

HI-FI CHOICE

THE WORLD'S NUMBER ONE GUIDE TO BUYING HI-FI

JANUARY 1991 £2.95

Loudspeakers

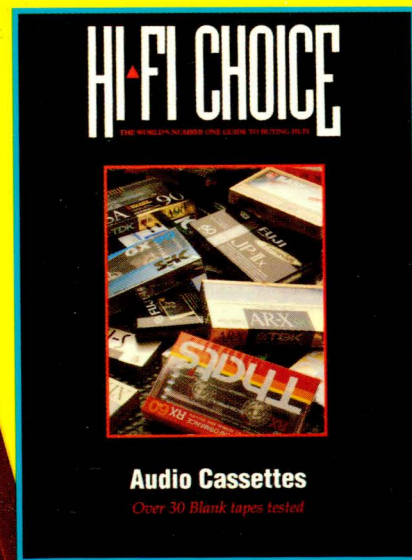
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Competition

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CASSETTE TAPES

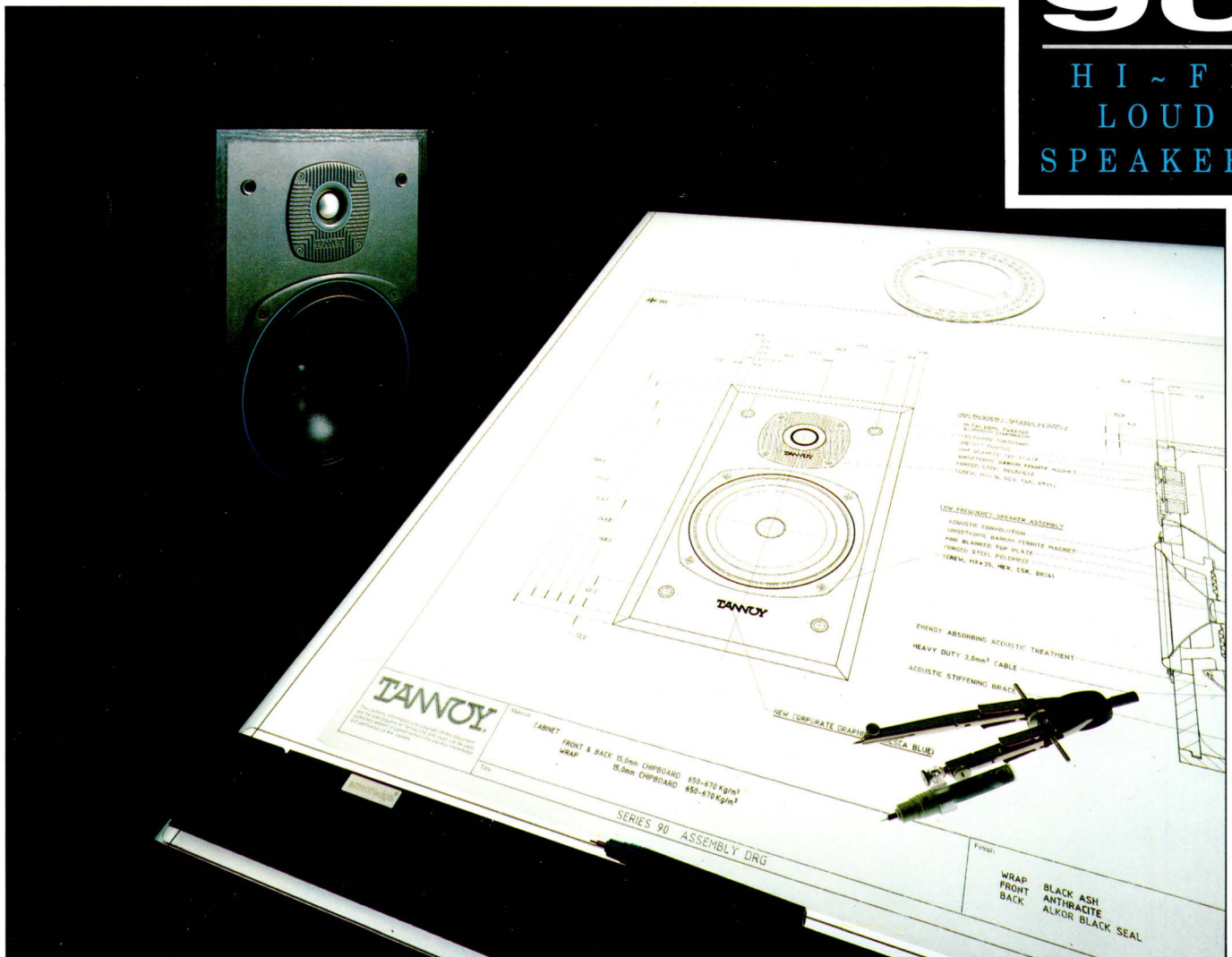
ISSN 0955-1115



VOTED 'FAVOURITE HI-FI MAGAZINE' BY HI-FI SHOPS NATIONWIDE

SERIES 90 - THE STORY CONTINUES...

E11 "IT MAY NOT GRAB YOU BY THE THROAT BUT IT'S ABILITY TO BEAUTIFULLY PORTRAY MUSIC MAY JUST TUG AT YOUR HEARTSTRINGS". WHAT HI FI, MARCH 1990. • "BI-WIRING IMPROVED STEREO FOCUS AND OVERALL PRECISION WHICH HELPED GIVE A PERFORMANCE REMARKABLE AT THIS PRICE". HI FI NEWS, JANUARY 1990. • **DC1000** "THE TANNOY MADE LISTENING TO MUSIC A MUCH MORE LIVELY, ENJOYABLE EXPERIENCE". WHAT HI FI, FEBRUARY 1990. • **J95** "THERE MAY BE BETTER £500 SPEAKERS OUT THERE BUT I'VE NOT HEARD THEM YET". HI FI REVIEW, AUGUST 1990. • **DC3000** "RECOMMENDED WITH ENTHUSIASM - EVEN WITHOUT THE LEAD SHOT". HI FI CHOICE, JANUARY 1990...



THE WORLD'S No.1 GUIDE TO BUYING HI-FI

HI-FI CHOICE

ISSUE NUMBER 90: JANUARY 1991

EDITOR
John Bamford

CONSULTANT EDITOR
Paul Messenger

ART EDITOR
Andrew Ryan

PHOTOGRAPHY
Chris Richardson

PRODUCTION EDITORS
Janet Moorhouse, Nuala Harvey

REVIEWS EDITOR
Jason Kennedy

NEWS/FEATURES EDITOR
Dan Houston

CONTRIBUTORS
Alvin Gold, Paul Miller, Roy Gregory, Rob Follis, Stan Vincent, Barry Fox

ADVERTISEMENT MANAGER
Rob Debenham

ASSISTANT ADVERTISEMENT MANAGER
Miriam Young

CLASSIFIED SALES EXECUTIVE
Jane Woolner

GROUP ADVERTISEMENT MANAGER
Fiona Hunt

ADVERTISEMENT PRODUCTION MANAGER
Lisa Nickson

MARKETING SERVICES MANAGER
Zoe Ringrose

SUBSCRIPTION FULFILMENT MANAGER
June Smith

NEWSTRADE CIRCULATION MANAGER
Sean Farmer

PUBLISHING DIRECTOR
Marianne McNicholas

ADVERTISEMENT DIRECTOR
Alistair Ramsay

FINANCE DIRECTOR
Colin Crawford

MANAGING DIRECTOR
Stephen England

CHAIRMAN
Felix Dennis

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ABC (July-Dec 1989-23,847)



Menu

I daresay we've said this many times before within the pages of *Hi-Fi Choice*: while we do our utmost to be 'objective' in our subjective assessments of loudspeakers, to the extent that we even report on the results of blind listening tests which involve a *panel* of listeners (*Choice* is the only UK hi-fi magazine to do this), we are not unaware of the fact that loudspeakers can produce varying results in different rooms.

Paul Messenger discusses the vexed topic of room acoustics - and how the environment in which we listen can affect the sound we hear in our homes - in his *Personal Messages* column this month. While it's perhaps unreasonable to expect your local hi-fi shop to spend many hours demonstrating inexpensive loudspeakers, it's worth stressing (once again) that when spending several hundreds of pounds on high quality monitors, you really should expect the retailer to allow a home trial. Only when you hear a pair of loudspeakers in your own home can you be sure that they produce the quality of sound to which you aspire.

While this month's *Choice* majors on loudspeaker reviews, we've also been busy testing a large batch of blank tapes. Finding the right brand or formulation of tape to suit your cassette deck can be a frustrating task, not to mention a costly exercise if done by trial and error! With the help of the supplement FREE with this issue, you'll now be better informed as to the performance characteristics of over 30 different cassette tapes on the market thanks to Paul Miller's in-depth measurement programme and analyses.

For February's *Choice*, our 'analogue expert' Richard Black is currently assessing a large group of turntables and tonearms - with a handful of cartridges thrown in too for good measure. While much of our time these days seems to be spent discussing the progress of technology, and the performance of today's (and tomorrow's) compact disc players, getting the best possible sound reproduction from LP records is still a major concern for many thousands of audiophiles around the world. As TV presenter Hugh Scully shows in our *Aspirations* feature this month, many of us will always treasure our valuable record collections.

John Bamford



*Photography by
Chris Richardson.*

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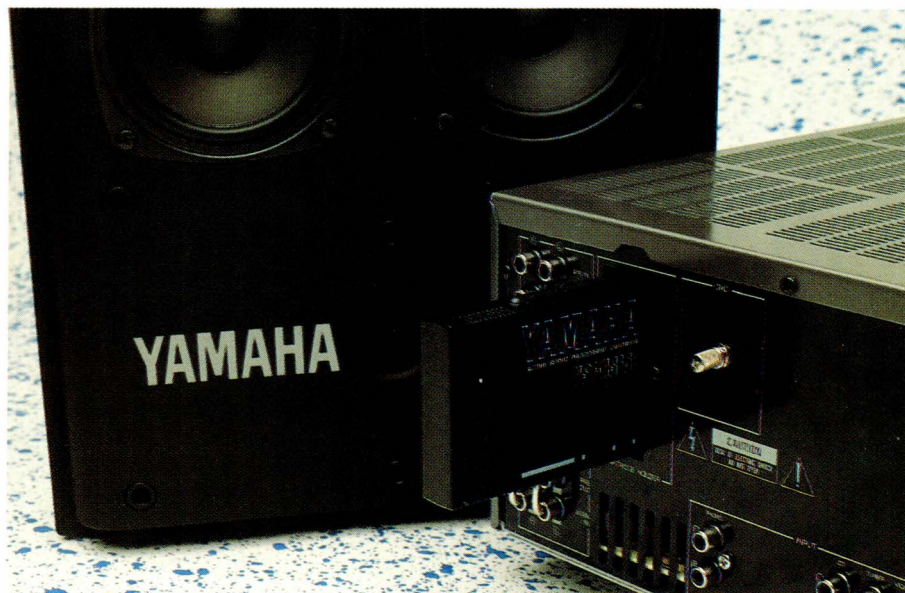
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Our pot-pourri of high-end gear this month includes a portable DAT recorder from Aiwa, Dahlquist's revealing *DQ-12* loudspeaker and Townshend Audio's 'double outrigger' modification for *Rock* turntables with *Excalibur* arms.

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We've three fabulous prizes to give away this month in a £2,000 Rotel competition. Come on, put your thinking caps on. . .



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With 10,000 records in his collection, he qualifies as a serious audio enthusiast.

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Next month Richard Black reviews a whole host of turntables, tonearms and cartridges, we visit Monitor Audio's drive unit factory, and bring back show reports from Tokyo and Belfast. And as if that's not enough, the February issue also



We test over 30 cassette tapes in this month's FREE supplement.



Contribute to our letters pages and you could earn a pair of FREE Isoda cables.

includes a FREE classical records supplement.

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Paul Messenger discusses the often overlooked effects of room acoustics on the sound produced by the systems in our living rooms.



The Choice team visits TV personality Hugh Scully, a collector with 10,000 LPs.

WHO SAID



SILENCE IS GOLDEN?



DIGITAL GOLD

Introducing the Technics Digital Reference Series. A range including CD players, a DAT deck, a 3-way Speaker System and a Digital Amplifier. All dedicated to one single golden rule. Reproducing sound, perfectly.

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Horntons

*8-9 Lower Temple Street, Birmingham
B2 4JD. 021 643 0972.*

R N Cleartone Ltd

235 Blackburn Road, Bolton. 0204 31423.

Dawsons Radio

*23 Seamoor Road, Westbourne,
Bournemouth. 0202 764965.*

Audiovision Ltd

5 Bethel Street, Brighouse. 0484 713996.

WT Parker

*24-28 Moor Street, Burton-on-Trent.
0283 42661.*

B G Audio

*9 Hatter Street, Bury St Edmunds.
0284 755227.*

Peter Tyson

9 West Tower Street, Carlisle. 0228 25891.

Peters HiFi

*Grosvenor Precinct, Chester.
0244 319392.*

Monitor Sound

54 Chapel Street, Chorley. 0257 271939.

Lintone Audio

*8 The Arcade, Mediterranean Village,
Metro Centre, Gateshead. 091 460 0999.*

Manders HiFi

2-4 Edward Street, Grimsby. 0472 351391.

Hereford HiFi

17 High Town, Hereford. 0432 268922.

Michael F Berriman

*306/308 Newlands Avenue, Hull.
0482 41976.*

Hughes

42 Buttermarket, Ipswich. 0473 215093.

Frazers

*100 The Parade, Leamington Spa.
0926 451769.*

Eastwoods

*210 Abbotsford Road, Leicester
0533 760011.*

Beaver Radio

Whitechapel, Liverpool. 051 709 9898.

Spatial Audio

*29 Tottenham Court Road, London, W1.
071 637 8702.*

PNR Audiovision

*28 Tottenham Court Road, London, W1.
071 580 9098.*

Bartletts HiFi

*175 Holloway Road, London, N7.
071 607 2148.*

Hyper-Fi

*Longbridge Road, Barking, London.
081 591 6961.*

Portogram Ltd

*212 High Street, Barnet, London.
081 449 4183.*

Westmorelands

*Unit 6, Saxby Road Industrial Est., Melton
Mowbray, Leicestershire. 0664 64741.*

Unilet HiFi

*35 High Street, New Malden, Surrey.
081 942 9567.*

W G Rankins

*11 Kettering Road, Northampton.
0604 37515.*

Hughes

*2 Rampant Horse Street, Norwich.
0603 660935.*

Peter Anson

*523 Alfreton Road, Bobbers Mill,
Nottingham. 0602 783312.*

Forum HiFi

*600-602 Mansfield Road, Sherwood,
Nottingham. 0602 622150.*

Cottons

*8-10 The Broadway, Peterborough.
0733 67682.*

HBH Woolacotts

*(Plymouth/Technics Centre) 56 Cornwall
Street, Plymouth. 0752 250571.*

Hopkins HiFi

*40 Fratton Road, Portsmouth.
0705 822155.*

Goodrights

Friargate, Preston, Lancs. 0772 57528.

B+B HiFi

*36 Minster Street, Reading, Berks.
0734 583730.*

Moorgate Acoustics

*8 Westgate Chambers, Westgate,
Rotherham. 0709 370666.*

HiFi Stereo

51 Washway Road, Sale. 061 973 5577.

Sevenoaks HiFi

*111 London Road, Sevenoaks.
07324 59556.*

CF Lake

254 High Street, Slough. 0753 38288.

Southport HiFi

Princes Street, Southport. 0704 536901.

Roy Townsend

*Sheriden Centre, Gaolgate Street,
Stafford. 0785 43669.*

Downings

*33 Market Street, Stourbridge, W Midlands.
03843 71747.*

Quinns Audio Visual Systems

Phoenix Way, Swansea. 0792 773644.

Wigan HiFi

*13 Wigan Centre Arcade, Wigan,
Lancashire. 0942 37977.*

Holman Radio

*2-4 King Street, Wimborne, Dorset.
0202 882785.*

Beatties

*St Marks Street, Wolverhampton,
W Midlands. 0902 22311.*

Vickers HiFi

24 Gillygate, York. 0904 629659.

Technics
For Music Lovers.

Update

PRODUCTS

Good Reproduction

Wharfedale has reprinted one of the books authored by Gilbert Briggs - the Yorkshireman who founded the company half a century ago. 'Loudspeakers - The How and Why of Good Reproduction' is still relevant today according to Wharfedale, as it addresses the nature of sound and its 'perfect reproduction'. More importantly for the enthusiast, the book is likely to provide a fascinating insight into early loudspeaker technology with which to compare modern techniques.

Priced around £11, the book has been perfectly reproduced in its original 'boys' own' cover.

Wharfedale hopes that further Briggs books can be reprinted but has to wait until original copies turn up - the printing plates were destroyed by flood.

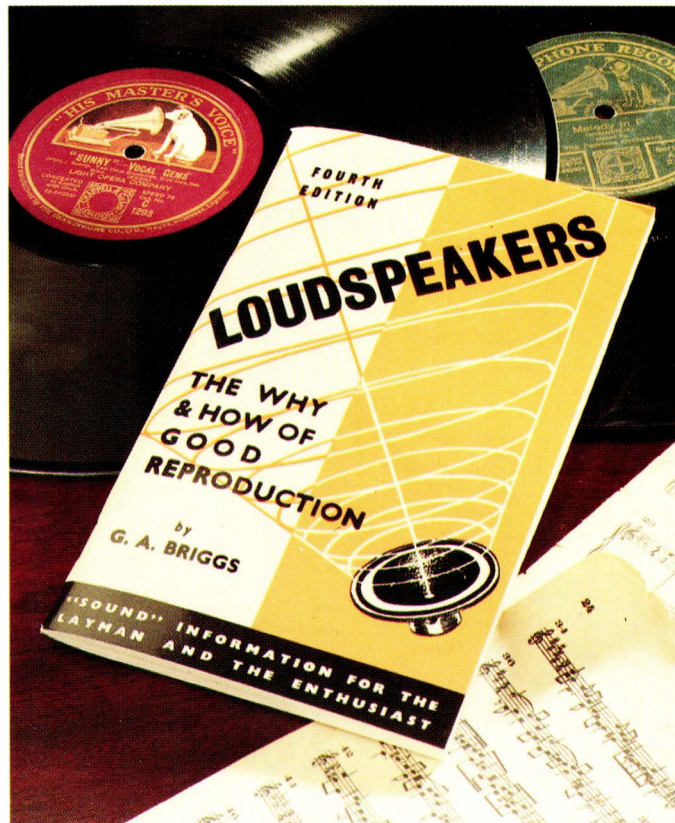
Copies are available from Wharfedale's Marketing Services Department, Sandeas Way, Crossgates, Leeds LS15 8AL.

Up the tubes

Following a successful Penta show, valve amplifier manufacturer Tube Technology has taken on a handful of new British dealers. TT has been in business for several years - marketing its products overseas to a hungry European audience. The company is based in Ealing, West London, and makes an almost affordable integrated tube amp - the £1,195 *Unisis* - as well as a pre and power combination. Our picture shows the *Genesis* 100 watt monoblocks which retail here for £2,250 a pair. The matching preamplifier is the *Prophet* - a two-box (power supply and preamp) £1,350 model. Its phono stage will cater for moving magnet and high output moving coil cartridges.

The TT range is visually stunning, with the valves on the *Unisis* arranged openly in front of its colossal transformers to glow in the dark. Liberal use of chrome, black face plates and brass makes for an exciting piece of furniture in your listening room.

Internally the designs

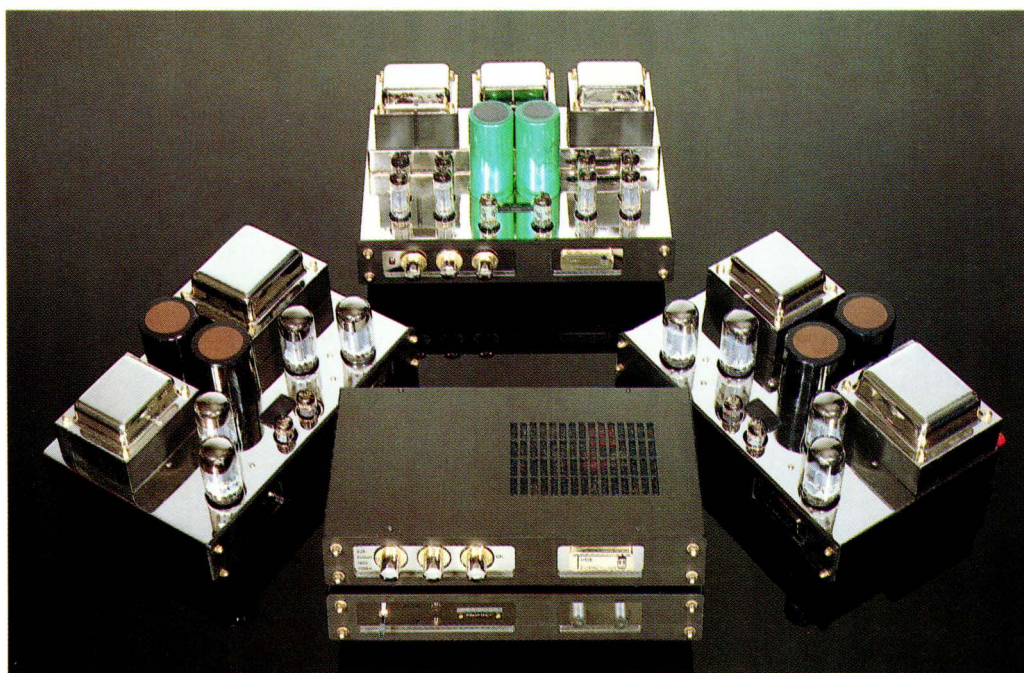


For your library: one of Gilbert Briggs' classic books reprinted.

promise simple circuitry with top notch components to give the purest cleanest signal paths. The printed circuit boards even use gold plated

tracks and all circuits are hard wired with high quality Furukawa cable.

For more details, call Tube Technology: (081) 566 5135.



Glowing bottles and a liberal use of polished chrome, from London-based Tube Technology.

Technics to the rescue

Technics has been extending its patronage of classical music to the full sponsorship of a recording of Venetian Vespers (1643) at Brinkburn Priory in Northumberland. The session, which had been planned for some time, was having trouble with record companies getting cold feet about the high costs involved and would have had to have been cancelled without full funding from Technics.

The music, including works by Cavalli and Monteverdi, was performed by the Gabrieli Consort and Players conducted by Paul Macreesh, who chose Brinkburn for its excellent acoustics. The session was recorded by Tim Handley using Panasonic DAT

machines, and produced by Ben Turner.

Technics is now looking for a record company to manufacture and distribute the works. At this stage it has no intention of marketing the recording itself.

Tracking the action

Harman Kardon has released a new £350 tuner which essays to reduce other channel interference with a development known as Active Tracking. The TU9600 is a remote control model featuring 24 preset memory, digital fine tuning, optimal (dual) antenna setting and HK's established Hi-blend facility.

It also uses a system of low group delay filters with dedicated wideband amplifiers which protect stereo signal separation and harmonic clarity - Active Tracking.

Pink Linn power!

Those cheeky chaps at Pink Triangle have come up with a power supply and update kit for a rival turntable, the Linn Sondek LP12. The power supply, called *Pacesetter*, is a mains powered version of Pink's *Pacemaker* and can drive the LP12 at either 33 or 45rpm. It's even housed in a casing designed to match the *Sondek*.

The *Update* kit is even more radical as it involves



Panasonic DAT recorders - on location for Venetian Vespers.

fitting a replacement stainless steel top plate and moving the motor from a point at the top left of the plinth to one at the bottom left. Pink Triangle argues that the motor in its traditional position tends to 'pull' the platter at 90 degrees to the cartridge, ie the vinyl groove will be vibrating at right angles to the stylus. The new (black) top plate places the motor so that these vibrations are better aligned with the record grooves and the path of least resistance for the arm and cartridge. This is a difficult concept to explain without the help of an illustration, but once grasped it seems to be pretty logical.

The complete power supply and upgrade kit including cables, fitting (by a Linn-trained retailer) and a two year warranty will cost a penny under £500 - which is about the price of Linn's new *Lingo* power supply, isn't it?



HK's new 'Active Tracking' TU960 tuner, with TU940 below.

engineering talent and production facilities to relaunch the famous Leak brand of amplifiers due for relaunch in the springtime at Chicago CES.

Prize dealers

Satisfied BADA dealers went home full of leek and potato soup topped by salmon in cream chive sauce on November 13 knowing that their organisation is recognised as providing the best in hi-fi retailing.

All of the eight regional winners of the Sony/Hi-Fi News Dealer Awards were British Audio Dealer Association members - as were the vast majority of runners up.

Grahams Hi-Fi of North London won both the National Dealer of the Year Award and its category for Greater London. Awards also

BUSINESS

Wharfedale buys Linn

Wharfedale's smoking pen and chequebook was in evidence again this month



Stylish Linn amplifiers: now a division of Wharfedale plc.

when the snowballing plc bought the stylish Linn brand of 'high end' electronics. In its now familiar stalking style, Wharfedale stepped in just after Linn had just gone into receivership. All Linn jobs have been secured in the takeover and production of Linn products will continue at Wharfedale's factory in St Ives (previously Cambridge Audio).

The acquisition of the Linn name, following last month's acquisition of Cambridge Audio from the receivers, completes Wharfedale's current business strategy, the company asserts. Wharfedale now has the necessary

went to Radford Hi-Fi of Bristol for South West England and South Wales; The Audio File of Bishops Stortford - East England; Audio Projects of Leeds - North East England; Manchester's Music Room - Midlands and North West England; Jeffries Hi-Fi of Brighton - Southern England; Reading Hi-Fi (guess where) - Thames Valley and to Zeus Audio of Belfast - Scotland and Northern Ireland.

Sony also presented Salisbury Hi-Fi with its *ES* Dealer of the Year award.

Voting by the public took place at the Penta Show and through *Hi-Fi News*.

We have a winner

In fact, we've got three winners for the **Luxman** competition run in our October issue (No. 87). The fabulous first prize of a Luxman *LV-104u* hybrid amplifier, *D-103u* CD player, *K110* cassette deck and *T-11L* tuner - worth a total of £1,663 - goes to John Foster of Bourne, Lincolnshire.

The second prize of a *K-112* 3-head cassette deck worth £315 goes to J.S.Ling of Ipswich, Suffolk and the third prize, an *LV-92* 40w amplifier will shortly be in the hands of Michael Howles of Swindon, Berkshire.

Metal dome craftsmen

Britain's only metal dome tweeter factory has been bought by Acoustic Engineering Ltd. AEL, itself 80 per cent owned by Monitor Audio, will now offer OEM facilities to other loudspeaker manufacturers - most of whom source drive units from Scandinavia and Europe. The factory in Tottenham, North London, used to belong to ELAC (Electro Acoustic Industries Ltd) and was used by Monitor Audio in the development and production of the loudspeaker specialist's pioneering metal dome tweeters.

Fully independent, AEL now offers a hireable research

Having pioneered the development of metal dome tweeters, Monitor Audio now owns the factory which makes them.



Prizes galore from Luxman. Were you lucky in our October competition?

and development facility which it hopes will attract other British loudspeaker manufacturers. While famous for the early metal dome tweeter designs, the factory is also capable of making any type of speaker driver.

Choice has visited the new factory and will be reporting on AEL in full in a future *Craftsman* feature.

NICAM: prices tumble

A NICAM VCR has been introduced by TV manufacturer Tatung using the Deccacolour brand name at the unprecedented price of £399. The Deccacolour *DVR 6641* is billed as a Hi-fi component and uses the barcode scanning system for timed recording. The timer offers eight-event recording over a 365 day period. A quick timer recording facility is also incorporated. *DVR 6641* is a two-speed remote



Just £399 now buys a NICAM stereo Hi-fi VCR from Tatung.

control PAL standard machine offering a 21 pin scart A/V connector as well as normal stereo RCA output sockets.

By hooking it to a hi-fi system, the user can enjoy stereo TV sound (on appropriate transmissions) while watching on a normal television set.

TECHNOLOGY

BASF backs DCC

BASF has bought Agfa, bringing the company's share of the tape market close to that of TDK and even closer to world leader 3M. So it's significant that BASF is backing Philips' new digital cassette format, DCC.

However, a recent talk at BASF's HQ in Ludwigshafen with Bernd Rothfuss, a physicist in charge of marketing magnetic products, and BASF's Chief Engineer Wilhem Andriessen, revealed that BASF's backing for DCC is a lot less than a full scale commitment and show of confidence.

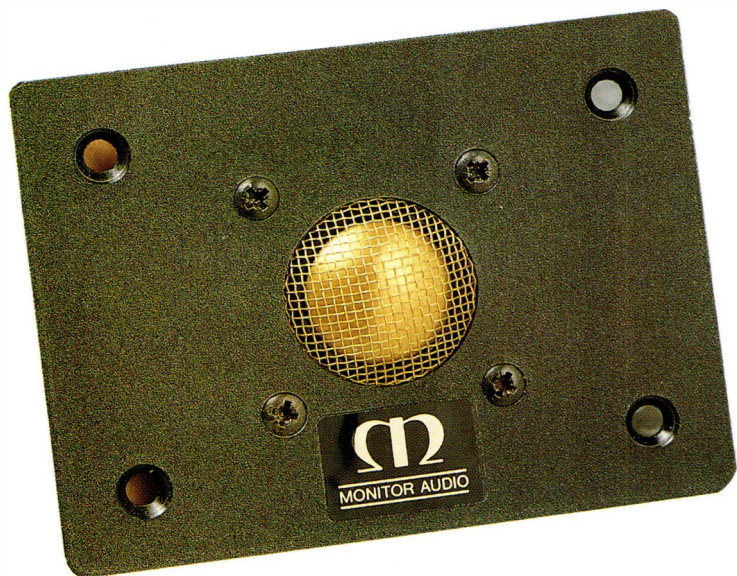
Says Wilhem Andriessen: "We are joining the party. We will co-operate to develop the cassette and the tape and investigate physical phenomena like tape-to-head contact. We expect that the first hardware will be seen at the next Berlin Funkausstellung.

"We do not say that we are also supporting DAT. We are not choosing. We are always happy to work on a European project - it is much easier than when the hardware comes from Japan.

"I am in an odd position. I was able to talk more about DCC before we started talking to Philips in August. Since then we have signed confidential agreements.

"DCC was designed with the music industry in mind. We have not done a test, but we believe that high speed duplication *will* work. Either thermal magnetic duplication or straight high speed copying. Almost all you have to do is change the heads.

"But the most important question of all is the benefits the new format can offer the



Two Great Players!

PORTABLE-SIZE CD PLAYERS WITH DENON SOUND QUALITY



DCP 50 **NEW**

The DCP 50 is the second portable CD player from Denon. It incorporates many of the performance features of its brother, the distinguished DCP 100.

Features include:

- Twin 16 Bit (4x O/S) DACs
- 19 Key Infra Red remote control
- 3 Position preset tone control
- 16 Title programme play
- Uses AA batteries or power via supplied AC adapter
- Clear LCD display on top of unit
- Headphone and line outputs
- Full 2 year Denon guarantee
- £179.95 rrp

"...using the line output through a decent Hi-Fi system confirms the quality this player can provide." GRAMOPHONE SEPT. 1990

DCP 100

Denon's first portable CD player, the DCP 100, is a stylish high performance machine with the emphasis on sound quality using 'Denon Super Linear' technology.

Features include:

- 8x oversampling for superb sound
- Twin 16 Bit DACs
- Rechargeable battery power source or AC adapter
- Full programme and repeat modes with clear status LCD display
- Audible cueing
- Compact and lightweight
- Full 2 year Denon guarantee
- £249.95 rrp

"... the Denon [DCP100] excelled, easily equal to low price and full size CD players." HIGH FIDELITY APRIL 1990

For FREE product information write to: DENON Enquiries, Hayden Laboratories Ltd, Freepost, Chalfont St Peter, Bucks SL9 9BS or phone (0753) 888447

DENON
DESIGN INTEGRITY

consumer. People will be able to use their existing analogue cassettes on the new hardware. So there is a degree of backward compatibility. That is the key concept.

"For us, though, there are relatively small dangers in joining the party. DCC will most likely use chromium dioxide tape, so it fits well with our existing developments. DCC is digital, and that's a fashionable word. Personally, I am quite sceptical about DCC."

Philips gave BASF a demonstration of DCC hardware back in August, using chrome tape made by Philips' own factory. Andriessen is cagey about giving an opinion of the sound, on the strength of the one demonstration, but will say that his first impression was that it was "very impressive".

Whatever happens on DCC, BASF will "within the next six to twelve months" start making its own R-DAT cassettes.

Bernd Rothfuss clearly has even deeper reservations about DCC than Andriessen feels it politic to express: "We have no positive commitment yet. We have to ask, are the benefits meaningful to the consumer? Personally, I couldn't care less whether a source is analogue or digital as long as I cannot hear the difference. If the benefit of DCC is just that it is digital, then it is meaningless. If it does not provide something else, it will not succeed."

"But it is easy and not expensive for us to support



Still counting - a 'flagship' 14 preamp for Exposure Electronics.

DCC, and we like to support European innovations. This is a special case where we have good reason to have positive attitudes. But the consumer benefits are highly questionable."

PRODUCTS

Xmas taping

Fuji has launched video and audio tape promotions for the pre-Christmas season. One of the best offers is a free Cuddly Duddly dragon with every £9.99 triple pack of E180 video tapes, or £12.99 triple E240 tape packs. On the audio side Fuji is offering a mini-speaker for a personal stereo with every seven-pack of ferric DR-1x tapes at £6.99 or a ten pack for £7.99.

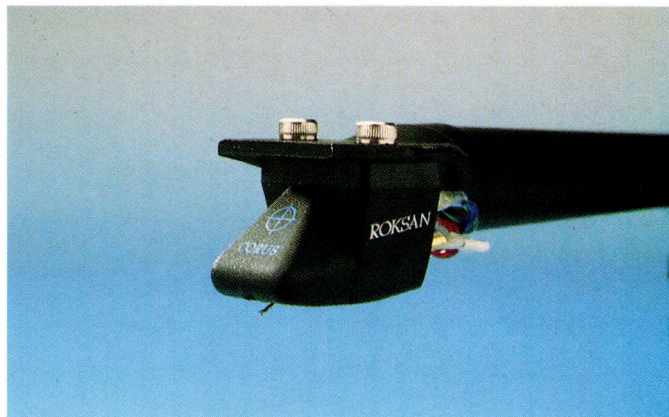
Exposure flagship

A flagship preamplifier from the Sussex specialist Exposure has been launched at a premium of £1,400. Dubbed *Exposure 14*, the preamp is designed to partner Exposure's 4DR power amps. Goodies include separate RIAA stages and regulators for MM and MC

cartridge inputs, dedicated and independently-powered buffer stages for two tape outputs, and separate circuitry for each channel. Outputs are phono sockets or Cannon connectors.

Dawn of a Corus

The turntable and loudspeaker manufacturer Roksan Engineering has



You can all join in: A new Corus from Roksan.

developed a moving magnet cartridge aimed at those of us without state of the art amplifiers. Recognising that the majority of amplifiers use moving magnet phono stages which are of considerably higher quality than their moving coil inputs, Roksan has made the *Corus*.

The cartridge is available in two forms - *Corus Blue* and *Corus Black* - taking account of its different quality but interchangeable styli. The *Blue* uses a Gyger III super fine line stylus and costs £60. At £100, the *Black* uses a Gyger II super fine line tip, which is the same as that used on Roksan's *Shiraz* (moving coil) cartridge.

Having interchangeable styli allows *Corus* users to upgrade from the *Blue* to the

Black - or indeed, in these hard times, to downgrade in similar fashion.

SHOW REPORT

Amsterdam Firato

The Dutch Firato show alternates every other year with the massive Berlin show and the pre-publicity suggested that this year the show would be one of Europe's major events. A Dutch show, of course, has to be a Philips showcase and Firato was no exception, the Philips hall being bigger than most UK shows!

As is becoming clearer every year, the appearance and styling of hi-fi is more and more important. For a couple of years now, the Japanese companies have been trying very hard to push titanium fascias as a

replacement for black and get a new sales cycle going. At Firato there were a lot of titanium fascias looking very handsome, but unfortunately there is no agreement on a standard shade. This totally defeats the object as you cannot mix 'n' match a light coloured Yamaha with a dark JVC in the same way that black components can be intermixed. Time will tell.

Philips failed to announce DCC (Digital Compact Cassette) on its home ground and instead showed its first DAT machine, the *DAT850*. Unusually, there was no indication that 'bitstream' processing was being used, which is rather strange as both Aiwa and Sony are selling 1-bit machines already. Aiwa and Denon



Two gifts in one: a free Cuddly Duddly (!) with Fuji tapes.



A NEW LOOK

Take a look at the look of the nineties. It's the new NSX-800

A NEW SOUND

Digital Dimension system. Sophistication beyond style, yet quite

A NEW FEEL

at home in any room interior. Essentially more compact, yet shaped to fit the new size of today's digital media. BBE Sound, Super T-Bass, and generous power output elicit music beyond ordinary limits, bringing forth every excitement and nuance. For only £549.99, open your listening space to the sound of the Digital Dimension.

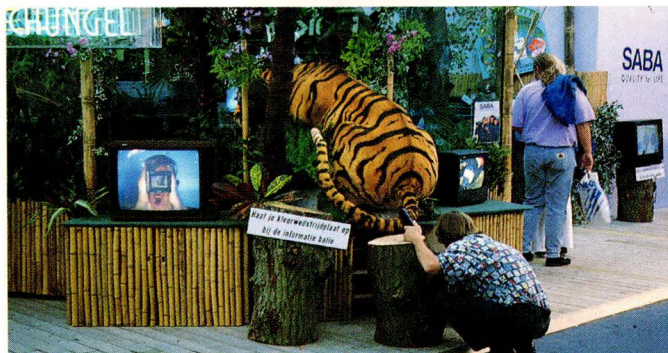
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AIWA[®]

were the only manufacturers at the show who had actually set retail prices, but almost everyone had a DAT prototype of some sort or the other. The most interesting prototype was the Kenwood DX7 mini-DAT. Not due until mid 1991, the basic machine is very cute and literally palm-sized, although extra battery and A/D modules have to be added to make a fully functioning unit. There was a fair amount of public interest in DAT, but the jury is still out on whether the format will grow far beyond the semi-pro and enthusiast markets.

The Panasonic stand filled an aircraft hanger sized hall and included a complete sealed off stage with a live blues band. Amongst the myriad midi, mini and normal sized components, a couple of items stood out, the most impressive being the new mini VHS C NV-S1E camcorder that automatically compensates for camera shake. There was something magical about seeing my unsteady hungover handheld shots appearing almost shake free on the screen. Couple this with a 'black box' that allows video programming over the phone and you have the ideal package for the disorganised videophile.



SABA stand at Amsterdam. Is that tiger remote controlled?

As a show special, Panasonic introduced the latest in mobile sound, a CD based system for mountain bikes! The prototype was fitted with a portable CD player clamped to the handlebars, hefty batteries and an amp under the crossbar, plus two five inch speakers in each wheel. (Imagine the phase effects as the wheels rotate!) If you find the twittering from walkthings irritating, watch out for this. Yes, I've already written to the Noise Abatement Society.

The most outstanding item at the show was a new Sony range of 'wireless' infra-red loudspeakers. Although the first models are for *Walkman* type usage, it is a certainty that at some point in the future we will all be able to 'throw off our cables', moving and changing loudspeakers at will. The SRS-IF series of battery powered active speakers

receive their audio signals from an infra-red transmitter connected to the line output of a signal source, and can be positioned anywhere in the same room as the transmitter. This technology has been seen before with IR headphones, but by using high power LEDs in the transmitter and very wide-angle sensitive receivers, Sony seems to have got around the bugbear of direct line-of-sight only usage. In the brightly lit demo area, the speakers would continue to work even with the receive elements covered by a hand. The transmitter costs around £100, the smaller 3watt speakers around £80 a pair and the larger 5watt ones approx £200. Unlimited pairs of speakers (and Sony IR headphones) can be used with one transmitter and this system will undoubtedly prove useful in many domestic, pro and AV applications.



Seen on the Philips stand: a Wurlitzer juke box with a CD heart. Rock on!



Throw off your cables: Sony's baby active speakers receive audio signal by infra-red.

In brief

The telephone number for retailer Doug Brady's Cheshire branch was printed incorrectly in a recently published advertisement. To clarify, the correct address is: Doug Brady Hi-Fi, Kingsway Studios, Kingsway North, Warrington, Cheshire. Tel: (0925) 828009.

The Bristol Hi-Fi Show is due to take place as usual at the fair city's Holiday Inn, over the middle weekend in February. There will be special offers for buyers at the show. Entrance costs £2.50 and the show opens at midday on Friday February 15 and runs all day on the Saturday and Sunday.

Definitive Audio has a new Cornish shop to join its existing branches in Brighton and Nottingham. The new branch is at St Day near Redruth and stocks the Audio By Design range of products including Voyd turntables, Audio Innovations amplifiers and Snell loudspeakers among others. Definitive Audio: (0726) 844039.

Thieves with a taste for good sound quality are reported to have stolen equipment from Audiokits in Borrowash, Derby. As well as eight Sonic Link amplifiers in various stages of completion, the light-fingered audiophiles made off with three reels of Sonic Link cable, a Logic Tempo turntable, Marantz 50SE CD player and Clearwater Export loudspeakers - sans grilles.

Elsewhere a Halloween 'prank' nearly led to disaster for Norman Audio when its new store in Blackpool was damaged by fire prior to its opening. The new store, at 216 Church Street, Blackpool was scheduled to open on November 10 - a date NA still hoped to meet.

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DSP-E300 DIGITAL SOUND FIELD PROCESSOR



“ Yamaha’s DSP Technology was hailed as the greatest single innovation in Hi-Fi since Stereo. Today, with products like the DSP-E300 Digital Sound Field Processor, Yamaha has created a stunning new ‘live music’ experience in home audio/visual entertainment. ”

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“ When Yamaha introduced the Astarte Series of Hi-Fi components featuring their revolutionary Active Servo Technology System, the ‘big sound, big speaker’ pundits were silenced. The new YST-C11 continues this revolution in music reproduction and adds a unique style to system and loudspeaker design. ”

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“ Ever the innovators in Hi-Fi design, Yamaha has created a range of stylish, compact stereo systems featuring Active Servo Technology. The YST-7 with its AM/FM Stereo Clock Radio and optional CDX-P7 portable CD player is designed to deliver remarkable sound anywhere in your home. ”

Yamaha Hi-Fi products are designed and manufactured to the very highest standards and represent the state-of-the-art in music reproduction. To ensure you derive the maximum enjoyment from your investment, we offer an exclusive, two-year guarantee on all our Hi-Fi products.

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MUSICAL EXPERIENCE

TWO-YEAR GUARANTEE)



AX-540 INTEGRATED STEREO AMPLIFIER



“ With their new rounded edge front panel design and alternative Black or Titanium finishes, Yamaha Hi-Fi System Components deliver superior sound quality in style. The AX-540 features High Dynamic Power, 85W/Channel output with CD Direct input capability. ”

TX-540 AM/FM STEREO TUNER



“ Yamaha Stereo Tuners have consistently achieved critical acclaim for their high sound quality. The TX-540 boasts many advanced features such as Yamaha's 'Alpha' circuitry for optimum channel selectivity. ”

KX-530 STEREO CASSETTE DECK



“ Yamaha Cassette Deck technology continues to produce superior machines that offer high sound quality and maximum value-for-money. The KX-530 is no exception, with its 3-Motor Stable Transport System, layer Amorphous Head and Dolby B/C & HxPro* circuitry. ”

CDX-530E HI-BIT COMPACT DISC PLAYER



“ Yamaha leads the world in Digital CD technology. The CDX-530E achieves superb sound quality at a budget price, yet boasts a wealth of advanced features normally only found on more expensive machines. ”

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Choice Sessions

Things we hear. . . This month, how Yamaha's AST system boosts bass output from small loudspeakers; even more bass output from a Cerwin Vega speaker the size of a typical fridge; go-anywhere sound with AR's self-powered Active Partners.



A domesticated alternative

Yamaha's AST system gives low end wallop with tiny speakers - but is it really any good? Jason Kennedy finds out.

Way back in Autumn 1989, Yamaha launched a system of amplifier/loudspeaker matching called Active Servo Technology, or AST for short. The technique involves using what would otherwise be the speaker's reflex port as a low frequency driver by powering it with an amplifier with a negative impedance output that's specifically tuned to the particular speaker. The result is hitherto unheard of bass extension from loudspeakers with very low internal volumes.

The inevitable snag is that both amplifier and speakers need to be Yamaha AST models. You can't mix 'n' match the components with other brands, each pair of speakers having a partnering 'cartridge' which is inserted into the amplifier in order to suitably modify its output. As a result, *Choice* hasn't been able to review Yamaha amplifiers or speakers in its technical reviews for the last year or so. You can't judge the performance of either component in isolation.

The AX-730 amplifier and YST-SF50 loudspeakers which I've been trying at home in recent weeks are part of the second

generation of AST products following the simpler AST-1 system which was a power amp and conventionally shaped loudspeaker combination. The unusual, even stylish, YST-SF50 speakers in this combo are fairly representative of the sort of weird variations in cabinet shape that AST allows; the funnel-like speakers produced to go with the *Astarte C10* midi system are another good example.

The AX-730 integrated amplifier costs £390 and has a full complement of knobs and switches, including a subsonic filter, muting, pre in/out sockets and loudness (which in this context is surely superfluous) to name but a few. The rear panel sports two sets of rather flimsy binding posts and a wide selection of phono sockets, in addition to the requisite slot for the loudspeaker matching 'cartridge'. The fascia is finished in a rather fetching brushed aluminium and perceived value is further enhanced by the amplifier's not insubstantial weight.

On the wall

The YST-SF50 loudspeakers are armed with four 3.5 inch mid/bass units and a plastic dome tweeter. They're a bit dearer than the amp at £430, which seems a lot, but they are rather stylish. Measuring 20 inches high and barely 3 inches deep, they represent something of a siting problem

for the hi-fi speaker oriented reviewer. The SF50s are designed to hang on the wall, a situation that without considerable effort would leave their leads trailing rather unglamorously beneath them. As

The 'heart' of Yamaha's AST system: plug-in cartridges tailor the amplifier's output to suit the speaker.

this was only a brief visit I wasn't too enthusiastic about making holes in my wall with mounting screws and so first fired them up sitting atop a sofa that was backed onto a wall. The

result was a rather bass-heavy balance which suggested off-wall siting would result in a more even response. Yamaha makes bolt-on pedestals which allow the SF50s to be floor or stand mounted without fear of toppling over, so the listening was carried out with these in place.

Bass weight

Having an earth loop problem with a rather esoteric (in context) turntable, listening was started off with the trusty Arcam *Alpha* CD player and one of the discs from Roger Waters' live-in-Berlin version of *The Wall*. Using the amp in its most 'fi mode, ie 'CD direct' and tone controls bypassed, resulted in a lively, almost 'gung-ho' sound with quite extraordinary bass weight for such insubstantial speakers. Although the combo sounds a tad crude compared to 'flatearth'-style alternatives, it works quite well with CD, producing a large if not particularly tactile soundstage and giving a remarkable impression of 'power', a result of its ability to plumb the sort of depths usually associated with medium-sized floorstanding speakers.

Results with the MM phono input (it has MC as well) were a bit less slick, uncovering a rather thick lower midband and somewhat synthetic tonal shading. Not exactly the sort of open window I'm used to, but then again these components represent a fraction of the cost of my 'reference' set-up. This Yamaha combo seems somewhat better suited to compact disc as its reproduction of that medium is less obviously coloured than with vinyl and its rolled-off extreme top end is well suited to the brash sounding players that

used to (and to an extent still do) abound.

At £820 it doesn't compete in hi-fi terms all that well - unless you must have small speakers and like plenty of bass. If you are CD ready, have space for what is a pretty chunky amplifier and use music in a slightly more relaxed fashion than sound quality 'victims' like most audiophiles, this combination and others in Yamaha's range of AST-equipped components could well be your cup of char.

Gross out!

The Cerwin Vega AT 100s are not considered to be true hi-fi in the conventional sense, but Roy Gregory can resist anything. . . except temptation.

"Shepherd's pie, which I love, with a bottle of ketchup, which I love. A great dollop of ketchup on shepherd's pie!"

- Albert Roux; chef et sauciere.

Every so often you have to give in to excess. It doesn't really matter whether it's a question of filling your face with fast

food or indulging in a more lasting extravagance, there's nothing quite like excess. It has an appeal all of its own. How often do Escort drivers wish their 1300L was an XR3i. Or, more pertinently, how often do Linn Kann owners wish they were listening to 'bariks! The need for more, be it bigger, faster or simply louder is one of life's universal frustrations.

Which brings us rather neatly to some of the larger Cerwin Vega loudspeakers, which embody excess and are the butt of more industry derision than CD. They've been banned at every hi-fi show they've attended (for producing anti-social sound pressure levels) and so entrenched is the animosity that surrounds its products, that Cerwin Vega has never offered them for review.

However, there are two sides to every coin. If the hi-fi establishment doesn't care for Cerwin Vega, then Cerwin Vega

The AX-730 integrated amplifier with YST-SF50 loudspeakers: just one in the series of AST-equipped combinations.

just plain doesn't care either. Why? Because the buying public just loves these speakers, and some of our more respected (or should that be canny?) dealers are selling them by the cartload.

So what's the secret? Fun. Forget the closest approach to the original sound, these babies communicate on an altogether different plane.

Let's take a look

I've been experiencing the sound of a pair of Cerwin Vega AT 100s, the largest in a range of conventionally shaped boxes. (The company does manufacture something called an AT 120, a huge column, but I chickened out.) The '100 is the same sort of size and shape as my fridge, and is a three-way floorstanding design with a rear firing port of a size more commonly associated with siege artillery. At £650 the pair, this is an awful lot of speaker for the money!

The cabinets respond to a knuckle rap with a wonderfully resonant gusto which suggests you'll get out rather more than



A brief introduction to our award-winning speakers.

Tradition has its place.

And our new **Series 3** loudspeakers are as true as ever to the Mordaunt-Short traditions of craftsmanship, care and quality.

But technology moves forward and in order to maintain another tradition – that of being in the forefront of loudspeaker design – we have had to make changes.

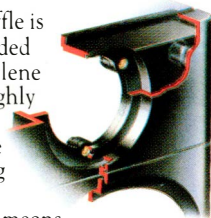
We spend a fortune on research.

And when our research tells us that there are a host of innovations which will make the sound from our **Series 3** loudspeakers the purest sound you'll ever want to hear, we must react accordingly.

THE BAFFLE, FOR INSTANCE

Traditionally, the loudspeaker baffle is made of wood with all its inherent problems of dimensional instability and construction limitations.

Our baffle is plastic moulded in polypropylene making it highly inert with considerable self-damping properties.



Which means we can add strengthening ribs and vary section thicknesses at strategic points, giving us a baffle which is both lighter and more rigid.

We can incorporate performance-enhancing geometrics not practicable with conventional woodworking techniques, we can design components for function, rather than manufacturing ease and then fit everything together with the sort



of tolerances that make accurate assembly a reality *every time*.

of the composite baffle is not being compromised.

NOT ONE, BUT TWO...

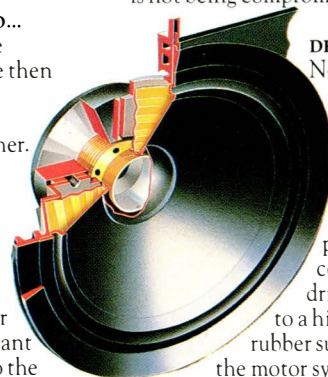
Having devised the polypropylene baffle, we then went one better.

Two baffles.

One behind the other.

One structural, one cosmetic, made of two different – yet each eminently appropriate – materials with a small air gap sandwiched between upper and lower baffles providing a resonant behaviour far superior to the conventional one-piece baffle.

The upper baffle has it cushy, its sole purpose being to look good, secure in the knowledge that the mechanical performance



DRIVERS...

No compromise either with our bass/mid unit. Each **Series 3** speaker features a polypropylene-coned bass driver matched to a high-hysteresis rubber surround with the motor system vented so as to minimise asymmetric pressure distortion. As you move up the range, so does the specification.

Which is true also of the aluminium dome tweeter. Its special suspension, braided voice-coil connections and ferrofluid

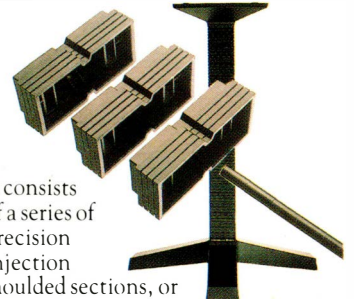
POSITEC PROTECTION

It's not new, but the POSITEC protection circuitry on all **Series 3** speakers safeguards, inaudibly, against drive equipment overload or malfunction.

cooling, whilst common to all speakers, are extremely uncommon in terms of performance and reliability with piston operation to beyond audibility enhancing the top end of the range.

IT'S A PEACH

The stand we've designed for the **Series 3** speakers is possibly the most innovative feature of all.



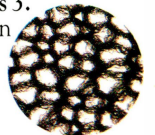
It consists of a series of precision injection moulded sections, or 'vertebrae', which slot together to give a readily adjustable height, providing a structure of which the rigidity and freedom from unwanted resonances is unparalleled by more conventional methods.

JUST ONE MORE THING

We haven't mentioned the grille.

Which has had as much care and invention accorded it as any feature of the **Series 3**.

It is a fine open weave mesh with no frame to cause diffraction, so it can be left in place (it arrives in position on your speaker) with no fear of reduced performance.



Or if you prefer, you can remove it.

The **Series 3** grille is designed rather like a hair net with elastic edges which fit snugly into a groove around the loudspeaker cabinet.

SO THERE YOU HAVE IT

Our new **Series 3** loudspeaker range. An award-winning combination of traditional standards and innovative technology.

Winner



What Hi-Fi? had this to say of the MS3.10 "...a build integrity and finish never seen in a speaker at this price."

WHAT HI-FI? AWARDS



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you put in, if you get my drift. On the recessed, offset and non mirror-imaged baffle (these guys really know how to upset hi-fi buffs!) you'll find level controls for the twin midrange drivers and tweeter, this latter being a particularly virulent horn loaded design. All of which leaves us with the bass driver to consider. Built on a cast aluminium frame, it's fully fifteen inches in diameter, with a heavily ribbed paper cone. Around the back is an equally massive magnet, but the most arresting thing about this driver is the rubber surround which mates the cone to the chassis. About an inch wide, it's bright, bright red! As far as styling goes, this is about as subtle as a pre-emptive strike.

Never have I seen a speaker which so wantonly disregards the Good Hi-Fi Guide Book, in this case sacrificing it to the twin idols of efficiency and bass extension. Whatever their failings, these speakers do go very loud and very, very deep.

Positioning the AT 100s is a doddle, mainly as a result of the excellent, straightforward and amusing 'destruction' manual. Far more important is positioning oneself! About central, slumped à la couch potato, beer in one hand, in-head entertainment in the other. In a world where the majority of musical output is produced with the limitations of medium wave radios in mind, I'm not sure that the closest approach to the original sound is all that relevant. What the Cerwin Vegas do is inject a healthy dose of wallop into the anaemic mix put

Cerwin Vegas: they go very, very loud. (Your neighbours will just love 'em!)

out by a lot of pop studios. As such, they're more concerned with the elemental than the intellectual. They communicate directly with your soul - by rattling it around inside your body.

The earth moves

How loud do they go? A quarter turn of the volume control on a Linx *Nebula* - just past 9 o'clock - had the entire room moving. Anything that wasn't tied down started to walk about. I reckon you could get reasonable output levels using a decent preamp - on its own! I shudder to think what's possible. The complete alienation of the neighbourhood I should imagine.

Listening to music on the big Cerwin Vegas is an overtly physical experience. No waiting for the emotional poignance of a finely wrought melody to move you - they just sort of 'shake' you in time to the beat. And what if the beat is less important than the melody? Realising that the majority of people who buy their speakers do so for listening to popular music, Cerwin Vega has divested its designs of the hi-fi necessities of low coloration, sound staging and tonal accuracy in favour of a more direct approach. Music (and hi-fi) is meant for enjoyment, and these speakers take that concept seriously, cutting right to the heart of the matter.

In the no-holds barred, never mind the quality, feel the width school of home entertainment, the Cerwins come on like

an eight lane blacktop. Whether it's synth bass from Black Box or Robocop's thudding tread, the sound comes out of the AT 100s in solid chunks. Female balladeers might suffer a little, but never mind, you make it up on the roundabouts. These speakers are state of the art for House Music.

For the dedicated audiophile, look on them as the ultimate party speaker. No more Tackhead transients arcing your beloved electrostatics - and who cares if people rest drinks on them? In fact, they're big enough for the buffet.

I'll never forget a hi-fi snob telling me that he wouldn't go to clubs because their sound systems are so bad. That's exactly the kind of person who won't get a buzz out of the Cerwin Vegas. If, on the other hand, you feel the occasional need to 'gross-out', I can't think of a better way than a pair of AT 100s. As for myself, when the big CVs and a decent bit of pop can't make me smile, I'll know that I've stopped listening to music and started listening to hi-fi. As the man in the song said: 'You've gotta say yes to another excess!'

A highland fling

Fulfilling a long-standing desire, the intrepid Stan Vincent treks to a remote Scottish isle, with a pair of Active Partners hidden in his rucksack.

Except for the unlucky few who are committed workaholics, most people look forward to their holidays. Let's face it, the



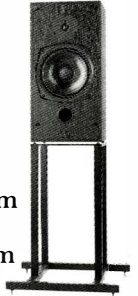
Our move into speakers may need some amplification.

Here is the very first Creek loudspeaker.

The 'Creeker'.

Or, to give it its full title, the CLS 20.

A 20 litre reflex cabinet finished in Black Ash, with 200mm bass driver and a 19mm textile soft dome tweeter.



And optional stand.

Very low on gimmicks. Very high on music. Very 'Creek'. Rather like our amplifiers.



Creek Audio Systems
Unit A1, Hazleton Industrial Park
Horndean, Hampshire PO8 9JU
Telephone: (0705) 597722
Fax: (0705) 598365

thought of putting up one's feet, basking in radiant sunshine and sipping limitless quantities of ice-cold beer holds appeal to all but the wettest of blankets.

As it turns out, I can live without the radiant sunshine on holiday, but what I always miss is having access to my favourite music — which, after all, is a healthy adjunct to relaxation. So, when planning my hols this year, after packing my walking boots, I went in search of sound reproduction gear that would combine portability with acceptable reproduction quality.

I had to do it the hard way, of course. The simple solution would have been to acquire a yuppie-blastor of the galactic battleship variety, toting pulsed lasers alongside its CD track selection controls. But that would have been far too easy. Having harboured a long-standing desire to investigate one of the Acoustic Research *Partners* range of speakers, I set my mind to acquiring a pair.

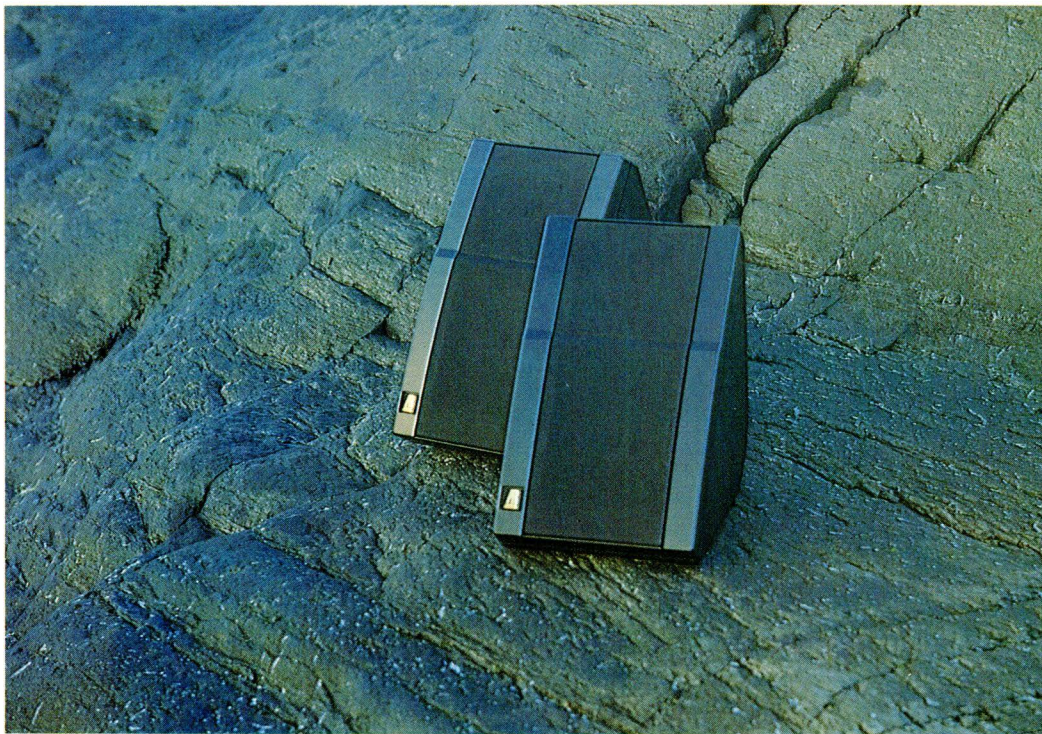
Going wild in the country

As fate would have it, my inquiry coincided with the addition of a new member to this family, dubbed the *AV 6 Active Partner*. This enclosure slots in below the *AV1 Powered Partner* and the *AV18 Rock Partner* in the UK product roster, at a price of £140.

Suitably impressed by serendipity, I set forth for the wilds of Scotland, safe in the knowledge that my musical appetite would not go unanswered.

The *Active Partners* share their siblings' characteristic wedge-shaped enclosure, fashioned from high-impact ABS plastic. A cloth grille — available in assorted colours — covers the long side of the *Partner's* trapezoid, which constitutes the front panel. A kink in this side divides the high frequency unit from the low.

The *Partners' 'active'* denomination of course means that they are self-powered — well, one of each pair is, at least — and though the amp is rated at just 12watts dynamic power output, high efficiency means that these little *Partners* put out maximum levels in excess of 104dB at 1 metre (when powered from AC mains). That was more than enough to blow the seagull nests out of the crofter's cottage where I took *mes vacances*.



AV6 Active Partners from Acoustic Research: take them anywhere you like!

Indeed, the crofter's cottage stood on an island to which there was a passenger ferry only, so I was certainly glad of each *Partner's* 5lb weight when I loaded them into the ferryman's boat. And even when installed either side of the cottage's rustic stone fireplace, the *Active Partners* were anything but obtrusive, standing less than 12in high.

Though the island's folk museum told graphic tales of former steam-powered slate-mining days, when not so much as a milliamp of electromotive force graced any of the inhabitant's dwellings, AC mains current was on tap throughout the whole of my stay. Not that the absence of such would have posed a problem for the Acoustic Research *Partners*, since they can be run from DC power of any level between nine and sixteen Volts. However, they're shipped with an AC transformer for domestic use.

Right on partner

Setting up the speakers is pretty simple, really — if your fingers aren't too large to manipulate the connectors tucked away on the rear panel of the left-channel speaker, and this panel, quite fairly, must be described as a tad fiddly. Signal input is taken through a stereo 3.5mm mini-jack, and the right channel's speaker signal output emerges through a small pair of press terminals. Thin stranded wire is provided for connection purposes.

Excepting the power input socket, the left speaker's rear panel is only otherwise distinguished by a press-button switch which adjusts sensitivity to accommodate differing signal sources.

Other than this switch, the *Active*

Partners have no level adjustment controls — in contrast to AR's more expensive *Powered Partners*. Signal level control comes from partnering source equipment.

As I elected not to cart my turntable, CD transport/decoder and preamp all the way to Scotland, my signal sources were a Sony *TC-D3* portable cassette recorder and a Denon *DCP-100* CD player, which are probably representative of most *Partner-users'* source equipment. And what could me more straightforward than using these portable components' headphone outputs? In practice, it was a technique that worked well.

Impressive scale

Indeed, I was pleasantly surprised by the impressive scale of sound produced by these dinky little boxes. The four-inch long-throw woofer and liquid-cooled two-inch cone tweeter give punchy, tight bass notes alloyed with refreshingly smooth, airy treble (half-power points are quoted at 60Hz and 20kHz respectively), giving an exciting but listenable edge to rock, and a pleasant though (occasionally) somewhat synthetic edge to orchestral music.

But who can be nitpicking among the rugged splendour of Scotland's West Coast? And for that matter, too much fault should not be found with a product that combines transduction and amplification in a miniature package of £140 cost.

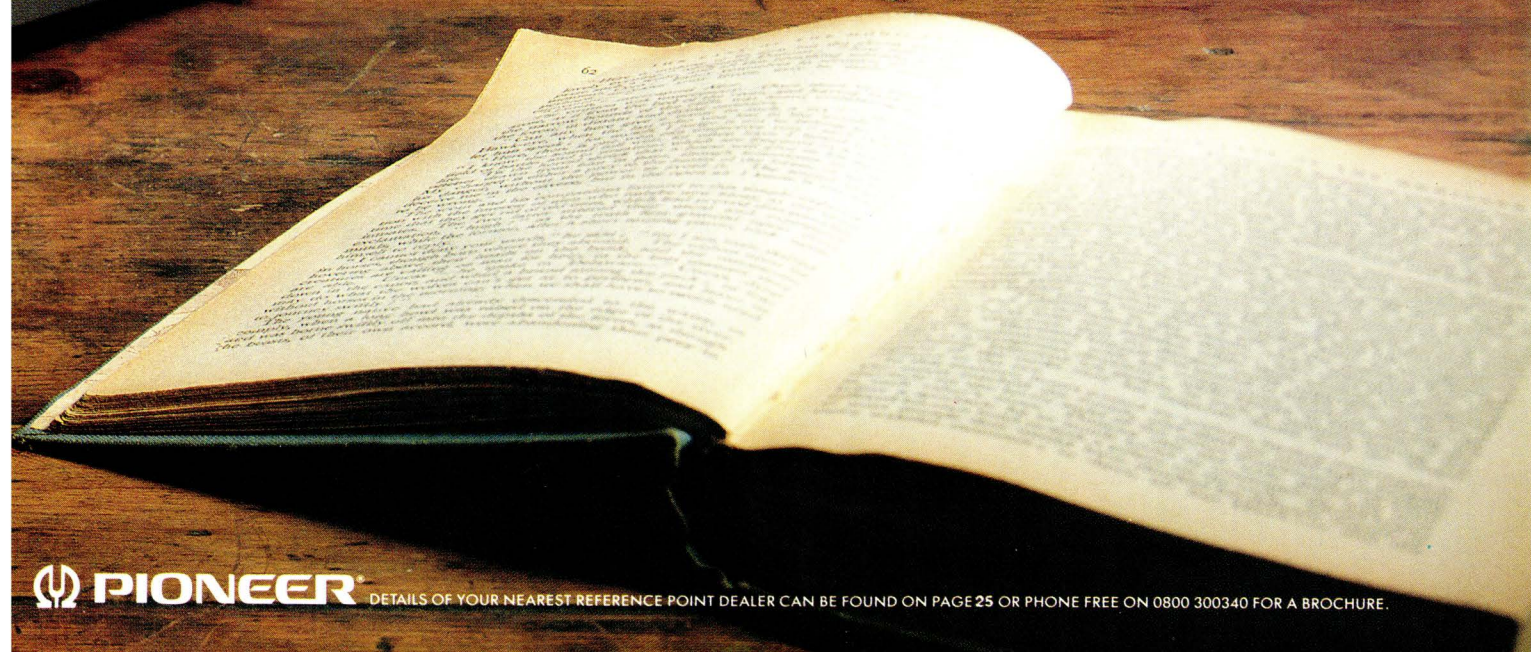
While the *Active Partners* were of obvious benefit to my holiday, they would be of equal value to someone in a small flat or bedsit, someone who already owns a personal CD or tape — but who can't afford either the space or budget consumption of any full-blown hi-fi system.



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“I’m not that technically minded, for example it still confuses me why the noise-shaping employs a feedback system within the intermediate stage of the PLM converter.”

(Level 42’s Mark King doing his level best to understand his Sony hi-fi separates.)

“It’s an ‘odd one that, I suppose since the first integrator receives ordinary feedback data along with data which passed the quantizer in the first stage, operation speed is increased and overload prevented. But, as I say, I’m not that technically minded.

Which is why I can only give the sketchiest outline of my new Sony separates.

I’ve grasped the basics of the TAF 420 in that it incorporates spontaneous twin drive – whereby the power supplies to both stages

of the power amp are kept separate to ensure there are no fluctuations in supply at either stage – and the use of super legato output transistors – selected to offer superior linearity and a reduction in switching noise and cross over distortion is essential to produce a clear sound.

And on the CD player an advanced digital to

analogue conversion process, and one bit converter improves ‘musicality’ as well as performance. That’s fairly simple stuff.

On the tuner there’s quartz synthesiser tuning, and on the tape, as well as Dolby B and C, there’s HX Pro and an MPX filter for FM recording.



And interestingly, in the speakers, Sony’s APM (Accurate Pistonic Motion) diaphragm means less of the ‘cavity’ effect which all speakers have to some extent.

Also, the acoustic specifications were developed by British ‘ears’.

Which only goes to show, as I’ve always said, if it sounds right you really don’t need to know any more.”

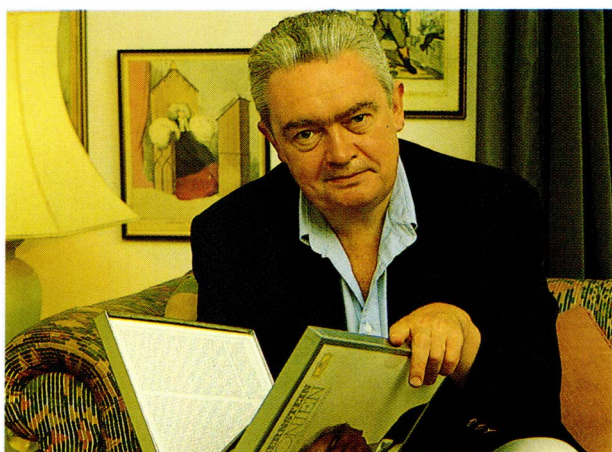
A handwritten signature in black ink, which appears to read "Mark King". The signature is written in a cursive, flowing style and is positioned below the text it is meant to sign.

SONY.

WHY COMPROMISE?

A record rare find

Hugh Scully is back on our screens this month with a new series of The Antiques Roadshow. Here he talks to Dan Houston about his record collection and hi-fi. Photographs by Colin Clarke.



violinists or pianists such as Jorge Bolet, or Andrei Gavrilov. And while I admire lots of popular artists such as Sinatra, I've always collected classical music. . . apart from when I had a French girlfriend who introduced me to the MJQ (Modern Jazz Quartet)."

He remembers how his love of music and the collection began; his first record was a 78rpm shellac disc of Rossini's *Thieving Magpie*: "I was 13 and I went to the cinema where the second feature was a cartoon with this music as the background. I had to buy it, and I used to play it on a wind-up gramophone."

The passion was consolidated with his first 'job' - spending a summer selling



It's not surprising to discover that veteran broadcaster and *Antiques Roadshow* anchorman Hugh Scully is a collector. Entering his Islington terrace house in London, one is greeted by a hallway walled with framed political cartoons from the early nineteenth century. Colourful caricatures satirically chart the lives of Queen Caroline, Napoleon, George IV, William Pitt, The Duke of Wellington and others.

The collection, amassed over a lifetime, continues in the knock-through lounge which is also his office. Here it's joined by a more limited but very rare series of marine charts - the first ever made by the Admiralty of the British Isles, and especially significant for the number of sailors' lives they undoubtedly saved in

the Eighteenth century. Hugh still counts sailing as a hobby, though practised more frequently during his days as a freelance broadcaster based in Devon, or when he worked for the BBC's *Nationwide* programme as the Plymouth correspondent.

Records everywhere

If the prints and charts are visually the most significant collections here, they are put in the shade when compared with Hugh's record collection. At around 10,000 in number, the sheaves of vinyl are too many for this room, and are kept all over the house. It's not a manic bonanza of bootsale bargains either. "I'm very selective," Hugh says, "I collect performances of classical music by certain

records at the HMV store in Oxford Street as a student. "There have always been well-informed sales staff there, and it was a wonderful job if you loved music," he remembers.

Kind of antiques

The early collection needed transcription and Hugh's first system after the wind-up gramophone was a Pye *Black Box*. "They're a kind of antique now," he says, "my first proper hi-fi system was bought in 1963 (he was twenty) and it was mostly Quad stuff."

He also began recording performances off air, using a Revox reel-to-reel tape recorder, and then braces of cassette decks

as soon as the compact cassette arrived in the late Sixties. His broadcast collection is almost as impressive as the vinyl mountain. He believes he owns around 5,000 tapes. It must surely be one of the most comprehensive catalogues of Radio Three's output during the last three decades. "I never record from LP records," he states, "I may have a few for the car but all these cassettes (flourish to knee-high stacks of C-90s at the back of the room) are off-air."


Seeing as he's interested in 'live

Hugh Scully says he can gauge a record's vintage by its smell. Here he sniffs at Bernstein on Beethoven.

performances', I imagined Hugh would be an avid concert-goer, but the collector's magpie instinct doesn't allow him to enjoy a night at the Proms fully. "One of the most frustrating things for me is going and hearing the perfect performance of one of the great works that I like, say Beethoven's *Choral Symphony*. If I hear it and I only hear it once and it disappears into the aether, then that for me is the ultimate frustration.

"With a painting I can look at it again and again; music disappears, but what I am interested in is preserving those performances. Given the choice between going to a concert at the Albert Hall and sitting in Islington with the option of





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recording it, I would opt to sit here. And frequently with modern hi-fi, the sound is better anyway."

