detailed and well balanced		●			●		E	207
R	Ross OP004	19.99	Sounds much like most other Toslink leads: slightly lacking detail, but good value					●		O	207
	SonicLink Digital Optical	30	Possibly slightly more detailed than other opticals, but still no match for a decent electrical digital link					●		O	207



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SYMMETRICAL
COAXIAL
STRANDED
SOLID CORE
COPPER
SILVER
DIG CABLE TYPE
ISSUE NUMBER

DIGITAL INTERCONNECTS (PRICES PER TERMINATED METRE PAIR)

STATUS	PRODUCT	£	COMMENTS	SYMMETRICAL	COAXIAL	STRANDED	SOLID CORE	COPPER	SILVER	DIG CABLE TYPE	ISSUE NUMBER
R	SonicLink Green	60	Spacious, positive and engaging if a bit over-crisp at times — very compelling, however		●		●	●	●	E	131
	Straight Wire Info-Link	300	A good cable, but bass seems a little light and detail suffers a little at climaxes		●		●		●	E	207
R	van den Hul Optocoupler	49.95	Noticeably has the edge over other optical leads, but still second best to electrical types							O	207
BB	van den Hul The First	140	Exceptionally natural albeit slightly cautious compared to some. Plenty of subtle information and integration		●	●				E	131

LOUDSPEAKER CABLES (PRICES PER METRE LENGTH)

STATUS	PRODUCT	£	COMMENTS	SYMMETRICAL	COAXIAL	STRANDED	SOLID CORE	COPPER	SILVER	DIG CABLE TYPE	ISSUE NUMBER
	ALR Jordan QMM	5	Generally neutral, if sometimes bass-shy, but not very communicative	●					●		183
R	Audio Note AN-B	16.50	Well suited to valve systems, elastic bass, methodical but unintrusive and musical			●			●		133
R	Audio Note AN-L	29.50	Fruity bass and expressive vocal rendition was appreciated by the panel, which was happy to accept its foibles	●			●		●		133
R	Audio Note AN-SP	150	A calm and civilised presentation, very quiet in the way it reveals subtle low level detail. Great poise and clarity				●		●		109
R	Audioquest Slate	15	Capable across the board, with just the smallest degree of dryness, but very listenable	●				●	●		203
R	Bandridge LC7409	4	Detailed and up-beat cable. A bit too steely for classical strings			●			●		157
R	Cable Talk Talk 3.1	2.25	Quite well-balanced but tends to lose bass lines in complex music					●	●		168
	Cable Talk Talk 4.1	4.25	Smooth and cultured sound that lacks fine detail and is a bit too restrained					●	●		157
	Cable Talk Flat 2	5	Rather unexciting sound, with variable bass and dry voices	●					●		203
	Cable Talk Concert 2.1	8	Can make stereo images recede, and favours the upper bass					●	●		192
	DNM LSC350	6.95	Majors on midband and lower treble lucidity at the expense of bass and extreme treble extension	●				●	●		168
R	Chord Company Odyssey	17	Relatively vice-free cable with good detail throughout the range and generally neutral bass			●			●		192
	Chord Company Rumour 2	10	Performance is listenable enough but fails to excel in any area	●					●		203
BB	DNM LSCB500	12	High impedance can influence the treble response, but this was a winner on sound per pound. Bi-wire					●	●		133
R	Electrofluidics Monolith 2020	45	Excellent bass extension and very fine performance elsewhere - one of the best cables available all round	●				●	●		203
	Gale XL189	1	Slightly bright and not too subtle, but a perfectly acceptable cable for any starter system	●				●	●		168
BB	Gale XL315	2	A little lacking in detail but plenty of life and excellent value					●	●		157
R	Gale XL160-2	2.50	Rhythmic and bouncy-sounding bi-wire cable. Can be slightly manipulative					●	●		157
R	Goertz M2	32	Remarkably detailed, smooth, neutral and with excellent bass; check amplifier compatibility	●				●	●		168
R	Hitachi LC-OFC	7	Very crisp, very clear and very confident. In the right system would be very expensive to better	●					●		109
BB	Ixos Gamma 6003	2.99	A little midrange dryness, but bass is among the best at this price, strong and consistent	●					●		203
R	Ixos Gamma 6006	5	Bass is better than treble, which can become spitty and sibilant — though only slightly	●					●		192
BB	Kimber 4PR	4.90	Considering the price, this cable's very slight dryness is forgivable when everything else is so right		●			●	●		192
R	Kimber 4VS	8.50	A good mix of virtues including particularly fine bass	●					●		183
R	Kimber 4TC	18.80	A well-balanced cable with good performance in all areas	●					●		168
BB	Kimber 8TC	348	Very capable in all areas, particularly good at imaging and with firm bass. Price for 5m terminated pair	●					●		203
	Linn K20	4	Seems to work best with lively, unsubtle music — can be dry and edgy	●					●		183
	Naim NAC A5	5.5	A 'dinosaur of a cable', this stiff wire rod doesn't belong outside Naim systems, where it works a treat					●	●		109
	Nordost Octava	3	Fair bass but confused treble and some coloration	●					●		168
	Nordost Flatline Gold II	9.50	Exciting sound but a bit too 'in-yr-face', and bass is not always even	●					●		92
	Ortofon SPK100	3	Grey-sounding — strips instruments of their natural richness and resonance. A bit bass-shy, too					●	●		133
R	Ortofon SPK200	4.99	Good strong bass and fair detail, only slightly marred by a little dryness	●					●		183
R	Ortofon SPK300	8	Tremendously open and atmospheric, with robust, full-blooded bass — if slightly bright at times	●				●	●		133
	Precious Metals SL102	10	Unusual construction gives rather strained sound, only really cheering up with simple musical textures	●				●	●		183
	Profigold Silverflex LC8258	4	A pretty-looking cable that does little to offend but is let down by some congestion	●					●		203
	Prowire Out of Sight	1.99	Special-purpose cable for laying under carpets etc. Fair sound across the board					●	●		203
	Puresonic 7845	1.95	Big, weighty sound — but too messy and bloated for its own good	●					●		183
	Puresonic 7891	2.85	Chunky cable design; shame about the sound quality	●					●		157
	QED Qudos	2.25	Despite high-tech design and excellent Air-Loc plugs, its music-making failed to gel					●	●		57
BB	QED Qudos Silver	5	A few minor flaws but overall performance is very assured for this price					●	●		192
	QED Profile 4x4	9	Good midrange and treble balance, but bass is rather slack and detail not outstanding						●		168
	QED Genesis Silver Spiral	30	Commendable bass, with a little dryness and mildly compromised imaging: good, but not the best at its price	●					●		203
	SonicLink S300	18	Happiest with simple music; tends to smudge detail in complex pieces	●					●		168
R	SonicLink AST50	1.95	It may look like bell-wire, but AST50 sounds detailed, ordered and balanced	●					●		157
R	SonicLink AST75	2.95	Unusual materials and rather unusual performance too, strong on excitement and with plenty of bass	●					●		203
R	SonicLink AST150	3.95	Slightly plummy bass and a useful way of holding musical strands together	●					●		157
	SonicLink AST200x2	5.95	At its best with exciting music, this cable seems shy of subtler details	●					●		192
	Straight Wire Duo	3	Not so subtle and lacking some detail, but sound is consistent with level and musical style	●					●		203
	Straight Wire Rhythm	6	Its major flaw seems to be woolly and indistinct bass, which pervades most types of music	●					●		192
BB	Straight Wire Quartet	8	A good all-rounder with full tone, clear detail and natural ambience	●					●		183
R	Supra Ply 3.4	6.95	Clean sound which stays together well at high levels, with full bass — perhaps a touch of treble restriction	●					●		183
R	Supra Ply 3.4/5	7.95	Good in all areas with rich bass and just a touch of treble roughness	●					●		203
R	Tara Labs Klara	2.95	A good budget cable with an even spread of virtues — and very minor vices — across the board	●					●		183
	Tara Labs RSC Prime 500	36	More suited to melodious music than anything with bite and drive, with only moderate detail	●					●		203
	TCI Python	7.99	No single major sin, but detail is not outstanding and rhythm isn't always completely solid	●					●		203
R	Townshend Isolda	50	Superb sound all round, and amplifier compatibility enhanced by included stabilising inductor	●					●		203
	van den Hul The Clearwater	7.99	Despite its evocative title, the Clearwater turns out to be a disappointingly murky-sounding cable					●	●		109
	van den Hul Royal Jade	10.99	Lots of technology, but sound suffers from dryness and woolly bass	●					●		203

MAINS CABLES AND CONDITIONERS

STATUS	PRODUCT	£	COMMENTS	SYMMETRICAL	COAXIAL	STRANDED	SOLID CORE	COPPER	SILVER	DIG CABLE TYPE	ISSUE NUMBER
	Clearaudio Accurate Power Gen	1,090	Compact and beautifully finished unit that offers positive sonic benefits that justify the price								206
R	Lynwood Electronics Mega Power	295	Reasonable price model that improves focus while producing a sweet, tight and clean bass								206
R	PS Audio Power Plant	1,200	Power Plant improves the cleanness and separation of individual voices and instruments, giving an impressive 3-D quality								206

MAINS CABLES AND CONDITIONERS (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	SYMMETRICAL	COAXIAL	STRANDED	SOLID CORE	COPPER	SILVER	DIG CABLE TYPE	ISSUE NUMBER
	GTA PHY-HP board	299	Oozing style and quality, the board generates an extremely natural and truthful sound								206
BB	Russ Andrews Kimber/Power Block	350	Improved version that elevates music to a cleaner and more three-dimensional experience with greater stereo imagery								206
	Russ Andrews The Purifier	250	More ambitious version of the Silencer that gives a cleaner, quieter background, allowing more low level detail								206
BB	Russ Andrews Silencer	40	A cost effect solution to noise-free mains supply that reduces 'hash' without losing brilliance and immediacy								206
	SonicLink S-Gold mains	225	Delivers a clean incisive sound with excellent detail, clarity and with no increase in noise								206
R	Trichord Research Powerblock500	300	Isolation transformer that bolsters clarity, openness and gives an increased refinement making for a purer and natural sound								206

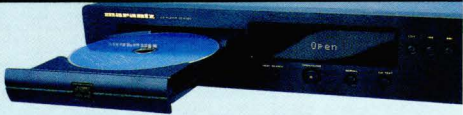
CASSETTE DECKS



SPECIFICATIONS

STATUS	PRODUCT	£	COMMENTS	DOLBY C	DOLBY S	DOLBY HX PRO	3-HEAD	TWIN DECK	AUTO REVERSE	AUTO CALIBRATION	ADJUSTABLE BIAS	ISSUE NUMBER
BB	Aiwa AD-F450	120	Basic but well-designed deck. Astonishing value; only the poor metering gives the game away	●	●	●	●	●	●	●	●	136
BB	Aiwa AD-WX727	170	High-class twin for those who want bells, whistles — and music	●	●	●	●	●	●	●	●	146
	Harman/Kardon TD420	250	Minor inconsistencies detract from a well-conceived, minimum features design	●	●	●	●	●	●	●	●	140
	Harman/Kardon TD450	350	Draw loader with poor tape navigation features; good midband but shallow bass	●	●	●	●	●	●	●	●	164
BB	JVC TD-R472	200	Excellent auto-reverse deck which doesn't suffer the usual disadvantages and is very sharply priced	●	●	●	●	●	●	●	●	158
BB	JVC TD-V662BK	270	Assured, clean and agile-sounding recorder, if not quite the most refined in its class	●	●	●	●	●	●	●	●	146
	JVC TD-W718	300	Twin deck. Good for creative live recording, but no timer standby. Respectable performance	●	●	●	●	●	●	●	●	171
R	Kenwood KX-W6080	200	Modestly decent-sounding twin deck, with some transport instability and ragged bass	●	●	●	●	●	●	●	●	171
	Marantz SD455	170	Works well as a single deck, especially on replay, but dubbing at high/low speed compromises sound	●	●	●	●	●	●	●	●	184
	NAD 613	230	Rough and ready, but enjoyable sound, though marred by mechanical motor noise	●	●	●	●	●	●	●	●	158
	NAD 616	300	Twin deck with basic features. No Dolby setting memory, transport is too unstable for audiophile use	●	●	●	●	●	●	●	●	171
	Nakamichi DR-10	800	An ergonomic oddity, but one of the last of the great cassette decks. Worth considering against MD	●	●	●	●	●	●	●	●	195
R	Onkyo K-611	460	Cute drawer-loading mini-size component with 3 heads and dual capstan transport	●	●	●	●	●	●	●	●	146
R	Pioneer CT-S550S	250	Great features, good with cheap low bias tapes, but slightly synthetic sound quality	●	●	●	●	●	●	●	●	164
	Pioneer CT-W806DR	300	Had it not been for the iffy transport quality, this sophisticated twin would have been Recommended	●	●	●	●	●	●	●	●	171
	Teac V-1050	180	One of the cheapest 3-head machines around, but it shows in very 'thick' sound	●	●	●	●	●	●	●	●	184
BB	Technics RS-AZ6	200	For those who can't afford the RS-AZ7; clarity over the widest bandwidth thanks to AZ thin-film head	●	●	●	●	●	●	●	●	164
BB	Technics RS-AZ7	270	Thin-film head gives a solid, almost CD-like bass and midrange. A clear advance in state-of-the-art	●	●	●	●	●	●	●	●	158
R	Yamaha KX-490	200	Electrifyingly transparent and capable deck whose only flaw is a trace of audible wow and flutter	●	●	●	●	●	●	●	●	158
R	Yamaha KX-580SE	250	Subtle, engaging and transparent deck, with a lightweight tonality, but stability and strong detail	●	●	●	●	●	●	●	●	171

