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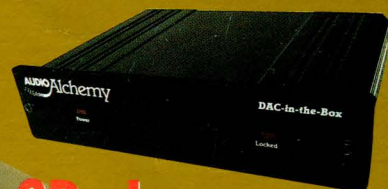
HI-FI CHOICE

BEST BUY
HI-FI CHOICE
MAGAZINE
THE WORLD'S NO. 1 GUIDE TO BUYING HI-FI

THE FINEST HI-FI MAGAZINE IN THE WORLD

FEBRUARY 1994 £2.95 US \$6.95

Why Rega's classic turntable is *still* the best budget buy



CD player upgrade: our pick of eight DACs with new models from Arcam, Audiolab and Meridian

THE ULTIMATE TAPE DECK?

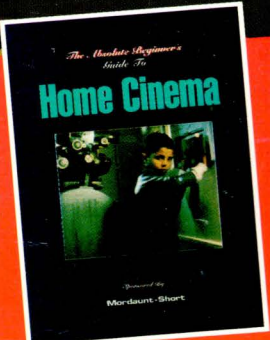
New Dolby S decks take on rivals, page 72

Exclusive! Harman's Festival 500 system on test
Includes the UK's definitive review based buyer's guide



FREE!

The Absolute Beginner's Guide to Home Cinema



PHILIPS INVENTS

The Digital Compact Cassette For generations

Philips has invented the ways we enjoy music. The compact cassette came with the freedom of the Sixties and Seventies. Play the music you want, wherever you want to play



it. In the Eighties the Compact Disc brought the absolute purity and reality of high technology sound. And now, for a new generation, Philips has invented a

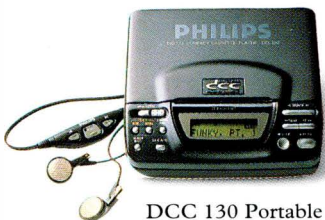
new system, Digital Compact Cassette, DCC. Quite simply, the DCC System gives you

the best of all worlds. It is as portable and as versatile as an ordinary cassette. You can buy pre-recorded tapes or you can record your own. But anything an ordinary cassette can do, a DCC can do better because the sound quality has all the precision and beauty of a compact disc. And don't worry about your existing collection of ordinary compact cassettes, the beauty of the DCC System is that it will play them too.



FD 920 DCC System

First we invented the compact cassette, then the compact disc,



DCC 130 Portable



DCC 811 In-car

so why have we invented the DCC?

**PHILIPS
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YOU**



PHILIPS



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Hi-Fi Choice welcomes all information on new and upgraded products and services, for possible coverage within the news and reviews pages. However, the publisher respectfully points out that the magazine is not obliged to either review or return unsolicited products. The editor is always pleased to receive ideas for articles, preferably sent first in outline form, with details of the author's background, and — where possible — samples of previously published work. He cannot, however, accept responsibility for unsolicited copy and would like to point out that it may take time for a reply to be sent.

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Back issues of the magazine are also available. Please refer to page 141 for full details of how to obtain copies.

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While every possible care has been taken in the preparation of this journal, the publishers cannot be held responsible for the accuracy of the information herein, or any consequence arising from it. Readers should note that all judgements have been made in the context of equipment available to *Hi-Fi Choice* at the time of review, and that 'value for money' comments are based on UK prices at the time of review, which are subject to fluctuation and are only applicable to the UK market.

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THE FRONT END

4 UPDATE

All that's new from around the world of hi-fi. A round up of the latest developments and releases, from the sublime to the unusual.

14 SESSIONS

A dozen of the brightest new products are given the *Choice* once-over in our bite-sized reviews, from a voice-controlled remote to a pair of aspirational floorstanding loudspeakers and Pioneer's latest Laserdisc player.



All the fun of the *Festival* revealed: turn to page 14 for our first impressions of this shiny new mini system from Harman/Kardon.

29 HELP!

Does your hi-fi sound out of sorts? Let the *Choice* panel of experts loose on your system.

35 WRITE ON!

Get your deepest hi-fi thoughts into print and you may find a *Hi-Fi Choice* sweatshirt squeezing through your letterbox.



Roksan's latest CD player the *Attessa* is put through its paces in Statements this month.

COLUMNS

41 21ST CENTURY FOX

Barry Fox wonders how to squeeze more playing time out of a CD and looks at the troubled early days of DCC and MiniDisc.

144 PERSONAL MESSAGES

Following his adventures last month with eigen-tones, Paul Messenger investigates bass, the final frontier for a satellite and subwoofer system.

COMPETITION

38

Don't miss the chance to win a fabulous £3,000 Sony home cinema system, and help Sony UK celebrate its 25th anniversary.

FEATURES

22 STATEMENTS

This month, we look at the striking lines of Roksan's new *Attessa* CD player and the vast lines of Sansui's flagship integrated amplifier. How does it compare to the best of British?

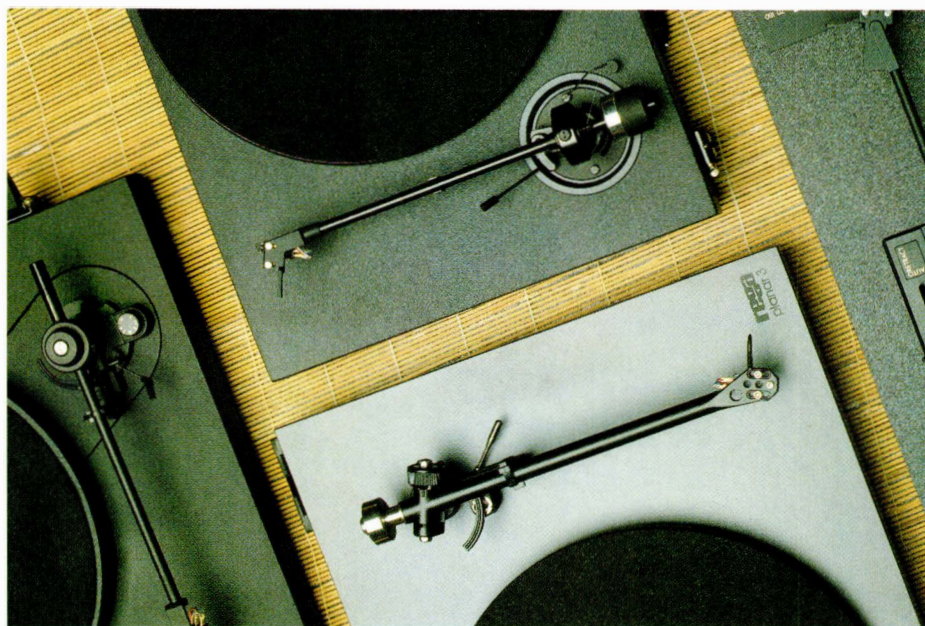
44 ASPIRATIONS

We talk to Bill Wilson, owner of the Wilson Stereo Library and the CD Warehouse, about his cost-no-object hi-fi system and music room.

THE REVIEWS

50 DIGITAL TO ANALOGUE CONVERTERS

Paul Miller checks out eight of the latest add-on digital to analogue converters. Which one will transform the sound of a Marantz CD-521i? The review features full blind listening tests and complete in-house measurements.



Don't discount turntables, especially the budget beauties above which are reviewed on page 64.

61

CONCLUSIONS, BEST BUYS & RECOMMENDATIONS

A summary of the reviews and a selection of favourite D/A converters from previous tests.

64

TURNTABLES

We put the record straight and get three of the most exciting new budget turntables — plus one long-standing classic — to spin the platters that matter for the latest *Choice* turntable test.

72

CASSETTE DECKS

Nine new cassette recorders fall under the *Choice* searchlight, as Alvin Gold discovers the joys of home taping. The test includes two new Dolby S machines from Kenwood and Sony.

85

CONCLUSIONS, BEST BUYS & RECOMMENDATIONS

A handy round-up of the hottest tape decks on test, and some competitive alternatives.

CHOICE MATTERS

11

COMING UP

The March issue includes tests on budget CD players, subwoofers and a round-up of the best in Nicam televisions. And don't miss the chance to get your hi-fi system a free health check from BADA, plus a free Sony Super Bit Mapping CD.

27

CHOICE SUBSCRIPTIONS

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95

READER CLASSIFIED

The only place to buy, sell or exchange your hi-fi is in our free classified advertising section.

138

READER OFFERS

The greatest audiophile recordings and the very finest hi-fi accessories, all available by mail order.

THE DIRECTORY

97

THE CHOICE DIRECTORY

A comprehensive listing of all the current products that *Hi-Fi Choice* has ever tested.



Back to basics

The humble compact cassette takes centre stage in this month's edition of *Choice*, as Alvin Gold finally gets the chance to pitch two brand new Dolby S equipped tape decks against more traditional alternatives.



Dolby S has been a long time coming. We first highlighted the potential benefits of the new system back in the May 1993 issue of *Choice*, and we have been trying to get our hands on a Dolby S equipped recorder ever since. The line from the manufacturers has been one of huge demand stripping stocks from warehouses and dealers' shelves, denying review samples to magazines such as ourselves.

We're not so sure about the level of current demand, but Dolby S is certainly an interesting bit of technology. On the one hand, it offers a high street version of the highly sophisticated Dolby SR studio noise companding system, yet remains flexible enough to be used on portables and car stereos equipped with nothing more advanced than good old Dolby B noise reduction.

It's this remarkable versatility that marks Dolby S out as the happening technology of the moment. Forget the constant wrangling over whether Digital Compact Cassette or MiniDisc is better. Players in either format are expensive luxuries for most people, and until more affordable portable and in-car versions become available, they look set to remain so.

With Dolby S cassette decks already on sale for a little over £300, my money is on this powerful new noise reduction system giving both digital recording mediums more than a run for their money over the next year or so.

Get into home cinema

If you want to get a better sound from your TV and video recorder, try playing them through your hi-fi system. Not sure how to go about it? Then look no further than our free 24 page supplement, *The Absolute Beginner's Guide to Home Cinema*.

Written by the experts on our sister magazine *Home Entertainment*, the guide was originally given away with the December 1993 edition of that title and proved a hit with both enthusiasts and first-time buyers. Given the increasing popularity of home cinema with *Choice* readers, we decided to reprint the guide to give you the benefit of the *Home Entertainment* team's hard-won experience.

If your copy of *The Absolute Beginner's Guide To Home Cinema* is missing from this issue of *Choice*, please tell your newsagent.

Simon Davies



Update

CHOICE NEWS FROM AROUND THE WORLD

Linn's new CD mimics music

Linn Hi-Fi has officially launched the £798 *Mimik* CD player, following its appearance at last year's Live '93 consumer electronics show at Olympia. It is designed to compliment its *Majik-I* amplifier and form the basis of an 'entry level' Linn system. The *Mimik* is housed in the now familiar midi-size Linn case and features only the most basic controls on its fascia.

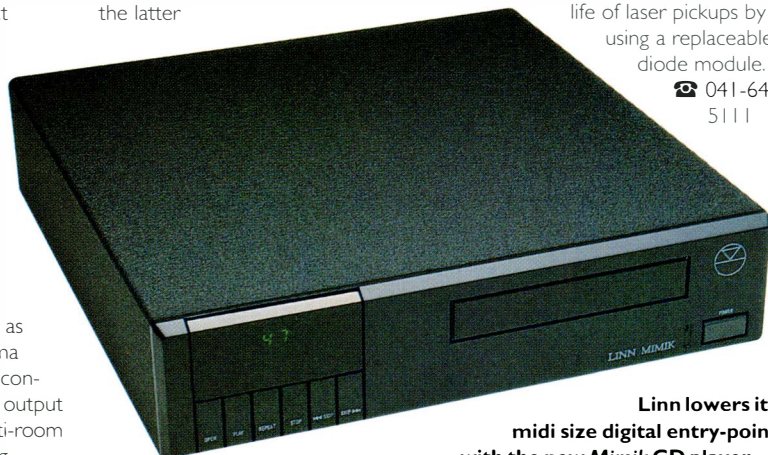
Like the more expensive *Karik*, the *Mimik* features an electrical BNC digital output, as well as an onboard delta-sigma bitstream digital to analogue converter. It has an extra pair of output sockets for use with the multi-room systems that Linn is becoming

increasingly involved with.

It is equipped for both conventional and electrical remotes, the latter

for connection with other Linn components. The *Mimik* also takes into consideration the finite life of laser pickups by using a replaceable diode module.

☎ 041-644 5111



Linn lowers its midi size digital entry-point with the new *Mimik* CD player.



Roksan decouple another speaker

Like the top of the range *Darius*, Roksan's new £895 floorstanding *Ojan 3* loudspeaker has a decoupled tweeter. This is sited, in the *Ojan 3*'s case, at one end of a beam that is only fixed at the bottom of the speaker.

The *Ojan 3*'s 76x27.6x45.9cm (HxWxD) cabinet is radically slanted and substantially stiffened internally. Only the sides are parallel, while the rest of the 18mm thick panels are angled to minimise internal standing waves.

A ported design, the *Ojan 3* has a claimed 80hm/90dB efficiency. Bass extends to 30Hz. ☎ (0895) 436384

A contender for the weird name of the year award — Roksan's *Ojan 3*.



A three-way Q for Kef

Kef has added a three-way model to its Q Series of loudspeakers, in the form of the £699 *Q70*. A floorstanding design, the *Q70* stands over a metre high and is equipped with two 160mm bass units, each in its own ported enclosure, and a 160mm Uni-Q coaxial midrange/treble in a third enclosure. Having several enclosures is claimed not only to minimise interference between units but also increase cabinet rigidity.

The *Q70* features magnetically shielded drivers, making it safe to use close to televisions, and offers an amplifier-friendly six ohm/90dB load. Bass extension is quoted at 45Hz, the same as that for the *Q50*, but the extra bass driver should ensure that the *Q70* can handle more power. ☎ (0622) 672261

Micromega gets Stage struck

Micromega has taken a fresh approach to single box CD players for its new Stage range. The range comes in three varieties: Stage 1 £449.99; Stage 2, £599.99 and, you guessed it, Stage 3 at £799.99.

Each model inhabits the same Micromega-built chassis and you can upgrade from one to another for the difference in price between the

two. They can also be upgraded to Drive 1 or 2 status, two new transports that are due in April, although no details are available at present.

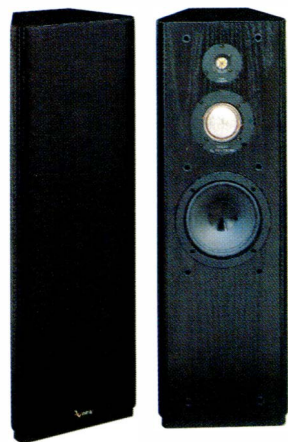
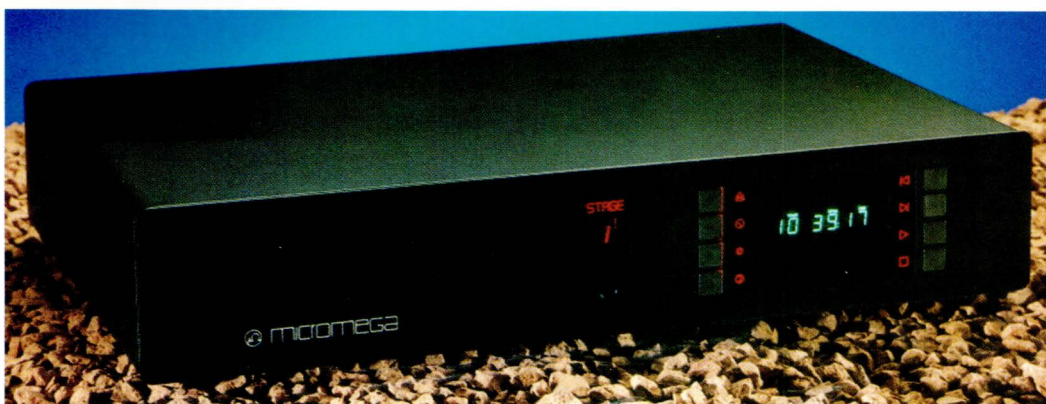
The common strand between the Stages is the new Philips CDM124 transport, Micromega's jitter-reduc-

ing *Accutrans* system, Bitstream D/A conversion and a dimmable display that also shows the model name.

Moving between Stage 1 and 2 upgrades both DAC and power supply, while moving up to Stage 3 brings separate left/right output transformers and improved specifications for your money.

☎ 081-989 0692

All the world's a Stage when you upgrade a Micromega player.



Infinite variety of speakers

American loudspeaker specialist Infinity has been expanding its range with two new pairs of Kappas; the £995 *6.li* and £1,195 *7.li*. Both are reflex loaded, three-way designs with triangular section cabinets that are designed to minimise internal standing waves rather than for corner mounting.

If you feel inclined to use Kappas with your TV, there's now a sonically matching centre channel, the £295 *Kappa Video*.

Should you prefer something smaller, the £399.95 *Micro II* system has 20cm tall cylindrical satellites and a 23x39x39cm (hxxxd) sub-woofer. It can be used indoors and out, or even on top of the TV. For more dedicated AV enthusiasts, the £109.95 *Video 1* centre channel speaker has a pair of midrange units and a tweeter, all housed in an oblong box for perching on your telly. ☎ (0908) 317707

Denon's D-90 RDS. It's quite literally, tuner-tastic, mate.



Denon's radio data mini

Denon has a new 'designer' mini system in its range. The £669.99 *D-90 RDS* succeeds the *D-70* and comes in three aluminium faced units with optional speakers.

The heart of the *D-90 RDS* is the *UDRA-90* receiver. This consists of a 30 watt amplifier with built-in RDS tuner. The latter bristles with 30 presets, together with all the usual RDS features. Uniquely, it also has an auto timer, which turns the system a true radio/cassette recorder.

The *UCD-90* CD player is clean and simple, an achievement made possible by leaving display duties to the receiver. Otherwise it is a stock Denon affair with an 18-bit converter and an optical output for digital recorders. The *UDR-90* single transport cassette deck features drawer loading and the ability to communicate with the CD player for easy disc dubbing.

British-built *SC-M2* loudspeakers are available to complete the package. Denon describes them as being 'small enough to be domestically acceptable and good enough to sell separately', to anyone with £80 to spare. ☎ (0753) 888447



In Brief

Thanks to the pound's strength against the mark, **Portfolio Marketing** has managed to restore the Best Buy Thorens TD280/IV back to £199.90. Because of the collapse of sterling, the deck had risen to £230 over the past year, since its test back in issue 115. ☎ (0494) 890277

On the February 6, **Audio Counsel** will be having a 10th Anniversary charity concert at the Queen Elizabeth Hall in Oldham. Performers will include The Jon Strong Band and comedian Dave Spikey. Tickets cost £3.50. ☎ 061-633 2602

The £299.90 **Jamo System 6000** surround speaker package, comprising two pairs of *Cornet 30.3* speakers and a *Centre 50* dialogue speaker, has been designed to be used with any of Jamo's subwoofers. ☎ (0327) 301300

Musical Images has got together with the Save The Children fund for both their anniversaries next year. Any customer donations to Save The Children will be matched by Musical Images, in the hope of raising £10,000 by September. ☎ 081-952 5535

Audio T of Gants Hill, Ilford, is holding an in-store 'guess the price' competition, to raise money for the Redbridge & District Tinnitus Association. ☎ 081-518 0915

Allison Acoustics has moved. The new address is Allison Acoustics Ltd, 20 Cleveland Way, Shelley, Huddersfield, W. Yorkshire HD8 8NQ. ☎ (0484) 603333

Memtek International has sold the Memtek Division (which specialises in Memorex tape) of the Tandy Corporation to Manny Magnets, Hong Kong. Manny Magnets specialises in magnetic media.

Airto Moreira has released an album with The Gods Of Jazz, including Chick Corea and Herbie Hancock, entitled *Killer Bees*. Only available on CD for the present, its catalogue number is BW041. His other band Fourth World will be at Ronnie Scott's between January 10 and February 5.

Kontak, the cleaning fluid specialist, has diversified into wire with the Link series of interconnects. The range includes both digital and analogue cable, balanced and unbalanced interconnects, with prices from £89.90 per metre length. For more details, contact Path Premier. ☎ (0494) 441736

Autoleads Ltd, distributors of Monitor Car Cable, has taken over the distribution of Monitor PC cable from electronics supplier Bandridge. These include audio and video cables, speaker cables and all manner of audio furniture. ☎ (0252) 735662

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Hans Fantel, The New York Times

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Friendly amps by Tube Technology

Would you like your hi-fi system to look less boring? Tube Technology has the answer in the £3,800 Synergy 'lifestyle' valve amplifier which, if nothing else, is a dramatic looking product. Available either as an integrated, Synergy I, or power amplifier, Synergy II, both varieties offer 150 watts per channel and use plenty of top notch components including Gold Aero tubes throughout.

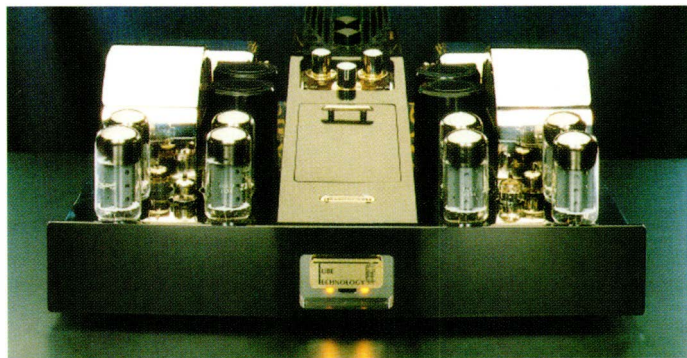
The Synergy I is billed as being user-friendly, a claim

Free your system from bland styling forever, with the Tube Technology Synergy I integrated amplifier.

based on the fact that it can be operated by remote control and OBBC, or on-board bias control. The latter is a display and adjustment system

for fitting new tubes.

The Synergy I can cope with five line inputs and has output taps of two, four or eight ohms. ☎ (0932) 850361



Rotel for the film buff
Rotel is making a play for the audiophile end of the home cinema market with a new AV preamp and six channel power amplifier.

The £399.95 RSP-960AX is a surround processor preamp that's equipped with Dolby Pro-Logic and three surround modes, six line inputs, full AV switching and some little red lights to show you which channels are in operation. Both RCA phono and S-video connections are included.

In the true couch potato tradition of AV amplification, the RSP-960AX is fully remote controllable and offers a variety of gizmos to play with from the comfort of your cinema seat.

Built to partner it, the £325 RB-956AX power amp is a six channel affair, all built into a single chassis. The RB-956AX offers six times 30W, four times 30W plus one channel at 90W; two times 90W plus two times 30W; or three times 90W. Or, to put it another way, five, four and three channel operation, with three level controls to go with them. ☎ (0908) 317707



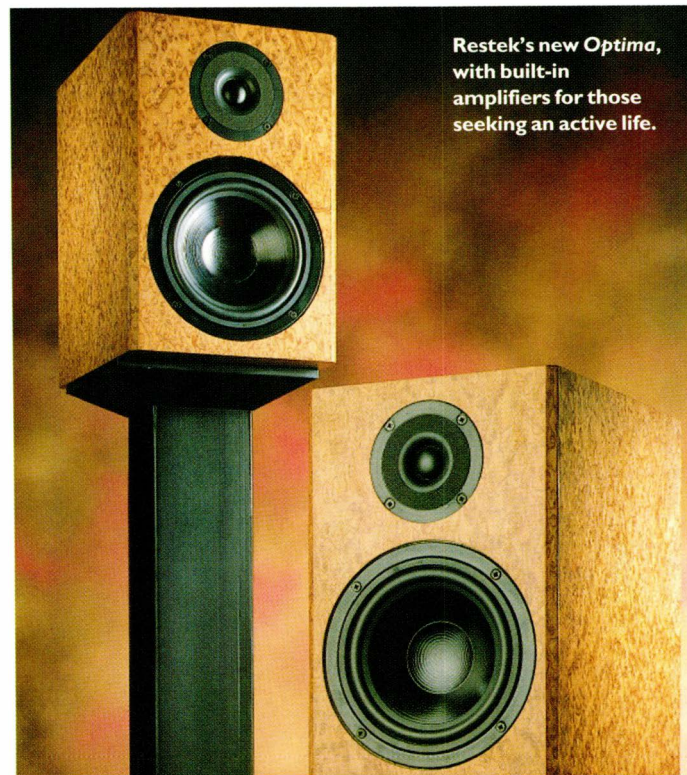
The RSP-960AX preamplifier marks Rotel's entry into the multi-channel world of home cinema.

Restek gets active

German manufacturer Restek has expanded its range by adding the £999 Optima, a two-way 'active' loudspeaker. Best known for its electronics, Restek has built a 70W amplifier — based on the company's Tensor/Extract amplifier designs — into each speaker. This is coupled with a sixth order, frequency response corrected electronic crossover circuit, which is claimed to keep the Optima linear right down to 40Hz.

Restek has not made the speaker fully active, with an amplifier driving each speaker unit directly, as it believes that such a system is not effective with two-way speaker designs. It is expected that future designs with more drive units will have conventional active crossover systems. The Optima is also available with balanced inputs for professional use.

The cabinet is made from solid MDF, with hand-finished hardwood veneers taken from sustainable sources. Heavyweight 70cm stands are required for the Optima. ☎ 081-770 9553



Restek's new Optima, with built-in amplifiers for those seeking an active life.

In Brief

Remember the days of Roger Dean's classic Yes album covers? Were you one of the people worried that the introduction of CD would mean the death of great sleeve artwork? Then get yourself down to the **Design Museum** at Butlers Wharf, London, to see how the problems of CD cover design are being tackled. ☎ 071-403 6933

After its launch in September, **MusicLink** is claiming that it has attracted a whole new breed of music lovers — those too lazy to go to the shops. It offers a 24 hour mail order music service, prices comparable to high street stores and free postage. ☎ 081-812 0812

Marton Music has moved from Hampshire to 5 Masterson Avenue, Read, Burnley, Lancashire BB12 7PL. ☎ (0282) 773198

Alphason has brought out two new equipment supports specifically for AV enthusiasts. The AV45 and AV45S are built so that they can be easily expanded, to make room for more equipment as it becomes necessary. Both pieces will accommodate a 29in TV and a minimum of four components. The AV45 costs £170 while the AV45S, with a swivel base for the TV, is £200. ☎ (0734) 265806



Tandberg Audio Products will no longer be handled by Esoteric Audio Imports. All enquiries for Tandberg products should be directed to Akers-Mic (Tandberg), Kongensgt 14, N-0153 Oslo, Norway. Spare parts and servicing will continue to be available through Esoteric Audio's service centres. ☎ (0243) 533030

ProTape has announced it is to be the sole distributor of Apogee blank DAT tapes. Apogee conforms to the highest DDS standard and ProTape suggests it is perfect for archiving, critical mastering, editing and recycling. ☎ 071-323 0277



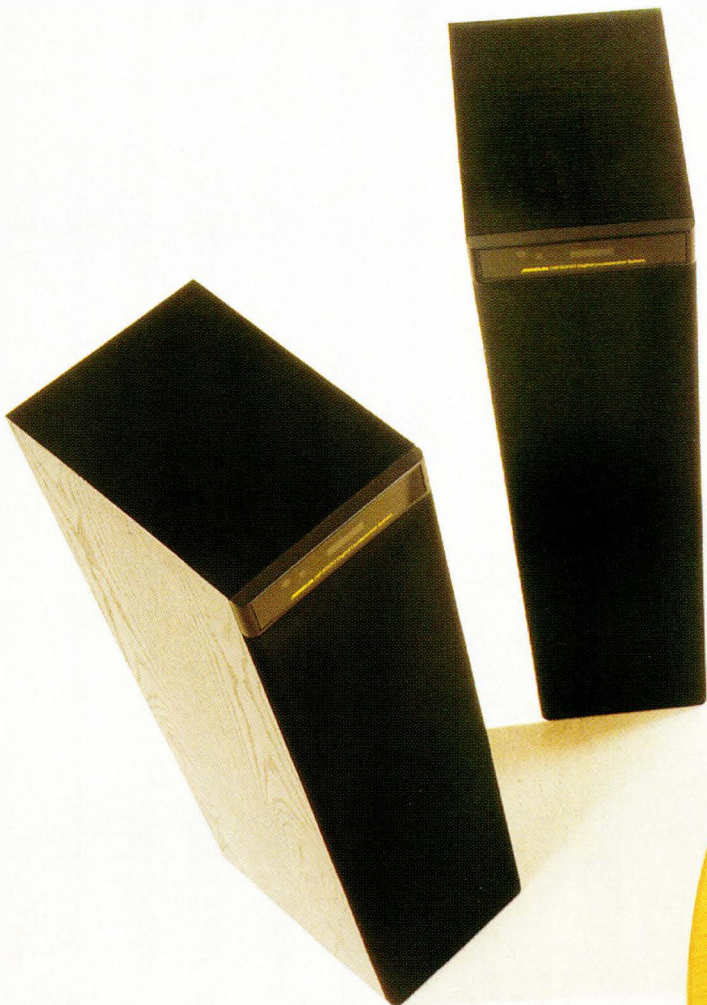
The Meridian High Definition Music System

The Meridian High Definition Music System realises for the first time the full potential of digital sound recording. No other audio system carries the digital signal from a compact disc to the heart of the loudspeaker. The benefits are clear; no distortion or compromise; easy instant remote control; and error free adjustment to match your room acoustic. Soon, all sources will be digital. Today, the Meridian High Definition Music System shows the way.

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The elegant and intelligent Meridian DSP5000 loudspeaker displays what is happening at all times and even includes an automatic memory to match its performance to each source and each room.

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(0480) 52144

Meridian America Inc.

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Building 2400, Suite 112
Atlanta, GA 30331
(404) 344 7111

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Castle set to ride the quarter wave

Castle Acoustics is adding the floorstanding £999.90 *Howard* to its range. The *Howard* is a double quarter wave horn design that's a cross between the *Chester* and *Winchester* models. It uses two 150mm mid/bass drivers, one of which faces upwards, for better bass extension and power handling. The tweeter is a 25mm aluminium dome.

The *Howard* has its drivers offset for improved imaging, each speaker being the mirror

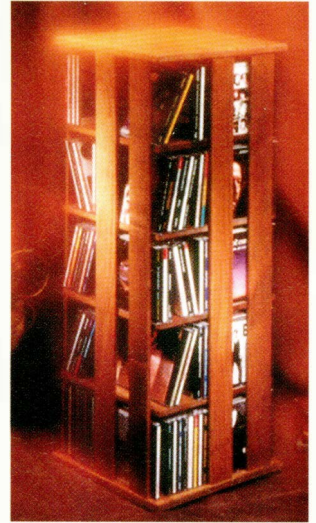


image of its partner. The profiled grilles are likewise a reflection of one another.

The quarter wave horn offers owners an attractive 8ohm/90dB load and a claimed bass extension to 40Hz, which seems more than feasible for a 104.5x26x41 cm (HxWxD), 24.8kg real wood veneered speaker. ☎ (0756) 795333

Will Castle's new *Howard* quarter wave loudspeaker drive music lovers around the horn?

The Napa Valley Box Company has added a £79 CD storage rack to its furniture collection. It will hold up to 200 single CDs on a smoothly revolving turntable. The pine cabinet is distributed by Bib Audio Video Products Ltd. ☎ (0442) 233233



Perfect Pitch Music, manufacturer of the *Franconstein* and *Dacula*, have launched the new £2,600 *Light Metal 1* floorstanding loudspeakers. Using sustainable materials throughout the unique cabinet design, the two-way *LM1* uses Bendor aluminium drivers both for bass and treble. ☎ 081-893 8662

US-based **Bel Canto Design** has announced a range of exclusive high-end single-ended triode amplifiers, DACs and a fibre-optic interface for digital converters. The \$8,600 *Orfeo 845* triode power amplifier looks particularly interesting. Unfortunately, there is no distributor in the United Kingdom as yet, but Bel Canto can be contacted on PO Box 396, Excelsior, MN 55331, USA.

Perivale-based **Orelle Hi-Fi** has announced a new, low-cost pre- and power amplifier to complement its existing range of electronics and loudspeakers. The £399 *SC-200* preamp features six line inputs and one phono input on a single circuit board, stuffed with high quality components. The matching *SP-150*, at £499, is a 75 watt per channel stereo DC coupled power amplifier, with top flight components used wherever necessary. ☎ 081-810 9388

Questech Systems, has announced the release of its new *Apex 100/A* loudspeaker, a 48 litre pyramid-shaped design using Bendor metal drive units. The speaker can be driven as an active or passive unit, with Questech's own active filter module electronics built into the body of the loudspeaker itself. ☎ (0223) 891091

In last month's *Bi-Wiring and Bi-Amping* feature, we inadvertently listed the wrong price for **AudioQuest F-14** speaker cable. Instead of £4.45 per metre, *F-14* actually £1.95 per metre. Our apologies to Arcam, and for any confusion this may have caused.

Morel puts Music First

Ipswich-based Morel, best known for high-tech drive units, has introduced a range of loudspeakers enthusiastically called the **Music First** series. First off will be the five-way, £1,495 *Music First 705*.

The *705* stands some 800mm high and features 220mm bass and 160mm mid-bass NeoLin drive units, plus three 28mm soft dome tweeters in each cabinet. All drivers use screened Neodymium magnets, and each one covers different parts of the bandwidth. This is claimed to improve the soundstaging abilities.

The cabinet is made from 18mm MDF panels, except for the 40mm thick front baffle. It is wired with van den Hul silver-plated copper cable and uses a hard-wired crossover, which Morel claims improves the overall sound quality. ☎ 081-875 9388



Morel presents the multi-tweeter experience that is the *Music First 705*.

Kenwood brushes up its lifestyle hi-fi

At the forefront of the lifestyle market, Kenwood is doing its best to tempt you with the £1,000 *HD-1000* component system. This top-of-the-range super-mini is made up of the *A-1001* 40W integrated amplifier, *DP-1001* DAC7 converter-equipped CD player, *X-1001* cassette deck and the *T-1001L* RDS tuner. All four units have gorgeous 5mm thick brushed aluminium facias and are fully remote controllable. Options include the £200 *GE-1001* parametric equaliser and £300 *LS-300G* loudspeakers, featuring 'thick MDF and large terminals'. ☎ (0923) 816444

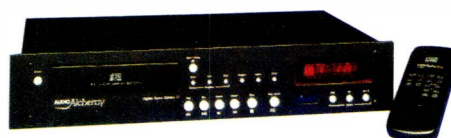


Audio Alchemy's latest economy drive

American affordable DAC manufacturer, Audio Alchemy, has launched a new CD transport, the £795 *Digital Drive System II*. Unlike its top-of-the-range *DDS v1.1* transport, this new model is a conventional front-loading design finished in black with attractive silver buttons.

The *DDS II*'s technical virtues include Audio Alchemy's own transport motherboard and data stream output board, custom servo power supplies and a mechanically optimised chassis.

Whether the *DDS II* is beautiful, as the press release suggests, is a matter of taste, but the all-metal chassis should certainly help to give it a longevity that will hopefully make it as reliable as it looks. ☎ (0494) 441736

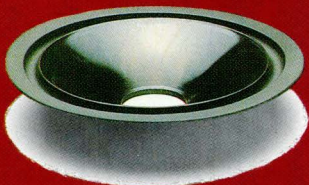


M A S T E R S O F M U S I C



The new Music Series loudspeakers from Mordaunt-Short Mastery of Sound

This mastery of sound is the result of numerous technical innovations unique to Mordaunt-Short.



For instance, MCS technology – an injection moulded cone and surround which ensures a precise cross-section profile for exact bass unit performance.

All crossovers are first order configurations based on minimalistic principles because of the excellent performance of the individual drive units. Result? A simple load and fewer components between the amplifier and the final sound. Bi-wiring is possible too on all speakers except the MS10.

No Phase Cancellations

The conventional mid-bass unit dust cap has been replaced with a phase plug. The path length is calculated to eradicate phase cancellations and give excellent dispersion across the critical middle frequencies.

Low colouration baffles have been a design priority in all Music Series loudspeakers. On the MS10, MS20 and MS30 this has been achieved with mica-filled polypropylene tensioned with steel tie rods.



On the MS40 and MS50, a 30mm dual material composite baffle has produced an extremely rigid structure.

Exclusive

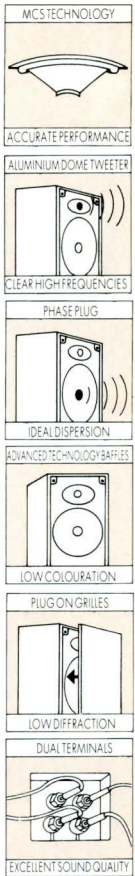
Controlled high frequency performance is achieved thanks to a 25mm aluminium dome tweeter designed and built by Mordaunt-Short.



The ultra thin metal diaphragm and compression moulded rubber surround are mounted on an elliptical low resonance chassis, utilising a high temperature voice coil with liquid cooling and damping.

Making Music

Music first. Music second. Music whichever way you listen to it. With the Music Series, Mordaunt-Short is making music more naturally than ever before. The masters of music are taking their title to heart.



We will be pleased to send you a Music Series brochure on request, together with the address of your nearest dealer.

Mordaunt-Short



Don't miss next month's superb issue of

HI-FI CHOICE

Budget CD players

While purse strings are tighter than ever, CD technology has never been cheaper. We look at eight CD players all at £180 or less. Are they real bargains, or do you lose more than just the fancy name-tag when the price tumbles?



To do this, the expert needs a top quality CD, like Sony's bit-mapped sampler. A free copy of this CD will be left with each health-checked system, for you to continue to enjoy.

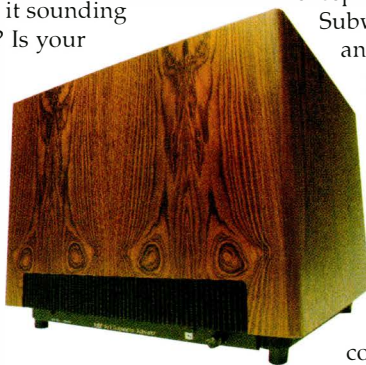
Special offer next month:

BADA system health check, plus free Super Bit Mapped Sampler CD

How does your system compare to the finest current systems? Is it sounding tired, or is it still the best? Is your CD player actually damaging discs?

Hi-Fi Choice, together with the British Audio Dealers Association, is offering readers a free hi-fi system health check.

An expert from your nearest BADA dealer will visit your listening room and tell you how well your hi-fi is performing.



Nicam stereo televisions

A quick look into the nearest high street store proves that there are plenty of Nicam stereo equipped televisions on the market. We round up the best of the breed and explain the ins and outs of Nicam stereo.

Subwoofers

Little speakers can often sound magical, except for the lack of bass.

Subwoofers may be the answer, but do they work properly? We test eight subwoofers to see if they can make bass without the space.

High-tech hi-fi

Meridian's 5000 system is the latest refinement of the company's ideal — completely digital hi-fi. First test of the full system, from CD transport to digital active speakers.

March's action-packed issue is on sale Friday, February 11, 1994

(All contents subject to change due to circumstances beyond our control)

DANIEL LEVY

A PIANO RECITAL FOR THE WELFARE OF NATURE

FRANZ LISZT, Forest murmurs.
 Au bord d'une source.
 La Vallée d'Obermann.
 Les Jeux d'Eaux a la Villa d'Este.
 Two Legends: St. Francois d'Assise.
 La Prédication aux oiseaux.
 St. François de Paule marchant sur les flots.
 Bénédiction de Dieu dans la solitude.
IN DEVELOPMENT

A PIANO RECITAL FOR THE WORLD'S CHILDREN

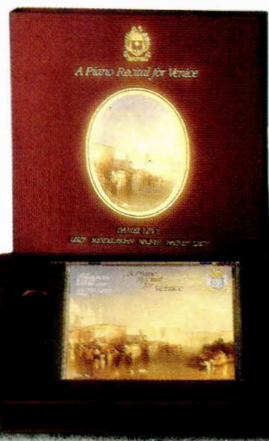
DEBUSSY, 'La fille aux cheveux de lin', Childrens corner, Reverie. **RAVEL**, 'Pavane pour une infante defunte'. **SCHUMANN**, unpublished pieces from 'Album for the Young'. **MENDELSSOHN**, Sechs Kinderstücke op. 72. **LISZT**, 'Inno del fanciullo al suo risveglio'. **SCHUMANN**, Impromptu n. 4 from 'Bilder aus Osten', Kinderszenen op. 15. **BACH**, Prelude n. 1 C Major from the 'Wohltemperierte Klavier'.
LIVE RECORDING

DDD



A PIANO RECITAL FOR VENICE

LISZT, Six Consolations.
MENDELSSOHN, Three Gondellieder.
WAGNER, Three Albumblätter, Sonate in A flat major.
WAGNER/LISZT, Solemn March to the Holy Grail (Parsifal), Isolde Liebestod (Tristan und Isolde) DDD



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is a great
love story...*



785
SONS

The latest products, the best recordings and our own point of view on the most interesting developments to hit the hi-fi scene. Concise reports by the Choice team.

CHOICE SESSIONS

MINI SYSTEM

Harman/Kardon Festival 500

The £1,200 Harman/Kardon *Festival 500* is a mini system without sonic compromise, if we are to believe the propaganda. It also lacks the traditional baggage of bells, DSP, whistles, simulated surround circuits and the rest.

The system has a handful of controls but most of the expected main features are present, including a heavily rationalised remote control, but excluding a timer or a second tape deck.

On the one hand then, this is a mini system for those with audiophile sensibilities. On the other, it is designed to appeal to the Bang & Olufsen buying fraternity and, on balance, I am not convinced the system has been properly thought through. It is too easy to jam the cassette deck solid, for example, by inserting a tape the wrong way around.

A more important gripe concerns the central bank of multi-function controls when used to do anything more complicated than just play a source. These have changing assignments to reflect their status, but despite being clearly labelled in the main display, their nested, hierarchical control logic defies description, and often demands many button presses to complete a simple operation.

If the *Festival* has a somewhat flawed appeal to the B&O set, it will please the music lover with its crisp, powerful and easy delivery. It isn't the greatest sounding H/K system ever, but it's a pretty good one, which



The *Festival's* stylish appearance belies its high quality internals.

transcends stack system norms.

The amplifier is a lusty item capable of driving Mission 753 floorstanding speakers to high levels with a mean, solid bass and plenty of fine detail. The CD player and AM/FM tuner are also genuine hi-fi components, the FM tuner section being particularly strong. Cassette performance is what you'd expect of a decent budget deck, and this too sets standards for system cassette decks.

Alvin Gold

Harman UK, Unit 2, Boreham Wood Industrial Park, Rowley

Lane, Boreham Wood ED6 5PZ.
☎ 081-207 5050

VERDICT

HARMAN/KARDON FESTIVAL

▲ Sound and appearance set new standards for a mini stack.

▼ Control system needs refining; not for the technophobe.

▶ **£1,199.99**

SOUND QUALITY

■■■■□

VALUE FOR MONEY

■■■■□

LASERDISC PLAYER

Pioneer CLD-1850

Everyone (even the makers) says that Pioneer's new £579 *1850* Laserdisc player is just the existing *1750* with a CD tray and no analogue decoder for old analogue soundtrack video discs.

Unpacked, it certainly looks the same. Black and angular, despite a bit of rounding off of the corners, with the same shuttle control and simple operational controls. At the back of the box, the sockets are in slightly different positions but there's still a pair of SCARTs, analogue audio and video outs and an optical digital out. The remote, with all the front panel functions including the shuttle wheel, is all but identical to that of the *CLD-1750*.

Turning it on, the picture quality is crisp, bright and very clean. Compared to ordinary video, the Laserdisc picture jumps out of the screen. The *CLD-1850* image is very tightly defined and very sharp. The colour drift is minimal, although perversely, this quality of image does make it more easy to spot 'cross luminance' PAL problems, typical of the UK PAL TV standard. They can produce speckling around the edges of red/pink objects against a dark background.

Turn the sound up and oops — this is not the same thing at all. The bass end is, if anything, up on the *1750*, but there is more control and detail all round. Not perfect, but better than that model's already more-than-acceptable CD sound.

The reason for the different sound and rearrangement of the rear sockets becomes clear when you get the screwdriver out and open the lid.

Pioneer has put entirely different electronics and a different transport mechanism into the mkII lookalike box. The circuit-board count is down too. The DAC is now the Pulseflow chip introduced in the CLD-700 and, unusually for a next-generation machine, the mechanical build quality is more solid. Out goes the plastic CD upper hub clamp and in comes a more solid metal clamp. Even the chassis is supported by much more substantial central metalwork.

Better CD sound and a separate CD tray (you no longer spend ages trying to edge the damn disc out of the tray as with the 1750), makes the CLD-1850 a more serious combination Laserdisc/CD player. And as a pure Laserdisc player with even more up-front sound, it is a worthy successor to the 1750.

Tim Frost

*Pioneer High Fidelity (GB) Ltd,
Pioneer House, Hollybush Hill,
Stoke Poges, Slough SL2 4QP.
☎ (0753) 789500*

VERDICT
PIONEER CLD-1850

- ▲ Excellent Laserdisc performance; more CD friendly.
- ▼ No built in popcorn machine as yet.
- ▶ **£579.00**

SOUND QUALITY
■■■■■□

VALUE FOR MONEY
■■■■■□



TUNER

Arcam Alpha 5

The trouble with tuner design is that radio-frequency circuits are hard work. In order to get good quality reception from an FM set, some very complex circuits have to be built and lined up, and doing this on a tight budget only allows one path to companies smaller than the Japanese majors; buying in pre-built modules and standard integrated circuits.

These are supplied in their millions by two or three manufacturers worldwide and can therefore be made cost-effectively. This is why the insides of this British-built unit are essentially indistinguishable from those of many far-eastern makes of budget (sub-£350 or so) tuners.

The £220 Arcam Alpha 5's features are pretty standard, with push-button tuning and 16 memory presets. I particu-

Arcam's Alpha 5 tuner will look and work a treat in all Arcam systems.

larly like the way the signal strength meter is sensibly calibrated so that it only lights up fully in the presence of a really strong (2mV) signal. Also, the tuner does not mute automatically if a signal is too weak for stereo reception. But is the sound as stereotyped as the tuner's contents?

On the whole, the answer is yes. Still, the 1993/4 £220 stereotype tuner is pretty good, and to be specific this Arcam will give you a clear and open sound with good stereo extension at both ends.

Its strength, in fact, lies in balancing the trade-offs, implicit in most tuner designs at this price. Ultimately, the Alpha 5 seems to lack a little bass weight and has the very common tuner characteristic of losing the atmosphere and ambience of good quality broadcasts. It can sometimes sound a little flat and uninvolved too. However, it is extremely listenable and has no nasty foibles.

The Alpha 5 is another good, if not great, tuner to consider at this price. Even so, it is hard to ignore the existence of such stars as the Denon TU-260L, and latterly the excellent Pioneer F-502 (see Issue 126).

Richard Black

*Arcam Ltd, Pembroke Avenue,
Denny Industrial Centre, Water-
beach, Cambridge CB5 9PB.
☎ (0223) 440964*

Pioneer's CLD-1850 Laserdisc player also likes the odd CD.

VERDICT
ARCAM ALPHA 5

- ▲ An honest tuner; the perfect match for other Arcam kit.
- ▼ Lacking in outstanding characteristics.
- ▶ **£220.00**

SOUND QUALITY
■■■■■□

VALUE FOR MONEY
■■■■■□



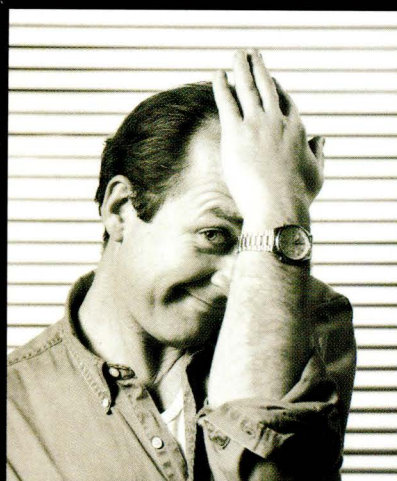
CARTRIDGE

Audio-Technica AT-OC30

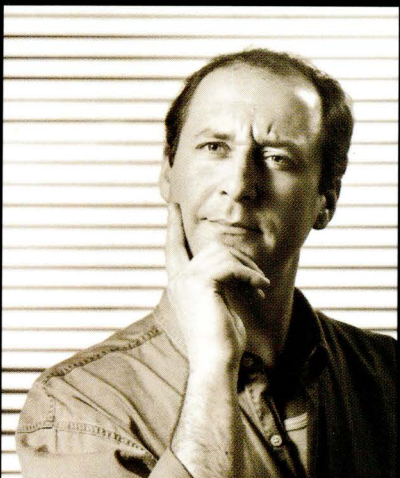
There's still a surprisingly healthy market for high quality record playing equipment. However, there's also the hidden agenda of stylus wear. You can get a very entertaining pick-up cartridge for no more than the price of a replacement laser head on a CD player, but the



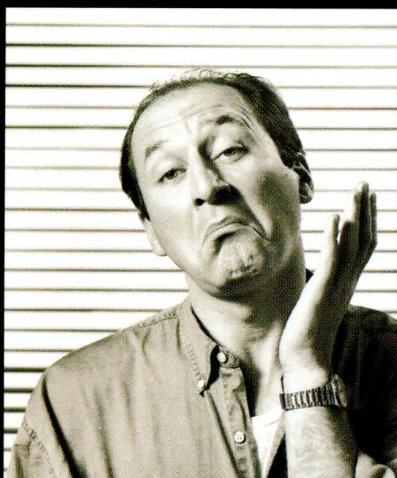
"I've got a pretty good hi-fi system"



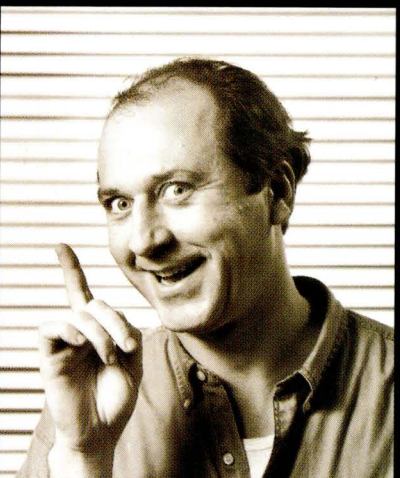
"Friends tell me all the time"



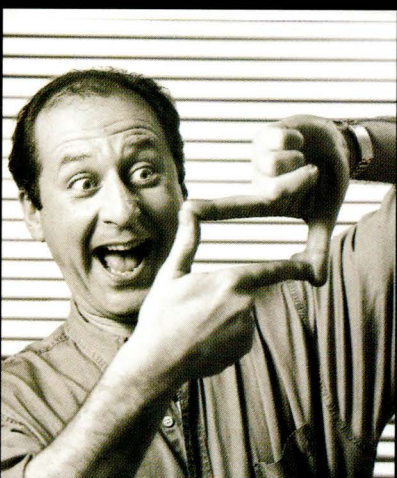
"Sure I'd like a Naim CD player"



"But it would cost me thousands to buy one"



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The Cornflake Shop
37 Windmill St, W1. Tel: 071 631 0472
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Canonbury Yard, 190a New North Rd, N1. Tel: 071 226 5500
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67 Tottenham Court Rd, W1. Tel: 071 580 9059
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4 Pockfords Wharf, Clink St, SE1. Tel: 071 403 2255
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Robert Ritchie
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NORTHERN IRELAND

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Lyric Hi-Fi
84 Bridge St, Portadown, Co. Armagh. Tel: 0762 358059

seriously addicted will find the temptation to treat self and record collection to something expensive difficult to resist.

And if recent releases are anything to go by, the current bogey price for state-of-the-art aspirants is around £1,000. Audio-Technica's £800-odd *Art 1* is one such example. The question here is, will the £590 *AT-OC30* supply most of the same magic for £200 less?

Having never actually used an *Art 1*, I cannot really say, but the *OC30* does have plenty going for it. The technical plus points of this low output moving coil are impressive: tiny 1mm shank nude stylus, gold plated beryllium cantilever, 6N purity copper coils, and a milled aluminium body.

Mounted in a Naim *ARO* tonearm and fed into a *NAC52* pre-amp, the *OC30's* characteristic sound focused the attention firmly on the presence and treble regions, at the expense of the bass and lower midband. The result is wondrously open and detailed, especially with 'difficult' sounds like vocal consonants. However, it's also a bit bright and insistent, lacking warmth, richness and power.

As with all top notch cartridges, the crucial factor is achieving a good net system match. Top quality, high transparency cables for certain, valve amps probably, and a rich, dark speaker balance should all help take the most advantage of the *OC30's* very real strengths.

Paul Messenger

Audio-Technica, Technica House, Unit 2, Royal London Trading Estate, Old Lane, Beeson, Leeds LS11 8AG. ☎ (0532) 771441

VERDICT

AUDIO-TECHNICA AT-OC30

- ▲ Wonderfully open balance provides great detail.
- ▼ Music lacks firm foundation because bass lacks power.

▶ **£589.95**

SOUND QUALITY



VALUE FOR MONEY



The ultimate stack: Mana's Phase Four array of wood, metal and glass.

EQUIPMENT SUPPORT

Mana Phase Four

Since the *Mana Sound Table* appeared about three years ago, it's been growing in reputation and size. The latest addition to the stack is a plinth that sits underneath the *Sound Table* called the *Soundstage*.

Made up of a large spiked frame and matching board, it raises the table by about three inches. It costs £200 and is designed to be used with the two tier £350 *Mana Reference*.

To take this stack up to *Phase Four* status, you add a £150 *Phase Three* Table, and end up with a platform that sits a comfortable two and a half foot off the floor.

The reason for constructing

this 'oil rig' in your living room is that once you've stationed your favourite source on top of it, you can't stop playing records. The degree of enjoyment you get from listening to records seems to increase dramatically. This it does by the simple, if not easily achieved, measure of making them sound much more like genuine living performances.

The *Phase Four* acts like an enlarger for what's coming off the record. It allows the player to retrieve more information and present it in an impressively coherent, detailed and musical fashion. Quite how is not something that Mana or I can explain. It's one of those rare

The AVC-1530 is the more specialised of two £500ish Denon AV amps under consideration.

VERDICT

MANA PHASE FOUR

- ▲ Optimises first class sources; no waste upgrade path.
- ▼ Addictive; low WAF (wife acceptance factor).

▶ **£750.00**

SOUND QUALITY



VALUE FOR MONEY



occasions where more is more. More layers of *Mana* table equals more information. More subtlety in notes, greater depth of field, more colour and texture, and dangerous amounts of energy.

It affects the whole bandwidth too, putting the bass into focus and allowing it to breath with new found dynamics, while opening up the midrange and treble, giving them the space to create wonderful musical scenarios.

The value of *Mana* tables increases as your system improves. In the context of a high-end set-up, a *Phase Four* is worth its weight in silver cable, but if you're just starting out then a *Sound Table* or shelf makes more sense.

Jason Kennedy

Mana Acoustics, 59 Jubilee Close, Pinner, Middlesex HA5 3TB.

☎ 081-429 0118

AMPLIFIER/RECEIVER

Denon AVR-1000/AVC-1530

Five hundred pounds isn't the least you can pay for a Dolby Pro-Logic AV amp or receiver, but it's not far above current budget level. Denon has two almost identical new contenders in this range, a £480 *AVC-1530* and £520 *AVR-1000*.

The amplification is effectively identical; the differences between the two being that the *AVR-1000* includes an FM/AM(MW) radio receiver, while the *AVC-1530* is able to



offer component (Y/C) or composite video sockets.

The specification promises three full 70W channels across the front (plus two times 20W for the surrounds), which puts these among the more powerful at any price, and comparable with Denon's *AVC-3020*.

A generous status display and the sensible decision not to include too many DSP frills make them easy to wire up and operate. This is apart from the four standard Dolby Pro-Logic modes and half a dozen simulations available for the curious or misguided.

Socketry includes centre and mono line outputs for feeding TV sets and subwoofers. The *1000's* radio is a pretty basic tuner-on-a-chip affair, with 16 presets covering FM and medium wave AM only.

There's a basic philosophical gulf between AV products and audiophile amplifiers, reflected here in a sound quality which is fundamentally hohum — the phrase that came to mind each time I switched them on. The Dolby Pro-Logic processing works very well, to be sure, with decent coherence across the front soundstage. But there's a dearth of grip, authority and transparency.

In stereo mode, everything happens with a slightly lazy indifference, which doesn't make for a particularly involving experience. This is less obvious with movie soundtracks, which are generally less demanding, but both amps fall significantly short of the altogether more impressive *AVC-3020*. The *AVR-1000* and *AVC-1530* are good value for movie work, but hi-fi nuts should set their sights a little higher, or supplement rather than



Tall, dark and 'ansome: the *SD5* is a substantial yet elegant loudspeaker.

substitute a proper hi-fi amp.
Paul Messenger

Hayden Labs Ltd, Chiltern Hill,
Chalfont St Peter, Bucks SL9
9UG. ☎ (0753) 888447

LOUDSPEAKERS

SD Acoustics SD5

The £1,235 SD Acoustics *SD5* is a tall, dark and deceptively substantial loudspeaker. Its narrow baffle makes you forget the height and driver

complement when you go to pick it up, but as soon as you try, it becomes clear that the *SD5* is a solid piece of kit.

The *SD5* is equipped with the same ribbon tweeter and polypropylene midrange unit as the hefty *SD1*, and a pair of doped paper 170mm bass drivers. It measures 110x20x30cm (HxWxD) and weighs 26kg, which is about enough to make up for its small footprint. As large loudspeakers go, it's pretty domicile

friendly, but it does like a bit of air



The retroquip factor comes to cable courtesy of Ixos 101 Silver Bullet Interconnect

VERDICT

SD ACOUSTICS SD5

- ▲ Revealing, neutral, fast and tight; good imaging skills.
- ▼ Needs ancillaries; lacks a certain je ne sais quoi.

► £1,235.00

SOUND QUALITY

■ ■ ■ □ □

VALUE FOR MONEY

■ ■ ■ ■ □

behind it, on account of the rear firing port.

I listened to the *SD5s* both at home and at Diva, a local high-end dealer. At home they sounded tight and fast, making the most of any low frequency action that a record had to offer and, once accurately positioned, they created clean deep soundstages.

The *SD5s* are pretty sensitive to partnering equipment, responding enthusiastically to improvements in amplification. They aren't efficient enough for affordable tube amps, but an Audiogram *MB1* made a suitable partner, and a Jeff Rowland pre/power showed what they could do — image very well indeed.

The speakers move decent amounts of air at low frequencies and resolve a goodly portion of detail. They are tighter and more extended than the similar Audio Note *AN-Js* but have a more obviously 'neutral' balance.

The *SD5* has significant potential. Given high quality, or at least charming ancillaries, it is capable of impressive and enjoyable results.

Jason Kennedy

SD Acoustics, The Factory, Alpha Road, Surbiton, Surrey KT5 8RP.
☎ 081-398 8727

ACCESSORIES

Ixos 101 Silver Bullet cables

In the past, Ixos has made solid cables with the accent on good value. The sound quality of the cables has always been fairly good, but Ixos lacked a cable to suit the upper regions

VERDICT

DENON AVR-1000/AVC-1530

- ▲ Good value package with fine Dolby Pro-Logic decoding.
- ▼ US oriented design lacks authority, grip and drive.

► £520.00/£480.00

SOUND QUALITY

■ ■ ■ □ □

VALUE FOR MONEY

■ ■ ■ □ □

of the market. The new £79.95 Ixos 101 Silver Bullet cables are the company's first sortie into the higher end

The cables are made from silver-plated PC-OFC copper, double screened with PVC and using a silver-plated copper braid. Each cable bears a striking similarity to Aeroquip water hoses, as used in motor racing, and the chunky WBT-esque plugs add to the purposeful, butch image. It's a directional cable, but is well marked with a whole series of arrows running along its flank.

Whoever made these cables, clearly loves the job. There are healthy amounts of solder joining the cable to the plug. You'd have to try really hard to unhinge these cables from their moorings.

The *Silver Bullets* didn't sound too bad either, although, in my system, they didn't match some similarly priced Audio Note cables. The differences were marginal, however. The Ixos cables sounded slightly brighter and more detailed but the Audio Note proved its worth when comparing contrasts in recordings. In truth, at this price level, I would be happy with either interconnect cable.

The Ixos cable offers a lot of cable for the money, both in terms of build and sound quality. It will not run every other cable out of town, and the high flyers of the audio cable world can sleep safe in their beds at night, but it's still a worthwhile addition to the market.

Alan Sircom

Path Premiere, Desborough Park Industrial Estate, Desborough Park Rd, High Wycombe, Bucks HP12 3BG. ☎ (0494) 441736

VERDICT

IXOS 101 SILVER BULLET

- ▲ Excellent build quality, bright, detailed sound.
- ▼ Sonically just short of the very best.

► **£79.95/1m pair**

SOUND QUALITY



VALUE FOR MONEY



RECORDING TECHNOLOGY

Sensaura

Sensaura is a brand new recording process, billed as the most significant advance since stereo. It has been developed by CRL, part of the Thorn EMI group. Unlike normal stereo, which in effect provides a letterbox slot view of the music, it is designed to produce a three dimensional soundfield which extends above, behind and outside the speakers. Sensaura requires no special replay processing, and works on any stereo system. And most importantly, mono compatibility is retained.

Despite its billing, Sensaura is not the first 3-D sound system. Binaural (dummy head) recordings can give startlingly effective 3-D soundfields, but only through headphones. Other systems, from the likes of Q-Sound and Roland, have suffered defects. Either they were not very effective, not mono compatible, or unsuitable for commercial recording.