His system contains no less than three cassette decks now: a Nakamichi BX1, Nakamichi BX2 and Denon DRM44HX. "I've always needed two cassette decks running to be able to stand by with deck number two when the cassette on the first deck runs out. But I also keep a third deck now, in case one goes down, which is very irritating. With all the decks I used to have a standby timer which I need to use when I am away. It's essential for me but a lot of decks now don't have a timer facility at all. That's a pity. Video machines all have a timer built in and I think cassette decks should have that too." Hugh is using a stand-alone timer of dubious vintage in this system.

He also bought a DAT player (Sony's DTC M100) during a trip to Japan. "I got it to record stuff off-air; there's nothing more annoying than a C90 running out three minutes before the end of a concert, and I've lost so many recordings by trying to flip over in the middle of a movement. So I needed something longer playing, and when digital audio tape came out with 120 minutes playing time it was the first time that I could record a whole opera with one tape, though I used to be able to do that with the Revox A77.

"Having said that, I bought it 18 months ago and it worked fine for a year, and then the heads clogged up. It was repaired but went wrong again - and the shop I had taken it to had gone bust by then."

A means to an end

Hugh's record player is a Linn Axis, and he uses a capable Marantz PM75 amplifier to power a pair of diminutive ProAc Super Tablettes. "The sound system is a means to an end," he qualifies, "it's probably not the most perfect sound system in the world but it suits me. . . and I like to keep my spending within reason." The ProAc speakers are a somewhat surprising choice; he used air-moving KEF 104s before. "I had had the KEFs for 15 years and loudspeaker technology has moved on a lot in that time," he says. "I was able to get a clear crystal sound out of a smaller enclosure and on a straight A/B comparison I preferred the ProAcs. I am

Hugh's hi-fi is housed in his record shelves. A penchant for tape means he keeps a DAT machine and three cassette decks at present.



delighted with them."

The Marantz amplifier was preferred to several British alternatives because it has a tone control. "I think amplifiers without tone controls must be designed by people who don't like music," Hugh contends. "The amp that is neutral assumes that recordings are neutral. Anyone who knows about recordings knows that isn't true, and I've never bought an amp without a tone control - which I use to roll off the hiss on some recordings."

Describing himself as 'a sucker for innovation', he also bought a Denon (DCD 1420) CD player. "I got a CD player when they first came out, but I must admit I don't go in for CDs much. With any system I have ever heard CD is not the panoply. The quality of sound and the fact that it is noise free is good but the presence isn't there; I'm sure it will be but it's not yet. It is particularly noticeable on piano recordings - you don't get the air and depth with them, they tend to sound more clangorous on CD."

With an impartiality the censors would be proud of, he points out later that not all CDs are as bad as all that. "Take this D Flat recording of Schubert's Piano Trio by the Stuttgart Piano trio, the sound is really

very good and it was only £3.99 in Woolworths."

Hugh volunteered the ego-massaging information that all his hi-fi had been bought using *Hi-Fi Choice* over the years. He even used the small booksize guides of the pre Issue 53 - or November 1987 - era. "I hadn't realised. . . but of course it's the same magazine. I found them very useful at sorting the sheep from the goats," he said.

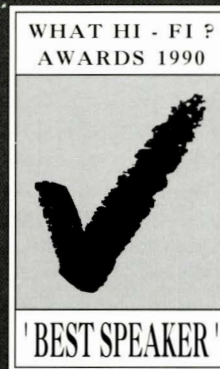
Easy control

The system was bought from several shops and Hugh mentioned Bartletts, who sold him the ProAcs among other items. It is housed in the record casing at the back of his room. Easy control is afforded by it being next to his desk and the loudspeakers are mounted on the window sill giving him optimum stereo at work.

The *Antiques Roadshow* only takes up 30 days of his year and he has recently founded his own film production company - Fine Arts Productions. "My expectation was that I would be making programmes about fine art but our first commission for Channel 4 is about the Falklands War. It'll be a series of four programmes marking the tenth anniversary of the war and will be

the Rest

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screened in 1992. We've been to the Falklands already and we're going to the States and Argentina. I'll continue to do the *Roadshow* as long as it's there but it's always wise to have a second string to your bow."

He says that he became involved with antiques purely by accident. "I was working for the BBC as a freelance broadcaster and a producer friend had visited my house and seen the cartoons and things like this Victorian button back chair. They needed someone to chair a programme called *Talking About Antiques* on Sundays for Radio Four. I said I didn't know anything about antiques but I've been doing it for over 20 years now. In the BBC you get pigeon-holed and I was only thought of as 'the guy who knows something about antiques'. It's a bit of a misnomer and untrue really, but it's been a delightful association."

Would modern hi-fi ever qualify for scrutiny at an *Antiques Roadshow* in the 21st century? "Well there are two things about antiques. One, they are aesthetically pleasing, but it's also the nostalgia thing, and that is one of the driving forces behind collecting antiques. That is why people collect old bottles or a win-up gramophone; they want to remember the past. I personally don't think Quad amplifiers will be the antiques of the future. They would only be part of it if they were part of the furniture. There are exceptions and something like the Michell Gyrodec might well be, if one had to single out anything."

Sniffing the vinyl

"But I do think people will continue to collect LP records. There is a smell when you take one out of its sleeve. It has an aroma of its own and is like uncorking a bottle of wine. It's more apparent with vinyl from the Sixties - if someone takes one of my old records out of its sleeve I would know its age with my eyes closed. That's not so obvious with new records; maybe it's because they are recycling vinyl now and it's not the virgin stuff."

"There is also a tactile, almost sensual pleasure when getting out a record. And the sleeve design is very important; the British record industry has been very good at that but some of the American sleeve designs are appalling. I've begun a

collection of record sleeves which are in the worst possible taste!"

Hugh goes off to root out one of his favourite examples of bad taste sleeve

Busts of Beethoven: Hugh has collected a 'handful' of records chosen especially for their sleeves in 'very bad taste'.

designs. He comes back with a copy of Daniel Barenboim's interpretation of Beethoven's *Third Concerto* with the Vienna State Opera Orchestra. The cover features a topless 'model' with early Seventies heavy eye make-up holding a couple of 'busts' of Ludwig himself strategically placed to cover her breasts. Sadly there isn't time to see the rest of this eclectic collection.

He says he's been collecting more records recently: "I've been buying a lot of records especially during the last year. It's partly because the imminent threat of the death of the LP is upon us and when it goes there are lots of performances which will never be heard again, because they are not commercially viable. I've been to quite a lot of closing down sales and whenever I'm abroad I always get out the map and pin point the best record shops in town. And when I'm presenting the *Roadshow* around Britain I often try to get to the local record shop after I've done the

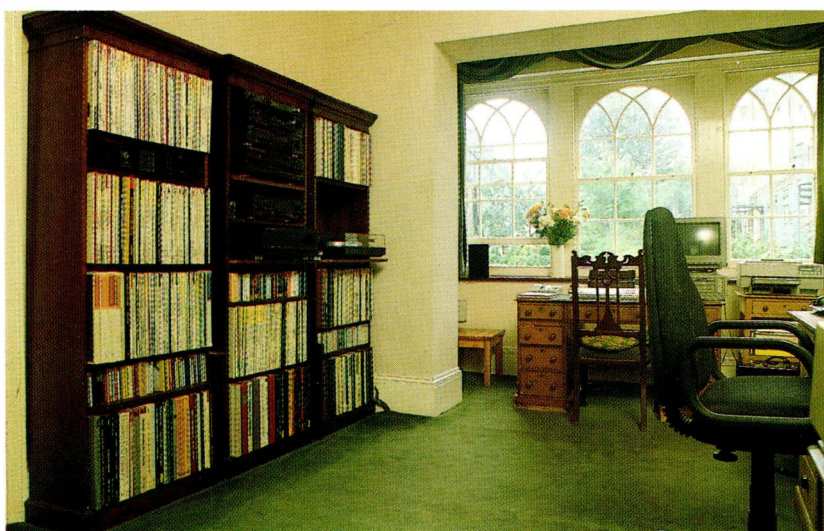


introduction which is a scene setter, but it doesn't give you much time! The best record shops are in London and when the Gramophone Exchange was in Wardour Street it was a Saturday afternoon paradise for many years."

Of course, much of that paradise would be lost if he didn't have a decent hi-fi system through which to hear all his records.

System:

Linn <i>Axis</i> record player	£435
Denon <i>DCD 1420</i> CD player	£400
Sony <i>DTC M100</i> DAT player	n/a
Nakamichi <i>BX1</i> cassette deck	n/a
Nakamichi <i>BX2</i> cassette deck	n/a
Denon <i>DRM44HX</i> cassette deck	£400
Technics <i>STG90L</i> tuner	£300
Marantz <i>PM75</i> amplifier	£500
ProAc <i>Super Tablette</i> loudspeakers	£345



The back half of the room is also Hugh's study. Records and tapes are easy to reach and the loudspeakers are ideally placed for the desk.

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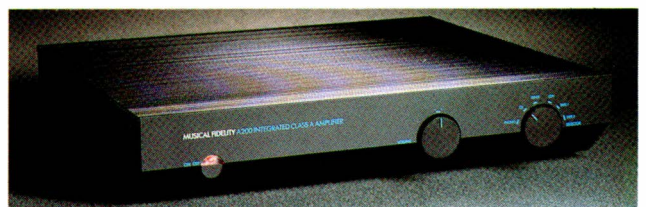
What Hi-Fi Magazine

grated amplifier is "the very essence of a good budget amplifier" and it won their "Best Budget Amplifier" Award in 1989. When word of this revolution reached distant shores, overseas hi-fi buyers flocked



to our door. When they heard the open and natural sound of its low feedback circuit, they rejoiced. Further cries of delight

greeted the matching T1 stereo tuner which, says High Fidelity Magazine, is "informative and involving to listen to." As is our A200 integrated amplifier, which delivers 60 watts per



channel. In fact, we make a wide range of hi-fi separates and loudspeakers that are sold around the world, especially in the Far East where they know a thing or two about hi-fi. Our hi-fi is also available in the UK. To hear it for yourself, simply make the short journey to a Musical Fidelity stockist. Where you will discover why *hearing is believing.*

MUSICAL FIDELITY

Statements

Monitoring what's happening on the high-end hi-fi scene. This month, modifications to the Townshend Excalibur tonearm, Dahlquist DQ-12 loudspeakers from the USA, and hands-on experience of Aiwa's dinky portable DAT recorder.

Astute observers of all things high-end no doubt will already have devoured *The Collection*, our fabulously glossy high-end annual which went on sale on November 23rd. (See our Back Issues listings on page 129 if you missed it and want to order one by post.) And eagle-eyed readers of said *Collection* may have spotted our up-to-date photograph of the Townshend *Rock Reference* turntable which these days sports a modification to its *Excalibur* arm's headshell. . .

Look: two hands

Using the analogy that you can hold a broom handle much more rigidly with two hands than with just one, designer Max Townshend has tweaked the outrigger-and-paddle arrangement which is an integral part of the *Excalibur* arm for the *Rock's* front end damping trough. The arm's extended headshell now sports a double outrigger for extra rigidity, bolted to the integral headshell and held atop via small spacers. This means that the vertical paddle, which is immersed in the damping trough, is now held more securely. And in a high quality system capable of resolving subtle improvements in source signals, this additional 'tweak' does make a

worthwhile improvement to image focus and 'solidity', giving an extra sense of stability which seems to take listeners just that little bit closer to the sound of the original master tape recording.



about it you have the option of new silver internal wiring (£75 extra) and, if you're going to the trouble and expense of improving the internal wiring, a further £25 enables the base of the arm to be terminated with phono sockets. This means that the standard 'Bamford Basement' listening room just a couple of days after this year's Heathrow Penta hi-fi show, while over here from his new factory base in Malta. He was delivering his latest creations for me to audition, the *Sir Galahad* loudspeakers which we pictured in our Penta show report (November issue). More on the 'awesome' *Sir Galahads* another time. Meanwhile, one thing we did try while setting up these 6ft tall beasts - something I hadn't A/B'd 'in anger' for at least a couple of years - was to listen to the *Rock Reference/Excalibur* combo with and without front end damping. To my ears the improvement in control and image specificity afforded by the trough arrangement is unmistakable!

To get back to the issue at hand, *Excalibur* arms are now manufactured with the double outrigger as standard issue. Owners of old *Excaliburs*, meanwhile, can quite easily have their arms updated - in more ways than one. Send your arm by registered post to Townshend's factory in Malta, together with a cheque for £120, and the headshell will be drilled to accommodate the extra outrigger and all fitted up. While you're

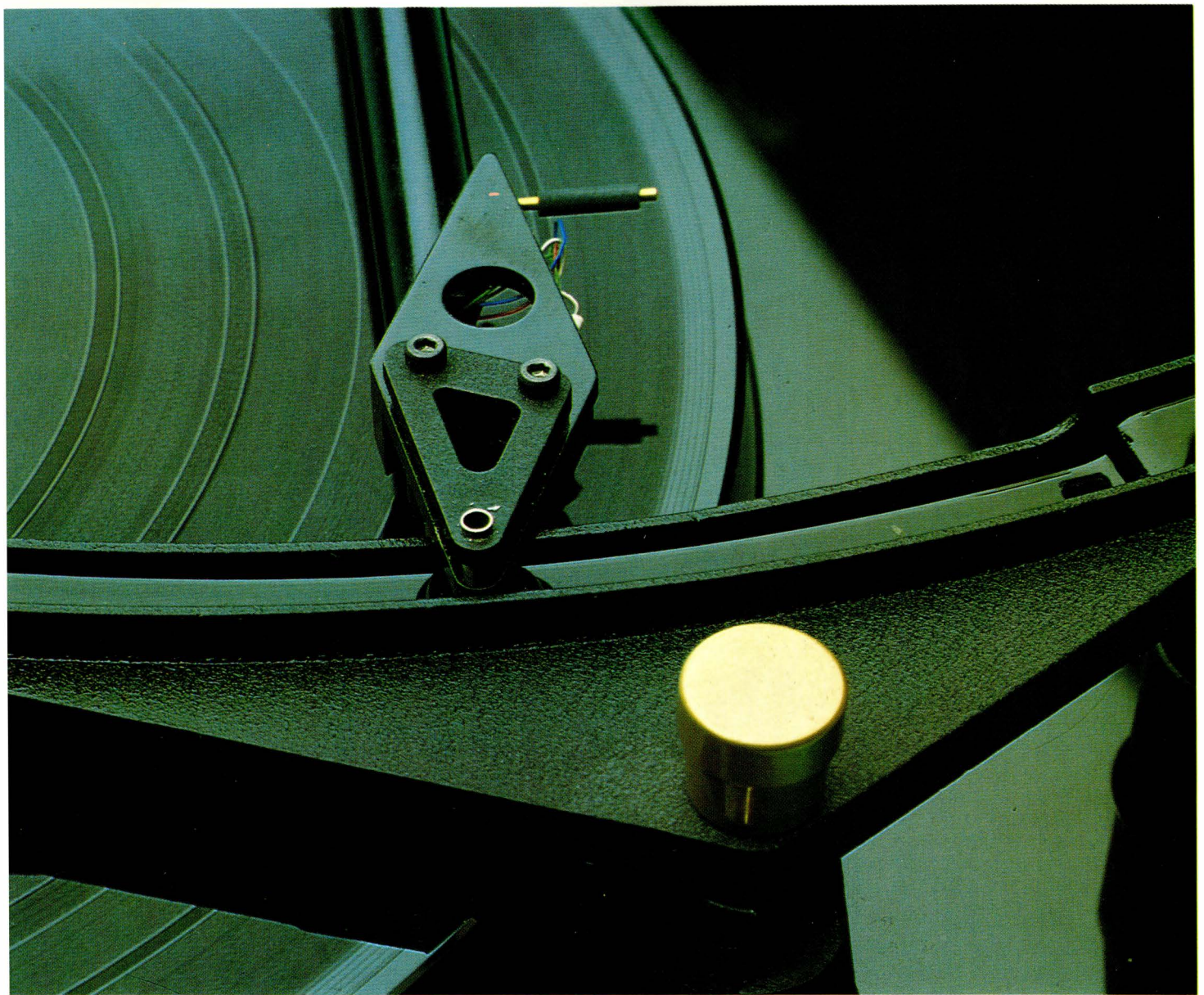
about it you have the option of new silver internal wiring (£75 extra) and, if you're going to the trouble and expense of improving the internal wiring, a further £25 enables the base of the arm to be terminated with phono sockets. This means that the standard



arm cable can be dispensed with, enabling you to experiment with high quality phono-to-phono interconnect cables between turntable and preamplifier. A nice touch. (Owners of Decca cartridges have a further option of having a special reinforced mounting for the pick-up, priced £15. You'll need to send the cartridge with the arm.)

For use on all Rocks

These modifications, by the way, are applicable to all *Excalibur* arms, whether you use a *Rock Reference* or just a basic *Rock*. I can't vouch for the silver arm wiring - I've not had the opportunity to make any A/B comparisons - but the extra stability of the double outrigger will prove worthwhile with either turntable. I like the thought of being able to improve signal transmission through to the preamplifier, so may well have to get my cheque book out to have the re-wiring treatment together with phono output socket termination. As Townshend is not unaware of the consequences of the withdrawal symptoms one suffers when



unable to play records, the company will endeavour to provide a factory turn around of just a couple of days. You're at the mercy of the postal service, of course, so to speed things up you may consider it worthwhile to spend an extra few pounds on sending your arm by Datapost. That way you shouldn't be without music for more than (say) ten days.

A final note for owners of 'standard' *Rocks* with or without *Excaliburs*. A common upgrade not generally publicised by Townshend has been to replace the metal armboard with one cut from acrylic. The company is now making these generally available, with spacers if required, for £25.

Townshend International, Unit BT22, Bulebal Industrial Estate, Zejtun, Malta. Tel: 010 356 772387. Fax: 010 356 778428.

John Bamford

DAT has had its share of problems in the past, but it has a few things going for it too; not least the fact that it is

Townshend's Excalibur arm now features a more rigid 'double outrigger'.

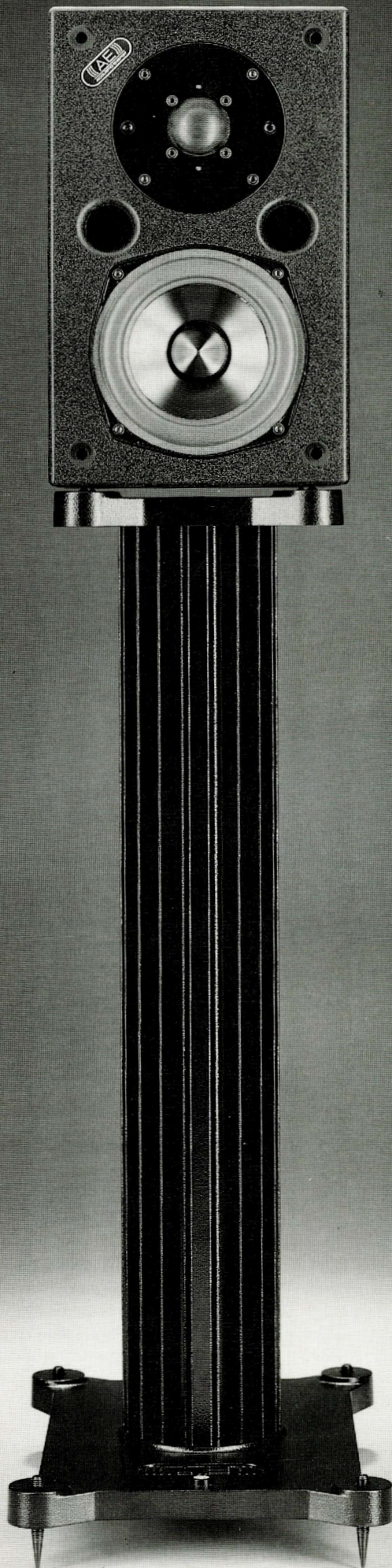
the mother and father of all gadgets. As one of *the* great gadget freaks - a post I have held since I built my first crystal radio (remember radio?) - a pocketable battery powered DAT recorder scarcely larger than a good personal cassette could have been designed with yours truly in mind. Naturally, when this little Aiwa DAT recorder turned up for a hands-on, my eyes nearly popped out. Yowee!

If the Aiwa isn't the first portable DAT with SCMS, I don't know who beat them to the punch. In case you've been out for a year or so, SCMS stands for Serial Copy Management System, a circuit that facilitates recording in the digital domain, which in principle means without any generation loss when recording from digital sources such as compact disc. But SCMS acts as gamekeeper as well as poacher; it won't allow digital copies (as opposed to original digital recordings) to be dubbed digitally, though no such bar is made in the case of analogue recordings.

OK, that's enough about SCMS for now except to note, *en passant*, that SCMS explicitly allows digital recordings, that is it will accept a digital feed and record it onto tape without further processing, where the early domestic players, which were never available in any quantity, didn't. This makes the Aiwa (and any other SCMS-equipped DAT recorder for that matter) an extremely powerful tool when teamed with a CD player which has a coaxial (electrical) digital output socket.

Weights and measures

The Aiwa itself is supplied in two boxes which screw together when they are both needed. The main box, which measures 95 x 38.1 x 146.4mm (yes millimetres!) and weighs 610g all in, is a complete 'bitstream' DAT player with a headphone socket analogue output. It is also a recorder capable of recording digitally only. The second little box, which screws on the back of the main unit, adding about 50mm and 100g to the main package, is a MASH powered A-to-D converter which will typically be needed when the Aiwa is



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used for live recording purposes with microphones. This unit also has a line level analogue output.

Both units are powered by internal rechargeable batteries, and under most conditions of use you'll be able to record for a little under an hour on a charge, or play tapes for as much as two hours. Recharging takes about two hours also, but the Aiwa machine can be powered from the mains whilst it is being recharged (a universal power adaptor that can be used with universal plug adaptors is supplied), at the expense of a somewhat protracted recharging cycle.

Any limitations?

The Aiwa doesn't do quite everything. It has no long play capability for example, even on playback, though the specifications supplied suggest that it can record and play tapes using the 32kHz sampling frequency that in this country is normally associated only with LP mode. One consequence is that maximum continuous record durations are restricted to two hours - unlikely to prove much of a hardship, even to Wagner freaks.

Other restrictions are less important. As with all DATs, the Aiwa records time code and track start IDs when tracks begin, which facilitates rapid searches. The Aiwa also allows IDs to be erased or renumbered, for example after a tape has been edited. But there are none of the more esoteric subcode ID facilities found elsewhere, such as the jolly sounding Skip ID.

Optional extras

You do get a remote control though, or rather, what Aiwa describes as a remote control. It is a tiny wired unit which addresses a number of the more important transport functions and also contains its own headphone socket which makes up for the dual purpose socket lost to the remote control on the main recorder itself. Apart from the ID editing keys, there's nothing here to cause dismay or confusion, except perhaps the single, dual function digital in/output socket, and the near invisibility of more than a few of the controls for which well sharpened nails will be required.

The display, by contrast, is a remarkably generous design with a particularly good record level meter. The Aiwa also comes with a well designed ever ready case. Aiwa supplied the *HD-S1* with two accessories which your Aiwa



The irresistible Aiwa HD-S1 portable DAT recorder: eminently practical.

dealer will certainly be all too happy to supply at extra cost. One is a single point stereo electret microphone called the *CM-S1*, which sounded rather like other low cost mics of this type: clear but rather edgy and coloured, especially at higher frequencies. The other accessory is a pair of high grade in-ear 'phones called the *HP-D9*. These are now the top of the range, and are of fine quality, though not quite as natural sounding as their predecessors, the *HP-V99*.

A hi-fi cassette deck

It is perfectly fair to describe the Aiwa as a high fidelity recorder if cassette decks can be labelled similarly. It equals or betters any extant cassette deck in such diverse areas as pitch stability, response linearity, lack of modulation noise or the other subtle shortcomings that mark tape as being less than real. But the Aiwa has shortcomings of its own, possibly associated with the necessarily tightly packed circuit and diminutive power supplies. There is room for disagreement about the cause, but not so for the effect, which is that despite a tremendous feeling of dynamic and spatial freedom in the sound, the *HD-S1* doesn't have the low down resolution of the best domestic DAT or CD players (I've just been playing with some stand-alone DAT recorders from Sony and JVC), and it isn't capable of the same sense of scale or of solidity. There is also a distinctly 'electronic' tinge to the sound, but this was harder to pin down, and wasn't a consistent problem.

To have expected more than this from a package so small, however, would have been absurd. Realistically, the *HD-S1* is a state-of-the-art true portable, with

awkward but manageable controls, and in many ways it makes an ideal personal stereo in a way that CD will never begin to emulate. If there's a down side to the cult of the gadget, it's that there's always something better just around the corner.

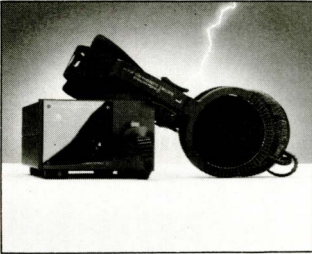
Mention the Aiwa to Sony for example, and its people will tell you all about their brand new DAT portable, how it's even smaller, how it has LP mode as well as SP for a maximum four hours of uninterrupted recording instead of two, and more besides. But you can't actually buy a Sony, at least not yet. The Aiwa is available right now, it's practical, and it works. Given that it is amongst the first units of its type, there are surprisingly few rough edges, and the *HD-S1* is an eminently practical recorder which many will perhaps see as a kind of pocket Nakamichi. Irresistible.

Alvin Gold

Dahlquist is a name familiar to those who've been following the wonderful world of hi-fi for the last decade or so. It's an American brand which first saw the light of day back in 1973 due to the efforts of Saul Marantz (designer of such classics as the legendary Marantz 10B tuner) and Jon Dahlquist. The brand's main technological hook, then and now, is what the company calls the phased array concept. This incorporates time alignment of the drive units and the tailored diffraction effects of the cabinet.

The most striking thing about Dahlquist loudspeakers is their appearance, a factor which apparently caused something of a rumpus when they

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1989



ATH 910



were first distributed in the UK. Because of the large flat grille cloth-covered frame that sits in front of and above the speaker's two baffles, people initially assumed they must be electrostatics. Presumably half tone (black and white pictures) printing in magazines wasn't all that hot in those days, as the transparency of the grille and the cage on the back of the *DQ-12* reveals the true shape of the beast. Possibly the original *DQ-10* was less revealing.

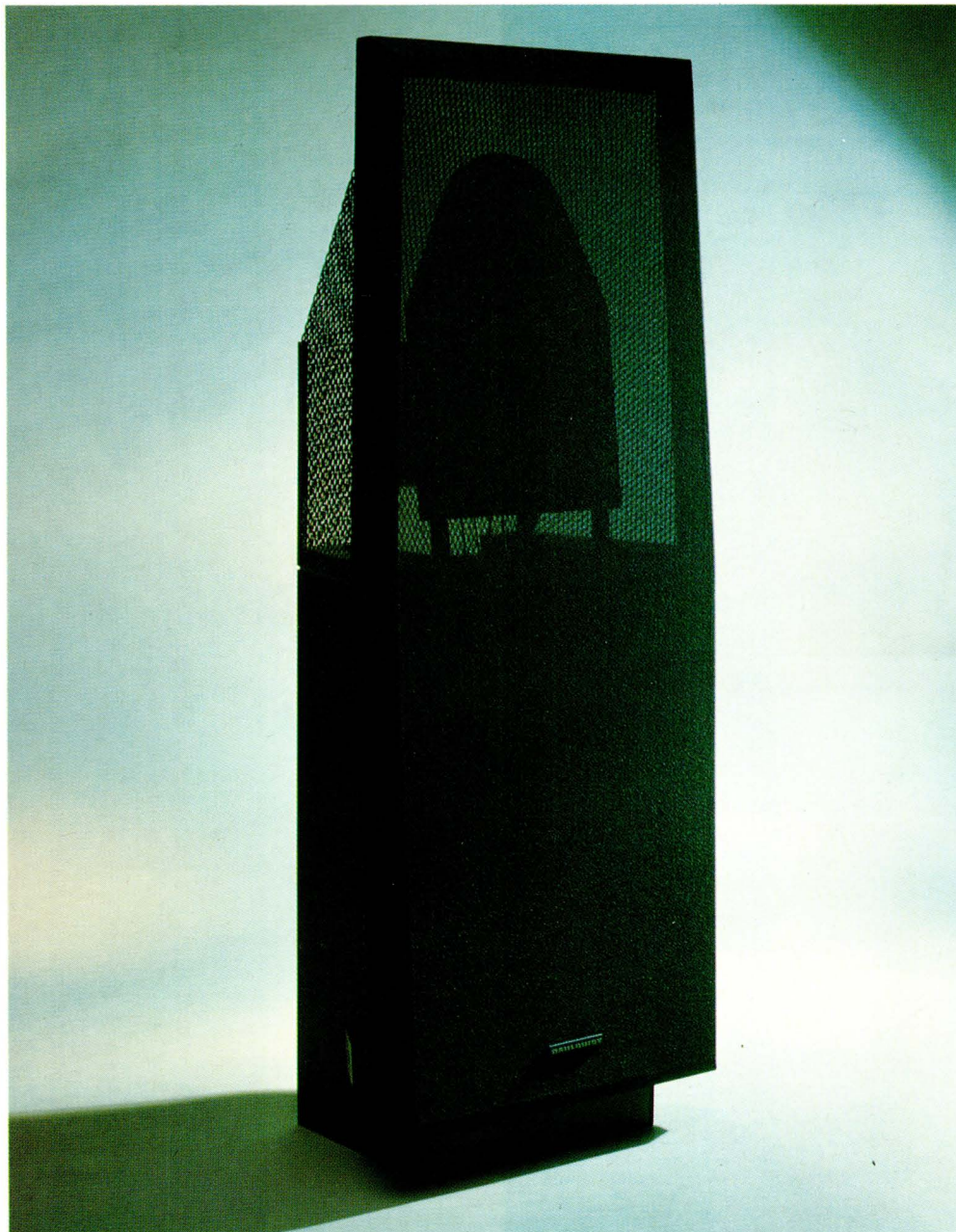
Aperiodic loading

What we have with the *DQ-12* is fairly small infinite baffle bass cabinet (54.5 x 27.3 x 20.3cm) supporting a small open baffle to which the mid and high frequency units are attached, the whole being covered by a cloth covered frame that extends the speaker's height to over a metre. The midrange unit has a form of enclosure which Dahlquist calls 'aperiodic loading', consisting of a damped dual concentric cylinder which is said to give "the focus and impact of an enclosed system" without losing the advantages of dipole mounting. The tweeter is a true dipole in as much as it's mounted on an open baffle with a damping ring to reduce diffraction from the mounting plate.

As well as bi-wire oriented terminals, the *DQ-12* has two fuses, one each for bass and mid/hf units which will presumably stop the over enthusiastic blowing drivers with 'turbo' amplifiers. And that's pretty well what you need to drive them; with a sensitivity of 86dB and an impedance that drops to 5ohm, you won't get far with a 12watt valve amplifier - as I found out. The result was a magnificently open and revealing mid and top but a rather recessed bottom end. Experimentation showed that a tube amp rated at 20watts - or 40watts of tranny power - was necessary to achieve an even balance.

Transparent to source

I tried a couple of tube amps and the power amp section of a Yamaha *AX-730* which happened to be around at the time. The results were almost entirely reflective of those amplifiers, the better valve amp creating an open and detailed soundstage which excelled with female vocals and in resolution of low level information. Tonally the *DQ-12* has the naturalness of



The American Dahlquist DQ-12 loudspeaker: no, it's not an electrostatic.

a Snell with perhaps a hint more transparency, which, as regular readers will know, is saying something. Bass extension, on the other hand, is relatively limited for the price, £1,300 buying you the sort of welly offered by a £750 Snell *III* (although the latter requires a £300 stand to give of its best).

The *DQ-12* has a relatively small bass cabinet. However, it is possible to boost LF output with near wall siting. But I found this compromised openness and image depth - and if your amplifier is adequate to the task, bass output should be quite sufficient with the speakers a couple of feet from the rear wall.

One thing that Michael Akutter (the distributor) mentioned is that bi-wiring is something of a must with these Dahlquist loudspeakers, and I have to concur. The extra length of cable made the *DQ-12* more realistic and natural to an extent not encountered before. So, whatever

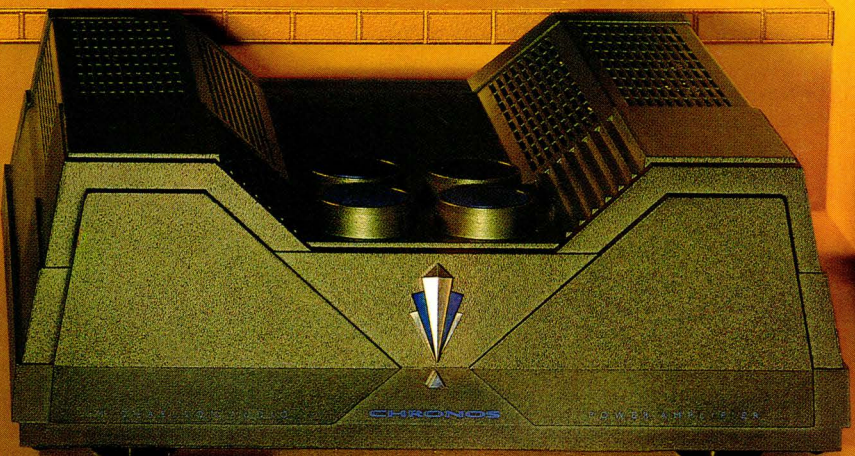
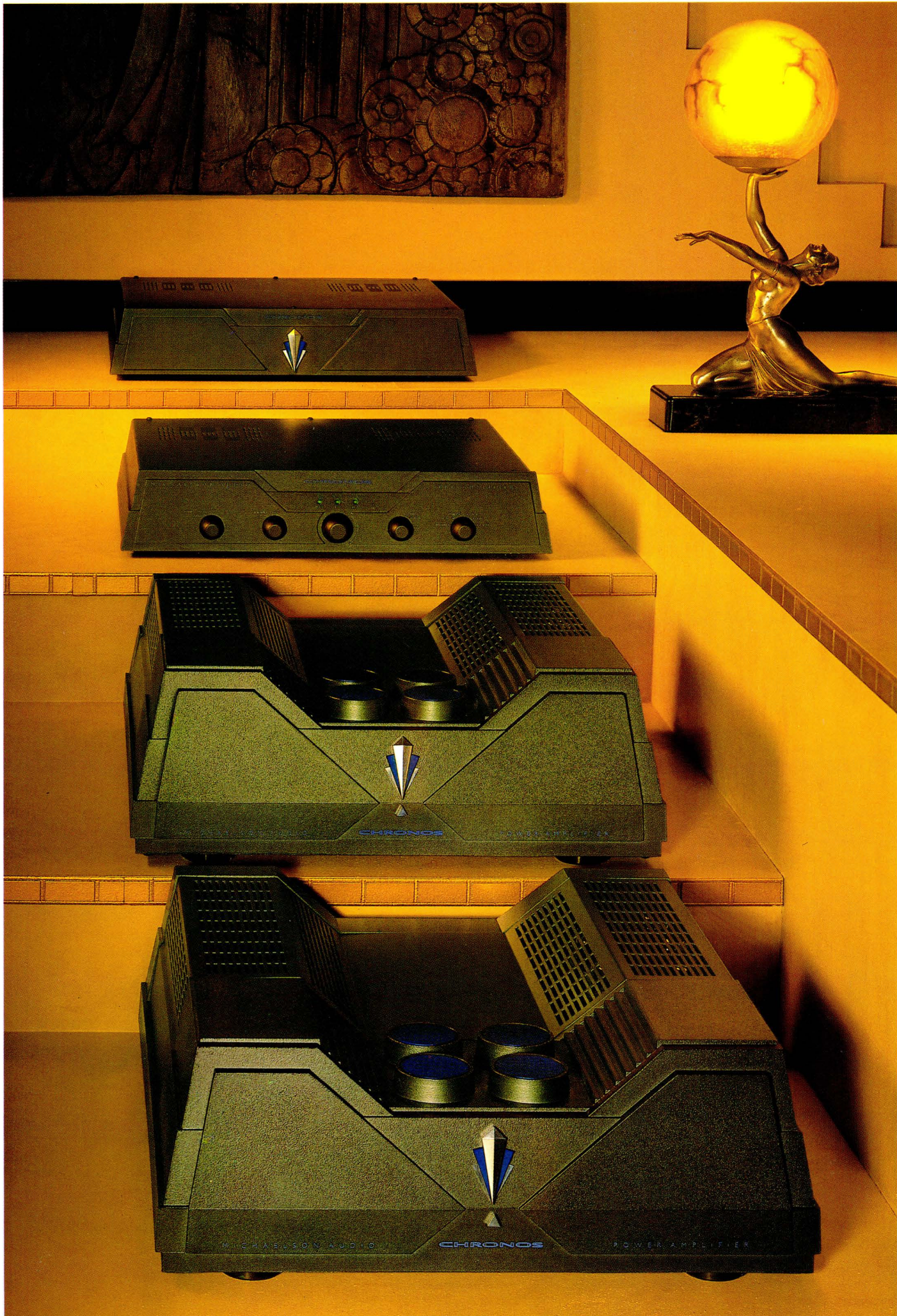
wire you use, double it up.

Extracting information

Despite this speaker's relative complexity - the phased array, fuses and large scale grille frame - it manages to transduce quite an extraordinary amount of information and present it in a tactile fashion when teamed with the right system. It's not the sort of speaker that you can throw on to the end of any old system, as it needs a fair amount of smooth, clean power and it won't treat bright sources very kindly. Having high-end style resolution requires high-end style partnering equipment, but if you've got some of that, the *DQ-12*s are well worth a listen.

For more information speak to Michael Akutter at The Sound Image Stage. Tel: (081) 866 2865.

Jason Kennedy



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Win £2,000 worth of Rotel hi-fi

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How To Enter

Our simple hi-fi quiz requires six answers which must be written on the entry form provided. Fill in the form, remembering to include your name and address and send it to the address shown in bold type at the bottom of the form. Mark your envelope **Rotel Competition**.

The Prizes

The first correct entry drawn from our mailbag after the closing date will win a Rotel Concept 2 CD system (£1,070), comprising RCD-865 CD player, RD-865 cassette deck, RTC-850L tuner/preamp and RB-870BX power amp. The second correct entry will win an RCD-865 CD player and an RA-840BX4 integrated amp worth £550. The £440 third prize is an RCD-855 CD player together with an RA-820BX4 integrated amp.

The Questions

Please write your answers in the space provided on the entry form.

1. Which premier Belfast dealer sponsored the Northern Ireland hi-fi show?
2. JPW has produced a *Plus* version of one of its more popular models. What is that model called?
3. Which expensive German loudspeakers does Barrie use in his fish restaurant?
4. At the Penta before last, Yamaha launched a system for tailoring its amplifiers to its loudspeakers. What is this system called?
5. Which brand of American amplifiers does Gamepath import and distribute in the UK?
6. In which country are Dali loudspeakers manufactured?



Entry Form

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Closing date: Monday, 11th February, 1991

Your answers:

- 1.....
- 2.....
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- 1) All entries must be on the entry forms provided. Photocopies will not be accepted. Incomplete forms will not be considered.
- 2) There is no cash or other alternative to the prizes.
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- 6) The winners will be notified by post and the results will be published in *Hi-Fi Choice*.

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David Clark—*Audio Magazine*

Ensemble

BY HENRY KLOSS

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Ensemble consists of four speaker units. Two compact low-frequency speakers reproduce the deep bass, while two small satellite units reproduce the rest of the music, making it possible to reproduce just the right amount of energy in each part of the musical range without turning your listening room into a stereo showroom.

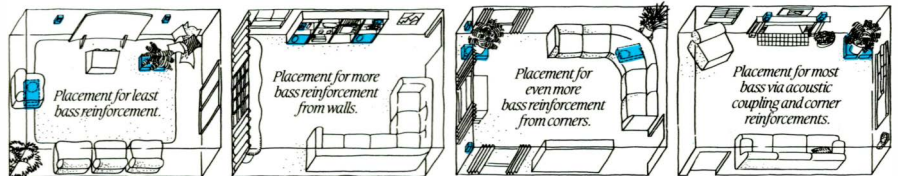


Introductory Price £299

Your listening room works *with* Ensemble, not against it.

No matter how well a speaker performs, at home the listening room takes over. If you put a conventional speaker where the room can help the low bass, it may hinder the upper ranges, or vice-versa. Ensemble, on the other hand, *takes advantage* of your room's acoustics. The ear can't tell where bass comes from, which is why Ensemble's bass units can be tucked out of the way—on the floor, atop bookshelves, or under furni-

ture. The satellites can be hung directly on the wall, or placed on windowsills or shelves. No bulky speaker boxes dominate your living space, yet Ensemble reproduces the deep bass that *no* mini speakers can.



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Not all the differences are as obvious as our *two* subwoofers.

Unlike seemingly similar systems, Ensemble uses premium quality components for maximum power handling, individual crossovers that allow several wiring options and cabinets ruggedly constructed for proper acoustic performance. We even gold-plate all the connectors to prevent corrosion.

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At only £299—complete with all hardware and 100' of speaker cable, —Ensemble is *the* value on today's speaker market. America's *Esquire* magazine describes them by saying, "You get a month to play with the speakers before you either return them or keep them. But you'll keep them." *Stereo Review* said "It's hard to imagine going wrong with Ensemble." For literature, reviews or to order, write us at the address in the coupon, or call 0 800 622 862.*

“We Know Of No Small Speaker That Surpasses The Overall Sound Of Ambiance.” —*Stereo Review*

Ambiance

BY HENRY KLOSS

Ambiance is an ultra-compact speaker that proves high performance, small size and low cost need not be mutually exclusive. Ambiance is ideal for bedrooms, studies...or for use as an extension speaker or in surround sound systems. While no speaker of its size can provide the same low bass as our Ensemble and Model Eleven systems, Ambiance has more output in the

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Ambiance is an ultra-compact speaker that proves high performance, small size and low cost need not be mutually exclusive.

"You get a month to play with the speakers before you have to either return them or keep them. But you'll keep them."
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Inc. Magazine

"Henry Kloss brought Dolby sound, CrO, cassette tape, and large-screen projection television into living rooms, and made the dominant speakers systems of three decades. Acoustic Research in the 1950's, KLH in the '60s, and Advent in the '70s. Now he's at it again at Cambridge SoundWorks, selling direct to the public."

"Very much in the Henry Kloss tradition... another hi-fi milestone."



"They were designed to play music—and make it sound like music. This they do very well, in a most unobtrusive way, at a bargain price... it's hard to imagine going wrong with Ensemble?"
Stereo Review

MODEL ELEVEN

BY HENRY KLOSS

Cambridge SoundWorks' Model Eleven is the world's first *transportable* full-range, high performance component system. It consists of a powerful 3-channel amplifier and two "satellite" mid/high-frequency speakers—all packed in a rugged "BassCase"™ that, when empty, serves as the system's subwoofer. Model Eleven's performance, when coupled with your portable CD or tape player, * rivals that of the most expensive component systems. And because we market it directly from our factory, it costs hundreds less than it would in stores.



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- Delivers the full range of music.
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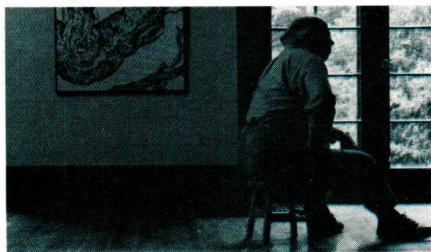
sound virtually identical to our acclaimed *Ensemble*® speaker system.

Model Eleven can be used virtually anywhere in the world—115- or 230-volt, 50 or 60 Hz AC or 12-volts DC. Because the entire system fits under an airline seat—or can be checked as baggage—you can take it just about anywhere. But Model Eleven's sound is so good, so "big," you may want to keep it home. It's an ideal second (or first) music system for a study, bedroom or kitchen. At £499 we don't know of any combination of components near its price* (transportable or not) that approaches its sound quality.



The drivers used in Model Eleven's two-way satellite speakers are no-compromise, high-performance components—just like you'd expect to find in the finest home speaker systems.

work *with* a room's acoustics for optimum performance. Remove the satellite speakers, amplifier and your portable CD player from BassCase. Place the satellites where they create a musical "stage" near ear level. Put the BassCase where it reinforces low frequency output—on the floor, even behind furniture. The result is musically accurate



Henry Kloss created the dominant speaker models of the '50s (AR), '60s (KLH) and '70s (Advent)—as well as our highly acclaimed Ensemble and Ambiance™ speakers. While packing a stereo system into a suitcase before a holiday, he realized that an amplifier, a CD player and two small speakers take up the same space required for an acoustic suspension woofer to reproduce really deep bass. That was the inspiration for BassCase. Model Eleven's bass speaker enclosure which doubles as the entire system's carrying case.

Performance that rivals the best home component systems.

Until now portable music systems were, at best, a compromise. Even the most expensive ones lack the deep bass necessary for full, natural sound. But Model Eleven delivers the all-out performance previously found only in high quality home component systems. Its three speakers are designed to

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Three course hi-fi

They're cooking up something fishy in Bournemouth, and as usual

Hi-Fi Choice was there to spot the hi-fi angle.

By Dan Houston with photographs by Chris Richardson.

Having visited Hugh Scully, we're now onto something more scaly. This *Focus* feature looks at what happens when a couple of fish restaurateurs aim for no compromises when it comes to entertaining their customers.

The journey took us to Bournemouth, to Barrie's Seafood Restaurant on the coast road going west out of the town towards Poole. The restaurant is run by two partners, Barrie 'The Fish' Thomas and Guy Pound, both of whom may be recognised by readers of *Choice*. Barrie was 'the fishmonger' on BBC 2's *The Fish Course* series a couple of years ago, and Guy was one of the first audiophiles visited for the *Aspirations* feature (Cello Under Sail - Issue 54).

Designer fish

An architect by profession, Guy had previously been involved with the casino restaurant at the Royal Bath Hotel. Both he and Barrie had wanted to start a high class fish restaurant for several years; they opened this place in October 1989. Guy designed the interior, and claims that it is the only purpose built and designed fish restaurant in the country. "There are no carpets, no curtains, no cloth anywhere. Even the table cloths are made of paper, which, although it looks like linen, can be thrown away at the end of a sitting. Fish smells can get into materials like that and I don't care what you say, but carpet also

carries disease. If you have 2,000 people coming through your doors in a year they will bring some dirt in on their shoes; hygiene is especially important for us."

The restaurant is therefore tiled, both on the floor and up to waist level around the walls. Large mirrors hang around the walls creating a sense of having more space, while the tables, hanging plants and revolving fans preserve an intimate atmosphere. During the summer, when

the restaurant had only been open nine months, an extension jutting out onto the pavement was added, increasing the seating to 74.

Fresh alligator

It's no fish and chip shop fare either; glancing at the list of starters on 'Tonight's Specials', I saw that you could kick off with £60 worth of Beluga caviare. The menu also includes the likes of fresh



Well 'eeled restaurant: Guy and Barrie sport fishy waistcoats at their 'plaiçe'.



The only purpose-built fish restaurant in the UK? The hi-fi has been installed to be purposefully discreet as well.

Florida alligator and fish from the Seychelles.

Barrie is a bluff West Midlander who also runs a local fishmonger's - Barrie the Fish - and boasts: "If it swims, I'll sell it." He has seen his industry change dramatically since he first started 30 years ago. "The delivery system is so sophisticated now that it's all done on the end of a telephone on a link system," he told me. "We can get fresh fish from all over the world - all flown in. I don't get

enough local fish, it's mostly plaice or lemon sole. So I phone around the UK to get the species I want." After a day at his shop, which starts at seven am, he gets to the restaurant by six-thirty in the evening. "I work an average 18 hours a day," he said, "I'm not known as anything else but Barrie the Fish."

The hi-fi connection

The decor and excellent cuisine (their chef is from The Boulestin in Covent Garden)

provide the foundation for a pleasant atmosphere at the restaurant, but the partners also wanted to be able to host cabaret nights, and to provide their customers with a kind of restaurant-theatre experience. Photographs on the walls make for pictorial name-dropping, both of the minor 'celebs' who have performed here and of the major 'celebs' who have supped here. "When Des O'Connor was in Bournemouth he came and ate here every night," Barrie told me

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with earnest pride.

The partners had decided that rather than have artists arriving and having to set up bulky PA equipment, they themselves should install a system which would provide background music for regular nights (it's a dinner-only restaurant) and which would also double-up as a system capable of being used for various cabaret applications.

More importantly they wanted a superb sound, and with Guy's connections in the hi-fi industry (he is now a partner in a local hi-fi shop), opted for hi-fi components rather than a 'professional' or public address system.

Music to their ears

"Most performers are used to bringing their own sound systems when they arrive; they are not used to having something decent to use at venues," Barrie explained. "But when they come here, all they have to do is plug in and they're away. There's nothing worse than artists turning up and unpacking loads of equipment while you're trying to get people through their meal. Our customers would start thinking: 'This is a bit naff!'"

"And music is very important in a restaurant. It's like having a really good cup of coffee after your meal. I think it's as important as the food that is being cooked. What can be worse than eating a nice meal but being stuck under a speaker chucking out a horrible noise? So many restaurants and pubs spoil it by not having a decent sound system; they'll use something like an ugly great stack of equipment which just sounds tinny and has no warmth. But why spoil the ship for a hap'orth of tar?"

Why indeed? Probably because not many restaurateurs are in the position of being able to shell out around £7,000 on something which is often perceived as an extra. *Hi-Fi Choice* readers aside, if you stopped people in the street and asked them how much money they should spend to get superb sound from a hi-fi system you would collect a series of dismally inadequate sums. Most restaurants and pubs suffer from poor installations for the same reason; the management usually doesn't have a clue about what can be achieved with modern equipment. ... and costs 'sound' according to purely



White wine (of course) is laid above the CD player and occasional TV at the bar.

pecuniary values.

In this restaurant, Guy wanted a superb sound system from the first stages of planning, and built its costs into the budget (though whether £7,000 can be described as 'a hap'orth of tar' in this project is a point worthy of mooting).

The installation

The system was installed by Chris Coakes, Guy's other partner at The Audio Shop, in Westbourne. The brief was to provide a system which would cover all the areas of the restaurant, with high quality balanced sound. Aesthetics were also important and cabling had to be hidden from view.

Diners are serenaded by four Audioplan *Kontrapunkt* loudspeakers, mounted high on the walls around the restaurant. The cabinets are mounted on (barely visible) unipivot brackets with ball and socket joints allowing them to be

altered directionally. The speakers offer excellent sound qualities, including stunning bass for their size - which makes them physically unobtrusive. Being properly mounted they deliver superb coverage to all the tables and there weren't any blind spots that I could find. Outside, a pair of Revox *Piccolo* speakers are also hung on brackets bringing coverage to the diners seated there. All the loudspeakers are finished in white in keeping with the decor. The only drawback with the system, and it is insurmountable in this case, is that stereo imaging is lost with the number of loudspeakers used. But there again, stereo imagery isn't required by 70-odd people tucking into their piscatorial delights. The benefit of using speakers like these is in their dynamic delivery and power handling.

The only obvious part of the system is



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a Philips CD multi-player, installed in a rack by the bar. This machine holds up to six discs at a time and will give random or sequential play all evening. Barrie explained that a cassette deck had been installed at first but this had been taken away as being a bulky extra they could do without. The rack also holds a small Amstrad VCR and television. Above these a small Yamaha mixer preamplifies the signal to a brace of Quad power amplifiers concealed in the roof space above the bar. "We chose the Quad 606s because they're a real workhorse amplifier," said Chris. "They need to be on seven nights a week and so build quality and reliability are very important. I wouldn't recommend them for all applications but they're ideal for here." The Quads power all six loudspeakers with Vecteur cable, run along the picture rails to the loudspeakers.

Wired for sound

The raised dais is in a corner of the restaurant facing in. It is wired with three sockets for a microphone or other equipment and the restaurant has an Audio Technica radio mic with a tie pin attachment as an alternative to the mics with cables. The radio mic's receiver is also hidden from view, next to the amplifiers. The radio microphone was necessary according to Barrie: "Where do you see that in restaurants? You don't, but the singers here use it fully, it means

they can go around the tables."

One of the more natty features of this system is a Yamaha effects box hooked onto the mixer (above the bar). The effects box, known as *R100*, delivers varying levels of reverberation to introduce a 'live sound' feel in the restaurant. Aficionados of Yamaha's prowess with effects will know that the company pioneered surround sound effects with the *DSP1* - the domestic version similar to this. Cabaret artists can key in the effect they want to

Speaker's corner and minor patron stars (above). Below: performer's perspective.

create so that the system gives diners the feeling of sitting in a much larger hall (or even a cathedral).

In fact the whole point of installing this system was to create a strong effect, in the cause of treating eaters to a sound quality the likes of which they had never heard in a restaurant before. It's been achieved by applying hi-fi principles and equipment to an unusual setting and by not cutting corners such as wiring with sub-standard cable.

And if being fully booked in advance for a series of cabaret evenings featuring Roger de Courcey and Nookie bear is anything to go by, then both cause and effect are enjoying success.



The System:

Philips CDC486 multi-disc CD player	£230
Yamaha AM602 Mixer	£200
Yamaha R100 processor	£150
Quad 606 power amplifiers (each)	£569
Audioplan Kontrapunkt speakers	£699
Revox Piccolo speakers	£198
Audio Technica ATW1031 radio mic system	£1099
Vecteur CV30 cable	£4.95/m
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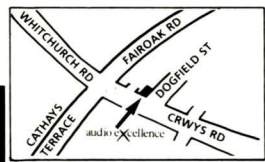
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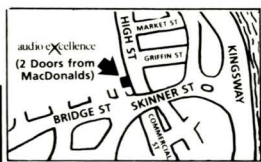
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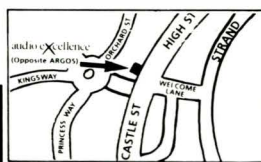
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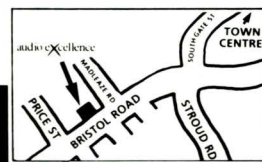
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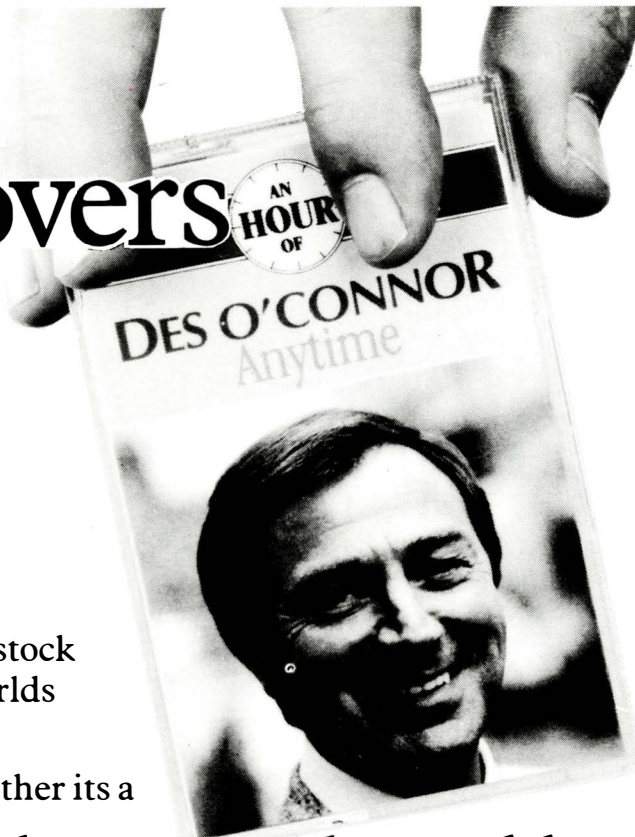
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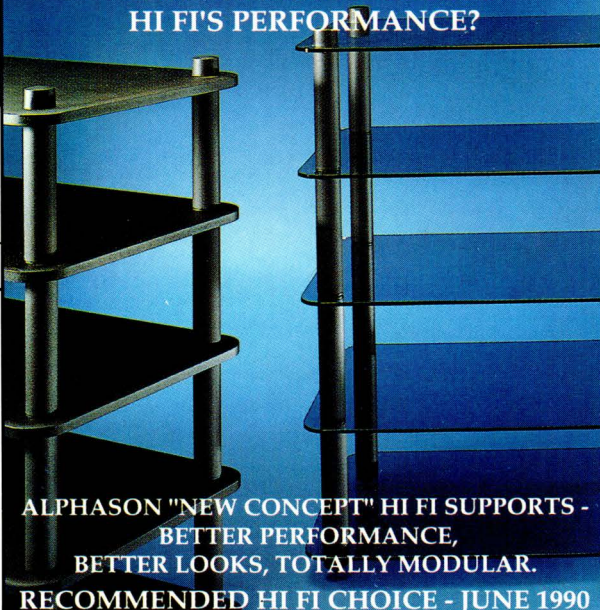
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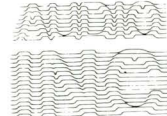
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Readers Write

CHOICE ANSWERS

Free Roksan Isoda interconnect

As something of an incentive for the literary giants amongst you, *Choice* will be giving away a 1m pair of Roksan Isoda interconnects to the writer of the best letter each month. The cables, worth £60, are the same as the ones Paul Miller reviewed for us in the supplement that was free with issue 83 when it was called *Isoda Electric HC-05*. Roksan has since changed the cable's name but not its novel hybrid construction, so its sound quality is still as "pleasantly lively and fluid" as ever. Interested? Well put those quills to parchment and get scribbling!

A bigger budget

A friend of mine is interested in buying a top notch system. Her budget extends to £7,000 on account of having just sold her house.

So far our not so short list contains the Linn Sondek/Ekos/Troika turntable with Naim 32.5/HI-CAP/250 amplification, or possibly Deltec DSP-50S/DPA-50S instead, and Isobariks.

The equipment will probably be sited on Target wall shelves and we were thinking of using Kimber 4TC cables. The room is 15 x 14ft and musical preferences are

for classical and pop/rock.

We would appreciate any help, but aren't entirely confident about the choice of amps, speakers and cables. Steven Smurthwaite, Acomb, York.

Before you, or should I say your friend, takes the plunge, we would strongly advise you to listen to a couple of alternative systems. The Linn is a good turntable, but you'd be surprised how much better some of the other players on the market sound. The Voyd and the Rock Reference specifically, are quite significantly more accurate and informative to our ears.

We would suggest you try and audition both of these options in the context of appropriate systems, the Rock with an Excalibur arm, something like Kelvin Labs amps and Glastonbury speakers. And the Voyd with a Helius arm, Audio Innovations amps and Snell loudspeakers. These two combos are tried and tested set-ups with the same sort of synergy afforded by Linn/Naim systems, but a lot more information extracting ability. And thus a potentially far higher entertainment factor.

But don't take our word for it - find a dealer who stocks the stuff and listen for yourself. Ring Audio Innovations (0273) 203277 and D.P. High Fidelity (0270) 211091 for details of your nearest dealers.

Win some free Roksan Isoda interconnect. All you have to do is write us a brilliant letter which has something to do with hi-fi.



Digital contemplation and other problems

I was contemplating buying a CD player, until I heard one! It's true what they say, I found the sound clean and clear, but very uninvolved. Each instrument sounded detached and out on a limb from the others.

I now want to improve on my existing record system, which consists of a Dual 505-1/A&R E77 deck, Yamaha A-300 amp and KEF Coda III speakers.

The system sounds awful at times. Vocals and high notes sound gritty, and the

original Ortofon cartridge was no better. I've tried fine tuning the deck with the Elite gauge but to no avail.

What's wrong? Is my system incompatible, and if I were to upgrade one part of it what would you suggest?

By the way I listen to the likes of Hendrix, Velvets, Yes and classical music. D. Lantain, Abingdon, Oxfordshire.

To be honest we don't really know why the top end on your system sounds so unappealing. The cartridge was considered quite rich when we reviewed it and it's reasonably compatible with the arm. The amp and speaker combination would tend to emphasise any brightness in the source, but the original review doesn't suggest that this is the case with the 505 (it does, however, suggest upgrading the mat). So, either you're particularly susceptible to the degree of HF distortion that, although subtle, will be apparent to the keen-eared with a system like this (especially at higher volumes), or, there's something wrong with one of the components.

It's the sort of thing that a dealer could help you sort out if you explained the situation and maybe took the whole lot round to his dem room and inserted alternative components until the right results are achieved.

If you were to ask how the system could be most effectively upgraded with a single purchase

The LP12 is a good deck in many respects, but you should compare it to players like the Voyd (pictured here) before parting with your cash.



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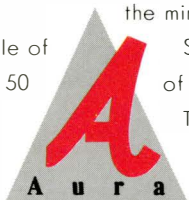
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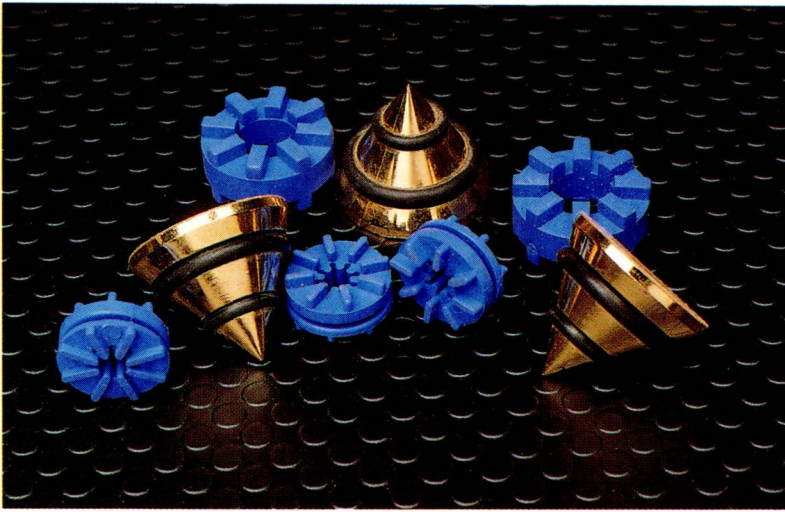
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Spikes or damping - just what is the best way to isolate your components? Sometime Choice contributor David Foxon adds his tuppence worth below.

we'd suggest a new turntable such as the Systemdek 1 or IIX if the budget stretched that far.

A formidable system!

In the last four months I have put together a system which, in theory at least, should sound quite formidable. And indeed it does have several pleasing qualities, but it doesn't quite live up to expectations.

It consists of the following components: Mission PCM II CD player connected to Cyrus 2/PSX amplification with van den Hul MCD102 III interconnect, which in turn drives a pair of Tannoy M15 loudspeakers via Linn K20 speaker cable. The Tannoys sit on Target stands, and a Nakamichi CR2-E along with the other components are supported by a Sound Organisation table.

The system's dominant characteristic is an attention to detail, upper range clarity and an overall cleanness of sound. I opted for the Mission CD player after auditioning it along with models from Cambridge and Marantz in the same price range, primarily because of the PSX direct link facility as well as its overall attention to detail.

However, the system lacks panache, particularly at the lower end. And, as I listen to rock and jazz most of the time, I find the lack of bass extension increasingly frustrating.

Is there a simple remedy that doesn't necessitate changing any of the principle components, or have I unwittingly assembled a system whose principle characteristic is this rather

clean and mundane 'reliability'. Would a change in speakers help? Tomi Pauk, The Leys School, Cambridge.

We suspect that your assessment of the situation is correct and that the only way to affect a really worthwhile sonic improvement would be to replace the speakers with something that, to use that old Messengerism, 'boogies'. Some fine examples of this genre, that have better than average bass extension, are the Wharfedale 505.2 - £180, and Mission Cyrus 781 - £250 from the stand supportable camp and the JBL LX33 - £259 floorstander. Any of these will add the panache you are after and retain, (probably even improve on) the detail revealing capabilities of the M15s.

Other tweaks that are worth trying include supporting the disc player on Sorbothane or V-damp feet and filling the stand with something heavy. Oh, and don't forget to Blacktak the speakers thereon.

Alternative approaches

Your piece on alternative CD player support devices reminded me of a few discoveries I made with the aid of IAR (International Audio Review) that explain some of your findings.

I think there are fundamental differences between the isolation problems of turntables and electronics (CD players in particular). The Linn/Sound Organisation table combination evolved because the turntable was more sensitive to low frequency vibration than mid or high frequencies, so a table with

quite a high resonant frequency was complementary. CD players (and other electronics) are very sensitive to midrange and HF vibration, which is why things like V-damp feet help with standard tables.

Cones are really designed to drain energy into a physical earth - that is to say something massive and non-resonant - Micromega recommends a 1.25" marble slab, which is what I've used under my turntable for some time. But I find the best compromise is that used by Micromega and Goldmund - a physical star earth. This involves using damping feet plus one critically positioned cone - the trick is finding the best position for the mechanical earth. With my deck it's just under the tonearm base.

David Foxon, Marston, Oxfordshire.

The wonder of vinyl

I currently own a Michell Synchro/Moth/AT-F5

turntable, Sony TA-F630ESD amp bi-wired with QED Flat 200 to Mission Cyrus 781 loudspeakers on matching stands.

I bought the amp with CD playback in mind, but having been converted to the wonder of vinyl, I find the sound a bit too cold and uninvolving. Could I cure this by purchasing a minimalist pre/power combination, using the 630 as an outboard DAC? Or could I get the Sony tweaked?

My goal is for the music to fill the room and to tug at my emotions! Nick Phillimore, Durrington, Salisbury.

The best amps for emotion tugging and room filling are those that employ pentode valves, affordable versions of which are manufactured by Croft and Art Audio in pre/power form and Audio Innovations in integrated Series 500 form. Our considerable experience of the latter (£800 or thereabouts) machine is that it would provide exactly what you want and quite possibly more. But remember that some form of step-up will be required for the AT-F5. Ortofon makes some inexpensive transformers and a few valve amp manufacturers make expensive variations on the same theme - you pays your money and you makes your choice.

As for tweaking the 630, you might find someone who's willing to give it a try (Les at Avondale Audio for instance) but it's debatable whether the amp has enough of the right ingredients to make the effort economically rational.



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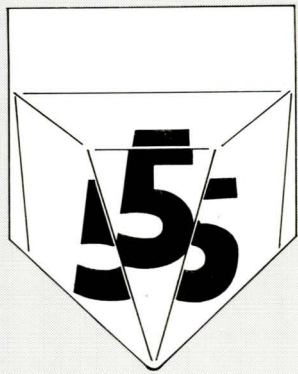
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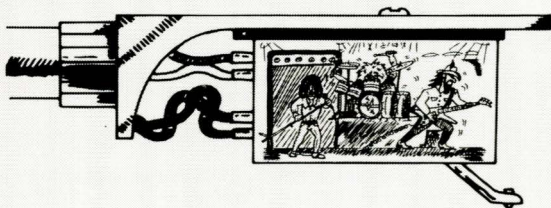
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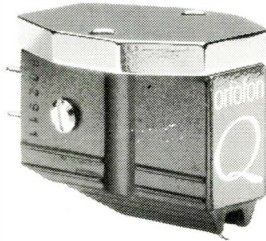
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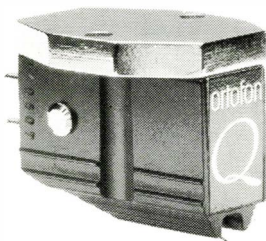
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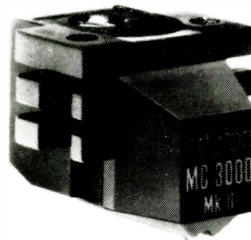
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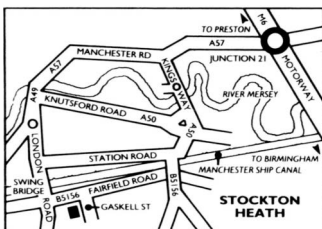
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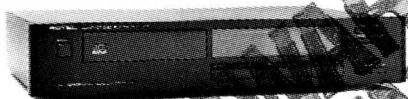
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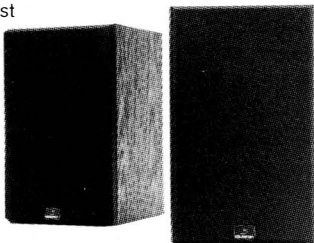
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Choosing and Using . . . Loudspeakers

*Thinking of buying some speakers but don't know where to start?
Paul Messenger guides you through the maze of loudspeaker selection.*

The first step on the road to choosing your loudspeakers is to specify your personal and particular requirements. It is possible to do this on a basic, simplistic level, checking the price, size and intended location. But there are real benefits for those prepared to take a little more trouble. With a little care, the assistance of the data in this issue, and (hopefully) the cooperation of a skilled retailer, the end result can be that much more worthwhile.

Those buying just loudspeakers will have a pretty good idea of the money they have available, which as ever is the fundamental bottom line of any purchasing decision. But there is - and always has been - controversy over the proportion of a budget that should be devoted to loudspeakers, vis a vis that spent on the other components.

Ten years ago conventional wisdom recommended devoting as much as possible to the loudspeaker, as it was regarded as the weakest link in the chain. An alternative philosophy, pointing out that the loudspeaker could do nothing to compensate for an inadequate source, switched attention towards turntables and amplifiers.

Setting a budget

When setting the loudspeaker budget, it is vital to allow sufficient funds for a decent stand or support, and good quality connecting wire. From £200, for example, one should probably allocate £140 for the speaker itself, £50 or so for stands, and maybe a tenner for the cables.

Where one listener may be barely conscious of the subtleties of stereo imagery, another will take particular

pleasure in pin-pointing musicians within a recorded acoustic. Likewise those who listen predominantly to electronic rather than acoustic instruments are liable to sacrifice coloration in favour of dynamic impact.

While a magazine can assist in presenting these alternatives, it is only through skilled demonstration that an individual can be confronted with the different but equally valid options to make an educated choice for himself.

At the time of writing I am temporarily living with a £1,000 system which suits me very well, but which certainly represents one extreme. It consists of a £600 turntable with £200 amplifier and £80 loudspeakers on £100 stands. At the other extreme, another could enjoyably combine a £500 remote control multisource midi-system with £500 worth of high performance, low coloration loudspeakers and stands. But unless one actually has the opportunity to hear the difference between these two very distinct approaches, how can one possibly have any basis for making a choice?

The site chosen for loudspeakers is often as influential as the choice of loudspeakers themselves. Over the years I have used open stand locations, both with conventional box speakers and panel types, and also stand-mounted wall-backed designs. Each has its own strengths and weaknesses and imposes its own characteristics on the sound, so again personal preference enters into the equation.

Having chosen the siting, one may then choose the loudspeakers and stands to suit. Alternatively, choose the speakers you like in the shop, and then move them around

at home until they sound to your taste.

The end result comes from a complex interaction between the loudspeaker, its support, its site, the acoustics of the room, and the general characteristics of the driving system. That is rarely entirely predictable. For those intending to spend a fair amount of money, it is not unreasonable to expect the luxury of a home demonstration, and/or the option to return and change a pair which do not suit after a day or two.

For any given budget there is an obvious choice between large or small loudspeakers. One instinctive reaction is to favour the big one, particularly if it has lots of drive units, but others will plump for a miniature or compact on aesthetic grounds. In fact the differences and trade-offs are much more far reaching.

Bass extension

Fundamentally, the larger the box the more extended the bass is for the same specific loudness. Ultimately a good big 'un is going to beat a good littl'un on loudness and bass extension, hands down. But it is also going to cost a great deal more. The large enclosed volume remains the route to extended bass, and this in turn adds 'weight' and 'scale' to the sound. But it can also reveal the low frequency inadequacies of the sources, be they the equipment or the recordings themselves.

Big speakers suffer from several innate disadvantages. Large box enclosures are expensive to build and ship, and represent an undesirably large surface area of unwanted radiation, which can colour the sound and blur stereo precision. Extra drive units do increase power

handling, but bring problems of crossover complexity and unit integration.

Little speakers can prove more fragile if used for the occasional party, and are certainly not at their best when trying to recreate the power and drama of rock or a full concert hall acoustic.

Given the excessive number of different models competing for attention, manufacturers are inclined to make much of the uniqueness of their particular brew. As a result the industry has become riddled with buzz words to describe any single type of engineering solution, and this leads to the sort of stereotyping which entirely misses the point of loudspeaker engineering.

Examples are legion, from the bextrene bass/midrange cones of the early Seventies through to the latest metal dome tweeters which are currently springing up everywhere. The result is that people talk of a 'metal dome sound' as something desirable (or not) per se, whereas in fact there will be a whole range of different metal dome sounds, in all probability some distinctly more 'equal' than others.

The underlying axiom is that great loudspeakers are not created by adopting a quick technological 'fix'. Indeed, history has often shown that the 'radical innovation' is a mere flash in the pan, with benefits in one area more than offset by unforeseen penalties elsewhere.

Technology has steadily improved the performance of loudspeakers over the years, and some innovations have proved decidedly worthwhile. But the whole is much greater than the apparent sum of the parts, and the buyer would do well to bear this in mind.

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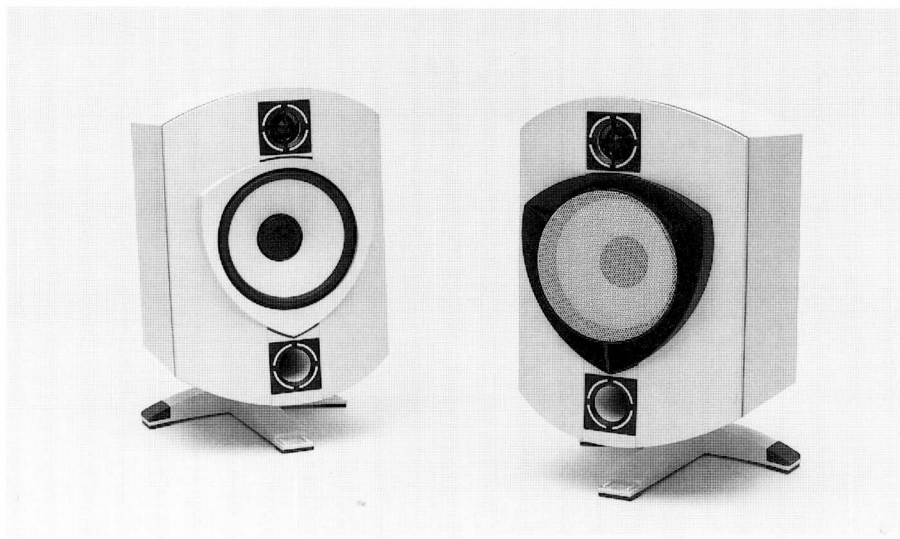
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Recommended



Although the B&W acoustic engineering heritage is formally acknowledged in the designer label, *Solid* is sufficiently different - in size, construction and application - from B&W's normal stock in trade to be marketed under its own quite distinct brand name.