CD PLAYERS



SPECIFICATIONS

STATUS	PRODUCT	£	COMMENTS	ELEC DIG OUTPUT	AES/EBU ELEC DIG OUT	OPT DIG OUTPUT	ST OPT DIG OUT	BAL ANALOGUE OUT	HEADPHONE SOCKET	VARIABLE OUTPUT	MULTI-DISC	SACD COMPATIBILITY	ISSUE NUMBER
BB	Acurus ACD11	899	First-rate if costly player, which combines a delightful transparency with an uncontrived naturalness	●	●	●	●	●	●	●	●	●	166
	Acoustic Precision Eikos	1,850	Seriously customised Pioneer with extraordinary resolution and world beating imaging and bass	●	●	●	●	●	●	●	●	●	165
	Advantage CD15	3,995	A CD player of some stature — what it lacks in dynamics it makes up for in subtlety and flow	●	●	●	●	●	●	●	●	●	193
	Alchemist Kraken	1,249	Distinctive looking player likely to suit a Alchemist system, but will result in variable results elsewhere	●	●	●	●	●	●	●	●	●	190
R	Alchemist Nexus APD32A	597	Refined treble, constrained yet capable bass and attractive all-round presentation	●	●	●	●	●	●	●	●	●	169
	AMC CD8A	150	Has balanced output, but is otherwise rather grey and unremarkable	●	●	●	●	●	●	●	●	●	172
BB	AMC CD9/DAC8	200	Beer-budget two-box system (player plus DAC) is smooth, attractive and easy on the ear	●	●	●	●	●	●	●	●	●	179
	Anthem CD1	1,595	Unusual combination of high-end player, complete with HDCD, and changer. Good, but noisy	●	●	●	●	●	●	●	●	●	178
BB	Arcam Alpha 7SE	300	Sharper, clearer Alpha 7 SE, and more affordable than before	●	●	●	●	●	●	●	●	●	207
	Arcam CD72	400	Easy going, slightly soft-centred reworking of Alpha 7 in new, svelte DIVA clothing	●	●	●	●	●	●	●	●	●	212
R	Arcam Alpha MCD	450	Excellent bass and natural midband, but just a touch of treble dryness, from this very listenable changer	●	●	●	●	●	●	●	●	●	178
BB	Arcam Alpha 8SE	600	Excellent (and very reasonably priced) HDCD-compatible player is a strong all-rounder	●	●	●	●	●	●	●	●	●	176
R	Arcam Alpha 9	800	Refined, articulate player which employs new DAC technology to great effect	●	●	●	●	●	●	●	●	●	188
R	Arcam CD92	850	High resolution player needs a touch of spit and polish to be completely convincing	●	●	●	●	●	●	●	●	●	212
R	Arcam FMJ CD23	1,100	World class presentation allied with innovative technology to deliver an engaging standard of music making	●	●	●	●	●	●	●	●	●	206
	Audio Analogue Paganini	750	Basically good, but sometimes heavy-handed player	●	●	●	●	●	●	●	●	●	191
	Audio Note AN-CD1	600	Easy on the ear, and for a valve player, easy on the pocket, but a bit Radio 2-flavoured	●	●	●	●	●	●	●	●	●	188
	Audio Note AN-CD2	999	High output impedance makes performance unduly system fussy	●	●	●	●	●	●	●	●	●	195
	AVI S2000MC2	899	A chip off the old block. This model's in-yr-face balance obstructs an otherwise finely detailed sound	●	●	●	●	●	●	●	●	●	176
R	AVI S2000MC Reference	1,399	Lean, dry, high resolution player, built to outlast most of us. A fine performer in a sympathetic system	●	●	●	●	●	●	●	●	●	169
	Balanced Audio Tech VK-D5	3,995	A valve-infused player with a big and engaging sound. Lacks a little subtlety	●	●	●	●	●	●	●	●	●	194
	Cambridge Audio D100	120	Hard, clanging and coloured sounding, and with suspect control logic	●	●	●	●	●	●	●	●	●	200
BB	Cambridge Audio D500	200	Clean and highly articulate player wears well in extended use	●	●	●	●	●	●	●	●	●	202
R	Copland CDA 266	1,199	Simple yet elegant design is unexpectedly sophisticated under the skin, and effective in execution	●	●	●	●	●	●	●	●	●	176
	Copland CDA 289	1,898	Beautifully built and musically enjoyable. Lacks some precision, but still among the best below £2,000	●	●	●	●	●	●	●	●	●	194
R	Cymbol CDP12	1,299	Clean, detailed and airy HDCD-equipped player with minimalist trappings	●	●	●	●	●	●	●	●	●	176
R	Cyrus dAD1.5	395	Improved dAD1 variant has improved digital filter for a more natural, easy on the ear quality	●	●	●	●	●	●	●	●	●	191

ONE-BOX CD PLAYERS (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	ELEC DIG OUTPUT	AES/EBU ELEC DIG OUT	OPT DIG OUTPUT	ST OPT DIG OUT	BAL ANALOGUE OUT	HEADPHONE SOCKET	VARIABLE OUTPUT	MULTI-DISC	SACD COMPATIBILITY	ISSUE NUMBER
R	Cyrus CD7	800	New Cyrus player has strong all-round attributes to match its good looks	•									212
R	Cyrus dAD3 Q24	900	Bold, lean and lively player demands sympathetic system matching	•		•							200
R	Denon DCD-435	130	Good low cost player, and a step up from the DCD-425, its predecessor	•		•			•				191
R	Denon DCD-655	180	Fine, slightly soft-edged budget player, and a good ameliorative for aggressive, edgy systems	•		•			•	•			200
	Denon DCD-1550AR	350	Disappointing bland and ploddy sound from an immaculately constructed, high-tech player	•		•			•	•			179
	Densen B-400	1,280	Bold, purposeful sound, but lacks subtlety, and has some ergonomic flaws	•									212
	EZO Fog Stage 3	1,170	Curious player is difficult to drive, and has sound quality that both enchants and sometimes confounds	•				•					212
	JVC XV-D723GD	500	Convincing DVD-Audio player that is ultimately let down by poor CD performance	•		•	•						206
R	Kenwood DVF-3030	180	Solid CD player with straightforward features	•		•			•	•			207
BB	Kenwood DP-4090	250	Focuses a clear, wide aperture lens on the music — and has CD Text too	•		•			•	•			172
	Kenwood DP-5090	300	Disappointing senior brother to the excellent DP-4090, but surface interface is good	•		•			•	•			179
	Kenwood DVF-R9030	800	Kenwood's first DVD-A player suffers from a mild compression of dynamics resulting in a polite yet matter of fact sound	•		•	•	•	•	•	•		206
R	Linn Genki	995	Explicit, rather bright sounding player with strong multi-room appeal	•							•		212
	Marantz CD5000	150	Well equipped budget player sounds thin and rough at times	•		•			•	•			202
	Marantz CC3000	150	Ragged sounding multidisc player, but it is cheap and well equipped	•							•	•	204
BB	Marantz CD6000	250	Great package with all mod cons, and eminently listenable too	•		•			•	•			207
BB	Marantz CD6000 OSE	300	Superbly constructed, slightly emasculated sounding, but smooth and articulate	•					•				200
BB	Marantz CD6000 KI Signature	500	Excellent all rounder, a well appointed good value package	•		•			•				212
R	Marantz CD-17 MkII	800	Sophisticated player with a short but attractive feature set, and a new found bounce in its step	•		•	•	•					206
R	Marantz CD-17KI Sig	1,100	Minor QC problems aside, this is a superbly turned-out machine, but ultimately a little bland	•		•					•		176
R	Marantz CD-7	3,500	A superbly designed CD player, both inside and out. Precise and dramatic in equal measure	•		•			•	•			194
EC	Marantz SA-1	5,000	The brand's first SACD player is a stunning machine that's equally as strong with conventional CD	•		•		•				•	208
	Meracuz Tanto	1,395	Believable tonal colours and textures, refinement takes preference over dynamics — but it's not cheap	•									169
BB	Meridian 506	1,100	Revised 506 includes MSR remote and a new DIA chip, which makes it livelier and more detailed	•		•						•	176
	Monrio Asty	695	Well built player has solid, propulsive sound quality that deteriorates towards HF	•									200
	Monrio Privilege	995	Costly and well-engineered, but ultimately rather heavy-handed and dull, if refined player	•									166
	Musical Fidelity X-RAY	799	Brilliantly packaged and clean but slightly antisepic sounding player	•		•							184
BB	Musical Fidelity A3 CD	800	Excellent player has few faults apart from a slight loss of EHF detail	•		•							200
	Myryad T-10	400	Rather ordinary player fails to shine with good music recordings	•									184
	Myryad T-20	600	Matter of fact styling and sound quality, a tad bright for some systems	•									195
	Myryad MCD500	1,300	Well-built, attractive player, showing much promise, but can be a little heavy-going on audition	•									176
R	NAD C520	170	Significantly improved entry level NAD is smooth and dynamic, if slightly dull	•									202
R	NAD 524	250	Clean, clear and essentially musical player in the NAD mould	•									191
	NAD 523	250	Lacklustre musical presentation was disappointing on test; so was the absence of a digital output	•								•	204
	NAD C540	330	Not cheap, and disc handling is pedestrian at best, but the C540 is smooth & elegant with just a hint of aggression	•									200
R	NAD Silverline S500	1,100	It sounds as good as it looks, which is notably refined and easy on the ear	•	•	•		•					195
R	Naim Audio CD5	1,120	Recommended subject to audition, a dynamic machine, yet some physical minuses	•									212
R	Naim Audio CD2	2,000	Provides bags of detail with a solid stereo focus but not all the romanticism we know to be possible	•									163
R	Nakamichi MB-10	400	Jewel of a multi-disc player, with crisp sound and superb fuss-free compact packaging	•		•			•		•		204
EC	Naim NACDSII/XPS	5,625	Brings you the Naim sound, but for once doesn't have to rely on Naim ancillaries to get the results	•									188
R	Onkyo DX-7222	150	Competitive following recent price cut, and on the whole a strong performer musically	•		•			•				200
	Onkyo DX-7511	300	Earthbound mid-price CD player fails to excite	•		•			•	•			207
	Parasound CDP-1000	499	Comes on like a high end player, but ultimately sounds a bit weak and soft-centred	•									184
	Philips CD751	150	Inconsistent and occasionally opaque and scrawny sounding cheapie	•									172
	Pioneer PD-5507	200	Low cost Legato Link implementation sounds gentle but slightly muddled	•		•			•				191
	Primare D20	799	Well presented player doesn't quite cut the mustard, though it performs promisingly	•									188
	Revox Exception E426	2,250	Very stylish with a light, agile sound that extends superbly and has fine timing	•				•					182
	Roksan Kandy	475	Slightly old-fashioned sound quality player available in various colour schemes	•		•							200
	Roksan Caspian	895	Improved Caspian (retested for 2001) is still bold, dynamic player, but rather more subtle and expressive	•									212
	Rotel RCD-951	300	Disappointing chopped-down RCD-971 — buy the original	•									191
BB	Rotel RCD-971	450	Odd disc handling logic, but bold, detailed and refined sound make this a must	•									184
R	Rotel RCD-991	825	Strong midrange player with switchable dither levels to provide some system tweaking ability	•	•								212
	Sherwood CD1	1,100	A very neutral, even handed sounding player with a rather flat, lifeless sound. Beautiful construction	•		•							163
	Sharp DX-SX1	2,700	Stylish player with a slightly forward but extremely nimble sound. Connects to matching digital amp via dedicated umbilical	•		•			•	•	•		211
R	Sony CDP-XE330	100	Unrefined, but lively, detailed and highly affordable	•									200
	Sony CDP-XE530	140	Well equipped, but raw, scrappy sounding player lacks depth and weight	•					•	•			202
BB	Sony CDP-XB930E	300	Yet another first rate UK optimised player with all the bells and whistles	•		•							195
R	Sony SCD-XB940	550	First mainstream SACD player that easily outstrips comparable CD players at this price	•		•		•	•			•	206
EC	Sony SCD-555ES	1,200	Composed and detailed with admirable build quality, compelling listening	•					•			•	212
EC	Sony SCD-777ES	1,700	Beautifully built SACD player that looks like a bit of a CD player bargain	•		•						•	198
EC	Sony SCD-1	2,500	The first SACD player sounds fabulous but there's not much competition and limited software as yet	•				•				•	194
	T-A CD1210R	1,185	Intriguing player with rather pushy basic sound, but has switchable digital filters	•		•							188
	Talk Electronics Thunder 1	550	Entry level upgradeable Talk Electronics player sounds slightly muted	•									200
	Talk Electronics Thunder 2	699	Fine player, slightly lacking in dynamics, but readily, if expensively upgradable in various ways	•									191
R	Talk Electronics Thunder 3	1,000	Clean, fast, and availability of a complete upgrade path make this a good long term proposition	•									195
R	TAG McLaren CD20R	1,249	Dry and unatmospheric, but plenty of presence — recommended with caution	•									188
	Teac VRDS-9	700	Well-presented. This Teac is crisp, yet shallow, and inconsistent in sound quality and partnering skills	•		•					•		176
	Teac VRDS-25x	1,000	Excellent, individualistic player with bold, colourful sound, but test sample had iffy CD-R compatibility	•		•		•		•			195
	Technics SL-PG390	90	It's very cheap. Very, very cheap	•									202
	Technics SL-PS7	200	Strong, but ultimately rather opaque and hard-sounding, high tech CD player	•					•				207
R	Technics SL-MC7	300	Maximum storage capacity for a minimum price, and presentable sound too (multidisc)	•		•					•		204
	Thule Spirit CD100	600	Definitely a try before you buy machine, but the bass and mid are excellent	•									188
	Trichord Genesis	549	Breathed-on Pioneer is warm and mellifluous, but ultimately lacks drive and authority	•					•	•			169
	Trichord Revelation	799	Well-ordered and clean sound that may be a little too refined for some, images well	•					•				166
	Tube Technology Fusion MkII	1,350	Improvements over the original model but still remains too inconsistent for its own good	•		•	•	•					206

ONE-BOX CD PLAYERS (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	ELEC DIG OUTPUT	AS/ES/BU ELEC DIG OUT	OPT DIG OUTPUT	ST OPT DIG OUT	BAL ANALOGUE OUT	HEADPHONE SOCKET	VARIABLE OUTPUT	MULTI-DISC	SACD COMPATIBILITY	ISSUE NUMBER
	Tube Technology Fulcrum	2,800	An imaginative two-box player with a smooth sound that lacks some lustre	●	●	●							194
	Yamaha CDX-493	180	Open and lively, but this player is also messy and lacking resolving power			●			●	●			191
	Yamaha CDX-596	230	Well-priced and attractive-sounding, this player can read CD-RW	●		●			●	●			207
	Yamaha CD-X993	400	A bit of a lush, though the sound is singularly free of grain, and equipment levels are strong	●		●			●	●			184
	YBA Spécial	695	There is nothing here to justify the pricing or the high-end parentage. Avoid			●							195

CD TRANSPORTS

STATUS	PRODUCT	£	COMMENTS	ELEC DIG OUTPUT	AS/ES/BU ELEC DIG OUT	OPT DIG OUTPUT	ST OPT DIG OUT	BAL ANALOGUE OUT	HEADPHONE SOCKET	VARIABLE OUTPUT	MULTI-DISC	SACD COMPATIBILITY	ISSUE NUMBER
R	Audio Note CDT Zero	550	Although ominously esoteric on paper, it's smooth, open and easy on the ear in practice (Tested with DAC1)	●	●								212
	Linn Karik	1,850	Based on early Linn transport, the Karik is dry but very positive, detailed and engrossing	●		●							144
	Roksan Attessa ATT-DP3	1,295	Not the most detailed or refined but capable of sounding exciting with the right material	●		●							162
	Theta Carmen	3,299	A well equipped and extremely upgradable CD/DVD transport. Right now, the finest of its type	●		●							203
	Theta Data Basic II	2,397	Uses a Philips CDM9 Pro mechanism and works a treat with more lively DACs	●		●							130
	Thorens TCD2000	999	Lively presentation not helped by rather loose bass and splashy treble. (Tested with TDA 2000 DAC)	●		●							162
R	Trichord Digital Turntable	699	Very detailed, precise, controlled yet involving; a first-rank performer	●		●							162

DACs

STATUS	PRODUCT	£	COMMENTS	ELEC DIG OUTPUT	AS/ES/BU ELEC DIG OUT	OPT DIG OUTPUT	ST OPT DIG OUT	BAL ANALOGUE OUT	HEADPHONE SOCKET	VARIABLE OUTPUT	MULTI-DISC	SACD COMPATIBILITY	ISSUE NUMBER
	Alchemist TS-D-1	300	24/96-equipped DAC sounds tidy but a little shut-in with both 16-bit CDs and 24-bit/96kHz DVDs										187
	Audio Note DAC Zero	369	Neat valve-equipped DAC sounds smooth and fluid in the right system. (Tested with CDT Zero transport)										191
R	Audio Note DAC Zero1x	750	Although ominously esoteric on paper, it's smooth, open and easy on the ear in practice (Tested with CDT Zero)										212
	Audionote DAC 5	18,500	Astonishingly natural and realistic in the right system, the only problem being the extravagant price										203
EC	dCS Delius	5,000	State-of-the-art resolution with considerably greater flexibility than anything else, hard to beat	●	●		●	●		●		●	207
	dCS Purcell	3,500	The first upsampler on the market adds significant depth and increased bass resolve with a suitable DAC	●			●					●	207