Sensaura is designed to jump all these hurdles. The main part of a Sensaura recording consists of a pair of microphones buried in a high accuracy dummy head. Digital signal processing is then employed, first to remove tonal aberrations caused by the dummy head itself, and then to reconstruct the subtle directional cues. CRL is keeping tight-lipped about the details of the processing, but I was told that it is vital to

main -

Surround yourself with sound, using just two loudspeakers, with Sensaura.



The new style Sennheiser HD320; no match for Alvin's swivel chair.

tain phase relationships with great precision, which is only feasible with DSP.

Sensaura does work. A sampler disc, consisting of extracts from outdoor scenes and a short orchestral recording, produced coherent 3-D sound, albeit one that is best along the centre-line between the speakers. There is some 'lensing' — Sensaura hears the world much as a wide angle camera lens sees it — and there are some tonal anomalies as sounds are panned across the soundstage, due to incorrect placement of the microphones in the dummy head, according to CRL.

Sensaura will be used for a series of classical recordings by EMI, with releases scheduled for a autumn '94. Other record companies and broadcasters are now

in discussion with CRL.

Alvin Gold

CRL, Thorn EMI, Dawley Road, Hayes, Middlesex, UB3 1HH.

☎ 081-849 9779

VERDICT

THORN EMI SENSaura

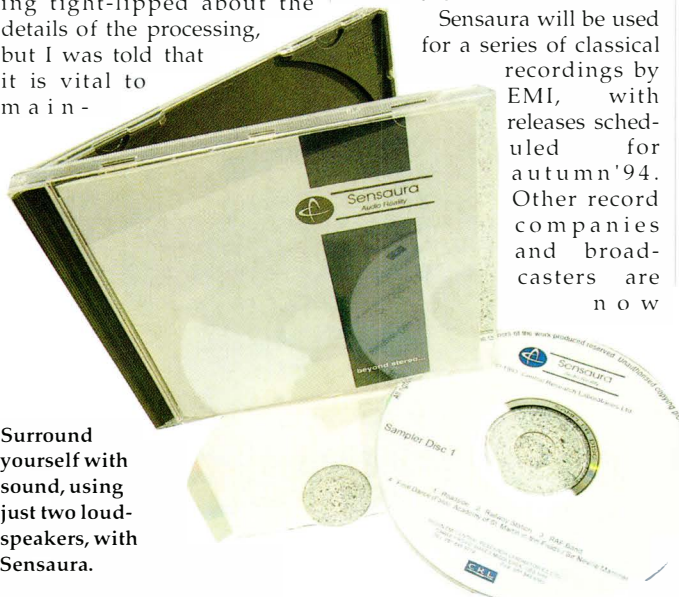
- ▲ Genuinely impressive three dimensional sound.
- ▼ No catalogue recordings as yet available.

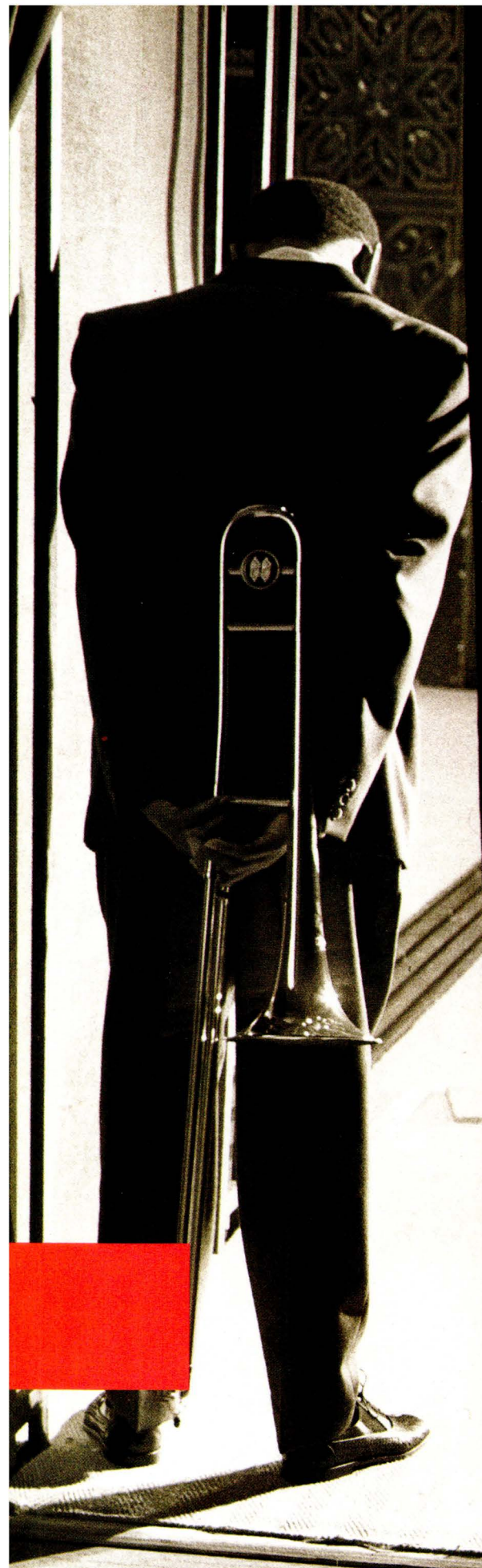
HEADPHONES

Sennheiser HD320

The £40 HD320 is a headphone of genuine clarity and refinement, amounting almost to lushness. It does not have awesome bass, nor is it the most analytical headphone in its class, but these objectives were never part of the brief.

This is a headphone designed for enjoyment; the more purist audiophile virtues scarcely get a look in. The HD320 has a mildly tailored response, with a trace of loudness contouring, which makes itself apparent as a warmth in the bass and a suggestion of distance and spaciousness in the midband. The result is eminently listenable, even easy on the ear. Behind the overt tailoring is





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premise.*

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the biggest bargain
in digital
hardware..."

Hi-Fi News, March 1993.

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COMPACT DISC PLAYER

an excellent drive unit and a well designed open back structure, which provide the quality that suffuses the sound.

There are other strengths too. The lead is less microphonic than the one used on previous Sennheiser models. On the other hand, wrapping the lead around an office chair, and rotating said chair sharply, does cause the lead to snap. I tried it and it worked, in two places. Now I'm suffering with withdrawal symptoms.

The other reason for the withdrawal symptoms is that the HD320 is extraordinarily comfortable. For once, everything is right. The headband is a two part type, with an unbreakable outer hoop applying just the right amount of tension to suit the low weight, and a thin, pliable inner one to locate around the head. The head size adjustment automatically locks against slippage, and the flat ear capsules are covered in a fine cloth which sits comfortably on the ears.

I found I could wear these phones for hours without stress, the negligible sound attenuation from the outside world helping them to sound more airy and natural. The cable, made from oxygen-free copper interwoven with Kevlar, is non-detachable and attaches to one earpiece only.

The final *coup de grace* is the price, down by £5 compared to its predecessor. The HD320 costs just £39.95. And yes, that's for a pair.

Alvin Gold

Sennheiser UK Ltd, 12 Davies Way, Knaves Beech Business Centre, Loudwater, High Wycombe, Bucks HP10 9QY. ☎ (0628) 850811

VERDICT

SENNHEISER HD320

- ▲ The most essential Sennheiser since the HD40.
- ▼ Fixed lead enhances reliability at the expense of serviceability.
- ▶ **£39.95**

SOUND QUALITY



VALUE FOR MONEY



RECORD REVIEW

Rachmaninov
Symphonic Dances Op 45; Vocalise
Dallas Symphony
Orchestra/Johanos
Athena ALSW 10001 (LP Only)

Although we're used to thinking of audiophile records as a phenomenon of the late seventies, the truth is enthusiasts were trying to raise standards decades earlier. This LP is a case in point.

Recorded on February 20, 1967, it was the first of a series made for the Vox label featuring the Dallas symphony orchestra. Four custom-made ribbon microphones were employed, and the music was recorded on a modified Ampex valve tape deck, running at 30ips tape speed.

Even the transfer to disc was undertaken with extra care, a special cutting lathe being used for the original (American) Vox issue. For this Athena reissue, the

disc has been cut by Doug Sax at the Mastering Lab using the original tape, and even against a US Vox original it sounds louder and more wide-ranging, with greater dynamics and sharper focus.

The Vox copy is sweeter, but less crisp and immediate. The Athena LP is noticeably more detailed and articulate, albeit sometimes emphasising a certain tonal dryness in the original recording.

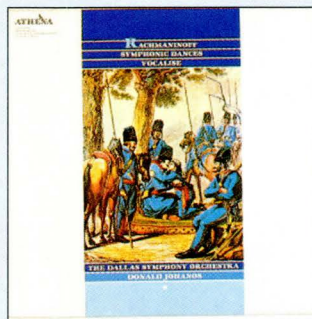
The sound is very clear, but not

especially rich or ambient. There's a slightly 'boxy' quality which robs it of that final ease and naturalness. Athena's pressing is quieter too, though my 20 year old Vox copy isn't bad.

Johanos' account of Rachmaninov's rich-hued *Symphonic Dances* is basically good, though not impeccably executed. Today we're used to more expert orchestral playing, with greater virtuosity and panache than he elicits from his Dallas forces.

Yet despite certain technical limitations, these performances impress with their sheer honesty. Yes, there are some rough edges, and yes, the orchestra doesn't play the music as if it's in their bones. Nevertheless, the result is greater than the sum of the parts, highlighting the way good analogue recording seems to deliver greater musical involvement.

Jimmy Hughes



ACCESSORIES

Philips Voice Commander

There's always something exciting about being first. Whether its running 100 metres faster than anyone else, or simply owning the latest pair of trainers, being the first gives most people a buzz.

However, the buzz of being first to play with the £99 Philips *Voice Commander* soon waned. Although voice recognising computer programs are comparatively new, I honestly expected more. Perhaps my expectations had been raised by years of heavy *Star Trek* abuse, but I didn't think a voice activated remote control would have to be man-handled at the same time.

The *Voice Commander* is a learning remote, that absorbs the controlling infra-red signals from separate TV, video and satellite remotes. However, it will only accept the most basic functions from these remotes, so

that the original remote will have to be kept handy if you want to access Teletext, for example.

A few of the key TV and video functions can also be programmed by speaking into the *Voice Commander*, and pressing an appropriate button or two. This is very useful when programming the video recorder — as it overcomes the pathological fear of timer buttons most of us seem to suffer from — but it is only partially-successful when it comes to changing channels on the television itself.

You can program the *Voice Commander* with up to four different voices; you could, in theory, program it with your normal voice, your voice after a debauched evening, with your mouth full of popcorn and still have room left over for the mynah bird.

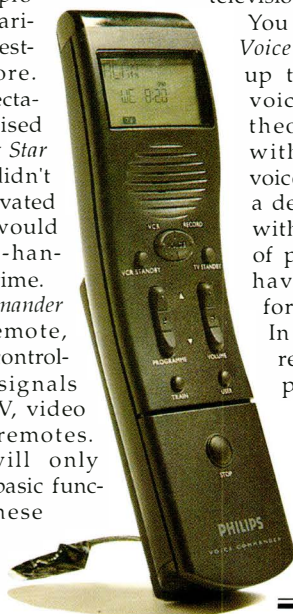
In reality, the level of recognition is quite poor. It has great

difficulty rejecting extraneous noise, such as the sound of a TV set, while you try to use it. In addition, you have to speak in almost exactly the same tone every time you use it.

Eventually, I can imagine every television set will have voice-activated remote control. The technology is still new and, to its credit, the *Voice Commander* makes a fair stab at voice activation. But I feel that in a matter of a couple of years it may look more like a dinosaur than anything out of Spielberg's studios.

Alan Sircom

Philips Electrical Ltd, City House, 420-430 London Road, Croydon, Surrey CR9 3QR. ☎ 081-689 2166



Philips *Voice Commander*: give this remote a good talking to.

VERDICT

PHILIPS VOICE COMMANDER

- ▲ Spoken commands make video programming easier.
- ▼ Not hand free; poor noise rejection.
- ▶ **£99.00**

EASE OF USE



VALUE FOR MONEY



Alvin Gold assesses the Roksan Atessa CD player, a follow up to the Rok-DP1/DA-1, and one which could well be seen as marking Roksan's digital coming of age.

Roksan Atessa ATT-DP2

Roksan was not the first of the major British turntable makers to make a pitch for the digital market, but when they did so, it was with a design characteristically removed from the run of the mill — the *Rok-DP1/DA-1*.

This was the first British design to be based on the Crystal CS4328 *Delta/Sigma* digital processor, at a time when most of the company's competitors were still locked into Philips processors. The Crystal processor gave the *Rok-DP1/DA-1* a fizz and transparency that was unusual at any price. It remains unusual today, except at the top of the market.

Evolutionary design

The new *Atessa* should be seen as an evolutionary rather than a revolutionary product. Its more cost effective physical design houses a refinement of the ideas already familiar from its predecessor. It also has a name that can be used in polite conversation, instead of the old hieroglyphics.

The £1,495 *Atessa* is a one-box CD player whose externals are constructed from matt powder coated sheet steel, formed into a distinctive shape with the throne-like raised construction of the disc plat-

The Roksan *Atessa's* elegant good looks are let down by an ugly duckling handset; at least it performs audible cueing.

form retained in a revised form. Internal construction is modular, which makes improvements (and updates) easier to implement. The S/PDIF output board, for example, can be changed for Toslink or AT&T (ST) equivalents.

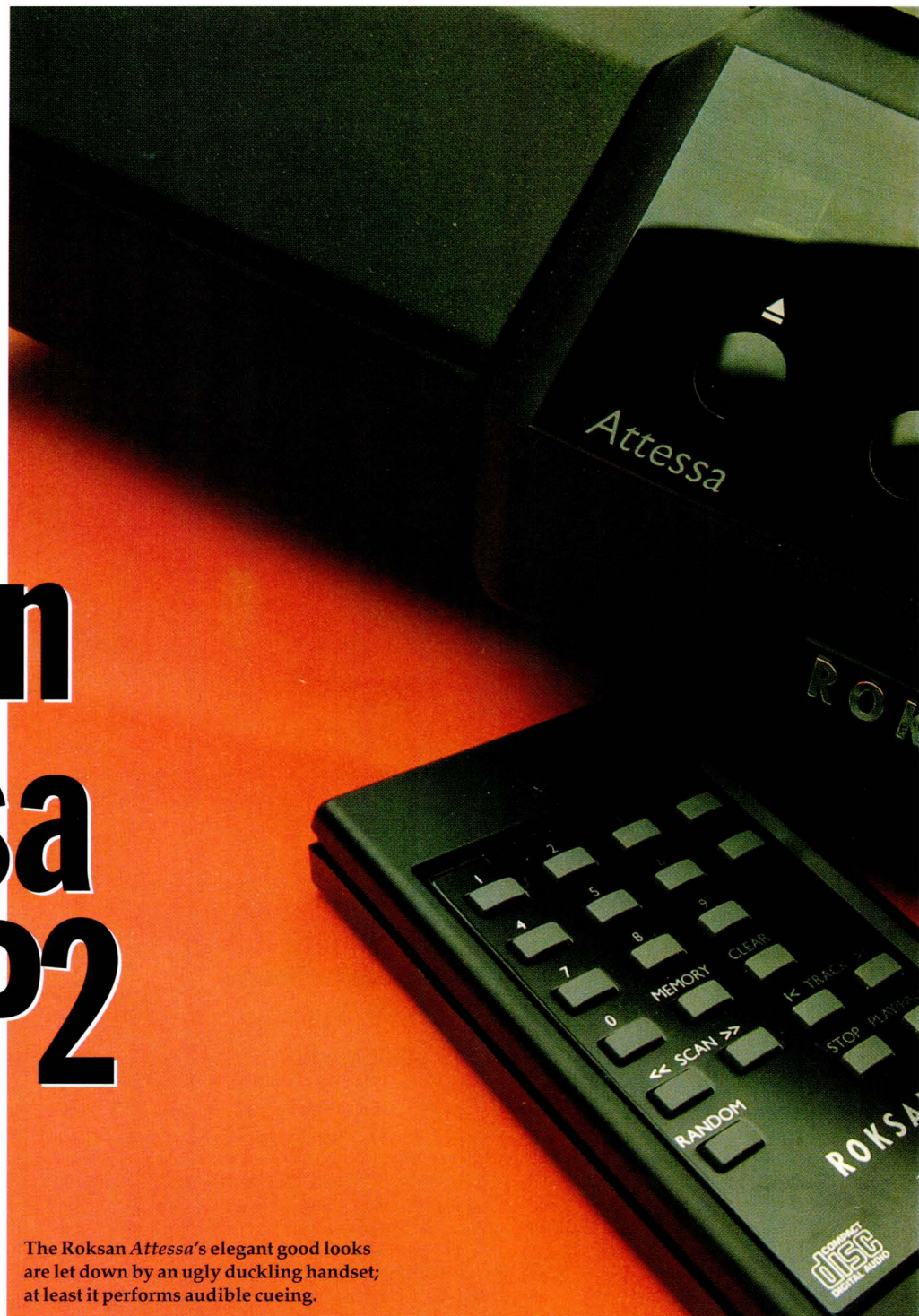
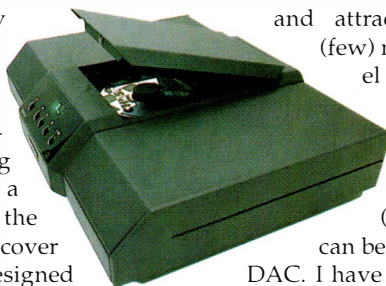
The deck has a fully enclosed suspension system with four separate stages of isolation which is decoupled over-all down to 2Hz. Loading is from above, using a magnetic puck to secure the disc, the loading and top cover action being cleverly designed to ensure slick operation.

An earlier *Atessa* sample had suffered from sticky lid syndrome, but this was identified and a solution has been put in hand. The only remaining criticisms are of

an achingly slow track search, all too common with audiophile CD players, and of the inability to perform audible cueing except when using the remote control.

The handset itself is as ugly and as old-fashioned looking as the player is elegant and attractive, but the *Atessa's* (few) native controls are a model of their kind. I'd have liked a 'display off' feature though, if only for aesthetic reasons.

The player's electrical (S/PDIF) digital output can be used to drive an external DAC. I have explored this area of the *Atessa's* performance, and can confirm that the player works, more or less, indistinguishably from the transport only version. Musically, we're dealing with a top flight transport section which gives the



Sansui AU-a707DR

The big, bold and beautiful Alan Sircom checks out a high-end amplifier made to similar specifications and finds it lacks a little fire in its belly.

Back in the seventies, amplifiers were big, bold and Japanese. These vast behemoths were designed to last for many years — witness the number of huge Sony and Rotel amplifiers still in service today. Sansui's £1,400 AU-a707DR amplifier, and the rest of the *Vintage Line* range of electronics, is in the same mould; big, bold, expensive and beautifully finished.

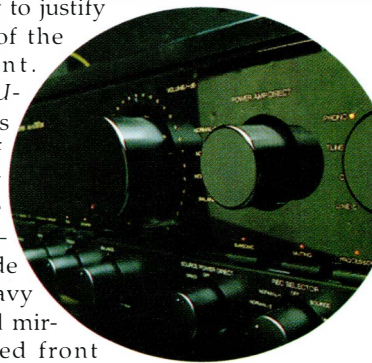
High-mass audio does seem to be back in fashion of late. Often, however, it seems only to justify the price of the component.

The AU-a707DR has a lot of very attractive padding —

wooden side panels, heavy chassis and mirror finished front panels — but the fundamental engineering has not been skimmed in any way.

Once you get past the high-gloss wood end cheeks, the AU-a707DR is still densely packed with amplifier. In the centre of the chassis is a vast, potted transformer, flanked by paralleled capacitors, heat sinks and amplifier circuits. It's not a toroidal transformer design, much loved by many of the British amp manufacturers, but is capable of giving the amplifier seemingly unlimited reserves of power, more than justifying the 130 watts per channel (RMS, into an 8ohm load) claimed by Sansui.

It is packed with the sort of controls



music space, structure and depth, all of which suggest that it is a low jitter design.

Roksan's attention to front end organisation lifts the *Attessa* above most similarly priced players. The DAC contributes much the same refined translucency as the old model, but where that combination had a rather unexpansive bass and could sound a little dry, the *Attessa* has a fuller, more earthy bass. This gives the sound a physical quality and a stronger sense of presence to underline the explicit and highly coherent stereo soundstaging.

The most arresting advances, however, are in tonality and that indefinable quality, expressiveness. To say that such powerfully felt performances as that of Miles Davis in *Sketches of Spain* sounded even more concentrated and more from the heart than before inevitably sounds lame, but it's true. The more vivid tonal colouring was an

objective observation and is attributable to the new low frequency alignment.

I don't think anyone will be disappointed by the *Attessa* — a kind of coming of age for Roksan in digital electronics. After all, it costs a good deal less than the *Rok-DP1/DA-1*, and delivers a fuller and more approachable style of music making. Although it may lack the intuitive quality of a Theta or Wadia CD player, the *Attessa* doesn't cost as much either.

In any case, Roksan has provided an unusually effective upgrade path for those willing to use an outboard D/A processor. This is thanks to a transport section that is the strongest feature of the package and not, as is usually the case, the weakest.

Roksan Digital Ltd, Stockley Close, Stockley Road, West Drayton UB7 9BB.

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that are an anathema to the audio purist. Not only are there two sets of speaker outputs, but there is a full set of tone controls and filters, source direct, power amp direct and extensive recording facilities. Having been brought up with a strict less is more doctrine, I have to rail against attacking such features out of hand, like a Puritan whitewashing a Catholic church, but at least these controls are less sonically injurious than most.

A worthy flagship

One of the more useful extras on the *AU-a707DR* is a delay after powering up the amplifier. The status indicator above the power switch flashes on and off until the amplifier is ready for action.

There is also a balanced line input, for a CD player like Sansui's own *Vintage Line* model. Although this input is, in effect, only pseudo-balanced operation — it lacks the balancing transformer required for full balanced operation — the balanced option does seem to improve performance over that of the single-ended (phono) inputs.

Sansui is rightly proud of its flagship integrated amplifier. The company has partnered it with some notoriously difficult loudspeakers like Apogee *Stages*, without difficulty. These American panel designs are well-known for emasculating all bar the most potent Krell-like super amplifiers, and any humble integrated that can make decent sounds is worthy of praise indeed.

On less challenging loads, like my Audio Note *AN-E* loudspeakers, the amplifier sounds as if it has unlimited reserves of power. I soon had to surrender to superior forces in the sonic war of attrition between hi-fi and my ears. The *AU-a707DR* could play at seriously alarming sound pressure levels without breaking sweat.

One of the best indicators of the build quality is the resolute sense of stereo location that you get from the *AU-a707DR*. Images build around the loudspeakers almost holographically, clearly defined in all three dimensions.

This is backed up by a near total absence of background noise, on any

input. Most noticeable is the whisper-quiet phono stage. Even at full gain, the turntable input stage is far quieter than almost any I've yet encountered. The only exception is that of the battery powered Pink Triangle *PIP* preamplifier. The balanced line input is also superbly quiet, but this is only to be expected.

Unfortunately, although the amplifier is technically very proficient, I am less than totally enamoured with its sonic performance. The superbly engineered phono stage is a case in point. Although in terms of background hiss and frequency response it performs with textbook accuracy, it was as if there was little grace to the unrelenting performance. There was no let-up, and this made all bar the most spartan of recordings sound dense and constricted.

Switching over to the line inputs was slightly better — especially the balanced input. These had a more even-handed, laid-back sound. Again, the textbook

tonal accuracy was clear, leaving nothing specific to criticise but nothing to focus the attention.

Precision performance

Playing a stack of recordings, one after another, showed a lack of dynamic contrast, a sort of sheen across every aspect of the *AU-a707DR*'s sonic abilities. This does not register when listening to an individual track, but creeps up on you over the course of an extended listening session. All of which only serves to detract from the high-end image of the amp.

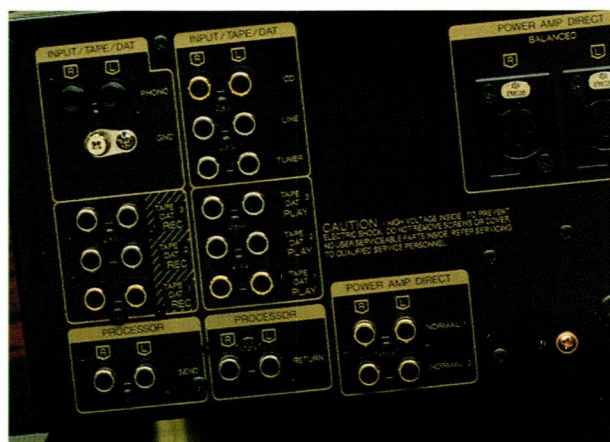
Although the ultimate sound quality of the Sansui may be lacking, I do think that there is a large, albeit specialised, market for this amplifier. It is beautifully made, with a very correct performance, especially in its stereo abilities, and will no doubt appeal to the Mercedes owner among prospective buyers.

However, the sanitised performance of a Mercedes car has never appealed to me and — in much the same way — the lack of fire in the *AU-a707DR*'s belly would soon have me yearning for more.

Sansui (UK) Ltd, Emlyn Street, Farnworth, Bolton, Lancs BL4 7EB.

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A view of the many ins and outs on the back of the *AU-a707DR*, the big, bold and beautiful flagship amplifier from Sansui.



close your eyes and see



the Arcam Delta system

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Ignore the fact that the Delta 290 is our finest integrated amplifier, the recipient of a coveted Design and Engineering Award from the world's pre-eminent consumer electronics show, the Chicago CES. Don't be swayed just because the UK hi-fi press agree, giving it "a compelling and enthusiastic Recommendation" ⁽¹⁾ and describing it as "an amplifier with real clout, able to deal with virtually any level of musical complexity". ⁽²⁾

Next cast a jaundiced eye on the Delta 280 tuner. Again, disregard the pleasing aesthetics and the convenience of remote control*. Don't even be led by reviews revering its sound as "lucid", "warm" and "attractively open". ⁽³⁾

Then, visit your scepticism on the Delta 270 CD player. "Solidly built", it "strikes a balance between smoothness and punch" to gain a class leading, 5 star recommendation. ⁽⁴⁾

If that's not enough, take a sideways look at our remarkable two-box CD player, the Delta 250 CD transport and Black Box 50 DAC. "To justify their significant cost, two-box systems really have to offer that little bit extra in terms of sound quality; but Arcam's combination does just that - and more". ⁽⁵⁾

Next, move on to the Delta 100 cassette deck. Try to dismiss once again its 1992 Chicago CES award and the reviewer who gushed, "In the beginning, I called for a round of applause for Arcam's bravery in producing a British-made cassette deck. At the end, I'm asking for a standing ovation". ⁽⁶⁾

Finally, muster up your best disinterest for the "extraordinarily well engineered" ⁽⁷⁾ Delta 2 loudspeakers, "a firm, positive sounding design with bold bass and mid and a firm grip on the musical architecture". ⁽⁸⁾

In fact, ignore everything anyone else tells you. Ignore even what your eyes tell you is true. Just let your ears decide.

Just listen. Close your eyes, open your mind, and see the light.

1. Hi-Fi Choice, March 1993. 2. Audiophile, February 1993. 3. Audiophile, April 1993. 4. What Hi-Fi? Awards issue 1993. 5. What Hi-Fi?, November 1993. 6. Hi-Fi World, April 1992. 7. What Hi-Fi? Awards, 1991. 8. Hi-Fi News Buyers Guide, November 1993. * CR200 System Remote Control handset to operate all the electronics listed here is an optional extra



For your free copy of our brand-new 'Soundscapes' brochure with full details of the Arcam Delta range and the name of your nearest dealer, complete and return this coupon to us. In addition, if you would like independent reviews of any of our hi-fi equipment, please state which products and we'll be happy to send you the relevant material. Arcam, Pembroke Avenue, Waterbeach, Cambridge CB5 9PB. Or telephone: (0223) 440964 (24 hours)

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No buts, it's got to be bits

I've taken two years to put my system together, which currently consists of a Pioneer A-400X amplifier, Sony TCK-611S cassette deck and a pair of Tannoy 611 Mk I speakers. I now wish to add a CD player, and it must be bitstream. I've been considering the Pioneer PD-S901 or the Marantz CD-10, but I'd like your advice before I part with my money.

**Karl Hay,
Hemel Hempstead, Herts.**

You've shortlisted two good CD players which should work very well in your system. Although the Marantz is much dearer than the Pioneer, it's quite a bit better and is incredibly well-built.

Using the cost of these machines

The Marantz CD-10 is a first class player and should survive many future system upgrades.

as a guideline to your budget, we would suggest that you also look at Pioneer's PD-77 which is superbly built and very well finished.

Though you're arguably exceeding the limitations of your system with either the Pioneer or the Marantz, you'll be buying something that will see you through many a future system upgrade.

Making friends for Marantz

I want to upgrade my hi-fi, keeping only the existing Marantz CD-72 CD player. I have £2,000 to spend. For the



Analogue classic: the Rega Planar, as confirmed on page 64, is still the budget deck to beat.

turntable, I've considered either a Rega Planar 2 or 3, or perhaps a Revox B-795 on sale locally second-hand. Audiolab's 8000A amp appeals, along with an RDS tuner, Nakamichi cassette deck and a pair of British loudspeakers.

**R Stephenson,
Wakefield, West Yorkshire.**

Either Rega turntable will easily

QUERY OF THE MONTH

Room Rumbles

I plan to construct a music room next to my bungalow, and I would like your advice regarding suitable dimensions. As well as the hi-fi, I also plan to have a piano in the room. The approximate size I have in mind is 15ft x 8ft x 8ft (L x W x H). I've read that room size has an effect on sound quality and that the wrong dimensions can create standing waves. Please tell me how and why!

**Richard Michael Earles,
Riyadh, KSA.**

You'd probably benefit from increasing the width of the planned room to at least 10ft to 12ft. That would allow sufficient physical separation for the speakers. So far as dimensions are concerned, it's best to avoid having

any two the same. Doing so may lead to standing wave reinforcement of particular low frequencies.



Carpeting the floor should reduce the effects of standing waves, but it's usually a good idea to keep the speaker end of the room quite lively and reflective.

Progressively increase the amount of damping as you reach the listening position. Two items that will definitely give you better sound are a good, clean dedicated mains supply for the hi-fi, using heavy-duty solid-core cabling, and not having your piano in the same room.

If the latter breaks your heart, you'll have to compromise. But do take mains wiring seriously. It can make a big difference to the final sound.

better the Revox, though the latter scores in terms of facilities and sheer ease of use. The choice of a cartridge for the Planar 2 or 3 is wide, but something like Rega's own Bias or Elys would make a good match.

The Audiolab 8000A is a good

choice of amplifier, though the matching 8000T tuner lacks RDS and is rather expensive at £700. An alternative tuner, with RDS, would be Denon's TU-580RDS, which is very good and more affordable at £220.

Given a budget of £2,000, you'd probably be compelled to look at the 'basic' Nakamichi DR-3 cassette deck, which is very fine, though not a three-head model. To complete the system, there's a wide choice of speakers. Start by listening to models like the Castle Chester, Epos ES14 and KEF Q80 and see which you prefer.





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Pushing a system to the limit

My system consists of a Linn Axis turntable, with Linn LV X Plus arm and Linn K9 cartridge, a Technics SL-PG520A CD player, Marantz and Technics cassette decks, a Creek CAS-4140 tuner, and a Musical Fidelity A-100 amplifier.

I wish to upgrade my JBL L-20T speakers, but what to? I have up to £1,000 to spend on speakers and stands, and would appreciate your help in drawing up a shortlist.

**S Goudry,
Tyne and Wear.**

A thousand pounds is quite a lot to spend on speakers, given the rest of your set-up. While you might get an excellent all-round improvement, the danger is that you'll unbalance your system and have to make further upgrades in other areas to compensate.

Arcam's Delta 2 would give you a fuller tonal balance than your current JBLs, with less treble forwardness. The Acoustic Energy AE-1 would fall within your budget, but these are very system sensitive and might prove too analytical.

Castle Chesters are good, and being a floorstanding model don't need stands, while the Mission 753 — another floorstander — makes a big sound. Finally, try the Heybrook Sextet. Though they are a little over your limit you may find them worth saving for.

It's an 'L' of a system

Frankly, my hi-fi is a bit of a mess. It makes mid-fi sounds and, when I attempt to raise the volume, the amplifier always starts clipping.

My system currently comprises a Michell Gyrodec turntable with Gyropower power supply, Rega RB300 arm and Linn K18 cartridge; Meridian 207 CD player; Rose RV23 preamp; Quad 606 power amplifier, and B&W Matrix 802 Series 2 loudspeakers.

The system is housed in a large L-shaped room 9.5m x 3.7m (5.8m into the tail of the 'L'). The speakers are against



Acoustic Energy AE1s are very capable and not too dear but require first class amplification.

the long wall, 4.25m apart. I listen to rock, blues, folk, jazz and classical music.

**John Jarvis,
St Albans, Herts.**

First, experiment with repositioning the loudspeakers. If possible, try them along the room, instead of across it, but at the very least, move the speakers to about 3m apart.

However, it would be surprising if that alone cured your problems. It does sound as if the amplifier is at fault, in the context of the rest of your system. You have to fill a comparatively vast space in hi-fi terms, and we do not think the Quad 606 has enough clout to drive the speakers to high levels.

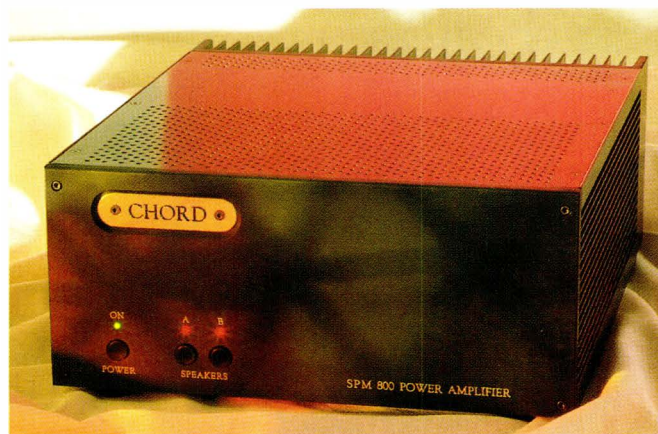
The solution may lie with the Meridian 605 monobloc power amplifiers, one of the bigger Chord SPM power amplifiers, or the monobloc Michell Alecto amplifiers. Adding that extra power

could make the difference, but eventually this will need a change in preamplifier (the Kinshaw Perception or the Michell Iso / Argo spring to mind) and possibly a new moving coil cartridge.

Finally, do try the new Michell Gyropower QC, which will add considerable life and detail to the overall sound of your vinyl.

Bitten by the bug

My system comprises a Quad FM-4 tuner, NAD 5420 CD player, Yamaha KX-250 cassette deck, NAD 302 amplifier, and a pair of Heybrook Point 5 speakers on Partington stands using Heybrook Heywire speaker cable. I feel satisfied with the overall sound but the upgrade bug has bitten and I think the NAD 5420 might be letting the side down.



If your amp keeps running out of steam try the muscular Chord.

Which CD player should I choose in order to get a significant improvement? My budget is £300, though I could push this to £400 if a product was really worth the extra.

**R Stevenson,
Warley, West Midlands.**

There are several good CD players worth auditioning at around the £300 mark. Among them, the popular Marantz CD-52, CD-52IISE and Rotel RCD-965BX deserve to be carefully auditioned.

The Philips CD-950 is also worth listening to at £350. If possible, try and hear these newer players against your old 5420, just to make sure the difference is clearly audible. There's no point in changing if the improvement is barely discernible.



The Marantz CD-52IISE should have the edge over an old NAD.

One box or two?

My current system consists of a Technics SU-VX700 amplifier, ST-G90LK tuner, SL-PG520A CD player, and Mission Cyrus 781 speakers connected via Cyrus speaker cable.

A lack of sharp and subtle detail has made me want to upgrade my rather bassy amplifier. Given a budget of £350, can you point me in the right direction? I've shortlisted the Rotel RC/RB-960BX combination, hoping this will give me the extra transparency and detail I crave. Other options include the Pioneer A-400 or the Marantz PM-44SE. In short, one box or two for my low budget?

**Gary Holland,
Lincoln.**

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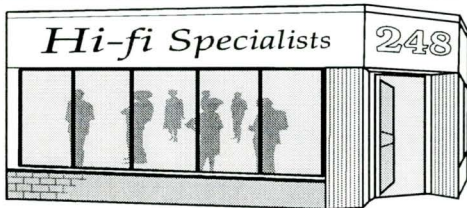


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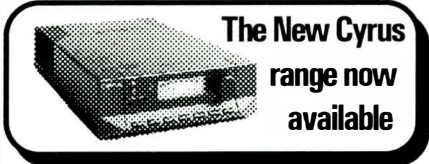
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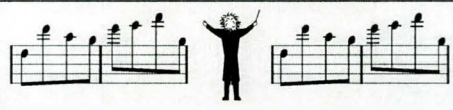
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there is a real possibility of hum pick-up, splitting pre and power amplifiers into separate boxes is a good idea.

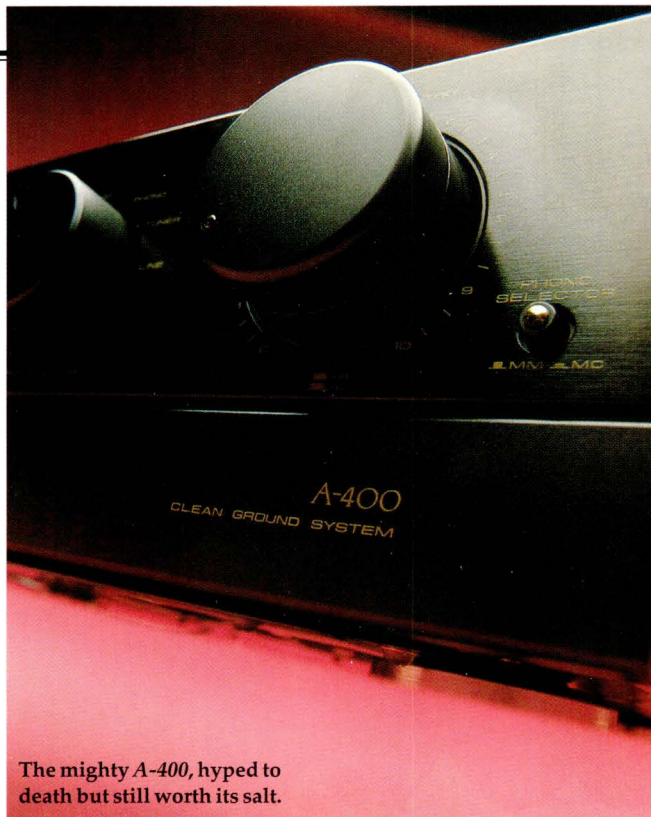
At the lower end of the price scale, it is less justifiable, and given so many good integrated amps costing under £350, it might be better to go for one of these. By all means audition the Rotel, but be sure to take in some of the integrated opposition as well.

Seeing as most of your system comes from Technics, why not listen to its new, well-received range of integrated amplifiers? Alternatively, of the two integrated amplifiers you mention, the Marantz PM-44SE did well in our recent group test (issue 123), with its comfortable sound. The Pioneer A-400 is good too. It's gutsy, with plenty of presence. Arcam's Alpha 5 and 6 are very exciting and should also be considered, the Alpha 6 having an especially sharp and detailed sound.

Loud and proud

I have a Pink Triangle LPT turntable fitted with the Moth RB250 arm and a Linn K5 cartridge, Cambridge Audio CD-3 CD player, Nakamichi Cassette Deck 2, Leak 2000 receiver and a pair of KEF 104 speakers.

I was thinking of replacing the ageing Leak with a modern amplifier and tuner, but have a particular need for something that will work at high and low listening levels. When I have the house to myself, I play at relatively high levels to get the most out of the system. But at other times, being mindful of the family, I play at levels well below average. To compensate, I use the Leak's loudness button, but



The mighty A-400, hyped to death but still worth its salt.

notice this feature is absent on virtually all modern amplifiers.

Would changing the speakers as well as the amplifier be worthwhile, and are efficient types (like Audio Note AN-Js) likely to give more realistic sounds than my KEFs, when played quietly? Or is it all down to the amplifier, some being better than others at low-level reproduction?

**CR Barker,
Cambridge.**

The 'loudness' button was designed to introduce some bass and treble lift, to give a more full-bodied quality of sound when music was played quietly. This facility has rather fallen out of favour, largely because dealers, manufacturers and the public recognise the virtue of keeping the signal path uncomplicated.

You've had your KEFs for so long now, they must be like old friends. While it is very likely that something more modern would outperform them, listen carefully (preferably at home) before you

make any significant changes here.

Sadly, the Leak wasn't that brilliant even in its day, and a good modern amplifier should better it in virtually every respect. Listen to the locally produced Arcam Delta 290 and Audiolab 8000A for starters. Both manufacturers offer matching tuners, the Audiolab 8000T being exceptionally good. Alternatively, Denon's TU-260L is particularly good value. Most modern tuners will outpace your Leak, though its FM section was rather good for its time.

Legendary collection

I have been collecting LPs since the early fifties, but my first real

hi-fi was obtained in the early eighties. The system currently consists of a Marantz CD-94II CD player and an AR Legend turntable, with a Stilton-modified, Audio-Technica AT-F3 cartridge. Both run, via Kimber PSB interconnect cables, into a Moth Series 30 preamp and into a pair of Pioneer A-400 amplifiers acting as monoblocks, and from there into Tannoy DC3000 loudspeakers.

I'm hoping to capture even more dynamics and headroom, and I'd appreciate your advice on upgrading the amps. Alternatively, should I spend my money on CDs and LPs?

**Mike Dowd,
Cumbria.**

Do not alter your amplification one iota. Any improvements, such as a Michell Argo preamp and Iso phono stage — the next logical amplifier upgrade, aside from Trichord's A-400 modifications — would only show up the shortcomings of the AR Legend turntable.

The only fine tuning that can be done to the amplification would be to use the A-400s as stereo amplifiers and bi-wire the Tannoy speakers, rather than using them as monoblocks.

Instead, concentrate on improving the turntable, to get the best out of 40 years of record collecting. A deck like the Systemdek IIXE 900AP would give the Legend a run for its money, but any one of the top flight turntables, such as a Mk III Rock, Roksan Radius, Pink Triangle Little Pink Thing would lift the system to new heights. Otherwise, buy more discs!



Trough line: a MkIII Rock should trounce an old AR Legend.



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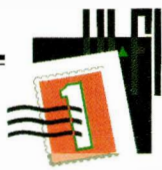
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Bolsover Street, London W1P 7HJ, or send a fax on 071-323 3547.

Learning the knowledge

I wish to purchase a system for £2-3,000, based around CD. I have shortlisted the Meridian 206ΔΣ and Marantz CD-10 CD players, Audiolab 8000C/8000P or Moth pre/power amps and either Mission 753 or Heybrook *Sextet* speakers.

My problem is finding a dealer who can demonstrate these items. I don't expect dealers to stock everything, but so far I've only been able to audition one or two of the items together.

Have I really got to buy, for example, the Meridian CD player and then take it with me to different dealers? Most outlets seem tied to one or two

LETTER OF THE MONTH One step forward, two steps back?

In the December issue of *Choice*, you state that: 'Though it doesn't shout it from the rooftops, the hi-fi industry is slowly coming round to a greener way of thinking.'

In the very same issue, however, Alvin Gold rhapsodises about the UKD *Callas* loudspeaker cabinets, stating that they are, 'Simply stunning, solid mahogany 3.5cm thick — the non-homogeneous nature of real wood gives superior damping to MDF.'

If you want to get up the noses of the whole environmental movement, just continue advocating that the last remaining tropical

hardwood forests are cut down for luxury goods.

All sorts of furtive, peace-loving wild creatures (including hi-fi enthusiasts) need a balanced climate to live in. Rising sea levels and hurricanes can really ruin your hi-fi, so please be eco-

The speakers of wrath: UKD's not so eco-friendly *Callas*.

nomical with raw materials and energy.

Edward Courtney, Wotton-under-Edge, Gloucs.

*The hi-fi industry is coming round to a greener way of thinking. Sadly, some countries are taking longer than others. The Italian craftsmen, responsible for the UKD *Callas* design, have a*

tradition of making musical instruments as well as hi-fi. Unfortunately, the use of solid hardwoods in these products is more questionable. Speaker makers like Ruark and Mission are leading the switch to sustainable resources, and the sooner others follow suit, the better. Ed.



companies and only want to sell those brands.

Ian Mace, Northampton.

Dealers often seem to carry too narrow a range of products, when what a lot of people want is the choice of a big supermarket with the personal service of a corner shop. Good retailers are often specific about what they do and don't like, and they aren't interested in

alternatives that, in their opinion, don't measure up.

If the dealer selects good components at each price point, and knows which combinations work well together, the customer avoids becoming embroiled in vast numbers of comparisons that can leave even experienced listeners confused. It may seem frustrating, but a knowledgeable dealer can save you a lot of time and trouble in the long run. Ed.

With this in mind, I went to my local hi-fi specialist for his advice about a new turntable. I wanted something that was simple, would work well with the rest of my system and would give my records the mellow tones they were first recorded with.

However, to my dismay, I was told that companies were no longer concentrating on the quality of record players, advocating the use of CD players instead. To this end, I was politely advised to switch over to CD. I cannot afford to replace all my records, and even if I could some of the records I own are not available on CD.

Brian Bishop, Ipswich, Suffolk.

Although not owning a CD player can make life difficult when buying music these days, it would be foolish to abandon your vinyl. Far better to listen to a decent turntable, as well as a CD player. This will give you the chance to find out just how good your old LPs are. Ed.

The vinyl frontier

I have been collecting jazz records since I was 14, and I now have a large number of rare albums and singles, all on 'prehistoric' vinyl.

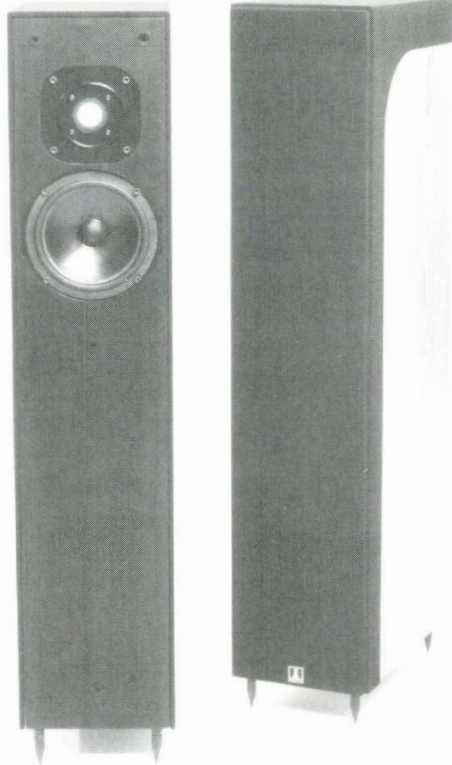
Recently, I came into a small inheritance and instead of adding to my collection, I thought it would be a good idea to update my audio system to better appreciate the sound of my records.

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Just one of the many quotable quotes from a recent review of the RM3000, CS100 and M3 combination in *What Video and What Home Cinema* magazine. Not surprisingly the system was awarded a BEST BUY status. Polk Audio, one of the USA's leading manufacturers of loudspeakers, designed each of the products to work to the highest audio standards either as a combined system or as discreet components in any good quality home cinema set-up.

Now for a few more detailed comments on the system.

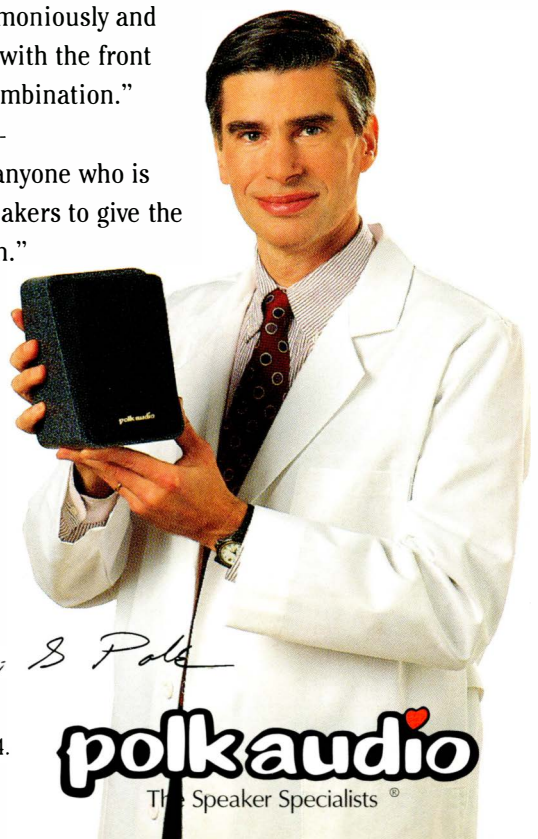
Front Channels - The Award-Winning RM3000 "is the first satellite subwoofer combo I've heard that actually convinces" "It sounded fantastic. Tight, sweet, deep-bassed, melodic, well-balanced." "The subwoofer ensures you get bass if you want it without disseminating any spurious midrange — very impressive."

Centre Channel - The magnetically shielded CS100 "does a damn good job of integrating itself with the RM3000's." "The CS100 demonstrates creditable bass and like the RM3000 satellites the dome tweeter produces a harmonious treble free from splashiness or a metallic edge."

Rear Channels - The M3 multi-application monitor with integrated bracket for flexible mounting "absolutely no complaints as rear effect speakers delivering music and all other content harmoniously and totally in keeping with the front RM3000/CS100 combination."

The Conclusion -

"I'd recommend anyone who is looking for AV speakers to give the Polk boxes a listen." Excellent advice.



Matthew S. Polk

All quotes are from the November 1993 issue of *What Video and What Home Cinema*.

For details and stockists of the Polk Audio range of loudspeakers, phone 0727 827311 or fax 0727 827284. U.K. distribution - Polk Audio Europe Inc., Tyttenhanger House, Coursers Road, St. Albans AL4 0PG

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Forty-five years ago, Sony was formed to supply electrical goods to post-war Japan. Its user-friendly design ethic quickly turned Sony into one of the most successful companies this century and it rapidly expanded. In 1968, Sony opened its UK operation and has continued to expand to this day.

Sony is a major force in the development of future technologies — like the Electronic Book and MiniDisc — as well as being at the forefront of digital engineering. It now owns a record company, Columbia/CBS, which is part of Sony Music Entertainment UK Ltd.

In 1993, Sony UK Ltd celebrated its 25th anniversary and now offers *Hi-Fi Choice* readers the chance to win a fantastic AV system. The centrepiece of the set-up is the 29in KVA-2932 television worth £1,000. This is equipped with an ultra-flat Super Trinitron screen, built-in Nicam stereo decoder and Digital Comb Filter. The fully-featured remote control

can be reversed, one side covering all the options and the other being greatly simplified for the less technically inclined.

To view the finest in home cinema entertainment, the £600 Sony MDP-650 Laserdisc player will play both 12in and 8in NTSC and PAL Laserdiscs, in addition to regular CDs.

For off-air video recording and replay of prerecorded tapes, the £500 SLV-E7 Nicam stereo VCR is the perfect prize. It can play both NTSC and PAL tapes, has a quick start and high speed return, and its four head playback system allows almost noiseless slow motion and still pictures from the tape.

To complete the system, we have the £800 SAV-A3 active Dolby Pro-Logic loudspeaker system. Elegantly styled as a pair of floorstanders with two tiny rear effect satellites, the SAV-A3 boasts 170 watts of amplification, plus a subwoofer and a synthesised centre channel loudspeaker built into the main floorstanders.

Questions

- How long is it since Sony was formed in Japan?
a) 25 years b) 50 years
c) 45 years d) 10 years
- What screen size is the KVA-2932 Nicam television?
a) 29in b) 25in c) 32in d) 22in
- How long has Sony been in business in the UK?
a) 5 years b) 25 years
c) 15 years d) 40 years
- What is the acronym for the UK 625 line television standard?
a) PAL b) CHUM
c) NTSC d) SECAM
- How powerful are the main amplifiers in the Sony SAV-A3 speakers?
a) 17 watts b) 75 watts
c) 170 watts d) 200 watts

How to enter

Write your answers to the five questions, along with your name and address, on the back of a postcard or sealed-down envelope. Please do not seal the answers within the envelope.

Send your completed entries to: Sony Competition (HFC/0294), *Hi-Fi Choice*, Tower Publishing Services Ltd, Tower House, Sovereign Park, Market Harborough, Leicestershire LE16 9PG. Entries must be received by first post on Monday, February 21, 1994.

Competition Rules

The Editor's decision is final and no correspondence will be entered into. Winners will be notified by post. The competition is not open to employees of Dennis Publishing Ltd, Sony (UK) Ltd, their suppliers, agents or associates. The competition is open to UK residents only. No cash alternative will be offered. Submission of entry will be taken as acceptance of the rules. Proof of posting cannot be accepted as proof of receipt. Please notify us if you do not wish to be informed of any special offers or promotions.

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and not because they look flash.

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The next generations

It's a year now since Sony launched MiniDisc (MD), and we are only just seeing the first mass market advertising. Sony is spending a million pounds on this, and tying in with Dixons who will put MD portables into 250 stores. People who buy MD hardware will get vouchers worth £2 off the price of music discs, plus a free pack of five blanks.

This news comes from a press statement that Sony sent out to a small number of music and marketing magazines. "World-wide, Sony has shipped more than 300,000 MD players and recorders since launching at the end of 1992," says Sony, carefully giving no figure for the number of these actually sold.

A dealer told me recently that he'd gladly sell his dusty stock of MD units at trade price. He knows that a second generation of small portables is due soon and wants to get rid of the first generation fast.

Surely the time for Sony UK to spend a million on MiniDisc's promotion was when the system was launched, not now when people who buy will soon find out that they should have waited for the next

generation of players to reach the market?

DCC duplication

There has been no way of duplicating short runs of DCC cassettes at an affordable price. DCC software duplication has so far required a major commitment by the record industry. The record plant must install a 'digital bin' (solid state memory store for the master recording), a bank of slave machines with thin-film multitrack heads and cassette loaders designed to handle DCC shells.

At first it sounds easy to make a few copies by playing a DCC cassette on one deck and then dubbing digitally onto several domestic decks with blank tapes. However, a domestic deck copies the music but does not copy the text and indexing information. And the domestic deck will add an SCMS flag to the tape, which prevents the tape from being digitally copied, even once.

Also, the DCC standard says that the pre-recorded cassette must have a welded shell, with embedded label. A blank cassette is made quite differently. On all these counts the copy tape falls outside the DCC standard for pre-recorded cassettes, and breaches the DCC licence. Such problems have deterred record companies from making short runs of DCC cassettes for publicity, for

tests and to give to the press. An 'advance information' sheet, spotted recently, announced the DCC MDU (Multicasette Duplication Unit) — a bank of up to 20 slaves which copy from a DCC master cassette, controlled by a personal computer. Just the job, according to Philips, for duplicating church music, or (and I quote), the 'Eskimo nose flute'.

A blue light on CD

One question on CD that keeps recurring is, why not make audio CDs double-sided, like Laserdiscs? Unfortunately though, it's not possible to press a double sided disc. The only way (which is how double sided Laserdiscs are made) is to press two quite separate discs and then glue them together. However, this costs more, and doubles the weight, which multiplies the battery drain in portables. In a home player, it is just as easy to use the multi-changers.

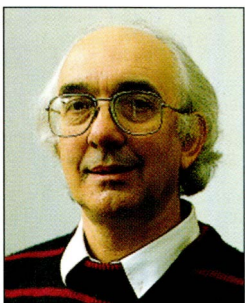
The next question is, when will we have blue lasers to extend the playing time of a single-sided CD, or MiniDisc? Blue gas lasers are already available and used for cutting CDs and LDs. All the major electronics companies are working on blue solid state diode lasers, and many have announced success with prototypes. But it's still a big step to mass-production.

The challenge sounds simple: change the colour of the laser from red to blue, so halving the wavelength of the light and letting the optics focus the laser beam into a spot which is one quarter the current size. This quadruples the amount of information that can be stored on the same disc.

Two ways of moving from red to blue are currently being researched. One is to take a red laser, and play optical tricks with the light which halve its wavelength (known in the trade as second harmonic generation, or SHG). The other approach is to find new chemicals for making the laser diodes used in CD players, so that they directly generate blue light.

Direct blue lasers will probably be the long term answer, but there will be nothing ready for sale until around 1998. The less satisfactory SHG blue lasers could be ready a year or so before that. But either way, this puts the quad-density blue laser CD rather further round the corner than some people are predicting.

One of the UK's top journalists, Barry Fox asks the awkward questions at press conferences all around the world.



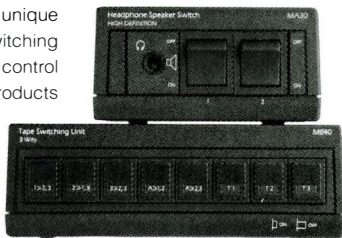
When will we have the new MiniDisc players, the easy duping of DCC and blue lasers for CD?



Sony is spending a million pounds to promote Mini Disc, nearly a year after the format was first launched.

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Members only



A library for music enthusiasts lies at the heart of Bill Wilson's passion for hi-fi. Jason Kennedy lends an ear to the Wilson Stereo Library reference system.

Bill Wilson is a man to be envied. He has managed to make a living out of listening to music — not by reviewing recordings or hi-fi equipment, but by selecting, lending and selling records. He has been doing this for over 30 years and now lives comfortably in Hastings, in an open plan house with one of the most interesting listening rooms we've ever seen.

Bill built the first of what he calls his 'music rooms' on the back of a house in Croydon. "It was designed precisely along the lines arrived at by Gilbert Briggs (of Wharfedale), using a ratio of 16:10:25," he explained, "and it worked extremely well. When I built the Hastings house, I used the same architect and went for a more adventurous room design. It didn't work out as I'd hoped, however, so I enlisted the help of an acoustician called Don Hammett.

"He experimented with absorbent





Bill Wilson's two pairs of Quad electrostatics are dwarfed by his purpose-built, open-plan listening room.

panels and eventually arrived at the present arrangement. This consists of panels covering the wall behind the loudspeakers, and a combination of panels and 92 anechoic style cones high up on the ceiling and walls above the speakers."

Additionally, the open plan nature of the building made the system sound uncomfortable. Bill overcame this by using curtains to close off the two main openings in the room, creating a contained environment which significantly improved the sound.

What Bill developed is a dry but not dull environment. It tamed excess high frequency energy but allowed the speakers to develop a broad bandwidth. When I paid Bill a visit, we listened to a variety of discs including Stravinsky's *Firebird* (Charles Dutoit, Montreal Symphony Orchestra), Glenn Gould's second working of the Brandenburg concertos and some Mary Black.

Each recording came across as being controlled yet full of life. The sound sat naturally in the soundstage and did not emanate from any particular speaker. It was definitely one of the better CD-based

Choosing the best discs

The titles that the Wilson Stereo Library lends and sells are selected by a two-tier system. Both Bill and his son Jonathan make the initial disc selection and then let a

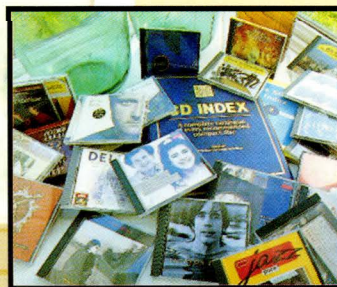
sample of their customers dictate the likely demand from that selection.

Bill used to try and listen to all the classical discs that were issued, in order to select the best ones for his customers. But he has found that by letting

music reviewers do the legwork, he can eliminate less inspiring releases just by reading a few magazines. Jonathan does a similar job with non-classical material, and together they listen to all the discs in order to check sound quality.

Bill and Jonathan base their buying decisions on a survey of 100 customers. Surprisingly, perhaps, they have found that this is a big enough sample to indicate the likely demands of the majority of the Library's customers.

The titles listed in a CD Warehouse Scoop sheet I was given seem to be largely mainstream, and include new and re-released titles. Bill and Jonathan will, however, try to find more obscure titles if asked to do so.



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set-ups I've heard, and I would have liked more time to enjoy it.

The Wilson Stereo Library

Bill Wilson's best excuse for having such a spectacular music room, if he needs one, is that he uses it to review discs for the Wilson Stereo Library. There are three slightly different services offered: the CD Library, which offers a hire before you buy service; the CD Warehouse for discount mail order purchasing, and the CD Index and Update which adds recommended listings with reviews to the opportunity to buy via mail order.

"We hold about 500 titles in stock at any one time," Bill commented, "but add 50 new titles every couple of weeks. This means that there are very few old issues in the catalogue."

Each service requires an annual subscription, and to use the Library you need to make a deposit prior to borrowing discs. However, there are incentives and the cost of £1.75 a disc per week, plus postage, seems quite reasonable. The CD Index itself is interesting, as it lists material that has been selected by both Bill and his son Jonathan as being of musical and sonic merit. The Index includes reviews by father and son, and is intended as a pre-selection service for members that takes the effort out of finding good records.

The Wilson Stereo Library membership is made up mainly of people between the ages of 30 and 75, just over half of whom are classical music lovers. This is in sharp contrast to the days of vinyl when classical music represented only a quarter of the Library's trade. At any one time, there are about four to five thousand active members but, since 1961, there has been a total of 100,000 members.

Quality counts

There's no shortage of feedback from customers either. "It helps us to tailor the stock held by the Library to our customers' demands." Bill maintained. "I think members are very much like myself, mainly concerned with quality."

"I say this because we've had only limited success with tape-based mediums. For this reason, I don't expect either Digital Compact Cassette or MiniDisc to be in great demand by Library members."

