

# HI-FI CHOICE

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

SEPTEMBER 1991 £2.95

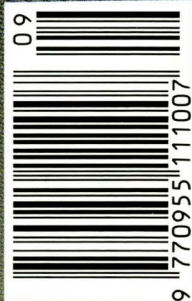
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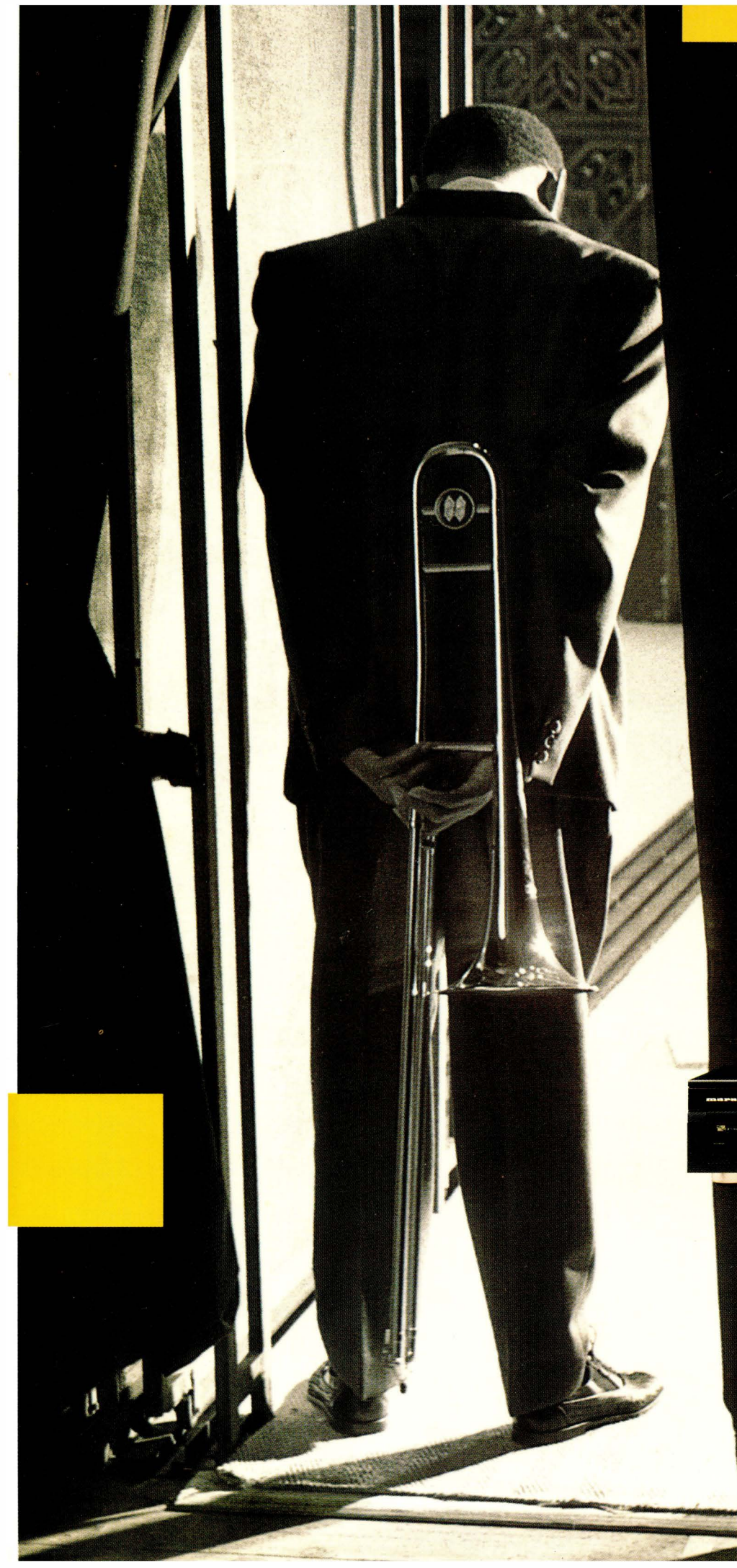
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EDITOR  
Andy Benham

CONSULTANT EDITOR  
Paul Messenger

ART EDITOR  
Andrew Ryan

REVIEWS EDITOR  
Jason Kennedy

PRODUCTION EDITOR  
Janet Moorhouse

SUB EDITOR  
Andrew Cartmel

CONTRIBUTORS  
Dan Houston, Barry Fox, John Seabury,  
Malcolm Steward, Roy Gregory, Richard Black

PHOTOGRAPHY  
Chris Richardson

GROUP ADVERTISEMENT MANAGER  
Fiona Hunt

ADVERTISEMENT MANAGER  
Rob Debenham

ASSISTANT ADVERTISEMENT MANAGER  
Miriam Young

CLASSIFIED SALES EXECUTIVE  
Jane Woolner

PRODUCTION MANAGER  
Jim Bulley

ADVERTISEMENT PRODUCTION MANAGER  
Lisa Nickson

SUBSCRIPTION MANAGER  
June Smith

NEWSTRADE CIRCULATION MANAGER  
Sean Farmer

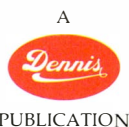
PUBLISHING DIRECTOR  
Marianne McNicholas

ADVERTISEMENT DIRECTOR  
Alistair Ramsay

MANAGING DIRECTOR  
Colin Crawford

CHAIRMAN  
Felix Dennis

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# Menu

**C**D prices are the most outrageous rip-off I have ever encountered. This is a statement that has been brewing for quite some time but, having recently returned from a trip to both the US and Japan, I am quite appalled by the iniquitous prices that music consumers in this country are having to pay for the silver discs.

Wandering around a Tower Records store in Los Angeles left me some \$50 lighter and the proud possessor of no less than four chart CDs. To buy the same discs from Tower Records in London would have cost me nearly £50. These CDs were relatively cheap by new release standards but the average price for a new release appeared to be around the \$14 - \$15 dollar mark, a far cry from the £12.99 that is threatening to become the norm in London. Japanese consumers also get a far better deal when it comes to purchasing discs. The average price tends to be around the eight or nine pound mark. This is a state of affairs that can only be described as outrageous. OK, so 17 1/2 percent of the UK price is VAT, but the basic price is still far too high to be accounted for by any explanation other than profiteering.

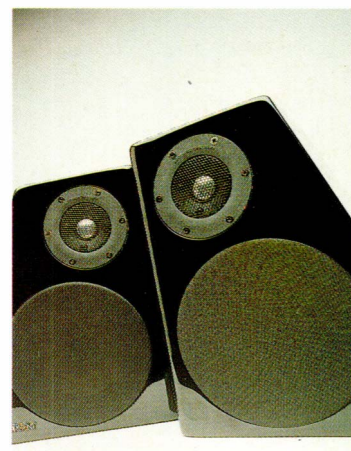
One of the great advantages of CD is that it is a universal format and discs pressed in any country and intended for any market can be shipped all over the world and sold where demand is greatest, in marked contrast to Laserdisc where the PAL/NTSC format hassle raises its head.

If CDs are so universal then how come we are expected to pay so much more for them than either the Americans or the Japanese? A recent ruling by the Press Council found in favour of the consumer magazine *Which?* after the BPI had lodged a complaint over the magazine's use of the words "rip-off" to describe the pricing of CDs in this country. The fact that *Which?* was completely cleared over the report, which alleged that "profiteering record companies are keeping the cost of Compact Discs artificially high", speaks volumes for the attitude of the record companies. Rather than try to sort the problem out they tried to gag the magazine.

In the very near future the record companies are going to be faced with another new format to release, be it DCC or Mini Disc. Let's just hope that sense prevails and they don't decide to milk the market for all it is worth and try and rip off the long suffering music fan yet again.

How about a little more music and a little less business?

*Andy Benham*



*Photography by  
Chris Richardson*

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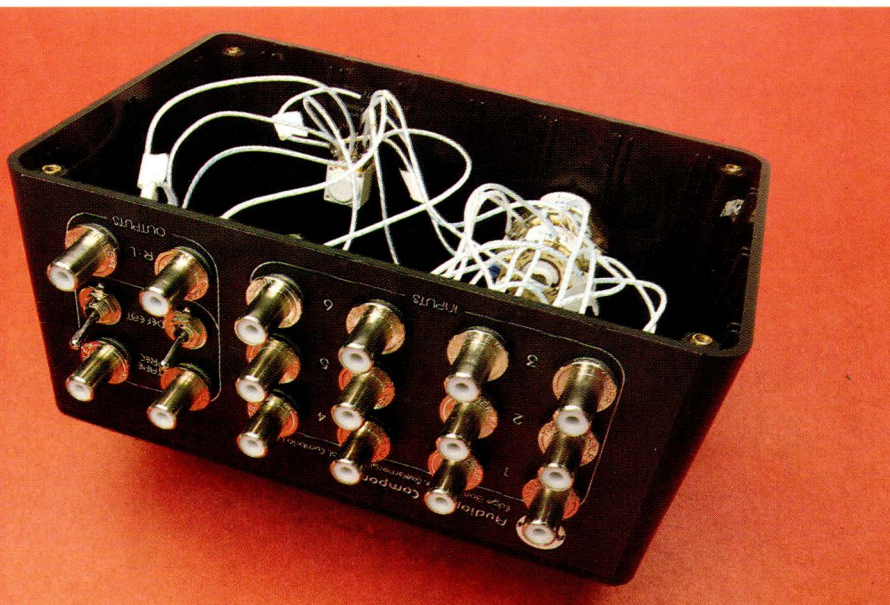
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*Paul Messenger checks out all these and more starting on page 57.*

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At a glance information including features, prices and comments on all the current products that we've tested in past issues of *Hi-Fi Choice*.

With well over a thousand entries, it even includes the results from this month's loudspeaker tests. Beware of cheap imitations, this is the real thing; 30 pages of detailed information including comments on sound quality, compatibility and value for money.

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Our resident anachrophile Paul Messenger puts the case for horn-loading.

# Update

## PRODUCTS

### Seven Sixes from Tannoy

Tannoy has just launched a new range of six sided loudspeakers. The Sixes range will replace all existing sub £1,000 Tannoys and consists of seven models all incorporating a novel hexagonal cabinet. The sonic advantages of the new shape include much reduced internal reflections, greater rigidity and reduced diffraction effects due to the softer angles at the edge of the front baffle.

The system offers constructional advantages as well, the chipboard cabinets can be wrapped in a circular fashion and then capped at either end with mineral loaded polypropylene crowns and bases. The crowns are inlaid with an unusual and quite attractive laminate, and the bases, which on the floorstanding models can be loaded with lead shot, are fitted with threaded inserts for spikes or attachment to the custom stands.

Tannoy has also been working on the drive units fitted to the Sixes, there are new 165mm and 200mm dual concentric drivers featuring the 'Tulip' wave guide which sits in front of the tweeter and creates a spherical wave front for optimum integration with the output of the mid/bass driver that surrounds it.

The range starts with the diminutive £120 603 and runs through the 605 (£150) and 607 (£200) until it gets to the first model to incorporate the dual concentric driver and the last model to require a stand the 609 (£250). Then comes the 611 (£400) which couples the dual concentric driver with a 200mm bass unit, the 613 (£550) which uses a 165mm dual concentric, bass unit and DMT which is a form of ABR, and finally there's the 615 (£700) which uses a 200mm version of the array found in the 613. All models are bi-wirable and come wrapped in black vinyl.



Tannoy's Sixes range of loudspeakers features hexagonal cabinets and dual concentric drivers.

### Sony's Princes

Sony's MDR-R10 King headphones have given birth to nine Princes, formally known as the MDR-CD series. The new range has been designed using the technology that was incorporated into the £2,500 MDR-R10, all the models are closed back

and have large circumaural earpads, the latter for reasons of long term comfort.

The most expensive model in the new range is the £300 MDR-CD3000, it incorporates a version of the 50mm biocellulose diaphragm found in the King, high rigidity vegetable fibre

composite shells, neodymium magnets and a composite collagen headband which is said to be nearly as comfortable as leather. The MDR-CD1000 (£150) uses the same diaphragms, magnets and headband with composite ceramic housings. The MDR-CD850 (£90) uses the same magnets with more conventional plastic drivers as do the rest of the cans in the range, as you work your way down through the MDR-CD750 (£73), 550 (£50), 450 (£42), 350 (£32) and 250 (£26) the differences come down to driver size and cable type.

### More Mana from Pinner

Pinner-based Mana Acoustics, maker of the Mana Reference sound table, has launched a cheaper option - the £99 Soundframe.

The two-inch high Soundframe uses the same principles and materials as the much-vaunted Mana Reference and is designed to be placed on a solid shelf or

Sony's new prince of headphones the MDR-CD3000.



similar platform. It is made of black angle iron, with the turntable supported by a square of 10mm glass plate. John Watson, for Mana, told *Choice*: "Originally we designed the *Soundframe* to take a pair of Martin Logan loudspeakers off the floor. But then we tried it with a turntable and thought it would be better for people with equipment racks who want to improve the sound further - it's not going to be sold as a speaker stand."

## Sound Distribution

Italy is traditionally famed for many things including its rich cultural heritage, great styling and a national cuisine that won't give you a heart attack when you turn 19. However, it has not previously been widely known for the manufacture of quality loudspeakers. HW International is seeking to change that by distributing the RCF line in the UK.

RCF's new range consists of the compact but substantially priced *Mytho 1* and *2*, which are around £600 and £800 respectively, the exact RRP depending on the choice of cabinet finish.

Also on offer are the



RCF's elliptical coned, *Mytho* range of Italian loudspeakers.

larger, floorstanding *Mytho 3* and *4* designs, which weigh in at £1,375 and £1,725 respectively.

All four speakers possess elliptic woofers with carbon fibre diaphragms and titanium domed tweeters. The full *Mytho* range will be on display at a hi-fi show near you in the near future.

## A cheaper multi room

A new through-house hi-fi system is being launched by the newly founded AMC company in the UK. Run by

*Let's go green: the Laserway Green Pen is a simple tweak for a CD based system.*



Malcolm Blockley, who put NAD on the map with his distribution company Hi-Fi Markets, the AMC Home Automation Series consists of a competitively-priced flexible switching unit (RSS14T) with add-on infra red sensors which controls up to four pairs of loudspeakers, with individual remote selection.

The sub-£200 unit will partner most brands of remote control hi-fi, say the makers, and as many as 16 of the units can be used together.

AMC is also hoping to demonstrate a range of electronics at the Penta Hi-Fi Show in September.

Two amplifiers promise innovative and exciting design around the £200 price point, and a Philips Bit Stream CD player, tuner, cassette deck and NICAM receiver will complete the lineup.

## Putting pen to disc

While Compact Discs are often described in terms of their user-friendliness, there are still a host of gadgets and cleaners being marketed to improve their sound quality or durability.

The latest of these is the *Lasaway Green Pen* - a £10 applicator with which to coat the edges of your Compact Discs.

The benefits of coating the edges of discs with a green felt tip have been known for several years; Kimihiko Sugano went into the background of his 'discovery' in July's *Aspirations* feature. The green ink cancels out refracted red light from the player's laser as it reads the disc - stopping it from bouncing back within the polymer layer. Information retrieval is the main benefit, though dynamics are reported to improve as well.

The difference between the *Lasaway* pen and a normal felt tip pen is that the ink has been specially formulated for the task. It leaves the edges of the disc covered in an opaque



Wire your home for sound with the AMC RSS14T through-house hi-fi system.

matt green paint which is resistant to wear.

The pens are made by the Mitsubishi Pen Company of Japan.

The ink is non-toxic, it will stick to the CD but won't harm it,' said Mike Cater, of Linkline, which imports the pens here. 'The ink won't flake off either; some inks might, and that would damage the CD player. We offer a money back guarantee as well, which you won't get with other makes. One pen will coat about 100 CDs, and we sell three for the price of two.'

### Neatly designed

Darlington based dealer Neat Hi-Fi has developed a loudspeaker - the £525 Neat *Petite*.

The diminutive model - a mere 30cm high, is a two way bass reflex (ported) design using a Japanese made 16.5cm doped paper cone and a 2.5cm soft dome tweeter made by Audax, of France. Internally all components are hard wired and the drive units are silicone mounted to prevent vibration.

The *Petite* is bi-wirable via two sets of gold plated Michell connectors. Finish is a black textured paint over the 16mm thick medite cabinet.

Designer Bob Surgeoner's aim in producing the *Petite* was to 'create a loudspeaker which produces vivid stereo



Sexy veneers and radiused edges characterise Celestion's 100.

with a credible sense of scale, authoritative bass and authentic treble'. The compact two way ported system was the best design for this aim he said, adding that doped paper cones and soft dome tweeters eliminate the 'implausible tinkle' of many competitive products.

### Celestion solo

Loudspeaker specialist Celestion has launched its £500 100 model, billed as the culmination of a decade's research and development. The two way speaker uses Celestion's 32mm aluminium dome tweeter with a 165mm Cobex cone mid/bass driver, both mounted flush within the baffle.

The crossover has been

kept simple, using a third order Butterworth design set at 2.2kHz. Gold plated terminals allow the 100 to be bi-wired, and internally separate feeds and star earthing minimise signal crosstalk.

Rigidly-braced, the cabinet is sealed and made from 15mm thick medite, with a rounded-off fascia to reduce defraction from the baffle.

The 100 is finished in a choice of real wood veneers balanced for symmetry in each pair - black oak and walnut are standard, while mahogany costs an extra £50. The speaker measures 425mm high and weighs 9.4kg. It is designed to be sited on 460mm or 610mm stands in free space.

The new design is being marketed as a solo product rather than as a part of one of Celestion's range of speakers. The company hinted that it may be joined by other models in a 100 Series in the near future.

### Marantz Manna

The ever bulging *Choice* mailbag was further inflamed recently by the response to the Marantz competition in issue 95 which put the company's top of the line CD transport and digital amplifier up for grabs. Having duly discarded the multiple entries from anybody called Jason Kennedy, Andy Benham or

Janet Moorhouse, the true winner emerged. D R Oliver of Biddenham, Bedford is the recipient of the CD-95DR, PM-95 and full function remote control, by virtue of being first out of the bag, getting all six skill testing questions correct and not being genetically linked to any member of the *Choice* editorial team. Well done to D R and better luck in future competitions to the multitude of others who contributed to our postie's latest hernia operation.

### Linn's CD player

Linn Products chose the summer consumer electronics show at Chicago to unveil a prototype of its new CD player - expected to be completed for production by January 1992. Typically Linn is playing its cards close to its chest, refusing to mention whether the two box DAC and drive system will be multi-bit or bitstream for instance. Anne Young, for Linn, told *Choice*: 'We previewed the prototype for our dealers, distributors and customers in the States to get some feedback from them before launching the product. There is no point in going into the details of technical specification because we still haven't finished work on it yet.'

Each part of the player, given the working name of *Dak* and *Mek*, will look similar to the *Kairn* preamplifier. All functions will be remotely controllable on the same handset employed by the *Kairn*, while manual controls will be hidden behind a flap-down door. Linn won't commit itself to a price although rumours of around £6,000 have been suggested by people who have come across the player. Linn ran a series of seminars and demonstrated the player at Chicago and claims reaction has been positive. However, no British journalists were allowed to enter the Linn room at the show!



Rrrret Petite, a small-is-beautiful product from Neat Hi-fi.



## SHOW REPORT

## The Chesterfield Show

The Chesterfield Hi-fi Show is fast establishing itself as the enthusiasts' show, Ian Ward brings back this report.

Chesterfield doesn't pretend to mimic the big industry shows like Penta, it simply cannot hope to replicate the sheer scale of such events. However, Chesterfield's diminutive stature is in many ways its forté; it gives the impression of being more a meeting of like-minded enthusiasts than a venture solely undertaken to promote products. Once again it was a pleasure to be able to venture into the various rooms with little evidence of queuing or overcrowding, and to talk with the various designers.

One such designer is Mark Baker of Origin Live. His company's emphasis at this year's show was on two new items, the two-motor *Oasis-S* (£895) turntable and the recently completed *OLI* speakers. These miniatures sport tweeters from the Focal range (highly rated by many other exhibitors at the show), and are batted down to an integral stand.

One of only two subwoofer demonstrations was to be found and in the REL Acoustics room. The *Stygian* 100 watt MOSFET



Origin Live's *Oasis S* turntable, a new two motor contender.

driven subwoofer could be heard supplementing a diminutive pair of AR speakers with remarkably articulate bass. The other subwoofer was to be found in the Pentachord room, a pentagon shaped coffee-table lookalike with delightful wood veneer finish. Also on display was an attractive new floorstanding design, which incorporates two bass drivers along with the metal Bandor mid/HF units. Available in passive or active versions prices range from £1,600 to £1,800.

### Awesome engineering

Tom Fletcher of The Nottingham Analogue Studio was demonstrating his new *Mentor Reference* turntable. This awesome piece of engineering differs from the standard *Mentor* by virtue of its superior bearing assembly and heavier (much heavier!) platter. Price? A snip at £4,400! The *Spacedeck* was also on display for the benefit of those with slimmer wallets, together with the unipivot *Space* and *Mentor* arms. The system was also host to a Croft preamp and a hefty pair of monoblocks, together with

a pair of Tom's enormous horn speakers.

Concordant had its sweet sounding top of the range *Exquisite* valve preamp on demonstration, along with the legendary modified *Quad II* monoblocks and the recently introduced *Exemplar* power amp (the latter a transistor design).

Lynwood was demonstrating a couple of new products at the show. Firstly, a *Mega* mains cleaner (£295) to add to the two existing models in the range. Proprietor David Rusby is confident that the *Mega* will convince any remaining sceptics as to the worth of these devices. The other new item from the company is a line-level integrated amplifier, the glass-fronted *Opal* (£485) which has pre-out sockets to enable future bi-amping capability. The reason for a phono-less amp from the pro-analogue Mr Rusby was explained thus: the end user can spend as little or as much as they wish on a separate phono stage, or indeed not bother at all if they don't own a turntable. Suffice to say one of Lynwood's own phono stages was on demonstration; the company offers a range of such devices from the *Basic* through to valve based *Advanced*.

### Home is where the tweaking goes on

The show's host, Chesterfield based Avondale Audio made good use of its home advantage by commanding three separate rooms. Its founder Les Wolstenholme is already famous (some would say notorious) for his modifications on existing amplifiers. Partly in order to answer the criticism that it is relatively easy to tweak an existing design, Avondale, under the

banner of Reference Music Systems, has been busy developing its own products. The two-motor *Genesis* turntable (£750) was on demonstration in several rooms, partnered by an extensively modified *Moth* arm (£350) please note that this is not just a re-wiring exercise!

The company's range of speakers is near fruition, all utilising the aforementioned Focal tweeters. The *Mini-Monitors* (£895), middle of the range *SBM Monitors* (£1,440) and the awesome *DBM Metal Monitors* were all up and



Pentachord's new floorstander conceals two bass drivers in its column.



Nottingham's finest; the heavyweight *Mentor Reference*.

running. Avondale's demonstrations consisted of two active systems and one passive, utilising amplification bearing the RMS marque. Even the passive demonstration sported the very practical feature of external speaker crossovers.

Just to let you know where this show is coming from, I counted a grand total of three CD players. Analogue and valves are still in the ascendancy here in Chesterfield!



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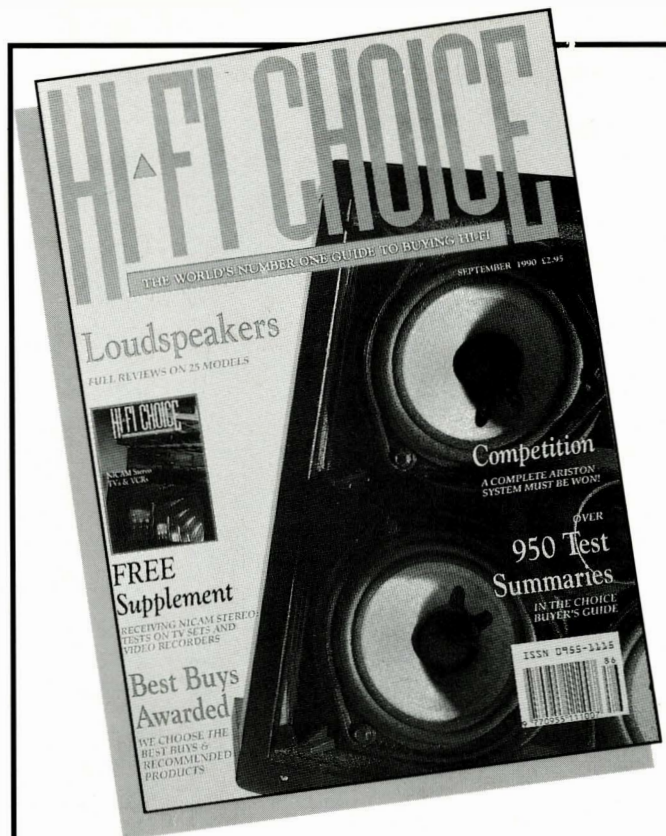
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Chew & Osborne 148 High Street Epping		0378 74242
Waters & Stanton 18/20 Main Road Hockley	0702 206835/204965	
Waters & Stanton 12 North Street Hornchurch		04024 44765
Chew & Osborne 26 King Street Saffron Walden		0799 23728
K A Cheeseman Sir Isaacs Walk Colchester		0206 46808
Peter Foulkes 104 High Street Maldon		0621 853148
Woolfmans Upper Mall Eastgate Shopping Centre Basildon		0268 285922
ACL Radio Services 1 North Mall Grays		0375 374666
Peter Foulkes 20 Exchange Way Chelmsford		0245 491479
AV Tech 76 Ilford Lane Ilford		081 553 2587/8
<b>GLOUCESTERSHIRE</b>		
Hutchinsons 295A High Street Cheltenham		0242 573012

<b>GREATER MANCHESTER</b>		
Hamlets Unit 32 Stareleigh Way Ashton-under-Lyme	061 343 5127	
R N Cleartone 54 Bridge Street Manchester		061 835 1156
<b>HAMPSHIRE</b>		
Bryants Hi-Fi 81 High Street Aldershot		0252 20728
Sinclair Youngs 9/11 Church Street Basingstoke		0256 28623
Now That's Hi-Fi 24 Arundel Way Portsmouth		0705 811230
Southampton Hi-Fi Centre 37 Bedford Place Southampton		0703 228434
R Upfields 6 Locks Heath Centre Locks Heath Southampton		0489 885122
Now That's Hi-Fi 174 Fratton Road Portsmouth		0705 811230
Cristavision 7 Thackery Mall Fareham Shopping Centre Fareham		
<b>HERTFORDSHIRE</b>		
Hypertec 6 Bancroft Hitchin		0462 452248
Staks 4 Park Place Stevenage		0438 318218
Chew & Osborne 70 South Street Bishop's Stortford		0279 56401
Herts Hi-Fi 93A/93B High Street Hoddesdon		0992 441172
Hi-Way Hi-Fi Ltd Unit 58 Marlowes Shopping Centre Hemel Hempstead		0442 235755
Radiolux 108 The Parade High Street Watford		0923 229734
<b>HUMBERSIDE</b>		
Superfi 4 Dock Street Hull		0482 24051
<b>ISLE OF WIGHT</b>		
Russells 40 Upper St James Street Newport		0983 523864
<b>JERSEY</b>		
Fotosound (Jersey) Ltd 5 Charing Cross St Helier		0534 59990
<b>KENT</b>		
Kimberley Hi-Fi 193 Broadway Bexleyheath		081 304 3272
Panatec Sound & Vision 83B High Street Gillingham		0634 573141
V J Hi-Fi 29 Guildhall Street Folkestone		0303 56860
V J Hi-Fi 119 High Street Margate		0303 56860
<b>LANCASHIRE</b>		
Clearstone 235 Blackburn Road Bolton		0204 31423
Wigan Hi-Fi Centre 13 Centre Arcade Wigan		0942 37977
Romers Hi-Fi Ltd 94/96 High Street Rishton Blackburn		0254 886382
Kenneth Gardner 30/32 New Street Lancaster		0524 64328
Norman Audio Ltd 216 Church Street Blackpool		0258 295661
Norman Audio Ltd 131 Friargate Preston		0772 53057
<b>LEICESTERSHIRE</b>		
Mays Hi-Fi 27 Church Gate Leicester		0533 625625
Stuart Westmoreland Ltd 2 High Street Oakham		0572 755600
Stuart Westmoreland Ltd 9/10 Cheapside Melton Mowbray		0664 411511
Parker High Fidelity 49 Baxter Gate Loughborough		0509 269888
<b>LINCOLNSHIRE</b>		
Superfi 271A High Street Lincoln		0522 520265
<b>LONDON</b>		
Covent Garden Records 84 Charing Cross Road		071 379 7427
Kamla Electronics 251 Tottenham Court Road		071 323 2747
Hi Way Hi-Fi 315 Edgware Road		071 723 5251
Hi Spek Electronics 344/346 Regents Park Road Finchley Central		081 349 1166
Light & Sound 166 High Street North East Ham		081 472 1373
Babber Electronics 158 Uxbridge Road West Ealing		081 579 6315
Spatial Audio 29 Tottenham Court Road		071 637 8702
Myers Audio 6 Central Parade Hoe Street		081 520 7277
Stereo Regent Street 245 Regent Street		071 491 7922
Brians Hi-Fi 19 Tottenham Court Road		071 631 1109
The Studio 133 Tottenham Lane N8		
<b>MERSEYSIDE</b>		
Beaver Hi-Fi 20-22 Whitechapel Liverpool		051 709 9898
Tisdalls 76 Tulketh Street Southport		0704 531500
<b>MIDDLESEX</b>		
Heathrow Hi-Fi Ltd 90 Staines Road Hounslow		081 572 1135
Musical Images Ltd 45 High Street Hounslow		081 570 7512
<b>NORFOLK</b>		
Martins Hi-Fi 85/87 Ber Street Norwich		0603 627010
Adcock & Sons Ltd 30/34 High Street Watton		0953 881248
Martins Hi-Fi 5 High Street King's Lynn		0553 761683
<b>NORTHAMPTONSHIRE</b>		
HG Rapkin 11 Kettering Road Northampton		0604 37515
<b>NOTTINGHAMSHIRE</b>		
Forum Hi-Fi 600 Mansfield Road Nottingham		0602 622150
Superfi 15 Market Street Nottingham		0602 412137
Parker High Fidelity 70 Long Row Nottingham		0602 476377
F L Smith Electrical 4 Regent Street Mansfield		0623 655684
<b>OXFORDSHIRE</b>		
Witney Audio Centre 28 High Street Witney		0993 702414
Sound 'n' Vision 5 Crown Walk Bicester		0869 246491

<b>SOMERSET</b>		
Telefringe 2/3 King Street Frome		0373 62598
Paul Roberts 32 North Street Taunton		0823 270000
<b>STAFFORDSHIRE</b>		
Active Audio 29 Market Street Tamworth		0827 53355
Active Audio 95 Stafford Street Hanley		0782 214994
<b>STOKE ON TRENT</b>		
Purkiss Hi-Fi 51/53 Piccadilly Hanley		0782 265010
<b>SUFFOLK</b>		
Peter Watts 1B St John's Street Bury St Edmunds		0284 703045
System Sound 91 North Street Sudbury		0787 72348
<b>SURREY</b>		
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Tru-Fi 2 Central Parade Redhill		0737 766128
Audiolite Ltd 127 Parchmore Road Thornton Heath		081 653 2261
<b>SUSSEX EAST</b>		
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Sunderland Electronics 52 Norfolk Square Western Road Brighton		0273 774113
<b>SUSSEX WEST</b>		
Sussex Audio 163/165 Church Road Burgess Hill		0444 242 336
Sunderland Electronics 43 Broadwater Street West Worthing		0903 201187
Cristavision 60 East Street Chichester		0243 775444
<b>TYNE AND WEAR</b>		
Bill Hutchinson Ltd 87A Clayton Street Newcastle-upon-Tyne		091 230 3600
<b>WARWICKSHIRE</b>		
Carvells of Rugby Ltd 3/7 Bank Street Rugby		0788 541341
<b>WEST MIDLANDS</b>		
Bridge Hi-Fi Tudor House Bridge Street Walsall		0922 640456
Naam Hi-Fi Vision 122/123 New Street Birmingham		021 633 4944
Superfi 67 Smallbrook Queensway Birmingham		021 631 2675
Coventry Hi-Fi Church Lane Walsgrave Road Coventry		0203 440529
Naam Hi-Fi Vision Lower Precinct Coventry		0203 632086
Universal Electronics 49 Victoria Street Wolverhampton		0902 23741
<b>WILTSHIRE</b>		
In-Phase Audio 21/23 Faringdon Road Swindon		0793 520948/526393
PR Sounds 58 Castle Street Trowbridge		0225 777799
<b>WORCESTERSHIRE</b>		
David Waring Cameras & Hi-Fi Marmion House High Street Worcester		0905 27551
<b>YORKSHIRE NORTH</b>		
Vickers Hi-Fi 24 Gillygate York		0904 629659
<b>YORKSHIRE SOUTH</b>		
Superfi 1 Rockingham Gate Sheffield		0242 723768
<b>YORKSHIRE WEST</b>		
Amnk Electronics Co Ltd 57 Otley Road Leeds		0532 752285
Superfi 7 King Edward Street Leeds		0532 449075
Amrik Electronics Co Ltd 57/59 North Parade Bradford		0274 722530
Eric Wiley 64/85 Beancroft Road Castleford		0977 553066
<b>N O R T H E R N I R E L A N D</b>		
<b>CO-DOWN</b>		
Hi-Fi Experience 47/49 Fountain Street Belfast		0232 238495
LRG Sound & Vision 171 Albertbridge Road Belfast		0232 451381
<b>CO-ANTRIM</b>		
LRG Sound & Vision 120-122 Main Street Larne		0574 72757
Nicholl Bros 13/19 Church Street Ballymena		0266 49616
<b>S C O T L A N D</b>		
<b>GRAMPIAN</b>		
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Bill Hutchinson Ltd 43 South Clerk Street Edinburgh		031 667 2877
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Bill Hutchinson Ltd 43 Hope Street Glasgow		041 248 2857
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Robert Ritchie 102/106 Murray Street Montrose		0674 73765
<b>W A L E S</b>		
<b>CLWYD</b>		
Owens Colwyn Centre Colwyn Bay		0492 530982
Lloyds TV, Video & Hi-Fi 30 Lord Street Wrexham		0978 364168
<b>GLAMORGAN</b>		
Tele Electrical Services 9 The Brackla Street Centre Bridgend		0656 654156
<b>GWENT</b>		
Hi-Fi Western Ltd 52 Cambrian Road Newport		0633 262790
<b>GWYNEDD</b>		
Owens The Mall Wellfield Shopping Centre Bangor		0248 362951

*When an audiophile resorts to digging up the road to install a new electricity supply things have got to be serious. Dan Houston visits the home of ex-recording engineer Dave Ruffell.*



# Getting back to the



If you had spent ten years running a recording studio used by the likes of Thin Lizzy then your choice of hi-fi might well be more ambitious than the average. And that's just the case with this month's audiophile who has built up a staggeringly expensive system in his quest to recreate the studio sound he knows so well.