DVD PLAYERS



SPECIFICATIONS

STATUS	PRODUCT	£	COMMENTS	ELEC DIG OUTPUT	AS/ES/BU ELEC DIG OUT	OPT DIG OUTPUT	ST OPT DIG OUT	BAL ANALOGUE OUT	HEADPHONE SOCKET	VARIABLE OUTPUT	MULTI-DISC	DVD-A COMPATIBILITY	ISSUE NUMBER
R	Denon DVD-1500	400	Colourful and engaging (if lightweight) sound, with excellent picture quality	●		●			●				207
	Denon DVD-3300	999	Similar to the slightly cheaper Technics DVD-A10: listenable and clear, but lacking a little excitement	●		●			●			DS	211
R	Denon DVM-3700	1,000	One of the first multi-DVD players, and a fine all rounder, with average to good pictures, and better sound	●		●			●		●		204
EC	Denon DVD-5000	1,600	The first DVD-V player that ain't bad as a CD player. A fine musical device	●		●			●				187
R	Encore DV-450	200	Superb value for money, though mainly of interest to the videophile on a shoestring	●		●			●				207
	Hitachi DVP-505	300	DVD player has rather dark, unexpansive sound, but good picture quality	●		●			●				207
	JVC XV-D701	500	Good video player, but rather undeveloped musically – CD Text is neat, though	●		●			●				198
	JVC XV-523	280	Looking impressive on screen, but lacks resolution and consistency when pushed hard	●		●			●				207
	JVC XV-515GD	300	Musically soft as a baby's bottom, and as surprising as yesterday's news	●		●			●				202
	JVC XV-D723	500	The first DVD-A player is more of a DVD-V with A added rather than the next generation of hi-fi	●		●			●				205
	Kenwood DVF-R9030	900	Kenwood's entrée into DVD-A is a multi-disc machine with great potential (pre-production)	●		●			●				206
R	Kenwood DVF-9010	1,000	DVD player with brilliant picture and clean, lively sound	●		●			●				190
	NAD T-550	500	Soft-centred but likeable player in the classic NAD mould	●		●			●				202
	Nakamichi DVD-10	800	Not the most compelling model in the resurrected Nakamichi line-up	●		●			●				198
	Panasonic DVD-RV40	350	Modestly equipped, gives good pictures, but is musically unengaging	●		●			●				207
	Panasonic DVD-A360E	580	Powerful equipment, and unthrottled digital output notwithstanding, sound quality is modest at best	●		●			●				198
BB	Philips DVD750	400	Clever DVD with CD-R/CD-RW compatibility and surprisingly keen sound	●		●			●				198
BB	Pioneer DV-525	399	Lean, clean and lively sound quality. CD-R and 24/96 compatible, too	●		●			●				202
BB	Pioneer DV-626D	450	Superbly equipped, and more than respectable sound quality	●		●			●				198
	Philips DVD960	530	DVD-V player has strong sound quality and good, though slightly washed out, pictures	●		●			●				207
BB	Pioneer DV-717	550	Superb DVD player with good picture quality and which really knows how to play 24/96 discs	●		●			●				190
R	Primare V20	1,000	Elegant and well built DVD performer that possess a strong picture quality and decent CD player	●		●			●				206
	Samsung DVD-907	500	DVD player with below average picture, and lacklustre sound quality	●		●			●				190
	Sony DVP-CX850D	600	Lacklustre sound quality is a disappointment, but the price is appealing for a 200-disc DVD player	●		●			●		●		204
R	Sony DVP-S7700	950	Powerfully endowed player offers articulate and believable sound	●		●			●				198
	Sony DVD-S9000ES	1,200	First DVD machine to play SACD has a 'Lexus' sound style that never really gets its hands dirty	●		●			●				210
	Sharp DV-760	500	Reasonable picture, but sonically brings new meaning to the term rough and ready.	●		●			●				202
	TAG McLaren DVD32R	3,995	A tour-de-force of engineering, albeit with matching price tag. But picture quality is second to none	●		●			●				212
	T-A DVD 1210R	1,699	Operationally quirky but an excellent DVD player that does a decent if not spectacular job with CD	●		●			●				210
EC	Technics DVD-A10	900	The best Technics CD player also plays both varieties of DVD with some skill. A little cool sounding but in a class of its own for the moment	●		●			●			●	210
	Theta DaWD	4,650	A top-notch CD transport, that also plays DVD-Video discs well. Pricy for a DVD transport, but worth it	●	●	●	●		●				191
	Toshiba SD-100E	250	Mainstream player offers so-so features, performance and pricing	●		●			●				207
	Toshiba SD-3109	380	Defocused and soft-edged, this is more attractive for its picture than its sound quality.	●		●			●				202
	Toshiba SD9000	800	Costly, high tech player with stunning pictures and crisp, slightly lightweight sound	●		●			●				198
	Yamaha DVD-S795	529	Fare price, and an unconstrained digital output, but otherwise unexciting	●		●			●				198

DIGITAL RECORDERS

MINIDISCS

SPECIFICATIONS				
FORMAT	PORTABLE	OPTICAL IN/OUTPUS	ELEC IN/OUTPUS	ISSUE NUMBER

STATUS	PRODUCT	£	COMMENTS	FORMAT	PORTABLE	OPTICAL IN/OUTPUS	ELEC IN/OUTPUS	ISSUE NUMBER
	JVC XM-448	220	An hidden keyboard is a great idea, but musically it sounds rather cool and strident	MD		●	●	205
	Kenwood DMF-5020	250	It may be high-tech but nothing conceals the caricatured sound	MD		●	●	205
R	Kenwood DMF-9020	500	One of the best MD decks yet for sound quality, and the first to make titling a practical proposition	MD		●	●	191
	Marantz CM635	500	CD player and MD recorder in one box: a practical idea but sound and features don't really match the asking price	MD		●	●	191
	Onkyo MD-121	450	Midi-sized deck that sounds slightly coloured at times, though immediate and lively	MD		●		177
R	Pioneer MJ-D508	200	Well equipped but musically sleep inducing player that deserves its recommendation due to price	MD		●	●	205
R	Pioneer MJ-D707	250	A handy set of features for the price, though sound is not outstanding	MD		●	●	191
	Sharp MDR3H	300	Nifty machine combining a 3-disc CD changer with a MD recorder. Sound on both is rather below par, though	MD		●	●	184
R	Sony MDS-JA55ES	650	Powerful demonstration of Sony's proficiency, it delivers the best MD can offer	MD		●	●	205
	Yamaha MDX-793	300	Nice machine to use and has some useful features, but sound quality a little wanting	MD		●	●	191

CD RECORDERS

STATUS	PRODUCT	£	COMMENTS	FORMAT	PORTABLE	OPTICAL IN/OUTPUS	ELEC IN/OUTPUS	ISSUE NUMBER
	JVC XL-R5000	450	Flexible, rattly build, and attractive sound, but it's a little expensive compared to other rivals	CD-R(W)		●		205
	LG ADR-620	350	A powerfully equipped machine with useful multi-room capabilities, but sound quality is rough and ready	CD-R(W)		●	●	205
	Marantz DR700	600	Dearer than Philips and Traxdata equivalents, with apparently only a smarter front panel to show for it	CD-R		●	●	191
R	Marantz DR-17	1,500	Highly recommended, but with a jitter problem that, resolved, would improve sound quality	CD-R(W)		●	●	205
BB	Philips CDR951	380	An improvement on previous models, it delivers the musical goods in some style	CD-R(W)		●	●	205
R	Pioneer PDR-509	300	Straightforward design and excellent recording properties that are slightly dulled by the replay chain	CD-R(W)		●	●	205
R	Pioneer PDR-W739	400	Flexible multi-disc that has everything including respectable sound and pricing	CD-R(W)		●	●	205
	TEAC RW-800	350	Capable recording tool, but a little rough and ready as a player	CD-R(W)		●	●	205
R	Traxdata Traxa udio 900	399	Identical to Philips and Marantz models: it makes bit-perfect copies of CDs and has perfectly acceptable replay	CD-R		●	●	191

HEADPHONES

SPECIFICATIONS								
ELECTROSTATIC	SUPRA-AURAL	CIRCUMAURAL	OPEN BACK	CLOSED BACK	MASS (g)	IMPEDANCE (Ω)	3.5mm JACK ADAPTOR	ISSUE NUMBER

STATUS	PRODUCT	£	COMMENTS	ELECTROSTATIC	SUPRA-AURAL	CIRCUMAURAL	OPEN BACK	CLOSED BACK	MASS (g)	IMPEDANCE (Ω)	3.5mm JACK ADAPTOR	ISSUE NUMBER
R	AKG K100	36	Leather clad groover with bags of power and clarity, for a respectable asking price		●		●		190	100	●	205
	AKG 301	70	Big 'phones with even and detailed sound but lacks sufficient bass weight		●		●		230	100	●	194
	AKG K 240 DF	100	Inoffensive 'phones that are very laid back, if lacking in grunt			●	●		240	600	●	186
R	AKG K1000	700	One of the best dynamics on the market, hooks directly into speaker outputs			●	●		270	120		99
R	Audio Technica ATH910PRO	80	The closed back 910s are an improvement on the 909s, with a nice rhythmic quality rarely found		●				280	40		55
R	Audio Technica ATH-D40fs	100	Detailed and involving sound with a professional 'studio' quality appeal			●			250	66		194
R	Audio Technica ATH-M40	120	Incredible detail and honesty from these classically designed studio 'phone			●			250	60		186
	Beyer DT311	50	Uncharacteristically tight, unrefined sound quality from this otherwise well engineered 'phone		●		●		124	40	●	133
	Beyer DT411	63	A reasonable but not very thrilling headphone that doesn't really offer enough at the price		●				120	250		111
	Beyer DT331	65	Clear and extremely detailed sound with rather thin bass			●	●		210	40	●	194
	Beyer DT431	81	Nice looking 'phones that may not be the best players on the field, but will always give 100 per cent			●	●		210	40	●	186
	Beyer DT531	105	Average performer from an established player. Lacks punch and bite			●	●		245	250	●	205
R	Beyer DT511	106	Superb midband clarity and speed slightly at odds with soft bass. Even so, high tingle factor			●	●		200	250		172
BB	Beyer DT831	140	These provide silky, smooth textures in abundance and we're not just talking about the velvet ear pads			●	1/2		295	250	●	186
	Beyer DT100	160	Rugged, modular professional design, but bass is woolly and treble lacks detail			●	●		350	600		157

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HEADPHONES (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	ELECTROSTATIC	SUPRA-AURAL	CIRCUM-AURAL	OPEN BACK	CLOSED BACK	MASS (g)	IMPEDANCE (Ω)	3.5mm JACK ADAPTOR	ISSUE NUMBER
	Grado SR-40	45	Cheap and nasty appearance largely redeemed by cheerful, up-beat sound. Very comfortable		●		●		120	32	●	172
BR	Grado SR-60	79	For sheer musical enjoyment these are hard to beat. Retro styling may not be to everyone's taste		●		●		200	32	●	194
	Grado SR-80	100	Open and dynamic with pedantically open mid-band. Crude physical design, rough frequency extremes		●		●		60	8	●	157
R	Grado SR-125	150	What these 'phones lack in style they make up for ten-fold in musical quality		●		●		200	32	●	186
R	Grado SR-225	200	Warm, darkly-coloured tonally and ultimately lacking in clarity, but true to the spirit of the music		●		●		200	32	●	163
	Grado SR-325	300	Elegant sound across the frequency spectrum; let down by old fashioned ear-piece design		●		●		200	32	●	205
ES	Jecklin Float Model 1	79	While very unusual in appearance, the Floats give remarkable sound quality and openness			●	●		400	200	●	55
	JVC HA-W60	49	Remarkable lack of interference and hiss ameliorates adequate sound of this cordless design		●			●	165	1/R	●	172
R	JVC HA-W200RF	75	Distinct lack of hiss from these FM cordless 'phones ensures that detail and depth are easily heard				●	●	280	20,000	●	186
R	JVC HA-DX3	200	Great headphone with a rich bass, careful mid-range and high comfort factor				●	●	340	90	●	205
	Koss TD/80	50	Oodles of bass but with a recessed midband; tiresome on the head with prolonged wearing				●	●	250	60	●	194
	Koss R/100	100	Rather cheap looking 'phones that supply good detail but are severely lacking in midrange excitement				●	●	215	60	●	186
	Precide Ergo Model 2	140	Still has much of the spaciousness of the Float from which it is derived, but coarse mid/top				●	●	380	100	●	163
	Philips HP910	80	Ergonomically good but suffers from a muffled mid-range and over excited bass				●	●	247	32	●	205
	Sennheiser IS 380	55	As close as you'll get to real hi-fi with infra-red phones at this price. Inevitable hiss spoils the illusion		●			●	192	1/R	●	172
R	Sennheiser HD 570 SympH	90	Comfortable, light-weight 'phones with a detailed and open sound but lacks bass depth on weightier music				●	●	210	64	●	194
R	Sennheiser HD 545	125	Fine all-rounder that takes all styles of music in its stride. Ear-clamping headband				●	●	255	150	●	172
ES	Sennheiser HD 565 Ovation	150	Wide bandwidth design which is refined, expressive and extremely comfortable				●	●	255	150	●	157
	Sennheiser HD590	160	Assured and confident player with very low colouration and great comfort				●	●	270	120	●	205
	Sennheiser HE 60/HEV70/AJK	998	Very nearly a superb electrostatic, with a pure midband, but top end is sibilant and edgy	●			●	●	260	N/A	●	163
	Sony MDR-V700DJ	100	Great looking fold-away 'phones with exceptional build quality. Kickin' bass		●		●	●	300	24	●	194
	Sony MDR-CD 2000	200	Large pads make for sweaty listening. Pure mid-tones, but weightless bass				●	●	300	32	●	205
BR	Technics RP-F800	50	Comfortable budget model that sounds sublime with great dynamics		●			●	160	40	●	205
	Technics RP-DJ1200	130	Functional design with head-pulping bass and muggy tonal balance. Good job they're sweat-proof		●			●	230	32	●	172
R	Stax System II	400	Luxury option at its price, but the sound delivery is five star quality all the way	●			●	●	295	50	●	205
ES	Stax Lambda Nova Basic	395	Refined, articulate, yet with real presence – and a notable bargain by electrostatic standards	●			●	●	347	N/A	●	163
	Vivanco SR322	30	Weak design and uncomfortable, but redeems itself with substantial sound quality		●		●		248	32	●	205
	Vivanco Cyberwave FMH3000	40	The only cordless 'phone to offer genuine walkabout freedom, but sounds like a cheap FM tuner		●			●	210	FM	●	172
	Vivanco IR5800	50	Consistently musical infra-red design. Doesn't reach for sonic heights so hiss can be forgiven				1/2	●	226	1/R	●	172
R	Vivanco SR650	50	Unusually comfortable 'phone with excellent detail resolution but aggressive		●		●		175		●	157
ES	Vivanco SR750	60	Cossetting physical design, attractive sound, though suffers overhang and lacks ultimate dynamics		●		●		188		●	157
R	Vivanco SR 950	80	Cuddly feel and sound make these an enjoyable pair of 'phones						252	32	●	194
	Vivanco FM7980	80	A fair amount of whine and crackle detracts from 'phones which are otherwise very listenable		●			●	280	9,000	●	186
	Vivanco FM8180	99	Well thought-out features and a better than average sound are, at times, marred by intrusive hiss					●	240	9,000	●	186