Bill Wilson calls himself a lucky man, but anyone who's managed to successfully run a record library for over 30 years, and in the process build one of the most impressive listening rooms on the map, has obviously got more than good luck on his side.

Building a better class of system

Bill Wilson's hi-fi system has been evolving for quite some time now, but elements within it have remained constant for at least 20 years.

The foundation in all his systems has been Quad amplification. In the seventies, Bill used a Linn *Sondek* with an SME *MkIII* arm and a Sonus *Blue* cartridge, Quad amps and a Wharfedale three box speaker system. From there he moved into Quad *ESL* electrostatic loudspeakers, and with the advent of second and third generation CD players, (Bill wasn't impressed with the first players to hit the market), he bought the Cambridge *CD1* — still in service eight years on.

The system currently comprises two pairs of Quad *ESL-63* loudspeakers arranged with one pair facing the listener and one pair sideways on, connected in reverse phase. This arrangement was suggested by Jim Rogers, a friend and fellow music lover who lives nearby (and whose system we featured in issue 120). It is based on the set-up used by SME managing director Alistair Robertson Aikman and has the effect of reducing the directionality of a single pair of *ESLs*. Doubling up the diaphragm area also means that it is easier to fill the room with sound.



Like his library, Bill Wilson's system is constantly evolving, yet remains true to the elusive quest for the ultimate sound quality

Alongside the *ESLs*, Bill usually uses a pair of Jim Rogers subwoofers. However, when we paid him a visit, he was trying out some of the Gradient subwoofers designed to match the Quad speakers.

Three Quad *606* power amps drive the *ESLs* and subwoofers, and four Jim Rogers surround speakers are placed at the sides and rear of the room to provide subtle ambient information. The latter are driven by a Quad *405.2* power amp and the signal is split by a Marantz *RV-55* Soundfield Processor. The main preamp is a precision pot-in-a-box passive type built by Jim Rogers.

At present, the Cambridge *CD1* is still the reigning source, but Bill is experimenting with alternatives in a quest for something better. When we visited, he was using the latest Meridian *500 Series* transport and *563 DAC*, but his head has been turned by the top-of-the-range *602/606* combination, as well as models from the US high-end Wadia range.

The mains supply has also received attention. Ben Carter, a friend and electronicsmeister, installed a separate power supply with its own fuse box and spike filter.

The rise and rise of the Stereo Library

Bill Wilson has always been interested in good music and good sound, and also feels it's not enough to say that only the music counts. It's the physical quality of sound that is critical as well.

"I first started experimenting with hi-fi in 1948, when I made what would now be called a subwoofer to use with my radio. I was a primary school teacher then, specialising in musical appreciation. But after a spell working in child development and psychology, I became increasingly interested in music."

"In 1961, formed the Wilson Stereo Library. The company was so named because stereo recordings were only just beginning to appear in the UK. It was an exciting time."

The Library started off in a small way. Bill and a dozen of his friends were keen to listen to the stereo recordings, initially only generally available on EMI *Stereosonic* reel to reel tapes. These tapes were very expensive, however — over three times as much as an LP, at three guineas each — and the only way that Bill and his friends could get to hear a variety of music was to share their recordings.

When stereo LPs started to become available, Bill took the plunge and borrowed £100 to create the Library. Some 30 years later, it's a suc-

cessful business that keeps Bill, his son Jonathan and two full-time employees very busy.

The Library has lent and sold most of the major formats that have been produced over that period, including eight-track cartridges, conventional cassettes and even videotapes. In the early days of video, Bill saw the potential for a rental market long before local video rental stores became commonplace.

For a man with access to such a formidable range of recordings, Bill has a surprisingly small CD collection of about 50 discs in his listening room. "That's because I'm the Library's keenest user," said Bill with a grin. "I keep my own collection in an almost constant state of flux. I prefer to listen to new performances of mostly classical works rather than revisiting a back catalogue in the way most people do when building up their own collections."

Bill Wilson is first and foremost a music lover, and without the Library it would have been hugely expensive for him to listen to as much music as he does. So the Library was borne out of necessity. The fact that it has funded such a spectacular purpose-built listening room makes Bill one of the most enviable enthusiasts we've ever met.

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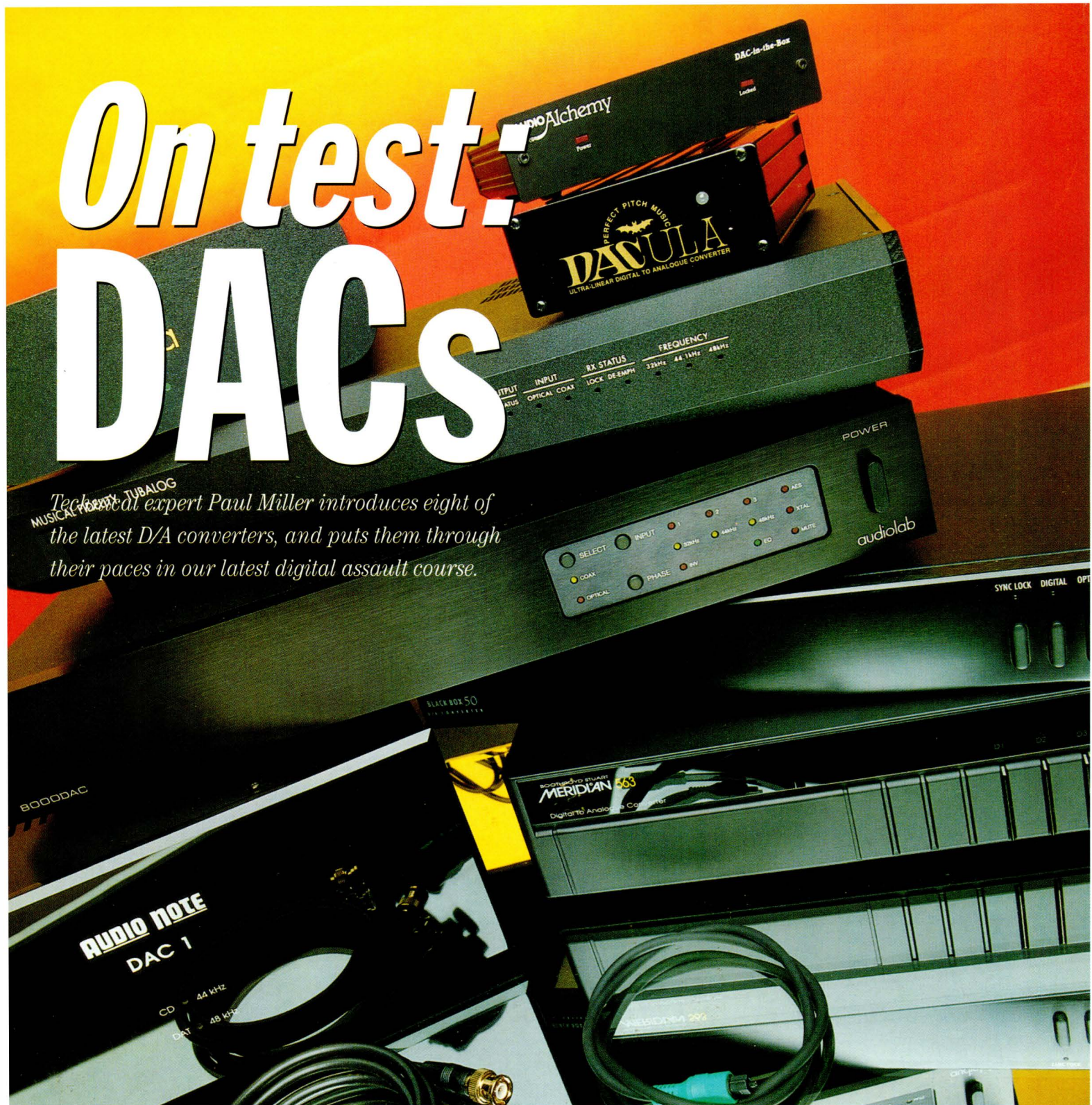


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Technical expert Paul Miller introduces eight of the latest D/A converters, and puts them through their paces in our latest digital assault course.



Outboard DACs, add-on converters, off-board processors. Call them what you will, this is one area of the audio scene that continues to witness an explosion of interest.

Purchasing a new DAC must seem like the ideal upgrade. It allows you to keep your trusty CD player, while using the digital output to drive an external converter. You get a revitalised sound quality without the unnecessary expense of splashing out on an entirely new integrated player.

This was the way we approached our blind listening

tests with eight of the latest sub-£800 outboard DACs. Two questions were uppermost during the auditioning: does the DAC offer a significant upgrade on the average CD player and, if so, does it harbour the potential to be further upgraded at a later date with a stand-alone CD transport?

To help us answer the first question, we employed a Marantz CD-52II, or rather its

coaxial digital output. This is one of the most popular budget players in recent memory and broadly representative of other Philips-based designs from Rotel, Technics, Arcam, Mission, Creek and Philips.

The cast list

Arcam Black Box 50	£450
Audio Alchemy DAC-in-the-Box	£200
Audiolab 8000DACmkII	£750
Audio Note DAC-1	£600
DPA Digital Little Bit Two	£450
Meridian 563	£595
Musical Fidelity Tubalog	£499
Select Systems Dacula	£400

As a result, the success — or otherwise — of our initial upgrade should tally with a huge number of budget players already at work in the home.

The final

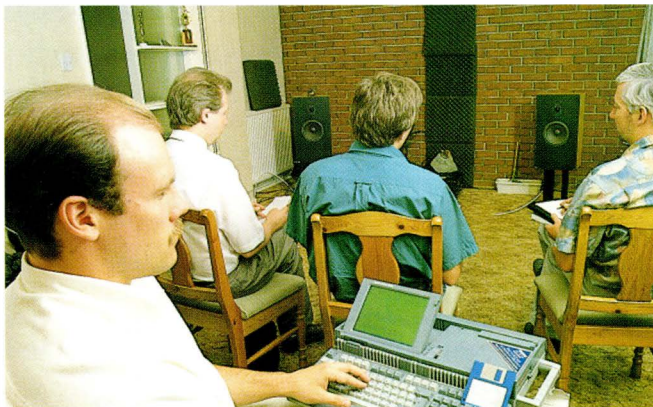
upgrade was completed by replacing the CD-52II with a TEAC P-700. This is a dedicated CD transport equipped with a transformer-coupled 75ohm coaxial digital output — which neatly conforms to the IEC958 standard. Sure enough, there are costlier and better sounding CD transports, but none that match the P-700's remarkable all-round compatibility.

So, which are the DACs that can be recommended as a quick-fix for an ageing CD player? And, more importantly, which represent a reliable long-term investment at the heart of a modern digital front end?

How the blind listening tests were done

Each of these outboard converters was auditioned under strict, blind conditions at precisely matched listening levels. This way, the high 3V output of the Audio Note, for example, could not secure it any advantage over the lower 1.9V of the DPA or Audiolab DACs. Such precautions are vital if each sample is to be evaluated without bias, however unintentional.

A broad repertoire of male/female vocal, jazz and classical CDs were auditioned via a Marantz CD-52II CD player by way of acclimatisation. This player was then upgraded and re-auditioned with each DAC before being replaced altogether by our reference CD transport, TEAC's low-cost P-700 (see issue 120).



The panel's comments are entered directly to overcome bias.

The remainder of the system included DPA 100S pre and power amplifiers driving Audio Note AN-E

loudspeakers on substantial MAF stands, with Audioquest Video Z and Silver Sounds cables.

Why outboard converters?

Broadly speaking, a CD player may be split into two hazy halves. There's the digital front end that includes the CD transport mechanism, the micro-processor (which directs most of the facilities) and the decoder, which unscrambles the output from the laser. The second half of the player takes this code for oversampling and Digital-to-Analogue conversion, prior to squirting it out as recognisable analogue music.

A CD player's digital output lies between these two halves, allowing the transport mechanism and processing electronics to be removed from the delicate process of D/A conversion. Using an outboard converter frees it from any interference that might otherwise circulate through the common power supplies, circuit boards and chassis of an integrated CD player.

But a word of warning. Some digital outputs and outboard DACs are more inter-compatible than others. The input impedance of a DAC may deviate from the 75ohm standard, for example, just as some transports/DACs will be more sensitive to circulating RF interference than others. So a random choice of DAC may not give you the upgrade you're looking for.

Making the right connection

Since the digital output of all CD players must conform to an agreed standard (called S/PDIF or Sony/Philips Digital Interface Format), it is quite possible to upgrade an old 16-bit player with a modern 1-bit or 20-bit converter.

So, whether the digital output comes in the form of a coaxial socket or Toslink optical transmitter, the format of the digital data remains the same. They simply take the form of pulses of red light (optical) or pulses of electricity

(coaxial). Peer around the back of your CD player and you should find one or both of these connections.

Theoretically, optical connections have an advantage because fibre-data travels one-way only and so there's

no return path to circulate unwanted interference. But in practice, coaxial (electrical) connections often sound superior because the transitions between digital 1s and 0s are more sharply defined.

Do not use an audio interconnect between transport and DAC — a 75ohm coax (like an FM download) is far better suited to this very high frequency digital signal. For our tests, a one metre length of Audioquest Video Z cable was employed, though many alternatives are detailed in our Directory pages.



Understanding Choice test measurements

Broadly speaking, these tests mirror those performed on CD players (issue 119 and 124) and two-box CD transport/DAC combinations (issue 120). Once again, we can observe deviations in linearity or the presence of unwanted cross-coupling by comparing the 0dB and -60dB frequency responses of each DAC (top graph).

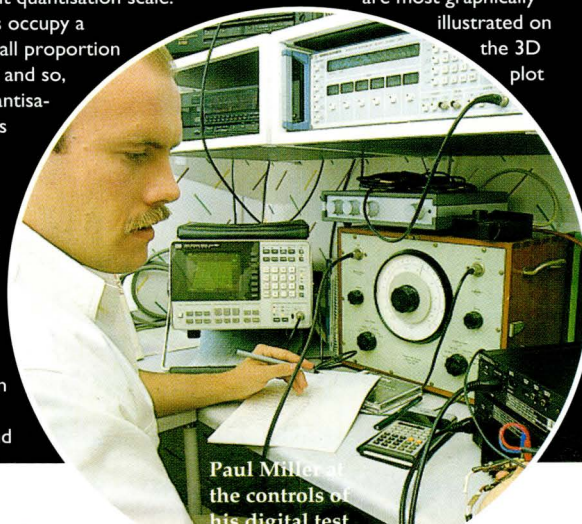
The dithered 1kHz tone plot (second graph down in each report) reveals the spread of distortion, noise and sampling images associated with a low -70dB signal. Dither is a special type of noise added to the digital signal to smear quantisation errors, trading distortion harmonics for a slight increase in noise. In this test, Audiolab's 8000DAC provides a good example of dither in action.

The numerical test data also reflects the increase in distortion and deviation in linearity that occurs as signal levels are decreased. CD uses a linear 16-bit quantisation scale.

Quiet signals occupy a relatively small proportion of this range and so, with less quantisation numbers available, distortion mounts up. Some DACs make better use of this 16-bit code than others so look for low errors in resolution (linearity) and

low distortion at -30dB, -60dB and -80dB for examples of technical excellence.

Distortion and sampling images are most graphically illustrated on the 3D plot

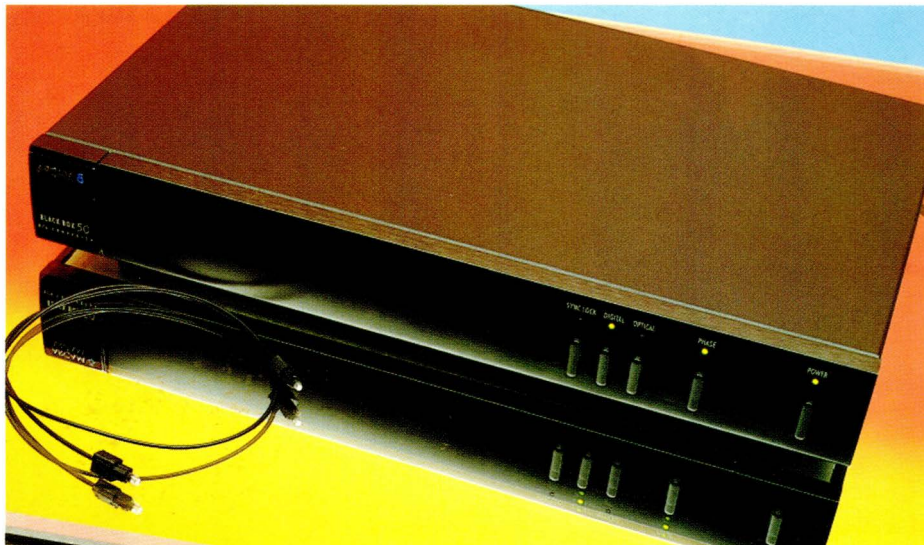


Paul Miller at the controls of his digital test

which uses an audio frequency sweep (20Hz-20kHz) to reveal changes across the entire spectrum rather than at one specific frequency. Distortion harmonics may be seen radiating out to the right of the main sweep while sampling or stopband images are represented as whole or partial V-shaped patterns. Distortion is strongly linked to the type of DAC and analogue filter stage while the stopband images are let slip by the attendant oversampling filter.

Another test reveals the characteristic input impedance of the DAC's electrical digital input which should remain very close to 75ohm from 1MHz to 20MHz. Impedances that deviate from 75ohm cause the digital output of the CD player to be mis-terminated and a proportion of the signal to be reflected. No data is lost but an increase in digital jitter and interference can only muddle the picture.

Arcam Black Box 50



Five generations on and Arcam's latest *Black Box* has very, very little in common with its great, great grandfather. Only the name is retained while original features, including Philips 16-bit DAC and Arcam's own interface chip, have long fallen by the wayside.

In common with the *Black Box 5*, this *BB50* is a sophisticated beast that even includes a Master Clock feed to synchronise the activities of its matching *D170.3* CD transport. Sadly, although it's based on similar precepts, Arcam's sync-lock is incompatible with DPA's Deltran facility.

The earlier *BB5* was Arcam's first venture into hybrid DAC technology, utilising Yamaha's *PCM67* with its blend of multi-bit and bitstream attributes. Ironically, Yamaha replaced this DAC with the superior *PCM69* just moments after the launch of the *BB5*. So no prizes for guessing what DAC lies at the heart of the *BB50*.

Sound quality

Here is one converter that plays by the digital rules. It offers a very consistent, enjoyable and richly-detailed sound that not only provides a great upgrade for the *CD-52II* but readily accommodates up-market transports like the *P-700*. Whatever your choice of music, the *CD-52II/BB50* sounds very natural and easy-going, its falling-off-a-log confidence leading to an almost lazy style of presentation.

For example, the vibrato quality of Sting's voice had passed unnoticed with the basic *CD-52II* but adding the *BB50* produced a further flourish to the music as a whole. Both the *CD-52II* and the *P-700* worked with the *BB50* to provide an open window to Mahler's *Fifth*, its rich, inviting sound achieved without congestion.

Yet drafting-in the Teac *P-700* enhances the *BB50*'s repertoire, exchanging an up-beat

flavour for one that is measured and sure-footed. An intriguing blend, but one that could be construed as slightly boring by some listeners.

Conclusion

The *Black Box 50* is not without one or two very peculiar technical wrinkles, oddities that Arcam is endeavouring to correct. But even as it

VERDICT

- ▲ A very controlled, articulate and detailed sound that escapes the homogeneity of its peers.
- ▼ Anyone looking for a racey sound might think the *BB50* too prim and proper.
- ▶ £449.90

SOUND QUALITY

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VALUE FOR MONEY

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stands, such faults do not impair either its compatibility or its arresting sound quality.

So the *BB50* remains an excellent upgrade for the archetypal Philips-based CD player, forging combinations that make good sense of whatever musical style happens their way. Furthermore, the *BB50* provides a dormant bedrock to sow upgrades above and beyond the capacity of these budget transports. A Best Buy that, in future months, could become an even Better Buy.

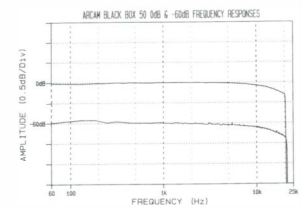
Arcam, Pembroke Avenue, Denny Industrial Centre, Waterbeach, Cambridge CB5 9PB.
 ☎ (0223) 440964

LABORATORY REPORT

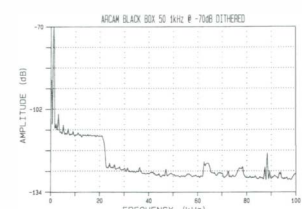
While replacing Yamaha's *PCM67* with the *PCM69*, Arcam also uprated various peripheral components to optimise the performance of this latest DAC. Hence the drop in distortion from 0.01 (BB5) to 0.002 per cent (1kHz/0dB) and improvement in S/N from 99dB to 102dB. Sadly, its low-level linearity has deteriorated.

Furthermore, an unusual sampling/clock inter-modulation releases spurious distortions as high as -65dB into the audio band. Unfortunately, these in-band digital distortions are not limited to rare peak-level signals but persist at -65dB (worse case) relative to music signals over a full 0dB to -50dB dynamic range.

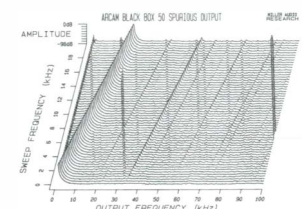
	20Hz	1kHz	20kHz
Channel Balance	0.03dB	0.02dB	0.04dB
Channel Separation	90.7dB	97.3dB	69.3dB
THD vs Level, 0dB	-113.8dB	-93.3dB	-89.0dB
-30dB	-93.6dB	-71.6dB	-71.5dB
-60dB	-43.4dB	-41.9dB	-41.3dB
-80dB	-20.3dB	-22.3dB	-22.5dB
-90dB	-11.2dB	-15.0dB	-15.4dB
Dithered, -100dB		-13.0dB	
Dithered, -110dB		-1.80dB	
Resolution @ -60dB		+0.16dB	+0.15dB
-80dB		+1.35dB	+1.25dB
-90dB		+3.25dB	+3.35dB
-100dB		+4.10dB	+3.05dB
Peak Output Level, L		2.366V	
R		2.371V	
Relative Output Level		+1.47dB	
Output Impedance		46.8ohm	
Radio Frequency Spuriae		24mV @ 16.9MHz	
0.33Hz Noise Modulation		+4.1dB	
CCIR IMD, 0dB		-95.5dB	
Suppression of stop-band IMD		65.0dB*	
De-emphasis Accuracy, 1kHz		0.00dB	
5kHz		+0.01dB	
16kHz		-0.07dB	
S/N Ratio (A-wtd), w emp, 0LSB		103.2dB	
w/o emp, 0LSB		101.5dB	
w/o emp, 1LSB		101.6dB	
Digital Input Impedance (1-20MHz)		75-74ohm	
Digital Input(s)		Coax + Toslink	
Serial Number		DBB008225	



Eight times oversampling and same analogue filters leave unchanged response.



Odd-harmonics generated by errors in the multi-bit portion of hybrid DAC.



Complex clock interference patterns in the audio band (top left).

Audio Alchemy DAC-In-The-Box



VERDICT

RECOMMENDED
HI-FI CHOICE
MAGAZINE
BEST BUY (1994)

- ▲ Stick with light and breezy material and the DITB will breathe new life into doddery CD players.
- ▼ Despite AA's protestations, the DITB proved rather a poor cousin to the DDE converter.
- ▶ **£199.95**

SOUND
QUALITY

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VALUE FOR
MONEY

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nalise as each product embraces an alternative blend of technology and facilities. More importantly, the *DAC-in-the-Box* harbours a nasty surprise, namely a mis-matched 45ohm input impedance which renders it fundamentally less compatible than the 75ohm *DDE*.

Nevertheless, and despite its shyness of bold and contrasting detail, AA's imported *DAC-in-the-Box* does represent stunning material value. For many tired old CD players, the *DITB* will be £200 well spent.

Path Premier, Desborough Park Ind Est, Desborough Park Rd, High Wycombe, Bucks, HP12 3BG. ☎ (0494) 441736

Little black boxes do not come any more compact than Audio Alchemy's *DAC-in-the-Box* (*DITB*), a dwarf DAC that's smaller still than its revered *DDE-I* (reviewed in issue 101). However, any comparison with the diddy *DDE-I* stops right here, as the *DITB* is a very different kettle of fish.

Its coaxial and optical inputs are now automatically selected and decoded using Crystal's popular CS8412 receiver. Furthermore, the *DDE*'s phase-invert facility and buffered digital output have been abandoned. But, with only six or seven square inches of fascia to play with, there's very little room for manoeuvre.

Embedded in the crowded circuit board of the *DITB* we discover Yamaha's YM3433 digital filter (not the YM3434 mentioned in AA's literature), while the DACs themselves are old 18-bit workhorses from Analogue Devices.

Sound quality

Our initial impressions of the *DITB* were gained using the *CD-52II* as host transport and, with selections of pop and rock, it seemed fairly open and lively. In the longer term, this view proved to be slightly superficial, especially as the *DITB* masks its difficulty with fierce or busy rock tracks by providing a somewhat vague overview of the prevailing soundstage.

In this respect there's little to be gained by exchanging the *CD-52II* for a costlier transport. Sure enough, the Teac *P-700* firm-ed-up its bass, brought a tauter focus to vocals and a crisper shine to percussion. Yet nothing could disguise the DAC's paper-like fragility, a lack of body and substance that undermined the strength and tension of Mahler's sombre *Fifth Symphony*.

The *DITB* is better suited to the ruder digital output of a budget player where its basically open, rounded and very nimble sound keeps most styles of music on its toes. So the

DITB is far from unpleasant, just a little opaque and lightweight when compared with the best of budget DACs, including Audio Alchemy's fabulous *DDE*.

Conclusion

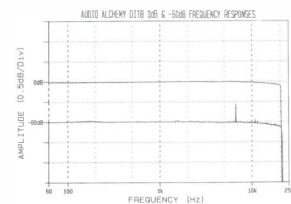
Audio Alchemy's claim that the *DITB* is more advanced than the *DDE* is difficult to ratio-

LABORATORY REPORT

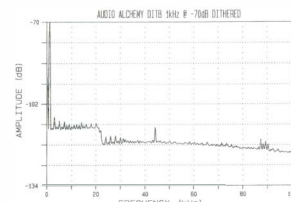
Distortion here is similar to that of the PS Audio Superlink DAC (issue 103), the last converter to use AD1860 DACs. Indeed, values of 0.005-0.08 per cent at -30dB are respectable enough for many bitstream DACs. Fortunately, Audio Alchemy's superior implementation ensures the *DITB* has an unperturbed response, reduced errors of +2.6/-1.5dB in linearity and a wider 108dB signal-to-noise ratio.

Sadly, the -5dB de-emphasis error will cause pre-emphasised discs (mainly classical) to sound dull and lacklustre. Similarly, the low 45ohm input impedance results in some 40 per cent reflection and 26 per cent overshoot with our standard 75ohm (Teac) transport.

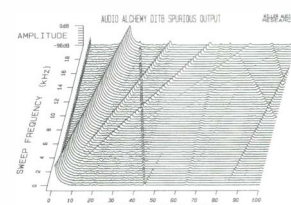
	20Hz	1kHz	20kHz
Channel Balance	0.07dB	0.08dB	0.04dB
Channel Separation	119.1dB	129.5dB	71.5dB
THD vs Level, 0dB	-95.9dB	-90.8dB	-71.3dB
	-30dB	-86.7dB	-61.7dB
	-60dB	-52.4dB	-28.2dB
	-80dB	-27.4dB	-7.20dB
Dithered, -90dB	-16.5dB	-16.6dB	-0.50dB
Dithered, -100dB		-14.4dB	
Dithered, -110dB		-6.50dB	
Resolution @ -60dB		-0.06dB	-0.10dB
		-0.47dB	-0.09dB
		-1.52dB	+2.55dB
		-0.70dB	+1.70dB
		-100dB	
Peak Output Level, L		2.249V	
		R	2.269V
Relative Output Level		+1.06dB	
Output Impedance		103ohm	
Radio Frequency Spuria		<1mV broadband	
0.33Hz Noise Modulation		+8.5dB	
CCIR IMD, 0dB		-96.2dB	
Suppression of stop-band IMD		72.5dB	
De-emphasis Accuracy, 1kHz		-0.72dB	
		5kHz	-3.81dB
		16kHz	-4.90dB
S/N Ratio (A-wtd), w emp, 0LSB		110.1dB	
		w/o emp, 0LSB	107.8dB
		w/o emp, 1LSB	107.8dB
Digital Input Impedance (1-20MHz)		43-46ohm	
Digital Input(s)		Coax + Toslink	
Serial Number		12371	



Flat, ripple-free response; sharp blips in -60dB trace are not uncommon.



Odd-order distortions show quantisation errors are not expunged by dither.



2nd-4th harmonics from 18-bit DAC but partial V-shapes from eight times filter.

Audiolab 8000DAC MkII



Audiolab's 8000DAC, the epitome of understated sophistication, has just received a facelift. The slab-like fascia of the £750 8000DAC MkII features two extra LEDs detailing which of the three gold-plated BNC (electrical) or Toslink (optical) digital inputs has been selected. Other beacons reveal the incoming sample frequency, the absolute phase and operation of its crystal-controlled phase locked loop.

The latter regenerates the Master Clock from incoming digital data using three narrow-bandwidth crystal-based oscillators for each of the three possible sample rates (48, 44.1 and 32kHz). Otherwise, any digital source that falls well outside the Class 1 tolerance is scooped-up by an initial free-running PLL, providing a lock at the expense of extra jitter.

The significant alterations to Audiolab's 8000DAC lie under the bonnet where the Philips BS DAC has been upgraded to a full DAC7 chipset, and where the noisy herd of 4000 Series CMOS logic integrated circuits have been replaced by a single microprocessor.

Sound quality

Two years ago, the original 8000DAC received an apathetic reception from our panel. In this test, perhaps having mellowed with age, they greeted its replacement with greater enthusiasm. The upgrade from CD-52II to CD-52II/8000DAC MkII was especially impressive on this occasion, not for any great splash of colour or dynamics but for the renewed sense of order, discipline and neutrality.

The percussive accompaniment to Lisa Stansfield snapped confidently into focus beside the measured, articulate but cool outpouring of her vocals. This dignified gait was equally evident with Sting's *Seven Days* where, even at its bustling height, the 8000DAC

adamantly refused to buckle and be rushed.

Instead, this DAC exerts a restraining influence, stifling some of the life and exuberance in an effort to rein-in any hint of harshness or sibilance. So, even if the extra weight and warmth provided by the Teac P-700 transport helped flesh-out its slightly dry and conservative sound, nothing could really disguise its rather impassive

VERDICT

- ▲ Technically beyond reproach; its sound will bring a sense of discipline to unruly systems.
- ▼ Never really lets its hair down; as a result music marches rather than swings.
- ▶ £750.00

SOUND QUALITY

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VALUE FOR MONEY

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treatment of classical, rock or pop music.

Conclusion

This 8000 Series DAC is a subtle development rather than a huge departure from the original version (issue 103). It remains an almost flawless execution of a tricky digital technology — a feat which earns Audiolab a commendation from my spectrum analyser. Yet the prevailing sound is still one of sobriety rather than a reflection of the mood and passion of the music.

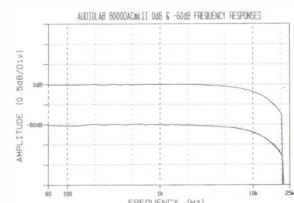
Cambridge Systems Technology Ltd, Spitfire Close, Ermine Business Park, Huntingdon, Cambs PE18 6XY. ☎ (0480) 52521

LABORATORY REPORT

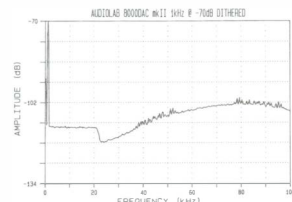
So what has Audiolab gained by adding Philips' TDA1547 Bit Converter to its existing SAA7350 used, in this instance, for its 192 times oversampling and 3rd-order noise-shaping? (The 384 times mentioned refers to the System Clock frequency, not the oversample rate.)

By retaining the NPC 5M5813 eight times filter and analogue stage, there's no change in its excellent stopband rejection, frequency response or 104dB signal-to-noise ratio. However, there's a reduction in bass/midrange THD of up to 2.5 times, from -30dB to -70dB, just as linearity errors have improved from -0.11/+1.9dB to -0.35/+0dB over a full 100dB dynamic range.

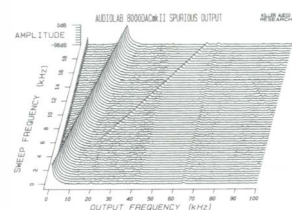
	20Hz	1kHz	20kHz
Channel Balance	0.10dB	0.10dB	0.22dB
Channel Separation	123.7dB	120.5dB	109.5dB
THD vs Level,			
-30dB	-85.7dB	-80.1dB	-67.5dB
-60dB	-58.3dB	-52.8dB	-38.8dB
-80dB	-28.2dB	-29.3dB	-19.1dB
Dithered,			
-90dB	-18.4dB	-21.0dB	-10.8dB
Dithered,			
-100dB			-17.1dB
Dithered,			
-110dB			-7.30dB
Resolution @			
-60dB			0.00dB
-80dB			-0.06dB
-90dB			-0.03dB
-100dB			-0.05dB
Peak Output Level, L		1.951V	
R		1.929V	
Relative Output Level		-0.26dB	
Output Impedance		100ohm	
Radio Frequency Spurious		<2mV broadband	
1Hz Noise Modulation		+5.0dB	
CCIR IMD, 0dB		-99.5dB	
Suppression of stop-band IMD		>105dB	
De-emphasis Accuracy,	1kHz	-0.10dB	
	5kHz	-0.17dB	
	16kHz	-0.45dB	
S/N Ratio (A-wtd), w emp, 0LSB		105.5dB	
w/o emp, 0LSB		104.1dB	
w/o emp, 1LSB		104.0dB	
Digital Input(s)	BNC, Toslink + XLR (AES/EBU)		
Digital Input Impedance (1-20MHz)	74-76ohm		
Serial Number	216A02076		



Audiolab has retained its 5th-order analogue filter and mild 0.75dB treble cut.

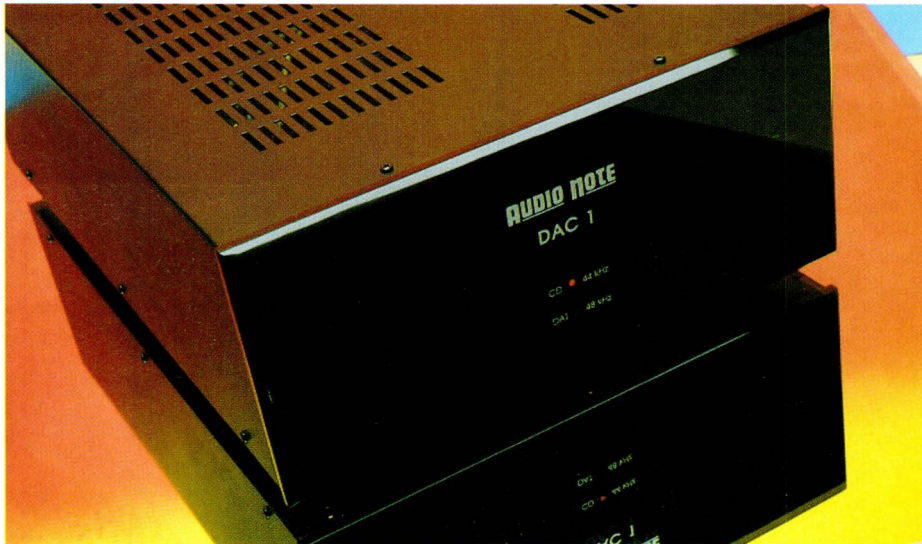


Perfect example of Philips' 3rd-order noise-shapers running with a 16.9MHz clock.



Differential output reduces even-order distortions; characteristic 3rd harmonic.

Audio Note DAC-1



VERDICT

- ▲ Crafted to bring out the very best in some pieces of music...
- ▼ ... but, at the same time, it has a tendency to squeeze the life out of others.

► **£599.00**

SOUND QUALITY ■■■□□

VALUE FOR MONEY ■■■□□

and unconvincing picture of musical events.

Conclusion

Although the *DAC-1*'s strong and involving vocal presentation can sound thoroughly delightful, the fuller and richer sound of classical material seems to unsettle its confidence, muddling the glorious ambience heard only moments before. This, plus matching problems with ancillary preamps and CD transports, restricts the *DAC-1*'s appeal.

Audio Note UK, Unit 1, Block C, Hove Business Centre, Fonthill Road, Hove BN3 6HA.

☎ (0273) 220511

Daring to be different seems to be part of Audio Note's philosophy. But deviating too far from the beaten track sometimes brings the danger of incompatibility. Unfortunately, this is the case with the *DAC-1*, cheapest of five like-minded units all featuring Burr-Brown's renowned eight times oversampling filter and 20-bit DAC, with AN's own valve output stage.

Nothing too outrageous so far. On the other hand, AN's decision to discard the customary I-to-V (current to voltage) op-amp in favour of a resistor and choke network seems to me to be faintly bizarre. This avoids the spectre of negative feedback but places a great strain on the DAC at low frequencies.

Meanwhile, its ECC88 triodes beef-up the output to a high 3V, giving the *DAC-1* an edge in A/B demonstrations but demanding a high preamp load (in excess of 50kohm) if its bass response is not to suffer.

Similarly, the high and non-standard impedance of its digital input is a quick fix to ensure the *DAC-1* will lock onto the lower output of various unspecified CD transports. But with real world 75ohm transports (like our Teac P-700), the *DAC-1* is instantly mis-terminated.

Sound quality

The enriching influence of the *DAC-1* turns the acoustic image of elegant and well-recorded vocals into living, breathing performances. This effect was particularly stunning with the Marantz *CD-52II* as host transport, ensuring vocals sounded crisp and precise while honing the texture and definition of subtle, background percussion.

But all is not sweetness and light. Its bass roll-off was exposed by the light and tumbling sound of Mahler's *Fifth Symphony*, whereupon the orchestra folded-in on itself, squashing dynamics

en route. With either *CD-52II* or *P-700* transports, AN's *DAC-1* was distinctly uncomfortable playing such complex music and struggled to achieve the immediate and involving quality heard with a pop and rock selection.

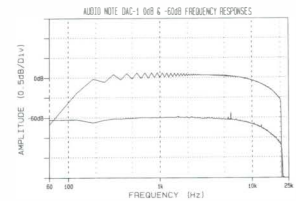
On these occasions, the *DAC-1* reins in its sense of contrast, obscuring the subtlest of dynamics in favour of a broad but sadly bland

LABORATORY REPORT

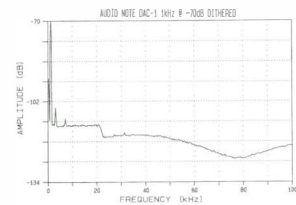
There is a struggle taking place within this DAC, a tussle between Burr-Brown's 20-bit chipset and its interface with Audio Note's analogue electronics. On the one hand we have a perfect rejection of stopband noise (>105dB), low-level linearity to within 0.3dB over a full 100dB dynamic range and an equally impressive low-level distortion (typically below 0.25 per cent at -60dB).

Yet the valve output stage pushes distortion from an anticipated 0.001 to a thumping 0.36 per cent at 0dB. This increases to 0.5 per cent into a low (but not uncommon) 10kohm preamp load, whereupon the droopy bass (-8dB at 20Hz) falls still further to some -17dB.

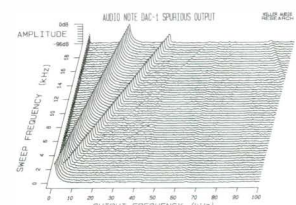
	20Hz	1kHz	20kHz
Channel Balance	0.38dB	0.21dB	0.15dB
Channel Separation	94.8dB	90.8dB	69.1dB
THD vs Level, 0dB	-47.2dB	-47.2dB	-47.5dB
-30dB	-62.4dB	-72.3dB	-73.4dB
-60dB	-56.3dB	-53.7dB	-51.8dB
-80dB	-18.6dB	-30.1dB	-31.4dB
Dithered, -90dB	-17.3dB	-22.5dB	-22.1dB
Dithered, -100dB		-18.1dB	
Dithered, -110dB		-6.80dB	
Resolution @ -60dB	+0.01dB	0.00dB	
-80dB	-0.23dB	-0.10dB	
-90dB	-0.33dB	-0.22dB	
-100dB	-0.10dB	-0.22dB	
Peak Output Level, L	3.081V	3.003V	
R	+3.6dB		
Relative Output Level	869ohm		
Output Impedance			
Radio Frequency Spurious		9mV @ 8.5MHz	
0.33Hz Noise Modulation		+7.8dB	
CCIR IMD, 0dB		-47.5dB	
Suppression of stop-band IMD		>105dB	
De-emphasis Accuracy, 1kHz		-2.44dB	
5kHz		-1.33dB	
16kHz		-1.18dB	
S/N Ratio (A-wtd), w emp, 0LSB		110.7dB	
w/o emp, 0LSB		104.8dB	
w/o emp, 1LSB		104.8dB	
Digital Input Impedance (1-20MHz)		98-102ohm	
Digital Input(s)		BNC/Coax + Toslink	
Serial Number		D1-209	



Reduced bass (at 0dB) and ringing caused by non-standard I-to-V stage.

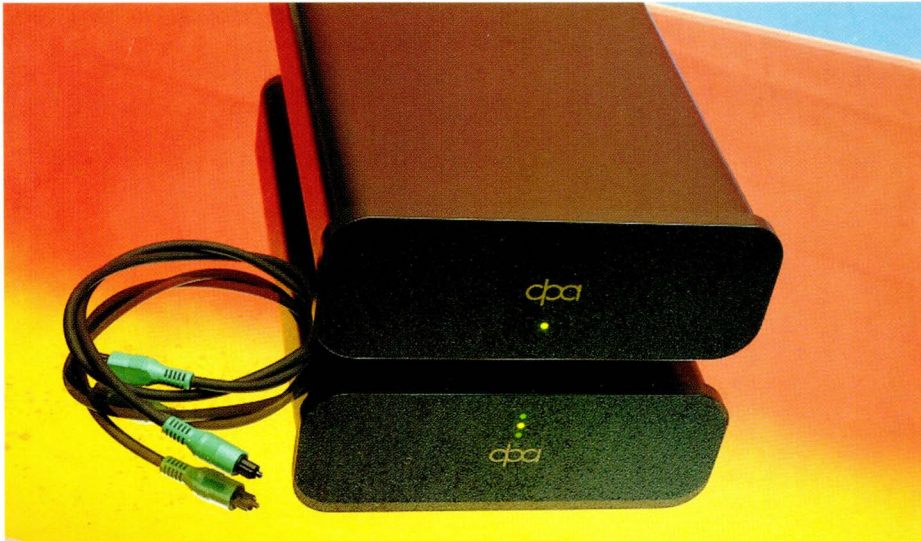


3rd and 7th order harmonics protrude at low listening levels.



Triode output stage colours the picture with a strong 2nd harmonic distortion.

DPA Digital Little Bit Two



VERDICT

- ▲ Deltran upgrade harmonises the digital output of any basic CD player; excellent results are possible.
- ▼ Used as a conventional outboard DAC it sounds smooth, refined but a little bland.
- ▶ £450.00

SOUND QUALITY	VALUE FOR MONEY
■ ■ ■ □ □	■ ■ ■ □ □

Old DACs, especially great ones, never die. Instead they are revamped, rebadged and relaunched. So it is with Deltec's *Little Bit* converter, now sailing under the banner of DPA Digital and incorporating many revisions to justify its *mkII* status.

The folded alloy casework is just as distinctive even though its curved facia has been traded for a thick, machined face plate and tough, wet-look, grey/green paintwork. Round the back are coaxial and high-speed (20Mbit) Toslink inputs, automatically selected for decoding by Yamaha's evergreen YM3623 interface chip. There's even a new double phase locked loop (culled from the *Bigger Bit*) to reduce digital jitter on incoming data before it cascades from Yamaha's eight times digital filter into Philips' SAA7350 Bit Stream DAC.

Also included, for the first time in a budget DAC, is DPA's Deltran facility. This auxiliary optical output uses the Master Clock to control the flow of data in any suitably modified CD player or transport (DPA's *T-1* being the natural choice). And this, plus a built-in RF conditioner for the power supply, adds up to a very tidy package indeed.

Sound quality

DPA's revisions have hit home for the *LB Two* is less troubled by the choice of CD transport than the *LB One* (issue 101). The *CD-52II* certainly benefitted with a widened its soundstage and a greater sense of depth and separation. There was greater inflection in Lisa Stansfield's voice, for example, just as the true colour and vibrancy of the bass successfully countered the one-note thud of the *CD-52II*.

Equally, there was a greater sense of physical size and musical scale. Yet Mahler's *Fifth Symphony*, rather than sounding exciting, tense or explosive, was suspiciously tidy and pleasant

— if ever Mahler could be described as such. To a degree, this classical experience blossomed with the Teac *P-700*, its extra body permitting trumpets to soar confidently.

By contrast, the dance rhythms of our pop selection sounded slightly leaden or matter-of-fact with the *P-700* in charge. But at least the music sounded both technically proficient and

accurate, if disappointingly de-humanised.

Conclusion

Two years on and the richer but questionably civilised character of the *Little Bit Two* provides a tempering influence over many rough and ready digital outputs. Yet this spring-clean witnesses an ambiguous rather than obvious improvement once joined by a superior CD transport. The *Little Bit Two*, rather like Audiolab's *8000DAC*, is just a bit too homely.

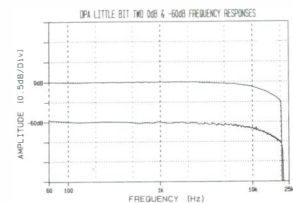
DPA Digital Ltd, Unit 7, Willowbrook Technical Unit, Crickhowell Road, St Mellons, Cardiff CF3 0EF. ☎ (0222) 795621

LABORATORY REPORT

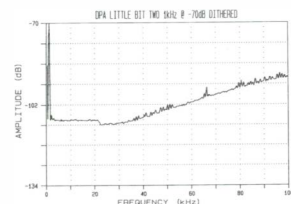
Assurances were made that the haze of RF noise surrounding the *Little Bit* converter would be assuaged (issue 101), a promise not entirely fulfilled two years later. Meanwhile, other oddities have surfaced. Specifically a digital zero code (offset by +2LSB) reveals a rather weak 93dB signal-to-noise ratio, worsened in practice by the unusually high +7.7dB noise modulation.

Otherwise, the -70dB plot shows a drop of 2dB in dynamic range even though its linearity is held to within tight +/-0.5dB limits. All else, including total harmonic distortion (0.0035-0.014 per cent), 100dB stopband rejection and <1ohm output impedance are just dandy.

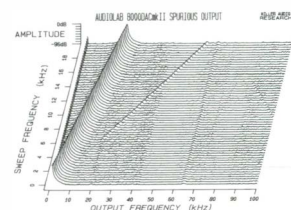
	20Hz	1kHz	20kHz
Channel Balance	0.04dB	0.03dB	0.05dB
Channel Separation	99.5dB	119.5dB*	90.9dB
THD vs Level,	0dB	-89.0dB	-87.7dB
	-30dB	-82.2dB	-77.3dB
	-60dB	-51.0dB	-45.8dB
	-80dB	-27.5dB	-24.3dB
Dithered,	-90dB	-12.6dB	-13.5dB
Dithered,	-100dB		-7.90dB
Dithered,	-110dB		+0.50dB
Resolution @	-60dB		+0.02dB
	-80dB		+0.29dB
	-90dB		+0.10dB
	-100dB		+1.20dB
Peak Output Level, L		1.913V	
		1.920V	
Relative Output Level		-0.37dB	
Output Impedance		<1ohm	
Radio Frequency Spurious		17-84MHz	
0.33Hz Noise Modulation			+7.5dB
CCIR IMD, 0dB			-82.5dB
Suppression of stop-band IMD			99.5dB
De-emphasis Accuracy,	1kHz		+0.12dB
	5kHz		+1.12dB
	16kHz		+0.49dB
S/N Ratio (A-wtd), w emp, 0LSB			99.3dB
	w/o emp, 0LSB		98.9dB
	w/o emp, 2LSB		93.0dB
Digital Input Impedance (1-20MHz)		74-75ohm	
Digital Input(s)		Coaxial + Toslink	
Serial Number		9309126	



Some unwanted cross-coupling can be seen on the low-level (-60dB) response.



Gentle 3rd-order analogue filter lets slip more ultrasonic noise than the Audiolab.



A lone 3rd harmonic from Philips SAA7350 Bit Stream DAC.

Meridian 563



Just seven issues ago we suggested that, come the day of reckoning, Meridian's 263 DAC would be the first to go. Well the revolution has come, gone and the dust settled to reveal an entirely new range of digital electronics. Foremost among them is the 563 DAC, resplendent in its chassis of alloy, moulded plastic, black-textured enamel and glass.

Wafer-thin keys select its single Toslink (optical), three coaxial (electrical) and balanced XLR (AES/EBU) digital inputs while an additional key inverts the absolute phase. This concession to tweekers was never available on the old 263.

Inside we find the same Crystal receiver and two-stage phase locked loop used in the 263, designed to clamp down on digital jitter before the re-clocked data reaches the DAC itself. And here Meridian has opted for not one but two Crystal DACs, one chip per channel delivering what Meridian promises is 19 bits resolution.

Just as importantly, Meridian has finally seen fit to redress the incompatible 45-55ohm impedance of its digital inputs. Today's 563 has an input impedance far closer to the agreed standard of 75ohm, ensuring this DAC will happily marry-up with all CD transports and not just those bearing the Meridian logo.

Sound quality

Peppered with definition and detail, the sound of the Meridian 563 appears open and smooth but also ever so slightly forward. Introducing it to the CD-5211 brought vocalists out of the mix with great conviction, enhancing the breathy quality of Lisa Stansfield as eloquently as the restrained but husky intonation of Sting's vocals.

The sound was always persuasive yet, when the mix became busier, its harmonious clarity was compromised as strings, percussion and vocals grew steadily more confused.

This one criticism was countered by the Teac

P-700 which kept a firmer grip of the digital reins. There was still a feeling of anxiety with the busiest sections of music but its sound now converged into a smaller soundstage without the disruption suffered by the CD-5211/563 pairing. Here at least the influence of this superior CD transport was apparent in the secure and deep soundstaging, a solidity

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VERDICT

- ▲ Sustains a very composed sound without losing sight of the music's natural energy.
- ▼ Lacks the full brilliance and sheer expressiveness of the short-lived 206 CD player.
- ▶ £695.00

SOUND QUALITY

■ ■ ■ ■ □

VALUE FOR MONEY

■ ■ ■ □ □

that enhanced the rumble of classical drums without muddying the overall picture.

Conclusion

The Meridian 563 is not the costliest DAC in our survey but at £700, and with a performance that's well-behaved but occasionally lifeless, it's not a viable upgrade for every budget CD player. The 563 comes into its own with a high-calibre standalone CD transport. Therefore, for this quality alone, the new 563 earns both our praise and Recommendation.

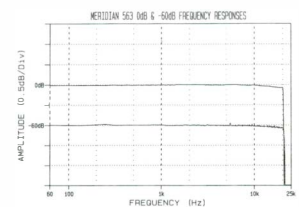
Meridian Audio Ltd, 13 Clifton Road, Huntingdon, Cambs PE18 7EJ. ☎ (0480) 434334

LABORATORY REPORT

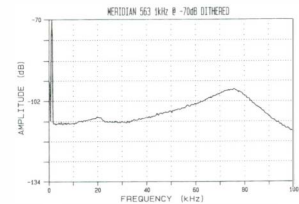
Both the 263 (issue 120) and 563 use the same Crystal CS8412 interface chip and similar Class-A analogue output stages. Yet the 563 features a differential pair of CS4328 DACs in an attempt to reduce common-mode noise and distortion while improving its low-level linearity.

In practice, the maximum error has reduced from -1.8dB to just -0.7dB over a full 100dB range. Yet even with a 4dB reduction in noise, the overall signal-to-noise ratio of 100dB suggests a dynamic range closer to 17-bits rather than 19-bits. Distortion, meanwhile, has also dropped from 0.007 to 0.0022 per cent at 20kHz — a world's best for Crystal Bitstream technology.

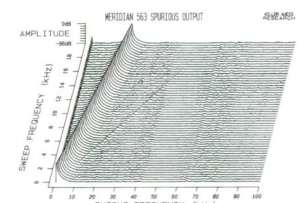
	20Hz	1kHz	20kHz
Channel Balance	0.25dB	0.25dB	0.23dB
Channel Separation	125.8dB	121.6dB	110.5dB
THD vs Level,	0dB	-101.0dB	-99.4dB
	-30dB	-93.8dB	-81.5dB
	-60dB	-57.4dB	-51.2dB
	-80dB	-27.2dB	-29.3dB
	-90dB	-17.0dB	-19.2dB
Dithered,	-90dB	-14.2dB	-5.90dB
Dithered,	-100dB	-0.15dB	-0.13dB
Dithered,	-110dB	-0.45dB	-0.65dB
Resolution @	-60dB	+0.05dB	-0.05dB
	-80dB	-0.01dB	-0.01dB
	-90dB	-0.15dB	-0.13dB
	-90dB	-0.45dB	-0.65dB
	-100dB	+0.05dB	-0.05dB
Peak Output Level, L		2.25V	
		2.188V	
		+0.91dB	
Relative Output Level		46.1ohm	
Output Impedance		34mV @ 11.3MHz	
Radio Frequency Spurious		+2.5dB	
0.33Hz Noise Modulation		-102.5dB	
CCIR IMD, 0dB		97.5dB	
Suppression of stop-band IMD		-0.02dB	
De-emphasis Accuracy,	1kHz	-0.03dB	
	5kHz	-0.05dB	
	16kHz	104.4dB	
S/N Ratio (A-wtd), w emp, 0LSB		99.8dB	
	w/o emp, 0LSB	99.8dB	
	w/o emp, 1LSB	99.8dB	
Digital Input Impedance (1-20MHz)		72-69ohm	
Digital Input(s)		Coaxial + Toslink + XLR (AES/EBU)	
Serial Number		100232	



A perfectly flat and ripple-free response despite 64 times oversampling.

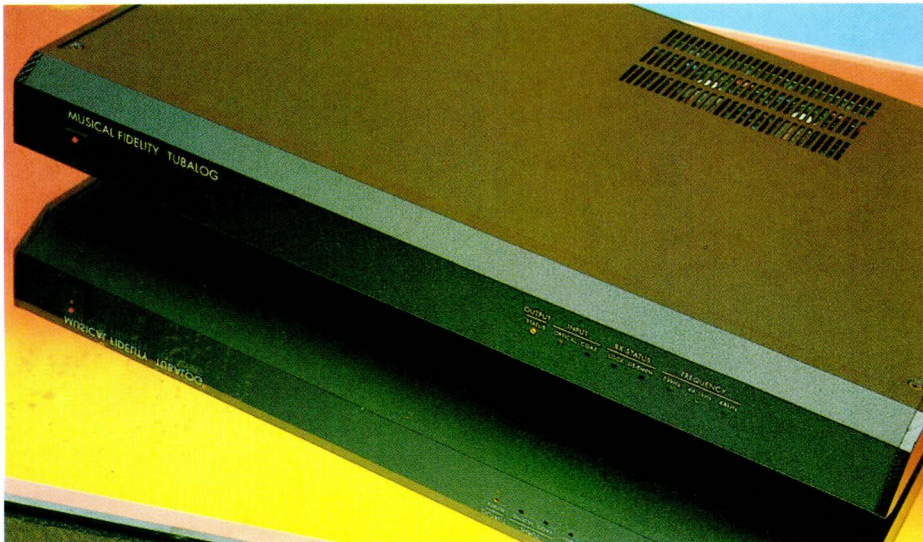


The practical dynamic range is stretched by just 2dB over the 263 (issue 120).



As promised — even-order distortions are all but extinguished.

Musical Fidelity Tubalog



When it comes to CD players or outboard DACs, Musical Fidelity remains resolutely tight-lipped about its choice of digital technology. And as far as the *Tubalog* is concerned, no journalist is privy to any more information than can already be gleaned by casting a careful eye over its cast alloy fascia.

Here we find some eight red and green fairy lights — status beacons — which indicate the incoming sampling frequency, whether de-emphasis is flagged and which of the optical or coaxial digital inputs is currently fired-up.

Lurking within is a unity-gain valve output stage, tacked onto the main audio board in an effort to colour the sound of the incumbent digital integrated circuits. These, however, are etched of all identification. Nevertheless, I'm a great believer in knowing exactly what's what and it appears that both the interface and 18-bit DAC are sourced from Sanyo. Neither one, to the best of my knowledge, is currently used in any other mainstream audio product.

Sound quality

This is one DAC that sounds less impressive with the Teac *P-700* than with the more basic Marantz *CD-52II*. Sure enough, the *P-700/Tubalog* combination sounds weightier and more spacious but it lacks drive and depth. Teac's transport refines the life from the *Tubalog*, overwhelming us with superficial and flat-sounding detail.

The growl of bass, for example, was far better represented by the *CD-52II/Tubalog* combination which tickled our interest with its lively and sparkling performance. Both pop tracks (Sting and Lisa Stansfield) benefited from this solid foundation, its rugged but taut bass reflecting a great deal of the richness and vibrancy of individual notes. By contrast, the

P-700/Tubalog traded this rich bass for something altogether more conservative.

Tied to a slightly rough and ready digital output (the *CD-52II*), the *Tubalog* releases a big and majestic sound with a deep and believable bass that's perfectly suited to the scale and tension of grand classical scores like Mahler's *Fifth Symphony*. In this instance, a

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REVIEWED BY [unreadable]

VERDICT

- ▲ Warm but vivid and animated performance is possible, thanks to MF's injection of valve-like vibrancy.
- ▼ Circulating interference on digital input may upset some choices of CD transport.
- ▶ £499.00

SOUND QUALITY

■ ■ ■ ■ □

VALUE FOR MONEY

■ ■ ■ □ □

smoother sounding transport only makes for less characterful music.

Conclusion

What we have here is an ideal upgrade for the Marantz *CD-52II* and associated Philips-based players, even if the scope for further improvements seems somewhat limited. Though the *Tubalog* may not be quite state-of-the-art, it's still sufficiently colourful and exciting to earn a firm Recommendation.

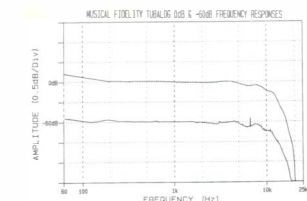
Musical Fidelity, 15/16 Olympic Trading Estate, Fulton Road, Wembley, Middlesex HA9 0TF.
☎ 081-900 2866

LABORATORY REPORT

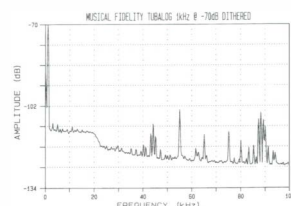
Distortion increases from a typical 0.07 to 0.15 per cent as the preamp load is reduced from something like 100kohm to 10kohm, but otherwise the low 97ohm output of MF's Class A triodes is very much more compatible than the Audio Note DAC-1. At -30dB and below, distortion is dictated by the 18-bit DAC which is up to 20 times poorer than that achieved by the best of today's technology.

Judging by the massive +17.6dB noise modulation, the 106dB signal-to-noise ratio is closer to 96dB in practice. Also, the V-shaped images on the 3D plot suggest that the eight times filter uses the same mathematics as Sony's CXD-2500 processor (see the Denon DCD-860, issue 95).

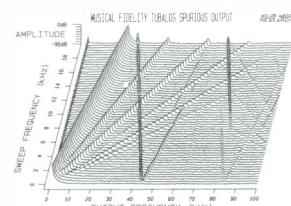
	20Hz	1kHz	20kHz
Channel Balance	0.14dB	0.00dB	0.25dB
Channel Separation	68.5dB	94.7dB	75.3dB
THD vs Level,			
0dB	-53.6dB	-61.6dB	-59.2dB
-30dB	-57.2dB	-56.8dB	-73.1dB
-60dB	-38.0dB	-37.2dB	-42.5dB
-80dB	-28.5dB	-28.5dB	-27.5dB
Dithered,			
-90dB	-15.7dB	-18.9dB	-18.7dB
-100dB		-15.1dB	
Dithered,		-5.50dB	
Dithered,		-5.50dB	
Resolution @			
-60dB		-0.18dB	-0.16dB
-80dB		0.00dB	+0.20dB
-90dB		+0.65dB	+1.25dB
-100dB		+0.10dB	+2.15dB
Peak Output Level, L	2.305V	2.305V	2.304V
R	2.304V	2.304V	2.304V
Relative Output Level	+1.23dB	+1.23dB	+1.23dB
Output Impedance	97ohm	97ohm	97ohm
Radio Frequency Spurious	10mV broadband	10mV broadband	10mV broadband
0.33Hz Noise Modulation		+17.6dB	+17.6dB
CCIR IMD, 0dB		-74.2dB	-74.2dB
Suppression of stop-band IMD		-28.7dB	-28.7dB
De-emphasis Accuracy,			
1kHz		-0.17dB	-0.17dB
5kHz		-0.18dB	-0.18dB
16kHz		-1.00dB	-1.00dB
S/N Ratio (A-wtd), w emp, 0LSB		105.6dB	105.6dB
w/o emp, 0LSB		105.6dB	105.6dB
w/o emp, 1LSB		105.5dB	105.5dB
Digital Input Impedance (1-20MHz)		76-78ohm	76-78ohm
Digital Input(s)		Coaxial + Toslink	Coaxial + Toslink
Serial Number		059643	059643



Warm sound from +2dB bass boost at 20Hz and -4dB treble cut at 20kHz.