It's not the first serious miniature loudspeaker to use moulded plastics for its enclosure, but *Solid* is by far the prettiest manifestation of this comparatively new trend to date. But above all, it's a quintessential Designer product - complete with colour printed carton proclaiming the name of the person responsible, one Morton V. Warren. There's even a 'made in Japan' sticker on the box, which came as a bit of a surprise.

At £189 it's not a cheap loudspeaker, but it does offer rather more in both style and capabilities than the typical £99 wooden box. Only the two sides are flat; the front, back, top and base are all elegantly curved and further enhanced by reliefwork and a range of optional colour decorations.

Neatest touch of all is the integral little metal stand/bracket that fixes by ball and socket joint to the centre of the rear panel. Though not the last word in rigidity, this may be used as a little stand, supporting *Solid* on a shelf or table, or as a mounting bracket fixed to wall or ceiling, allowing the speaker to be pointed in any direction.

There's also a ceiling bracket which allows four *Solids* to be combined in a cluster, for professional installation work. Another handy feature is that the drive unit magnets are shielded, so they may be sited close to a TV set without affecting the colour purity.

Quite why it should be called *Solid*

must remain open to conjecture. My guess is that this is at least partly marketing doublespeak, so as to give the impression the speaker is something which it most certainly is not, mechanically at any rate. Thump the side and you get a sort of dull and prolonged thud - usefully frequency non-specific - but with rather too long a time constant for my taste.

Open it up and you find a thin and light though reasonably stiff little box, with light fibrous damping lining the inside. Much of the 2.5kg is due to the metalwork - magnets, shielding and mounting bracket.

The main driver has a tiny little 90mm plastic cone and generous magnet, while the tweeter uses a small hard plastic annulus behind a phase corrector, closely resembling the cheap but well respected Audax tweeter. The PCB crossover looks decidedly ordinary.

Test Report

Sensitivity is an impressively high 90dB, but 3dB of that is due to the very low impedance characteristic, which sucks more than twice the current of a more normal 6-8ohm model for the same amplifier voltage (ie volume control setting). Many amplifiers will run short of current before they get near clipping with this speaker, so any advantages of the high sensitivity may well prove to be illusory.

Especially when helped by room boundary reinforcement, the overall frequency balance is pretty good, if a trifle uneven here and there. It's a bit up-and-down from 400Hz-1.5kHz, and there's some loss of energy around the crossover, but distribution around the main axis is

very stable. Bass extension is of course limited, but well handled for all that.

Sound Quality

The *Solid* certainly did a very good job of fooling the panel into believing it was hearing something significantly larger (though not that large), and the overall reaction was pretty positive, indicating a performance level comparable with the better conventional wood (or wood and plastic) miniatures.

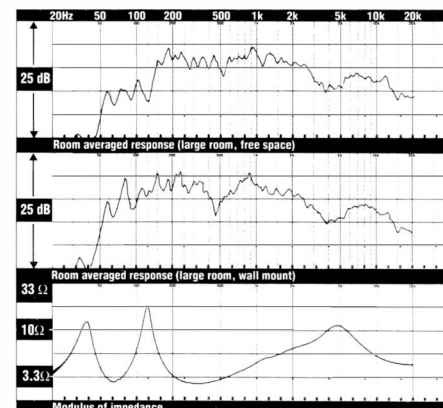
Dynamics and midrange focus are impressive, though the balance is a trifle bright and the treble a shade obvious and detached. The plastic enclosure certainly adds its own colorations, quite distinct from those of a wooden box. Energy storage is clearly low, and there's no single obvious resonance; instead there's a general blurring of timbres and slight loss of timing across much of the bass part of the spectrum. Whether it's better or worse is probably a matter of personal taste.

Conclusion

I can't say that the *Solid* will offer any real improvement over the sound quality of the best £100 miniatures, but it's certainly good enough to trade punches with them. Value for money depends on how much worth is attached to the unusual styling and versatility, though making some allowance for this the performance is sufficient to merit Recommendation.

TEST RESULTS

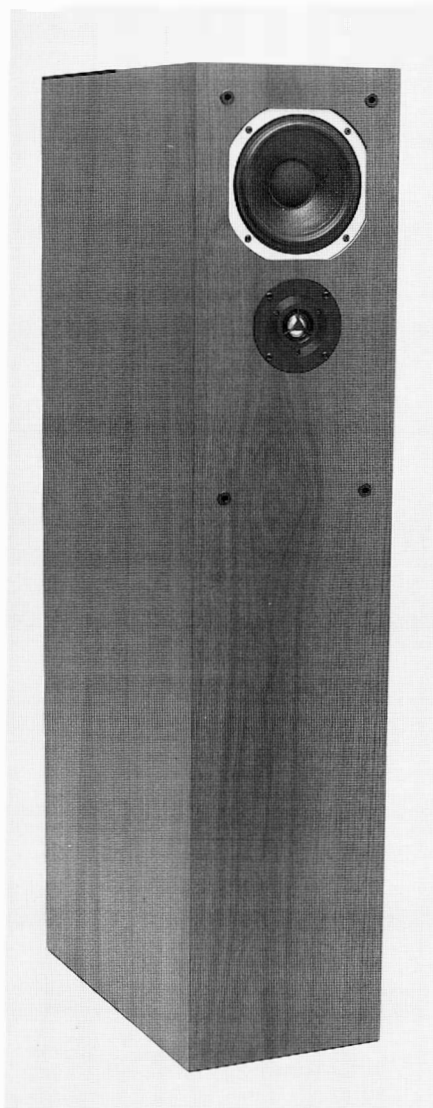
Size (h x w x d)	24 x 16 x 16 cm
Weight	2.5kg
Recommended amplifier power	10-100W
Recommended placement	close to wall (or ceiling)
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF roll-off (-6dB ref midband)	100Hz
Large room/wall LF roll-off (-6dB ref midband)	50Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	90dB/2.83V
Impedance characteristic (ease of drive)	very demanding
Typical price per pair (inc VAT)	£189



Castle Winchester

Recommended

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Steeped in the Yorkshire heartland traditions of British loudspeaker manufacture, Castle is particularly noted for excellent cabinet work. However, its fine veneers are normally lavished on models much smaller and less costly than this new, unusual and elaborate flagship model.

The *Winchester* costs a substantial £1,250, but simply in terms of mass and bulk, they look pretty good value, never mind the excellent finish or elaborate enclosure engineering. This is both tall and deep, but fortunately very slim and elegant with it. The reason for the bulk is a highly unusual bass technique known as quarter wave loading, which traces back to the legendary Voigt designs which helped originate the whole concept of high fidelity.

In fact, this development is the work of Colin Walker, one time turntable manufacturer and lifelong enthusiast, and

the operating principle is something of a cross between a column and a horn - this promises high efficiency with tight driver control.

The *Winchester* uses two small main drivers and two quarter wave horns, exiting from a common mouth at the rear. One driver is placed as usual on the front, above the 25mm metal dome tweeter, the other fires upwards from the rear of the top. It's a controversial approach, though one that's bound to appeal to an *Isobarik* owner like me.

The main drivers use 110mm paper cones and cast chassis - well fixed using machinehead bolts and T-nuts - but so tightly rebated I couldn't shift them to examine inside. Peering up through the port, the carcass appears to be 19mm MDF throughout, while the internal partitioning makes excellent and well distributed bracing for the large sides. The bi-wire/-amp crossover uses good quality, high power handling components, and fine mechanical stability is ensured by four decent spikes and a footprint much longer than my size twelves.

Test Report

On my measurements, sensitivity is rather less than Castle claims, and just a shade below average, which is partly a natural consequence of both the mild impedance characteristic and the good low frequency extension. That said, the 20Hz in-room relative output level is no higher than that registered by a number of other much smaller models, so clearly the quarter-wave bass loading technique is not the most efficient user of internal volume.

As the room curves show, *Winchester* needs to be kept well clear of walls, and even then its mid-bass output (50-80Hz) is rather strong. Elsewhere, however, the balance is unusually flat and smooth, and effectively devoid of any unwanted crossover perturbation, which is very impressive.

Sound Quality

With just one dissenter, the panel warmed to the sound of the *Winchester*, placing it close to the top of the list. The good scale and natural qualities were much appreciated, with just slight criticism of over-politeness and bass thickening.

Shortly after the listening tests, Castle asked permission to bring new samples which had been improved to give tighter and quicker bass performance. There wasn't time to compare old with new, though the measured response seemed

much as before.

My original blind notes read: "Pity the bass is a bit thick/heavy/detached; everywhere else is nice, agile, communicative and coherent." My sighted notes on the second samples suggest that a worthwhile improvement has been made. Though no speed freak, it trucks along very nicely indeed, a bit strong in upper bass perhaps, but quite agile and with little cabinet overhang.

The sound as a whole has a delightful airy delicacy, though it doesn't sound quite as big as one expects from the box size. Vocals are clear and not chesty, but also a little hollow, and a slight echo is present. The stereo scale and soundstage are very good, and the speaker sounds so nice at modest levels I felt disinclined to thrash it... until I started thrashing it.

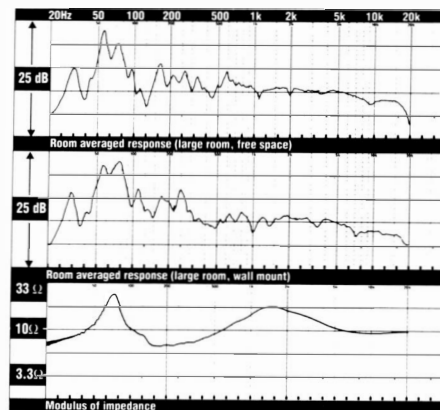
Winchester lapped it up, driving along as fast as you like, maintaining excellent dynamic range resolution across a wide bandwidth and at different levels, with fine integration and coherence, and nice differentiation of low frequency timbres.

Conclusion

Clever acoustic and enclosure design give a big scale performance combined with the clarity and agility of small main drivers. Although the reach into the bass doesn't quite measure up to the size of these beautiful enclosures, in every other respect the *Winchester* is quite a success, warmly Recommended, and good material value for money.

TEST RESULTS

Size (h x w x d)	114 x 24 x 47cm
Weight	29kg
Recommended amplifier power	20-100W
Recommended placement	well clear of walls
In room averaged response limits 50Hz-10kHz	+/-7dB
Large room/space LF rolloff (-6dB ref midband)	25Hz
Large room/wall LF rolloff (-6dB ref midband)	25Hz
Large room output at 20Hz (ref midband)	-10dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£1,250



Celestion 5

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Long established and with a collection of past innovations that most rivals must envy, Celestion is also weathering the current recession better than most, thanks in no small part to the success of the tiny little '3, a classy £109 miniature that *Choice* reviewed and recommended exactly a year ago.

Despite undoubted strengths in imaging and coloration, both I and the listening panel found the '3's dynamic capabilities a little lacking - which is precisely the aspect of performance that this new and somewhat larger model is likely to address.

The £149 '5 which is the subject of this review looks superficially as if a '3 had been put on a course of intensive weight training with steroids, promising higher sensitivity and power handling with the proviso that the larger box makes controlling cabinet coloration that much more difficult.

It's a simple 2-way sealed box with an internal volume of 12 litres - about twice that of the typical miniature - and is designed, like the '3, for close-to-wall siting. Though smartly enough presented, with plenty of investment in grille and driver basket mouldings, I couldn't shake off the general impression that a cost accountant had taken a leading role in the design process. Certainly, size, weight and build seem nothing special for the price. However, the '5 gets away with it, providing you don't look too closely, and I suspect its vinyl skin would be less obvious in the more popular black finish.

Both the 25mm metal dome tweeter and the 130mm paper cone main driver use moulded polycarbonate frames - claimed to combine good stiffness with

low energy storage, and certainly making a good job of the styling. The chamfering around the edge of the baffle and its continuity with the reasonably unobstructive grille frame are also elegant.

Coarse-threaded Allen bolts which could have been tighter hold the drivers into the 15mm chipboard baffle. The sides of this sealed box are only 12mm stock, and internal damping is very light, so the whole thing sounds rather resonant to the knuckle test. The conventional (single-terminal-pair) crossover uses decent components hardwired together but tag-linked to the drivers.

Test Report

The room curves confirm how well this design has been optimised for its intended location. Noteworthy too is the fine driver integration through the crossover region, where the transition is almost seamless, though there's a bit of a suckout when the measuring microphone is a little below the main axis, so lowish stands may well be preferable (though Celestion recommends 24 inches).

The grille is pretty innocuous, if marginally better removed. Sensitivity is usefully above average, and in no way compromised by an impedance characteristic which should be kind to amplifiers. And considering the enclosure is far from large, bass extension is really quite good.

Sound Quality

The panel gave the '5 a generally positive response, 'a good effort' being pretty much the consensus view, with particular praise for the midrange clarity and smooth and polite treble. Low frequency extension

and detail are both lacking, and there's some thickening and slowing in the upper bass/lower mid, which heavy stands (as recommended) do something to counter. But the soundstage is both well formed and surprisingly generous and open, avoiding serious boxy effects.

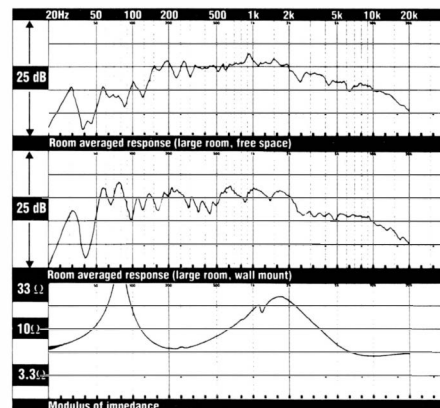
Though by no means one of the 'faster' sounding designs, the '5 is lively and coherent, providing a degree of dynamic freedom that the smaller '3 somehow lacks. Things do tend to come to pieces a bit when faced by material with complex bass rhythms and interplay, betraying some lack of bass agility and timing, but detail elsewhere is good, especially in the midband.

Conclusion

Although build and engineering content don't look particularly special at the price, the '5 has been cunningly conceived and balanced. Although it may be a little slow for some tastes, the overall mix is nonetheless impressive, and should be particularly well suited to being on the end of a budget CD-oriented system, providing much of the good stereo and wall balance of the '3 alongside better dynamics and higher sensitivity.

TEST RESULTS

Size (h x w x d)	35 x 20.5 x 26cm
Weight	5kg
Recommended amplifier power	15-70W
Recommended placement	quite close to rear wall
In room averaged response limits 50Hz-10kHz	+/-5dB
Large room/space LF roll-off (-6dB ref midband)	30Hz
Large room/wall LF roll-off (-6dB ref midband)	30Hz
Large room output at 20Hz (ref midband)	-14dB
Estimated midrange sensitivity (ref 2.83V, 1m)	89dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£149



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SANYO

Creek CLS 20

CREEK AUDIO SYSTEMS, UNIT A1, HAZLETON INDUSTRIAL PARK, HORNDEAN, HANTS PO8 9JU. TEL: (0705) 597722



Being taken over by a major loudspeaker manufacturer is clearly a pretty effective way for an electronics brand to get its loudspeaker design to market. Creek's loudspeaker has endured and/or enjoyed an unusually long gestation period, appearing in prototype form at several hi-fi shows over the years prior to the company's absorption by Mordaunt-Short.

Now this absorption is accomplished, the £199 CLS 20 (or *Creeker* as it is colloquially christened) is finalised, productionised and should be in the shops by the time this issue hits the shelves.

Claiming as its inspiration the Mordaunt-Short *Pageant 3* - a great favourite with *Choice* and the marketplace approximately a decade ago - it's a largish bookshelf model in trade terminology, though woe betide anyone who tries to put it on a bookshelf. Certainly it's big for a £200 model, has a largish main driver and weighs a substantial 8kg too, so it's obviously pretty good material value for money.

Optional matching open frame stands lift it quite high off the ground, and since it's designed to be used well clear of walls, it takes up quite a lot of space in the listening room. Presentation is neat though plain, rather in the hair shirt Creek tradition, the only decoration being the green badge that sits below the grille. Rebated drivers help keep the baffle looking tidy, rendering the plain but nicely made MDF-frame grille an aesthetic option, apart from the ugly mounting lugs that are left behind.

The drivers were really tightly bolted home, a welcome exception to the general rule, into T-nuts behind the substantial

18mm black vinyl finished chipboard panels. The crossover is a simple affair, hardwired behind the single pair of terminals. The main driver has a generous magnet (needed to control the reflex loading) and a 140mm doped textured paper cone. The tweeter uses a 19mm fabric dome and short horn flare.

Test Report

Sensitivity is round about average, and the impedance trace shows a load that shouldn't embarrass even modest amplification. As a natural consequence, bass extension is respectable enough though nothing special.

The responses are reasonably well balanced overall, but a bit uneven with it. Neither wall nor free space looks ideal, so a compromise position about a foot forward of the wall might be a good starting point. Stands lower than those which Creek supplies are likely to give the smoothest response, and the grille is probably better avoided.

Sound Quality

This Creek came in for fairly heavy and consistent criticism during the blind listening, on two separate presentations, and subsequent fiddling around with positioning and so on leaves me reluctantly in broad agreement.

There's a strong tendency to over-richness even when it's brought well out into the room on its own high stands, and this is certainly one factor that the panellists disliked. Vocals are sweet if rather lacking in body, and the sound is all rather laid back and lacking in authority. In fact, it's a bit of a boom box - not exactly slow as rather imprecise and

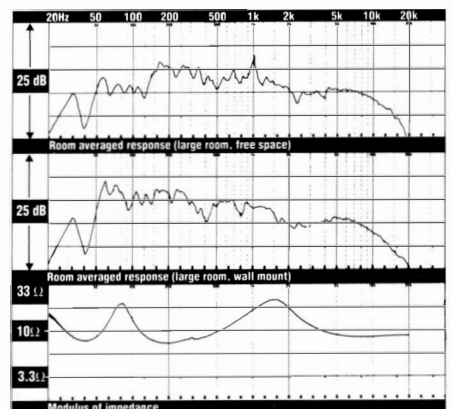
tonally resonant through the mid-bass, adding a sort of thickening to the sound, leading to adjectives like slow, bland and underwhelming sprinkled amongst the listener's notes.

Conclusion

I wish I could remember more clearly what the *Pageant* sounded like, though I have to say that if it sounded like this then loudspeakers have come a long way over the past ten years. Although perceived value for money is very good, I have to say that the *Creeker* has proved something of a disappointment, and may well be rather too big for its own good, the cabinet making too much sonic contribution to the overall end result.

TEST RESULTS

Size (h x w x d)	49 x 24.5 x 24cm
Weight	8kg
Recommended amplifier power	15-80W
Recommended placement	high stands in free space
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF roll-off (-6dB ref midband)	30Hz
Large room/wall LF roll-off (-6dB ref midband)	30Hz
Large room output at 20Hz (ref midband)	-14dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£199



Cyrus 780

MISSION ELECTRONICS, STONEHILL, HUNTINGDON, CAMBS
PE18 6ED. TEL: (0480) 52777

Recommended



In the overcrowded loudspeaker market, with at least fifty brands competing for attention, *Choice's* normal rules of engagement restrict each manufacturer to a single entry per project. Rules, however, are made to be broken, and on this occasion the temptation to compare and contrast this Cyrus-branded luxury £169 miniature with the £99 Mission 760 was too great to resist.

Cyrus is the upmarket sub-brand of Mission Electronics, itself now linked with Sansui as part of the troubled Polly Peck multinational. Whereas Mission and Sansui products have wide availability, Cyrus products have superior build and performance and are aimed at the enthusiast market, so will only be found in specialist hi-fi shops.

Both Mission 760 and Cyrus 780 in fact share the same drivers, front panel dimensions and trim, the £70 premium for this Cyrus variation being devoted to stiffening, prettying and expanding the enclosure and beefing up the crossover.

It's a stylish slimline miniature, the injection moulded grille neatly finishing and shaping the front edges and fitting (very) snugly onto the moulded, ported baffle. Presentation is both smart and restrained, and certainly looks rather better with the grille in place. The main driver is mounted above the tweeter, in order to obtain the smoothest crossover integration at different listening heights.

As with its baby brother, the drivers were really tightly mounted into the surprisingly thin but rib-stiffened plastics front baffle, using coarse-threaded woodscrews (one of which stripped during re-assembly). The differences are only really apparent under the now

wooden skin (or on the bathroom scales), where the heavier-gauge (multi-strand!) wiring and (6mm) thicker box panels are found, complete with bituminous damping pads on the side panels and a fairly heavy fill of fibrous wadding. Though the extra depth is partly responsible, note that the total weight is increased by more than 50 per cent.

The crossover is generously rated, carefully laid out and hardwired to both drivers and gold-plated bi-wire terminal tags. The main driver has a light 100mm doped paper cone, small magnet and pressed steel frame, while the tweeter is a 19mm fabric dome with short horn flare.

Test Report

Sensitivity is pretty good, though this is partly due to a lowish impedance in the power hungry lower midband, and there's little in the way of genuine bass extension either. The crossover region is very well integrated so the 780 is very tolerant of the listening axis, while the grille too is benign.

The response is pretty well balanced overall, especially with a little low frequency assistance from a nearby rear wall. However, it's not particularly smooth, being somewhat prominent around 1kHz and rather deficient around 400Hz, though both these effects can be ameliorated if sufficient time is spent experimenting with placement.

Sound Quality

As is only to be expected, the Cyrus 780 has much in common with the standard 760, and like its sibling, it did well in the blind listening tests, on two separate presentations. Once again there was praise for the overall (wall sited) balance and a

general lack of boxiness which lends an impressive sense of scale, even if genuine weight and welly are a little lacking.

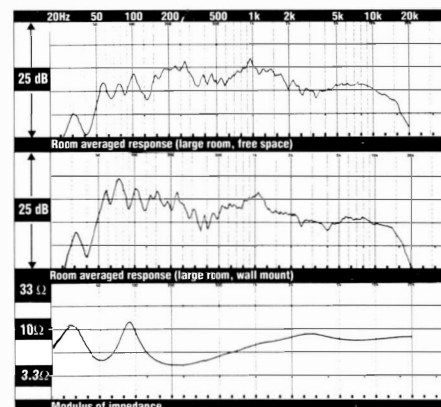
Timing is basically good, though the treble remains mildly obvious and distracting. Compared with the 760, delicacy, clarity and transparency are all subtly improved. Timing is a shade tighter, dynamics are a little more convincing and the stereo soundstage becomes more solid and coherent. These are small, incremental improvements to be sure, but are just the sort to quicken the pulse of the enthusiast, and are, at the end of the day, precisely what the quest for hi-fi reproduction is all about.

Conclusion

This is a delightful little miniature speaker that goes a long way towards justifying its premium price. Although not quite such good material value as its 760 stablemate, it nevertheless deserves Recommendation. The hope must remain that Mission remains unaffected by the problems currently besetting its parent company.

TEST RESULTS

Size (h x w x d)	29 x 18 x 26cm
Weight	5.5kg
Recommended amplifier power	15-70W
Recommended placement	light stands close to wall
In room averaged response limits 50Hz-10kHz	+/-5dB
Large room/space LF roll-off (-6dB ref midband)	50Hz
Large room/wall LF roll-off (-6dB ref midband)	50Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB/W
Impedance characteristic (ease of drive)	quietedemanding
Typical price per pair (inc VAT)	£169





SEVENOAKS HI-FI & VIDEO

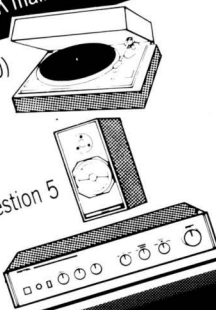
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SUGGESTED SYSTEMS

The suggested systems priced below all include the popular Dual CS503/1 turntable, but an alternative turntable or CD player is available at extra cost. Please see "OPTIONS" list below for further details.

SPEAKERS All system prices include the Dual CS503/1	AMPS	Goodmans Maxim II Widale Delta 30.2 JPW Minim Gale GS210	Celestion 3 JPW Sonata M/Short MS 3.10 W/Dale Diamond 4 Alison AL100 Mission 760	Celestion DL4 II Tannoy E11 JPW Sonata - M/Short MS3.20	H/brook Pt5 Celestion 5 Celestion DL6 II Monitor Audio R7	Tannoy M15 Wharfedale 505.2 Monitor Audio R9 M/Short MS 3.30	Castle Warwick KEF C45 Celestion DL8 II Rogers LS4A (Add £40)	Castle Durham Heybrook HB1/3 Tannoy M20 (BK) Tannoy DC 2000 (Add £70) M Audio Mon II (Add £50)
Rotel RA820AX	294.95	309.95	329.95	349.95	369.95	389.95	429.95	469.95
Rotel RA820BX4	329.95	339.95	359.95	379.95	399.95	419.95	439.95	489.95
Cambridge P50	349.95	359.95	379.95	409.95	419.95	439.95	469.95	519.95
Pioneer A300	349.95	379.95	389.95	409.95	419.95	449.95	459.95	499.95
Rotel RA840BX4	379.95	309.95	329.95	349.95	369.95	389.95	399.95	434.95
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Rotel RA810A	264.95	284.95	299.95	319.95	339.95	359.95	389.95	469.95
QED A240CD II	334.95	264.95	289.95	319.95	339.95	359.95	429.95	549.95
Yamaha AX330	254.95	349.95	379.95	409.95	449.95	469.95	499.95	479.95
NAD 3240	329.95	349.95	429.95	449.95	469.95	499.95	429.95	424.95
Harman PM6300	419.95	359.95	389.95	399.95	399.95	409.95	374.95	409.95
Kenwood KA5010	349.95	299.95	314.95	329.95	334.95	334.95	364.95	459.95
Nad 3225PE	349.95	299.95	309.95	309.95	329.95	334.95	419.95	409.95
Nad 3020 i	279.95	329.95	349.95	369.95	369.95	389.95	369.95	409.95
Marantz PM 30SE	319.95	284.95	309.95	319.95	319.95	349.95	429.95	474.95
Technics SU 810K	279.95	354.95	379.95	389.95	389.95	429.95	439.95	474.95
Musical Fidelity B1	334.95							

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Cartridge supplied with these systems

Leads provided with these systems (QED 79 strand add £1/metre)

Carriage for mail order customers on all systems in excess of £250 (UK mainland only) NB speaker stands are NOT included but highly recommended — wide range available from £20 per pair

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- Denon DCD560 add £50
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- Denon DCD960 add £130
- JVC XLV231 add £30
- Marantz CD40 add £60
- Marantz CD41 add £130
- Marantz CD50 add £130
- Marantz CD50SE add £150
- Marantz CD60 add £180
- Marantz CD60SE add £200
- Nad 5320 add £70
- Nad 5325 add £100
- Philips CD624 add £80
- Philips CD634 add £130

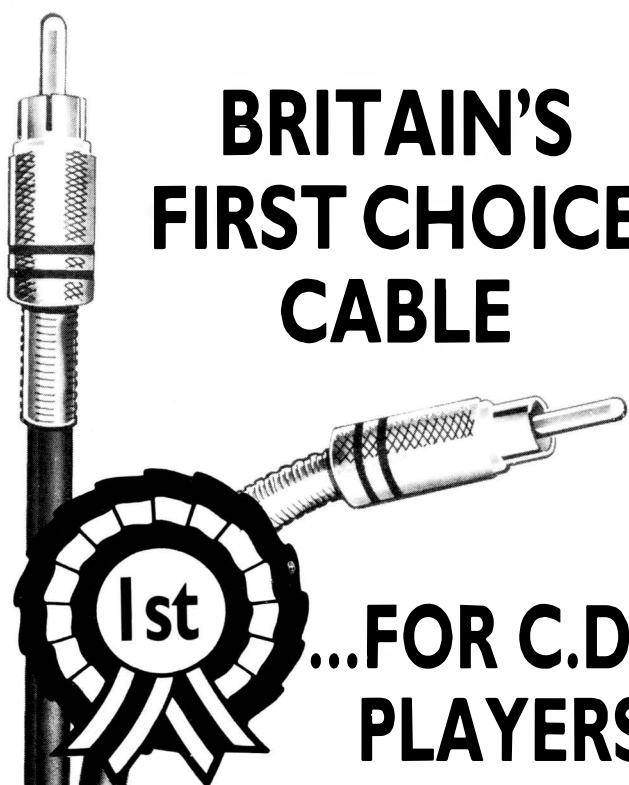
- Philips CD850 add £270
- Pioneer PD6500 add £40
- Rotel RCD855 add £100
- Rotel RCD865 add £130
- Sony CDP790 add £180
- Technics SLP277 add £70
- Technics SLP477 add £40
- Technics SLP550 add £80
- Technics SLPS70 add £120
- Yamaha CDX530 add £170
- Yamaha CDX530 add £60

TURNTABLES

- Dual CS503-2 add £20
- Dual CS505-3 add £30
- Dual CS505-4 add £30
- Dual CS430 deduct £20
- AR EB 101 add £100
- Nad 5120 add £60
- Revolver black inc. arm add £30
- Revolver Rebel add £30
- Ariston Q Deck add £30
- Rotel RP855 add £30
- Systemdek I + AT 110E add £80
- Systemdek II (K900 + MOTH + AT 110E add £170

MINI/MIDI SYSTEMS. Sony, Technics, Kenwood, Yamaha, JVC. Very special offers on selected models typically from £300-£1000

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Hi Fi Answers, commenting on INCON said: "With INCON the sound was sweet, open, transparent, tuneful and very easy to follow. Both sonically and musically the QED cable transformed the sound."



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Dali 700

C. S. E., 5 LUCAS GROVE, NORTH TOCKWITH, NORTH YORKS
YO5 8QZ. TEL: (0423) 358074



This Danish brand made its impressive UK debut at the September 1990 Penta show, and at the time of writing, British distribution is just starting to get under way. It's a fairly new company, but is clearly ambitious and has generous resources through financial links with Denmark's largest hi-fi retail chain.

The 700 that is the subject of this review is a very substantial and quite elaborate floorstanding model, made all the more imposing by the black lacquer piano finish of our samples (an optional extra). Considering it weighs 29kg and uses four different drivers, the £600 asking price seems quite modest: certainly the basic material and engineering value for money looks promising.

The box itself gives the impression of deliberate over-engineering: one doesn't feel like hazarding the knuckle test for fear of bruising. (In fact it looks tougher than it is, and there's a lovely sonorous

bonk towards the bottom of the box.) The whole thing is built on a meaty MDF plinth, but elsewhere chipboard is used. However, it's pretty substantial chipboard, 25mm thick, and there's additional stiffening from the mid enclosure, which only extends two-thirds of the way back into the enclosure, the back panel of which is extended down inside - a very similar arrangement to that used by Mission in its monstrous flagship loudspeaker, the 767.

I haven't seen a grille, though maybe there's one available (there are retaining lugs on the baffle): our samples had a black flock baffle finish, which is nice enough, though the exposed driver fixings are not very pretty. The mid and treble drivers are slightly offset from the centre line, the pair of enclosures being mirror-imaged.

Both the bass and mid drivers are doped paper cone devices, 155mm and 90mm in diameter respectively. Frames are diecast and rebated, magnets are generous and both operate in individual ported enclosures. All were very tightly fixed by coarse-threaded machinehead woodscrews. The elaborate crossover is hardwired with generously rated components and bi-wire/amp terminals, with tag connections to drivers.

The unusual 45mm paper cone tweeter and ribbon super-tweeters share a common metal faceplate. Paper cone tweeters looking rather like this were a common sight twenty years ago, and were gradually ousted by plastic, fabric and metal domes, so why fit them to an apparently hi-tech speaker like this?

Dali engineers claim it has much lower moving mass and therefore much faster response than conventional tweeters, which I'm not going to dispute. Certainly it's a deliberate choice, and the distribution difficulties such devices suffer in the final octave or so is presumably taken care of by the inclusion of a supertweeter.

Test Report

The basic spec makes pretty impressive reading, the 700 registering sensitivity close to average, alongside an easily driven impedance characteristic and exceptionally well extended bass, all from an enclosure which is big, but not that big.

The wall-loaded trace looks altogether too strong below 100Hz, but the balance improves when moved out into space. It's still a bit strong at around 50Hz, and again around 200Hz, but elsewhere it's reasonably flat and quite even, with barely a hiccup through the crossover region.

Sound Quality

This Dali really bombed on the listening test, drawing all manner of objections from the panelists, dominated by accusations of incoherence and sluggishness, alleviated only by praise for the weight and scale.

I had a broadly similar initial response on connecting them up for extended listening, but after an hour or so my reaction had become much more positive. I'm quite sure this wasn't simply a matter of getting accustomed to the flaws, but rather that the speaker just got better and better as it got warmed up - something that blind testing can't take into account.

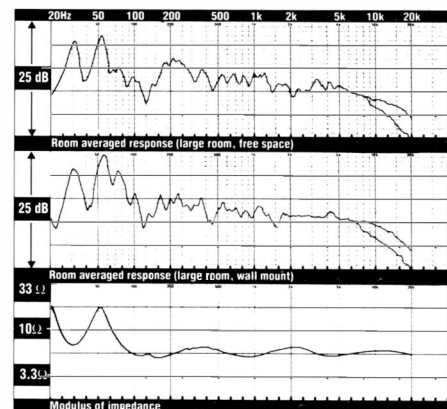
The upper mid/treble still sounded phasey but the sound as a whole had become pretty fast, with fine dynamic shading, imparting a nice bite on brass. As the treble started to fill in and integrate, the bass speeded up and became better defined. I still wouldn't regard it as particularly coherent at the top end, where focus never seemed comfortable or stable, but in other respects it delivered a pretty impressive account of itself.

Conclusion

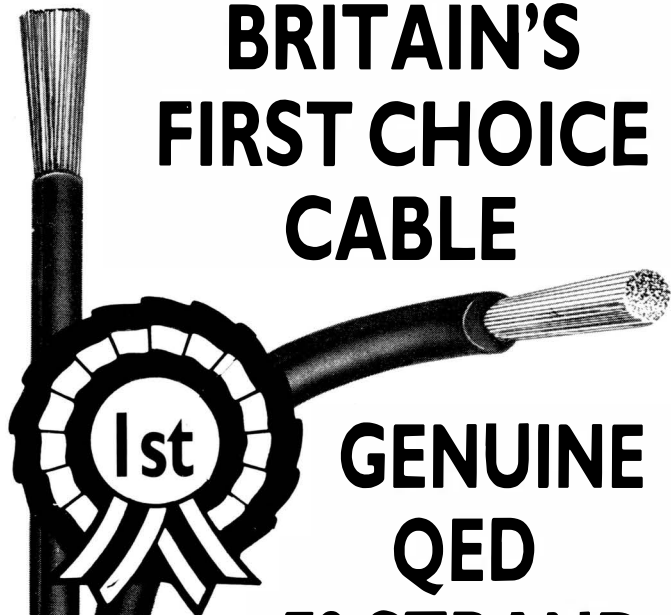
Although undoubtedly good material value for money, with a spec that many rivals might envy, the 700 ultimately seems to be a victim of its own complexity, and fails to integrate the acoustic outputs of the various types of mid and treble drivers successfully enough for full coherence.

TEST RESULTS

Size (h x w x d)	110 x 28 x 35cm
Weight	29kg
Recommended amplifier power	15-150W
Recommended placement	well clear of walls
In room averaged response limits 50Hz-10kHz	+/-8dB
Large room/space LF roll-off (-6dB ref midband)	20Hz
Large room/wall LF roll-off (-6dB ref midband)	20Hz
Large room output at 20Hz (ref midband)	-6dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB/W
Impedance characteristic (ease of drive)	good
Typical price per pair (inc VAT)	£600 (piano finish extra)



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In the July issue of *What Hi Fi?*, three dealers were asked to choose the best C.D. based system for £700. All three dealers selected QED 79 Strand as their preferred choice of speaker cable.

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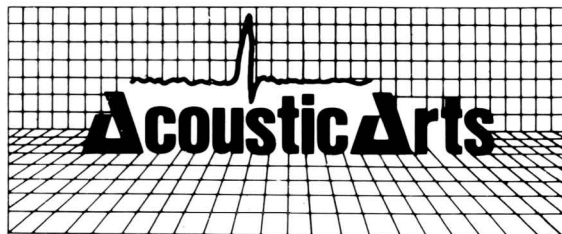
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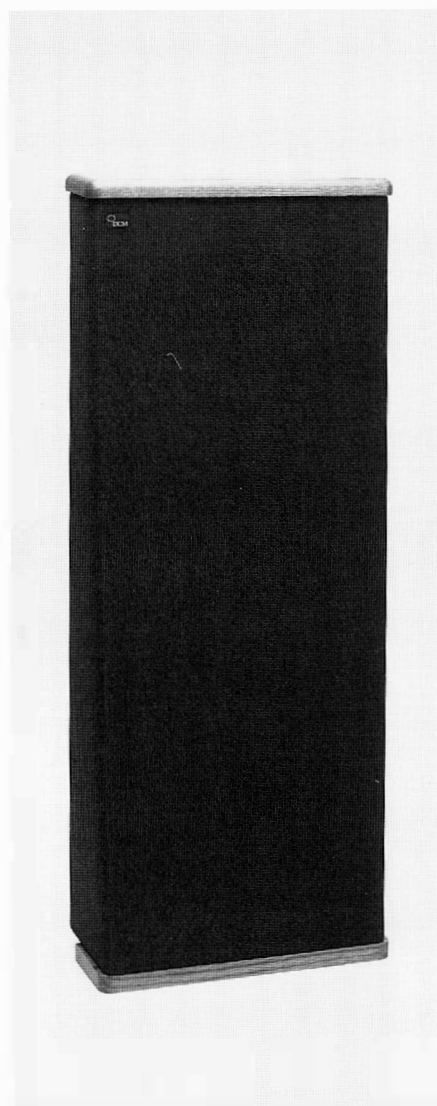
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DCM Timeframe TF250

AUDIOFREAKS, 15 LINKWAY, HAM, SURREY TW10 7QT. TEL: (081) 948 4153



This US brand has been around for a number of years, though UK distribution has been spasmodic and largely unsuccessful to date. Now Audiofreaks is looking to relaunch a range which has always featured some interesting ideas, from the original *Time Windows* up to the cute little *Timeframe* featured in this review.

Little isn't perhaps the right word for a floorstanding model which costs £350, but it's far from large in this particular review group and is certainly pretty enough to look at, thanks to the very slim side profile. I would have said the same of the nicely shaped hardwood top plates too, but the woodgrain figuring on our two samples was so different as to spoil the overall effect rather.

The stocking-tube construction prevented me gaining access to either the drivers or the inside, save via the tiny little terminal block (which suffers the

traditional American affliction of nasty narrow spring terminals). The cabinet is high, wide but very shallow indeed, only 8cm deep at the top tapering to 14cm at the base, a shape inevitably prone to first reflection colorations, even though DCM has tried to minimise this.

The carcass is wrapped in foam to smooth out the edges and the whole thing covered in a nondescript brown fabric tube, glued to top and bottom panels and then covered by the hardwood trim. The large back panel is only some 13mm thick and sounded very hollow to the knuckles.

The shape clearly compromises fore-and-aft stability, so a bit of wood some 2cm thick is bolted (quite substantially) to the rear of the base, to be swivelled out and add some 14mm to the footprint depth. There's no spike provision and a fair amount of compliance, but three cones can provide a measure of stability.

The main driver looks like a paper cone device, the cone being some 120mm diameter, while the tweeter appears to have a small hard plastic annulus/dome with phase compensator. These are inverted on the baffle, the main driver above the tweeter. There's also a quite large reflex port towards the bottom of the baffle, leading to a rather tatty cardboard tube.

Test Report

The impedance is mild in terms of current demands, if a little complex in shape, while sensitivity is average. Bass extension, however, is more that of a miniature than a floorstander, which is evidence of the sacrifice in internal volume in order to accommodate the slim styling.

Siting is more a matter of taste than anything, though the in-room traces tend to indicate some wall reinforcement will be beneficial. The overall balance is pretty good, but in a rather uneven way: note the peak at 300Hz and suckout at 1.2kHz, and some excess around 600-800Hz.

Sound Quality

The listening panels showed little real enthusiasm for the *Timeframe*, though there was a fair measure of inconsistency in the comments from two separate presentations. The common threads highlighted a heavy and thick mid-bass, with consequent congestion, a degree of midband coloration and a general feeling that musical involvement was not being encouraged.

The sound is essentially soft and rather flabby, though rather pleasant in a sort of warm and cuddly way. However,

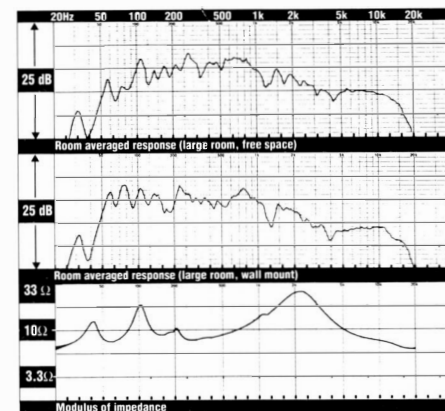
coloration was particularly noticeable on spoken word, adding a quite unpleasant and irritating hollow and somehow echoey midrange effect to the voices of radio announcers - something which could well be a function of the very slim cabinet.

Conclusion

Interesting and potentially appealing because of its unusual shape, I suspect this very feature is also the design's most serious flaw, constraining the mechanical rigidity of the structure and probably also adding a measure of coloration too. Though it's a decent size box for the price, construction and performance are both rather mediocre.

TEST RESULTS

Size (h x w x d)	86 x 32 x 15(max) cm
Weight	9kg
Recommended amplifier power	15-70W
Recommended placement	quite close to rear wall
In room averaged response limits 50Hz-10kHz +/-5dB	
Large room/space LF roll-off (-6dB ref midband)	45Hz
Large room/wall LF roll-off (-6dB ref midband)	45Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£349



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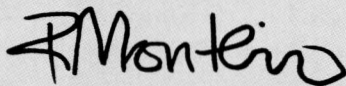
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Not too keen on the lecture, I was, none the less, taken up by what he said, and decided to pay you a visit. This turned out to be quite an experience! After listening to a few systems I had already decided I would be buying my own combination and not the one recommended in the magazine. A MUSIC SYSTEM SHOULD, INDEED, BE LISTENED TO, BEFORE PURCHASING. In addition, the personal attention, friendly, untiring and "non pushy" attitude of your sales assistant, Jas, turned the daunting prospect of choosing the right hi-fi into A MOST PLEASANT EXPERIENCE.

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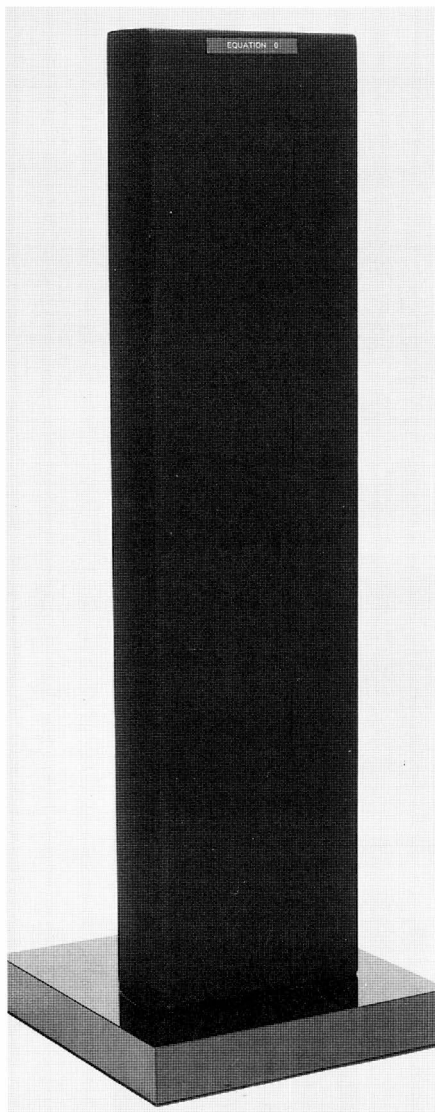
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Equation 0

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Recommended



A new brand to me and I daresay most readers, Equation seems to be something of a Eurospeaker concept, or should that be a speaker concept for Euraudiophiles - perhaps a bit of both. Combining design, manufacture and marketing resources in Belgium, Holland and Switzerland, UK distribution is actually being handled by Oxford Distribution Ltd., a sister company to Oxford Acoustics of *Crystal* turntable fame.

The 0 is the cheapest Equation, though a £1,290 pricetag is never going to warrant the term cheap. There are several other larger and more expensive models too, I understand, some running to several thousand pounds.

I have to say that visitors were surprised when told the price, expecting such small enclosures to cost rather less. But if 0 looks a little short on material value for money, it's also one of the prettiest loudspeakers I've ever seen, especially

for anyone seeking something both discreet and contemporary.

The whole thing sits on a very heavy little plinth about a foot square and a couple of inches thick, finished in piano lacquer black and incorporating the crossover and three sets of reportedly very costly 4mm sockets (Hypertac). There's no provision for spikes, and it's claimed that the 0 has been deliberately aligned and designed so as not to need spiking (but see later).

The enclosure proper rises monolithically and monochromatically from the middle of the plinth, a black stocking tube keeping all from view and neatly capped by a recessed lacquer black endplate. The carcass combines what seems to be a fairly hefty section of plastic tubing lined with foam with a substantial, bitumen damped medium density fibreboard baffle, some 20mm thick.

Triple terminals notwithstanding, it is in fact a 2-way reflex loaded design (the terminals allowing single or bi-wire/-amp connection - avoid both!). The main driver has a tiny little 90cm paper cone, a cast frame and a massive magnet roughly the size of the cone. The tweeter has a soft fabric 25mm dome, and the small tube port bends and extends some way down inside. All was pretty well screwed and glued together.

Test Results

Quoting a sensitivity is difficult when the response is this uneven, though 85dB is as good a figure as any, which is several dB below the norm. There's not much in the way of bass extension either, the small enclosure volume sharply curtailing in-room output below 50Hz. The impedance is nice and easy.

The plots suggest that getting the best in-room balance for the 0 will require a degree of care and probably some luck as well. Kept clear of walls, a broad midband plateau, 600Hz-2kHz looks uncomfortably exposed, but place it close against the wall and there's a risk of boomy effects in the mid-bass. Clearly a little wall assistance will probably be worthwhile, but the upper mid is likely to remain sufficiently stronger than the lower-mid to introduce a measure of coloration. That said, the crossover region is impressively seamless.

Sound Quality

The 0 did well on the listening test, finishing high up the list despite its small size and lack of spike or cone support. Though scale is quite impressive, the

limited bass reach is audible, along with some compression and thickening. On the other hand, speed and timing are delightful, dynamics are most impressive and there's a reasonable impression of weight.

The midrange and presence is distinctly forward, giving a rather shouty quality - occasionally aggressive and untidy but more importantly highly informative and impressively transparent.

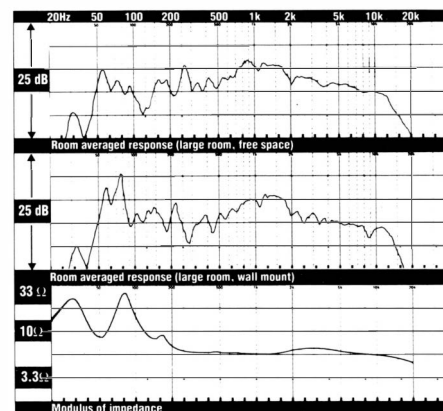
Later experiments confirm that it does need some help from wall proximity, but I have to say that the introduction of three cones under the plinth worked a rare treat under my listening conditions. Transients, scale, speed and focus are all significantly improved, though it is perhaps true that the slightly fuzzy bass quality became a little more obvious. The midband does sound a bit cuppy, but when it's capable of delivering awesome dynamic energy and leading edge definition like this, what the hell!

Conclusion

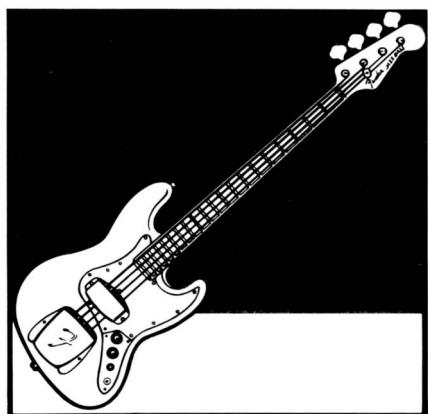
This is really a miniature speaker masquerading as a floorstander. But it's not only aeons ahead of the typical stand-mounted miniature on styling, it can also mix with the very best on sound. In the best material value for money around, 0 is warmly Recommended to anyone seeking high style to match high performance.

TEST RESULTS

Size (h x w x d)	85 x 20 x 13.5cm
Weight	15.5kg
Recommended amplifier power	20-70W
Recommended placement	quite near rear wall (try cones)
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF roll-off (-6dB ref midband)	45Hz
Large room/wall LF roll-off (-6dB ref midband)	45Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	85dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£1,290



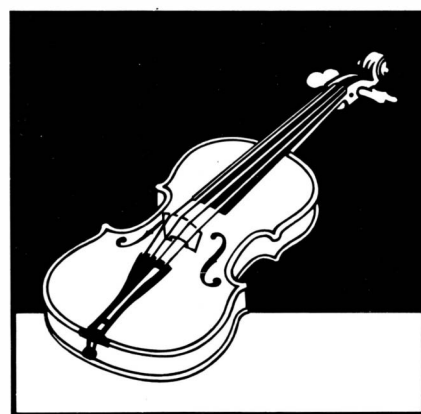
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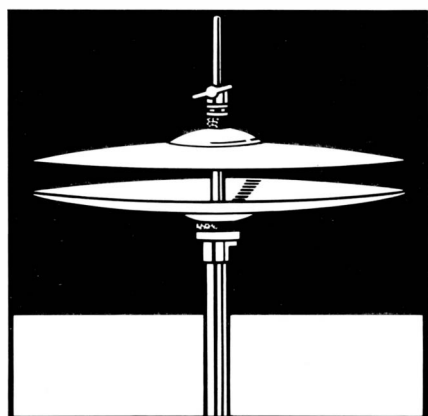
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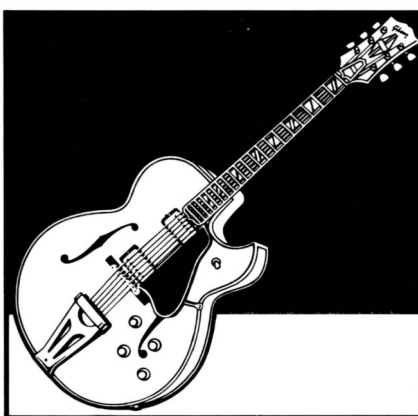
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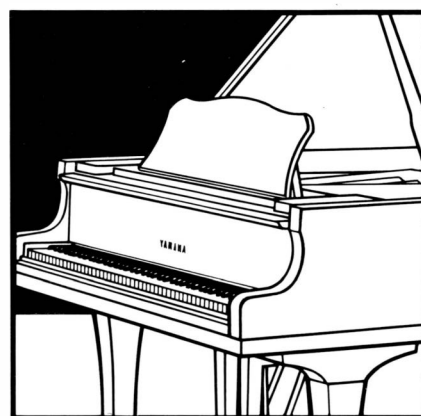
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Goodmans HIM 440

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vibrate along with the music, and there's nothing much left in the budget for bracing or damping. However, the big 3-way confers advantages too: big is good for bass extension, and 3-way improves broadband sensitivity, which in turn increases the loudness available from any given amplifier.

Close scrutiny reveals the engineering economies needed to hit the price point. The only generous things are the rear port tube and the box, which is built from 19mm chipboard, and is empty apart from one horizontal brace, though some extra stiffening is supplied by the inset rear panel.

Baffle stiffening is aided by what looks like a layer of MDF laminated onto the baffle. This is painted grey and has some relief fluting by way of decoration - which is just as well, as the grille is a big ugly brute, with very thick frame.

I couldn't get at the drivers without risking damage to the plastic trim that keeps the baffle nice and neat. The bass unit has a 235mm doped paper cone with foam surround, smallish magnet and pressed steel frame, while the 90mm paper cone midrange has its own small tube enclosure. The tweeter is a horn-loaded 25mm soft dome, and internal wiring is the cheapest kind. Two level controls on the front provide independent adjustment of mid and treble level (presumably so you can turn them right down and just hear the bass). These were subjectively set a little below the mid-point for listening and measurements.

Test Report

The sensitivity of this speaker is a stunning 94dB, some 6dB above average. And this has not been achieved by sacrificing bass extension either, since in-room output has only fallen to -8dB by 20Hz. However, the impedance is quite severely compromised, dipping very low around 1kHz, an important region for peak levels, so any partnering amplifier ought to have good current reserves.

The response is clearly rather over-rich in the midbass, so wall reinforcement is best avoided. Elsewhere, the balance is pretty good overall, albeit somewhat uneven through the presence band and a little spiky in the treble. The drivers are very well integrated through the crossovers.

Sound Quality

With any sensitivity advantage neutralised by the volume control, the listening panel gave the 440 a right pasting,

complaining about sibilant exaggeration and a crude top end, obvious coloration, one-note, ploddy bass and a generally boxy sound.

On a brighter note, a couple of listeners praised the liveliness and coherence, points on which I agree, though I also go along with most of the harsher criticisms too. The top end has an uncomfortable scratchy, spitty quality, while serious coloration dominates the midbass region, leaving the speaker sounding less big than its measured response would suggest.

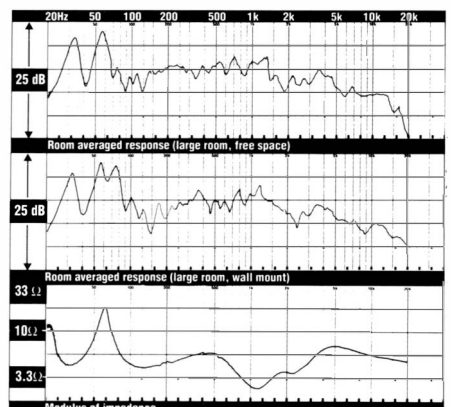
Timing and pace are quite good, dynamics likewise, but the box stores, delays and muddles (mangles) the upper bass and midband timbres. Although the loudness capabilities are quite impressive, one is disinclined to pursue them because of the attendant discomfort. Ultimately, it's all a bit too close to the PA experience for comfort.

Conclusion

The *High Impact Monitor* experience merely tends to confirm that there is no such thing as a free lunch. Sure, you can have both high sensitivity and good bass extension, all for £350. But you'll also need a pretty good amplifier to explore that sensitivity, and get a couple of small wardrobes and a buzz-saw to join in with every song. The 440 isn't really that bad a loudspeaker, but nor is it a good one either, and it isn't half an ugly way to go.

TEST RESULTS

Size (h x w x d)	87 x 38 x 40cm
Weight	25kg
Recommended amplifier power	10-200W
Recommended placement	where there's space
In room averaged response limits 50Hz-10kHz	+/-8dB
Large room/space LF rolloff (-6dB ref midband)	24Hz
Large room/wall LF rolloff (-6dB ref midband)	-8dB
Large room output at 20Hz (ref midband)	-8dB
Estimated midrange sensitivity (ref 2.83V, 1m)	94dB/W
Impedance characteristic (ease of drive)	difficult
Typical price per pair (inc VAT)	£350



Shamelessly dubbed a *High Impact Monitor*, and aimed squarely at certain US and UK niche markets, the *HIM 440* must be one of the more extraordinary speakers to have come my way for *Choice* testing.

Comparison of price/size/weight ratios of different manufacturers will always show Goodmans high in the perceived value stakes, but this little baby breaks every rule in that particular book. Something this big and heavy which costs only £350 looks like a real steal - if perceived value were the only criterion.

Aside from establishing where in the bed-sit to put them, the question addressed here is whether and how it shapes up against the more conventional hi-fi speaker. Can it compete, or is it really just a poorly disguised PA speaker?

Stereotypically, anything this big and this cheap doesn't have any right to sound good as well. Big boxes have big panels which are all too keen to resonate and

Heybrook Solo

Recommended

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This West Country hi-fi manufacturer can supply a complete system with turntable and amplifier, but has always been best known for its extensive range of bookshelf size loudspeakers. The *Solo* is a brand new model, competitively priced at £149, which places it at the bottom of the Heybrook line-up, just a little above the price of the similar sized *Point 5* when this was reviewed by *Choice* just twelve months ago (since inflated to £179).

It certainly looks good value from a material content point of view, being a solidly built two-way sealed box of what might be called a 'standard' bookshelf size. Construction is pretty conventional too, with the carcass wrap fitted with front and back panels (whereas the *Point 5* inserted top and bottom faces).

Solo has a slightly dumpy appearance, but it closely matches the top plate shape of Heybrook's popular *HBS1* stand, and the combination looks very good together, taking up very little space when mounted as intended close to a wall.

The driver line-up looks pretty similar to that used in the *Point 5*, with the same slightly unusual looking tweeter, a 14mm hard dome with elaborate phase compensation and flaring. The main driver has a 110mm paper cone with wide surround, pressed steel frame and small magnet, again much as its stablemate.

One notable feature, encountered all too infrequently, is that all the driver screws were properly tightened, and the tough 18mm chipboard baffle seems well able to take the strain of the double-helix woodscrews. The sides are solid panels too, 15mm thick, and all is wrapped in an innocuous black vinyl woodprint, discreetly decorated with gilt logos. The

grille is a neat affair with slim chamfered MDF frame and tasteful, sober cloth covering.

Twin terminals on the rear allow bi-wiring (or bi-amping), providing the internal links are severed first. The crossover - such as it is, or rather isn't - is located behind the terminals and is hardwired to the drivers with special solid-core cables. The box itself is lightly filled with a cocktail of damping layers, including artificial fibres and long-haired wool.

Test Report

Solo's sensitivity is close to the average (and a couple of dB better than *Point 5's* rating) and the mild impedance characteristic should present no problems for even the most modest amplifier. Bass extension is pretty good considering.

The overall response is pretty well balanced, and well suited to mounting close to a rear wall, though as usual some experimentation in any given room is essential, and the *Solo* should be quite tolerant.

Balanced it may be, smooth it's not, especially towards the top end of the tweeter range, but also in the broad prominence through the upper mid and lower treble, 600Hz-2kHz. The crossover region is well handled, and the speaker is best sited with the main axis at ear height, on stands such as the *HBS1*, square with walls so that the listener is slightly off-axis laterally from each. The grille is harmless.

Sound Quality

For some reason that continues to elude me, Heybrooks never seem to do well in

my blind listening tests, and *Solo* is no exception. Which leaves me with something of a problem since I've grown to like it a lot over extended subsequent listening.

There are some coloration problems to be sure, the midband sounding a little hollow and nasal and the treble quality mildly distracting and irritating. The upper bass is just a shade on the strong side too, but the thing that sets *Solo* apart from the pack is its excellent speed and timing through the bass and lower midrange.

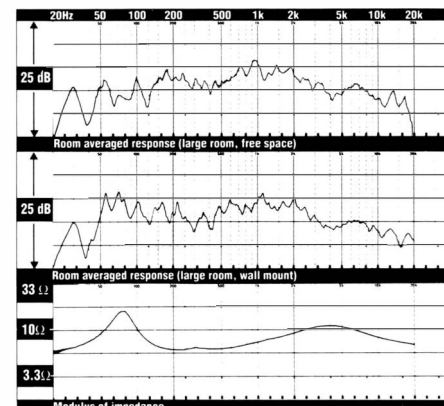
This was brought home forcibly on the release of the Brazilian influenced Paul Simon album with its complex percussion and bass lines. *Solo* simply boogied happily on down, sorting out the various threads impressively well, while most rivals clogged up and sounded congested. In this important part of the frequency band, coloration is distinctly lower than most.

Conclusion

Not everyone's cup of tea I daresay, *Solo* has its cosmetic limitations and doesn't always produce a comfortable sound. But give it something rhythmic and complex to get its teeth into and it starts to show its real capabilities, encouraging foot-tapping and enthusiastic volume control settings. It may be a bit untidy, but it's a lot of fun too, which is the best reason I know for formal Recommendation.

TEST RESULTS

Size (h x w x d)	36 x 23 x 22cm
Weight	5kg
Recommended amplifier power	20-80W
Recommended placement	HBS1 stands close to wall
In room averaged response limits 50Hz-10kHz +/-5dB	
Large room/space LF roll-off (-6dB ref midband)	28Hz
Large room/wall LF roll-off (-6dB ref midband)	28Hz
Large room output at 20Hz (ref midband)	-15dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£149



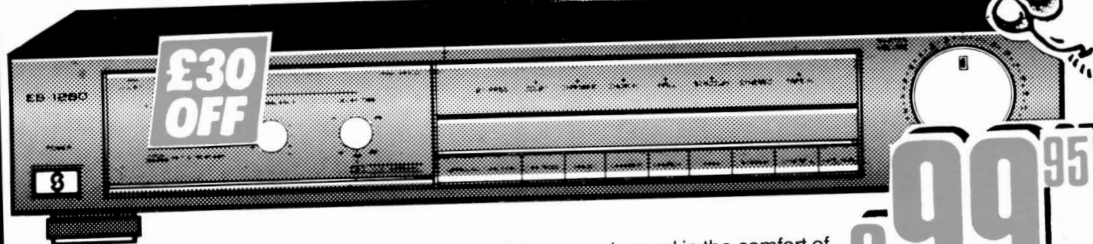


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Jamo Cornet 40

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One of the world's more successful loudspeaker manufacturers, Jamo is a Danish operation that was until recently distributed in the UK by Goodmans. One loudspeaker brand distributing another's products is an unusual arrangement, though it certainly enabled Goodmans to augment its own models with some useful niche products whilst also allowing Jamo to achieve a degree of brand recognition in the UK.

However, it came as no surprise when Jamo decided to go it alone and set up its own UK subsidiary in the summer of 1990, since when the entire range of ranges has become available (rather than just the few models that Goodmans cherry-picked).

Any manufacturer which offers fifteen ranges of about three models each could be accused of either a lack of direction or of cynical marketing strategies, though that would be to sell Jamo short. Certainly it is business-led, but no brand can ever progress without a sound business base. Though it may be accused of lack of commitment to any hi-fi ideals, especially when so much effort goes into the visual presentation, the company's strength lies in accepting that many loudspeaker customers don't want to have hi-fi idealism thrust upon them, and that people want different loudspeakers for different purposes. In the modern idiom, it's niche marketing par excellence.

To date the nearest things to hi-fi loudspeakers that Jamo made was the *Concert* range, the smallest of which was reviewed a couple of years back. It's an entirely competent 2-way bookshelf model with a very attractive luxury finish, but £230 is well above the mass market

price for models that size in the UK.

With this in mind, one of the first things the company did on setting up its new subsidiary was to start work alongside its British staff to develop a new range of speakers which would be specifically tailored to UK conditions, in sound, presentation and price. The first fruit is this *Cornet 40*, which hits the crucial £99 price point firmly on the nose, and is both larger and in some ways prettier than many of its immediate rivals from better established brands.

The box is fashionably slim with most attractive post-formed edges around a pretty, textured silver-grey baffle that is rebated to inset the drivers. Which is just as well, since the grille supplied looks something of an afterthought, physically and acoustically. The enclosure has a 16mm chipboard baffle and 12mm MDF wrap, all tough stuff, the only damping being an inch or so of foam.

The main driver has a small 100mm doped paper cone and the generous magnet needed to control the rear-ported loading. The tweeter uses a 25mm soft doped fabric dome which is larger than those usually found in this size of speaker (and not necessarily the better for it).

Test Results

Sensitivity is a shade below average, which is high for a miniature, though bass extension is naturally limited. The overall balance looks pretty good, almost irrespective of the siting of the speaker, though some experiment may be needed to obtain precisely the best result. The crossover region is well handled, though the treble is still a shade exposed and the 'corner' at 14kHz is a bit abrupt. The

impedance trace poses no drive difficulties.

Sound Quality

Considering its budget price, this Jamo model did alright in the listening tests, though it didn't prove to be a giant killer. Reactions varied quite widely, however, some listeners seemingly happy with the decent balance and timing whereas others criticised a flat soundstage, a degree of muddle and a lack of subtlety and refinement.

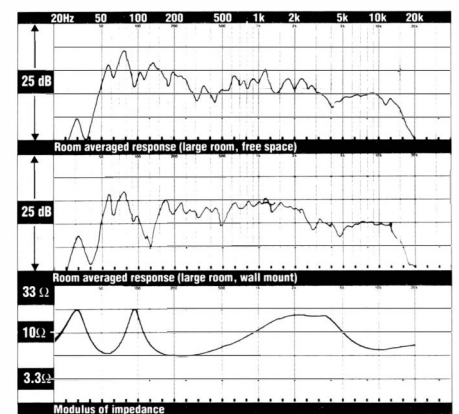
To a degree all of this is true. The sound is certainly a little heavy, chesty and thick in upper bass, especially if too close against the wall. The treble sounds rather obvious and slightly detached, yet is somehow also softened, lacking some detail, air and transparency. But there's little wrong with the basic rhythm and speed, which helps the music bounce along with a lilt.

Conclusion

Good in parts, especially the smart contemporary presentation and finish, the *Cornet 40* is clearly well worth considering. However, at this early stage of its development the sound quality is insufficiently distinguished amongst a highly competitive field for formal recommendation.

TEST RESULTS

Size (h x w x d)	31.5 x 19.5 x 21.5cm
Weight	4kg
Recommended amplifier power	15-70W
Recommended placement	high stands 1ft from wall
In room averaged response limits	50Hz-10kHz
Large room/space LF roll-off (-6dB ref midband)	48Hz
Large room/wall LF roll-off (-6dB ref midband)	48Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£99



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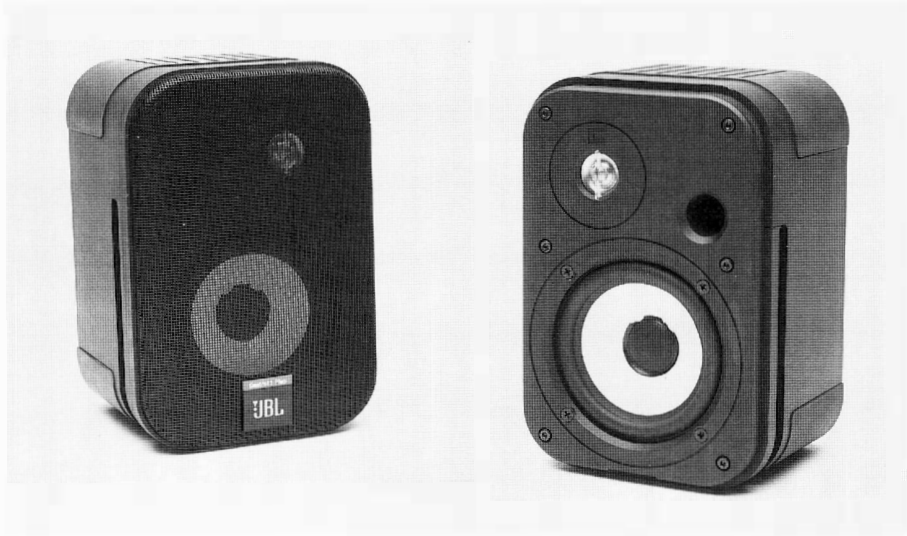
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JBL Control 1 Plus

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From amongst an enormous range of speakers which cater to all sorts of different domestic and professional applications, the *Control 1 Plus* must be the smallest of all. (Which it was until an even tinier *Control Micro* was announced, during the finalisation of this review.) *Control* models aren't really aimed at the domestic/consumer market at all, and primarily are intended for a variety of pro applications, which is one reason why the price looks a bit on the high side for the apparent perceived value.

Controls are anything but conventional, in design, construction or appearance. The original *1* was one of the first serious loudspeakers to use a (carefully researched) moulded plastics material for its enclosure, a technique which offers the designer a number of advantages, whilst also ensuring good manufacturing tolerances and consistency.

The end result is refreshingly different in appearance, and undeniably cute in this sub-miniature variation. Available in black, grey or white, the rubberised enclosure feels virtually indestructible, and should survive all manner of knocks and scrapes, though it is inclined to show scuff marks.

Mounting points are incorporated, and an enormous variety of matching mounting hardware - tripods, wall and ceiling brackets and so on - is available to satisfy any installation requirements, while the chunky, fluted and radiused hi-tech styling with open mesh metal grille provide the macho aesthetics that appeal to the professional sector - perhaps the same is true of the infernal spring clip wire connectors, which are too narrow for 4mm plugs.

The little baffle is just large enough to accommodate the two drivers and a narrow moulded port. The main unit has a tiny 85mm plastic cone which is coloured white, while the tweeter has a small shiny metal (titanium) dome, both of which are clearly visible whether or not the acoustically transparent grille is used. The apparent driver fixing screws were barely tight, let alone tightened, but this is probably mechanically irrelevant, since the whole thing is so tightly fitting I was quite unable to gain access to the interior from the front.

Through the terminal port may be found the good quality crossover and the shielded and flux cancelled driver magnets which allow *1 Plus* to be used close to TV sets. The enclosure itself is quite thin and obviously acoustically quite inert, with just a thin lining of absorptive wadding.

Test Report

JBL claims a very high 91dB sensitivity for this tiddler, and certainly it does achieve this level round about 1kHz. But in the real world, taking proper account of the major fundamental band from 100-500Hz, a rating of 89dB/W is more realistic - still an impressively high figure from one so small. The price to be paid is an inevitably and severely restricted bass extension, and also in a current hungry impedance characteristic that some cheap amplifiers might not like.

Low bass might not be on the agenda, but sited close to a wall the *1 Plus* is quite capable of delivering in-room output at a realistic level down to 50Hz, which is quite impressive. However, even with wall assistance in the bass, the octave

around 1kHz is clearly prominent, to a degree which may enhance clarity but which must compromise neutrality. The treble is rather uneven, too, partly because it is also rather too directional for comfort, small changes in axis causing quite large variations.

Sound Quality

Significantly smaller than even B&W's *Solid*, this little JBL found itself rather out of its depth when auditioned behind the black curtain, though the fact that it survived at all alongside so many much larger models is itself creditable.

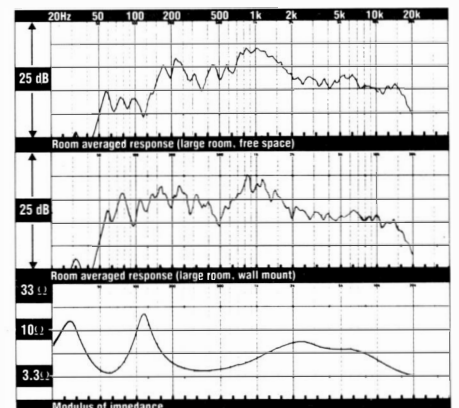
The lack of bass extension and power is obvious, managing to make even Pavarotti sound a bit small, but there's no gainsaying the impressive and informative dynamics that give this speaker a big heart. The sound is attractively 'live', and timing is pretty good, with no obvious smear or overhang, though the mid-forwardness does contribute to a level of coloration which several members of the panel felt might prove fatiguing, and sibilants and consonants tend to 'splash' a bit.

Conclusion

Probably the best speaker around for its size, this *Control* model is an attractive package that will win customers on presentation alone, though the inbuilt Pro ruggedness makes it a little expensive against conventional domestic opposition.

TEST RESULTS

Size (h x w x d)	23 x 15.5 x 14cm
Weight	3kg
Recommended amplifier power	15-70W
Recommended placement	close to wall
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF roll-off (-6dB ref midband)	100Hz
Large room/wall LF roll-off (-6dB ref midband)	50Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	89dB/W
Impedance characteristic (ease of drive)	current hungry
Typical price per pair (inc VAT)	£229



ACIDDHARTHA

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This West Country loudspeaker specialist has enjoyed a good run of success in past issues of *Hi-Fi Choice*, with a small and well established range of bookshelf size models which are distinguished by the use of real wood veneers even down to the little £99 *Sonata*, which was an obvious Best Buy when reviewed back in our June '89 issue.

The model under scrutiny here is, as its name suggests, a luxury derivation thereof, the price increase to £129 permitting extra features such as bi-wire terminals, uprated crossover components and a better quality (or at any rate more expensive) metal dome tweeter.

The *SP* is a little larger than most miniatures, and looks much more like a piece of real furniture than most of its rivals, thanks to the proper wood veneer used on all six faces - which is rather better quality than that used for the standard *Sonata* if my memory serves me correctly. To use the grille would seem a bit of a shame, though households where tiny feet patter should note that the tweeter dome is both shiny and otherwise unprotected. It's a pity the mounting lugs are so ugly.

Besides the 25mm metal dome tweeter, the main driver has a small (105mm) undamped paper cone, terminated by a quite wide surround. Both are secured with proper T-nut bolts, which might have been tighter. The lightly damped sealed box is built from 15mm high density MDF or some such, and the simple crossover, terminals and units are all hardwired with generous cable.

Note that the bi-wire option is only obtained by removing one terminal block and snipping two links.

Test Report

Measured when sited well clear of walls, the balance of the *Sonata Plus* is clearly bass light, though mid-prominent might be the more appropriate adjective, since the midband in its broadest sense (150Hz-2.5kHz, roughly four octaves) is some 5dB louder than the bass and treble.

Wall siting takes care of the bass end of things, giving impressive and useful in-room extension to below 50Hz - indeed, too close to the wall could overdo things a little. But there's no such fix available for the treble. Judged by both the norm and the subjective experience, a degree of treble roll-off on the room traces is desirable, but the *SP* goes several dB beyond the norm here.

The otherwise good bass-to-mid balance is marred by some unevenness, and the tweeter seems a little axis-sensitive. Sensitivity is just a shade below average, while the load is a simple one that any amplifier will happily drive. The grille is better left off (in order to hear the tweeter better), and highish stands will bring the enclosure to the right height for ideal on-axis listening.