LOUDSPEAKERS

STEREO SPEAKERS

SPECIFICATIONS

STATUS	PRODUCT	£	COMMENTS	SIZE (WxHxD) (cm)	FLOORSTANDER	SENSITIVITY (dB/W)	IMPEDANCE (Ω)	BASS FROM (HZ)	FREE SPACE	CLOSE TO WALL	ISSUE NUMBER
R	Acoustic Energy Aegis One	150	At a new low price, this has a very natural and transparent midband, erring a little on the dull side	19,36,5,24		87	6	40	●		187
R	Acoustic Energy Aegis Two	250	Floorstanding variation on the Aegis One theme, with a neutral, even and detailed if slightly shiny sound	19,87,24	●	89	8	40	●		201
	Acoustic Energy AE120SE	500	Attractive styling and good sonic headroom, but a heavy, uneven overall balance, and a difficult amp load	18,97,28	●	89.5	10	25	●		199
R	Acoustic Energy AE520	1,000	Could be more neutral, but high-class build is reflected in a high-class sound. Very elegant too	21,98,30	●	91	3	25	●		190
	ALR Entry 2	250	Metal cone stand-mount has a generous performance envelope, but sound quality was controversial	20,33,29		90	4	22	●		201
	ALR Jordan Note 3	1,000	Very substantial, with tuneable ABR for better room matching. Sounds good but could be more neutral	24,5,37,32		89	5	30	●		211
	ALR Jordan Note 7	2,500	A beguiling Anglo-German collaboration delivers metal-cone precision with fine dynamic range	25,107,32		92	4	25	●		196
	AR 15	275	Neat and chunky wall/stand-mount certainly knows how to rock and roll, less convincing on the delicate stuff	22,37,22		90	4	45	●		201
R	Arcaadis Concept 2	1,200	Solid oak floorstander is a little lazy sounding, but is well balanced and smooth with modest coloration	19,90,26	●	86	7	25	●		211
	ATC SCM10	1,000	A compact speaker with good transparency but lightweight bass	18,38,25,5		80	8	65		●	192
	ATC SCM70ASL	10,500	Stylish aluminium casework disguises dynamic grip, tracking and precision that equals the very best	127,40,46	●	A	A	20	●		205
R	Audio Gem Emerald	540	Pretty, compact floorstander with lively if lightweight sound	18,94,21	●	87	6	40	●		164
R	Audio Note AN-E/D	1,520	This classic large stand-mount might have throwback aesthetics, but it delivers an exceptional allround sound	36,79,28		92	4	20	●		204
	Audio Physic Tempo	1,999	Tall and unusually-styled floorstander has stunning stereo but suspect bass tuning	22,107,47	●	88	8	28	●		143
R	Audiovector C2	799	Elegant two-and-a-half-way has a big, full bandwidth sound, but midband seemed a little underdeveloped	19,10,,27	●	90	4	20	●		190
R	Audiovector M2	1,399	High-class, smooth and slightly laid-back performer has driving bass. It's upgradable, too	20,102,30	●	89	4	22	●		180
R	AVI NuNeutron	500	A smooth and subtle though pricey sub-miniature, albeit with the inevitable limitations of the breed	14,27,23		86	4	50		●	190
R	AVI Biggatron Red Spot	600	Good bass coherence and timing, but the lean and decidedly forward balance won't be to every taste	19,5,37,30		88	7	30	●		211
	AVI Positron	899	This 'mini-floorstander' is capable of great precision and delicacy, but in a rather small-scale way	17,57,24,5	●	85	6	40	●		174
R	B&W 601 S2	200	A smooth and sophisticated stand-mount combines good drive with fine neutrality	20,5,36,23		89	4	30	●		207
BR	B&W 602 S2	300	Large stand-mount has fine dynamic literacy and good communication skills at a very competitive price	23,5,49,29		90	5	28	●		201
R	B&W 603 S2	550	Capable of being driven seriously loud, but the cautious balance seems less happy playing at low levels	23,5,87,29		91	4	22	●		193
	B&W CDM-1NT	750	An uncommonly stylish and sonically self-effacing stand-mount that should be very easy to live with	22,40,29		89	7	30	●		208
	B&W CDM-7NT	1,250	A very classy floorstander, in sound as well as looks, with fine bass drive, authority and overall neutrality	22,95,29	●	90	6	20	●		208
R	B&W Nautilus 805	1,400	A small-sounding loudspeaker dynamically, but very stylish, clean and 'unboxy', delivering loads of detail	24,42,31		89	12	28	●		199
	B&W Nautilus 803	3,500	Classy looking three-way with impressively deep bass, wide dynamic range and a laid-back balance	29,108,42	●	89	3	20	●		210
	B&W Nautilus 804	2,500	The prettiest Nautilus has tremendous clarity and imaging but lacks the welly of bigger models	24,101,5,24,5	●	89	8	38	●		200
ES	B&W Nautilus 802	6,000	Outstanding example of the high-tech speaker builder's art, needs real power but gives real sound	39,111,55	●	91	8	34	●		183
R	B&W Nautilus 801	8,500	The 801 is a magnificent loudspeaker in nearly every respect, but it is one that likes to play loud	52,111,61	●	91	8	34	●		186
R	Blueroom Minipod	249	The Minipod can show its competitors a thing or two about freedom from boxiness and looks fab	18,34,17		91	4	50		●	193
R	BC Acoustique Araxe	1,300	Neat compact floorstander is a very lively communicator, if a little short of deep bass grunt	21,92,30	●	94	3	40	●		204

STEREO SPEAKERS (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	SIZE (WxHxD) (cm)	FLOORSTANDER	SENSITIVITY (db/w)	IMPEDANCE (Ω)	BASS FROM (Hz)	FREE SPACE	CLOSE TO WALL	ISSUE NUMBER
R	Cabasse Farella 400	950	Exciting but very upfront-and-in-her-face sound. High sensitivity, fine build and good dynamic drive	26,92,32	●	92	5	28		●	180
	Carlsson OA52.2	1,500	Ultra-discreet design integrates cleverly with the listening room. Impressively unboxy, but sounds a bit thin	41,54,37	●	90	8	20		●	195
R	Castle Richmond	250	Tiny real-wood miniature has a lightweight but very coherent sound, a bit in-her-face but plenty of fun	17,33,20		90	5	50	●		201
	Castle Inversion 15	425	This striking looking standmount is a good all-rounder, commendably free from boxiness	22,42,25		91	4	30		●	193
R	Castle Severn 25E	700	Pretty little floorstander is lively and communicative, if a little coloured in the voice band	21,84,24	●	88	6	28		●	204
BB	Castle Harlech	880	Handsome big-sounding floorstander, great value and dynamic midrange	20,96,33	●	88	8	28	●		160
	Castle Inversion 100	1,975	Large semi-omni design with gorgeous Art Deco styling, sounds open but bass alignment is ill-tuned	26,5,11,45	●	91	8	20		●	195
R	Celestion A Compact	600	Provided the room isn't too large and your tastes not too heavy, this is a charming little number	17,24,21		90	3	45		●	193
BB	Celestion A1	899	Rich, warm and laid-back, but a true quality sound; lovely build	24,41,35		88	6	25	●		164
R	Celestion A2	1,500	Full-scale, big sound from ultra-elegant floorstander. Smooth and slightly laid back presentation	24,93,39	●	89	6	22		●	180
	Chario Syntar 100	249	Pretty with a pleasantly easygoing balance, but not the most communicative or exciting sound around	18,32,27		87	6	45	●		170
R	Chario Hiper 1000	300	Classy looking standmount has a sweet, easygoing sound with fine midband voicing	18,35,28		87	4	45	●		187
	Chario Constellation Lynx	550	Beautiful near-miniature is let down by a midband too laid back for its own good	20,36,26		87	3	40	●		190
EC	Chario Academy Millennium 2	2,100	Price includes stands. A showy speaker that lives up to its own hype	22,53,35		90	4	55	●		190
	Cyrus CLS70	800	Wonderfully striking styling, but presence is very laid back; likes playing loud	22,33,32		87	8	40	●		211
BB	Dali 606	400	A big bruiser at a tempting price. Sounds refined and polite, but also packs some punch	22,97,32	●	91	4	25	●		174
	Dali Royal Menuet MkII	400	Classy sub-miniature with a beautiful box and fine ingredients, but a little lacking in subtlety and excitement	16,26,18		87	3	50		●	190
R	Dali Evidence 870	1,300	A real heavyweight, sonically and physically, and good for movies as well as music	24,5,106,36	●	93	2.5	20	●		204
R	Dynaudio Contour 1.8 MkII	1,842	Wonderful voice-band delicacy and loads of deep bass from a very elegant and compact box	21,95,29	●	85	4	20	●		167
	Dynaudio Audience 72	1,100	Very competent in most respects, but doesn't quite grab the attention; could be more communicative	20,97,26	●	89	3	20	●		211
	Elac CL102 II	599	Chunky floorstander with classy drivers has a neutral, slightly 'shiny' character, and could have more punch	20,95,28	●	88	9	23	●		199
	Elac CL 310i Jet	800	It's pricey, and you can buy better performance for the money. Small speaker, good sound	12,3,20,8,28,2		86	4	42	●		191
	Eltax Liberty 3+	150	Bright, bassy, laid back and attractively evenhanded, but dynamically challenged. Big box for your dosh	20,5,38,34		86	4	25	●		187
	Eltax Linear Response	249	A curiously dumpy shape, but smooth, laid-back performer is easy on the ears, with fine tonal accuracy	25,35,32		85	4	40	●		177
	Eltax Chroma Front	300	Gorgeous shiny styling package at an ultra-competitive price, suffers from an excess of rather flabby bass	19,98,28	●	87	4	25	●		201
R	Energy e-XL 25	400	Neat slimline design delivers a fine all round performance for the price, but could sound smoother	15,87,31		90	4	25	●		201
	Epos ES12	499	High quality luxury standmount has great midband and stereo imaging	20,38,25		85	8	45	●		160
	Epos ES25	1,655	Handsome floorstander with a rather uneven and bass heavy balance	24,90,35	●	88	6	22	●		143
	Gale 2i	140	Unspectacular sound and appearance fail to help this solid little miniature stand out from the crowd	22,40,27		88	7	40		●	170
R	Heybrook Prima 2	159	Great openness, speed and timing. Sounds fresh and vital, though sometimes lacks scale and weight	20,29,18		87	6	50		●	179
	Heybrook HB1	180	Good value but an uneven performer, the HB1 provides plenty of fun with the volume turned well up	21,38,25		88	3	50	●		207
BB	Heybrook Heylette	200	Attractive traditional-style near-miniature with classy main driver now has fine overall balance to match	19,5,30,22		88	4	45	●		187
BB	Heybrook Optima	259	A dumpy ugly duckling with a heart of gold. Deserves a better tweeter, but communicates well	22,88,29	●	94	4	30	●		193
BB	Heybrook Heylios	269	Classically styled stand-mount has a fine balance of smoothness and dynamics, plus real wood veneer	23,5,36,27		89	6	25	●		201
	Heybrook Ultima	649	Has the bass wallop to justify its dual hi-fi/home cinema roles, but doesn't excite	22,97,29	●	89	6	45	●		174
R	Heybrook Duet	750	Looks slightly old-fashioned, sounds a bit coloured but its fine timing and liveliness serve music well	23,43,30		88	11	27	●		199
	Heybrook Octet	1,800	Good-looking but pricey floorstander with novel drivers and a fine ceramic-enclosure midband	24,97,31	●	90	6	25	●		180
R	Indigo Three	500	Cute 'n' chunky standmount is an entertaining communicator. Great fun, despite some sonic weirdness	23,30,5,32		86	17	24	●		199
	Infinity Delta 60	700	Striking and massive floorstander, lots of speaker for the price, but seems a victim of its own complexity	29,115,41	●	90	4	25	●		183
	Infinity Kappa 70	795	Fine material value. Sonically big, smooth and even, but lacking in coherence and dynamics	26,96,27	●	87	4	25	●		204
	Jamo E800	200	Nicely voiced, open midband but bottom end is a bit strong and amorphous	17,5,33,29		87	3	30	●		207
	Jamo D830	1,400	Dynamically exciting and communicative, but lacks both smoothness and neutrality. Pricey too	24,5,38,32		88	5	30	●		211
BB	JBL LX2	250	Invigorating, if a touch crude, this good-hearted speaker reproduces music with enthusiasm	22,40,27		87	8	40	●		170
	JBL Ti200	400	Very substantial standmount knows how to rock and roll, but can sound uncouth on more delicate material	21,41,30		92	5	40	●		193
R	JBL L20	700	Pricey, heavy and a bit laid-back, but this is a fine rock'n'roll which is dynamic and communicative	26,42,28		86	8	30	●		138
	JBL SVA1500	700	A distinctive Pro-style bi-radial horn tweeter, with a fun sound, enlivened by a juicy bass thump	17,5,51,31		86	8	40	●		174
R	JBL L40	1,000	Classic, large, three-way standmount is full of vim and vigour, with a superb sense of balance	30,65,31		88	4	23	●		167
R	JBL 4312 II	1,000	Crude but startlingly effective dynamics. The original party animal knows just how to rock'n'roll	36,60,30		94	4	25	●		190
R	JBL SVA 2100	1,250	Monstrously large and brutish styling, goes very loud as well as deep. Fine focus but some boxiness	37,114,52	●	91	8	<20	●		180
BB	JBL L90	1,500	A classic monitor which communicates with gusto and enthusiasm, though it can sound a bit crude	24,94,35	●	91	6	23	●		143
	JBL LX70	550	Bassmeister supreme, shame the rest doesn't match up. Fine sensitivity but an itchy, scratchy treble	26,59,40	●	91	4	33	●		183
BB	JBL Xti40	500	Real wood and a cute shape, with a punchy driving bass, and a restrained overall balance	23,82,31	●	88	6	40	●		210
R	JMLab Cobalt 815	999	Hefty real-wood floorstander has a slight 'boom n'tizz' character but delivers big speaker grip and dynamics	22,100,31	●	90.5	9.5	22	●		199
R	JMLab Electra 905	1,200	Compact but massively engineered, delivers a very classy sound with exceptional dynamic range	23,5,47,28		90	4	40	●		204
	JMLab Electra 915	1,795	Fine headroom and bass, and classy engineering too, but also a tricky amp load which lacks delicacy	26,5,106,36	●	92	4	20	●		195
R	JMLab Mezzo Utopia	7,250	Looks good and sounds even better. A genuinely big speaker with fantastic coherence	35,115,47	●	92	4	30	●		186
BB	JPW ML510	130	Lots of good quality speaker for the price, but not an ideal match for cheap budget components	20,34,22		88	5	50	●		169
	JPW ML910	330	Loads of speaker for the money, plenty of headroom and loudness capability, but sounds dull	23,104,30	●	91	4	43	●		183
R	JPW ML1010	400	A seriously substantial speaker for the price, and an obvious choice for those who like their music loud	22,5,115,40	●	91	6	25	●		170
	KEF Cresta 2	149	A good looking/value package but sonically disappointing, and no match for the Q15	20,5,37,24		91	4	0	●		195
R	KEF Q15.2	200	A vigorous and entertaining compact speaker that remains particularly well aligned for close-to-wall siting	20,5,31,27		89	3	30	●		207
	KEF Q-55.2	500	Beefy vinyl-finished UniQ delivers loads of bass, but might have more control	21,87,29	●	90	4	25	●		210
R	KEF Reference One-Two	1,350	Limited low bass but bags of headroom. Coherent and lively sound, but could be more transparent	22,5,87,35	●	89	3	40	●		211
	KEF RDM Three	1,500	Definitely a speaker aimed at long-term satisfaction rather than immediate impressiveness. Nice	24,100,27	●	90	4	40	●		189
	KEF Reference Model 2	1,599	Classy, large floorstander that has massive headroom and clean mid-to-treble, but limited deep bass	23,103,34	●	89	4	30	●		167
BB	Keswick Audio Aria II	379	Confident and dynamic sound, if a little crude and shut in	21,42,24		89	8	20	●		148
R	Keswick Audio Torino	999	Good value, lively contender with distinctive styling. Goes loud and deep but could be smoother	26,93,28	●	90	4	20	●		167
R	Linn Kan	295	Great bass discrimination from size, ensuring a very informative, if slightly shut-in experience	19,31,19		86	4	45	●		187
BB	Living Voice Auditorium	1,500	Pretty, compact floorstander has wonderful coherence, high sensitivity and fine dynamic integrity	21,5,98,29	●	91	4	25	●		180
EC	Living Voice Avatar OBX-R	4,000	Discreet but extremely fine design with external crossover and an affinity with valves	21,5,104,27	●	89	8	45	●		196
	Magnat Vintage 320	350	Loads of speaker for your money, but the sound is thick, heavy and lacking in presence and authority	25,102,30	●	90	4	20	●		201
	Magnat Vector 77	450	Tall, dark and a lot of speaker for the money. Beautiful balance, but lacking in subtlety and transparency	22,115,29	●	89	5	30	●		183
	Magnat Vintage 710	800	Very competent but didn't particularly stand out; distinctive styling and slightly shiny sound	20,27,42,32	●	90	5	25	●		211
R	Magnat Vintage 720	1,200	Slightly crude in some respects but lots of heart, fine scale, decent dynamic coherence and integrity	29,113,32	●	88	4	20	●		180
	Martin-Logan Prodigy	8,967	Combines the finesse of an electrostatic with the grunt of cleverly engineered cone bass to good effect	42,179,71	●	91	4	28	●		204