Simple oversampling/DAC IC leaves trail of harmonic and sampling distortions.



2nd-5th harmonics from valve output; V-patterns from eight times digital filter.

Select Systems Dacula



Select Systems' new £400 outboard converter has been given a name that calls for severe self-restraint when attempting to write a serious review of its merits. No puns from me then when I report that the *Dacula* outboard converter was put together using the latest Crystal Bit Stream technology.

Naturally, the small but rugged black alloy case is vital in eliminating any trace of daylight but this doesn't explain why Select Systems has omitted a Toslink optical digital input in favour of a single coaxial socket.

Incidentally, this is the same off-the-shelf box used by DPA for its *Power* mains filter, which therefore leaves the *Dacula* with only just enough room to accommodate its L/R outputs, a standby switch and 5-pin DIN socket which hooks-up to the outboard DC power supply. The testing question, however, is whether the Select Systems *Dacula* can break out and burst into song.

Sound quality

No, is the short answer. The *Dacula* is powerful yes, but dim, loose and lazy. As a result, Lisa Stansfield's bassist sounded as if he was playing in gardening gloves, fumbling for notes that struggled from slackened strings. Whatever our choice of CD transport, the *Dacula* consistently failed to get its teeth into the music.

In practice, it slows the pace if not the weight of its bass, giving rise to a dark and treacly sound that, while pleasantly open and ambient, still lacks sharpness and clarity. Clamping the *Dacula* to the Marantz *CD-52II* certainly extended but also softened its bass, generating extra power at the expense of drive and detail.

Otherwise, its soundstaging opens up to

reveal silkier-sounding vocals, free of sibilance but full of body. Yet with both the Marantz and Teac transports, the tension, pregnant pauses and sense of anticipation captured within Mahler's *Fifth Symphony* were lost in the *Dacula's* lush and rolling balance. Highly charged and dramatic performances are, unfortunately, reduced to sounding decidedly

VERDICT

▲ The *Dacula's* warm and comfortable sound is well suited to bright sounding systems.

▼ Otherwise its soft bass is as appropriate as steamed chocolate pudding on a hot summer's day.

▶ £399.00

SOUND QUALITY

■ ■ ■ ■ ■

VALUE FOR MONEY

■ ■ ■ ■ ■

amateurish and lacking in excitement.

Conclusion

The overtly rounded sound of Select System's analogue electronics tends to smother the natural freshness and zest of Crystal's popular DAC. Sadly, contrary to what the name suggests, the *Dacula* possesses very little bite at all — perhaps the 'Mr Blobby DAC' would have been a more appropriate title. The final nail, perhaps, in its petite coffin.

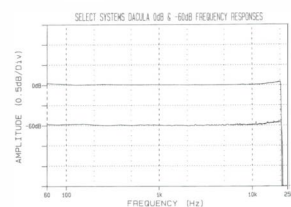
Select Systems Ltd, Hamworth Trading Estate, Hampton Road West, Feltham, Middlesex TW13 6DH. ☎ 081-893 8662

LABORATORY REPORT

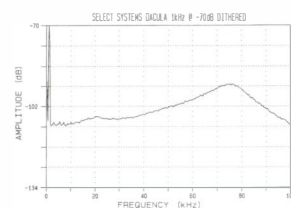
The *Dacula*, which uses Crystal's CS4328 DAC, offers good low-level linearity plus a low 0.013 per cent THD at -30dB/1kHz. Distortion increases from a typical 0.07 to 0.15 per cent. Even the 96dB A-wtd signal-to-noise ratio is first-class for a Crystal DAC and remains virtually unhindered by a mere +1dB noise modulation.

Yet the NE5532 op-amp and discrete high-speed transistor output stage tends to boost high frequency THD from the expected 0.006 per cent to some 0.01 per cent, increasing further to 0.03 per cent with de-emphasis engaged. Meanwhile, the inaccurate de-emphasis response will only add to its full and rich sound.

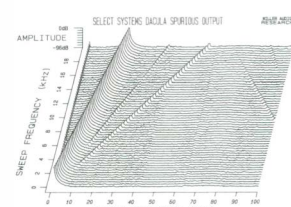
	20Hz	1kHz	20kHz
Channel Balance	0.25dB	0.04dB	0.02dB
Channel Separation	125.0dB	106.3dB	87.2dB
THD vs Level, 0dB	-100.0dB	-96.4dB	-78.9dB
-30dB	-90.5dB	-78.0dB	-63.7dB
-60dB	-57.9dB	-49.5dB	-34.5dB
-80dB	-30.5dB	-26.7dB	-13.3dB
Dithered, -90dB	-17.2dB	-17.5dB	-3.90dB
Dithered, -100dB		-10.4dB	
Dithered, -110dB		-6.50dB	
Resolution @ -60dB		-0.02dB	0.00dB
-80dB		-0.35dB	-0.25dB
-90dB		-0.65dB	-0.55dB
-100dB		-0.90dB	+0.25dB
Peak Output Level, L		2.018V	
R		2.028V	
Relative Output Level		+0.10dB	
Output Impedance		69.8ohm	
Radio Frequency Spuriae		10mV @ 2.8MHz spikes	
0.33Hz Noise Modulation			+1.1dB
CCIR IMD, 0dB			-82.5dB
Suppression of stop-band IMD			94.5dB
De-emphasis Accuracy, 1kHz			-0.17dB
5kHz			-1.10dB
16kHz			-1.86dB
S/N Ratio (A-wtd), w emp, 0LSB			116.2dB
w/o emp, 0LSB			116.2dB
w/o emp, 1LSB			96.3dB
Digital Input Impedance (1-20MHz)			75-77ohm
Digital Input(s)			Coaxial
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DACS: conclusions, best buys and recommendations

Converters from every corner of digital technology are represented in this test. We've Bit Stream, hybrid multi-bit/bitstream, 18 and 20-bit DACs, married to both valve and solid-state analogue circuitry. Yet despite this huge divergence in technical opinion, every one of these converters brought something extra to the performance of our basic Marantz CD-52II CD player.

Sure enough, the different DACs each bring their own characteristics to bear, yet every contender succeeded in expanding the neat but unadventurous soundstaging provided by the CD-52II. This improvement in stereo depth, in the sense of space and atmosphere, is perhaps the principal advantage of using an integrated CD player as a CD transport with a separate DAC.

The effect of each of these converters on the sound produced is a very different matter. Select System's *Dacula*, for example, offers a roly-poly performance that contrasts markedly with the lightweight, but often remarkably ambient quality, of the Audio Note DAC-1. With the right transport and system, however, both have potential a plenty.

Meanwhile, both Audiolab and DPA Digital must wonder where to turn next. The internal design and construction of both converters is nothing short of exquisite — if only the wealth of subtle detail did not sound so prosaic. Competing designs look positively ham fisted in comparison, yet it is this very crudeness that often paves the way to subjective success.

Musical Fidelity's *Tubalog* is a case in point. Following in the footsteps of its CDT CD player (issue 112), a colourful sounding valve output stage is included to temper the roughness of its 18-bit digits. The result is a somewhat larger-than-life performance that seems hugely animated compared with the deadpan civility of either the DPA or

Audiolab. On the other hand, this vivid merry-making quickly reaches its peak with budget transports, providing little incentive for further upgrades.

Similarly, Audio Alchemy's charming *DAC-in-the-Box* is best seen as a stop-gap upgrade. Its sheer affordability is reflected in a smooth, yet hardly high-resolution, sound. But where funds are especially tight, the *DITB* makes a great alternative to competing beer-budget DACs.

By contrast, Meridian's 563 only really begins to sing with a high calibre CD transport. The 563 is no snob but its sound betrays more than a hint of anxiety or discomfort with budget transports. Yet, teamed with the Teac P-700, it revealed a hidden confidence, giving a secure and engaging performance.

Talking of Best Buys brings us smartly to Arcam's *Black Box 50*. The name is getting long in the tooth, just as Arcam's choice (and implementation) of digital technology is hardly mould-breaking. Yet, by combining the sober detailing of the 8000DAC with a dash of *Tubalog*-like colour, the *BB 50* was clearly the most consistent, sure-footed and all-round entertaining converter in our survey this month.

The best of the rest

Outboard DACs are a convenient stepping-stone into the digital market for many manufacturers. After all, Philips' expensive Red Book licencing fee only applies to CD mechanisms, not outboard converters. Which explains why DACs currently outstrip CD transports by a ratio of some three or four to one.

At the beer-budget end of the market, QED's £139 *Digit* is still going very strong indeed, its silky-smooth but slightly lightweight sound can now be bolstered with the addition of an £85 *Positron* power supply.

Teac's *D-700* maintains this company's tradition for high-value

Best Buys and Recommended Models

Best Buy

Arcam Black Box 50 (£450) A very measured and sophisticated sound that leaves plenty in reserve to accommodate future upgrades.

Recommended

Audio Alchemy DAC-in-the-Box (£200) Despite slightly veiled sound it can rescue the oldest of players from obsolescence.

Meridian 563 (£595) Warmer but no less detailed than the old 200 Series, the 563 really comes into its own with top-flight CD transports.

Musical Fidelity Tubalog (£499) The animated character of the *Tubalog* ensures it's a great upgrade for budget CD players.

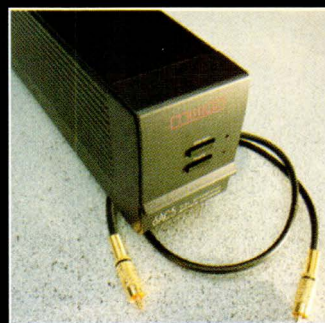
Best Buys and Recommendeds

Products that make the grade are awarded *Hi-Fi Choice's* unique Best Buy or Recommended accolades. This sets them apart as being capable of a higher standard of fidelity than average at a particular price.

A product carrying the **Best Buy** swing tag is significantly better than the alternatives in its price band. It is of excellent quality and very good value for money. Watch out for this logo. It is your guarantee of quality and value.



Recommended products are also very good, but not quite in the same league as Best Buys. Despite being runners up, they are definitely worth considering as they may prove more compatible in the context of a complete system.



Mission's DAC5 is a particularly effective and affordable DAC.

engineering and revels in a big and powerful sound. It's the obvious partner for the P-700 transport. By

contrast the £995 *DSP-1000* from Enlightened Audio Design will take you on a hair-raising, helter-skelter ride of lightening-fast dynamics. Plenty of unchecked enthusiasm here for the stout of heart.

Recent revisions to Linn's 20-bit *Numerik* converter have helped clean-up its act, encouraging a more uniform and gripping performance. Then there are our old favourites, the £420 *Digital Decoding Engine* and £300 *DAC5* from Audio Alchemy and Mission respectively. Neither is especially new but the former harbours the potential for state-of-the-art sounds with a top-notch transport. Much the same goes for DPA's fabulous two-box *PDM2* (£2,200) and Meridian's *606* (£1,350). Snap them up while you can.

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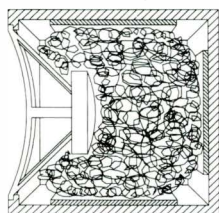
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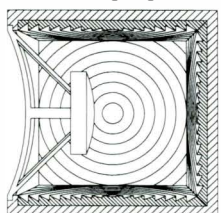
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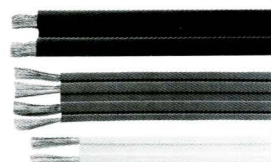
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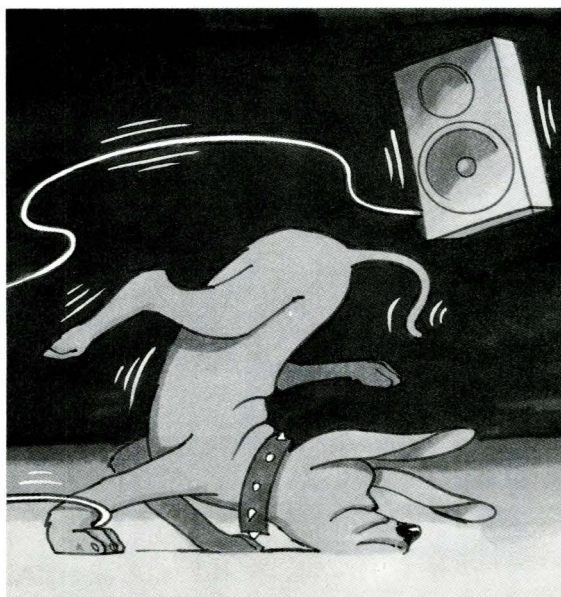
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TURNTABLES

The spin

Proving that the vinyl record is still far from dead, Alan Sircom and Rob Tribe spin four budget platters that matter — including an all-time classic turntable.

The cast list

Ariston Elite	£170
Pro-ject 0.5	£130
Rega Planar 3	£260
Thorens TD180	£199

As there is less interest in turntables these days, big group tests of record players are, sadly, a thing of the past. New turntables are thin on the ground, but three of the latest budget models — Ariston's *Elite*, the Thorens *TD180* and the Pro-ject *0.5* — are all important enough to warrant closer investigation in their own right.

Having three shining examples of modern turntable engineering, we felt it appropriate to look at them alongside one of the all-time classics of the art, the ever-popular Rega *Planar 3*. Though rather more expensive than the others in the test, the Rega has set the standard for

many years (we last tested the turntable back in issue 48, nearly eight years ago, when it earned Best Buy status). We wanted to know how the deck had developed over the last decade, and what better way than to pit it against the three young rivals to the throne.

After walking into the local High Street multiple music store, it seems that a turntable in today's digital climate is about as unlikely as Vinny Jones asking a referee for pointers on soccer etiquette. Aside from the odd 12in single, you are unlikely to find any trace of the black vinyl LP. However, the actual state of the vinyl market — both for records and



doctors

turntables themselves — is far better than many would have you believe.

While turntables are no longer a prerequisite for a decent hi-fi system, there are still many reasons for including a turntable on your shopping list. If you already have a decent sized record collection, it would be criminal to ditch it in favour of CD. Many of the discs may be unavailable and the sheer cost of replacing disc after disc will be prohibitively. In addition, although it does little to further the growth of the music business, buying second-hand LPs is considerably cheaper than new CDs.

A turntable harps back to the early

audio days of Edison and Berliner. It's a mechanical engineering masterpiece that translates the vibrations caused by sound into undulations on the walls of a minute groove in the record, and back again. Electronic components have been used to refine and amplify that signal, but the basic process remains essentially unchanged.

The birth of CD over a decade ago proved to be the only serious challenger in a century of radical change. It was a challenger that would finally prove the victor. At the same time, unprecedented improvements in vinyl replay systems took place, as if to firmly shut the stable

door after the horse bolted. Even today, each improvement in CD technology seems to be matched by developments on the analogue scene.

Three of the four turntable manufacturers in this test have long-standing reputations in the hi-fi industry, and even the comparative newcomer, Pro-ject, has connections with the old guard of turntable production.

Ariston was one of the great names of vinyl in the seventies and eighties and made one of the quintessential turntables, the popular *RD11*. In the company's former guise, it never managed to re-ignite the popularity it had in the seventies

TURNTABLES

but now, fronted by the Richer Sounds group, it hopes to take the lion's share of the budget turntable market with its new £170 *Elite* deck, complete with an Audio-Technica *AT-95E* cartridge.

This is the only deck in the test with any form of suspension, albeit a modification of the semi-suspended design used by more exotic decks from Roksan and Pink Triangle.

The keen eyed will spot similarities between the *Elite* and turntables bearing the Revolver name tag, such as the Revolver tonearm and the drive belt that encircles the entire platter. This is because the *Elite* is built for Richer Sounds by the people who used to build Revolver's turntables. Little now remains of Ariston.

The £130 Pro-ject *0.5*, the cheapest

If you already have a decent record collection, it would be criminal to ditch it in favour of CD.

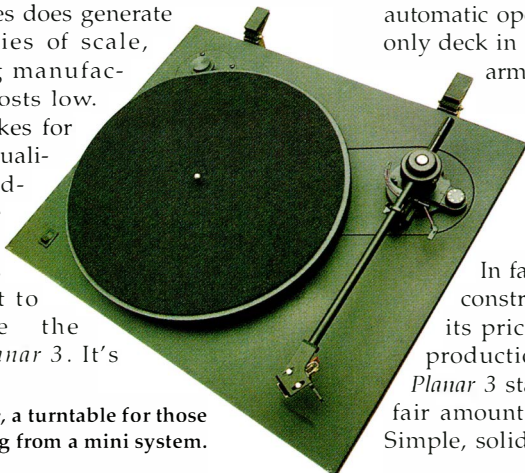
turntable in the company's range, is a truly pan-European venture. Designed in Vienna by one Heinz Lichtenegger, who was once connected with Thorens in Germany, the deck is built in a factory in the Czech Republic and is fitted, for England at least, with a Danish Ortofon *OM10* cartridge. The cartridges are sent from Denmark to the Czech Republic to be fitted on turntables destined for the English market.

Claimed to be the largest turntable manufacturer in existence, Pro-ject are said to make in the region of 500,000 turntables a year and manufacture virtually every part of the turntable (bar the Ortofon cartridge) within the factory itself. Making vast numbers of turntables does generate economies of scale, keeping manufacturing costs low.

This makes for a high quality, affordable deck.

It's difficult to describe the £260 *Planar 3*. It's

The *Elite*, a turntable for those upgrading from a mini system.



been around so long now that most reviewers consider it an old friend — even most of the people at Rega couldn't remember exactly when the deck was introduced.

Although Rega has been making turntables for 20 years, the *Planar* design was launched back in 1977. It has been subtly improved since then, but the only major change during its lifespan has been the switch to Rega's own *RB300* arm instead of the S-shaped Japanese-sourced *R200* arm, some 10 years ago.

To this day, its popularity remains undiminished, with over 1,000 decks a month leaving the company's Southend factory. Although the deck is fitted with the highly-respected *RB300* arm, no cartridge is supplied as standard. Rega's unique Pöcan bodied £74 *Elys* cartridge, designed specifically for the *RB300* arm, was included in our review package.

Even though no 78 rpm records were made after the fifties, there are still collectors with substantial libraries, who can't use their discs on most current turntables. The obvious exception is the £199 Thorens *TD180*, which can play 78s in addition to 33 and 45 rpm records. The optimum shape for a monophonic 78 stylus is slightly different to a stereophonic one, so the Thorens is fitted with a Stanton *500* cartridge, with interchangeable styli. For those who don't need the 78 option, the turntable is supplied with an Audio-Technica cartridge, at a £20 saving.

The Thorens *TD180* also boasts semi-automatic operation, as well as being the only deck in the test to feature automatic arm-lift at the end of each side.

Construction

Ariston	■ ■ ■ ■ □ □
Pro-ject	■ ■ ■ □ □ □
Rega	■ ■ ■ ■ ■ ■
Thorens	■ ■ ■ □ □ □

In fairness, the build quality and construction of each deck reflects its price perfectly, but the superb production engineering of the Rega *Planar 3* stands head, shoulders and a fair amount of torso above the others. Simple, solid and built to last, the only



Pro-ject's *0.5* is a real bargain for those on a beer-budget.

criticism that can be made of the Rega's construction is of the elegant but dappy slot-in plastic hinges attaching the lid to the deck.

The Thorens and the Ariston are pretty evenly matched. Overall, the Thorens *TD180* feels a little less rugged than the Ariston, but there is little between the two. Although the Thorens' tonearm is small and spindly, and the thin plinth has a distinct boxy resonance, the semi-automatic operation is quiet and behaves well. Four sturdy feet support the deck.

Ariston's *Elite*, on the other hand, lacks the automation of the *TD180* — which means there's less to go wrong — and the *Elite*'s arm seems more resilient and better able to survive the rigours of long-term use. The deck feels sturdy and the plinth is more acoustically dead than the *TD180* but, engineering differences aside, only nit-picking could set the two apart when it comes to build quality.

Just trailing the field is the Pro-ject *0.5*. But even here, the construction is in a different league to the sort of deck found fronting a mini or midi system and it is only just outclassed by the other tables. It is well finished, with some very neat touches like the isolation mounted motor, but is let down by the plastic cartridge headshell, which is only glued to the arm and can come loose. Also, the level of automation is curious. It has the Thorens automatic turntable start, but automatic lift-off is missing and changing speed involves moving the belt position, like the Rega and the Ariston.

Facilities

Ariston	■ ■ □ □ □ □
Pro-ject	■ ■ ■ □ □ □
Rega	■ ■ □ □ □ □
Thorens	■ ■ ■ ■ ■ ■

Unquestionably, the Thorens *TD180* is by far the most feature laden of the test. None of the other turntables in the group offer the convenience of semi-automatic operation, although Rega and Ariston would argue against such frivolities from a sonic standpoint.

As such, with the *TD180* you neither have to turn the deck on, or lift the arm off at the end of the side, although it lacks the cueing facilities of fully automatic operation. If this wasn't enough,

the Thorens also offers the chance to play all those old 78s collecting dust in the attic, and the speed control is switch operated which means no fiddling about with belts, as on the other decks.

Although lacking the versatility of the Thorens, the Pro-ject still offers automatic switch on, thanks to a leaf switch kick-starting the motor when the arm is moved into position above the platter. There is no automatic arm lift-off at the end of a side, however, and changing speed involves removing the platter and adjusting the belt on the motor pulley.

The Ariston *Elite* and the Rega *Planar 3* have next to no automation at all, and appear intent on keeping the less is more faith. You have to cue and lift-off the arm manually, and speed adjustment is like the Pro-ject (although the belt of the *Elite* runs around the deck, making speed change less difficult). Having a totally manual turntable involves a little more work on behalf of the operator, but this is not as bad as it appears at first. All the functions soon become second nature.

Sound quality

Ariston	■ ■ □ □ □
Pro-ject	■ ■ ■ □ □
Rega	■ ■ ■ ■ ■
Thorens	■ ■ ■ □ □

Every deck in this test managed to give a good account of itself. There were considerable differences between the decks, however, more than justifying the purchase of one deck over another.

The Ariston *Elite* was the first tested and made its mark as a pitch stable and rhythmic performer, especially with funk and indie rock tracks. Surprisingly, it made an unusually big difference between 33rpm albums and 45rpm 12in singles, sounding considerably more dynamic and forceful on 45s.

On reflection, this difference was more to do with the *Elite's* indifferent performance being 'pepped up' by the cut of a 12in single than any magical turntable neutrality. Although what was there sounded tightly defined, it suffered from a lack of bass, as if there was a substantial roll-off. This, combined with a hard, glassy sounding treble, made the overall sound quality rather uncomfortable, especially when compared to the more expensive decks in the test.

It simply didn't shine with any kind of music. The *Elite* rarely sounded exciting and for the most part proved slow and two-dimensional. At the same time, it blurred transients together and removed the attack and release from fast brass chops. Curiously, the player was not as

Fitting a cartridge in nine easy stages

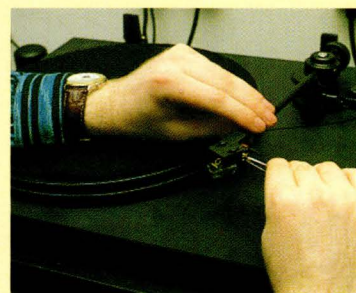
Three of the four turntables in this test are supplied with a cartridge as a complete package. The Rega *Planar 3*, like most decks sold through specialist dealers, comes without a cartridge, but it's very unlikely to leave the shop without one being fitted.

Fitting a cartridge is a dying art, but a careful installation is vital to ensure a good sound. Simply attaching one at random to the front of the tonearm is likely to do more harm than good, severely damaging your records. So follow our simple guide for perfect results every time.



1 Loosely fit the cartridge to the slotted grooves in the headshell of the arm. Tighten the mounting nuts and bolts, but leave enough slack to reposition the cartridge by hand.

2 Using a pair of tweezers, fit the four colour-coded wires from the tonearm onto the appropriate colour-coded pins at the rear of the cartridge.

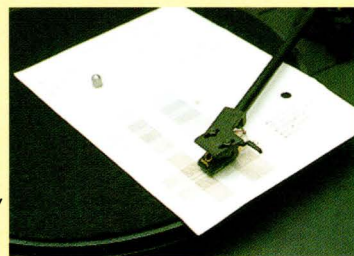


wires from the tonearm onto the appropriate colour-coded pins at the rear of the cartridge.

3 Place the turntable on a level platform. Remove the stylus guard from the cartridge. By moving the rotating counterweight to be found at the rear of the arm, attempt to balance the cartridge, so that the arm floats freely along the horizontal plane. Set the free-spinning dial on the counterweight to zero and dial in the tracking force of the cartridge by moving the entire counterweight assembly. The tracking force is usually given in the cartridge manufacturer's specifications and is typically between 1.5gm and 2gm.

4 Place an old record on the platter but do not set the platter spinning. Place the arm on the record. By sight, try to make the cartridge parallel to the record. Replace the arm on the rest and adjust the Vertical Tracking Angle of the cartridge by raising or lowering the pillar at the rear of the tonearm.

5 Adjust the overhang and tracking of the cartridge, using an alignment protractor like the *Polestar* in our picture. Take great care to get the alignment correct, as care and attention at this point reaps great sonic rewards. Once this alignment is correct, tighten the cartridge bolts so that there is no more play and the cantilever is the only part of the cartridge that can still move. Re-check the alignment, in case it has been moved accidentally when tightening the mounting bolts.



6 Repeat steps 3 and 4, with greater care and attention.

7 Position the anti-skating dial (or adjust the hanging weight) to match the downforce of the cartridge being used.

8 Clear away all the tools, sit back, relax and play a record. The cartridge will normally take many hours to run in — if you are impatient, leave the cartridge tracking through a locked groove (like The Beatles *Sergeant Pepper*) for a weekend. This will help to bed the cartridge in properly.



9 Remember that most moving magnet cartridges have removable styli that should be replaced every two to three years, depending on use. Unfortunately, moving coil cartridges do not have removable styli, and need replacing — or retipping — after the same length of time.

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TURNTABLES

dynamically challenged as expected from its overall performance, the *Elite* being capable of defining the swings of music from loud to soft quite well. Ultimately, however, its performance was marred by too many problems, despite its low price.

There appeared to be an odd balance with the Stanton 500 cartridge in the Thorens turntable. It seemed to have lost most of the treble energy from any rock track, especially from the right hand channel. Overall, however, the Thorens was a good balance between sound quality and convenience. Bass performance was well defined with good depth.

Vocals were articulate and easy to listen to. However, it failed to define the air around the voices and instruments, suggesting a lack of fine detail on any

The fierce competition from CD seems to have forced an improvement from the surviving turntables.

Thorens-played record. That one criticism aside, the player played music with an air of confidence that was lacking in the cheaper decks. It is left wanting when compared to decks like the Rega *Planar 3*, even when using an identical Audio-Technica cartridge, but offers a valid performance for serious turntable users.

Surprisingly, given the large price differential, there was little between the performance of the Thorens and that of the Pro-ject. The Pro-ject 0.5 had a clarity and detail that was way beyond expectations, especially at the price. It had a lively, upbeat nature but was not as smooth sounding as the best of the group. It was also found wanting in depth of bass.

The Pro-ject 0.5 had an up-front sound, with clear, bright, yet unfatiguing treble and a great sense of stereo depth and focus, though the stereo image was not as panoramic as that portrayed by the Rega or the Thorens. Sounds were a trifle ragged at the frequency extremes, though the mid-band was clear and lucid.

Rega's *Planar 3* was definitely still the star of this turntable line-up.



If anything, it had a more lively, detailed presentation than the Thorens, although that models' good manners gave a better sense of balance on classical music. But it's impossible to view the Pro-ject without taking the extreme low price into account, which makes it superb value.

The Rega turntable was clearly superior to the others in the test. Although more costly, it more than justified the extra expense. The *Planar 3* was the only player to make sense of spatial information and give life and breath to vocals.

With its own *Elys* cartridge in particular, the Rega had by far the smoothest treble, with the deepest, most rhythmic bass, the tightest, fastest sense of timing and by far the most neutral performance of all in this particular group.

Most noticeable was the high level of listenability, regardless of the type of music played. It could deal with the upbeat funkiness of Galliano's *A Joyful Noise Unto The Creator* with as much ease as it coped with the enthusiasm of *The Pirates of Penzance*. More than any other deck in the test, the Rega *Planar 3* shows just what makes people cling to their vinyl, even today.

Verdict

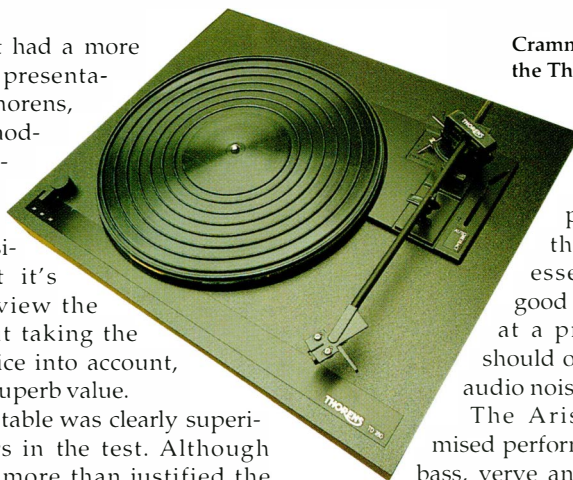
Ariston	■ ■ □ □ □ □
Pro-ject	■ ■ ■ □ □ □
Rega	■ ■ ■ ■ □ □
Thorens	■ ■ ■ □ □ □

Although budget turntables are packed with compromises, in fairness not one of the decks in this test behaved so badly that it was unlistenable. The fierce competition from CD seems to have forced an improvement from the surviving turntables.

Ten years ago, I doubt if a test of budget decks would have proved so successful.

In many respects, the Pro-ject 0.5 is the real star of the show. Its performance and build quality are far better than one would reasonably expect from so cheap a turntable, breathing an infectious sense of fun into any recording. Sure, it has more compromises than the Liberal Party

Crammed with facilities, the Thorens TD180.



manifesto and more flaws than a Bosnian peace treaty, but the 0.5 gives the essence of what good hi-fi is all about, at a price where you should only expect low-fi audio noises.

The Ariston's compromised performance, lacking in bass, verve and spatial effects, would be unforgivable were it not for its low, low price. It is not a fundamentally poor deck, and its tight, undemanding sound will appeal to those making a system on a micro-budget, with cheap amplifiers and bass-light speakers.

Both the Ariston *Elite* and the Pro-ject 0.5 turntable are perfect upgrades for the midi system owner, looking for an undemanding turntable. Disregarding the sound quality, the price differential between the two weighs heavily in the Pro-ject 0.5's favour. At this level, where price-tags can make or break a product, the extra £30 makes the Ariston less of a bargain than the Pro-ject. The fact that the Pro-ject actually sounds better is all part of the bargain.

Finally, the Rega *Planar 3* may be the oldest and most expensive turntable in the test, but it's also streets ahead of the others and shows no signs of ageing at all. It is still one of the record players to beat at any price, with a neutral performance and a build quality that others can only aspire to.

The *Planar 3* was always one of the main examples of the 'flat earth' philosophy in the eighties, proving that a system is only as good as the source component used. Although the source-first argument has fallen from grace of late, the Rega *Planar 3* makes a strong case in defence of such systems.

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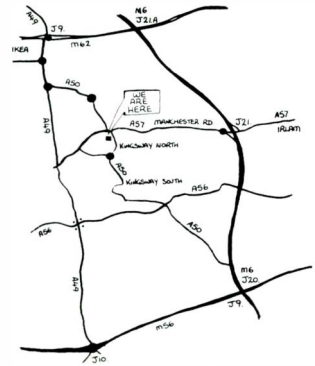
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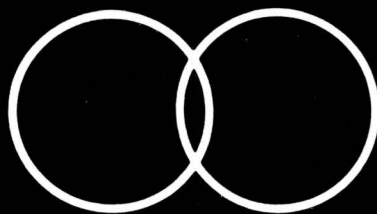


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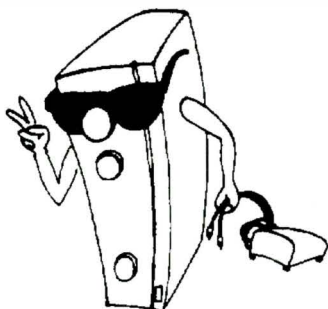
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Kenwood KX-7050S	£400
NAD 602	£200
Nakamichi DR-2	£580
Pioneer CT-S420	£250
Sony TC-K611S	£330
Teac V-7010	£800
Technics RS-BX646	£230

The first real digital rival to the ubiquitous compact cassette was Digital Audio Tape, first seen in the mid-eighties. Now we've witnessed the arrival of two more quite different and apparently viable digital recording media, MiniDisc and Digital Compact Cassette. Both appeared on the dealers shelves while no-one was watching some time ago.

In anticipation of a brave new world rendered afresh in numerical code, most of the major tape hardware producers put analogue cassette deck development on ice, making the flow of new ideas and cassette decks slow to a trickle. Over the last two years, it has been a struggle to put a sensible group of new decks together for our regular tests. Now things seem to be changing. I make no claims for a new golden age of analogue cassette decks or anything so fanciful, but there has definitely been a levelling out.

New models are beginning to emerge again and sales are still being made. It looks as though we may have been too quick to write off a mature and effective technology that is capable of doing the right job in the right way, and at a price that people are prepared to pay.

Accordingly, we have managed to gather a group of cassette decks for test, and even had the luxury of a spread of prices and specifications. We assembled a group which included low-cost models with minimal gadgets, and expensive ones made the same way.

There are high spec decks at most price levels (our group spans the £200-£800 band). There are decks with automatic tape alignment circuits, and some without. Best of all,



On test: cassette decks

The future of compact cassette looks rosy, even against digital opposition. Tape tycoon Alvin Gold looks at nine newcomers to the cassette challenge.

CASSETTE DECKS

Why is Dolby S so special?

Dolby B and Dolby C are hiss reduction processes which, in essence, boost the signal to be recorded in order to keep it clear of the hiss. On playback, the boost is reversed, reducing hiss in the process.

A complication arises because the boosted signal must not be allowed to peak so high that the tape can't accommodate the signal, and it is solutions to this problem that made Dolby such an outstanding success. But this doesn't mean that it's perfect, or that Dolby B or C tackle all the problems associated with recording onto tape. This is where Dolby S steps in.

Dolby S is a simplified version of Dolby SR, a professional signal processing (not just noise reduction) strategy. It consists of a number of circuits operating together to reduce hiss across the frequency band — not just at high frequencies, where Dolby B and C operate — with the minimum possible audible intrusion.

Several different measures are taken to ensure that noise reduction is supplied in such a way that the background hiss can't be heard to vary, which is a problem with Dolby C in particular, especially with piano and other transient-rich music.

Techniques employed include varying the bandwidth of the signal compressors as the music changes, using three separate stages of signal processing to cover the entire frequency band, and using weighting networks and filters that modify the action of the processors where the system is likely to be audible. If you like, Dolby S analyses the nature of the signal to be recorded, and responds intelligently.

A secondary property of Dolby S recordings is that, in the absence of a Dolby S playback deck, they will operate satisfactorily with a Dolby B processor at the cost of some mild compression, which can actually be beneficial. This is especially noticeable in a car where ambient noise levels can swamp quiet musical passages.

even leaving Dolby S to one side? Or, is it as much a demonstration of the power of shrewd marketing?

Four of the nine models tested cost under £300 — some well under — and the other five cost more. Taking this as the dividing line between ordinary, commercial cassette decks that sell widely in real quantities, and the more restricted market for high class decks designed to

compete on more or less equal terms with CD players as a prime music source, a secondary aim of the tests was to try and determine if it is really worth paying the extra.

Does a £500 deck sound £200 better than a £300 deck? Does performance bear a direct one-to-one relationship with price? And which facilities are important, or is it all down to quality of engineering?

Setting your recording levels

Setting recording levels is a black art. The optimum setting depends on factors such as the cassette deck, the tape and the music.

In general, drive the tape as hard as you can. Ferric tapes can usually be peaked to around +3dB on the record level meters; chromes a dB or so higher; and metals on average about +6dB. The distortion measurements in the reviews made at 0dB and +8dBV ref 0VU (counter zero) should help.

Using a high recording level reduces background noise, which may mean you can manage with a less powerful noise reduction system (Dolby B instead of Dolby C). This inevitably pays audible dividends.



Push the levels to the limit to get the best from your recordings.

How the tests were done

As always, the tests were conducted in two parts, listening and laboratory tests, with the measurements being used to confirm the listening results, rather than the other way around. The measurement programme was performed by the author, using a Hewlett Packard spectrum analyser to analyse the mechanical behaviour of the transports, and a Lindos computer measurement system for the figures and frequency responses.

The two types of measurement that correlate most closely with the listening results are the frequency responses and the spectrum analyses. Small, local aberrations in the response plots are generally less important than overall trends affecting a wide range of frequencies, and to a first approximation, the 300Hz-5kHz band has the greatest influence.

Listening was done using a high quality hi-fi system with both speakers and headphones, and mainly using TDK tapes corresponding to the industry standard IEC references. These are not necessarily the high-fliers, but all decks should be capable of using them to good effect. These tapes were TDK AR (Type I ferric), SA (Type II chrome bias) and MA (Type IV metal).

perhaps, there are two Dolby S cassette decks, including the celebrated Sony TC-K611S, the cheapest single transport Dolby S model yet at £330.

There are some common features that run throughout the models tested. They're all single transport designs with unidirectional transports. No twins, and no auto-reverse models have been included this time.

Our primary aim was to pitch the Sony against both its Dolby S and non-Dolby S equipped competition. The Sony has scarcely been out of the headlines since its release a few months back, and it has already won important industry awards.

Do the benefits of Dolby S outweigh other factors, or is the Sony so attractively priced that it can compete on all grounds,



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Denon DRS-810



Denon's latest addition to its drawer loading cassette deck range is the £300 DRS-810. This model boasts a new closed loop, dual capstan mechanism, featuring an improved (heavier) flywheel, and no less than four motors, including the horizontal lift attendant that operates the drawer.

The features list is unusually gimmick-less, suggesting that the deck is aimed at the serious, quality market. Naturally, you get three heads and independent off-tape monitoring in real time, as the recording is being made. Dolby B, C and HX Pro are included with a defeatable MPX filter switch, and a time/elapsed time/remaining time feature. The latter is very necessary as the tape is invisible once inserted, though two button presses are required to obtain this information. One is to select tape length as the deck can't work this out for itself — the usual method is by measuring differential hub rotation.

Most of the minor controls are squirreled away behind a full-width flap, including the headphone socket and associated volume control, and Dolby switching. With the cover closed, the Denon is remarkably clean and attractive to look at. System remote control is possible. The best bits, however, are the less obvious ones; the anti-resonance case construction, the sophisticated power supplies, and the wide range (50dB) record level meters to mention just three.

Sound quality

On paper, everything looked right, but the DRS-810 was unexpectedly disappointing. The problems were not all that obvious. A quick audition suggested a clean, tidy and stable sounding deck, with only a slightly compressed feel giving the game away.

More careful and extended listening revealed a lack of subtlety, and a certain clamping down on the ambient trails of louder sounds with Dolby noise reduction active. It was as though the processing was not companding properly as

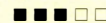
musical dynamics altered. I know I've been critical of aspects of some Dolby installations in the past, but this is unusual.

Without Dolby, matters improved somewhat. However, the mild compression remained apparent, and increased in severity with each step down the bias ladder, that is, when changing from metals to chrome bias tapes, and then to ferrics (Type IV, II and I respectively). Prerecorded material was handled well, but then prerecorded tapes are

VERDICT

- ▲ Aesthetics; ease of use and an excellent tape transport mechanism.
- ▼ Rather unsubtle sound; short on ambient, low level detail, especially with Dolby noise reduction.
- ▶ £299.99

SOUND QUALITY



VALUE FOR MONEY



rarely of a standard that will show up subtleties of the type described.

Conclusion

The drawer loading mechanism leads to a clean, attractive design, and as a musical tool, the Denon gave a fair performance. Its transport is among the best at this price, helping produce a praiseworthy, solid sound. The signal processing side, however, was less satisfying, and the DRS-810 was felt at best undistinguished, and at worst clearly flawed in its dealing with fine detail.

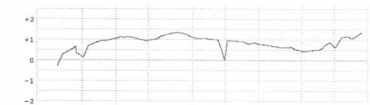
Hayden Laboratories Ltd, Chiltern Hill, Chalfont St Peter, Bucks SL9 9UG. ☎ (0753) 888447

LABORATORY REPORT

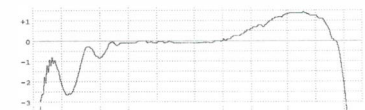
Wow & flutter IEC386 Q-Pk %			
Pk Wtd			0.138%
Mean Wtd			0.096%
Crosstalk ref 0dB			
100Hz			-45.8dB
1kHz			-44.5dB
6.3kHz			-35.1dB
10kHz			-32.2dB
Tape type			
	IEC Type I	IEC Type II	IEC Type IV
Noise CCIR 468-3 Q-Pk IEC			
Peak Wtd	-40.2dB	-45.4dB	-43.1dB
Peak Unwtd	-44.1dB	-46.3dB	-45.8dB
Mean Wtd	-40.4dB	-45.6dB	-43.3dB
MOL 3% ref 0dB			
1kHz	+5.3dB	+0.5dB	+1.2dB
Distortion (THD+N) @ +8dB			
100Hz	n/a	15.5%	n/a
1kHz	n/a	11.6%	n/a
6.3kHz	n/a	2.84%	n/a
Distortion (THD+N) @ -8dB			
100Hz	0.84%	0.63%	0.63%
1kHz	0.98%	0.59%	0.63%
6.3kHz	1.09%	0.82%	0.75%
Dimensions (wxhxd)		43.4x12.2x31cm	
Average wind/rewind time (C90)		2 min 20 sec	

Although not all the distortion figures were run — the test equipment didn't like the playback tape — the Denon appears to have a slightly narrower effective dynamic range than other comparably priced machines. This means, for example, using Dolby C where B might have done. Wow and flutter was good, analysis showing a clear central peak, which implies an accurate pitch and low levels of programme wow.

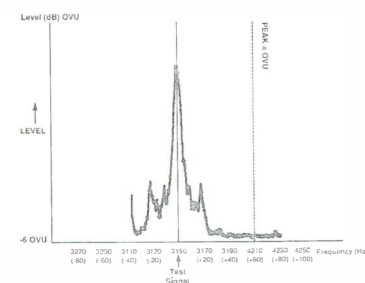
The 2dB hump in the frequency response with metal tapes is unexplained, and isn't totally correctable with the bias trim pot. The other plots, are exemplary.



Type I, playback only: excellent playback response, though the two channels diverge about 2dB.



Type IV, record/playback: Some divergence between channels — the other (not shown) is flat in the treble.



A good result (low wow and flutter) for a deck in this particular price range.

Harman/Kardon TD4400



This is a high quality cassette deck, completely dedicated to making high quality recordings. You can tell this by the lack of superfluous front panel furniture that clutters so many other models. As a result, the £400 TD4400 has just two heads, which rules out off tape monitoring as recordings are being made, and the transport is a single capstan type, albeit a better one than most.

The operating system is a model of simplicity and efficiency, and the controls have a strong tactile quality. Metering is clear and fairly wide ranging, and the basic transport features are supplemented by track search and intro scan, both worth having on a cassette deck. The Harman literature pointedly remarks that these two features are not included on Nakamichi decks up to £1,000 — but then Nakamichis do have headphone sockets, which the TD4400 doesn't.

The name of Nakamichi is taken in vain elsewhere too. Describing the unusually wide frequency responses, the claimed bandwidth is up to 22kHz (-3dB) with all tape formulations measured at -20dB, which H/K notes is equalled only by Nakamichi. Our tests were done at a slightly more searching (and useful) -10dB, and failed to confirm this figure.

The TD4400 otherwise succeeds or fails by the quality of the internals, which include fully discrete, low negative feedback record and replay chain electronics, where others typically use high feedback integrated circuits.

Sound quality

The TD4400 joins the select rank of those able to make sense of more demanding tape types, notably metals. The deck was impressively clean and tactile sounding, with strong dynamics, a sharp, almost etched treble quality with high energy tapes and a perceptible but not catastrophic softening in the lowest couple of octaves.

Stereo focus and stability was of a high order, more reminiscent of higher price dual

capstan decks than other single capstan models. H/K must know something about transport design that eludes most of its competitors — or maybe others see dual capstans as a necessary component of any ambitious design, irrespective of its real technical benefits.

There is just a mild coarsening of textures when recording on metal tapes with Dolby C, but the deck sounded airier and less constrained with the Dolby setting reduced to B. It is not the first time that Dolby C has had this rather

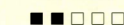
VERDICT

- ▲ Sparsely equipped, but immaculately engineered; a product of real integrity.
- ▼ No headphone socket; no timer standby (important for unattended recordings); not cheap.
- ▶ £399.99

SOUND QUALITY



VALUE FOR MONEY



uncomfortable effect on music, often concentrated, it seems, on the intelligibility of voices.

Conclusion

If you want a cassette deck with all the bells and whistles, look elsewhere. This one has few bells, and absolutely no whistles, nor is it bargain basement material. On the other hand, if you want solid, no nonsense engineering and sheer musical excellence (stopping some way short of brilliance) look no further.

Harman UK, Unit 2, Borehamwood Industrial Park, Rowley Lane, Borehamwood ED6 5PZ.

☎ 081-207 5050

LABORATORY REPORT

Wow & flutter IEC386 Q-Pk %

Pk Wtd	0.106%
Mean Wtd	0.086%

Crosstalk ref 0dB

100Hz	-30.1dB
1kHz	-40.6dB
6.3kHz	-39.1dB
10kHz	-39.0dB

Tape type IEC Type I IEC Type II IEC Type IV

Noise CCIR 468-3 Q-Pk IEC			
Peak Wtd	-40.5dB	-45.3dB	-42.7dB
Peak Unwtd	-45.2dB	-46.8dB	-46.9dB
Mean Wtd	-40.7dB	-45.6dB	-42.8dB

MOL 3% ref 0dB

1kHz	+3.6dB	+0.8dB	+3.0dB
------	--------	--------	--------

Distortion (THD+N) @ +8dB

100Hz	8.45%	15.1%	10.4%
1kHz	5.77%	11.1%	7.38%
6.3kHz	3.48%	3.72%	3.68%

Distortion (THD+N) @ -8dB

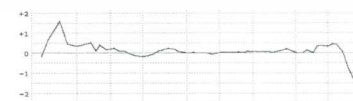
100Hz	0.87%	0.63%	0.68%
1kHz	1.07%	0.71%	0.78%
6.3kHz	1.29%	1.03%	1.31%

Dimensions (wxhxd) 44.2x12.6x21cm

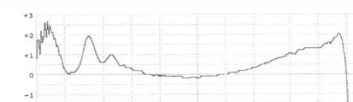
Average wind/rewind time (C90) 2 min 4 sec

As promised, the TD4400 does have a wide operating bandwidth, but not as wide as Harman claims, though differing test parameters may be a factor. Nevertheless, the test showed that the overall record/replay response is -3dB down on one channel at 20kHz with metal tape. The figure drops to 15kHz with Type I ferric tapes, making the 22kHz claim implausible, even taking differences in methodology into account.

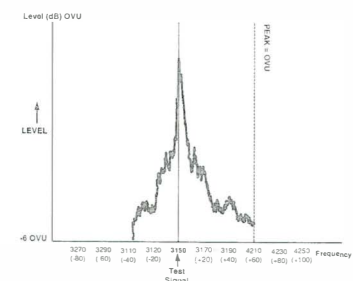
The other notable feature of the TD4400 is the excellence of its (single capstan) transport. The moral of the story is that, in the final analysis, it is the 'how' rather than the 'what' that counts.



Type I, playback only: near perfect playback response shape, especially in treble

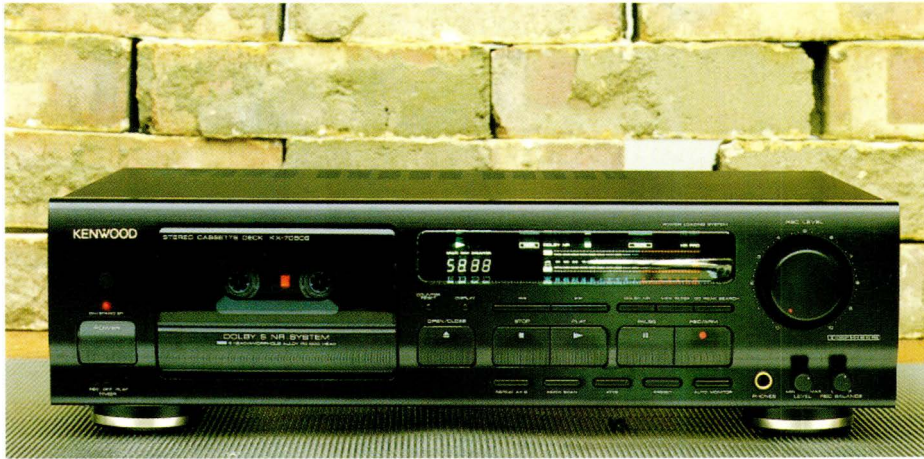


Type IV, record/playback: wide Type IV (metal) frequency response — but not as



Excellent performance from single capstan transport mechanism.

Kenwood KX-7050S



VERDICT

BEST BUY
Hi-Fi CHOICE
MAGAZINE
RECOMMENDED PRODUCT

- ▲ Dolby S; powerful operating features; fairly well endowed beneath the skin too.
- ▼ Slightly fussy style; makes comparatively little of the extra capabilities of metal tapes.
- ▶ **£399.95**

SOUND
QUALITY

■ ■ ■ ■ □

VALUE FOR
MONEY

■ ■ ■ ■ □

ing complex passages with Dolby S, but to a lesser degree than I have noticed elsewhere. Using metal tapes merely added a little more get up and go to the sound — a small but useful point in its favour.

Conclusion

The KX-7050S successfully synthesises features and sound audio engineering — and high-tech Dolby S — at an attractive price. Good value, and strongly endorsed. A dear Best Buy.

Trio-Kenwood (UK) Ltd, Kenwood House, Dwight Road, Watford, Herts WD1 8EB.

☎ (0923) 816444

Astonishingly, this is one of only two Dolby S cassette decks to have been submitted for review, underlining the slow pace at which this important system is making headway. The deck itself is a well-equipped £400's worth, with three heads and a dual capstan transport in which the tape path across the head is closely controlled by differential rotation of two slightly different sized capstans. Single capstan decks control the tape path using tape reel back tension and a single capstan, which is in less effective.

An auto tape bias/equalisation circuit is also fitted. The creative user is not neglected either as the KX-7050S is well endowed with smart search and play options, and can be plumbed into Kenwood brand systems with rear panel system link sockets.

Beneath the deceptively familiar flowing lines of this cassette deck, Kenwood has done a great deal of work to bolster performance. Bias frequency has increased to 210kHz to reduce beat noise (intermodulation between bias harmonics and the music signal) which has necessitated a new erase head design. An amorphous alloy record head is mounted on a rigid base block. The usual bias trap coil in the replay equaliser has been replaced by an op-amp, improving signal-to-noise and (claims Kenwood) sound quality. Finally, the signal ground circuit has been redesigned to reduce non-audio components.

Sound quality

This model provides an object lesson on what's wrong with Dolby C — and right with Dolby S. On paper, Dolby C and S offer roughly similar levels of noise reduction, yet their effects on music were quite different.

Using a good Type II tape (TDK SA, properly adjusted using the ATMS feature), Dolby C added the familiar restraining hand to dynamics, and a subtle filter for fine detail. The Dolby S circuit sounded little quieter — differences in hiss, such as they are, are academic

under most conditions of use — but the reduction of modulation noise and the subliminally perceived cluttering effect behind the dominant notes was remarkable.

The phrasing of individual notes was strikingly better than with Dolby C, and the system generally sounded as good as, or better than, Dolby B, which is usually the least manipulative of noise reduction circuits and, of course, clearly superior in signal-to-noise terms. There was some subtle rearranging of textures dur-

LABORATORY REPORT

Wow & flutter IEC386 Q-Pk %			
Pk Wtd			0.163%
Mean Wtd			0.136%
Crosstalk ref 0dB			
100Hz			-44.1dB
1kHz			-44.4dB
6.3kHz			-51.4dB
10kHz			-42.1dB
Tape type IEC Type I IEC Type II IEC Type IV			
Noise CCIR 468-3 Q-Pk IEC			
Peak Wtd	-42.2dB	-48.2dB	-45.4dB
Peak Unwtd	-48.5dB	-52.9dB	-51.7dB
Mean Wtd	-42.5dB	-48.4dB	-45.6dB
MOL 3% ref 0dB			
1kHz	+6.5dB	+3.6dB	-dB
Distortion (THD+N) @ +8dB			
100Hz	7.28%	14.8%	7.85%
1kHz	4.48%	9.96%	2.08%
6.3kHz	2.53%	4.60%	4.18%
Distortion (THD+N) @ -8dB			
100Hz	0.57%	0.62%	0.61%
1kHz	0.79%	0.48%	0.52%
6.3kHz	1.02%	0.79%	0.79%
Dimensions (wxhxd)		44x12.7x32.5cm	
Average wind/rewindtime (C90)		2 min 5 sec	

Following tape alignment, the record/replay frequency responses from Type II and IV tapes were excellent, but Type I tape (TDK AR) appeared over-biased, depressing the treble above 2kHz, the -3dB point being at 14kHz. The replay only response was also slightly lacking in top end.

In other areas, the Kenwood goes a long way to making the best of good quality tapes, with a fine signal-to-noise performance and plenty of headroom at the top end, especially with metal tapes. Pitch integrity was good, but there was a significant level of flutter energy, visible as prominent sidebands in the spectrum analysis.

Peak suggests low wow; note sidebands, possibly from eccentric capstan spindle.

NAD 602



There are decks with three heads, and others with fancy editing widgets, auto-reverse transports or one of those devices that extracts boy scouts from horses' hooves. But maybe you have no use for such things. Maybe you're on a tight budget, or perhaps you only want a cassette deck to make the odd tape for your car. If what you want is just a cassette deck, then this, ladies and gentlemen, is just a cassette deck.

NAD has a strong record making minimalist hi-fi gear, but the £200 602 is about as stripped down as they come. A tight bank of rather clunky transport controls is complemented by a record level, balance, Dolby B/C switching (Dolby HX Pro is included too) and a Play Trim control.

The record level meters are specially designed for illegibility, with bright fluorescent elements completely drowning out the non-illuminated legends (though colour coding helps). The meter is also of limited resolution and has sluggish ballistics, which makes it easy to set too high a level with spiky, transient material. The tape counter is mechanical, and no special tape search aids are fitted.

Finally, the NAD lacks a headphone socket and has no timer standby support, which means it cannot be used to make absentee recordings off air. Build quality is pretty basic, but what do you expect at this price?

Sound quality

First impressions (using Dolby B and TDK SA Type II tape) were of an attractive and reasonably accurate sound which held up with a range of different types of music, even the dense undergrowth of a Mahler symphony, without clutter or severe loss of musical structure, though there was some lightening of balance and of orchestral sonority.

It was with a recording of Ravel piano music, however, that the 602's limitations began to show. Again, sound quality was more than respectable, and the lack of pitch integrity

expected from the laboratory measurements was never too obvious, but a certain fuzziness crept in around the edges of notes. Detail was lost, and ambient information was obscured.

These trends increased significantly when Dolby C was used instead of Dolby B (non-Dolby recording is not really feasible with music that has a wide dynamic range). Metal tapes added a certain strength and energy to recordings compared to chrome bias tapes, but for reasons that are not immediately

VERDICT

▲ Simple, easy to use and workmanlike sound quality; Play Trim makes the most of your existing tapes.

▼ Lacks real depth and weight of sound; pitch stability is marginal; strictly basic motoring.

▶ £199.95

SOUND QUALITY



VALUE FOR MONEY



obvious, the impact of the bass lightened, giving recordings a leaner, meaner but ultimately somewhat emasculated feel.

Conclusion

This is a simple but respectable deck that does a great job adequately. At a slightly lower price it would make quite a sensible purchase, but even after the currency realignments in 1993, £200 seems slightly excessive for what the NAD 602 has to offer.

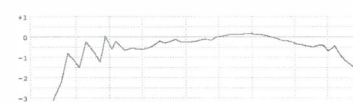
NAD Electronics, Adastra House, 401-405 Nether Street, London N3 1QG.
☎ 081-343 3240

LABORATORY REPORT

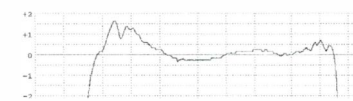
Wow & flutter IEC386 Q-Pk %			
Pk Wtd			0.145%
Mean Wtd			0.120%
Crosstalk ref 0dB			
100Hz			-42.6dB
1kHz			-43.7dB
6.3kHz			-38.9dB
10kHz			-37.6dB
Tape type			
	IEC Type I	IEC Type II	IEC Type IV
Noise CCIIR 468-3 Q-Pk IEC			
Peak Wtd	-42.4dB	-46.1dB	-44.6dB
Peak Unwtd	-46.8dB	-48.8dB	-48.2dB
Mean Wtd	-42.6dB	-46.3dB	-45.0dB
MOL 3% ref 0dB			
1kHz	-0.2dB	+0.3dB	+1.5dB
Distortion (THD+N) @ +8dB			
100Hz	17.7%	18.7%	18.8%
1kHz	10.5%	9.73%	11.0%
6.3kHz	4.19%	2.80%	5.51%
Distortion (THD+N) @ -8dB			
100Hz	1.09%	0.47%	0.67%
1kHz	1.07%	0.53%	0.59%
6.3kHz	1.30%	1.14%	1.33%
Dimensions (wxhxd)	42x12.6x25cm		
Average wind/rewind time (C90)	2 min 15 sec		

The NAD 602 adds to the evidence that solid, high accuracy transports are off the menu at this price level. Wow and flutter is roughly double what would be expected of a typical hi-fi design, with a significant wow element in the spectrum analysis.

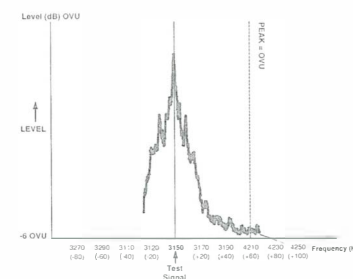
The frequency responses showed good midband and treble alignment, with bandwidth extending to just over 15kHz (-3dB) with metal tapes. Low frequency bandwidth is naturally limited. The NAD won't tolerate high recording levels, but with most music types it is safe to peak recordings around +3dB or so without audible compression. Tape bias noise levels were fair all round.



Type I, playback only: RH channel is flatter; Play Trim helps cure response errors above 10kHz.



Type IV, record/playback: well tailored treble; smooth midband but note excessive upper bass.



Speed instability artefacts are visible in this broad, rather blunt looking plot.

Nakamichi DR-2



To all intents and purposes, the DR-2 is simply a DR-1 (the top of the DR range) without the azimuth adjust feature. The only other omissions I can identify are gold plating on the output sockets, and the output level control — surely an advantage.

Lack of azimuth adjust may reduce replay compatibility with tapes recorded elsewhere, but most will say a hearty 'so what?' to that. Theoretically, the unique discrete three head arrangement that Nakamichi uses to prevent mutual interference between the heads means that azimuth errors can creep in, but I have used a DR-1 extensively, and have never known any correction to be necessary.

The rest of the story is very much as Nakamichi fans will already know. The DR-2 triple head block is mated to a diffused resonance, dual capstan mechanism so finely engineered that the cassette shell pressure pad is rendered redundant, and is lifted clear of the tape by the transport. Apart from a useful bi-directional counter zero search, there are few features of note. Tape type selection remains anachronistically manual and Dolby HX Pro is missing, but a fine bias adjuster is included, and tape/source switching is automatic. As usual for this brand, the abiding impression is of quality and practicality.

Sound quality

The Nakamichi was a notable success in the business of magnetic particle manipulation, particularly when it came to making exotic oxides sing. Many decks sound better with metals than chromes without driving the metal tapes hard enough to make them really come alive. The DR-2 is one of the minority of decks able to wring a real increase in dynamic range from metals that reaches right across the frequency spectrum.

One curiosity which is not readily explained is that much smaller response domain inaccuracies than are found in the Nakamichi cause many other decks to sound

coloured, sometimes unacceptably so. Here, the response modifications seem to be entirely academic. Accurate Dolby tracking may be contributory, but leaving the cause to one side, the effect was that the Nakamichi was acceptably close to being a transparent window to the sound. Midband textures had a palpable feel that could almost be touched (this was demonstrated with startling effectiveness with Suzanne Vega's 99.9F). At the same time, the DR-2 was more than capable of

VERDICT

- ▲ Like a DR-1, with only the unnecessary bits missing, apparently improving performance slightly.
- ▼ The usual Nakamichi problem areas — manual tape type selection, not exactly cheap.
- ▶ £599.95

SOUND QUALITY



VALUE FOR MONEY



doing justice to complex large scale Mahler symphonies, which cassettes can render uninteresting on a good day, and virtually opaque at other times.

Conclusion

In common with its stablemates in the DR Series, and the DR-1 especially, the DR-2 remains stubbornly more than the sum of its parts. It would be downright perverse not to award it a Best Buy.

Nakamichi B&W (UK) Ltd, Marlborough Road, Churchill Industrial Estate, Lancing, West Sussex. ☎ (0903) 750750.