We're in semi rural Sussex, at the home of Dave Ruffell, who, in the Seventies, ran the Saturn Label from one of the few 'out

# studio

of London studios'. Now 47, Dave swapped the hard living and long hours of the recording business for the motor trade. "I'm a secondhand car salesman," he says frankly, as though testing one's reaction to the breed. Curiously, he had an X reg Honda parked in his drive when we arrived; having run the gamut of aspirational automobiles he admitted that his interest in cars is now strictly commercial.

Dave's real passion is hi-fi. And his present system is the result of 27 years upgrading through many different manufacturers' components. "My first system was Quad based, I had one of their first transistor amplifiers. With that I was using a Revox reel to reel tape recorder and some B&W P1 loudspeakers," he says.

## Making tracks

Five years after the arrival of the Quad he was running his own 16 track recording studio, which he opened in 1969. "It was just interest that got me into the business," he explained. "I used to go around with a two track machine recording school choirs and orchestras and the thing grew from there. One of my first jobs was for Decca and there were several other labels which used the studios, like Motown UK, Virgin and a few independents. There are quite a lot of records with my name on them."

To prove the point Dave rooted out several of 'his' records from an eclectic collection. They include such off-beat outfits as Egg, Kevin Coyne and Hatfield and the North, who were all regular customers. He has kept several master tapes of studio sessions but unfortunately doesn't have an open reel tape recorder any longer, and so couldn't demonstrate their quality.

He continued: "I sold the studio in 1978. The investment that was needed to expand and compete with the London studios was beyond my reach, and in any case it was very hard work. It was a case of 18 hour days; you had to be there all the time, and you were expected not to require sleep. Even when the band wasn't there you were still editing. It affects me

*All this could be yours for a mere £70,540, although rewiring the main electrical spur is extra.*

even now; I never eat an evening meal 'til ten at night - I suppose my body clock just got used to those hours."

## Don't get phased

It was during his years sitting behind a mixing desk that Dave first learned about sound quality and recording techniques. "Many of the recordings made with the simple equipment in the first days of stereo still sound a lot better than those being made today; especially when played through a good hi-fi system. I think that ultimate sound quality is always going to be from a simple pair of microphones. That way you don't have all the problems with cables and leads. In any multi mic', or multi track approach sooner or later you're going to have phase problems. I'm not suggesting they always connect things up the wrong way but it sometimes happens."

It's an interesting indictment on the 'progress' of recording technology, and one which is often repeated. Just as good hi-fi requires a simple approach to the passage of signal, so those who use it



*Sorry sir, it's not available in black, the gold plated ZXL1000.*

often bemoan the fact that most recordings are the result of hopelessly complex techniques. Hence the continued popularity of vinyl records from the 'golden age of recording' in the Fifties, or 'audiophile' records which are made with a revealing hi-fi system in mind.

## All is revealed

The system here is nothing if not revealing. To buy it would set you back the cost of a small house and it represents Dave's consuming passion with hi-fi perhaps as much as it represents his passion for the music itself. "I certainly can't afford this,"



he asserted, "make no mistake a lot of other things suffer as a result."

The system is all arrayed along one wall of the room on Target isolation tables. The 'on axis' sofa sets the listener about 12 feet away from the loudspeakers while a second sofa is provided for watching TV or videos. From an acoustic point of view the room has a reasonable shape but Dave says the sprung floor is "too floppy" and that the window alcoves tended to "suck out a bit". "Certainly the next thing I would like to change in this system is the room itself, it's far from perfect," he admitted. "And it is worthwhile spending money on the acoustics. You can make a medium price system sound fantastic in the right setting."

box made which covers the deck's plinth entirely.

### Good as gold

Even rarer than the Goldmund is the gold-plated Nakamichi 1000-ZXL Limited which has pride of place opposite this 'oil rig' of a turntable. Only three of these state of the art cassette decks were ever imported into the UK and Nakamichi quotes likely secondhand prices as being around £3,000. Dave, who bought his secondhand and wrapped in a blanket, six months ago, says he wouldn't part with it for three times that price. As if having one of these superlative tape decks isn't enough, he also has a backup in the shape of a Nakamichi *Dragon* - Niro Nakamichi's

bought last November. These run a little cooler than the Krells he said; he could listen to the system in the summer - and he loved the sound quality.

### The last word

The significantly odd man out of the set up is a pair of American Snell *AIIIs* - the giant transducers which were Peter Snell's last engineering creation. Aficionados view these units with much the same reverence as Mozart's *Requiem*, for Peter Snell died shortly after the speaker's completion.

These again are as rare as hen's teeth and Dave was listening to a pair on approval during our visit - his existing Wilson Watts *Tiny Totts* and *Puppies* combination was sitting redundant in the hall.

It's a good example of how the audiophile with means is always changing his system to try and create the perfect match between components. Dave told me the Snells were better suited to the room and had made a difference. "It's a very difficult room," he repeated, "and a speaker is the only element in the hi-fi chain which is dependent on, or reactive to, its environment. In that sense it's the most critical element as far as the room is concerned. I liked the Wilson Watts but I think they would favour a slightly smaller room than this - I have to sit a lot closer to them when they're here. But that makes sense because they were designed as a nearfield monitor anyway." Dave told me that before the Wilsons he used a pair of Apogeos: "But they had to go because they were blocking out the light from the windows," he explained.

### Spur of the moment

In order to get the best sound from this system two spurs of 16mm<sup>2</sup> and 25mm<sup>2</sup> copper cable were run from a specially installed 63amp circuit breaker box. The cables were supposed to improve the sound quality of the system by providing ample and clean mains. But Dave explained that when he first listened the system sounded better at different times of the day. "I felt that it wasn't coming 'on song' until 9.30 or 10.00 pm at night," he said.

"We looked at the mains cable which was coming in from the street and discovered that it was still the original 10mm<sup>2</sup> copper which had been installed in 1925 when the house was built. In those days houses just had four electric light bulbs, and the supply wasn't up to coping with a serious hi-fi set-up - there was no point in my putting in the larger cables. So I got



Probably the most expensive turntable in the world, the Goldmund Reference.

The main source component is the Swiss Goldmund *Reference* turntable, which with its Goldmund arm and Koetsu *Urushi* cartridge represent more than half the total price of the system. "The amount of money these cost new is absolutely ludicrous, it's mental," Dave commented. "But I bought mine secondhand," he added trying to exonerate himself from the extravagance. Of course such extravagances are worth it to the apogean audiophile; the Goldmund is in a class of its own and the Koetsu has the right balance of musicality, definition and detail for Dave. The turntable lacks a dust cover - which seems a trifle mean when one considers the price. Dave has overcome the problem by having a bespoke perspex

1982 statement on audiophile cassette recorders.

Below the *Dragon*, a two box (DAC and drive unit) Sony CD player and the Goldmund arm's computer unit complete the source components. Dave eschews a tuner, and indeed radio itself, as he doesn't consider it a hi-fi medium.

The amplifiers here are from Audio Research - an able complement for the turntable and both share an importer in the shape of Absolute Sounds which imports the brand from the eastern seaboard of the United States. Audio Research preamps are often partnered with Krell power amps in an appealingly synergistic marriage of finesse and force, but Dave uses the AR *Classic 120* power amps,



onto the electricity board who offered me 16mm<sup>2</sup> aluminium cable which again wouldn't have been enough. In the end and after a lot of persuasion they installed this stuff..." He breaks off to show me his new supply cable.

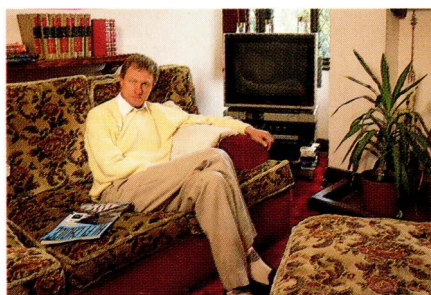
"It's 25mm<sup>2</sup> shielded copper which they normally only run to a block of flats! It cost me £600 and I had to dig up the garden. I don't really notice a difference at the times when it was good anyway - like late at night. But on a cold evening when the rest of the road is using a lot of juice then it's really fantastic."

The system is played between 10 and 20 hours a week according to Dave. And it's the sort of system that is so involving that he and his wife (a one time orchestral musician) sit and listen to records, and would only listen to tape as 'background music'.

Dave does listen to CD, but rates it as a poor 'improvement' on the analogue medium. This is maybe to be expected considering the difference in price between his record player and the Sony machine and in some ways this is rather an unfair comment but Dave explains: "I'm not going to invest in an expensive CD player while they're bringing out something new the whole time. £10,000 on a CD player wouldn't be worth it. No medium will retrieve all the information recorded, but there is a lot more chance of doing so with a record. There is another point as well. If you went into a shop and bought 100 CDs and 100 records then I am sure that you would probably throw 20 records away as being unlistenable, but you would throw 60 of the CDs away - they're that bad. And when it comes to hi-fi it really makes me laugh that people say: 'this CD player has an analogue sound'. If that's what you're after why don't you play a record!"

## On the road again

Dave describes his as 'an open house' and enjoys visiting other audiophiles to listen to different systems. The systems that had most impressed him, he said, were those of Ricardo Franasovici who runs Absolute Sounds and uses Goldmund, Jadis and Martin Logan equipment at home; Peter Qvortrup who is the main proponent behind Voyd, Audio Note and (until recently) Snell; Alastair Robertson Aikman, who runs SME and whose system and room were featured in *Choice Collection 1990*, and lastly John Jeffries the distributor behind Reference Imports (The Basis turntable, CAT preamp, Lumley Reference monobloks and Diamond Reference speakers).



*The owner and his system, with the television in its rightful place, hidden away in the corner.*

If it seems he moves in a rarified atmosphere then he says others appreciate his system. "A lot of friends who are still in the land of the living, with something like a Linn and Naim system, come by to play their own records and listen to my hi-fi. I'm not saying that less expensive systems are bad, I think hi-fi is really good these days. A friend of mine wanted to listen to an Incatech *Claymore* integrated amplifier recently and we put it into this system with the Wilson Watts. And when we'd hooked it up we were both staggered at the sound quality. I mean it's a



*My other cassette deck is a Nakamichi Dragon!*

two bob box arrangement and it was that good that I almost felt I had blown all this money for nothing."

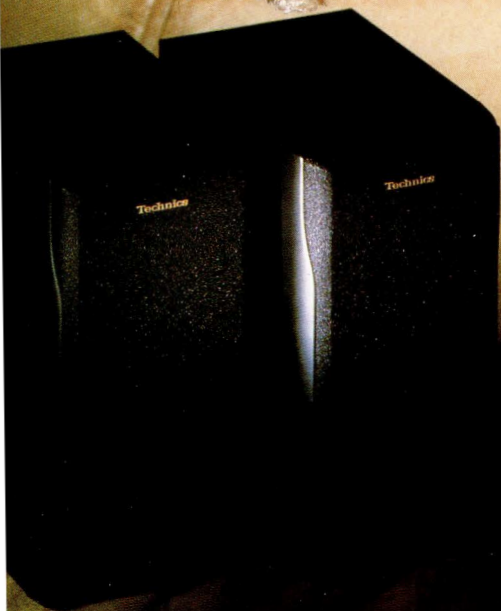
Nevertheless Dave carries on with his upgrades and feels he is close to getting a sound he'll want to keep for good. His comment on his present system's abilities was understated to the point of being disparaging considering the cost and time involved arriving here: "It's not the best system I could get. But it's adequate for my needs and my room."

### The System:

Goldmund <i>Reference</i> turntable	£31,950
Goldmund <i>T3F</i> tonearm/micro-processor	£5,850
Koetsu <i>Urushi</i> cartridge	£1,699
Mandrake silver tonearm cable	£577
Sony 552 CD player and 702 DAC	£N/A
Nakamichi <i>Dragon</i>	£1,785
Nakamichi gold plated <i>ZXL1000</i>	£3,000
Audio Research <i>Litz Link</i> interconnect	£321/M
Audio Research <i>SP11</i> preamplifier	£N/A
Audio Research <i>Classic 120</i> monobloks	£2,998 each
Van den Hul <i>SCS6</i> speaker cable	£39.99/M
Wilson Watts <i>Tiny Tots</i>	£7,390
Wilson Watts <i>Puppies</i> (subwoofer)	£4,380
Snell Type <i>AIII</i>	£6,950
<b>Total</b>	<b>£70,540</b>



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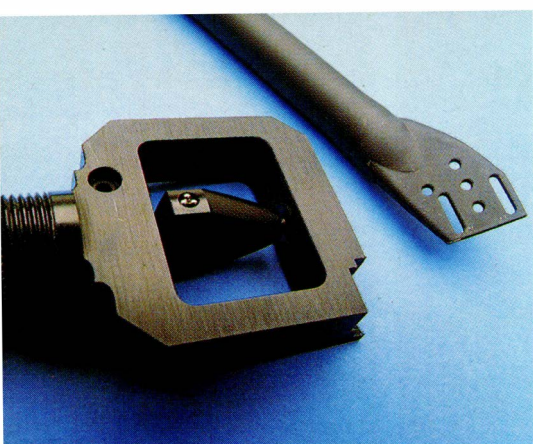
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## Technics

For Music Lovers.



*With the Xerxes record player and Darius loudspeakers under his belt, Roksan founder Touraj Moghaddam has consistently surprised the hi-fi community with innovative designs. He talked to Dan Houston about his latest creations.*

# The art of Xerxes

It's mid week in mid Wales with no less rain than anywhere else this 'summer'. But while the rain has metaphorically given the British hi-fi industry more than just a good soaking over the last year, the face across the table, in the Bell Inn just outside Llandrindod Wells, is beaming with success. I'm opposite Touraj Moghaddam who is better known as the founding intelligence behind Roksan Engineering - maker of the *Xerxes* turntable, *Darius* Loudspeakers and *Artemiz* and *Tabriz* tonearms.

His happy attitude is due to the fact that he has just finished work on the new Roksan amplifier, a £7,000 four box creation which is as innovative as the record player or speakers were five years ago. The amplifier takes design near to its simple, but far from simplistic conclusion; signal travels in a straight line through high quality components mounted directly onto one circuit board, and over the shortest possible distance. It's the sort of amplifier that when its functions are explained you find yourself saying 'ah yes'; it incorporates many of the design philosophies that audio electronics companies have strived for. The internal layout is as beautiful to the hi-fi buff as the performance is to the music lover, and the overall design certainly has a coherent appeal.

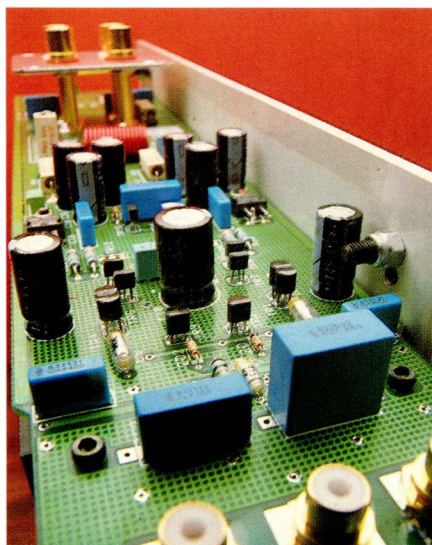
## Beefing up the Artaxerxes

Roksan isn't brand new to the electronics field. This amplifier is in fact a macro version of the *Artaxerxes*, a universal moving coil phono amplifier launched in 1989. The diminutive *Artaxerxes* (its extruded aluminium looks like a case for five king size cigarettes) received some acclaim from reviewers, though it has mostly been purchased by *Shiraz* owners. It will also prove a vital link to the Roksan

amplifier for vinyl users - the amplifier being a purely line level device.

If you speak to people in the industry about Touraj you either get a reaction of awe at his achievements or an immediate put down as though he was some sort of charlatan. Roksan is a company which has come up on the outside, only recently joining the mainstream.

This is as much Roksan's fault as anybody else's, in 1985 the company launched itself into the inveterate parlour world of the hi-fi industry with the abrasiveness of a spoilt child. The 'no prisoners!' attitude would have succeeded better if a certain other turntable manufacturer hadn't done more or less the same thing ten years before. Whether he gives any quarter or not Touraj Moghaddam undoubtedly has one of the best brains in the industry; he has a lucid understanding of the parameters involved in designing superlative audio equipment, which enables



*Look no wires, the main PCB from the RoK-M1 power amp.*

him to explain them in layman's terms. He is a mechanical engineer by training and irrevocably locked into the physical world. This only becomes relevant when one realises that many designers in this field are irrevocably locked into the metaphysical world.

Touraj was born in Iran 33 years ago, and first came to England (as it later turned out, to stay) in 1972. Privately schooled he completed his education at Imperial College with a Mechanical Engineering degree in 1980. Four years later he was studying wind turbine technology for his PhD when he teamed up with fellow Imperial graduate John Loughlin and Tufan Hashemi, a friend, to design the *Xerxes*.

He remembers making the first prototypes using an old door for the plinth, with cardboard tacked around the edges to conceal the motor and suspension. But enthusiasm at the Westmoreland Hi-Fi Show in late 1985 led to the company being able to move to proper premises in the Clerkenwell Road, London the following January.

## Standing proud

The *Darius* loudspeaker with its suspended tweeter arrangement and wacky exoskeletal stands followed in November of that year and the company began to establish itself as synonymous with innovation.

While the self aligning self centering bearing for the *Xerxes* made sound engineering sense there was also a hint of magic in the approach. The Cornflake Shop in London was so impressed with the *Darius* stands that they had some copies made up for a pair of Wharfedale *Diamonds*!

Those heady days at the Turnmill weren't all plain sailing. Record player

sales were tumbling in the face of the digital upsurge, and Roksan was never able to dislodge the Linn LP12 from pole position. But by the spring of 1988 the company had consolidated enough to enable a move to Wales, into a new factory just outside the genteel spa town of Llandrindod Wells. The Penta hi-fi show in September of that year saw the appearance of the *Artemiz* tonearm with its novel 'intelligent' counterweight.

## Playing the spoons

It was another first. The idea, as I remember it being explained with the aid of a spoon balanced on Touraj's finger in a cafe at the time, is that the suspended counterweight does not exert any momentum over the headshell end of the arm - as it moves both over warps and across the record.

At Penta the company also launched its *Shiraz* cartridge - a moving coil high end contender priced at £735. This has since been joined by two Goldring-sourced cheaper moving magnet models - the *Corus Blue* and *Black* launched in the autumn of 1990.

Expansion of the range of Roksan goods continued, with the launch of the *Hotcakes* full-range single-drive unit wall-mounting loudspeakers in January 1989, the *Artaxerxes* in September of that year, the *Tabriz* and *Tabriz-zi* 'budget' tonearms in December, and Roksan-badged interconnect and loudspeaker cables made by the Japanese Isoda company available from March this year.

## Moving over

By now the company had expanded its factory, taking over and knocking through into another unit to double the workshop and storage space. Roksan was able to purpose build a listening room - and provide its staff with a canteen!

With views to the South West over verdant rolling countryside, dotted unsurprisingly with sheep, the modern Roksan factory has the combined feeling of rural timelessness and high technology. Engineers work with computer aided design systems and delivery trucks are from firms who might normally supply British Aerospace.

While much of the activity of the past four years was taking place Touraj and John together with another engineer John Cheadle (pinched from the space industries) were working on the Roksan amplifiers.

In a sense it was finding Cheadle, whose expertise in the capability of satellite components is half-jokingly referred to as 'DC

to light', that gave rise to the amplifier.

"John joined about three years ago," Touraj explained, helping himself to one of my roll-ups. "But he was already working on the *XPSII* power supply before he joined and we were already working on the *Artaxerxes* and the amplifier then.

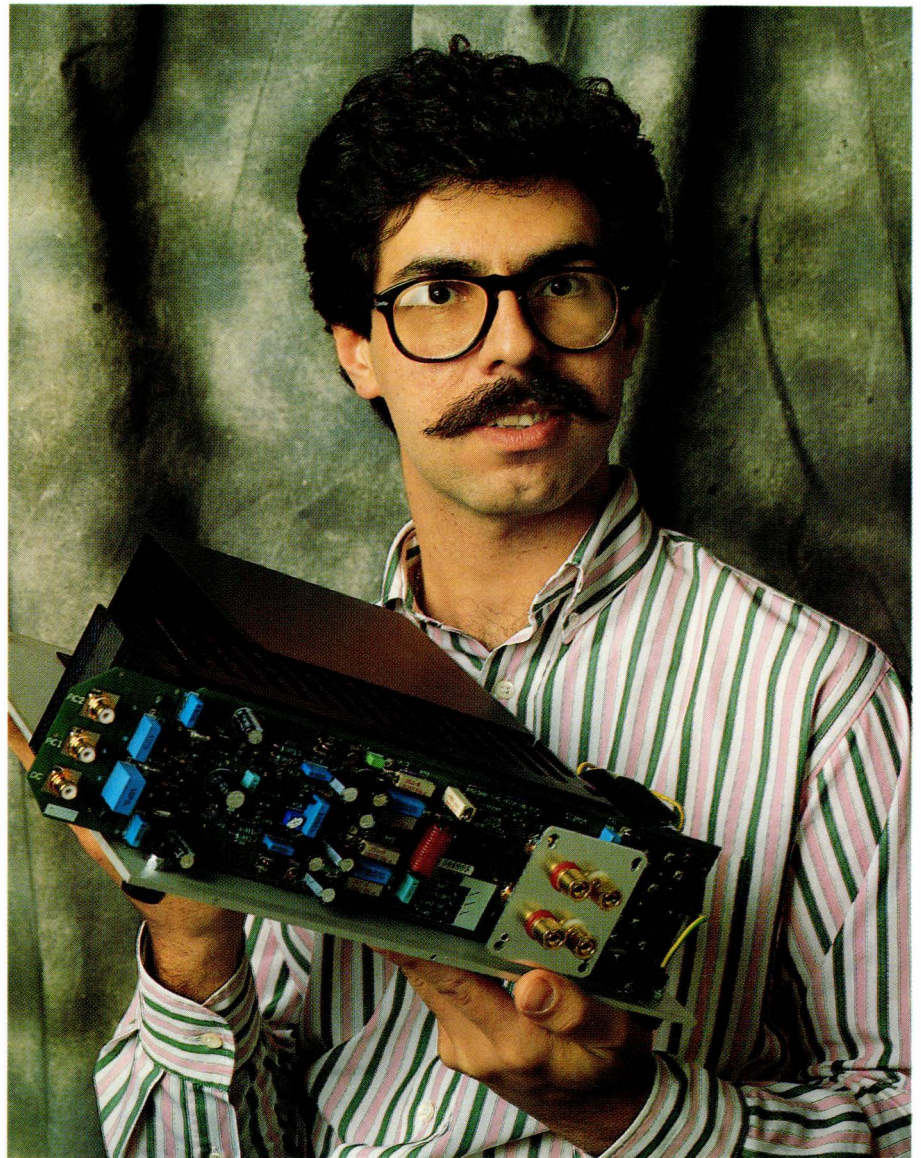
"My job as far as designing the amplifiers went was to look at things like impedance and damping. John Loughlin and John Cheadle are the physicists but I believe that every electrical circuit has a mechanical analogy. So I would come in and want to know about the ratios between the capacitors here and the capacitors there, or where is the ground point or what happens at different levels.

"When we started we went right back to basics and had to consider what an amplifier does." Touraj began to arrange the glasses and salt and pepper shakers

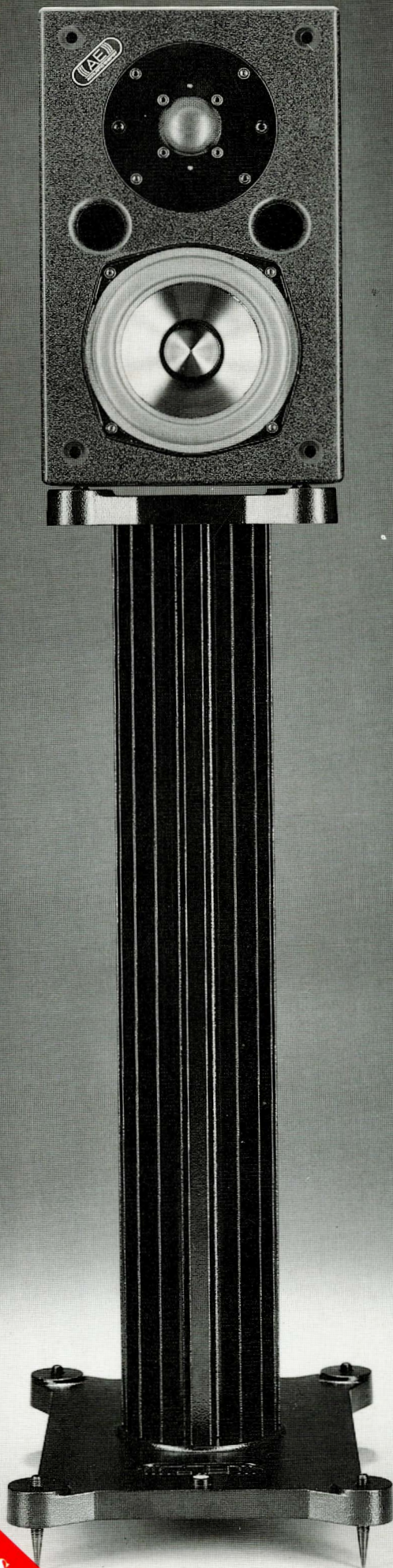
into a line in front of him. "Imagine the signal is like a line of people," he said walking his fingers around the pepper (read preamp stage), "they walk into this room and start going round and round. What you need is to mimic exactly this line of people but to have them much bigger to come out of here," his power amplifier is a salad bowl.

"Now to be able to put bigger people out you need a big reserve of bigger lookalikes. You get those from the power supply," a beer mug. "It's wrong to say that signal comes in and is fed and gets bigger as it goes through the amplifier. It's really a case of needing a massive reserve from which to draw precisely the same signal in terms of frequency but at much higher amplitude.

"The critical points are how the controller sees the small people, and how and



Touraj Moghaddam poses with his latest creation, the RoK-M1 power amplifier.



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when he lets out the big lookalikes, and whether there is a big enough reservoir of them to mimic what is coming in. If for instance someone comes in who is twice the size of all the others, then you'll need massive reserves which many amplifiers don't have. That's what happens when they clip."

The waitress cleared the table. After such a simple explanation it wasn't surprising to hear Touraj say that Roksan's task was 'pretty well defined' for the amplifiers.

It wasn't all quite so simple. Roksan wanted to be close to perfect reproduction and to do that any distorting or crosstalking elements had to be eliminated. And each component had to be tried and tested in relation to the others - corrective circuitry for 'defective' elements was eschewed.

## Look no wires

After three years of working on the system, testing thousands of components, and rigorously insisting that an amplifier could be made where signal travels in a straight line (dual mono) without the need for sonically degrading cable anywhere on the circuit board, the amp was finished. It comprises four boxes - the *RoK-L1* line level preamplifier, the ever important *RoK-DS1* DC power supply and a pair of *RoK-M1* monoblocks.

Touraj explains further: "What you have here is a totally symmetrical complementary design where you are generating the plus side of the signals and the minus side of the signal rather than taking a transformer and inverting it to give you the minus side. If you do that you inherently get different functions from the circuit; it doesn't behave the same way in positive as it does in negative and you also get problems with crossover distortion when it goes from positive to negative."

Everything, Roksan avows, is of the highest quality, from the material used for the PCBs to sourcing its 'own' Roksan badged capacitors for the preamplifier - and they do look natty on the boards. Functions such as earthing and the power for the relay switches and light emitting diodes have been taken off the signal board to banish any distortion, and the transformers are shielded from the boards by aluminium cases and the heatsinks.

## Total control

The amplifiers use Hitachi MOSFETS (four each in the output stages of the power amps), which are bound to cause a few raised eyebrows. But according to Touraj

these can be made to perform excellently. They are rugged, he says, and behave well when they're hot, provided they're properly matched.

The RoK amp certainly looks like being a contender for any high end system, and may well show up some of the shortcomings of many loudspeakers and turntables. With Roksan equipment it displays a combination of power, speed and grace which is simply awesome.

Touraj enlightens me further: "People talk about power in amplifiers... if that's all it's about then why don't you plug your speakers to the mains. Power is about total control over the loudspeaker; it's about telling a loudspeaker cone or diaphragm when to move and when to stop.

You have to know about momentum - which is mass and velocity. Your amp has to be able to cope with a mass and move it; it has to create a force field that can move this thing with the speed you want back and forth and at the time you want it." It goes without saying Touraj believes his amp does all these things correctly.

Above all Touraj has tried to make hi-fi components which he says are coherently musical. This does not mean to say that they add anything to what is on a record, or that they are truly neutral in tone; but if the business of audio reproduction was to copy a sculpture Touraj says he'd even want to know the size of chisels used for the original and to get each hammer stroke right.

## Loving care

The same care and attention that goes into critical elements such as the arm bearing or the turntable platter bearing also goes into the choice of felt platter mat - to support even a warped record uniformly and so minimise resonances that build up between record and platter.

He can explain why you shouldn't clamp a record (because the character of the vinyl becomes more rigid from edge to centre), and why you should use short interconnects (for small current) with long speaker cable (for larger current) rather than the other way round. (Cable is his bugbear.)

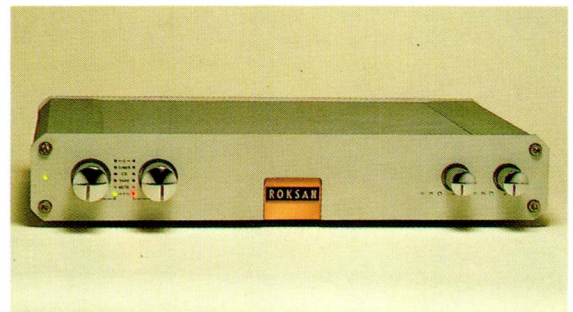
While Linn Products and Naim Audio - the original stalwarts of analogue - are producing CD players Touraj has just

launched the Radius, a mid-price turntable which is radically different from the *Xerxes*.

And he revealed that in September he will be bringing out another high end



*Analogue rules OK - the Radius turntable.*



*RoK-L1 pre-amp, complete with twin pots.*

turntable, currently given the working name of *Daddy Xerxes* which will be his 'last statement' (obviously only for the moment) on vinyl replay. As he drained his coffee cup Touraj was saying that no part of a hi-fi system has any 'intelligence'; it's more a case of making accurate measurements. I left convinced of one thing: that the man who designs the Roksan measuring devices knows a lot about accuracy.

And it even stopped raining for a while.

## Curriculum Vitae

Touraj Moghaddam

Age 33.

Technical Director Roksan Engineering

Founded Roksan	1985
First product Xerxes turntable	1985
Darius loudspeaker	1986
Move to Wales	1988
Artemiz tonearm/ Shiraz cartridge	1988
Artaxerxes phono amplifier	1989
Corus cartridges/Roksan cables	1990
Amplifiers and Radius turntable	1991
Number of employees	15
Turnover	£1.2M

*A very mixed bunch this month, with Roy Gregory extolling the virtues of passive preamps, Richard Black looking at corporate sponsorship of the recording industry and John Seabury discussing digital interconnects.*

## Choice Sessions

### **RATA passive preamps**

*Roy Gregory opines on RATA's selection of passive preamps and examines the options that are available in this value for money range.*

Passive controls of the 'pot in the box' variety started out as a way of achieving high quality CD sound on the cheap. Putting a 10K log pot in a box is undoubtedly cheaper, and a lot more straight line than the average preamp. With a few sockets and a bit of wire, anybody could produce their own passive, if not for pence, then for a few pounds.

Like most things in hi-fi, the cheap and simple soon becomes the expensive and complex. The then £400 Mod Squad *Line Drive* was the first audiophile passive control unit to achieve market acceptability. Since then it seems that everyone makes a passive control of some sort, often complemented by a standalone phono stage. Things have come to a head with the First Sound *Reference II*, a cool £2,097 of passive control unit; only the incurably audiophilic or unconscionably rich need apply.

But fear not. For those mere mortals who find the 'quality on the cheap' aspect of passives the most endearing trait, help is at hand.

Russ Andrews now offers a variety of passive units, designed to meet most pockets and needs, and available either as kits or finished boxes. The range starts with a simple one input and one output pot in a box. Component quality is good with Kimber *TC* internal wiring and gold plated socketry. The chosen pot, used with Holco low faking resistors, is the superb but little known Sternice from France. The basic unit will cost you £62 as a kit or £77 ready built.

You can buy the same set-up with higher grade componentry. Kimber *Silver AG* wiring, Kimber *Ultraplate* socketry and Vishay resistors put the prices up to £140 and £153 respectively.

Next comes the real McCoy as far as control units go. Six inputs and a defeatable tape out will start around £235 with common grounding and plastic casework. Add the fancy bits, separate earth tracks for each input, a prettier black ash box and knobs, and you are looking at about £668 for the finished unit. You can

versions, the separate earth paths offering a rather expensive icing on the cake.

I had a Mod Squad *Line Drive* to hand, and compared the RATA to it, feeding it from the line level output of a Michell Iso for phono, and a Micromega *Digital/Duo BS* for CD. This latest *Duo Bit Stream* convertor from Micromega is a real star, and sets new standards at the £500 price point. A fuller consideration in due course. For the moment, I'm just enjoying playing around with it.

Via the mod Squad the normal virtues of passive control units were readily apparent. Good focus and transparency were coupled to an absence of grain or edge to the sound. Likewise as normal, bass lost a little punch and weight, and things could get confused when the music got going.

Substituting the RATA unit brought about a major advance in sound quality. It was more transparent with better harmonic accuracy, the musical naturalness and clarity were exceptional. Using the Leigh Concertino for Harpsichord and Strings (*Lyrita*), the solo instrument's tonal brilliance was beautifully portrayed, and its delicate nature was preserved even in front of the full orchestra.

Large scale works still wanted a degree of control only available from a high quality (and therefore expensive) line

save yourself about £38 for each input you don't need, and around £70 by building it yourself, but one look at the mass of Kimber Silver AG wire filling the insides should deter all but the most hardened fanatic.

So RATA has a range of products varying in facilities and cost from the reasonable to the only faintly ludicrous. Remember, £2,097! The bottom line is how they perform. Naturally I plumped for the most expensive unit, but its performance will reflect any of the silver wired



*Bolognese sauce is just one of the options with the RATA passive preamp.*



stage, but on small scale acoustic recordings the delicacy and transparency of the RATA's portrayal was quite breathtaking. Using Kimber *Silver KCAG* interconnects and plugs wrought further benefits in the areas of tonal believability and instrumental substance. All of which is a rather wordy way of saying that the full Kimber *Silver* set-up, from source output to power amp input did an exceptional job of making sure that it wasn't audible, and that the musicians were. Only the equally expensive and enormously impractical Cogan Hall cables gave any improvement, but until you've seen them you wouldn't believe how serious their domestic impact is. Not like the *KCAG 'strings'*.

For anyone seeking a quality passive control, the RATA units are amongst the best available. The standard wiring and socketry should be cost effective, whilst the silver versions are simply excellent. Prices are reasonable, and if the appearance isn't so hot, the performance certainly is. The silver 'pot in the box' seems especially good value, and for those who want the best of both worlds, RATA is launching a standalone buffer stage which effectively turns a passive preamp into a line preamp.