STATUS	PRODUCT	£	COMMENTS	FLOORSTANDER				FREE SPACE	CLOSE TO WALL	ISSUE NUMBER
				SIZE (MM) (cm)	SENSITIVITY (dbw)	IMPEDANCE (Ω)	BASS FROM (Hz)			
	Mirage FRX7	550	Neat slim floorstander has a heavy, laid back balance, probably better suited to movie than music reproduction	17.5,95,32	● 90	4	25	●	204	
	Mirage OM-5	3,000	A meaty model that goes loud without distortion, digs deep with aplomb and creates plenty of depth of image	133,30,42	● 90	6	22	●	206	
	Mirage OM-10-1	2,000	Tall black omni-bi-pole has plenty of bounce and dynamic vigour, but is more room sensitive than most	23,118,30	● 88	4	20	●	210	
R	Mission 700	130	A lot of speaker for the money. Good bass weight and extension and goes loud with ease	18,34,26	● 87	8	40	●	179	
R	Mission 771e	200	Beautifully styled miniature has a delightfully voiced midband, and real wood finish too	17,31,22	● 86	6	45	●	207	
	Mission 780	299	Gorgeous miniature has a fine midband and clean, bright treble, slightly odd bottom end	16,5,28,27	● 86	6	40	●	201	
R	Mission 773e	400	Beautifully designed slim floorstander could be more neutral but still delivers an all-round entertaining sound	17,5,88,26	● 92	4	30	●	193	
R	Mission 774	500	Gorgeous floorstander is an entertaining communicator, despite some balance oddities (bright treble)	18,95,31	● 90	4	40	●	183	
R	Mission 782	699	Ultra-compact floorstander has a glorious midband and slightly odd bass. Good communication skills	16,5,82,28	● 86	9.5	25	●	199	
R	Mission 775e	800	Lots of speaker for the money, and musically involving too, if a little short of serious weight and authority	23,115,30	● 93	3	25	●	204	
	Mission 783	1,000	Plenty of bass weight, and a clean, articulate midrange, but the two don't quite seem to gel	20,5,97,33	● 87	5	20	●	211	
BB	Monitor Audio Bronze 2	180	A real corker, which combines solid material value for money with a fine all round sonic performance	18,5,35,27	● 89	3	30	●	207	
	Monitor Audio Silver 5i	450	Great looking, sharply priced real wood floorstander, but bottom end lacks drive and tension	20,81,21	● 87	5	30	●	210	
	Monitor Audio GR20	1,500	Solid and confident design with all metal drivers and neutral if slightly uninspiring sound	20,92,5,30	● 89	6	30	●	212	
	Mordaunt-Short MS902	200	Gorgeous metal-finished budget stand-mount has a shiny sound to match its looks	18,31,25	● 87	4	45	●	207	
BB	Musical Tech Kestrel Evolution	315	Cuteyly styled, cleverly compact and a smooth, subtle and coherent performer, best suited to smaller rooms	20,85,19	● 86	4	40	●	201	
R	Musical Technology Harrier	400	Very pretty package, good measured performance and even sound. Sensitivity is low, and dynamics limp	25,80,23	● 86	8	25	●	152	
BB	Musical Technology PM15	450	A subtle, understated but very involving example of the 'classic' luxury-finish compact standmount	20,41,27	● 88	5	38	●	183	
BB	Musical Technology Falcon	680	Big speaker has a big but also surprisingly smooth and civilised sound. Fine material value too	33,117,30	● 89	4	22	●	190	
R	Musical Technology Condor	1,000	Lots of clever ideas in a floorstander, which places transparency and smoothness ahead of dynamic drama	25,91,23	● 85	4	28	●	174	
BB	Naim Intro	660	Great dynamic range and info retrieval, but thin, lacks warmth	24,89,27	● 89	6	30	●	164	
R	Naim Credo	1,060	Involving sound, but rather forward and cold. Good clarity, but some coloration and a lack of richness	24,89,30	● 88	8	28	●	180	
R	Naim SBL Passive	1,970	Lively and punchy – smoother but more upfront than before	27,89,27	● 88	6	25	●	143	
EC	Naim NBL	6,648	Elegant, large floorstander is exceptionally informative with an awesome dynamic range and dry, forward balance	29,116,47	● 89	4	20	●	200	
R	Neat Critique 2	445	Contemporary standmount has a clean, crisp sound with lovely natural midband voicing	22,32,24	● 86	6	50	●	183	
BB	Neat Mystique Mk2	575	This elegant package delivers a fine overall sound quality; some might find the top end too insistent	20,86,18	● 85	6	23	●	177	
R	Neat Neat Petite III	795	The treble is peaky, but this is still one of the most coherent and communicative miniatures around	20,30,5,20	● 86	5	30	●	211	
R	Neat Elite	1,195	A highly entertaining all-rounder, has a planar tweeter that sounds sweet, if not particularly smooth	20,88,18	● 88.5	6	25	●	195	
BB	NHT Super One	250	A fine compromise between size and performance, sensitivity and hence loudness capability is modest	18,5,29,5,23	● 85	8	30	●	170	
BB	NHT 1.5	400	This compact standmount sounds much bigger than it has any right to. Good timing and communication skills	18,42,26	● 85	6	40	●	177	
BB	NHT Super Two	550	Black and shiny compact three-way floorstander has marvellously even balance and good coherence	18,5,100,26	● 87	8.5	25	●	199	
	Opera Prima	495	Good-looking hardwood enclosure, plus fine mid and treble, but less satisfactory bass	19,34,31	● 90	4	40	●	190	
	Origin Live Conqueror	1,650	Chunky floorstanding three-way has lovely cabinetwork and lively sound, but limited deep bass	24,94,27	● 88	8	30	●	167	
R	Orelle Swing	1,200	A superb example of what an essentially small loudspeaker can do, with bags of brio and enthusiasm	18,101,28	● 87	8	45	●	195	
BB	PMC TB2	600	A worthy and prettier successor to the TB1, which sets a high standard in its size/type class for neutrality and transparency	20,40,5,31	● 88	8	30	●	211	
R	PMC LB1	999	Still fully competitive eight years after our original review, this genuine compact monitor is now a modern classic	17,5,53,26	● 87	6.5	40	●	199	
BB	PMC FB1	1,275	Handsome floorstander has the lively coherence of a simple two-way alongside impressive bass weight and extension	20,105,31	● 88	6	20	●	204	
R	Polk L550	800	No enthusiast tweaks here, but powerful and beautiful balance	27,83,29	● 89	8	25	●	138	
	Polk RT16	799	Bass rich, lively and powerful, but suspect top end; big and not very pretty	22,105,39	● 91	4	22	●	160	
	ProAc Response 2.5	2,700	For aspirant high-enders looking for seriously good boxes, this speaker should be first port of call	22,107,25	● 86	8	30	●	149	
	ProAc Tablette 2000 Sig.	899	Beautifully veneered compact stand-mount is classically balanced, if a little on the bright side of neutral	19,36,26	● 87	6	30	●	209	
	ProAc Studio 125	1,000	Pretty if pricey compact floorstander with a beautifully natural and neutral midband, and some bass thump	20,94,28	● 87	8	28	●	192	
	QLN Signature	1,000	Attractive pyramidal standmount with heavy, laid-back balance but remarkably unboxy sound	27,37,36	● 83	4	25	●	167	
R	Rega Jura	450	Beefy sounding, chunky floorstander sounds very 'direct coupled' to the music, if a touch 'boom'n'tizz'	22,5,92,5,26	● 90	5	25	●	193	
R	Rega ELA Mk II	498	Pretty and smooth, the latest incarnation has a superb midband and excellent communicative skills	30,80,20	● 87	8	40	●	139	
R	Rehdeko RK 115a	1,700	Single-driver system has limited bandwidth and obvious coloration, but wondrous dynamic coherence	34,42,27	● 95	8	55	●	167	
	RMS Revelation Series 1	1,299	Innovative metal-box compact with integral port/stand – clean with good timing but very laid-back balance	20,99,24	● 81	8	22	●	167	
	Roksan ROKone	595	Large standmount is musically very communicative, if a little coloured	21,45,33	● 89	6	30	●	160	
R	Roksan OJ3X Black	995	Innovative low-line, two-way floorstander with decoupled tweeter; great bass and fine dynamic range	28,79,46	● 84	8	20	●	167	
BB	Royd Doublet	485	Great value compact floorstander. lively and very informative, if a little uneven	18,93,19	● 90	4	28	●	160	
R	Ruark Epilogue	269	Beautifully finished miniature with a lively balance and plenty of charm; best suited to smaller rooms	17,29,23	● 87	8	47	●	183	
	Ruark Sceptre	599	'Traditional' cabinetwork with classy veneer and shiny gilt fixings, hampered by rather wayward sound balance	21,38,31	● 87	8	40	●	174	
	Ruark Prologue One R	949	Strikingly contemporary compact floorstander is well voiced but a little lean in overall balance	17,5,93,28	● 88	5	25	●	204	
R	Ruark Excalibur	7,000	A big, handsome speaker with a big, laid-back but open sound, rocking bass and loads of headroom	30,125,53	● 90	4	30	●	186	
R	Sequence 400	329	Clever hang-on-wall panel is well voiced, though bass isn't too great	25,100,7	● 86	8	45	●	164	
	Silverado Raider	695	Beautifully built audiophile compact: neutral if bright, tough work for amps	20,40,25	● 83	3	30	●	164	
	Snell K.5	795	Classy AV-ready stand mount is very solidly engineered. Sound is neutral but lacks excitement	22,46,30	● 87	6	25	●	190	
BB	Snell E.5 Mk2	1520	Large floorstander has serious deep bass extension, and also a delicate midband with low coloration	22,109,30	● 89	4	20	●	211	
	Snell XA75ps	4,500	Active bass floorstander with marvellous mid coherence, slightly suspect bass integration.	28,117,50	● 91	6	25	●	194	
	Soliloquy SM 2A3	1,095	Fine match in balance, coherence, transparency and speed. Intended for use with Cary CAD 2A3SE	35,5,19,30	● 91	8	45	●	196	
	Sonus Faber Concertino	599	A beautifully neutral loudspeaker in a beautiful Italian suit of clothes. Classy, if quite pricey	21,32,29	● 87	5	30	●	193	
	South Coast Speakers Lancelot	895	Pretty compact standmount has nice ribbon tweeter but sounds a bit soft and lacks dynamic vigour	19,36,26	● 84	8	45	●	199	
R	Spendor 2030	599	Discreet slimline floorstander with delicately coherent, laid-back sound	18,89,27	● 87	8	30	●	160	
EC	TAG McLaren F1	15,000	Oddball aesthetics with accurate, unflappable, controlled and consistent sonic neutrality	40,127,48	● 87	8	25	●	202	
BB	Tannoy mX2	150	Surprisingly refined considering its very modest price: very communicative with outstanding midband delicacy	18,5,33,25	● 89	4	45	●	207	
	Tannoy Revolution 1	200	Pretty little mini-monitor is smooth, well mannered and polite to a fault, lacks dynamic expression	17,30,22	● 86	4	30	●	187	
BB	Tannoy mX3	300	A great all-round compromise at a very modest price, combining good looks with fine midband voicing	18,5,87,26	● 90	5	40	●	201	
R	Tannoy mX4	350	Lacks dynamic grip and authority, but delivers great bass extension and a classy overall balance at a sharp price	18,5,96,26	● 88	4	20	●	210	
BB	Tannoy Revolution R2	350	Bargain price real wood floorstander is beautifully voiced and very even-handed, if a tad laid back	17,94,24	● 90	4	20	●	193	
	Tannoy Revolution R3	550	Handsome real-wood floorstander does a decent job, but lacks the evenness of its smaller R2 brother	18,5,103,28	● 89	8.5	28	●	199	
R	Tannoy D300	999	Gorgeous-looking compact floorstander. And a fine all-round performer, too	24,85,23	● 87	6	26	●	167	
	Tannoy ST-100	1,200	This supertweeter adds a subtle and delicate effect while also broadening the soundstage at a price	15,10,5,6	● 95	8	N/A	●	206	
	Technics SB-M500	450	This model offers a clean, open sound, offset by midbass, heavy balance and low sensitivity	25,78,37	● 85	8	25	●	152	
	Triangle Cometes	359	Communicative standmount has great midband dynamics, but the very bright top end might be intrusive	22,40,29	● 91	4	42	●	193	

STEREO SPEAKERS (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	SIZE (WxHxD) (cm)	FLOORSTANDER	SENSITIVITY (dB/W/M)	IMPEDANCE (Ω)	BASS FROM (HZ)	FREE SPACE	CLOSE TO WALL	ISSUE NUMBER
BB	Triangle Zephyr II	599	Loads of fun. Dramatic dynamics and righteous timing will give any hi-fi system a wake-up call	22,94,29	●	91	4	25	●		190
EC	Veritas H3	6,000	Loads of fun with wonderful dynamic and temporal integrity from horn-loaded Lowther drivers	30,110,47	●	104	4	50		●	191
R	Vienna Acoustics Mozart	1,500	Gorgeous slimline floorstander sounds very laid-back but very charming, and musically literate	17,97,30	●	88	7.5	25	●		199
EC	Wilson benesch Discovery	5,500	Innovative three way with built-in stand, combines great subtlety with weight and headroom	23,47,38	●		6	45	●		212
EC	Wilson benesch Bishop	20,000	Deep and even bass sets new standards for cleanliness and clarity, lovely open midband too	23,161,561	●	89	4	520	●		189
	Wharfedale Diamond 7.2	140	A good-hearted, lively and up-front performer that's a little lacking in subtlety and smoothness	19,29,5,23		88	4	45	●		169
	Wdale Diamond 7.2 Anniversary	200	Lively and exuberant, but a tad untidy with it; can sound a bit cold and hard	19,29,5,24		88	4	40	●		187

SUBWOOFERS

STATUS	PRODUCT	£	COMMENTS	SIZE (WxHxD) (cm)	FLOORSTANDER	SENSITIVITY (dB/W/M)	IMPEDANCE (Ω)	BASS FROM (HZ)	FREE SPACE	CLOSE TO WALL	ISSUE NUMBER
	Acoustic Energy AE1085	299	Lots of loud subwoofer for your money, though ultimately more film than music oriented	50,42,43				20		●	179
R	B&W ASW1000	499	Bulky heavyweight is a high quality item, able to generate more bass output than music is likely to need	54,47,50	●	A		A20	●		198
	Jamo D8SUB	950	Pretty but pricey, the D8SUB packs plenty of punch (for movie fans), but doesn't delve deep enough for music replay	45,5,41,45.5	●	A		30		●	210
R	JPW SW60	349	A real heavyweight, sounds clean and transparent, if perhaps a little understated. Usefully flexible	55,47,39				20		●	179
	KEF Model 30B	499	(Active) Commendably discreet with good sense of timing but limited extension	38,5,37,43	●	A		45			154
	M&K MX70	795	Cutely compact and entertaining too, but lacks the ultimate extension to justify its high price	37,32,30	●	A		25			210
	Mission 7AS2	399	Ugly if very effective at supplying very low bass, but filter could do with more flexibility higher up	56,30,31				<20	●		198
R	Paradigm PDR-10	150	Not much grip, drive or authority, but it doesn't get in the way and it is very cheap	34,5,36,42	●	A		25			210
	Polk PSW430	400	A lot of subwoofer for your money, but lacks deep grunt and is more movie than music oriented	38,5,45,46	●	A		25			210
R	REL Q50	375	This good looking if bulky sub does the business with impressive flexibility and sonic self-effacement	42,53,31				20			210
R	Ruark Log-Rhythm	775	Adds weight and scale with commendable discretion, making a positive contribution to the whole musical exposition	43,43,43	●	A		<20		??	210
	Soliloquy S10	1,050	(Active) Pretty subwoofer, cosmetically matching SM 2A3 speakers, pricey and mid-bass a bit strong	51,30,5,46	●	A		25	●		19