LABORATORY REPORT

Wow & flutter IEC386 Q-Pk %			
Pk Wtd			0.057%
Mean Wtd			0.043%
Crosstalk ref 0dB			
100Hz			-43.3dB
1kHz			-39.8dB
6.3kHz			-40.3dB
10kHz			-36.9dB

Tape type	IEC Type I	IEC Type II	IEC Type IV
Noise CCIR 468-3 Q-Pk IEC			
Peak Wtd	-37.7dB	-42.5dB	-39.1dB
Peak Unwtd	-43.6dB	-46.5dB	-44.3dB
Mean Wtd	-37.9dB	-42.7dB	-39.3dB

MOL 3% ref 0dB			
1kHz	n/a	n/a	+5.2dB

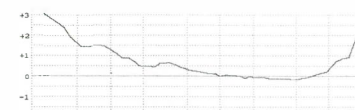
Distortion (THD+N) @ +8dB			
100Hz	0.86%	2.66%	2.21%
1kHz	2.20%	2.15%	0.72%
6.3kHz	2.17%	2.80%	2.92%

Distortion (THD+N) @ -8dB			
100Hz	1.03%	0.63%	0.82%
1kHz	1.10%	0.70%	0.93%
6.3kHz	1.20%	0.87%	0.92%

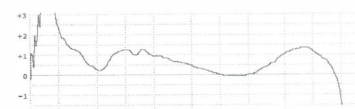
Dimensions (wxhxd)	43x10x32cm
Average wind/rewind time (C90)	2 min 22 sec

Signal-to-noise figures are not remarkable, but there is an enormous amount of headroom above 0VU, which makes it sensible to record at quite a high level. Peaks of around +8dB are acceptable with most types of music (the power spectrum of the music will have a small effect on this).

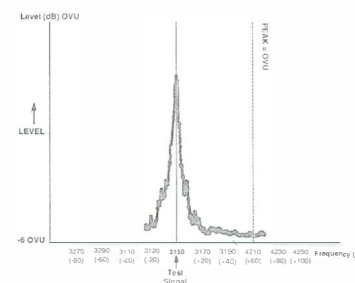
All responses extend to about 20kHz before dying, but the various response shapes (using TDK tapes which are close to the IEC standards) are a little wayward, though correctable using the fine bias adjust control. Finally, transport behaviour is state-of-the-art, beating even the DR-1 reviewed previously. This is probably due to sample variation.



Type I, playback only: typical Nakamichi dished playback response shape, but midband is linear.



Type IV record/playback: good bandwidth, though ±1dB response envelope in midband is surprisingly wide.



Textbook spectrum from Nakamichi with sharp central peak, minimal sidebands.



Pioneer CT-S420



Whether round folks, it's acronym chasing time. According to my calculations, the £250 CT-S420 has been blessed with three; Super Auto BLE, FLEX and MPX filtering, together with a three head auto monitor, display on/off, CD Deck Synchro and SR compatibility (sic).

FLEX is an interesting addition to the usual list. A shortened form of Frequency Level EXpander, this circuit takes the form of a single on/off control, (that is, you can turn it off), and arose from the remarkable observation that most recordings, no matter what the style of music, have a similar power spectrum. In other words, the recorded energy tends to decline with frequency in a fairly orderly and predictable manner.

On the other hand, duff recordings, perhaps made on another deck with a different head azimuth, or from AM radio, or simply from an old tape that has been through the wars, tend to decline in output with frequency at an accelerated rate, sounding dull in the process. FLEX analyses the power spectrum of the recording, and applies equalisation to bring it into line. Hi-fi it ain't, but the circuit can inject a bit of life back into otherwise unusable tapes, while leaving good ones largely alone.

Super Auto BLE is Pioneer's three-frequency tape alignment circuit. It adjusts the record parameters at the press of a button, a process that takes barely 10 seconds. Other highlights include switchable MPX filtering. All Dolby cassette decks have an MPX filter, but it is almost always unnecessary unless you happen to have a really duff old FM tuner, and so here it can be bypassed. Headphone monitoring is at a fixed level, and the SR socketry facilitates remote control when patched into a compatible Pioneer system.

Sound quality

As promised, the FLEX circuit added a touch of vitality and edge to dull prerecorded tapes, but it was no more than a touch. Sadly, the

basic sound from prerecorded tapes was as dull and threadbare. FLEX made no practical difference. You might as well take up watering the garden with a thimble.

The measured frequency responses gave little clue to the way this deck performed. Chrome bias tapes sounded dull and compressed, irrespective of whether noise reduction was or was not being used. Metal tapes redressed the balance convincingly, but still sounded uneven, with an excess of audible

VERDICT

▲ FLEX works (though its influence is masked here by poor set-up), and the deck is generally likeable.

▼ A miss, unfortunately. Prerecorded material sounded ditchwater dull, and native recordings were uneven.

▶ £249.95

SOUND QUALITY

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VALUE FOR MONEY

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energy concentrated in the upper midband area. This resulted in a suggestion of glare and intrusiveness which was particularly noticeable with upfront rock recordings.

Conclusion

Unfortunately for Pioneer, the CT-S420 inhabits a highly competitive area of the market, and there are better £250 decks around. Ironically, given the presence of FLEX, compatibility with prerecorded tapes was particularly poor.

Pioneer High Fidelity (GB) Ltd, Pioneer House, Hollybush Hill, Stoke Poges, Slough, Berks SL2 4QP. ☎ (0753) 789789

LABORATORY REPORT

Wow & flutter IEC386 Q-Pk %

Pk Wtd 0.14%
Mean Wtd 0.11%

Crosstalk ref 0dB

100Hz -43.5dB
1kHz -43.5dB
6.3kHz -37.0dB
10kHz -34.6dB

Tape type IEC Type I IEC Type II IEC Type IV

Noise CCIR 468-3 Q-Pk IEC
Peak Wtd -42.9dB -47.4dB -45.5dB
Peak Unwtd -47.3dB -49.1dB -48.8dB
Mean Wtd -43.1dB -47.7dB -45.7dB

MOL 3% ref 0dB

1kHz -2.0dB -4.3dB -0.3dB

Distortion (THD+N) @ +8dB

100Hz n/a n/a 10.1%
1kHz n/a n/a 7.25%
6.3kHz n/a n/a 5.99%

Distortion (THD+N) @ -8dB

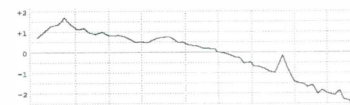
100Hz 0.85% 0.61% 0.56%
1kHz 1.15% 0.65% 0.69%
6.3kHz 1.72% 1.43% 1.40%

Dimensions (wxhxd) 42x12.5x28cm

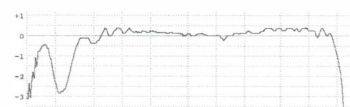
Average wind/rewind time (C90) 2 min 10 sec

Curiously, the replay response run showed output gently declining with frequency, which explains the perceptibly warm, dull balance. A test plot made with FLEX added about 1dB output at 20kHz, but had very little effect below 10kHz. However, the test signal was a single, continuous tone, while FLEX is designed to respond to wideband signals.

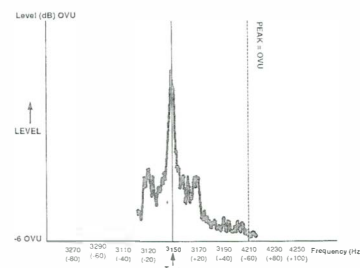
The record/replay responses were exemplary, with a useful 20kHz bandwidth with metal tapes (-3dB), and a well extended bass, indicative of good head design. Wow and flutter was not particularly low, but the artefacts were well distributed flutter rather than the more immediately annoying low rate wow.



Type I, playback only: wayward plot explains warm, slightly dull sound with prerecorded tapes.



Type IV, record/playback: excellent response shape (echoed by other tape groups) thanks to Super Auto BLE.



Modest wow and flutter, but sharp central peak implies good pitch stability.

Sony TC-K611S



Sony really stirred things up with the *TC-K611S*, which at £300 was easily the cheapest single transport Dolby S deck. Unfortunately, the price jumped up to £330 before bulk stocks reached our shores. Although still the cheapest of its type, with models like the Kenwood *KX-7050S* selling at £399, the *K611S* no longer looks quite such impressive value.

In addition to Dolby S, and HX Pro, the deck has timer standby, variable headphone monitoring and, irritatingly, manual tape/source switching. The deck is lightly but adequately built, with component and engineering quality commensurate with the selling price. The transport employs single capstan drive.

The deck is also equipped with a rather disappointing manual tape calibration system. Disappointing because it needed its maximum bias setting to cope with a mainstream, IEC compliant TDK *MA*, because it consistently over-biased tapes when the correct alignment was indicated. What's more, adjusting for one tape automatically meant that existing settings for other tape groups were lost.

Sound quality

Experience suggests that integrating Dolby S successfully into a cassette deck is no trivial matter, and the *611S* presents an object lesson in the difficulties involved. Although technical performance is mainly respectable, it is a little rough around the edges, and this takes its toll.

Intrinsic sound quality is clean in the mid and top, but there is some lightening of textures through the bass. Taking Dolby B as a baseline with TDK *MA* correctly aligned (that is, not as per the calibration system), the Dolby C and S circuits both sounded rather flat and opaque. There were no obvious Dolby artefacts such as noise pumping with Dolby S, but the sound lacked transparency, as though a thin layer of cloth had been draped in front of the speakers. Dolby C was little different in this respect, and my preference was

for Dolby B, which was simply livelier and sharper, with adequate hiss reduction.

The Sony was unimpressive with metal tapes, sounding rather rattly and aggressive when driven too hard. Overall, a good Type II such as TDK *SA* does at least as well at considerably lower cost.

Because the Dolby S stipulation for head azimuth and other playback parameters are strict, it was expected that replay compatibility would be a strong point. It was, but Dolby S

VERDICT

RECOMMENDED
HI-FI CHOICE
MAGAZINE
BEST BUY CASSSETTE DECK

- ▲ Dolby S; slick operation; dry but clean and tidy sound and attractive pricing.
- ▼ Slightly rough around the edges; tape alignment system is flawed; Dolby C and S reduced transparency.
- ▶ £329.99

**SOUND
QUALITY**

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**VALUE FOR
MONEY**

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provides no advantage here unless and until prerecorded titles start becoming available in real quantity.

Conclusion

Recommended certainly, and good value at £330. Nevertheless, the *TC-K611S* doesn't offer quite the bamstorming performance I had expected. This is partly because the price has crept up, and also because there are signs of cost cutting — presumably to pay for the Dolby S installation.

Sony UK Ltd, Sony House, South Street, Staines, Middlesex TW18 4PF. ☎ 081-784 1144

LABORATORY REPORT

Wow & flutter IEC386 Q-Pk %			
Pk Wtd			0.128%
Mean Wtd			0.085%
Crosstalk ref 0dB			
100Hz			-41.6dB
1kHz			-40.0dB
6.3kHz			-36.6dB
10kHz			-33.4dB

Tape type	IEC Type I	IEC Type II	IEC Type IV
Noise CCIR 468-3 Q-Pk IEC			
Peak Wtd	-43.8dB	-48.0dB	-45.6dB
Peak Unwtd	-42.0dB	-42.4dB	-41.5dB
Mean Wtd	-44.0dB	-48.1dB	-45.8dB

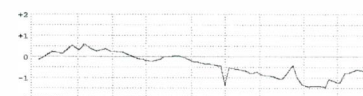
MOL 3% ref 0dB			
1kHz	+0.2dB	-1.6dB	n/a

Distortion (THD+N) @ +8dB			
100Hz	16.2%	18.8%	10.10%
1kHz	10.8%	11.7%	3.19%
6.3kHz	2.37%	4.59%	5.34%

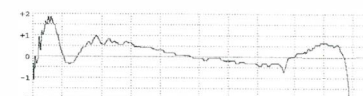
Distortion (THD+N) @ -8dB			
100Hz	0.70%	0.82%	0.62%
1kHz	0.88%	0.64%	0.64%
6.3kHz	1.17%	1.00%	1.18%

Dimensions (wxhxd)	43x12.3x30.6cm
Average wind/rewind time (C90)	2 min 6 sec

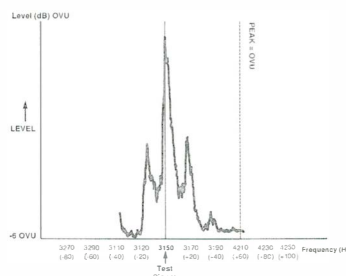
The tape alignment system consistently over-corrects, giving a rather dull balance. This explains some of the compressed feel that was noted during listening sessions. The exception is TDK *MA* (metal) for there is insufficient bias current on tap to allow over-biasing. This didn't apply with *MAXG* which was within the Sony's adjustment range, and which produced a dull and uneven response — signs of over-biasing when adjusted by the book. Note also the high distortion levels at high recording levels, indicative of head saturation effects and confirming the marginal metal tape compatibility noted earlier.



Type I, playback only: good result; downwards output tilt towards treble is just detectable.



Type IV, record/playback: accurate response, but tape calibration system suggests under-biasing.



Respectable wow and flutter — note sharp sideband about -3dB down.

Teac V-7010



The £800 V-7010 is the flagship of the Teac range. It is quintessentially a Japanese home market model, with an imposing edifice of a front panel and a macho tape transport section mounted amidships. The effect is only mildly tamed by wooden side cheeks.

This is an enthusiast's design, pure and simple. For example, a tape bias/equalisation system is fitted, but it isn't automatic, which is bound to alienate many potential users. Modus operandi involves using a special display mode, following which bias and level (sensitivity) can be tweaked in a few seconds. There are comparatively few of the more glamorous features expected of high-end decks these days (shades of Nakamichi), other than a Rio Tinto Zinc button (effectively a bi-directional return to counter zero circuit) and two line level inputs. The V-7010 will not win any ergonomics prizes, and despite being a very costly flagship product, Dolby S is notable by its absence.

Of course, the 7010 is a three head deck, with an elaborately engineered dual capstan mechanism with quartz referenced direct drive capstan motors. The transport and its mounting employs various anti-resonance measures, and is suspended from the main copper plated steel chassis. Massive power supplies and extensive internal screening distinguish this model, which tips the scales at an unusually massive 8kg.

Sound quality

At first I found it very difficult to distinguish recordings made on this deck from the original source material, even in a high resolution, wide bandwidth system. To my surprise, this even held when Dolby C was selected. This deck is effectively transparent.

Nearly transparent anyway. Soon I began to notice a certain softness at the frequency extremes, the bass especially, and a slight loss of vocal inflection and intelligibility with some female vocal material (for example, with Mary

Black). At the same time, the midband took on a subtly harder edge than the source. The fact remains, however, that none of these things was immediately obvious, and it took time to hear what the Teac was doing — or not doing.

Changing down a gear to chrome bias tape caused the sound to lose some of its edge. Objectively, the sound remained pretty good, but the spark of vitality vanished. Dolby HX Pro is supposed to eliminate the subtle bias modulation that causes the compression that leads to

**RECOMMENDED
HI-FI CHOICE
MAGAZINE**

VERDICT

- ▲ Enormously capable; heavyweight build; transparent sound with Type IV tapes.
- ▼ Not user friendly, and a sledgehammer to crack a nut for many people.
- ▶ £800.00

**SOUND
QUALITY**

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**VALUE FOR
MONEY**

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this effect with lower bias tapes, but it rarely convinces totally, and it doesn't do so here.

Conclusion

There is no doubt that the V-7010 is an extremely capable deck. It brooks no compromise on tape quality, and likes Type IV tapes like TDK MA, or (even better) MA-XG if it is to perform at its best. Recommended then, but it is not cheap, and without Dolby S it looks rather vulnerable.

Teac UK Ltd, 5 Marlin House, The Croxley Centre, Watford, Herts WD1 8YA.

☎ (0923) 819630

LABORATORY REPORT

Wow & flutter IEC386 Q-Pk %			
Pk Wtd			0.090%
Mean Wtd			0.072%
Crosstalk ref 0dB			
100Hz			-42.8dB
1kHz			-43.4dB
6.3kHz			-39.3dB
10kHz			-44.7dB

Tape type	IEC Type I	IEC Type II	IEC Type IV
Noise CCIR 468-3 Q-Pk IEC			
Peak Wtd	-44.3 dB	-47.6dB	-45.6dB
Peak Unwtd	-50.9dB	-53.2dB	-52.0dB
Mean Wtd	-44.5dB	-47.9dB	-45.8dB

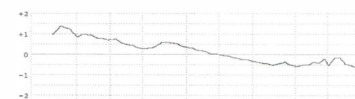
MOL 3% ref 0dB			
1kHz	+3.1dB	+1.3dB	+4.6dB

Distortion (THD+N) @ +8dB			
100Hz	10.5%	13.4%	7.72%
1kHz	7.42%	8.28%	2.98%
6.3kHz	1.43%	3.06%	2.99%

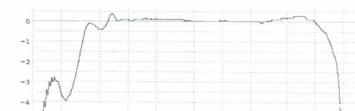
Distortion (THD+N) @ -8dB			
100Hz	0.47%	0.58%	0.57%
1kHz	0.76%	0.51%	
6.3kHz	1.06%	0.75%	0.73%
Dimensions (wxhxd)		47.2x14.9x35.5cm	
Average wind/rewind time (C90)		2 min 0 sec	

Treble bandwidth is a little narrower than expected, -3dB with metal tapes being no higher than 16kHz, but the responses are extremely accurate, and operating dynamic range is first class. The replay only response shape was little worse, and was notably well extended, indicating an excellent state of azimuth adjustment.

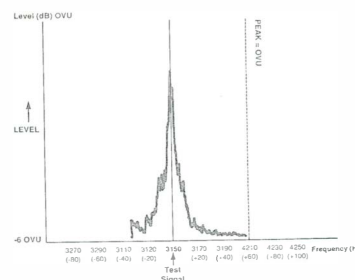
The Teac's transport is truly excellent. In common with the Nakamichi DR-2, this is top of the range material, the numbers being incredibly low. The spectrum analysis was notable only for the lack of discrete wow or flutter artefacts. Only a mild broadening of the peak distinguishes the Teac from textbook perfection.



Type I, playback only: excellent replay compatibility, thanks partly to well set-up head geometry.



Type IV, record/playback: very accurate response shape, but note slightly truncated treble.



This is what a nearly perfect wow and flutter spectrum analysis looks like!

Technics RS-BX646



Despite the modest £230 price-tag, the RS-BX646 is unusually well built. The structure is solid and non-microphonic, thanks in part to a composite steel and rubber base section which is the foundation to which everything else is attached. The impression of quality, however, goes far deeper than this, and is reflected in an initially confusing, but superbly engineered, set of controls. The display area is another quality item, though the record level meters are short, and there are sound technical reasons for mounting the transport centrally.

The RS-BX646 is a three head deck with off tape monitoring, but the star feature, the one that sets it apart from other decks in the same price area, is the so-called Advanced ATC (Auto Tape Calibration) process.

Although it isn't quick, at just under 40 seconds per calibration run, it does offer very high resolution; 64 steps each for bias, level and equalisation, with both channels tested at three frequencies instead of the usual one. In addition, the set-up can be performed with more or less than the usual amount of record bias current, to optimise treble MOL (maximum output level), often beneficial with rock music, or low frequency MOL, which tends to suit classical music with generally more powerful lows.

Sound quality

The adjustable bias feature did work, and not just when the tape was driven towards the edges of performance, but at normal levels. Although it added a certain contrived quality to recordings, this was often a very likeable one, adding (depending on the setting) a touch of warmth or sharpness to the sound.

The main technical shortcoming (see the Laboratory Report) was a lack of bass, but. In most situations this won't be apparent. The Technics lacks the weight and authority of a typical CD player, but you're unlikely to notice unless you select your music carefully, and

you're using a quality, wide bandwidth system.

Bass apart, the Technics performed to a very high standard, despite slight balance differences when changing tape groups. The treble was reproduced with an unprocessed ease, and the bass made up in precision and speed what it lacked in subterranean reach. It was the midband that really impressed, however. Most decks in this price area sound flat and even rather opaque, but the Technics was not like that at all. It was refined and three-

VERDICT

- ▲ First rate sound quality, especially that translucent, three-dimensional midband - and affordable too!
- ▼ A minor loss of bass depth and weight; manual tape/source switching.
- ▶ £229.95

SOUND
QUALITY

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VALUE FOR
MONEY

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dimensional, throwing an image well clear of the plane of the speakers. Well recorded female vocals were reproduced with a radiant quality and expressiveness rare from such a modest component.

Conclusion

The Technics RS-BX646 is obvious Best Buy material, and is a clear advance on previous generations from this marque. Just how do they do it at this price?

Panasonic UK Ltd, Panasonic House, Willoughby Road, Bracknell, Berks, RG12 4FP.

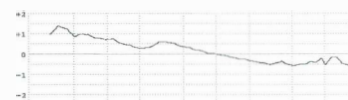
☎ (0344) 853943

LABORATORY REPORT

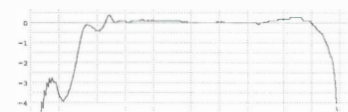
Wow & flutter IEC386 Q-Pk %			
Pk Wtd			0.11%
Mean Wtd			0.09%
Crosstalk ref 0dB			
100Hz			-37.3dB
1kHz			-35.2dB
6.3kHz			-35.7dB
10kHz			-28.5dB
Tape type			
	IEC Type I	IEC Type II	IEC Type IV
Noise CCIR 468-3 Q-Pk IEC			
Peak Wtd	-38.7dB	-41.5dB	-40.3dB
Peak Unwtd	-44.7dB	-45.0dB	-44.8dB
Mean Wtd	-38.9dB	-41.7dB	-40.6dB
MOL 3% ref 0dB			
1kHz	n/a	+1.5dB	n/a
Distortion (THD+N) @ +8dB			
100Hz	6.03%	9.37%	6.29%
1kHz	2.47%	3.64%	1.71%
6.3kHz	1.60%	1.40%	2.06%
Distortion (THD+N) @ -8dB			
100Hz	1.44%	1.04%	1.10%
1kHz	1.55%	1.06%	1.03%
6.3kHz	1.50%	1.12%	1.22%
Dimensions (wxhxd)			43x12.5x29.3cm
Average wind/rewind time (C90)			1 min 5 sec

Despite the use of three test points for the sophisticated tape alignment system, I was surprised by the degree of response variation encountered at these test points. This was often around 2dB, and is certainly one factor underlying the residual perceived differences in sound quality from one tape to the next. Note the slightly bright metal tape response, and the well engineered playback response shape.

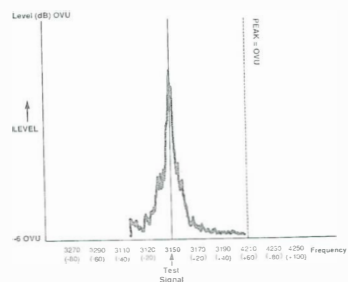
The Technics receives a clean bill of health elsewhere. Wow and flutter is low (though not exceptionally so), with some modest capstan wow visible in the plot. Note also the exceptionally rapid fast wind speed.



Type I, playback only: accurate playback response, apart from some minor differences between channels.



Type IV, record/playback: lightweight bass; note also 'dished' response and elevated treble.



Low level capstan related sidebands but overall, this plot paints a positive picture.



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 Magnepan Incorporated/Acoustic Energy
 Magnepan Incorporated/Acoustic Energy/De
 Acoustic Energy
 Mission Cyrus/Marantz/Nakan
 Mission Cyrus/Marantz/Nakamichi/
 Mission Cyrus/Marantz/Nakamichi/Sonus Fab
 mi/Sonus Faber/Onkyo/Orto
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 Ortofon/Mordaunt Short/Mantra/Radford/Tasc
 Creek/Celestion/Sound Org
 Tascam/Creek/Celestion/Sound Organisation/
 Creek/Celestion/Sound Organisation/Koetsu/
 Celestion/Sound Organisation/Koetsu/SME/Ak
 Sound Organ
 Koetsu/SME/AI
 SME/Akai (video)/AKG/Beyer Dynamic/Audio
 Akai (video)/AKG/Beyer Dynamic/Audio Tech
 AKG/Beyer Dyr
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 Audio Technica/Sony DAT/Linn/Naim Audio/Re
 Sony DAT/Linn/Naim Audio/Rega/Roksan/Audi
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 Naim Audio/Rega/Roksan/Audio Research/Io
 Rega/Roksan/Audio Research/Ion Systems/Arc
 Roksan/Audio Research/Ion Systems/Arcam/R
 o Research/Ion Systems/Arcam/Rotel/Ro
 Systems/Arc
 Arcam/Rotel/R
 Rotel/Royd/Son
 Royd/Sony ES/Yamaha/Revox/Magnep
 Royd/Sony ES/Yamaha/Revox/Magnepan Incc
 Magnepan Incorporated/Acoustic Energy/De
 Acoustic Energy/Danon/Epos/Heybrook/Missi
 bk/Mission Cyrus/Marantz
 Mission Cyrus/Marantz/Nakamichi/Sonus Fab
 mi/Sonus Faber/Onkyo/Orto
 Sonus Faber/O
 Ortofon/Mordaunt Short/Mantra/Radfo
 Mordaunt Short/Mantra/Radford/Tasc
 Mantra/Radfor
 Radford/Tascam/Creek/Celestion/Sound Org
 Tascam/Creek/Celestion/Sound Organisation/
 Creek/Celestion/Sound Organisation/Koetsu/
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Cassette decks:

conclusions, best buys and recommendations

The Sony TC-K611S has been hyped in some quarters as the greatest value for money product of the year. However, from either the sound quality or features point of view, this didn't exactly turn out to be the case. Check out the Technics RS-BX646 if you want to see how much good engineering can be crammed in at a giveaway price.

By any traditional measure of course, the Sony represents good value, but what it conspicuously fails to do is to reproduce music with the clarity and vitality of the best at this level, of which the Harman/Kardon TD4400 is an excellent example. Try also the Kenwood KX-7050S, only modestly more expensive than the Sony if you take into account its excellent specification and sound quality.

On balance, the least satisfactory models were the Denon DRS-810, the Pioneer CT-S420 and the NAD 602. Of the three, the NAD is simply under-engineered. It feels and is flaky, and inevitably this reflects in the way it sounds. To add to the problem, it is priced above the strict budget level to which it properly belongs.

The Pioneer suffered from poor set-up when replaying pre-recorded material, and often sounded ill at ease when recording. It just didn't quite cut the mustard. Ditto the Denon, which is an attractive machine with some neat design ideas, but which simply sounded too much like a cassette deck, with audible compression and poor handling of very low level information.

Taking up the middle ground, with Recommended status, were the Harman/Kardon TD4400 and the Teac V-7010. The H/K is a minimalist two head deck occupying a price band that normally belongs to much more fully equipped machinery. It makes up for this apparent disadvantage on sheer merit. It is an excellent sounding deck, with many of the

trademark qualities of other H/K gear, namely solidity, speed and clarity.

The Teac is built like a battleship. It makes few concessions to the user, yet is well equipped, and will probably still be making music when its owner has been put out to pasture.

In ascending order of price, the Best Buys start with the Technics RS-BX646. This benefits from a new found interest in reducing microphony, and all too obviously gains from the economies of scale at this end of the market. For £230, it is absurdly good value.

The Kenwood KX-7050S is more of the same, the £400 asking price allowing Kenwood to include Dolby S circuitry in one of the most convincing applications of this technology yet. The Nakamichi is an obvious Best Buy for its state-of-the-art performance, which is fully a match for the more costly DR-1.

The Nakamichi also enables us to finally answer the questions posed in the introduction: is it worth paying extra, and do the benefits of Dolby S outweigh other, more traditional factors? In the final analysis, you get what you pay for, and Dolby S doesn't make up for a lack of talent elsewhere.

Best Buy and Recommended listing

Under £300	Status	Price
Technics RS-BX646	Best Buy	£230
Over £300		
Sony TC-K611S	Recommended	£330
Harman/Kardon TD4400	Recommended	£400
Teac V-7010	Recommended	£800
Kenwood KX-7050S	Best Buy	£400
Nakamichi DR-2	Best Buy	£580



The Technics RS-BX646 stole the show with great sound at a very competitive price.

Best Buys and Recommendeds

Products that make the grade are awarded Hi-Fi Choice's unique Best Buy or Recommended accolades. This sets them apart as being capable of a higher standard of fidelity than average at a particular price.

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Recommended products are also very good, but not quite in the same league as Best Buys. Despite being runners up, they are definitely worth considering as they may prove more compatible in the context of a complete system.

The best of the rest

The (near) pocket money Aiwa AD-F410 is still available for those who want a basic deck that works. It costs £100, and along with the Kenwood KX-3050, the Sony TC-K520 and the Denon DRM-510 should be seriously considered by anyone in the market for a model like the NAD 602.

Although none of these models is as barely equipped as the NAD, they're all sensible, reasonably simple designs which represent real value. Pioneer also has some, as yet untested, but interesting new models in this price range, which should be considered.

The more ambitious buyer will find no shortage of excellent designs. Virtually all the Nakamichi models perform consistently well, starting with the two head DR-3 at £400, which is a reasonable enough price if the deck is to be used heavily over a long period. Alternatively, the RX-202E offers auto-reverse without the compromise, as it flips the whole tape - not the heads.

Harman/Kardon has a model called the TD4200 which at a sliver under £250

has many of the qualities of the TD4400 tested here. It gained a Best Buy rating in the last cassette deck test (October '93).

Also check out the Kenwood KX-5050, which is an excellent choice at £230 if you don't want to sacrifice the convenience of search and editing tools.

Harman/Kardon's TD4200 is a basically equipped deck that's still built to a high standard.



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About 50% of our business at the moment is digital, so here is a summary of the equipment we feel provides quality sound! Cheapest player is the **AMC CD6** at £350, which is still the most enjoyable we know in this price bracket. The most accurate player we have is the **AVI Integrated** unit at \$999 (remote extra), and utilising the CDM9 transport can equally be used as an excellent transport. Just added to the range are the **Sugden SDT-1** player at \$949, the **Micromega T-Drive** (£1200) and **T-Dac** (£800), both of which are being run in and evaluated and are immediately impressive. The **Micromega T-units**, when connected via the available balanced AES/EBU link sound particularly smooth! Expected in shortly are the new perception Dac, and in the new year the upgradeable Micromega Stage 1, 2 and 3 players. And of course we must not forget our most expensive transport, the **Wadia 8** or the excellent **Pink Triangle Ordinal and Dacapo Dacs**. So there is lots to choose from!

ETC

Perception Phono Centre (£495) and Line-Stage preamps, AVI Phone Stage (MM + MC) for AVI Pre-amps, AVI FM Tuner, Sugden A51 Pre-power combination, Harmon-Kardon AVR30 Pro-Logic Receiver, Jamo SW600 100 Watt Active Subwoofer, etc.

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ESSEX

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HAMPSHIRE

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V J HI-FI, 29 Guildhall St, Folkestone. (0303) 256860. Mission, Kenwood, Tannoy, Marantz, Sony, Rogers, Denon, Musical Fidelity, Quad, Yamaha. Dem and home trial facilities, free local install. No appts necessary, service dept. Amex, Diners, Visa, Access, Int free credit, instant credit. Mon-Sat 9-6. **BADA**

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SOUND ADVICE, The Factory, Duke St, Loughborough LE11 1ED. (0509) 218254 Shahinian, Rega, Naim, Linn, Royd, Yamaha, Rotel, Arcam, Nakamichi, JPW, 3 demonstration areas, no appts necessary, free installation, service department. Lombard credit charge, Access, Visa. Mon-Fri 9.30-6.00, Sat 9.30-5.30.

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STAMFORD HI-FI CENTRE, 9 Red Lion Square, Stamford, Lincs PE9 2AJ. (0780) 62128. Pioneer, Technics, Marantz, Cyrus-Mission, Rotel, NAD, Yamaha, Kenwood, Quad, plus all major speaker manufacturers. Expert advice, comparator demonstrations, on two floors, part exchange Hi-Fi purchased for cash. No appointments necessary, home trial facilities, free installation, service department. Mastercard, Visa & credit charge, finance available Mon-Sat 9-5.30pm, closed Thursdays.

SUPERFI, 271A High Str, Lincoln LN2 1JG. (0522) 520265. See main entry under Nottinghamshire for full details.

LONDON

ANALOG AUDIO, 849 High Road, London N12. (081) 445 3267. Cambridge, Denon, Rotel, Yamaha, Marantz, Wharfedale, Teac, Mordaunt-Short, Cerwin Vega, Nad. Free install. Service dept. Instant credit up to £1000. Visa & Access. 9.30-6 6 days.

AUDIO T, 190 West End Lane, West Hampstead, London NW6 1SQ. (071) 794 7848, Fax (071) 431 3570. Great hi-fi from Arcam, Audiolab, Cyrus, Denon, Meridian, Mission, Philips, Rotel, Proac, Micromega, Yamaha, and many more. Mon-Sat 10-6pm. 3 yr gntee on Hi-Fi. Free del & instal. 30 day upgrade scheme. Home dems. PX. 2 dem rooms. **BADA**

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CORNFLAKE SHOP, 37 Windmill St (just off Tottenham Court Rd), London W1. (071) 631 0472 (domestic). (071) 323 4554 (multiroom). Fax. (071) 323 4554 Fax. (071) 436 7165. Tues -Sat 10-7 Rega, Roksan, Naim, Monitor Audio, Arcam, Nakamichi, Rotel, Epos etc. 3 dem rooms. (incl. home cinema) Friendly, professional service. Home trial facilities. Appointments preferred. Full delivery and repair service. Multiroom specialists. Access & Visa.

COVENT GARDEN RECORDS, 84 Charing Cross Road, London WC2 (071) 379 7635, Fax (071) 836 1345. London's premier digital audio centre, Photo CD, DCC, CD, & 16X9 TV'S. Audiolab, B&O, Marantz, Mission, Cyrus, Philips, Pioneer, Rotel, Rogers, Quad, Sony, Technics, single speaker dem rooms, appointments suggested, installation service available. All major credit cards accepted. Mon-Sat 10am-7.30pm.

DOUG BRADY HI-FI, 14-18 Monmouth St. London WC2H 9HB, (071) 379 4010, for the very best in hi-fi separates and home cinema. Wide range of top specialist hi-fi from Britain, America and Japan. 3 dem rooms. Closed Monday **BADA**

GRAHAM'S HI-FI, Canonbury Yard, 190a New North Rd, London N1. 071-226 5500. Winner Sony/HFN Greater London Dealer Award 1986/89/90. "One of the 5 best hi-fi shops in the world". Arcam, Linn, Meridian, Naim, Rega, etc. Systems from £500 FREE PARKING, 4 dem rooms, service dept, open Tues-Sat. RING FOR APPOINT **BADA**

HI-FI & COMPONENTS, 84 Battersea Rise, London, SW11 1EH. Tel: 071 2231 110. Denon, Harman Kardon, Tannoy, Kenwood, Rotel, NAD, Wharfedale, Dual, Shure, Ortofon, Celestion, etc. Appts nec, Service Dept. Access, Visa, Diners, Amex, Open 10-6 Closed Wed.

INFIDELITY, 9 High Str, Hampton Wick, Kingston-upon-Thames. (081) 943 3530. For full details see entry under SURREY.

K.J. WEST ONE, 26 New Cavendish St, London, W1M 7LH. (071) 486 8262/63. Fax (071) 487 3452. Most established brands stocked. Two Hi-Fi and one Home Cinema dem studios. Appts nec

Home trial. Free installation. Service dept. Major credit cards. Interest free credit usually available - ask for details. Mon-Sat 10-6pm. (Late night Thurs till 7pm)

MUSICAL IMAGES LTD, 173 Station Road, Edgware & 45 High Street, Hounslow, Middlesex. See under Middlesex & full pge ad. in The Directory.

SOUND ORGANISATION LONDON, 4 Pickfords Wharf, Clink Street, London, SE1 9DG. Tel 071 403 2255. Audio Research, Aura, Creek, Epos, Exposure, Heybrook, Koetsu, LFD, Lyra, Martin Logan, Micromega, Naim, Nakamichi, Rega, Rotel, Roksan, Royd, SME, Sonus Faber. Interesting new equipment always under evaluation. 2xsingle speaker listening rooms. Appts preferred. Free Installation. Service Department. Open Tues -Sat. 10-6. Late dem by appointment.

SOUND SENSE, 350 Edgware Road, London W2 1DX. (071) 402 2100. Alphason, B&W, Kenwood, Nakamichi, Celestion, Denon, Monitor Audio, Marantz, NVA, Sony ES, Yamaha. Appts preferred. Installations available. Access, Visa, Standard credit facilities. Mon-Sat 9.30-6.30.

STUDIO 99, 79-81 Fairfax Road, Swiss Cottage, London NW6. 071-624 8855, Fax 071-624 5315. Naim, Meridian, Quad, Mission/Cyrus, Rega, KEF, Arcam, Epos, Acoustic Energy, Yamaha, Nakamichi, NAD, Sonus Faber, B&O etc. Single speaker dem room, AV demos. Multiroom. Service dept. Visa/Access credit facilities. 10-7 Mon-Fri, 10-6 Sat. **BADA**

SUPERFI, 2-4 Camden High Street, Camden, NW1 0JH (071) 388 1300. See main entry under Notts for full details

UXBRIDGE AUDIO - CHISWICK, 109 Chiswick High Road, Chiswick, W4 2ED (081) 742 3444 Fax (081) 742 3295. 2 Demo Rooms, Installations, 2 Year Guarantee, 7 day exchange. Major credit cards, Tues - Sat 10 - 6, See Middlesex entry for brands stocked. **BADA**

VOLUME ONE, 41 Upper Wickham Lane, Welling, (081) 304 4622. For full details see entry under Kent.

ZEBRA, 18-24 Brighton Road, South Croydon CR2 6AA. (081) 688 2093. Audio lab, Arcam, KEF Reference, Marantz, Mission, Micromega, Pioneer, Rotel, Sony, Tannoy, and large range of AV equipment. S2 Air Conditioned Demo Rooms. in a more casual environment. Service department. The UK's leading home cinema centre. Mon-Sat 9.30-6.00. Access, Visa, Switch & instant credit up to £1000 subject to status.

GREATER MANCHESTER

CENTRAL RADIO, 30-32 Shudehill, Manchester M4 1EY. Tel 061 834 6700. Technics, Kenwood, Pioneer, Aiwa, Marantz, Mission, B&W, Wharfedale, JBL, Thorens, Panasonic, etc. TV video, surround sound, AV systems, service dept, free delivery. Access, Visa, Switch finance. Mon-Sat 9-5.30.

THE AUDIO COUNSEL, 12 Shaw Road, Oldham, Manchester OL1 3LQ. (061) 633 2602. Linn, Yamaha, Rega, Rotel, Arcam, Micromega, EPOS, Creek, Nakamichi, Denon. 2 dem rooms. Free install. Visa, Access, Licenced credit brokers up to £1000 instant credit. 10.00-5.30 Tues, Weds, Sat, 10.00-7 Thurs & Fri. Closed Mon.

SWIFT OF WILMSLOW, 4-8 St Annes Parade, Wilmslow. (0625) 526213. Aura, B&W, Denon, Kenwood, Marantz, NAD, Pioneer, Rotel, Tannoy, Revolver, JPW. Open 9:30am-6:00pm 2 dem rooms. No pressure! **BADA**

MIDDLESEX

AUDIO T, 159a Chase Side, Enfield, Middx EN2 0PW. (081) 367 3132, Fax (081) 367 1638. Great hi-fi from Arcam, Audiolab, Cyrus, Denon, Meridian, Micromega, Mission, Philips, Rotel, Yamaha and many more. Mon-Fri 10-6pm. Sat 9.30 - 5.30 3 yr gntee on Hi-Fi. Free del & instal. 30 day upgrade scheme Home dems. PX. 2 dem rooms. A/V Dept. **BADA**

HARROW AUDIO, 27 Springfield Rd, Harrow. (081) 863 0938. Mon-Sat 9.30-5.30. A&R, Audiolab, Cyrus, Denon, Epos, Monitor Audio, Musical Fidelity, Nakamichi, Quad, Rotel, Tannoy, Thorens, Yamaha. etc. **BADA**

MUSICAL IMAGES LTD, 45 High Street, Hounslow, Middlesex TW3 1IR. (081) 569 5802. FAX (081) 569

6353. & 173 Station Road, Edgeware HA8 7JX (081) 952 5535. FAX (081) 951 5864. Most brands available - see full page ad in the product directory. Interest free credit, ask for details. Demo Rms, Repairs & Service. Open Sunday and all week. A home cinema specialist. Mail Order. Part exchange.

RIVERSIDE HI-FI LTD., 422 Richmond Road, East Twickenham, Middlesex TW1 2EB. Tel. (081) 892 7613. Fax (081) 892 7749. A.R., Arcam, Audio Innovations, Castle, Dual, Denon, KEF, Luxman, Michell, Musical Fidelity, Micromega, Marantz, Nakamichi, Rotel, Spendor, Systemdek, Tannoy, Yamaha. One demo room, in-car demo for car hi-fi systems. Apts not always necessary. Home trial facilities. Free installation, service dept. Lombard Tricity, Access, Visa, Amex, Diners Club. Mon-Sat 9.30-6, Thurs, Fri 9.30-7. **BADA**

SIGHT N SOUND, The Treaty Centre, Hounslow, Middlesex TW3 IES. 081 572 5418, fax 081 572 5417. Sony, Kenwood, Finlux, Toshiba, Philips, Sanyo, Grundig, Pioneer, Technics, Akai. No apts nec, free install, service dept. Access & Visa, financing available. 9-6pm Mon-Sat.

MERSEYSIDE

W.A. BRADY & SON, 401 Smithdown Rd, Liverpool L15 3JJ. (051) 733 6859. 'Largest choice of specialist Hi-Fi in N.W. £100-£20K'. All credit cards. 3 dem rooms. Closed Monday. **BADA**

P & A AUDIO (BIRKDALE) LTD 31 Liverpool Road, Birkdale, Southport (0704) 68373. Arcam, Cambridge, Creek, Denon, Michell, Mission/Cyrus, Mordaunt-Short, NAD, Pink Triangle, QED, Revolver, Rogers, Rotel, Royd, Tannoy. 3 Single speaker demo rooms and Nicam surround sound dem room. Free delivery, installation (Merseyside) Service dept. Mon-Sat 9-5.30 Half day Tues, Access, Visa, Lombard. **PETERS HI-FI** 11 Werburgh Sq, Grange Precinct, Birkenhead. 051-647 5626. 9-5.30 closed Thurs. See Cheshire entry for full details. **PETERS HI-FI**, 11 St Werburgh Squ, Birkenhead. Also at 8 High Str, Bromborough. 051-334 1874/2825. Open 9-5.30 6 days a week. See Cheshire entry for details.

WEST MIDLANDS

AMADEUS SOUND & VISION, 10 Boldmere Road, Sutton Coldfield, West Midlands. 021-354 2311. Audio Innovations, aura, B&O, B&W, Castle, Marantz, Micromega, Musical Fidelity, Nakamichi, Harman Kardon, QED. Single speaker demo, apts preferred, service available, installations, B&O link install, home trials. Access, Visa, interest free credit available subject to status. 9.30-6pm, 6 days. **BADA**

FRANK HARVEY HI-FI EXCELLENCE, 163 Spon Street, Coventry CU1 3BB. (0203) 525200. Audiolab, Arcam, Bang & Olufson, Mission-Cyrus, Denon, Marantz, Meridian, Nakamichi, NAD, Quad, Rega, Rotel, Yamaha. 3 floors, 3 demonstration rooms, nice staff, nice coffee. Apts nec, service dept, free install, home trial facilities. **BADA** All credit facilities available. Mon-Sat 9.30-5.30 Wed til 8pm.

GRIFFIN AUDIO LTD. 94 Bristol Street, Birmingham. (021) 692 1359/(021) 622 2230. Arcam, Castle, Cyrus, Denon, Linn, Marantz, Naim, Quad, Rega, Rotel. Open Tues-Sat 10-6. **BADA**

MUSICAL APPROACH, 37 High Street, Aldridge, Walsall, W. Mids. (0922) 57926. Linn products, Arcam, Creek, NVA, Revolver, Onix, Epos, Marantz, Rotel, Quad & more. Dem facs. Home trial. Service dept. Credit facs available. Access, Visa. 9.30-5.30 Mon-Sat. 9.30-1 on Thurs.

MUSIC MATTERS. 351 Hagley Road, Edgbaston, Birmingham B17 8DL. (021) 429 2811. Rotel, Denon, Lexicon, Tannoy, Ruark, Alchemist, Exposure, Pioneer, Roksan, Nakamichi, Arcam, Audiolab, Musical Fidelity, Mission/Cyrus, Meridian, KEF, Monitor Audio, Pink Triangle. 2 single speaker luxury demo rooms. Apts nec, home trial facilities, free installation, service dept. Access, Visa, instant credit up to £1000, interest free credit available. Tue-Thur 10.30-6, Fri 10.30-8, Sat 10-6. Branches also at: 93-95 Hobs Moat Road, Solihull, W Midlands B92 HJL. 021-742 0254. 156-157 Lower High Str,

Stourbridge, W Midlands D18 1TS. (0384) 444184. **BADA**

NORFOLK

AUDIO IMAGES, 7 All Saints Rd, South Lowestoft, Suffolk NR33 0DL. Tel: 0502 582853. For full details see our main entry under Suffolk. **BASICALLY SOUND**, The Old School, School Rd, Bracon Ash, Norwich NR14 8HE. (0508) 70829. Arcam, Linn, Naim, Denon, Spendor, Audiolab, Sound Organisation, Creek, Rega, Epos, etc. 2 comprehensive dem rooms. Home trial. Free installation. Visa, Access, HP facilities. Tues-Sat 9.30-1, 2-5.30.

NORTHAMPTONSHIRE

AUDIO CRAFT 23-25 Dergate, Northampton, NN1 1TY. Tel: 0604 36291/Bang & Olufsen, Kenwood, Technics, Marantz, Celestion, Mordaunt-Short. No apts nec, Free install, Service Dept. Open Mon-Sat 9-5.30pm

AUDIO SHOP, 6 Hill Str, Raunds, Northants NN9 6NN. (0933) 622325. Denon, Rotel, Marantz, Moth, JPW, Royd, Pro-ject, Philips. Full range of accessories available. No apts required, service dept, free install, home trial. Open Mon-Sat 9-5.30, Wed 9-12.30.

CLASSIC HI-FI + VIDEO, School Lane, Kettering, Northants. (0536) 515766. Rotel, Musical Fidelity, Wharfedale, Yamaha, Onix, Nad, Pioneer, Marantz, Kenwood, Kef, Shearne, Rogers, Metaxas Audio and many more. Home trial, free instal., service dept. Access, Visa, credit facs. 9.30-5.30pm.

LISTEN INN, 32 Gold Street, Northampton. (0604) 37871 (Fax) (0604) 601430. Linn, Naim, Rega, Epos, Royd, Mission, Cyrus, Arcam, Audiolab, Neat, Creek, Quad, Denon etc. 2 Dem Rooms **BADA**

NOTTINGHAMSHIRE

CHANNY AUDIO, Chantry Walk, 18-18a Eldon Street, Tuxford, Nr Newark, Notts NG22 0LH. (0777) 870372. Pink Triangle, DPA, Rotel/Michell, Micromega, NVA, Alchemist, Michell, Monitor Audio, Lumley, SME and much more! 3 dem rooms. Home trial, free installation, service dept. Access, Visa & credit facilities and mail order. Mon-Sat 9.30-6pm Sun & evenings home dem by apt.

DEFINITIVE AUDIO, (0602) 813562. For a carefully considered approach to building a true hi-fidelity audio system with components derived from the following manufacturers; Audio Innovations, Snell, Wadia, Micromega, Deltac, Voyd, Systemdek, SME, Revox, Ortofon, Pioneer. Demos by apt. Please phone for further details. Installation free of charge Mon-Sat 10-7, closed Wed am.

NOTTINGHAM HI-FI CENTRE, 120-122 Alfreton Road, Nottingham. (0602) 786919. Over 25 years experience, superb demo rooms, extensive range, free parking. Mon-Sat 9-5.30. **BADA**

PETER ELLIS AUDIO, 29 Kirkgate Newark, Nottingham, NG24 1AD (0636 704571) Quad, Castle, Arcam, QED, Sugden, Tannoy, Thorens, Marantz, Denon, Teac. Demo Room, Free Install, Service Department. Home cinema dem room. Access, Visa, Mon-Sat 9-5.30 Close at 1:00pm on Thursday

SUPERFI, 15 Market Str, Nottingham NG1 6HY. (0602) 412137. Kenwood, Technics, Denon, Aiwa, Rotel, Wharfedale, Mission, Marantz, NAD < Celestion, and many more. 2 single speaker dem rooms. Free install on systems, service dept. Access & Visa, Amex. Open 9-5.30, 6 days.

OXFORDSHIRE

ASTLEY AUDIO LTD. 3 Marketplace, Wallingford (0491) 839305. Aura, B&W, Technics, Panasonic, Pioneer, Kenwood, Marantz, Sony, Yamaha, Denon, Dual, Mission, Tannoy. Home trial, free installation. Service dept. Access, Visa, Amex, Diners. Instant credit. Tue-Fri 9-5.30, Sat 9-5. Records & CDs stocked.

AUDIO T. 19 Old High St, Headington, Oxford OX3 9HS. (0865) 65961, Fax (0865)60415. Great hi-fi from Arcam, Audiolab, Cyrus, Denon, KEF, Meridian, Mission, Rotel, Sony, Yamaha and many more. Open Mon Fri10-6pm, Sat 9.30-5.30. 3 yr gntee on Hi-Fi. Free del & instal. 30 day upgrade scheme. Home

deems. PX. 2 dem rooms. A/V Dept. **BADA**

OUVERTURE HI-FI, 3 Church Lane, Banbury, Oxfordshire OX16 8LR. (0295) 272158. Arcam, Heybrook, Mission, Quad, Denon, Linn Products, Naim Audio, Epos, Meridian, Nakamichi. For sensible unbiased advice, call Oxfordshire's audio experts. Superb demo facilities. No apts nec, service dept, free install, home trial. Access/Visa, instant credit. Mon-Fri 10-6, Sat 9.30-5.30. **BADA**

OXFORD AUDIO CONSULTANTS LTD, Cantay Hse, Park End Street, Oxford OX1 1JE. (0865) 790879 fax (0865) 791665. NAD, Rotel, Musical Fidelity, Pioneer, Marantz, Rogers, TDL, Thorens. Audio Research, Proceed 2 Demo rooms. Service Dept, Home trial and free installation. Instant credit, Access, Amex, Visa. 10-6 Mon-Sat.

WESTWOOD AND MASON, 46 George St, Oxford. Tel: 0865 247783 Arcam, Rotel, Rega, Epos, Tannoy, Royd, JPW, Mission, Nakamichi, Denon, Aiwa, Naim, Quad, Aura, Tannoy, Teac. Open 9.30-5:00pm. Dem room. Closed Thur. **BADA**

SHROPSHIRE

AVON HI-FI, 12 Barker Street, Shrewsbury, Shropshire SY1 1QJ. (0743) 55166. NAD, Quad, B&W, Arcam, Kenwood, Aiwa, Bose, Nakamichi, Revolver, Onkyo. Dem room. Home trial. Free install. Service dept. Access, Visa. £1000 instant credit. Mon, Tues, Wed, Fri, Sat 9-5.30.

CREATIVE AUDIO, 9 Dogpole, Shrewsbury. (0743) 241924. Arcam, Audiolab, Celestion, Cyrus, Denon, Epos, Kef, Meridian, Mission, Naim, Quad, Rega, Roksan, Rotel, Ruark, Tripod. Dem room. Home trial and free installation. One of the best ranges of quality hi-fi outside London. Credit to £1000. Access, Visa. Tues-Sat 9.30-5.30. Service dept.

SOMERSET

MIKE MANNING AUDIO, 110 Middle Street, Yeovil, Somerset BA20 1NE. (0935) 79361, Fax (0935) 32923, Mobile(0850) 325965. Naim, Roksan, Pink Triangle, A+R (Arcam), ATC, AVI, NAD, Pioneer, Rotel, Denon, etc. Dedicated listening lounge, for relaxed and unpressured demonstrations. Apts not usually nec. but best to phone first. Home trial facilities on request, free installation, service department. Instant credit, Access & Visa, etc. 9-5.30 closed Mondays.

STAFFORDSHIRE

GRANGE HI-FI LTD., 153 Branston Rd, Burton-on-Trent, Staffordshire DE14 3DQ. (0283) 33655. Albany, Audio Innovations, Audiolab, Arcam, Castle, Denon, Pink Triangle, Marantz, Rotel, Rogers, Systemdek, SME, Tannoy, TDL. Dem fac, apts nec on Sat, Free Install. Service dept Access, Visa. 9.00-5.30pm. Closed Mon all day & Wed afts. Closed for lunch 12.00-12.30.

SUFFOLK

AUDIO IMAGES, 7 All Saints Rd, Pakfield, South Lowestoft, Suffolk NR33 6JL. Tel/Fax: 0502 582853. Quad, Triangle, Arcam, Castle, Rotel, Moth, JPW, Finlux, Audio Innovations, plus the amazing Rothwell range. Separate demo room, no apts nec. 10-6.30 Tue-Thur, 7pm Fri, 6pm Sat.

BURY AUDIO, 47 Churchgate St. Bury St Edmonds, Suffolk, IP 33 1RG. Tel 0284 724337. Arcam, Furukawa, Heybrook, Infinity, Marantz, Meridian, Michell, Pink Triangle, Proac, Rotel, Target, Roksan, Shalinian, Quad.Etc. Single Speaker Room. No appointments necessary. Home trial fac. Free installation. Service Department. Access, Visa, Switch. Open 6 days a week. Mon/Tues/Sat 9.30-5.30 Thurs/Fri 9.30-7.00. Closed Wed **EASTERN AUDIO**, 41 Bramford Rd, Ipswich. (0473) 217217. Quad Audio Lab, Denon, Dual, Marantz, Mission, NAD, Nakamichi, Technics, Arcam. Mon-Sat 9.30-6. **BADA**

SURREY

AUDIO SOUTH, 24 (The Woolmead) East Str, Farnham, Surrey GU9 7TT. (0252) 714555. Audio Note, Deltac, JPW, Marantz, Rotel, Teac, etc. AV specialist. Dem room and evening appointments available. Home trial facilities. Free installation. Access,

Visa. 10.30-6 Mon-Sat.

DATASOUND, 23 South St, Dorking, Surrey RH4 2JZ. (0306) 882897. Arcam, Celestion, Denon, Dual, Marantz, Mission, Musical Fidelity, NAD, Rotel, Tannoy. Dedicated listening room. Free install. Service dept. Up to £1000 instant credit subject to status. 9.30-5.30 6 days.

INFIDELITY, 9 High Str, Hampton Wick, Kingston Upon Thames, Surrey. Tel: (081) 943 3530. Arcam, Creek, Epos, Heybrook, Micromega, Naim Audio, Roksan, Rega Research, Shaninian, TEAC. Single speaker listening room. Apts pref, free installation, service dept. Major credit cards. Closed Mon, Tue-Fri 10.30-7, Sat 10-6.

PJ HI-FI - the Hi-Fi Shop, 3 Bridge St, Guildford, Surrey GU1 4RY. (0483) 504801/304756. 9-6 Mon-Sat. Linn, Meridian, Arcam, Quad, Revox, Rotel, NAD, Nakamichi, Marantz, Yamaha, Deltac, Rega, Audiolab, Mission/Cyrus. **BADA**

RIVERSIDE HI-FI, 422 Richmond Road, East Twickenham, TW1 2EB. Tel: (081) 892 7613. Fax: (081) 892 7749. See main entry under Middlesex.

ROGERS HI-FI, 13 Bridge Street, Guildford, Surrey. (0483) 61049. Aiwa, Creek, Denon, JPW, Marantz, Micromega, Rogers, TEAC, Pioneer, Systemdek, Tannoy. Demonstration facilities available, no appointment necessary. Free installation. Service department. Access/Visa. Instant credit up to £1,000 subject to status. Monday-Saturday 9.30-6pm, later by appointment.

SOUNDS EXCLUSIVE, 1 Kent House, High Str, Cranleigh GU6 8AU. (0483) 268185. Michell (amplification & decks), Marantz, Ariston, Ortofon, AME, Sumo, Proac, Jamo, Origin Live, Kiseki. Demo room, apts preferred, home trial facilities, free install, service dept. Access, Visa. Open 9-5.30 Mon-Sat.

SPALDINGS HI-FI, 352-4 Lower Addiscombe Rd, Croydon, Surrey. (081) 654 1231/2040. 3 dem rooms and home dem. Free install, credit. Mon-Sat 9-6. Tues-8. Closed Wed. Service dept. **BADA**

SURBITON PARK RADIO, 48 Surbiton Rd, Kingston-Upon-Thames, Surrey. (081) 546 5549. Quad, Castle, Dual, Denon, Kenwood, Mordaunt-Short, Rotel, Pioneer, QED, B&W, Tannoy. Demo facilities. Access, Visa. 9.30-5.00 Mon-Sat. Service dept.

SURREY HI-FI, 45 High Street, Godstone, Surrey RH9 8LS. (0883) 744755. Parking, easy access - just 2 mins off junction 6, M25. Tube Technologies, Rel Acoustics, Audio Lab, Quad, TDL, Nakamichi, KEF, Thorens, Rotel, Marantz, Denon, Michell, Tannoy, Top Line, Rel Acoustics. Single speaker demo room. Demonstration by appointment, free installation, service dept. Access, Visa, Mastercard. 0% Credit. Open 9-6, closed Wed.

TRU-FI SOUND & VISION, 10 Church Street, Leatherhead, Surrey. (0372) 378780. Sony, Technics, Panasonic, Mitsubishi, Ferguson, Aiwa, Pioneer, Sanyo, B&W, Mission. Free installation. Credit facilities. Access, Visa. 9.15-5.30 Mon-Sat. Closed Wed. Service dept.

ZEBRA 18-24 Brighton Road, South Croydon CR2 6AA. 081 688 2093. See main entry under London.

SUSSEX (EAST)

JEFFRIES HI-FI, 69 London Rd, Brighton, East Sussex, Tel 0273 609431. 2 Dem Rooms, closed Mon. Late night Wed. Free parking. Bus route. Credit Facilities. **BADA**

JEFFRIES HI-FI, 4 Albert Parade, Green Street Eastbourne, East Sussex. Tel: 0323 313336. 2 Dem Rooms. Closed Mon. Late night Wed. Free Parking Bus Route. Credit Facilities. **BADA**

THE POWERPLANT, 66 Upper North Street, Brighton BN1 3FL. (0273) 775978. Roksan, Musical Fidelity, Marantz, Rotel, Yamaha, Tannoy, Audiolab, B&W, Micromega, Epos. JPW, etc. Comfortable single speaker facilities. No apts. nec. Home trial facilities, free install. Late night dems by request. Service dept. Credit facilities available on request. Tue-Sat 10-6pm. **BADA**

SUSSEX (WEST)

AUDIO DESIGNS, 26 High Street, East Grinstead, W. Sussex RH19 3AS. 0342 314569. Arcam, Audiolab, Cyrus, Epos, Linn, Marantz, NAD, Naim, Rotel, etc. Very comfortable listening room. No appts nec., Home trial facilities, free installation, service dept. Access/Visa. 9.30-6.00 Mon-Sat, late Tue. **BADA**

BOWERS & WILKINS LTD. (Est. 1945) 1 Becket Buildings, Littlehampton Rd, Worthing. (0903) 2 64141. 1 minute from A24 & A27. Free local parking. Aura, B&W (inc. Matrix), Castle, Denon, Mission, Nakamichi, Philips, Quad, Technics, Thorens, and many more in 3 Dem Rooms. Systems, Hi-Fi and Home Cinema. Service Dept., Installations. Open 6 days a week. Access, Visa, instant credit to £1000 subject to status.

CHICHESTER HI FI, 7 St. Pancras, Chichester, W. Sussex PO19 1SJ. Tel: (0243) 776402. Linn, Naim, Rega, Creek, Nakamichi, A&R, Denon, Roksan etc. Tues-Sat, 10-1, 2-5.15 (closed Mon). **BADA**

TYNE & WEAR

RED RADIO SHOP AND HI-FI CENTRE, 11 Olive Street, (Off Park Lane), Sunderland. Tyne & Wear SR1 3PE (091) 567 2087. Castle, Denon, JVC, Kenwood, Mordaunt-Short, Michell, Pioneer, Teac, Tannoy, Monitor Audio etc. A/V Dem room, large with comparator facility. No appts nec, Free install Service dept. Interest free credit and no deposit 9am-5.30pm daily.

WARWICKSHIRE

CASTLE HI-FI, 59 Smith Street, Warwick. CV 34 4HE. Tel (0926) 499963. A.R. B&W, LPW, Jensen in car, Marantz, Musical Fidelity, NAD, Pioneer, Rogers, TDL, Yamaha, Dolby Pro Logic. Dem Room. No appt nec, Home trial facilities, Free Installation, Service Department. Interest free credit, Access, Visa, Chartered Trust. Open 10-6 6days a week.

FRANK HARVEY HI-FI 163 Spon Street, Coventry, Warwickshire, CV1 3BD. Tel 0203 525200. Arcam, Mission, Cyrus, Musical Fidelity, Marantz, Rotel, NAD, Tannoy, Yamaha, KEF. Open 9.30-5.30 closed Thursday. **BADA**

HOUSE OF MUSIC, 44 Park Street, Leamington Spa, Warwickshire CV32 4QN. (0926) 881500. Linn, B&O, Meridian, Mission, Celestion, Arcam, Rotel, Sony Esprit, Denon, Aura. Two separate rooms. No appts required, service dept, free install, home trial. Access, Amex, Visa, Diners, Int free credit, instant credit. Open 9.30-5.30 6 days. **BADA**

STRATFORD HI-FI, 25 Henley Street, Stratford, Warwickshire CV39W. (0789) 414533. Arcam, Yamaha, Denon, NAD, Mission, Rotel, Marantz, Pioneer, Monitor Audio, B&W, Tannoy, Laserdisc. Dem room, wide range of home cinema equipment. No appts required, service dept, free install, home trial. Access, Visa, Int free credit, instant credit. Open 9.30-5.30 6 days, open late Wed by appt.