### Technics-sponsored recording of Panufnik

*As the recording industry encounters hard times, recording works by the less well known composers is increasingly only possible due to the generosity of private individuals and companies. Richard Black reports on how Technics' sponsorship has enabled some unusual recordings to see the light of day.*

One of the less appealing problems facing musicians has always been the need to make ends meet. Few are as lucky as Sibelius, who while still in his early thirties was given a pension by the Finnish government to allow him to compose. In fact the only solution is to put 'bums on seats', or the modern equivalent, records on hi-fi systems. Of course, by far the safest way to do that is with programmes of well-known and well-loved favourites, which is all very well until one wishes to promote less well known works and performers; and let's face it, music would very quickly shrivel up and die of mal-

nutrition if its diet were no more adventurous than Beethoven symphonies.

Nowhere is this financial situation more fraught than with major orchestral works. Simply by virtue of the number of people involved, an orchestra is an expensive body to hire for concerts or recordings, and if a record company wishes to feature any works outside the core repertoire it must either be very sure of its market potential or find some kind of backing for the project.

In the past many recordings were made with backing from bodies such as the British Council but, with public money becoming tight, there has been a trend towards sponsorship from companies and even private individuals. It is most encouraging to see several hi-fi companies getting behind various musical ventures which, without the help of the industry, probably wouldn't ever see the light of day. After all, no music, no hi-fi - so it seems an appropriate and graceful gesture.

The Japanese manufacturer, Technics, has been showing its commitment to fostering contemporary music recently through its sponsorship of recordings of works by the distinguished Polish-born composer Andrzej Panufnik, on the Conifer label. One record, featuring Panufnik's concertos for violin and for bassoon, and *Hommage à Chopin*, has already been released, and in June I was delighted to be invited to attend a recording session for a second record, this time of the *Ninth Symphony* and the *Piano Concerto*, performed by the London Symphony Orchestra under the composer's baton, with Ewa Poblocka as the soloist in the concerto.

After suffering Nazi oppression in Poland during the Second World War, and Communist oppression after it, Panufnik settled in Britain in the Fifties. He wrote his *Piano Concerto* in the early Sixties, at around the same time as his famous *Sinfonia Sacra*, and revised it substantially in 1972, and again in 1982.

For those who know none of Panufnik's music, I should think it is a good introduction. It is certainly a strong corrective to the notion that all 'classical' music composed since the Fifties sounds like Stockhausen, Cage or Xenakis. For a start, it uses an orchestra of conventional instruments, conventionally played, and although it sounds 'modern', its harmonic and melodic language will not be unduly strange to anyone who enjoys Bartok's music. Indeed, it is quite gripping, with some especially lovely harmonies in the slow central movement.

### Take one

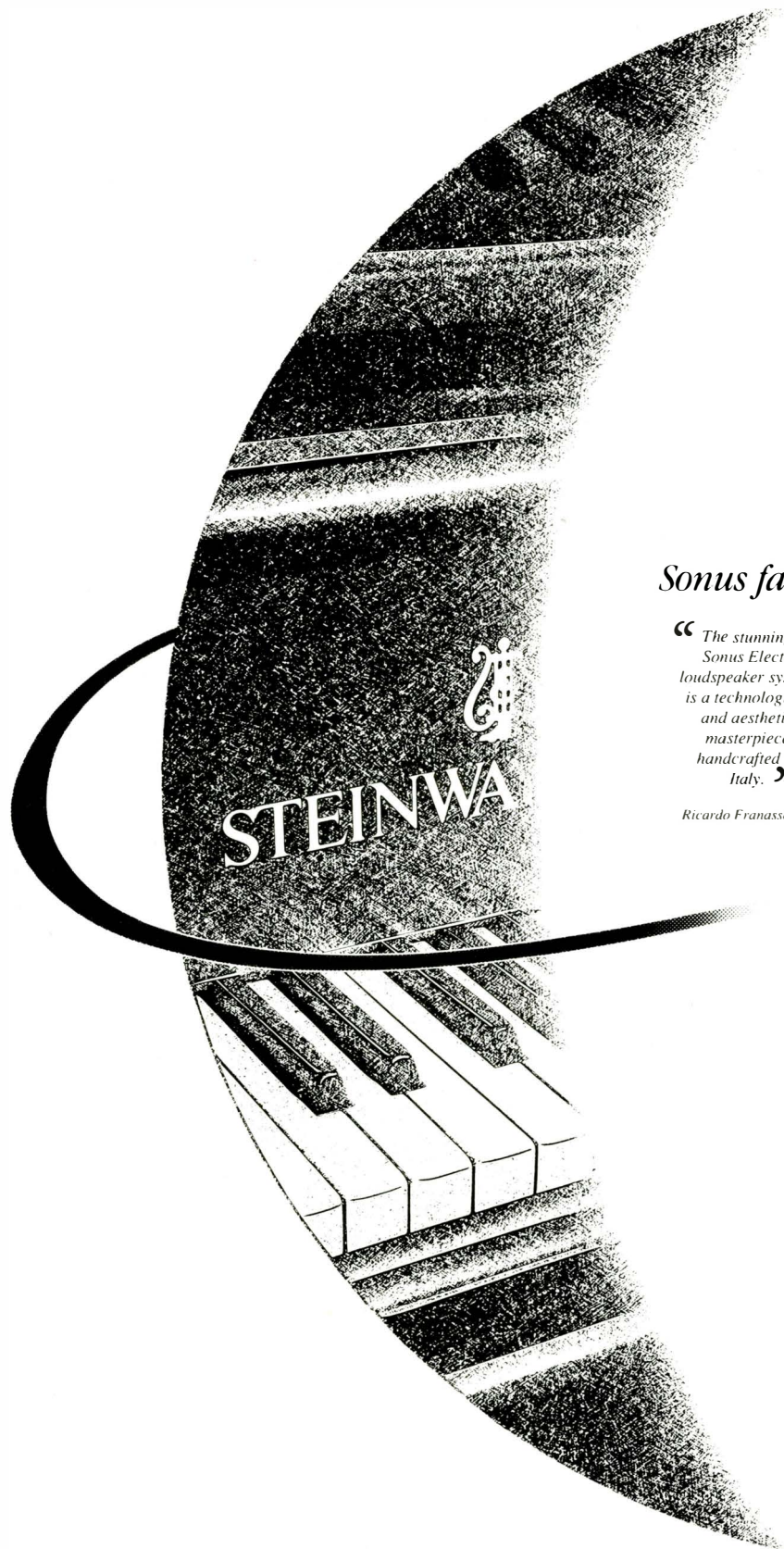
*Of the Ninth Symphony I can only say that I remember better the strong impression it made on me at its premiere in 1987 than*



*Assembling an orchestra is both a time and cost consuming business.*

the notes themselves, as I only got to hear the Concerto being recorded. Actually, I also heard it being rehearsed; it might come as a surprise to learn that, in this case as in many others, 'recording session' includes all the rehearsal the orchestra will get. It says something for the players' professionalism that they were able to progress from a sight-reading playthrough of the Concerto to recorded takes in little over an hour. The recording engineer, Trygg Tryggvason, had already rigged his microphones for the Symphony, and during the rehearsal was quickly able to readjust the balance to include the solo piano. Mixdown was 'live' to a pair of Technics DAT recorders, monitored over a pair of rather 'well-travelled' ATC

# Master Class.



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The recording is due for release this autumn, when it will join three other recordings sponsored by Technics recently, ranging from Monteverdi to Prokofiev. But how did Technics come to be interested in the music of Panufnik? Alan Ainslie, Assistant Director, Technics Marketing, explained that Technics believes in putting something back into music which, ultimately, is any hi-fi company's *raison d'être*. Conifer initially approached Technics for sponsorship for the bassoon concerto record, and the relationship prospered, based on a mutual admiration for Panufnik's music. Let us hope that it continues to do so.

## Alternative links

*As we should have known, not all optical links are equal, and John Seabury has been trying out some different types.*

A decade ago, the digital revolution looked set to banish forever the subjective vagaries surrounding hi-fi reproduction. But real life is seldom so obliging; we now accept that CD players differ from each other in sound quality, and that with two-box players it matters how you get the digital signal from transport to converter.

When I looked at Arcam's *Black Box 3* with the *Delta 170* transport, for example, I found distinct differences in musical presentation between the optical and coaxial cables supplied. I also achieved worthwhile improvements by upgrading the coaxial cable.

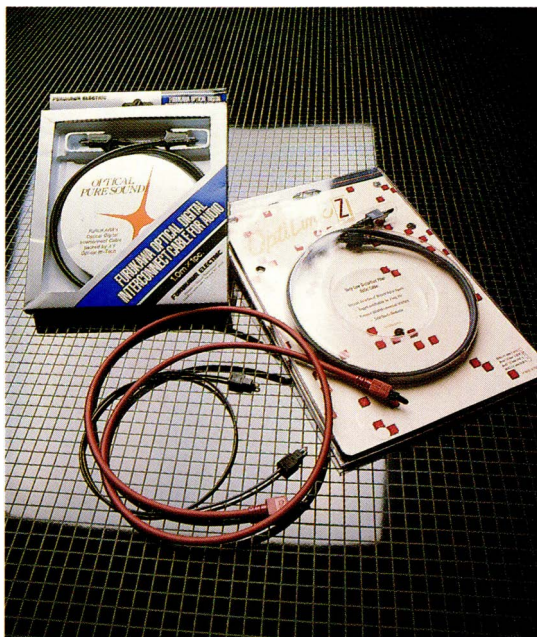
At the time, Arcam was planning to release some higher grade optical cables sourced from AudioQuest and I made a mental note to check them out against some competing products, to see if upgrading a modest optical cable was a cost-effective and worthwhile move. I've now had a chance to do just that, testing three Arcam and three Furukawa optical cables using the Arcam *Delta 170/BB3* combination and also a Meridian 200/203 combination, with *D600* active speakers.

All the cables feature the TOSLINK connector which has become an industry standard. Most manufacturers moan about this being a relatively imprecise system, but also accept the fact that they have to live with it!

Arcam's three cables are: the freebie plastic type, 75cm long (which Arcam estimates would cost £15 to £20 if sold

separately); the one metre *Optilink X* which uses a better quality plastic fibre and costs £39; and the one metre *Optilink Z* featuring a single silica (quartz) fibre, at £69. The dearer cables come from AudioQuest.

Furukawa cables are manufactured in Japan and distributed here by Quantum Audio. The cables, all one metre in length, are: the memorably named *FO1110*, a single-core plastic (POF) fibre costing £37.50; the *FO1210* single-core polymer clad silica (PCS) at £90; and the *FO1310* nine-strand (PCS) cable which costs £105.



*Optical interconnects can make all the difference to the sound of a system.*

All the Furukawa interconnects include a moulded finger-grip on the substantial plastic connector at each end. A nice touch, but the oversize collet can give compatibility problems where the socket is recessed behind the back panel. They wouldn't quite push all the way home in the *Delta 170*, but the signal was transmitted OK, with good sonic results. A few minutes with a metal file or modelling knife would solve the problem. Probably not a conspiracy, but a nuisance.

## Exploring the options

I started experimenting with the Arcam range. Compared to the supplied cable the *Optilink X* offered finer detail, firmer bass, better instrumental timbre and a more assured performance. Stereo imagery was neater, and there was a greater sense of interplay between the instru-

ments. Even at this stage, it was clear the quality of optical interconnect *does* make a difference.

AudioQuest's *Optilink Z* cable took the same process a bit further; it produced a harder hitting sound that emphasised snare and kick drums. There was more texture on bass instruments too. Given that the Arcam combination is slightly laid-back to begin with, these improvements could be a positive boon for some listeners.

So to the competition. Furukawa's POF cable had a nicely integrated sound with good definition, offering about the same level of performance as Arcam's *Optilink X*. The Furukawa made the bass sound particularly good.

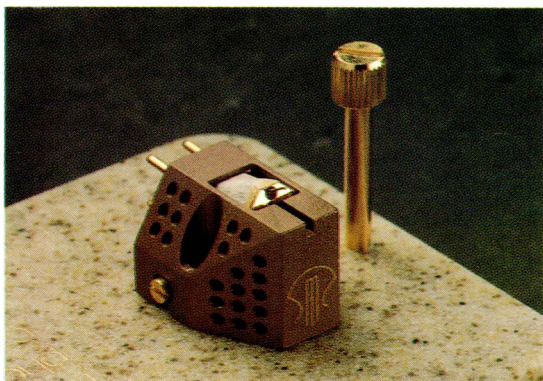
There wasn't the same crystal clarity as with Arcam's top cable, but that changed when I swapped to Furukawa's PCS single-fibre cable. This offered a taut and airy performance, with slightly better definition of bass and more finely-detailed stereo compared to the (admittedly cheaper) *Optilink Z*, though both had a pleasing seamless quality.

Last but not least, Furukawa's PCS multi-strand cable was a delight. It started from where the single-fibre left off, allowing bold passages to be bolder, subtle passages to be subtler, and fast and furious sections to come across

with even greater precision. £105 may seem a lot to pay for a one metre optical cable, but it is worth having a listen to what can be achieved before dismissing the idea.

With all these upgrades, the gains in each department added together to give a more credible and involving performance. Furukawa's PCS multi-strand produced the best proportioned result of the lot, though the one-step-up-the-ladder offerings from both companies were very good value for money, giving useful improvements without great expense.

The only drawback is that more accurate sound can initially seem like a less generous sound, particularly when you're accustomed to a slightly hazy sound-stage or flattering bloom in the bass. But the tauter performance will always win the day, especially when you try going back to the way the system sounded before.



*Malcolm Steward finds analogue nirvana in the shape of the Lyra Clavis cartridge while Paul Messenger runs him a close second in the superlative stakes trying to describe Naim's first CD player. Jason Kennedy had to content himself with a Mentmore amplifier!*

## Statements

**T**reading gingerly through philosophical quicksand one might, in an unguarded moment, categorise high-end cartridges roughly in two divisions: those of an analytical nature, which appeal strongly to the intellect, and those of a more romantic disposition which appeal particularly to the heart. A third category exists for those rarities with equal appeal in both respects, but it's hardly overflowing with entries. The £980 Lyra Clavis moving coil definitely deserves top billing in category number two and, in my estimation, qualifies for inclusion in the hallowed halls of the third.

The Clavis is a rare and beautiful animal. In terms of hi-fi criteria it isn't beyond every criticism, but when one has experienced its magical propensity for getting right to the living, breathing soul of a piece of music such considerations fly out of the window. Who'll give a moment's thought to another cartridge which can, say, convey the stopping and starting of bass guitar notes with greater incisiveness when the Clavis can virtually take you inside the player's mind, allowing you to understand more completely the expression and emotion he's attempting to wring out of the instrument? And what does it matter if another transducer can put more air and space around a cymbal figure if that motif means nothing to the music as a whole?

It's all a question of what you listen for when you sit down in front of your hi-fi for an evening's entertainment. If you want to explore the mechanics of a recording, revelling in layers of detail being ruthlessly revealed then you're probably better off with something else, the highly analytical Ortofon MC5000, for example. If, however, you gain more satisfaction from having your emotions stirred, the hairs on your arms standing to attention, and feeling a lump rise in your throat, the £980 Clavis is sure to hammer your musical nail.

Its manufacturer, Scantec, hails from Japan and the company's literature tells

you exactly where the Clavis is 'coming from'. The first paragraph describing the cartridge, or Proprietary Decoding Algorithm as Lyra choose to refer to it, reads 'No matter what the sampling rate, or the number of bits, the most advanced CD technology today is basically speculation. Estimating what was lost during the recording process and trying to reconstruct it. Yes, the best DSP based designs are gradually becoming more listenable, but they are still at best approximations.' It continues 'If you're looking for music, not just sound, Lyra CPI has the answer'. Digiphobes will be nodding in agreement with the sentiment before they even remove the cartridge from its exquisite wooden packaging.

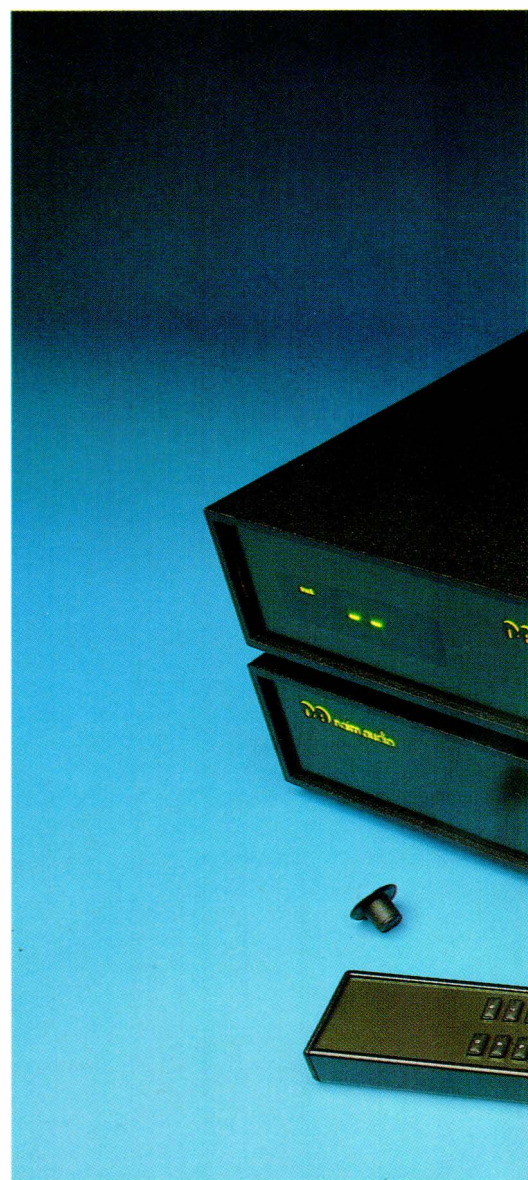
And make no mistake, the Clavis is the sort of cartridge of which devoted vinyl adherents dream. It's not surrounded in mythology or arcana but it requires a modicum of tweaking to exploit its true potential. Once unboxed there's a necessary task to perform before bolting the cartridge into a tonearm. This paradigm of analogue virtue, designed by Jonathan Carr and individually hand-crafted by Yoshinori Mishima, needs to be stripped ready for action. The instructions warn that users are on their own once they undress the Clavis but, in all honesty, with its perforated alloy body in place you'll not hear the full measure of the outstanding performance of which it is capable.

### A taste of ecstasy

Having removed the brass screws from either side of its aluminium-magnesium alloy mounting plate you can gently, and with extreme caution, tease the body off. Remembering that you're handling an inordinately delicate piece of equipment, bolt the Clavis into the headshell: this is made slightly easier than usual because its top plate is ready tapped to accept standard mounting hardware. After the usual alignment procedures have been carried out, you are ready to lower what's

claimed to be the world's smallest line contact stylus into its first groove. If you've got everything spot-on be prepared for a taste of ecstasy.

I used the Clavis in my Pink Triangle modified Linn Sondek LP12 which is fitted with a Naim ARO unipivot tonearm, all supported by a Mana turntable stand.



I described the *Clavis* as magical, and truthfully that is the only way to express how I felt about its performance. Linn's *Troika* is magnificent, Audio Technica's *ART-1* is stunning, Ortofon's *MC5000* is revelatory, Kiseki's *PHS* is dramatic, but the Lyra cartridge exhibited a level of communication and an overall balance of virtues which none of these respected devices can fully match.

Quite how the *Clavis* managed to weave its spell is hard to articulate. It seemed to highlight with more conviction than other cartridges the human and physical elements of music making. For example, even the finest musicians don't play with quartz-locked precision, instruments with tempered tuning like guitars are never note-perfect over their entire range, no two drumbeats are ever 100 per cent alike: the *Clavis* respected and reflected these facets, and painted a rewardingly realis-

tic picture of music, one which didn't appear artificial or processed.

### Follo' the toons!

Don't imagine that by concentrating on the emotional aspect of musical performances the *Clavis* ignored hi-fi's fundamentals. In this respect nothing could be further from the truth. The range of dynamic shading it could portray was wide and exquisite, and its exposition of instrumental timbre excellent. And, naturally, it allowed you 'tae follo' the toons!' But this was small beer for the Lyra, it continued past this base level, recognising that music exceeds the bounds of predictability and the chromatic scale. If you

*Two very different approaches to the art of reproducing music in the home, top left: the Lyra Clavis, below: Naim's long awaited CD player.*

subscribe to the notion that being able to 'sing along' means that a component's fit is hi enough, then all well and good: stick contentedly with Simple Minds and The Proclaimers but steer clear of seriously adventurous composers and musicians. The profundity, colour and value of more taxing music which is lost on lesser cartridges becomes immediately apparent with the *Clavis*.

When I said earlier that the *Clavis* was a rarity, I was, unfortunately, speaking quite literally. Each sample is hand-built by one man, and he doesn't churn them out by the crate-full. Is there some way he might be persuaded to take on an assistant, I wonder? Exclusivity might be valued by some enthusiasts but I would be much happier if these superb cartridges were made more widely available. Perhaps the company could then devote time to building the *Parnassus*. This is Lyra CPI's £1,450 flagship cartridge. It's said to be better still!

Malcolm Steward

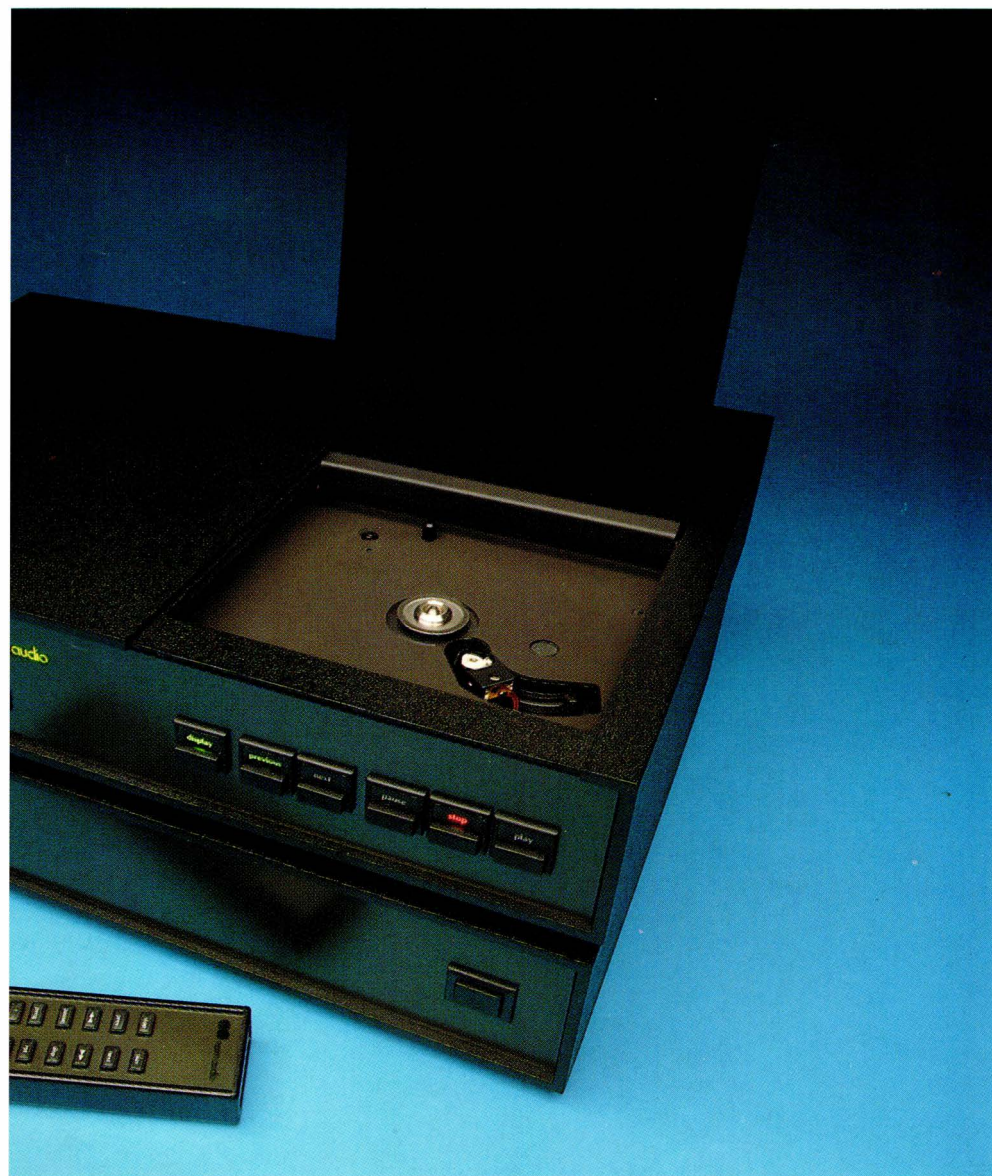
Only Naim could make a one-box two-box player", commented one wry observer. The £3,000 *NACDS* may share a number of building blocks with Philips and most audiophile CD player makers, but the way they've been put together is as wilfully and deliberately different as the sound that this machine makes.

After seven years of consistent and implacable opposition to the silver disc and all its works, Naim Audio has celebrated the end of the Thatcher era with one of hi-fi's more comprehensive U-turns. But get a listen to what the *CDS* can deliver, and you've got to admit it's a U-turn that's been handled with some style.

The rationale is simple enough. Vinyl is disappearing rapidly from the racks of mainstream record stores, and where the music industry leads, specialist hi-fi is forced, however unwillingly, to follow.

But where do you go, if you make amplifiers and speakers that make all commercial CD players you've tried sound like doodly squat? You build one yourself, of course. First and foremost so you've got one to use at home. But it's nice to be able to defray the development costs by making a few replicas that like-eared friends and customers might be interested in buying.

I discussed some of the background to this project in last month's *Personal Messages*. What has emerged from Naim Audio is still a CD player, consisting of two separate boxes and costing £3,000, but it





Not a digital output in sight - the rear panel of Naim's CD player.

differs from most of the high end competition in a number of important ways. Even the basic architecture breaks completely - and quite deliberately - with the currently popular audiophile practice of separating out transport and DAC (digital-to-analogue converter). Instead the *NACDS* keeps these together in the same unit, whilst the second box contains a massive multi-way power supply.

Such an arrangement doesn't easily lend itself to upgrading one or other box piecemeal, but Naim regards it as the only logical route. The performance of a conventionally separated (transport/DAC) two-box player is constrained by the 'standard' interface that's used to link them both together.

Ditching the need to provide universal interfacing by making the player itself a single entity with just a single (DIN) stereo analogue output permits much faster proprietary data transfer links from transport to DAC, resulting in greater retrieval accuracy in the time domain.

### Suspended subchassis?

This isn't the first CD player to use a spring-decoupled transport, though the Naim variation is unusually bouncy. What is a little more unusual is that there are two sets of transit screws to undo prior to operation. Not just the turntable, but also the main electronics board is carefully mechanically decoupled from the case. Critical components are apparently several orders of magnitude more sensitive to vibration than the boards used in Naim's preamps, for example.

Given the above mechanical complexity, I felt very disinclined to try and open up the machine to see what's inside. I understand the DACs themselves are the classic Philips 16-bit four times oversampling chipset.

Operation is a little quirky, and I can niggle a bit about the ergonomics too. It's

not that I mind top-loading my CDs after lifting up a little hatch. In fact I've quickly come to prefer it to those infernal delayed-action sliding drawers. Nor do I object to removing and replacing the little magnetic clamp with each disc. You only forget to put it back the first half dozen times, the embarrassing clatter of a disc rattling around the transport tray soon providing the necessary conditioning.

Furthermore, I appreciate that the matt black interior surface has been coated in a very special way to minimise laser light scatter. But I do wish the sides of the tray base had been scalloped to allow me to get the fingertips of one hand round a CD and lift it out without dropping it. I suppose the fault lies partly with the disc itself, for being too small for two-hand and too large for one-hand operation. But I haven't yet found the knack of lifting out a disc without dropping it, leaving it canted sideways to be picked up whilst depositing fingermarks under the edge.

And I do wish the control buttons had been more clearly identified: you can only read what each button says after you've made it light up by selecting it! And the handset is almost indistinguishable from the *NAC52*'s, Sod's Law dictating that I always pick the wrong one up first.

Although the player seemed to track damaged discs pretty well, my sample did sometimes prove reluctant to lock onto the start of an individually selected track, usually when trying to demonstrate it to visitors.

### The boogie factor

But such carping is really utterly irrelevant when confronted by a CD player that plays tunes like this one. That, moreover, gets down and boogies in a way that no previous CD player - and precious little vinyl for that matter - can manage.

Speaking as one who has consistently

- even interminably - rejected Compact Disc as a serious substitute for vinyl, the *NACDS* is making by far the most persuasive arguments in favour of the silver disc that I've yet heard. It doesn't make CD 'better' than vinyl, but can make listening to CD a highly entertaining and engrossing experience, especially when playing modern dance, house or rock music.

There's no denying I was using it under optimum circumstances, driving an extravagantly expensive full-house Naim active system. And it should come as no surprise that the CD player and the big *DBL* loudspeakers are superbly complementary to each other. But there's no denying the awesome, gobsmacking results either.

This is a dance and rhythm machine, no question about it, holding strict tempo with an iron grip and remarkable bandwidth through the most complex sampled polyrhythms. On this modern and fundamentally synthetic music, the extraordinary analysis of the mix - crisp, fast and uncoloured, with solidity and control - seems significantly better than I've heard from vinyl.

Go to the opposite end of the musical spectrum, and I still find myself missing the shimmer, body and translucency of orchestral strings, or the delicacy of the plucked string that the best vinyl affords. It could be I just haven't come across the right CD yet, however textures and timbres seem a little less effective than tempi.

Likewise I've yet to find vocals that quite match the intimacy and sex appeal of my favourite vinyl discs (eg Ella Fitzgerald, in mono, from the Fifties), but again it is difficult to know whether one should be blaming the CD medium or the paraphernalia of the modern recording studio.

What is very clear is that this player is exceptionally faithful to the recordings themselves, making it ridiculously easy to separate the good from the bad from the indifferent. The synthetic quality of most pop mixes is all too obvious.

While the clarity, detail, control and precision of the *CDS* is highly impressive, a similarly expensive vinyl playing source nevertheless manages to extract significantly more in the magic and the message, for all its irritating distortions and colorations. Were I foolhardy enough to attempt to quantify the differences, I'd have to say that my vinyl reproduction is at least as far ahead of this CD player as the *CDS* is ahead of every other CD player I have heard.

But perhaps uniquely amongst CD players, the intention behind the *NACDS*

is not to oust or supplant vinyl. (The music business doesn't need any help in committing that particular act of cultural vandalism.) Instead it's to create a machine that makes the playing of CDs a genuinely enjoyable experience. To this end it must be judged a great success, insofar as it makes more digital discs sound significantly more entertaining and informative than they ever did before. Just listen to the sound of your tapping feet.

*Paul Messenger*

**M**entmore Industries has been going through some troubled times of late. The company was set up in 1979 by Hackney Council and the Manpower Services Commission to employ disabled people and manufacture electronic equipment. Since then the company purchased the remains of Michaelson & Austin and produced valve amplifiers of its own including a version of M&A's substantial *TVA-1* 200 watter. For further background dig out a copy of issue 83 (June '90) where we featured Mentmore in *Craftsman*.

Of late, for reasons no doubt political, Hackney Council has been having deliberations over the company's future and although nothing has been firmed up the amplification side of the business may end up in private hands. It has also appointed a British agent, Marpaul Hi-fi, with the aim of breaking out of its virtually export only situation. Which is why a pre/power combination ended up in the *Choice* offices for what must be one of the first reviews in the UK press of this well established brand. Mentmore makes one preamp and four power amps priced upwards of £770 for the *TVP-III* preamp. The latter along with the £1,453 *TVA-50* 65W power amp are the subject of this review.

## Sidewinder

The preamp is unusual in that it hides its control knobs sideways underneath the tri-faceted wooden fascia, LEDs being provided to show which source has been selected, it also has a filter option which is billed as cutting out rumble. The hidden knob arrangement can be a bit confusing at first, especially the sideways on volume knob, on my sample this worked in the conventional clockwise fashion - so if you thought about it enough it was possible to figure out which way was down. Apparently the latest versions work in an anti-clockwise fashion which, although it sounds odd, is more logical.

The *TVP-111* has three inputs, including an MM only phono stage, and a tape output, which ain't a lot if you want to run a tuner, CD player and cassette deck along with your turntable. It is fully buffered, ie the aux and CD inputs are line stages rather than being purely passive as is often the case in valve preamps. This can be quite useful if you've got lengthy pre/power interconnects or a low impedance power amp.

The power amp is a hefty affair with two substantial output transformers and alternative four or eight ohm tapings to drive your loudspeakers with. Its most unusual, and initially perplexing, feature is a volume knob that's hidden away in the same fashion as the one on the preamp. This really kept me guessing until Marpaul told me of its existence - it's not the sort of thing you notice (or expect) unless you turn the beast over, but the volume levels available soon tell you that something is amiss!

The preamp gave me a bit of a run around as well, the first sample had a defective valve in it and the second sampled proved a bit noisy, but the first sample came back with a new tube onboard and behaved well.

Which brings us round to the Mentmore's sonic character which is quite distinct but not too obtrusive. Basically this is a powerful, ballsy combination that trades in the dynamics and transparency of some valve amps for real driving power and solidity. It's not unobtrusive as amps of this price go, especially compared to transistorised alternatives, and it has enough transparency to reveal most detail, it just doesn't provide the openness of some alternative designs.

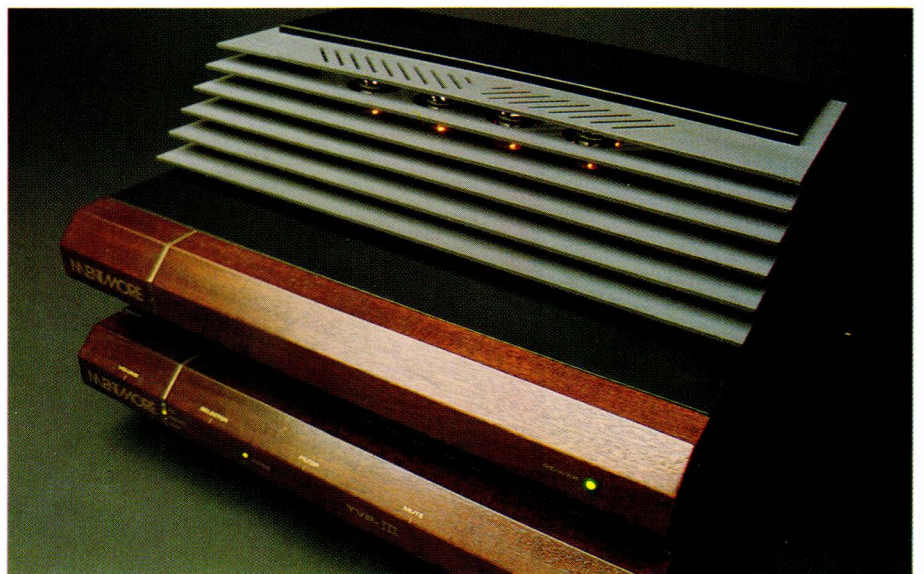
However, the sheer grunt that the Mentmores can deliver more than makes up for the lack of transparency, with an efficient pair of speakers like the Audio Note Js and, given its 65W output, you get a very appealing combination of valve openness and almost transistor like ability to drive the lower frequencies. In fact this is very much the amp for those of you who want a taste of valve transparency and dynamics but don't want to give up the power afforded by transistors.