LOUDSPEAKERS

MULTICHANNEL SPEAKERS & PACKAGES

SPECIFICATIONS

STATUS	PRODUCT	£	COMMENTS	SIZE (WxHxD) (cm)	FLOORSTANDER	SENSITIVITY (dB/W/M)	IMPEDANCE (Ω)	BASS FROM (HZ)	FREE SPACE	CLOSE TO WALL	ISSUE NUMBER
BB	Acoustic Energy Aegis Three	350	High value floorstander has deep and even bass and a smooth neutrality thereafter	19,90,25	●	90	5	22	●		198
R	B&W LCR6	349	Large, gutsy standmount intended for all-round AV use delivers fine performance as a stereo pair too	25,5,55,32		90	5	20	●		198
	B&W Nautilus package	6,500	This classy, laid-back package is arguably too good for current programming. Very bulky centre speaker	var	var	n/a	3	20		●	210
	Definitive Technology BP2X	595	Pricey but effective bi-polar surround speaker, with unusually high sensitivity	23,37,15		94	4	120		●	198
	Definitive Technology BP2004	1,700	Pricey bi-polar floorstander has a fine midband, let down by its built-in powered subwoofer	19,104,31	●	91	5	28	●		198
	Dynaudio LR/C 120	439	Slim centre and front standmount, has an evenhanded but rather laid back balance but lacks drive	16,5,57,31		89	5	25	●		198
	Jamo Concert package	2,500	Lovely main speakers sonically overshadow the centre, while surrounds are a bit obvious too	var	var	n/a	5	30		●	210
BB	JBL Xti-series package	1,100	Hexagonal boxes all round, this package has decent authority and all round tension	var	var	n/a	5	40		●	210
	KEF Q-series package	880	Cleverly designed, vinyl-finished UniQ package packs a goody thump but centre and surrounds stand out	var	var	n/a	3	25		●	210
	Mirage OM-series package	2,000	Big black and bouncy package with omni fronts has plenty of vigour but some coloration var	var	var	n/a	4	20		●	210
R	Mission 77D5	199	Neat flush-mount surround speaker has no bass but a smooth midband and nicely restrained treble	34,26,12		92	4	120		●	198
	Mission Cinema 8 package	1,400	Beautifully styled and cleverly designed package, but could have more grunt and drive for the price	var	var	n/a	4	30		●	210
	Polk RTE 1000p	1,300	Tall elegant tower with built-in powered bass 'subwoofer' that needs using with discretion. Bright but engaging	20,110,35	●	91	4	25	●		198
	Monitor Audio Silver series	1,000	Great looking conventionally styled package lacks something in dynamic drive and tension	var	var	n/a	4	30		●	210
R	Mordaunt-Short Declaration 500	1,600	Good value vinyl THX Select package with Power Towers. Good authority but must be 5.1-connected var	var	var	n/a	3	25		●	210
R	PMC FB1/TB2 package	2,200	Classy if bulky and pricey package has good transparency, coherence and weight	var	var	n/a	6	20		●	210
R	Rega Jura/Ara/Senta	920	Classy real wood package does a good all round job, but sounds bright and might have more surround weight	var	var	n/a	4	25		●	210
BB	Tannoy mXAV4 package	500	Lacks grunt, grip and authority, but smooth and refined with seamless surround coherence	var	var	n/a	4	20		●	210
BB	Tannoy Saturn 56LCR	400	A punchy compact standmount based on a serious cast-frame, pro-style dual-concentric driver	21,38,29		89	6	25		●	198
BB	Tannoy Saturn 56	500	Fine value vinyl floorstander offers plenty of genuine grunt and real dynamic tension	21,89,29	●	91	4	20	●		198

CENTRE CHANNEL SPEAKERS

STATUS	PRODUCT	£	COMMENTS	SIZE (WxHxD) (cm)	FLOORSTANDER	SENSITIVITY (dB/W/M)	IMPEDANCE (Ω)	BASS FROM (HZ)	FREE SPACE	CLOSE TO WALL	ISSUE NUMBER
R	Acoustic Energy Aegis Centre	140	Good value centre-front speaker but a tad shut in and with a slightly obvious top end (price per speaker)	46,17,20		89	5	50	●		198
	B&W Nautilus HTM1	1,500	Very bulky for a centre speaker, though very capable too - a little less laid back than its siblings	76,37,30		89	4	30		●	210
	Castle eep	250	Substantial centre-front speaker based on Harlech drivers but with rather brighter voicing	48,17,29		88	8	45		●	198
R	Definitive Technology CLR2002	595	Pricey, but undoubtedly one of the better centre-front speakers around, with fine timing and open voicing	55,5,17,5,31		90	4	40	●		198
	Jamo Concert Center	550	A decent balance match but lacks the class and grip of the Concert 8s, and is bulky and pricey too	55,22,30		87	5	100		●	210
BB	JBL Xti10C	200	An elegant, cleverly designed centre and a good match for the 40s. Better value than most too	51,19,5,27		88	5	50		●	210
	KEF Q95C	200	This artfully designed UniQ centre looks much better than most on top of the TV set	40,17,17		89	3	120		●	210
	Mirage OM-C2	600	Large but discreet omni-bi-pole matches OM-10-1 well but lacks tight focus, and seems expensive	64,18,5,31		88	4	50		●	210
R	Mission 77C	199	A good centre-front match for 77-series, the triple tweeter might be a curiosity, but voicing is very good	42,17,21		91	4	100		●	198
	Mission 78C	350	Makes a good visual and sonic match for the 782, but quite pricey by comparison, given the ingredients	45,17,19		86	3	100		●	210
	Monitor Audio Silver Centre 10i	300	Neat and good looking partner to the Silver 5is, but a little more forward, and quite expensive too	50,17,21		87	4	100		●	210
R	Mordaunt-Short MS 504	200	Smart yet discreet and a good match for the 502. Sounds clean and expressive, and is well priced	50,19,20		88	3	120		●	210
R	PMC TB2M/C	325	This bulky centre speaker is quite pricey, but it combines good transparency with some authority	40,20,31		87	6	50		●	210
	Polk CS 1000p	999	Monstrously large and heavy centre-front speaker, presumably for those with monstrous intentions	87,22,35		92	4	25	●		198
R	Rega Senta	185	The very compact Senta is sensibly priced, a bit bright maybe, but articulate and expressive	32,16,21		89	4	120		●	210

CENTRE CHANNEL SPEAKERS (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	SIZE (WxHxD) (cm)	FLOORSTANDER	SENSITIVITY (dB/W/M)	IMPEDANCE (Ω)	BASS FROM (HZ)	FREE SPACE	CLOSE TO WALL	ISSUE NUMBER
BB	Tannoy mXC	100	Could be more exciting, but a very impressive centre speaker at an unusually reasonable price	42,16,21		88	4	120		●	210
BB	Tannoy Saturn 56C	200	A punchy compact standmount based on a serious cast-frame, pro-style dual-concentric driver	38,21,29		89	6	25	●		198

PERSONAL / INTERNET

PERSONAL STEREOs

SPECIFICATIONS

STATUS	PRODUCT	£	COMMENTS	STORAGE FORMAT	RECORDING	IN-LINE REMOTE	CODEC	PC CONNECTION	STANDARD CAPACITY	ISSUE NUMBER
	Aiwa HS-PX307	30	So-so sound but an impressive features roster. Decent value overall	Cassette						204
R	Aiwa AM-HX50	180	Neat play-back only personal with an impressively full-bodied sound, though short on detail	MiniDisc						204
	JVC XL-PG7	100	Undistinguished CD model, with tacky build and below-par sound	CD						204
R	Panasonic RQ-SX71	70	A sleek aluminium body, decent sound and superb features	Cassette						204
	Panasonic RQ-SX91	80	A super-slick personal for well-heeled cassette users. Sound is rather bright	Cassette						204
	Panasonic SJ-MR100	250	Well built and nicely appointed, though performance is unremarkable at the price	MiniDisc	●					204
R	Philips ACT7582	115	A splash-proof body and an entertaining sound – the perfect CD personal for holiday japes	CD						204
BB	Sharp MD-MT831H	250	Smart design, sprightly sound and a well featured package	MiniDisc	●	●				204
	Sony WM-EX404	35	Super-stylish but sonically flawed, with particularly uncomfortable earphones	Cassette						204
R	Sony D-EJ815	140	High-tech build and features, including super-effective shock protection. Sound is soft but substantial	CD						204
BB	Sony D-EJ915	150	A beauty to behold – the most portable CD player yet and a good performer to boot	CD						204
BB	Sony MZ-R91	250	A petite and sexy beast with good sound and excellent facilities	MiniDisc	●	●				204

INTERNET AUDIO

STATUS	PRODUCT	£	COMMENTS	STORAGE FORMAT	RECORDING	IN-LINE REMOTE	CODEC	PC CONNECTION	STANDARD CAPACITY	ISSUE NUMBER
	Aiwa MM-VX100	130	Aiwa's expertise in the personal stereo field is visible, but performance is only average	Solid State			MP3	PRL	32MB	204
	Audio ReQuest ARQ1	568	Full size separate containing CD player, hard drive and PC connection. Sign of things to come?	CD/HDD	●			APRILISE	17GB	208
BB	Creative Labs Digital Jukebox	349	Smartly designed high-capacity portable with storage for over 1,000 tracks	Hard Drive	●		Agnostic	USB	5.7GB	208
R	DigMedia Music Store	350	Innovative CD/hard drive combo with optional solid state portable. MP3 with or without a computer	CD/HDD	●		MP3	USB	5.4GB	208
	JazPiper MV32P	125	First wave player that looks good but sounds bright. Includes voice recording and phone book features	Solid State	●		MP3	PRL	32MB	195
	LG MF-PD360	130	Good looking and temptingly affordable, but features and performance are nothing special	Solid State	●		MP3	USB	32MB	208
	LG AHA-FD770	200	Cassette and solid state personal in one – novel idea, poor execution	SS/Cass	●	●	MP3	PRL	32MB	204
R	Pine D'Music	120	Good build, solid sound and a voice recording mode make this a good first-time buy	Solid State	●		MP3	PRL	32MB	195
	Pontis SP504	158	Not the best aesthetically, but exceptionally good MP3 sound	Solid State	●		MP3	USB	32MB	204
R	Rio 500	190	Well featured and a strong performer, though new generation Rios have now arrived	Solid State	●		MP3	USB	64MB	195
R	Rio 600	169	Neat design, strong future-proofing, good features and sound. Only its memory lets it down	Solid State	●		Agnostic	USB	32MB	208
	Schneider MPMan F20	99	The world's first MP3 personal. Basic but still good value	Solid State	●		MP3	PRL	32MB	195
	Smart Portable MP3 Disc Player	119	CD personal that also plays MP3 tracks burnt onto CD-R discs	CD			MP3			208
	Sony NW-MS7	249	A gorgeous little personal using Sony's Memory Stick storage. Good but pricey	Solid State	●		MP3/ATRAC3	USB	64MB	208

RECORD PLAYERS

TURNTABLES

SPECIFICATIONS

STATUS	PRODUCT	£	COMMENTS	MANUAL	SEMI-AUTO	AUTO	SPEEDS	SSSP SUBCHASSIS	EXTERNAL PSU	SUPPLIED WITH ARM	SUPPLIED WITH CART	ISSUE NUMBER
BB	Audio Note TT1/ARM1	594	Simple and unpretentious, it delivers a real taste of true high end performance at an affordable price	●			33/45			●		203
	Avid Acutus	4,995	Extremely capable design with no apparent shortcomings, don't sell your vinyl 'til you've heard it on this!	●			33/45			●		194
	Clearaudio Reference	3,990	Opulent beast tested with Souther TQ-1 arm. Tends to gloss over detail, but can sound bold	●			33/45					144
R	DNM Rota 2	5,600	Tonally slightly bleached, but extracts detail like few others. Works well on its own table	●			33/45			●	●	144
	Dual CS 455.1	220	Neat record player with automatic convenience (and 78rpm), but doesn't match simpler manual rivals sonically		●		33/45/78					203
R	Dual 505-4 UK	250	Consistent sounding and well isolated turntable. It is slightly lacking in oomph		●		33/45				●	103
R	Kuzma Stabi/PS	1,950	(Tested with Stogi Reference) Solid oak plinth; sound is very clear, detailed and extended	●			33/45					91
R	Linn LP12 Basik	1,100	Trails the full LP12 significantly, but pace, rhythm, timing etc. still top rank	●			33			●		103
R	Linn LP12 Lingo	1,750	The classic reference is improved by the Lingo, but charming character remains	●			33/45					91
R	Micell Gyrodec	875	Sweet and natural-sounding player, well matched to Rega RB300 arm	●			33/45					55
EC	Micell Gyro SE	775	A stunningly desirable combination of looks, solidity and sound make this a tempting turntable	●			33/45					190
BB	Micell Orbe SE	1,725	A Superb turntable, able to mix it with the best at virtually any price	●			33/45					192
	Moth Kanoot	329	Rather coarse-sounding deck that requires decent isolation and comes with a Rega RB300 arm	●			33/45			●		164
BB	NAD 533	220	Sonically a little crude, but musically satisfying results at a very modest price	●			33/45			●		203
BB	Notts Analogue Spacedeck/Arm	750	No frills, just a first-rate, outstandingly natural-sounding deck that will last forever	●			33/45			●		159
R	Pink Triangle Tarantella II	850	A turntable that looks unlike any other, with rare ability too. Quirky, but sound is immensely likeable	●			33/45			●		192
BB	Pro-ject 2	300	Remarkably effective at the price, with decent timing and a generally well defined sound	●			33/45			●	●	164
	Pro-ject Classic Cherry	450	A great looking turntable with a generous and dynamic sound, but lacks something in overall coherence	●			33/45			●		203
	Pro-ject Perspective	750	Flexible facilities and competitive package, but performance of turntable alone is behind the best	●			33/45			●		192
R	Pro-ject 6/Sumiko	850	Don't think of this as a deck with a good arm, but as a scaled-down Oracle Delphi – it's that good	●			33/45			●		138
BB	Rega Planar 2	214	A remarkable product at the price, surprisingly articulate and confident	●			33/45			●		48

TURNTABLES (CONTINUED)