Sound Quality

Incomplete contrast to its cheaper brother, the *SP* received little praise and significant criticism in the panel tests, though perhaps the consensus was nearer indifference. To describe a loudspeaker as sounding 'pleasant' - as several did - is praise of a kind, but of the fainter kind that stops just short of damnation.

Some wall assistance is mandatory in balancing the bass, which certainly achieves a respectable standard in maintaining the flow of the music.

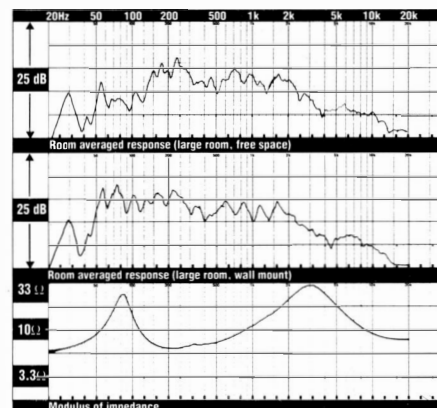
Dynamics are fine too, but vocals certainly sound recessed and rather boxy, and in the final analysis the sound is unacceptably dull, lacking sparkle, transparency and speed, tending in turn to make the music rather boring.

Conclusion

Frankly, I can't help wondering whether this model should be termed the *Sonata Minus*. I'm quite sure that the metal dome tweeter fitted to this luxury variation costs rather more than the little Audax device fitted to the standard *Sonata*. But that cheap little Audax tweeter has turned up in all sorts of giant-killing miniatures over the years: it's far from perfect, but then again so are all tweeters, whatever their technology. And in this instance its substitution by something apparently more hi-tech has clearly failed to enhance the performance of the package as a whole.

TEST RESULTS

Size (h x w x d)	32 x 23 x 21 cm
Weight	5.5 kg
Recommended amplifier power	20-60W
Recommended placement	quite close to rear wall
In room averaged response limits 50Hz-10kHz	+/-7dB
Large room/space LF roll-off (-6dB ref midband)	30Hz
Large room/wall LF roll-off (-6dB ref midband)	30Hz
Large room output at 20Hz (ref midband)	-15dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£129





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Recommended



This is a new model to KEF's popularly priced C-series range, though the company left room for it when originally setting up the nomenclature. The C75 and C95 have both been through the *Choice* test programme, and both passed with honours. Rather than simply filling in the gap between, the £549 C85 shares the same cabinet dimensions as the larger model, but actually costs a full £150 per pair less - thanks to economies made in both technology and finish.

First out the window is the real wood veneer, which has been replaced by a vinyl print which certainly looks tolerable enough in the black of the review samples. Then there has been some saving on crossover components, due to the elimination of the conjugate components that flatten out the impedance seen by the amplifier. Finally, the coupled cavity bass technique has been replaced with an orthodox front-mounted woofer, which

is reflex loaded via a port placed just below it.

If the bass is now relatively conventional, the same cannot be said for the mid and treble, which uses KEF's proprietary *Uni-Q* driver, a clever technique which places a miniature tweeter under the dust cap on the pole piece of the (large) midrange driver. I'm told that some customers (in naive overseas markets) object to paying all that money for a speaker without a tweeter, which only shows which organs they were using to buy hi-fi with.

The advantage of *Uni-Q* lies in making the transition from midrange to tweeter. When placed conventionally a few inches apart, interference lobes create relative balance shifts with changes of listener position, but in *Uni-Q*'s coincident placing this problem is largely resolved.

The box consists of an 18mm vinyl wrap, partition-braced between drivers. The 150mm plastic cone bass driver works into the generously ported lower section, which is damped by an elaborate cocktail of acoustic foam lining and fibre fill. The six driver fixings were barely tight, and were coarse, small gauge woodscrews. The square cast driver basket is deliberately shaped to provide tension, but that presumably implies tight screws or bolts, and threading that is less liable to strip.

Two complex high rating PCB crossovers are tag connected to the drivers and gold plated bi-wire terminals. The spikes are rather flimsy and don't tighten well, evidence of some lack of commitment here I suspect, though the little moulded plastic covers are handy for reviewers. The grille has a clever plastic frame with little acoustic impediment, and looks better on.

Test Report

Sensitivity is a usefully high 89dB or thereabouts, though you'll have to supply roughly two watts to achieve it because the impedance is low right across the band. Bass extension is perhaps a shade disappointing considering the size of the cabinet.

This is not a model that should be placed near to walls, since the mid-bass output is clearly too strong. Pull it out a few feet into the room and the response looks remarkably well balanced. 50Hz remains prominent (thanks to the room), and there's a little unevenness here and there, but far less than most other speakers supply, and the crossover region is virtually seamless.

Sound Quality

The 85 did very well indeed in the blind tests, receiving fullsome praise from all but yours truly - and even I wasn't too rude about it. "Easy to forget the speaker and enjoy the music", was one response, while others commented favourably on the neutral balance, tunefulness and good timing. The only real criticism concerned the bass, which one described as "rich and laid back", another as "slightly overblown and ploddy", which sounds like much the same observation processed through different value sets.

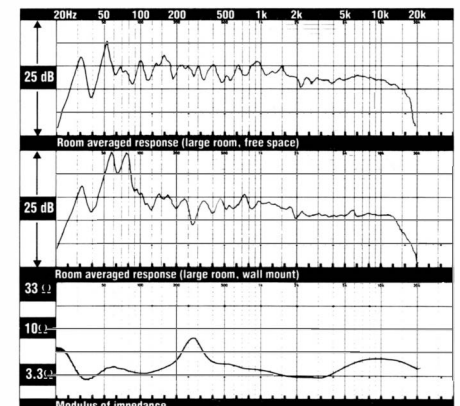
From my subsequent listening, I have to say that I think the panel got a bit carried away. The 85 is certainly a highly competent design, especially in terms of driver integration and the refreshingly stable stereo perspectives. But it is also a bit bland, a bit too thick through the mid-bass region and just a bit short of drive and energy - somehow it doesn't sound quite as loud, powerful or extended as it should.

Conclusion

Although it's not my personal favourite, the C85 will clearly please most people most of the time, and is therefore warmly Recommended. It is further evidence (if any were needed) of KEF's masterly command of acoustic engineering, which clearly take precedence over mechanical considerations.

TEST RESULTS

Size (h x w x d)	88 x 25 x 32cm
Weight	19kg
Recommended amplifier power	15-120W
Recommended placement	well clear of walls
In room averaged response limits 50Hz-10kHz	+/-5dB
Large room/space LF roll-off (-6dB ref midband)	27Hz
Large room/wall LF roll-off (-6dB ref midband)	27Hz
Large room output at 20Hz (ref midband)	-12dB
Estimated midrange sensitivity (ref 2.83V, 1m)	89dB/ 2.83V current hungry
Impedance characteristic (ease of drive)	
Typical price per pair (inc VAT)	£549



Lindley New Age

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A relative newcomer to the world of hi-fi loudspeaker manufacturing, Lindley Audio's *New Age* loudspeaker makes no attempt to ape its contemporaries, preferring to strike out boldly in new directions of technique and aesthetics. The slim tubular column with circular hardwood endplates has an almost classical simplicity, though our sample's combination of black baffle and light beige enclosure looked a bit odd, while the grille is a rather apologetic affair.

The column itself started out as a section of heavy plastic tubing, which as a material should offer good rigidity and a degree of inherent self damping. The top section of the tube is cut away and a long flat panel is fixed in position, forming the driver baffle at the cutaway and extending most of the way down the tube. This further stiffens the *New Age*'s enclosure and also turns it into a much longer folded tube extending from behind the drivers to an

exit port just below and in front of the main driver.

This technique, known as tuned column loading, is rarely found these days, though it bears some similarity to certain so-called (ported) transmission lines. The length of the column is chosen so that its natural resonance coincides with and damps the natural resonance of the main driver, while also augmenting the bass output of the system.

The hardwood base makes an elegant plinth and is equipped with (optional) spikes for optimum floor coupling, though the small footprint and high centre of gravity do restrict the absolute rigidity that the baffle can achieve. The high power, simple crossover circuitry is contained within the base, well away from any magnetic fields, though only a single terminal pair is currently fitted, so bi-wiring/amping is not strictly on the agenda. All is hardwired with heavy internal cable, though somewhat surprisingly in this age of simplified signal paths, the tweeter is fed via a potentiometer which allows its level to be adjusted to taste.

The drivers are neatly rebated in the black flock covered medium density fibreboard (MDF) baffle, secured by machinehead bolts - six for main driver - which might have been tighter and seemed inclined to strip threads. The cast chassis main driver has a massive magnet and clear plastic 125mm cone, the tweeter uses a 25mm soft fabric dome. The baffle/divider is 19mm MDF, while the tube itself is 12mm thick. A foam lining has been carefully tailored and fitted.

Test Report

The response unevenness means the sensitivity rating can only be a ballpark figure, but round about 86dB, or a little below average, is the best estimate. Which is very creditable when taking into account the nice'n'easy driving impedance and the good low frequency extension from a far from bulky loudspeaker.

The response itself is distinctly uneven, with more than a suggestion of the classic three-humped effect. Wall proximity appears to do more harm than good, by over-exaggerating the mid-bass, the relative lack in the upper bass being the main problem, leaving the broad and quite flat midband itself rather exposed. Though the level of the treble may be increased some 3dB above that shown in the trace (or reduced to zero), higher settings make the 12kHz peak more irritating subjectively.

Sound Quality

The panel gave the *New Age* a rather mixed reception, enjoying the good sense of space, air and scale, but finding the overall pace a little slow and the musical message somewhat short of emotion. Though the bass itself is extended and quick, it seems somehow detached from the rest of the band. The mid and upper bass are quite coloured, tending to clog up and sound congested, while upper harmonics are a little suppressed. One panelist referred to bass players wearing gloves!

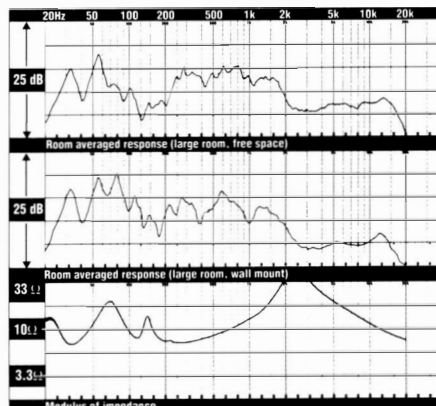
The midrange and treble are nicely coherent and focused, though the treble sounds a bit spitty, and there's a degree of 'cuppy' coloration. Stereo is very precise, albeit with the sort of 'hot seat' focus whereby perspectives shift with head movements.

Conclusion

Despite attractively different aesthetics, fine stereo performance and exceptional bass extension, the *New Age* lacks either the neutrality or speed for formal recommendation at over a grand. But it is fundamentally enjoyable, for all the quirks, and well worth auditioning.

TEST RESULTS

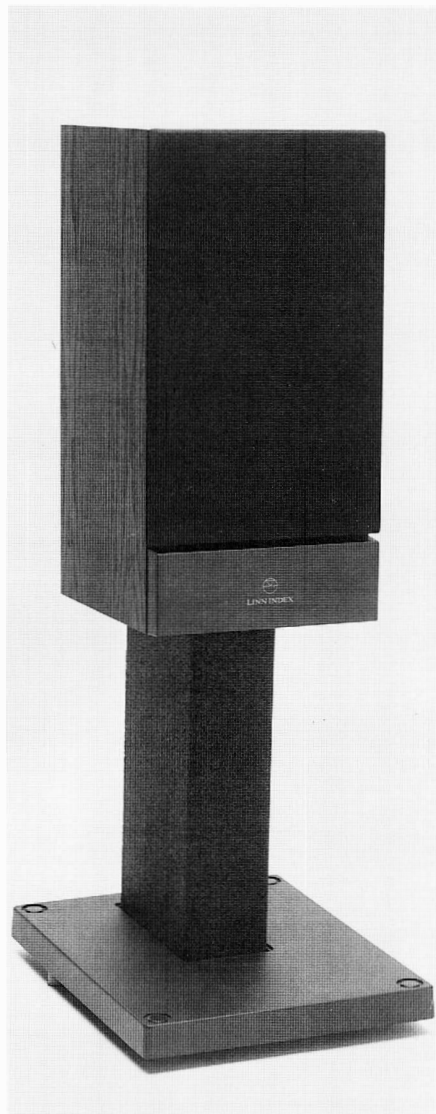
Size (h x w x d)	105 x 23 x 23cm
Weight	19kg
Recommended amplifier power	20-100W
Recommended placement	well clear of walls
In room averaged response limits 50Hz-10kHz	+/-8dB
Large room/space LF roll-off (-6dB ref midband)	25Hz
Large room/wall LF roll-off (-6dB ref midband)	25Hz
Large room output at 20Hz (ref midband)	-9dB
Estimated midrange sensitivity (ref 2.83V, 1m)	86dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£1,100 (depending on finish)



Linn Index II/KuStone

Best Buy

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The original *Index* was Linn's first attempt at a modestly priced loudspeaker, and was (predictably enough) a pretty controversial product, tending perhaps to give mechanical considerations priority over acoustic criteria. The resultant brew was strongly favoured by some dealers but almost ignored by others, and now - several years down the road - the rather dumpy enclosure looks more than a little dated.

Index II is therefore a complete redesign, slimmer and altogether prettier than its predecessor. It's a conventional enough 2-way sealed box, very smartly presented and pretty good perceived value for £235, especially given Linn's fine reputation for build quality.

But the loudspeaker is only part of the story. More interesting perhaps is a radical new stand, the £109 *KuStone*, which *Index II* is designed to partner. It's not obligatory, but most customers are opting for the

combination, and as a personal believer in the concept of the integral stand I decided to test it that way - as a £344 compact floorstander.

Aesthetically, it's very neat: the stand is lower than most while the central pillar is shaped to tilt the enclosure back a few degrees - a handicap for home horticulturalists, but discrete and almost cute when mounted close to the wall as intended. Anthracite grey plastic trim conceals the driver mounting, tidying the baffle very smartly and providing the spacing and grooving for the clever (optional and sonically inconsequential) stocking mask grille.

Though the sealed box loading only requires a modest main driver magnet, the speaker itself weighs a solid enough 6kg. The baffle is built from high density 18mm board while the vinyl covered wrap is 15mm stock, stiffened by a circumferential brace, with light damping fill. The generously rated PCB crossover is fixed behind the bi-wire 4mm sockets and hardwired to the drivers using hefty multi-strand cable. The main driver uses a 115mm plastic cone, the tweeter a 19mm soft dome.

KuStone consists of a large and substantially spiked metal baseplate, neatly disguised with plastic trim. This gives a good footprint and bolts directly to the speaker with long metal rods tensioned against what looks like a shaped metal breeze block, an expanded metal described as microporous. The whole caboodle weighs in at 10kg, and can be used with other loudspeakers via a spiked top plate (Blutak coupling is not an option here).

Test Report

It must have been kind-to-amplifiers week in Scotland when this design was put together - certainly there's no sign of the low impedances found in other Linn designs. Which is one of the factors behind the lowish (86dB/W) sensitivity rating, the other being an exceptionally good bass extension for the size of the box - compare the 20Hz figures.

Measured only at its designated close-to-wall site, the response is both smooth and well balanced, if a shade rich in the mid-bass (50-200Hz) and slightly peaked up around 6-9kHz. The crossover transition is virtually seamless.

Sound Quality

To describe any Linn speaker, let alone an *Index*, as a good overall compromise seems like a contradiction in terms, but that was

how the panel heard - and liked - it. Certainly this is a much tamer animal than its predecessor, though that should not be taken to imply criticism, and the slightly bright and obvious treble and the generally quick and well defined bass are both links with other Linn speakers.

Above all, the music remains nicely coherent and the soundstage delivers a fair measure of transparency, at any rate by wall-mount standards. Speed and timing are both pretty good, but the sound is actually slightly soft dynamically, rather laid back and somehow lacking power and energy. The bass region is clean, clear and quite extended, if a bit lacking in authority. Somehow the dynamic range is rather more impressive than the dynamics themselves.

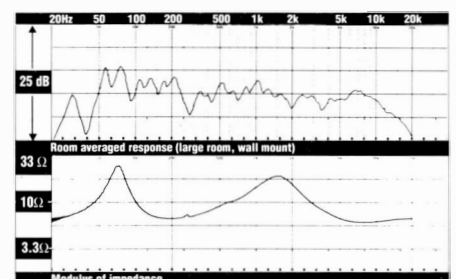
Conclusion

Not as fast or dramatic as one has come to expect from Linn loudspeakers, *Index II* plus *KuStone* nevertheless make very nice music together, delivering generally good resolution and clarity throughout the frequency band, including the bass region where most speakers of this size and price run into trouble.

At £344, the package is sonically very competitive, aesthetically way ahead of the pack, and good engineering and material value too. Which leaves me no alternative but to hang a Best Buy hat on the corner of the review, adding just the caveat that my drive system uses several Linn components, which might have given *Index II* a bit of a head start.

TEST RESULTS

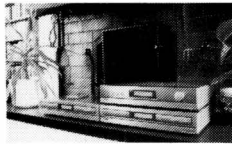
Size (h x w x d)	44 x 21 x 23.5cm (box only)
Weight	6kg (stand 10kg)
Recommended amplifier power	20-80W
Recommended placement	<i>KuStone</i> stands close to wall
In room averaged response limits 50Hz-10kHz	+/-7dB
Large room/wall LF roll-off (-6dB ref midband)	28Hz
Large room output at 20Hz (ref midband)	-12dB
Estimated midrange sensitivity (ref 2.83V, 1m)	86dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£235 + £109 stand



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Mission 760

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Taken over by Polly Peck just prior to the latter's well publicised troubles, the current plan is that this major British hi-fi specialist will now operate alongside Japanese electronics brand Sansui (another component in the same group). One marketing idea involves packaging a pair of 760s together with Mission-tweaked Sansui amplifier and CD player as a complete 'starter' system in a single carton, selling for £380 (you get the wiring but the speaker stands are extras).

Mission markets two separate ranges of hi-fi: the Mission-branded value for money models aimed at the mass market, and the upmarket *Cyrus* sub-brand. Both this £99 Mission 760 and the more expensive *Cyrus 780* (see page 73) share the same drivers, front panel dimensions and trim.

The 760 is of course the beer budget variation, with a less deep and substantial vinyl-wrapped enclosure and a single terminal, commercial grade crossover network. Indeed, the rear terminals are those truly nasty bare wire spring clips, though they'll take 4mm bananas with a bit of a push.

Terminal prejudices aside, there seems little wrong with the rest of the package. It's a stylish slimline in the modern idiom, and the grille is a real feature, using the sort of injection moulding investment only feasible for high volume models, to finish and shape the front elegantly, discreetly and without either acoustic compromise or the slightest possibility of rattles.

Following Mission's tradition of mounting the main driver above the tweeter, the drivers were really tightly mounted into the moulded plastics front baffle, apparently using coarse

woodscrews. This is a surprisingly thin panel, so taking up little of the limited enclosure volume. Ribbing provides stiffening and a small reflex port is incorporated.

Dig a bit deeper and some of the economies become evident. The box itself is built from comparatively thin 10mm stock, though the shape itself provides good inherent stiffness. The simple PCB crossover uses decent enough components, but internal wiring is cheap and driver connections are spring tags. The main driver has a light 100mm doped paper cone, small magnet and pressed steel frame, while the tweeter is a 19mm fabric dome with short horn flare.

Test Report

Almost indistinguishable from the *Cyrus* version, the response is well balanced overall, especially with a little low frequency wall assistance. However, it's not particularly smooth, the band around 1kHz being rather prominent.

Sensitivity is high for a £99 miniature, though this is partly due to a lowish impedance throughout the bass, and partly to the limited bass extension, which falls off sharply below 50Hz (in room). The crossover region is well integrated (though less so than *Cyrus* in this respect), so the listening axis is uncritical; the grille appears to be harmless.

Sound Quality

Every so often a cheap hundred pound miniature turns in an outstanding result when tested under blind conditions for *Hi-Fi Choice*. It happened with the JPW *Sonata*; it happened with the Mordaunt-Short *MS3.10*; now the Mission 760 has

repeated the trick.

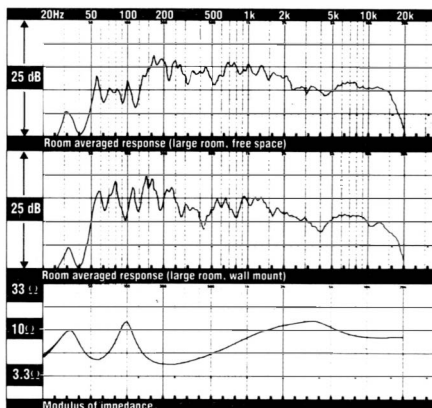
Definitely a superior miniature, it sounds clear and lively with inherently good timing. An impressive lack of boxiness allows a quite generous soundstage to be generated with a decent level of transparency. There's a little upper bass thickening and more than a touch of obviousness and untidiness in the treble, but these are relatively minor complaints, especially given the price context.

Conclusion

An obvious Best Buy, the 760 re-establishes Mission at the forefront of the budget miniature market, a position it last held with the memorable 70 a number of years ago. The sound may lack a little refinement but it's exceptional for the price, while the generous sensitivity will aid those with budget amplifiers, providing these are of reasonably good quality. The hope must be that the current difficulties surrounding the parent Polly Peck group don't interfere with the Mission operation.

TEST RESULTS

Size (h x w x d)	29 x 18 x 20 cm
Weight	3.5 kg
Recommended amplifier power	15-60 watts
Recommended placement	on light stands close to wall
In room averaged response limits 50Hz-10kHz	6dB
Large room/space LF roll-off (-6dB ref midband)	50Hz
Large room/wall LF roll-off (-6dB ref midband)	50Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB/W
Impedance characteristic (ease of drive)	A little demanding
Typical price per pair (inc VAT)	£99





GLOSSARY

The Hi-Fi Choice dictionary of audio terminology, explaining all the weird and wonderful adjectives used by our reviewers, as well as technical abbreviations.

AM: Amplitude modulated; see 'Medium Wave'.

ACOUSTIC BREAKTHROUGH: Sound that gets into the turntable and hence the cartridge from the air and thereby creates a risk of acoustic feedback.

ACOUSTIC FEEDBACK: If any sound in the room can find its way through the body of the record deck to the cartridge stylus, then that sound will be reproduced from the loudspeakers, along with the wanted programme material. If too much of this sound from the loudspeakers is picked up by the cartridge in this way then a vicious circle of acoustic feedback will be created.

ACTIVE: Speaker systems which contain electronic crossovers and where the drive units are connected directly to power amplifiers.

ALIGNMENT PROTRACTOR: A device used to minimise the lateral tracking error of a cartridge/arm combination.

AMPLITUDE: Size or magnitude; hence the amplitude/frequency response, known normally simply as the frequency response, which describes the relative loudness of the system at different frequencies with a constant input voltage.

ANECHOIC: Without echo; a special room or 'chamber' with thick sound absorbing materials on all surfaces to prevent reflections.

ARM MASS: More accurately called *effective* arm mass, because it is *not* the weight of the arm on a pair of scales. It is the mass of the arm and cartridge combination that appears to be concentrated at, and thus felt by, the stylus tip which is tracking a record groove. There is nothing inherently good or bad about arms with light or heavy effective mass; what matters is the manner and choice of their combination with cartridges of different compliance and the low frequency resonance produced by such combination.

AZIMUTH: With reference to tape and cassette recorders, the alignment of head gap to tape path.

BALANCE: 1) The overall relative loudness perceived at different frequencies (eg bass, treble); 2) the accuracy of the match between the two channels of a stereo transducer (eg cartridge or pair of loudspeakers).

BANDWIDTH: A range of frequencies with presumed defined upper and lower limits.

BASS: Lower part of the frequency spectrum.

BELT DRIVE: The motor has its rotational speed geared down to the required platter speed (33 $\frac{1}{3}$ rpm for LP discs) by a rubber or similar resilient belt which runs round a small pulley on the motor shaft and a large pulley attached to or part of the platter.

BEXTRENE: A plastics material frequently used for bass and mid-range cones.

BIAS: (*turntable/arms*) Because the cartridge on a pivotal arm is being drawn across the record surface by the stylus tracking at an angle offset from the pivots, groove friction produces an imbalance of lateral force. Bias is the application of a compensatory lateral force acting in the opposite direction.

BIAS: (*tape*) This refers to a high frequency current passing through the record head which allows the audio current also passing through the head to produce reasonably linear magnetisation of the tape at all levels permitted by the combina-

tion of each machine with the tape. The lowest level of bias is required for ferric cassettes, a slightly higher one for ferrichrome, an even higher one for chrome or pseudochrome, and the highest for metal.

BOTTOMING: The stylus scraping on the distorted rounded bottom of the groove due to incorrect stylus geometry.

CANTILEVER: The thin rod or tube that connects the stylus to the armature and hence the cartridge body.

CAPACITANCE: An element of electrical impedance that is particularly important when matching pickup cartridge, arm leads and amplifier input characteristics to achieve a flat frequency response from discs.

CLIPPING: This is reached when a circuit is overloaded and overdriven, resulting in bad waveform distortion and audibly unpleasant effects.

COLORATION: A general term used to describe the audible effects of distortions, particularly in loudspeakers and record players. These are usually caused by frequency response irregularities and/or resonances.

COMPATIBILITY: The selection of interdependent components to achieve optimum system performance; notably arm/cartridge mass/compliance matching, cartridge electrical loading, or loudspeaker compatibility with amplifiers.

COMPLIANCE: A measure of the springiness of the cantilever/armature seen from the stylus, expressed in compliance units (Cu), where 1 cu = 10⁻⁶ cm/dyne.

CROSSOVER: An electrical circuit which uses combinations of inductors, capacitors and resistors to divide the signal from the power amp into the required frequency bands and with any necessary equalisation for feeding to the individual drive-units of the speaker system.

CROSSTALK: The leakage from one channel to the other in a two channel stereo system.

CUTTER: Mechanism used to cut recorded signal onto lacquer master; consists of turntable, lathe, cutting head, cutting and servo amps.

DIN: German standards body, responsible amongst other things for a popular range of standard plugs and socket specifications.

DAMPING: A means of controlling resonances by means of a resistive medium (electrical, mechanical, or acoustic depending on situation).

DECIBEL (dB): A logarithmic unit that is convenient for expressing ratios that span a wide range on a linear scale. For simplicity it can be regarded as a measure of relative loudness.

DISTORTION: Literally this can mean any deviation from the original, but usually refers to harmonic rather than intermodulation distortions when not specified.

DOLBY: Covers various signal processing/deprocessing systems, but normally refers to the B & C noise reduction systems used in cassette record/replay, and the B system used for music-cassette replay.

DOPING: A technique involving the application of damping to a loudspeaker driver cone in order to assist in controlling resonances.

DOWNFORCE: The weight, measured at the stylus, which holds it down in the groove.

DRIVE UNIT (DRIVER): The term used to distinguish the loudspeaker unit itself, be it bass, midrange, treble or fullrange in application, from the complete loudspeaker system which combines drive units, cabinet and crossover into a total design.

DROPOUTS: Momentary reductions of programme level due to inadequate head/tape contact caused by oxide particles shedding off the tape onto the head gap, or inadequacies in tape transport or tape.

DYNAMIC RANGE: The ratio in dBs between the quietest sound that can be successfully recorded and the loudest which can be accepted without serious distortion on an average programme.

EFFECTIVE MASS: The inertia, or mass-controlled resistance to movement, of a device, particularly important with regard to tonearms.

EFFICIENCY: The amount of acoustic power delivered for a given electrical input power.

ELECTROSTATIC: A principle employed in some loudspeaker transducers using static electricity effects to set up a polarising field within which the modulated transducer medium moves.

ELLIPTICAL STYLUS: A specially shaped stylus profile that makes the 'plan view' radius along the length of the groove smaller than the 'elevation view' contact radius viewed from the front.

EQUALISATION: (*general*) The deliberate modification of frequency response, usually in response to some engineering limitation or deficiency.

EQUALISATION: (*tape*) This refers to the necessary change in frequency response required of an amplifier so that overall flat frequency response is obtained from a tape medium. Equalisation is required both on record and replay. Any tape recorded on a good cassette recorder should have the same inherent response when played back on another correctly set up machine, since all playback equalisations should have been standardised. These standards are normally specified by the time constants of the circuits involved, eg 79 μ s or 120 μ s (see 'Microseconds').

FARAD: Measure of capacitance.

FM: Frequency modulated; often used to describe radio transmissions of high fidelity potential on the VHF band.

FARAD: Measure of capacitance.

FERRITE ROD: A short rod type aerial used for AM reception; may be fitted internally or externally to a tuner or receiver.

FERRO-FLUID: A magnetic fluid which is introduced into the voice-coil gap to provide damping and/or improved cooling.

FILTER: A circuit (normally) used to restrict the bandwidth of a system; may be fixed or switchable.

FREQUENCY RANGE OF SPECTRUM: Can refer to any particular group of frequencies, but commonly applied to the audible band from 20 to 20,000 cycles per second (Hz), extending from the deepest bass to the highest audible harmonics.

FREQUENCY RESPONSE: The variation in output over a frequency range, particularly of a transducer; can be expressed as a range with decibel limits, or depicted graphically.

Hz (HERTZ): 1 Hz = 1 cycle per second and is a measure of frequency which corresponds to musi-

cal pitch (the higher the frequency the higher the pitch).

HF: High frequency.

HARMONIC: Harmonics are the whole number multiples of a base frequency called the *fundamental*.

HARMONIC DISTORTION: The addition of unwanted harmonics to a signal.

HUM: A low frequency interfering sound produced by break-through or interference from mains wiring or circuitry.

IHF: American Institute of High Fidelity, an important standards body.

IEC: An international standards body.

IMPEDANCE: Measure of resistance (and reactance) in alternating (ie audio) signals; this is of some importance in the compatibility of both cartridges and headphones with amplifiers. For convenience sake is measured in ohms.

INTEGRATION: Used to describe the success with which the output from two drive units combine to give smooth output through the crossover region.

INTERMODULATION (IM): A form of distortion arising from two or more signals producing non-harmonic signals that correspond to the sum or difference of the two frequencies.

KILO (k): prefix meaning one thousand.

LED: Light Emitting Diode; an indicator light.

LF: Low frequency.

LATERAL FRICTION: The resistance to movement of an arm and cartridge combination in the horizontal plane (ie across a record), caused by friction in its bearings.

LINEAR: A transducer that produces an output that exactly portrays its input over the required operating range is described as linear, and is hence distortion free. Hence also nonlinearities (distortions).

LINE-CONTACT: A special stylus profile that extends the ellipse, increasing contact length up and down the sides of the groove.

LOAD OR LOADING: The impedance (including resistive and reactive components, ie ohms, mH, pF) seen by one component looking back to its interconnected component; of importance in compatibility of cartridge/amp, and amp/headphone.

'LOUDNESS': An equalisation circuit frequency switchable on amplifiers which is designed to compensate for presumed hearing characteristics at low listening levels by boosting bass and treble.

MOL: Maximum operating level of tape normally referring to 5% distortion of 315Hz or 3.15kHz.

MEDIUM WAVE: An AM transmission band incapable of high fidelity signals.

MICRO-(μ): Prefix for units meaning one millionth of.

MICROSECONDS (μ s): The time constant of a resistor capacitor combination involving a frequency response change (equalisation).

MIDRANGE, MIDBAND: The central part of the audible frequency range where the ear is most sensitive.

MILLI-(m): Prefix for units meaning one thousandth of.

MODULATION: The audio signal is 'stored' by means of modulations within a medium, eg the 'wiggles' in the groove of a plastic disc, or the

magnetic coding on a tape.

MODULATION NOISE: An additional noise added to tape noise, which increases with the degree of modulation of the tape, caused by the properties of the magnetic coating. This noise has most of its energy near the modulation frequency (causatory tone).

MOVING COIL: A transducer (eg cartridge or headphone) where the signal is generated by the movement of a coil within a magnetic field.

MOVING MAGNET: The most common form of cartridge transduction, where the magnet moves while the coils are held relatively stationary.

MULTIPLY FILTER (MPX): A circuit which introduces severe attenuation at supersonic frequencies to decrease interference encountered with the output from some stereo FM tuners.

NANO (n): Prefix meaning a thousandth of a millionth of.

NOISE: Random unwanted low level signals.

NOISE MODULATION: An unwelcome breathing effect that can be heard on some programme material, produced by poor noise reduction systems, or circuits.

OCTAVE: Two-to-one ratio of pitch or frequency.

OFFSET ANGLE: The angle measured between the centre line of the pickup cartridge and the line which joins stylus and arm pivot point.

OHM: Unit of electrical impedance (including reactance) or resistance; also kohm, where 1 kohm = 1,000 ohms.

OVERHANG: The extent to which the cartridge stylus extends beyond the centre of the platter is critical, and controlled by fore and aft adjustment of the cartridge on the arm.

PASSIVE: The most common type of system, where drivers and crossover are driven from a single power amplifier.

PEAK RECORDING LEVEL: A level above which distortion becomes apparent. This distortion is introduced when the oxide particles almost reach magnetic saturation, and thus will accept no more level.

PHONO: The most commonly used plug/socket combination in audio components.

PICO (p): Prefix meaning one millionth of a millionth of.

PORT: An opening in a cabinet which is tuned to characteristics of the bass driver and the enclosure volume to provide reflex type bass-loading.

POWER AMPLIFIER: The part of an amplifier that provides power to drive the loudspeakers: usually integrated, it is sometimes a separate component.

PREAMPLIFIER: The part of an amplifier that accepts the input signals, sorts them, applies any necessary equalisation, and then passes the signal to the (normally integral) power amplifiers.

PRESENCE: A quality of forwardness or immediacy in a sound balance, generally related to an upper-middle frequency response boost.

PRINT-THROUGH: A pre- or post-echo of a loud signal created by magnetisation occurring from one layer to an adjacent layer after the tape has spooled or been recorded.

Q: A measure of the magnitude and shape of a resonance; the higher the Q, the sharper and more severe in amplitude the resonance.

REFLEX: a system of bass loading (using port or ABR) which offers improved efficiency and bass power handling at the expense of subsonic control compared to a sealed box.

RUMBLE: The low or medium frequency sound produced mechanically by any moving parts in a turntable, mainly the motor and platter bearings.

SENSITIVITY: The volume of sound output for a specific electrical voltage input.

SEPARATION: As between the two channels of a stereo pickup; see *crosstalk*.

SHIBATA: A special stylus extending the elliptical to a 'line-contact' type of profile.

SIDE-THRUST: A force acting on cartridges in pivoted (ie not parallel tracking) arms, due to the stylus/vinyl 'friction' acting along the line of the offset angle; hence bias or side-thrust compensation.

SIGNAL-TO-NOISE, SIGNAL/NOISE, S/N: The difference in total output when an applied signal is removed.

STYLUS: The specially shaped piece of diamond in contact with the groove and connected to the cantilever.

SUBSONIC: Below the audible range, ie below 20Hz.

SQUARE WAVE: A signal which consists of a fundamental plus a (theoretically infinite) series of odd (3rd, 5th etc) harmonics in a precise phase and amplitude relationship. It is useful for examining transient performance, symmetry, resonance control and 'ringing'.

THD: Total harmonic distortion.

TRACING: The following of the groove modulations by the stylus; hence for example tracing distortion, caused by the inability of a spherical stylus to trace the high frequency inner grooves on a disc.

TRACKABILITY: The ability of cartridge to cope with large amplitude modulations (or of the arm and cartridge to follow the groove itself properly).

TRACKING ERROR: The discrepancy between the truly tangential angle at which a record is cut and the slightly off-tangential angle at which it is tracked by a stylus on a pivoted arm during some parts of the arm's travel.

TRANSIENT: Signal of very short duration.

TREBLE: Upper part of frequency spectrum, typically above about 3kHz.

TWEETER: A small drive unit designed to operate over the high frequency range.

ULTRASONIC: Frequencies above audibility, ie greater than 20kHz; also *supersonic*.

VERTICAL TRACKING ANGLE (VTA): The angle at which the plane of motivation of the stylus is set with respect to the vertical when viewed from a side elevation of the cartridge. Should match the 20° cutter standard.

WEIGHTING: A factor or function that is applied to a measurement to increase its relevance and usefulness.

WOOFER: A drive unit that operates over the bass portion of the audio range.

WOW AND FLUTTER: Low and high frequency pitch variations (from poor tape transport of turntable platters with speed drift).

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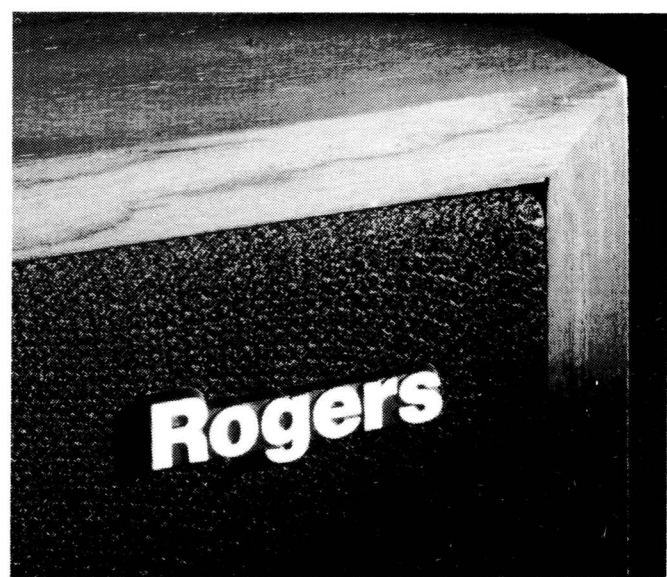
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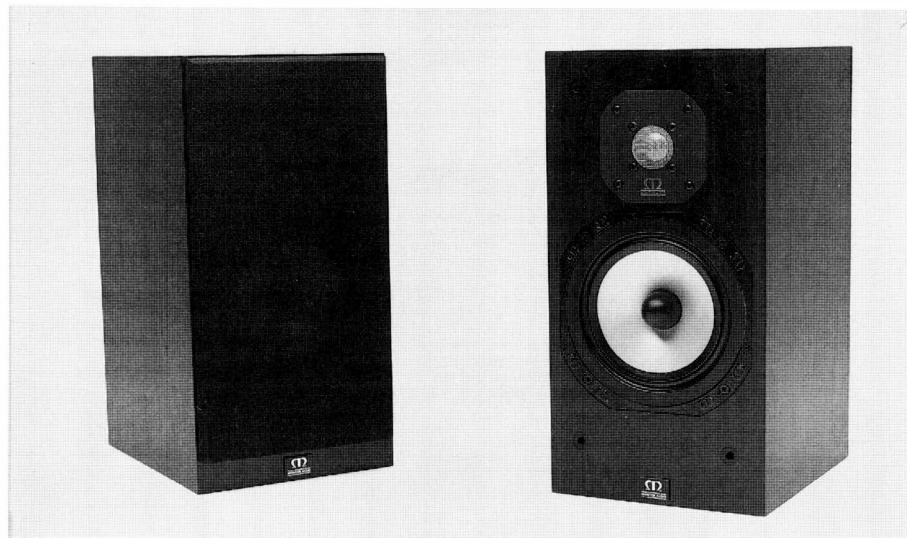
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Monitor Audio Studio 10

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Monitor Audio did much to popularise the use of metal dome tweeters a year or three back, this ingredient becoming a key feature across most of the company's extensive range. The next stage, naturally enough, is to use metal (combined with ceramics) for the cone of the bass/mid driver as well - an engineering feat that is rather less easily accomplished.

Such is the £1,090 *Studio 10*, a classy and pricey near miniature that was the first in a line of upmarket, prestige models featuring this newly developed driver. It first appeared the best part of a year ago, and has already enjoyed more than its fair share of critical acclaim, though it's taken 'til now to get around to the *Choice* test programme.

The carton may be small, but woe betide anyone who doesn't prepare themselves for a proper lift. Discs have been slipped for a lot less than the combined 17 kilos of these babies. They're mouthwateringly beautiful to look at too, providing your sensibilities aren't offended by the rather *outré* gold embellishments (that contribute greatly to MA's successful export drive). Ignoring the gilding, the woodwork is a joy, and as is usual with Monitor, is available in all the finishes you can think of, and more you never even knew about.

The box is solidly built from 19mm MDF, veneered on all six faces. There's a generously proportioned rear port, bituminous damping pads are fixed to the (in)sides, and the whole thing is lined with good quality acoustic foam. Few will wish to hide the baffle, especially as grille is a cheap MDF frame affair.

The drivers were really properly tightened with T-nuts, and nicely rebated too. The main unit - the *raison d'être* for both the speaker and its high price - uses a c120mm metal/ceramic sandwich cone with phase plug dust cap, built onto a lovely solid die-cast frame with massive magnet. Internal wiring is very heavy gauge, hardwired to the well specified, high power bi-wire/-amp crossover. The tweeter is Monitor's established 25mm gold anodised metal dome.

Test Report

Sensitivity is close to average and the impedance is relatively uncompromised, though bass extension is rather sharply curtailed below 50Hz. Above about 150Hz the in-room response looks close to ideal in balance, and smooth and even with it, with good crossover integration and just slight treble focusing around 5-8kHz.

However, the bass region just doesn't seem to integrate with the rest, at any rate in the test/listening room. Even well clear of walls the second octave (40-80Hz) is at least 5dB too strong, a situation exacerbated when closer to walls.

This measured (and audible) midbass over-richness regularly affects a number of designs from a variety of different manufacturers to a greater or lesser extent. However, there's no doubt it's been cropping up rather too regularly and severely in several Monitor Audio models I've assessed recently. The difficulty is knowing whether to blame the speaker or the room, and the truth is probably that each must share part.

Sound Quality

The panel found the *Studio 10* rather confusing. Rather predictably, the bass performance received general censure for its sluggish and heavy quality, though the impression of extension and scale nevertheless had a couple of panellists half convinced, while the rendition of vocals was universally approved.

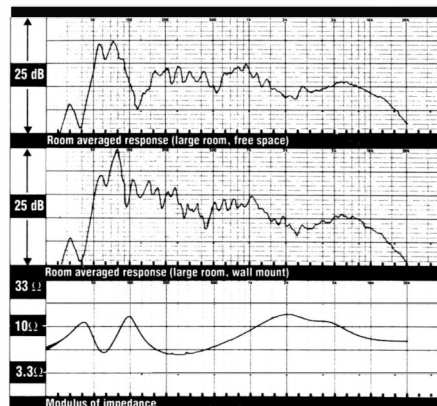
Indeed, the midrange and treble are very sweet and transparent sounding, but this is invariably marred by the thick, heavy and slow bass that doesn't seem to integrate well. The MA matching stands were not available, but I did have the similarly massive Foundation *Designer* (used in panel test) and the equally hefty (and usefully higher) Slate Audio stands on hand. But despite extensive experiment, I couldn't clear the bass clogging. Bi-amping helps clarify things a little, but also tends to make the root of the problem more obvious.

Conclusion

The *Studio 10* must remain damned by the faint praise of being good in parts. The mid and treble show fine transparency and the most delicate detailing, but the whole sound spectrum doesn't quite get it all together, never mind getting on down.

TEST RESULTS

Size (h x w x d)	40 x 20 x 25cm
Weight	8.5kg
Recommended amplifier power	20-70W
Recommended placement	heavy stands well clear of walls
In room averaged response limits 50Hz-10kHz	+/-8dB
Large room/space LF roll-off (-6dB ref midband)	45Hz
Large room/wall LF roll-off (-6dB ref midband)	45Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£1,090



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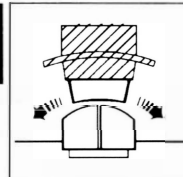
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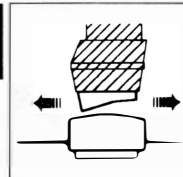
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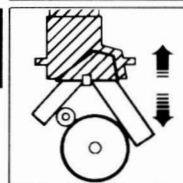
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Recommended



Historically, Philips has made some notable contributions to the field of loudspeaker development, including the brave motional feedback models of a decade ago, though its UK profile in this sector has been low for the past several years. Having made the decision to get back into hi-fi separates, a speaker range is an obvious accompaniment. In our September 1989 issue, we examined the £250 FB815, which is certainly a lot of speaker for the money. This month's representative, the £650 FB825 is a lot of loudspeaker, period.

It's a big floorstanding model with four drive units including a ribbon tweeter, and makes a visually imposing statement when introduced to the listening room. It's too severe and monolithic to be called pretty, but is handsome enough in its way, I suppose, helped by the radiused edges and rebated drivers nestling beneath a plastic trim,

providing you don't look too closely at the slightly tacky and obviously plastic finish.

Four drivers are actually used as a traditional 3-way lineup, the two 155mm doped paper cone bass drivers operating in tandem, and so allowing the width of the speaker to be much narrower than if a single equivalent had been used. The box is a traditional reflex with large rear panel port and much larger internal volume than most. The baffle is 30mm MDF, while the sides are 20mm chipboard, stiffened by a little bracing. The panels are thickly and carefully lined in long-haired wool. Wiring is utilitarian, tag connected to a decent looking PCB crossover, doped paper cone.

The ribbon tweeter has a plastic chassis and was secured by tolerably tight woodscrews, while the 95mm paper cone midrange driver operates in its own very small sealed sub-enclosure. There's widespread evidence of careful cost engineering, but that's only to be expected when selling something as big and heavy as this for a relatively modest price. The plastic frame grille has a thick profile, and should be discarded.

Test Report

This large model makes no attempt to go for high sensitivity, registering an average 88dB rating, but doing so whilst maintaining an easy 8ohm amplifier load. However, given the size of the box, it's rather surprising to discover that the bass is no more extended than a number of smaller models.

Although wall proximity over-inflates the mid-bass region quite dramatically, when sited a metre or so into the room, the 825 turns in a remarkably flat and surprisingly (for one so large) even response across the band. There's a little too much energy around 200Hz, and some odd interference effects above 1.5kHz, but these blemishes look relatively minor in context.

Sound Quality

Big and cost-effective, the 825 also turned in a subtle enough performance in the listening tests to convince the panel of its virtues. The sound is surprisingly airy and free, notably lacking in congestion, if a shade thick and heavy in places. Mid-session, cones were inserted, bringing a worthwhile improvement in precision and timing.

Ironically perhaps, much of the criticism was directed towards the treble end of things, with adjectives ranging

from scrappy to acid. Certainly the directionality of the ribbon tweeter can give rather unpredictable results, which is a bit of a pain, and the one here is set higher off the ground than most. (Ribbons radiate the highest frequencies in a tight beam whose reception requires the ear to be at the same height off the ground as the tweeter.)

However, the sound doesn't really hang together that well when it's driven loud. The bottom end lacks authority and extension, sounding rather slower with compressed dynamics and some muddle on complex material. There's a measure of overhang coloration too, though timing remains pretty good. Male voice has some chestiness, and overall it must be said that the sound is a little bland, though very competent.

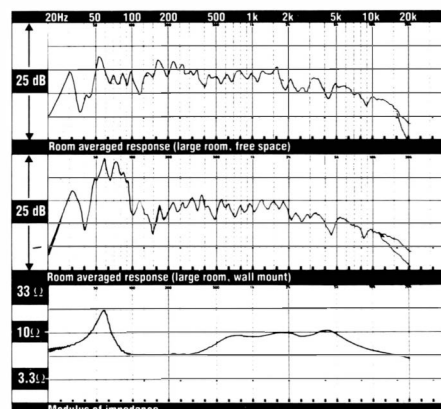
Conclusion

To get away with a box as big as this at a price as low as this whilst still managing to come up with a coherent and spacious sound that is impressively uncongested implies some very subtle engineering.

The 825 clearly deserves Recommendation though it's a pity the loudness and bass welly don't quite match up to the box size, which itself will probably prove something of a commercial liability in the miniature-oriented UK market, even though it's probably largely responsible for the relative lack of congestion.

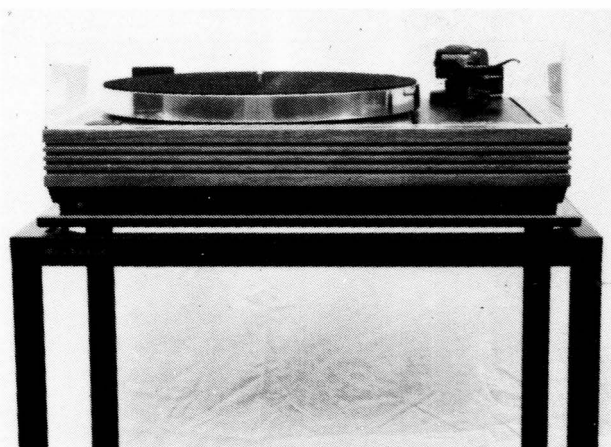
TEST RESULTS

Size (h x w x d)	110 x 29 x 41cm
Weight	33kg
Recommended amplifier power	15-100W
Recommended placement	on cones well clear of walls
In room averaged response limits 50Hz-10kHz	+/-4dB
Large room/space LF roll-off (-6dB ref midband)	25Hz
Large room/wall LF roll-off (-6dB ref midband)	25Hz
Large room output at 20Hz (ref midband)	-10dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£650



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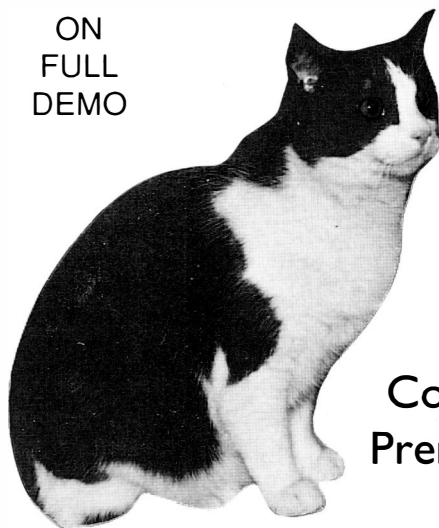
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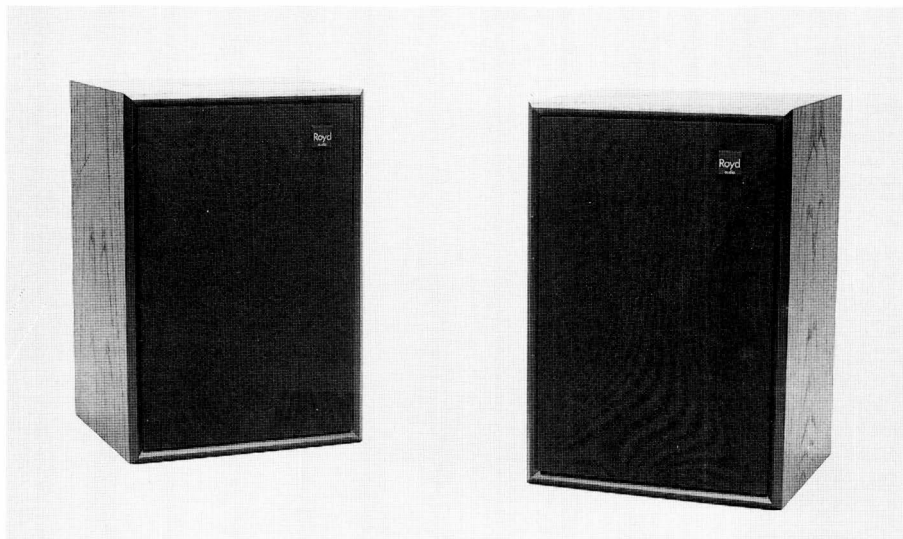


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Royd Sintra

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Recommended



Royd has become something of a specialist in the seven litre enclosure, currently making no fewer than six different models of exactly that same size, selling at every conceivable price from the £115 *A7II* to the brand new £330 *Sintra* reviewed here.

That's not to say Joe Akroyd's trying to milk the miniature market exactly; rather he just happened to upgrade all three of his older miniature models at the same time. The *A7II*, *Coniston R* and *Eden* remain on the roster, while *Seven*, *Sapphire* and *Sintra* upgrade the performance of each respectively, at slightly higher prices.

The most obvious change is the introduction of a new and slightly unusual port arrangement. Previous Royds have used tube ports which exit at the back of the enclosure and also act as bracing between main driver magnet and the enclosure itself, and in the *Eden* this consisted of an aluminium tube. Now Royd has come up with a new rubberised high density tube to do a similar acoustic job whilst also acting as an absorber of energy.

There are plenty of other detail differences too, with revisions to crossover and main driver and the substitution of the Vifa tweeter with a more expensive Scanspeak. But in every important respect, *Sintra* follows in the footsteps of *Eden*, itself a quirky but in certain ways highly impressive design reviewed and recommended a couple of years back.

Trying to pick one up usually results in a gasp of surprise: no-one expects something this small to weigh in at 8kg. There's no feasible access to the interior, since the grille is fixed to prevent any dust getting into the main driver which is deliberately made without a dust cap.

The mass is due, I understand, to slabs of steel which are fixed to the inside to mass-load the panels.

The main driver itself is rather unusual, having a tiny 19mm voice coil and very light paper cone, all mounted in a solid die-cast frame with generous magnet and eight fixing bolts. The soft fabric dome tweeter also has a 19mm diameter coil. All is very nicely, if soberly presented, with a tasty wood veneer. The port exits at the rear, next to a simple pair of 4mm sockets. I wot not of the crossover, save to note a fairly complex impedance characteristic.

Test Report

Sensitivity is a very healthy 88dB/W, and this is in no way compromised by the mild impedance characteristic, though bass extension in one so small is naturally rather severely restricted.

There's nothing of any real consequence below 50Hz (in room), but the response from 50Hz right up to 1kHz is very well balanced when sited as intended back against the wall. The discontinuity at 1.5kHz is a little abrupt, as is the final treble roll-off (c13kHz). The best listening position is at, or a little above, the main axis vertically and the appropriate 30 degrees or so off-axis horizontally.

Sound Quality

The *Sintra* proved rather disappointing in the blind listening tests, which I find difficult to understand since it has become one of my personal favourites. I suspect the explanation may lie in its differentness - a factor that often tends to unsettle listeners and generate negative reactions.

Compared with the norm, *Sintra* does sound rather thin and bright in balance. This is partly due to its lack of real weight, but also to the unusual and very refreshing lack of bloom and boom from its massive and rigid little cabinet.

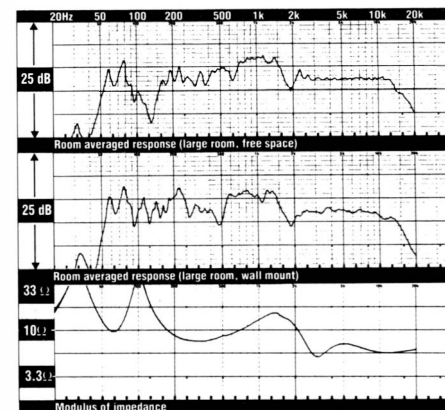
Having taken the time to adjust to the balance, the impressive qualities of speed, air and razor-sharp timing start to shine through. So low is the cabinet signature, it sometimes reminds me of a panel speaker, but a less welcome consequence is that there's nothing to hide any midband inadequacies, which in this case amount to the coloration consequent upon a somewhat isolated and projected upper mid. In my book, that's an acceptable price to pay for the informative and dazzlingly quick mid-bass and the lively and involving dynamics and coherence, but others may not find the compromise as much to their tastes.

Conclusion

Sonically somewhat idiosyncratic, *Sintra* is also highly communicative and informative, and a worthwhile improvement over *Eden* to boot. It doesn't go particularly loud or deep, but in certain important respects sets standards for miniatures - indeed for loudspeakers in general - which demand recognition. The simple fact that it makes music so enjoyable and involving is ample grounds for Recommendation, though I must add the rider that the sound will not be to every taste.

TEST RESULTS

Size (h x w x d)	30.5 x 20.5 x 19cm
Weight	8kg
Recommended amplifier power	15-60W
Recommended placement	stands close to wall
In room averaged response limits 50Hz-10kHz +/-4dB	
Large room/space LF roll-off (-6dB ref midband)	50Hz
Large room/wall LF roll-off (-6dB ref midband)	50Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£330



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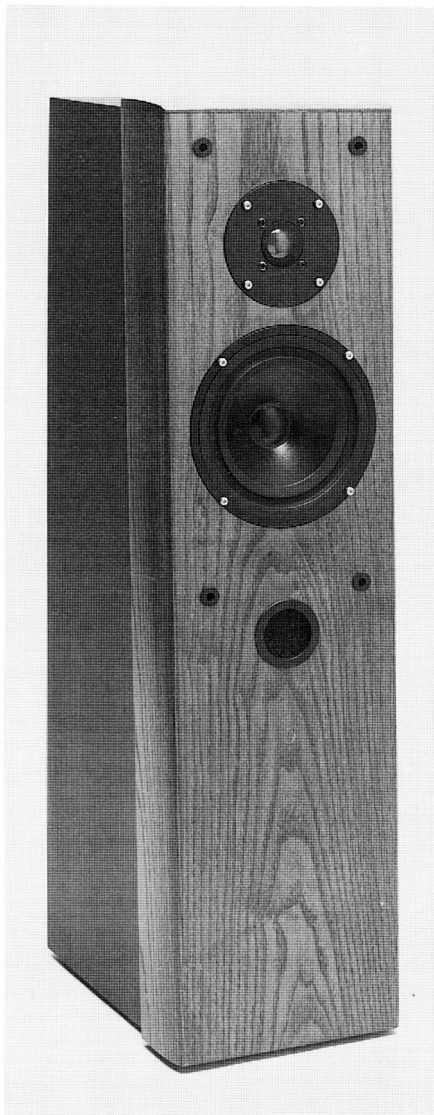
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Ruark has appeared in a *Choice* loudspeaker group test before, the original *Broadsword* making a disappointing debut some years back. Since then, however, the brand has undergone significant changes, original founder Brian O'Rourke now concentrating on the cabinetry and production side while son Alan has taken over the role of acoustic designer.

Time having accomplished its traditional healing role, I was really pleased to get a chance to try one of the new generation of Ruarks, especially since Alan has recently been involved in listening panel duties. The speaker which arrived was the £629 *Talisman*, a compact floorstanding model of decidedly pretty and somewhat unusual appearance. It looks a shade expensive considering the basic ingredients are simply a conventional two-way driver configuration in a modest ported cabinet. But due allowance should be made for the

quite complex cabinetwork, and also the delightfully figured medium oak veneering on our samples (alternative finishes available).

The drivers are held in by gold coloured machinehead screws, which were tight but not that tight, though proper T-nuts allow that to be rectified. The spikes are a bit thin, but seat and clamp securely, while the tapered shape helps maximise the fore-and-aft footprint while minimising visual impact - and probably helps crossover integration too.

The construction is very cunning, consisting of two five faced sections, each about the size of a window box, built so they overlap and one nests inside the other, so adding stiffness and bracing all around the sides, top and bottom. There's also an extra crossbrace between sides further back. All fabricated from MDF, the baffle is 18mm thick, the carcass 19mm, and the reinforced overlapped sides reach some 27mm.

The main driver uses a 115mm textured, doped paper cone, built on a cast basket with a hefty magnet; the tweeter is 25mm metal dome. Very heavy gauge cable links the drivers to the hefty crossover components, which are well spread out and all hardwired to bi-wire/amp terminals. There's also a small foam-damped port.

Test Report

Sensitivity is a little below average, but that's partly because *Talisman* presents a very easy load for the amplifier to drive. Bass extension is satisfactory, though it does confirm that volumewise this compact floorstander offers little more than a standard bookshelf model.

The overall balance is very well judged, almost irrespective of whether the speaker is close against the wall or moved out into the room, so about half a metre out would probably give the best compromise. Balanced it may be, smooth it most certainly is not, with up and down variations of several dB intermittently across the range. The effect of this is bound to be rather unpredictable, adding its own particular brew of coloration to the proceedings.

Sound Quality

The panel really enjoyed the *Talisman*, giving high marks and plenty of praise on two separate presentations, and with rare unanimity. I liked it too, more than enough to enjoy living with it for several days, and was reluctant to move on to something else (- incidentally, it sounds significantly

better still when bi-amped!).

Blessed by an unusually tight and well controlled bottom end, the *Talisman* responds well to being placed back against the wall, though the coloration conscious might prefer to bring it forward a foot or so into the room. The balance of this speaker is a little on the bright and thin side of neutral, and the treble can be a bit relentless, but these traits are forgivable in the light of the fine sense of timing and pace, good coherence and leading edge definition, and delicate detailing.

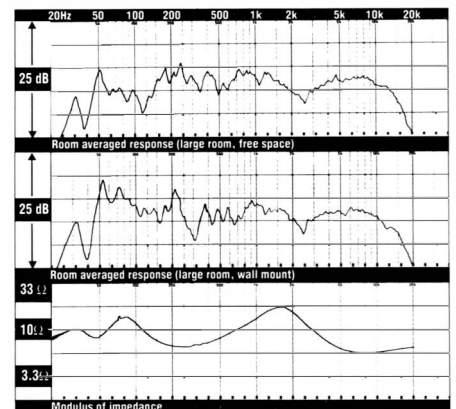
Mid-bass is much better controlled than is usually the case, though there remain a number of specific colorations elsewhere which are mildly irritating - a slight honk in the upper bass, some nasality and a slightly aggressive edge, particularly on brass. Partly in consequence, dynamics are very impressive indeed.

Conclusion

This is a most impressive package - a total contrast to our last Ruark experience - and is warmly Recommended for its success in maximising communication albeit at some cost in unevenness and coloration. Clever woodworking skills are blended with a very well balanced mechanical and acoustic performance to give an end result which is compact, aesthetically pleasing and immensely listenable too.

TEST RESULTS

Size (h x w x d)	83.5 x 21.5 x 31 (max) cm
Weight	17kg
Recommended amplifier power	20-80W
Recommended placement	close to rear wall
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF roll-off (-6dB ref midband)	30Hz
Large room/wall LF roll-off (-6dB ref midband)	30Hz
Large room output at 20Hz (ref midband)	-14dB
Estimated midrange sensitivity (ref 2.83V, 1m)	86dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£629



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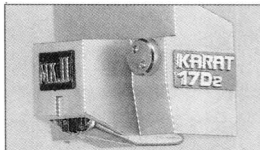
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Tannoy E11LE

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Successor to the *Eclipse*, the £129 *E11* is the leader (aka cheapest) model in Tannoy's *Series 90* range of bookshelf size hi-fi speakers. It has done well commercially, and has collected some very favourable reviews elsewhere in the hi-fi press. But my own experiences, and those of the listening panel in last May's *Choice* were altogether less positive, finding it disappointingly 'slow', if pleasantly civilised.

I wouldn't go so far as to claim that Tannoy agrees with me, but I don't deny it was rather gratifying to discover that the company had been working on this variation of the *11*. The £149 *11LE* will be manufactured as a limited edition of 1,000 pairs. Part of the extra goes on gold-plated terminals, but the main driver, enclosure and crossover have all been extensively modified in order to counter the criticism of 'lazy' presentation.

The result may look rather similar to an *E11*, though twenty quid pays for plenty of detail improvements. The driver configuration has been inverted to re-optimize the forward sound distribution following the wider driver overlap of the simpler crossover network. This now consists of just two components feeding the tweeter, selected for good sound quality and carefully mounted to minimise vibration.

The enclosure is 12mm chipboard wrap with 15mm front and back, as before, but it's now fitted with the complex crossbracing used in the larger *90s*, lossily coupled to the main driver magnet. This, too, is different, having an extra ring to cancel stray flux, allowing the speakers to be placed close to a TV set.

The combination of 120mm

polypropylene cone main driver and 25mm metal dome tweeter is much as before, though a handy innovation is a little metal grille, retained by stray magnetic flux, that offers good protection for the tweeter dome if required, but is easily removable for best sound quality.

Test Report

On looking at the test results, I think this speaker should have been called an *E11TNL* not *LE*, the initials standing for totally new loudspeaker. The box and drivers may be the same size as before, but just about everything else has changed.

The 'Q-modified' port produces an impedance trace that looks more like that of a sealed box than a reflex system, and the bass alignment has very little similarity to the standard *E11*. Whereas that is a little bass rich, to the point where wall siting is totally inappropriate, the *LE* remains quite lean even against the wall, yet absolute extension is significantly better. The midband looks uncomfortably exposed if moved out into the room - indeed, the presence band around 1.5kHz looks decidedly exposed period - though things are pretty orderly elsewhere.

Sensitivity is pretty close to average, and the impedance presents an easy load. The ideal listening axis is roughly level with the top face of the cabinet, so go for lowish stands.

Sound Quality

The *LE* did alright in the listening tests - certainly better than the standard model four months earlier - though no better than might have been expected given the price. In fact the reactions were unusually inconsistent, not just between one panelist

and another but also from one track to another - 'mixed bag' and 'curate's egg' being just a sample of the clichés that popped up on the notes.

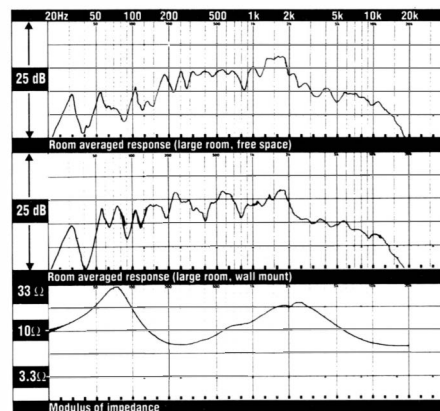
And I have to say that I, too, remain confused. Matters such as stand compatibility have given me trouble with past Tannoys, and this one is still leaving me struggling - conscious that it has plenty of potential, but unable to get a truly satisfactory and coherent result. Certainly it does sound faster and clearer than the standard *11*, but it's still apt to clog up a bit in the bass, and the mid forwardness can be a shade trying.

Conclusion

One thing is clear: the *LE* is a completely different loudspeaker from the standard *11*. I heard it sounding very good indeed in prototype form at the factory not long ago, and feel sure there is plenty of potential here. But I've found extracting that potential surprisingly difficult in practice, since the speaker seems very sensitive to set-up. That said, it's certainly worth trying, and is clearly good value for money.

TEST RESULTS

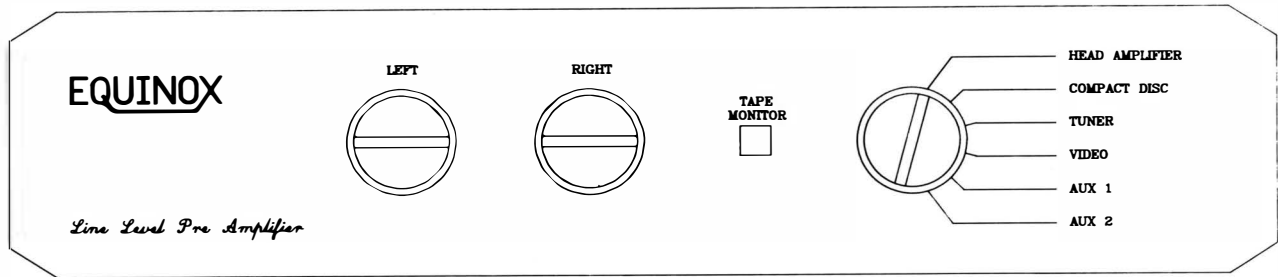
Size (h x w x d)	39 x 21 x 22cm
Weight	6kg
Recommended amplifier power	15-70W
Recommended placement	close to rear wall
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF roll-off (-6dB ref midband)	30Hz
Large room/wall LF roll-off (-6dB ref midband)	30Hz
Large room output at 20Hz (ref midband)	-15dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£149



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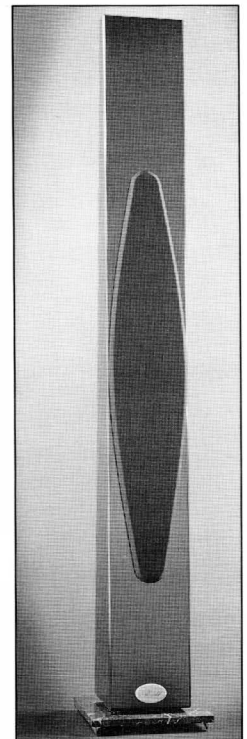
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Recommended



Hot from the Penta Show and pretty much a prototype, the 47kg *Tor* has much in common with its now £500 more expensive *Glastonbury* brother, but has been redesigned to trim costs and suit local (Maltese) manufacturing conditions.

In place of the metal jacket with plaster lining, *Tor* uses a welded metal skeleton inset with moulded, reinforced plaster panels roughly 20mm thick. The carcass is almost undamped, with just some felting around the inside at main driver level.

The sides are wrapped in a rather anonymous black open weave fabric, but a touch of class is supplied by the heavy and attractively figured thick marble top and bottom plates. The latter is drilled to accept three very substantial spikes.

Other features shared with *Glastonbury* are the ribbon tweeter and the large and

carefully shaped reflex port. The main driver cone is roughly 125mm in diameter, uses a cast basket bolted to threaded inserts and is fitted (internally) with elaborate acoustic blanket and foam damping.

The crossover is simple, with no bi-wire/-amp facility, which to my mind is a pity. Townshend reckons the speaker should be used with special impedance-matching cables, the concept of which would take pages to discuss, and arranged to send some, which finally arrived the day before the speakers were being collected for photography. These massive great hawsers have high capacitance and are therefore totally incompatible with my own (Naim) amplifiers, though I managed to get some action going with a *BB100*, though only from a CD source, so sensible comparison was impossible.

Test Report

I might have guessed this would be a weird one. Though only approximate due to the response unevenness, the 82dB sensitivity rating is a substantial 6dB below average. Put that with the limited (c60W) power handling and you're left with a speaker that doesn't go particularly loud.

However, you also get a speaker with remarkable bass extension, the room-assisted 20Hz output actually matching the level obtained in the midband, which is very unusual for any loudspeaker with state-of-art aspirations.

Nice though the full level bottom octave is, *GT* struggles a bit to keep the next octave under control, even when away from walls, and is a little short of output over the next two. The upper-mid (600Hz-1.5kHz) looks a little exposed, especially with the subsequent 15dB suckout at the crossover point, a feature which will certainly have sonic repercussions.

Sound Quality

Weird it may be, but the *GT's* sound quality certainly seduced the panel, the absence of the usual 'wooden box' effects being very obvious and most welcome. Add in the stunning stereo focus and prodigious low frequency extension and the defects somehow paled into insignificance.

Exceptional phase coherence, fast transient response and low cabinet coloration creates the sort of holographic stereo that only panel speakers usually manage to achieve, but coupled here with

at least some of the welly of conventional cone drive. Ultimately the dynamics and the dynamic range are limited by the lack of loudness capability - I found the temptation to overdrive them almost impossible to resist!

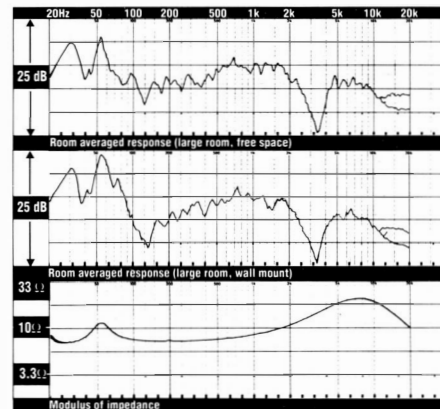
Without resorting to the sort of careful component and cable selection that could well 'tune out' such effects, one becomes aware of the rather heavy and slightly 'thuddy' bass, which alters timbres by favouring fundamentals at the expense of harmonics, and of the presence suckout which takes the bite from brass and adds a rather 'cuppy' character to vocals. The upper treble is a bit spitty on axis too, and in spite (or maybe because) of its exceptional focus and precision, the stereo soundstage perspectives shift dramatically with quite small head movements.

Conclusion

As a virtual prototype, the *GT* shows great potential and some very considerable strengths. Sound quality considerations make Recommendation mandatory, even though there remains plenty of scope for further improvement and refinement in performance and presentation. Prospective purchasers must, however, establish that it will go loud enough to suit their requirements.

TEST RESULTS

Size (h x w x d)	99 x 26.5 x 33cm
Weight	47kg
Recommended amplifier power	30-60W
Recommended placement	well clear of walls
In room averaged response limits 50Hz-10kHz +/-10dB	
Large room/space LF roll-off (-6dB ref midband)	below 20Hz
Large room/wall LF roll-off (-6dB ref midband)	below 20Hz
Large room output at 20Hz (ref midband)	0dB
Estimated midrange sensitivity (ref 2.83V, 1m)	82dB/W
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£1,495



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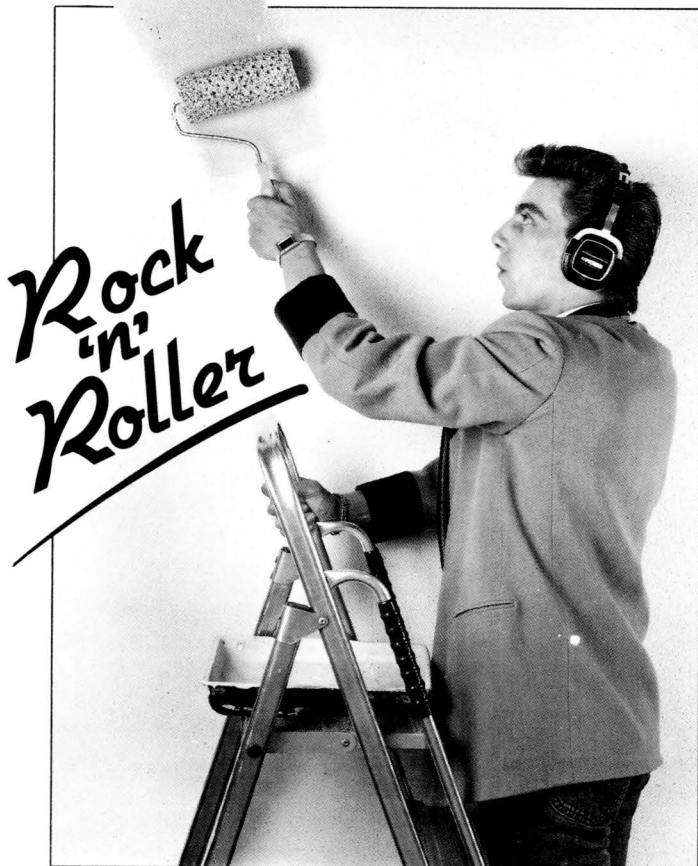
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Long one of Britain's favourite loudspeakers - from Britain's best known loudspeaker specialist - the *Diamond* is now entering its fourth generation, complete with trendy metal dome tweeter and a modest price increase to £109.