Strangely enough, their Achilles heel could be too much low frequency power. If you already have speakers which are very capable in this department, or medium sized speakers in a small room, I can imagine the bass getting a bit OTT. In my relatively dry sounding room with well damped speakers there were occasions when kick drums and the like got a bit too heavy, although overall the balance was much to my liking, being a bit of a closet bass freak and all. And I imagine miniature ball busters like the *AE1* or *MA Studio 5* would be well suited to this slightly heavy balance.

At the end of the day I thoroughly enjoyed my sojourn with the Mentmores, their enthusiasm and welly injecting powers did great things for my records and CDs (yes I do have a few), and what they lacked in clarity they made up for in floor shaking skills. I wonder what the bigger power amps can do?

Postscript: At the time of going to press Mentmore's ownership, and possibly the name as well, were on the verge of changing, so we would suggest you contact Marpaul Hi-fi for any further details. Tel: (04747) 3098.

*Jason Kennedy*



*The Mentmore combination - the first amplifier to suffer from rate capping?*

# Dome is where the art is

*Paul Messenger investigates Canon's attempts to create a wide imaging stereo speaker and comes to the conclusion that if anyone can, Canon might have done.*

**C**elebrating the arrival of stereophony back in the golden age of *Hi-Fi News* (when that? - ed) cartoonist Anscombe showed the proud enthusiast seating his whole family in line astern on a row of chairs with a stepladder at the back, carefully positioned along the line equidistant from each of the loudspeakers.

That unforgettable image put the finger firmly on one of the great and lasting weaknesses of the whole concept of stereo. As the basic theory makes clear, two conventional loudspeakers can only create an accurate and 'solid' image at locations equidistant from the two sources.

Searching for ways to circumvent this constraint and increase the sociability of stereo listening has preoccupied the minds and imaginations of audio engineers for over 30 years - hitherto with remarkable lack of success.

Now Japanese cameras-to-photocopiers multinational Canon is taking a radical step towards tackling the problem, by the unprecedented decision to launch a luxury specialist loudspeaker into what many regard as the toughest and most competitive loudspeaker market in the world.

The speaker concerned is actually designed and manufactured here in Britain, though the idea behind it came originally from a Japanese research engineer, one Hiro Negishi. Negishi now heads up Canon Research Europe which operates from a business park close to the University of Surrey, in Guildford.

The modern styling from Alan Boothroyd, who also does industrial design for Meridian, KEF and others, is distinctly oddball, self-consciously 'designer', but indisputably pretty, with the undoubted virtue of looking more like an art deco lamp or hi-tech astrolabe than a loudspeaker. However the *S-50* is utterly and startlingly original in all man-

ner of crucial respects.

Scheduled to sell at £349 per pair (excluding stands), about the only thing these cute little magic mushrooms have in common with a conventional loudspeaker is a moving coil driven, cone diaphragm drive unit. And there's only one of those (in each loudspeaker, dummy).

## Wide imaging stereo

The truly unique contribution goes back to Negishi's original idea, known as wide imaging stereo (WIS). Rather appropriately for a camera company the concept actually borrows ideas from optics and applies them to audio signals.

The first UK appearance was about four years ago, at a Canon technology exhibition held in London, where some pretty sceptical hi-fi journalists were treated to a rather unusual pair of loudspeakers that did indeed appear to create a credible stereo image over an unusually wide area. But before tracking the progress of the WIS project up to today's first production samples, it's necessary to dig into some of the (very simplified) background about how stereo itself works.

In the simplest case, if you play a signal through just the left hand channel of a system, the sound will appear to come from the left, and vice versa through the right channel. However, play the same (mono) signal through both left and right channels simultaneously and you don't hear the sound coming from left and right speakers simultaneously. Instead, the brain is fooled into believing it comes from midway between the speakers. This ability to create 'phantom' images that appear to hang in space is the very foundation of stereophony.

Shift your position a little to the right of the centre line, and that central mono image lurches alarmingly towards the right hand speaker. In deciding where a specific stereo image is located, the ear/

brain responds to (at least) two different stimuli: the relative loudness and the arrival time of the two sources.

Move to the right of the centre line, and the right hand loudspeaker wins on both counts. One way of compensating, for the relative loudness factor at least, is of course to use the balance control on the amplifier. The listener to the right of the centre line can get a pretty good image merely by boosting the relative output of the left hand loudspeaker by a decibel or two.

Which is all fine and dandy provided that there's no one else in the room sitting on the left of the centre line, and who would obviously prefer to have the output of the right hand speaker boosted. However you look at it, stereo remains a solitary and anti-social activity

## Crossing axes

One technique that can help a bit is to place the speakers at an angle, so that their main axes cross in front of the listener. With over-angled placement, as you move to the right of the centre line, you move closer to the axis of the further (left) speaker and further away from the axis of the nearer speaker, so providing some loudness compensation, albeit of a rather hit-or-miss nature and with a sack load of compromises thrown in.

While it may represent a step in the right direction, and certainly does reduce the severity of the symptoms significantly, the over-angling approach suffers from the fact that the directivity of a conventional forward radiating speaker varies quite dramatically across the audio band, and especially around the crossover point, so that any relative loudness compensation tends to be haphazard and concentrated towards the upper end of the spectrum.

What is really needed is some sort of means of directing the ideal frequency balance across a wide forward angle, but





*Canon's magic mushroom, or the S-50 WIS system as it is known to its friends.*

with a higher relative level directed towards the opposite corner of the room than straight down the room. Some sort of acoustic lens might provide the answer, and just such a 'lens', in the form of an offset conical mirror, lies at the heart of the Canon WIS approach and the S-50.

The base of the loudspeaker forms a metal cone, and the driver fires downwards onto the side of the cone shape, which reflects the full bandwidth of the speaker out into the room, but with the greatest intensity across towards the opposite corner, and proportionally less output directed straight ahead.

This provides the automatic compensation needed to widen the effective stereo listening area. Move to the right of the

centre line and the output from the left increases and that from the right speaker decreases.

The effectiveness of this technique is immediately - indeed startlingly - obvious to anyone already used to the sound of conventional stereo. It's initially quite disturbing to find that the stereo shifts one is accustomed to hearing when moving around the room no longer take place.

Almost uncannily, the soundstage remains spread across the space between the loudspeakers almost irrespective of where one chooses to sit or stand. The speakers are designed to be set at 45 degrees to straight ahead, and the best results are found within the far quadrant of the room, behind the point where the

directional axes cross, while the near quadrant has difficulty maintaining focus. But it works to some degree pretty well anywhere, even quite close to yet outside the line of the speakers.

That doesn't mean you get pinpoint accuracy across most of the room. In fact you won't get quite the precision and layered focus available from the very best conventional forward-facing loudspeakers when listening on the hot seat. But the Canon does have sufficient accuracy to reveal some of the micro- as well as the macro-structure of the image, and you don't get that uncomfortable lurch to one side that usually happens when shifting position.

As usual, the central line is best in terms of accuracy and focus - but at least you do get an identifiable stereo spread away from the line, albeit with some tendency for central images to spread and smear a little in the direction of the nearer speaker.

There's also a tendency for images to spread backwards a little behind the plane of the speakers, due I suspect to wall reflection of the significant inward/rearward output. Don't even consider trying to use them less than a foot from the wall, and give them three if you can.

## **Time to go dome**

Stereo performance is only one of the characteristics that defines a loudspeaker. And to achieve its obvious imaging strengths, the designers of the S-50 have adopted all sorts of unusual engineering solutions elsewhere, all of which will have some impact on the end result.

The anatomy of the speaker itself is best described with one eye on the photographs. The dome is the enclosure proper, which means that the lens system roughly doubles the overall bulk. Providing partial compensation, the dome is made from a self-damping plastic that takes up little of the internal volume, and is port-loaded by a flared reflex tube that opens into the horizontal, circular, cast metal baffle.

Besides the port, and a substantial hex nut that presumably holds everything together, there's a tiny little paper cone driver, about 80mm across plus a generous surround, with parasitic tweeter horn in the centre, rear mounted and protected from prying fingers by a plastic grille.

Not only is the baffle cast metal, so are the two verticals, the main lens cone and

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the three (studded rather than spiked) feet, all of which should confer exceptional mechanical integrity, which will be further enhanced by the fact that the unit is pointing downwards, so all mechanical reaction forces are directed towards or away from the floor.

Although it's just a single driver system, and therefore needs no electrical crossover circuitry, there is a network in line with the driver to provide some frequency balance compensation. Specifically, there's a suck circuit to counter a horn effect that is created by the geometrical relationship and proximity of driver and lens.

The driver magnet has been carefully shielded so that the speaker can be placed close to a television set without interfering with colour purity.

The spherical shape, circular base, wide-spaced tripod feet and underslung terminals don't make for good aesthetic or mechanical compatibility with the typical speediframe speaker stand, and in my (somewhat limited) experience, vertically-oriented driver systems are also hideously stand-sensitive.

### The supporting cast

The obvious solution is to use Canon's own dedicated device. This complements the shape and features of the speaker in a most delightful way, the ensemble somehow having much of the elegance of the traditional Japanese stone lantern, albeit in hi-tech form.

The prototypes that I tried out were quite light in weight, and inclined to ring when tapped. The pressed steel top plate (which may be changed for fabricated sheet steel in production) was designed to be clamped tightly onto the speaker via a central screw, so providing some reinforcement, but the base is also a flat (though thick) steel sheet, and the verticals, mirroring the shape of the speaker's baffle supports, are well offset from any mechanical moment from the main driver.

I'd had the loudspeakers for a couple of weeks prior to receiving the matching stands, and had already enjoyed and been very entertained by them perched on top of a pair of that marvellous all-purpose standby, the Heybrook *HBS1*.

I brought them back in for serious listening when the Canon stands arrived, and found myself puzzled and perplexed. The sound seemed more shut-in, coloured and somehow boxy, while the image itself seemed to be down at floor level, without any real height, scale or generosity.

I started making notes that were in-

creasingly uncomplimentary, checking off all manner of quite serious midband colorations - pinched, cuppy and metallic effects to varying degrees - while low bass and upper treble were somewhat lacking and also ill-defined. It still managed to sound tolerably agile, with good fundamental timing, but started to get aggressive and uncomfortable when driven hard.

The improvement wrought by returning to the *HBS1* was almost surreal, the sound blooming to life with enhanced bandwidth, coherence and even a measure of confidence and authority. The *S-50* was transformed from an ugly sounding duckling to an ugly looking one instead, the metamorphosis that so dramatically



*The stands may look great but are best used as plant supports.*

rescued the sound sending the ensemble aesthetics straight up the Swanee.

### Fuelling the illusion

The image seems entirely detached from the enclosures, nicely filling the space in between instead. The illusion is further enhanced by a refreshing lack of serious phasey effects accompanying shifts in head position, and good balance consistency over a wide listening window.

The midrange is impressively even and coherent, with coloration tolerably well controlled, but it's still a limited bandwidth speaker, without much in the way of bass grunt, and with significantly less treble than most of its contemporaries.

There's some lack of fine detail and openness at the top in consequence, but it's by no means unpleasant - quite the

reverse in fact, as conventional tweeters have an unerring habit of drawing unwelcome attention to their presence, in the vast majority of cases. Here there's a mellowness instead, which one listener described as pleasantly nostalgic.

### Hammer down

That said, you don't really want to hammer them too much with heavy rock or dance music. There's protection circuitry built in, so they'll probably survive any maltreatment, but the Hammer himself caused some strange things to happen dynamically to the balance - limiting the treble, it seemed - when I started trying to explore output levels around 100dB.

Using a single driver to cover the whole audio range is unusual, though not unprecedented, and is a technique that's highly regarded by purists for its fine coherence and midband integration, even though it does involve significant compromises at the frequency extremes.

The driver may be small for a bass unit, but it's big for a tweeter, and is going to be struggling to get up to the limit of human hearing, even with the help of the parasitic tweeter horn emerging from the dust cap. And the fact that it's so small is bound to mean little serious bass extension or welly, and comparatively low sensitivity.

One obvious alternative solution might have been to use some sort of coaxial driver arrangement, where the tweeter is mounted in the centre of the bass/mid driver. This was considered, but there's a certain amount of uncertainty around at present regarding some KEF patent applications for its Uni-Q driver, and Canon decided to steer clear of any confusion.

### Conclusion

Certainly the Canon *S-50* must be regarded as a success, if only because it achieves its objective of increasing the number of people that can all enjoy stereo sound simultaneously, a feature that is particularly relevant right now, with the spread of NICAM stereo sound television. That alone goes a long way towards justifying its highish price, as does the quite elaborate and costly engineering and the very classy industrial design.

The sound is quite distinctive, and some may take offence at the restrained treble (though I found it rather refreshing). The innate lack of aggressiveness and 'out of box' image should particularly appeal to classical listeners, especially those using CD as a source, though rock and dance fans may be underwhelmed by the lack of real welly and loudness capability.

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# Readers Write

## CHOICE ANSWERS

### Passing into oblivion

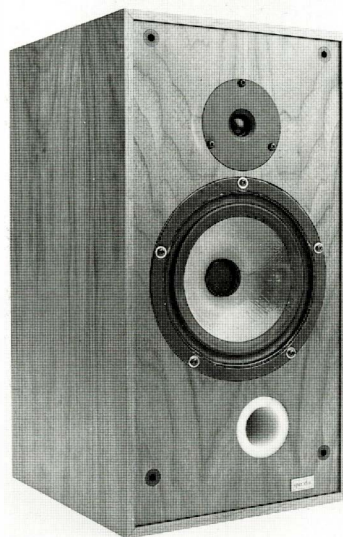
My system, which was all purchased as a result of studying your magazine, is in use with Leak 2075 loudspeakers. It includes the Denon DCD1520, Arcam Black Box 2, Pioneer cassette CT-91a and Pioneer A400 amp. I would be interested to know if you have the original reports on the Leak 2075s from when they were first introduced, and if, on reading these, you would consider that I can improve on them at a cost of less than £800.

I consider it sad that these magnificent speakers, which were received with great enthusiasm by both technicians and musicians alike, seem to have passed into oblivion.  
H N Smith, Stroud, Glos.

*We can't find a review of the Leak 2075 in our back issues, it's possible that by 1975 (when Choice was first published) that the 2075 was no longer in production.*

*However, even if you could find a review from that period it would be unrealistic to compare it with a contemporary one. The differences in source components, use of stands etc would make it difficult to come to an absolute judgement. The only way you can find out if they can be improved upon by contemporary alternatives is to take your speakers along to a dealer and make some comparisons.*

*I doubt that for you there are many speakers that would improve upon them in all respects, but one which would give them a good run for their*



*Sendor's SP2/2 should prove to be a significant upgrade over a pair of vintage Leak 2075s.*

*money is that old Hi-fi Choice favourite the Audio Note AN-J (which was reviewed as the Audio Innovations Model J in issue 95), which sells for a pound below your limit. If you can't get to hear the Audio Notes try and track down some Sendor SP2/2s or Epos ES14s, both retail for just under £500.*

### Toying with ideas

My hi-fi system consists of a Yamaha CDX-930 CD player connected to a Cyrus II amplifier via bog standard interconnect, and a pair of Epos ES11s which are attached with Linn K20 to the amps output terminals.

I want to upgrade the system somewhat and am considering adding a PSX power supply to the amplifier. I also want to improve the sound of my CDs, to wit I am toying with the idea of adding a separate digital to

analogue convertor such as the Meridian 203 or Deltec Little Bit to my Yamaha. Or perhaps I should get a completely new player, what do you think?

I have a budget of £1,000 and am considering upgrading the various cables in the system as well. What course would you recommend I take?  
Henry Tan, London, NW6.

*Replacing your interconnect and speaker cable is highly advisable, the interconnect especially will be limiting the sound quality of your CDs quite drastically. If the budget will cover it, the interconnect and speaker cables made by Audio Note and Deltec are very good. There seems to be something to be said for using the interconnect and speaker cable from the same source, by the way.*

*As far as the actual CD*

*player is concerned, we would suggest you listen to some of the machines that came out well in our last review, the Aiwa XC-700 and NAD 5425 in particular are worth seeking out.*

*There's also couple of new players that we will hopefully be reviewing in the November issue that would be worth considering, they are Pioneer's PD-8700 and other more expensive ones in that (upside down disc) range, and Marantz' latest CD52 which could well be a winner.*

### Sounds on the cheap

Being an impoverished music lover, I had to take an unusual approach to purchasing a hi-fi system. I bought one at a car boot sale for £19! It comprises a Sansui SR-222II/ADC record player, Tandberg TCD310 cassette deck, Rogers A75II amp and Rogers Export Monitor speakers.

I am pleased with the sound but there's a couple of points I'd like to address. Firstly, the speakers are sat on concrete slabs on the floor, and the bass annoys the people downstairs. Can I put them on stands, and would this reduce the problem? Secondly, the top end seems a bit bright and edgy, could this be caused by the ADC cartridge and if so with what budget cartridge would you suggest I replace it?  
Ryan Lidlow, Weston-Super-Mare, Avon.

*It sounds like you got a bargain there Ryan. However, to address your problems; stopping bass travelling through the floor isn't easy but a pair of lightweight stands - Target makes very affordable ones - would improve the situation to an extent. Not using spikes would also make a small difference, but it would be a compromise in sound quality terms.*

*The ADC could be causing the brightness you are hearing, if it only occurs when you are playing records. Usually, worn out cartridges sound dull though, and it's more likely that it has been damaged or badly aligned given its origins, and either of these factors could be*



**A basket full o' serious CD player on the cheap, Aiwa's XC-700 is the budget player to beat.**

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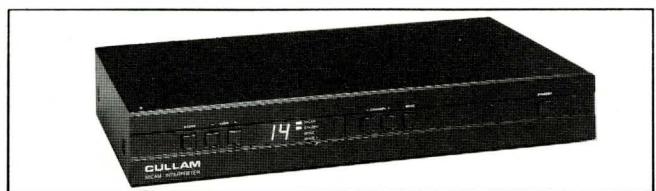
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the culprit. Your best bet would be to take the deck along to a dealer (who actually stocks good quality record players) and have him check it over. If there's a problem he can fit a new cartridge for you.

On the very cheap hi-fi cartridge front, the AT-95E, which costs as much as your system, is about the only serious contender, but if that's too dear NAD's MM4 is a usable alternative at £9.

## The great Snell debate pt 2

I read with interest William Osgood's letter in the July issue of *Hi-Fi Choice*, where he shared his company philosophy with your readers.

Having distributed and successfully brought the name of Snell Acoustics to considerable fame in the UK over the past seven years, and having been robbed of the distribution sometime over the past eight months, I obviously have a somewhat different view and recollection of 'events'.

Rewriting history is nothing new, and Mr Osgood's claim that I did not like the original A/III and the J/II and E/II, after Peter Snell designed these speakers, is incorrect. My only objection was to the rear facing tweeter on the A/III and the E/II. On the A/III Peter kindly installed a switch to defeat the unit, and on most of the E/II's we subsequently bought for the UK and Scandinavian markets, the rear tweeter was disconnected.

My 'highly opinionated position' was, and is, against the new Snell models designed by Kevin Voecks, the sound of which I find totally alien to the sound of the models that Peter Snell created.

I therefore pressed Snell Acoustics to continue to supply the Peter Snell designed models, Type K, Type J/III and Type E/II, which it did until last year, when, without explanation, Snell stopped supplying, despite promising the opposite.

After that we decided to



*The Snell J/II, designed by Peter Snell, liked by Peter Qvortrup and updated by Kevin Voecks!*

study more carefully the whole subject, and having ascertained the overall parameters more closely, we designed our own speakers,

which are technically different in some key areas to the speakers they replace, whilst maintaining the same type of sound that so many review-

ers and customers liked about Peter Snell's speakers.

Opinions are already in print as to how our efforts compare and I shall watch with interest how Mr Voecks' speakers do in the same comparison, and shall be happy to offer speakers for this purpose.

I look forward to Snell Acoustics finding a distributor in the UK for its speakers, so that the real positions between old and new can be clarified.

Peter Qvortrup, MD Audio Note UK.

## Roksan Interconnect Winner

### Leave well enough alone?

My system consists of a Townshend *Rock Reference*/Moth/Linn K18 record player, Meridian 208 CD player, Grant 100P preamp and Bryston 2B power amp, and Townshend *Glastonbury* speakers. I will soon be replacing the *Moth* with an *Excalibur* arm and was interested to read your comments about the deck in the last turntable review (issue 91).

Regarding my system, do you feel that there is any need to upgrade my amplification, bearing in mind that the preamp has been modified by Avondale Audio. Would it be beneficial perhaps to get another 2B and bridge them, or should I leave well enough alone? Iain Noble, Preston, Lancs.

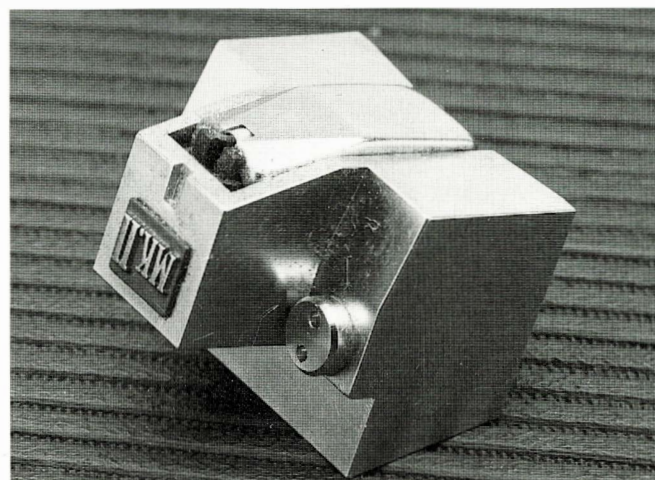
*Moving up to the Excalibur is a logical move that should bring significant improvements in virtually all aspects of LP reproduction. Altering the amplification, however, is less straightforward. It is also not obviously necessary, you have enough power to drive*

*the Glastonburys and unless there's some aspect about the sound that you don't like, it's not really a weak link.*

*What would be more rewarding is a cartridge upgrade. The options are multifarious but the cartridges that have traditionally been great partners for the Rock are Audio Technica's AT-OC9 and the Dynavector 17D2 (£280), it of the very short diamond cantilever. The OC9 has now been replaced by the OC30 (£500) which promises to be a better cartridge, but is so far unproven. Of course, with either of these you would need a step-*

*up transformer which would set you back another £200 or so, EAR and Audio Innovations make good ones.*

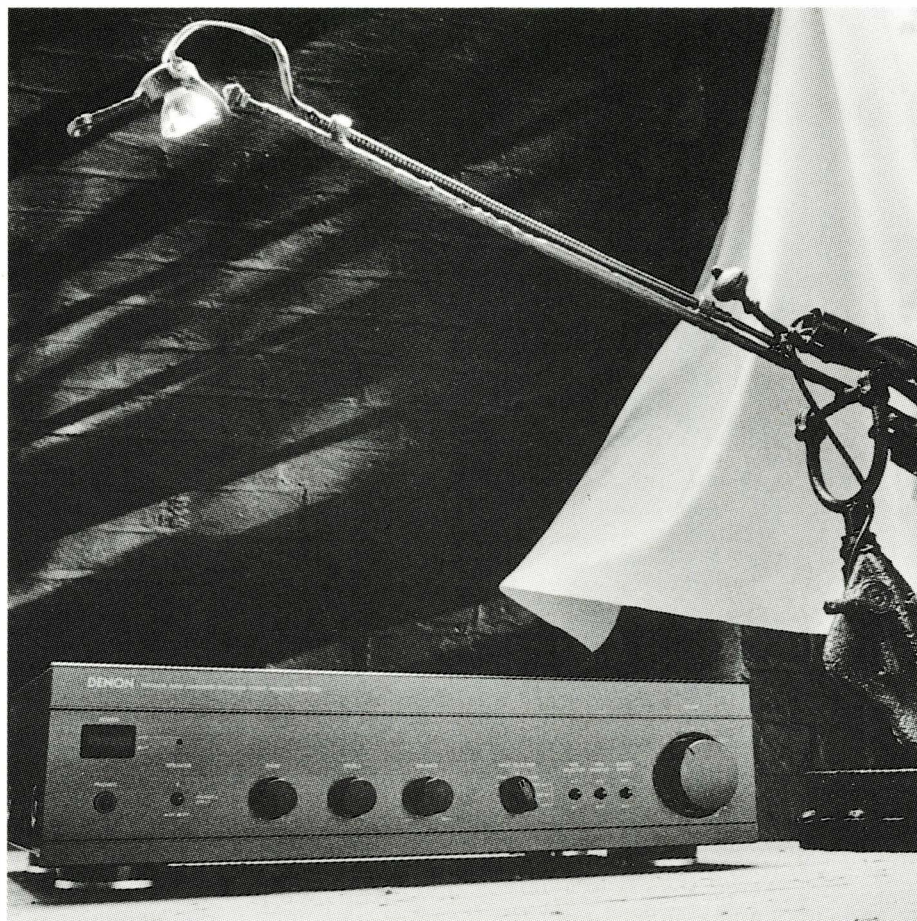
*If that is a bit excessive, the Shure VST V (£173) MM is a cheaper but not a lot less impressive cartridge that has single handedly put the Shure name back on the audiophile map. Depending on what it is, your speaker cabling might also benefit from upgrading, the heavy Townshend Isolda stuff was developed specifically for your speakers and, not surprisingly, works extremely well with them.*



*The classic Rock Reference cartridge, Dynavector's 17D2.*

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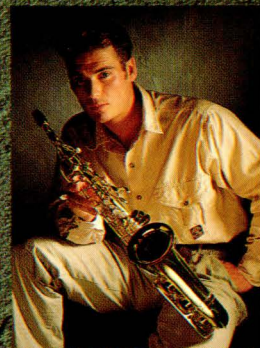
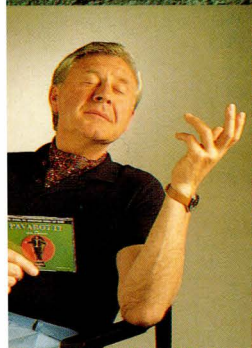
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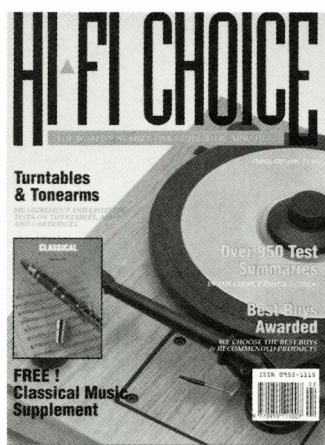
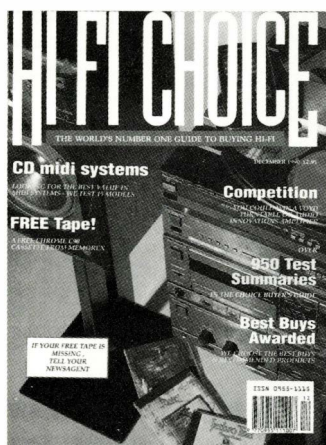
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# 21st Century Fox

*This month Barry Fox looks at the implementation of the proposed blank media levy and takes John Peel to task for some ill judged comments on everyone's favourite format, the Compact Disc!*

**A** lot of people regret the passing of the LP, just as a lot of people still miss getting dirty from steam train smoke or smelling the dung from a horse and carriage.

There is a lot of life left in the old LP yet. Sansui just introduced a new turntable made by Dual. Audio Technica does a healthy trade in cartridges and styli. Specialist vinyl junkie shops thrive in Japan. But eventually the LP will die, because the public at large likes the sheer convenience of CD, record shops like the space saved on CDs and cassettes and the record companies are shutting their vinyl pressing plants.

And talking technical rubbish will not change history. Recently BBC DJ John Peel wrote a classic piece of nonsense for the London Evening Standard. I quote:

"The CD is a gossamer thing and if you let your foul, grease-ridden, germ-infested fingertips so much as brush across the playing surface, well, you might as well bin it". Rubbish. Of course dirty discs don't play properly. What you do is wipe them clean with a cloth.

"Apparently the stupid things don't even revolve at a constant speed". True, but it's clever, not stupid. The reason why LPs don't sound as good towards the end of the side is that the disc is rotating at constant speed and thus has to cram more information into the shorter turns of the spiral near the centre.

It's the same principle that means you can get round a circular race-track faster if you stick to the inside lanes which are shorter.

Back in the mid-Twenties Garrard tried to sell a gramophone called the World Record Controller. The motor altered its speed so that the record ran slower while its outer grooves were being played and faster towards the centre, just like a modern CD. The WRC failed because it

required the cooperation of the record companies to put out recordings suitable for playing at constantly varying speed. Also, it was difficult to match the motor speed to the correct playback speed. The digital code on a CD made matching easy.

"My strongest objection to the sound of CDs", writes Peel, "(is that they are) too bright and too hard, and old favourites transferred from vinyl just don't sound right."

Don't blame the system, Mr Peel. Blame the people who use it. If you have ever heard one CD - just one - that sounds "right", then that proves the system works.

Re-issues sound too bright and too hard because the record companies have skimmed on the job of transferring the sound from old analogue tapes to new digital masters.

The chances are they are using old tapes which were equalized, with treble boost and bass cut, to compensate for the characteristics of the LP. Of course those tapes sound wrong when transferred to CD which reproduces the boosted treble with painful accuracy.

It is sad to see someone with the clout of John Peel saying silly things so publicly and in the process making a fool of himself.

**B**ehind the scenes the record industry, both in the UK and US, continues to lobby for a tax or levy on blank tape. They call it a royalty because it sounds better, even though there is still have no way of allocating tape tax revenue to the artists whose records have been copied.

In the USA agreement is expected any day now on a deal which puts two per cent on the price of any digital audio recorder (DAT, DCC or Mini Disc) and three per cent on blank tapes or discs. The digital audio recorder will have SCMS (Serial Copy

Management System) to prevent cloning, ie, the recorder will not make a digital copy of a digital copy.

The breakthrough for the music industry came after two things happened. The National Music Publishers Association, headed by talkative spokesman Ed Murphy and using even more talkative songwriter Sammy Cahn as a figurehead, sued



*The record companies think you should pay more for your blank tapes.*

Sony for selling DAT in the USA. Then Tandy signed with Philips to promote DCC. Philips and Tandy realised they would be sued by the NMPA the moment they tried to sell DCC in North America.

Philips, with its 1992 hands full with launching DCC in Europe, handed Tandy the problem. It's your country, you sort it out. So Tandy sought a deal with both the software industry and EIA (Electronics Industries Association of America).

The issue of how the money will be distributed has been swept under the carpet. Perhaps one day we will see a police state in which all recorders are fitted with electronic logging devices, which identify every recording taped.

In the meantime, spare a thought for what already happens in horse racing. Betting shops collect a tax of ten per cent on all bets. They then remit the money to the Government which treats it as any other tax revenue, and to the Levy Board, which uses the money to police horse racing against dopers and nobblers.

Now bookies stand

accused of skimming up to £20 million a year off the top of this tax. So only a very small percentage of the money which betters pay as a tax actually goes to the "good cause" for which it is intended. The rest goes straight to the Government, to administrators or into the pockets of the bookies.

Why should we expect anything different from a tax on tape?

But most honourable people feel they should make some

amends when copying a disc onto tape. They feel this even though they may only be doing so because the disc is no longer available.

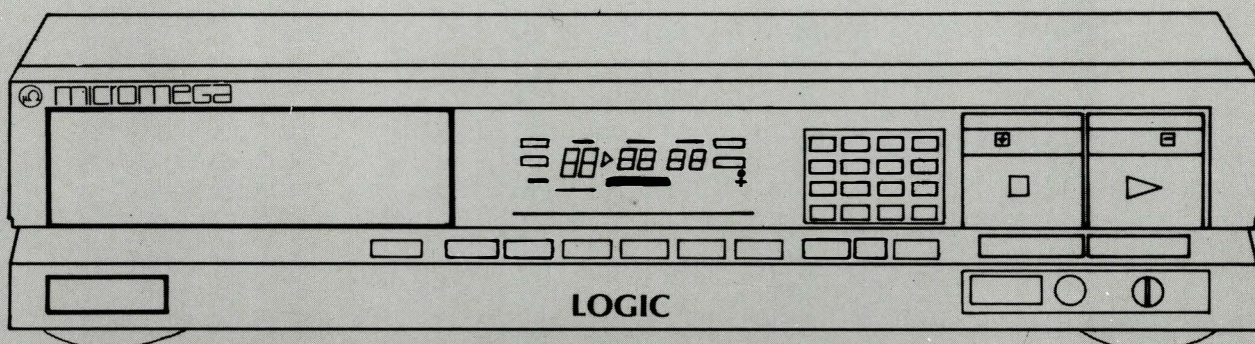
This happens a lot because pressing runs on minority interest titles, including a lot of jazz, are often as low as 500. I, for one, object to Paul McCartney getting my tax on a tape used to record Tubby Hayes from a deleted LP. And this is just what will happen if the tax is distributed on a percentage basis tailored to record-sales royalties.

All of which brings us back to the most sensible suggestion ever made to me by a record company boss. Don't even try and distribute the levy as a royalty, he said. Just give it to an appropriate charity, for example the Deaf or Blind.

Then we can all get on with selling, using and enjoying digital recorders.



# MICROMEGA



## MICROMEGA AND MUSICALITY

You only have to look at a Micromega CD Player to see that it is very different from the mass of more 'normal' machines on the market. You only have to use one to see that the differences are more than skin deep. In fact, everything about the Micromega range is the result of a fundamental reappraisal of the ideal conditions for CD replay.

It's all very well us talking of power supplies and data integrity, but as a customer you want to know how these things affect what you hear.

CD has had specific musical failings. In general these can be summed up as a lack of the following: deep bass weight, upper range tonal accuracy, dynamic coherence and many aspects of stereo performance. It has also been accused of having an antiseptic or clinical sound. The upshot of all this is that many CD players sound gutless with screeching highs. The sound can sound harsh and 'glarey' when the music gets complex or loud, and the soundstage is wide yet mostly flat.

Many 'audiophile' players try to compensate for this by adding pleasant second order harmonic distortion to 'sweeten' the sound, and a midrange suckout to give an impression of depth. Thus they try to hide the problems rather than solve them.

Micromega players retrieve much more information than other CD machines. This is because of the way they are built. The result is a more complete sound. High frequencies and harmonics are sweet and airy, the music swells with a true sense of body, and it does not get hard as it gets loud. The soundstage is open, with width, depth and height, and properly proportioned images which do not wander. Even more importantly, music is preserved with a natural sense of ebb and flow, which allows you to hear how an instrument is being played, and gives melodic lines a clear and well defined shape. And that all adds up to increased musicality.

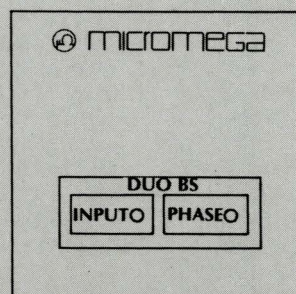
These effects benefit any type of music, yet they are more easily recognised on well recorded acoustic performances. In our experience, recordings on the Chesky, Reference Recordings and Harmonia Munddi labels are particularly revealing. Once you have heard the difference, you will hear it with every type of music.