STATUS	PRODUCT	£	COMMENTS	MANUAL	AUTO	SEMI-AUTO	SPEEDS	SUSP SUBCHASSIS	EXTERNAL PSU	SUPPLIED WITH ARM	SUPPLIED WITH CART	ISSUE NUMBER
R	Rega Planar 3	274	Sounds musical in a balanced manner, needs decent isolation and suffers a little pitch instability	●			33/45			●		164
BB	Rega Planar 25	619	Great looking turntable has a silky smooth sound with exceptional midband coherence	●			33/45		●			203
R	Reson RS1	600	Supplied set-up and ready-tuned, this unconventional deck is packed with mid-band detail	●			33/45		●	●		159
R	Roksan Radius 3/Tabriz zi	890	Elegant-looking turntable with a tidy, ordered sound. Bright and breezy if a shade lightweight	●			33/45	●	●			159
EC	SME Model 10A	3,333	Elegant and extremely capable design with Series V309 hybrid arm, superbly built	●			33/45	●	●	●		195
EC	SME Model 20.2A	4,863	Beautifully built, extremely neutral damped and suspended deck with superb sound. Inc V arm	●			33/45/78	●	●	●		186
R	Thorens TD166 VI/UK/RB	400	Refined, solid sound with well-focused imagery; suitable for use with good MM/MC budget cartridges	●			33/45	●		●	●	103
R	Thorens TD146 VI	550	Tonearm not quite up to turntable's potential; this semi-auto is much pricier than manual TD166	●			33/45	●		●		203
R	Thorens TD2001	700	Balances convenience and sound well, but deck lacks detail and bass could be better controlled	●		●	33/45	●		●		159
R	VPI HW19 Junior	650	A notably large and handsome turntable with good sound quality and considerable upgrade potential	●			33/45	●	●	●		203
R	Well Tempered Record Player	850	Intriguing and challenging. Musically not ideal, but its limpid quality and lack of artificiality set standards	●			33/45	●	●			136
EC	Well Tempered Reference	5,500	Superb mechanical stability and unflappability result in a clean reproduction	●			33/45	●	●	●		205
BB	Wilson benesch The Circle	795	A beautiful turntable with a sumptuous sound, all at a very reasonable price – a clear Best Buy	●			33/45	●				192

CARTRIDGES

STATUS	PRODUCT	£	COMMENTS	MM	MC	REPLACEABLE STYLUS	OUTPUT (mV)	MASS (g)	ISSUE NUMBER
EC	Allaerts MC1B	1,295	Highly capable and entertaining Belgian cartridge that warrants the finest turntable and phono stage you can afford		●		0.5		203
BB	Audio Technica AT-95E	20	Clear and dynamic, though richly balanced	●		●	2.8		48
R	Audio Technica AT-OC9ML	330	A well-finished cartridge with a sound that's smoothly detailed, but also rather unexciting		●		0.4	8	192
BB	Clearaudio Signature	1,495	A great all-round performer with fine dynamic vitality and a seductive midband intimacy		●		0.55	11.5	175
BB	Denon DL110	70	A fine all-rounder, this high output MC model is likely to perform well		●		1.0	6	48
R	Denon DL103	100	Good performance in bass and good 'life'. Is seriously let down by its spherical stylus which kills subtle detail		●		0.1	6	103
BB	Denon DL304	200	Uncoloured, detailed, tracks superbly. Top notch altogether, and a bargain at the price		●				103
R	Dynavector DV-20X L	299	Articulate-sounding, with impressive treble resolve, though lightweight at times. Needs a high quality turntable and arm		●		0.25	8.6	192
R	Dynavector Karat 17D2 mk2	450	Clean and controlled sound with taut, tuneful bass. Detailed and musically cogent		●		0.15	5.3	158
R	Dynavector XX-1L	998	Very clear, very detailed; a response lift around 20kHz seems to do no harm		●		0.25	12	84
R	Dynavector Te-Kaitora	1,698	A real smoothie, but pricey. Worth checking out for its delicate laid-back transparency and low needle-talk		●		0.25	8.5	175
EC	Dynavector DRT XV-1	2,500	Capable of conjuring one of the most tactile, three dimensional sound stages on the vinyl planet. Extremely entertaining		●		0.3	13	208
R	Goldring Elan	19	A lightweight and frisky-sounding MM apparently based on Nagaoka MM4 body	●		●	5.0	7	67
R	Goldring 1012GX	79	Slightly harsh but plenty of life and detail. Some high frequency coloration apparent	●		●	6.5	7	85
R	Goldring 1022GX	99	As with 1012, a touch harsh; detail and transient purity improved	●		●	6.5	7	85
R	Goldring Eroica LX	110	Not the most subtle cartridge in the world: can sound edgy at times, but lively and informative		●		0.5	8	84
R	Goldring 1042	120	Not terribly subtle, and not such good value alongside 1012 and 1022. Quite lively, though	●		●	6.5	6	91
R	Goldring Elite	220	The basics are right, and it will cheerfully tackle any source material, but its sound is not the cleanest		●		0.5	8	103
R	Goldring Excel VX	525	Good bass drive but dull and imprecise higher up. An old-fashioned sound that falls short of the true high end		●		0.45	8	175
BB	Grado Prestige Gold	149	Rich sounding with an unusually refined top-end for a moving magnet-type cartridge	●		●	4	6	158
R	Grado Reference	995	Loads of tracking headroom but treble is limited. A prospect for mid-oriented valve amp users	●			1.7	6.5	175
BB	Linn K9	125	Linn improved this model by beefing up the Basik's bodywork and adding a super stylus	●		●	4.5	5	Col
R	London Decca Maroon	259	Now manufactured under the London brand name, this Decca cartridge is as iconoclastic as ever	●			5.0	6	67
R	London Decca S Gold	399	Immediate and detailed, but coloured and nonlinear, with a questionable effect on records	●			5.0	6	84
R	Lyra Lydian Beta	599	A thoroughly enjoyable cartridge – smooth, agile and dynamic in character		●		0.5	8	192
R	Lyra Lydian	649	Superbly capable all-round musical performer that improves markedly when its body cover is removed		●		0.3	7	158
BB	Lyra Clavis Da Capo	995	A stable tracker, and one of the finest cartridges we've heard		●		0.1	7	143
R	Lyra Parnassus D.C.t	1,895	A real little jewel of a cartridge, with many good qualities, but handicapped by a rather too obvious treble peak		●		0.22	10.5	175
BB	Ortofon 510P	38	For the price, a good blend of virtues – weight, clarity and neutrality	●		●	3.0	5	85
R	Ortofon 520P	65	Sensitive to load capacitance, but the 520P has a lively, effervescent sound	●		●	3.0	5	67
R	Ortofon MC3 Turbo	130	The 3 Turbo is bright, cheerful and bouncy, but unsubtle – take it as it comes		●		3.3	4	103
BB	Ortofon MC15 Super II	130	A good all-rounder, with outstanding resolution, if slightly bright and close up		●		0.35	7	103
R	Ortofon MC25E	180	An excellent upgrade for a mid-price turntable		●		0.5	11	139
R	Ortofon MC25FL	250	A bit too stark and honest, but faithful to what's on the LP		●		0.5	11	139
BB	Ortofon MC 10 Supreme	300	A full and cultured-sounding cartridge, with collective attributes far outweighing its shortcomings		●		0.5	10.7	192
R	Ortofon MC30 Supreme	525	Highly detailed and even-sounding cartridge that has a special affinity with female vocal recordings		●		0.5	10.7	158
BB	Ortofon Rohmann	1,000	A class act in nearly every respect, with fine groove security and a very smooth and even-handed sound		●		0.25	8.5	175
R	Ortofon MC3000II	1,100	A real ear-opener. Nothing to criticise anywhere – one of the very best		●		0.12	10	84
R	Ortofon MC5000	1,500	Limited tracking ability, bright and forward sound, but good stereo		●		0.12	10	91
R	Rega Bias	39	Difficult to mount in some arms due to its shallow body, but the Bias offers a gentle, refined sound	●		●	5	4	67
R	Rega Elys	85	Clearly superior to the Bias, the Elys is more detailed, accurate and convincing	●		●	5.0	5	67
R	Rega Recca	250	If you're after a high quality moving magnet cartridge, they don't get much better than this	●		●	6.5	6.3	192
R	Roksan Corus Black	130	Recognisably related to the Corus Blue, but smoother and more civilised	●		●	6.5	5	91
BB	Sunikio Blue Point Special	250	A no-nonsense performer with engaging musical properties – one of the best around for less than £300	●	●		2.5	9	192
R	van den Hul MM-1	250	If woody midrange could be tamed, imaging and security would pull it through	●		●	5.5	6	103
R	van den Hul DDT-II	600	Outstanding stereo imaging and neutral balance are appealing, but rhythmically the DDT-II is a bit lazy		●		0.35	7.6	158
R	van den Hul MC-10	750	A neutral, balanced performer, gives fine depth and focus and a firm, extended bass		●		0.4	6	60
R	van den Hul MC-One	900	This extends all the positive qualities of the 10, but adds greater authority and scale – worth all the extra money		●		0.4	6	60
R	van den Hul MC-Two	1,200	MC-Two rewards with a highly detailed yet fluid and musically convincing portrayal		●		0.4	6	72
R	van den Hul Frog	1,500	Seems to control/suppress surface noise better than its rivals. This delicate and subtle performer has great charm		●		0.65	7	175
R	van den Hul G' hopper III/IIA	2,800	Undoubtedly one of the finest cartridges available. It has tremendous bandwidth, energy and finesse		●		0.4	6	122
R	Wilson benesch Matrix	786	Extraordinarily well balanced cartridge: neutral and detailed yet lively and rhythmically assertive		●		0.58	6	158
R	Wilson benesch Carbon	1,573	Carbon fibre body contributes to a delightfully clean and open midrange, and a quick, lively and coherent sound		●		0.45	7	175

TONEARMS				EFFECTIVE MASS	PARALLEL TRACKING	PIVOTED	UNI-PIVOT	EFFECTIVE LENGTH (cm)	ISSUE NUMBER
STATUS	PRODUCT	£	COMMENTS						
R	Kuzma Stogi Ref	1,250	Large, solid and well made arm, gives exceptionally clear sound with just a hint of brightness	High		●			79
R	Linn Ekos	1,500	Superb, state-of-the-art design which builds significantly on predecessor's strengths	Med		●		229	67
BB	Rega RB250	109	The ultimate budget arm? Refined, sweet, detailed and natural	Low		●		237	60
BB	Rega RB300	174	Despite its modest price it sets exceptional standards and could be used on many high-end turntables	Low		●		237	60
R	Roksan Tabriz Basic	350	Targeted at the Xerxes, this is a good alternative to the Rega arm in many cases – a touch bright though	Low		●		240	91
R	SME Series IV	983	Superb engineering and finish with a finely balanced sound, impressive stereo focus and low coloration	Low		●		233	60
R	SME Series V	1,461	Excellent in all respects, this arm arguably sets the standards for pivoted arms, regardless of price	Low		●		233	60

STANDS & SUPPORTS				SPECIFICATIONS						
EQUIPMENT SUPPORTS				HEIGHT	TOP PLATE SIZE (cm)	FILLABLE	WELDED	NUMBER OF SHELVES	SHELF TYPE	ISSUE NUMBER
STATUS	PRODUCT	£	COMMENTS							
	Avik C4	200	Attractive wood finish stand with a very large footprint but sound is a little coloured	77	47			4	MDF	206
R	Avik Furniture A4	350	Good sound and stylish Scandinavian looks at an affordable price	80.5	47			4	Wood	193
	Alphason GR 17/17-AS	275	Great looks but sound can be bettered for the money	36	60,39			4	Glass	181
	Apollo Symphony	245	Simple steel and glass stand which majors in excitement factor but lacks precision	73	46.5		●	4	Glass	206
	Apollo Soprano	275	Uninspiring looks and sonic performance that can be beaten at this price	68.5	45.5			4	Glass	193
R	Atacama Europa	240	Stylish, expandable modular design with agreeable full-bodied sound – great value	67	48.6			4	Wood	193
BB	Audiophile Furniture Base	615	Price is justified by its earth-shattering sonic abilities – a worthy upgrade	82	43			4	MDF	193
R	Avid Isoshelf	1,100	An enthusiasts equipment support stand free from coloration if a little fiddly to set up	87.5	48			5	MDF	193
R	Custom Design Aspect650	270	Smart looks and practical thanks to adjustable shelves. Sound is fair with some loss of detail	66	46		●	4	Glass	206
R	Elemental Isotube x 4/Ref	1,199	Blockbusting size and build. Super sound quality	92	45,49		●	4	Marb	181
R	Elemental Audio Isotube X4	849	A hefty stand that demonstrates just how much difference a good support can make	90	49		●	4	Glass	193
BB	Frameworks H500/H175	404	Two-shelf stand and isolation platform combo in tubular steel – made a spectacular impression on audition	70	52,34		●	3	Glass	166
	Ixos Deadrock 704	250	Looks unassuming but sound is full and inviting		46,39			4	Resin	181
	Mana 4-tier	500	The ultimate statement in steel and glass; adds resonance in a way you'll love or hate	87	45		●	4	Glass	206
R	Optimum Int 2000 OPT490	299	25kg stand with shelves between variable-height tubular uprights. Sounds smooth and relaxed with sturdy bass	50	60,40			4	Glass	166
R	Optimum Int 2000 OPT660	349	Glitzy style isn't reflected in sound, which is wholesome	82	60,52			5	Glass	181
	Projekt Furniture A4	215	An elegant support stand that blends in to any home environment with a laid-back sound	56	48			4	Wood	193
R	Quadraspire Q4	280	Simple but modestly effective and very attractive	52	49			4	MDF	206
	Sonus System Elite	330	Rather ugly and seems to offer little over and above cheaper steel and glass stands	68	50		●	4	Glass	206
BB	Sound Organisation Z560	160	Welded and bolted members give structural integrity. While performance is not up with the best, it's great value	90	46,36		●	5	Wood	166
	Sound Organisation Z545	160	Budget price and great looks make this a great value stand	73	46		●	4	Glass	193
R	Soundstyle X100	230	Looks lovely, sounds lively but slightly bright	64	49,28		●	4	Glass	181
	Soundstyle XS100	270	Less character than other similar strands, but sound is somewhat short on transparency	72.5	49.5		●	4	Glass	206
	Soundstyle Radius SR100	280	Stylish looks and a smooth sound	63.5	49.5		●	4	Glass	193
	Soundstyle Finewoods W105	320	Veneered shelves clamped between tubular uprights. Delivers with classical material	82	48,27			4	Wood	166
BB	Standesign Design 4	190	An all-in-one support at a budget price with good sonic performance	88.5	50.8		●	4	Glass	193
R	Townshend Seismic Sink AV1-4	600	Gives significant isolation for turntables and seems to add little character otherwise	74.5	45			4	MDF	206
BB	Townshend Seismic Stand	1,245	It's big, it wobbles and it's pricey. But this is the ultimate equipment support	72	58,45			3	Wood	181
BB	Wilson benesch Asside	590	Sounds even better than it looks. And it looks wonderful	72	37,50			4	Wood	181