Despite its undoubted commercial success, it's not a model that has found particular favour with *Choice* loudspeaker reviewers or their listening panels over the years. In the recent past our recommendations have gone instead to two other Wharfedale miniatures - the cheaper *Delta 30* and the more refined *504/2*. Now that the *Diamond's* top end is handled by a variation on the *504's* metal dome, there seems a fair chance this situation could change.

There are plenty of other detail differences in the new model too, even if the basic configuration of a tiny reflex-loaded miniature designed for close-to-wall mounting remains much as before. Call it a bookshelf speaker if you want to, but have no doubt that it will only give of its best when properly stand mounted, so allow sufficient in the budget to cover for this.

The cosmetics are distinctly smarter and happily rather more restrained than earlier *Diamonds*. The grille in particular is new, different and rather elegant, the cloth being fitted behind wide horizontal slats that add a touch of designer style while being slim enough and close enough to the baffle to minimise any acoustic interference. It looks pretty enough from the front with or without the grille, since the MDF baffle has a nice textured vinyl finish and radiused verticals. Driver

mounting hardware is concealed beneath a discreet plastic trim.

The decision to stick with a traditional wood-based enclosure is a deliberate one, since Wharfedale feels this still offers optimum all-round performance. Boxes as small as this are inherently rigid, the carcass here being 12mm chipboard, while the more important baffle is altogether sturdier stuff, at least 20mm thick. All is - and feels - very solidly put together, with copious glue sealing up the internal edges. A small tube port exits at the rear, behind the tweeter.

The 19mm metal dome tweeter and the 95mm textured plastic cone main driver, with pressed steel basket and generous magnet, were both well screwed in place. The crossover is a modest enough affair, tag connected to the drivers and single terminal pair.

Test Report

Although there's a suggestion of the 'three-humped' characteristic, the wall-sited room curve is remarkably well balanced, from 50Hz right up to 1.5kHz, though there's some loss of energy around the crossover and focusing of the tweeter output at around 7-9kHz on our far field measurement.

Sensitivity is a little below average, and bass doesn't realistically extend below 50Hz in-room, but the load which the amplifier sees will save even the least capable from embarrassment, mid-system owners might note. The grille is innocuous and the listening axis uncritical, though it's better to use high stands and avoid above-axis listening.

Recommended

Sound Quality

The *Diamond IV* did pretty well overall in the listening tests, although opinions were somewhat divided. The balance is a little thin and a shade abrasive, leading to occasional over-enthusiasm on sibilants and surface noise, but adding some gusto and incisiveness to CD.

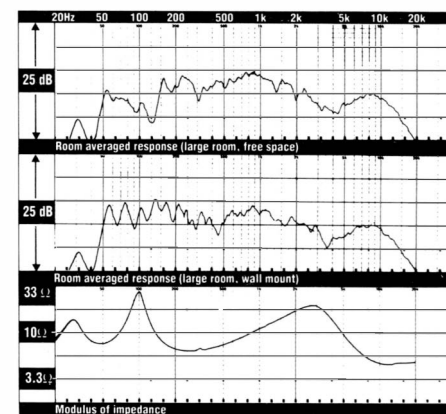
But for the most part the sound is smooth, pleasant, controlled and tidy, if also a bit 'sat upon' dynamically and a trifle boxy with it. Coherence and speed could both be improved, but the bass nevertheless has an attractive 'bounce' and timing is pretty good. Genuine scale and weight are inevitably in short supply, so the soundstage stays a little constrained, leaving one aware of the small box size - and indeed the box itself - which tends to constrain both transparency and depth somewhat.

Conclusion

The *Diamond* has matured into a very competent loudspeaker that now makes an impressively civilised sound from a tiny and very prettily attired enclosure. It more than passes muster amongst the UK's leading budget miniatures, and clearly deserves confident Recommendation, even though in my view and under our conditions it doesn't quite reach the top of this highly competitive class.

TEST RESULTS

Size (h x w x d)	27 x 18 x 18.5cm
Weight	3.5 kg
Recommended amplifier power	20-60 watts
Recommended placement	rigid stands close to wall
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF roll-off (-6dB ref midband)	48Hz
Large room/wall LF roll-off (-6dB ref midband)	48Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	86dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£109



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Conclusions, Best Buys and Recommendations

Which ones made the grade? Paul Messenger sums up the views of the panel on this month's batch of loudspeakers.

Two **Best Buys** and a further eleven **Recommendations** out of a total of twenty four is a little better than the usual hit rate, and this was certainly an interesting, varied and quite unusual group of loudspeakers.

Most noticeably, all bar the Creek and Linn were either quite tiny models for stand mounting, or proper floorstanders. The middle group of middle size boxes was notable by its absence, which is partly a matter of luck, but also says something about the state of the market today.

The British consumer's love affair with miniature loudspeakers continues unabated (somewhat to the exasperation of manufacturers, who would much rather be selling the larger and more expensive models popular overseas). But the reason for this phenomenon is not merely relative size, poverty or parsimony, it has just as much to do with the real world performance of these little boxes.

Whatever the absolute (anechoic) bass extension, place them on a decent pair of stands close to the wall in a real room and the bass extends nicely down to 50Hz or thereabouts. Even the little B&W *Solid* manages this trick, though the still smaller JBL *Control 1 Plus* just fails to make it, giving a pretty clear indication of where the dividing line lies.

Sacrificing the bottom octave and a bit, as well as the loudness capability of larger units, is certainly a pity, and certainly unacceptable to the more fanatical enthusiast. But 50Hz is sufficient to do a pretty good job on the majority of material at common day-to-day levels as far as most people are concerned.

The paradox isn't merely

Mission 760: we reckon it's a snip at just £99. (Stands are extra, of course.)



that the miniature speaker can do most of what's required by most people most of the time, but that it actually often does a rather better job than something larger and more ambitious (most of the time on most material), and for several very good reasons.

First there's commercial determinism (a variation on the self fulfilling prophecy). The hundred pound miniatures are comfortably the best sellers, so a leading brand has got to be competitive. The manufacturer therefore makes damn sure that it gives this model its best shot. The sort of production runs involved justify a much greater investment in tooling, moulding and so on, often with worthwhile engineering advantages, alongside favourable component purchasing terms. It's therefore hardly surprising that this sector of the market offers the sort of material value for money that more

expensive models find difficult to match.

But there are technical and engineering reasons why miniatures fare so well too. Some of these are due to the drivers, and some to the enclosure, which is an important distinction. The small main driver goes on working better to a higher frequency than larger units, and is usually mounted physically closer to the tweeter too (except for dual concentric drivers), both of which aid crossover integration. There's a good chance that the driver/cabinet area ratio is maximised, while the small enclosure is inevitably inherently stiffer, stronger and less susceptible to vibration than a larger unit. Furthermore (with the possible exception of a line source) a small 'point' source is ideal for precise and accurate stereophony.

Increase the main driver size and you increase the moving mass, sending

correspondingly more energy into the now larger and therefore less rigid cabinet. With occasional but all too rare exceptions (Arcam *Alpha*, Linn *Index II*), what you gain in terms of extra bass extension and sensitivity is usually lost by increased muddling of the mid and upper bass regions, which tends to be a poor trade-off.

Having established the virtue of the miniature driver combination, is there anything that can be done to tackle the bass and sensitivity limitations? Certainly at least four of the models in this month's tests are adopting some very original solutions in this particular quest, and pretty successfully too, since three are Recommended.

Best value but least ambitious is the Ruark *Talisman*, essentially combining miniature drivers in a larger floorstanding enclosure which is unusually constructed to maximise stiffness.

Something of the same is true of both the Equation 0 and Lindley *New Age*, both of which use large section plastic tubing in their construction. I have to say I suspect this adds its own slightly blurring coloration to the bass region, though I don't reckon it's any worse than wood, just different.

The Equation doesn't attempt to be much more than a high sensitivity miniature, thanks to its massive magnet, but the mass-loaded plinth is a rather interesting innovation.

Although the uneven balance is some cause for concern, the Lindley achieves remarkably good bass extension from its tiny main driver thanks to column-loading, which is about halfway down the Castle *Winchester* road.

Most elaborate and largest of all is said Castle model, which actually uses two



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miniature size main drivers but loads them with quarter wave horns to enhance low frequency efficiency and control the drivers. The result combines good sensitivity, with tight clean bass and fine mid-to-treble integration, but uses a relatively big box for the LF extension on offer.

It's too early yet to say whether these four (and previously reviewed models like the Linn *Kaber*, Seventh Veil IV and Doxa 5-2) constitute the start of a new trend towards 'floorstanding miniatures' (if that's not too much of a contradiction in terms), but the runes appear to be pointing in that direction.

Best Buys

I think this is the first time I've actually awarded two Best Buy ratings in a single test group. It's an accolade I'm most reluctant to give lightly, reserving it for those that stand out sonically from their price rivals while also offering fine material value for money.

Inevitably therefore miniatures stand the best chance, and the new £99 **Mission 760** is a real honey. Recalling days of yore when the 70 was the pick of the budget bunch, the plastic baffle 760 is discreetly pretty, fashionably shaped and unusually free of the boxiness that remains the nemesis of lesser miniatures. Nothing at £99 is going to be anywhere near perfect, but as a compromise the choices made here would seem to be very well balanced.

Nudging the price ceiling for Best Buy rating, the **Linn Index II/KuStone** combination costs £344, for which you not only get a decent 'bookshelf' size speaker but also a good looking well-matched stand too. Consider it a compact floorstander if you prefer. It's well built and very attractively presented, delivering a much better acoustic performance with lower coloration than its predecessor while

maintaining Linn's reputation for superior mechanical engineering. Unlike so many price rivals, the mid-bass stays under fair control, bass extension is very good (at some price to sensitivity), while the consistency of dynamic range and contrasts is unusually precise, more than compensating for a slight lack of pace.

Recommended models

The fourth generation model of this very popular design, the £109 **Wharfedale Diamond IV** is actually the first of its line to make the *Choice* Recommended lists. The tiny, well engineered box is wood throughout, and the tweeter used in this latest incarnation is a classy little metal dome. The net result is that the once unruly *Diamond* has matured into a very competent loudspeaker that makes an impressively civilised and lively sound from a very prettily attired enclosure.

A step or two up the price ladder and two more Recommended models appear. The **Heybrook Solo** at £170 gives a big sound for the price, and remains refreshingly uncongested through the bass region, with fine timing and an unusual ability to sort out complex rhythmic material. It's also well put together, and smartly if conservatively presented. Do allow enough in the budget for the *HBS1* stands, which are a good match sonically and aesthetically.

The **Cyrus 780** costs £170 and is closely related to the Best Buy *Mission 760*. It's certainly a better loudspeaker, but only you can (and should) make the decision as to whether it's worth the extra £70. It shares the same drivers, baffle and trim as its cheaper relative, but has a bigger, beefier box finished in real wood, and a better crossover too, both of which take its performance and refinement comfortably clear of the beer budget class.

Style is a major reason for

singling out the small but perfectly moulded £189 **B&W Solid**, which doesn't so much outperform the budget miniatures as match them pretty well. The compact and cunningly shaped cabinet, choice of colour finishes and the neat integral bracket/stand will delight interior designers who feel loudspeakers should be heard but not seen.

The £330 **Royd Sintra** is one of the more expensive miniatures available, but it is also one of the fastest and most dynamic speakers around period. A bit bright and a little bass shy for some tastes perhaps, this worthy development of the illustrious *Eden* nevertheless sets standards for speed and integration that few can match, at any price.

The £549 **KEF C85** is the complete opposite sonically and constructionally, this generous floorstanding model closely matching the performance of the already popular and previously Recommended *C95*, at a saving of £150. It's a little too laid back and rich for some tastes, but offers a degree of refinement that is very beguiling, especially through the troublesome crossover region, along with decent sensitivity, power handling and bass extension.

Though the **Ruark Talisman** costs nearly twice the price of the *Sintra*, in some respects the two would seem to be kindred spirits. £629 buys the first of the 'floorstanding miniatures' discussed half a page back, combining a small diameter main driver with a compact and very elegantly finished enclosure, elaborately constructed for maximum stiffness. Careful damped port tuning gives good bass extension without over-richness, and the sound is dynamic and detailed with good timing, if perhaps a little coloured and uneven for some tastes.

One could accuse the £650 **Philips FB825** of being a bit of a dinosaur. Certainly its size versus performance envelope looks a shade old-

fashioned, but the balancing acts of integrating the drivers and controlling the big enclosure have been accomplished with great skill. The end result is a shade rich and heavy, but not turgid or congested.

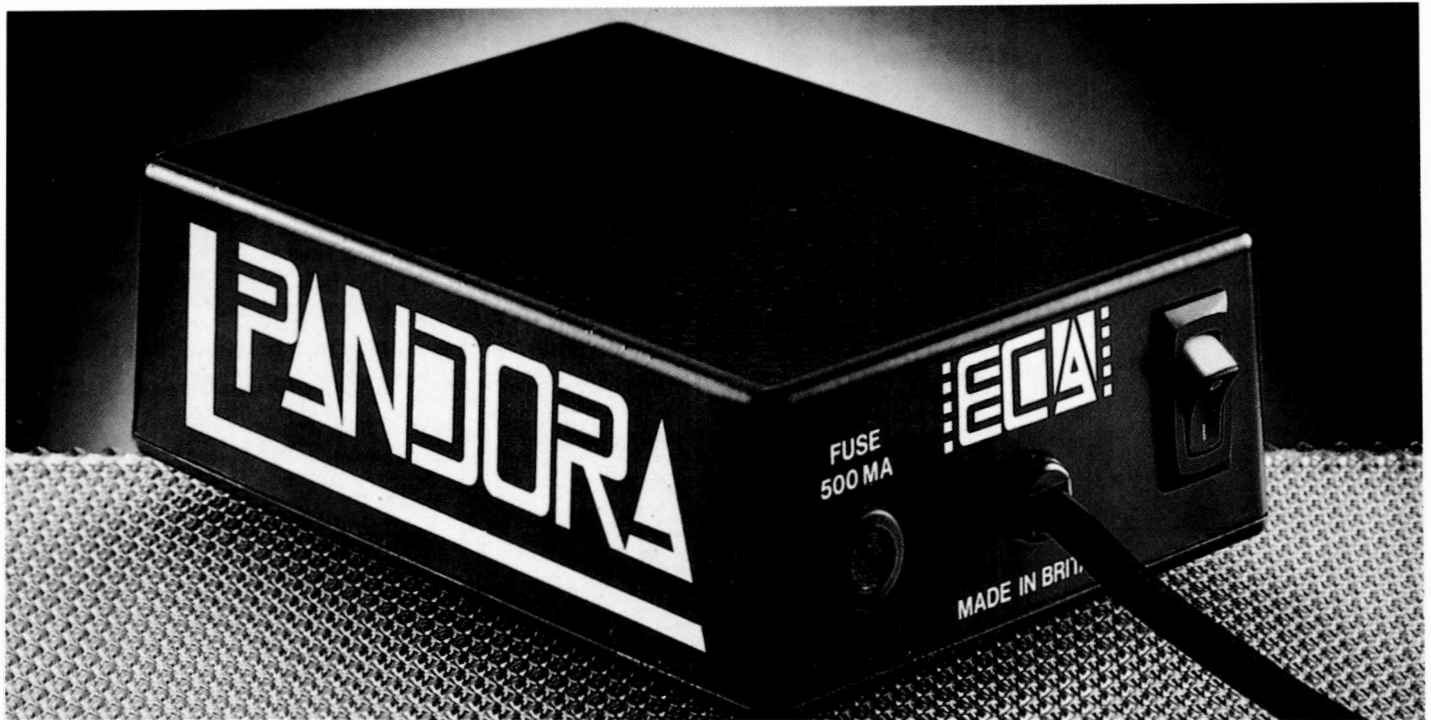
Fancy terminals notwithstanding, I can't rate the **Equation 0** as particularly good value for money (£1,290). But it is certainly one of the most elegant speakers I've ever seen, and it also plays music with considerable verve and just a little too much gusto. The sound isn't particularly big, or particularly free of coloration, but it is big-hearted and dynamic, out of all proportion to its size, and attractively transparent.

The same amount of money can perhaps be more readily justified for the tall and imposing **Castle Winchester**, which has a delightfully smooth and airy transparency of its own. Like the Philips it's on the large side considering its bass reach and sensitivity, and the balance might be a shade rich for some tastes. But the speed and timing of the music belies the size of the box, which itself is a work of art in veneered MDF.

Of all the speakers tested for this month's issue of *Choice*, top of the price ladder at £1,495, fourteen kilos heavier than its nearest rival, and definitely the weirdest is the plaster-cast **Townshend Glastonbury Tor**. Stunning stereo focus, a delightful elimination of wooden box effects, prodigious bass extension and fine speed and timing all sound too good to be true. They are: the price extracted is a severe limitation on loudness capability due to low sensitivity and limited power handling - which is all the more frustrating given the extraordinary drama and clarity of the basic sound. Recommended then, for the things it does so very, very well, with the proviso that ours were prototypes, and a tweaky product like this has already started and will continue to evolve.

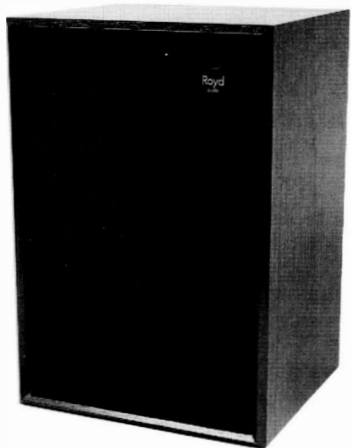


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TechTalk

Each Hi-Fi Choice review contains a test results table. On this page Paul Messenger explains how the loudspeaker tests were performed, and outlines what the findings reveal about the products.

Recent *Choice* loudspeaker tests have introduced a number of changes in the test procedures, partly reflecting the changes in the magazine itself in the last few years. In the small format A5 days, a batch of 50 or 60 models was assembled once a year, making the logistics and costs of hiring an anechoic chamber reasonably practical.

Now the loudspeaker schedule involves almost continuous testing of smaller batches. Major tests of 20-25 models happen thrice a year, and are supplemented by smaller groups - miniatures, giants or whatever - which makes 'one-site' testing the sane and sensible option.

Listening

The 'blind' tests on this occasion lasted three days with about five listeners, making up around 30 separate presentations of about half an hour each. Split evenly between vinyl and compact disc, the programme covers as broad a range of music as possible.

Care is taken to try and 'normalise' the relative volume of each loudspeaker, though differences in frequency balance, bass extension and room drive unavoidably get in the way.

Choice of ancillary components inevitably influences the type of sound, possibly as much as the room itself, and is one potential source of prejudice I know no way of avoiding. The main drive system comprises Naim amplification and cables, sourced from Linn *Sondek/Naim ARO/Troika* vinyl disc and Mission *Cyrus/PSX* CD player all mounted on Mana tables. Grilles are deliberately left on.

Bookshelf models were used on Linn *Kan*, Foundation *Designer*, Heybrook *HBS1* and Slate Audio stands.

Bi- and tri-wiring is adopted where possible, using heavy multi-strand cables (Linn, Naim, Hitachi). Again for the sake of consistency, except where specifically instructed otherwise, the speakers are auditioned both sited against a rear wall and in free space.

My particular thanks go to Jason Kennedy for all his hard work as operator on the blind listening tests, and also to panellists: Ken Weller (Tannoy), Richard Dunn (NVA), Alan O'Rourke (Ruark), Bill Livingstone (Linn), Russell Kaufman (Studio Power), Tom Barrow (Rotel), David Inman (KEF), Danny Haikin, Chris Bryant and Richard Allen.

Measurements

Without decrying the value of anechoic work, especially when developing a single product in isolation, there's no doubt that the room-averaged measuring technique which Martin Colloms originally introduced has proved by far the most effective predictor of listening test behaviour, and is particularly relevant to group testing.

Although a solitary in-room measurement of any specific loudspeaker is of very little value, a good idea of the subjective balance is obtained by averaging the measurements at a number of points in the listening area. Further, the comparison of a number of loudspeakers enables the effects of the room to be taken into account.

The main change from before has been to focus exclusively on room measurements and room-averaged response (RAR) traces for the published data. The current test programme involves two separate sets of room measurements, in two cases taken with the specific

wall and free space sites used in the listening tests (large room); intermediate positions produce more or less intermediate results.

A conventional pen recorder/mike set-up (Neutrik) is used to carry out sequential rapid sinewave sweeps (high pen and paper speeds) for a succession of microphone positions. By the time half a dozen sweeps have been completed on the same piece of graph paper, an obvious 'average' pattern will have emerged that clearly delineates the averaged response in the listening area.

The technique allows examination of wall-mounted or free space siting, with results that show fine subjective correlation - specifically the mid-bass in-fill and midband unevenness that are the usual consequences of wall-siting.

A perfectly flat straight line is not the 'target'. Careful comparison with listening findings and established references suggest that ideal 'large room' balance should be a flat and straight line up to around 1-2kHz, followed by a gently but steadily increasing downtilt through c5dB at 5kHz to c10dB at 20kHz. Low frequencies are heavily modified by the main room modes - most notably the c10dB boost at 30Hz (or 10dB suckout at 42Hz if you prefer). For the rest, even and smooth variations are better than sharp discontinuities.

The listening room

The speaker and microphone sites parallel the listening tests, giving a measuring distance of 3-4m, the room itself being a sturdily built, sparsely furnished 4.5 x 5.5m plus bay. Additional nearfield measurements examined the influence of grilles and axis variations.

Sensitivity differences have as much to do with

impedance variations as with conversion efficiencies which is one reason why the impedance has also been plotted and presented. Halve the impedance and the speaker sucks twice the current and therefore twice the power for the same volume setting. By adopting 40hms rather than 80hms impedance, 'current hungry' designs therefore 'pinch' 3dB of extra sensitivity. Few amplifiers have the capability to deliver this extra 3dB in full, most settling for 1.5-2dB, so an apparent sensitivity advantage may well be partly negated in practice.

One consequence of the RAR based testing is that alternative bases need to be set to define low frequency extension. Tradition defines the low frequency roll-off as the -6dB (sometimes -3dB) point referred to the sensitivity. Such a technique can be applied to room measurements, but the results tend to be strongly modified (even modulated) by the main room modes.

Probably more useful is to specify the relative level of 20Hz ref the midband sensitivity. However, this has the drawback that a good percentage of speakers don't get down to 20Hz, and can't be measured below 30Hz.

Until I can figure out a better approach, I am quoting the -6dB points for both measurement conditions large room, free space; large room, wall mount; plus the 20Hz level. The *Directory* 'bass from' entries for the recent reviews carried out using room averaged response techniques therefore refer to the large room/best position -6dB point for the speakers concerned, and cannot be compared with earlier 'anechoic' entries on this parameter, though each has its own internal consistency.

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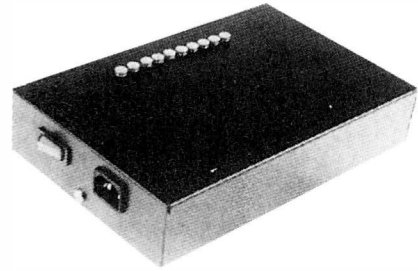
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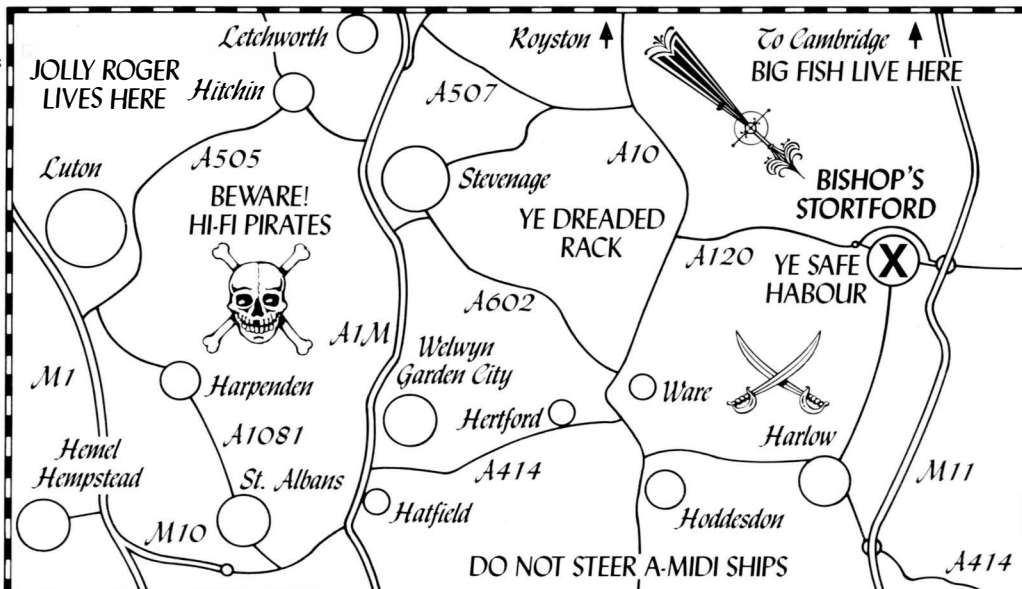
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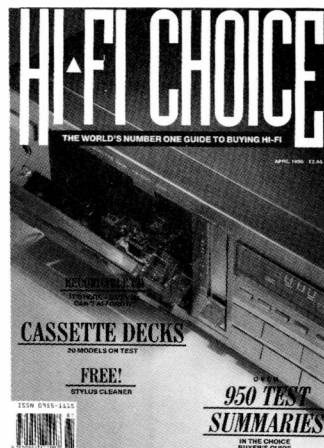
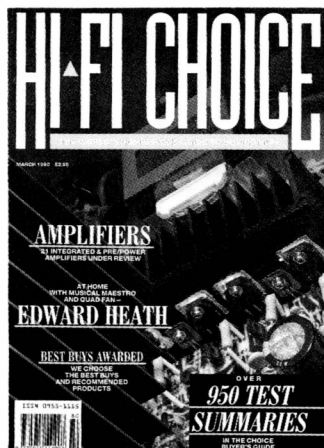


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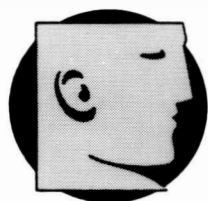
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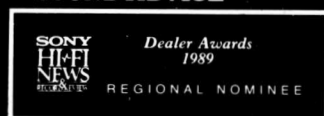
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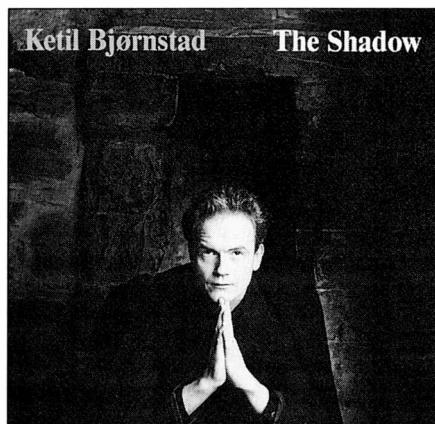
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You might stumble across one or two of these records in some specialist record shops, but for the most part these records and/or CDs are not readily available in the UK. You certainly won't find them in your local record store! We have already added many exciting discs from specialist American record labels such as Reference, Wilson and Sheffield - and we expect our catalogue of LPs and CDs to expand considerably during the next few months.

RADKA TONEFF: Fairytales

Ref LP1 £12.95

Ref CD1 £14.95

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ARNE DOMNERUS' KVARTETT:

Blatoner fra Frolldhaugen

Ref CD34 £14.95

A selection of Grieg 'miniatures', imaginatively arranged for a jazz quartet. Superbly vivid sound. (Available on CD only.)

For-X, FXCD65.

KETIL BJØRNSTAD: The Shadow

Ref LP35 £12.95

Ref CD35 £14.95

Recorded in Oslo and released earlier this year, *The Shadow* features the delightful voice of Randi Stene in a collection of compositions inspired by the Poems of John Dunne. Bjørnstad is one of Norway's finest session players. For-X, FXLP93/FXCD93.

SMITH/RICCI: Paganiniana

Ref LP10 £14.95

Ref CD10 £17.95

Breathtaking purist analogue audiophile recording of classical works performed on piano and violin. On the

American Water Lily Acoustics label, recorded by Kavi Alexander and sponsored by Conrad-Johnson. An essential addition to any audiophile's collection. Water Lily CJCD/CJLP

TOTTI BERGH: I Hear A Rhapsody

Ref LP4 £12.95

Ref CD4 £14.95

On the Gemini label, saxophonist Totti Bergh plays a selection of jazz standards. *Jazz Journal* magazine described this as "A delightful 'wee small hours' album".

Gemini GMCD48/GMLP48

MARTY PAICH BIG BAND: The New York Scene

Ref LP13 £12.95

Featuring Art Pepper, Victor Feldman, Jimmy Guiffre and Bill Perkins, this soundful set includes extended modern stylings of some classic Broadway musical tunes by the likes of Cole Porter and Rodgers & Hammerstein. Discovery DS-844

MARTY PAICH: What's New

Ref LP14 £12.95

Another superb recording of big band 'swing' jazz, this time featuring mostly Marty Paich original compositions. It doesn't seem possible that this was recorded in 1957. Like *The New York Scene* LP, which dates from 1959, the

sound is quite breathtaking: vibrant, dynamic, and with a superbly natural soundstage. They knew what they were doing in those days. Discovery DS-857

OPUS 3 TEST RECORD 1: Depth Of Image

Ref LP11 £12.95

Ref CD11 £14.95

Produced with the idea of analysing hi-fi systems and their ability to reproduce depth of image. This is Opus 3's best selling recording, containing examples of the work of many of its recording artists. Opus CD7900/LP7900

OPUS 3 TEST RECORD 3: Dynamics

Ref LP12 £12.95

Ref CD12 £14.95

Another compilation on the Swedish Opus 3 label, with musical extracts carefully chosen to illustrate what is meant by musical dynamics and comprehensive liner notes to show you what you should be listening for. How good is your hi-fi system? Opus 3 CD8300/LP8300

GREX VOCALIS: Renaissance For Kor

Ref CD15 £14.95

A capella performances of Renaissance and medieval songs, beautifully recorded in natural acoustic

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environments for the Norwegian For-X label.

(Available on CD only.)

CD: For-X FXCD39

YTRE SULOENS JASS-ENSEMBLE / BARBARA ANN SHORTS: A Stone For Bessie Smith

Ref CD16 £14.95

Blues and gospel singer Barbara Ann Shorts, backed by a small jazz ensemble with musical roots in the New Orleans tradition, plays tribute to the great US blues singer Bessie Smith who died in 1937. This collection of songs includes a fascinating re-working of Sting's *Moon Over Bourbon Street*.

(Available on CD only.)

For-X FXCD69

ROAR ENGELBERG / STEIN-ERIK OLSEN: Mosaic

Ref CD17 £14.95

Scandinavia's only professional pan flautist, Roar Engelberg, plays a collection of arrangements with Stein-Erik Olsen (classical guitar) — pieces by Ravel, Bach, Faure, Desportes and more. Superb dynamics!

(Available on CD only.)

For-X FXCD81

JIM BROCK: Tropic Affair

Ref CD18 £15.99

Ref LP18 £15.99

Vibrant contemporary jazz, recorded live to two-track by Reference Recordings' Prof. Johnson. Remarkable clarity and a tremendous 3-D soundstage. RR31



WILLIAM WALTON: Facade Suite

Ref CD19 £15.99

Ref LP19 £15.99

One of the Reference label's earlier analogue recordings (these days the company concerns itself with improving digital techniques), featuring the superb playing of Chicago Pro Musica. "A true state-of-the-art recording", said *The Absolute Sound* magazine. RR16

STRAVINSKY: L' Histoire du soldat Suite

Ref CD20 £15.99

Ref LP20 £15.99

Chicago Pro Musica again. The US underground magazine *The Absolute Sound* reckoned this to be one of the best (analogue) recordings ever made! RR17

VIVALDI / BACH: Sinfonia in C; Trio Sonata in C, etc

Ref CD21 £15.99

Ref LP21 £15.99

An exemplary digital recording of the Helicon Ensemble playing Baroque music from Vivaldi and Bach. The CD contains an extra track, Bach's *Prelude in C*. RR23

COPLAND: Appalachian Spring Suite

Ref CD22 £15.99

Ref LP22 £15.99

The *Appalachian Spring Suite* in its original version for thirteen instruments, recorded with a Nakamichi DMP-100 digital encoder. Plus the Pacific Symphony Orchestra in a world premiere recording of *Eight Poems of Emily Dickinson*. The CD contains an extra (analogue) recording of *An Outdoor Overture* (8m 50s). RR22

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Conductor Lowell Graham leads performances of John Williams' *Liberty Fanfare*, Samuel Barber's *Commando March* and many more. A pure analogue audiophile recording from 1988 using John Curl's Ultramaster recorder. W8823, WCD8823

JAMES B. WELCH: Concert

Ref LP24 £15.99

JAMES B. WELCH: Recital

Ref LP25 £15.99

Two of the Wilson Audiophile label's famous recordings of classical organ works. On a big system these discs are truly breathtaking — watch out for your woofers!

Ref CD24/5 £15.99

Tremendous value: both *Concert* and *Recital* on one compact disc!

W177, W278, WCD177/278

The Choir of Grace Cathedral, San Francisco

Ref CD26 £15.99

Ref LP26 £15.99

W805, WCD794/805.

Another breathtaking example of Wilson Audiophile's pure analogue recordings, used as reference discs by hi-fi gurus around the world. The discs are hard to find in the UK.

THELMA HOUSTON & PRESSURE COOKER: I've Got the Music In Me

Ref LP27 £15.99

Ref CD27 £15.99

One of Sheffield Labs' most famous recordings. The original direct-cut has been out of print for many years and is now highly collectable — but the recording sessions were of course taped, and this issue will still blow



your socks off! Sheffield ST200, CD2.

Listed below are further highly collectable Sheffield Labs discs which are astonishing in their sense of realism and truly awesome dynamics:

CLAIR MARLO: Let It Go

Ref LP36 £15.99

Ref CD36 £15.99

TLP29, CD29

TOWER OF POWER: Tower Of Power Direct

Ref LP37 £15.99

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LAB17, CD17

JIM KELTNER & RON TUTT: The Sheffield Lab Drum Record

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LAB14, CD14/20

The Sheffield Lab Track Record

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LAB20, CD14/20.

JAMES NEWTON HOWARD: James Newton Howard and Friends

Ref LP33 £15.99

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LAB23, CD23.

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- Ref CD26 (£15.99)
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Thelma Houston and Pressure Cooker: *I've Got The Music In Me*

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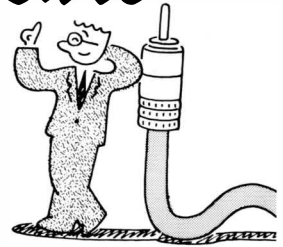
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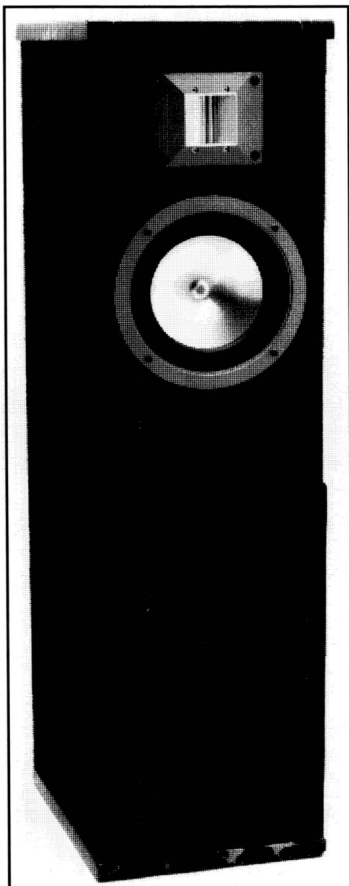
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CAMBRIDGE HI-FI, 1-3 Hawthorn Way, Chesterton, Cambs, CB4 1AT (0223) 67773. Mission-Cyrus, Rotel, Kenwood, Pioneer, Manticore, Revolver, Ariston, ITL, KEF, Meridian, Technics, Ruark. Monitor Audio. Single speaker dem room. Tues-Sat 9.30-5.30 closed Mon. Free installation. Service Dept. Visa. Access Credit facilities.
STEVE BOXSHALL AUDIO, 41 Victoria Rd, Cambridge CB4 3BW. (0223) 68305. 10-6 - 6 days. 3 dem rooms, home trial, appts. preferred. Free installation and service dept. Access, Visa & credit. **BADA**
STILTON AUDIO, 489 Lincoln Road, Peterborough PE1 2PE. (0733) 558838 897152. Linn, Mission, Arcam, Rotel, Teac, Meridian, TDL, Cambridge Audio, Musical Fidelity, Creek/Mordaunt Short. Home trial, free installation. G-Credit facilities. Access, Visa, Amex, Avco Finance. 10.00-18.00 Mon-Sat
UNIVERSITY AUDIO, 1-2 Peas Hill, Cambridge. (0223) 354237. Quad, Spendor, Arcam, Yamaha, Rotel, ATC, Marantz, Aragon, Rowland, Pioneer, Oracle. 2 dems, 1 single speaker. Home trial, free install, Service Dept. Visa, Access, Amex, Credit. 9-5.30.

CHESHIRE

ASTON AUDIO, 4 West St., Alderley Edge. (0625) 582704. Wide range of specialist audio, interest free credit. Visa, Access. Home trial. Closed Mon. **BADA**
DOUG BRADY HI-FI, Kingsway Studios, Kingsway North, Warrington. (Padgate 0925) 828009. 'Largest choice of specialist Hi-Fi in N.W.' All credit cards. 3 Dem rooms. Open 6 days. **BADA**
CHRIS BROOKS HI-FI, 29 Gaskell St, Stockton Heath, Warrington. 0925 61212/3. Tues-Sat 10-6. 2 dem rooms. Credit facilities. All credit cards. Total absence of bull**** **BADA**
NEW DAWN HI-FI, 1-3 Castle St, Lower Bridge St, G-Chester. (0244) 24179. Linn, Quad, Technics, National Panasonic, Denon, Rotel, Dual, Meridian, Aiwa, Philips
SOUNDSTAGE, 21 Nantwich Road, Crewe, Cheshire CW2 6AF. (0270)

255488. Linn, Alphason, Creek, Onix, Royd, Epos, NAD, Denon, Mission, Rotel. Two dem rooms. Home trial. Free installation. All major credit cards. Credit facilities. 9.30-6. 6 days. Evening dems by appt. Part exchange welcome.
SWIFT OF WILMSLOW, 4-8 St Annes Parade, Wilmslow. (0625) 526213. Arcam, Denon, Kenwood, Musical Fidelity, Marantz, NAD, Cambridge. 2 dem rooms. Tues-Sat 9.15-6pm. No pressure! **BADA**

CLEVELAND

GILSON AUDIO, 172 Borough Road, Middlesborough, Cleveland TS1 2EJ. (0642) 248793. Linn, Exposure, Quad, Mission, NAD, Rotel, Marantz, Denon, Audio Lab, Tannoy. Dem Room, appts. preferred. Home trial, free install. Service Dept. Access, Visa £1000 credit subject to status. 10-5 Mon-Sat.

CORNWALL

DEFINITIVE AUDIO, Treaskel Vogue, Saintday, Redroff, Cornwall, TR16 5NH. (0726) 844039. Voyd, Audio Innovations, Snell, Helius, Audio Note, System Dek, JPW, Deltac, Goldring, etc. Free Home Demo and Installations throughout Cornwall. Credit facilities. Open 7 days.

CUMBRIA

PETER TYSON, 6 Abbey St., Carlisle, Cumbria, CA3 8TX. 'Cumbria's premiere hi-fi centre'. Part exchange welcome. (0228) 46756. Linn, Musical Fidelity, Cyrus, Marantz, Denon, Philips, Nakamichi, Technics, Pioneer, Creek & more. Dem room. Dem without obligaton. Home trial. Free Install. In-house service dept. Visa, Access, HP. 9-5.30. Closed Thursdays.
LAKE LAND HOME MUSIC, 'fair Place' (200yds past church), Water millock, Penrith. CA11 0LR 07684 86235. Hear the full Quad range and ATC SCM 50A monitors and 20 monitors, and Revex Easyline multi room systems here (B&B available), or in your own home, without G-obligation, in N. England and Scotland. Revox, Castle, Spendor, Sugden, Marantz, Townshend, Sumo and compact discs available.

DERBYSHIRE

ACTIVE AUDIO LTD., 12 Osmaston Rd, The Spot, Derby. (0332) 380385/385185. Arcam, Ariston, Celestion, Denon, Kef, Kef Reference, Cyrus, Marantz, Revox, Rotel, Rogers, etc, etc. Meridian, Musical Fidelity. Account and credit cards. Ring for opening times and free 'Fact Pack'. The only BADA MEMBER in Derbyshire. **BADA**

DEVONSHIRE

CHELSTON HI-FI, 38 Walnut Road, Chelston, Torquay, Devon TQ2 6HS. Tel: (0803) 606863. Denon, Marantz, Rotel, Musical Fidelity, Acoustic Energy, NAD, Castle, Heybrook, Celestion, JPW etc. 2 dem rooms. Home trial. Free installation. Access, Visa, Amex, Diners, Hi-Fi Markets Chargecard. Credit facilities. 9.30-7.30 Mon-Fri, 9.30-6 Sat.
UPTON ELECTRONICS, 31 Torquay Road, Paignton, Devon. (0803) 551329. Pioneer, Denon, NVA, Musical Fidelity, Tannoy, Ruark, Arcam, Cambridge, Linn, Revolver etc. Single speaker dem room. Home dems. Appts. nec. for dems. Free install. Own service dept. Access, Visa, inst. cred. up to £1000. 9-5.30 Mon-Sat. 9-1 Weds.

ESSEX

1ST AND FOREMOST HI-FI CENTRE, 49-55 North Station Road, Colchester, Essex CO1 1RQ. Tel: (0206) 549842. Fax: (0206) 762900. Tlx: 987873 SAIDG. Trio Kenwood, JVC, Akai, Aiwa, Sony, Pioneer, Technics, Nakamichi, Panasonic, Revox, etc. Home trial, free installation. G-Service dept. Instant credit available + all credit cards accepted. Monday to Saturday 9am-6pm.
A.T. LABS, 442/4 Cranbrook Rd, Gants Hill, Ilford. (01) 518 0915. Mon-Sat, 10-6. Two dem rooms. Access, Visa. Sony Hi-Fi News Best Dealer '86 & '88 (National). **BADA**
BRENTWOOD MUSIC & HI-FI CENTRE, 2 Ingrave Rd, Brentwood. (0277) 221210. Alphason, Denon, Marantz, Quad, DNM, Rock/Glastonbury, E.A.R., Exposure, Kelvin Labs, Rotel, plus many more. Dem facilities, homerial, evening appts. (high end). Home installations. System problem diagnosis. Mon-Sat 9.30-5.30 (Thurs from 10am, Sat from 9am). Credit facilities. Access, Visa, Hi-Fi Markets Chargecard. Service facilities.
LYON AUDIO, 16 Peartree Business Centre, Peartree Road, Stanway, Colchester. Essex CO3 5JN. (0206) 560259. Quad, Rogers, Mission, Denon, Cyrus, Marantz, Audiolab, Rotel, NAD, Wharfedale, TDL. Dem facilities. Mon-Sat 9-6. Installations. Access, Visa, instant credit. Service dept available.
RAYLEIGH HI-FI, 44a High Street, Rayleigh, Essex. (0268) 779762/

747571. 216 Moulsham St, On-the-Parkway, Chelmsford. (0245) 265245. 132-134 London Road, Southend-on-sea. (0702) 435255. A&R, Creek, Cyrus, Denon, Epos, Ion, Linn, Mission, Naim, Quad, Rega, Roksan, Rotel, Royd, 0% finance. **BADA**
THOMSONS, 2 High Street, Great Baddow, Chelmsford, Essex. Tel (0245) 71465. JVC, Kenwood, Mitsubishi, Toshiba, Tannoy, Mordaunt-Short, Acoustic Research, Wharfedale, Philips, Audio-Visual dealer. Home trial. Free installation. Service dept. Access, Visa, HP. Open 9-1, 2-5.30 Mon-Sat. Open 9-1 Wed

GLOUCESTERSHIRE

AUDIO EXCELLENCE, 58 Bristol Road, Gloucester. (0452) 300046. Audio Research, Arcam, Mission, Quad, Linn, Naim, NAD, Yamaha and lots more. Closed Mon.
ROBBS OF GLOUCESTER, 13/15 Worcester Street, Gloucester GL1 3AJ. (0452) 419777. Sony, Technics, Aiwa, Pioneer, Denon, Bose, Celestion, Dual, Kenwood, JVC. Largest selection in Gloucestershire. Dem facilities. Home trial. In house service dept. Access, Visa. 9-5.30 6 days.

HAMPSHIRE

HAMPSHIRE AUDIO Ltd, 2-12 Hursley Rd, Chandlers Ford. (0703) 252827/265232. Quality CD and analogue agencies. 5 dem studios. Large free car park. **BADA**
HOPKINS HI-FI, 38/40 Fratton Rd, Portsmouth PO1 5BX. (0705) 822155. Technics, Quad, Monitor Audio, Tannoy, Denon, Nad, Heybrook, Onkyo, Dual, Marantz plus others. Dem facilities, appointments necessary. Access, Visa. 9-5.30. Open to 6 Thurs. Closed Wed. Service dept.
JEFFRIES HI-FI (PORTSMOUTH), 29 London Road, Portsmouth PO2 0BH. (0705) 663604. 2 dem rooms. Closed Mon. Late night Wed. Parking. Bus Route. Credit fac. **BADA**
TRU-FI SOUND & VISION, 10-12 Grosvenor Road, Aldershot, Hants. Tel/Fax: (0252) 26390/332424. Aiwa, Audio Technica, B&W, Nakamichi, Mission, Mordaunt-Short, Nagaoaka, Sony, Technics. Dem fac. Free install. Service dept. 0% finance. Access, Visa. Mon-Sat 9.30-6.

HEREFORDSHIRE

ENGLISH AUDIO, 95 Whitecross Road, Hereford HR4 0DG. (0432) 355081. Musical Fidelity, Arcam, Pink Triangle, Denon, Marantz, Rogers, Audio Innovations, Rotel, Nakamichi, Heybrook and others. Dem room. Home trial. Free install. Service dept. Access, Visa. Credit arranged. Open Mon-Sat 10am-6pm.

HERTFORDSHIRE

ACOUSTIC ARTS Ltd, 101 St Albans Rd, Watford, Herts. (0923) 245250. A&R, Audiolab, Audio Research, Apogee, Denon, Krell, Magneplanar, Meridian, Quad, Rogers, TLD. Mon-Sat 9.30-5.30. **BADA**
DARBY'S OF ST. ALBANS, 6 Market Place, near the clock tower, St. Albans, Herts. (0727) 50961. Alphason, A&R Cambridge, Bang & Olufsen, Denon, JPW, JBL, Harman Kardon, Quad, Ruark, Sony. Home demonstrations, free delivery and installation. Sales rental service. In house credit. Lombard, Tricity. Mon-Sat 9-6.
HYPERTEC, 6 Bancroft Road, Hitchin, Herts. (0462) 452248. B&W, Denon, Dual, Marantz, Pioneer, Rotel, Tannoy, Technics, Wharfedale, Bang & Olufsen. 2 dem rooms without appoint. Private dem room + evening dem by appt. Home trial. Free Install. Service dept. Access, Visa, Hypertec creditcharge. 9.30-5.30 6 days per week.
STUDIO 99, 82 High Street, Harpenden. (05827) 64246. Linn, Naim, Meridian, Rega, Nakamichi, Mission/Cyrus, Quad, Creek, KEF, Bang & Olufsen, Yamaha etc. Quiet single speaker dem room. Appts nec. Home trial, free install. Service Dept. Visa/c, Access/c & finance terms. 9-5.30pm (Mon-Sat). Closed Weds. **BADA**
THE AUDIO FILE, 27 Hockerill St, Bishops Stortford, Herts CM23 2DW. (0279) 506576. 9.30-5.30 6 days. Dealer Of The Year 1988/89. Linn, Naim, Rega, Quad, Cyrus, Arcam, Musical Fidelity. 0% credit. **BADA**

KENT

HI-FI CENTRE LTD., 65 King Street, Ramsgate, 0843 590321. A.R., Aiwa, Ariston, Celestion, Goodmans, Kenwood, Marantz, NAD, Radford, Tannoy, etc. etc. + guaranteed recon. equip. Dem room + home dems. Hi-Fi repairs & servicing, Trade in & Cred facs. Mon-Sat (9.30-5.30).
JOHN MARLEY HI-FI CENTRES, 2 Station Rd, West Canterbury. (0227) 769329. Also at Dover - (0304) 207562. B&W, Heybrook, Magnum, M.Y.S.T., Nakamichi, Pink Triangle, Rotel, Sansui, Technics, Quad. Dem and home trial fac. Mon-Sat 9-5.30 closed Thurs. Free install. Credit to £1,000. Access, Visa, Creditcharge. Service dept
PHOTOCRAFT HI-FI, 40 High St, Ashford. (0233) 624441. No. 1 in Kent

for Linn, Naim, Rega, Roksan, Exposure, Onix, Epos, Royd, Creek. But before you choose equipment choose where to buy it. Dem room, appts. necessary. Home trial and free installation. Visa, Access, Bada Chargecard. 9-5.30 Mon-Fri (Wed & Sat to 5 only). Service Dept. **BADA**
PROGRESSIVE AUDIO, Rainham, Kent. (0634) 389004. Alphason, Audio Innovation, Conrad Johnson, Proac, Raymond Lumley, Rock Reference, Snell, TDL, Voyd and others. Dem by appt., please phone. Home trial. Free installation. Access, Visa.
STANDENS, 92a High Street, Tonbridge, Kent, TN9 1AP. (0732) 353540. Pink Triangle, Kelvin Labs, TDL, Ruark, Marantz, Quad, Musical Fidelity, Micromega, NAD, Arcam. 2 Demo rooms. Home trials. Free installation and Service dept. Access & Visa. HP Terms, and Bada credit charge. 9.00-5.30 Mon-Sat except Wed 9.00-1.00. **BADA**
TONBRIDGE HI-FI, 96 Woodlands Road, Gillingham, Kent. (0634) 525858. Linn, Naim, Rega, Pink Triangle, Exposure, Creek, JRT, Sony, Ruark, KEF, Arcam etc. If your interest is music pay us a visit + find out what we do.

BADA
TONBRIDGE HI-FI, 31 High Street, Tunbridge Wells, Kent, (0892) 24677. Linn, Naim, Rega, Pink Triangle, Exposure, Creek, JRT, Sony, Ruark, KEF, Arcametc. If your interest is music pay us a visit + find out what we do
V J HI-FI, 29 Guildhall St., Folkestone. (0303) 56860, Mon-Sat 9-6. NAD, Yamaha, Marantz, Cambridge Audio, Denon, Kenwood, Rogers, Dual, Musical Fidelity, Quad, Dem and home trial facilities, free install, credit to £1000. Amex, Diners, Visa, Access. Service Dept
VJ HI-FI, 29 Guildhall St, Folkestone. (0303) 56860. Mon-Sat 9-6. NAD, Yamaha, Marantz, Cambridge Audio, Denon, Kenwood, Rogers, Dual, Musical Fidelity, Quad. Dem and home trial facilities, free installation, credit to £1000. Amex, Diners, Visa, Access. Service Dept.
VJ HI-FI, 119 High Street, Margate, (0843) 226977. Mon-Sat 9-6. NAD, Yamaha, Marantz, Cambridge Audio, Denon, Kenwood, Rogers, Dual, Musical Fidelity, Pioneer. Dem and home trial facilities, free installation, credit to £1000. Amex, Diners, Visa, Access. Service Dept.

LANCASHIRE

MONITOR SOUND, 54 Chapel St, Chorley, (02572) 71935 A&R, Dual, Mission, Quad, Rogers, Rotel, Spendor, Thorens, Nakamichi, Yamaha, etc. 2 dem rooms. Open Mon-Sat, closed Weds. Free installation. Credit to £1,000. Access, Visa. Service Dept.
NORMAN AUDIO, 131 Friargate, Preston PR1 2EE. (0772) 53057. Fax 562731. Sony Hi-Fi News Area Winner. Aiwa, B&W Loudspeakers, Denon, Marantz, Mission Cyrus, Monitor Audio, Nakamichi, Quad, Roksan, Rotel & many others! 2 lux. dem. Inge. Home trial by arrangement. Free install. Service Dept. Inst. cred. facs. with several companies. Most credit cards accepted 6 days 9-5.30. **BADA**

LEICESTERSHIRE

MJS HI-FI, 80 Stapleton Lane, Barwell, Leicester LE9 8HE. (0455) 46977. The Rock, Audio Innovations, Kelvin Labs, Snell, Helius, Sugden, Ruark, Concordant, Valdi, JPW. Dem and home trial facilities. Mon-Sat 9.30-7.00. Free installation and service dept. Visa, Access
THE LEICESTER HI-FI CO, 6 Silver Walk, St. Martins Square, Leicester LE1 5EW. (0533) 539753. Arcam, Creek, Marantz, Mission/Cyrus, Musical Fidelity, Nakamichi, QED Hi-Fi, Quad, Rogers, Roksan, "and oodles more". 2 dem rooms, home trial arranged, free installation service department, credit facilities, Hi-Fi Markets, Access, Visa, Diners, Amex. 6 days 9.30-5.30. Leicestershire's only Bada member. **BADA**
SOUND ADVICE, Duke Street, Loughborough LE11 1ED. (0509) 218254. Arcam, Creek, Linn, Epos, Mission, Cyrus, Naim, Rega, Rotel, Yamaha etc. Dem facilities. Appts required. Free installation. Service Dept. Credit facilities, Access, Visa, Amex. Mon-Sat 9.30-6

LINCOLNSHIRE

BOSTON HI FI CENTRE, 65a Wide Bargate, John Adams Way, Boston, Lincs PE21 6SG. (0205) 365477. Quad, Nakamichi, Creek, Ariston, NAD, Denon, Marantz, Castle, Rotel, JPW, Rogers. Separate demo studio. Home trial, free installation, service department. Access, Visa, Hi-Fi Markets Chargecard. Tues-Sat 9-5.30 pm.

LONDON

A.T.LABS, 190 West End Lane, London NW6. (071) 794 7848. Mon-Sat 10-6. 2 dem rooms. Access/Visa. Sony Hi-Fi News Best Dealer '86 & '88 (National) **BADA**
ANALOG AUDIO, 849 High Road, London N12. (081) 445 3267. Denon, Dual, JBL, NAD, Marantz, Rotel, Wharfedale, Cerwin Vega Teac, Mordaunt Short. Free install. Service Dept. Instant credit up to £1000. Visa & Access. 9.30-6 6 days
AUDIO CHOICES, 66 High Road, Leytonstone, Stratford E15. 081 534 6987. Marantz, A&R, Musical Fidelity, SD Acoustics, Rotel, Audio Technica,

Ruark, Roksan, Moth, Nakamichi, B&W, Van den Hul, Dual, Pink Triangle, Alison Acoustics. Dem room, home dems within M25 area. 10.30-7.30. AUDIO VENUE, 24 Church Road, Crystal Palace, London SE19 2ET. (081) 771 7787. Linn, Naim, Nakamichi, Marantz, Dual. Credit available, 2 yr warranty, 2 Demo Rooms. Closed Weds. **BADA**
BILLY VEE SOUND SYSTEMS, 248 Lee High Road, London SE13. (081) 318 5755. Linn, Rega, Naim, Nakamichi, Quad etc. 2 dem rooms. Int. free credit. Access, Visa. Closed Thurs. **BADA**
CORNFLAKE SHOP, 37 Windmill Street (just off Tottenham Court Road), London W1. (071) 631 0472. Mon-Sat 10-7. Rega, Roksan, Naim, Monitor Audio, Koetsu, Marantz, Yamaha, SME, DNM, Epos. Three dem rooms. Delivery and installation service. Credit facilities. Access, Visa. DOUG BRADY HI-FI, 14-18 Monmouth St, London WC2H 9HB. (071) 379 4010. Wide range of top specialist hi-fi from Britain, America and Japan. 3 Dem rooms. **BADA**

GRAHAMS HI-FI, Canonbury Yard, 190a New North Rd, London N1 7BS (071) 226 5500. Winner Sony/HFN Greater London Dealer Award 1986-1989. Linn, Naim, Rega etc. £300-£3,000-£13,000. **BADA**
JUST MUSIC, 52 Upper Tooting Road, London SW17 7PB. (081) 767 1233. Aiwa, Dual, Denon, Marantz, Quad, Rogers, Thorens, Musical Fidelity, Sugden, Heybrook and many more. Dem facilities. Appts can be arranged. Home trial. Free installation available. Access, Visa, Amex. Hi-Fi Markets, Chargecard, Creditcharge, finance arranged. 10am-7pm Mon-Thurs, 10-6 Fri & Sat. **BADA**
KAMLA ELECTRONICS, 251 Tottenham Court Road, London W1. (071) 323 2747. Amadens, Ariston, BLQ, Gale, Incatech, JPW, Linn, Mordaunt Short, SME, Systemdek, Thorens, Townshend, Ruark, Wharfedale. KJ WESTONE, 26 New Cavendish St, London W1M 7LH. (071) 4868262/63. Fax (071) 487 3452. Arcam, Audio Research, Acoustic Research, Apogee, Arcam, Audiolab, Creek, Epos, Linn, Meridian, Musical Fidelity, Pink Triangle. Appts. nec. Home trial. Free installation. Service dept. major credit cards. Mon-Sat 10-6pm. (Late night Thursday til 7pm.)
SOUND ORGANISATION LONDON, 1 Cathedral Street, London SE1 9DE. 071 403 2255/3088. Linn, Rega, Roksan, Micromega, Radford, Rotel, Nakamichi, Onix, Creek, Naim, Exposure, Royd, Heybrook, Epos. Interesting new equipment always under evaluation. Single speaker listening room. Credit facilities. Appts. preferred, free install., Service dept. Open Tues - Sat 10-6. Late dem. by appt. **BADA**
STUDIO 99, 79-81 Fairfax Road, London NW6. (071) 624 8855. Linn, Naim, Meridian, Rega, Quad, Nakamichi, Mission/Cyrus, KEF, Bang & Olufsen, Yamaha, Creek etc. 2 single speaker dem rooms. Appts. nec. Home trials, free install. Service Dept. Visa/c, Access/c & finance terms. 10-7 (Mon-Fri), 10-6 (Sat). **BADA**

TIME AND TUNE, 218/220 Whitechape Road, London, E1 1BJ. (071) 247 0567/8/9. Akai, Aiwa, Bose, Hitachi, Kenwood, Mitsubishi, Panasonic, Philips, Pioneer, Sony, Technics. Home Trial Facilities, Free Installation, Service Dept., Instant Higher Purchase. 9.30am-6pm Mon-Fri, 9.30am-2pm Sun, Sat Closed. **BADA**

GREATER MANCHESTER

THE AUDIO COUNSEL, 12 Shaw Road, Oldham, Manchester OL1 3LQ. (061) 633 2602. Linn Naim Rega, Rotel, Arcam, Micromega, EPOS, Creek, Nakamichi, Denon. 2 dem. rooms. Free install. Visa, Access. Licensed credit brokers up to £1000 instant credit. 10.00-5.30 Tues, Weds, Sat; 10.00-7.30 Thurs, Fri. Closed Mon.
CHRIS BROOKS AUDIO, 10-12 Oak Street, Hazel Grove, Stockport SK7 4EJ. (061) 419 9050. Tues-Sat 10-6, 2 dem rooms, credit facilities, All credit cards. Just like the Warrington Ship - total absence of bull.

MIDDLESEX

A.T.LABS, 159 Chase Side, Enfield, Middx. (01) 367 3132. Mon-Sat 10-6. Two dem rooms. Car Park. Access/Visa. Sony/Hi-Fi News Best Dealer '86 & '88. **BADA**
A.T. LABS, 173-175 Station Rd, Edgware, Middx. (01) 952 5535. Mon-Sat 10-6. 2 dem rooms. Access, Visa. Sony/Hi-Fi News Best Dealer '86 & '88 (National) **BADA**
HARROW AUDIO, 27 Springfield Rd, Harrow. (01) 863 0938. Mon-Sat 9.30-5.30. A&R, Audiolab, Cyrus, Denon, Dual, Heybrook, Linn, Monitor Audio, Musical Fidelity, Quad, Rotel, Tannoy etc. **BADA**
NORTHWOOD AUDIO, 126 Pinner Road, Northwood, Middlesex HA6 1BP. (0927) 420877. Exposure, Musical Fidelity, Pink Triangle, Manticore, Audio Innovations, Rotel, Ruad, Ruark, SD Acoustics, Moth. Dem. room. Home trial. Free Install. Access, Visa. 9-6 Mon-Sat.
UXBRIDGE AUDIO LTD, 278 High St, Uxbridge, Middx UB8 1LZ. (0895) 30404 (Multi-line) A&R, AR, Ariston, Creek, Cyrus, Denon, Dual, JPW, KEF, Manticore, Meridian, NAD, Nakamichi, Quad, Rotel, Wharfedale, Yamaha, etc. 2 dem rooms. Mon-Sat 10-6 **BADA**

MERSEYSIDE

BETTER HI-FI, 16 Cook St, Liverpool L2 9RF. (051) 2275007. Linn, Naim, Quad, Arcam, Audio Innovations, Threshold, Creek, Denon, Yamaha,

Mordaunt Short. 3 dem rooms. Home trial. Free install. Service Dept. Access, Visa. Instant credit up to £1000, 0% on certain items. 9-5 Mon-Sat.
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**
IN CONCERT HI-FI, 144 Seaview Road, Wallasey, Wirral, Merseyside (051) 630 5055. Denon, Kenwood, QED, G-Alexander, Spica, Shan Acoustics, Systemdek, Musical Fidelity, Audio Dimensions, Voyd, Single speaker dem room. Home trial free installation. 10-6 - closed Mon. Access Visa.

NORFOLK

BASICALLY SOUND, The Old School, School Rd, Bracon Ash, Norwich NR14 8HE. (0508) 0629. Arcam, Linn, Naim, Denon, Spendor, Exposure, Audio Technica, Creek, Rega, Epos, etc. 2 comprehensive dem rooms. Home trial. Free installation. Visa, Access. HP facilities. Tues-Sat 9.30-1, 2-5.30.
MARTINS HI-FI, 5 High Street, Kings Lynn. (0553) 761683. Established 1968. **BADA**
MARTINS HI-FI, 85/91 Ber Street, Norwich. (0603) 627010. Established 1968. **BADA**
SOUND APPROACH, 161 Unithank Road, Norwich. (0603) 622833. Kuzma, Ariston, Castle, Denon, Exposure, Ion, Royd, NVA, Roksan, Ruark, etc. etc. Dem and home trial facilities. Mon-Sat 9-6.30. Free installation. Credit to £1,500. Visa, Access, Diners Club. Service Dept.

NORTHAMPTONSHIRE

CLASSIC HI-FI + VIDEO, School Lane, Kettering, Northants. (0536) 515766. Rotel Musical Fidelity, Wharfedale, Monitor Audio, Yamaha, JBL, Dual, Marantz, Kenwood, KEF, Celestion, and many more. Home trial, free instal. service Dept. Access, Visa, credit facs. 9.30-5.30pm.
THE AUDIO SHOP, Coffee Tavern Court, High St, Rushton. (0933) 56651. Audio Technica, Denons, Goodmans, Rotel, Tannoy, Ion Systems, Thorens, Gale, BLQ, Royd. Dem room. Home trial and free installation. Mon-Sat 9.30-5.30 (Thurs 9.30-2). Service Dept.

NOTTINGHAMSHIRE

CHANTRY AUDIO, Chantry Walk, 18a Eldon Street, Tuxford, Newark, Notts NG22 0LH. (0777) 870372. Pink Triangle, Royd, JPW, Rotel, S.D. Acoustics, NVA, Mitchell, Art Audio (valve), Kelvin Labs, Sumo, + much more. 2 Dem. Rooms. Appts preferred. Home trial, free installation. Access, Visa + credit facilities and mail order. Mon-Fri 10am-4.30pm. Sat 9.30-5.30. Sun home dem by appt. Closed Weds.
DEFINITIVE AUDIO. (0602) 813562. Voyd, Audio Innovations, Snell, Helius, Systemdek, Revox, Deltac, JPW, Pirate, Loewe Audio Visual plus more. Home dems throughout Notts and E. Mids. Free install. 10-7, 7 days. Tel: (0602) 813562 for further info appt

WEST MIDLANDS

ALTERNATIVE AUDIO Ltd, 93-95 Hobs Moat Rd, Solihull. (021) 742 0254 (sales), 0248 (service). The widest range of quality hi-fi and CD in the West Midlands. Tues-Sat 10-6. **BADA**
AUDIO CENTRE MAINWAY, Sharing Asda Car Park, High Street, Bloxwich, Walsall. W. Midlands. (0922) 473499. Linn, Ariston, Aura, Arcam, Cambridge Audio, QED, Musical Fidelity, Rogers, QED, Systemdek, Moth etc. The Midlands most exclusive Hi-Fi Centre with private listening studio. Open evenings by appointment. Home trial. Free install. Own service department. Inst. credit. Chargecard. Interest free. Access. Barclaycard. Mon-Sat 9-5.30.
BRIDGE HI-FI, 3 Tudor House, Bridge St, Walsall. (0922) 640456. NAD, Dual, Yamaha, Kenwood, Technics, Pioneer, Mission, Celestion, Denon, Mordaunt Short. Appts required. Home trial & free install. Access, Visa, Diners, Amex. Credit to £1,000. 9.15-5.30 Mon-Sat. Service Dept.
FIVEWAYS HI-FI FIDELITY LTD, 12 Islington Row, Edgbaston, Birmingham. (021) 4550667. Alphason, Arcam, Denon, Meridian, Musical Fidelity, Quad, Revox, Spendor, TDL, Thorens, etc. Dem facilities. Tues-Sat 9.30-6. Free installation. Access, Visa. Service Dept.
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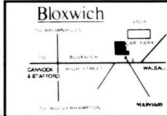
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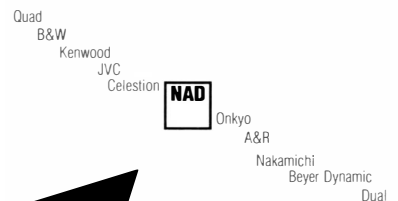
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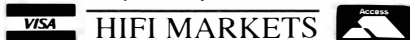
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THE WORLD'S NUMBER 1 GUIDE TO BUYING HI FI

THE DIRECTORY

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 suitable 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 retail price is placed in its respective category in alphabetical order. For instance the Acoustic Research *EB101* is presently at the beginning of the Turntables and Tonearms section; however, the Ariston *Superior* heads the Motor Units section as it is sold and was reviewed as a separate component – requiring a separate arm. Where there are several products with the same name but different model numbers these are in price ascending order.

Then come the ratings for the standard achieved in laboratory and listening tests, with the exception of certain product groups where lab tests

were not carried out. One important point to remember is that they cannot be used to compare products from different categories – ie 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 (unless you can get hold of first generation copies of the master tape!).

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 in the 20 or so words we have attempted to put across the essence of the review, in some cases using quotes from the review itself. Obviously, important information on compatibility or auxiliary equipment used in the test cannot be included, and it is best to refer to the original review for this, of which more later.

The next column(s) varies from category to category but is usually either features or specifications, the former being facilities available on a cassette deck or amplifier or the type of drive

system on a turntable

Specifications vary with product type but usually relate to suitability or capability, for instance arm matching figures are given with the cartridges which tie in with the mass figures for the tonearms themselves, making it easier to avoid compliance/ mass mismatches.

Perhaps the most influential letters in the Directory are those found in the Value column, the *RS* and *BBs* denoting the Recommended and Best Buy ratings that are appended to products we consider meritorious. The Best Buy tag means that a product not only offers good sound quality but is reasonably priced as well. With source components a price limit of approximately £300 is usually used as a guide. Recommended means that either the performance of a product is particularly good irrespective of price or, alternatively that a good value standard is achieved but overall attainment falls short of Best Buy classification. 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 (especially the electromechanical elements – ie cartridge and speaker) system building is not quite 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.

The final column contains a reference to the issue of *Hi-Fi Choice* which featured the complete review. If you wish to get a better idea of a product by reading the complete review it is possible to order a copy (if still in print) through our back issues department. Every *Choice* issue contains a Back Issues page for this purpose.

The Directory is constantly updated with the latest reviews and price changes as well as having discontinued products removed. If a listed product is updated to a 'mark two' form and the alterations are purely cosmetic or not too extensive we sometimes leave the product in with its current model number and an asterisk to denote that it has changed since our original review was published.

SYSTEM BUILDING

Pre-packaged one-make systems have been commercially very successful, with advantages like cosmetic consistency, competitive pricing, and (assumed) technical compatibility. However, despite the mass market clout of the consumer electronics giants, the hi-fi tradition of specialised separate components seems as strong as ever, and certainly represents the route taken by those who place sound quality first.

Yet those who choose the separates route still have lingering doubts – usually completely unjustified – over the compatibility of components from different manufacturers. Gross incompatibilities are very rare nowadays, only likely to rear their heads amongst the most exotic components. Here the delicate art of 'supercompatibility' really takes over the major role and might be regarded as the key to 'real' hi-fi.

There are now three different pre-recorded music media competing for the attention of the hi-fi user, and to go for all three will either cost a lot of money or involve substantial compromises in the sound quality of each. For this reason many separates purchasers may start with just one source, adding others or a tuner when funds permit.

There will always be controversy over the relative qualities of LP, CD and cassette. LP is still the choice for ultimate sound quality – particularly for those prepared to spend a substantial sum on a good quality turntable system.

Cassette has never really challenged vinyl's superior quality, but it is a multiple role format, offering 'go anywhere' flexibility, a uniquely useful recording capability, plus a broad catalogue of pre-

recorded music cassette material. As a hi-fi medium cassette suffers from pre-recorded material which has been improving but is still patchy in quality, and can usually be bettered by a home recording. There is also the worry that a tape made on a specific machine usually replays best on that machine, which may cause aggravation when upgrading a few years hence.

CD is the latest challenger to these two established media, using a digital instead of analogue storage format. The sound quality remains controversial, hailed as near perfect by its fans but derided by vinyl freaks, so it is probably fairest to say that CD is fine for most listeners, but may not suit everyone; certainly the lack of background noise, defects and deterioration over time are major strengths.

While there will always be arguments about the different music storage and transmission formats available to the hi-fi listener, there is also controversy over the relative importance of the different components which make up the system chain – by which is meant the source, the amplification, and the loudspeakers (and for the pedantic the room itself, though there's often little that can be done here).

For many years the 'weakest link' theory proposed that the loudspeakers needed the most attention, that amplifiers merely had to have sufficient power, and that turntables were pretty well perfect. However, this perspective has become steadily discredited by an alternative 'theory of precedence', which stresses that no subsequent component can make up for the inadequacies of its

predecessors – all it can do is supply its own additional degradations. In such a context it is not uncommon to find more than half the system budget allocated to the record player, with scrimping and saving made on amplifiers and loudspeakers.

Choosing the components of a system is only part of the task of getting the system as a whole working as well as possible. Good turntables and loudspeakers both benefit to a surprising degree from proper support – from stands that enable them to give their best performance, whether floor-standing or wall mounted.

Siting of components within a room can play a significant role, as can the room itself. Some people may prefer an acoustically more 'live' room than others, but most will agree that the larger it is the better, because this tends to provide smoother and better extended bass reproduction. All rooms create reflections and standing waves, and the effects of these are more severe if all opposing walls are parallel, similar distances apart, and with hard reflective surfaces.

Provided that the loudspeakers can be placed fairly symmetrically, slight asymmetry elsewhere in the room is usually helpful.

The loudspeakers are most critical of placement, because it is their job to create the stereo image, and it will be impossible to do this if the sound from each is not roughly similar at the listening position. Each loudspeaker should operate in a similar immediate acoustic environment, unencumbered by other furnishings and structure, and a similar distance from listener, nearby walls, and

corners. Some loudspeakers are designed to operate close to a rear wall, others a metre or so out into the room, but all loudspeakers benefit from being closely mechanically coupled via proper stands to the floor.

Mixing and matching the components of a record player to get optimum results can be something of a black art, over and beyond the fairly simple business of choosing a cartridge of roughly the right compliance to suit the arm effective mass. Certainly the combining of turntables and tonearms is not a simple matter, and this is where a good specialist dealer will come into his own, both in terms of recommending good combinations from the models he holds in stock, and then in correctly carrying out the sometimes tricky set up procedures which are often required to get the best results.

The key to getting the best results from a separates system lies in finding an experienced and skilled dealer in the first place, one who takes the trouble to find out what you really want and then demonstrate some likely alternatives.

The Directory has been compiled so that it can be used by *Choice* readers as a buying guide. A guide in the sense that you should use the information in it to make a shortlist of equipment suited to your needs and budget, and then audition it at a dealers before taking the plunge. Because tastes inevitably differ it would be unwise to buy purely on the basis of our recommendation and dealers are the most experienced people around when it comes to making systems work as a whole.

THE DIRECTORY

TURNTABLES & TONEARMS

The schizophrenic split between consumer electronics and 'real hi-fi' is most obvious amongst turntables. The former are supplied simply as a means of playing vinyl in a system context. Cheaply manufactured in the Far East, these are complete players with a variety of automatic facilities, sometimes tied into system remote control. But engineering compromises severely limit sound quality, cartridge choice may be P-mount restricted, and such machines are rarely stocked by specialist hi-fi dealers these days.