WILTSHIRE

THE AUDIO EXCHANGE, 52 Morse Str, Swindon, Wiltshire SN1 5QP. (0793) 539008. Acoustic Energy, Audio Innovations, Cerwin Vega, CR Developments, Heybrook, Impulse, Micromega, Michell, REL, Sequence, Sugden, AV and single speaker demo room. Home trial facilities, free installation, service dept. 10-6 Mon-Sat

AUDIO T, 60 Fleet St, Swindon, Wiltshire. SN1 1RA. (0793) 538222. Fax (0793) 487260. Great hi-fi from Arcam, Audiolab, Cyrus, Denon, Linn, Meridian, Mission, Rotel, Sony, Yamaha, and many more. Mon-Sat 9.30-5.30. 3 yr gntee on Hi-Fi. Free del & instal. 30 day upgrade scheme. Home dems. PX. 2 dem rooms. A/V Dept. **BADA**

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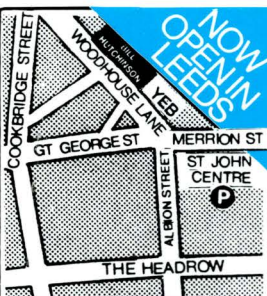
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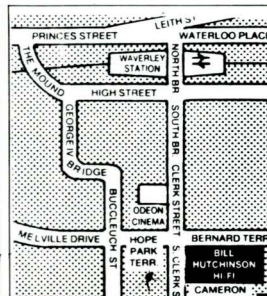
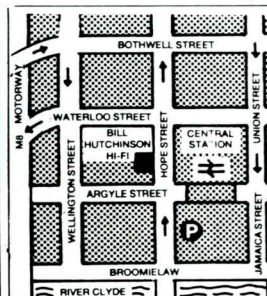
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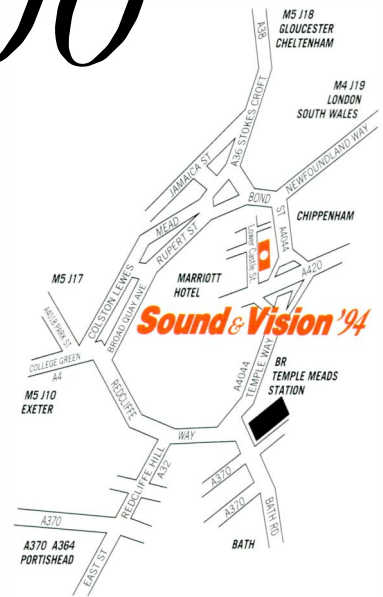
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Turn to page **99**

- We tell you the best hi-fi to buy
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The Directory

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The Directory

This is the legendary Hi-Fi Choice Directory, the only buying guide that is entirely based on comprehensive technical and subjective reviews. Each and every entry carries the weight of our exhaustive test procedures with regularly updated prices and specifications.



The *Hi-Fi Choice Directory* was conceived as a reference guide to all the audio products reviewed by *Choice* that are currently available. The products are split into categories, each with its own introduction containing information about the product type and its applications. They are particularly relevant to the uninitiated first time buyer and help sort out the order of priorities when buying a piece of equipment.

Each product along with its current retail price is placed in its respective category in alphabetical order. The prices of the products are updated on a regular basis, although it should be noted that our value ratings are based on the product's price at the time of review.

Sound quality

This column contains the ratings for the standard achieved in our listening tests. The sound quality ratings range from Poor to Excellent. Their meaning and order are as follows:

P	Poor
A-	Average-
A	Average
A+	Average+
G-	Good-
G	Good
G+	Good+
VG	Very Good
E	Excellent

With P being the worst and E the best rating within a section.

One important point to remember is that these cannot be used to compare products from different categories. For example, a cassette deck rated Excellent in sound quality will not usually offer the same standard of fidelity as a similarly rated turntable or CD player.

How to use this guide

Perhaps the most influential symbols in the *Directory* are the little red triangles ▲ found in the value column at the beginning of each entry where appropriate.

Products that make the grade are awarded the Best Buy or Recommended accolade.

▲▲ A product carrying the Best Buy swingtag is of excellent quality and good value for money in its price category.

▲ Recommended products are runners up, but still definitely worth considering within their price bands.

Please note however, that an expensive Recommended product will nearly always sound better than an inexpensive Best Buy. An ideal situation would be to choose suitably priced ▲▲ Best Buy or ▲ Recommended products from relevant categories and create a Best Buy system. But, due to the variety in tonal balance that exists in much audio equipment, and differences in taste, system building is unfortunately not that simple. These ratings make a useful guideline for shortlisting components, but only experiencing the actual combination will tell you whether it works for you.

Finding that component

Before you shop, follow our top eight tips for better buying:

1. Check out the components' recommended retail prices in the *Directory*.
2. Find out as much as you can about the products you want by reading *Hi-Fi Choice's* reviews and lab tests.
3. Visit local dealers that stock some of the brands you want to hear and try to find one that seems sympathetic to your needs.
4. Don't discount a dealer's suggestions just because the products don't have rave reviews.
5. Take your own software (records, CDs, tapes) along for a demonstration of the equipment that the dealer recommends.
6. Listen at the sort of volume you would normally use at home — systems often sound more impressive when played loud.
7. If you are unsure about something or want to hear an alternative, just ask.
8. Audition a system for a reasonable amount of time, say three quarters of an hour or so, before making a decision.

Unless you have first generation masters of course.

Comments

The Comments column contains a potted summary based on the original review, emphasising

the salient points of a product's character and sonic performance. The space available doesn't allow for great detail but we have attempted to put across the essence of the review. Obviously, important

information on compatibility or auxiliary equipment used in the test cannot be included, and we would advise you to refer to the original review for this.

Please note that these comments are those of our own reviewers and not, as is the case with some magazines, those of the manufacturer.

Features

Product features are shown with a combination of figures and blob charts, with headings at the top of each column indicating the appropriate category, a blob indicating the existence of a particular feature.

There are different headings for each section and the more complicated categories are explained in the individual introductions. Where figures are used the unit of measurement is shown in the heading.

Back issues

The final column contains a reference to the issue of *Hi-Fi Choice* which featured the complete review.

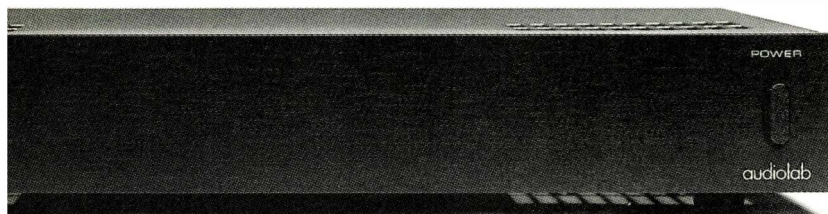
Index

Amplifiers	101
AV amplifiers	108
Cables	108
Cassette decks	111
CD players	113
CD transports	115
DACs	117
DAT players	117
Headphones	120
Loudspeakers	121
Stack systems	131
Tuners	133
Turntables - Cartridges	133
Turntables - Integrated	137
Motor units	137
Tonearms	137

The new Audiolab *Digital-Analogue convertor*

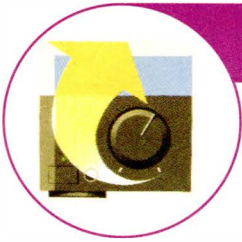


The Audiolab product range:
8000A Integrated amplifier
8000C Pre-amplifier
8000P Stereo power amplifier
8000T FM/AM tuner
8000M Monobloc power amplifier
8000DAC digital-analogue convertor



Winners
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Best Integrated Amplifier
Audiolab 8000T Best Tuner
Audiolab 8000DAC
Best Digital Component
Audiolab 8000C & 8000P
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AUDIOLAB



Amplifiers

The amplifier sits at the heart of the system, processing the outputs from all the various music sources as necessary and then driving the loudspeakers. These two (quite separate) functions are integrated into a single box at the low-to-middle price points; separated pre- and power amplifiers, even separate power supplies, become increasingly common as one moves upmarket. At the upper end of the specialist market, valve amplifiers provide a popular alternative to the transistor types amongst enthusiasts.

There is a substantial difference between specialist (sound quality oriented) amplifiers and the consumer electronics style models. The former

are bleakly simple, avoiding all unnecessary features to provide the most direct signal path in the interests of best sound quality. The latter range from models with just basic tone controls and tape recorder switching, to those with elaborate facilities such as graphic equalisers, remote control (including volume), surround sound options etc. etc.

We include our measured power output (RMS, 8ohm load, 1 channel driven) – but again, paradoxically, this doesn't necessarily correspond to the loudness capability of the amplifier, which has as much to do with the elegance of the overload characteristics within a given system (valve

amplifiers invariably sound more powerful than their rating would suggest).

Apart from output the facilities listing shows how many line (that is inputs besides those for phono cartridges) inputs a product has and includes tape inputs. The MM and MC blobs indicate which types of cartridge can be accommodated. Integrated, preamp and power amp indicate the type of amplifier reviewed, and in some instances that a pre/power combination has been tested. In such instances the price given is for both components. The remote control and headphone socket blobs indicate the existence of these facilities.

Amplifiers

Product	£Price	Comments	Output W&B	Line inputs	MM	MC	Integrated	Preamp	Power amp	Headphone socket	Remote control	Issue No.
Adcom GCA-510	349	G American power amp with line inputs and passive pot, highly detailed midrange but rather high price.	81	5				•				121
Adcom GFP-555III/GFA-535III	850	A+ Technically proficient pre/power saddled with a slightly hard and unsympathetic sound.	94	6	•				•	•		124
AMC CVT3030	460	A A well meaning and affordable attempt to mix transistors with valves, albeit one that only really shines with simple musical styles.	35	5	•			•				116
▲ Akai AM-47	230	G+ Plenty of widgets and an unexpectedly sharp, open and detailed sound. Looks ghastly but sounds strain free.	104	4	•			•				104
Akai AM-95	630	A- A revamped version of the older AM-93 with newer onboard bitstream DACs. Its sound is just too eager, however	110	6	•	•						109
Albarray AP4/S508	850	A- A disappointing sound from a pre/power amp that's hamstrung by a variety of technical oversights. Albarray has done better.	46	4	•			•	•			116
▲ Albarray PP1	400	G+ Available with or without various MM/MC options, the 'basic' PP1 has an attractively warm, earthy sound.	48	4				•				104
Alchemist Kraken	444	A Class-A objet d'art that's far too sensitive to RF interference. Can sound cold and fierce as a result.	54	5	•	•		•				116
▲ Alchemist Kraken APD7/APD8	775	G A quirky Class A number with an equally warm and colourful sound. Hardly accurate but entertaining nonetheless.	49	4	•			•	•			124
▲ Arcam Delta 110S/120.2	1070	VG Now in mkII guise this established combination has matured into a very articulate, powerful if dry-sounding amplifier.	109	4	•	•		•	•	•	•	124
▲ Arcam Delta 290	450	VG Combines the dryness and restraint of Arcam's older models with a refreshing sense of detail, dynamics and musical colour.	99	5	•	•	•			•	•	116
▲ Art Audio Quintet	988	VG Switchable triode/ultralinear output stage. In triode mode these are 15 of the sweetest watts around. Surprisingly gutsy	15/25	10	5	•		•	•			109
Audio Innovations Series 200	850	VG Turns in a fuller and more substantial performance via MM rather than CD. Otherwise its sound can seem slightly bleached.	10	5	•			•	•			109
▲ Audio Innovations Series 300II	500	G+ Under-powered and over-distorted yet capable of realising an open and captivatingly expressive sound. Sensitive speakers are a must	9	4	•			•				97
▲ Audio Innovations Classic 25	699	G+ Warm, cuddly and immensely musical kit amp that almost transcends 'hi-fi' with its sheer listenability	24	5				•				126
▲ Audio Innovations Series 700	999	G+ Valve amp that can turn the roughest of digital sounds into music, both understated and graceful. Sensitive speakers are a must	24	5				•				116
▲ Audio Note Oto SE	1500	VG Transparent, very dynamic, excellent clarity and subtlety with limited power make for a very clean sounding amp	9.5	3	•			•				126
▲ Audio Note Ongaku	43125	E A single ended, zero negative feedback, triode, line level integrated amp and a half. Probably the best amplifier in the world!	27	6				•				Col
▲ Audiogram MB1	500	G+ It'll successfully tackle the most difficult of speakers and still provide a very warm, rich and euphonic sound.	46		•			•			•	116
▲ Audiolab 8000A	450	VG Recent mods have cured the slightly glassy treble, replacing it with a smoother and more solid style of music making	81	7	•	•	•					97
Audiolab 8000C/8000P	1100	G Very distinctive, almost stark neutrality that will not appeal to all listeners. Good value engineering, nevertheless	157	7	•	•		•	•			97
▲ Aura VA-100 Evolution	300	G+ Might overheat when driving insensitive, low-impedance speakers but was applauded for its sense of scale and drama via CD	81	5	•			•				109
▲ Aura VA-50	250	VG Superficially similar to the cheaper VA-40 but with much more of the old MA-80's magic! Great sound from a slimline package	65	5	•			•				97
▲ Beard Audio CA35/P35mkII	1790	VG Good build quality and finish and a characteristic valve sound make a first class amplifier capable of great musical enjoyment	35	4	•	•		•	•			63
Beard CA506	1295	G+ A versatile valve preamp, the bass sounded lively if a touch softened, while the treble was detailed but lacked a little sparkle	4	4	•	•		•				50
Beard M70	1995	G+ A substantial British monoblok power amplifier, but not a great deal more impressive than the P35	70					•				50
▲ Concordant Excelsior	1040	E Styling might not inspire confidence, but sonically this preamp is tremendously vivid and detailed. Real high-end performance	3	3	•			•				77
▲ Conrad-Johnson PV-10	1250	E Fabulous preamplifier. Beautiful imaging, superb detail, plenty of gain on the phono stage; classy build quality too.	4	4	•			•				78
▲ Conrad-Johnson Premier 7	11000	E The 'Seven is designed without compromise, and is clearly one of the finest (valve) preamplifiers money can buy.	4	4	•	•		•				Col
▲ Creek CAS 4040 S3	220	G Now in mk3 guise the '4040 offers a dry but tidy sound via disc and one that's slightly leaner and better focussed on CD.	41	3	•			•				92
Creek CAS 4140 S2	250	A+ Running production changes inspired us to re-review this amp which now sounds thicker and 'blurred' compared to the original	41	3	•	•	•					109
Creek CAS 6060	500	G Looks like the old '5050 but employs the sort of big, meaty-sounding electronics used in the earlier '4040. Dynamic and impressive	81	5	•	•	•					104
▲ Cyclone Catalyst	1995	VG Exceptionally load tolerant and very refined in delivery. Extra options available in future	74									80
▲ Denon PMA-250III	160	A- Pretty high resolution for the price, occasionally loses its grip but is generally engaging and enjoyable	55	3	•			•				121
▲ Denon PMA-450	250	G+ Denon's latest integrated amp swept the board with its big, brassy if somewhat extravagant sound.	99	5	•			•				116
▲ DPA Digital DSP-200S/DPA-200S	1245	E The very dramatic but exceptionally detailed and transparent sound of this combination belies its modest power rating.	48	5				•	•			124
▲ Dual CV600RC	160	G A very lively, open and vibrant sound. Slightly sanitised via CD perhaps, but still damn good for a features-first integrated amp!	63	5	•			•		•		104
▲ EAR 834	1,300	VG+ Electrifying, pin you to your seat sound that puts the raw into raw power and brings electric guitars to life, but can be a bit wearing	44	6				•				126
EAR 549	5400	VG Valves imitating trannies give exceptional power delivery but not the delicacy and transparency one expects	200						•			60
▲ EAR 802/509mkII	4200	VG Extremely well made and combining the sonic strengths of both transistors and valves this EAR combo warrants attention	100	6	•			•	•			63
EMF Audio Sequel	349	G+ A fresh start for Mike Creek has resulted in the Sequel, a minimalist amp with a very refined but mildly restrained sound	47	4	•			•				109
Exposure XX	625	A Line only integrated with good sense of timing but limited hf extension. Likely to be very system dependent.	43	4				•				121
▲ Exposure XI/XII/VIII Super	1650	VG New preamp and improved power amp led to a smooth and refined sound, MM/MC less transparent than CD	61	5	•	•		•	•			80
▲ Grant G60AMS	1300	G+ Neat and compact valve monoblok gave good sound on the 8ohm tap, better still on 4ohms. The midrange was particularly natural	60						•			57
▲ Harman Kardon HK6150	200	G+ Based on the older HK6100 but with a more solid, punchy and expressive performance that attracted considerable praise	44	5	•			•				109
▲ Harman Kardon HK6250	280	G+ Heavily based on the cheaper HK6150, this version offers slightly more power with a similarly gutsy and expressive sound	51	5	•			•				116
Harman Kardon HK6550	430	A- Follow up to 6500 is disappointing with grainy hf and limited depth. Quite powerful but ultimately not up to the mark	69	6	•	•	•					121

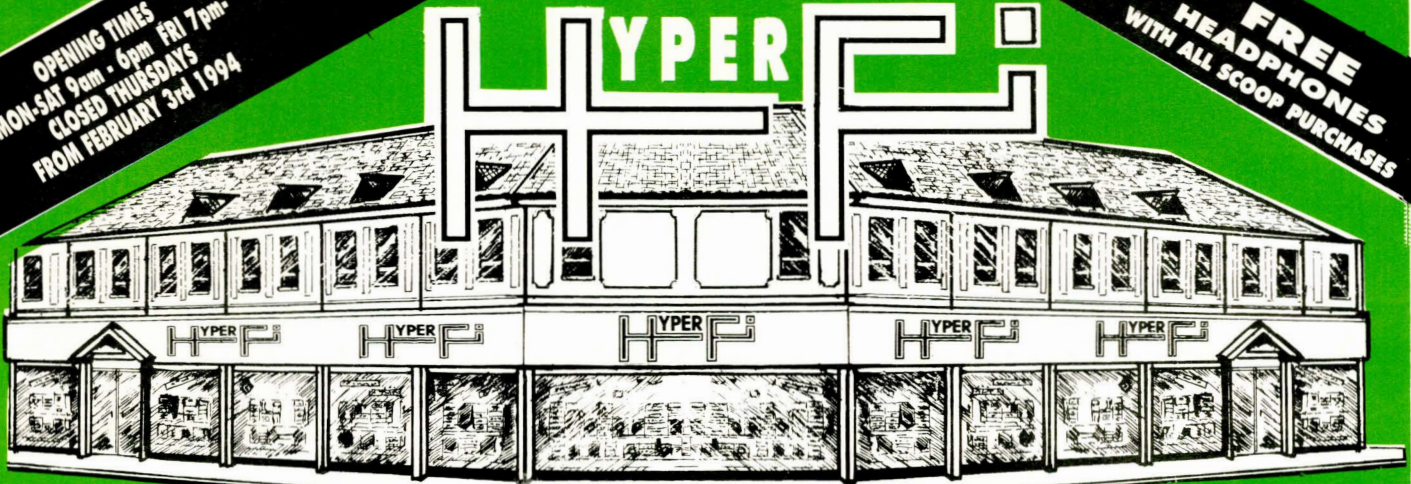
Amplifiers continued

Product	Price	Comments	Output W/R Ω	Line inputs	MM	MC	Integrated	Preamp	Power amp	Remote control	Headphone socket	Issue No
Harman Kardon HK6850	900	G This monster is derived from the HK6800 with a similarly deep and powerful sound but a rather steep price tag	101	6	•	•	•	•	•	•	•	109
Heybrook C3/P3	1379	A Heybrook has improved the manufacture of its power amp though flaws in the preamp's disc input remain	146	4	•	•	•	•	•	•	•	104
▲ Heybrook Signature	2014	G+ A stunningly powerful and vivid-sounding combination which is equally impressive via vinyl or CD	148	4	•	•	•	•	•	•	•	109
JVC AX-A342	170	A A value-conscious budget amp offering plenty of power but a slightly untidy and inconsistent sound	77	5	•	•	•	•	•	•	•	109
JVC AX-R562	250	A- More fuss and bluster than detail and dynamics was how one listener concisely described this less than wonderful model	90	5	•	•	•	•	•	•	•	121
▲ JVC AX-Z1010	650	G+ One of the best behemoths: a big amp with a big, boppy and unclouded sound and a couple of ancient 16-bit DACs for good measure!	124	6	•	•	•	•	•	•	•	109
▲ Jadis JP30/JA30	10750	E French tubes. Beautiful build, nostalgic styling and delightful sounding midrange transcend limitations at frequency extremes	30	4	•	•	•	•	•	•	•	60
Kelvin AZI	700	A This latest Absolute Zero still sounds animated but also rather more synthetic and crude. It's also rather more expensive.	100	6	•	•	•	•	•	•	•	116
▲ Kenwood KA-3020	170	G+ An unassuming little amplifier that turns in a remarkably balanced and entertaining sound. Lively, detailed and engaging	66	5	•	•	•	•	•	•	•	97
Kenwood KA-4050R	280	A- Respectable but ultimately uninspiring model whose remote control is its main asset.	85	5	•	•	•	•	•	•	•	121
▲ Lecson Quattra	420	G Underpowered but with the flexibility of four independent power amps. Very deep, captivating sound with 3D soundstaging.	40	5	•	•	•	•	•	•	•	92
Magnum Quartet A	329	A- An integrated model that incorporates four monoblocks optimised for bi-wiring, but sound is sandy in the treble.	72	5	•	•	•	•	•	•	•	121
▲ Magnum A-Class	599	G+ Lashings of rich and compelling music, trading a hint of lushness for stark accuracy. An unexpected find. Phono stage option	55	7	•	•	•	•	•	•	•	116
▲ Marantz PM-52SE	430	G+ The SE premium pays for a degree of fluency that draws you into the music and keeps you there. Rather nice	95	6	•	•	•	•	•	•	•	121
▲ Meridian 201/205	1285	G+ A fine preamp with option of full system remote, plus competent monoblock power amplifiers with generally good performance	100	6	•	•	•	•	•	•	•	62
▲ Moth Series 30	587	G+ A modular system capable of cracking results. The passive preamp and power amp combination warrant a Best Buy in their own right.	35	4	•	•	•	•	•	•	•	109
▲ Musical Fidelity Preamp/Typhoon	500	G+ A combination that plays everything close to its chest but bridge the power amp and you'll witness an explosion of detail.	62	6	•	•	•	•	•	•	•	116
Musical Fidelity Tempest	200	P+ Basic but lusty amp has a disturbingly bright and forward sound, accentuating strings and percussive detail above all else.	62	6	•	•	•	•	•	•	•	116
▲▲ NAD 302	170	G+ A spritely and uplifting performance. Sounds loud but never intrusive or fatiguing.	39	5	•	•	•	•	•	•	•	116
▲▲ NAD 304	230	G+ Equally effective with CD and vinyl this is another successful and entertaining NAD amplifier for your shortlist	50	6	•	•	•	•	•	•	•	121
NAD 1000S/208	1120	A+ One of the beefiest amplifiers we've ever tested. Unfortunately it sounds too restrained and lightweight	314	5	•	•	•	•	•	•	•	124
▲ Nakamichi IA-3	350	G A minimalist outing for the cassette heroes that's very confident if a tad restrained.	62	3	•	•	•	•	•	•	•	121
▲ NVA AP20	260	G+ Utilitarian amplifier sounds gentle and restrained but is euphonic and utterly engaging. Optional phono stage	35	4	•	•	•	•	•	•	•	109
Onix OA-21S/SOAP	730	G- Via MM disc this amp comes alive with a fresh and vibrant sound though its CD input sounds utterly dead by comparison.	60	4	•	•	•	•	•	•	•	97
Onix OA22L	300	A+ Nothing genuinely unpleasant about this amplifier, simply that its hurried and lacklustre sound fails to spark the imagination.	39	5	•	•	•	•	•	•	•	116
Orelle SA-020.2	419	A Potentially system dependent this split the panel but ultimately elicited only limited enthusiasm	86	6	•	•	•	•	•	•	•	121
▲ Philips FA-930	200	A+ Radical styling hides a digital switching facility plus full remote control over what is Philips' best effort to date	99	5	•	•	•	•	•	•	•	109
Pioneer A-300X	230	A+ This revamped version of the A-300 was also more confident sounding via CD than MM, yet our panel were still left unmoved.	55	5	•	•	•	•	•	•	•	116
▲▲ Pioneer A-400	280	VG Pioneer's design concept snaps into focus with an amp that seems to bubble with musical detail. A budget bench-mark	71	5	•	•	•	•	•	•	•	92
▲ QED A270CD/PA	370	G+ Recent updates have bolstered the output of the A270 without adding to its colorations. The PA phono option is a touch expensive	61	5	•	•	•	•	•	•	•	97
▲ QED C300/P300	630	G A cost-effective combo, limited in its resolution but less beguiling as a result. Disc stage is sweeter but samey	58	3	•	•	•	•	•	•	•	85
Quad 34	388	A Well-built durable preamp, filtering and above average tone controls but was found lacking in sound quality (viz: detail/dynamics)	4	4	•	•	•	•	•	•	•	44
Quad 66/606	1515	G Amplifiers with a classic lineage but compromised by an equally dated, soft and undynamic sound.	138	6	•	•	•	•	•	•	•	124
Rational Audio	175	A+ Wacky Czechoslovakian amp offers a very open and fluid sound via CD but its MM performance depends on cartridge load impedance.	129	3	•	•	•	•	•	•	•	92
Ray Lumley Model 75	1995	G+ Valve monoblocks represent good value. What they lack in musical subtlety they make up for in sheer muscle.	75	•	•	•	•	•	•	•	•	78
Rega Elex	298	A Minimalist amplifier that sounds too forward, hard and unforgiving for its own good. Shows plenty of promise, however.	51	4	•	•	•	•	•	•	•	116
▲ Rose RV-23	425	G+ Beautifully built British 'hybrid'. You can spend more to get a more transparent sound but it's hard to criticise at the price	3	•	•	•	•	•	•	•	•	77
▲▲ Rotel RA-930AX	170	G+ This budget wonder captivated our listeners with its clean, vibrant and thoroughly involving sound	53	3	•	•	•	•	•	•	•	104
▲ Rotel RA-935BX	200	G A line only winner that lets a lot of music through and never lets things get out of hand. Could be a touch more enthusiastic	58	5	•	•	•	•	•	•	•	121
▲ Rotel RA-940BX	250	G Rotel's cheapest 'BX' amp prompted a mixed reaction, some finding it muddled while others thought it 'exceedingly musical'	53	5	•	•	•	•	•	•	•	109
▲ Rotel RA-960BX	300	G+ If you like music to harbour a latent rather than blatant sense of power this amp's confident restraint could be just the ticket	88	5	•	•	•	•	•	•	•	116
Rotel RC-980BX/RB-980BX	800	A Plenty of watts per pound, sound is expansive but lacks a sense of poise, of control and fine detail - a disappointment	143	5	•	•	•	•	•	•	•	109
▲▲ Sansui AUX-417R	310	G+ Unusually clean and precise with more subtlety than is usually attributed to remote control amps.	53	5	•	•	•	•	•	•	•	121
▲ Sansui AU-X911DG	800	G+ At its best when used with the on-board MASH/PWM DAC where it sounds technically neutral but still emotionally charged	112	7	•	•	•	•	•	•	•	85
Sherwood AI-2210	80	P Lightweight in all respects this is better than you'd find on a midi and at least its reasonably painless.	47	4	•	•	•	•	•	•	•	121
Sonic Frontiers SFC-1	1500	G+ Smooth, sophisticated Canadian valve amp with a decent direct input and more features than average	54	6	•	•	•	•	•	•	•	126
Sugden A21a	469	G The modern-day relative of Sugden's original Class A amp and one that offers a smooth, easy-going sound.	25	•	•	•	•	•	•	•	•	92
TEAC AX-1000	180	A- Initially entertaining but ultimately unsatisfactory and rather short on high frequencies	62	5	•	•	•	•	•	•	•	121
TEAC A-X5000	260	A- This amplifier is compromised by a grey and muddled sound that taxed the concentration of our listeners. Better via MM disc	107	6	•	•	•	•	•	•	•	97
Technics SU-VZ220	130	A- Cheap, cheerful and pretty flexible to boot the SU-VZ220 quickly sounds thin, splashy and relentless when the going gets tough	50	4	•	•	•	•	•	•	•	109
Threshold FET 10e/SA-4	11852	G+ Almost valve-like limpidity and excellent soundstaging are star qualities of the Threshold amps	100	7	•	•	•	•	•	•	•	Col
Wharfedale 2050A	250	A- Loud and potentially aggressive amp that is reasonably detailed and clear, but ultimately a bit much like hard work	70	5	•	•	•	•	•	•	•	121
Woodside ISA230	900	A Smooth and inoffensive valve amplifier if one that lacks the sparkle and euphony required for a truly entertaining sound.	27	5	•	•	•	•	•	•	•	116
Woodside SC26/STA35	2743	G+ Synergistic pairing with a cool, controlled sound, good focus and transparency. More about poise than grunt	35	5	•	•	•	•	•	•	•	100
YBA Integre	1199	G+ Audiophile spec French integrated with good resolution and nice phono stage.	57	4	•	•	•	•	•	•	•	121
▲ YBA 1 pre/power amp	7649	E Well finished pre/power amp offers front rank stereo staging and transparency, and is capable of driving the most difficult loads	85	5	•	•	•	•	•	•	•	62
▲ YBA 2 pre/power amp	3624	G+ Superbly finished with very good space and transparency, slightly softened bass. Needs transformer for MC cartridges	70	5	•	•	•	•	•	•	•	56
YBA 3 pre/power amp	2350	G This duo produced see-through, ethereal stereo images that were more convincing towards the centre of the soundstage	56	4	•	•	•	•	•	•	•	72

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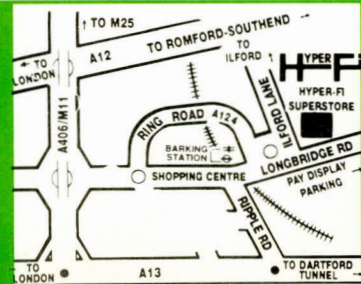
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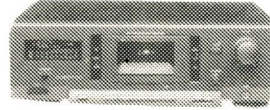


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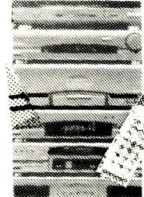
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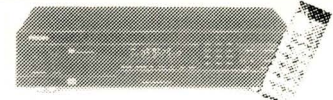
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AV amplifiers

In practice an AV amplifier provides all the standard CD, tuner, tape, aux and phono inputs offered by a standard stereo amplifier. In addition many also incorporate an AM/FM tuner section which, strictly speaking, makes them A/V receivers.

More importantly a modern A/V amplifier includes a Dolby Pro Logic decoding chip along with extra circuitry to effect the rear channel delay. Naturally there's at least four channel's worth of amplification under the bonnet to feed the five loudspeaker outputs (Front L and R,

Centre and Rear mono L+R). Most also include a line-level subwoofer output to enhance the rib-shaking impact of 'action' movies for example. Some A/V amps offer other surround modes like simulated stereo, Hall surround (L+R is fed to the rear) and Matrix surround (L-R is fed to the rear). Others use an element of Digital Signal Processing (DSP) to steer the Dolby Pro-Logic or permit a variable rear channel delay. This also opens up including options like Jazz, Church, Hall and Stadium Surround modes which use different delay and steering levels to generate different

'sound fields'.

From left to right the headings below indicate how many watts per channel each amp has for its front, centre and surround outputs. Surround modes indicates how many different surround effects are available and includes DSP. The audio inputs are for both hi-fi and AV components. S-type and phono video inputs are for VCRs, Laserdisc players and CTVs, S-type being the better of the two. Subwoofer outputs are of the phono socket variety for active subs, and AM/FM tuner denotes if the unit is effectively a receiver.

A/V amplifiers

Product	£Price	Comments	Surround Front output W/BQ	Surround Centre output W/BQ	Surround Surround modes	Video inputs	Audio inputs	Subwoofer phono	AM/FM S-type	Issue No.
Denon AVC-3530	999	VG A true heavyweight with a richly detailed sound and flexible features to match	142	141	46	10	9	5	5	• • 125
Harman Kardon AVR30	999	G+ Limited surround options are offset by a very secure sound with excellent control over effects.	74	75	30	7	10	6	0	• • 125
Kenwood KA-V8500	699	G- Can sound a tad forced and immediate but is remarkably well-equipped with digital soundfield options.	62	63	37	10	11	6	5	• 125
Marantz PM-700AV	450	A+ Sounds just great through front and centre channels but surround is very weak.	69	52	51	3	7	6	3	• 125
Philips FR940	450	A- Perhaps as a result of the mismatch between front/centre channels, the FR940 proved a great disappointment on dem.	180	24	24	6	8	4	0	• 125
Pioneer VSA-D802S	600	A- The disappointingly grey sound lacks attack and confidence, undermining the tension of movie soundtracks.	53	55	32	9	9	5	3	• 125
Sherwood RV-6010R	350	A- Another A/V amp with mismatched channels, creating a soft and ineffectual soundfield.	99	31	25	4	7	3	0	• • 125
Technics SA-GX550	450	VG A surprisingly gutsy and involving performance from a modestly-priced package.	48	48	49	2	5	2	0	• 125
Yamaha DSP-A2070	1100	G+ The ultimate in A/V flexibility with full manual control over ever conceivable soundfield.	101	99	35	24	10	6	6	• 125



Cables

Cables are not accessories but an integral part of your system. You can make do without accessories but no conventional system will function without cables. Inevitably some cables are greater than others. The best cable for your system will only be found through trial and error, but hopefully by combining our recommendations with those of a dealer you will end up with something that suits both your pocket and your system. Generally speaking budget to spend about ten per cent of the total system cost on cables.

Analogue interconnects are the leads that connect source components to amplifiers and pre to power amps. The cables in this section are priced for a one metre terminated pair. Symmetrical indicates where a twisted pair of conductors are used. Coaxial means that there is a central 'hot' conductor and a shield that carries the negative signal. Stranded cables have multiple strands and solid core use individually insulated strand(s). Copper and silver indicates whether these metals are used as conductors.

Digital interconnects connect CD transports

to DACs, and are traditionally coaxial with a 75ohm impedance. They come in optical and electrical varieties, the former being made of plastic or glass and the latter in coaxial or alternative configurations. The prices shown are for a terminated linear metre

Speaker cables are used between the amplifier and speaker. Our prices are for a terminated 5metre pair. Resistance and capacitance are indicated as low (L), medium (M) or high (H). Neither high resistance nor high capacitance cables are suitable for long runs.

Analogue interconnects

Product	£Price	Comments	Symmetrical	Coaxial	Stranded	Solid core	Copper	Silver	Issue No.
Audio Note AN-A	29.50	A- A well-rounded and cuddly sound from a high-ish resistance interconnect. Lacks a sense of scale and dynamics	•			•		•	108
Audioquest Ruby Hyperlitz	70	A+ A crisp, fast and articulate-sounding cable if one that's a little too pointed for our listeners	•				•	•	108
▲ Audioquest Lapis Hyperlitz	329	E An expensive cable that justifies its tag with a beautifully poised sound - natural, relaxed and very compatible.	•				•	•	108
Audio Technica AT620	28	A Plenty of cable for the money but its performance is distinctly lightweight, lacking depth and subtlety			•	•		•	108
Chord Chameleon	59	A+ An unpredictable cable with an 'anomalous treble' that can sound harsh one moment and oddly recessed the next!			•	•		•	108
▲ Chord Solid	115	VG What looks like a military RF cable actually provides a slightly forward but incisive and intimately detailed performance			•		•	•	108
▲ Cogan-Hall Intermezzo Ref	185	E A user-hostile cable with a tight, convincing bass allied to a very relaxed and involving mid/treble.			•		•	•	108
Cogan Hall Intermezzo E-M	320	G+ This bigger, thicker and thoroughly unwieldy 3-core version of the Intermezzo Reference actually sounds a little coarser			•		•	•	108
▲ DNM Interconnect	40	VG Fresh, transparent and packed full of detail, this slither of a cable scored a direct hit with our listeners			•		•	•	108
Goldring 'Studio Quality'	20	A- A bog-standard OFC coaxial cable that might otherwise be given away with a new amp or CD player. Cheap but nothing special.				•		•	108
▲ Isoda Electric HA-08-PSR	199	G+ This odd-ball cables utilises a mix of copper, brass and aluminium strands to achieve a very distinct sound			•	•		•	108
▲ Madrigal HPC	215	VG A very unusual cable design with a business-like approach to music-making that barely conceals its underlying 'fizz'			•			•	108
Magnan Type Vi	595	A+ With a series resistance some 500-1000 times higher than average, the furry sound of the Type Vi will alter from system to system.			•	•		•	108
▲ Monster Interlink 500	60	G+ Plenty of hype to keep the marketing bandwagon rolling plus a lively and lucid balance to cheer up the enthusiast			•	•		•	108
▲ Moth Ley Line Black	100	G+ The cheapest of Moth's Ley Line series uses just two twisted conductors to achieve a very solid and confident sound.			•		•	•	108
Moth Ley Line Grey	200	G+ The four twisted conductors of this cable actually mark a downturn in audio quality			•		•	•	108
▲ Panasonic RP-CA910	50	G This conventional coax employs plenty of hi-tech materials which encourage an even-handed balance. A good upgrade.			•	•		•	108
▲ Silver Sounds 12/2 and 12/3	99/150	VG Both these cables share a similarly open, transparent and dynamic sound though the latter is arguably the better integrated			•	•		•	108
Sonic Link Yellow	60	A An interesting non-copper cable with an up-front sounded described as 'heavy-handed and pushy'.			•		•	•	108



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- Celestion 3000/5000, was £1099.95
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- Celestion 3rd Dimension, was £189.00
NOW £145.00
- Jamo & Studio range ... TO CLEAR
- Infinity Ref. 20, was £249.95
NOW £149.95
- Infinity Ref. 40, was £399.95
NOW £249.95
- JPW Minim ... NOW £59.95
- Tannoy 603mk1, was £129.99
NOW £94.95
- W'dale DIA.IV was £119.95
NOW £79.95

Amplifiers:

- Marantz SC/SM80 Pre+Pwr, was £999.00 ... NOW £589.00
- Marantz PM40SE Amp, was £249.90
NOW £119.95
- Marantz PM32 Amp, was £139.90
NOW £99.95
- NAD 2400 Power-amp, was £419.95
NOW £359.95
- Rotel RA-940BX, was £249.95
NOW £199.95
- Rotel RA-960BX, was £299.95
NOW £239.95

CD Players:

- Denon DCD 590, was £179.95
NOW £129.95
- Marantz CD62, was £299.95
NOW £219.95
- Marantz CD72, was £399.95
NOW £299.95
- Pioneer PDS801, was £329.95
NOW £269.95
- Onkyo DX-1500 ... £99.00
- Rotel RCD955AX, was £279.95
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- Yamaha CDX560, was £199.95
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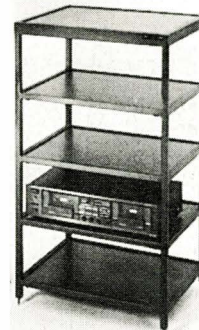
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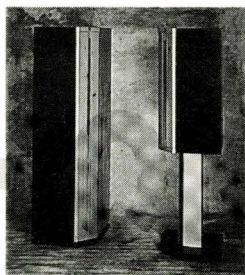
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Suggested Systems

The following suggested system package includes the NAD 5120 Turntable. Alternative items: ie CD Player/Turntable/Cassette deck are available options.

SPEAKERS	JPW Sonata Wharfedale DIA.4 Celestion 1 Mission 760i	Tannoy 603 Celestion 3 Boston HD5	Mission 761i BW DM600i Tannoy 605 AR 152 Infinity Ref/20	Tannoy 607 Mission 780 Boston HD8	BW DM610i Mission 762i Rogers LS24Z Infinity Ref/40	Rogers LS44Z BW DM620i (add £100) Mission 763 Celestion 3000/5000 (add £200)	T/T & C.D. PLAYER OPTIONS Awa XC750, £89.00 Denon DCD695, add £89.00 Denon DCD1290, add £209.00 Marantz CD42/2, add £399.00 Marantz CD52/2, add £120.00 Marantz CD72, add £199.00 NAD 502, add £99.00 Pioneer PD3801, add £189.00 Dual CS503-2, add £60.00 Dual CS505-4, add £99.00 Project 1, add £60.00 Thorens TD280W, add £120.00 Systemdek 11X/900, add £329.00 Many others available on request
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 - Harman Kardon HK6250 ... £279.95
 - Marantz PM44SE NEW! ... £199.95
 - NAD 304 ... 219.95
 - Pioneer A400X ... £299.95
 - Rotel RA935BX ... £199.95
 - Yamaha AX570 ... £289.95

CD Players:

- Aiwa XC.750 ... £199.95
- Denon DCD1290 ... £329.99
- Kenwood DP7050 ... £349.95
- Marantz CD52SEmk2 ... £299.90
- NAD 502 ... £219.95
- Sherwood CD5010R ... £139.95
- Rotel RCD965BX ... £299.95
- Technics SLPS620A ... £199.95
- Yamaha CDX570 ... £239.95

Cassette Decks:

- NAD 6100, was £299.95 ... NOW £259.95
- Kenwood KX5030, was £199.95
NOW £149.95
- Marantz SD62, 3HD, HX PRO, was £249.90
NOW £169.90
- Yamaha KX.360, was £199.95
NOW £169.95
- Aiwa ADF410 ... £119.95
- Aiwa ADF810 3HD ... £229.99
- Denon DRS810 3HD ... £299.99
- Denon DRW760 Twin ... £249.99
- Kenwood KX-5050 ... £229.95
- Nakamichi DR3 ... £349.95
- NAD 602 ... £199.95
- Sony TCK-611S 3HD ... £329.95
- Yamaha KX-650 3HD ... £259.95

Tuners:

- Denon TU260L ... £119.99
- Denon TU580RD/RDS ... £219.99
- Marantz ST40/50L ... TO CLEAR
- NAD 402 ... £159.95
- NAD 4225, was £159.95 ... NOW £119.95
- Rotel RT930AX ... £159.95
- Rotel RT950BX ... £199.95
- Sony STS311LB ... £179.95

AV Amps/Receivers:

- Denon AVC3020 ... £729.99
- Denon DRA345R ... £249.95
- Denon DRA645RD/RDS ... £319.95
- Kenwood KRV8500 ... £699.95
- Kenwood KRA4050 ... £229.95
- Kenwood KRV6050 RDS ... £349.95
- Kenwood KRV7050 RDS ... £399.95
- Marantz PM700AV ... £449.90
- NAD 705 ... £329.95
- Yamaha DSP E200 ... £369.95
- Yamaha DSP A500 ... £449.95
- Yamaha DSP A1000 ... £899.95

Turntables:

- Dual CS430 ... £119.95
- Dual CS503-2 ... £179.95
- Dual CS505-4 ... £229.95
- Project .5 Ort.510 cart. ... £129.95
- Project 1 Ort.510 cart. ... £169.95
- Project 2 Ort.MCI cart. ... £249.95
- Soundlab & KAM (DISCO) ... STOCKED
- Systemdek 11X900 + RB250 ... £329.95
- Systemdek 11XE900 exc T/A ... £329.95
- Jamo Pro 200/300/400 ... STOCKED
- Mission 760i Ex Demo ... £99.00
- Mission 760i/SE ... £149.95
- Rogers LS2/2 ... £229.95
- Rogers LS8A ... £499.95
- Tannoy SIXES Mk 2 ... STOCKED

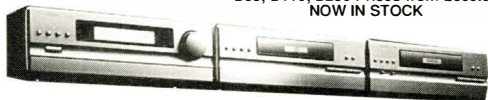
Loudspeakers:

- Bose AM3 Mk2 ... STOCKED
- Bose AM5 Mk2 ... STOCKED
- B&W DM600i, 610i, 620i ... STOCKED
- Boston HD3, 5, 7, 8, 9/SW10 ... STOCKED
- CELESTION ... STOCKED
- Cerwin Vega AT/DC & VC - NEW!! ... STOCKED
- Jamo Pro 200/300/400 ... STOCKED
- Mission 760i Ex Demo ... £99.00
- Mission 760i/SE ... £149.95
- Rogers LS2/2 ... £229.95
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Analogue interconnects continued

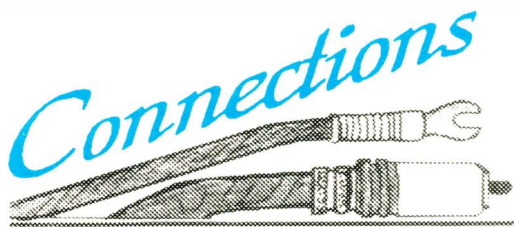
Product	£Price	Comments	Symmetrical	Coaxial	Stranded	Solid core	Copper	Silver	Issue No.
▲ Sonic Link Violet	99	G+ Another nickel-based cable but with a very much better-balanced sound than Sonic Link Yellow	•			•			108
Straight Wire Laser Link	50	A+ Thanks to its high parallel capacitance this interconnect helps remove ultrasonic noise. Unfortunately it still sounds very odd!	•			•		•	108
Straight Wire LSI-Encore	90	A+ A solid-sounding cable with a strong mid and bass but a disappointingly sat-upon treble	•			•		•	108
▲ Tara Labs Prism	36	G 6N-purity copper, aero-grade insulation and spaced solid-core conductors all add-up to a slightly bright but frisky sound	•				•	•	108
▲▲ Tara Labs Quantum CD	63	G+ Praised by our panel for its lack of obvious vices, Quantum CD encourages a sweet and positive sound	•				•	•	108
Tara Labs Quantum II	99	G Bass power and extension is the key to the sound of this unusual and hi-tech cable	•				•	•	108
▲ van den Hul The Source	70	G+ Accurately reflects the life of the music without detail forcibly from the speakers		•		•		•	108
van den Hul MC D-102mkIII S	80	A+ A rather coloured sound thanks to its full and resonant bass out spoiled overall by a dirty treble	•			•		•	108

Digital interconnects

Product	£Price	Comments	Type	Plastic	Glass	Non-coaxial	Coaxial	75Ω	Issue No.
▲▲ Audioquest Video Z	50	E The very best available with an expressive sound but generous price to sweeten the pill	Electrical				•		108
Audioquest Digital PRO	90	A+ A silver cable with all the drive of Video Z but lacking its clean-cut transparency	Electrical				•		108
Audioquest Optilink Z	100	A Good level of midband detail but frequency extremes lack depth and extension	Optical			•			108
Bandridge AL560	20	P The disappointingly heavy and muddled sound of this basic fibre thwarts any recommendation	Optical	•					108
Chord Codac	34	A A connection with a stranded inner core and a sound that lacks integration	Electrical				•		108
▲ DPA Digi-link	27.50	VG Can seem slightly impassive but there's no avoiding its exceptionally detailed sound	Electrical				•		108
DPA Opti-link	20	P Very similar to Bandridge AL560 with an equally naff sound	Optical	•					108
Kimber PSB DigiLink	24	A- An analogue interconnect inappropriately pressed into digital service. A visible deterioration in the digital signal results.	Electrical					•	108
Kimber KC-1 DigiLink	52	A This cable adopts a woven construction with the addition of a conductive screen. Music lacks detail and spirit.	Electrical					•	108
Kimber KC-AG DigiLink	222	A- An asymmetric cable using silver conductors that deviates from the 75ohm standard. Not ideal for digital applications.	Electrical					•	108
▲ Kimber Opti-Link	70	G Hardly cheap for what appears to be a bog-standard PMMA fibre, yet it sounds a little brighter and livelier than most.	Optical	•					108
▲ Monster Cable Datalink 100	45	G+ A colourful coaxial interconnect with an equally colourful and up-beat sound. Very compatible.	Electrical				•		108
▲ Monster Cable Interlink LS100	45	G Well constructed stepped-index fibre with polished ends and rugged connectors. Slightly lean, fuzzy but engaging performance	Optical	•					108
Moth Leyline Datalink	140	A- A thin, coaxial version of Leyline Black with a rather hard and unforgiving character. Too expensive	Electrical				•		108
▲ QED DigiFlex	19	VG A top performance, low-loss 75ohm coax with a very open, almost liquid quality that allows its music to ease naturally across.	Electrical				•		108
Sonic Link Brown Digital	35	A- A solid-core, twisted-pair interconnect that deviates from the 75ohm standard and provides an equally unbalanced sound	Electrical					•	108
Straight Wire Silver link	60	G+ A genuine attempt to get things right with a silver-plated, multi-strand coax. Yet it still sounds too dry and mechanical	Electrical				•		108
▲ van den Hul MC Videolink 75	30	VG An AV-cum-digital cable that comes very close to besting QED's DigiFlex. Still some emphasis of vocal sibilants, however	Electrical				•		108

Speaker cables

Product	£Price	Comments	Resistance	Capacitance	Stranded	Solid core	Copper	Silver	Issue No.
▲ Audio Note AN-B	165	G+ A very high capacitance Litz-style cable whose sound may well act as a taming influence in many systems	M	H			•	•	109
Audio Note AN-D	100	A Supplied in linear, non-polarised lengths that should be twisted into stereo pairs. Sounds rather gritty and forward	L	L		•		•	109
▲ Audio Note AN-SP	1270	VG Some 15 individually-insulated silver strands go to make up this very civilised but exceptionally detailed-sounding cable	H	L			•	•	109
▲ Audioquest F-14	44.50	A+ Ideal for laying flat under carpets, F-14 encourages a slightly warm and vibrant sound	M	L			•	•	109
Audioquest Type 4	75	A+ Four 18-gauge OFHC copper conductors wound in a Litz-fashion increases capacitance but restrain the cable's 'bite'	M	H			•	•	109
Audioquest Midnight Hyperlitz	260	G Very similar to Type 4 but with a delicate smoothness that contrasts with the brighter sound of cheap cables	L	H			•	•	109
▲ Bandridge LC7259 & LC7401	20/30	A Two very traditional figure-of-eight cables. The thinner version (LC7259) sounds lighter and coarser than LC7401	L	L		•		•	109
Bandridge LC8258 & LC8408	30/50	A- Two versions of the Silverflex series that, sadly, encourage very little sense of poise or decorum in their music	L	L		•		•	109
▲ Cogan-Hall Intermezzo Full-Range	465	VG Extra care must be taken to prevent shorting this user-hostile cable. Nevertheless it sounds superb!	L	L			•	•	109
▲ DPA IS19	275	G+ Shares the clear, neutral and transparent sound of the older 8S without the tremendous clarity of Gortex Black-16	L	L			•	•	109
DNM Rainbow	84	A+ The high impedance of this simple ribbon cable has an influence on the treble response of some speakers. Lacks 'oomph'	H	L			•	•	109



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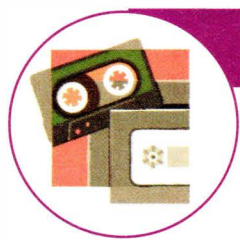
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Speaker cables continued

Product	£Price	Comments	Resistance	Capacitance	Stranded	Solid core	Copper	Silver	Issue No.
Heybrook Heywire	66	A This well-meaning facsimile of earlier ribbon-style cables ends up sounding lumpy and uneven	H	L		•	•		109
Isoda Electric HA-20	400	A+ This unorthodox cable employs a combination of copper, brass and aluminium strands. It sounds 'oddly impure'!	M	L	•			•	109
▲▲ Mission Stranded	20	G+ This Swedish-made cable proved a real hit with our listeners - a slick performer and Best Buy upgrade	L	M	•			•	109
Monitor PC KC27/KC34	40/60	A Two heavyweight multi-strand cables with a thick and chesty (10027) or light and wispy (10034) balance. Take your pick	L	L	•			•	109
Monster Powerline 3 Plus	75	A- The archetypal 'old-style Monster Cable' that labours under a soggy bass and untidy treble	L	M	•			•	109
Naim NAC A5	44	A- Described as a 'dinosaur of a cable' by our listening panel, this stiff rod of wire has little application outside of a Naim system	L	L	•			•	109
QED Bi-wire 79-Strand	35	A Reminiscent of curtain track, this bi-wire version of 79-strand is unfortunately saddled with a 'loud, hard and untidy' balance	L	L	•			•	109
▲ Silver Sounds 12/2	300	E Tonally accurate and exquisitely detailed, this cable opens a very transparent window on the music	L	H		•	•	•	109
▲ Silver Sounds 16/4	200	VG A prime choice for bi-wire systems even if this cable does lack the full finesse of its sister 12/2	M	H		•	•	•	109
Sonic Link Grey	80	G- A spaghetti-thin cable composed of silver-plated OF-copper and PTFE insulation. Lacks bass impact and treble 'air'	H	M		•	•	•	109
▲ Straight Wire Waveguide 1.5	20	G A conventional multi-stranded cable with a refreshingly up-beat, crisp but slightly lean-sounding balance	M	M	•			•	109
▲ Straight Wire Flex-4	50	G+ Another very quick and dynamic-sounding cable from Straight Wire. A little short on subtlety but very engaging nonetheless	L	H	•			•	109
Tara Labs Quantum III	238	A An imaginatively-named cable that encourages an equally colourful sound. Described as 'dark and fruity' by our panel!	L	H		•	•	•	109
van den Hul MC The Clearwater	50	A Despite its evocative title, the Clearwater turns out to be a disappointingly 'murky sounding' cable	M	L	•			•	109
van den Hul MC The Magnum	265	A Touted as vdH's most prestigious twinlead speaker cable, the Magnum sounds surprisingly soft and old-fashioned	L	L	•			•	109
▲ van den Hul MC The Wind	330	VG Blown-in from the continent, vdH's 'Wind' kicks up a storm with its lush midrange and bone-crunching bass!	L	M	•			•	109



Cassette decks

The bad odour of copyright theft hangs around the compact cassette, but there is no doubt it is the world's most versatile and ubiquitous music storage medium. Buffs may wrinkle their noses, but are happy to use cassette decks to make up tapes for the car or personal.

There is no problem in connecting a cassette deck to any normal amplifier, but some care needs to be taken in choosing the best tapes for a specific machine. (Trial and error is one effective technique, but many decks have manual bias adjustment and some match up to the tape auto-

matically.) Lab performance and sound quality often go hand in hand, and are frequently somewhat dependent upon factory alignment. The mechanical integrity of the mechanism is another crucial factor, that is reflected in the price.

The columns on the right indicate when the facilities shown in the headings are available on a deck. Dolby B and C offer varying degrees of noise reduction and the HX Pro system gives significant treble improvements with ferric (Type I) tapes. Dolby S increases the level of noise reduction with less signal degradation than B or C.

Three-head recorders allow you to listen to a recording as it's being made, a useful quality control function. Bias adjustment allows you to fine tune the deck to suit different types of tape when recording. Auto calibration is an automatic system for setting bias and Dolby levels. Twin deck offers the option to dub tapes or to play two cassettes simultaneously. Autoreverse is a useful convenience feature, but usually with some mechanical compromise. In the case of twin decks a blob is inserted in this column even if only one transport autoreverses.

Cassette decks

Product	£Price	Comments	Dolby B	Dolby C	Dolby HX Pro	Dolby S	Auto calibration 3 Head	Bias adjust	Twin deck	Autoreverse	Issue No.
▲▲ Aiwa AD-F410	120	A Comparable to AD-F500 but cheaper: Good all round performance, well adjusted, useful basic and not so basic features	•	•	•						99
▲▲ Aiwa AD-F810	230	G First class budget 3-head machine with a dual capstan transport that really works at reducing the 'fudge' factor	•	•	•						99
▲▲ Aiwa AD-WX828	200	G- Equipment levels strong, and sound is both vivid and presentable, but control system daunting.	•	•	•					•	123
▲▲ Aiwa AD-WX929	230	A Superbly equipped twin deck that works and works well - remote control	•	•	•	•				•	117
▲ Aiwa XK-S9000	700	G+ Fabulous build, clunky transport and sharp, refined sound quality with Dolby S or B and metal tapes	•	•	•	•	•	•	•		105
Akai DX-57	220	G Eschews fancy gadgets for a good transport and decent electronics. Sound quality is firm and tidy but avoid Dolby C.	•	•	•	•	•	•			105
Akai GX-65	300	A Fine ungimmicky middle ranking deck with simple, purposeful controls, works best with metal tapes. Performance fair to good	•	•	•	•	•	•			87
▲ Akai GX-95II	440	G+ Sharp, clear and articulate sounding deck, with superb performance extending to frequency extremes	•	•	•	•	•	•			99
Akai GX-R35	220	A Middling sound quality at best with Dolby B; deteriorates with Dolby C	•	•	•	•	•	•			99
▲ Akai GX-W45	320	A Costly but musical high-spec dual deck, doesn't like modern high energy Type IIs and IVs. Good stability and clarity	•	•	•					•	111
▲ Arcam Delta 100	850	E Superb transport and a ripe, spacious sound. The Dolby S installation more successful than most. Some replay incompatibility	•	•	•	•	•	•			111
Denon DRM-710	260	A Although this is a fair performing model, the design has lost some of the competitive edge of its predecessor, the DRM-700	•	•	•						105
▲ Denon DRS-610	200	G Unique loading mechanism provides stability, and the deck has a crisp, clean quality. Occasionally anaemic bass.	•	•	•						111
Denon DRS-810	300	G- Drawer loading deck, carefully designed, yet lacking in subtlety on audition	•	•	•						127
Dual CC800RS	170	A- Low(ish) cost auto-reverse deck. Delivers a punchy but ultimately rather crude impersonation of source material, thin, lightweight bass.	•	•	•						105
Harman Kardon DC5500	600	A Workmanlike sound quality offset by high price and inexplicable shortcomings like 'forgetful' Dolby switching and no timer support.	•	•	•					•	117
▲▲ Harman Kardon TD4200	250	G+ This is a very basically equipped deck built to a high standard which sounds solid and refined.	•	•	•						123
▲ Harman/Kardon TD4400	400	G Simple features plus excellent engineering make this a model of integrity	•	•	•						127
Harman Kardon TD4600	700	A Original Dolby S deck has improved over the years and now sounds very acceptable. A strong, solid sounding deck - but expensive.	•	•	•	•					117
Goodmans Delta 700W	140	P Compact and ultra-basic twin deck which is rough and bass shy, with less than stable tape path.	•	•	•					•	123
JVC TD-R452	180	A- Tidy, stable but ultimately rather soul-less experience. Auto-reverse is useful though.	•	•	•						117
JVC TD-X352	150	A- Disappointingly amorphous sound despite decent measured results.	•	•	•						117
▲ JVC TD-V562	200	G+ Ultra-sophisticated transport at a silly price; sound quality is stable but slightly opaque.	•	•	•	•					123
▲ Kenwood KX-3050	170	A Acceptable sound quality marred only by a loss of midband analysis and slightly edgy treble	•	•	•						117
Kenwood KX-5530	220	A- Neat looking, well equipped deck, adequately engineered but somewhat lacking musically. Worth considering if auto-reverse is a must	•	•	•						105
▲▲ Kenwood KX-7050S	400	VG Very well equipped and fine sounding deck, includes well implemented Dolby S	•	•	•	•	•	•			127
▲ Marantz CP230	400	A This is a competitively priced portable recorder though not suited to replay of musicassetes	•								52
▲ Marantz CP430	500	A Uniquely flexible and compact package for outside work which at a pinch can double as a domestic cassette deck	•			•	•	•			87

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Cassette decks continued

Product	Price	Comments	Dolby B	Dolby C	Dolby Pro	Dolby S	3 Head	Auto calibration	Bras adjust	Twin deck	Autoreverse	Issue No.
NAD 602	200	A+ Minimalist deck for the audiophile market. Unfortunately engineering is minimalist too	•	•	•							127
▲ Nakamichi DR-3	400	VG Refined, exquisitely detailed and solid sounding 'budget' Nakamichi 2-header.	•	•						•		123
▲▲ Nakamichi DR-2	600	VG Accomplished design with simple features (manual tape select!) but superb sound/serviceability.	•	•						•		127
▲ Nakamichi DR-1	850	VG Typically idiosyncratic Nakamichi with manual everything. Good azimuth adjustment and dynamic, authoritative sound.	•	•								117
▲ Nakamichi RX-202E	600	G+ Fine, clear and articulate sounding player. Excellent with prerecorded material, but idiosyncratic and sometimes obstructive control	•	•						•		63
Philips DCC600	500	A+ Simplified circuit and mechanism, but the Philips badly needs a D/A converter transplant	•	•								123
Pioneer CT-S420	250	A+ Poor replay compatibility, but otherwise satisfactory, if slightly uneven performer.	•	•	•					•		127
▲ Pioneer CT-S520	280	G Decent if slightly coloured middle ranker with FLEX to revitalise old or soggy sounding tapes.	•	•	•					•		123
Sansui D-790WR	200	P Modestly poor sounding but simple to use twin deck. Type II tapes show large response errors.	•									123
Sansui D-X117WR	240	P Bass is thin and coloured, and the sound lacks dynamics, pitch accuracy and overall stability - the sound is neither stable nor solid.	•	•	•							111
Sherwood DD-3010C	160	P Good range of features, let down by poor transport and iffy electronics	•	•	•							117
Sherwood DS-5010C	160	P+ Mediocre performance from well priced deck with some useful secondary features.	•	•	•					•		123
▲▲ Sony (WMD6C) Pro Walkman	290	G+ One of the finest sounding cassette decks on the market today. A mandatory Best Buy, which also fits in your pocket	•	•								60
Sony TC-K611S	330	G Cheapest Dolby S three header yet, slightly let down by lack of attention to detail	•	•	•					•		127
Teac R-9000	500	G Much better than average auto-reverse deck, well worth considering. Nicely engineered too	•	•	•	•				•		105
▲ Teac V-8000S	700	G Superb stability and real subtlety, this must be the best TEAC yet. The only disappointment was the Dolby C	•	•	•					•		105
▲ Teac V-7010	800	G+ Heavyweight (in every sense) design, immaculately crafted, impeccable sound, but not for grannie.	•	•	•					•		127
▲▲ Technics RS-BX646	230	G+ Unusually well built and non-microphonic deck with sophisticated facilities and lucid midband.	•	•	•					•		127
▲▲ Yamaha KX-260	160	A Lively, entertaining deck that trades gadgets for a convincing performance at an attractive price point	•	•	•					•		111
Yamaha KX-360	200	A Performance has both dryness and precision. Good - but doesn't 'breathe,' and occasionally sounds unstable	•	•	•					•		111
▲ Yamaha KX-650	260	G Fine audio manners, especially in the midband and treble, mark this high class deck out from the crowd	•	•	•					•		99
Yamaha KX-W362	250	A- Almost a good deck, it is let down by audible levels of wow & flutter, apparent even with prerecorded material, audio circuits are good	•	•	•							111



CD players

Now over a decade old, this all digital music source is well established despite high disc prices and the opposition of some hi-fi enthusiasts. Compact Disc's strengths over conventional vinyl are complete freedom from surface noise, ease of use, and more robust software.