How often have you heard natural sound and natural perspectives from a CD? How often have you tapped your feet or been swept along by the emotive swell of an orchestral crescendo? With a Micromega player this is normal.

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## THE ONLY LOGICAL DIGITAL CHOICE



# Choosing and Using . . . Ghetto blasters

*Or a round-up of the pros and cons of the CD playing portable blaster, resident bass freak Jason Kennedy talks you through the species.*

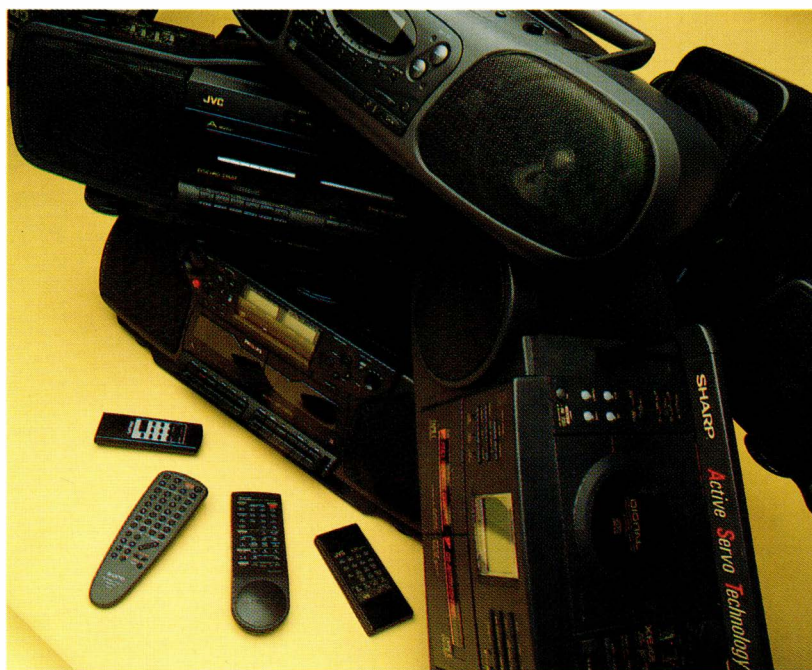
**T**he CD portable or ghetto blaster was one of audio's success stories in the Eighties, opening up new markets for second/third systems with holiday/weekend away capabilities, and appealing strongly to young people - as much because of their compactness and transportability as the capacity to run off expensive batteries while annoying the neighbours.

Increasing affluence (amongst the affluent) suggests that the addition of CD playback should expand the portable market still further, particularly in value terms. However, prices are not that much higher than for a CD only standalone mains player, so the flexibility of a portable package may present a tempting alternative to customers planning their first CD player.

This assessment of a batch of six blasters has been carried out entirely subjectively, more rigorous lab testing is largely unnecessary as the engineering constraints in terms of weight and power consumption mean that these portables are comparatively crude compared with mains/domestic hi-fi.

The listening was initially carried out with the units below ear level and facing the listener. But experimenting with siting revealed that the smaller players provided a better tonal balance off-axis (ie, with less direct treble output) and even at floor level (hence boosting the bass).

The tape recording standard on all models is limited to some degree by automatic level control. In extremis this could adjust the record level to make everything the same volume,



## ***Blast the neighbours with a compact and mobile sound system!***

though in practice the systems used are more 'intelligent' than that. It is inevitable that some gainriding and compression effects will mar recordings, however.

Given the limitations imposed on portable stereo systems, most of the blasters tested managed to come up with fairly reasonable sound quality. The CD medium gives them a substantial sonic advantage over the standard cassette-based machines that have become so prolific, albeit at a fair price increase. However, if used on battery power, the combination of disc drive and laser transport will prove fairly expensive, using even more power than a cassette deck.

## **How low can you go?**

That said, the players are hardly in the forefront of digital audio technology, and most sound as if they use first generation bit and oversampling rates. Only a

few of the manufacturers' specifications volunteered the aforementioned information, which would suggest that it may not be all that impressive.

The practicality of making this medium portable is somewhat debatable to say the least. Being made of relatively soft plastic, Compact Discs mark quite easily, and contrary to public perception, CD players can get stuck in the pits in much the same way as record players. The units were tested for their ability to operate while in motion, and most could withstand light swinging but gave up if jarred, in some cases to the point of taking some time to recover their bearings and recommence play. They would be more comfortable in a domestic situation where space is short, or as a somewhat inadequate substitute for a full blown hi-fi.

Comparing these outfits on sonic grounds with alternative CD-based systems tends to show them in a poor

light, as the standards of conventional loudspeakers and amplifiers can hardly fail to be significantly better. Small built-in speakers have several flaws, not the least of which is their fundamental inability to reproduce the lower registers, resulting in a severely constrained bandwidth. The players that featured relatively deep bass were notably more palatable in this respect but tended to be a bit upper bass heavy when poorly sited, such as on the floor by a wall.

## **Bad vibes**

Transmission of vibration, from inbuilt loudspeakers to the CD player in particular, is

not likely to help things either, as this medium will have to work considerably harder than if it was isolated. On most of the players tested the sound quality available from pre-recorded cassettes is handicapped by the absence of Dolby noise reduction as the encoding is already incorporated during the recording of most commercial tapes. Given the restricted high frequency output of most of the blasters' loudspeakers, this isn't such a disaster.

Few of the players had the good sense to provide an external aerial socket which could have pulled up the standard of radio reception considerably at little extra cost. However, the situation is not all that grim, and there are a variety of advantages to what are after all fairly compact multisource stereo systems, which can be used off the mains, in the car and even on the beach. They are a lot more robust than most other music sources except perhaps Walkmans - and how else are you going to achieve street cred?

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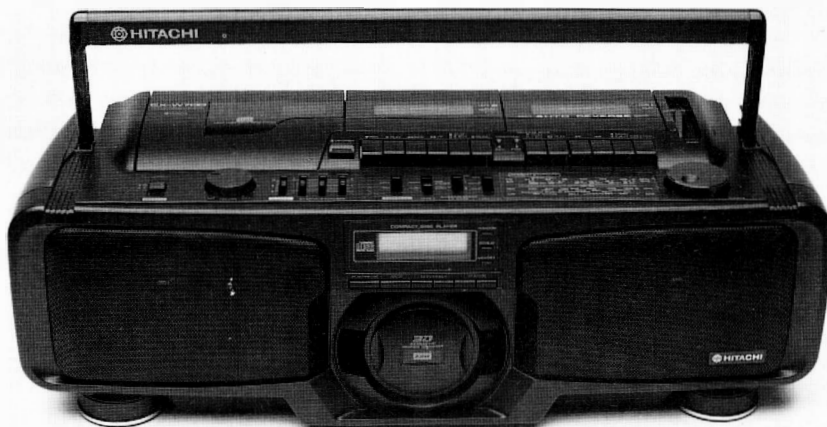


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# Hitachi CX-W700E

HITACHI SALES (UK) LTD, HITACHI HOUSE, STATION ROAD, HAYES, MIDDLESEX UB3 4DR. TEL: (081) 848 8787



This year's big Hitachi CD portable doesn't appear to have as many loudspeakers in it as last year's model, which had three in array across the front. According to the manual however, there is a third drive unit hidden somewhere inside the '700. Did I say drive unit? What I meant of course was 3D acoustic super woofer, or whatever that is. The only visual clue to the presence of the aforementioned acoustic super woofer is from an illuminated ASW badge situated in front of an odd plastic moulding which conceals a single port from whence bass presumably rolls forth.

Like last year's machine, the '700 is a substantial beast with enormous gold ringed feet and a sculpted fascia. It also weighs enough (8.4kg) without batteries to discourage you from actually lugging it about too often. It is, to use a 'street' phrase, a blaster with an attitude.

## General features

Apart from the 3D bass there's a good variety of buttons and sliders to play with on this Hitachi. It has a four band 'graphic equaliser' or that's what they call it anyway, there's also a 'surround' switch which presumably alters phase to give the impression of spaciousness. Around the back is the usual array of CD and headphone output sockets, a microphone socket and a pot for the latter that allows karaoke style mixing of your vocals along with a track from any of the onboard sources.

There is one obvious omission from this list, namely a remote control. While not really a great necessity on a portable a remote control is generally available with

other £250 players and can come in handy in a domestic situation.

## Radio

Atop the right hand side of the '700 is a four band analogue tuner in the usual rather vague cursor and dial style that is so prolific among portables. Four bands however, is one more than most, though whether a short wave band of this rather uninspiring nature is worth having is open to debate. The actual band selector is a rather flimsy switch hidden in a trough next to one of the tape transports; let's hope the theory about people always listening to the same station, or at least the same wavelength, is correct. That apart, the tuner is as good as any other in the group, except for the lack of presets and a rather dubious tuning knob.

## Cassette deck

In the more merrier tradition of low cost audio equipment, the Hitachi has two tape transports that share almost the full gamut of portable features. One is a unidirectional recorder that can be equalised for type I or type II formulation tapes, and the other is a two mode autoreverse deck which seems to have difficulty stopping at the end of the tape when it has been rewound. This deck does, however, have twin capstans which should mean that it sounds a bit more stable than its partner.

All the controls are mechanical and equalisation has to be applied manually. It's a pretty run of the mill machine I'm afraid, but at least it's straightforward to use and it does the usual high and regular speed dubs with little fuss. Still, a noise reduction system would have been nice.

## CD player

Apart from altering the volume, controlling the CD player is the one operation that cries out for remote control, possibly because one is so used to driving domestic CD players with remotes, in particular direct track access, skip/search and pause are very useful. But as there isn't a remote with the '700 you'll have to dispense with such luxuries and get up when you want to skip a track. This player has all the usual controls plus random, repeat and programmability. The latter allows programming of up to 32 tracks, which is pretty impressive by blaster standards, if a tad OTT.

## Sound quality

As it's fairly novel, the surround option was one of the first things I checked out on the Hitachi. It doesn't seem to have any effect with radio, despite the fact that the surround indicator is located on the radio dial.

With CD and to a lesser extent tape, high frequencies are thrown out of the cabinet and give the impression of greater sonic spaciousness, especially if you're sitting a few feet away from the thing and facing it. If you are very close it tends to sound a bit tinny. It's of debatable value but may keep you amused for a while.

In normal mode the radio sounded much like all the other radios in the group, not too transparent but evenly balanced and compressed. Tape sounded a bit tinny without full 3D super woofing but passed muster, revealing the lyrical if not the dynamic content of the test tapes, again it seemed to represent the norm for the group.

CDs made a somewhat better impression with a fair helping of welly, though it didn't exactly plumb the depths in the way that the big Philips and similarly priced Sharp did. Tonally it could have been a bit more convincing too. All in all I didn't get the impression that any of the sources were receiving a great deal of help from the amplification or loudspeakers on the '700, none of the sources sounding entirely convincing.

## Conclusion

Not a big hit really, this £250 Hitachi seems to have left behind the good points that its predecessor had and ended up sounding a trifle bland. If it were less expensive, or it had more up to date features it might look a bit more competitive, but at the price I would suggest you look elsewhere.

# JVC RC-X610

JVC (UK) LTD, ELDONWALL TRADING ESTATE, 12 PRIESTLEY WAY, STAPLES CORNER, LONDON NW2. TEL: (081) 450 3282



The RC-X610 is designed around the 'big is desirable' philosophy that has always been prevalent in the blaster market. It seems odd that while midi systems have got smaller and become mini systems the humble blaster remains as bulky as ever. This £200 JVC is not only large but reasonably heavy as well which bodes well for its low frequency capabilities, and of course it has got 'hyper-bass sound' for extra trouser flapping cred.

On the control front, the unit comes complete with the usual bass, treble and hyper bass alongside a very poorly defined source switch. It's vague because it's combined with the normal/fast dubbing speed switch and you really have to study the thing to find the right setting, though ease of use would hopefully improve with practice.

## General features

The 610 doesn't exactly have an abundance of general features, although there is a remote control, albeit a fairly basic one that only affects the CD player and volume level.

JVC has provided the usual minijack sockets for headphones and a microphone, along with the standard phono output sockets for the CD player, should you feel inclined to connect it up to a homebound system or an in-car set up.

If you want to do the latter it has a 12V input so that you can run it using an appropriate connector wired into the cigarette lighter or other convenient current source.

Alternatively you can power it up with eight 1.5V batteries or directly from the mains with the supplied lead, and go

anywhere, do anything and play the odd CD whilst you're at it.

## Radio

The 610 comes equipped with a good ol' cursor and dial four band radio. The dial is pretty short and the cursor a safe distance away from the FM band markings but tuning is still quite easy and quick. The tuning knob itself is on the side of the machine and feels a bit 'thick' in use, but it gets you up and down the dial without too much sweat.

For the more clogged up short wave band there is a second, infinitely rotating, fine tuning knob, but even with its help I couldn't dredge up anything listenable on that band. Long and medium waves are also provided while FM is also available in mono only for when reception gets too grim.

## Cassette deck

The cassette playing and dubbing potential on this JVC is just a tad under par, it has got two transports and one of them can record but the other is a bog standard uni-direction contraption.

The tape controls are all of the mechanical variety but the unit can synchro dub from disc, or play tapes in relay, giving first one side of one tape and then one side of another. Not exactly mind blowing but it'll keep you entertained for a couple of hours if you use long tapes.

It has normal and chrome equalisation, although the manual tends to suggest that the latter setting is only available for playing pre-recorded cassettes or cassettes recorded on another machine. It can also put a four second gap between CD tracks

for easy access with APSS track search system. It does have to be said, though, that the latter system didn't seem all that evident when I tried to find a track on one well spaced commercial tape.

## CD player

I checked out the manual in the hope of finding out what type of DAC this player used, but all it says under the column of specifications is 'Type: CD player', talk about stating the obvious.

Otherwise it's pretty straightforward, the controls on the machine giving you basic play, stop and skip/search options and those on the remote adding direct track access, random play, introscan and programming facilities.

The programming system will remember up to twenty tracks as long as their combined length is less than 99 minutes, although this is hardly likely to be a major drawback. The 99 minute limit is imposed by the two digit display which will also show elapsed time, track number and the amount of tracks on the disc (up to 16) when the machine is in the play mode.

## Sound quality

Listening started off with a bit of Kiss FM, surely the radio station for which blasters were designed, its output is heavily compressed and pumps out heavy bass like it's boogie time!

In fact with this JVC the bass was overblown to the extent that I almost had to turn the hyper bass off! And it wasn't just Kiss either, similar effects were noted with the relatively civilised GLR.

Cassette tapes sounded a bit dark and lacking in HF openness but trucked along in an acceptable fashion even inspiring a bit of enthusiasm with the Steve Berry jazz tape.

Compact Discs brought home the fact that you have to turn the hyper bass right down for it to sound anything like balanced, it then sounded reasonably good but not exactly musical.

The amplification and speakers seemed to be restraining it from producing low level detail and as a result discs tended to sound a bit flat and dull. Not a tremendous success really.

## Conclusion

It's big, pretty heavy and reasonably well equipped for the price. However, the lack of any definite musical appeal means that it doesn't really warrant formal Recommendation.

# Philips AZ8102

PHILIPS ELECTRICAL LTD, CITY HOUSE, 420-430 LONDON ROAD, CROYDON, SURREY CR9 3QR. TEL: (081) 689 2166



The Philips AZ8102 is one of the more basically equipped machines in this small test group. It has what it takes to call itself a CD portablaster but not a lot more. This is apparent as soon as you pick it up as it doesn't weigh a great deal by comparison with most of the other machines. But weight isn't everything, or so they say, and it is equipped with a radio, single cassette transport and CD player along with some form of amplifier and a pair of four inch, paper cone, full range loudspeakers.

What more could you possibly want? Loads a bass perhaps; well it has a dynamic bass boost button, no guarantee of trouser flapping performance in itself, but it shows some promise, and today's blasters feel a bit naked without a button or slider like this.

## General features

There's nothing to make a big deal of on the AZ8102, rather it's fitted with what blaster designers feel is the minimum that they can get away with at the price, which is £170 by the way.

Starting around the back, it has minijacks for a mono microphone and stereo headphones, a compartment for eight 1.5v batteries and a pair of phono output sockets marked 'CD out' just in case you feel inclined to use the player with a domestic system, or want to make better recordings than the on-board deck is capable of.

On the top there is a rather uninspired row of sliders which control volume and after a fashion, tone. The fashion in question being that audiophile *bête noire*, the graphic equaliser, though whether you

can call three crude tone controls a graphic equaliser is debatable. Alright it does affect the machine's tone and can be quite useful to tame the rather hissy nature of the radio, it's just a pity that they aren't a bit more subtle.

Apart from these sliders there's the aforementioned bass boost button which seems to act as some form of high pass filter in the off position, as the sound gets ridiculously anaemic without it.

## Radio

The tuner on this Philips is a good old fashioned analogue cursor and dial device. True, the cursor is pretty vague and the frequency band graphics on the dial are stacked two deep on one side of the window with the FM strip being the furthest from the cursor, which is cunning stuff. However, despite this, it's surprisingly quick and easy to tune into stations on the frequency modulated band, more so than with some of the digital tuners found on the more expensive machines in the group in fact. The major advantage with the digital machines, however, is that once you've set the presets they are pretty quick to use, as long as you can remember which station is on which preset.

Apart from FM, with which there is a mono option, the tuner covers the long and medium waves, which is nothing special but at least you get the longwave option.

## Cassette deck

There's only a single tape transport on the AZ8102 and it's not even autoreverse, however this is a blessing in real terms as

cheap autoreverse decks generally yield far worse results than uni-directional alternatives. There's not a lot more that you can say about this particular deck though, apart from mentioning that it will record from any of the onboard sources or a microphone and that its controls are of the mechanical variety.

What it doesn't have is any facility for equalising chrome or metal tapes, any form of noise reduction system or any means of altering record levels, the latter is true of all the machines in the group though, as automatic level control is just about standard on this sort of machine.

## CD player

Like the cassette deck, the CD player on this Philips is pretty basic, although it does, for instance, have a 24 track memory which is pretty straightforward to use. But it doesn't have shuffle play, FTS or even an elapsed time display, in fact the only other feature that it does have is introscan, which gives you the first few seconds from the beginning of each track.

## Sound quality

Listening to *Hey Joe* on GLR the sound was so hissy that I thought reception had suddenly got dramatically worse. Spinning the dial up to the manically compressed Kiss FM brought similar results though - noisy, spitty and bright. Turning the treble down lessened the effect somewhat but there was no getting away from the fact that FM radio reception was not very appealing.

Cassette replay wasn't a great deal better either. After I'd managed to get the cassette in the slot at the right angle and depth so that the door would shut I played the John Mellencamp music cassette. It sounded rather tinny and lacking in substance, this largely as a result of the machine's inability to plumb the depths but also reflecting a rather uninspiring tape deck.

The CD player made a pretty good rescue bid for the whole machine with a reasonably subtle presentation showing good separation and musical nuance. At the end of the day the lightweight balance proved to be its major sonic limitation, although once one was accustomed to it, discs were quite listenable.

## Conclusion

Not a particularly wonderful creation but it's not too expensive and it does have a reasonable CD player onboard. Pity about the radio.

# Philips AZ8594

PHILIPS ELECTRICAL LTD, CITY HOUSE, 420-430 LONDON ROAD,  
CROYDON, SURREY CR9 3QR. TEL: (081) 689 2166

**R**ecommended



The Philips AZ8594 is this year's 'Beast' though that name seems to have been played down somewhat, perhaps beasts aren't as fashionable this year. Either way the 8594 is a substantial machine, probably the biggest in the bunch but, then again, at £260 one expects either technology or brute force, in this instance it appears that we have the latter.

Despite its size and colour, the AZ8594 is a reasonably attractive blaster. It has a militaristic feel and groovy little finger indents around the major control buttons for CD and radio.

The volume knob is a rather difficult to use edgeways on device, that can alternatively be manipulated with the remote control. Oh and it has got a little LED in it, for extra funk power.

## General features

As mentioned above, the '8594 has its own remote control but its capabilities only extend to the basic CD functions. There's no calculator style keypad for direct track access, just volume and basic radio tuning and preset accessing functions.

But at least it has got a remote control facility of sorts which is more than you can say for some of its competitors.

It has, of course, got turbo bass and an 'acoustic control panel' incorporating a five band graphic equaliser, which covers a slightly larger range than usual. There are two LCD displays, one for the CD player and one which serves both the tuner and the clock, the latter device operating in either 24hr or AM/PM mode.

What else? Well there's a rear firing reflex port so that you can fatten up the bass by putting the beast against a wall,

heaven forbid, and output sockets for headphones and the CD player. It has also got the biggest drive units in the bunch, a full four and a half inches either side.

## Radio

The tuner on this Philips is of the upmarket quartz synthesised, digital variety, so you can preset your favourite stations, up to six per band, and have the machine search out strong signals with its autoseek system.

It features all four bands, which is unusual for this type of tuner, but apparently the seek system doesn't work on the overly noisy short wave.

The lack of a key pad means that you have to run through the preset stations in numerical order rather than being able to directly access the one you want. And setting the presets involves a more lengthy procedure than usual, but it's easy to remember.

## Cassette deck

As the picture should reveal, the 8594 comes equipped with two tape decks that are configured in the usual fashion, ie, one will record, the other will autoreverse and never the twain shall get tangled. Both decks are twin capstan types which should help, and both are mechanically controlled.

You can even manually equalise for chrome tapes on one of the decks, the one that records as luck would have it. And of course it does all the usual double deck tricks, such as high and normal speed dubbing and relay playback so that come party time you can get at least 135 minutes or so of interrupted playing time

without having to resort to the dreaded C120s.

## CD player

I couldn't find any clues as to the DAC type onboard this product from 'the inventor of the Compact Disc' as the legend reminds us, but if trends elsewhere are anything to go by, one would expect to find a standard 16x4 chipset somewhere in there.

The player has most of the features that one expects of a portable, including repeat, shuffle, scan and a programmable memory capable of remembering 20 tracks. The latter can be programmed manually, or during play or introscan which is quite handy. With the aid of the remote you can slump onto the couch, stab the scan button and give the store button a tweak every time a track you want to hear comes up.

There doesn't seem to be any clever recording aids on the player save for the usual synchro start.

## Sound quality

As with the cheaper Philips blaster, radio didn't make a good impression. It wasn't half as bad as its sibling but there was far too much energy and aggression in the sound to make extended listening a pleasant experience.

Cassettes were a bit more gratifying, the tonal balance was a bit dark until the graphic was tweaked but bandwidth seemed limited despite an emphasis on the frequency extremes. Low frequency solidity was not lacking though, and after a while one got used to its foibles and was able to enjoy the better quality tapes.

CDs were considerably more endurable, sounding open and substantial. If this machine has one thing it's bass power, but it can get a bit overblown at times and restraint has to be exercised with the turbo bass slider.

Otherwise discs sounded pretty good, easily on a par with the other machines in the group save perhaps the Sharp, but that's not a direct reflection of the CD player alone. The amplification and loudspeakers are of a better quality than average but naturalness at high frequencies doesn't seem to be a strong point.

## Conclusion

If you are after a big blaster with most of the trimmings then put this on your shortlist. As a dance music aficionado friend of mine put it, "it tomps", what more can you say? Recommended.

# Sanyo MCD-Z55F

SANYO MARUBENI (UK) LTD, SANYO HOUSE, OTTERSPOOL WAY, WATFORD, HERTS WD2 8JX. TEL: (0923) 246363

**R**ecommended



The £320 Sanyo MCD-Z55F, as well as scoring well in the catchy name takes, is a veritable tour de force of CD portable features. Despite its relatively small size it's remarkably heavy, probably heavier than all but the big Sharp and Philips machines. More to the point, however, it actually looks good as well, with the Z55 Sanyo has gone for style rather than scale and in my mind succeeded admirably. Its amorphous shape and rounded buttons are very appealing after the boxy machismo of most blasters. Then there's the remote which is simply gorgeous. OK, it has got too many buttons on it, but it's such a great shape and it does do virtually everything.

## General features

Where do you start? It's got everything and then more, but I guess you've got to start somewhere, and the remote is as good a place as any. It has controls for all three of the onboard sources and you can flit between them without having to worry about changing source select buttons.

As well as a keypad for CD tracks and radio station presets, there's a volume control and switches for the surround and sound tailoring options. The latter consist of four alternative response curves that can be used to change the sound of any source, they are; 'vivid' which has a loudness type effect, 'mild' which enhances bass a bit, 'natural' which supposedly gives a flat response and finally 'karaoke' which, naturally enough, enhances the midrange. The latter is presumably for use with the two level mic input that sits on the back of the '55, alongside the more conventional socketry

for taking the CD signal out or putting a line level signal in, and the obligatory minijack socket for headphones.

Needless to say there are other features onboard this Sanyo, there's a clock with alarm/sleep functions, a 'bassxpander' sliding tone control with an emphasis on what, for CD portables, are considered low frequencies, and a surround option. The latter is something of a misnomer of course, but it represents another sound effect to play with if nothing else. Amazingly enough there's not a lot more that really needs saying about the '55's general features, save that the overly stylised volume knob isn't particularly easy to use, and considering how many things it does, there are remarkably few buttons on it. Which is where the remote comes in, mute button and all.

## Radio

This Sanyo is equipped with a two band digital tuner, it covers FM in either stereo or mono and the medium wave under the guise of AM. Unusually you can plug an outboard aerial into a 75ohm coaxial socket on this tuner, which would undoubtedly improve performance if you have a roof mounted aerial. It also has the ability to remember 20 preset stations, ten from each band, and it can seek them out in either high (DX) or low (local) sensitivity modes.

## Cassette deck

The tape playing and recording facilities on this machine are remarkably comprehensive for a portablaster. For a start it has two, three mode, autoreverse decks that can be driven with either the electronic

controls on the player or the remote. It can apply Dolby B type noise reduction to playback and recording off CD or radio but not another tape for some reason. It can equalise for different tape types automatically and it can relay play both sides of two tapes giving you at least three hours of non stop thrash or whatever.

But that's only the half of it, it has also got a brain, or at least it shares one with the CD player and between them they can perform some pretty neat tricks. For instance it can set its auto level control to suit the dynamic range of the disc to be recorded by scanning through it at high speed. It can also rearrange the order of tracks on a disc to fit onto a specified tape length, or alternatively run them in standard order and fade the track that hits the end of the tape out and restart it on the other side.

## CD player

Compact Discs are loaded by a rather flimsy draw mechanism that inspires little if any confidence in its longevity, it's definitely not drunk or child proof, let alone drunk child proof! Otherwise it operates in traditional fashion, displaying track and elapsed time as well as the number of tracks left to play.

## Sound quality

The Sanyo's lack of real scale was betrayed by its inability to flap trousers in a convincing fashion, even with maximum bass expansion it sounded more limited than most in its low frequency extending capabilities. As a result, however, midrange was allowed to put in an appearance, which made a refreshing change and could partly explain the better than average clarity heard off air, tape and CD.

Cassette tapes sounded more gutsy than usual and most appealing with the mild sound setting, as did most things in fact, because the natural setting sounded a bit thin in a lot of instances.

CDs were much the same but better of course, in fact acoustic music on CD sounded best with the natural setting. The alternatives that emphasise bass made that part of the spectrum sound rather woolly.

## Conclusion

More features than you could possibly want and pleasant if not awesome sound combined with attractive styling make this a Recommendable product, as long as you can live without bass - and afford the price tag of course.

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# Sharp CD-JX20X

SHARP ELECTRONICS (UK) LTD, SHARP HOUSE, THORP ROAD, MANCHESTER M10 9BE. TEL: (061) 205 2333

**R**ecommended



Sharp's not very memorably named CD-JX20X is an unusual looking and unusually equipped £250 blaster. I fancy it is styled to look like a mini system flanked by a pair of novel loudspeakers, such is the 'box between two tubes' effect it creates. Its new and possibly unique technical feature is the use of Yamaha's Active Servo Technology in its amplifier and loudspeakers.

Put simply, this is a system of matching the electrical characteristics of loudspeaker and amplifier so that the reflex port acts as a bass driver. The sonic effect is to enhance the system's low frequency capabilities, or to put it in blaster speak - pump up the bass.

As far as I know this is the only blaster to employ AST, as it's known. Yamaha has used it in its own mini systems, some of which look remarkably similar to the JX20, albeit with the addition of separate speakers. But those apart it's surprisingly under exploited in this highly appropriate field.

## General features

High on the groovy features front comes a well endowed remote control which has switching for all three sources, yep, even cassettes can be fast forwarded or dubbed from the comfort of your sofa, not to mention volume and power. It's very nearly as slick as the one that comes with the expensive Sanyo machine, but unlike that one you have to select the source before you can get the disc spinning or whatever.

That apart, the unit is equipped with a basic high/low tone control and a sliding bass level adjuster, minijack sockets for

headphones and a microphone, and a pair of auxiliary inputs for an external source of some form. What form is debatable though, the only thing it hasn't got is a record player, but you'd need a separate phono stage to use one of those. I guess it'll come in handy when you get your DCC or MD recorder!

That apart, there's an LCD display that tells you the time when it's not telling you which frequency it's tracking, some source select buttons that light up, seven and a half conservatively rated watts per channel and a pair of three and a half inch, paper cone, full range drive units.

## Radio

The wireless on this beastly is quite a clever little digital device, equipped with eight FM and eight AM presets, AM in this context meaning medium wave only. The preset stations can be accessed either via arrows on the player or with the keypad on the remote.

You can't tune into anything other than the presets with the remote, but you can find your favourite station manually or with the auto seek system and listen to FM stations in mono if reception is too noisy in stereo.

The machine also comes complete with a full clock timer system that can be used for alarm or sleep purposes with any of the onboard sources, so, if you fancy, you can go to sleep listening to a CD and wake up to the radio.

## Cassette deck

The CD-JX20X is equipped with two tape transports in the usual configuration, one that records and one that autoreverses.

Both decks are manipulated by a single set of electronic controls on the machine which are virtually replicated on the remote. You can do everything but record with the latter, including changing decks. Tape types are identified and equalised for automatically but there doesn't seem to be a switchable noise reduction system.

It has a brain as well, or at least it can interact with the CD player's brain and between the two of them they can juggle the order of tracks on a CD to fit different tape lengths. Alternatively you can dub from tape to tape at normal or low-fi speed.

## CD player

According to the manual, the CD player uses the classic 16-bit, four times oversampling chipset, an unusual claim, most other blaster manuals just say 'CD player' next to the 'type' listing.

Otherwise the player comes adequately if not lavishly equipped with a 20 track memory, random play and direct track access being accomplished via the keypad on the remote.

## Sound quality

Overall the Active Servo Technology endowed this blaster with much more even and natural low bass than was encountered elsewhere in this group which gave it a good start in the listening test. The radio had a slightly tizzy balance, very high notes seemed to be picked out but otherwise it was pretty clean if nothing special on the sensitivity front.

Cassettes sounded more substantial than usual with good depth to John Mellencamp's vocals but a similar high frequency accentuation as was found with the radio. However, the remarkably gutsy presentation for the medium was enough to make it more entertaining than usual.

CD as one might expect made the best impression, the subtlety of this player's low frequencies really making the most of the double bass on the Marty Paich track. The unit managed to imbue the music with unusual three dimensionality and integrity by blaster standards and it even goes quite loud without ripping your ears out.

## Conclusion

For my money this was the most sophisticated sounding player in the bunch, this coupled with a well equipped remote control and reasonable construction makes it well worthy of Recommendation.

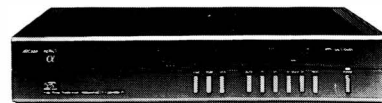
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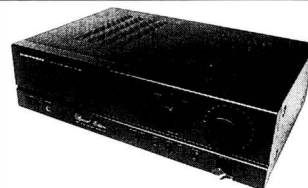
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# Choosing and Using . . . *Loudspeakers*

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

**T**he 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 audiophile could enjoyably combine a £500 remote control multisource mid-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?

## Siting

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 wallbacked 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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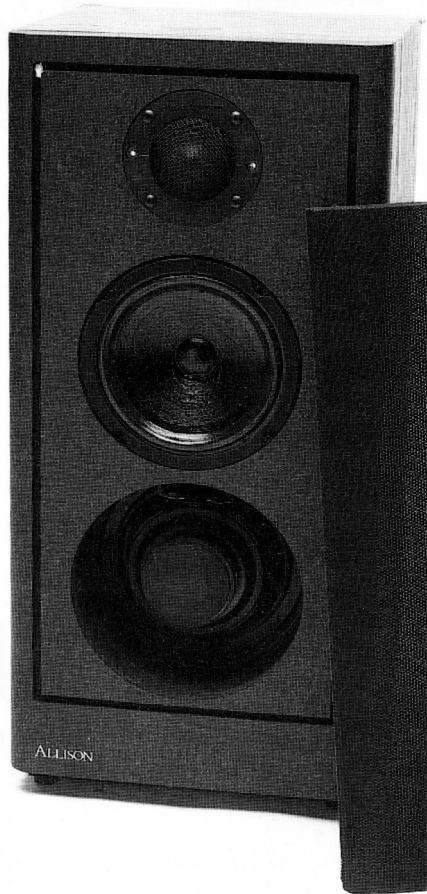
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# Allison AL120

ALLISON ACOUSTICS LTD, 20 CLEVELAND WAY, SHELLEY, HUDDERSFIELD, W. YORKS HD8 8NQ. TEL: (0484) 603965



East Coast US speaker manufacturer Allison is best known for the way it integrates the performance of the speaker, primarily through wall-mount designs like the little budget price *AL100* that received Best Buy recognition recently (issue 94).

The *AL120* we received this time around is a very different can of oysters altogether. It costs a shade over £400, feels very solidly built indeed, and sits rather squat and low on the floor, on rubber feet as supplied (inadvisable), but fortunately with tappings for fitting proper spikes into wooden runners attached to the base.

Obviously it's intended for floorstanding, and both the measurements and the UK agent suggest at least 60cm away from the nearest wall. Which makes it all the more reprehensible that the back panel hasn't been given a decent finish.

It's a two-and-a-half-way design - fundamentally a two-way but with an extra bass/mid driver helping out in the bottom octave or so. The most unusual feature is that this driver has been mounted backwards in the box, so you see a magnet where you expect to find a cone. It doesn't look particularly pretty, so hopefully your moulded perforated plastic covers will arrive in a better state than our much travelled pair. But it should work well, since it provides some balancing of mechanical moments and magnetic fields.

The squat shape keeps the panels small with the respect to the enclosed volume, provides a decent footprint for floor coupling, and keeps the centre of gravity low too, further aiding stability. It also of course places the mid and treble drivers rather closer to the floor than usual, which is probably significant.

Grille out of commission, the substantial marbled baffle with post-formed edges looks quite elegant, even if the drivers themselves aren't so pretty, and there's nothing much wrong with the vinyl wrap, apart from not being tree wood, that is.

Tacky little woodscrews secured the upper main driver tightly, the lower driver and tweeter less so, and the fact that the tweeters had been fixed a few rotational degrees out of true did look a little strange. The very well (possibly over) stuffed, sealed box is very well built, with 25mm MDF baffle and 20mm sides, various stiffeners, a brace and the reverse-driver baffle all adding reinforcement.