Specialist turntables offer big sound quality

improvements, but lack so-called convenience features (that practised users often find irksome). Such 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 individual components, but 'naturally sympathetic' combinations do exist, and the good dealer can help.

Listed separately as integrated players and as turntable motor units and tonearms, our **sound**

quality rating is based on results achieved using a high quality system – but in point of fact the turntable is usually the limiting factor soundwise in any system. **Lab performance** summarises the speed stability, vibration generation and environmental isolation of turntables, along with the friction, alignment and adjustment of tonearms. The tonearm's physical characteristics also define a range of mechanically compatible cartridges (see cartridge listings).

INTEGRATED TURNTABLES

NAME PRICE	LAB SOUND	COMMENTS	FEATURES ARM EFF. MASS	VALUE	BACK ISSUE FULL REVIEW
Acoustic Research EB101 £230	Good Good	This genuine high fidelity product offers an impressive package at a competitive price	Subchassis, manual, 13.5g	BB	48
Alphason Solo/Xenon MCS £420/£300	Average+ Good	The deck is warm and euphonious with high levels of clarity. Wow artefacts occasionally just audible	3 point suspended motor unit, optional quartz PSU/speed change 13g		67
Alphason Sonata/HR-100S MCS/Atlas £720/£480/£340	Very Good Very Good	Good sound in all areas – bass, clarity and neutrality all in the top class and bettered by very few decks. Atlas PSU expensive but worthwhile	Belt drive, suspended, optional PSU, 13g	R	79
Ariston Q-Deck £165	Good Average+	Well engineered and good sounding low cost package which is both easy to set up and to use	Semi-auto, belt drive, solid	BB*	67
Ariston Icon £215	Good Good	A thoughtful and efficient design that offers good sound, excellent value and semi-automatic operation too! Good vibration isolation eases siting	Belt drive, suspended, semi-automatic, 10g	BB	79
Ariston Forte £350	Average— Average	Heavy on engineering, short of soul? The Forte almost makes it, losing out only because of some residual pitch variations and a lack of bass power. The arm is modestly good	Manual 2-speed belt drive player and detachable arm, 10g		67
Dual CS430 £100	Average Average—	Ragged, sometimes unpleasant cartridge mixes with a modest pleasing player in a very sharply priced package.	Belt drive, with cartridge, auto return, 5g	R	67
Dual CS505-3 £160	Very Good Good	Continuous steady improvements have kept this model at the forefront of the budget market. Practicality is excellent and the deck has excellent timing bass/mid and stereo imaging	Semi-auto belt drive, 8g	BB	67
Dual CS5000 £230	Average Average+	The rare 78 facility may give grandma's collection a new lease of life but the player did not merit recommendation on price vs sound	Electronic, belt drive, subchassis, 10g		48
Goldmund ST4 £4,589	Very Good Excellent	The Studio turntable takes on a cheaper tonearm than the T3F, yet provides a similar reference standard objective and subjective performance at £2,000 less, in a neatly integrated though bulky package.	Solid subchassis, direct drive, parallel arm, detachable headshell	R	60
Heybrook TT2 turntable & arm £424/£269	Average Good+	A gradual process of informed evolution and a sensibly designed arm combine to make this a good sounding middle of the road package. Well supported by dealers	Manual subchassis motor with arm, belt drive, 14g	R	67
JVC AL-FQ555 £170	Below Average Poor	Clear midband sound but woolly bass and crude treble. Ease of use however ranks highly, and there's little to go out of adjustment	Auto, direct drive, 5.5g		67
Kenwood DP-990 £400	Average Average	Smart, slick and massive player suitable for low compliance cartridges only. A good but not inspired performer.	Semi-auto 2 speed direct drive, 16g		67
Kuzma Stabi/Stogi £699/£399	Average+ Stabi: Good; Stogi: Excellent	Stabi is powerful, spacious but not sufficiently subtle. Stogi is an excellent all rounder with even spread of abilities	Manual, belt drive, subchassis, 12.5g	Stogi: R	60
Linn Axis/Akito £399	Good— Average+	A neat, attractive and well-made package which delivers a rather harsh sound with a 'one-note' effect in the bass, but it's well suited to mid market systems	Belt drive, semi-suspended, electronic PSU, 10g		79
Linn Sondek/Ittok/Troika* £549/£483/£669	Excellent Very Good	Superb sound – the best LP12 combination yet. The Troika gives the system real solidity and strength, stretching the deck and arm qualities to the full. Arm has since been upgraded	Manual subchassis player, belt drive, 14g	R	60
Manticore Mantra/Musician £340/£170	Good+ Good+	Well engineered deck with satisfying sound. The arm is particularly fine and very good value	Belt drive, suspended, 15g	R	79
NAD 5120 £90	Average Average	A number of running improvements have given this player a range and tautness denied its lazier sounding antecedents.	Semi-auto belt drive, detachable arm/tube/weight, 9g	BB	67
Omega Point Silver/Black £895/£295	Good Good+	An avowedly stripped down turntable that lacks even an on/off switch, the Omega Point Silver offers fine midrange clarity and good stereo, but some HF compression and a lack of 'wellie'	Manual, solid, belt drive, unipivot, 11g		55
Opus 3 Continuo/Decca London International (Revised)* £599/£99	Poor Good	Heavyweight motor unit with many fine properties, but which needs further development. The idiosyncratic arm is a suitable (though not ideal) platform for the Decca cartridge. For all its faults though, the whole transcends the sum of the parts	Belt-drive manual, damped unipivot arm, 12g		67
Rega Planar 2 £155	Average+ Good	A remarkable product at the price, surprisingly articulate and confident	Manual, 11.5g	BB	48
Rega Planar 3 £207	Good Good	A long time leader in its price category, the '3 (with its excellent RB300 arm) sounded nicely 'musical' in a balanced and coherent manner	Manual, 11.5g	BB	48
Revolver Rebel £169	Average— Average—	Fat, assured and forward presentation, but ragged and subjective speed stability problems. With a little further development, it will be a winner	Manual, 2-speed belt drive inc cartridge, 13g		67
Revox B291* £892	Average— Average—	Sound quality ranks as below average. Subjective bandwidth is narrow and the music lacks grace and energy. Ease of use however is unrivalled	Automatic, remote controllable, direct drive parallel arm, prefitted cartridge		55
Roksan Xerxes/Artemis/Shiraz £695, £595, £655	n/a Very Good	Imaginatively designed, sophisticated front-end system, a little drier than some perhaps, with superior stereo, resolution and presence	2-speed manual, MC cartridge, 9g	R	72
Rotel RP-855 £189	Good Good	Great sound for the money—detailed and clear with good bass and no irritating nasties	Belt drive, solid, speed adjust, 9g	BB	79
Systemdek IIX £248	Good Average+	Poised, clean sounding deck, forward and explicit in character. A good value deck under £250, and a relatively cheap and satisfactory suspended model	2 speed belt drive manual turntable and arm, 11g	R	67
Technics SLBD-22 £90	Average— Average—	Not bad for the price and a great improvement on the L20, it performs reasonably when not stretched	Semi automatic, solid plinth, electronic, 6g P-mount	R	48
Technics SL-DD33 £110	Average Average	As with the QD33 though better value	Automatic, direct drive, solid plinth, 7.5g, P-mount	BB	48

TO ORDER BACK ISSUES OF HI-FI CHOICE SEE PAGE 130

THE DIRECTORY

INTEGRATED TURNTABLES

NAME PRICE	LAB SOUND	COMMENTS	FEATURES ARM EFF. MASS	VALUE	BACK ISSUE FULL REVIEW
Technics SL-L20 £115	Poor Average—	A rather lightweight parallel tracker achieving a poor overall rating, with little to recommend it unless you dig facilities	Electronic, solid plinth, 5g, P-mount		48
Technics SL-QD33 £140	Average Average	The quartz speed controlled version of the DD is short on sound quality but not features. But it did have fair focus and some depth	Automatic, Quartz, direct drive, solid plinth, 7.5g, P-mount	R	48
Thorens TD 280 Mk II £180	Good— Good—	Legendary Thorens build quality on the cheap – slightly unsubtle sound but eminently liveable-with and very good value	Belt drive, solid, electronic PSU, 12g	BB	79
Thorens TD 166 Mk V £200	Good Good	Classic suspended-subchassis deck with clear, stable sound of no particular character. Unlikely to make enemies	Belt drive, suspended, 12g	BB	79
Thorens TD 316 Mk II £220	Good Good—	Very solid deck with neat split-chassis construction. Sound is a bit insecure in the bass, but it could suit classic+1 – sic lovers well	Belt drive, suspended, electronic PSU, 12g	R	79
Thorens TD320 Mk II £350	Good Good	Good, consistent sounding deck with much improved (but not ideal) arm. A little expensive for performance offered	Semi-auto two speed belt drive, 14g		67
Townshend Rock Reference/ Excalibur £1,800/£650	Excellent Excellent	Overall, the closest reproduction to master tape we've yet heard, with stunning real bass and excellent neutrality. Front-end damping trough improves LF detail significantly	Belt drive, suspended, electronic PSU, front-end damping, 12g	R	79
Well Tempered WTAT £1690	Average Very Good	Intriguing and challenging design. Musically it is not ideal, but it has a limpid quality and a lack of artificiality that sets standards as well as turning the ear, though it's not completely uncoloured. A charmer yet mainstream enough in its virtues to be viable	Manual 2-speed, damped, suspended arm, 7.5g	R	67
Zarathustra S4/Pluto 5A Prestige/PSU £1500/£2500/£500	n/a Excellent	The very well made and finished heavy platter S4 with the superb Pluto arm make a devastating combination ranking up there with the very best	Subchassis, manual, available without PSU	R	72

MOTOR UNITS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Ariston Superior £598	Good+ Good	Good but slightly damped sound quality, with powerful and stable bass. The pro quo is a certain lack of pace, energy and resolution	Belt drive, subchassis, electronic		55
CEC ST930 £599	Good Good+ +	A rarity – a serious hi-fi product that loses nothing to budget rivals in finish or convenience. Good clean sound, very stable and assured	Belt drive, external PSU, 78 speed inc.	R	79
CS Audio Resan kit for Rega £80	Good— Good	After-market kit to convert Rega 2 or 3 to semi-suspended subchassis style. Looks good and sounds tidier than original. Feedback is much reduced	Conversion kit, all work reversible	R	79
Michell Synco £265	Good Good	A particularly happy blend of qualities endows the Synco with a blend of subtlety and force – the mailed fist in the velvet glove. Easy on the ear in the best sense	Manual, belt drive, suspended motor unit	R	67
Michell Gyrodec £595	Good Good	Sweet and natural sounding player, well exploited by the Rega RB300 arm. Aesthetics, and the acres of acrylic, are unique	Manual, belt drive, suspended motor unit		55
NVA Senior £450	Good— Average	Very high sensitivity to low-frequency vibration, especially on NVA stand, gives strange subjective bass response and confused sound. Looks are unusual but pleasing	Belt drive, electronic PSU, two-part plinth		79
Oracle Alexandria Mk III £995 – £1095	Very Good Very Good	One of the most beautifully presented players made, and fully supported by superb separation, dynamics and a euphonious style of delivery.	Manual 2-speed belt drive	R	67
Origin Live Oasis B £199	Average Average+	Aesthetics are not its strong point, but its lively and articulate – if idiosyncratic – sound will please some tastes. Highly resonant construction is very sensitive to feedback	Belt drive, 33 $\frac{1}{3}$ rpm only, solid plinth/subchassis		79
Origin Live Oasis A £495	Good— Average	Rather coarse sound with lack of detail resolution – but lively presentation may appeal. Appearance is industrial	Belt drive, external mains filter, 33 $\frac{1}{3}$ rpm only, suspended subchassis		79
Oxford Acoustics Crystal Reference £2395	Very Good Excellent	This big, open and powerful sounding turntable works beautifully with Airtangent arm to give superb 3-D imagery	Manual, belt drive, subchassis, stand	R*	60
Pink Triangle Little Pink Thing £345	Good+ Very Good	Leads the field for clarity and neutrality at this price or a good bit more. It also looks very smart! Excellent value. Arm cut-out suits Rega or Linn style	Belt drive, semi-suspended, electronic PSU	R	79
Pink Triangle PT T00 £650	Very Good Excellent	Uniquely clear sound, uncoloured, free from ringing and with good bass. Very close to master tape, given a good arm and cartridge	Belt drive, external PSU, suspended subchassis	R	79
Revolver £150	Average Average	Nicely balanced, but unimpressive timing and lightweight bass made this deck rather average for the price. Manufacturer has since made several changes, but not re-submitted for review	Manual, belt drive, solid plinth		48
Roksan Xerxes £695	Excellent Very Good	This unique design cuts a swathe through the conventions of turntable design, providing superb resolution and stereo. Power supply has since been upgraded – see issue 78 for our latest report	Manual, belt drive, solid/decoupled	R	67
Systemdek IIXE £248	Good Very Good	Fine, honestly specified and well built player which easily betterers its closest stablemate, the IIX Frankly, at the price it's a sonic bargain	Manual 2-speed, external PSU	R	67
Systemdek IV £495	Good Very Good	The level of wow is a theoretical concern at least, but elsewhere this player shines, combining euphony, information and imaging in a polished, untemperamental package	Two-speed manual belt drive	R	67
VPI HW-19 £1,317	Very Good Very Good	Built to accommodate parallel tracking arms, this large but elegant deck produced clean, smooth sound when fitted with an SME arm. Good bass	Belt drive, suspended subchassis	R	79
Voyd Valdi £680	Good— Good+	Slight 'one-note bass' effect and lack of pitch stability compromise the performance of this well-made deck	Belt drive, suspended subchassis, electronic PSU		79
Voyd "The Voyd Plus" £2,777	n/a Excellent	Based on the standard 3-motor Voyd but with upgrade options (better bearing, platter, etc) which take it half way to a Voyd Reference, so we've dubbed it The Voyd Plus. Superb build and finish; colourful, dramatic performance. A thoroughbred	Belt drive, 3 motors, subchassis, outboard PSU	R	72

TONEARMS

NAME PRICE	LAB SOUND	COMMENTS	ARM EFF. MAS	VALUE	BACK ISSUE FULL REVIEW
Airtangent 1B £1990	n/a Excellent	A complex but superbly built arm for high quality systems, giving excellent stereo and resolution	7.5g (vertical)	R	60
Alphason Opal £130	Good Average	This is a straightforward adequate sounding low cost arm, priced just above where it rightly belongs	10g		55
Alphason Delta £190	Good Average+	A highly competent design from Alphason gives good sound quality but with slight blurring and treble fizz	16g	R	48
Alphason Xenon £240	Good Good+	A trimmed down HR100S, the Xenon has inferior bearings and a simpler finish, but sounds crisp and coherent. Fits any Linn cutout	12.75g	R	55
Alphason HR100S £420	Good+ + Very Good	This S-shaped arm sounds smooth, but nevertheless reproduces transients with fine attack	10g	R	48/Coll

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	Musical Fidelity B1	£200
	Pioneer A400	£230
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	Revolver Rebel	£190
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	Michell Syncro/Syncro Arm	£380
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	Roksan Xerxes Tabriz	£850
	Alphason Sonata/Zenon MCS	£1020
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	Pioneer CT447	£170
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	Yamaha KX530	£230
	Rotel RD865	£230
	Aiwa ADF800	£250
	Kenwood KX5010	£270
	Nakamichi Cassette Deck 2	£300
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	Nakamichi Cassette Deck I	£600
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	Quad 306	£290
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			Marantz SD55	£350	£300	

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THE DIRECTORY

TO NEARMS

NAME PRICE	LAB SOUND	COMMENTS	ARM EFF. MAS	VALUE	BACK ISSUE FULL REVIEW
Airtangent 1B £1990	n/a Excellent	A complex but superbly built arm for high quality systems, giving excellent stereo and resolution	7.5g (vertical)	R	60
Alphason Opal £130	Good Average	This is a straightforward adequate sounding low cost arm, priced just above where it rightly belongs	10g		55
Alphason Delta £190	Good Average +	A highly competent design from Alphason gives good sound quality but with slight blurring and treble fizz	16g	R	48
Alphason Xenon £240	Good Good +	A trimmed down HR100S, the Xenon has inferior bearings and a simpler finish, but sounds crisp and coherent. Fits any Linn cutout	12.75g	R	55
Alphason HR100S £420	Good + + Very Good	This S-shaped arm sounds smooth, but nevertheless reproduces transients with fine attack	10g	R	48/Coll
Ariston Enigma £99	Average Average +	Good but not the best in its class: mid-band sounds a little uneven; treble a trifle "brash"	11.5g		48
Audio Technica AT1130 £186	Good Good	Well suited to most cartridges including high compliance ones, the AT is smooth and tonally neutral, if slightly lacking in 'balls'	8.5g	R	67
Decca London International £49	Average + Average +	This uni-pivot design gives a rather rich tonal balance and some bass muddling. Could be good with Decca cartridges, but not well built	12g		48Summary
Eminent Technology £1000	Good + Good + +	One of the best sounding tonearms around, the linear tracking Eminent delivers impressive stereo imagery, focus and transparent sound	9g (vertical)	R	48/Coll
Goldmund T3F arm £4400	Excellent Excellent	This complex parallel tracker created an "ear-opening" experience when tested with a (since updated) Goldmund Studio turntable	16.5g	R	Coll 2
Helius Orion 2 £490	Very Good Very Good	Excellent engineering with rigid bearings, free from slack. It remains expensive but the level of performance deserves Recommendation	12g	R	48
Kuzma Stogi Reference £699	Very Good Very Good	A large, solid and well-made arm that holds the cartridge firmly, giving exceptionally clear sound with just a hint of brightness	12g	R	79
Linn Ekos £895	Very Good Very Good	Superb, state of the art design which builds significantly on Ittok's strengths	9g	R	67
Mission Mechanic £900	Good Good +	Nearly right, but inconsistency with level and vague imagery spoil what is otherwise a firm, powerful advocate for black vinyl	11g		55
Moth Arm £78	Good Good +	The ultimate budget arm? Refined, detailed, sweet and natural – performance improves in line with the rest of the system	12g	BB	60
Rega RB300 £115	Good + + Good + +	Despite its modest price this sets exceptional performance standards and could be used on a number of high-quality turntables	10-11g	BB	60
Roksan Artemiz £595	Average Good	Interesting design which works a treat on the Xerxes deck. Fits Rega cut-out. See issue 72 for up to date assessment	8g		67
SME 3009 Series IIS £182	Good Average +	A simplified less flexible (as regards adjustment) Series III with a similarly 'soft' sonic character	5g		48
SME 3009 Series III £253	Good Average +	Comprehensively adjustable and very well made, suited to MM and high compliance MC cartridges	5g		48
SME 3009R £335	Average + Average +	A higher mass version of the Series III designed for low compliance MC cartridges	12g		48
SME 309 £495	Very Good Very Good	Beautifully made, finished and presented, this arm is fully and easily adjustable and a highly neutral performer	10g	R	79
SME Series IV £810	Excellent Very Good	Superb engineering and finish with a finely balanced sound giving impressive stereo focus and low coloration	10.5g	R	60
SME Series V £1247	Excellent Very Good	Excellent in terms of design engineering and sound quality, this arm arguably sets a new reference standard regardless of price	10.5g	R	60

* rating refers to original tested model

CARTRIDGES

Very much the 'slave' of turntable and tonearm and to some extent undermined by the supply of free 'starter' cartridges on many turntable systems, the cartridge is still worth taking seriously. The quality of both the stylus itself and the cartridge's tracking performance are important in preserving that most important part of the hi-fi system – the record collection – and the cartridge also plays a significant role in determining the overall balance of a system.

Cartridges fall into two groups: high output models, capable of working directly into any amplifier, and more expensive low output models. 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. Most under-£150 amplifiers and many valve designs need either an extra head amp or transformer to cope with the low output. **Cartridge/amplifier**

interfacing can be very subtle, but even basic high output moving magnet designs benefit in overall balance from optimised amplifier capacitance loading. Still more important, the mechanical cartridge characteristic of cantilever compliance ('springiness') needs to be considered in the light of the effective mass of the tonearm which will be used (see Turntable & Tonearm entries).

NAME PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/type	VALUE	BACK ISSUE FULL REVIEW
Arcam C77 £22	Average + Average +	A sensible moving magnet package with good bounce at a competitive price	6-16g Normal, MM	BB	48
Arcam C77Mg £30	Average – Average	Punchy sound quality with plenty of extra energy to liven things up. The solid body seems well worth the extra £10	4-8g Normal, MM	BB	67
Arcam E77Mg £50	Average Average	Our sample had a disappointing stylus, but gave a coherent, rich and laid back sound, with good 'scale'	3-8g Normal, MM	R	48
Arcam P77Mg £60	Average + Average +	Cautiously recommended, the P77Mg was preferred to its cheaper partner by virtue of a better tip. Channel balance could have been better	4-9g Normal, MM	R	48
Arcam PMX10 £100	Good + Good + +	Not the very clearest in complex high-frequency sounds, but lively and exciting, good transients.	5-11g Low, MC	R	85
Audionote I02VDH £895	Good Very Good	One of the best, giving 'an extraordinarily relaxing midrange clarity', needs a transformer	8-18g Very low, MC	R	43
Audioquest MC5 £220	Average Average	Offers high-output benefits but the drooping frequency response and severe VTA error preclude recommendation	10-20g Normal, MC		54
Audioquest AQ 4041-L £400	Good + + Good +	Slight harshness detracted from the performance of this otherwise clear-sounding and detailed cartridge	8-16g Low, MC		84
Audio Technica AT95E £18	Average – Average	Clear, dynamic if richly balanced, the magnetic '95E is a definite Best Buy	8-14g Normal, MM	BB	48

TO ORDER BACK ISSUES OF HI-FI CHOICE SEE PAGE 130

THE DIRECTORY

CARTRIDGES

NAME PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/type	VALUE	BACK ISSUE FULL REVIEW
Audio Technica AT-420E OCC £31.50	Average Average	Better suited to pop recordings this MM bears some of the sonic hallmarks of the Linn K5	7-14g (damp) Normal, MM	R	67
Audio Technica AT-430E OCC £44.50	Average + Average	A rising high frequency response yields something of a treble sting, not a good all-rounder	3-7g Normal, MM		67
Audio Technica AT-F3/OCC LE £74	Average + Good	Though the 'limited edition' badge is a trifle tongue-in-cheek the 'F3 still offers excellent value	8-15g Low, MC	BB	67
Audio Technica AT-F5/OCC LE £106	Average Good +	This latest sample demonstrated some technical weaknesses but its spacious, fluid sound quality still represents a benchmark at this price	4-10g Low, MC	BB	67
Audio Technica ATOC7 £265	Good + Good +	The OC9 is better if you can afford the extra. But OC7 is at least a taste of the high-end at a sensible price	6-13g Low, MC	R	54
Audio Technica ATOC9 £400	Average + Very Good	Tonal colours are reproduced faithfully and it rarely puts a foot wrong. Slightly less transparent than more costly MCs but it has got real welly. Good value (really!)	6-14g Low, MC	R	60
Audio Technica ART1 £800	Good + Very Good	This is a delicate and very fluid-sounding MC that tracks well, offers very low distortion and exceptionally good stereo separation	9-18g Low, MC	R	72
Cello Chorale £750	Average + Good	Now available through a new distributor at a saving of some £300, the Chorale is still blessed with a delicate but highly detailed treble. Arm matching is a problem	3-9g Low, MC		72
Denon DL110 £69	Good Good	Firmly recommended as a fine all-rounder, this high-output moving coil model is likely to perform well in nearly all circumstances	6-16g Normal, MC	BB	48
Denon DL160 £89	Average + Good	Although listeners just preferred the 110 its brother here proved a twin in lab tests and is still "thoroughly competent"	6-16g Normal, MC		43
Denon DL 103 £99	Average Good	This classic spherical stylus model gives a lively sound with powerful bass, and is popular in broadcast studios	6-16g Low, MC	R	48
Dynavector DV-50X £99	Good Average	A high-output MC model with impressive lab performance, but whose tip and sound quality both disappointed	6-14g Normal, MC		48
Dynavector DV10X IV £125	Average Average +	Fine sounding and realistically priced, damping is recommended to ensure successful tracking ability	8-18g Normal, MC	R	48
Dynavector DV23RS £230	Average + Good	Sound quality was described as "shut-in", lacking energy and sparkle but with some "edginess" in high frequencies	10-22g Low, MC		28
Dynavector XX-1 £680	Good + + Good +	Good, but not immensely competitive at the price, and not helped by comparison with the low output version	7-15g Normal, MC		84
Dynavector XX-1L £680	Good + + Very Good	Very clear, very detailed, no troubles with tracking; response lift around 20kHz seems to do no harm	7-13g Low, MC	R	84
Empire 800 Mk II £33	Good Average	This very high output MM appears to be based on the classic Ortofon VMS series. A trifle uninspiring overall	7-17g Normal, MM		67
Empire MC-5M £110	Average + Good	A very low compliance renders this MC best suited to heavy tonearms while its sweet, non-aggressive sound quality earns it a recommendation	13-20g Low, MC	R	67
Empire Benz Micro MC-2 £600	Average Good +	Similar to both the Empire MC1000 and vdH MC2 in design, the Benz offers a warmer and very transparent account of the music. Its tracking prowess is slightly limited	5-12g Low, MC	R	72
Glanz MFG 110EX £25	Average Average	A little bright but giving detailed bass and clear treble this was competitive at the price	6-16g Normal, MM	R	Systems
Glanz MFG310-LX £50	Good + Good + +	Detail and treble outstanding for sub-£100 cartridge. Slight coloration may be due to body resonance.	6-10g Normal, MF	BB	85
Glanz MFG610-LX £90	Good + Good +	Similar to cheaper '310 but slightly clearer transients and bass. Benefits from lowish impedance loading.	3-10g Normal, MF	R	85
Glanz GMC-10EH £50	Good Good	The rising HF trend of this high o/p MC may cause problems in certain systems but with a favourable wind its seductive qualities will win out	8-14g Normal, MC	R	67
Glanz GMC-10LX £80	Average + Average +	Bearing some of the hallmarks of the '10EH, the '10LX is still less competitive in the sonic stakes	7-15g Low, MC		67
Glanz GMC20E £129	Average Average	You could try haggling but we thought the makers of this number were demanding too much lucre for their product	3-6g Low, MC		48
Goldmund Clearaudio £1500	Average + Very Good	Something of a mixed bag overall, its sonic character bears a strong resemblance to the Pradikat though it shares some of the hallmarks of the more expensive Accurate	5-12G Low, MC		60
Goldring 1012 £40	Good + Good	Slightly harsh sound but plenty of life and quite good detail. Some very high frequency coloration apparent.	6-12g Normal, MM	R	85
Goldring 1022 £60	Good + Good	As with 1012, a touch harsh; detail and transient purity improved, though, and it goes well with electric guitar!	5-11g Normal, MM	R	85
Goldring Elan £16	Average + Average	A lightweight and frisky-sounding MM that appears to be based upon the same body as the Nagaoka mm4	7-15g Normal, MM	R	67
Goldring Epic II £26	Average Average +	An excellent budget choice though the limitations of the stylus are rather obvious at higher frequencies	5-12g Normal, MM	R	67
Goldring Eroica £100	Good Good -	More confused and coloured than its low-output sibling - high output less of an issue in these days of cheap MC-compatible amplifiers	8-15g Normal, MC		84
Goldring Eroica LX £115	Good + Good	Not the most subtle cartridge in the world; can sound edgy at times, but lively and informative	8-14g Low, MC	R	84
Goldring Excel £500	Average + Good	Goldring's most expensive cartridge to date errs on the warm and heavy side of neutral. Strong bass lines are its forte though its ability to resolve subtle treble details is weaker	6-13g Low, MC		72
Grado ZTE + 1 £26.50	Average - Average	Bass and treble are a trifle coloured but the midband proved highly enjoyable. Ideal for budget systems	6-13g (damping) Normal, MM	R*	54
Grado ZF3E + £47.50	Average - Average	Downtilting balance disguises the brightness of this cartridge; bit of a mixed bag at this price	9-20g (damping) Normal, MM	*	54
Kiseki Blue Goldspot £450	Good + + Good +	Good bass and imaging, but hints of spit and coloration let the side down slightly	8-15g Low, MC		84
Kiseki Purpleheart Sapphire £799	Good + Good +	Rare, beautiful to look at and sweet to listen to, our review of this high-flyer conjured up images of Japanese art	5-14g Low, MC		Collection
Kiseki Blackheart £1795	Good Good	This cartridge demonstrated refined poise and a delicate but at once potent security, however, the price did seem a little on the high side compared to other Kisekis	6-16g Low, MC		60
Kiseki Lapis Lazuli £4000	Good Very Good	Combining very sensible design concepts at a silly price, the Lapis Lazuli is best thought of as combining the detail of the MC3000 and the fluidity of the Clearaudios	4-12g Low, MC		60
Koetsu Black S £612	Average Good +	The S is an OEM design built to Koetsu's blueprint. It features a sturdier fixing plate and offers a brighter, faster and more tactile sound than the earlier K	8-15g Low, MC	R	72
Linn K5 £32.50	Average Average +	Not as crisply focused as the costlier Linn magnetics, the K5 offers a smoother presentation	7-16g Normal, MM	R	67

THE DIRECTORY

CARTRIDGES

NAME PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/type	VALUE	BACK ISSUE FULL REVIEW
Linn K9 £81	Average Good	Linn threw this model into the leading pack by beefing up the Basik's bodywork, adding a super stylus, and keeping the price fair	6-15g Normal, MM	BB	48/Coil
Linn Asaka £299	Good + Good +	Disciples of Linn who are trying to realise their true "Karma" may find that saving money is not a short cut to heaven	9-18g Low, MC	R	48/Coil
Linn Karma £465	Very Good Very Good	A specialist which is strongly recommended for Linn-based systems: results may be less predictable in more general application	9-18g Low, MC	R	48/Coil
Linn Troika £669	N/a Very Good	Ex-Karma users have been seen with glazed expressions indicating smug self-indulgence the morning after fitting a Troika	8-18g Low, MC		Coil
London Maroon £149	Average Average +	Now manufactured under the London brandname this Decca cartridge is as iconoclastic as ever	9-20g (damp) Normal, MM		67
London Super Gold £300	Poor Average -	Immediate and (in the midrange at least) detailed, but very coloured, very nonlinear and questionable effect on records. Devotees swear by it	9-15g, damp Normal, fixed stylus MM		84
Milltek Aurora £249	Good + Good +	An overall feeling of relaxed ease characterised this clear and atmospheric Kiseki-built cartridge	8-16g Normal, MC	R	48/Coil
Milltek Olympia £349	Average + Good +	Warm and detailed sound - packs the punch of the best MCs with high output as a bonus	12-20g (damping) Normal, MC	R	54
Nagaoka MM4 £9	Average - Average -	Clear punchy sound that delivers the rudiments of a good performance	6-16g Normal, MM	R	54
Nagaoka MP10 £18	Average Average	High frequencies sounded "shut-in" with this spherical-stylus model, but mid and mass were energetic, bouncy and punchy	5-13g Normal, MM	R	48
Nagaoka MP11 Boron £40	Average Average +	Responding well overall in PM's equipment and listening room, this model was mildly criticised for low level and dynamic limitations	5-13g Normal, MM	BB	48
Nagaoka MP11 Gold £47	Average - Average +	There were mild criticisms directed at most areas, but in general the sound was clear, open and even	3-8g Normal, MM	R	48
Nagaoka Stilton TS10 £50	Good - Good	Stilton-designed solid body (with three-point mounting) certainly gives remarkably resonance-free sound, but tip and generator are less good - a little rough at times	5-10g Normal, MM	R	85
Nagaoka Stilton TS11 £70	Good - Good	Differs from TS10 in having Vital stylus with better tracing but still some high frequency harshness	5-10g Normal, MM		85
Ortofon OM5E £15	Average - Average -	The OM10 is a hi-fi cartridge - the OM5E is not	5-16g Normal, MM		43
Ortofon OM10 £20	Average Average	One of the leading "cheapies", this gives a fine level of sound quality for the price, with good matching compatibility	5-15g Normal, MM	BB	48
Ortofon OM20 £45	Average Average +	This turned out to be the listening panel's favourite among Ortofon's moving magnet models	5-16g Normal, MM	R	48
Ortofon 510 £30	Good Good +	For the price, a good blend of virtues - weight, clarity and neutrality	3-11g Normal, MM	BB	85
Ortofon 520 £50	Average Average +	Very sensitive to load capacitance this new Ortofon maintains the company tradition for a lively, effervescent SQ	7-16g Normal, MM	R	67
Ortofon 530 £80	Good + Good +	Very clean and assured sound; transients not quite perfectly pure but plenty of detail	4-11g Normal, MM	R	85
Ortofon X1 £50	Average Average	The cheaper X1 scored higher marks with our listening panel than the X3, but both were a disappointment	6-15g Normal, MC		48
Ortofon MC10 Super £70	Average Good	"What a delightfully sweet-sounding cartridge this is..." we said	5-15g Low, MC	BB	48
Ortofon X3 £70	Average Average	A lack of bass power, definition and a "zitty" top end makes this competent but uninvolving	5-15g Normal, MC		48
Ortofon OM40 £90	Average Average +	Highly competent engineering, secure tracking and decent sound quality are major strengths. But it's a little cold, a little polite	3-8g Normal, MM		48
Ortofon 540 £100	Average - Average	Graced with an advanced FGII stylus our sample possessed too high a compliance for broad arm matching. It could also sound a little unforgiving	3-8g Normal, MM		67
Ortofon MC20 Super £200	Average + Good +	An "inviting" sound quality: polite rather than exciting it approaches much more expensive models, but does not better them	6-15g Low, MC	R	48/Coil
Ortofon MC30 Super £270	Very Good Good +	Beautifully engineered and well-balanced, it was slightly criticised as bland, though some may appreciate the lack of rough edges	5-14g Low, MC		Coil
Ortofon Quasar £300	Good + + Very Good	Many of the qualities of the MC3000, although a touch bright. Good detail and delicacy	8-15g Low, MC	R	84
Ortofon MC3000 MkII £850	Very Good Excellent	Low levels of body resonance are a real ear-opener. Nothing to criticise elsewhere; one of the very best	9-16g Low, MC	R	84
RATA RP20 £22	Average - Average	Good integration, a clear dynamic midrange and the beginnings of fine stereo imagery merits clear recommendation	6-14g Normal, MM	R	48
RATA RP40 £44	Average Average +	The '40 did a good job of sorting out the layers and complexity of the mix, with good focus, excellent stereo spread and fine scale	6-15g Normal, MM	R	48
RATA RP70 £77*	Average Average +	Clearer and sweeter than the '40 this also seemed heavier and less lively. For £99 you can have a van den Hul stylus	6-14g Normal, MM		43
RATA RP70vdH £99	Average + Good	Able to retrieve bags of musical detail (thanks to the vdH stylus), RATA's top cartridge ranks as one of the most articulate MM's available	11-18g Normal, MM	R	67
Rega Bias £34	Average Average +	Difficult to mount in some arms due to its shallow build, the bias offers a gentile, refined SQ that certainly makes it worthy of audition	4-10g Normal, MM		67
Rega Elys £74	Good Good	Clearly superior to the Bias, despite their common heritage, the Elys is both more detailed, accurate and musically convincing	8-15g Normal, MM	R	67
Revolver £20	Average + Average	This modified AT-95E enjoys a very lively mid and treble even if the bass is somewhat "slower" in protection. A firm budget buy	8-16g Normal, MM	BB	67
Shure M92E £17	Average - Average	Though lacking depth, the overall sound quality was competent, but treble was not its forte	10-15g Normal, MM		43
Shure M99E £29	Average - Average -	Sister to the 92E this is a solid but not particularly exciting cartridge	5-10g Normal, MM		38 (Summary)
Shure ME75ED £26.50	Average Average -	Rather bright and splashy in the high frequencies but nevertheless a competent model	5-10g Normal, MM		38
Shure M104E £36	Average - Average	Capable in many ways, but giving no substantial improvement over the 92E in our view	5-15g Normal, MM		38

TO ORDER BACK ISSUES OF HI-FI CHOICE SEE PAGE 130

THE DIRECTORY

CARTRIDGES

NAME PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/type	VALUE	BACK ISSUE FULL REVIEW
Shure ME97HE £49	Average Average+	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	8-20g Normal, MM	R	48
Shure M105E £49	Average Average-	A slightly 'spitty' sound lacking deep bass and dynamic contrast, but can be used in virtually every system where it will perform "unobtrusively"	5-12g Normal, MM		38 (Summary)
Shure M110HE £60	Average Average	Sound quality was thought eminently presentable, but not exciting; smooth clear high frequencies, but a loss of bass definition	5-10g Normal, MM		38 (Summary)
Shure M111HE £72	Average Average	Early reviews of this cartridge complained principally of the price - which has since come down	5-10g Normal, MM		38 (Summary)
Shure ML120HE £95	Average+ Average+	Quite decent sound quality and a generally fine balanced performance	6-18g Normal, MM		48
Shure ML140HE £120	Average+ Good	Qualitatively the treble of this well-balanced moving magnet model was a match for many moving coil cartridges	6-16g Normal, MM		43
Shure V15 VMR £215	Good Average+	Initial listening gave promising results, but extended familiarity gave the feeling of a lack of energy and a "shut-in" sound	5-12g Normal, MM		38
Shure VST V £158	Good+ + Very Good	Quite exceptional assurance with difficult material; very stable and clear sound. One of the best. Dynamic Stabilizer actually works!	4-11g Normal, MM	R	85
Shure Ultra 500 £499	Good Good	There was no doubting the accomplishments of what could well be the finest moving magnet cartridge around	6-14g Normal, MM		48
Stilton/AT-F3 £110	Good+ + Good+	At a premium of some £40 this modified AT-F3 offers a startlingly refined performance and is strongly recommended	8-18g Low, MC	R	67
van den Hul MC10 £499	Good Good+	A neutral balanced performer giving transparent midrange, fine depth and focus with firm extended bass. Gosh!	5-10g Low, MC	R	60
van den Hul MC One £699	Good Very Good	This extended all the positive qualities of the '10 but added greater authority and scale - worth it for the extra money	6-12g Low, MC	R	60
van den Hul MC1 Super £800	Good+ + Very Good	Slight softening effect on transients was the only real flaw, but it didn't quite seem to have that special touch one expects for the money	8-15g Low, MC		84
van den Hul MC Two £899	Good Very Good	Connected directly to any standard MM input the vdH MC Two rewards with a highly detailed yet fluid and musically convincing portrayal	6-13g Normal, MC	R	72

* rating refers to original tested model

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 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.

Lab measurement provides some useful data, particularly in regard to an amplifier's ability to drive a wide range of different types of loudspeakers, but this is only obliquely related to sound quality. We also 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). The listing of features provides some indication to the complexity of an amplifier: many users prefer to retain the option of tone controls to 'shape' the overall sound according to taste; many others have found living without tone controls surprisingly easy, with additional benefits in terms of transparency

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Acoustic Research A03 £160	Average+ Average	New slimmed down version of the A04 with less power and facilities but also a slightly 'fuzzy' sound	38W, MM disc, CD direct and 3 aux inputs		74
Acoustic Research A07 £299	Very Good Average+	Relatively smooth but ineffectual sound quality that lacks some weight and impetus at very low frequencies	75W, 4 line, 2AV and MM/mc inputs		68
Aiwa XA-005 £130	Good+ Average-	A technically competent amp with big, friendly but not overly engrossing sound quality	61W, MM, 5 line inputs, source-direct		80
Akai AM-52 £230	Average+ Average-	Basically equipped, this amplifier offers a comfortable but hardly over-detailed sound	95W, MM/mc disc, 5 line inputs, loudness		74
Akai AM-65B £299	Good Average	On-board 18-Bit DAC's actually give better sound than standard CD inputs! Punchy via MM disc	101W, MM, 6 line, digital inputs		80
Akai AM-93 £550	Average Average-	Unfortunately Akai's on-board D/A converters were less successful than its conventional analogue CD input.	112W, coax and optical dig inputs, MM/mc		68
Amadeus Silver £270	Average- Good	Limited headroom via disc but still offers a sweet, lush sound. Limited current delivery	37W, MM/mc, 3 line inputs	R	80
Amadeus Gold £360	Average- Good	There is some indication of instability but otherwise sounds very rich, warm and musical. High-ish IMD.	56W, MM/mc plug-in cards, 3 line inputs	R	74
Aragon 4004 £1795	Good Good	Despite its imposing bulk the Aragon is something of a softy at heart. It can deliver oodles of power but its musical presentation is more laid-back	231W power amp		72
Arcam Alpha II £180	Good Good+	Very confident, convincingly musical and punchy sound that sets the standard for other budget amps	41W, 4 line and MM inputs	BB	68
Arcam Delta 60 £280	Good Good+	Very refined and highly detailed sound via MM and CD without any of the hardness noted via the MC stage	59W, 4 line, MM/mc inputs, no tone controls	R	68
Arcam Delta 90.2 £400	Average+ Average+	Dark but slightly dead or conservative sounding version of the original Delta 90. Improved disc stage	73W, MM/mc, 4 line inputs, tone bypass, bi-wire	R	74
Ariston Amp £219	Average Average+	Slightly veiled and thin sound but proved suitably attractive in the listening tests	32W, full logic control, MM and 4 line inputs	R	68
Audio Innovations Series 200 £429	Poor Good++	Like most Innovations valve power amps, compatibility with other brands is unpredictable. Hardly a powerhouse, but nicely 'open', transparent and dynamic sound in small(ish) systems	12W	R	77
Audio Innovations Series 300 £479	Poor Good++	Something of an anomaly the 300 is an integrated valve amp that looks awful in the lab but sounds remarkable in a system	10W, MM, 6 inputs	BB	63
Audio Innovations Series 400 £625	Poor Good++	Superior styling and better build quality than the Series 300 make for a very attractive integrated valve amp. Capable of fine results in the right system, but can sound too 'thin' and lacking in welly	12W, MM and 4 line inputs	R	77

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AMPLIFIERS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Audio Innovations Series 1000/2nd Audio Amplifier £1379/£2579	Poor Excellent	This valve combination offered awesome dynamic range with superb transparency and power to match. Compatibility with other brands is unpredictable	15W, MM, 6 inputs, monobloks	R	63
Audiolab 8000C £325	Excellent Good	A well established preamp with a highly controlled sound, though it could do with more life and depth	MM/mc, 5 inputs, hdph, tone controls	R	62
Audiolab 8000A £350	Very Good Good +	Exceptionally detailed, tactile and transparent via CD but slightly more clouded via disc. A stalwart design	72W, MM/mc, 4 line and full record out selection	R	74
Audiolab 8000P £495	Excellent Good +	A dynamic powerhouse, load tolerant and sonically reliable	100W	R	62
Audion CD-1 £399	Average + Good + +	Nicely presented valve (line-only) preamplifier with fine bandwidth and enjoyable, musical sound Great – if you can justify the cost. Well worth hearing	5 line inputs		77
Aura VA-40 £189	Average Average +	Based on ITL's earlier MA80, this amp sounded slightly withdrawn or 'dead' if inoffensive	55W, MM 4 line inputs, MOSFET output		80
Beard Audio CA35/P35mkII £695/£895	Fair + Very Good	Good build quality and a very smart finish combine with a characteristic valve sound to make a first class amplifier capable of giving hours of musical enjoyment	35W, MM/mc, 4 inputs	R	63
Beard 506 £1195	Good + Good +	A versatile valve preamp – the bass sounded lively if a touch softened while the treble was detailed but lacked a little sparkle and air	4 inputs MM/mc	*	50
Beard M70 £1995 pair	Good Good +	A substantial British monoblok power amplifier, but not a great deal more impressive than the P35 at half the price	70W	*	50
Bryston 0.5B/2B £695/£695	Very Good Good	Very rugged Canadian pre/power combo that sounds cool confident and punchy. Headamp available to suit MC cartridges	65W, MM and 4 line sources, overload LEDs on power amp	R	74
Bryston 12B/4B £1295/£1395	Good + Good	Bryston's massive 4B power amp stood out as the backbone of this combo, the preamp sounding a trifle unbalanced between MM and MC inputs	272W, bridgeable to 800W 6 line, 2 disc inputs, subsonic filter		68
Cambridge P50 £200	Good Average +	A pleasant enough sound with full bass yet with a slightly mechanical quality that reduced its sense of 'naturalness'	56W, 4 line inputs + MM/MC + tone		85
Cello Audio Suite £1200	Excellent V Good/Excellent	Cello's preamp represents a whole new ball game in flexibility and sound quality (or war of attrition on your wallet)	Optional inputs MC etc	R	50
Chord SPM-900 £1725	Average + Good +	Technically very interesting, this mini-powerhouse uses a switched-mode supply to deliver a crisp and refined sound	236W with protection into lower loads	R	85
Concordant Excelsior £856	Good + + Excellent	Cottage industry styling might not inspire confidence, but sonically this preamp is tremendously vivid and detailed. Real high-end performance. We loved it!	MM plus 3 line inputs. External power supply	R	77
Conrad Johnson PV10 £1.395	Excellent Excellent	Pricey, yes, but a fabulous preamplifier which confirms C-J's high reputation in the States. Beautiful imaging, superb detail, plenty of gain on the phono stage – classy build quality too.	MM plus 4 line inputs	R	78
Conrad Johnson MV50 £1995	Good + Good +	Coupled with the PV5, this CJ power amp performed well on audition	50W		Collection
Conrad Johnson Motif MC-8 £1995	Very Good Very Good	A cheaper alternative to the '7, this preamp is an undoubted success in maintaining the Motif sound but does not compare on sound quality	MM/mc	R	50
Conrad-Johnson Premier Seven £8995	n/a Excellent	Price has increased since we tested it – but at this price who cares? The 'Seven is designed without compromise, and it's clearly one of the finest (valve) preamplifiers money can buy. Absolutely gorgeous!	MM, 4 line inputs, sep Rec Out, versatile cartridge matching	R	72
Creek CAS 4040 S2 £179	Good Good	More neutral than its predecessor tonally, substantial improvements in transparency were also noted, while the lively punchy, character is retained	30W, MM, 4 inputs, tone controls	BB	62
Creek CAS 4140S2 £219	Average Good	Disc headroom still poor but the open and detailed, if slightly bright, sound wins through	40W, MM/mc, 3 line inputs, mono and mute	R	80
Creek CAS-5050 £399	Average Good	Strong RF IMD compromises the sound of the CD input which contrasts with the delightful performance via MM/mc	72W, MM/mc, aux CD and video + pre/power mode	R	74
Croft Super Micro A £549	Average + Very Good	The looks are somewhat improved, while this 'hot rod' version with tuned components performed very well indeed. There is still no gain on the line inputs	4 inputs, MM, straight line	R	57
Croft Series IV(S) £850	Good Good	The original IV is still available now supplemented by the higher price and power (S); both are fine performers	40(60)W channel	R	57
Croft Series IVSA £1000	Good Very Good	Featuring tuned components chosen for their sound quality, the 'A' variant is an impressive example of Croft's technique in valve design	60W special supply regulation	R	57
Cyclone Catalyst £1995	Good + Very Good	Exceptionally load tolerant and very refined in delivery. Extra options available in future	74W, external MM or MC stages, 3 line inputs	R	80
Deltac DSP-50S DPA-50S Pre/Power £725/£925	Excellent Very Good +	Remarkable pre/power combo based around the highly linear DH-0A32 hybrid op-amp	63W, external feedback wiring, 3 line, MM/mc no tone controls	R	68
Deltac DPA 100S £2200	Very Good Very Good	A top-quality transistor power amp, sounding fast, articulate and well controlled, though maybe a touch clinical for some tastes	80W	R	50
Denon PMA-250II £140	Good Good +	Spacious yet tactile and gutsy sound via all inputs. Worthwhile upgrade over original PMA-250	53W, MM 3 line inputs, source-direct	R	80
Denon DAP-2500 POA-4400A Pre/Power £549/£599 pr.	Very Good Good	Denon's fully-fledged preamp also incorporates D/a converters that did not improve the sound of our £299 CD player. The power amps are brilliant!	172W, monobloks Opt/Coax dig + 2 tape, 4 line and MM/mc inputs		68
Denon POA-6600 £1,000/pair	Excellent Very Good	Delivers abundant high quality sound, solid engineering expertise and content clearly compensating for any compromising of purist audiophile principles	250W monoblok, remote power	R	60
DNM 3A From £1000	Good + Very Good	The DNM3 in its acrylic case is a remarkably revealing and neutral state of the art preamp	5 inputs MM/mc twin vol controls	R*	44
E.A.R. 802/509mkII £1098/£1868	Average Very Good	Extremely well made and combining the sonic strengths of both transistors and valves this EAR combo warrants attention	100W, MM, 6 inputs, monobloks	R	63
E.A.R. 549 £3,628/pair	Very Good Very Good	A valve monoblok that measures like a solid state amp is itself an achievement, but exceptional power delivery and bass 'slam' is not fully matched by delicacy and transparency elsewhere	200W monoblok, bias setting		60
Exposure VII/VIII £430/£470	Very Good Good	Supplied as a combination without the separate preamp power supply, this pre power combination performed satisfactorily especially on the moving coil input	50W, MM/mc, 3 inputs, straight line		62
Exposure VI/VII*/VIII Pre/Power £320/£500	Good Very Good	An established company like Exposure could do more to improve the 'look' of these amps which, nevertheless, sounded confident, dry and musical. Dual version no longer available	63W, Super mod, 4 line and 2 disc inputs with full rec-out switching	R*	68
Exposure XI/XII/VIII Super £1600	Good Very Good	New preamp and improved power amp led to a smooth and refined sound, MM/mc less transparent than CD	61W, MM/mc, 5 line inputs	R	80
Grant G60AMS £948 pr.	Good Very Good	This neat and compact 60W valve monoblok gave good sound on the 8ohm tap, better still on 4ohms. The midrange was particularly natural	60W monobloks 8ohms	R	57
Hafter DH120 kit form £295	n/a Fair	We didn't build one: see below	60W		44

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AMPLIFIERS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Hafner XL-600 £1,145	Very Good Very Good	Sounds remarkably open, transparent and inherently 'musical'. XL-600 is tremendously powerful and very compatible	426W in stereo mode, 1.5kW in bridge	R	74
Hafner DH120 assembled £360	Very Good Fair	Sound quality results were decent enough, but this power amp won't set the world on fire at this price	60W		44
Harman Kardon HK6100 £159	Good Good	Re-packaged version of the popular PM635. Still offers very up-beat and exciting sound	47W, MM, 5 line inputs, tone controls	R	80
Harman Kardon HK6800 £600	Good+ Good	Smoother and more evenly paced than previous H/K superamps, this model sounded both confident and nimble. A fine result	115W, 4 line + 2 tape i/p's + MM/MC	R	85
Harman Kardon Citation 25/22 £649/£899	Good Average+	Not as outrageous as previous Citation amplifiers but neither as punchy nor exciting in the sonic stakes. A good all-rounder but lacks sparkle	138W, MM/mc full range of input and record out		74
Heybrook C3/P3 £400/£500	Average+ Average-	There's a chance our power amp was a dud for the combo sounded very disappointing on the whole — glassy and uncouth	138W with plenty of current. Passive line inputs		85
Jadis JP30/JA30 £4,145/£4,200	Fair Excellent	Two-box preamp plus monoblok power amps, classic valve design gives stereotype valve sound. Beautiful build, nostalgic styling and delightful sounding midrange transcend limitations at frequency extremes, in lab, and re cartridge matching	30W 2-box pre-, monoblok power, MM-only, 4 line inputs	R*	60
Jeff Rowland Coherence One/Model 7 £3950/£9900	Very Good Very Good	The technical design of these amps is very elaborate but ensures they achieve an extraordinarily transparent and potent sound. However, the CD i/p is clearly superior to the disc inputs	448W monoblok MM/mc with variable loading options. Balanced topology	R	72
Kelvin Labs Absolute Zero/M30 £395 + £295/£595pr.	Good+ Average+	Latest versions of the M30 offers a true 30W Class A and a slightly muddled but very comfortable sound. MC preamp is a very linear design	33W monoblok MC only + 4 line inputs. Separate L/r balance	R	74
Kelvin Digital Integrated £550	Good+ Very Good	Not so Class A as before but now fitted with a PDM DAC which offers a smooth, detailed and naturally 'musical' sound	34W, digital, line and MM i/p's only	R	85
Kelvin Integrated £395	Good+ Very Good	A true 20W Class A amp with lush, detailed and very musical sound to match. Watch out for re-style	18W, MM/mc, 4 line inputs	R	80
Kenwood KA-5500 £130	Very Good Fair	Having dropped its moving coil input, this latest version has British style dynamics and rhythm but is not first grade yet	35W, MM, 4 inputs, hdph, tone controls	R	62
Kenwood KA-4010 £170	Good Average+	A flexible design at moderate cost. Smooth and cultured sound if slightly lean in balance	81W, MM/mc, 4 line inputs, source-direct	R	80
Kenwood KA-5010 £210	Good Good	Offers a slightly bass-light but very smooth, fresh and alive sound. Well built and sensibly equipped	101W, MM/mc, cd 3 tape, tuner, aux + direct	R	74
Kenwood KA-7010 £300	Average+ Average+	More powerful version of the 5010 but less successful in the listening tests. RF IMD is the likely cause	123W, as above plus — 20dB mute facility		74
Klyne SK5a £2590	Very Good Very Good	Beautifully made and presented this American thoroughbred has a good lab performance, but although versatile, is rather expensive for the quality of sound offered	Balanced output, versatile cartridge loading		72
Lectron JH50 £2,300	Average Very Good	Sexily presented valve power amplifier from France. Lovely valve sound too, with delicate and airy top end. Not especially powerful and rather expensive — but very desirable!	50W		78
Linn LK1/LK280 Pre/Power £545/£695	Good Good-	A very modern, logic-controlled amp with distinctive and inoffensive sound quality. Its restrained sound could do with extra insight and zip.	84W, compact amp CMOS sw. for 2 tape, 2 line and MM/mc, xlr sockets		68
Linx Nebula £500	Average+ Average+	Ambitious both in style and design this amp was less impressive in the sonic arena — positive but two-dimensional	88W, logic-controlled i/p switching		85
Magnum MP150/MF150 £320/£320	Average+ Good	This is no technical masterpiece but the strain-free, fluid sound augers well for CD-based systems. Excellent value	89W, 3 line + MM/MC i/p's. No tone cont.	R	85
Marantz PM-50 £230	Good+ Average+	One of Marantz's new breed, the PM-50 has a big and beefy sound yet one that lacks refinement	92W, MM/mc, 4 line inputs, source-direct		80
Marantz PM-75 £500	Good Average	More successful than most amps with on-board DACs but still not as balanced as other Marantz products	136W, opt/coax dig inputs, 6 line + MM/mc		68
Marantz PM80 £400	Very Good Good+	Technically robust with an equally beefy and tactile sound. Great sense of power and control but spatially a little flat	133W, 3 tape, 4 line + MM/MC, Class A option	R	85
Marantz PM94 £1,200	Very Good Good	At 23kg the PM94 is no lightweight in either physical or sonic respects. A very powerful and comprehensively equipped amplifier	140W MM/mc tone controls (switchable)		60
Marantz PM-95 £1,800	Very Good Average+	Beautifully constructed, this amp was less convincing via its digital i/p than via line. Class A option best suited to sensitive speakers. Costly	151W with 30W available in Class A. Opt + coax inputs		74
Meridian 201/205 £599/£425 each	Very Good Good+	A fine preamp with additional luxury option of full system remote, plus competent and attractive monoblok power amplifiers with generally good performance	100W MM/mc 6 line inputs remote capable straight line	R/—	62
Mission Cyrus One II £200	Very Good Very Good	Crisp, meaty and exquisitely detailed, this latest Cyrus amp had us enthralled via CD. MM/MC enjoyed a lesser clarity	34W, 4 line + MM/MC i/p's with dual-conc vol.	R	85
Mission Cyrus PSX £230	Very Good Very Good	The PSX does make the Cyrus Two sound better, and also improves the PCM II CD player giving more wallop and clarity	Auxiliary power supply	R*	62
Mission Cyrus Two £330	Very Good Very Good	Also a top performer in its group with fine moving coil and compact disc sound. Since our review Mission has omitted the headphone socket on the Cyrus Two	50W, MM/mc, 5 inputs, straight line	R*	62
Musical Fidelity B1 £200	Average+ Good+	The subject of much controversy, this 50W wonder offers a very deep, solid and powerful sound	50W, MM/mc, 5 line inputs, tape monitor	R	80
Musical Fidelity A1 £269	Average+ Average+	Just scraping a recommendation, this current A1 sounded lush but sleepy — lacking the bite and sparkle of old	26W with 9W of Class A, 4 line + MM/MC inputs	R	85
Musical Fidelity B200* £349	Very Good Good+	Running cooler than other MFs, the B200 delivered fine musical and dynamic sounds with plenty of power	80W MM/mc 4 line inputs straight line	BB	62
Musical Fidelity A100 £459	Good+ Very Good	This is another one recommended for fine sound with which you could keep your Chinese carry-outs warm	50W MM/mc 5 inputs straight line	R	62
Musical Fidelity MA-50 £875 pair	Good Excellent	An audiophile bargain. One of the best sounding power amplifiers made	50W, monoblok	R	62
Musical Fidelity P270 £1,399	Very Good Very Good	If the hot-box aspect is not a deterrent, this is something of a bargain. A big amplifier scale of sound which is just a little rough-edged	135W	R*	50
Musical Fidelity MVX A370 £2399/£2399	n/a Excellent	In its latest guise, the A370 confirms its status alongside the MVX as amongst the best indigenous components for both sound and presentation	MVX - mm/mc/4 line/phase invert A370 - 150W	R*	72
NAD 3020i £140	Very Good Good+	The most balanced and communicative of NAD's 3020 series. Great at revealing subtle musical clues without aggression	31W with tone controls, 3 line + MM inputs	R	85
NAD 3225PE £160	Average+ Average+	Light and detailed if not as rich or weighty sounding as others, MM input sounds warmer than CD	42W + 70W dyn. headroom, soft-clipping, MM only	R	68
Naim NAIT 2 £339	Average+ Fair	Well built with good load tolerance the NAIT delivered a fully competitive sound in spite of its modest measured power output. Recent modifications as yet unchecked	15W pc MM 3 inputs	R*	50

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NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Naim Separates £560-£8,000	Very Good Good	A consistent and coherent series of 'building blocks' for conventional passive or active operation. Sound quality ignores conventional audiophile standards of presentation, but achieves fine musical communication	40-70W, MM/mc etc	R*	60
Nikko Beta 400/Alpha 800 £225/£800	Very Good Good	Big, bold and gutsy these are indestructible amps with a sound quality to satisfy all but the most demanding users	358W(!) with every feature necessary	R	85
NVA P70MC/a60 £830	Fair Average+	NVA's speaker cables are a must. the amp offering well-integrated but not particularly crisp sound	68W, MC, 3 passive line inputs		80
Oakley S £499	Good Very Good	Much improved version of the original Image preamp from Yugoslavia. This one won't disgrace itself even in top-notch systems. Image Six model (£150 more) is really fabulous	MM plus 3 line inputs	R	78
Onkyo A-8000 £140	Good+ Good+	A rare combination of style, features and very acceptable sound quality. Free of compression and 'grain' — undemanding	64W, 5 line + MM disc i/p's + full tone cont.	R	85
Orell SA-040 £359	Good Good+	This promising newcomer from a brand new company sounded pretty good and should improve as production settles	45W MM/mc, 4 line inputs, straight line	R	56
Orell SA-040SE £400	Average Average+	Very natural, relaxing if not overly exciting via CD, the sound closed-in to become 'pinched' or fettered via disc	64W, 5 line + MM/MC i/p's. Tweaky compts.		71
Philips FA-880 £200	Good Average	A new and cheaper design from Philips that sounds best via MM disc. Can appear soft and unbalanced via CD	108W, MM/mc source-direct tone		74
Philips FA960 MkII £300	Good+ Average	The MkII '960 still failed to grasp our listeners' attention but it remains a competent amp nonetheless	122W, 6 line & 2 disc inputs + tone controls		68
Philips DFA-888 £300	Good Average	As above but including a modified disc input and onboard DAC. Sounds tight but also slightly thin	107W, as above + opt and coax digital inputs		74
Pink Triangle PIP £2670	Excellent Excellent	This state-of-the-art preamp is one of the few truly high end products to come out of this country this year. It will most certainly worry the competition	MM/mc, 4 inputs, battery supply	R	62
Proton 520 £115	Average Average	Very well equipped budget amp with a slightly flat and undynamic sound — acceptable at the price though	31W, MM/mc with variable MC gain, 4 line inputs	R	74
Proton AP-1000/AA-1150 £250/£395	Good+ Average+	Bags of headroom available from this pre/power combo, but can seem bloated or unrefined via MM	67W, MM/mc, adjustable MC gain, 5 line inputs		80
QED A240 CD II £199	Good+ Good	Latest 240CD is fine value for CD and has competent MM disc input as well	45W MM 5 line inputs straight line	BB	62
QED A240 SA II £259	Good+ + Good+	Redesigned 240SA represents a significant allround improvement over its predecessor, and provides a good moving-coil disc input in a competitive price	45W MM/mc 5 line inputs straight line	BB	62
QED A270 £299	Good— Good+	Building on the strengths of the '240, the '270 sounds weighty, fast and dynamic. A bit 'lumpy' via MC	51W, 5 line and 2 disc inputs, pre-out	R	68
QED C300/P300 £300/£300	Good Good	A cost-effective combo, limited in its resolution but no less beguiling as a result. Disc stage is sweeter but samey	58W, 2 tape, 3 line, MM/MC + mono/biamp opt.	R	85
Quad 34 £299	Very Good Fair	This well-built durable preamp has useful filtering and above average tone controls but was found lacking in sound quality (viz: detail/dynamics)	4 inputs MM/mc tone controls		44
Quad 405 £389	Very Good Fair	Not an impressive power amp but easy on the ear if not pushed and very reliable	100W		44
Ray Lumley Model 75 £1,995 pr	Average Good+	Monstrous valve monobloks which represent good value. What they lack in musical subtlety they make up for in sheer muscle. And these are Lumley's small monobloks!	75W monoblok		78
Revox B150 £1,047	Very Good Average+	Beautifully constructed but hampered by Revox's convoluted logic control. Open and smooth sound. Still costly.	117W, CMOS sw. for 3 line, 2 tape and MM		68
Revox B250 £1,467	Very Good Good	With much improved sound over its predecessors plus amazing remote control facilities, this could form the heart of a round-the-dream-house system	150W MM/mc system/house remote tone controls		56
Rose RV-23 £395	Good Very Good	Beautifully built classy British 'hybrid' preamplifier. You can spend more to get a more transparent sound — but it's hard to criticise the Rose given the competitive price	MM plus 3 line inputs	R	77
Rotel RA810A £120	Very Good Fair	As a cut price RA820AII this is a very successful little amp that loses little in sound quality to its predecessor. Excellent value	20W, MM, 5 inputs, hdph, tone controls	BB	62
Rotel RA-820AX £150	Very Good Very Good	The spacious, detailed and very musical performance of this budget amp is almost too good!	47W, MM, 4 line inputs	BB	80
Rotel RA-840BX4 £190	Good+ Good+	Very authoritative but creamy-smooth and delightfully musical. Spatially convincing too, yet not as open as RA-820AX	39W, 4 line + MM/MC, dual-conc. volume. No tone	R	85
Rotel RA870BX £330	Very Good Good+	A powerful blockbuster with solid and well focused sound, good versatility and fine load tolerance	85W MM/mc 7 line inputs tone controls	R	56
Rotel RB/RC850 £160/£140	Good+ + Good+	Quality separate pre and power amplifiers at near budget integrated amplifier prices. A notable achievement	60W MM/mc 4 line inputs tone controls	BB	62
Rotel RC-870BX/RB-870BX Pre/Power £219/£230	Excellent Good+	Reduced price makes the 870 combo better value but, despite mods to the preamp, it is the power amp that must take the lion's share of credit	128W or 208W in bridged mode. CD direct, 4 line, 2 tape and MM/mc	R	68
SAE P102/A202 £499/£599	Average+ Average+	Microprocessor-controlled pre and power amp that sounds much better at low rather than high volume levels. Pro-oriented aesthetics	151W, MM/mc + CD tuner and 2 tape tone memory, spk switching		74
Sansui AU-X911 DG £480	Very Good Good+	At its best when used with the on-board MASH/PWM DAC where it sounds technically neutral but still emotionally charged	112W, 4 dig, 3 line and MM/MC i/p's Rec-out	R	85
Sony TA-F410R £170	Average+ Average+	Over-zealous protection circuitry limits continuous power but sound is still agreeably focused despite being tonally lean	84W, 2 tape, 3 line + MM i/ps. Tone + Rec-out		85
Sony TA-F630ESD £350	Good Average	Based on the '530 but equipped with PDM D/a convertor. Amp is competent but DAC sounds truly magnificent!	130W, as above + opt. and coax digital inputs	R	74
Sony TA-F730ES £450	Very Good Good	A very stable and coherent amp but one that lacks a crucial sense of involvement	133W, MM/mc, 3 tape, 2 line, full rec-out		80
Sumo Athena/Polaris £695/£695	Very Good Very Good	Very good value US pre/power combo with transparent, detailed and gutsy sound via all inputs	128W, MM/mc, 2 tape and 3 line inputs	R	80
Teac A-X400 £115	Average Average	Sibilance and a lack of crisp vitality hamper the performance of this amp, as does the stringent protection circuitry	59W, 4 line + MM + tone + mic i/p level control		85
Technics SU810 £130	Average+ Average	Our sample started off sounding fast, taut and well-integrated yet eventually failed on the MM disc input	66W, 2 tape + 3 line + MM. Tone + loudness cntrl		85
Technics SU-V660 £250	Good Fair	Chunky build but integrated output stage infers a weak, insubstantial and rather monophonic sound	107W, MM/mc, cd aux, tape + tuner + power amp-direct		74
Technics SE-M100 £550	Very Good Good+	An unusual disc-less poweramp with volume control. Standard line input sounds very open and clean. Digital input is harsher and less convincing	123W, coax and opt digital inputs var and direct CD no MM or MC disc	R	74
Yamaha AX-330e £130	Average+ Average+	An improvement on earlier efforts but still a little bland or lack-lustre. Very compatible though	48W, MM, 3 line inputs, source-direct option		80

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THE DIRECTORY

AMPLIFIERS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
YBA Model 3 pre/power £995/£995	Good Good	Suited to highish sens. loudspeakers this duo produced see-through, ethereal stereo images that were more convincing towards the centre of the soundstage than at the edges	56W stereo amp MM only with 3 line i/p's. Separate L/r volume controls		72
YBA 2 pre & pwr £1395/£1695	Good + + V Good/Excellent	Superbly finished French audiophile separates, with very good space and transparency, slightly softened bass. Needs extra transformer (£300) for MC cartridges	70W MM (MC extra) straight line	R	56
YBA 1 preamp £2895	Very Good Excellent	A front line French audiophile product. Great stereo and a fine Krell style finish	MM/mc, 3 inputs, straight line	R	62
YBA 1 power amp £2995	Good Excellent	This equally well finished power amp offers front rank stereo staging and transparency, and is capable of driving the most difficult loads	85W	R	62

* rating refers to original, tested model

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 smallish 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) for the given box **size**. After that such subtleties as coloration and

dispersion come into the equation

Careful **placement** of the loudspeakers within the room is as important as the initial choice of model. For good stereo they need to be more or less the same distance from nearby walls, and preferably on similar rigid stands. The listener should be about the same distance from and listening angle to each loudspeaker. The ideal **placement** depends on the way a particular model has been balanced (not to mention a number of other factors), and our recommendation is given in the entries

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	BACK ISSUE FULL REVIEW
Acoustic Energy AE1 £696	Good Very Good	To the author's knowledge, the most awesomely dynamic and articulate miniature ever made	29.5 x 18 x 25cm semi-open space	88dB/w 60Hz	R	59
Acoustic Energy AE2 £1138	Good Very Good	Dynamic, solid and lively, a great allrounder if a bit small considering the price. AE proves that metal cone/dome drivers really work.	39 x 23.5 x 29.5cm heavy stands in free space	88.5dB/w 45Hz	R	66
Acoustic Energy AE3 £1650	Very Good Very Good	Solid, authoritative and impressively accurate – if a shade ponderous and slow – AE's latest 'big one' is a much better bet than the earlier '4, combining traditional monitoring virtues with the latest metal diaphragm technology.	63 x 26.5 x 37cm low stands in free space	85dB/w 23Hz (in room)	R	86
Acoustic Energy AE4 £1800 (stands £552)	Good Good	Magnificent but also seriously flawed, the AE4 possesses tremendous dynamic realism but a very mid-dominant balance. Large rooms and wallets only need apply	54 x 32.5 x 44cm own stands in free space	90dB/w 40Hz		71
Acoustic Research Red Box £100	Average Average	Lively and balanced if a bit crude and uneven, this under-£100 econobox succeeds partly because of its simplicity, and works well with some rear wall assistance	32 x 19.5 x 17cm close to rear wall	87dB/w 85Hz	R	74
Acoustic Research AR112 £125	Average Average—	Nicely presented and engineered, but sounds a bit small and boxy without true coherence.	36 x 19 x 18.5cm stands near rear wall	87dB/w 75Hz		66
Acoustic Research AR122 £150	Average Average	Despite a promising enough list of ingredients, the 122 failed to excite real enthusiasm amongst the listening panel	38.5 x 19 x 22cm stands near rear wall	87dB/w 68Hz		68
Acoustic Research AR132 £200	Average + Average—	Good presentation and detail engineering was not sufficient to counter bass heavy balance problems on auditioning	44.5 x 23 x 25.5cm stands 1ft from rear wall	87dB/w 50Hz		66
Alexander SE5 £199	Average Average	Particularly well suited to surround sound A/v applications, the SE5 can give any miniature a run for its money on bass performance; hardness and coloration mar good detail and clarity, and price is a little high	40.5 x 12 x 15cm ALS stands near wall	82dB/w 50Hz (in room)		78
Alexander SE11 £299 (stands £69)	Good Good	Clearly better than its cheaper stablemates, the metal jacket delivers a different – and in some respects superior – sound than the wood-based competition	52 x 14 x 17.5cm stands close to wall	86dB/w 25Hz (in room)	R	82
Allison AL105 £150	Average Average—	Pretty enough in appearance, sonically the AL105 doesn't really make the grade at the £150 asking price	37 x 24 x 21cm high stands against wall	87dB/w 45Hz (in room)		78
Allison CD6 £290	Average Good—	An unusual cube-shaped model designed for wall mounting gives exceptional bass extension from a small box, though it's also a bit heavy, coloured and slow	28.5 x 28.5 x 28.5cm stands against rear wall	88dB/w 45Hz	R	71
Alphason Amphion £680	Good Good	This fine-sounding, nicely finished compact wall-mount is just a little too expensive for formal Recommendation, but is a good performer for all that	44 x 23 x 27.5cm high stands against wall	88dB/w 47Hz (in room)		78
Alphason Orpheus £1000	Good Good+	Large hi-tech two-way features unusual, sweet-sounding isodynamic tweeter, well engineered and balanced if a shade odd in appearance	65.5 x 28 x 34cm stands near rear wall	87dB/w 43Hz	R	71
Apogee Caliper Signature £3350	Good + Very Good	Pretty but power hungry full range panels have remarkable transparency and delicacy, though loudness and bass 'grunt' both a bit lacking; need very costly amplification	122 x 59-70 x 6.5-28cm floor, free space	81dB/w 30Hz (in room)	R	81
Arcam Three + * £150	Average + Average—	Arcam's baby speaker did not delight our listeners, but it might do better in less expensive systems	34 x 18 x 23cm close to wall at head height	88.5dB/w 95Hz		53
Arcam Alpha £199	Good Good	It has its own colorations to be sure, but delivers a fine room balance with unusually good dynamics, timing and 'life', and is fine material value for money as well	46 x 26.5 x 26cm stands close to wall	89dB/w 30Hz (in room)	BB	82
Arcam Two + * £280	Good Average	Most things to most men this compact is unlikely to disappoint with its lively "bally" character though lacking weight... a bit	38 x 23 x 28cm near wall shelf or 40cm stands	88dB/w 55Hz		59
Arcam One + £380	Good Average	Provides a solid, weighty and rich sound, but is a little raw in the treble and indefinite in the midband	22.3 x 28.1 x 37.8cm open space, on stands	88.5dB/w 60Hz		59
Ariston Image £180	Average— Average—	Despite a sweet treble character, the Image fails to impress with a 'lumpy' over-rich balance that has room integration problems	42 x 22 x 27.5cm stands in free space	89dB/w 28Hz (in room)		82
Ariston Q £395	Average + Average	The prettily shaped Q delivers a good impression of scale from a small box, but the rather laid back, ponderous and over-rich overall sound engendered little enthusiasm amongst the listening panel	35 x 16.5-25 x 20-27cm high stands in free space	85dB/w 30Hz (in room)		86
ATC SCM20 £1320	Very Good Good +	Massively built to no-compromise Pro monitoring standards, the SCM20 is invariably informative but the rather forward presentation is a mite uncomfortable too. Needs a big amplifier and sadly lacks a bi-amp option.	44 x 24 x 31cm stands close to rear wall	82dB/w 28Hz (in room)		86
Audio Electronics TC10 II £599	Good— Good +	Oddball appearance is rescued by a respectable technical performance, interesting and impressive engineering and fine sound quality at a realistic price.	70 x 33.5 x 33.5cm low stands in free space	87.5dB/w 40Hz	R	68
Audioplan Kontrapunkt £799	Good Good +	Cute little German miniature sounds as sweet as it looks, dressed expensively in real wood with matching stands. Not for bass or loudness freaks.	31 x 24 x 13cm matching stands in free space	83dB/w 48Hz (in room)	R	86
B&W Vision DS1 £99	Average Average—	Although significantly hampered by upper bass cabinet coloration, the DS1 cleverly combines high sensitivity with a rich and generous soundstage	36 x 21 x 19cm stands quite close to wall	91dB/w 40Hz (in room)	R	82