However, many vinyl enthusiasts still find CDs sound less involving than top quality vinyl. But, with the dominance of CD in the high street, even vinyl die-hards need a CD player today.

The columns on the right indicate when the facilities shown in the headings are available on a CD player: DAC type indicates the type of convertor chip used in each player, 16, 18 and 20-bit are multi-bit types, all the others are bitstream variants. In much the same way that an amp's output is not indicative of its sound quality, the chip used in a DAC isn't the only determining factor in a CD player's sound, but it is an important one. Remote control is not yet universal, and we have included a tick box, more to show which

machines don't have one than which do. The existence of electrical and/or optical digital outputs is important for future upgrading with an outboard DAC, as a rule electrical outputs are the most desirable. Phase inversion in the digital domain is rare on one box players but can make quite a big difference if you've got golden ears. Headphone sockets are useful but beware of those without volume controls. Track entry key-pads are those with calculator style buttons which makes track access much quicker.

CD players

Product	Price	Comments	DAC type	Optical digital output	Electrical digital output	Remote control	Track entry keypad	Headphone socket	Issue No.
▲ Aiwa XC-300	150	A+ Cheap, cheerful and gratifyingly free of digital 'nasties', well-equipped but safe rather than thrilling on the sonic front.	Toshiba BS	•	•		•	•	107
Aiwa XC-750	200	A A refined version of the XC-700, sadly it has lost the magic of the original	SAA7350	•	•		•	•	119
▲ Adcom GCD-600	699	G Equipped with a 5-disc carousel loader, this bright and breathtaking player sounds similar to Adcom's amps.	16-bit	•	•		•	•	124
AMC CD6	349	VG Based on the same 1-Bit circuit as Rotel's RCD-965BX but with a raunchier, beefier but less transparent sound.	PDM BS	•	•		•	•	124
Arcam Delta 270	800	G+ The dry but tightly-focussed and supremely detailed sound of this player will either beguile or aggravate, depending on taste!	Hybrid	•	•				124
Aura CD-50	400	G- Based on an older Philips board with new CDM9 transport, this is a slim player with an innocuous sound	SAA7321	•	•				119
AVI S2000MC	999	G+ A stylish, midi-width player with an exceptionally refined and comfortable sound. Lacks passion	20-bit	•	•				119
Creek CD60	500	G A big and confident sound from a player that's 'into' green. So it looks ghastly even if the internal design is very thoughtful.	16-bit	•	•				107
▲ Denon DCD-695	200	G A rough diamond with a raunchy sound to match. Pitch feature will be of interest to budding musicians.	18-bit	•	•		•	•	124
Denon DCD-890	270	G- Similar to the DCD-1290 in its execution, sounds lively and powerful but lacks subtlety.	18-bit	•	•		•	•	112
Denon DCD-1290	330	G- Looks the business but sound is a real five-minute wonder. Its compelling fizz lasts about as long as a firework.	18-bit	•	•		•	•	107
Dual CD1080RC	200	A- Strange-sounding player with a top-heavy treble that does little to redress its lack of vibrancy and emotion	MASH/PWM	•	•				107
▲ Genexa CD-4900	129	A A little thin on detail, build quality and dynamics but thin on price too!	MASH/PWM	•	•				124
▲▲ Goodmans GCD-650II	110	A+ For all its technical foibles this player has a fresh-faced honesty that's very refreshing.	MASH/PWM	•	•				124
Goodmans GCD-658	170	A- A 6+1 magazine-loading autochanger with an exaggerated and often aggressive sound	Hybrid	•	•				117
Harman Kardon TL8500	600	A This 5-disc carousel player sounds civilised enough but lacks the detail and finesse of its peers	MASH/PWM	•	•				117
▲ Harman Kardon HK7725	800	VG This flagship implementation of RLS sounds impressively bold and dynamic - a genuine rock 'n roller!	18-bit RLS	•	•		•	•	124
▲ JVC XL-Z464	200	G+ This latest variation on a traditional 200 theme is no less impressive than JVC's past generations	PEM bitstrm	•	•		•	•	124
JVC XL-Z1050	500	A Technically advanced and luxuriously equipped, this player remains rather bland and unsatisfying on audition	PEM bitstrm	•	•		•	•	119
Kenwood DP-3050	200	A+ A slightly over-cooked version of the DP-3040 with a highly civilised but uninteresting sound	NPC bitstrm	•	•		•	•	124
Kenwood DP-7050	350	A Kenwood's first sowing of Philips' Bit Stream technology has fallen on stony ground judging by its dry and awkward sound	SAA7350	•	•		•	•	119
Kenwood L-1000D	830	G A beautifully constructed and very stylish player that really only gives off its best when used in balanced	16-bit	•	•		•	•	100
▲ Linn Karik	1497	VG Based on Linn's original CD transport, this player sounds dry but very positive, detailed and engrossing	Crystal BS	•	•				119

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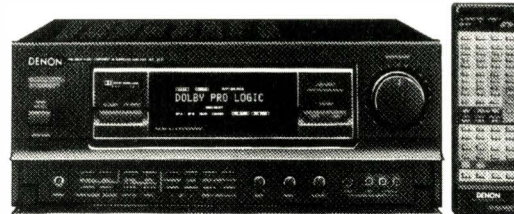
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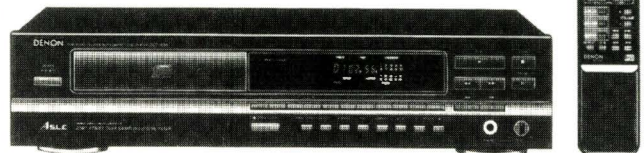
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CD players continued

Product	Price	Comments	DAC type	Electrical digital output	Optical digital output	Headphone socket	Track entry keypad	Variable output	Remote control	Issue No.
▲ Marantz CD-52II	230	G Launched to usurp the position of its own CD-52SE, the '52II is less colourful but equally appealing	SAA7350	•	•	•	•	•	•	119
▲ Marantz CD-52IISE	300	G A new mains transformer plus the full complement of internal mods has recaptured the frothy if startling sound of the original '52	SAA7350	•	•	•	•	•	•	119
▲ Marantz CD-72	450	G+ A heavily-constructed player. This implementation sounds astonishingly solid and immediate but also rather too 'clean'	bitstream	•	•	•	•	•	•	107
▲ Marantz CD-72SE	600	G+ A recommendation just eluded the grasp of this superbly built player thanks to its very polished but restrained sound.	bitstream	•	•	•	•	•	•	112
▲ Meridian 206ΔΣ	995	E A new variation on the 206 theme with the most liquid and captivating sound to date	Crystal BS	•	•	•	•	•	•	119
▲ Meridian 208	1550	E State of the art CD sound combined with a decent preamp and full remote control	bitstream	•	•	•	•	•	•	83
▲ Micromega Logic	300	G A version of Philips CD624 with new op-amps and CD tray. Still, it sounds rather meatier, better integrated and more purposeful	SAA7321	•	•	•	•	•	•	100
▲ Mission DAD5	300	A+ Similar to Philips' 600-series: lively, plenty of space and full of 'bounce' but a little too eager to impress in the short term	bitstream	•	•	•	•	•	•	107
▲ Musical Fidelity CDT	500	G+ Oddball player with a cheap top-loading transport and appalling digital gubbins yet saved by the euphony of its valves!	hybrid	•	•	•	•	•	•	112
▲ NAD 502	220	G This updated version of the 5425 has traded the spontaneity of its forebear for a more precise but mechanical style of music	MASH/PWM	•	•	•	•	•	•	119
▲ Nakamichi CD-4	380	A- This looks new enough but sounds little better than the older CD Player 4 upon which it is firmly based.	18-bit	•	•	•	•	•	•	124
▲ Orelle CD-160.2	750	A- Based on Philips traditional 16-bit technology but suffering an unusually disjointed and undynamic sound.	16-bit	•	•	•	•	•	•	124
▲ Philips CD690	130	G- The remote-less version of Philips CD692 but with a colourful performance that's all its own.	PDM BS	•	•	•	•	•	•	124
▲ Philips CD920	160	A+ A new budget player with an appalling technical record but a surprisingly clean if understated sound	SAA7341	•	•	•	•	•	•	119
▲ Philips CD930	200	G+ Featuring digital circuitry similar to Marantz's players but a sound that's a little too ripe and soft.	bitstream	•	•	•	•	•	•	112
▲ Philips CD950	350	G+ Philips' top 900-series player is the first to employ its advanced DAC7 chipset. Sounds very crisp, clear and confident.	DAC7	•	•	•	•	•	•	112
▲ Pioneer PD-S802	350	G Once again Pioneer's LLC topology only served to split and confuse the listening panel. It's good, but quirky!	PFM BS	•	•	•	•	•	•	124
▲ Pioneer PD-M701	330	G+ A 6-disc multichanger from the originators of the breed. A little untidy perhaps, but still sounds fresh, dynamic and exciting	PDM	•	•	•	•	•	•	117
▲ Pioneer PD-M901	450	A Another 6-disc multichanger based on the PD-M701 but with the addition of various 'Sound Field' options. Listening is hard work	PDM	•	•	•	•	•	•	117
▲ Pioneer PD-S901	500	G+ The very refined but confident, crisp and powerful sound of the '901 snatches Pioneer's LLC concept from the jaws of defeat	PFM bitstrm	•	•	•	•	•	•	119
▲ Quad 67	790	E Deceptively sleek in appearance but with a powerful, fluid and captivating sound reminiscent of Meridian's 206.	Crystal BS	•	•	•	•	•	•	124
▲ Rotel RCD-945AX	230	G Based on the same CD-player-on-a-chip as Philips CD690 but with improved execution and build.	PDM BS	•	•	•	•	•	•	124
▲ Rotel RCD-965BX	300	E An exceptionally refined bitstreamer: transparent, exquisitely detailed and powerfully emotive. A landmark player	SAA7323	•	•	•	•	•	•	100
▲ Sansui CD-X217	240	G- Sansui has returned to its roots judging by the balmy and very comfortable sound that pours from this player	MASH/PWM	•	•	•	•	•	•	119
▲ Sansui CD-X317	280	A Not in the same class as older CD-X311mkII. Same technology but the sound is neither as responsive or engaging	MASH	•	•	•	•	•	•	107
▲ Sansui CD-X617	350	A This 'double-DAC' version of the CD-X317 is more impressive, sounding light and tizzy with pop but dull with classical CD's	MASH	•	•	•	•	•	•	112
▲ Sansui CD-Alpha 717DR	1560	G+ A beautifully constructed if rather dated flagship player with an equally sedate and unadventurous sound.	MASH/PWM	•	•	•	•	•	•	124
▲ Sherwood CD-3020R	120	G Although this budget wonder has little respect for musical convention, what emerges is still remarkably entertaining	NPC bitstrm	•	•	•	•	•	•	119
▲ Sherwood CD-5010R	160	G+ A warm, detailed and enjoyable performance from a solidly built but affordable package.	PDM BS	•	•	•	•	•	•	124
▲ Sherwood CDC-5010R	200	G+ This highly affordable 5-disc carousel player sounds unexpectedly deep, spacious and involving - a rare find	PDM	•	•	•	•	•	•	117
▲ Sony CDP-X303ES	550	A+ A disappointingly lean and inconsistent result from a player that puts the 'high' in technology if not fidelity	PLM bitstrm	•	•	•	•	•	•	124
▲ Sugden SDT-1	850	A Bearing in mind Sugden's SDA-1 converter lies at the heart of this player, its unpredictable performance is disappointing	16-bit	•	•	•	•	•	•	119
▲ Teac CD-P3500	200	A A well-meaning attempt to pare-down the CD-P4500 results in a similar looking player with a thoroughly uninspiring sound	bitstream	•	•	•	•	•	•	112
▲ Teac CD-P4500	280	G TEAC's first genuine 1-bit player its sound described as having a certain 'organic warmth', very composed and easy-going.	SAA7350	•	•	•	•	•	•	107
▲ Teac VRDS-10	770	A+ A basic analogue stage compromises the potential of TEAC's superb engineering and digital electronics. Lacks bass energy	DAC7	•	•	•	•	•	•	119
▲ Technics SL-PG440A	170	G This mix of the SL-PG520 and '420 fails to benefit from the strengths of either and only just achieves recommendation.	MASH/PWM	•	•	•	•	•	•	124
▲ Technics SL-PG520A	180	G+ A cracking player. Superb clarity and dynamics, thrilling but musically involving too	MASH	•	•	•	•	•	•	107
▲ Technics SL-PG620A	200	G+ A costlier, tarted-up version of the SL-PG520A that loses very little in the way of clarity, sparkle or in compelling dynamics	MASH	•	•	•	•	•	•	112
▲ Technics SL-PS840	420	A A very refined but highly detailed and engrossing performance from just about the fastest, slickest player on the planet	MASH/PWM	•	•	•	•	•	•	119
▲ Woodside WS2	1095	G+ Responded well to our jazz and classical selection but sounding bright and grainy with the pop CD's	16-bit	•	•	•	•	•	•	95
▲ Yamaha CDX-670	290	G- Yamaha has retained the CDX-660 casework but cut costs with a new multi-task IC that's not entirely de-bugged.	PDM Bit Stream	•	•	•	•	•	•	124



CD transports and DACs

A CD player can be split into two basic components, the mechanism which reads the information from the disc, called the transport, and an electronic device which turns the digital bitstream coming off the disc into an analogue audio signal, this is called a digital to analogue convertor or DAC. Although at the lower end of the market both of these are contained in a single box, the best CD players are usually two box affairs.

Although many of these units will be purchased as matching pairs, a DAC can also be

used to upgrade an existing CD player. For instance an early machine with a satisfactory transport but a dated convertor can be rejuvenated by adding an outboard DAC.

The columns on the right indicate the facilities available on a transport or DAC. Remote control is self explanatory. The existence of electrical and/or optical digital in and outputs is pretty fundamental to transports and DACs, as a rule electrical outputs are the most desirable. Class 1 transports are those with an output whose crystal clock accuracy is better than ± 50ppm (parts

per million), certain DACs won't lock onto (and thus can't be used with) transports with a lower clock accuracy. DAC type shows the specific convertor chip employed. In much the same way that an amp's output is not indicative of its sound quality, the chip used in a DAC isn't the only determining factor in a CD player's sound. Phase inversion in the digital domain can make quite a big difference if you've got a high resolution system and golden ears to go with it.

Entries for one make transport/DAC combinations are listed after the separate components.

CD transports

Product	Price	Comments	Electrical digital output	Optical digital output	Headphone socket	Track entry keypad	Variable output	Remote control	Issue No.
▲ Meridian 200	895	G+ Broadly compatible and offering a light, fresh and very bubbly sound that is both natural, engaging and unfatiguing	•	•	•	•	•	•	96
▲ TEAC P-2	3500	G Beautifully styled and constructed but sound is bleached and generally less inspiring than that of the P-10	•	•	•	•	•	•	96
▲ Technics SL-PA10	470	G Has the unusual limitation of only optical output. Reassuringly solid and more immune to vibration than most	•	•	•	•	•	•	88



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 HD7500 II £259.90
 HD7525 £449.90
 TL8500 £499.90

M97GM97MG £1149/E1199
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 SW900/SW700 £259/E299
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 FX362BK £129.99
 FX342BK £119.99
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 RX1010VTN £389.99
 RX808VK/508VBK £559/E339
 RX308BK/206XBK £239/E199

AMPLIFIERS
 A10230 W.OCH. £129.99
 A20240 W.PCH. £169.99
 A30040 W.PCH. £259.99
 A40060 W.PCH. £259.99
 A40080 W.PCH. £299.99
 A6020 W.PCH. £329.99
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 TAF592E £299.99
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DACs

Product	£Price	Comments	DAC type	Electrical digital input	Optical digital input	Phase invert	Issue No.
▲▲ Arcam Black Box 50	450	VG A very measured and sophisticated sound from a DAC that leaves plenty in reserve to accommodate future upgrades.	Hybrid	•	•	•	127
▲ Audio Alchemy DAC-in-the-Box	200	G Despite its slightly veiled sound this giveaway DAC may still rescue the oldest of players from obsolescence.	18-bit	•	•		127
▲▲ Audio Alchemy DDE v1.0	420	VG A very sweet and seductive sounding unit that gives good results with a wide range of CD players/transports	Bitstream	•	•	•	101
Audiolab 8000DAC mkII	750	G Just as smooth and refined as its predecessor yet, sadly, still manages to obscure the passion or fire of music.	DAC7	•	•	•	127
Audio Note DAC 1	600	G+ An oddball DAC with manual de-emphasis switching. Needs a high preamp input impedance if bass is not to suffer.	20-bit	•	•		127
Audio Synthesis DSM-M	1234	G+ A weighty but neutral and highly calculated performer, best suited to transports like the P-10, despite Sync Lock facility.	20-bit	•	•		113
Beard DAP-1	975	A- Clad in a wooden case this marriage of digital technology and valves has hit the rocks, a disappointingly flat sound	16-bit	•	•	•	113
DPA Digital Little Bit Two	450	G A new on-board mains filter promotes a smoother and richer sound at the expense of some life and vitality.	SAA7350	•	•		127
▲ DPA Digital Bigger Bit	695	G With either P-10 or Meridian 200 transports it delivers a very taut and dynamic sound, bathed in an open acoustic	DAC7	•	•		103
DPA Digital PDM1 Series 3	1280	G+ Bears technical comparison with both PDM2 and Bigger Bit but - in terms of sound quality - is great advance on the latter	DAC7	•	•		103
▲ ds/d Decode-1	495	G Elegantly designed bitstreamer with plenty of inputs, can sound too bright, immediate or artificial for its own good.	Bitstream	•	•	•	113
▲ Forte Audio Model 50	950	VG A typically big and full-blooded sound, infiltrated by a slightly euphonic quality but never hard or gritty	DAC7	•	•		103
▲ Meridian 563	695	G+ Warmer but no less detailed than the earlier 200-series, the 563 really comes into its own with top-flight CD transports.	Crystal	•	•	•	127
Meridian 606 DAC7	1350	G By refining the 203's sound further Meridian have also tempered its vibrancy and 'life' . Fickle with other transports	DAC7	•	•	•	101
Micromega Duo BSII	550	G Has a tendency to sound light, airy and 'fast' but it can also become a little hard or - fatiguing with some digital outputs	SAA7321	•	•	•	101
Micromega Microdac	300	A+ Described as a modest but entertaining performer, achieving its sweetest balance with Arcam's D170.3 transport.	SAA7321	•	•		113
▲ Mission DAC5	300	G+ Another modest DAC but one capable of a lean but clean and detailed sound that's typical of the DAC7 breed.	DAC7	•	•	•	113
▲ Musical Fidelity Tubalog	499	G+ The animated character of the Tubalog ensures it's a great upgrade on budget CD players.	18-bit	•			127
▲ NVA DAC-ON	730	G+ DAC-ON actually turns out to be a QED Digit linked to substantial external supplies. A ruse that undoubtedly improves its sound	SAA7323	•			113
PS Audio Superlink	1498	G- Does the business with Meridian's 200 but can sound bloated, smeared and even vaguely electronic other transports	18-bit	•	•	•	103
▲▲ QED Digit	139	G+ Bearing in mind its expressive but very forgiving performance the Digit is almost embarrassingly cheap	SAA7323	•			113
Roksan ROK-DA1/ROK-DS4	995	G+ A creditable affair, both expansive and expressive in character but rather also lean in balance.	Crystal	•			113
Select Systems Dacula	399	G The overly warm and heavy bass of this DAC is quite atypical of the Crystal Bit Stream DAC.	Crystal	•			127
Stax DAC-Talent	1400	G+ Natural, refined and never over-zealous, its also capable of sounding very spicy and dynamic. Can be a maturing influence	20-bit	•	•	•	101
▲ Sugden SDA-1	749	G+ A pleasant surprise from the fuddy-duddies of audio, judging by its 'masses of high resolution detail and tremendous dynamics'	TDA1541it	•			113
Sugden Stemfoot PDA-10	1200	G+ Unfortunately this 'upgraded' SDA-1 is less impressive than the original, losing out on dynamics, airiness and subtle detailing	16-bit	•	•	•	113
Threshold DAC 1/e	3150	G+ Can sound beautifully detailed with a marvellous sense of scale and sharp, solid images. Compatibility is unpredictable	MASH	•	•	•	103
Woodside DAC1	909	G Fine but slightly dated and costly package in performance terms - but flexible, musical and t well built	16-bit	•	•		87
▲ Woodside DAC2	510	G+ Offering a sharp and dynamic sound, all the more captivating for its lack of graininess and 'tizz' . A reliable upgrade	16-bit	•			101

Transport/DAC combos

Product	£Price	Comments	DAC type	Electrical digital input	Optical digital input	Track entry keypad	Headphone socket	Variable output	Remote control	Issue No.
Audio Alchemy DDS/DTI/XDP/P52	2047	A+ A multi-box combination with a Bit Stream DAC that is fundamentally more inspiring than its partnering transport.	DAC7	•	•	•	•	•	•	120
DPA Digital T-I/PDM2mkII	3245	G An ingenious combination that includes a clock-feed from the DAC to CD transport. Capable of astonishing results	DAC7	•	•	•	•	•	•	120
▲ EAD T-1000/DSP-1000	2195	VG A two-box player based on Pioneer's Stable Platter CD transport. Its music always sounds fast, furious and fascinating.	20-bit	•	•	•				120
Linn Karik/Numerik	2495	G+ Partnering Linn's Numerik DAC with its Karik CD player (as transport) provides a dry, dynamic but also slightly dirty sound.	20-bit	•	•					120
Meridian 200/263	1390	G Now updated with Crystal Bit Stream technology, this popular duet has unfortunately lost much of the charm and poise of the original.	Bit Stream	•	•					120
▲ Meridian 602/606	3100	VG Meridian's top-of-the-range two-box player looks and sounds both distinctive and elegant, the perfect partner for a cultured system!	DAC7	•	•	•	•			120
Proceed PDT3/PDP3	4598	G+ The third in a series of unusual transport/DAC combinations and a pairing that retains a powerful, confident and rugged sound	20-bit	•	•	•				120
▲▲ TEAC P-700/D-700	1500	VG They may lack the resolution of high-end colleagues but still sound warm, bubbly and perpetually entertaining.	20-bit	•	•	•				120



DAT players

DAT, or digital audio tape, has been on the market for quite some time now but has never really 'made it' as a consumer medium, probably due to the fact that very little prerecorded software has been made available. In the last year or so it has begun to carve itself a niche at the top end of the market replacing reel to reel tape recorders as the audiophile's

tape based medium. The DAT standard specifies a 48kHz sampling rate, which is higher than CD, so direct copying in the digital domain is only possible on those machines with dual sampling frequencies, ie 48kHz and 44.1kHz. Some machines also record at 32kHz to give a longer recording time for a given length of tape, this is shown in the LP

mode column. The optical and electrical in/outputs in the column headings are for digital signals, analogue in/outputs are universal. The AES/EBU and S/PDIF socketry is for connection to professional components and typically DAT machines with this facility have been made for the pro and semi-pro markets.

DAT players

Product	£Price	Comments	Remote control	LP mode	Optical in/out	Electrical in/out	AES/EBU in/out	S/PDIF in/out	Issue No.
JVC XD-Z1010TN	1050	A+ Ambitious but ultimately disappointing deck with an opaque musical delivery and more features than you can shake a stick at	•	•	•	•	•		111
▲ JVC XD-Z505	620	G Competent middle market DAT with uncomplicated (but still flawed) user interface, but good basic sound quality	•	•	•	•	•		105
Panasonic SV-3700	1111	A Slick, powerfully equipped, this pro DAT has a clear, quick and colourful sound somewhat lacking in weight and substance	•	•	•	•	•	•	111
Sony DTC-77ES	1000	A Superb engineering, many nice features (including off tape monitoring) but perceptibly slowed, thickened sound	•	•	•	•	•		105
Tascam DA-30	1199	A+ Interesting pro DAT deck with solid, tangible sound quality which is nevertheless lacking in analysis	•	•	•	•	•	•	111

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EXAMPLES:

	Normal Price	SALE PRICE
Micromega DUO CD 3 Transport & DUO BS DAC	£1799.00	£1299.90
Micromega DUO CD 3 Transport & DUO Pro DAC	£2399.00	£1699.90
Mission Cyrus PSX Power Supply for Cyrus 2	£299.00	£149.90

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Bartletts Suggested Systems

The Bartletts Suggested Systems listed below are supplied with the Marantz CD 53, an alternative CD player or Turntable are available, see below for price details. All systems are supplied with 8 metres of 79 strand loudspeaker cable. QED 4mm plugs are available at a cost of £1.00 each. Carriage charge for delivery to an address on the UK mainland is £12.00 per order. All items are sent fully insured. Prices were correct at time of printing but are subject to change without notice. E&OE.

	Celestion 1	Mission 760i Celestion 3 Tannoy 603	Tannoy 605 Mission 760ise	Mission 761i B&W DM 600i Celestion 5	Tannoy 607 B&W DM 610i Celestion 7 Mission 780	Rogers LS 2A 2	Mission 762i Cerwin- Vega VS 8	Rogers LS 4 A 2 Tannoy 609
Marantz PM 44 SE	384.95	429.95	457.95	469.95	503.95	511.95	527.95	560.95
Marantz PM 32	335.95	374.95	405.95	413.95	447.95	459.95	475.95	499.95
Marantz PM 40 SE	343.95	383.95	389.95	419.95	451.95	467.95	483.95	529.95
Nad 302	359.95	396.95	424.95	432.95	464.95	480.95	496.95	520.95
Nad 304	409.95	455.95	483.95	491.95	523.95	539.95	545.95	579.95
Harman Kardon 6150	384.95	415.95	445.95	458.95	491.95	499.95	515.95	539.95
Harman Kardon 1200	439.95	482.95	511.95	523.95	556.95	564.95	581.95	622.95
Arcam Alpha 5	409.95	455.95	483.95	491.95	523.95	539.95	545.95	579.95
Technics SUA 600	399.95	415.95	443.95	451.95	483.95	499.95	515.95	539.95

Choices. The following CD players or Turntables can be ordered instead of the Marantz CD 53 in the above systems.

CD Players

Aiwa XC 300	Deduct £60.00	Sony CDP 311	Deduct £30.00
Denon DCD 595	Deduct £20.00	Sony CDP 711	Add £50.00
Denon DCD 695	Add Nil	Sony CDP 911	Add £100.00
Denon DCD 890	Add £70.00	Technics SLPG 440	Deduct £20.00
Marantz CD 42 II	Deduct £20.00	Yamaha CDX 470	Add Nil
Marantz CD 52 II SE	Add £100.00	Yamaha CDX 570	Add £45.00
Nad 502	Add £20.00	Yamaha CDX 670	Add £90.00

Turntables

Dual CS 503-2	Deduct £70.00
Dual CS 505-4	Add Nil
Thorens TD 280 IV	Add £10.00
Systemdek IIX 900 inc.RB 250 AT 110e	Add £125.00

Bartletts Super Savers

Creek Service Stock Clearance

	Normal Price	Saver Price
Creek 4040 amplifier	£219.90	£169.90
Creek 4140 amplifier	£249.90	£199.90
Creek 6060 amplifier	£499.90	£349.90
Creek T 40 tuner	£249.90	£199.90

All of the above models are ex-service stock and are covered by a one year parts and labour guarantee

Bartletts System of the Month

Marantz CD 53 CD player
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Celestion One Loudspeakers
8m 79 strand cable

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Carriage for the above system £12.00

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Headphones



There are a variety of different approaches to headphone design. Amongst the more expensive models, electrostatic drivers are used in open-backed phones. The majority of these come with some form of transformer which usually takes the signal from the speaker terminals on the amplifier, but some can run from a pair of tape out sockets.

The more down to earth (see affordable) models feature dynamic, or moving coil, drivers in circular open or closed backed designs. The advantage of open backs seems to be a correspondingly open sound, but one can also of course hear external noises. Closed-back designs are useful in situations where it is necessary to block out background noise, but they aren't gen-

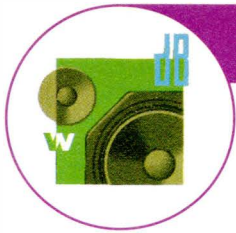
erally as good sonically.

Another means of distinguishing different types is the way they sit on your head. There are three styles: circumaural models enclose the ear and rest on the side of the head; supra-aural designs feature a flat pad which presses on the outer ear (pinna); and intra-aurals rest inside the ear itself, and are popular with personal stereos.

Headphones

Product	£Price	Comments	Type	Open back	Closed back	Dynamic	Electrostatic	Issue No
▲ AKG K1000	500	E One of the best dynamics on the market, hooks directly to speaker outputs and makes much of the competition sound lame	Extra-aural	•	•	•	•	99
AKG K135	33	A The K135s don't live up to the usual AKG standards, though they do have the ability to reproduce rhythm well	Supra-aural	•				63
▲ AKG K240 Monitor	60	G Something of a classic, these AKGs are very user friendly in all respects; sonically on the warm side of neutral	Circumaural	•				63
▲ AKG K280 Parabolic	90	G+ A very revealing and unusual twin driver design that uses the same principle as a satellite dish to beam sound into the ear	Circumaural	•				63
▲ AKG K340	140	E Heavyweight cans in most respects, the K340 with its electrostatic tweeter is a very revealing headphone	Circumaural		•	•	•	75
AKG K44	40	A Good quality personal oriented phone, could have a better sense of space but is musically quite communicative	Supra-aural	•				99
▲ AKG K400	100	VG Comfortable over long sessions. Sound is exquisitely detailed, dynamic and uncoloured	Supra-aural	•				121
▲ AKG K500	119	G+ Open and clear, they reproduced music with impressive definition, balance is on the light side but transparency is high	Circumaural	•				111
Aiwa HP-X30	26	G- A flashy personal stereo phone which alternatively could be used at home. A slight LF tonal preference colours the response	Supra-aural		•	•		75
▲ Audio-Technica ATH-308	26	A- Small cans with a fairly forward balance which helps perceived clarity but can become wearing over time, good for personals	Supra-aural	•				111
▲ Audio-Technica ATH-609	31	A- Warm feeling and sounding with impressive physical substance for the price, could be more relaxed and open	Circumaural	•				99
Audio-Technica ATH-611	51	G Same basic design as 609 but bigger thinner diaphragm makes this a more relaxed and informative headphone	Circumaural	•				99
Audio-Technica ATH-9000	246	G Electrets which connect to the amps speaker outputs, it sounds a little too smooth but would suit aggressive amps	Circumaural	•				111
▲ Audio-Technica ATH-910	70	G The closed-back 910s are an improvement on the 909s with a nice rhythmic quality rarely found with headphones	Circumaural		•	•		55
▲ Audio-Technica ATH-911	80	VG Nicely finished dynamic headphones with all the trimmings, plus a very clean and subtle sound	Circumaural	•				63
Bandridge EH910DD	50	A- Modestly successful mid/top, but dreadfully cloying, ploddy bass makes this model essentially unlistenable	Circumaural		•	•		121
▲ Beyer DT-211	25	A Good value compact, couth and enjoyable, esp in midband. Earpads not removable for cleaning	Supra-aural	•				121
Beyer DT411	49	G A reasonable but not very thrilling headphone that doesn't really offer enough at the price	Supra-aural	•				111
▲ Beyer DT911	179	VG Probably too revealing for many headphone amps these are very subtle and fine if expensive cans	Circumaural	•				111
▲ Beyer DT990	102	VG A significant pair of dynamic headphones; they have a smooth and yet revealing neutral sound that is hard to criticise	Circumaural	•				55
▲ Beyer IRS690	203	VG High quality infra-red headphones with soft comfy earpads and mellow but informative sound quality which is hard to dislike	Circumaural	•				75
JVC HA-D690	40	A Competent but rather undistinctive cans, a bit middle of the road and well suited to aggressive sources	Supra-aural		•	•		111
JVC HA-D910	60	A Broadly acceptable if unexciting design with low level losses and some colourations	Circumaural		•	•		121
▲ Jecklin Float Electrostatic	399	E These electrostatics have an openness of sound rarely found in the breed, with good dynamic range to boot	Circumaural	•			•	55
▲▲ Jecklin Float Model One	79	G+ Whilst very unusual in appearance, the Floats give remarkable sound quality and openness at a reasonable price	Circumaural	•				55
▲ Jecklin Float Model Two	99	G+ Helmet shaped and pretty unflattering but open sounding and comfortable in the long term. te lack of adjustment	Circumaural	•				63
Kenwood KH-1000	20	A- First step up from a true mini: a near miniature which is cheap, comfortable and inoffensive	Supra-aural	•				121
Philips SBC3390	60	A Up front but rather aggressive headphone with lightweight, coloured sound. Not very comfortable.	Supra-aural		•	•		121
Quart Phone 75X	70	A Unusually comfortable sealed headphone, though sound isolation poor. Hard, edgy sound quality.	Circumaural		•	•		121
▲▲ Sennheiser HD440 II	35	A+ Still the one by which others at the price are measured, though now slightly leaden sounding, cold treble	Supra-aural	•				121
Sennheiser HD 540II	120	G+ A good but not great headphone that due to its high impedance and efficiency should work well with most sources	Circumaural	•				111
▲▲ Sennheiser HD560 Ovation II	140	VG Characteristic slightly heavy sound, but still the benchmark at this price level. High class sound and comfort	Circumaural	•				121
▲ Sony MDR-CD1000	170	G+ A fine sounding and comfortable headphone that's likely to work well with most sources	Circumaural		•	•		111
▲ Sony MDR-CD3000	350	G+ Better than most of the headphone outputs around so hard to make the most of, potentially up there with the electrostatics	Circumaural		•	•		99
▲▲ Sony MDR-CD350	30	G Very impressive, possibly the most open sounding cheap closed back can around, lightweight in balance but transparent	Circumaural		•	•		99
▲▲ Sony MDR-CD550	60	G+ A very competent headphone, creates a remarkable sense of space for a closed back design and sounds natural to boot	Circumaural		•	•		99
▲ Sony MDR-CD750	90	G+ Reasonably comfortable and eminently listenable these Sonys have characteristically good bass power and relaxed hf	Circumaural		•	•		111
Sony MDR-CD850	100	A+ Very comfortable, and reasonable sound - better than most sealed designs - though hardness intrudes	Circumaural		•	•		121
▲ Stax Gamma pro/SRD-X pro	678	E The Gamma pros are like a stethoscope for your hi-fi, revealing subtleties that many loudspeakers fail to resolve	Circumaural	•				63
▲ Stax Lambda Signature/SRM-T1	1644	E The Signature when combined with the SRM-T1 valve driver must be the most transparent headphone available	Circumaural	•				72
▲ Stax SR Gamma	239	G+ The next model down the Stax range from the Lambda, the Gamma is an excellent headphone with little to criticise but the price	Circumaural	•				55
▲ Stax SR Lambda Pro/SRD-7SB	674	G+ An industry reference, frighteningly revealing, bringing across more information than loudspeakers costing twice as much	Circumaural	•				55
▲ Stax SR Lambda Pro/SRM-1	1239	E Extracts layers of information that other headphones only hint at. The SRM-1 has more edge than the SRM-T1	Circumaural	•				75
Technics RP-F10	100	A Another very comfortable sealed model, modest sound isolation and uneven sound favouring bass	Circumaural		•	•		121
▲▲ Vivanco SR808 Classic	55	G A new mid price reference from a new and interesting source. Good all round, no obvious shortcomings	Supra-aural	•				121
Yamaha YHD-1	46	G Stylish semi-folding design with a slightly forward balance that very nearly scraped a recommendation	Supra-aural	•				111

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Loudspeakers

Last item in the hi-fi chain, to some extent the loudspeaker is merely the slave of what has gone before, capable only of reproducing a signal as good as it is fed. Nevertheless the distortions (colorations and stereo effects) introduced by loudspeakers (and rooms) tend to be more immediately obvious than those anywhere else in the chain, so careful choosing according to taste is very important.

The average loudspeaker consists of a small-

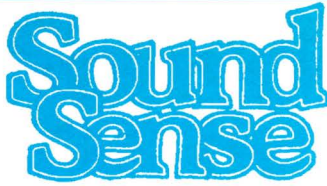
ish enclosure, much of which may have begun life as part of a tree, plus a couple of drive units hidden behind a removable grille. Inside the box lurks a simple electrical circuit known as a crossover, which divides the incoming (full range) signal into the right bits for the drivers to handle. Variations on the above formula are specifically identified in the entries. The designer's primary task is to balance the 'sensitivity' of the loudspeaker (how loud it goes for a given electrical

input) against the bass extension (how low does it go), shown as 'bass from', for the given box size. After that such subtleties as coloration (or lack of it) and dispersion come into the equation.

Careful placement of the loudspeakers within the room is as important as the initial choice of model. See siting columns for guidance. For good stereo they need to be more or less the same distance from nearby walls. Models not ticked as 'floorstanding' will require rigid stands.

Loudspeakers

Product	£Price	Comments	Size: HxWxD (cm)	Site in free space Bass from (Hz)	Site close to wall Sensitivity (dB)	Floorstanding	Issue No.
ATC SCM20	1461	G+ Massively built, invariably informative but the rather forward presentation can be uncomfortable	44x24x31	28	82		• 86
▲ Acoustic Energy Aegis 1	452	G Rich and slightly heavy balance doesn't mask fine mid/treble coherence and transparency. Entry level for all-metal drivers	39x21x26	28	84	•	118
Acoustic Energy AE1	764	G Amongst the best miniatures around, shows exceptional mid focus and coherence, but is pricey and could be more agile.	29.5x18x25	48	84	•	102
▲ Acoustic Energy AE3	1650	G+ Solid, authoritative and impressively accurate – if a shade ponderous and slow	63x26.5x37	23	85	•	86
Acoustic Res arch Pi 3	219	A Lively good value box has extra bass driver to give plenty of thump, but lacks refinement and extension	51.5x21x23	50	88	•	110
Acoustic Research AR M.5	129	A- Pretty enough but a bit too tiny for its own good, it's better suited to auxiliary surround sound duties	22x16x23	50	88	•	114
▲▲ Acoustic Research AR M1	199	G Cutely shaped miniature delivers splendidly unboxy bass and midrange, but is a little marred by a rather bright treble	27x20x26	30	85	•	110
Acoustic Research AR M2	269	A Not necessarily as agile or well balanced as the cute little M1, M2 is larger, louder and still attractively unboxy	41x24x36	28	89	•	118
▲▲ Allison AL100	100	A Loud and lively budget wall-mount is bigger and beefier than most of the competition, if lacking some subtlety and refinement	33.5x24x21.5	30	87	•	94
Allison AL105	170	A- Pretty enough in appearance, sonically the AL105 doesn't really make the grade at the £150 asking price	37x24x21	45	87	•	78
▲ Allison AL110	220	G- Compact bookshelf model is a little dry and mid forward, but bass is extended and solid	40x24.5x22.5	28	86	•	102
Allison AL120	420	A Pretty well balanced if slightly mid forward, but sound quality is a little disappointing for the price	63x28x27	30	88	•	98
Allison MS 200	220	A- Small and solid as a brick, this micro-miniature has limited bass and bright balance, but sounds agile and communicative	25.5x14.5x15	50	85	•	106
▲ Apogee Caliper Signature	3998	G+ Power hungry full range ribbon panels have remarkable transparency and delicacy, loudness and 'grunt' are a bit lacking	122x70x6.5	30	81	•	81
▲ Arcam Delta 2	300	G Pretty luxury compact sounds a shade forward and coloured but has dynamic and lively bass for its size	37.5x22.5x27.5	40	87	•	94
▲ Audio Note AN-E	1300	G+ Lovely coherence, great midband dynamics and transparency, extended bass and high sensitivity — pity it's so darn ugly!	80x36x28	20	91	•	106
▲ Audio Note AN-J	799	G+ Light damping and local unevenness adds some coloration, but doesn't spoil the very lively, dynamic and coherent sound	58.5x33x24.5	25	90	•	110
▲ Audioplan Kontrapunkt	899	G+ Sounds as sweet as it looks, dressed expensively in real wood with matching stands. not for bass or loudness freaks	31x24x13	48	83	•	86
Aura SP-50	399	A Two very tasty drivers rather outclass the cabinetwork; a capable but slightly dull compact stand mount	40x22x25	30	87	•	126
▲ B&W 2001	120	A Cunningly concealing its (very real) limitations, this is just about the smoothest and best balanced miniature around	29x18x21	48	87	•	118
B&W 2003	190	A- Flashy and assertive ghetto blaster styling is not reflected in the rather bland, if well balanced sound	43x21x25	30	88	•	122
B&W 610	240	A Bass extension and impressive loudness credentials, but rather indifferent integration and coherence	49x23.5x30	25	89	•	102
▲ B&W DM620i	399	A+ Good material value, this compact floorstander has a beautifully voiced midband, less happy bass tuning	77x24x32	40	89	•	126
▲ B&W DM600	180	A+ An impressively smooth overall balance, but sound is a touch bland with it	35x20.5x25	30	85	•	98
▲ B&W Matrix 801	3495	G+ Lacks the transparency of the best panels, and the drama of the best dynamics, but is something of an acoustic tour de force	77/99x56x43	<20	86	•	81
B&W Matrix 805	845	G Stylish, with remarkable imaging properties, good balance and low coloration, though less successful at musical communication	42x26x22.5	30	87	•	98
▲ Bose 305	390	G- A bit of an oddball, fine dynamic liveliness and a good room match more than make up for the strange stereo imaging and treble	28x45x23	40	88	•	78
Bose 401	456	A Cheaply built but distinctively styled semi-omni floorstander suffers from heavy midbass but still sounds lively and open	78.5x30x28.5	28	89	•	110
Bose 901 MK6	1496	A The pre-equalised multi-driver 901 is cleverly engineered to deliver exceptional loudness	33x54x32	28	89	•	86
Bose Interaudio 3000XL	170	A- Lots of perceived value and well enough balanced, but low cost engineering results in a crude and unsubtle sound	46.5x29x23	45	89	•	71
Boston HD5	130	A Tiny and prettily shaped miniature has an attractive lack of boxiness, but is a little short of drama and dynamic drive	25x16x18.5	30	86	•	110
Brinkmann Endymion	395	A+ Omnidirectional design with rococo styled urn-shaped ceramic enclosure. Distinctly bass light, but impressively coherent	48x29 (diam)	50	85	•	106
▲ Cabasse Bisquine	600	G+ Classy French large bookshelf speaker has great coherence and dynamic grip, but a rather mid-forward overall character	48x26x30.5	30	91	•	110
▲ Cabasse Skiff	1500	G+ Large floorstanding three-way gives great sensitivity and bass extension with fine dynamic grip	100x30x36	25	92	•	122
▲ Canon S-30	150	A+ Clever and unusual moulded design has attractive lively coherence, along with 'wide imaging stereo' effect	27x22.5x23.5	50	88	•	114
▲ Canon S-50	350	A+ Only a small cone miniature at heart, the fascinating styling and extended sweet spot feature make it utterly original.	30x24(diam)	48	84	•	102
▲▲ Castle Chester	650	G+ A brilliant throwback, using horn-type approach to provide startling midrange dynamics and coherence.	94x23x27	45	87	•	98
Castle Durham	250	A Like the slightly larger York, the very pretty presentation is not reflected in a similarly sweet sound	40x22x24	48	88	•	118
▲ Castle Pembroke	400	A+ Comfortably recommended, a sweet smooth sound with good overall balance of engineering-based performance	55x37.5x30.5	46	88	•	31
▲ Castle Trent II	190	A Very classy finish for the price, plus a sound that passes muster without setting anything much alight	33.5x18x20	50	88	•	122
▲ Castle Winchester	1499	G+ Unconventional and beautifully crafted, large for its bass extension but engagingly agile and attractively open and airy	114x24x47	25	87	•	90
Castle York	340	A+ Pretty little real wood compact has an engaging transparency, good balance and fine timing, could do with more authority	43x22x26	30	86	•	110
▲▲ Celestion 1	109	A Pretty basic performance but at a very basic price — it all sounds a bit scrappy and untidy, but its heart's in the right place	27.5x16x21	50	87	•	114
▲ Celestion 15	389	G Big box and bang for your bucks, short on subtlety and control, but long on both enthusiasm and perceived vinyl wood grain	103x20.5x25.5	28	90	•	114
Celestion 9	269	A Nicely presented and fair material value, with impressively flat bass-to-mid balance	49.5x20.5x24	30	89	•	102
Celestion SL12Si	629	A Elements of fine sound quality, but this 'grown up' SL6 variation has a lumpy response alongside its improved power handling	53x20x27	50	85	•	66
Celestion SL600Si	820	G Has certain remarkable qualities that some will find irresistible, but needs careful system and room matching	27x20x23	52	82	•	68
Celestion SL6Si	429	A+ This stereotype luxury compact can sound a bit dull and congested, but really opens up on Slate Audio stands; favours CD	37.5x20x25	30	86	•	94
Celestion 300	1099	G Splendid bass extension and fine panel-like openness and transparency, but dynamics and timing are suspect, balance very laid back.	100x21x31	<20	86	•	118
Creek CLS 10	119	A Almost identical to the Goodmans Maxim 3, this neat miniature is very competently engineered, but not desperately exciting	26x17x21	50	85	•	114
Dali 102	230	A Attractive bookshelf model has fine midband focus and bass extension, but treble's a bit restrained and bass a bit detached	37x21x25	30	86	•	114



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AVR30	£999.90
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KENWOOD

KP-V6050	£349.90
KR-V7050	£399.90
KA-V8500	£699.90

MARANTZ

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AV-500RPE	£599.90
MA-500POW	£249.90
SR-73	£699.90
SR-82	£849.90

PIONEER

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RX202	£599.90
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PIONEER

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CTS420	£249.90
CT95	£999.90
CTW420R	£199.90
CTW620R	£249.90

SONY

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TXK311	£149.90
TCK411	£199.90
TCK511	£249.90
TCK611	£299.90
TCW435	£169.90
TCWR535	£199.90
TCWR635S	£279.90

TECHNICS

RSBX404	£179.90
RSBX646	£229.90
RSBX747	£299.90
RSTR232	£169.90
RST0333	£189.90
RSTR515	£269.90
RSTR777	£299.90
RSTR979	£359.90

YAMAHA

KX260	£159.90
KX360	£199.90
KX650	£259.90
KXW262	£199.90
KXW362	£249.90
KXW952	£499.90

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ALPHASON

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ARISTON

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TECHNICS

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HARMAN KARDON

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KENWOOD

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DP7050	£329.90
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CD52IIE	£299.90
CD72	£449.90
CD72SE	£549.90

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VSA-7015	£499.90
VSA-D8025	£599.90

ROTEL

RSP-960AXPRE	£349.90
RB-956AXPOW	£325.00

SONY

STRD-511	£279.90
STRD-611	£329.90
TAHV-570R	£399.90

TECHNICS

SAGX550	£449.90
SAGX350	£329.90

TEAL

AG-V3020	£449.90
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YAMAHA

RX-V470	£399.90
DSP-E200	£369.90
DSP-E1000	£669.90
DSP-A970	£799.90
DSP-A1000	£1099.90

NAKAMICHI

CD4	£379.90
MB3	£649.90

PIONEER

PDS502	£229.90
PDS702	£299.90
PDS802	£349.90
PDM602	£269.90

ROTEL

RCD945AX	£229.90
RCD955AX	£199.90
RCD965BX	£299.90
RCD965BXD	£349.90
RCD965LE	£379.90
RCD965BXLED	£399.90

SONY

CDP311	£169.90
CDP411	£199.90
CDP335	£229.90
CDP711	£249.90
CDP911	£299.90
CDPX303ES	£549.90

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SLPG320	£119.90
SLPG420	£139.90

SLPG520	£159.90
SLPG620	£179.90
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SLPS840	£419.90

TEAC

VRDS10	£769.90
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DM610	£239.90
DM620	£399.40
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CERWIN VEGA

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VS8	£249.90
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VS12	£549.90
DC10	£549.90
DC12	£649.90

HARMAN KARDON

Loudspeakers continued

Product	EPrice	Comments	Size: HxWxD (cm)	Site close to wall Bass from (Hz)	Site in free space Sensitivity (dB)	Floorstanding	Issue No.
Dawn Chorus FS	698	G Compact floorstander with superb coherence but rather forward midband. Would suit smaller rooms best	91x26x21	30 86	• •	114	
▲ Diamond Acoustics Reference III	895	G+ Lovely free stander suffers from indifferent bass alignment, but is fast, coherent, solid and very informative indeed.	87x27.5x28	30 90	•	106	
Dynaudio Contour 1.3	1199	G Heavyweight luxury finish bookshelf model has good scale and weight but is pricey and a bit ponderous	38x20.5x29	28 86	•	122	
▲▲ Epos ES11	350	G+ Integral baffle/driver to give a remarkable combination of low coloration, transparency and speed; bass is a bit shy	37.5x20x25	45 86	•	94	
▲ Epos ES14	515	G+ Substantial stand mount delivers delightful midrange focus and delicacy with good bass control. System sensitive	49x22.5x29	25 85	•	98	
▲ Faraday FS1	225	A+ Concrete box on a budget, works surprisingly well despite cheap drivers, wood veneers here Direct sale only	47x27x28	45 86	•	114	
Faraday FS5	589	G Pricey and ugly, but with its own sonic charm, thanks to substantial influence of the concrete enclosure has upon the sound	46x27x26	28 90	•	102	
Faraday Siren	330	A- Interesting if ugly high mass concrete cabinet is let down by imbalance of ageing driver combination	46x27x27	48 87	•	94	
Genexa SE100	150	A Tandy-stocked miniature is attractively lively, coherent and communicative, could do with more grunt and lower coloration	28x15.5x19	50 84	•	110	
▲ Goodmans Maxim	120	A Budget miniature offers well balanced strengths and few weaknesses at a very realistic price; a bit feeble	26x17x20	30 85	•	122	
Harbeth HL Compact	584	A Clean, neutral sound lacks resolution and gives rather unobtrusive though well differentiated stereo	52x27.2x28.1	65 87	•	59	
Harbeth LS3/5A	379	A Still a classic miniature, though not to every taste, and none the better for the recent update under our listening conditions	30.5x19x16	60 81	•	66	
▲ Harbeth HL-P3	400	G Very limited loudness but impressive full-range scale from uncoloured and very well balanced but time-smearing sub-miniature	31x19x17	23 82	•	118	
Heco Presto Superior 750	650	A Tall slim and attractive floorstander delivers a fine, even in-room balance but lacks transparency, coherence and dynamic drive	95x24x27	22 87	•	106	
Heco Reflex 10	160	A Nicely balanced small bookshelf is a competent rather than exceptional package for the price, thanks to indifferent build.	32x21x23	30 90	•	102	
▲▲ Heybrook HB1 S3	250	G Latest version of long established favourite delivers good liveliness and fine coherence for the price	47x29x24	30 88	•	98	
▲ Heybrook Prima	120	A+ Neat and discreet miniature delivers fine coherence, pace and timing, though balance is a trifle forward and bass a bit light	29x19.5x18	50 86	•	110	
▲ Heybrook Quartet	555	G Beautifully presented and built large bookshelf model with good sensitivity and a lively, forward sound	41x24x23	48 89	•	122	
▲ Heybrook Sextet	1079	G+ Engagingly coherent and a highly analytical, partly due to distinct and t always comfortable upper-mid forwardness	96x27x20	25 85	• •	102	
▲ Heybrook Solo	170	A+ Discreetly styled, sounds a little untidy in both bass and treble but handles complex rhythmic material much better than most	36x23x22	28 87	•	90	
▲ Heybrook Trio	349	G Same drivers as HBS1 in prettier real wood enclosure give a sweeter and more forgiving if less committed sound	47x24x25	45 89	•	118	
Infinity Modulus	795	A+ Carefully conceived and beautifully built. Undeniably attractive in the mid and treble, it failed to handle the bass as well	30x18x26	45 84	•	86	
▲ Infinity Reference 10	180	A An engaging and lively sound from a prettily finished and substantial small bookshelf size model	36x23x23	50 87	•	98	
Infinity Reference 20	230	A Well presented and balanced with good bass control, but somehow lacks convincing cohesion and agility.	46x27x24	27 88	•	102	
▲ Infinity Reference 30	400	G Budget price floorstander has good overall balance and bass extension, but is rather coloured and uneven	86x27x24	25 89	• •	122	
Infinity Reference 50	550	A- Despite hi-tech drivers, good bass extension and sensitivity, this three-way suffers from a forward, coloured sound	86x26.5x25	25 89	• •	98	
Jamo 307	300	A- Beautifully styled bookshelf baby places more emphasis on presentation than basic engineering	32x18x27	48 86	•	122	
JBL Control 1 Plus	250	A Sub-miniature with forward midrange and real bass; high price partly justified by near-indestructible Pro build	23x15.5x14	50 89	•	90	
JBL L1	450	G Good power handling, decent transparency and deep but current hungry bass from a compact and solid enclosure	40x21x25.4	47 87	•	121	
JBL ti1000	1500	G Ultra-engineered, beautifully crafted bookshelf model. Performance compromised by over enthusiastic midbass output from port	44x30x28	45 89	•	118	
▲ JPW AP2	180	A Offers real wood veneer at a bargain price; performance is cleaner but broadly comparable to P1 Vinyl overall	43.5x25.5x26	45 86	•	106	
▲ JPW AP3	225	A+ Pretty good stereo and well balanced overall it had its own character which is well suited to vinyl replay	52x25x29.5	57 90	•	46	
▲ JPW Minim	79	A- Very civilised but dynamically limited, the Minim is well suited to the smaller room and where limited loudness is acceptable	27.5x18x19.5	28 85	•	82	
▲▲ JPW Mini Monitor	£60	A- Ultra cheap Richer Sounds special is lightweight and short of welly, but a snip for surround sound use	27x18x17	50 85	•	122	
▲ JPW P1	155	A+ Honest and basically articulate if not very sophisticated, resolution is good but can sound a little wearing in bright systems	44x25.9x26.1	60 89	•	59	
▲▲ JPW P1 Vinyl	135	A A lot of highly competent loudspeaker for the price, with a safe sound that's unlikely to disappoint.	43.5x25.5x26	32 87	•	102	
▲▲ JPW Sonata	115	A+ Well balanced and integrated, offers fine sound if limited bass and dynamic range, plus real tree wood at a nearly silly price	32x23x20	55 86	•	71	
JPW Sonata Plus	135	A- This luxury variation on the redoubtable Sonata theme features a metal dome tweeter, and isn't the better for it	32x23x21	30 87	•	90	
▲ JRT AD1	500	G+ A fair share of cosmetic deficiencies do little to spoil the impressive coherence and timing	59.5x28x36	28 86	•	86	
▲ JRT AD1 Micro	389	G Delightful life and coherence, gives surprising impression of scale; some aggressive tendencies but very open to system tuning	28x17x21	50 87	•	94	
Jamo Concert II	330	A- A respectable 'bookshelf' performer that needs free space siting but includes attractive cabinetwork and a neat grille	41x24x25	48 85	•	66	
Jamo Concert V	500	A Compact, solid, nicely finished delivers unusually extended bass at the expense of lowish sensitivity; midband is laid back	86x24x28	20 85	• •	102	
Jamo Concert VII	800	A Beautifully built, uses unusual double reflex bass system, unsuccessfully as far as low frequency resolution is concerned	96x28x31.5	25 87	• •	94	
▲ Jamo Cornet 50	150	A+ Good value bookshelf size speaker has a rough and ready sound but good heart, engaging liveliness and fair timing	42x23x22.5	28 87	•	110	
Jamo Silhouette	400	A+ Tall, slim and rather elegant in its way, doesn't sound bad for a styling exercise, just a bit rich and polite	122x24.7x17	45 88	• •	114	
▲ Jordan JH400	504	A+ Piano finish hexagon has single full range driver and controversial sound, with uneven balance but delightful mid coherence	33x24x30.5	50 83	•	106	
▲ KEF 104/2	1595	G+ A reference point for dynamics, preferred without KUBE, suited to many rooms. Good stereo, high sound level	90x28x41.5	50 92	• •	60	
KEF K120	169	A Physically pretty and sonically competent but undistinguished bookshelf size model has good sensitivity but limited extension	34x20.5x26	45 87	•	106	
KEF Q30	359	A Fine focus from Uni-Q driver, but lacks drive and time coherence; acoustically smaller than it looks	73x19x29	44 88	• •	126	
▲ KEF Q80	569	A+ Uni-Q floorstander has good stereo and fine midband coherence, but bass lacks extension, drive and resolution	85x24.5x26.5	45 87	• •	106	
KEF Q90	739	A Generous floorstander has even balance and decent extension but fails to communicate excitement and involvement effectively	90x25x32	25 88	• •	118	
Kammerzelt Ref Mini Monitor	425	G A impressively sweet sound with good pace and drive, but scale is restricted and presence a little dulled considering the price	27x17x24	50 85	•	94	
▲ Kenwood LS-770E	260	G Impressively communicative bookshelf model has fine vigour, scale and dynamics, if not the smoothest sound around	48x27x25	25 89	•	106	
▲ Kenwood LS-500G	500	G Japanese designed and built luxury compact delivers an invigorating and exciting sound; an interesting contrast to some lazier models	45x23x26	48 89	•	118	
▲▲ Legend II	200	G Liveliness, coherence and fine information retrieval justifies the odd looking moulded baffle construction	37x21x30	48 88	•	122	
▲▲ Linn Index II/KuStone	374	G Stand and speaker looks and sounds very good, good bass extension and control, fine dynamic range. Clean, clear if a shade slow	44x21x23.5	28 86	•	90	
▲ Linn Kaber	1298	G+ Dry, bright balance emphasises superb dynamic range and transient precision, but can sound unforgiving	89x19x29	25 85	• •	118	
Linn Kan II	530	A+ Niche product for those prepared to tolerate its strong character for the sake of fine bass performance and near invisibility	30.5x18.5x16.5	35 82	•	78	
▲ Linn Keilidh	579	G+ Stunning timing and coherence and awesome bass drive, especially with ceramic plinth; sounds a bit shut in	83x20x27.5	22 87	• •	114	
Living Voice Air Partner	11990	E Formidable horn design with astounding transparency, dynamics and speed. Its idiosyncracies are compensated by sheer energy	165x64x92	40 101	•	117	
Lumley Monitor Reference 4	375	A All metal diaphragm and real wood at fair price; balance uneven — upper mid forward with suspect bass tuning	36x17x23	44 86	•	126	
▲ Magneplanar MG1.4	1090	G+ Offers a very crisp and articulate sound, particularly revealing of upper mid vocal details	155x8x57	40 88	• •	72	
Magneplanar SMGa	668	A Tonally 'rich', in the right room it proved a satisfactory musical experience	122x48x4.5	56 85	• •	46	
Marantz DS110	200	A+ Pretty near-miniature trades bass extension for sensitivity, delivering fine midband dynamics but little grunt	33x19.5x20.5	55 88	•	114	
Marantz DS220	300	A+ Nicely shaped and presented large bookshelf model sounds competent rather than inspired; a touch too heavy	37x23x26	50 88	•	122	

Loudspeakers continued

Product	£Price	Comments	Size: HxWxD (cm)	Site close to wall Sensitivity (dB)	Site in free space Sensitivity (dB)	Floorstanding	Issue No.
▲ Martin Logan CLS II	4333	G+ High resolution design, fussy about system set-up, demanding of ancillaries and software alike. It rewards the efforts though	60x28x7.5	45	86	• •	72
Meridian Argent 1	995	G+ Beautifully built, finished and shaped, has fine bass extension and virtual absence of 'boxiness'; needs a big amplifier	33x27x27	28	83	•	98
Meridian Argent 2	875	G Beautiful high-tech 'large compact' delivers extended, smooth and neutral sound with fair speed. Slate Audio stands essential	48.5x21x29.5	23	85	•	94
Meridian M30	950	A Pricey active speaker, easy on the ears and worth considering especially where space is at a premium	38.5x18x32	40	NA	•	46
▲ Mission 753	700	G+ Gorgeous presentation and potential for open transparency. Floorstander with lots of drivers that gives lots of loudness	90x22x30.5	45	88	• •	114
▲ Mission 760i	130	A+ Attractive little wall-mount miniature has livelier dynamics and bass drive than most of its type, but sounds as little shut in	29.5x18x20	48	87	•	110
Mission 764i	480	A Generous and handsome floorstander looks fine material value for money, but good scale sound has lazy tendencies	89x25x32	22	86	• •	118
Mission 765i	680	A+ Big heavyweight floorstander has good sensitivity and bandwidth, but somehow lacks agility, authority and dynamic grip	102x25x33	22	91	• •	110
Mission 751	300	A Attractive luxury miniature has great sonic potential, but our review samples have been marred by sample variations	32x17x27	45	86	•	126
Monitor Audio MA1200 Gold II	1200	G Pricey but classy floorstanding variation on MA800 theme; beautifully voiced midband, heavy midbass	93.5x17x27	28	85	• •	122
▲ Monitor Audio Studio 6	800	A+ Pretty but pricey metal diaphragm compact has clear and transparent midband but is ultimately lacking in vim, vigour and drive.	35x22x25	45	86	•	118
Mordaunt-Short 5.10	130	A Plenty of well engineered speaker for the money, and smoother than most of the competition, but lacks timing and enthusiasm	30.5x18.5x21.5	50	85	•	110
Mordaunt-Short 5.20	150	A Lots of speaker for your money, but not as smooth or well balanced as other M-S 5-series models	36x21.5x21.5	45	87	•	114
Mordaunt-Short 5.30	220	A- Good hi-tech material value for money, but a disappointingly dull and rather bland sound. Safe but uninspiring.	42.5x25x28	28	86	•	106
▲ Mordaunt-Short 5.40	299	G Elegant near-floorstander has an even balance that makes it very easy on the ears, yet also inviting and informative	64x21.5x26.5	28	85	•	110
Mordaunt-Short Classic 20	395	A+ Luxuriously finished, beguiling mid transparency, bass is altogether less convincing	37x22x27	45	86	•	102
Morel Bassmaster 602	1200	G+ Superbly built compact stand-mount, did well in listening tests but suffers (enjoys?) upper midband peak	24.5x40x22.5	25	84	•	114
Musical Fidelity MC-3	400	A+ Solid and authoritative large bookshelf model gives fine stereo and decent dynamic drive but balance is rather shut in	47x26x28	25	88	• •	118
▲ NAD 804	320	A+ Good value compact floorstander sounds lively and coherent, but quite coloured due to uneven balance too	75x20x26	25	89	• •	126
▲ NVA Cube 1	720	G+ Attractive, semi-omni is very sturdily built, and gives an idiosyncratic but unusually open, spacious and informative sound	33x32x32	52	85	•	71
▲ NVA Cube 2	480	G A rude but exciting miniature, with unusually accomplished bass capabilities for its size	28.5x27x28.5	48	85	•	82
NVA Cubix	1400	G Too idiosyncratic for recommendation, the Cubix possesses remarkable bass extension for its size, but is tricky to optimise	60x32.5x32.5	28	84	•	78
Naim NA IBL	899	G This tiny floorstanding wall mount delivers outstanding dynamics, speed and detail, marred by pronounced upper mid forwardness	80x18x15-20	30	84	• •	94
▲ Naim SBL	1708	G+ Impressive scale, full bandwidth, coherent, attractively discrete, coloured midband, very well balanced and agile	88x26.5x17-27	25	86	• •	102
▲ Neat Petite	525	G+ Far from perfect, but one of the most entertaining and enjoyable speakers around, colorations notwithstanding.	30.5x20x18	33	86	•	102
Nobis DM7	560	G Pretty US bookshelf model has more than enough speed, timing and coherence to make up for a measure of coloration	38x21.5x28.5	25	85	•	110
▲ Origin Live OL2A	469	G Compact floorstander sounds open, transparent and evenly balanced; needs a big amp but enjoys hard driving	82x19x19	25	85	• •	122
Origin Live OL1	499	G Luxury miniature has very good overall balance, sacrificing sensitivity to achieve remarkable bass extension for the box size	30.5x19x21	25	82	•	106
Philips FB820	470	A Big-but-less-than-beautiful three-way is well enough balanced but lacks communication skills in the time domain	86x27x35	28	87	•	98
▲ Philips FB825	700	G Generous sounding and impressively uncongested, loudness and bass extension don't quite match plasticity looks	110x29x41	25	88	• •	90
Pioneer S-4UJ	250	A+ Carefully developed minimalist audiophile design has some vigour but suffers an intrusive upper mid peak	37x21x28	50	87	•	122
▲ Professional Monitor Co LB1	998	G+ Delightful smoothness and transparency, though bass extension and sensitivity are both limited	53.5x18x26	33	86	•	110
Professional Monitor Co AB1	1600	G Bulky stand-mount transmission line has lovely panel-like transparency, slightly shut in balance, and needs a big room	79x27x43	22	89	•	114
QLN Model One	700	A Model One exaggerates the Signature's rich and heavy midbass and lacks its velvet smoothness	35x25x27	28	85	•	82
QLN Signature	1100	G Luxury compact has a rather laid back and 'heavy' sound, but coloration is low and stereo imaging very good	37x18x36	30	83	•	78
▲ Quad ESL-63	2384	G+ This classic electrostatic may not be punchy in the bass, but has strengths that some can't live without	92x66x27	34	84	• •	60
▲ Rega EL8	298	G Kyte drivers in compact floorstander give more bass but a shade less coherence; good for small rooms and budget systems	75x16.5x21	55	86	•	122
▲ Rega ELA	405	G Very compact floorstander with integral stand has serious coherence and dynamics, but a measure of brightness and untidiness	84.5x20x30	30	86	•	110
▲▲ Rega Kyte	198	G Has splendid timing and coherence, sounds very explicit and informative, if a bit bright and short of grunt	31x19x20	50	87	•	114
▲▲ Rogers LS2a/2	220	G Balance is a bit warm and rich but 2a/2 has delightful mid-to-treble coherence and transparency, and more welly than Mk1	35.5x23x22	30	84	•	106
Rogers LS4a/2	300	A+ Civilised but a trifle lazy, this large bookshelf model hasn't quite the timing or agility to be particularly engrossing	43x25.5x25.5	25	86	•	110
Rogers LS6a/2	350	G Largish stand-mount is well built, measures well, good material value, but sounds a bit heavy and lacklustre	51x28x29.5	22	87	•	114
Rogers LS8a	450	A+ A mixed bag, with plenty of scale and welly but lacking the subtlety, clarity and agility delivered by some rivals	89x25.5x25	48	91	•	102
▲ Rogers Studio 3	450	G Pricey LS3/5A-derived wall-mount sub-miniature is excitingly coherent if a bit lightweight; no real loudness capabilities	31x19x17	30	83	•	118
▲ Rogers Studio 1a	599	G- Classic BBC monitor sound sensitively updated – transparent and natural with fine stereo, but a touch 'heavy' in balance	63.5x30.5x30.5	36	87	•	66
▲ Rogers Studio 7	880	G Latest variation on classic BBC-monitor theme looks old fashioned but has beautifully voiced, laid back sound	63x30.5x30.5	30	88	•	122
▲ Roksan Darius	1895	G+ Provides an exceptionally impressive combination of transparency and delicacy with fine information retrieval and speed	47x27x40	20	82	•	86

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SEVENOAKS SUPERFI

This advertisement is valid until 28th February 1994

Display, Demonstrations and After Sales

Unlike many of our competitors, all products (subject to availability) are on display and may be auditioned in dedicated listening rooms in any of our branches. Our helpful staff enjoy and understand the equipment they sell and will be only too happy to assist you through the Hi Fi choices that lie ahead. Our Sevenoaks Superfi service dept is one of the largest and best equipped in the business and will maintain your purchase in tip-top working order at all times.