Peculiarly - and if it's an economy measure it seems a pretty stupid one - the visible bass wire feeding the reversed driver is of a better grade than the hidden one inside the box feeding the main driver. A conventional terminal pair feeds the part PCB crossover, which uses good quality components and tag connections. The woofer and main driver both use 120mm hand doped paper cones, pressed frames and small magnets.

## Test report

Sensitivity is a generous enough 89dB or so, but two or three of these have been pinched by the resolutely current hungry impedance characteristic. Bass extension is pretty much what one would expect from the context.

Unlike many Allison's, this one is clearly not intended to be sited close to a boundary wall. Kept well clear, the low frequency room alignment is pretty good, though the little isolated 55Hz bump might well prove audible. Elsewhere the curve is

impressively smooth, albeit lean in the upper bass and becoming increasingly exposed through the upper midrange with some loss of energy in the presence band.

## Sound quality

The *AL120* neither distinguished nor disgraced itself in the blind listening tests, though some panellists were distinctly more enthusiastic than others. The low bass extension and good room match provide some scale and authority, while the rather projected mid-forward balance adds an attractive zing, bite and pace - or makes everything a bit brash and aggressive, depending rather on one's point of view.

The midband sounds quite coherent, fast and informative, though it's not sweet and there's some 'papery' and 'cuppy' coloration. And more than one listener complained of poor overall timing and coherence: "bass seems to be operating in different timeframe from treble". Sensitivity is subjectively high, but the speaker has a slightly irritating tendency to sound a bit loud.

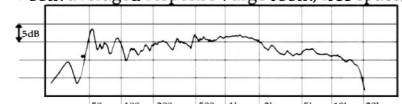
## Conclusion

Although by no means a bad loudspeaker, the *AL120* is far from exceptional at £420. The basic concept makes plenty of sense, it's solidly built and well engineered to match the listening room, but in the end somehow lacks the spark of musicality needed to distinguish it from the herd.

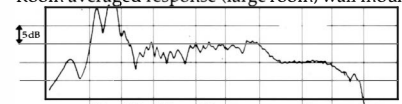
## TEST RESULTS

Size (hwxwd)	63x28x27cm
Weight	17kg
Recommended amplifier power	20-200W
Recommended placement	well clear of walls
In room averaged response limits 50Hz-10kHz	+/-4dB
Large room/space LF rolloff (-6dB ref midband)	30Hz
Large room/wall LF rolloff (-6dB ref midband)	30Hz
Large room output at 20Hz (ref midband)	-13dB
Estimated midrange sensitivity (ref 2.83V, 1m)	89dB
Impedance characteristic (ease of drive)	very current hungry
Typical price per pair (inc VAT)	£420

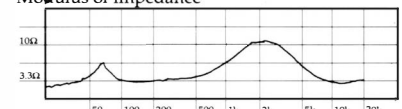
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



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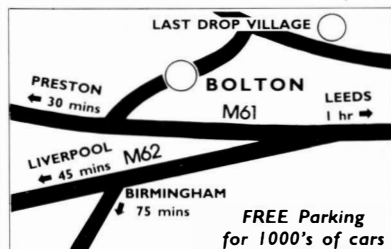
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# AR 152

AKG ACOUSTICS LTD, VIENNA COURT, LAMMAS ROAD, GODALMING, SURREY GU7 1JG. TEL: (0483) 425 702



US East Coast hi-fi specialist AR used to be one of the great innovators of loudspeaker technology - the invention of sealed-box bass loading being just one of a dozen or more influential techniques which the company pioneered. Changes in ownership and direction now mean that UK marketing is handled by AKG Acoustics, better known for the distribution of the eponymous headphones, microphones and suchlike.

The 152 is one of six models in the *Spirit* range, designed by UK consultant Dave Berriman and first introduced a year or three back, the three least expensive being covered in issues 66 and 68. The 152 reviewed on this occasion is not that much larger, but it does feature a load of extra features and luxury touches - real wood veneer, extra enclosure bracing and an advanced main driver dust cap, to name but three - in order to justify a post-VAT-rise pricetag approaching £400.

In terms of size, the 152 is firmly in competition with luxury compacts such as the Celestion *SL6Si* and Epos *ES11* - a role for which it would seem to be well equipped. It's a sealed box (of course), and wraps the nicely veneered and solidly built box around a special dual density baffle some 36(!)mm thick - twice or thrice the norm. This is cleverly arranged with a grooved edge to allow a stretch-fit grille cloth to cover the naughty bits if preferred; without in any way compromising the sound.

However, removal only replaces the demure with the dour, as unrelieved black is replaced by a mixture of black, grey and anthracite, the rather prosaic driver frames neatly recessed and disguised with soft plastic trim. The drivers were pretty well secured (to the point where some frame buckling had occurred), but only with

rather flimsy coarse-pitch woodscrews, and both look fairly ordinary devices.

The main unit uses a 145mm plastic cone with wide surround and decent magnet, while the tweeter is a 25mm doped soft fabric dome. The box is exceedingly well stuffed with wadding, and the promised figure-8 brace stiffens the 18mm wrap. Twin gold-plated terminals feed separate high grade hardwired crossovers, with heavy wiring tag-connected to the drivers.

## Test report

Sensitivity is just about average and the amplifier load is nice and easy too, while bass extension is very healthy considering the box dimensions.

The 152 is a little bass lean when used well clear of walls, yet not very even when pushed close up against the boundary, as suggested in the accompanying leaflet. Some experimentation between the two extremes would seem like the best plan. Elsewhere the balance is reasonably smooth and tidy, though the upper mid is slightly prominent, with a small step down during transition to the tweeter. The latter rolls off a little earlier than usual.

## Sound quality

The blind listening test rated the 152 about average, which is a little disappointing for the price, though subsequent sighted experiments showed that there was a fair bit more to come after some playing around with stands and siting. Furthermore, its qualities tend to be of the subtle rather than dramatic kind, and are apt to sneak up on one during the course of an evening's listening, rather than during a hectic twenty minutes behind a black curtain.

Close to the wall, bi-wired, on rigid lightweight frame stands, the speaker comes into its own, showing fine timing and good drive built on a solid foundation. Dynamics are positive and firm, while the ability to maintain a wide dynamic range - the intelligibility of simultaneous musical strands recorded at very different levels - is very impressive.

Vocals too are quite expressive and delicate, if a bit cuppy and pinched with it, and the whole thing hangs together pretty well, coping with complexity without clogging. However, the lean midbass combined with the rather projected upper mid does make for a rather cold, thin overall balance; while not actually aggressive, this can be a mite relentless, and the lack of extreme HF adds a slightly 'shut-in' impression.

## Conclusion

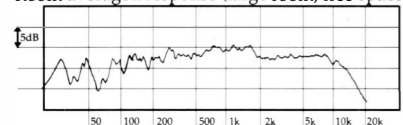
This is a good loudspeaker in many respects, and comes within a hair's breadth of formal Recommendation, though in the final analysis it seems just a shade on the expensive side for some of the ingredients involved. The cabinet is first class, but neither drivers nor build achieve quite such a high standard.

A little thin in balance, it nevertheless delivers good coherence with more pace, drive and dynamic resolution than many of its rivals, so is well worth auditioning.

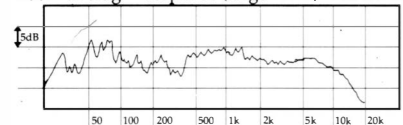
## TEST RESULTS

Size (hwxwd)	44x23.5x28cm
Weight	8kg
Recommended amplifier power	20-120W
Recommended placement	stands 1-2ft from wall
In room averaged response limits 50Hz-10kHz +/-5dB	
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
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£373

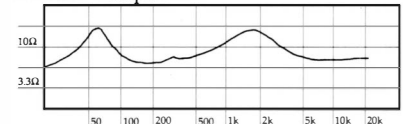
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



# B&W DM600

B&W LOUDSPEAKERS LTD, MARLBOROUGH ROAD, CHURCHILL INDUSTRIAL ESTATE, LANCING, W. SUSSEX. TEL: (0903) 750750

**Recommended**



There are three models in B&W's recently introduced 600 series, competitively priced 'budget' loudspeakers with plenty of hi-tech content. The £150 600 examined here is the least expensive of the trio, and the historical precedents are promising: the floorstanding 620 rated a Best Buy in issue 94.

However, whereas the 620 package is clearly highly competitive simply on the basis of box size versus price, the 600 is more obviously a small bookshelf loudspeaker at a small bookshelf loudspeaker sort of price - £150 per pair, to be precise.

What does distinguish it somewhat is the extensive use of engineering plastics in the construction, and the consequent very clean contemporary styling, especially when the rather boring grille is removed. (Boring it may be, but at least it's discreet, has been properly designed to keep baffle reflections to a minimum, and may therefore be regarded as a realistic option for those who prefer not to advertise the brand name in two inch high letters.)

The main styling contribution is made by the complete structural panel that comprises the visible baffle. This moulding incorporates attractive surface textures, edge chamfering that is echoed in the grille frame, plus mounting arrangements for the drivers and the aforementioned giant B&W logo. Soft plastic inserts then cover the visible mounting screws. The panel itself is quite thin, but has reinforcing ribs to add stiffness, and is mounted by six screws onto a thin (4mm) and mostly cutaway sub-baffle.

The whole thing feels a bit lightweight, and rapping the sides merely serves to remind one that this is at heart an

econobox, hi-tech trimmings notwithstanding. The sealed-box wrap is only 13mm thick, well filled with wadding but otherwise unbraced, and the terminal block accommodates separate bi-wire terminals and a multi-component hardwired crossover.

The main driver has a 115mm polypropylene cone with wide surround, mounted on a pressed steel frame, secured by four pretty feeble and coarse-threaded crosshead screws; these seemed fairly well tightened into the plastic, but clearly represent a potential weak spot. The tweeter has a 25mm metal dome, an annulus phase compensator helping to deter probing fingers.

## Test report

Sensitivity is comfortably below average, and the main driver is a fairly enthusiastic consumer of amplifier current too. In this context, and that of sealed-box working, it's not surprising to unearth a quite impressive bass extension despite the small enclosure dimensions.

The room responses are unusually and impressively smooth by any standards, let alone those of near-budget models. The low frequency alignment suggests the speaker should be sited 30-60cm clear of the wall, under which conditions it should provide an even and well balanced response, interrupted only by minor local perturbations.

## Sound quality

The good frequency balance and overall evenness with decent bass extension all contributed to a fine overall result in the blind listening tests. There was praise for the natural relationship of fundamentals and harmonics, and the lack of coloration or exaggeration of any part of the

spectrum, save perhaps an occasionally obvious treble.

On the down side there isn't the finesse and transparency of more expensive models (like the *Matrix 805*), and the bass does let things down somewhat, lacking genuine weight and coherence and showing some lack of control and authority in the upper bass and lower mid.

More extended hands-on listening gave further cause for caution. An initially favourable reaction to the overall smoothness soon gave way to a degree of disinterest. Although the sound seems to be presented faithfully enough, it's all a bit laid back, and the reality behind the hi-fi illusion never seems to reach through, grab and hold the attention. Dynamics too are somewhat disappointing: confusion and congestion were never far away, especially using complex material with much low frequency content.

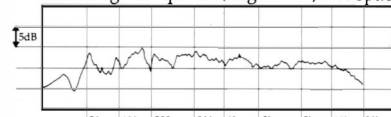
## Conclusion

Although not such obviously good material value for money as the bigger 620, the fine measured performance and listening test results are ample to guarantee the 600's Recommendation. At the same time I must add the personal opinion that it isn't the most communicative model around; an overall blandness somehow fails to encourage the suspension of disbelief.

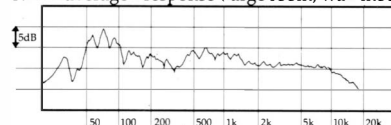
## TEST RESULTS

Size (hwxwd)	44x23.5x27cm
Weight	5kg
Recommended amplifier power	20-100W
Recommended placement	stands 30-60cm from wall
In room averaged response limits 50Hz-10kHz	+/-4dB
Large room/space LF rolloff (-6dB ref midband)	33Hz
Large room/wall LF rolloff (-6dB ref midband)	28Hz
Large room output at 20Hz (ref midband)	-8dB
Estimated midrange sensitivity (ref 2.83V, 1m)	85dB
Impedance characteristic (ease of drive)	current hungry
Typical price per pair (inc VAT)	£150

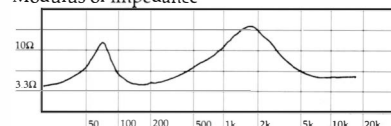
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance





# B&W Matrix 805

B&W LOUDSPEAKERS LTD, MARLBOROUGH ROAD, CHURCHILL INDUSTRIAL ESTATE, LANCING, W. SUSSEX. TEL: (0903) 750 750

**R**ecommended



This new prestige miniature from B&W has already received plenty of publicity and praise in the press, including a *Sessions* piece by Alvin Gold in issue 96. Small but not that small, this chunky little box is a new £915 frontrunner in the upmarket luxury compact sector, designed initially for professional users but with at least half an eye on competing with such as the MA *Studio 10*, Acoustic Energy *AE1* and Sonus *Faber*, to name but three.

It's not exactly pretty, but Pentagram has done its usual professional job in turning an unpromising basic shape into something purposeful and interesting.

You also get a little electronic equaliser to flatten the bottom end still further, but it wasn't easily fitted into my system so I ignored it. Putting the tweeter on the top in its own little nacelle is a technique that B&W has pursued on and off for years. It's obviously costly in manufacturing terms, but does promote time alignment and avoid the dispersion discontinuities created by the baffle edge when conventionally mounted.

The grille is equally elaborate, and equally carefully designed to give the best acoustic performance, with a curved ribbed metal extrusion to break up edge effects, integrated with conventional and carefully shaped wood frame and cloth cover. The box itself is fully clothed in a choice of good quality real wood veneers or paintwork, and an alternative model (suffix *H*) repositions the tweeter (but doesn't reconfigure the grille) so that the speaker may be used on its side.

The Matrix of the model name refers to a clever - though again expensive - technique for stiffening up the 16mm MDF cabinet without adding too much mass. Take the main driver out and you're looking at a scaled down version of a case

of wine, with criss-cross MDF dividing stiffeners running towards the back, complicated by the need to provide ventilation between the compartments so as to maintain the acoustic contiguity and purpose of the whole enclosure.

A carefully streamlined port just below the main driver provides reflex loading, tuned to a lowish 40Hz, and two of the cavities are well stuffed with the many generously rated components (partly used to extend the bass rolloff) in the elaborate bi-wire/-amp crossover network.

The main driver has a 120mm Kevlar reinforced cone, fitted in a cast chassis and driven from a massive magnet. But given all the foregoing, the fact that only four of the eight possible fixing holes were used, and with quite flimsy, coarse-pitch woodscrews is a bit disappointing, even though they were satisfactorily tight.

## Test report

Our limited test programme only serves to confirm B&W's ambitious spec for this very compact model. Sensitivity is a very decent 87dB, the amplifier load is mild and even though subsonic bass is not achieved, this model still manages sensible 30Hz in-room output.

The low frequency alignment is well suited to the intended free space siting, and the overall balance is pretty good too, if rather rich in the lower mid and dull in the presence region. It's also unusually smooth, though the individual contributions of the two drivers are clearly visible.

## Sound quality

Of the seven-strong panel, five liked the 805 quite a lot, one was underwhelmed and the other hated it, so if we were a representative sample, it should win

plenty of fans. The slightly rich and dulled balance will not be to every taste, and imposes itself on the whole proceedings - perhaps all the more obviously because of the inherent smoothness and dynamic linearity of the individual drivers.

"Controlled, precise, analytical but musically cold" is one quote from a panellist that I feel sums it up particularly well. Stereo imaging shows holographic precision and the sound isn't in the least box-bound.

Fine detail is maintained well down into the mix, the sound doesn't clog up with level or complexity, and good midbass power conveys an unusual measure of authority from one so small. It's also lively and even quite bouncy, though timing is definitely rather sluggish and smeared, voices sounding rather too thick and opaque with strange sibilants. Glasgow accents definitely lost their bite, and took on a rather pasteurised air.

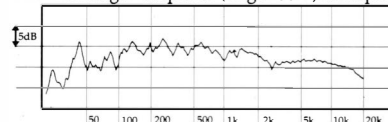
## Conclusion

This is a most interesting loudspeaker, and appears ideally suited to its role as a professional nearfield monitor, where its accurate repeatable analysis of balance and soundfield - not to mention near indestructibility - will be very welcome. Despite these very real strengths, however, in my opinion it is rather less successful as a tool for musical communication. But then five out of seven gave the thumbs up, so a Recommendation is in order.

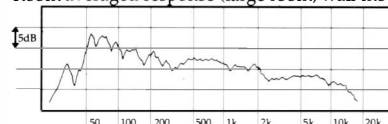
## TEST RESULTS

Size (hwxwd)	42(max)x26x22.5cm
Weight	8.5kg
Recommended amplifier power	20-200W
Recommended placement	stands in free space
In room averaged response limits 50Hz-10kHz	+/-4dB
Large room/space LF rolloff (-6dB ref midband)	30Hz
Large room/wall LF rolloff (-6dB ref midband)	30Hz
Large room output at 20Hz (ref midband)	below -15dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£915

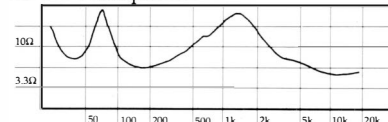
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



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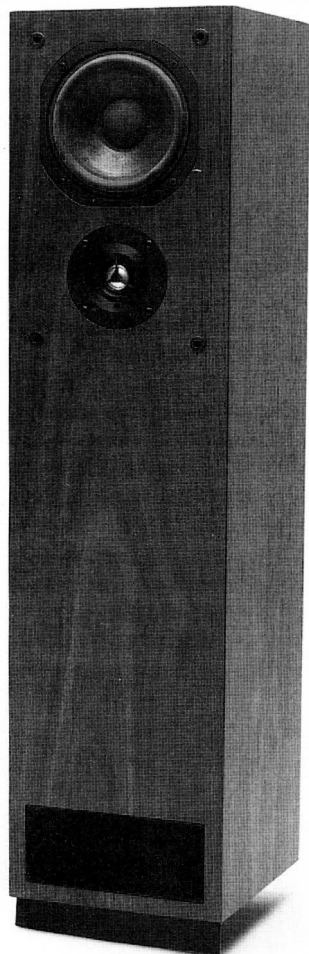
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# Castle Chester

CASTLE ACOUSTICS LTD, PARK MILL, SHORTBANK ROAD,  
SKIPTON, W. YORKS BD23 2TT. TEL: (0756) 795333

**Best Buy**



Few British hi-fi companies would seem less likely to come up with something truly radical than this traditional Yorkshire operation. However, Castle recently introduced a most unusual large floorstanding model, the £1,250 *Winchester*, reviewed and Recommended in issue 90.

Hot on its heels comes this half-size *Chester*, much more domestically acceptable in bulk and price (£600) but with the same exceptional standards of real veneer finish and presentation. Amongst twenty five pairs of speakers, this is the one that oozes craftsmanship and class, boring back panel apart.

It weighs a solid 17kg, and sits on four really substantial spikes, a couple of whose sockets loosened themselves, which Castle is rectifying in production. Given the high centre of gravity, the footprint could be larger, but I gather an optional frame extension is on the way for loony

audiophiles like me.

Every other speaker in this project uses either a sealed or a reflex ported box to load the bass. The *Chester* employs something quite different, known as tapered quarter wave loading. Operating a bit like a cross between a horn and a tuned column, it's actually a very old technique, going back to the legendary Voigts and the popular Baldock DIY *Paralines*. But that was all of a quarter of a century ago, since when the approach has lain dormant in hi-fi terms, waiting for Colin Walker and Castle to revive it.

The main driver has a lovely cast chassis and massive magnet with 110mm paper cone, while the tweeter uses a 25mm metal dome, both properly mounted with bolts and T-nuts that could have been tighter. The main driver sits at the top of the box, one third of the way along the folded horn that exits through a smallish slot in the front at floor level. Internal partitioning and additional bracing stiffens an already truly substantial box built from 20 and 25mm MDF, while the inside is carefully damped by a complex cocktail of carefully chosen fillers.

## Test report

Sensitivity is just about average, and the load will pose no problems for the driving amplifier. However, bass extension is disappointing for a floorstander as large as this - the measured behaviour is closer to that expected of a normal bookshelf size model.

Room matching is rather better than the *Winchester*, though optimum placement is difficult to predict; try 30cm or so clear of the rear wall for starters. Although the overall mid and treble balance stays within quite tight limits, there's also some unevenness along the way, with minor peaks at 1.5-2kHz and 5kHz.

## Sound quality

Controversial is one way to describe a sound which strongly polarised the panel, the more perspicacious correctly identifying it as the best of the day, while others (myself included) found it difficult to adjust to its differentness from both the norm and its immediate predecessor.

Subsequent hands-on listening helped sort things out. It took about five minutes to get over my initial surprise at the balance quirks, at the fact that it sounds more like a miniature than a large floorstander, and to begin accommodating some initially irritating colorations. Then the penny dropped.

This speaker has quite extraordinary powers of midrange resolution, rendering voices, percussion and stringed instruments of all kinds (struck, plucked or bowed) with great subtlety, delicacy, coherence and transparency, and without resorting to a hyped, forward balance. Stereo is superb.

The sound remains a little coloured and hard (though tightening up the tweeters helped), and there's no avoiding the limited bass extension. But it's also exceptionally agile, with fine dynamics and uncannily convincing transients, thanks I suspect to a bass which is essentially aresonant in the traditional sense, and to the pressure control the loading exerts on the main driver.

In fact it's so goddamn involving, I sat up half the night re-exploring my record collection instead of getting on and writing up the review, and have been suffering withdrawal symptoms ever since the *Chesters* went off for photography.

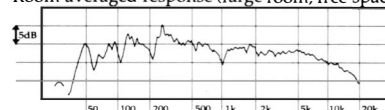
## Conclusion

Although very expensive for a Best Buy, there can be no denying the excellent value for money the *Castle Chester* represents and so this rating is entirely appropriate. The delicious sound quality should quickly bring cult status among enthusiasts. The very revealing nature might require a bit of extra care with system matching, but I'd bet they sound gorgeous on the end of a really good valve amplifier. Just don't expect them to sound as big as they look.

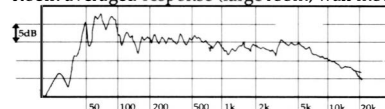
## TEST RESULTS

Size (hwxwd)	94x23x27cm
Weight	17kg
Recommended amplifier power	15-80W
Recommended placement	39-90cm from walls
In room averaged response limits 50Hz-10kHz	+/-5dB
Large room/space LF rolloff (-6dB ref midband)	45Hz
Large room/wall LF rolloff (-6dB ref midband)	45Hz
Large room output at 20Hz (ref midband)	below -15dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£600

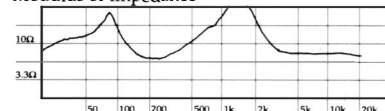
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance





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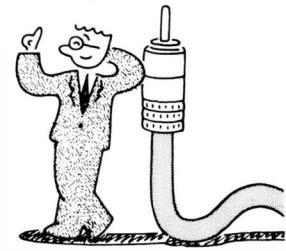
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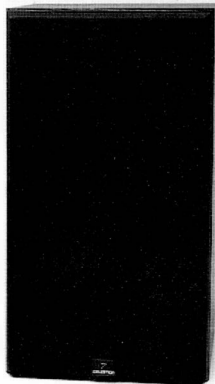
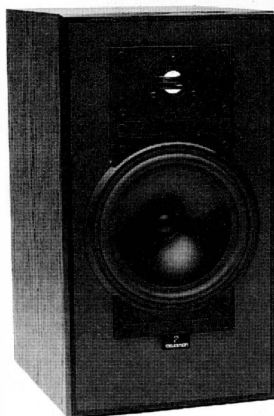
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# Celestion 7

CELESTION INTERNATIONAL LTD, DITTON WORKS, FOXHALL ROAD, IPSWICH, SUFFOLK IP3 8JP. TEL: (0473) 723131

**Recommended**



The little 3 has been a big commercial success for Celestion, so there was a certain inevitability about the 5, launched summer 1990 and reviewed (and Recommended) in issue 90. This year the company has been even busier, introducing 7, 9 and 11, the £200 7 being the first to come under scrutiny.

As with its predecessors, this is a two-way vinyl econobox, seeking to provide maximum performance within tight budgetary constraints. Likewise it's a wall-mount sealed-box too, with special care taken to minimise the unwelcome effects of wall reflections upon the stereo imaging.

The box definitely falls into the 'large bookshelf' category, though proper stands should of course be used. Celestion supplying some high central pillar types that had been part filled with extra damping. It's fashionably narrower than it is deep, and looks very demure with the grille in place. This has a neatly designed moulded frame that causes little sonic impairment, but the speaker certainly looks more impressive with it removed.

I say looks impressive, because rather more effort seems to have gone into the aesthetics than the engineering. The grille retaining lugs are particularly neatly executed, for example, but what look like cast alloy driver frames held in my hefty machinehead screws turn out to be injection moulded plastics frames - which may well be just as effective, though I doubt it - held in by some very feeble, coarse pitch woodscrews, the large machineheads merely permitting leverage that wound them like a spring.

The box is built from fairly coarse chipboard just 14mm thick, though a decent figure-8 brace stiffens the wrap, and the inside is lightly stuffed with

wadding. A single terminal pair feeds a quite simple commercial grade hardwired crossover, and thence via tags to the drivers. The bass unit has a good size magnet and 145mm plastic cone, while the tweeter uses a 25mm metal dome, physically protected by a phase compensating diffuser.

## Test report

The good size enclosure combines decent low frequency extension with average sensitivity and an easy load for the driving amplifier. Although some degree of wall reinforcement is clearly necessary, the low frequency alignment remains less than ideal, the boost in the midbass being accompanied by some loss of energy in the upper bass, leaving the midrange somewhat exposed.

Nevertheless, said midrange and the treble too are quite smooth, well integrated and balanced, with just a slight notchiness in the the crossover region. Mid and upper treble are a little suppressed.

## Sound quality

The 7 did consistently very well in two separate 'blind' presentations, with universal praise for the generous scale and impressively lively and dynamic qualities, tempered by qualifications regarding some harshness, hardness and untidiness. To some extent the balance itself is responsible, tending to project the upper mid and presence, which gives the impression of good detail at the expense of a slightly nasal, pinched coloration and thinning.

The key to the 7's success - or otherwise - has much to do with the stands with which it is used. It doesn't like open frames and spike-coupling nearly as much as Blu-tack and a heavy damped pillar

stand. Celestion's own do a pretty good job, and Foundation's expensive *Designers* an even better one in helping to keep the speaker under control.

On its own stand the midrange sounds nice and coherent with good timing, and the music has an attractive 'bounce'. There's a decent sense of scale that brings a measure of authority too, though the bass is a little thick and slowed - slightly furry in texture almost - and a touch of aggression and hardness remains. The end result is not the subtlest, fastest or most transparent sound around, but is goodhearted, lusty and fundamentally enjoyable.

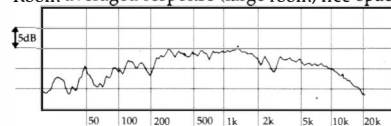
## Conclusion

Despite reservations over the driver fixing and possibly undue emphasis placed on cosmetics, there's no doubt that the 7 is good value for money, well deserving Recommendation. It's good looking for a cost effective large bookshelf model too, and delivers a lusty, up-front performance provided some care is taken to provide the best possible support.

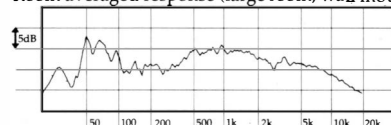
## TEST RESULTS

Size (h x w x d)	45 x 24.5 x 32 cm
Weight	8 kg
Recommended amplifier power	20-100 W
Recommended placement	stands close to wall
In room averaged response limits 50Hz-10kHz	+/-6 dB
Large room/space LF rolloff (-6dB ref midband)	30 Hz
Large room/wall LF rolloff (-6dB ref midband)	30 Hz
Large room output at 20Hz (ref midband)	-11 dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87 dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£200

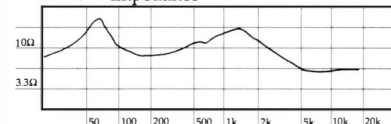
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



# AUDIO NOTE

Let me introduce you . . . to an existing and emerging line of products, which does, and will represent the efforts and combined intellectual resources of a new and unique British - Japanese co-operation, where we will share all aspects of technical knowhow, between Mr Kondos Audio Note Company in Japan and our team here, which were originally responsible for most of the Audio Innovations amplifier designs and philosophy, expressed in the formulation of the Audio by Design systems philosophy, so I think that I can say with some confidence that we are well equipped to set ourselves high goals and achieve them!

Let me first introduce the productline as it looks now, and given space, I shall outline some of the new products under development.

I shall start with the Audio Note cartridges.

We took over the manufacturing right early last year, and after some considerable problems procuring cantilevers from Japan (the Audio Note Ioll and IoLtd are the only cartridges using a titanium cantilever), both the Ioll vdH and the IoLtd vdH are now available in limited quantity.

The Audio Note Ioll and IoLtd represent the pinnacle of cartridge development, and the fact that they are now made in the UK and easily represent the most advanced transducers ever made in this country, is testament to our commitment to quality analog as well as technological development in general.

## Cables

Audio Note in Japan were one of the pioneers in the development of specialised audio cables, as early as 1976, the first 99.99% pure silver litz interconnect, the AN-V, was offered to audiophiles in Japan, since then the range has expanded and now incorporates a line of interconnects starting at £25,00/m terminated for the AN-A copper litz to the latest AN-V silver litz at £175,00/m terminated. The cables compliment and enhance the quality and performance of most systems, not just systems defined within the Audio by Design philosophy.

## Amplifiers

The Audio Note ON-GA-KU line integrated amplifier will be well-known to most of you, having received unanimous acclaim as the best amplifier available, be it at a price (now £34,500.00!). There are less expensive amplifiers from Kondos hand, the NEIRO 7.5 watt stereo amplifier, which uses similiar technology to its more expensive brother, but without the silver wired out tranformer and silver foil signal capacitors, at £6,995.00 the Neiro will take you some way towards ultimacy.

The original M7 pre-amplifier used transistors with a valve powersupply, the transistors have become unavailable and the M7 resurrected as the M7Tube, using very high grade valves in a feedback free SRPP circuit, worth a listen at £5,750.00.

We are preparing a small line of amplifiers, built here in the UK, with designs approved by Mr Kondo, the first should be a "mini" ON-GA-KU fully integrated amplifier at £5,000.00, using the 211 triode in single ended mode, rated at about 25 watt class A, no feedback, with remote control functions. Available in November/December.

## Loudspeakers

As you will have seen from various mentions and reviews, we have replaced the Snell Acoustics, Peter Snell designed speakerline, with a small line of speakers of our own design. So far everybody who has reviewed the Audio Note speakers agrees that they represent a considerable sonic advance over the Snell speakers, which we have been selling for over seven years. Visit one of our dealers to ascertain the improvements for yourself. An upgrade program for existing Snell customers is available.

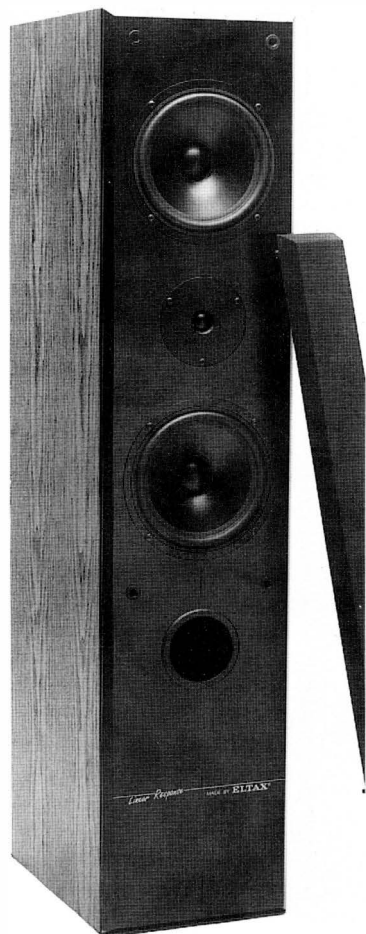
This more or less concludes the news for now, I shall be back with more next month.

**Peter Qvortrup**

**Audio Note Co. 0273 821371. Brighton**

# Eltax Linear Response 8

STUDIO POWER, CLARKE HOUSE, KEIGHLEY ROAD, BINGLEY,  
WEST YORKSHIRE BD16 2RD. TEL: (0274) 551 877



The name on the top of this review meant little when this rather battered pair of floorstanders arrived in cartons that had practically disintegrated. A covering letter from Yorkshire based Studio Power explained that Danish manufacturer Eltax is the source of SP's ProAudio speakers, so SP has decided to distribute some of the Eltax hi-fi speakers in the UK.

The *Linear Response 8* is a tall, deep and narrow loudspeaker, designed for placing straight onto the floor. There's no spike provision, so we used Michell cones for support, but that's the only serious shortcoming in what looks like a pretty competitive - if typically Danish - package for £400.

There are two main drivers, both used over the full range up to the crossover point, and quite widely spaced above and below the single 19mm soft plastic dome tweeter. It's an arrangement that has advantages and disadvantages. In some

respects the two main drivers behave like one placed halfway in between - which is where the tweeter is of course - which makes for good crossover integration and nice radiation symmetry. On the other hand the distribution mismatch between the single and the double source is one reason for the amplitude response errors like those found in our far field room averaged pen charts.

The appearance is further enhanced by chamfering around the baffle edge, which is continued in the grille. The latter, however, should be immediately discarded, its thick frame set perpendicular and close to the rebated drivers proving a significant source of coloration. Happily the black painted baffle looks quite neat with no disguise.

The box sounds a bit wooden to the knuckles, and has a large diameter port below the driver array. The rear has simple, cheap terminals and has been ignored by the stylist, the wrap being covered by a quite adequate black vinyl woodgrain.

The twin main drivers have 120mm plastic cones and nice cast frames, held in by silly little machinehead woodscrews offering feeble leverage but done up nice and tight. The tweeter is a 19mm soft plastic dome with short horn flare.

The baffle is built from nice solid 18mm MDF, the wrap from 18mm chipboard, and there's no additional bracing whatsoever. Egg box foam lines the back and sides only, and is the sum of the enclosure damping.

## Test report

I've picked 88dB as the sensitivity rating for the *LR8*, because that's the figure that comes out over the first decade, the main fundamental range up to 500Hz, but such is the response it's down to 82dB or less over most of the next decade, so attempting comparisons with other speakers will always be difficult. Bass extension is good, though the lowish impedance - and the lowish presence band sensitivity - suggest the driving amplifier ought to have a bit in reserve.

The balance is weird, but certainly less so provided the speaker is kept well clear of walls (as recommended by the manufacturer, though contradicted by the importer). Under these conditions the bass and lower midrange are very well balanced, but output then falls smoothly but persistently until it's some 10dB down through the presence band (measured far field), 5dB of which is then recovered in the mid treble. All transitions including

the crossover are pretty smooth, and the shape bears more than a passing resemblance to the classic 'loudness' compensation contour.