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LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	BACK ISSUE FULL REVIEW
B&W Vision DS2 £150	Average Average—	Although the box is generous for the price, the DS2 is a rather uneven performer, both on measurement and listening. Careful stand selection and placement is needed to control the enthusiastic mid bass.	50 x 24 x 25cm stands in free space	89dB/w 43Hz (in room)		86
B&W DM550 £149	Good+ Average—	Beautifully presented, well engineered near-miniature with precise sound but a distinct lack of 'wellig'. Ideal for considerate flat dwellers	35 x 20.5 x 22.5cm stands in free space	86dB/w 70Hz		71
B&W DM560 £200	Average+ Average—	Fine cosmetic presentation and good engineering for the price; overload protection may be handy but listening panel was underwhelmed	49 x 23.5 x 30cm stands in free space	88dB/w 55Hz		66
B&W CM1 £345	Good Average	Cleverly thought out luxury design package is also fundamentally well engineered, if a shade pricey on 'sound for pound' basis	24.5 x 16 x 22cm close to rear wall	84dB/w 90Hz		74
B&W Matrix 801 £2500	Good+ Good+	Lacks the transparency of the best panels, and the drama of the best dynamics, but is something of an acoustic tour de force, with low coloration and fine stereo imaging	77/99 x 56 x 43cm floor or stands, free space	86dB/w below 20Hz (in room)	R	81
Bose Interaudio 3000XL £150	Average Average—	Lots of perceived value and well enough balanced, but low cost cabinet and driver engineering results in a crude and unsuitable sound	46.5 x 29 x 23cm stands in free space	89dB/w 45Hz		71
Bose 305 £350	Average Good—	A bit of an oddball, fine dynamic liveliness and a good room match more than make up for the strange stereo imaging and treble	28 x 45 x 23cm high stands near wall	88dB/w 40Hz (in room)	R	78
Bose 901 MK6 £1600	Good Average	Still controversial after all these years, the pre-equalised multi-driver 901 is cleverly engineered to deliver exceptional loudness with a modest amplifier, but mid bass tends to dominate the sound and transparency is notably lacking.	33 x 54 x 32cm rigid stands in free space	(92dB/w midband) 28Hz (in room)		86
Boston A120 £349	Average+ Good—	Ugly but cleverly engineered, the 120 combines a tiny main driver with much larger ABR to give a generous, bighearted and lively sound despite little genuine bass extension and a few rough edges.	62.5 x 31.5 x 25cm stands in free space	89dB/w 48Hz (in room)	R	86
Boston A4011 £120	Average Average—	Competent performance for size and price but below average relative to the UK competition	34 x 21 x 20cm on stands near wall	88.5dB/w 63Hz		41
Boston Acoustics T830 £399	Good Good	A lot of speaker for the money, the T830 is a smooth and accomplished performer with a big and easy – or alternatively a lazy and laid back – sound	82.5 x 25.5 x 24cm floor, away from walls	91dB/w 28Hz (in room)	R	82
Castle Clyde £159	Average+ Average	A tidy little performer packing punch, but beginning to show its age in the light of new competition	37 x 21.5 x 22cm open space on stands	89.5dB/w 64Hz	R	46
Castle Warwick £179	Good Average—	Excellent presentation and fine engineering with overload protection, but a sonic disappointment in bass and dynamic qualities	46.5 x 25 x 23cm stands 1ft from rear wall	88dB/w 50Hz		66
Castle Durham £209	Average+ Average	Listening results were encouraging, well engineered and finished, but lean on treble and a bit weak on bass; still recommended	41 x 21.5 x 25cm near rear wall	89dB/w 67Hz	R	46
Castle Pembroke £229	Good Average+	Comfortably recommended, a sweet smooth sound with good overall balance of engineering-based performance	55 x 37.5 x 30.5cm open space on stands	88dB/w 46Hz	R	31
Celef Cirrus £180	Average Good	It's nice to see Celef back in the UK, with this decent sounding small reflex box that seems unusually tolerant of siting	39 x 20.5 x 23cm stands in free space	84dB/w 60Hz	R	66
Celef CF2 Nimbus £230	Good— Good—	Nicely balanced overall but a little uneven with it, this lively and dynamic large bookshelf model came close to Recommendation	46 x 25.2 x 24cm stands in free space	88dB/w 55Hz		71
Celestion 3 £109	Average+ Average	This attractive little wall-mount gives good balance and stereo imagery, with a character which leans more towards inoffensiveness than excitement	31 x 18.5 x 21cm high stands against wall	86dB/w 55Hz (in room)	R	78
Celestion DL6 Series Two £159	Good Average	Good tonal colouring and plenty of bass for the enclosure size; the metal dome tweeter is excellent, but bass and mid lack clarity and 'bite'	45.4 x 24.5 x 26.2cm near wall, on stands	87dB/w 65Hz		59
Celestion DL8 Series Two £199	Very Good Good	A refined middle market speaker has a smooth but slightly dull quality, with good definition and deep, if slightly boxy bass	50 x 27.5 x 27.8cm open, stands	87.5dB/w 60Hz	R	59
Celestion SL12Si £579	Average Average	Careful setting up does reveal elements of fine sound quality, but this 'grown up' SL6 variation has a lumpy response alongside its improved power handling	53 x 20 x 27cm matching stands clear of walls	85dB/w 50Hz		66
Celestion SL600Si £799	Good+ Good	This Aerolam high tech miniature has certain remarkable qualities that some will find irresistible, but needs careful system and room matching.	27 x 20 x 23cm matching stands in free space	82dB/w 52Hz		68
Celestion SL700 £1349 inc stands	Good Good	Very sophisticated, mostly smooth and accurate transducer, with fast but not very deep bass and a rather bright treble	37.5 x 20 x 23.5cm free air on tall stands	83dB/w 45Hz		60
Celestion 6000 £1470	Very Good Very Good	A genuine fullrange audiophile quality speaker system – with Star Wars styling to suit a high tech environment	Complex, on floor in free space	82.5dB/w	R	60
Cyrus 781 £250	Average+ Good	Properly run in, the pretty little 781 delivers a fast, dynamic and informative sound which more than justifies its price. Take care to adjust placement to suit room and system.	43 x 22.5 x 28cm matching stands 1ft from wall	88dB/w 28Hz (in room)	R	86
Doxa 5 – 2 £900	Average Good	The high sensitivity and seductive midband makes an obvious partner for valve amplifiers, though obtaining a good room match may prove a little tricky	98 x 21 x 28cm floor well away from walls	91dB/w 30Hz (in room)	R	82
Duntech PCL500 Marquis £3998	n/a Very Good	Better value for money than the Crown Prince – and arguably more dynamic, with real bass 'slam' – but a little less refined in the higher registers	147.5 x 27 x 40 free standing away from walls	92dB/w 48Hz	R	65
Duntech PCL1000 Crown Prince £6120	n/a Very Good+	Immensely 'listenable', refined sounding speaker capable of creating lifelike musical images. Not overly transparent to source, but very civilised nonetheless	180 x 30.5 x 43.5 free standing away from walls	90dB/w 42Hz	R	72
Goodmans Maxim Two £90	Average+ Average	More wham-bam-thankyou-mam sound that imitates much bigger speakers when you let these babies yell. (A well-controlled yell)	26 x 17 x 19cm near wall on shelf or stand	86dB/w 85Hz	BB	59
Goodmans B-Max/Maxim Two £90 + £90	Poor Average—	Stick with the Maxims on their own until you can afford some real grown up loudspeakers	60 x 21 x 26 + see above, suck and see	89dB/w 55Hz (in room)		78
Goodmans M100 £79	Average+ Average—	Effectively a Maxim on the cheap, the M100 measures more smoothly but sounds somehow less involving than its more famous stablemate.	20 x 17 x 26cm close to rear wall	85dB/w 50Hz (in room)	R	86
Goodmans M300 £99	Average Average—	Conveying much of the charm and life which has made the Maxim 2 so popular, the M300 is sensitive, but also significantly hampered by upper bass cabinet coloration	38.5 x 21.5 x 17cm stands close to rear wall	89dB/w 50Hz (in room)	R	82
Harbeth LS3/5A £343	Good Average	Still a classic miniature, though not to every taste, and none the better for the recent update under our listening conditions. Limited dynamic range	30.5 x 19 x 16cm stands in free space	81dB/w 60Hz		66
Harbeth HL Compact From £539	Very Good Average	The clean and neutral sound lacks resolution and gives rather unsuitable though well differentiated stereo. Can be bi-wired to advantage	52 x 27.2 x 28.1cm open space, on high stands	87.5dB/w 65Hz		59
Heco Interior 90S £159	Good Average—	Neatly finished and engineered miniature, but the disappointingly 'lifeless' sound left the listening panel decidedly underwhelmed	27 x 18 x 16cm on high stands	87.5dB/w 90Hz		74
Heco Interior 120 £169	Good Average	Drab appearance belies a lively enough character, though the balance is altogether a bit bright for UK tastes	32 x 23 x 23cm high stands against wall	88dB/w 50Hz (in room)		78
Heco Interior 430s £429	Good Good—	This tall floorstanding enclosure delivers an impressively even sound balance with good bass extension, if not the lively dynamics to satisfy enthusiasts	85 x 24 x 27.5cm free space	88dB/w 43Hz	R	71

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LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	BACK ISSUE FULL REVIEW
Heco Superior 740 £599	Good Good—	A similar sonic package to the cheaper Interior 530, these Superior clothes are very pretty indeed, though spikes are still awaited	84.5 x 22 x 25cm on floor in free space	88dB/w 30Hz (in room)		78
Heco Superior 940 £1000	Good Good	This large and beautifully finished floorstander has an impressively smooth and attractively transparent midband. Bass is well extended but follows rather than drives the music along.	110 x 26 x 31.5cm free space	88dB/w 20Hz		86
Heybrook Point 5 £139	Average Average	"Uncouth yet still satisfying", the Point 5 gives good dynamics and bass for a compact wall-mount, but is burdened by a somewhat unhappy treble	37.5 x 23 x 24cm high stands against wall	85dB/w 32Hz (in room)		78
Heybrook Point 7 £185	Average Average	Physically an attractive package, but not entirely convincing in lab or listening panel test; interesting for all that	40.5 x 23 x 23cm stands against rear wall	85dB/w 60Hz		68
Heybrook HB1 £199	Good Average+	No longer an over-bright character, a strikingly clear sound and fine transient performance now merits recommendation	47 x 29 x 23cm on stands near wall	88dB/w 61Hz	R	46
Heybrook HB100 £255	Average+ Good	Well matched for wall sating, the HB100 is a lively and informative performer in the tradition of the popular HB1	47 x 26 x 28cm stands near rear wall	86dB/w 50Hz	BB	66
Heybrook HB150 £319	Average Good	Convincingly communicative but a bit colored and congested, this lively compact wall-mount is nicely finished but a little costly for the content	40.5 x 23 x 22cm stands close to rear wall	89dB/w 42Hz (in room)		82
Heybrook HB200 £399	Average Average	This luxury successor to the HB2 is lively and informative, but sounded insufficiently balanced to convince our listening panel	46 x 23 x 26cm stands against rear wall	87dB/w 55Hz		66
Infinity RS2001 £180	Average Average+	A little coloured and unruly in the treble, the 2001 nevertheless retains the lively dynamic bounce of its predecessor; pity the price has gone up	36.5 x 22.5 x 20cm lightweight stands	87dB/w 50Hz (in room)	R	78
Infinity Kappa 6 £795	Good Good	Interestingly styled US loudspeaker has unusual high tech drivers and good neutrality, but the sound seriously lacks excitement	63 x 38 x 24cm stands, free space	85dB/w 35Hz		66
Infinity Kappa 8 £1850	n/a Good++	Very nicely made and unobtrusive but large four-way speakers which have a tendency to sound bass heavy unless used with solid core cables	118 x 51.5 x 17.5cm floor standing, open space	89dB/w 33Hz		72
Infinity Modulus £695	Good Average+	Luxury high-tech miniature is carefully conceived and beautifully executed. Undeniably attractive in the midrange and treble, the Modulus failed to handle the bass end of the spectrum as successfully.	30 x 18 x 26cm high stands 1ft from wall	84dB/w 45Hz (in room)		86
Jamo Concert 2 £230	Good Average—	A thoroughly respectable 'bookshelf' performer that needs free space sating but includes attractive cabinetwork and a neat grille	41 x 24 x 25cm stands in free space	85dB/w 48Hz		66
JBL TLX12 £149	Good— Average	This smart near-miniature has a 'boppy', lively bottom end, but beware of the fizz in its top	37 x 23 x 23cm stands 0.5m from rear wall	87dB/w 55Hz	R	71
JBL LX33 £259	Average+ Good	A bit of a cheat, but a lot of speaker for the money, which manages a better room balance than many 'large bookshelf' rivals, and delivers a fine acoustic performance	80 x 25 x 21cm floor, 1ft from wall	89dB/w 48Hz	R	82
JBL LX44 £340	Good— Average	This generously built model offers good power handling, bass extension and dynamic range, but suffers from the 'three-way syndrome', with middle muddle	58.5 x 30 x 29cm stands in free space	89dB/w 40Hz		71
JBL XPL 90 £699	Good Average+	Though undoubtedly pretty and very expensively engineered, this elaborate near-miniature didn't really convince our listeners that it could deliver a sound quality to match its elevated price.	39.5 x 24 x 24cm stands in free space	85dB/w 45Hz (in room)		86
JPW Minim £79	Average+ Average—	Very civilised but dynamically limited, the Minim is well suited to the smaller room and where limited loudness is acceptable	27.5 x 18 x 19.5cm stands against wall	85dB/w 28Hz (in room)	R	82
JPW Sonata £99	Good Average+	Well balanced and integrated, this near-miniature offers fine sound if limited bass and dynamic range, plus real tree wood at a nearly silly price	32 x 23 x 20cm stands near rear wall	86dB/w 55Hz	BB	71
JPW P1 £139	Good Average+	Honest and basically articulate if not very sophisticated, resolution is good but it can sound a little wearing in bright systems or with rough sounding material	44 x 25.9 x 26.1cm free space on stands	89dB/w 60Hz	R	59
JPW AP2 £165	Good Good	Few grounds for criticism but purchasers should check out the treble qualities to avoid hammering the ear anvils	46 x 26 x 25cm 40cm from wall on 45cm stands	89dB/w 65Hz	R	53
JPW AP3 £219	Good Average+	Pretty good stereo and well balanced overall it had its own character which is well suited to vinyl replay	52 x 25 x 29.5cm near wall on stands	90dB/w 57Hz	R	46
JRT AD1 £500 (stands £100)	Average+ Good+	A most auspicious Choice debut for relative newcomers JRT. A fair share of cosmetic deficiencies do little to spoil the impressive coherence and timing that makes this beautifully finished and generously proportioned model so enjoyable	59.5 x 28 x 36cm own stands close to rear wall	86dB/w 28Hz (in room)	R	86
KEF C15 £99	Good Average	One of the finest around delivers a surprisingly 'big' and well balanced sound, with excellent stereo from free space sating	26.5 x 18 x 14cm stands in free space	85dB/w 60Hz	R	71
KEF C25 £139	Average+ Average—	Very safe and competent, but rather short on inspiration, the '25 lacks the brio and flair of its smaller C15 brother	34 x 20.5 x 17cm high stands near wall	87dB/w 60Hz (in room)		78
KEF C45 £199	Good Average—	Conventional and competitively priced, C45 delivers an impressively consistent and competent sound. As one listener commented: "Offensively inoffensive... whether it be love or loathing, give me some emotion".	47.5 x 28 x 24cm uncritical	87dB/w 30Hz (in room)		86
KEF C55 £219	Good Average+	Similar to but less good value than C75, the '55 provides Uni-Q stereo stability but not real wood veneer or good low frequency room match	48 x 24.5 x 25cm stands, free space	91dB/w 30Hz (in room)		82
KEF C75 £349	Good Good	Compact floorstanding model's Uni-Q driver provides fine crossover integration, giving stable stereo and fine dynamic range within a slightly 'rich' balance	72 x 24.5 x 25.5cm floor in free space	90dB/w 45Hz	R	71
KEF R102 £365	Very Good Very Good	High class near-miniature with expressive, articulate midband and clean, accurate bass and top. The sound quality of the Kube circuitry, however, is suspect	33 x 20.7 x 26.3cm near wall or open on stands	89.5dB/w 60Hz	R	59
KEF C95 £599	Good Good	Rich and lazy, but nonetheless very endearing in a cosy sort of a way, the '95 is a lot of speaker for the money, and delivers a big sound with grace and subtlety	88.5 x 24.5 x 31cm floor in free space	90dB/w 28Hz (in room)	R	78
KEF 103/3 £680 inc. stand	Good+ Good	Technically impressive, excellent bass/power handling for size, but not for the audiophile system. Better among cheaper components, and good in a large room	56 x 27 x 30cm supplied stands free space	90-95dB/w 35Hz		53
KEF 104/2 (inc KUBE equaliser) £895 (£994)	Very Good Good++	A reference point for dynamics, preferred without KUBE, suited to many rooms. Good stereo, high sound levels	90 x 28 x 41.5cm floor standing in free space	92dB/w 50Hz	R	60
KEF 107 £2025	Very Good Good+	A welcome sense of ease and lack of strain at most normal levels. Minor criticisms included a dulling in the extreme treble. Excellent bass extension	116.5 x 33 x 45cm on floor in free space	87.5dB/w 20Hz	R	60
Linn Helix £279	Average+ Good	Attractive presentation is coupled with an attractively lively sound which is more neutral if less committed than earlier Linn loudspeakers	51 x 25.5 x 28cm stands 1ft from rear wall	88dB/w 53Hz	R	66
Linn Kan 2 £339	Average+ Average+	A niche product for those prepared to tolerate its strong character for the sake of its fine bass performance and near invisibility	30.5 x 18.5 x 16.5cm Kan stands against wall	82dB/w 35Hz (in room)		78
Linn Nexus £379	Good Average	Good features include a solid, meaty bass plus good imagery and tonal balance. The catch is that Nexus lacks resolution and timing	49 x 23.5 x 30.4cm near rear wall supplied stands	89dB/w 60Hz		59

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LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	BACK ISSUE FULL REVIEW
Linn Kaber £989	Average Good +	Discreet wall-mount package trades sensitivity for fine bass extension and midbass performance; can be a little relentless but has prodigious dynamic capabilities	93 x 19 x 28cm floor against rear wall	86dB/w 28Hz (in room)	R	82
Magneplanar SMGa £675	Average— Average	Tonally 'rich', in the right room it proved a satisfactory musical experience	122 x 48 x 4.5cm on floor clear of wall	85dB/w 56Hz		46
Magneplanar MG1.4 £1190	Good + Good +	Replaces the stalwart MG1c with a revised panel layout. Offers a very crisp and articulate sound, particularly revealing of upper mid vocal details	155 x 8 x 5.7cm open space	88dB 40Hz	R	72
Magneplanar MG2.5R £1998	Good Good	Offers the low coloration and profound musical insight of better electrostatic loudspeakers but without loss of low frequency extension	183 x 56 x 4.5cm Open space	83-85dB/w 35Hz	R	60
Magneplanar MG11a £2700	Good Very Good	Another excellent true-audiophile loudspeaker this American panel speaker helps to convey much of the original character of the music	180 x 62 x 38cm well clear of walls	84-86dB/w 35Hz	R	46
Marantz LD20 DMS £170	Average Average	Recommended more for CD users than vinyl keepers, soundly engineered and built but should be heard before bought	36 x 23 x 24cm free space on 45cm stands	86.5dB/w 55Hz		53
Marantz LD50DMS £200	Very Good Good—	Well behaved larger two-way has fine balance, stereo and integration with good bass extension, albeit with mild 'boxy', 'chesty' and 'fizzy' effects	42.5 x 27 x 28cm stands in free space	87dB/w 50Hz	R	71
Martin Logan CLS II £3998	n/a Very Good	Much improved high resolution design, fussy about system set-up and demanding of ancillaries and software alike. It rewards the efforts though	60 x 28 x 7.5cm open space	86dB/w 45Hz	R	72
MB Quart 220 £270	Average— Average	The elaborate and pretty enclosure in a wide range of finishes works better than the drivers and crossover, which impose a lumpy balance	30 x 22.5 x 21cm stands in free space	87.5dB/w 80Hz		74
MB Quart 280 £340	Average— Average	Despite redoubtable build quality and good dynamics, the 280 has a rather 'obvious' mid bass and a balance that adds rather too much of its own character	44 x 27 x 29cm uncritical	88dB/w 40Hz (in room)		78
MB Quart 390 £469	Below Average Poor	An aggressive, messy sounding design whose uncouthness undermines the positive level of detail	52 x 31 x 30.5cm open space, on stands	89.5dB/w 60Hz		59
Meridian M30 £775	Average + Average	Pricy but easy on the ears and worth considering especially where space is at a premium	38.5 x 18 x 32cm free space on stands	Active 40Hz		46
Mission 761 £130	Average Good	One helluva speaker for the price, if a shade small and short of subtlety and refinement – should prove a worthy successor to the 70 and 700	38 x 21 x 21cm stands near rear wall	87dB/w 60Hz	BB	66
Mission 762 £200	Average Average—	Mission's 'bookshelf middleweight' offers high sensitivity and loudness capability, but at the expense of a somewhat untidy and rather 'heavy' sound	50 x 25 x 27cm stand, experiment advised	91dB/w 55Hz		66
Mission Cyrus 781 £250	Average + Average +	Superb build, finish, presentation and engineering for the price, this romantic sounding Cyrus needs careful system matching to achieve good results	43 x 22.5 x 28cm medium stands near wall	88dB/w 40Hz (in room)		78
Mission 763 £300	Average + Average +	A very artful combination of generous volume and good bass extension at a modest price. Works well in the listening room despite a few rough edges	77 x 25 x 32cm near rear wall	86dB 40Hz	BB	68
Mission Cyrus 782 £350 (stands £80)	Good— Good—	Lively, articulate and beautifully finished, this compact wall-mount model with twin main drivers has good integration but a rather rich, 'loudness' balance	50 x 25 x 32.5cm Cyrus stands near wall	90dB/w 50Hz		71
Mission 764 £450	Good Good—	Large floorstander has fine bass extension but limited dynamic range, and sounds 'lazier' than Best Buy 763	86 x 25 x 32cm 0.5 + m from rear wall	86dB/w 43Hz		71
Mission 767 from £2500	Very Good Very Good	Magnificent and massive part-active monoliths have fine acoustic subtlety and impressive loudness capability, ultimately limited by partnering (Cyrus) electronics	138 x 29 x 43cm floor, flexible	91dB/w below 20Hz (in room)	R	81
Monitor Audio Monitor 7 £150	Average— Average	This lively and punchy near-miniature looks pretty enough and is good value but is let down by an unruly and indifferently integrated tweeter	34 x 16.5 x 17cm stands 1ft from wall	84dB/w 70Hz		74
Monitor Audio Monitor 9 £190	Good Average	Despite a much better treble balance than the 7, the Monitor 9 is less engaging and lively at low frequencies than its smaller sibling	37 x 20 x 21cm high stands near wall	84dB/w 40Hz (in room)		78
Monitor Audio R300/MD £250	Average Average—	An attractive 'large bookshelf' model that's handicapped by poor crossover and integration between paper cone bass and metal dome tweeter	47.5 x 25 x 30.5cm stands in free space	88dB/w 50Hz		71
Monitor Audio R352/MD £299	Average + Good	A good value large box that sounds more engaging than subtle, providing a good compromise between bandwidth and sensitivity	64 x 25 x 32cm stands in free space	89dB/w 45Hz	R	66
Monitor Audio MA700/Gold £349	Good Average +	Lacks bass authority and timing, but could suit the smaller room, at the end of a CD-based system used primarily for classical music at modest levels	35 x 21.5 x 25cm stands, free space	87dB/w 48Hz (in room)		82
Monitor Audio R852/Gold MD £449	Good Good	Luxury build and 'high tech' tweeter or not, this compact model offers good refinement and detail on an open soundstage	45 x 25 x 26cm stands in free space	86dB/w 50Hz	R	66
Monitor Audio 1200 Gold MD £799	Average Average +	This smooth and civilised slimline floorstanding loudspeaker is well built and nicely presented. But it is also expensive	94 x 20 x 26cm in free space	85dB/w 48Hz		68
Monitor Audio MA1800/Gold £1299	Good Average +	Attractive and beautifully finished, even when ballasted with lead shot the 1800 inclines towards upper bass richness and lacks genuine extension	106 x 22 x 32cm floor, free space	88dB/w 30Hz (in room)		81
Mordaunt-Short 3.10 £100	Average Average +	Probably the liveliest and most communicative miniature around, this beautifully presented design is probably better suited to budget 'real hi-fi' than the blandness of the midi system	28.5 x 17.5 x 20cm high stands near wall	84dB/w 50Hz (in room)	BB	78
Mordaunt-Short MS 3.20 £130	Average Average +	All the charm of its BB-rated £99 baby 3.10 brother, plus a smidgeon more bass for those in a suggestible frame of mind	35.5 x 18 x 20cm open stands against wall	85dB/w 50Hz (in room)	R	82
Mordaunt-Short 3.30 £180	Average Average +	A little too mid-forward for neutrality or formal recommendation, this attractive, good-sized model nevertheless has more than enough appealing qualities to merit serious consideration	46 x 23.5 x 27cm high stands 1-2ft from wall	87dB/w 38Hz (in room)		78
Mordaunt-Short MS3.40 £230	Average + Average	It looks pretty and sounds civilised, but the 3.40 failed to ignite any degree of enthusiasm amongst our listeners. Low frequency stand and room matching is a bit tricky.	57 x 23.5 x 27.5cm stands in free space	87dB/w 30Hz (in room)		86
Mordaunt-Short 442 £1150	Good + Good + +	A resounding success with the listening panels. Make sure your room can accommodate the bass	95 x 26 x 38cm floor standing in free space	87.5dB/w 40Hz	R*	60
Musical Fidelity Reference 2 £199	Good— Good—	This compact wall-mount design with advanced drivers has good dynamics, balance and stereo, plus flashy styling and some midband 'boxy' coloration	38 x 25 x 20cm stands near rear wall	88dB/w 50Hz		71
Musical Fidelity MC-2 £299	Very Good Good + +	This exceptionally clean and clear design offers real subtlety and finesse. Bass quality is light but exceptionally clear; the treble is smooth if slightly shallow	48.5 x 25.5 x 16.5cm open space and stands	87.5dB/w 65Hz	BB+	66
Musical Fidelity MC-4 £499	Very Good + Good + +	Achieving a very high standard, the MC-4 sounds detailed and coherent like the MC-2, but with more bass depth and solidity, and large image scale	56.5 x 26.9 x 29cm open space on stands	87.5dB/w 60Hz	R*	59
NAD 8225 £150	Good Average +	Notwithstanding lacklustre styling and an unprepossessing appearance, this NAD miniature has a smooth and even midband plus an appealing overall jauntiness. The whole turns out to be worth more than the sum of its parts.	34 x 20 x 18cm stands close to wall	87dB/w 45Hz (in room)	R	86
NVA Cube 2 £380	Average Good	A rude but exciting miniature, with unusually accomplished bass capabilities for its size	28.5 x 27 x 28.5cm NVA stands against wall	85dB/w 48Hz (in room)	R	82
NVA Cube 1 £600 (stands £200)	Good— Good +	Attractive, cube-shaped semi-omni is very sturdily built, and gives an idiosyncratic but unusually open, spacious and informative sound	33 x 32 x 32cm own stands c0.5m from wall	85dB/w 52Hz	R	71

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MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	BACK ISSUE FULL REVIEW
NVA Cubix £1,100	Average Good	Too idiosyncratic for formal recommendation, the Cubix possesses remarkable bass extension for its size, but is tricky to optimise and has some aggressive tendencies	60 x 32.5 x 32.5cm low stands against wall	88dB/w 20Hz (in room)		78
Opus 3 Credo £399	Average Average	Credo's odd-shaped silicate-based cabinet confers good box and bass performance, but the sound could be more neutral for the price	32 x 28 x 32cm stands in free space	88dB/w 65Hz		74
Opus 3 Capella £599	Good Good	The sound of this Scandinavian curiosity certainly benefits from the crushed marble enclosure, though presentation is strictly DIY	32 x 40.5 x 26(ave)cm amongst books in bookcase	86.5dB/w 45Hz		66
Pearl & Oakley Victoria 200 £1099	Average— Average—	Extraordinary – and to many very attractive – ‘ginger jar’ presentation in Staffordshire ceramics, but let down by need for further acoustic and mechanical development	93 x 33 x 33cm on floor in free space	87dB/w 30Hz (in room)		78
Philips FB815 £230	Average Average	An impressively – indeed imposing – physical package for the price, clever engineering gives a very competent if slightly hard and brittle sound quality that somehow lacks genuine authority	63 x 27 x 27cm low stands in free space	85dB/w 30Hz		86
QLN Model One £700	Good Average	Similar to Signature at two thirds the price, Model One exaggerates the latter's rich and heavy midbass and lacks its velvet smoothness	35 x (16-25) x (21- 27)cm pillar stands, free space	85dB/w 28Hz (in room)		82
QLN Signature £1,100	Good Good	Beautiful but expensive luxury compact has a rather laid back and ‘heavy’ sound, but coloration is low and stereo imaging very good	37 x 18 x 36cm heavy stands in free space	83dB/w 30Hz (in room)		78
Quad ESL-63 £1690	Good + Good + +	With its unusual but subtle characteristics this classic electrostatic may not be punchy in the bass, but has strengths that some cannot live without	92 x 66 x 27cm open stand well clear of wall	84dB/w 34Hz	R	60
Richard Allan CD5 £184	Average— Average—	This neatly presented small reflex design can sound engagingly communicative, but is flawed sonically and technically and quite expensive too	38 x 19 x 23cm on rigid stands	88dB/w 80Hz		68
Rogers LS2a £180	Average Average	Provides very good engineering and stereo performance for the price, alongside some ‘boxiness’ and certain dynamic constraints	36 x 23 x 21cm low stands 1ft from wall	88dB/w 50Hz (in room)		82
Rogers LS4a £219	Good Good—	This artfully voiced and well balanced compact gives a fair flavour of the classical ‘BBC sound’ at a very reasonable price	43 x 25.5 x 24.5cm stands 1ft+ from wall	87dB/w 32Hz (in room)	R	78
Rogers LS6a £285	Good Good	Stereotypically a Rogers model with impressively even balance, prospective purchasers will have to weigh the fine midband naturalness against slightly lazy dynamics and timing.	51 x 27.5 x 28cm stands in free space	86dB/w 25Hz (in room)	R	86
Rogers LS7t £399	Good + Good +	A fine combination of classic qualities at reasonable price produces the “R” tag, but try to get a pair home on approval to check for bass ‘heaviness’	56 x 27 x 28cm free space on 40cm stands	88.5dB/w 48Hz	R	59
Rogers Studio 1a £579	Very Good Good—	The classic BBC monitor style sound sensitively updated – transparent and natural with fine stereo, but a touch ‘heavy’ in balance	63.5 x 30.5 x 30.5cm stands in free space	87dB/w 36Hz	R	66
Roksan Darius £1395 (+ £345 integral stand)	Good Very Good	New totally realigned, the current Darius provides an exceptionally impressive combination of transparency and delicacy with fine information retrieval and speed. The problem is affording the amplification to do it justice	47 x 27 x 40cm own stands angled in space	82dB/w 20Hz (in room)	R	86
Rotel RL850 II £140	Average + Average +	Strongly recommended. Well-balanced, clear, with decent focus and fine stereo, but tendency to ‘heaviness’ needs decent stands and space	44 x 25 x 24cm free space on 40cm stands	86.5dB/w 50Hz	BB	59
Royd A7 Series 11 £115	Average + Average	Lively clear sound; good upper bass and dynamics, but treble “ramp” made vocals sound shut in. Try before you buy	31 x 20 x 17cm shelf or 50cm stands near wall	86dB/w 75Hz	R	53
Royd Eden £235	Average Average +	Delightful mid/treble speed and transparency but determinedly bass light, this oddball miniature threatens cult status but could use a sweeter tweeter	31 x 20.5 x 18.5cm stands close to rear wall	87dB/w 85Hz	R	66
Royd Apex £485	Average + Good	Not the smoothest sound around, it more than compensates with an impressively communicative and informative musical presentation	85.5 x 20 x 30cm on floor close to wall	87dB/w 33Hz (in room)	R	78
Ruark Swordsman £219	Good Average	Very attractively styled and finished, the Swordsman is a well built ‘small bookshelf’ model that delivered better test than listening results	38.5 x 20 x 27.5cm stands 0.5m from wall	84dB/w 50Hz		71
SD Acoustics OBS £695	Average Good	Recent changes have added some refinement to a seductive midrange, good timing and fine sensitivity, though bass extension is limited and coloration obvious	102 x 35 x 25cm floor, angled, away from walls	92dB/w 30Hz (in room)	R	82
SD Acoustics SD1 £1150	Average Very Good	A large scale, airy and unusually detailed system with excellent dynamics. Current model has more civilised top-end and warmer balance than original model	123.5 x 38.2 x 31.9cm free space	90dB/w 50Hz	R	60
SD Acoustics SD3 £500	Average Good	Neither cheap nor perfect, this near miniature (using OBS’ mid driver down into the bass) sounds unusually lively and dynamic within inevitable physical constraints, and is ultimately both engaging and entertaining.	38 x 19 x 29cm stands 10cm from wall	83dB/w 30Hz (in room)	R	86
SD Acoustics Ribbon £2000	Average Good +	Entertaining but a little underdeveloped and rather amplifier sensitive, the Ribbon is a lively and loud hybrid marred by some colorations: some like it, others don't	152 x 30 x (15-30)cm floor, angled, away from walls	91dB/w 30Hz (in room)		81
Seventh Veil System IV £1290 (+ £340 integral stand)	Average Good +	Lacks welly and loudness but delivers astonishing results with female vocals in particular. Antithesis of the ‘good allrounder’, this oddball design has considerable charm that the committed enthusiast might find irresistible.	72 x 44 x 21 x 29cm own-stands close to wall	84dB/w 28Hz (in room)	R	86
Shan Shimna £280 (stands £75)	Average + Good—	Pretty little miniature in cast mineral/plastics has limited dynamic range and could sound smoother, but integration is good and box effects slight	31 x 16 x 17cm stands near rear wall	84dB/w 65Hz	R	71
Snell Type C £2350	n/a Very Good	Pricy, yes, but an extremely capable loudspeaker. Musical and transparent; excellent bass extension	112 x 38 x 33 free standing away from walls	90dB 35Hz	R	65
Sony APM-101ES £100	Good Average	Big hearted sound from small bookshelf successor to BB 10ES, sounds a little untidy at frequency extremes, so suits CD better than vinyl	39.5 x 22.5 x 23.5 stands in open space	86dB/w 52Hz	R	71
Sony 121ES £150	Average Average—	Good perceived high tech value, but the balance has an artificial ‘loudness’ character, too rich in the bass, making room matching difficult, and too strong in the treble as well.	43 x 25 x 28cm stands in free space	86dB/w 25Hz (in room)		86
Sony APM-141ES £200	Average Average	A great deal of loudspeaker for the money, the rich-sounding 141 needs a big room and still shows significant ‘loudness’ (boom n’ tizz) tendencies	61.5 x 26 x 32cm large room, free space	88dB/w 30Hz (in room)	R	78
Sony APM-181ES £300	Very Good Average	Big and beefy but also somewhat fat and bass heavy, this well engineered three-way has notable strengths but lacks transparency and sounds better at lower levels	57.5 x 29 x 36cm stands in open space	87dB/w 40Hz		71
Sony APM 66ES £700	Average + Average +	Powerful heavyweight sound with a brilliant midband – clear articulate and transparent. But the bass is on the boomy side and the treble can sound grainy	66 x 38 x 36.5cm open space, low stands	89dB/w 60Hz		59
Spendor SP2/2* £500	Very Good Good +	Conceding little to the SP1, this 30 litre model displayed good tonal balance with a highly articulate midrange, only slightly marred at frequency extremes	50 x 25 x 30cm free space, stands	87dB/w 45Hz	R*	59
Spendor SP1 £800	Very Good Good	A very subtle and musical performer that works particularly well with digital material. An exceptional allrounder	63.5 x 29.5 x 30.5cm stands in open space	87dB/w 41Hz	R	60
Spica TC50 £599	Good— Good	This triangular-profile ‘grown up’ miniature is a shade boxy and laid back but has good rhythmic and musical integrity	40.5 x 33 x 29cm stands in open space	88dB/w 55Hz		71
Spica TC50SE £799	Good— Good	A heavily UK-modified TC50, the SE sounds less boxy and more spacious, but lacks some of the urgency of the standard model	40.5 x 33 x 29cm stands in open space	88dB/w 55Hz		71

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MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	BACK ISSUE FULL REVIEW
Spica Angelus £1295	Good Average	A little bass shy and soft in the bass and lower mid, the free standing Angelus is otherwise tidy, extremely lively and fluid, if uneven overall	116.8 x 53.3 x 26cm away from walls	86.5dB/w 50Hz		60
Studio Power DMS100 £249	Average+ Average+	Close to a BB rating, and in many respects remarkable value for money. Delivers an impressively smooth and large sound, but sheer ugliness will limit its appeal	51 x 26 x 32cm open stands 1ft from wall	86dB/w 25Hz (in room)	R	82
Sugden CL £275	Average+ Good—	A thoroughly impressive and likeable near-miniature, the CL is prettily and properly built, and needs a good driving amplifier	35.5 x 18 x 26.5cm high stands in free space	86dB/w 35Hz	R	78
Tannoy E11 £129	Average Average—	Fundamentally turgid and slow, thanks to leaden upper bass and 'shut in' treble, though stereo images are convincing, as are the reasonably uncoloured vocals	39 x 21 x 22cm stands, free space	87dB/w 45Hz (in room)		82
Tannoy M15 £170	Good Average+	Somehow lacking the magic of its predecessors, the M15 remains a fine value compact that needs careful set-up to give optimum results	50 x 25 x 21cm Blu-tack to stands 1-2ft from wall	88dB/w 40Hz (in room)	R	78
Tannoy DC1000 £200	Average Average—	The smaller of two DC models with dual concentric drivers, the '1000 is much less well balanced than the larger, floorstanding '2000	50 x 24 x 25cm	91dB/w 53Hz		71
Tannoy M20 £250	Good Good	Alongside fine build and presentation, the M20 provides an unusually clever combination of the 'traditional' virtues of transparency and low coloration with more trendy strengths of speed and pace.	50 x 25 x 22cm stands in free space	87dB/w 25Hz (in room)	R	86
Tannoy DC2000 £300	Good Good	Remarkably high sensitivity from unique dual concentric driver that has an involving but characteristic sound. Bass could be better	68.5 x 26 x 27cm floor in free space	93dB/w 55Hz	R	66
Tannoy DC3000 £600	Good Good	Giving new meaning to terms like dynamic range and headroom, the magnificent '3000 is a must for those who enjoy high-level monitoring. But spare a thought for the neighbours	94 x 26 x 31cm floor 1ft+ from wall	94dB/w 30Hz (in room)	R	78
Tannoy Westminster £3600	n/a Good+	These awesome horn loaded speakers are remarkably controlled and impressive, if only suited to a few pockets and rooms	Huge, flat against rear wall, away from corners	96dB/w (manuf.)	R	Coll
TDL Studio 1 £549	Average+ Good	Delivering genuinely extended bass from a compact floorstanding enclosure, the Studio is very detailed but a shade clinical and detached in presentation	76 x 23 x 33cm low stands in free space	84dB/w 25Hz (in room)	R	78
TDL Monitor £1799	Very Good Very Good	Fine solidity and good accuracy, with enough bass extension to satisfy even organ freaks. Needs a big room and can sound a bit lazy and a shade tinkly	118.5 x 30 x 47cm 0.5m from walls	88dB/w 28Hz	R	66
Technics SBC 250 £140	Average+ Average—	Despite a fairly even tonal balance, the 250EK sounded muddled in the midrange and dull in character	36.5 x 23.5 x 20.5cm free space, stands	86dB/w 60Hz		46
Technics SB-CS5 £70	Average Average	Clearly fine material value for money, the CS5 nevertheless betrays its mid system heritage, the quest for size for its own sake compromising the performance of both enclosure and main driver	42.5 x 25 x 24cm stands in free space	86dB/w 48Hz (in room)	R	86
Technics SB-RX50 £500	Very Good Average+	With its unique coaxial drive unit the RX50 proved a smooth and well balanced loudspeaker, its minor weakness being a mildly excessive low bass	48 x 30 x 26cm free space on 40cm stands	86dB/w 40Hz	R	46
Toshiba SS33-M £100	Average Average	Providing a benchmark for budget loudspeakers, this Toshiba-inspired but UK designed and manufactured model is a lot of loudspeaker for the money, if a shade on the cheap	40 x 26 x 21.5cm stands in free space	86dB/w 55Hz	BB	68
Townshend Glastonbury IIS* £1700	n/a Very Good	What? No bass? Actually, like the KEF 107, Glastonbury II goes down so low you might not notice how good it is. A truly remarkable performer. Superb soundstaging	91.5 x 28 x 46 free standing in room corners	88dB 27Hz	R*	65
Vandersteen Model One £1000	Average+ Average+	This compact American floorstander's elegant staggered baffle arrangement contributes to a refreshing freedom from boxiness, but the price is quite high in view of the additional mid forwardness and bass imprecision.	100 x 30.7 x 25.6cm floor clear of walls	87dB/w 23Hz (in room)		86
Videotone Minimax 2 £80	Poor Average—	Cheap in build and QC as well as price, but cheerful (if coarse) with it – if a little too cheerful after extended listening...	27.5 x 17 x 20cm near rear wall	84dB/w 80Hz	R	74
Visonik David 6001 £173	Average— Poor	Sharp styling a classy looking miniature makes, but the complex grillework worsens a sound which starts off with too much top and not enough bottom	20 x 12 x 13cm against rear wall	87dB/w 130Hz		74
Wharfedale Delta 30 £80	Good Average	Very clear and surprisingly neutral for the price, with good dynamics and stereo within limited volume ceiling	37.9 x 20 x 16.9cm near wall on high stands	88.5dB/w 80Hz	BB	59
Wharfedale Delta 50 £100	Average+ Average—	"There's nothing obviously wrong, but it seems a bit mundane," is what we said when the Delta 50 was £129. But since then the price has dropped by 30 per cent, making it great value	48 x 27 x 19cm near wall on 40cm stands	88dB/w 55Hz		53
Wharfedale Diamond III £100	Below Average Average—	This latest version of the long running Diamond sports a better tweeter, but bass, though deep, is soft, and the midband is indistinct and uneven	24 x 18.5 x 20.5cm near wall, stands	86.5dB/w 75Hz		59
Wharfedale Super Diamond £140	Average Average—	Although there are improvements on the basic "legendary" model, listening panelists did not get airborne about this upgrade	24 x 19 x 19cm close to wall at head height	88dB/w 57Hz		53
Wharfedale 504/2 £150	Average Average	Not strictly accurate, this musically involving miniature sounds unusually coherent and well integrated, if a shade dull in balance	29 x 18.5 x 19cm stands against rear wall	84dB/w 60Hz	R	68
Wharfedale 505/2 £180	Average Good	This lively Wharfedale provides plenty of speaker with unusual refinement for the money, and should be fairly tolerant of room siting	44 x 25.5 x 24cm stands 1ft from wall	86dB/w 55Hz	BB	66
Wharfedale 507 £220	Average+ Average—	Generous in size but unringratiating sonically, the 507 doesn't seem to gel in the way the smaller 505.2 does, finding a good in-room balance difficult to achieve	49 x 25.5 x 29.5cm high stands 1ft+ from wall	86dB/w 35Hz (in room)		78
Wharfedale Coleridge £499	Average Good	Compact, beautifully finished and extravagantly engineered box sacrifices bass extension in the cause of high midband sensitivity; communicative, but can be a little unforgiving	48 x 26 x 26.5cm stands 1ft from wall	91dB/w 48Hz (in room)	R	82
Yamaha NS 1000M £900	Good Good+	Living up to its monitor label, and tonally well suited to digital material, the NS 1000M is superbly crafted and capable of high levels	67.5 x 37.5 x 32.5cm 30cm from wall, stands	90dB/w 40Hz	R	46

* rating refers to original, tested model.

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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. Hi-fi buffs may wrinkle their noses pointedly, but are still happy to use cassette decks to make up tapes for the car or personal – at the same time complaining loudly about the quality of pre-recorded material. (In fact the very best decks can do a surprisingly good job with musicassettes.)

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 automatically.) Lab performance and sound quality often go hand in hand, and are frequently somewhat dependent upon factory alignment. The mechanical integrity of the mechanism itself is another crucial factor, that is often reflected in the asking price.

All modern hi-fi decks have Dolby B and the majority have Dolby C besides: the very worthwhile

HX Pro system is becoming steadily more widespread. Remote control remains rare, though sometimes it is available as a system option. Three-head recorders allow simultaneous checking of the recording being made. Auto-reverse is a useful convenience feature, but usually with some mechanical compromise, while double-mechanism 'dubbing' decks of dubious quality are fashionable at the bottom end of the market. The welter of different 'music search' systems available is some indication of their frequent ineffectiveness.

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Acoustic Research RD-06 £280	Average Average+	Acceptable middle market player with very simple facilities and cramped control section, but unusually good looks	Dolby B/C/HX Pro, fine bias, counter memory, repeat		69
Aiwa AD-F270 £90	Average Average+	An excellent budget machine, adequately equipped and satisfactorily built. Sound quality is in severe danger of transcending the price category	Dolby B/C, fine bias adjust	BB	75
Aiwa AD-F370 £130	Average Average	Adequate but uninspiring recorder with detail shortcomings but good control layout and successful sounding with recorded musicassettes	Dolby B, C, HX Pro, bias adjust		63
Aiwa AD-R470 £150	Average Good	For once, an auto-reverse deck with the performance of a decent unidirectional one at a similar price. The Aiwa is modern in concept and execution, and has good, transparent electronics	Dolby B/C/HX Pro, auto reverse, cue & review, bias adjust	BB	69
Aiwa AD-WX777 £179	Very Good Very Good	Excellent, middle price dual deck with quick side change and a living, breathing sound – though prerecorded tapes sound bright	Twin auto-reverse, one records, Dolby B/C, fine bias	BB	75
Aiwa AD-F700 £199	Good Average—	Somewhat less than the sum of the (most fine) individual parts, this deck has an artificial quality which spoiled the efforts of a fine transport	Dolby B/C/HX Pro, fine bias, CD Direct input		75
Aiwa AD-F800 £249	Good Very Good	Close to first class performance – and superb value. The Aiwa is purposeful and finely engineered. It provides a near irresistible blend of good mechanics and electronics	3 head, dual capstan, Dolby B/C/HX Pro, tape calibration	BB	75
Aiwa AD-WX888 £249	Good Good	Inaccurate set-up spoils metal tape operation, but with other tapes the deck works well. This deck offers fine engineering, facilities and sound	Dual auto-reverse twin deck, Dolby B, C and HX Pro	R	75
Aiwa XK-007 Excelia £400	Good Good	Downmarket version of XK-009 with simplified bias/equalisation adjustment section and more forgiving but less informative sound. Still good, but less exciting than XK-009	Dolby B, C, dbx, HX Pro, 3 Head, tape alignment		63
Aiwa AD-WX909 £400	Good Good	Convenience meets sound quality, and both win. An essentially clean, positive recorder which works alongside an auto-reverse player of lower standard – a sensible compromise	Dual deck, auto-reverse, track search, Dolby B/C/HX Pro, bias adjust, 3 Head	R	57
Aiwa XK-009 Excelia £550	Very Good Very Good	Excellent detail, stable articulate midband and slightly obvious treble. The most interesting Aiwa for yonks	Dolby B, C, dbx, HX Pro, 3 Head, tape alignment, CD direct	R	63
Akai GX-32 £170	Average Poor	Constrained and smeared sum this deck well. It has poor bass and treble definition alike, though it proved well aligned for prerecorded cassettes	Dolby B/C, variable bias, headphone out, track search		69
Akai GX-52 £250	Very Good Very Good	Well finished and a pleasure to use this well specified deck sounds clean and defined with all tape groups, with or without Dolby	Dolby B, C, HX Pro, track locate features	BB	57
Akai GX-65 £300	Average Average+	Fine ungimmicky middle ranking deck with simple, purposeful controls, works best with metal tapes. Performance standards fair to good	3-head, dual capstan, Dolby C/HX Pro		87
Akai GX-95 £400	Good Very Good	Well designed and finished cassette deck with features well judged to please the audiophile – especially switchable Dolby HX Pro and switchable panel display. The calibration system is simple and effective, and the deck sounds great	Dolby B/C/HX Pro, 3 head, manual tape set-up	R	69
Denon DRM-400 £140	Poor Poor	Messy, confused sound terminally lacking in detail and space under all conditions of use due to high mechanical flutter levels.	Dolby B/C, memory stop, track search		81
Denon DRM-500 £180	Good Very Good	Powerful, refined and detailed sound, and an excellent transport are keys to the success of this cleanly styled addition to the range – but why no timer standby?	Dolby B/C/HX Pro, variable bias	BB	75
Denon DRW-750 £250	Good Good	Polished and articulate, the only significant shortcoming is poor performance with prerecorded material	Dolby B/C/HX Pro, twin unidirectional, one records	R	69
Denon DRM-700 £250	Good Very Good	Sloppily executed (though attractive) user interface contrasts with a high standard of music making belying its modest price	3 head, Dolby B/C/HX Pro, record return	R	81
Denon DRM-800 £330	Good Very Good	There are some nagging faults and limitations (no timer standby is particularly annoying), but as a means of recording music it sets a very high standard	Dolby B/C/HX Pro, off tape monitoring, dual capstan	R	75
Dual 5850RC £269	Poor+ Average—	Average-to-middle deck which does most things well and skates over the more subtle things. Control system is uninspired but easy to master. Overpriced	Dolby C/HX Pro, bias adjust		87
Goodmans GSW-5200 £90	Poor Poor	Musically unimpressive but at least it's cheap!	Dolby B, twin, one records		69
Grundig Fine Arts CCT-903 n/a (system component)	Good Good—	[Competent part of complete Grundig system]. Solid and well engineered deck with small but significant problems preventing it scoring highly. Basic design generally – and transport specifically – are excellent	Dolby B/C, twin auto reverse, one records		69
Harman Kardon CD491 £695	Good Good+	Excellent audio engineering and tremendous flexibility make this an audiophile cassette deck 'par excellence'	Real-time counter, auto reverse, track search, Dolby B, C, HX Pro, bias adjust	R	52
Kenwood KX-440HX £130	Average+ Poor	Uneven, unstable sounding player with limited resolving power, but good control layout and finish	Dolby B, C, HX Pro, intro scan		63
Kenwood KX-3010 £170	Average+ Average	Minor ergonomic shortcomings notwithstanding, this is a workmanlike deck that only misses recommendation due to an azimuth problem leading to very dull sound with prerecorded tapes.	Dolby B, C, HX Pro, auto bias		75
Kenwood KX-4520 £260	Good+ Very Good	Some high frequency Dolby misalignment and obscure minor functions aside, this is a vital and engaging performer	Dolby B/C/HX Pro, 3 heads, various search functions	R	81
Kenwood KX-5010 £270	Very Good Excellent	This important new middle price deck is a well thought through and thoroughly developed design which eschews gimmicks for the sake of musical excellence	Dolby B/C/HX Pro, auto tape calibration, track/intro search	BB	69
Kenwood KX-9010 £400	Very Good Average+	Clean, detailed but flat and overtly hi-fi-ish sound quality makes the 9010 a little less than the sum of its parts.	3-head, auto tape calibration, Dolby B/C/HX Pro, remote control		75
Marantz SD-40 £170	Average Average—	Transitory sounding electronics mar a basically good recording machine. Prerecorded material suffers from effects of Dolby pumping	Dolby B/C/HX Pro, bias adjust		81
Marantz SD-50 £220	Good Very Good	Fine, exacting all-rounder offering good stereo, precision and focus. Good with prerecorded tapes too.	Dolby B/C/HX Pro, track & intro search, variable bias etc	R	81
Marantz CP230 £300	Average Average	This is a competitively priced portable recorder though not suited to replay of musicassettes	Dolby B, bias adjust	R	52

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CASSETTE DECKS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Marantz SD585 £300	Average Average—	Sound quality is a little sat upon, and control ergonomics are somewhat opaque, though the twin auto-reverse/recording capability makes this a powerful machine	Dolby B/C, twin auto-reverse & record, parallel recording etc		69
Marantz SD-60 £350	Good Very Good	A first rate, highly capable deck offering energetic yet refined sound largely due to good electronic design	3-head, Dolby B/C/HX Pro, variable bias & sensitivity	R	81
Marantz CP430 £399	Average Average	Uniquely flexible and compact package for outside work which at a pinch can double as a domestic cassette deck. dbx is useful for location work; results with Dolby B are acceptable	Portable 3 head, dbx, fine bias, ever-ready case and charger/adaptor	R	87
Memorex SCT-5 £150	Bad Poor	Poor example of a twin cassette deck where everything has been sacrificed on the altar of flexibility	1 rec/play, 1 play only transport, Dolby B/C		87
Memorex SCT-84 £200	Average + Average +	The playback only transport is a little disappointing, but the record one is a quality item and the deck works well. Ergonomics are good, but styling and control feel are decidedly tacky.	Dolby B/C, fine bias, twin with auto-reverse record, unidirectional play	R	69
NAD 6300 £550	Very Good Very Good	Solid and homogeneous sound quality and very good replay compatibility thanks to 'play trim' Distinctive, musical – and costly	Dolby B, C, HX Pro, 3 Head, bias adjust	R	63
Nakamichi CR-1E £345	Very Good Good	Modestly equipped by any standards, the CR-1E stands or falls by its build quality, which is high, and sound which is highly competent	Dolby B & C		57
Nakamichi CR-2E £395	Very Good Good +	Ordinary to look at, in some respects rather awkward to use (tape switching especially), the CR-2E sounds very slightly better than the CR-1E, and therefore ranks well. But it doesn't come cheap	Dolby B & C, bias adjust, remote control	R	57
Nakamichi RX-202E £545	Good Very Good +	Fine, clear and articulate sounding player. Excellent with prerecorded material, but idiosyncratic and sometimes obstructive control system	Auto reverse, Dolby B, C, 2 Head	R	63
Nakamichi RX-505E £895	Very Good + Very Good +	First class recorder with near state of the art performance. Auto reverse tape system raises a few smiles, but provides auto-reverse without the usual compromises	Unidirectional auto-reverse, 3 heads, dual capstans	R	87
Nakamichi CR-3E £595	Very Good Very Good	The user interface is a little clumsy, though conceptually straightforward. Sound quality approaches the CR-4E, and is amongst the best at the price.	Dolby B & C, bias adjust, remote control	R	57
Nakamichi CR-4E £745	Very Good + Very Good +	High class deck with a reasonably full range of features and superb sound at a slightly unlikely price	Dolby B & C, bias adjust, remote control, 3 Head	R	57
Nakamichi CR-5E £995	Excellent Excellent	A slightly simplified version of the all-conquering CR-7, the CR-5 has a very similar standard of audio performance – the best	Dolby B/C, fine bias, 3-head	R	69
Nakamichi CR-7E £1500	Excellent Excellent	Remarkably this deck is not only ergonomically but also sonically superior to the Dragon, particularly on record/replay	Real-time counter, track search, Dolby B & C, tape alignment adjust, bias adjust, remote control, 3 Head	R	60
Nakamichi Dragon £1750	Excellent Excellent	Previous to the birth of the CR-7E, this machine stood head and shoulders above the rest. It is still the ultimate for musiccassette replay	Auto reverse, Dolby B & C, tape alignment adjust, bias adjust, remote		60
Onkyo TA-2120 £130	Average + Good	Clear, vivid sound with good timing and resolution when using Type II tapes without Dolby. The controls are less inspiring – the meters in particular are plainly inadequate	Dolby B/C, auto tape sensing, block/side repeat	R	63
Onkyo TA-2200 £190	Poor Poor +	Mediocre, dynamically rather squashed sound quality, partly due to iffy transport. Messily equipped too	Dolby C/HX Pro, variable bias		87
Philips FC566 £179	Average + Average +	Mostly well equipped, though some tape search facilities fail to exploit the auto-reverse capability. Sounds clean and stable – with prerecorded tapes too	Auto reverse, track search, Dolby B & C		57
Philips FC870 £250	Average Average	Disappointing at the price, this is a well equipped deck with off-tape monitoring, but a somewhat listless, smeared musical style	Dolby B/C/HX Pro, 3-heads, track/intro search etc		81
Philips FC567 £279	Average Poor	Well equipped but ergonomically substandard; sound quality is messy and lacking in clarity and dynamics	Dual deck, auto reverse, track search, Dolby B & C		57
Pioneer CT-337 £130	Average Average +	Simple but well made machine with a slightly soft but consistent standard of reproduction	Dolby C/HX Pro, CD synchro, mic inputs	R	87
Pioneer CT-447 £170	Good Good	An excellent and affordable package, decidedly OTT in the display area but capable of genuinely fine musical reproduction	Dolby C/HX Pro, auto tape alignment, track search	BB	87
Pioneer CT-656 £250	Good Good	Well conceived and executed low cost 3-head recorder. It benefits from and makes good use of metal tapes, but is never less than couth and stable sounding – even with ferric tapes	3 heads, off tape monitoring, fine bias, Dolby B/C/HX Pro	R	75
Pioneer CT-737 Mk II £350	Good Average +	Easy to use and sensibly equipped, the CT-737 is much improved, but sound quality is still a tad lacklustre	3-head, Dolby B/C/HX Pro, manual record bias/sensitivity		75
Pioneer CT-959 £450	Very Good Very Good	Near state of the art for £450. Engineering is of a high order which reflects in an open window sound quality, but playback response is very bright (being corrected by manufacturer)	3-head, var bias & eq, multi-mode meters, Dolby HX Pro	R	87
Pioneer CT-91a £500	Very Good + Very Good +	Superb, near state of the art recorder with an excellent dual capstan transport and very capable electronics. At the price, this one is a mould breaker	3-head, tape calibration, Dolby B/C/HX Pro	R	75
Revox B215 £1,727	Very Good Very Good	Fine, consistent and solid sound quality, with excellent under the skin engineering and many useful features – but you're also paying for the same	Dolby C/HX Pro, 3 heads, dual capstans, auto tape align	R	87
Revox B215-S £1,826	Very Good Very Good +	This is a superbly engineered deck with a classically fine performance that almost transcends the stereotypes. Ergonomics are flawed but the user interface is both powerful and flexible	3-head, dual capstan, Dolby B/C/HX Pro, auto calibration	R	75
Rotel RD-845 £130	Below Average Good/Poor*	Extremely fine transport and clean sounding electronics for the price. Bass lacks weight, but deck works remarkably effectively with chrome tapes. *See text	Dolby B/C, manual tape selector	R	81
Rotel RD-855 £180	Average Good	The transport is OK and the various frequency responses are erratic, but good basic electronics help the Rotel deliver. Coherent, enjoyable and informative	Dolby C memory stop & repeat, track search	R	87
Rotel RD-865 £200	Good Very Good	Fine, architecturally solid sound quality in a package with a low gimmick count and strong audiophile appeal	Dolby B/C/HX Pro, fine bias	BB	75
SAE C102 £549	Average + Good	Looking most unlike a cassette deck designed in the States and proving competitive in its price group. Not sonically that outstanding, however	Real-time counter, track search, Dolby B & C		52
Sansui D-X301i £180	Average + Good	Lively, informative and well equipped basic deck, if rather obscure operationally	Dolby B/C/HX Pro, variable bias, track search	R	69
Sansui D-X501 £230	Poor Poor	Unhappy mixture of good looks, excellent ergonomics and mediocre, sometimes poor sound	Dolby B/C, random track search		81
Sansui D-X701 £340	Average Average	A little flat and smeared under some conditions, this design is at its best with metal and prerecorded tapes	Dolby B/C, 3-head, variable bias & output, track search		81
Sherwood DS-1135C £100	Average + Average	Excellent value. There is a low level constant background drone, and Dolby C recordings sound flat and coloured. Elsewhere sound quality exceeds expectations	Dolby B/C/HX Pro	R	87
Sherwood DS-7000R £230	Average— Poor	Rough and ready cassette deck in which sound engineering has been sacrificed on the altar of extra selling features, namely three heads for real time off-tape monitoring	3-head Dolby B/C/HX Pro		87
Sony TC-RX110B £90	Poor + Poor +	Woolly bass and scrappy treble combine to make a meal of many music types, despite accurate response shapes with most types of tape. Prerecorded material sounds dull	Dolby B/C		75
Sony TC-TX55 £150	Average Average +	The sound quality ranking is a good one for an auto reverse machine at this price level. Clean, sharp sound, only slightly let down in the deep bass.	Auto reverse, Dolby B, C & HX Pro	R	75

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THE DIRECTORY

CASSETTE DECKS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Sony TC-K520 £170	Average+ Good	Fine, assured and detailed performer with a very well designed and straightforward user interface	Dolby C/HX Pro, variable bias, display on/off	BB	87
Sony (WMD6C) ProWalkman £249	Good+ Very Good	"One of the finest sounding cassette decks on the market today. A mandatory Best Buy, which also fits in your pocket"	Dolby B. & C	BB	60
Sony TC-K850ES £400	Very Good Very Good+	Near state of the art recorder with excellent recording quality, and even better playback performance. Sounds — and looks — best with the display turned off	3-head, Dolby HX Pro, bias/level adjust, dual capstans	R	87
Sony TC-K730ES £500	Very Good Very Good+	First rate cassette deck that scarcely betrays it is a cassette deck on audition. Features and control wise, it feels a little dated	Dolby B. C, bias and equalisation adjust	R	81
Teac V-270C £89	Average— Average—	Not quite cheap enough to compete solely on price, the V-270C is a rather messy and unstable sounding deck	Dolby B & C, bias adjust		63
Teac V-480 £129	Average Average+	A rather utilitarian model, the V-480 just makes it on to our recommended list by virtue of a clean, open sound that to an extent transcends the measurements	Dolby B/C/HX Pro, fine bias	R	75
Teac W-470 £129	Average— Average	A low grade transport is allied to respectable electronics to give sound quality ranging between acceptable and good. Prerecorded tapes sound bright	Twin deck, one records, Dolby B/C, intro-search		75
Teac V-870 £349	Good+ Good	Cut-down V-970X for the proletariat. Expensive and carefully engineered with mostly very good but slightly cold sound quality	Dolby B. C, HX Pro, 3 Head, manual tape calibration	R	63
Teac V-970X £449	Very Good Very Good	An excellent sounding deck with useful features (tape calibration etc) that fully justifies the price	Real-time counter, track search, Dolby B/C/dbx & Dolby HX Pro, bias adjust, remote control, 3 Head	R	57
Teac W-990RX £445	Good Good	A mess with dbx, but taut and articulate otherwise. The 990, though expensive, has a powerful range of features, making it one of the few really ambitious decks to successfully straddle both sets of requirements	Dolby B/C 9 dbx, dual auto-reverse/record, parallel & sequential recording, remote	R	69
Teac R-919X £489	Very Good Average	Superbly equipped, yet usable — and well built too. But sound quality is something of a disappointment at this price level, being appropriate for a model about half the price	3-head auto-reverse, tape calibration, Dolby B/C/HX Pro/dbx		75
Technics RS-B555 £160	Good+ Good+	Very good value. Resolution, stability and quality of set-up are strong points, a slightly strained, synthetic quality is sometimes apparent	Dolby B/C/HX Pro, bias adjust, track search	BB	81
Technics RS-B665 £199	Average— Poor	Disappointing deck, below par by Technics standards. Lacks detail and neutrality due to electronics and transport limitations	Dolby C/HX Pro, track search, fine bias, mic inputs		87
Technics RS-TR255 £160	Average Average	Neat, sensibly designed middle of the road dual transport recorder, suitable where the ability to dub tapes is a particular priority	Twin transports, one records and auto-reverse, Dolby B/C	R	75
Technics RS-TR265 £170	Average+ Average—	Flexibility and build quality are strong suits, and the control system is a gem, but performance is unduly compromised by the range of features and sharp pricing	Dual auto-reverse, one records, Dolby HX Pro		87
Technics RS-B655 £200	Good Very Good	Excellent middle price deck, well equipped with a not over-refined but highly articulate and crisply defined style of musical presentation	Dolby B/C/HX Pro, bias adjust, track search	BB	81
Technics RS-TR355 £200	Average Average	Serviceable middle market dual deck without serious fault but with some annoying inadequacies, notably an inability to play side A and B and then stop	Twin auto-reverse, one records, Dolby B/C/HX Pro		75
Technics RS-TR555 £300	Average+ Average	Sound quality varies with mode of use, but is rarely less than competent, and is often highly enjoyable, dbx is best avoided	Dual auto-reverse/dual record/Dolby B/C/HX Pro & dbx	R	81
Technics RS-B905 £350	Good Good	Good, well set up cassette deck with a clean, accurate sound but some compression, dbx circuit sounds poor	Dolby B, C, HX Pro, dbx, bias adjust, 3 Head		57
Yamaha KX-230 £140	Average+ Average+	A strong near-budget performer, the strengths include good overall sound, excellent search aids. Weaknesses: ergonomics, soggy bass with prerecorded material	Dolby B/C/HX Pro, variable bias	R	75
Yamaha KX-330 £170	Average Good	Cramped control panel but a strong, dynamic and comparatively stable performance distinguish this strong middle-price deck	Dolby C/HX Pro, optional remote control	R	87
Yamaha KX-530 £230	Good Good	Excellent all-rounder that does most things at least competently and many things well. One of the best middle price decks	Dolby C/HX Pro, 3 motors, optional remote control	BB	87
Yamaha KX-630 £300	Good Very Good	Well equipped and immaculately presented, offers fine, articulate music making with a bias towards high bias tapes, especially metals	3 head, Dolby B/C/HX Pro, optional remote	R	81
Yamaha KX-800 £330	Good Average	The present Yamaha range seems oddly inconsistent. This sophisticated model sounds fine (almost) but came a clear second best to the KX-500	Real-time counter, track search, Dolby B. C, HX Pro with play trim, bias adjust, 3 Head		57
Yamaha KX-930 £400	Good Average	Worthy but ultimately slightly disappointing mixture of fussy ergonomics and tidy but cluttered sonics	3 heads, dual capstans, Dolby C/HX Pro, remote control		87
Yamaha KX-1200 £500	Excellent Average+	A veritable rats' nest of buttons and dials, albeit well laid-out. This is nearly a great recorder, but lacks simplicity of sound	Real-time counter, track search, Dolby B, C, dbx, HX Pro, bias adjust, remote control		52

DAT RECORDERS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa Excelia XD-001 £1300	Very Good Very Good	Clear and very listenable recorder roughly comparable to but slightly sweeter sounding than the Sony DCT-1000ES — but with an inferior front panel design	Track ID and search, remote	R	63
Grundig Fine Arts DAT-9000 n/a (system component)	Good Good	Conventional DAT recorder offering standard facilities. The deck is well made and equipped, and is engineered to a satisfactory quality standard. It performs to an acceptable standard, though it is not state of the art	2/4 hour recording, mic inputs, digital in/out		69
Luxman KD-117 £1499	Good Good	Slightly soggy, earth-bound sound quality, this model trails the other DAT decks tested so far	Two analogue inputs, remote twin address		63
Sony DTC-M100 £799	Very Good Very Good	Clean, clear sounding 2nd generation model with most of the features and sound of the DTC-1000ES	Mid-width, alpha-numeric display, remote, optical interfaces	R	63
Sony DTC-1000ES £1299	Very Good Very Good	Fine, consistent performer with accomplished tape handling and good build quality	Standard track ID and search, remote	R	63

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CD PLAYERS

This all-digital music source is well established, despite still high disc prices and the opposition of many hi-fi enthusiasts. Compact Disc's strengths over conventional vinyl are complete freedom from surface noise with automatic and programmable play, plus track skip and fast music scan – frequently under full remote control. However, many vinyl enthusiasts find CDs sound less involving than

top quality vinyl replay.

Introduced five years ago at around £500, CD players now average less than half that price, and for the most offer improved performance besides. Even cheaper players may have the latest decoding chips and the most useful play features: extra money can buy remote control, remote volume control, audio 'tweaks', plus improved build and component

quality control.