SUGGESTED SYSTEMS

The suggested systems priced below all include the popular NAD 5120 turntable but an alternative turntable or CD player is available at extra cost. Please see "OPTIONS" list below for further details.

SPEAKERS	AMPS	CD Players	Turntables
JPW Sonata (V) Celestion I JPW Minim	Marantz PM42 226.95	Alwa XC300 Denon DCD595 Denon DCD695 Goodmans GCD360 Goodmans GCD650II	Dual CS503.2 Dual CS505.4 Nad 533 Project 0.5 Technics SLBD22K Thorens TD280 IV
Celestion 3 MK II JPW Sonata (W) Mission 760I	265.95	Add £49 Add £79 Add £99 Add £0 Add £19	Add £79 Add £119 Add £99 Add £69
Tannoy 603 MK II Mission 760I SE Nad 800	280.95	Kenwood DP3050 Kenwood DP7050 Marantz CD52II Marantz CD53	NAD 501 NAD 502 Teac CDP3500 Technics SLPG440AK
Tannoy 605 MK II Celestion 5 MK II B&W DM600 Mission 761I Mon Audio 1	304.95		
Tannoy 607 MK II Celestion 7 MK II Nad 802	335.95		
Rogers LS2A-2 B&W DM610 Mon Audio 7	351.95		
Castle Durham II Heybrook HB1/3	366.95		
Rogers LS4A-2 Tannoy 609 MK II	397.95		
	413.95		
	436.95		
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	491.95		
	507.95		

- FREE** with suggested Systems
- Cartridge (turntable based systems only)
 - Speaker Leads (80 strand cable)
 - Carriage (Systems over £300)

Options
The following Compact Disc Player or Turntable may be ordered instead of the NAD 5120 in the above systems.

0% FINANCE - UP TO 12 MONTHS

We offer 0% finance on a wide range of Hi Fi separates. **Option 1:** 10% deposit followed by 6 equal monthly payments. Example: Cost £600. Deposit £60 plus 6 payments of £90. **Option 2:** 25% deposit followed by 9 equal monthly payments. Example: Cost £600. Deposit £150 plus 9 payments of £50. **Option 3:** 50% deposit followed by 12 equal monthly payments. Example: Cost £420 plus 12 payments of £35. All options: minimum balance £400. Subject to status. **0% APR.** Personal shoppers only. Written details on request.

ADDED VALUE AT SEVENOAKS SUPERFI

- 0% Finance on selected Hi Fi separates (but not suggested systems above)
- Claim CD vouchers worth **up to £100** on selected Mini and Micro Players
- Claim **FREE** CDs* or CD vouchers with selected Cassette Decks
- Claim **FREE** Cassettes with selected Cassette Decks
- Claim **FREE** Stands and Cable with selected Speakers
- Claim **FREE** Audio Technica ATH-610 Headphones worth £40 on Hi Fi separates purchases over £500

Added value offers are not available on "Price Beat" sales. *CDs must be chosen from our "Free" CD collection.



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IN STORE & MAIL ORDER - You can buy with confidence from **Sevenoaks Hi-Fi**. We've been in business for 21 years and have lots of experience with personal callers and Mail Order customers. All goods are **BRAND NEW, FULLY GUARANTEED** and maintained by our own service department. For personal attention and demonstration call into any of our branches. If you live too far away, simply post or phone your order through and our efficient Mail Order department at Sevenoaks head office should have your equipment safely delivered within 2 or 3 days, subject to availability. Carriage is only £7 per order and generally FREE if total exceeds £300 (UK mainland only). All goods are insured against loss or damage in transit. Payment may be made by cash, cheque, Access or Visa (Barclaycard). Prices include VAT.

PLEASE CALL US BEFORE TRAVELLING TO VERIFY PRICE AND AVAILABILITY

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- Arcam Alpha 5 £229.95
- Arcam Delta 290 £329.95
- Aura VA100 Black £299.95
- Aura VA100 Black £449.95
- Audiolab 8000ACN £699.95
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- Audiolab 8000P(II) P.O.A.
- Audiolab 8000P(III) £159.95
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- Denon PMA490R £624.95
- Denon PMA450 £724.95
- Denon PMA450 £774.95
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- Exposure EXP15 MM £279.95
- Exposure EXP17 MM £199.95
- Exposure EXP18 £169.95
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- Marantz PM45SE £219.95
- Marantz PM54SE £349.95
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- Musical Fidelity The pre B £949.95
- Musical Fidelity Typhoon £169.95
- Musical Fidelity MA65 (Pair) £229.95
- Nad 302 £329.95
- Nad 304 £229.95
- Nad 306 £279.95
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- Pioneer A400 £842.95
- Pioneer A400X £388.95
- Quad 66 inc R1 £341.95
- Quad 306 £673.95
- Quad 606 £169.95
- Rotel RA930AX £249.95
- Rotel RA935BX £299.95
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- Sony TAF542 £299.95
- Sony TAF542 £199.95
- Technics SUV220K £249.95
- Technics SUV230K £399.95
- Technics SUA700K £239.95
- Technics SUA900 £289.95
- Yamaha AX470 £289.95
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 - Aiwa ADF810 £229.95 (FT)
 - Aiwa ADW828 £199.95 (FT)
 - Aiwa ADW828 £229.95 (FT)
 - Aiwa ADW828 £159.95
 - Denon DRM540 £299.95
 - Denon DRM710 £199.95
 - Denon DR5610 £249.95
 - Denon DR5810 £249.95 (FT)
 - Denon DRW760 £399.95 (FT)
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 - Marantz SD53 £199.95 (FT)
 - Marantz SD63 £699.00 (FT)
 - NAD 602 £339.00 (FT)
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 - Nakamichi DR3 £329.95 (FT)
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 - Pioneer Sony TCK611S £179.95 (FT)
 - Pioneer Sony TCR635S £179.95 (FT)
 - Teac 2020S £229.95 (FT)
 - Technics RS8X404K £179.95 (FT)
 - Technics RS8X646K £199.95 (FT)
 - Technics RSTR323K £199.95 (FT)
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 - Yamaha KX260 £149.00 (FT)
 - Yamaha KX360 £149.00 (FT)

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 - B & W DM610 £299.95 (FS)
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 - B & W 805 £139.95 (FS)
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 - Castle York £129.95 (FS)
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- Denon AVR1000 £999.95
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- Kel 90 £699.95
- Kel 100 £349.95
- Kenwood KAV8500 £399.95
- Kenwood KRV6050 £599.95
- Kenwood KRV7050 £249.95
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- Kel R104.2
- Kel R105.3
- Kel R107.2
- Kel Q10
- Kel Q50
- Kel Q60
- Kel Q60
- Kel Q90
- Mission 751
- Mission 752
- Mission 753
- Mission 760
- Mission 760SE
- Mission 761
- Mission 760
- Mon Audio 1 Gold
- Mon Audio 7 Gold
- Mon Audio 14 Gold

Mid/Mini Systems

- Aiwa, Denon, JVC, Kenwood
- Sony, Technics and Yamaha P.O.A.

Tuner Amps/Receivers

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- Nad 705 £329.95
- Technics SAGX130DLK £229.95

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 - Arcam Black Box 50 £399.95 (FD)
 - Arcam Delta 270 £449.95 (FS)
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 - Denon DCD695 £699.95 (FS)
 - Denon DCD690 £479.95 (FS)
 - Denon DCD1290 £139.95 (FS)
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 - Marantz CD53 £99.95
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 - Musical Fidelity CD2 £179.95 (FD)
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We believe our prices are some of the most competitive around. But if you can find a verifiable offer on an identical product at a lower price, in stock at a local authorised dealer, and if it's brand new in a factory sealed box (no ex-demonstration/display or re-packs). We'll beat that price by up to £15 per sale!

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THIS ADVERTISEMENT IS VALID TO 28TH FEBRUARY 1994

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* WE ACCEPTS ALL KINDS OF DOUBLOONS - GOLD, PAPER & PLASTIC'S ALL FINE



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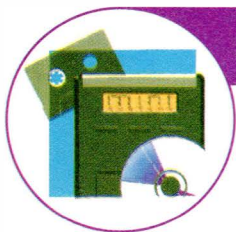
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Loudspeakers continued

Product	EPrice	Comments	Size: HxWxD (cm)	Site Sensitivity (dB)	Site close to wall	Floorstanding	Issue No.
Royd Topaz	173	A+ Cheerful, articulate and essentially communicative miniature can also sound a trifle scrappy and shut in; well worth trying	30.5x20.5x19	50	87	•	114
Royd Abbot	666	A+ Engaging and dramatic dynamics and fine transient coherence are hampered by a rather coloured mid-forward balance	83x20x34	43	88	•	118
Ruark Swordsman Plus	299	A Real wood variation on the Swordsman theme looks and measures rather better than it sounds	38x20x28	27	84	•	98
Ruark Templar	479	A+ Compact floorstander with striking baffle has decent bass/mid but dull treble; could tame over-bright system	73x19x27	25	85	•	122
▲ Ruark Talisman 2	700	G Less ideologically committed than some compact floorstanding rivals, its key strength lies in fine all round compromise	86x25x31	30	86	•	118
SD Acoustics Ribbon	2295	G+ Amplifier sensitive, Ribbon is a lively and loud hybrid marred by some colorations; some like it, others don't	152x30x(15-30)	30	91	•	81
▲ SD Acoustics SD1	1650	G+ A large scale, airy and unusually detailed system with excellent dynamics. A warmer balance than original model	123.5x38.2x32	50	90	•	60
▲ SD Acoustics SD3	399	G Port firmly blocked, the new SD3 has the agility and charm of a quality miniature, with good bass extension but low sensitivity	38x19.5x29	25	83	•	106
SD Acoustics SD4	699	G Tall slim floorstander has fine balance, good bass extension and lovely open midband transparency	100.5x20x30.5	25	85	•	114
Sequence 30	200	A Radical slimline hang-it-on-the-wall design has performance comparable to a typical miniature, with reasonable overall balance	87x25x7	50	85	•	114
Shahinian Arc	1062	G Unusual and occasionally wonderful small floorstanding omni; too bright but exceptionally coherent and revealing	69x35x25	24	85	•	110
Snell JIII	770	G Dated styling belied by fine sensitivity and bass extension, and a lively if slightly untidy and not quite coherent sound	58x33x25	30	89	•	118
▲ Spondor S20	535	G Maintains Spondor's tradition for peerless mid-to-treble coherence and perspectives. Bass is rather unconvincing.	38x22x26	25	83	•	102
Spica Angelus	1295	A A little bass shy and soft in the bass and lower mid, otherwise tidy, extremely lively and fluid, if uneven overall	116.8x53.3x26	50	86	•	60
Spica TC50	599	G This triangular-profile 'grown up' miniature is a shade boxy and laid back but has good rhythmic and musical integrity	40.5x33x29	55	88	•	71
Spica TC50SE	799	G A heavily UK-modified TC50, the SE sounds less boxy and more spacious, but lacks some of the urgency of the standard model	40.5x33x29	55	88	•	71
▲ TDL RTL3	400	A+ Bargain price floorstander has rich, heavy and bright sound with good scale and fine basic neutrality	92x20x38	25	88	•	126
TDL Studio 0.5	499	G Tiny floorstanding transmission line has good agility but doesn't provide the coherence or even balance of Studio 1	55x20x30	40	85	•	94
▲ TDL Studio 1	699	G Genuinely extended bass from a compact enclosure, very detailed but a shade clinical and detached in presentation	76x23x33	25	84	•	78
▲ TDL Studio 1M	899	G+ Transmission line helps bring the best from metal cone driver: lovely transparency and fine bass extension	81x23x33	<20	84	•	118
▲ TDL Reference Monitor	1999	G+ Fine solidity and good accuracy, with great bass extension. Needs a big room and can sound a bit lazy and a shade tinkly	118.5x30x47	28	85	•	66
▲ Tannoy 607 II	220	A Large bookshelf, smart hexagonal box has fine bass for the price, but treble sounds rather shut in	50x32x24	25	88	•	122
▲ Tannoy 609 II	295	A+ Large bookshelf size model with dual concentric driver has fine balance and scale with low coloration	50x32x24	22	86	•	126
▲ Tannoy Westminster	6000	G+ These awesome horn loaded speakers are remarkably controlled and impressive, if only suited to a few pockets and rooms	Huge	38	96	•	Col
Technics SB-EX2	180	A Nicely presented, well built and decent size enclosure sounds solid but somewhat dull	48x23.5x27	20	86	•	98
▲ Technics SB-RX50	650	A+ A smooth and well balanced loudspeaker, its minor weakness being a mildly excessive low bass	48x30x26	40	86	•	46
▲ Thiel SCS	1069	G+ Luxury piano-gloss compact sets class-leading standards for coherence and communication, can sound a shade dark and shut in	40x22x23	45	87	•	114
Thiel CS1.2	1219	G Elegant compact floorstander has fine balance and dynamic range, but transient timing and dynamics are less convincing	94x27x27	30	86	•	118
▲ Totem Model One	995	G Utterly delightful but exasperatingly expensive luxury miniature sets the benchmark for its size	31x16.5x23	28	86	•	122
Vandersteen Model One	1395	G+ This compact American floorstander's elegant staggered baffle arrangement contributes to a refreshing freedom from boxiness	100x30.7x25.6	23	87	•	86
Visonik David 6001	173	P Sharp styling but the complex grillework worsens a sound which starts off with too much top and not enough bottom	20x12x13	130	87	•	74
▲ Wharfedale 425	200	A+ Large bookshelf size 505 heir shows fine control and a conservative balance ideally suited to quality systems on a budget	40x27x26	45	87	•	118
▲ Wharfedale 515	260	G An update on the 505 theme, this is still more evenhanded, with better bass extension and smoother treble.	40x25.5x30	28	85	•	106
Wharfedale 517	400	A Half as big again as the 515, should offer an improvement, but somehow has a less effective overall subjective balance	53x26.5x34	25	86	•	110
▲ Wharfedale Delta 30.2	100	A Has a bigger main driver than many, and so packs a bit more welly and loudness. Coloration is rather obvious, but timing is good	38x22x17	48	88	•	98
▲ Wharfedale CRS3	110	A+ Loads of fun — a remarkably coherent and lively performer at any price; pity it doesn't look prettier	38x22x18	50	88	•	122
Wharfedale Diamond V	130	A This miniature is smoother than most, but rather stodgy with it, inspiring little enthusiasm among our listeners	27x18x20	50	86	•	114
▲ Yamaha NS 1000M	1200	G+ Living up to its monitor label, and tonally well suited to digital material, it's superbly crafted and capable of high levels	67.5x37.5x32.5	40	90	•	46
▲ Zyp A1	199	A+ Cute metal cased micro-miniature is quite coloured but great fun, with surprising dynamics and fine wall-loaded room balance	22.5x14.5x13	30	85	•	110



Stack systems

Stack systems is a generic title that we've chosen to describe any form of complete system package. Fundamentally what we're talking about here is midi and mini systems, you know those all singing all dancing, lights blazing systems that hi-fi snobs are allergic to. Sold on the basis of their ability to play virtually all mediums at the flick of a remote control switch stack systems offer a plethora of features, and the dearer the system the more complex

they tend to become. With things like double cassette decks, multi preset tuners, CD players and graphic equalisers supplied as standard the big boys of the stack world offer such luxuries as Surround Sound, separate chassis for different components and occasionally a record player. They usually have a few line inputs for extra sources and a few are available without loudspeakers. As the latter are often the weakest part of a stack system buying good quality speakers

separately will bring worthwhile improvements. The section headings for stack systems include size of the complete stack without speakers and rated output per channel — where a system has more than two channels this is indicated in the comments. Tuner presets and the existence of a remote control are self explanatory. A blob in loudspeakers shows that they supplied, an **O** indicates that they are optional. The final column is for those of you with records to play.

Stack systems

Product	EPrice	Comments	Size: HxWxD (cm)	Rated output Watts	Remote control	Loudspeakers	Turntable	Issue No.
▲ Denon D110	870	G Nearly hi-fi from pretty but pricey silver stack; richer, fuller speakers would help	37x27x33	40	30	•	o	125
Goodmans System 700	735	A Separates flexibility and upgraeability in remote midi package; anodyne sound	69x35x37	50	20	•	•	125
▲ JVC MX7G	799	A Wondrous 2-speaker surround movie sound system, but a very uneven package elsewhere. Four by 20W output	42x28x28	20	40	•	•	125
Philips FW91	999	A+ Good looking and performing package rendered expensive by inclusion of DCC deck	37x26x32	60	30	•	•	125
▲ Pioneer N53M	549	A+ Cheap, occasionally nasty but undeniably cheerful and entertaining if horrid speakers are discarded	36x26x28	30	24	•	•	125
▲ Technics SC-CH950	1000	A+ Classy if rather bland allrounder includes useful Dolby Pro-Logic AV capabilities	42x27x34	60	39	•	•	125



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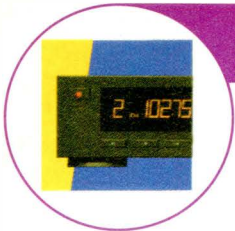
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Tuners

The radio medium operates at a much lower profile than TV, but in areas outside pop music the BBC service is the envy of the world. Live Prom concerts can rival all other sources from a hi-fi perspective.

Only the FM (VHF) bands give stereo hi-fi sound, though AM (MW & LW) are useful for certain transmissions in the UK.

Something of a hi-fi afterthought, tuners are often selected merely to match a chosen ampli-

er cosmetically. However, the task they carry out is far from simple, combining the skills of RF (reception) and audio (signal processing) engineering. The importance of the former will depend on local reception conditions, but money invested in a high quality outside aerial system is well spent.

Tuners come in two basic types. Analogue models tune gradually (and usually manually) across the bands, and can have analogue or digi-

tal displays; they are often preferred for sound quality, and are certainly best for AM bands. Digital tuners offer convenient automatic tune facilities and pre-set memories.

The 'Presets' column heading shows how many different frequencies a tuner can memorise for instant access. FM, LW and MW show which wavebands it can access. 'Signal strength meters' are useful for aerial alignment. 'Automatic tuning' means that a tuner can seek out signals for you.

Tuners

Product	£Price	Comments	Presets	FM	LW	MW	Signal strength meter	Automatic tuning	Manual tuning	Issue No.
Aiwa XT-003	120	A- Economically designed and built in the UK, but trade-offs have a marked influence on FM and AM sound quality.	30	•	•	•	•	•	•	93
▲ Akai AT-93L	280	G+ By AM standards presentable (good) while FM delivers the goods	20	•	•	•	•	•	•	65
Arcam Delta 280	350	G+ Fine sound quality marred by mild synthesiser whine; RF performance only average, remote £60 extra	20	•	•	•	•	•	•	120
▲▲ Audiolab 8000T	700	VG Unusually combines fine sound quality and RF performance (inc AM); superb ergonomics are a joy to use	39	•	•	•	•	•	•	120
Aura TU-50	300	G Tonally neutral, but with rather poor imaging and a certain woodenness to the sound.	16	•	•	•	•	•	•	109
Creek T40S3	250	A Analogue tuner. Sample was hampered by an obvious bass 'hump', production units are said to be cured	•	•	•	•	•	•	•	93
▲▲ Denon TU-260L	120	G+ Bare minimum of features. Careful designwork promises a surprisingly open and vivacious sound, so don't overlook it!	20	•	•	•	•	•	•	93
▲ Denon TU-580RD	220	G Fine feature package including remote and RDS, plus excellent RF performance and decent sound quality	30	•	•	•	•	•	•	120
Harman Kardon TU9200	200	A The listening panel appreciated its liveliness, but found it a little muddled.	32	•	•	•	•	•	•	109
▲ Harman Kardon TU9400	270	G+ Striking in appearance and with a sound to match, it comfortably exceeded our expectations. On stereo FM it's HK's best yet.	24	•	•	•	•	•	•	93
Harman Kardon TU9600	380	G Good bass and detail, and good - perhaps slightly enhanced dynamics	24	•	•	•	•	•	•	109
Kenwood KT-3050L	170	A Excellent RF performance and plenty of features including RDS, but did sound rather ordinary under our conditions	39	•	•	•	•	•	•	120
▲ Linn Kremlin	1779	E Controversially good sound at a very high price. The reviewer's saving up but you should check it out for yourself	80	•	•	•	•	•	•	120
▲ Magnum Dynalab FT101	795	G+ Although expensive for its fairly minimum set of facilities, its excellent sound makes up for what it lacks elsewhere	•	•	•	•	•	•	•	72
▲ Marantz ST-40L	140	G Slow to tune but provides a meaty and dynamic sound on FM. AM too has a little extra bite to its performance	30	•	•	•	•	•	•	93
Meridian 204	660	G Pleasant sounding with a fine finish but does not make the grade at this price	18	•	•	•	•	•	•	55
▲ Meridian 604	1350	VG Unique digital convertor makes most sense in Meridian system context; smooth sweet sound with fine front end	30	•	•	•	•	•	•	120
▲ Naim NAT 01	1425	E There may be better sounding tuners in the world, but we have yet to hear one	•	•	•	•	•	•	•	50
Nakamichi ST-7E	765	G+ Exceptionally good for weak-signal areas, and good all round	16	•	•	•	•	•	•	55
▲ Quad FM4	424	G+ Fine sound, excellent ease of use, good build and finish and a more than satisfactory technical performance	7	•	•	•	•	•	•	50
Quad 66	519	G+ Very pretty and compact but technically unadventurous. Smooth sound but only makes sense in Quad system context	19	•	•	•	•	•	•	120
▲ Rotel RT-930AX	160	G- A competent rather than exciting performer, with low audible interference though slightly compressed and muddled sound.	20	•	•	•	•	•	•	108
▲ Rotel RT-950BX	200	G+ Fine fast and coherent sound quality for price, but RF performance only adequate and sample build was suspect	20	•	•	•	•	•	•	120
Sherwood TX-3010C	120	A Lots of features and fine RF discrimination for price. Sound is communicative but inconsistently tacky	30	•	•	•	•	•	•	120
▲ Technics ST-G70L	200	G+ Another very polite and refined-sounding tuner but one that does retain just enough sparkle to keep your interest. Plenty of widgets	39	•	•	•	•	•	•	93



Turntables – cartridges

Cartridges fall into two groups: high output models, capable of working directly into most amplifiers and categorised as having a normal (N) output, and more expensive low and very low output models (L, VL). Stereotypically, low output cartridges use the moving coil principle of operation, have better mechanical integrity and tighter tolerances, and

give better performance but at much higher cost. With CD now the dominant medium many amplifiers are no longer equipped with the necessary phono input for a cartridge and a separate phono stage is necessary. Valve designs need either an extra head amp or transformer to cope with the low output of moving coil cartridges.

Cartridge/amplifier interfacing can be very

subtle, but even basic high output MM designs benefit in overall balance from optimised amplifier capacitance loading. The mechanical characteristic of cantilever compliance ('springiness') needs to be considered in the light of the effective mass of the tonearm, and to achieve a good match compare the effective mass requirements figures with the actual effective mass of specific arms.

Turntables – cartridges

Product	£Price	Comments	Arm effective mass (g)	Output	MM	MC	Issue No.
▲▲ Arcam C77	30	A+ A sensible moving magnet package with good bounce at a competitive price	6-16	N	•	•	48
▲▲ Arcam C77Mg	40	A Punchy sound quality with plenty of extra energy to liven things up. The solid body seems well worth the extra £10	4-8	N	•	•	67
▲ Arcam E77Mg	60	A Our sample had a disappointing stylus, but gave a coherent, rich and laid back sound, with good 'scale'	3-8	N	•	•	48
▲ Arcam P77Mg	73	A+ Preferred to its cheaper partner by virtue of a better tip. Channel balance could have been better	4-9	N	•	•	48
▲ Audio Note IO IIV	1395	E One of the best, giving 'an extraordinarily relaxing midrange clarity', needs a transformer	8-18	VL	•	•	100
▲ Audio-Technica ART1	850	VG This is a delicate and very fluid-sounding MC that tracks well, offers very low distortion and exceptionally good separation	9-18	L	•	•	72
▲ Audio-Technica AT-420E	36	A Better suited to pop recordings, this MM bears some of the sonic hallmarks of the Linn K5	7-14	N	•	•	67
▲▲ Audio-Technica AT-95E	20	A Clear, dynamic if richly balanced, the magnetic '95E is a definite Best Buy	8-14	N	•	•	48

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Turntables – cartridges continued

Product	£Price	Comments	Arm effective mass (g)	Output	MM	MC	Issue No.
▲ Audio-Technica OC-10	320	G+ Good treble and good detail too, but some congestion and coloration reduces its informativeness.	4-12	L		•	103
▲ Audio-Technica OC-5	130	G For the price, it's unusually effortless and detailed, but it tends to become rather relentless and tiring after a while.	5-14	L		•	103
Audioquest AQ 404i-L	500	G+ Slight harshness detracted from the performance of this otherwise clear-sounding and detailed cartridge	8-16	L		•	84
Audioquest AQ 7000	1295	G+ Stunning stereo imaging and good detail at low levels are spoiled by less-than-perfect tracking and high sensitivity to arms.	6-20	L		•	91
Denon DL103	100	A+ Good performance in bass and general 'life' is seriously let down by its spherical stylus which kills subtle details.	9-22	L		•	103
▲ Denon DL110	70	G Firmly recommended as a fine all-rounder, this high-output MC model is likely to perform well in nearly all circumstances	6-16	N		•	48
Denon DL160	90	G Although listeners just preferred the 110, its brother here proved a twin in lab tests and is still "thoroughly competent"	6-16	N		•	43
▲ Denon DL304	200	VG Uncolored, detailed, neutral, superb tracking; top notch altogether, and a top notch bargain too.	4-12	L		•	103
▲ Dynavector 17D2	298	VG Clear, detailed, neutral and generally very informative - excellent	6-18	L		•	91
▲ Dynavector DV10X IV	138	A+ Fine sounding and realistically priced, damping is recommended to ensure successful tracking ability	8-18	N		•	48
Dynavector XX-1	698	G+ Good, but not immensely competitive at the price, and not helped by comparison with the low output version	7-15	N		•	84
▲ Dynavector XX-1L	698	VG Very clear, very detailed, no troubles with tracking; response lift around 20kHz seems to do no harm	7-13	L		•	84
Empire Benz Micro MC-Gold	150	G Nothing is obviously wrong, but nothing is stunningly right either. Safe, but perhaps a little too safe	7-17	L		•	103
▲ Empire Benz Micro MC-Silver	150	G Ultimately not the peer of the MC Gold is more appropriate to the sort of equipment it's likely to be partnered with	8-18	N		•	103
▲ Empire Benz-Micro MC-3	800	G+ Offers a warmer and very transparent account of the music. Its tracking prowess is slightly limited	5-12	L		•	72
Glanz GMC-10LX	80	A+ Bearing some of the hallmarks of the '10EH, the '10LX is still less competitive in the sonic stakes	7-15	L		•	67
▲ Glanz GMC-20E	129	G+ Very good tracking, smooth sound and good detail. Very slight surface noise enhancement	5-10	L		•	91
▲ Goldring 1012	50	G Slightly harsh sound but plenty of life and quite good detail. Some very high frequency coloration apparent	6-12	N	•		85
▲ Goldring 1022	70	G As with 1012, a touch harsh; detail and transient purity improved, though, and it goes well with electric guitar!	5-11	N	•		85
Goldring 1042	90	G Not terribly subtle, and not such good value alongside 1012 and 1022. Quite lively, though	7-12	N	•		91
▲ Goldring Elan	20	A A lightweight and frisky-sounding MM that appears to be based upon the same body as the Nagaoka mm4	7-15	N	•		67
Goldring Elite	200	G The basics are right, and it will cheerfully tackle any source material, but its sound possesses a certain dirtiness	8-18	L		•	103
Goldring Eroica H	100	G- More confused and coloured than low-output LX, high output less of an issue these days	8-15	N		•	84
▲ Goldring Eroica LX	100	G Not the most subtle cartridge in the world; can sound edgy at times, but lively and informative	8-14	L		•	84
Goldring Excel	549	G Errs on the warm and heavy side of neutral. Strong bass lines are its forte, but resolution of subtle treble details is weak	6-13	L		•	72
Goldring Excel GS	600	G+ True high end quality in its lack of colorations, but tracking seems indifferent and high levels tend to sound rough and edgy	9-20	L		•	103
Kiseki Blackheart	1995	G Demonstrated refined poise and a delicate but at once potent security, however, the price did seem a little on the high side	6-16	L		•	60
Kiseki Blue Goldspot	499	G+ Good bass and imaging, but hints of spit and coloration let the side down slightly	8-15	L		•	84
Kiseki Lapis Lazuli	5000	G+ Combining very sensible design concepts at a silly price, combines the detail of the MC3000 and the fluidity of the Clearaudios	4-12	L		•	60
Kiseki Purpleheart Sapphire	899	G+ Rare, beautiful to look at and sweet to listen to, our review of this high-flyer conjured up images of Japanese art	5-14	L		•	48
▲ Linn K5	49	A+ Not as crisply focused as the costlier Linn magnetics, the K5 offers a smoother presentation	7-16	N	•		67
▲ Linn K9	98	G Linn threw this model into the leading pack by beefing up the Basik's bodywork and adding a super stylus	6-15	N	•		Col
London Maroon	199	A+ Now manufactured under the London brand name this Decca cartridge is as iconoclastic as ever	9-20	N	•		67
London Super Gold	339	A- Immediate and detailed, but very coloured, very nonlinear and questionable effect on records. Devotees swear by it	9-15	N	•		84
▲ Miltek Aurora	299	G+ An overall feeling of relaxed ease characterised this clear and atmospheric Kiseki-built cartridge	8-16	N		•	Col
▲ Nagaoka MP10	19	A High frequencies sounded "shut-in" with this spherical-stylus model, but mid and mass were energetic, bouncy and punchy	5-13	N	•		48
▲ Ortofon 510	30	G+ For the price, a good blend of virtues - weight, clarity and neutrality.	3-11	N	•		85
▲ Ortofon 520	50	A+ Very sensitive to load capacitance this new Ortofon maintains the company tradition for a lively, effervescent SQ	7-16	N	•		67
▲ Ortofon 530	80	G+ Very clean and assured sound; transients not quite perfectly pure but plenty of detail.	4-11	N	•		85
Ortofon 540	100	A Graced with FGII stylus but possessed of too high a compliance for broad arm matching. It could also sound a little unforgiving	3-8	N	•		67
▲ Ortofon MC10 Super	80	G "What a delightfully sweet-sounding cartridge this is . . ." we said	5-15	L		•	48
▲ Ortofon MC15 Super	100	G+ A good all-rounder, with outstanding performance in detail retrieval, even if it can be very slightly bright and close-up	10-24	L		•	103
▲ Ortofon MC3 Turbo	110	G Not terribly subtle, but it obviously doesn't aim at that. The 3 Turbo is bright, cheerful and bouncy - take it as it comes!	10-24	N		•	103
▲ Ortofon MC3000 MkII	900	E Low levels of body resonance are a real ear-opener. Nothing to criticise elsewhere; one of the very best	9-16	VL		•	84
Ortofon MC5000	1500	G Review sample could not be fully run-in, limited tracking ability, bright and forward sound, though imaging is excellent	12-20	VL		•	91
▲ Ortofon Quartz	140	G Lively, quite detailed, and a touch bright, the Quartz has many qualities of the much dearer Quasar	3-12	L		•	91
▲ Ortofon Quasar	350	G+ Many of the qualities of the MC3000, although a touch bright. Good detail and delicacy	8-15	L		•	84
Ortofon Quattro	210	G+ Undoubtedly a competent performer. Generally neutral, but can be edgy and bright in loud passages.	6-18	L		•	103
Rega Bias	34	A+ Difficult to mount in some arms due to its shallow build, the bias offers a gentle, refined SQ	4-10	N	•		67
▲ Rega Elys	74	G Clearly superior to the Bias, despite their common heritage, the Elys is both more detailed, accurate and musically convincing	8-15	N	•		67
▲ Revolver	20	A This modified AT-95E enjoys a very lively mid and treble even if the bass is somewhat 'slower' in comparison. A firm budget buy	8-16	N	•		67
▲ Roksan Corus Black	130	G Recognisably related to Corus Blue, but distinctly more civilised and smoother.	7-12	N	•		91
Roksan Corus Blue	75	G Roksan-specified modified Goldring 1012; slight harshness detracts from otherwise good sound.	7-12	N	•		91
▲ Shure ME97HE	55	A+ It won't turn a sow's ear of a turntable into a silk purse, but will at least keep going and produce an acceptable result	8-20	N	•		48
Shure V15 VMR	220	A+ Initial listening gave promising results, but extended familiarity gave the feeling of a lack of energy and a "shut-in" sound	5-12	N	•		38
van den Hul Grasshopper III GLA	3200	E Undoubtedly one of the finest cartridges available, it has tremendous bandwidth, energy and finesse	6-10	L		•	122
▲ van den Hul MC One	975	G+ This extended all the positive qualities of the '10 but added greater authority and scale - worth it for the extra money	6-12	L		•	60
van den Hul MC One Super	1100	G+ Slight softening on transients was the only real flaw, but it didn't quite seem to have that special touch one expects	8-15	L		•	84
▲ van den Hul MC Two	1300	G+ Connected directly to any standard MM input it rewards with a highly detailed yet fluid and musically convincing portrayal	6-13	N		•	72
▲ van den Hul MC10	775	G+ A neutral balanced performer giving transparent midrange, fine depth and focus with firm extended bass. Gosh!	5-10	L		•	60
▲ van den Hul MM1	275	G+ If woody midrange coloration could be tamed, the excellent imaging and admirable security would make it excellent	7-15	L		•	103



Turntables and tonearms

Specialist turntables are what high fidelity sound is all about, CD may offer silent back-grounds and flat frequency responses but they can't match the dynamics and superlative timing that serious turntable users take for granted. Turntables at the cheaper end of the market (sub-£350) tend to be supplied with matching tonearm, and often include a 'starter' cartridge. Still better quality is found at higher prices

amongst the separate motor units and tonearms. Careful partnering and set-up is essential for these components, but 'sympathetic' combinations exist.

The columns show from left to right, 'arm effective mass' which relates to cartridge compliance and is explained in the 'Cartridges' introduction. 'Suspended subchassis' - decks which have some form of internal isolation, generally in the

form of springs but occasionally more solid materials such as rubber. 'Manual' and 'Automatic' refer to the operational tendencies of the deck/arm combination - automatic high end turntables are as rare as hens teeth. 'Cartridge' - if one is supplied. 'Belt drive' as opposed to direct drive is the preferred method in most quality decks. An 'Electronic PSU' offers switchable speed change and a 'smoother' power supply, and better sound.

Turtables - integrated

Product	EPrice	Comments	Arm effective mass (g)	Suspended subchassis	Manual	Automatic	Cartridge	Belt drive	Electronic PSU	Issue No.
▲ Alphason Sonata/HR100S MCS	1785	G+ Good sound in all areas - bass, clarity and neutrality all in the top class and bettered by very few decks at price	13	•	•			•	•	79
▲ Dual CS-503-2	160	A Not wholly inspiring; generally coarse and wooly sound is at least not offensive, but easily bettered by the CS505-4	10				•	•	•	91
▲ Dual CS-505-4	200	A Consistent sounding and well isolated turntable. It is slightly lacking in balls, compensates with a consistently unmuddled presentation	10				•	•	•	103
▲ Dual CS430	120	A- Ragged, sometimes unpleasant cartridge mixes with a modest pleasing player in a very sharply priced package	5					•	•	67
▲ Kuzma Stabi/Stogi Reference	2000	G+ Beautifully made solid oak plinth, the Stabi also sounds very clear, detailed and extended. Stogi Reference is very capable.	12	•	•			•		91
Linn Axis/Akito	535	A+ A neat, attractive and well-made package which delivers a rather harsh sound with a 'one-note' effect in the bass	10	•	•			•	•	79
▲ Linn Basik	299	A+ Strong midband analysis and imagery, clean if sharp treble is matched to a good if occasionally wooden bass	10		•			•	•	103
▲ Linn LP12 Basik/Akito	904	G Trails the full LP12 significantly, but pace, rhythm, timing etc. still in top class, and bass tauter than of old	10	•	•			•		103
▲ Linn LP12-Lingo/Ekos	2642	G+ The classic reference is improved by the Lingo but charming character remains. Ekos is well made and suited to many decks	9	•	•			•	•	91
▲▲ Rega Planar 2	185	G A remarkable product at the price, surprisingly articulate and confident	11.5		•			•		48
▲▲ Rega Planar 3	250	G A long time leader in its category, the '3 (with excellent RB300 arm) sounded nicely 'musical' in a balanced and coherent manner	11.5		•			•		48
▲ Revolver Rebel	185	G- Quite lively and detailed but not the strongest on subtlety, with slightly lumpy bass. Motor breakthrough audible	12	•	•			•		91
▲ Roksan Radius/Tabriz zi	740	G Design is subtle, refined and easy on the eye. Musically it offers exceptional performance with a minimum of fuss	9		•			•		103
Roksan Xerxes 33/Tabriz zi	990	G At its optimum with a relatively inexpensive arm/cartridge unless upgrade to full Xerxes is contemplated. XPSII PSU	9		•			•	•	103
▲ Roksan Xerxes/Artemiz/Artaxerxes 2114	2114	E Superb, highly integrated and synergistic in nature, suitable for use with any good MC. Will not suit all tastes, however	8					•	•	103
▲ Systemdek 1.920	235	A- The motor unit is derivative of the Rega Planar 2 with a Moth arm. Up tempo even bright at times but never lacks enthusiasm	12		•			•		115
▲▲ Technics SL-DD33	150	A As with the QD33 though better value. P-mount cartridge	7.5				•	•		48
▲ Technics SL-QD33	180	A Quartz controlled version of the DD is short on sound quality but not features. But it did have fair focus and some depth	7.5				•	•	•	48
▲ Thorens TD-3001/TP90SF	760	G Excellent middle ranking esoterica, with strong all round abilities rather than excellence in particular areas			•	•		•	•	103
▲▲ Thorens TD166 W/JK/RB250	280	A- Refined and articulate sound with well focused imagery, suitable for use with good MM and budget MC cartridges	11.5	•	•			•		103
Thorens TD2001	650	G- Similar to TD320 but much dearer - why? Sound is comfortable but not very detailed	15	•		•		•		91
▲ Voyd Reference	5950	E Voyd's flagship, equipped with three substantial motors, a Lexan platter and brute PS. A strong contender for world's best			•	•		•	•	C91
▲ Well Tempered WTAT	1690	G+ Intriguing/challenging design. Musically it is not ideal, but has a limpid quality and a lack of artificiality that sets standards	7.5		•			•		67

Motor units

Product	EPrice	Comments	Suspended subchassis	Solid plinth	Belt drive	Electronic PSU	Issue No.	
▲ Michell Gyrodec	697	G Sweet and natural sounding player, well suited to Rega RB300. Aesthetics, and the acres of clear acrylic are very distinctive		•		•	•	55
▲ Michell Syncro	325	G A happy blend of qualities endows the stylish Syncro with a blend of subtlety and force - the mailed fist in the velvet glove		•		•		67
Origin Live Oasis A	495	G- Rather coarse sound lacking resolving power - but lively sound may appeal. Industrial appearance				•		79
▲ Pink Triangle Anniversary	1495	E Possibly the most detailed, clear and neutral deck around. Likeness to master tape is uncanny		•		•	•	91
▲ Pink Triangle Export	890	E The PT T00 with built in PS. Retains features of great transparency and neutrality. Review sample had highish motor noise		•		•	•	91
▲ Pink Triangle Little Pink Thing	500	G+ Semi suspended, leads the field for clarity and neutrality at the price. It also looks good. Excellent value				•		79
Revolver	200	A Nicely balanced, but unimpressive timing and lightweight bass made this deck rather average for the price			•			48
▲▲ Systemdek IIX/900	230	G A high performance budget turntable which is particularly strong at fine detail resolution and imagery		•		•		103
▲ Systemdek IIXE/900AP	388	G+ The acrylic platter'd IIXE is one of the most capable budget decks on the market, good resolution, dynamics and timing		•		•	•	103
▲ Voyd 0.5	3368	E Halfway between standard and Reference Voyds with the latter's platter and bearing. Superb finish, colourful and dynamic sound		•		•	•	72

Tonearms

Product	EPrice	Comments	Effective mass (g)	Height adjustment	Pivoted	Parallel tracking	Issue No.
▲ Airtangent 1B	3000	E A complex but superbly built arm for high quality systems, giving excellent stereo and resolution	7.5	•		•	60
▲ Alphason HR100S	490	VG S-shaped arm sounds smooth, but nevertheless reproduces transients with fine attack	10	•		•	C86
▲▲ Moth arm	95	G+ The ultimate budget arm? Refined, detailed, sweet and natural	12			•	60
▲▲ Rega RB300	139	VG Despite its modest price it sets exceptional performance standards and could be used on many high end turntables	11.5			•	60
▲ Roksan Tabriz	190	G+ Targetted at the Xerxes, this is a good alternative to the Rega arms in many cases - a trifle bright	9	•		•	91
▲ SME 309	568	VG Beautifully made and finished, fully adjustable, a highly neutral performer	10	•		•	79
▲ SME Series IV	828	VG Superb engineering and finish with a finely balanced sound, impressive stereo focus and low colouration	10.5	•		•	60
▲ SME Series V	1232	E Excellent in all respects, this arm arguably sets the standard for pivoted arms regardless of price	10.5	•		•	60

HI-FI CHOICE SPECIAL OFFERS

Choice accessories

This month we have some exciting new Choice accessories, as well as a collection of popular recordings. And keep your eyes peeled for next month's pages as we will also be offering a new range of cables and interconnects.

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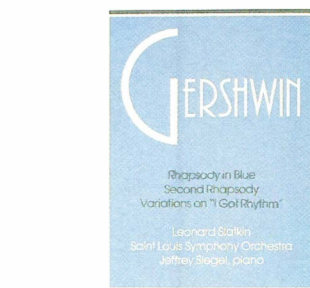
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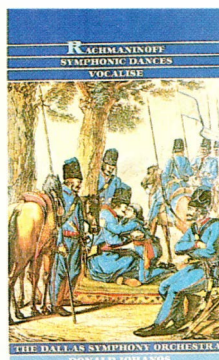
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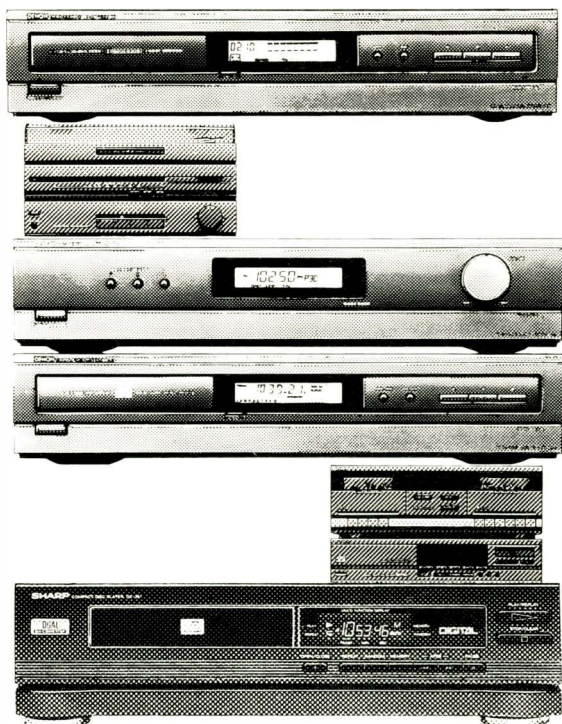
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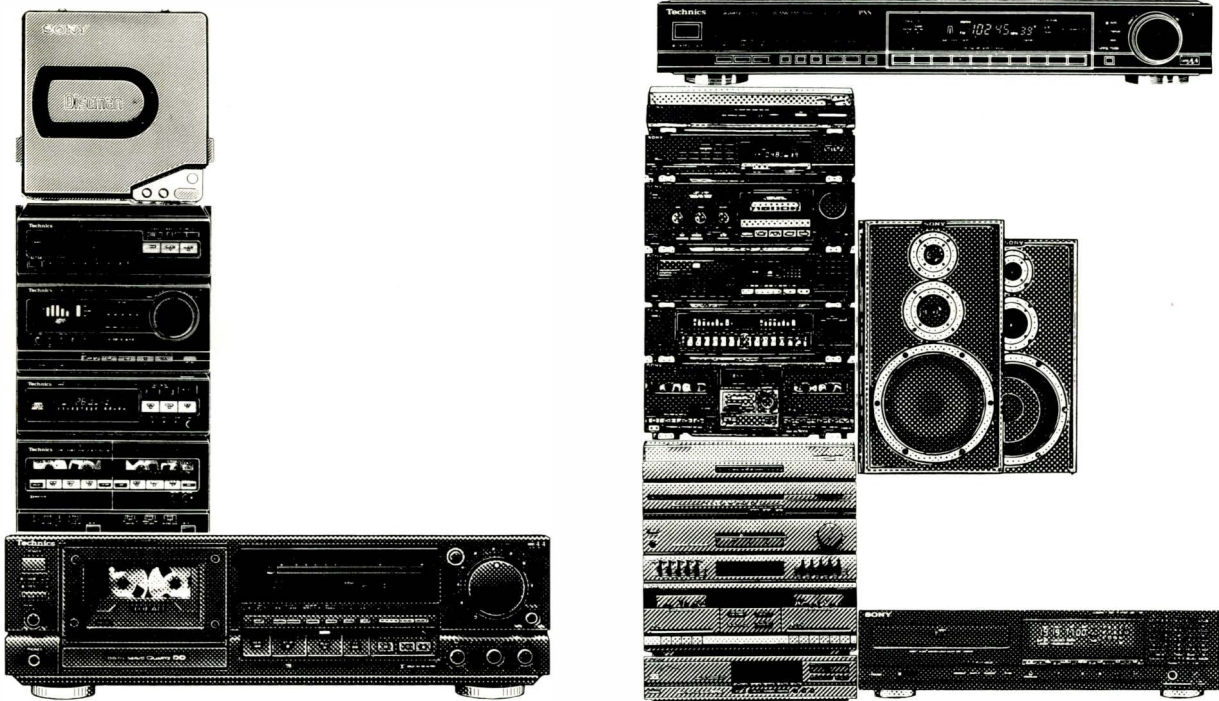
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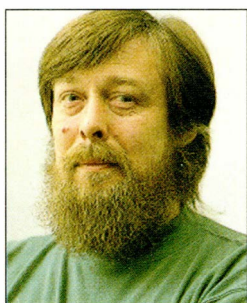
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Bass without tears

The nooks and crannies of my listening room are currently filling up with subwoofers, in preparation for next month's group test review. Subwoofers are an area of hi-fi that have never amounted to a big deal here in the UK, and to my knowledge, this is the first attempt in this country to do any serious comparative reviewing on the topic.

My own recent experience includes a batch of satellite/subwoofer three-box speaker systems (issue 104), plus the first examples of the now-successful REL. The three-box models were a disappointing breed on the whole. None came near the performance of a similarly priced conventional two-way, and only Bose really managed to achieve a satisfactory in-room balance. Most of the others merely supplied an excess of midbass alongside no more actual extension than a pair of conventional budget speakers.



This month Paul ponders the merits of subwoofers — the coffee tables of the listening room.

I have some sympathy with the manufacturer's representative who pointed out that this is what many subwoofer purchasers expected. If they didn't hear the bass thumping away, they felt they weren't

getting value for money. But that is an argument founded on customer ignorance. I don't believe that anyone who's heard flat and truly extended bass will find it easy to settle for the artifice of boom and roll-off.

The REL subwoofers were the exception which showed what could be achieved with careful design. Their subsequent success in a hitherto sceptical UK market would tend to support my case. REL has done much to prove that subwoofers need not be mere boom boxes but can be made to work as serious hi-fi components.

Even so, the typical subwoofer approach to bass reproduction might well have certain inherent limitations. The point at issue is how this alternative means of bass delivery interacts with the room. There's a fundamental difference, for example, between generating bass from a pair of speakers set up on stands, and doing so from a single box sitting on the floor.

There's no more effective way of exciting room eigentones than by placing the source of excitation right on one or more of the room boundaries. Indeed, this factor is one minor limitation in the flush-mounted open-backed 15in Tannoy dual concentric drivers which are my current reference point. Happily in this case, the main eigentone derives from the 'longest

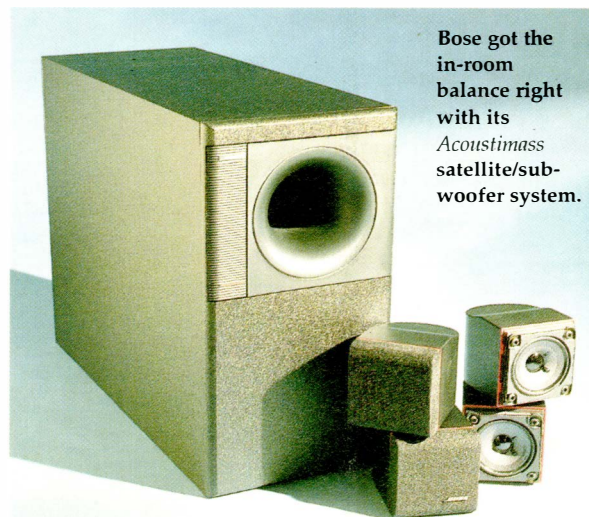
dimension of the room, and so is at a relatively innocuous very low frequency, clear of most music programmes.

Not so the typical subwoofer, which often fires its main driver and/or port directly at the floor and therefore does its best to excite the more intrusive floor-to-ceiling mode at around 50-60Hz. There are, of course, some good reasons for firing the driver/port downwards — it helps to avoid unwanted midrange output and ensures a consistently predictable nearfield coupling for starters. It also encourages its disguise as an occasional table or chest, or even transformation into ottoman for those handy with the needlework.

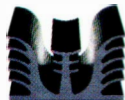
There are a couple of other relevant but rarely considered factors. One of which is all the ramifications of phase, and the overlapping of spaced port and driver outputs. The other is the way in which sources interact with each other (as well as the room) at low frequencies. The perceived in-room balance of two speakers fed with a mono signal is significantly different from one speaker alone, due to the way the sources couple when delivering frequencies whose wavelengths are longer than the distance between the sources. In the case of my wall-mount drivers, for example, this amounts to roughly 3dB more relative bass output in twin-speaker mono over single-speaker mono.

This is one of the reasons why many of the three-box speakers suffered problems — which Bose deftly avoided using smaller satellites and wider bandwidth sub units with higher frequency and sharper crossovers. And in a similar vein, one reason why the Dolby Pro-Logic standard for three front speaker home cinema sound normally incorporates an early centre channel roll-off is to avoid the bass complications of coupling a third full-range driver across the front soundstage.

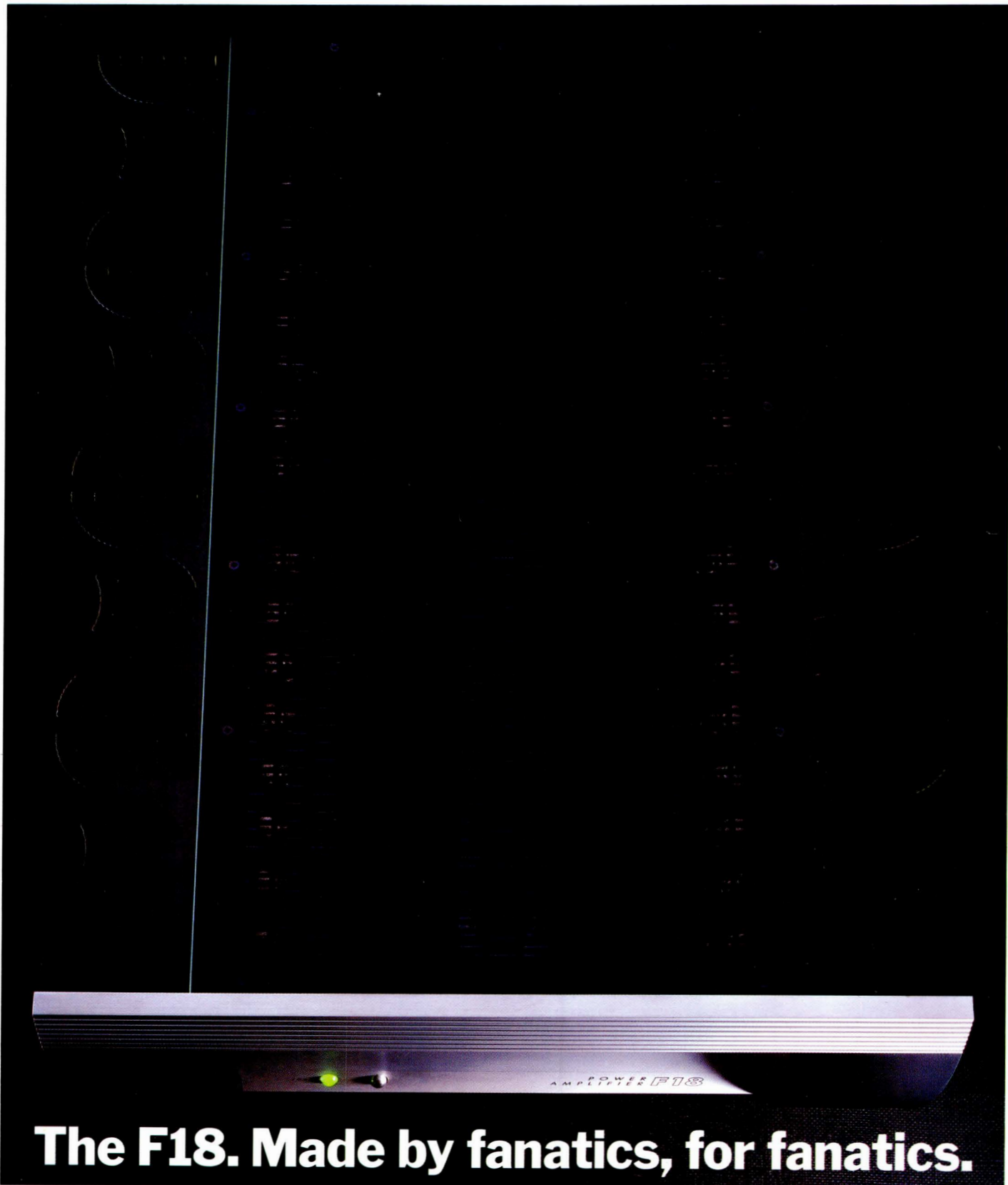
Paul Messenger has been writing about hi-fi longer than he cares to remember, and is a former editor of Choice — three times over.



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