## Sound quality

Despite the bizarre balance, the fact that several panellists actually liked the *LE8* is a testament to some underlying strengths in a design which is nevertheless fundamentally flawed. In fact three listeners were very positive, reacting favourably to the lack of aggressiveness in the sound, and the more distant perspectives.

The 'loudness' balance creates a thick and heavy bass, very distant presence and slightly tizzy recovery, but the speaker nevertheless shows quite nice vocal integration and coherence, albeit with significant suppression of fine detail.

And although it is certainly too heavy, the bass is impressively even and quite agile, creating rather less coloration than the construction might lead one to expect. Stereo imaging is quite precise and stable too - provided one can accommodate the shift in perspectives.

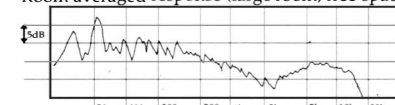
## Conclusion

The balance anomalies preclude any possibility of recommendation, but I can't help feeling there are plenty of people out there who will actually welcome the laid back presentation, and a response which Fletcher and Munson suggest will be subjectively quite appropriate to low listening levels.

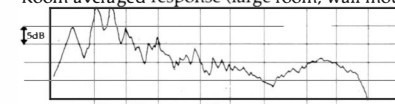
## TEST RESULTS

Size (hwxwd)	97x21x33cm
Weight	16kg
Recommended amplifier power	20-120W
Recommended placement	cones clear of walls
In room averaged response limits 50Hz-10kHz	+/-7dB
Large room/space LF rolloff (-6dB ref midband)	22Hz
Large room/wall LF rolloff (-6dB ref midband)	22Hz
Large room output at 20Hz (ref midband)	-7dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB (see text)
Impedance characteristic (ease of drive)	current hungry
Typical price per pair (inc VAT)	£399

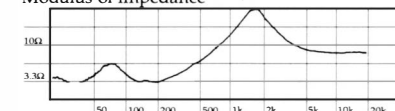
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



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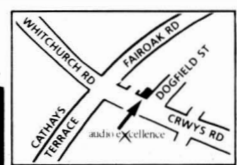


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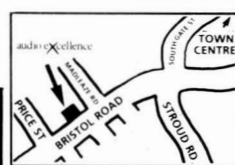
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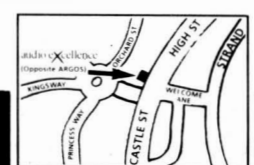
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# Epos ES14

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**Recommended**



I got my first taste of an Epos loudspeaker in the last loudspeaker review project (issue 94), wherein the pretty little *ES11* stormed through the test programme to a deserved Best Buy rating. But the *ES11* is a mere stripling upstart; the *real* Epos speaker is the original *ES14*, several years old now and a well established part of the scene - almost a classic, in fact - but a speaker that has hitherto eluded our review net.

That's because designer and Epos founder Robin Marshall is very suspicious of 'blind' listening tests and any reliance on the results thereof, which he feels often give very misleading findings for all sorts of reasons.

I explained that I shared many of his doubts, wasn't myself prepared to rely solely on blind sessions in any case, and was prepared to make his position clear in the text of the review. Fortunately his concerns (as far as this speaker is concerned anyway) proved groundless.

Tall, slim and deep, the £475 *ES14* isn't much bigger than a large bookshelf speaker, though if you did trust your rawlplugs with the substantial 12kg weight, it wouldn't sound too good placed that close to the wall. Instead there's a matching open frame stand which fits well and gives a generous supporting footprint.

Put together, the combination looks quite tall and assertive, especially since no grille is supplied or available to hide the phase plug in the centre of the main driver (the metal dome tweeter has mesh protection). But it is also nicely finished in real wood veneer, and attractively, discreetly presented, the cast driver frames being squared off to fill the baffle width.

The advanced proprietary main driver has a massive magnet and frame, the alloy

sandwich faceplate alone being 8mm thick. Both drivers were extremely tightly secured with large fine pitch machinehead bolts into tough threaded inserts, the moving parts consisting of a 145mm plastic cone and a 25mm metal dome.

The box itself is strong 18mm MDF, the sides further reinforced by an alloy tie-bar, and the space partly filled with carefully arranged foam blocks. A large port is fitted to the rear, but is blocked by a foam plug.

The original *ES14* was one of the pioneers of bi-wiring, but in those days the feature created such dealer confusion that it was abandoned, and is probably unnecessary given the extreme simplicity of the crossover - a solitary capacitor protecting the tweeter was all I could find.

## Test report

Sensitivity is a significantly below average 85dB, but in compensation bass extension (measured with foam plug in place) is good, while the amplifier load remains benign.

The overall balance is very nicely judged, suggesting that the speaker is best sited 30-60cm clear of the rear wall for optimum low frequency alignment. Elsewhere the midband is just slightly forward and there's a slight discontinuity in transition to the tweeter, which itself recovers to a slight peak and corner at around 8-9kHz.

## Sound quality

The *ES14* did really well in the listening tests, its lively and involving sound being well liked by all panellists, keeping the attention by maintaining good flow and integrity while also having the midband delicacy and transparency to encourage

fine detail analysis.

It's not entirely neutral - the midband clearly leading the way both in quality and stereo perspectives - being a little forward and projected. But as it's such a nice midrange, with such good vocal projection, it seems churlish to complain. Consonants are rather superior and sibilants more convincing than most, though the treble is just a bit too obvious and spitty - the tweeter was one of the first of the metal dome units to be developed, and is beginning to sound a little dated.

The bass is interesting. It's rather restrained and lacking in drive, authority and a bit of pace too, but the extension is good enough to generate an impressive sense of scale, and the dry balance ensures that things never get boomy, chesty or out of control.

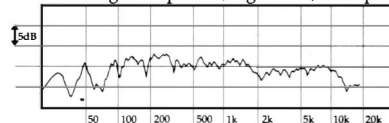
## Conclusion

Tinkly treble apart, this is a very satisfying loudspeaker in many ways, clearly deserving confident Recommendation. Its main strength lies in the elegantly fast and detailed midrange, but it is also nicely presented, very well built and good material value for money. The only note of caution is that it is very revealing of the quality of the source, so should only be chosen after demonstration with a good quality system.

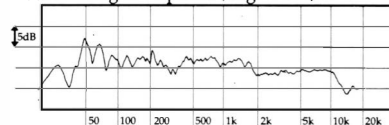
## TEST RESULTS

Size (h x w x d)	49 x 22.5 x 29 cm
Weight	12 kg
Recommended amplifier power	20-100 W
Recommended placement	stands 30-60 cm from wall
In room averaged response limits	50 Hz-10 kHz +/- 5 dB
Large room/space LF rolloff (-6 dB ref midband)	25 Hz
Large room/wall LF rolloff (-6 dB ref midband)	25 Hz
Large room output at 20 Hz (ref midband)	-9 dB
Estimated midrange sensitivity (ref 2.83 V, 1 m)	85 dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£475

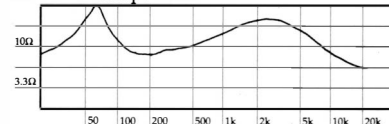
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



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# Heybrook HB1 Series 3

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As the name suggests, this loudspeaker has been around for many years, during which it has provided much of the foundation of West Country manufacturer Heybrook's success. To my recollection it wasn't in fact the company's first loudspeaker, but originally came in as an entry level budget model underneath the pretty little *HB2*.

It's a sign of the passing years that the *HB1* now looks quite large against the competition and costs £250, while Heybrook has since introduced a number of cheaper and smaller starter models. The tide of fashion too has rather left the *HB1* looking a shade anachronistic, with its large baffle area and limited overall depth - not that the shape doesn't make a great deal of sense for a wall-mount model such as this.

It's a large bookshelf size two-way sealed box, and sits neatly enough on Heybrook's excellent *HBS1* stand. The vinyl cladding is as good as they come, and all is neatly, if rather demurely finished, with only the stick-on badge to interrupt the various blacks and greys, whether or not the neatly chamfered grille is used.

What is particularly impressive is the considerable attention to detail that has obviously been paid in both design and manufacture. The passage of time brings a maturity through development that is rarely found in brand new models.

The flush-mounted drivers are really tightly screwed and bolted home, while the inside of the enclosure is lightly filled with a complex and carefully arranged mixture of different damping materials, and bituminous pads provide further damping for the box itself. The simple, good quality hardwired crossover uses double terminals for bi-wiring, and solid-

core cables soldered to the driver tags. Solid-core speaker cables are recommended.

The main driver has a rather diddy magnet, but a proper cast frame, supporting the quite large (155mm) doped paper cone. The tweeter is a 25mm soft doped fabric dome. The box is built from 18mm and 15mm board, with extra batten stiffening and a double thickness behind the tweeter.

## Test report

Sensitivity is a generous 88dB, the load will be easy enough for any accompanying amplifier to handle, and bass extension is very respectable too.

Although intended to be placed close against a rear wall, the room averaged response traces suggest that the *HB1* will be equally happy (or unhappy) if moved further out. The free space trace looks just as well balanced as that measured with full wall reinforcement, though both have salient characteristics that will influence sound quality.

A little of the midbass assistance provided by the wall is helpful in balancing the slightly strong upper midrange, but too much is inclined to emphasise both of these at the expense of the upper bass and lower mid. The crossover region is well handled, though the tweeter does show a distinct 'corner' at 12kHz prior to rolloff.

## Sound quality

The *HB1* received strong and virtually unanimous praise in two separate 'blind' presentations, delivering impressive scale, fine coherent vocals and lively dynamics and dynamic range. There's good weight and body - sometimes a little too much perhaps - but timing and speed are seldom

found wanting. Replacing multi-stand cable with solid-core sweetens the top and tightens the bottom, at some cost in speed.

Balance anomalies like the rather forward upper midband and heavy, 'thuddy' midbass do give rise to some colorations - mild cuppy effects, for example, and a certain relentlessness and aggression that is not always relaxing. There's some disruption in the stereo image too, depth layering not being too well resolved.

But such failings seem relatively inconsequential compared with the vividness of illusion this speaker can create. It's first and foremost a communicator, helping to break down the barriers between performers and listeners.

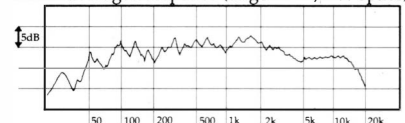
## Conclusion

Not polite or bland enough to satisfy those merely seeking the means to generate background music, this latest version of the *HB1* is both a demanding and ultimately a satisfying experience musically. There's nothing particularly special about any of the ingredients used, but the whole here is much greater than the sum of the parts, reflecting the considerable care that has gone into putting everything together. A Best Buy rating is entirely appropriate.

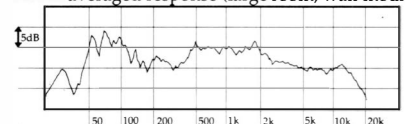
## TEST RESULTS

Size (hwxwd)	47x29x24cm
Weight	8kg
Recommended amplifier power	15-100W
Recommended placement	stands 30cm from wall
In room averaged response limits 50Hz-10kHz	+/-4dB
Large room/space LF rolloff (-6dB ref midband)	48Hz
Large room/wall LF rolloff (-6dB ref midband)	30Hz
Large room output at 20Hz (ref midband)	-14dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£250

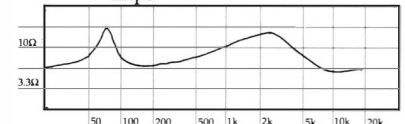
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



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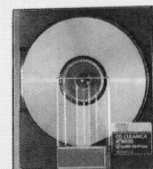
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# Infinity Reference 10

**Recommended**

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MILTON KEYNES MK12 6HR. TEL: (0908) 317707



One of America's largest and best established specialist hi-fi speaker manufacturers, Infinity has tended in the past to concentrate on its home market, though one or two of the budget bookshelf models have enjoyed their fair share of success over here in the UK.

The two new *Reference Series* models included in this report came with plenty of accompanying propaganda. On the one hand there was a multi-lingual instruction manual (English/French/German); on the other was a design 'white paper' beginning with the words: "The new Reference Series has been specially developed for the UK market..."

Whatever the flannel, this is a good looking and chunkily proportioned little bookshelf model that certainly feels solid and substantial enough to justify its £159 pricetag. Indeed it weighs a cool 7kg, which is a good bit more than most similarly sized speakers, and doesn't even have the excuse of needing a big magnet to control a ported enclosure - this is a straightforward sealed-box design, with fundamental system resonance at just above 80Hz.

Presentation is distinguished by attractive radiusing of both baffle and rear panel edges, and the use of a good quality textured vinyl print on all six faces. The moulded plastic grille is chamfered around its outside edge, for appearances' sake, but not on the edge next to the drivers themselves, which is a wasted opportunity. The speaker looks pretty enough without it - apart from the ugly great mounting lugs left at each corner.

The drivers were pretty tightly secured, albeit using coarse-pitch woodscrews and at the expense of some cracking - and some difficulty in properly re-tightening - into 18mm thick particle board that

should perhaps have been stronger. The odd section of battening adds further strength to some panel junctions, and the whole thing is well filled with wadding.

A conventional terminal pair feeds a fairly elaborate PCB crossover, and that in turn tag-connects to the two drivers, both of which use advanced diaphragm materials. The main driver has an injection-moulded, graphite-loaded polypropylene cone some 120mm in diameter, with contiguous concave sealing dust cap. The fact that the basket is merely pressed steel is disguised by a plastic trim ring. The tweeter uses an ultra-light foamed polypropylene 19mm dome, dubbed Polycell, which is bound to leave your DIY friends impressed.

## Test report

Sensitivity is close to average, and the bass extension is quite impressive for the modest box volume. There's no free lunch, of course: the impedance is resolutely low through the bass region - though not to the extent that it is likely to cause any embarrassment to a modern transistor amplifier.

The curves suggest that although the *R10* is a little bass shy when used well clear of reflective walls, it is inclined to get midbass boomy if moved up too close. Careful experiment will be needed to achieve optimum in-room alignment. That achieved, the overall result is pretty well balanced, though not without some local unevenness and a clear 9kHz treble 'hot spot' that is likely to be subjectively audible.

## Sound quality

In complete contrast to its big brother, the *Ref 10* turned in a solidly impressive listening test result, which subsequent

sighted listening did little to modify. The real strength here is an essentially communicative - though not entirely uncoloured - midrange, providing a good balance between detail and refinement, especially on relatively simple material.

The tweeter seems a little too inclined to make its presence known, though it's reasonably sweet and quite transparent, and the focus sharpened up when the supplied *Supra* cable was substituted for *NACA5*. The sound (inevitably, given the dimensions) lacks scale, weight and authority, and a certain amount of body too, and the bass certainly doesn't sound as 'fast' as the mid and treble, leading to slightly insubstantial transients. But at least there's little tendency to boom, just a slight fuzzing and thickening of textures and differentiation, and low frequency room matching is pretty good.

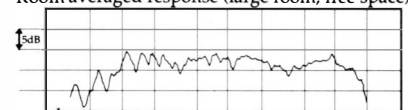
## Conclusion

Disregarding the attendant hype, once again Infinity has demonstrated its ability to US-manufacture, ship and sell a fully competitive bookshelf speaker on the UK market. I still have some reservations over the mechanical integrity of the main driver mounting (enthusiasts could contemplate T-nut conversion), but this good basic allrounder nevertheless deserves Recommendation.

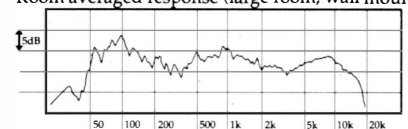
## TEST RESULTS

Size (hwxwd)	36x23x23cm
Weight	7kg
Recommended amplifier power	20-70W
Recommended placement	stands 30cm from wall
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF rolloff (-6dB ref midband)	48Hz
Large room/wall LF rolloff (-6dB ref midband)	50Hz
Large room output at 20Hz (ref midband)	-15dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB
Impedance characteristic (ease of drive)	current hungry
Typical price per pair (inc VAT)	£159

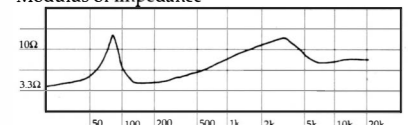
Room averaged response (large room, free space)



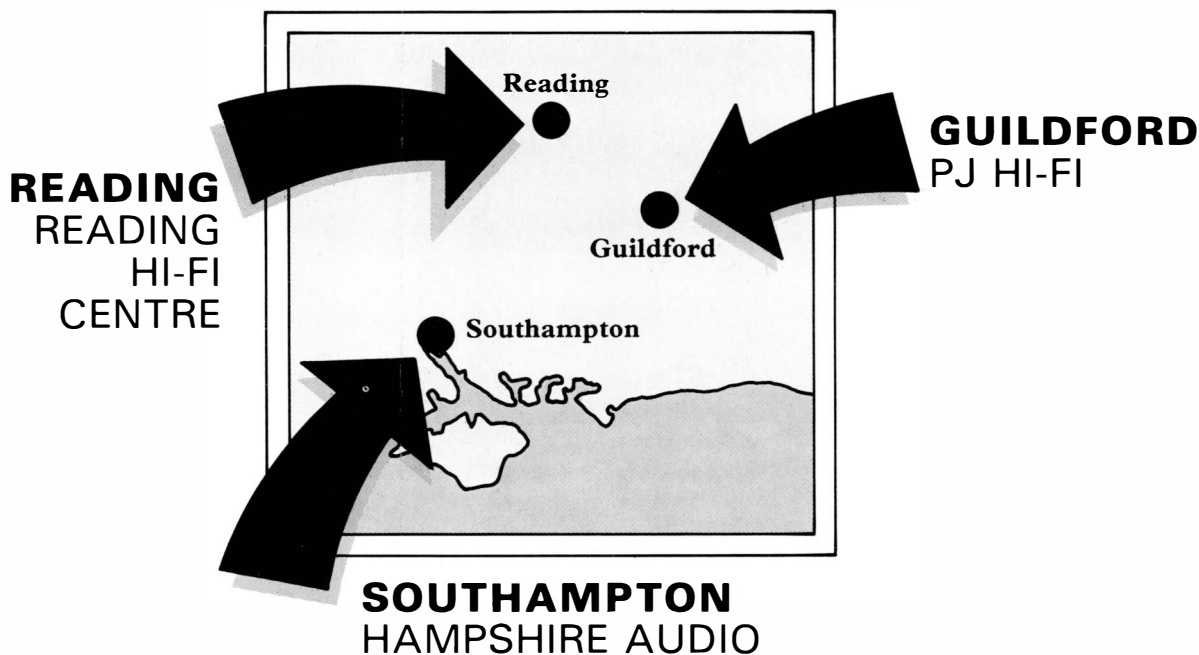
Room averaged response (large room, wall mount)



Modulus of impedance



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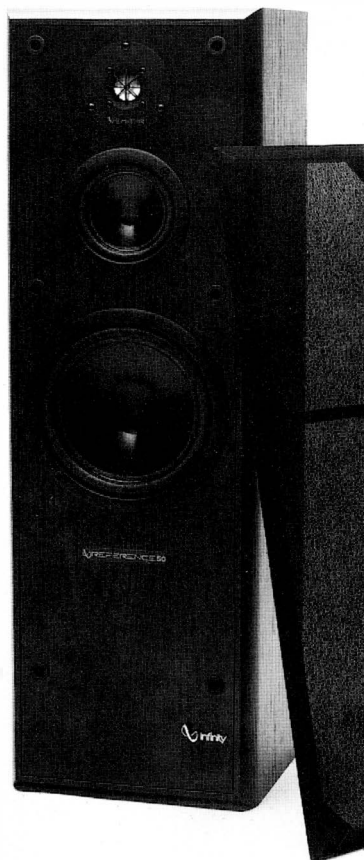
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# Infinity Reference 50

INFINITY LTD, GAMEPATH, 25 HEATHFIELD, STACEY BUSHES,  
MILTON KEYNES MK12 6HR. TEL: (0908) 317707



wrapped econobox, presentation is first class, especially with the grille off. The special injection moulded plastic cones with integral dust covers look impressively hi-tech, though it's a pity about the six ugly rubber lugs used to mount the grille, and the three separate logo/badges place it on the flash side of neutral aesthetically.

Nice chamfered baffle edging is echoed in the moulded frame grille, though this is really a rather stupid affair, presenting a thick and obstructive inside edge close to the part-rebated drivers. The fairly small machinehead woodscrews securing the units were all pretty tight, the cone drivers having pressed steel frames decorated with plastic trim. The bass has a 145mm cone, the midrange an 80mm cone, while the tweeter is a particularly unusual device, the diaphragm being a flat 25mm plastic disc complete with spiral 'voice coil' sitting in the magnetic field and therefore responding directly to signal input.

The box is built up from substantial 19/20mm panels, though oddly enough the wrap seems to use a heavier grade board than the baffle. There's no bracing bar a couple of strategically placed two inch battens, and the peripheral junction between wrap and front/back looks a comparative mechanical weak spot. The midrange driver has own little internal enclosure filled with longhair wool, and the whole (sealed) box is heavily stuffed by what looks and feels remarkably like cotton wool.

Twin gold plated terminals feed a bi-wire/amp crossover that separates bass from mid/treble arms. Tri-terminals would surely have indicated more serious commitment to this feature. The network is built on a printed circuit board, with tag driver connections.

## Test report

As one would expect from a decent size three-way, the 50 combines a usefully high (89dB) sensitivity with good bass extension, though the load presented to the amplifier is very current hungry, confirming that there are no free lunches on offer here.

The curves make it quite obvious that this floorstander should be kept well clear of room boundaries, whereupon the whole bass range lines up really nicely. The broad midband decade, 300Hz-3kHz has distinctly forward tendencies and looks worryingly ragged between 800Hz and 2kHz. The unusual tweeter has a smooth and extended response, but is clearly a

shade short on the sensitivity required to match the midrange.

## Sound quality

The 50 was given a poor reception in the blind tests, with persistent criticism of muddle and poor timing through the bass, despite acknowledgement of decent power and weight. Every panellist began with positive comments, which had invariably degenerated to irritation and exasperation by the end of the presentation, one observing with impressive perspicacity: "it's got to be an American multi-way".

Voices sound slowed, not fully coherent and somewhat aggressive with a slight nasal coloration, and the overall sound is lazy and uninvolved. The low bass is certainly well maintained, but the midbass is a little lean, which in turn leaves the rather coloured, uneven midband somewhat exposed above a slightly reticent treble. The supplied (single run) *Supra* cable helped tame the aggression somewhat, but lost out in other areas to bi-wire *NACA5*.

## Conclusion

Despite good overall balance and extended bass, the *Reference 50* serves mainly as a reminder of the problems of integration and timing coherence that is often associated with the complexity of a three-way configuration.

## TEST RESULTS

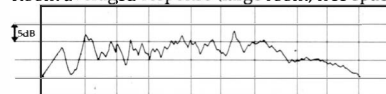
Size (h x w x d)	86 x 26.5 x 25cm
Weight	15kg
Recommended amplifier power	15-150W
Recommended placement	well clear of walls
In room averaged response limits 50Hz-10kHz	+/-4dB
Large room/space LF rolloff (-6dB ref midband)	25Hz
Large room/wall LF rolloff (-6dB ref midband)	23Hz
Large room output at 20Hz (ref midband)	-9dB
Estimated midrange sensitivity (ref 2.83V, 1m)	89dB
Impedance characteristic (ease of drive)	current hungry
Typical price per pair (inc VAT)	£499

US manufacturer Infinity has just introduced a brand new *Reference* series of six loudspeakers, made in the US of A but specifically targetted at UK and European tastes. The baby of the batch is reviewed and Recommended on page 75, while this test examines the *Reference 50*, one from the top of the line and offering little change from £500.

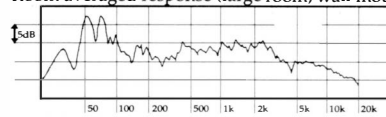
Something of a rarity these days, the 50 is a genuine three-way design with separate drivers for bass, midrange and treble. It's also a floorstander, and the need to accommodate the large diameter woofer has led to a cabinet that is rather wider than it is deep. There's no avoiding the very short footprint, though the base is fitted with spikes of decent quality. (Infinity's brochure describe these as decoupling the speaker from the floor; I thought the whole point was to couple the twain across a wide bandwidth.)

Given that this is basically a vinyl

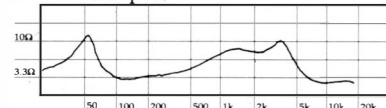
Room averaged response (large room, free space)



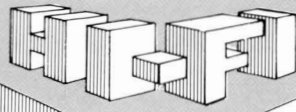
Room averaged response (large room, wall mount)



Modulus of impedance



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# Jamo Cornet 40 II

JAMO UK LTD, JAMO HOUSE, HEYFORD LANE, STOWE HILL, WEEDON, NORTHANTS NN7 4SF. TEL: (0327) 349 449



Danish speaker manufacturer Jamo was just setting up its UK distribution subsidiary when *Choice* originally examined this little budget bookshelf model (issue 90).

That review was generally positive, though the overall sonic performance was considered a little undistinguished amongst the very competitive UK rivals. The quality of the tweeter was singled out for specific criticism, and this has apparently received the attention necessary to justify such an early reassessment of the model.

So little has changed, at least on the surface, that it is tempting to delve into the hard-disk and dig out the original review. As a company, Jamo has been highly successful with what might be described as the scattergun approach to loudspeaker marketing. By which I mean it produces a large number of different ranges aimed at various niches in the market, each containing just two or three models.

Professional consultants have already reacted positively to some of the variations intended for permanent and discrete installation, though getting established in the crowded budget hi-fi market is likely to be a more difficult proposition.

Certainly the *Cornet 40* is a very pretty little enclosure, the post-forming around the baffle edges adding a touch of cabinet class rare at this sort of price. The thick-framed grille looks a bit of a disaster acoustically, but its removal reveals a very prettily trimmed baffle, with a silver-grey laminate surface, nice discreet graphics and part-rebated drivers - all in all, possibly the prettiest in its class. It's also one size larger than the typical £99 miniature, which indicates good basic material value for money.

I don't know what precise changes have been made, though a slight change in the impedance characteristics point towards at least some degree of crossover modification, whether or not the drivers themselves have also come under scrutiny.

The main driver has a smallish 100mm paper cone in pressed steel basket, the frame edge rebated and covered by a cosmetic trim ring, leaving the diddy socket-head screws with only 9mm of chipboard into which to bite, though the size of the allen socket on the screw prevents any real torque being applied. The tweeter is a 26mm soft plastic dome with similar woodscrew fixing.

The rear-ported enclosure is built from 16/12mm chipboard, damping being restricted to a ripple-profile plastic foam sheet set against the rear panel. Signals are fed to a single terminal pair, and thence to a quite elaborate hardwired crossover, using heavy gauge wire but tag driver connections.

## Test report

The various objective measurements are all much as before. Sensitivity is a shade below average, while the impedance remains nice and kind to amplifiers. In the listening room, bass extension is well maintained to 50Hz, but rolls off sharply below that.

Close-to-wall siting introduces some midbass excess, so start experimenting with the speakers about 30cm from the wall, and adjust if necessary to get the best overall bass-to-mid balance. Whatever the eventual room-modified bass alignment, there's a clear though not too excessive midrange peak centred on 1.3kHz that will provide its own character, while the broad mid treble is also slightly excess.

## Sound quality

The *Concert 40* certainly did more than enough in the listening tests to justify its modest price, though it wasn't the object of any great enthusiasm either, with consistent complaint that it started to clog up when dealing with loud complex material.

Essentially it seems to be rather an uneven performer: "fruity, sparkly, grumbly, lots of everything, but is this a good thing?" commented one panellist. The bass seems quite well extended, but isn't really fast or tight enough to provide a truly solid foundation or generate any real authority. Voices are nicely projected, if a touch thickened and chesty, while the treble adds some sparkle, but lacks the control, resolution and delicacy to portray textures convincingly, and tends to exaggerate vinyl surface noise.

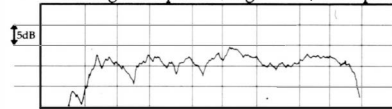
## Conclusion

Despite the tweaking process the *Cornet 40* has undergone, it is still a competent rather than a distinguished performer in this highly competitive sector of the marketplace. My previous reservations regarding a lack of fine treble resolution remain much as before, reducing its appeal to vinyl enthusiasts, though the pretty cosmetics could well find a place on the end of a CD oriented system.

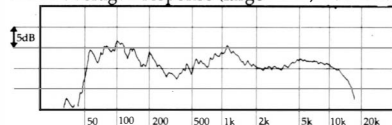
## TEST RESULTS

Size (hwxwd)	32x20x22cm
Weight	4kg
Recommended amplifier power	15-70W
Recommended placement	stands 1-2ft from wall
In room averaged response limits 50Hz-10kHz	+/-5dB
Large room/space LF rolloff (-6dB ref midband)	48Hz
Large room/wall LF rolloff (-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)	£99

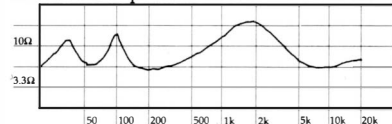
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance





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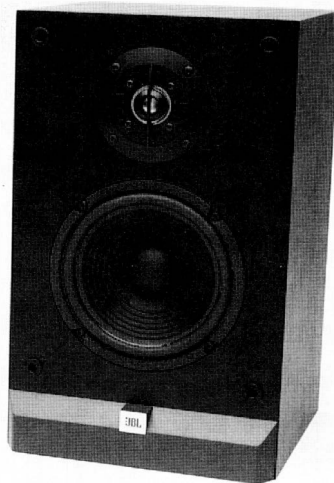
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# JBL XE2

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Ancestor of the US West Coast tradition in loudspeaker design, JBL's abundance of overlapping generations of models must be unmatched outside the Shure replacement stylus catalogue. Indeed, the XE2 model under scrutiny on this occasion bears a remarkable - if superficial - similarity to the L20 T3 assessed in the last batch of tests (issue 94).

The dimensions of the two boxes are practically the same, though the XE2 is clearly the budget variant, selling at £150 instead of £250, and weighing in at 5kg rather than 7.5kg.

Another even more fundamental distinction is that this model is actually built over here in Europe - in Denmark, that rising star of world loudspeaker manufacture, to be precise. Which is not necessarily an endorsement, I should add, judging by some of the build quality.

It's a pretty standard looking 'bookshelf' size enclosure, ported at the rear and intended for stand mounting well clear of walls.

Styling is decidedly nondescript, ditto the simulated wood vinyl, with the accent on simulated. Despite flush-mounted drivers, the plain laminate and sticky-out lower plastic trim/badge make it look silly without the grille on. The latter may use a moulded plastic frame, but the perpendicular inside edges seem to have been carefully conceived to offer just as much unwanted acoustic impediment as the old style chipboard cutouts which cottage industry manufacturers are usually forced to use.

The box size and all-up weight are respectable enough for the price, but the fine detail all suggests that when choices were made, cheapness rather than engineering integrity was the prime concern.

In fact the only area of generosity is the decent main driver magnet, which helps power the 120mm radially ribbed paper cone. The 26mm dome tweeter lurking behind a phase-compensating annulus is actually a plastic fabric, with a surface coating to give it an ultra shiny appearance.

The drivers seem screwed down tightly enough, but it's difficult to be sure given the limited torque that can be applied to the diddy little machinehead screws that have an appallingly coarse pitch. The removal of one main driver for internal inspection revealed that two of the four flimsy screws had been bent during assembly.

The box itself is 16mm particle board with rather coarse grain, the walls lined with wadding. To cap it all, the tacky little spring-clip terminal block won't take 4mm banana plugs.

## Test report

Given the wide variation in frequency response, any sensitivity rating can only be an approximation. Over the main fundamental range it's a generous 88dB, but the broad and deep presence and lower treble suckout will make it sound a quiet and very laid back 88dB. It's a nice easy amplifier load, but in-room bass rolls off fairly rapidly below 50Hz.

The low frequency alignment is well suited to the intended free space siting, but further up the band, between 700Hz and 4.5kHz, output falls gently away by some 7dB, much of which is then recovered on the subsequent rise to 20kHz. It has to be said that the trend is pretty smooth throughout, and crossover integration is good, but the substantial departure from any approximation to overall flatness will introduce

unavoidable coloration, resulting in a sound not unlike depressing the loudness button on an amplifier.

## Sound quality

The abovementioned balance anomaly dominates the perceived sound quality to such an extent that sensible appraisal is extremely difficult. Setting an equivalent comparative volume level, for example, is virtually impossible, my notes making it clear that the blind tests were conducted at too high a relative level for the sensitivity rating, merely in an attempt to drag the presence level up to something realistic.

The dreadful 'loudness' balance creates a slow distant sound with a dominant 'thump'n'tizz' factor, the one saving grace being that the sound never, but never, sounds aggressive, such is the relative lack of bite and fire. Lurking beneath the overall presentation, the mid/presence is nice and smooth with good integration, but bass is thick and slow, while the top end tinkles sweetly but rather relentlessly.

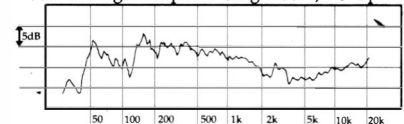
## Conclusion

Suitable only for those seeking a warm mellow sound that has little to do with high fidelity, the XE2 does little to enhance the credibility of this famous brand.

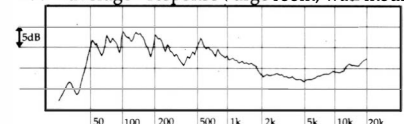
## TEST RESULTS

Size (h x w x d)	38x23x23cm
Weight	5kg
Recommended amplifier power	20-70W
Recommended placement	high stands in free space
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF rolloff (-6dB ref midband)	48Hz
Large room/wall LF rolloff (-6dB ref midband)	48Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB (see text)
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£149

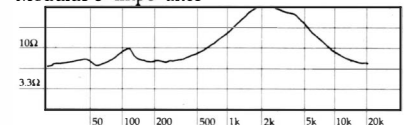
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



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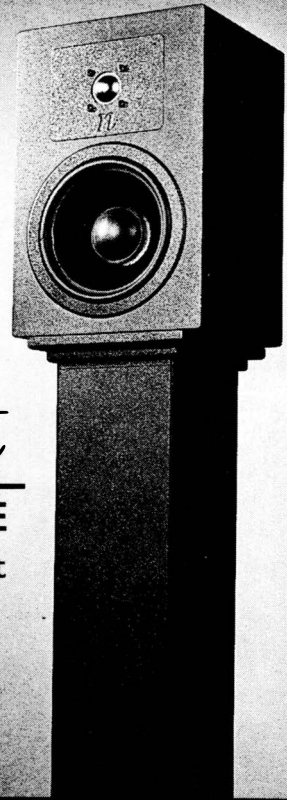


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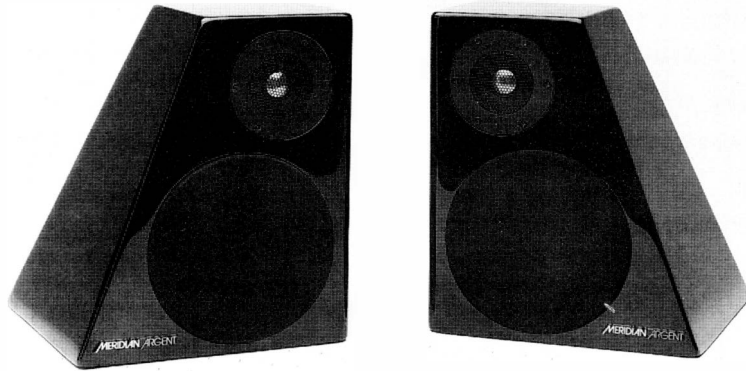
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# Meridian Argent 1

MERIDIAN AUDIO LTD, ECCLESTON ROAD, TOVIL, MAIDSTONE, KENT ME15 6QP. TEL: (0622) 672269



The House of Meridian is well known for very superior standards of industrial design, co-founder Alan Boothroyd having been responsible for several of hi-fi's all time classics. But even by these very high standards, the *Argent 1* is something a bit special.