Compared with many hi-fi components, CD players give impressive lab performance, though there are differences between players nonetheless. **Sound quality** variations are even more marked, particularly in a good quality system. As it behaves very like a preamp, there are no problems connecting a player to a normal amplifier

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa XC-007 £499	Very Good Good	Creditable sound despite inverted output, high tech engineering with very good lab performance. A worthy contender but not cheap.	Remote, keypad, timer, digital output, pseudo 20 bit, dual DAC		64
Akai CD-55 £230	Good Average—	Budget model which fails to compare with the CD52	Remote, hdph, Good programming		83
Akai CD-52 £249	Good Good	A nice surprise from Akai, genuinely good sound from this mid-priced model. Better linearity will help further.	Remote, digital output, headphone socket	BB	64
Akai CD-62 £330	Fair Very Good	Looks, build quality and the technical specification are right up to date. As it stands it sounds very good but if the indifferent lab performance could be improved, it would probably sound even better.	Remote, programme, hdph, comprehensive display etc	BB	70
Akai CD-73 £450	Good Average	A little uneven musically, the Akai tends to smother fine detail, but has first class dynamics and stereo imagery. Worth auditioning.	Track entry keypad remote, menu display (switchable)		62
Akai CD-93 £700	Good Very Good	Undoubtedly a CD player of real class in build, presentation, lab performance and sound quality, but also a shade expensive for formal Recommendation – though that's not to dissuade lovers of black lacquer wood finish.	Track entry remote, menu display etc.		58
Arcam Delta Black Box £260	n/a Very Good	This rich, powerful and articulate sounding DAC transforms the majority of medium price CD players	Needs D-out CD players	R	60
Arcam Black Box II £300	Very Good Very Good	An addition to the BB I, it also offers improved sound and more inputs	Optical and wired input digital decoder	BB	76
Arcam Alpha £375	Very Good Very Good	Arcam's new star, its best CD player yet and great value	Remote, hdph, etc, coax dig, out	BB	83
Arcam Delta 70 II £600	Very Good Good	Now in Mk II form a further improvement is seen in features, performance and sound quality. Solidly built and British	Now adds simple remote vol + std features: also display off	R	76
Arcam Delta 170 Transport £600	Very Good Very Good	While no bargain, this is a well made metal boxed transport providing clean digital data for outboard decoder/processors	Transport only, display off, usual programming	R	76
Ariston CD1 £345	Good Good	Easy on the ear compact disc for those who like their music Radio 2 flavoured. And it looks good	digital output, remote control	R	87
Cambridge Audio CD3 £649	Poor Good+	Unique internal configuration gives the CD3 a fluid and detailed sound falling off at the frequency extremes. The controls and displays are primitive	Optical/electrical digital out, remote control		87
Carver TL 3100 £340	Average Average—	The sound quality did not live up to the excellent fascia. Carver's DTL did not aid the indifferent sound	DTL sound shaping, usual facilities, remote, memory		76
Carver TL-3300 £700	Good+ Poor	Carver needs to listen critically to CD sounds; in our opinion, DTL does not improve the recipe	DTL, remote, programming, digital output		83
conrad johnson DFI £1,995	Average— Good+	Setting a decent standard and including an FET line preamplifier, the unusual DFI is worth investigating	Line preamp built-in, simple remote facilities		76
Deltec PDM-One £500	Average Very Good	A no frills audiophile bitstream converter at an affordable price	Coax-in, special cable and mains filter options	R	83
Denon DCD 620 £180	Average+ Average—	Not competitive on performance though feature pack is good	Hdph + vol, edit, remote		83
Denon DCD820 £270	Average+ Average—	A powerful combination of features and build for the money ensures recommendation. The sound is just good enough	Well equipped, power vol, edit etc, digital out	R	76
Denon DCD 920 £320	Good Average+	Highly featured and well presented but unexceptional performance	Everything! inc remote volume		83
Denon DCD1420 £400	Very Good Average	Superbly equipped with a fine lab performance, this modern player needs a touch more sonic spice to get recommended	20-bit, very comprehensive, remote, power volume etc		76
Denon DCD-1520 £550	Very Good Very Good	High tech, high profile, high gadget content, good sounding player at an almost affordable price.	Programme, hdph socket, remote, track entry, optical digital output	R	70
Denon DCD 3520 £1000	Very Good Good+	Built like a battleship this new model takes its place at the top of the Denon range with a smooth and powerful sound, quite free of graininess	Composite 20-bit DACs, full programming features	R	72

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CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Ferguson CD007 £130	Good Fair	The cheapest recommendation in the test group: don't expect the earth but the value is good	Manual, digital output, headphone socket	R	64
Ferguson CD008 £150	Fair Fair	Not as strong as its relatives. sample fault perhaps? Though performance is fair enough overall	Remote, midi digital output. 2x 0/s. timeshare 16 bit		64
Grundig CD9000 £1000	Good Good	Aimed at a market which puts external styling above sound quality. Although this player is of slightly above average competence in most departments it is expensive	Remote, programme, hdph socket, calendar display etc		70
Harmon Kardon HK7300 £199	Average Average—	Budget low bit technology, does not deliver enough for a recommendation	No remote, no digital out; basic control features		83
Harmon Kardon HK7500 £299	Average+ Average	Decided improvement over 7300 in all respects. Still fairly unimpressive sound	Remote, hdph + vol, remote vol, good programming, A-B repeat etc		83
JVC XL-Z1010 £499	Good Average—	Despite some high tech design and a good lab result this model did not deliver good sound quality	32 track prog., disp off, auto fade, 2 digital op		76
Kenwood DP-8020 £500	Excellent Very Good	Fine build and finish, a fine performer in the lab, and in sound quality	Comprehensive remote inc volume, display off, opt & coax digital output, versatile	R	83
Marantz CD50SE £330	Very Good Very Good	Souped up CD50 delivers reference performance in its class. Worthy successor to the '65SE legend	Full remote, power (7 step) volume Hdph, (fixed), FTS disc memory, Good programming	BB	83
Marantz CD60SE £380	Very Good Very Good	Luxury '50SE with superior remote volume and variable headphone socket: a fine performance all round	Optical digital output, full remote, power vol, FTS, hdph	BB	83
Marantz CD12LE £2800	Very Good Excellent	This top of the range two-box player may be very expensive but it is very well made. Technical performance is very good and the sound is the best from Marantz yet	Two box, digital processor, FTS, optical connection, hdph socket, comprehensive display, balanced output etc	R	70
Meridian 203 £495	Very Good Very Good+	Exceptionally lucid, transparent and solid sound 'bitstream' converter. Always tidy and easy on the ear, but doesn't bulldoze the craggy bits	Stand alone converter, 32-48kHz, optical/electrical i/p	BB	87
Meridian CD206 £800	Very Good Very Good	Fine build, finish and styling, very good sound, classy	Good programming, remote, coax digital output	R	83
Meridian CD208 £1490	Excellent Excellent	State of the art CD sound combined with a decent preamp and full remote control	Opt & coax dig. output, fixed and variable output. Hdph + remote level, Programming, phase invert	R	83
Micromega CDF1 Classic £1400	n/a Very Good	A very well made and stylish player from France, the CDF1 is a CD player for analogue lovers or as close as we've come across	Basic remote, digital output, suspended chassis	R	72
Micro Seiki CDM100 £3850	Very Good Good	One of the hernia inducing bricks of hi-fi, the Micro is extravagantly styled, finished and built. The good lab performance led to an 'only good' sonic display when the price demanded excellent	Balanced output, remote, display blanking		72
Misson Cyrus PCM II £400	Very Good Good+	Improvements in price and performance keep this classic remote player in the running	Remote vol, phase inv, display of, dig op, PSX option	R	83
NAD 5320 £169	Average— Average—	A low cost player devoid of features but at this low price it should still offer better sound	Budget facilities, 20 track program		76
Nakamichi OMS-1E £395	Good Good	This neat enough player doesn't really follow the Nakamichi tradition of providing exceptional sound quality while at the same time perpetuates that of selling at an above average price	Simple remote etc		58
Nakamichi CDP-2E £495	Very Good Good	It's ergonomically superior and has above average sound, but it isn't cheap. The standard of build quality and finish is first class which isn't quite matched by the sound quality	Programming, hdph, remote track entry, digital output		70
Nakamichi OMS-5EII £1500	Good+ Very Good	"... delivers near state of the art performance and build quality in a deliberately starkly functional package, but at a very high price ..."	Skip and scan, simple track programming, manual control		51
Nakamichi OMS-7EII £2000	Good+ Good	The only serious criticism here is of the price. And in our not always humble opinion you can get better sound quality for less elsewhere in Nakamichi's range	10 digit track entry keypad programming, headphones		51
Onkyo DX-1500 £170	Average Fair	Ruled out on the grounds of its poor DAC filter, but it's not so bad really given the price	Manual, 2x 0/s, timeshared 16 bit		64
Onkyo DX-7500 £490	Good Very Good	This comes close to the state of the art performance in many areas. It has lots of facilities and is well made too	Key pad remote, memory, hdph, comprehensive display, optical output etc	R	70
Philips CD610 £160	Average+ Average	Built down to the price the sound is OK while the package performance and features constitute fine value	Remote, hdph, programming etc	BB	76
Philips CD630 £250	Very Good Good	Large clear display with an international flavour. Strong Philips style, high value CD player	FTS, digital op, versatile programming, remote, remote vol (7 steps) hdph (fixed)	R	83
Philips CDC875 £300	Average+ Average—	The changer works well and this machine is very well equipped. The sound quality is below par but may not matter too much in its likely 'muzak' application	6 disc changer/dig op remote, hdph, memory, shuffle		76
Philips CD840 £350	Good+ Very Good	Philips best yet and bitstream too! Very versatile programming and easy to Recommend. Fine stereo imaging for price	FTS, hdph + vol, full remote programming	BB	83
Philips CDV185 £350	Average+ Average	Hard to value with the video singles facility but it all works well enough for a recommendation	Video singles + CD scart + digital out etc	R	76
Pioneer PD9300 £499	Excellent Average	A mid price flagship of excellent build and lab performance but only average sound - interesting though	Remote, 24 track programming, 2 digital op		76
Pioneer PD-91 £899	Excellent Very Good+	Close to state of the art in nearly all areas - soundstaging, clarity and simple lack of artificiality. A well made and sophisticated player	Track entry remote, calendar display, index search, etc.	R	64
Proton AC-120 £180	Average Average—	Fine styling, low price but barely average performance	15 track memory, simple design, remote, hdph		76
Radford DAC1 £895	Good Good	Fine but slightly dated and costly package in performance terms - but flexible, musical and well built	DAC with 2 electrical + optical i/p, tape out		87
Radford WS1 £1095	Good Good	This player fails only in subtle ways. It is not the most engaging of players, but it is strong, forceful and dynamic, and it remains one of the better Philips 16-bit clones	Programming, intro scan etc	R	87
Revox B126 £649	Very Good Good	Made in Switzerland so the build quality and technical performance is high but then so is the price and the sound quality is only good	Programming, Revox remote system compatible		70
Revox B226S £840	Good Average	Top quality build and finish for the Revox system enthusiast. For high value sound look elsewhere	Remote vol, hdph, 19 track memory, digital op		76
Rotel RCD-855 £250	Good Good+	Stripped for action this well built Philips technology player delivers fine performance and sound. First rate value	Remote, 20 track prog, 1 audio op, 1 digital op	BB	76

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CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Rotel RCD-865 £300	Average Good	Curious mixture of bold musical presentation and foreshortened imagery. Grows on you though. One to audition with care	'bitstream', remote control	R	87
SAE D102 £700	Good Good	Considering the high price of this player, most of the innards seem fairly prosaic. Sound quality and lab performance are both respectable enough, but hardly justify the price premium involved, though styling is unusual	Remote (inc volume), skip, scan etc.		58
Sansui CD-X711 £550	Excellent Very Good	Luxury features, finish and sound from this classy Sansui; no excuses required here	Balanced and normal op, Digital; opt & coax; hdph + vol, remote full programming	R	83
Sharp DX150 £129	Fair Fair	This is a none oversampled player which is rather outclassed for technical and sonic merit by the vast majority of the competition. Pretty enough but would you want to put discs in it?	Programmable, skip, search, repeat		70
Sharp DX750 £179	Fair Fair	It has a remote control but it's too like the 150 which is rather outclassed for technical and sonic merit by the vast majority of the competition	Remote, programmable, skip, search, repeat		70
Sonographe SD1 (by CJ) £799	Good Very Good	Distinctive with oak end-cheeks, using Philips based 14 bit x 4 oversampling, Conrad Johnson electronics make this a musically rewarding player	Full search programme and timing	R	51/Coll
Sony CDP-228ESD £400	Very Good Average+	Good value, this is Sony's best mid price design and comes superbly equipped	hdph, remote, rem vol, custom file	R	76
Sony CDP-338ESD £600	Excellent Good	Only a bit better than the 228 the 338 is a good machine, but not quite good enough for formal recommendation at the price	Custom file, remote, rem vol, hdph, shuffle etc, 2 digital op		76
Sony CDP-X7ESD £1300	Good+ Average	A Sony flagship, build and finish is exemplary. styling is unusual but the sound is just average	Custom file, remote, 2 digital op, balanced audio + phonos		76
Sony CDP-R1/DAS-R1 £5000	Very Good Excellent	Sony has aimed high with the R1 and in some ways has created the reference player. Build quality is amazing and it offers a high level of facilities. One or two faults were revealed in both the lab and the listening, but it's generally excellent	Two box, dual optical connection, digital processor, FTS, remote		72
Stax Quattro £2995	Very Good Very Good	Now in mkII guise this substantial player recreated exceptionally strong and convincing bass lines together with a beguilingly musical midband	18-bit DACs, 20-track memory, full IR remote, variable o/p	R	72
Teac PD470LE £279	Average Average	With the LE upgrade the 470 has improved to a just average position	Remote, hdph, 20 track prog		76
Teac ZD880 £450	Good Fair	Decent enough in most respects with a very good build and finish. Its sound isn't competitive enough to inspire any real enthusiasm	Remote, track key access, auto space, comprehensive display, hdph socket etc		70
Technics SL-P277A £160	Very Good Average+	High value, budget priced, yet well equipped and finished, a strong example in its group	Remote, programming, hdph + level. No BB digital op.		83
Technics SL-P550 £220	Very Good Average	Superb, slick presentation, well equipped, average sound, fine build	Remote vol (6 steps) hdph + var, remote programming, edit/fade, digital optical only		83

CD MIDI SYSTEMS

So you want a hi-fi, but you don't want to make a fuss about it. A pre-packaged system with everything matching up and no aggravation may not rank with carefully chosen separates on **sound quality**, but there's no denying the attractiveness or popularity of this approach – the market for pre-packaged component hi-fi systems is at least as big as that for separate items, even ignoring the vast numbers of low-cost single unit stacker systems.

The arrival of compact disc led to a new fashion for shelf-standing compact systems, or 'midis' as

they are known in the trade, as a replacement for earlier floor-standing rack systems (themselves the upmarket development from music centres). Only some 330mm wide, midis can more or less match full-size (430mm) rack components for performance, and are certainly cheaper to make, ship, sell and buy.

Whereas specialist hi-fi is moving steadily towards ultra-simple 'no frills' components, midi systems tend to be sold on a feature count at a price point, usually with little opportunity for

demonstration and comparison. Our test programme includes extensive auditioning and lab testing, while making allowance for the different aspirations of designers and expectations of users. Key features valued highly by customers include system remote control, automatic switching, double 'dubbing' cassette decks, and elaborate equaliser tone controls. And the top end of the market is developing with surround sound audio/video-ready packages.

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa NSX-800 £550	Average Poor	Undetailed, undynamic and largely unmusical system which throws it all away for an excessive range of tape related features	One box miniature plus remote control & speakers with dual auto reverse cassette mechanisms, mic mixing etc		89
Aiwa X-D80K £550	Poor Poor	Congested and harsh sound quality, the cassette deck, amp and loudspeakers being well below par. The built-in timer adds some operational flexibility	Auto-reverse, CD synchro record, remote, timer		77
Aiwa X-D100 £1000	Average— Fair	Very fully equipped with wide ranging in and outputs but poor upgradeability. Sound quality is reasonable on the whole	Digital & optical in/outputs, dual auto reverse, disc file CD etc		77
Akai FX-800CD £700	Very Good Very Good	Well thought through as a functioning system. Lacks the usual surfeit of controls, and sound quality is of an unusually high order. An excellent buy even at this price	Twin record & auto reverse cassette etc with 'intelligent' remote	BB	89
Ferguson HFD28 £300	Poor Poor	Similar to Goodmans 5000 system but with greater power and marginally superior sound	One-piece, semi-remote		77
Grundig Studio Line 1 £330	Poor Average +/ Poor	Intriguing package with warm, woolly but attractive sound let down by poor attention to detail and suspect cassette deck. Amplifier appears to be inadequately protected	CD/cassette tuner plus preset equaliser		77
Hinari DK200 Disc Deck £300	Poor— Poor—	Confused user interface is matched to inadequate electronics. Poor – and poor value	Single unit, two cassettes, CD, tuner, remote		77
JVC Midi-W53 £500	Average Average	A potentially excellent middle price system spoilt by the loudspeakers and – to a lesser extent – the record player	Midi system with SEA equaliser		89
JVC Midi-W900CD £1111	Good Good+	A competent allrounder, with important convenience related features, and powerful linked recording facilities. Less strident speakers would be appreciated	Separates system, equaliser, auto-reverse cassette	R	65
JVC Midi-W91CDM £1111	Good— Average	Very well equipped (viz: multi-disc player, powerful tape related features) with acceptable but rather nondescript sound	Multi-disc player, twin auto-reverse cassette, equaliser		77
Kenwood M-54CD/CDS £600	Average+ Average+	The M-54CD is the version without speakers and is the one to buy. The control system is A1 and the range of facilities offered is dazzling, but the amp and CD player are crude	Dual auto-reverse cassette, tuner/timer, CD, turntable with or without speakers	R	89
Memorex System-550 £500	Average Average+	Above average electronics let down by very poor loudspeakers. Worth considering if the latter are replaced	Dual auto reverse cassette deck, tuner/timer, dual CD player, semi-auto turntable & speakers		89

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CD MIDI SYSTEMS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Pioneer P500 £400	Good Very Good	Inexpensive yet but high grade compact with excellent consistency between sources and plenty of presence	Compact system, remote control, dual auto-reverse cassette	BB	89
Pioneer S-11 £510	Average— Average—	Fine lower middle market system, with one useful extra – the built in timer. Only the record deck is disappointing	Twin auto reverse cassette, built in timers, one piece amp/cassette		77
Pioneer S-555 £800	Good Good	Confusingly well equipped, in some respects rather gimmicky system, weak on record performance (surprise!) but quite or very good elsewhere	Full feature midi system with graphic equaliser, dual disc CD player	R	89
Pioneer S-330D £1080	Very Good Very Good	High standard of reproduction on all sources, though mistracking with Dolby C was a limitation. There are few gimmicks and plenty of fine engineering	Dolby C/hx pro, multi-disc, amp with DAC etc	R	77
Proton AI-3000II £650 w/o spkrs	Average Very Good	Simple facilities and good, no-nonsense engineering combine to produce a system with genuine class. It's as easy to listen to as it is on the eye	Single box amp/tuner/CD/cassette with remote control; no loudspeakers	R	89
Sanyo 39CD £260	Poor Average—	Acceptably compromised basic low end system, offers broadly respectable if unambitious music making for those on a tight budget	One piece + CD, non-remote, manual tuner		77
Sanyo 49CD £300	Poor Average—	Similar to 39CD, but with Dolby B, preset tuning, remote control and more power. Audio wise, it's more of the same, but there's greater stature when loud and cassettes are helped by Dolby B	One piece + CD, partial remote control, digital tuner	R	77
Sanyo SYS-801CD £360	Poor Poor	Typical low end midi system: simple controls, adequate CD and tuner, poor turntable and cassette, awful loudspeakers	Remote control midi system		89
Sanyo 59CD £380	Average— Average—	Adequate performance overall, though endemic lack of pitch integrity takes edge from tape and records. Some inconsistencies in control system too	As 49CD, + full remote, auto source select, separate turntable		77
Sharp CD-X17E £500	Average Average+	Highly specified miniature with detachable speakers, AC mains power only. Good sound let down by crude upper midband and treble. Expensive for what it is	CD luggable with dual cassette & tuner, detachable speakers		77
Sharp 320E £500	Poor Poor	Poor quality system featuring tacky styling, a lack of sophistication – and overpriced	One box midi & turntable with surround matrix		89
Sony Compact 302D £400	Average Average+	Fine low to middle price system whose only significant weaknesses are the poor tuner behaviour with weak signals and the turntable	Auto-reverse record, unidirectional play cassette, graphic equaliser etc	R	89
Sony LBT-V702D £700	Average + Good	Creditable up-market system with detachable speakers and excellent cassette deck, amplifier, and a relative absence of superfluous gadgetry	Twin auto-reverse cassette deck, tuner/timer, video in/out circuitry	R	89
Technics CDC30 £600	Good Good	A fine record player-less system whose electronics are well made and of moderately good performance, it's rescued from anonymity by excellent loudspeakers	5 disc multiplay top loading CD player, twin auto-reverse cassette, tuner	R	89
Technics CDX50 £750	Very Good Very Good	Conventional, well built but button bound sound system with a nearly adequate turntable and excellent loudspeakers etc.	Dual auto-reverse cassette system (tested with optional equaliser)	R	89
Yamaha AST-C10 £530	Average + Very Good	Brilliant if flawed luggable with weighty, powerful bass, and a rare combination of expressiveness and clarity unprecedented from such a small package. Good features.	Mains portable twin cassette/CD/radio system detachable speakers, remote	R	77
Yamaha YST-C11 £600	Average + Good	The cassette deck is a little wobbly in tone, but CD and FM are excellent, and bass depth is unusually prodigious from such small loudspeakers, though paid by with some loss of subtlety	'Astarte', dual auto reverse cassette, luggable, with remote control		89

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 receiving certain transmissions in the UK.

Something of a hi-fi afterthought, tuners are often selected merely to match a chosen amplifier

cosmetically. However, the task they carry out is far from simple (or cheap), 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 digital displays; they are often preferred for sound quality, and are certainly best for AM bands. Digital tuners offer convenient automatic tune facilities and hold many station positions in pre-set memories.

(The Lab and Sound results for models tested in issue No. 65 refer to FM only. For AM results see under Comments.)

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Akai AT-52L £150	Very Good Very Good	Holds its own on FM against many much more expensive tuners, but AM is very poor	All bands	BB	65
Akai AT-93L £250	Good + Good +	By AM standards presentable (good) while FM delivers the goods	All bands, aerial switch	R	65
Arcam Alpha £120	Good Average + +	Attractively classic British analogue tuner with sound quality comfortably better than most	FM/am analogue	BB*	50
Arcam Delta 80 £300	Very Good Very Good	Hi-fi sound on FM, good on AM, a dependable British all-rounder	6AM, 6FM presets, FM/mw, lw display manual tune	BB*	55
Harman Kardon TU920 £299	Good Average	Rather weak sound quality for the price despite good lab test results	16 presets, AM/fm, digital auto scan, active tracking		55
Harman Kardon Citation 23 £559	Good Very Good	Fine performance, interesting features and ease of use are this tuner's forte, and the sound quality is top notch	FM/am seek/manual adjustment muting, 16 presets remote control	R	60
Linx Theta £475	Good Very Good	A Magnum Dynalab on the cheap with the hallmark styling of this small British newcomer. Some of the best midrange from any tuner	Manual analogue tuning, no presets, signal strength meter	R	72
Magnum Dynalab FT101 £599	Good Very Good	Although expensive for its fairly minimum set of facilities its excellent sound makes up for what it lacks elsewhere	Analogue manual tuning, no presets, signal strength meter	R	72
Marantz ST35L £125	Good + Average—	It works well enough but the sound could be better for the money	16 presets, AM/fm, digital auto scan, active tracking		55
Meridian 204 £525	Good + Good	Pleasant sounding with a fine finish but does not make the grade at this price	FM only, auto scan, digital, remote, clock timer		55
Musical Fidelity TI £300	Good + Very Good	Top class FM stereo sound on good signal strengths from this audiophile model. Watch out for local CB!	FM only, analogue box dial, manual tune, signal meter	R	55
Naim NAT 01 £1294	Very Good Very Good	There may be better sounding tuners in the world, but we have yet to hear one	No presets. Two box, flywheel tuning FM only, Analogue	R	50
Nakamichi ST-7E £750	Good + + Good +	Exceptionally good for weak-signal areas, and good all round	16 AM/fm presets, Schotz enhanced sensitivity, auto time digital		55
Onkyo T9090 II £590	Very Good Very Good	It has most of the facilities you could possibly want and more beside. Lab performance and sound quality are both good enough to ensure recommendation even at this price	FM only, digital, 20 presets, auto scan etc.	R	72
Pioneer F91 £350	Excellent Good + +	Easy to use, this model has excellent RF performance and scored very high ratings on the listening tests	FM/am 24 presets	R	60

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TUNERS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Proton AT-300 £199	Good Good	The AT-300 is pretty on the outside, orthodox on the inside and rather dear. AM – poor	FM/mw only	R	65
Quad FM4 £329	Very Good Good+	Fine sound, excellent ease of use, good build and finish and a more than satisfactory technical performance	7 presets. Digital	R	50
Revox B260 £1120	Excellent Very Good	Sophisticated and expensive, the B260 is ideally suited to the rest of the Revox range and should also work well in other systems	FM – virtually everything	R	60
Rotel RT-830AL £110	Good+ Good	Fine sounding budget audiophile material, no frills, no fuss	Manual dial analogue. FM, MW, LW	BB	55
Rotel RT-850AL £160	Good+ Good+	Scoring well on listening tests and one of the best sounding tuners at its price level, it was a bit let down on AM but RF performance was good	FM/am, digital	BB	50
SAE T-102 £449	Good+ Good+	Expensive for all the radio you get, but sounds interesting. AM – poor	FM/mw only	R	65

Rating refers to original, tested model

HEADPHONES

There are a variety of different approaches to headphone design, and examples of each turn up in this group. Amongst the more expensive esoteric models, electrostatic drivers are used in square open-backed phones such as the Jecklin and Stax models. The majority of these come with some form of transformer which takes the signal initially from the speaker terminals on the amplifier. The actual speaker cables then travel from this unit via a

bypass switch to the loudspeakers

The more down to earth models feature dynamic drivers in circular open-backed designs. The advantage of open backs seems to be a correspondingly open sound and a less claustrophobic feel to the music. One can also of course hear external noises and irritate people on public transport.

The third category are closed-back designs,

which are useful in situations where it is necessary to block out background noise.

Another means of distinguishing different types is the way they sit on your head or ears. There are three styles: circumaural models enclose the ear and rest on the side of the head; supra-aural designs press on the outer ear (pinna); and intra-aural types rest inside the ear and are popular amongst users of personal stereos.

NAME PRICE	COMFORT SOUND	COMMENTS	TYPE	VALUE	BACK ISSUE FULL REVIEW
Aiwa HP-X30 £30	Good Good—	A flashy personal stereo phone which alternatively could be used at home. A slight LF tonal preference slightly colours the response, but it ain't a bad can	Supra-aural, closed-back, dynamic		75
Aiwa HP-V99 £50	Good— Average+	Horn loaded in-ear miniatures with plenty of guts but not enough transparency or bass to compete with the headbanded competition	Intra-aural, closed-back, dynamic		75
Aiwa HP-X80 £50	Good Good	A headphone that's highly suited to non acoustic music and portable sources, nicely made and slickly finished. Sound quality doesn't quite match the price	Supra-aural, closed-back, dynamic		75
Aiwa HPEX-200 £90	Good Good	Modern looking and well finished the Excelias, as they are dubbed, had meaty bass and sounded reasonably open for the type	Circumaural, closed-back, dynamic		63
AKG K135 £35	Poor Fair	Despite a very appealing design the K135s don't live up to the usual AKG standards, though they do have the ability to reproduce rhythm well	Supra-aural, semi-open, dynamic		63
AKG K145/S £58	Good+ Good+	Electrostatic tweeters combine with a dynamic mid/bass unit to create very confident sounds in a comfortable headphone. Balance is on the bright side	Supra-aural, semi-open, electrostatic/ dynamic	R	75
AKG K240 Monitor £60	Very Good Good	Something of a classic these AKGs are very user friendly in all respects; sonically on the warm side of neutral	Circumaural, semi-open, dynamic	R	63
AKG K280 Parabolic £110	Good Very Good	A very revealing and unusual twin driver design that uses the same principle as a satellite dish to beam sound into the ear	Circumaural, open-backed, dynamic	R	63
AKG K340 £136	Good Excellent	Heavyweight cans in most respects, the K340 with its electrostatic tweeter is a very revealing headphone. Gives the total electrostatics a good run for their money	Circumaural, closed-back, electrostatic/dynamic	R	75
Audio Technica ATH 909 £55	Average Average	Quite impressive in the treble though a bit bass shy, the 909s worked well at high levels	Circumaural, semi-open, dynamic		55
Audio Technica ATH 910 £65	Average Good	The closed-back 910s are an improvement on the 909s with a nice rhythmic quality rarely found with headphones	Circumaural, closed-back, dynamic	R	55
Audio Technica ATH-911 £75	Very Good Very Good	Nicely finished dynamic headphones with all the trimmings, plus a very clean and subtle sound	Circumaural, open-backed, dynamic	R	63
Beyer DT 325 £30	Very Good Fair	Lightweight in more ways than one, the 325s may be a little bright for some systems and tastes but will suit duller sources	Supra-aural, open-back, dynamic	R	63
Beyer DT330 Mk II £45	Good Poor	Not the most revealing 'phones encountered, the 330s were nevertheless enjoyable and rarely offended	Circumaural, semi-open, dynamic		55
Beyer DT550 £69	Good Good	On their own the 550s sound articulate with a slightly 'gritty' treble and 'keen' midrange: not suitable for headbangers!	Circumaural, semi-open, dynamic		55
Beyer DT880 £90	Good Good	Well made cans with a warmish sound but fairly solid midrange, though they're not that informative for the price	Circumaural, semi-open, dynamic		63
Beyer DT990 £119	Very Good Very Good	The 990s are definitely a significant pair of dynamic headphones: they have a smooth and yet revealing, neutral sound that is hard to criticise	Circumaural, open-back, dynamic	R	55
Beyer IRS690 £200	Good+ Very Good	High quality infra-red headphones with soft comfy earpads and mellow but informative sound quality which is hard to dislike	Circumaural, open-back, dynamic	R	75
Jecklin Float Model One £79	Good Very Good	Whilst very unusual in appearance the Floats give remarkable sound quality and openness at a reasonable price	Circumaural-ish, open-back, dynamic	BB	55
Jecklin Float Model Two £99	Good Very Good	Helmet shaped and pretty unflattering but open sounding and comfortable in the long term. Note lack of adjustment means you should try before you buy	Circumaural-ish, open-backed, dynamic	R	63
Jecklin Float Electrostatic £399	Good Excellent	One version of the state-of-the-art, these electrostatics have an openness of sound rarely found in the breed, with good dynamic range to boot	Circumaural-ish, open-back, electrostatic	R	55
JVC HA-D990 £65	Good+ Good+	Good looking well made cans that offer good sound quality for the money. Sonic nature is of the easy-going, laid-back variety	Supra-aural, closed-back, dynamic	R	75
Koss TD/60 £20	Good Average	Although they're devoid of channel identification and have a decidedly Stateside approach to sound, these are very listenable phones for the price	Supra-aural, closed-back, dynamic		75
Koss K/6X Plus £30	Fair Poor	'Sixties-style' phones from the good ole US of A, their sonic style is unique and can make a system sound quite different	Supra-aural, closed-backed, dynamic		63
Pioneer SE-72 £30	Good+ Average—	Neat, nicely made personal stereo oriented phones along the lines of Sony V3s. Sound is on the veiled side, good for aggressive sources	Supra-aural, closed-back, dynamic		75
Quart Phone 30 £40	Good Fair	Whilst not as seductive as their PMB25 predecessor the 30s are reasonably neutral and do improve on some of the competition – though not stunning	Circumaural, semi-open, dynamic		63

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HEADPHONES

NAME PRICE	COMFORT SOUND	COMMENTS	TYPE	VALUE	BACK ISSUE FULL REVIEW
Quart PMB 25II £40	Good Good	Despite a somewhat unconventional suspension system the 25s put in a convincing and enjoyable performance with warm yet lively balance	Circumaural, open-back, dynamic	BB	55
Quart Phone 70 £70	Good Good	Competent performers that were hard to criticise but lacked the life and sparkle of which some of the competition are capable	Circumaural, closed-back, dynamic		63
Quart PMB 65 £70	Good Good	Quite revealing and neutral albeit with the usual closed back sound, this competes well with more established models	Circumaural, closed-back, dynamic	R	55
Quart PMB 85 £90	Fair Very Good	These more expensive Quarts bear a striking resemblance to the Jecklin Float models and use two drivers per ear. Sound is a bit bass heavy but not bad overall	Circumaural, open-backed, dynamic		63
Realistic Pro-X £25	Poor Average—	Robust, unanimously uncomfortable and heavily veiled in sonic terms – not a great success	Supra-aural, closed-back, dynamic		75
Ross RE2530 CD £20	Average Average	Rather an 'average' £20 phone that some found uncomfortable due to high pressure on the ears. Sonic balance is on the bright side	Supra-aural, closed-back, dynamic		75
Ross RE2560 CD £25	Good Average+	If you're not too fussy about quality of finish and don't have an elfin head then these British phones warrant attention. Sound could be smoother	Supra-aural, semi-open, dynamic		75
Ross RE-2760 £35	Poor Fair	Stylish white cans from the only British firm in the business. Unfortunately sound quality is not up to par in this price range	Supra-aural, closed-back, dynamic		63
Sennheiser HD40 £20	Very Good Good—	Very light and comfortable headphones with an even sonic balance that will suit most sources, but jack is 6.3mm and not suited to personals	Supra-aural, semi-open, dynamic	BB	75
Sennheiser HD450 £35	Good Fair	Modern, simple and lightweight phones that are remarkably robust and which turned in a relaxed if weighty performance that was at worst pleasant	Supra-aural, semi-open, dynamic	R	63
Sennheiser HD480 £45	Good Fair	Using the same shell as the 450s, the 480s were a little softened and unrevealing by comparison with their competitors	Supra-aural, semi-open, dynamic		63
Sennheiser HD520 £65	Good+ Good+	A very comfortable and musically capable headphone. If you've got this sort of bread to blow on cans, give 'em a blast	Circumaural, semi-open, dynamic	R	75
Sennheiser HD530 £75	Very Good Good+	One of the better dynamics in its group, the 530s create a sense of space that eludes most sub £100 cans, and they're dead comfy to boot	Circumaural, semi-open, dynamic	R	75
Sennheiser HD540 Ref Gold £160	Good Very Good	The 540 Golds prove that dynamic headphones can be subtle, informative and capable of creating a remarkable sense of space	Circumaural, open-back, dynamic	R	55
Sony A21L £20	Good— Good—	Forward facing in-ear drivers on a folding plastic band provide exceptional clarity for such an inexpensive phone. However, no bass, and fit isn't to everyone's taste.	Intra-aural, semi-open, dynamic	BB	75
Sony MDR V3 £30	Fair Good	Portable stereo oriented phones that are very nicely made and combine clarity with a pleasant lack of distortion	Supra-aural, closed-back, dynamic	BB	63
Sony MDR V7 £70	Very Good Very Good	Classy sounding cans that are very slick and work well with all types of music, setting the standard in their price range	Circumaural, closed-back, dynamic	R	63
Sony MDR-CD999 £120	Good+ Very Good	A very nice headphone in all respects, the 999s are worthy of the best headphone outputs and high quality sources	Supra-aural, semi-open, dynamic	R	75
Sony MDR-R10 £2500	Excellent Very Good+	Costly state of the art sealed moving coil design built to the highest standards using the finest materials. Sound quality reflects this care, being big, clear, sweet and refined	Circumaural, closed-back, dynamic	R	72
Stax SR34 £140	Fair Very Good	The least expensive Stax headphones around, the SR34s are lively and rhythmic with good tight bass and a sweet midrange	Supra-aural, open-back, electret		55
Stax SR84 £210	Very Good Very Good	The stepping stone between dynamics and full electrostatics, these electret phones are revealing, open and highly enjoyable	Supra-aural, open-backed, electret	R	63
Stax Gamma pro/SRD-X pro £296/£230	Very Good Excellent	The Gamma pros are like a stethoscope for your hi-fi, revealing subtleties that many loudspeakers fail to resolve	Circumaural, open-backed, electrostatic	R	63
Stax SR Gamma £299 (inc. SRD-6 Adaptor at £100)	Very Good Very Good	The next model down the Stax range from the Lambda, the Gamma is an excellent headphone with little to criticise but the price	Circumaural, open-back, electrostatic	R	55
Stax SR Lambda Pro £545 (inc. SRD-7SB Mk 2 Adaptor at £185)	Very Good Very Good	A bit of an industry reference the Pros are frighteningly revealing, bringing across more information than loudspeakers costing twice as much	Circumaural, open-back, electrostatic	R	55
Stax SR Lambda Pro £360/ SRM-1 energiser £635	Very Good Excellent	This combination extracts layers of information that other headphones only hint at. The SRM-1 has more edge than the SRM-T1, but it's good	Circumaural, open-back, electrostatic	R	75
Stax Lambda Signature/SRM-T1 £470/£895	Very Good Excellent	The Signature when combined with the SRM-T1 valve driver must be the most transparent headphone available	Circumaural, open-backed, electrostatic	R	72
Yamaha YHL-006 £30	Average Average	Unusual personal stereo oriented phones that curl up when not in use. Earphones are like golf balls and balance is well suited to Walkmans	Supra-aural, open-back, dynamic		75

PERSONAL STEREO

Whilst not exactly hi-fi components, personal stereos probably play more music to more ears than all manner of domestic systems and as such demand some attention. Now that personal CD players have joined the ubiquitous Walkman in the market, the variety and standard of sound quality is huge, with obscurely named cassette players practically falling out of your cornflakes packet and Discmen going for £300.

Despite their diminutive size personals attempt to incorporate as many gimmicks and features as

possible, cassette players often incorporating tuners, graphic equalisers and Dolby noise reduction. CD players are still relatively expensive and don't tend to vary that much on the features front, rather the amount and quality of accessories differs. Most models come with a mains adaptor and some include remote control

Sound quality on the cassette front seems to have a proportional relationship to price and integrity of construction – wow and flutter being quite obvious on the cheaper models. CD players

become less noisy as they get dearer and also reduce in size; one drawback of the latter seems to be that immunity to shock suffers as a consequence. Cassette players do, on the whole, seem better suited to the outdoor life than their digital counterparts, as does the software. Bear in mind that the sound and lab ratings given below cannot realistically be compared to those in other categories or between cassette and CD personals.

PERSONAL CASSETTES

MODEL NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa HS-PL300 £110	N/a Average	Good looking, simply laid out player with a sensible selection of features and reasonable sound quality for a small player of this price	Dolby NR, chrome/metal eq, remote		78
Aiwa HS-PX303 £150	N/a Good	Chunky and macho styling combines with comprehensive features and a half decent transport to make a powerful personal	Dolby B & C, chrome/metal eq, remote	R	78

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PERSONAL CASSETTES

MODEL NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Panasonic RQ-P505 £100	N/a Poor	Very attractive and neat little player with nicely designed controls and XBS bass boost, but sonically it's limited by distinct wow and flutter	Dolby, chrome/metal eq, remote		78
Panasonic RQ-P525 £120	N/a Average +	Fitted with what is effectively a bass only tone control and harbouring all the necessary features the 525 also has a knack with tape replay	Dolby B & C, chrome/metal eq, remote	R	78
Philips D6658 £30	Very Poor Poor	The low price limits sound quality, and this is not a spectacular machine, but it does a reasonable job nonetheless	Graphic EQ, AM/fm		56
Saisho PS90R £40	Poor Poor	A bit of a jumble of features and gadgets, the PS90R has on-board speakers, an extending aerial and even records, but sound quality is dubious	Graphic EQ, types I, II & IV, AM/fm, recorder		56
Sharp JC-270E £130	N/a Average -	Slightly old fashioned design combines with a basic feature count and mediocre sound quality to make an apparently uncompetitive player	Dolby, chrome/metal eq, remote		78
Sony WM-BF65 £90	N/a Average +	Regular size radio/clock/cassette player with a bright even open balance and Sony's forward facing phones. Not as glamorous as slightly more expensive models but sonically not bad	Dolby, chrome/metal eq, radio, alarm clock	R	78
Sony WM-701C £200	N/a Good -	Beautiful little machine with all the necessary buttons n' switches and a fundamentally exceptional sound quality, marred unfortunately by wow and flutter	Dolby B & C, chrome/metal eq, remote, folding phones		78
Sony Walkman Pro £249	Good + Very Good	One of the finest sounding cassette decks on the market today. A mandatory Best Buy, it takes other personals to the cleaners (except on weight and power consumption)	Dolby B, C, types I, II & IV, record, line in/out, varispeed	BB	52/56
Toshiba KT-4549 £80	N/a Poor	Fully equipped with 10 preset radio and alarm clock the KT-4549 is a bit aggressive on the sonic side and the bass boost system lacks balls	Dolby, chrome/metal eq, radio, alarm clock		78

PERSONAL CDS

MODEL NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Goodmans GCD-10 £120	Average - Poor	Cheap, flashy and not short on accessories the GCD-10 is a rather noisy player that left a lot to be desired on the sound quality front	13.5 x 3.7 x 18cm, 478g, mains adaptor		66
Kenwood DPC-77 £270	Good + Very Good	Very chunky and well made, the DPC-77 is the only player to include a digital output and sounds very good through its analogue output - a suitable domestic alternative	12.8 x 3.5 x 14.5cm, 750g, digital output, mains & in-car adaptors	R	66
Philips D6800 £130	Average Average -	A competitively priced and reasonably attractive looking player whose sonic performance is somewhat marred by a rather grainy top end	13 x 4 x 17.5cm, 516g, 3" ready, twin hdph sockets		66
Sanyo CP-12 £260	Fair Good +	Sonically amongst the more enjoyable personal CD players and capable of revealing the musical aspects of a disc in an interesting and entertaining fashion	12.5 x 2 x 12.7cm, 380g, wired remote, mains adaptor	R	66

CD PORTABLES

CD Portables or Yuppie Blasters as we classified them are basically portable stereos gone digital, ie a compact disc player is included alongside the usual AM/fm radio and single or double cassette deck. Compact disc is a novelty that seems to add a fairly hefty premium onto the price of the standard ghetto blaster, but the improved sound quality over standard cassettes may justify this for some.

In virtually every case a CD output socket is

fitted which means that it's possible to play silver discs through a domestic amplifier and loudspeakers, thus they are some sort of substitute for standalone mains machines (as are the personal CD players). One drawback with having a CD player on board is that batteries are gobbled up even quicker than usual, up to ten batteries being required in some cases. Neither are the units particularly light, the heaviest weighing eight kilos!

However they do all run off the mains too, and come with an appropriate lead for this purpose. Other useful features common to most are spare input sockets to record from an external line source such as a preamplified vinyl disc signal, and microphone sockets for recording live events (although the usual lack of record level adjustment is a nuisance).

MODEL PRICE	SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa CSD-XL25 £150	Poor	It's cheap, cheerful and not too low on features but sound quality from disc is frankly uninspiring	Twin headphone sockets		73
Bose Acoustic Wave £750	Very Good	Not exactly a CD portable as it doesn't play discs, but a highly versatile and stylish radio cassette player that has bass	Input sockets, Dolby NR, PA capable etc	R	73
Grundig RR9000CD £300	Average	Relatively slick machine with full CD function and volume remote control, low on features for price and unspectacular sounding	Remote, motorised volume pot, condenser mic		73
Philips AZ8394 £200	Average -	Stylish in a wasp like fashion, unfortunately the disc playing lets it down somewhat but otherwise it's OK	Twin decks, graphic eq., bass boost, condenser mic		73
Sharp QT-CD43 £280	Average	Quite a beefy box that comes complete with remote control for volume and CD functions. It even has a surround sound option which enhances imaging	Clock, speaker outputs, powered volume pot		73
Sony CFD-D73 £280	Good	The model we received was intended for the Japanese market and thus may not be entirely representative but it made reasonable sounds and has novel features	UHF bandwidth, input sockets, graphic eq., Megabass	R	73
Sony CFD-DW83 £300	Average	A macho looking beast capable of highish levels, but unimpressive sound for the price. Nice styling and good for scratching	Clock, timer, balance, input sockets, graphic eq.		73
Toshiba RT-8089 £200	Poor +	Square and long but rather drab on the sound quality front, as well equipped as most but rather tinny in many respects	Clock, twin decks		73

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STANDS AND SUPPORTS

It's becoming more and more apparent that all the components in a hi-fi system benefit from being placed on the right kind of support. It is already acknowledged that performance of electro-mechanical transducers, such as turntables and loudspeakers, can be greatly improved by using highly rigid supports. This notion has been expanded to include electronics such as amplifiers and compact disc players, and inevitably a broad range of stands and supports have been produced to cater for this requirement.

With loudspeaker stands there seems to be two

broad schools of design. The most common is the open frame type which uses square section steel tubing (usually less than an inch square) made up to form a tripod or quadropod stand usually fitted with spikes top and bottom to ensure good coupling to both floor and cabinet. However, for reasons of domestic harmony this latter option is often not pursued as eagerly as perhaps it should be. The alternative approach is to use mass. Larger section (approximately 3 inch x 2 inch) tubing is welded between square top and bottom plates and filled with sand and/or lead shot. Again, this type uses

spikes at the base but Blu-tack or the like for coupling with the speaker cabinet.

Equipment supports generally place isolation quite high on the list of priorities and usually use a lightweight steel frame to support an MDF platform. Once again spikes are used to minimise contact with the platform and ensure good coupling to the floor. Minimising weight without compromising rigidity seems to be the aim with turntable supports but those designed for electronics often employ some form of damping to kill vibration, sometimes in the form of mass.

LOUDSPEAKER STANDS

MODEL PRICE	TYPE FINISH	COMMENTS	TOP PLATE SIZE HEIGHT	VALUE	BACK ISSUE FULL REVIEW
Appolo A820 £44	4 leg Fair	A light open-framed budget design slightly lacking in rigidity and subjectively superceded by other stands costing £10 more.	19 x 19cm 53cm		58
Appolo A10 £52.50	4 leg Fair	A robust and lightweight model, it would make an ideal upgrade for those still happy with the big boxes of old.	19 x 19cm 44cm	R	58
Audio Dimensions Classic 2 £110	4 leg Average	Built in the heavyweight tradition and damped with chalk. Solid, stable, tactile sound	20.3 x 20.3 x 52cm	R	83 supp
Foundation Fred £70	2 leg Average	With sand filling the Freds made speakers sound tight and coherent with a more even balance.	19 x 19cm 36/43/59cm		58
Foundation Sir Fred £80	2 leg Good	Upgraded 'Fred' with special in-fills. Sweet sound but one that also lacks bite and edge	19 x 19 x 46.5cm		83 supp
Foundation Maggi £159 to order	Pair Very Good	Made for Magneplanar and other similar panel speakers they seem to have a healthy effect on the sound quality thereof.	50 x 2cm 2cm	R	58
Foundation Pi £269 to order	2 leg Very Good	Overpriced in material terms the Pi nevertheless has a very positive effect on the low frequency performance of conventional speakers	20 x 20cm 25/38/46/53cm	R	58
Goldring Black Satin £65	1 leg Very Good	Screw together stand tastefully hewn from medite. Some loss of bass but still pleasantly rhythmic	18 x 20 x 46cm	R	83 supp
Heybrook Point 5 £55	3 leg Very Good	An unusual triangulated open frame stand that can help certain speakers sound more transparent and fluent – a good value stand	23 x 21.5cm 47cm	BB	58
Heybrook HBS1 £99	4 leg Very Good	With its new aluminium base frame the HBS1 fared very well in the listening tests. It allowed much of the speakers own 'sound' to remain intact.	23 x 21cm 47cm	R	58
Linn Kan II £79	4 leg Very Good	Built to support Linn's Kan speaker this stand is well suited to the task, but is less successful with other loudspeakers	19 x 16cm 59cm		58
Linn Sara £85	4 leg Very Good	The Sara exhibits some odd properties so its use other than with the Sara loudspeaker should be viewed with caution.	25 x 21cm 53cm		58
Monotrak Engineering M1 £58	1 leg Good	The M1 gave the mid and treble a commendably smooth and detailed presentation but bass sounded rather lacklustre and muddy.	19 x 18.5cm 48cm		58
Monotrak Engineering M4 £58	4 leg Very Good	Begging comparison with Heybrook's HBS1 the M4 maintained much of the openness and forthright detail of that model.	23 x 21.5cm 53cm	R	58
Monotrak Engineering M4S £58	4 leg Very Good	Its stature and stability would seem to mark it out as most suitable for smaller, lighter cabinets. The M4S possessed an open midband and clear treble.	20 x 17.5cm 53cm		58
Origin Live Three Leg £89	3 leg Good	An unusual tripod stand devoid of top plate and taking up more floor space than normal, subjective and technical performance was exemplary.	(support area) 22 x 17.5cm 52cm	R*	58
Origin Live Advanced £145	3 leg Good	One of three related tripod-like stands. Stable sound with good sense of depth and power	22 x 20.6 x 44cm		83 supp
Partington PP4 £60	1 leg Good	The PP4 offers a rather mixed performance, though when damped with sand infill it was less ready to embellish the overall sound and low frequencies became tauter and quicker.	18 x 16.5cm 48cm		58
QED TS22 Tristand £60	3 leg Very Good	Most tracks sounded uplifted or buoyant, never thick nor coloured. It worked well with most of the speakers tried and encouraged a fluid and revealing midband	19 x 17cm 45/50/58cm	BB	58
Stand Design Z20 £70	1 leg Excellent	Well built and finished with optional sand in-fill. Ideally suited to Wharfedale 505.2's	16.5 x 19 x 50cm	R	83 supp
Target T-40 £48	2 leg Very Good	Not very stable, tends to infer a slightly forward, ragged sound with diluted pitch	19 x 19 x 40cm		83 supp
Target HS20 £60	1 leg Excellent	This monopod stand can be used either filled or unfilled and encourages different characteristics in the sound accordingly.	19 x 16.5cm 53cm		58
Target HJ15/3 £100	3 leg Very Good	Sound quality was basically very good though without the sand infill some loudspeakers may sound a little unbalanced as both bass and treble regions are subjectively exaggerated.	28 x 28cm 40cm	R	58

EQUIPMENT SUPPORTS

MODEL PRICE	TYPE FINISH	COMMENTS	SIZE (H x W x D)	VALUE	BACK ISSUE FULL REVIEW
Alphason R444 £120	Rack Good	A heavyweight structure with stressed MDF shelves, ideally suited to the Sonata turntable	82 x 60 x 39.5cm	R	83
Audioquest Sorbothane Feet £40 for four	Feet Good	These large gumdrops are very useful for damping vibrations in amplifiers and especially CD players.	6.5 x 2.5cm (circular)	R	57
Cornflake TCS6 £60	Shelf Good	A squat and rigid frame supports a Medite top board with four adjustable spikes, better suited to suspended sub-chassis turntables.	43 x 23 x 33cm		57
Foundation Stable Table £100 (with Super Board)	Table Good	Similar to Stand Design's table though less well finished and certainly less stable	64 x 46.5 x 36cm		83
Origin Live Skyline Super £100	Table Good	An asymmetric table that helps provide a quick, lucid and solid sound with most decks	41 x 50 x 40cm	R	83
Roksan Equipment Table £169	Rack Good	An upgradable/expandable system suited to Roksan's Xerxes if not other competing turntables	65 x 52 x 38cm		83
Sound Organisation Table £55	Table Very Good	A deceptively simple structure that just happens to be engineered in a thoughtful, and ultimately successful manner.	37 x 45 x 35cm	BB	57

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EQUIPMENT SUPPORTS

MODEL PRICE	TYPE FINISH	COMMENTS	SIZE (H x W x D)	VALUE	BACK ISSUE FULL REVIEW
Sound Organisation Wall Stand £40	Shelf Very Good	The first of its ilk and still amongst the best, this simple framework represents a vast improvement over standard furniture shelves.	27.5 x 43 x 35cm	BB	57
Sound Organisation Z022 £97	Table Excellent	A small but costly table made from thin steel tubing. Suited to the LP12 but not other decks	49 x 45.5 x 36cm		83
Stand Design Duplex £75	Table Very Good	Well made and nicely finished, this table is broadly compatible with most heavy turntables	63.5 x 46.5 x 36cm	R	83
Target TT1 £46	Shelf Excellent	This rigidly braced shelf offers both good sound quality and material value for money	26 x 46.5 x 35.5cm	BB	57
Target TT2 £55	Table Very Good	Standing up to the best in most areas, the TT2's only real foible concerns a slight loss of bass 'slam'.	52 x 46.5 x 35.5cm	BB	57

* rating refers to original tested model

CABLES AND CONNECTIONS

Although cables and connections are sometimes thought to be the least important items in an audio system there has been a growing awareness in recent years that they have a significant effect on sound quality. To this end there is now a vast array of exotic cables and interconnects available to those interested in experimentation. The key observation on cables is that they are much more than mere accessories. Carrying the audio signal, just as any amplifier does, it's really not too surprising that they can influence sound quality

The characteristics of any cable are determined by the materials and topologies utilised in its construction. The purity of the conductor, nature of the insulator dielectric, mechanical construction, physical geometry, RF characteristics, efficiency of screening and finally the connectors themselves, all play vital roles in the sonic character. These factors tend to vary more with interconnect cables which are used to carry the signal between active components like pre and power amplifiers. The interconnects summarised here were tested in 1m

terminated lengths and therefore the results and prices relate to that length – some cables may well perform differently when used in longer lengths. What's more most cables are significantly cheaper if you are prepared to fit plugs yourself.

The features column contains information on the material make-up of the different cables with the following abbreviations: OFC – oxygen free copper, OFHC – oxygen free high conductivity (Audionote define the HC as high crystal), PC-OCC – pure copper by ohno continuous casting, LC-OFC – linear crystal oxygen free copper

INTERCONNECT CABLES

MODEL PRICE (per metre)	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Audioquest Livewire Topaz £35	Good Fair	Sounding 'bigger' and faintly richer than Reference 2, Topaz was also slightly grainy at the top end.	Gold-plated plugs, OFHC copper		59
Audioquest Livewire Ruby £49	Fair Good	Smoother sounding than the Topaz, the extended crystal Ruby is less grainy and coarse, better able to resolve complex passages.	FCL copper twin axial	R	59
Audio Technica AT6115 £40	Very Good Fair	This cable sounds somewhat 'quieter' than the original LC-OFC interconnect, but is also less transparent and three dimensional.	PC-OCC copper coaxial		59
Audionote Copper ANC £44	Fair Good	ANC sounded punchy with a faintly lean but tightly-focused bass character. This crystalline precision waned slightly at higher frequencies.	OFHC copper twin-axial	R	59
Audionote Flexible Silver ANS £99	Fair Very Good	ANS scored a hit with its transparent midband and revealing but quite unforced treble quality. Bass transients were slightly softened.	Silver signal & Copper screen	R	59
Audionote Silver ANV £154	Poor Excellent	Far weightier-sounding than the flexible ANS, ANV interconnect also possesses a fair degree of treble clarity and sparkle.	21 strand silver Litz		59
Budget Patch Cords see text	Fair Poor	As thrown in gratis with cassette decks and the like – frequency extremes were restricted and performances were veiled.	Thin coaxial		59
Budget OFC circa £7	Fair Fair	Subjectively, this cable did lift much of the aural fog experienced with scrawny standard hook-up leads.	OFC		59
Chord Mono-t £27/1.2m	Average+ Average+	Offers a slightly rolled-off treble but its rich sound is an upgrade from patch-cords	Unsymmetrical 4-conductor cable		83 supp
Deltec Slink £32	Good Very Good	Ideally used in lengths of under 4 metres, it errs on the lean side of neutral but has an uncommon transparency in the midrange.	4 silver plated OFC strands PTFE dielectric	BB	59
Deltec Black Slink £152	Excellent Excellent	Inherently neutral the cable faithfully reproduced broad and deep stereo soundstages with precise focus and a sense of tactility.	8 silver plated OFC strands PTFE dielectric	R	59
Deltec Gortex Black Slink £152	Very Good Excellent	A true reference quality cable providing an exceptionally detailed and transparent sound	Symmetrical, 8-conductors, Gore-tex ins.	R	83 supp.
Denon LC-OFC N/a separately	Very Good Fair	Supplied with Denon's dearer CD players this cable introduced a peculiar 'twangy' coloration at high frequencies, and a slightly soft bass.	LC-OFC, non-magnetic gold plated plugs		59
DNM Solid-core £23	Fair Good	Transparent in the midband and full of sparkling detail in the treble, low bass was slightly curtailed (unterminated price £2.30 per m.)	Single strand nickel-plated copper. Unshielded	R	59
Isoda Electric HC-05-PSR £54	Good Good	A pleasantly lively and fluid sounding cable though softens some subtle, midband detail	Aluminium + brass multistrand cable	R	83 supp.
Kimber Kable PSB £41.40	Very Good Very Good	An exceedingly transparent midband but slightly 'clanky' treble. It always managed to sound remarkably uncluttered and open.	OFC, PTFE dielectric	BB	59
Kimber Kable KC-1 £65.55	Very Good Fair	Tonally faintly leaner and brighter than the more open-weave PSB, KC-1's treble detail was just too sharp and grainy.	Multi-gauge PTFE dielectric		59
Kimber Kable KC-AG £390	Good Very Good	Treble detail resolution was perceived in a slightly abrupt if wholly controlled fashion. Depth re-creation and lateral separation were excellent.	Multi-gauge silver, PTFE dielectric	R	59
Monster Interlink 300 £24	Average+ Average	A big, larger-than-life sound but with some emphasis of midband detail and loss of bass	Screened, symmetrical cable		83 supp.
Monster Interlink 400 £34	Good Good	Bass is solid and punchy, counterpointed by a slightly overblown midband which tends to make vocalists sound larger-than-life.	Multi-gauge	R	59
Origin Live Soli-Core Super £60	Good Fair	Improves over previous Soli-core samples in stereo depth and bass weight, but a 'loud' treble presentation remains.	Solid-core gold-plated AT plugs		59
QED Incon P1-Gold £15.95	Good Good	A lively open presentation that just borders on the lean side of neutral, the quick and lucid delivery affording considerable musical insight.	OFHC, gold plated Deltron plugs	BB	59
QED Incon Graphite GP1 Gold £18.95	Fair Fair	A shielded version of Incon P1, it sounded thicker at the frequency extremes, the top end being coarser and more out of focus. Good for long runs though.	OFHC Graphite shielding	R	59
Sterling £250	Fair Good	Possessing a neutral if faintly rich overall balance it supplies a pleasantly open and transparent perspective. (Reviewed in pre-production form.)	2 silver strands per conductor		59
Supra EFF-1 £60/0.75m	Average Average	A new, costly and mildly disappointing addition to the range. Edgy, smeared sound	Screeded, symmetrical dir. cable		83 supp.

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INTERCONNECT CABLES

MODEL PRICE (per metre)	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Thorens SAC 100 £50	Good Fair	Performance is undermined by a slightly coarse and splashy treble, not necessarily bright, simply rather confused – and fine detail lacks resolution.	Silver-plated OFC, coaxial		59
van den Hul MC-D300II £45	Poor Good	It tended to highlight some upper mid detail, but a generally open and spacious acoustic proved its saving grace. Slightly soft at LF.	Silver plated single strand VdH plugs	R	59
van den Hul MCD-1021II £69	Good Good	Possessing the same endearing qualities as the D300 it presented open and transparent soundstages and improved timbral resolution	Twin axial silver plated copper	R*	59
van den Hul Thunderline £150	Good Fair	Thunderline essentially parallels the sonic performance of the cheaper D102. HF is occasionally tainted by a 'tizzy' 'coarseness', bass is tight and dry.	Silver plated 'matched copper'		59
van den Hul MC-Gold £250	Fair Good	It possesses a rich and beguiling treble balance that matches a weighty, slightly warm bass character. Seductive balance may prove worthwhile in some circumstances.	Silver & gold plated copper		59
van den Hul MC-Silver £750	Good Good	Although remarkably transparent for an asymmetric design this costly cable was not considered to be of 'state-of-the-art' standard, and is bettered by cheaper models.	19 silver plated copper strands		59
Vecteur 8045 £49	Very Good Good	Sounding solid and forthright it might seem slightly cold in some systems but the treble 'edge' is mercifully clean. Very low frequencies were a little lacking in 'slam'.	LC-0FC signal & screen	R	59
Yfere LC-0FC Quad £85	Very Good Very Good	New cable with a very refined sound. Very transparent with good sense of focus and space	Symmetrical, star-quad with screening	R	83 supp

LOUDSPEAKER CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Absolute Wire Force 4 £4.75 per metre	Good Fair+	By current standards there was a loss of fine, sharp detail at the frequency extremes, but it has a big and friendly sound	744 OFC strands, PVC dielectric		64
Audio Innovations OR-200 £16 per metre	Fair+ Fair+	Open and detailed throughout the midband but a grainy coloration tended to corrupt subtle timbral information at very high frequencies	200 LC strands, polyurethane and cotton dielectric		64
Audionote AN-SP £100 per metre	Average— Excellent	A clean and open sounding cable that offered a deep and pleasantly detailed perspective. Bass was slightly restricted, but seemed tight and coherent nonetheless	15 silver strands, polyethylene dielectric		64
Audioquest Livewire Black £15 per metre	Good Good	It proved clear and punchy but with some grain across the treble. Nevertheless Black remains an interesting concept and proved better than Livewire Green	OFHC, surface only – foam core construction	R	64
Audiospec Latitude L4 £3 per metre	Average+ Average+	Warm, ruddy but also mildly muddy sound with some slight emphasis of bass notes	Figure-of-eight multi-strand, PVC dielectric	R	83 supp
Audio Technica AT6120 £10 per metre	Fair+ Fair	Compared to earlier LC-0FC cables this PC-OCC derivative sounded smoother and less aggressive	PC-OCC, PVC dielectric		64
Bellwire 12p per metre	Poor Average—	Broadly speaking it delivered a bright and tizzy sounding treble with a fairly open and detailed mid with little or no bass resolution	0.5mm single strand, PVC dielectric		64
Deltec 8S £144 – 5m pair	Good Good+	The unerring transparency and detail resolution of 8S throughout the midband makes it a far cleaner and more spacious sounding cable than others at the price	4 silver plated OF copper strands, PTFE	R	64
Deltec Gortex Black 16 £528 – 4.5m pair	Very Good Excellent	Improvements in bass resolution, transparency and treble poise maintains status of this cable	Silver-plated OF copper with Gore-tex ins.	R	83 supp
DNM Solid core £3 per metre	Average Fair	A good general-purpose solid-core, though too bandwidth limited for high-end applications. Sounds great in some systems	0.65mm single strand, webbed PVC dielectric	R	64
Exposure £2.50 per metre	Good Good	It could sound a trifle matter of fact but this emotive flattening was also somewhat dependent on the music program. It is also highly suited to long runs	56 OFC strands, webbed PVC dielectric	R	64
Furukawa FS-2F09 £6 per metre	Good Average+	Some loss of bass weight but otherwise offers a fresh and open sound. Good value	Multi PC-OCC stranding, PVC dielectric	R	83 supp
Furukawa FS-2T15S £50 per metre	Good+ Very Good	An advanced solid-core cable with a highly fluid, detailed and inherently musical sound	Single 1.5mm Super PC-OCC strands	R	83 supp
Kimber 4VS £7.15 per metre	Average+ Average	Similar construction to 4TC but dissimilar materials infer a slightly tizzy sound	Open-weave, multi-strand with PVC ins.		83 supp.
Kimber Kable 4PR £54 – 5m pair	Fair Fair+	This directionally marked cable benefitted from an open and airy treble quality but seemed notably leaner than 4TC. Bass was well round and satisfyingly taut	4 x 7 copper strands per conductor, PVC dielectric		64
Kimber Kable 4TC £17.65 per metre	Good Good+	4TC made a great impression in the listening tests with an open midband, a smooth and un-fatiguing treble with slightly rich but suitably weighty bass	OF copper, PTFE dielectric	R	64
Linn K20 £2.20 per metre	Good Fair	Subjectively it erred on the forward and bright side of neutral but enjoyed an essentially clear and punchy delivery	56 OFC strands, webbed PVC dielectric		64
Marantz ML-55S £30 – 10m	Fair Fair	Subjectively this cable offered a loose and splashy treble which, though not overtly bright, did compromise both tonal and timbral accuracy	30 OFC strands, 3 conductors PVC dielectric		64
Mission Cyrus £2.50 per metre	Average+ Good	Because of its impedance characteristic this cable will deliver a smooth and un-fatiguing treble balance with loudspeakers offering an easy load	0.8mm single strand, PVC dielectric	BB	64
Monitor PC Silverline PC4 £5.75 per metre	Good Average	Sonically it laboured under a heavy and claustrophobic balance, lacking the see through transparency and lucidity of the better solid core cables	2072 x 0.07mm silver plated copper strands		64
Monster SCI 16-4 £3 per metre	Average Average	Not as thick-sounding as early Monster cables but still slightly unbalanced. Versatile construction	4 x 16-gauge conductors, OF copper strands		83 supp
Monster Original £4.50 per metre	Good Fair+	Original sounded relatively congested and murky at higher frequencies but possessed weight and conviction in the bass	Multistrand		64
NVA LS1 £6 per metre	Average+ Good	A light and breezy sounding cable best suited to short lengths. NVA benefitted from a clear and transparent outlook	7 x 0.25mm silver alloy strands, PTFE	R	64
Origin Live Soli-Core Ordinary £1.80 per metre	Good Fair+	Subjectively it bettered the performance of the costlier Super version, affording a pleasantly detailed and spacious soundstage with firm bass but slightly coarse treble	1.8mm and 0.5mm single strands	R	64
QED 79-Strand £1 per metre	Good Fair	For much of the last decade QED 79-Strand has been the first port of call for enthusiasts on the upgrading ladder, a tradition that should still hold true today	79 strand, PVC dielectric	R	64
QED Incon Graphite £2 per metre	Fair+ Fair+	This graphite version of Incon sounded cruder and generally more heavy handed than the cheaper unshielded type. Overall presentation was mildly restricted and cloaked in a faint aurai fog	OFHC, polymeric screen		64
QED Flat 200 £2.20 per metre	Good Good	I detected a degree of confusion at low frequencies but this did not stifle the acoustic atmosphere which remained open and positive	200 strands, flat webbed PVC dielectric	R	64

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HI-FI CHOICE SEE PAGE 130

THE DIRECTORY

LOUDSPEAKER CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Rotel Supra 4 £2.57 per metre	Good + Good	Ideal for both long and short runs, it furnishes a big sound that benefits further from a smooth, unfatiguing treble	1,036 OFC strands, webbed PVC dielectric	R*	64
Rotel Supra 10 £6.91 per metre	Good + Good	Supra 10 provided a very free and open sound that was unhindered by any excess at low frequencies. Worth its weight in scrap copper!	2,562 OFC strands, webbed PVC dielectric	R*	64
Solid core mains cable 36p per metre	Fair + Good	It enjoys much of the smooth treble and articulate midrange usually associated with the better solid core derivatives. Lean but taut and rhythmically coherent	1.5mm square, 3 cores, PVC dielectric	BB	64
Sterling £99 per metre	Fair Fair	This pre-production sample possessed a strangely muddled and reserved sound quality. It suffered from a progressive instrument modulation	Pure Silver, PTFE dielectric		64
Townshend Isolda £400 - 5m pair	Fair + Good	Isolda possessed a truly dark background out of which rose a very solid and extended bass together with an excellent sense of transparency through the upper octaves	8 coax cables per conductor - very thick	R	64
van den Hul CS-122 £5.95 per metre	Fair + Good -	Characterised by a driving and powerful bass, CS-122 proved to be a heavy sounding cable. Mid treble detail was refreshingly clear but there was a slightly muted air about the extreme treble	19 x 0.45mm silver plated strands, webbed rubberised dielectric	R	64
van den Hul CS-352 £12.95 per metre	Good Fair +	Subjectively it sounded like CS-122 only more so, the deep rumbling bass tending to overwhelm subtle musical details. It also appeared a trifle peaky in the treble	7 x 0.76mm + 168 x 0.125mm silver plated strands, rubberised dielectric		64
van den Hul SCS-12 £29.95 per linear metre	Good + Good +	SCS-12 set a high standard with a tight and well focused soundstage populated with tactile stereo images. Bass wasn't as extended or resolved as some other cables	19 silver plated strands of 12 different gauges, PTFE dielectric	R	64
van den Hul SCS-2 £99.95 per linear metre	Good + Good +	Overall it was commendably neutral and transparent but nothing less would be acceptable bearing in mind the tremendous cost of a stereo pair	665 silver plated matched crystal copper strands, PTFE dielectric	R	64
Vecteur R-CV30 £4.99 per metre	Fair Good	Subjectively the better of Vecteur's three-strong cable line-up offering a neutral overall perspective but with a slight loss of detail resolution at both frequency extremes	4 x 0.8mm LC-0FC PTFE insulated strands	BB	64
Vecteur S-CV90 £69 per metre	Fair + Fair +	It seemed both less transparent and integrated throughout the midband than R-CV30, though both frequency extremes were spruced up with a tighter sharper delivery	6 x 0.7mm LC-0FC strands		64

IN-CAR ENTERTAINMENT

In-car entertainment is an area not usually associated with the esoteric world of domestic hi-fi. However, it represents a source of musical entertainment that many of us are exposed to every day. The majority of new cars are fitted with some form of radio before they leave the showroom and in many cases this usually very basic player is taken for granted and accepted as representative of in-car audio standards.

For the price of a budget amplifier or more, there is a wide variety of in-car machines to choose from,

including cassette, CD and even DAT players. The majority of sub £300 players are integrated units featuring a cassette player, AM/fm tuner and amplifier, all in one remarkably compact standard sized box. At this price level the cassette players tend to be fairly basic affairs, although autoreverse and noise reduction systems are both fairly common. Tuners are usually of the digital variety with varying degrees of sophistication in signal tuning and presetting, with some machines featuring as many as 18 FM presets. The emphasis is on the frequency

modulated band and AM often suffers as a consequence, but fortunately for radio enthusiasts there are some exceptions

The amplifier is usually designed to drive two pairs of speakers mounted fore and aft of the vehicle, and a fader is fitted to adjust the balance between the two. The dearer machines feature separate bass and treble controls which can be quite handy given the unusual acoustic of the car environment and the variety in balance and presentation to be had from car speakers

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Alpine 7282L £250	Good Very Good	A very attractive and seductive sounding player. The matt surfaced transparent preset keys are especially sexy	Bass/treble controls, 12 FM, 6 AM presets, chrome eq., clock, 8W	R	61
Alpine 7905M/3539 £650/£350	Excellent Excellent	An easy to use and attractive CD/tuner, partnered with a powerful and flexible amplifier to give an effortless source of in-car entertainment	Bass/treble controls, 12 FM, 12 AM presets, slide-out, 150W	R	68
Clarion 916HP £160	Good Average	With its rubbery buttons and touches of white this is a modest looking player let down by a weak cassette	Bass/treble controls, 5 FM, 5 AM presets, 9W		61
Clarion 946HP £250	Very Good Very Good	A good FM side let down slightly by AM performance. This Clarion is particularly nice to use with its nifty SAM tuning system	Bass/treble controls, 12 FM/6 AM presets, Slot-in, 15.1W	R	61
Clarion CDC7000/10028HA £650/£250	Very Good Excellent	Despite a slightly off-beat cartridge system the Clarion combo put in a performance that had the sonic edge over other CD/tuners in its test group	Bass/treble controls, 12 FM, 12 AM presets, security code, 80W	R	68
Goodmans GCE229 £150	Fair Average	If knobs, switches and legends are your bag then the GCE229 is the one for you - a lot of gizmos for the price and it even sounds OK	Bass/treble controls, 6 FM/6 AM presets, Chrome eq., clock, MSS, 10.1W	BB	61
Nakamichi TD-400E/PA-300 II £495/£329	Very Good Very Good	If you want your in-car entertainment to compete on sound quality grounds with your domestic system, this combo offers a very strong challenge	Bass/treble controls, 5 FM, 10 AM presets, uni-directional, chrome eq., Dolby B, C, 75W	R	62
Nakamichi TD-700E/PA-300II £874/£329	Very Good Excellent	For those who appreciate the wonders of analogue there are few in-car players to really compete with this superb cassette/radio. You can even adjust azimuth	Bass/treble controls, 6 FM, 6 AM presets, music search, Dolby, 75W	R	68
Panasonic CQ-497 £117	Fair Poor	The CQ-497 has a traditional style analogue tuning system making it easy to use. AM reception was good but the other sources are less encouraging	Bass/treble controls, chrome, NR, 7W		62
Philips DC680 £180	Average Good	A colourful and musically competent player that despite a gammy volume knob is well worth checking out.	8 FM, 4 AM presets 3.5W	R	61
Pioneer DEX-M300/CDX-M100/ GM-3000 £300/£450/£280	n/a Very Good	Separate control unit and boot mounted multi play autochanger make this a bit of a hefty installation but it uses the same magazines as their domestic players and sounds fine	Bass/treble controls, 18 FM, 6 AM presets, 80W, removable fascia		68
Proton 214CD/D275 £300/£175	Very Good Very Good	This Proton cassette/tuner offers good power and a level of fidelity appropriate to its price. Musically it has a Decca-like charm that is very appealing, plus a sensitive radio	Bass/treble controls, 8 FM, 8 AM presets, Dolby B/C/nr, chrome eq., 85W	R	68
Sharp RG-F816E £200	Poor Average	Nothing if not novel the 816, with its unusual anti-theft system is custom built for the furry dice brigade, but is sonically a bit lacklustre	Four band graphic, 8 FM, 16 AM presets, ASP, Dolby, MSS, 10.9W		62

THE WORLD'S NO 1 GUIDE TO BUYING HI-FI

Personal Messages

This month Paul Messenger takes up a challenge and faces up to the listening room question.

After several months delving amongst exotic equipment supports, turntable power supplies and contact cleaners, it's time to devote this column to something rather more general.

I'm referring to the listening room itself, a topic which has forced itself into my consciousness at least twice this past month. I'm not proposing to trot out glib solutions to the personal (acoustic) space problems of every reader. Such panacea do not (yet) exist, because solutions can only follow the proper definition of the problem, and that itself is still far from being achieved.

It was during one of my regular but infrequent visits to Roy Gandy, Patron of Rega Research, that I was challenged to face up to the listening room question, which, on reflection, I've been avoiding for years. Roy is one of the industry's genuine iconoclasts, and takes great delight in goading the press by undermining our collective world view. No doubt his new and close-to-production integrated amplifiers will have a similar effect, but I shall pass over those for the time being.

No more trivia!

Having castigated me for overconcerning myself with what he regards as hi-fi trivia and minutiae compared to the influence of the room itself, he pointed out that the vast majority of dem rooms in hi-fi shops all over the world sound pretty vile, which is a sorry situation for an industry attempting to sell sound and musical quality.

It's a statement that has a ring of truth in my limited experience, and certainly there are very few people around that have as much experience as Roy, who has spent twenty years visiting hi-fi shops all over the world.

What I can confirm is that dealers who get deeply into the business of elaborate purpose-built dem facilities more often than not seem to

end up with eggy faces. And the statement is almost universally true of the dem rooms that manufacturers tend to create within the confines of their factories. Why do so many dem rooms sound horrible? In Roy's view a major reason is that they are not really rooms at all, the phrase 'elaborate purpose-built' alone ensuring that much. Although one does encounter the odd exception, there's sad irony in the fact that setting out with the best of intentions to build rooms with predictably good acoustics so often results in something which sounds lifeless and bland, if not downright unpleasant.

There's an even stronger thesis for the related observation that the acoustics of nearly all the prestige concert halls, opera houses and recording studios that have been purpose-built over the last century have been: "mistakes, near-mistakes or plain disasters", in the words of legendary Decca record producer John Culshaw.

Only serving to reinforce aphorisms like: 'a little knowledge is a dangerous thing', and 'can't see the wood for the trees', it's no coincidence that the past half century has also seen dramatic growth in the field of acoustic engineering and in the availability of relatively sophisticated acoustic measurement apparatus.

Instead of digressing down several fascinating byways, I shall merely refer readers to an excellent article called *Omni-Presence*, written by Keith Howard and published in the November 1984 edition of *Hi-Fi Answers*.

The nub of this piece is that the subjectively perceived sound balance of a loudspeaker is a subtle combination of both the sound reaching the listener directly and that which gets there by 'early reflection', from the nearby surfaces.

This has implications for both the speaker and the room, and Keith makes a

most persuasive case for taking the concept of omnior non-directional loudspeakers much more seriously than the UK has done in the past.

Villains of the piece

In Roy's view, the main villains of the dem room are the stud wall and the acoustic tile false ceiling, though virtually any attempt at surface absorption can be troublesome, especially if it is consistent over a large area.

Though domestic living rooms rarely feature false ceilings and deliberate acoustic absorbent, the walls either side of the speaker play a crucial role in supplying the early reflections which add to the direct sound and create the total balance. Their pattern of energy absorption or reflection - effectively their reflective frequency response - will influence the character of the total sound.

He didn't just tell me this, but went ahead and carried out a most unusual comparative demonstration, placing a pair of speakers in turn outdoors, against the side wall of the house (and so eliminating all side and rear walls and ceiling), in a small room largely constructed of studwork, and in a very large but solid and lively lounge.

Outdoors was all sweetness and light (sonically), apart from the background noise of wind, birds, passing cars and so on. The large lounge was comparatively 'shut in', but nonetheless nicely balanced. However, the small room sounded unpleasantly harsh and lacking in energy and vigour.

Roy's explanation is that even when skimmed, the plasterboard and support structure of a partition stud wall is actually a comparatively soft material that absorbs quite a lot of energy in the treble part of the spectrum. This dulls the total sound by effectively rolling off some of the high frequency energy above

about 5kHz, and in consequence suppresses fine detail while leaving the lower treble somewhat exposed (hence the harshness). The listener then tends to exacerbate the problem by turning up the volume in search of the lost detail.

Lacking a stud wall of my own, I haven't attempted to verify any of this. Roy says it's quite easy to hear (though quite difficult to measure) differences in the reflective responses of different construction walls by pointing a conveniently small but energetic loudspeaker (such as a Linn *Kan*) playing white noise towards the wall and listening from behind it.

I know it's not terribly helpful to come out with the sweeping suggestion that stud wall construction may be bad for hi-fi reproduction, especially for readers whose homes are built that way. I would stress that it's by no means yet proven in any case, though I'm sure it's something worth bearing in mind when choosing where to site loudspeakers.

If a room is composed of a mixture of outside and partition walls, for example, it would make sense to place the speakers against or close to the more rigid and less absorptive outside walls.

Where studwork is unavoidable, hanging pictures or placing items of furniture against it can help break up the continuity and so reduce the effect.

Assuming this phenomenon does exist, I can't help wondering about the implications. For example, it may go some way towards explaining the love affair that American hi-fi enthusiasts have for panel speakers. American builders have been using stud wall techniques for far longer and with much wider scope than we in the UK, while the directivity characteristics of panels (dipoles) reduce the amount of side wall reflection to a marked degree. Might there be a link?

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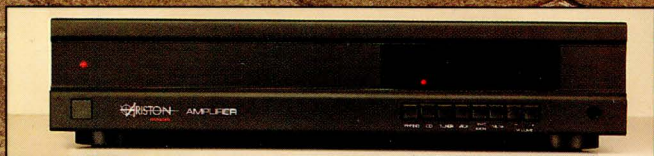
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