SPEAKER STANDS				SPECIFICATIONS						
STATUS	PRODUCT	£	COMMENTS	HEIGHT	TOP PLATE SIZE (cm)	FILLABLE	WELDED	NUMBER OF SHELVES	SHELF TYPE	ISSUE NUMBER
	Alphason Akros II	65	A well-specified budget stand but the sound is as subtle as a house party	60,45	16.5		●			202
	Alphason HDS	85	A reasonable stand with a smooth but rather bland sound balance. Good finish options	45-60	15.5,15.5		●			189
	Apollo Olympus	75	A popular stand and a decent performer, but unremarkable by today's standards	40-60	15,12.5		●			189
	Apollo A4/6	82	A pretty and robust design that sonically fails to stand out from the crowd	51,40.51	18		●			202
BB	Atacama Nexus 6	50	An excellent all round performer and a genuine hi-fi bargain	60,50	14.5,18		●			202
R	Atacama R724	150	Atacama uses its market strength to deliver a superbly appointed product at a very reasonable price	60	15,17		●			189
R	Custom Design R/S300 MkII	100	A solid stand improving on the original with better focus and detail	61,56.51	16.5,18		●			202
R	Elemental Isotube S2se	599	Stands of distinction, able to free the speaker's sound from its box in a way budget stands simply can't	61	23,27		●	●		189
R	JPW HS1	120	A purposeful stand, a touch dry-sounding but particularly strong with bass. Great for rock and dance music	61	19,21		●			189
R	Mana Sound Base	175	The Sound Base plinth simply improves the sound of every speaker placed on it	8	29,32					202
	Mission Stance	100	Detailed and open but needs a firm foundation to give its best	60	19,15		●			202
BB	Partington A-4	119	An oddball stand with a sound that's sheer class. More open and focused than almost anything below £150	50-100	19,22		●	●		189
R	Partington Dreadnought Ult.	299	Super heavyweight stand that is an open window to the speaker placed on it	63	20.5,23.5		●			202
	Russ Andrews Torlyte	599	Subtle and musical-sounding stands, though a touch more 'pizzazz' is need for Recommendation at this price	61	33.5,24					189
	Sonus Systems Excel	110	Strong performance when filled with sand but design flaws let it down	65,45	20,22.5		●			202
	Sound Organisation Z524	69	A coherent-sounding stand with particular strengths in the midband, though quality drops at the frequency extremes	61	16,17					189
BB	Sound Organisation Z522	89	Easy going and likeable performer straight out of the box	59	16,17		●			202
	Sound Style Select	95	OK but not as good as its cheaper brother the Z522	59	16,17		●			202
	Target HM60	106	A solid and well-built stand laid-back to the point of coma	40-70	16.5,19		●			202
R	Townshend Seismic Sink	499	Unique inflatable plinth that works well with decent floorstanders as well as standmounted speakers	4	38,48					202

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TUNERS

ANALOGUE TUNERS



ISSUE NUMBER	ROT. TUNING KNOB	SIG. STRENGTH METER	REMOTE CONTROL	RDS	PRESETS	WAVEBANDS
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STATUS	PRODUCT	£	COMMENTS	FM, M, L	64					
R	Cambridge T500	180	Very capable tuner suited to good and less good reception conditions	FM, M, L	64					193
R	Creek T43	399	Quality UK-made tuner offering classy sound in all areas at a very fair price	FM, M, L	64					193
R	Cyrus FM7.5	400	Beautifully made and presented, with sound that's a small but worthwhile advance over budget models	FM	7					211
BB	Denon TU-260L II	130	The return of the all-time favourite, now enhanced with RDS and sounding as fine as ever	FM, M, L	40					193
R	Denon TU-1500RD	250	A well balanced and clean sound with good bass and treble extension	FM, M	40					184
	Magnum Dynalab FT11	499	All-analogue tuner: receives weak or tightly packed stations but loses out on noise and sonic neutrality	FM	3					184
BB	Harman/Kardon TU950	200	Bulky but effective, delivering fine RF performance and good sound for the price	FM, M, L	30					166
	Leak Trough Line - GTA	300	A renovated classic with a style all of its own coupled with an emotive and gutsy performance	FM	0					206
	Linn Pekin	545	Smart and high-tech tuner which integrates well with Linn systems but offers less appealing performance out of that context	FM, M	80					211
R	Linn Kremlin	2,600	Controversially good sound at a very high price	FM	80					142
BB	Marantz ST-48	120	A classic budget model which manages a performance only just behind much more expensive models	FM, M	60					184
	Marantz ST6000	150	Another budget killer from Marantz, with sound well above its class and useful features	FM, M, L	90					211
R	Myryad T-30	400	Attractive product that produces attractive sounds too: capable of very musical performance with a good aerial	FM	29					193
	Myryad T-10	530	A very smart unit which works well and offers good rhythmic drive and vitality, albeit at a price	FM	20					184
	NAD C440	200	Rather polite sound, a little vague at times, that seldom offends but never excites	FM, M	30					193
	Pioneer F-504RDS	250	Cable-friendly with advanced RDS and excellent RF performance; slightly disappointing sound	FM, M	40					166
	Roksan Caspian	595	Neat fascia with great ergonomics, but sound is not really any better than models at half the price	FM	50					184
	Sony ST-SE500	140	A lot of features for the money, but sound lacks detail and has some coloration	FM, M, L	30					193
	Roksan Kandy KT-1	375	Well made but sound is a bit lacklustre and lags behind some budget models	FM, M, L						211
	Rotel RT-935AX	160	Good ergonomics and sound quality at a realistic price, but limited features and RF selectivity	FM, M	20					166
	Sony ST-SA3ES	250	Clean, lean presentation but needs a quality aerial to perform at its best	FM, M, L	30					157
R	Sony STS-B920S	180	A little hiss and image compression don't detract from the clean performance of this feature-packed tuner	FM, M, L	30					184
	Thorens TRT2000	499	Not exactly neutral sounding, but nonetheless makes listening fun	FM, M	59					157

DIGITAL TUNERS

STATUS	PRODUCT	£	COMMENTS	DAB	7					
R	Arcam Alpha 10 DRT	800	The first DAB tuner and arguably still the best, but the system's still not perfect	DAB	7					199
	Arcam FMJ DT26	1,000	Metal-cased version of the Alpha 10 DAB, not so competitive now DAB prices are dropping	DAB	7					211
	Cymbol C-DAB 1	1,000	The first 'high-end' DAB tuner, although format is the ultimate limitation. Gorgeous finish	DAB	8					199
	Pision Wavefinder	299	Bizarre-looking DAB tuner that requires a powerful PC to operate - great gadget, sound variable	DAB						211
	Sony ST-D777ES	550	Smart and useful with DAB and FM in one box, but neither band really shines	DAB, FM, M, L	99					211
R	Technics ST-GT1000	500	Handy tuner that combines DAB, FM and AM in one unit and substantially lowers the price bar for DAB entry	DAB, FM, M	97					199
	VideoLogic DRX-601E	299	Cheapest DAB tuner to date, and concedes little if anything to dearer models	DAB	10					211

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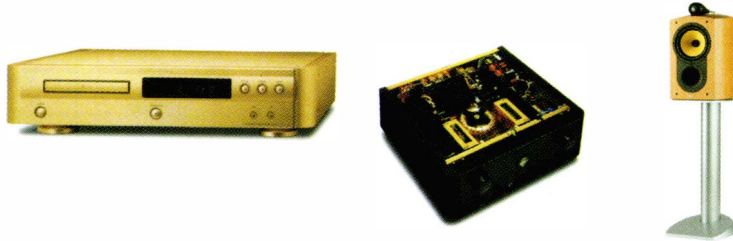
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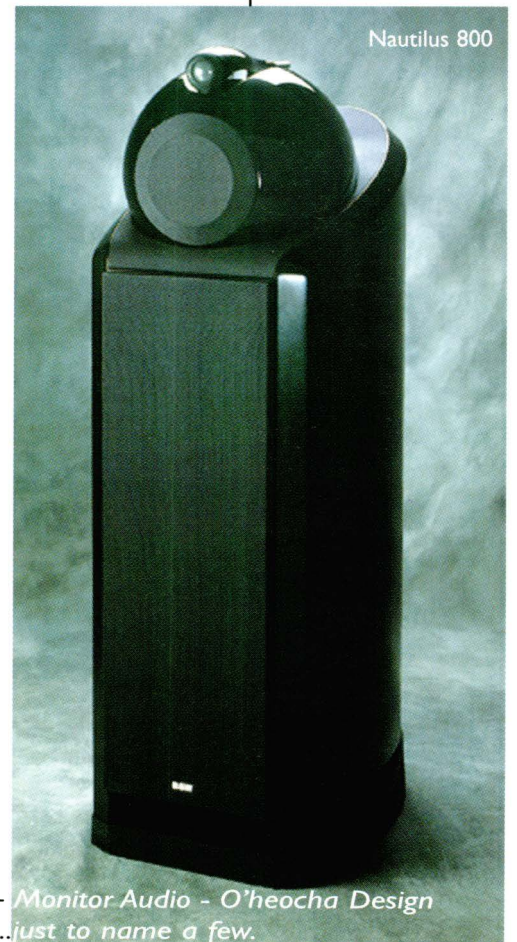
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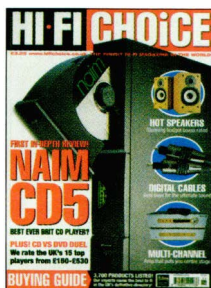
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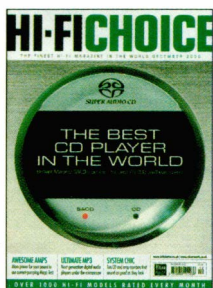
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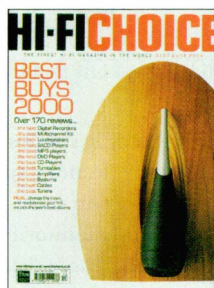
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NEXT MONTH...



AMPS WITH INTEGRITY

If you're ready for a serious new integrated stereo amplifier, make sure you check out next issue's Bench Test of beasts priced between £500 and £1,500. No merely ample amps these, the tested models – including representatives from Alchemist, Arcam, Linn, Creek, Cyrus, NAD, Naim and YBA – promise serious sound for pound. So, if you're thinking of upgrading your current model, join us next issue as we sort the men from the boys.

TURN ONS

What with all this carry-on surrounding the new digital formats of SACD and DVD-A, it's easy to forget the analogue wonder of good old vinyl. Even the least expensive turntables can remind us why we got into all this in the first place. Next month, we take a look at sub-£300 turntables (including models from Rega, Dual and Moth) and find out which *really* gets to the heart of the music.

ACTIVE SPEAKERS

Go louder without losing it! Next issue, we take a look at a group of active speakers, so called because they have built in amps and electronic crossovers. Discover why they are the choice of professionals...

PLUS...

Chord CPM3300 integrated amplifier: Over £5,000 of serious stereo power... Pioneer's brand new CD-R: Is the PDR609 as good as its predecessors? The redesigned Rega Planet CD player and Tannoy's stunning new Dimension loudspeakers!

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IF YOU THINK YOU'VE GOT PROBLEMS TRYING TO CHOOSE THE PERFECT LOUDSPEAKER, JUST SPARE A THOUGHT FOR POOR MIKE OLDFIELD...

Elsewhere in this month's issue, I got to review a couple of pairs of speakers. Big deal! More often than not I do speakers by the dozen or more. But there are speakers and there are speakers. By the dozen they tend to be, if not much of a muchness, at least hewn from some well established stereotypes.

However, the Tannoy Kingdom 12 and Quad ESL-989 loudspeakers are entirely dissimilar in heritage, physics and engineering. Neither is what you'd call a stereotype, as both are much too large to spawn imitators. Rather they represent two of the major goalpost sets, helping establish the ultimate standards to which more 'popularly priced' models aspire.

Bizarrely, given that both are ostensibly trying to do the same job, it's hard to imagine two more different designs, especially since both are fine loudspeakers in their own right. I don't know another speaker that can match the Quad's wonderful freedom from midband 'boxy' coloration – amongst box loudspeakers, the similarly classic Spendor BC1 probably gets closest.

Go from the Quad to the Tannoy (taking care to compensate for their very different sensitivities) and you'll immediately hear extra 'boxiness' and a sound that's obviously less smooth. But it's by no means game, set and match to the Quad. After a few minutes one starts to adjust to the Tannoy's coloration, and the expressiveness and authority of this much higher sensitivity design starts to make itself apparent.

I don't think it's possible to state that one is categorically 'more right' than the other. Rather it's down to the individual to decide which best suits his or her tastes best. It's a debate that's been going on for at least the 30 years since I caught the hi-fi bug, in the Pro-audio as well as hi-fi sectors. When I worked for Spendor, back in the mid-1970s, a sizeable proportion of production was of speakers with built in amplifiers destined for professional users. But these were being delivered to the broadcasters rather than

the music recording studios, which isn't too surprising, since accurate speech monitoring was a prime criterion, and Spendor's roots lay firmly in the BBC monitoring tradition.

BC1s were widely used throughout the BBC, but mainly in the smaller studios. Larger locations, especially those used for pop music recording, went for larger speakers with higher sensitivities and power handling – typically BCIII, Rogers LS5/8s and Tannoys. In the music biz recording studios of the day, the most popular monitors were almost invariably based on Tannoy, JBL or Urei drivers, because recording engineers used seriously high listening levels, and also wanted maximum ruggedness and reliability. (Re-coning a blown Tannoy from the parts bin was one of the skills of the era.)

Yet even the Pro sector had its Quad Electrostatic fans, especially on the classical side of things. In 1977 I went to Walthamstow Town Hall for a Philips recording session (Beethoven *Piano Concertos*, Brendel/Haitink/LPO). In a little side room alongside the mixing desk and tape machines was a pair of Quads to do the monitoring. I can't remember the engineer's name, and there are no credits at all on the boxed set (Jimmy's bound to know!), but he made some of the better orchestral recordings of the era, and dragged his Quads all round Europe to whatever location.

Around the same time, Mike Oldfield (of *Tubular Bells* fame) was intending to tour using multiple stacked Quads as his PA system. 36 pairs as I recall (but don't quote me), an unlikely scenario which I suspect never reached fruition. But a Quad archive picture (for which the editor is currently searching) shows sitarist Ravi Shankar and band performing live on stage with Electrostatic sound reinforcement.

Like I said earlier, choosing a speaker is all down to picking the best combination of performance attributes for your particular tastes and preferences.

We wouldn't call Paul Messenger choosy, but he's been known to turn down speakers based on the knots in their veneer.

"I DON'T THINK IT'S POSSIBLE TO CATEGORICALLY STATE THAT ONE SPEAKER IS 'MORE RIGHT' THAN ANOTHER."



Prodigy / the first descendant of the awesome Statement Evolution 2, hybrid technology without compromise.

"In every sense the Prodigy is a true classic."

Alvin Gold, Hi-Fi Choice, January 2000

"Bearing in mind what it does, the UK pricing makes it competitive, and so this design must be warmly recommended."

Martin Collins, Hi-Fi News, August 2000

Ascent / like its big sister, the Prodigy, a taste of the Statement Evolution 2 in a room-friendly package.



absolutely

MARTIN LOGAN

AN AMERICAN BEAUTY

Absolute Sounds' commitment to Martin Logan has been rewarded with a line of speakers so comprehensive that it now encompasses every permutation of home theatre, and a price band from entry-level to cutting edge.

Prodigy and Ascent are the models marking a new era for Martin Logan. Having mastered the art and science of creating hybrid systems, with the awe-inspiring Statement Evolution 2, Martin Logan has applied the same skill to smaller systems suitable for a wider range of applications.

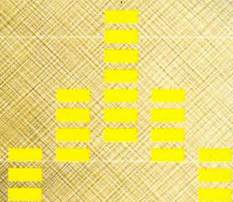
Both Prodigy and Ascent are immediately recognisable as Martin Logan products because of the peerless, room-friendly appearance, with the captivating see-through panels and furniture-grade finish. But it is sound as clear as the panels themselves which mark the Prodigy and Ascent as children of the Statement. Also available is the best-selling Aerius 2 for those purists with limited space.

To provide a selection for all home entertainment needs, the Prodigy and Ascent have also been joined by the new Theater centre-channel model, the Script, the Scenario and the Cinema, to create multi-channel systems able to grace any size or shape of room.



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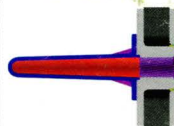


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The CM Series tube-loaded tweeter is derived from the world-leading technology found on our flagship Nautilus™ speaker, widely acknowledged as the best loudspeaker money can buy. Tube-loading the tweeter ensures far greater absorption of unwanted radiation and results in a more focussed and natural high frequency sound.



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One look tells you that this is a speaker that will enhance any environment. Finished in real wood veneers with a stylish brushed aluminium baffle, no other speaker in its class brings music to life with such realism yet fits so effortlessly into your interior. The CM doesn't only look beautiful, it sounds amazing too. Including audio technology derived from the ground-breaking Nautilus™, the CM Series is the perfect solution for interior design-conscious music enthusiasts.

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