To describe it merely as a truncated rectangular pyramid misses the point. This stunningly beautiful compact speaker, so elegantly shaped and finished in high gloss piano lacquer black, is contemporary design elevated to an art form. The way all the edges and corners are nicely and variously radiused conveys a hand-finished touch of class.

Unfortunately, at £1,200 it is also a stunningly expensive compact speaker, significantly smaller than its more conventionally shaped £995 *Argent 2* stablemate (issue 94). My guess is that the classy shape and finish is responsible for at least a third of the total price.

Viewing the photograph, some might be struck by a sense of *deja vu*. Yes, you have seen it before. *Argent 1* is in fact based on the head unit used to house the mid and treble units in Meridian's startlingly original two-box *D6000* speaker - the one that takes a direct digital input, performs active crossover functions in the digital domain, and incorporates analogue power amplifiers in its pedestal bass unit (see *Lifestyle*, issue 97). By implication therefore, *Argent 1* has more to do with *D6000* than *Argent 2*, though all three use very similar drivers.

These are both advanced devices, the bass unit having a massive magnet and cast frame, plus a (yellow) 120mm Kevlar cone and protuberant phase plug mounted on the large diameter polepiece, both of which are hidden when its personal flush-fitting cover is in place. The tweeter has

its own protective mesh and uses a 25mm aluminium dome, the voice coil wound with silver wire.

Both drivers were well secured using six slightly flimsy woodscrews, the massive 25mm thick birch ply cabinet network being strong enough to inhibit overtightening. The shape alone confers additional strength as well as acoustic advantages, and an additional internal brace makes for one of the strongest enclosures I've encountered. The shape will aid wide distribution on the outside, while spreading the influence of internal standing waves across a range of frequencies. Further internal control is provided by bituminous panel damping pads and a complex cocktail of heavy damping infill. The elaborate bi-wire/amp PCB crossover uses top grade components and is hard wired to the gold-plated terminals and drivers with heavy cables.

## Test report

Once again I find myself unable to confirm Meridian's sensitivity, extrapolation from our 'real world' far field measurements gives a well below average 84dB, well short of the claimed 88dB. On the plus side, the amplifier load is mild and bass extension is very good for such a small enclosure.

Although the free space balance looks pretty good, it is somewhat mid forward, and wall proximity is in fact advised. Under these conditions the bass lines up beautifully, though a somewhat unusual reflection/interference pattern emerges in the midrange, which may be related to the unusual enclosure shape, not to mention the wide distribution. To minimise coloration, careful experiment with placement would seem essential.

Elsewhere the response is impressively smooth, but depressed in the presence region and slightly suppressed throughout the treble as a whole.

## Sound quality

The panel showed good consistency, unanimously rating the *A1* comfortably above average, and with good agreement between individual listeners. Stereo is unusually good, with no trace of boxiness to obstruct the fine midrange delicacy and transparency.

Bass is dry and usefully well extended, though rather lacking in weight and power, with a measure of overhang and thickening, while the treble is unusually sweet, if just a little detached and obvious.

The dulled presence region adds to the politeness, but leaves the sound rather lacking in crispness as a result, more than one listener finding the sound rather overdamped and a little lacking in enthusiasm.

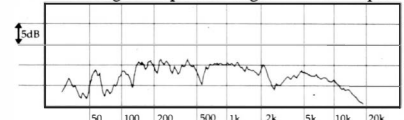
## Conclusion

The pretty face should itself ensure the *A1*'s success, rendering any attempt to make value judgement somewhat superfluous. Its beauty is certainly more than skin deep, the smooth, sweet and slightly laid back sound possessing considerable charm and unexpected scale too, if falling a little short of the near perfection required for formal Recommendation. A powerful amplifier is advised, and ultimate loudness is not very great.

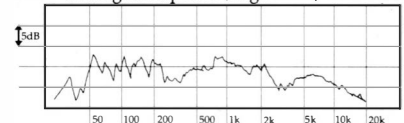
## TEST RESULTS

Size (hwxwd)	33x27(max)x27(max)cm
Weight	9kg
Recommended amplifier power	30-120W
Recommended placement	Slate stands near wall
In room averaged response limits 50Hz-10kHz	+/-4dB
Large room/space LF rolloff (-6dB ref midband)	28Hz
Large room/wall LF rolloff (-6dB ref midband)	28Hz
Large room output at 20Hz (ref midband)	-11dB
Estimated midrange sensitivity (ref 2.83V, 1m)	83dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£1,200

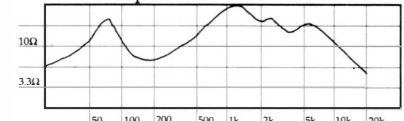
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



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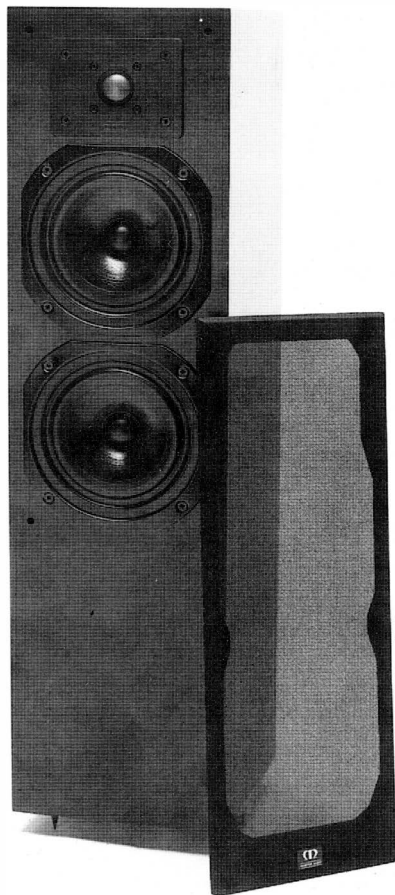


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any case. The *11* needed a 60cm stand to get its bass units far enough off the floor, so 26cm doesn't get halfway. And spiking the bottom of an enclosure like this will never give the same stability footprint as a good quality stand.

The box is fashionably slim and quite tall. Two apparently identical bass/mid drivers are fitted, one operating just to augment the bass where a large cone area is an advantage, the other carrying on up into the midrange where its small size helps promote good crossover integration to the tweeter.

All is finished in an attractive shiny black paintwork, the drivers bolted straight to the baffle with really well tightened T-nut bolts. The rather plain grille is better left unused, partly because the speaker looks prettier without it, but also because the baffle is narrow and the frame rather thick, while the 25mm metal dome tweeter has its own protective mesh cover anyway.

It's not a particularly heavy loudspeaker for its size and configuration, largely because the very strong MDF panels are only 11mm thick. The long vertical panels are stiffened both by the lower partition and a figure-8 brace between the bass and main driver, and all is lined with pads of acoustic foam.

A good quality bi-wire/amp crossover is fitted behind the twin terminals, with all connections being hardwired. The main drivers are simple low-tech affairs, with 105mm doped paper cones and wide surrounds, small magnets and pressed steel frames.

The £300 *Monitor 11* was a Recommended model from our last group loudspeaker reviews (issue 94), and the £400 *Monitor 14* is very closely related indeed.

It's all very logical really. Anyone buying an *11* needs a pair of stands costing maybe another £100 to put them on, and these are certainly not necessarily going to be MA brand stands. So why not extend the *11*'s cabinet down to the floor, fit it with a set of spikes and make the whole package look much neater in consequence?

Welcome to the *14*, though I reckon MA has quite a nerve to charge an extra £100 for a set of spikes and a 26cm square tube of MDF, even with the extra bulk and packing. The extra section of the box is actually blanked off acoustically, an access panel at the rear allowing sand and/or lead shot damping/mass loading to be added.

And there's a fatal flaw in the logic in

## Test report

The *14* achieves average sensitivity without resorting to a current hungry low impedance, and manages pretty good low frequency extension too, especially considering the compact dimensions. However, as is often the case with twin main driver systems, the overall bass level is too strong for the mid and treble.

The similarity to the findings for the *11* is very close indeed, but the differences, due to replacing stand with close-to-floor mounting, are nonetheless significant. Where the *11* was about 4dB too strong across the two octaves from 100-400Hz, the *14* is about 7dB too strong across a narrower band, 150-250Hz.

Elsewhere the response is pretty well balanced along a slightly downtilted characteristic, though still somewhat uneven with it. The presence and crossover regions are well handled, but the treble does seem to focus rather around

5-10kHz, and the ultimate rolloff is on the early side.

## Sound quality

Although direct comparison is not of course possible, the evidence of the blind listening suggests that the *14* is actually somewhat inferior to its cheaper sibling. One listener praised the easy listening balance and awarded high marks, but even he added the rider about the over-prominent lower mid. 'Dark', 'plummy' and 'soggy mess' were alternative adjectives and phrases that appeared in another's notes.

The *14* is quite nicely voiced through the midband - very reminiscent of the *11* here - a bit scrappy and with a slight tendency to hardness, but quite expressive and coherent with good focus and a slightly spikey treble. And then the bass comes in, all boom along a box and leaden thud. What had previously been at least tolerable - even rather attractive in its way on the high stand - goes just too far over the top when down on the floor.

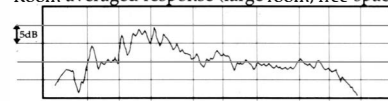
## Conclusion

This review merely serves to emphasise how important the correct stand and support is in achieving a good end result. Through being too close to the floor and poorly supported on inadequate spikes, the floorstanding *14* is significantly inferior to a properly stand-mounted *11*. Adding particulate mass to the lower section might afford a slight palliative, but won't effect a cure.

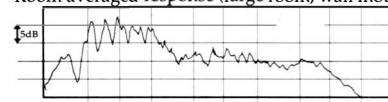
## TEST RESULTS

Size (hwxwd)	78x20x24cm
Weight	10kg
Recommended amplifier power	15-100W
Recommended placement	well clear of walls
In room averaged response limits 50Hz-10kHz	+/-7dB
Large room/space LF rolloff (-6dB ref midband)	30Hz
Large room/wall LF rolloff (-6dB ref midband)	28Hz
Large room output at 20Hz (ref midband)	-13dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£400

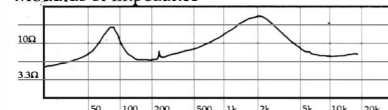
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance

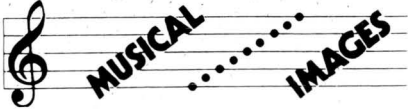




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# Monitor Audio Studio 5

**Recommended**

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TEL: (0223) 242898.



For many years Monitor Audio has reaped most of its rewards from the budget and mid-priced sectors of the market, down below £400. A year or so back, around the same time as the acquisition of serious drive unit manufacturing capability, a new and more upmarket strategy emerged, the *Studio* series featuring metal cone and dome drivers in luxury finish compact cabinets.

First of the line was the £1,000 *Studio 10* (reviewed in issue 90), an interesting and already commercially successful model let down by poor in-room bass alignment. Three more *Studios* have subsequently appeared, the 5, 15 and 20, each priced at 100 times the model number.

The baby 5 is the subject of this review, its small dimensions more or less ensuring freedom from its predecessor's midbass excess. However, justifying a £500 pricetag for something so small could be a little more difficult. Certainly the fine cabinet finish, with a top quality veneer of your choice (on all but the back) is a start. So too is the proprietary metal diaphragm driver technology, which is still sufficiently rare to command a handsome premium.

The whole thing feels reassuringly solidly built, with very rigid panels. 6kg is very hefty for something so small, so it wasn't too surprising to find the box built - hewn even - from massive 20mm MDF, and a very big magnet on the back of the main driver. This device uses a 90mm cone/dome made from aluminium/magnesium alloy and skimmed with a ceramic insulator (it says in the blurb). It was secured by four well-tightened fine-thread bolts into T-nuts, though the use of a pressed rather than cast frame was a bit of a surprise. The tweeter is a 25mm metal dome, again well fixed into place.

The flush-mounted drivers and veneered baffle are a positive encouragement to leave the grille in the packing material. Poor grille - it's quite a harmless looking device in this instance. Although this is a sealed box, internal damping is sensibly light, and restricted to thick foam pads lining the walls. Ultra heavy gauge cable is hardwired to a top quality bi-wire/amp crossover and two sets of class Y Michell type socket/binders inset into the rear panel.

## Test report

The low 83dB sensitivity rating (significantly below that claimed by MA) is bound to restrict loudness capabilities, despite the easy load and good power handling, but some recompense may be found in a reasonably good low frequency extension, albeit one that definitely needs some help from a nearby wall to lift up the midbass.

Even with such assistance, the octave around 1kHz remains somewhat projected, and the broad bass region remains lean, though the overall trend is impressively flat and smooth, with output well maintained through the crossover region and on up to a slightly early ultimate treble rolloff.

## Sound quality

Considering its small size, the *Studio 5* did reasonably well in the listening tests, though not without polarising opinions quite dramatically. There's an exciting immediacy that is quite seductive, but other factors also come into play. Size - or rather the lack of it - is certainly a problem: what bass there is is tight and controlled, but is lacking in extension, warmth, rhythmic poise and the sheer ability to kick ass, as one listener described it.

That aside, the mid and treble are most impressively clear, fast and coherent, albeit rather spotlighted by the forward balance. Musical strands are analytically dissected, and voices have a dynamic quality that is distinctly more real than most, though there's a definite touch of glare and the presence is a little too brilliant. Poor microphone technique can be ruthlessly exposed.

There's a degree of pinched and nasal coloration, and an almost jangly quality that makes exploring the (rather limited) maximum loudness a little uncomfortable. To some extent this might be a function of the need to place this speaker close to the wall in order to balance the bass, the wide dispersion and wall reflections serving to add colour and also interfere with the perspectives of an otherwise very good stereo image.

## Conclusion

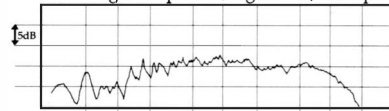
I'm sure this loudspeaker is destined to be the subject of debate and controversy. It brings an extraordinary vividness and excitement to voices that encourages one to overlook its limitations at the lower end of the frequency range.

A tad pricey for the material content and build quality, it is nevertheless one of the more interesting miniatures around, and thus deserves Recommendation. Purchasers should ensure that ample amplifier power is available, and that this very revealing loudspeaker doesn't highlight deficiencies further up the system chain.

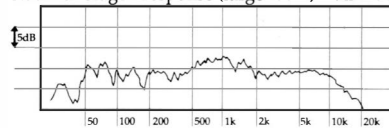
## TEST RESULTS

Size (h x w x d)	32x18x20cm
Weight	6kg
Recommended amplifier power	25-75W
Recommended placement	stands close to wall
In room averaged response limits 50Hz-10kHz	+/-4dB
Large room/space LF rolloff (-6dB ref midband)	30Hz
Large room/wall LF rolloff (-6dB ref midband)	28Hz
Large room output at 20Hz (ref midband)	-11dB
Estimated midrange sensitivity (ref 2.83V, 1m)	83dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£500

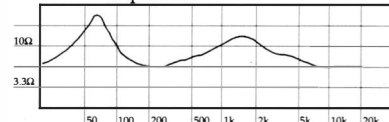
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



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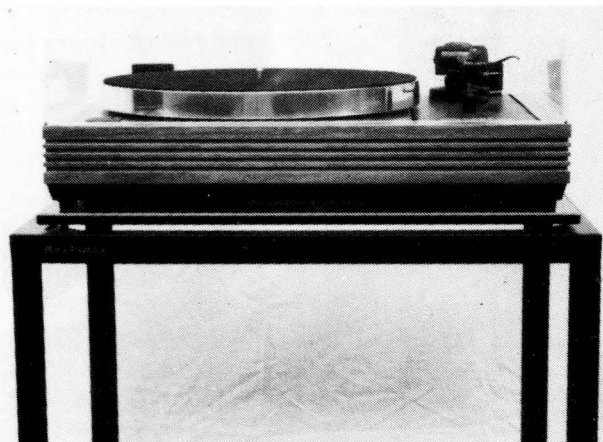
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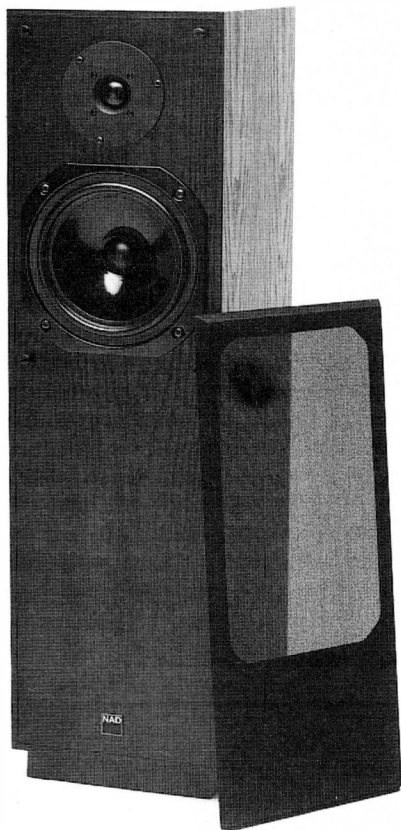
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# NAD 8100

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**Recommended**



Originally founded by an international consortium of dealers, NAD has had plenty of success with its amplifiers and source electronics, designed in the UK or US and manufactured mainly in the Far East. The brand is less known for loudspeakers, though a year ago *Choice* reviewed and recommended a neat little £150 miniature model dubbed the 8225 (issue 86).

The £299 8100 is a very close relative, taking the same two drivers and crossover and mounting them in a larger floorstanding box. The difference in price is not that much more than the price of the decent pair of stands needed to support the miniature, while the 'extended loudspeaker' approach not only looks neater but offers significantly enhanced bass output to boot. On the down side, the footprint made by this little floorstander is much smaller than that provided by many stands, and of course

cabinet coloration becomes more of a problem the larger the box.

Only the width remains as before, the 8100 being 7cm deeper and 40cm higher than its stablemate, while the much larger port is now tuned to a lowish 40Hz (previously c55Hz). Although its no luxury package, all is neatly put together with some attention to engineering detail. The base is a solid 30mm chunk of MDF, for example, fitted with decent quality spikes.

The drivers are not rebated, so the thick MDF grille frame is not too obstructive, but it still does the speaker no acoustic favours. With little relief from omnipresent black and an utterly adequate vinyl woodgrain, styling and presentation have clearly not been a design priority.

The main driver uses a 125mm plastic cone, a pressed steel frame and rather small magnet, and is attached by rather silly woodscrews that were barely tight. The tweeter is a 25mm fabric dome device, and the fixings were certainly much better tightened up.

The box itself is only 15/16mm chipboard, but there are two very classy double-figure-8 braces to stiffen the long vertical panels. There's light damping mainly around the rear of the main driver, and also in the base. The simple commercial bi-wire crossover is hardwired to the drivers and fed from two pairs of gold plated terminals.

## Test report

Sensitivity is pretty good, thanks in no small part to the low impedance that will make some demands on the amplifier's current reserves. Bass extension is pretty reasonable, though clearly peaked up somewhat around 40-50Hz and falling quite rapidly below that, indicating perhaps that the port is a little too exuberant.

The wall reinforcement that was virtually a necessity with the little 8225 must be avoided like the plague with the 8100. Free space siting shows a pretty well balanced overall characteristic, held within tighter limits than most across the majority of the range. However, the fat low/mid bass bump will be subjectively all the more obvious because of the slight leaness in the octave from 75-150Hz, while the broad midrange is slightly forward and a little ragged.

## Sound quality

The 8100 did well in the blind tests, with pretty good consistency between the

panellists. There was praise for the good balance and resolution and for an attractively clear, open and lively sound. This was tempered by general reservations that the treble was a bit obvious, hard and edgy, with some fatigue potential - a factor that might be ameliorated by careful cable selection. The forward presence tends to add to this slight aggressiveness, and also flattens stereo perspectives somewhat.

The bass received a more mixed reaction. It certainly has an attractive character, especially on first acquaintance, with an engagingly lively and bouncy quality. But it is a bit of an illusion, generated by the slight lack of warmth and the bump at the bottom. More extended listening found it somewhat detached and a little ponderous, but more than half convincing nonetheless.

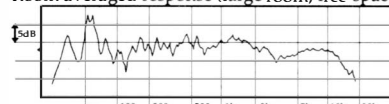
## Conclusion

Much like its baby bookshelf stablemate, the 8100 delivers an overall result that's significantly greater than the sum of its parts. It's by no means above criticism, but the weaknesses always seem less significant than the entertainment value of a speaker which is comfortably more communicative than the herd, and certainly good enough value for Recommendation.

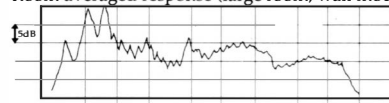
## TEST RESULTS

Size (hwxwd)	75x20x25cm
Weight	9.5kg
Recommended amplifier power	20-70W
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)	28Hz
Large room output at 20Hz (ref midband)	-14dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB
Impedance characteristic (ease of drive)	current hungry
Typical price per pair (inc VAT)	£299

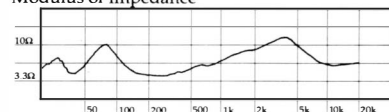
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



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# Philips FB820

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Having previously examined the 815 and 825 in previous loudspeaker review projects (issues 86 and 90), the eternal cycle of life's rich pattern sort of brings us naturally around to the one in the middle, the £450 FB820.

Historically Philips has shown itself very capable at speaker engineering, but its decision to start marketing hi-fi loudspeakers in the UK again after an absence of several years has more to do with supporting its successful standalone CD players with a full range of hi-fi separates than introducing any radical new technology.

Given that the average size of speakers has been shrinking slowly but surely over the past two decades, the 800 series's determination to provide a really big box for the money seems a little out of context with UK specialist hi-fi in the Nineties, though there's no denying each offers pretty good material value for money.

The impressive scale of the speaker itself is rather spoiled by the horrible plastic laminate that is stuck on around the wrap, overlapping(!) on the base, and the poorly decorated back view, though each of the cabinet edges has been nicely radiused, and the whole thing is tolerably narrow. The grille is unhelpful and pretty ugly, placing a quite deep plastic frame close against the rebated drivers. You can leave it off because the drivers have been nicely decorated with glued on soft plastic trim.

Pretty this may be, it's also a useful disguise for indifferent build, and an effective means of preventing simple rectification. The one I removed at random revealed stupid little woodscrews that were barely tight. This in turn makes a bit of a nonsense of the magnificent 30mm MDF baffle, which probably contributes much more to the 20kg weight than the diddy little magnets fitted to the drivers.

There's no floor coupling provision at all so we used Michell cones, and the rest of the box, specifically the 20mm chipboard wrap does sound a bit wooden and wardrobery, the single O-brace and thin felt lining offering little in the way of stiffening or damping, and there's no stuffing at all at the two ends of the box.

The twin bass drivers each have 115mm doped paper cones, pressed steel frames and little magnets. The midrange 75mm doped paper cone operates in its own small sealed enclosure, while the little tweeter has a 17mm plastic dome. There's a substantial complex PCB crossover with decent components, tag connecting with cheap wire, making the gold plated terminals rather spurious luxuries.

## Test report

Even given the easy amplifier load, the average sensitivity is maybe a slight disappointment for the box size, especially since bass extension is unremarkable.

That said, the 820 delivers almost the same set of parameters as the larger 825. Not even the drivers are the same, though the pen charts could easily have come from the same loudspeaker from 20Hz up to 2kHz. Above that there's quite a contrast between this dome tweeter and the 825's ribbon, especially above 7kHz.

Right up to its slightly early c12kHz final rolloff, the 820 is impressively evenly balanced, with just a shade too much warmth around 200Hz and a rather obvious hiccup from 1.5-3kHz.

## Sound quality

For reasons that will probably forever remain mysterious, the 820 was much less

successful in the blind listening tests than its stablemate. It wasn't universally disliked by any means, but didn't generate any real enthusiasm either, the word boring cropping up more than once.

The even balance and good sense of scale are worthwhile pluses, and the vocal band sounds nicely open too, but the bass is heavy, ponderous and slow, introducing some chestiness to voices, while dynamics lack impact and timing information is quite muddled, especially as the music becomes more complex.

The 820 sounds quite open and even at low levels, but hardens up and becomes edgy and almost metallic when driven hard. In fact the louder you try to go, the more obvious and variegated the colorations seem to become, with varying degrees of quacky, nasal and cuppy effects alongside the chestiness.

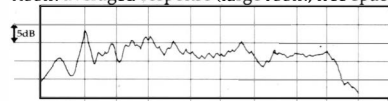
## Conclusion

I have to admit I'm rather perturbed that the 820 doesn't follow the good subjective example set by its big brother, since the two clearly have much in common. Whether the inconsistency is down to us or to Philips, the fact remains that the 820 is a rather boring and old fashioned sounding big box, its occupation of room space providing the main justification for its price.

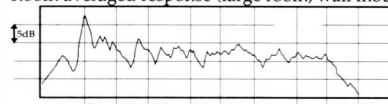
## TEST RESULTS

Size (h x w x d)	86 x 27 x 35 cm
Weight	20 kg
Recommended amplifier power	15-100 W
Recommended placement	cones clear of walls
In room averaged response limits 50Hz-10kHz	+/-5 dB
Large room/space LF rolloff (-6dB ref midband)	28 Hz
Large room/wall LF rolloff (-6dB ref midband)	26 Hz
Large room output at 20Hz (ref midband)	-10 dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87 dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£450

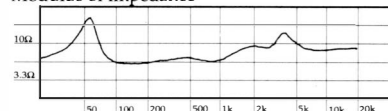
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



*music made live... music made live... music made live... music made live... music made live... music made live...*

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NAD 3225PE	320.95	330.95	346.95	367.95	404.95	409.95	461.95
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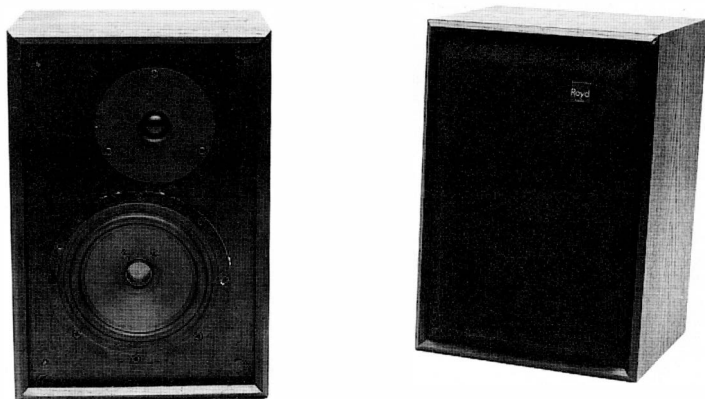
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# Royd Sapphire

ROYD LOUDSPEAKER COMPANY LTD, UNIT A6, STAFFORD PARK 15, TELFORD, SHROPSHIRE. TEL: (0952) 290700



The *Sapphire* is but one of about half a dozen different Royd models that share more or less the same little seven litre 'miniature' enclosure. At £200, it is in fact the middle model in the most recently introduced threesome, all featuring a curious rear port/damper made from a massive vibration absorber.

In many respects it's a cost-pared version of the estimable *Sintra*, a personal favourite of this reviewer that was covered in issue 90. Both share the same rather special little main driver, the *Sapphire* economies being found in the omission of mass damping on the enclosure panels, and the substitution of a less costly tweeter.

One thing that hasn't changed is the good quality real wood veneer wrap, which is still quite unmatched by even the best vinyl prints, both in appearance and to the touch. But then you expect to find a few luxury touches if you're paying £200 for something this small.

To one already conditioned to lifting the little 7.5kg *Sintras*, the *Sapphire* seems distinctly less solid, but in fact 5kg is itself pretty substantial for a box this size. The main driver has no dust cap to protect the magnetic gap from possible pollution, so the fitted foam grille is a permanent fixture. Its appearance is perhaps a matter of taste, though the acoustic transparency of the foam is invariably excellent.

The unusual Royd main driver has a tiny 90mm paper cone driven from a 19mm voice coil and a generous magnet. The rigid cast frame is nicely open at the back, and has no fewer than eight fixing holes. All eight rather diddy woodscrews were pretty well tightened into the MDF baffle, this tough composite, some 13mm thick, making the whole box very rigid.

The inside is lined with light wadding, and the heavy rubberised ventilated port

acts as a brace/damper by being tensioned against the magnet. The tweeter is a Vifa-sourced 19mm soft dome, and the drivers are fed through a simple hardwired crossover behind the 4mm input terminal pair. The matching open frame stand looks good value at £79.

## Test report

Sensitivity is a generous 88dB, aided and abetted by a nice easy load for the partnering amplifier, but compromised by some pretty obvious limitations towards the bass end of the spectrum, due to the limited size of both enclosure and driver.

Accepting that there's nothing of consequence below 50Hz, the overall response trends aren't at all bad, but are certainly far from perfect, and also differ markedly from the norm. Optimum bass balance should be achieved, as the manufacturer suggests, about 15-30cm from the wall.

This brings the midbass level, aided and abetted by the port resonance, up to match the midrange. But there's no avoiding the broad loss of energy through the two octaves comprising the upper bass and lower midrange, and that in turn leaves the next octave and a half somewhat exposed. There's a slight discontinuity at the crossover point itself, but no suckout, and treble output thereafter is unusually flat and extended.

## Sound quality

The *Sapphire* received a very uneven reaction from the listening panel, the lack of body and bass weight receiving due criticism from all while several panellists also found the mid and treble altogether too forward and aggressive.

However, despite these obvious

cosmetic deficiencies, extended hands-on listening revealed significant positive qualities besides. The midrange and treble is exceptionally fast and coherent, with excellent timing, and this in turn helps break down the barrier between illusion and reality to a quite remarkable degree, given a good enough source. The *Sapphire* is musically very informative - but also brought astonishing realism to a Nicam Test Match live broadcast.

Going over to the Royd from a more average loudspeaker can be a bit of a shock. The upfront presentation is initially discomforting, but given a few minutes of acclimatisation and the return to the previous speaker brings a real sense loss, as the glimpses of reality give way to an altogether more prosaic - if more tonally accurate - presentation.

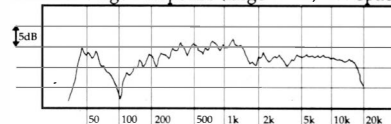
## Conclusion

Like others from the Royd stable, the £200 *Sapphire* has a somewhat controversial performance. Lack of genuine weight and power beneath a rather projected midrange can make for an edgy and uncomfortable experience. But the sheer speed and coherence can also be captivating. On the end of a good quality, carefully chosen system, there's no speaker at the price known to the author that can create such a convincing illusion of reality. Recommended then, but not for the fainthearted.

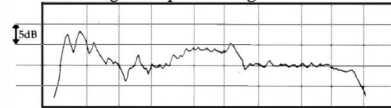
## TEST RESULTS

Size (h x w x d)	30.5 x 20.5 x 21 cm
Weight	5 kg
Recommended amplifier power	15-70 W
Recommended placement	stands 30 cm from wall
In room averaged response limits 50Hz-10kHz +/-5dB	
Large room/space LF rolloff (-6dB ref midband)	48 Hz
Large room/wall LF rolloff (-6dB ref midband)	48 Hz
Large room output at 20Hz (ref midband) below -20dB	
Estimated midrange sensitivity (ref 2.83V, 1m)	88 dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£200

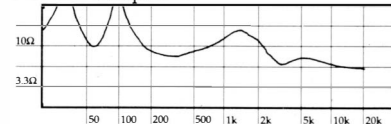
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance

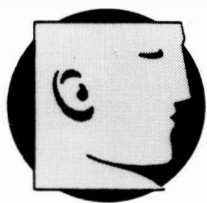


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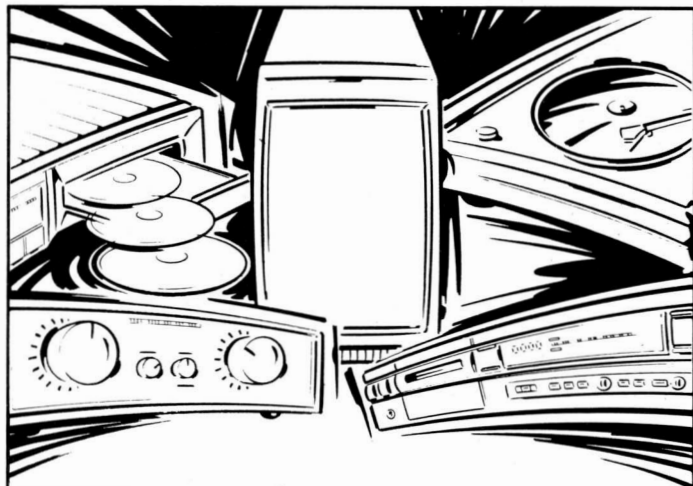
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# Ruark Swordsman Plus

RUARK ACOUSTICS LTD, UNIT 9 ANNWOOD LODGE INDUSTRIAL ESTATE, ARTERIAL ROAD, RAYLEIGH, ESSEX SS6 7UA. TEL: (0268) 728 890



When Ruark started out, its main expertise was on the cabinetmaking side of things, an early brush with *Choice* reviewing suggesting rather less mastery in the field of acoustics. Then came the *Talisman* (issue 90), the first of a new generation of models and a most impressive compact floorstander that both looks and sounds good.

Under scrutiny on this occasion, however, is a new-to-the-UK *Swordsman Plus*, a £279 luxury finish two-way compact which is based on the much earlier and altogether plainer looking *Swordsman* (which remains available at £239).

As shown by the success of the Arcam *Delta* and Epos *ES11* in the last loudspeaker group tests (issue 94), this is a very fashionable type of product right now - and with good reason, for it offers good performance without much bulk, and without the bass constraints of the miniatures.

The *Swordsman Plus* is significantly less expensive than either the Arcam or the Epos, yet Ruark has really gone to town with the presentation. All six faces are beautifully veneered in real wood, and the badgework and machinehead fixing bolts are gilded. Though removal reveals the pretty veneer, the grille mounting lugs are ugly, and only the tweeter is flush mounted, the main driver frame being left proud to overlap the tweeter mounting plate, so, from an aesthetic point of view at least, the slim chamfered grille might be best left in place.

The box itself is built from solid 15mm MDF, and a generous internal shelf provides further stiffening for the sides. Damping is limited to a thick foam lining, and a single terminal pair feeds a simple hardwired network, with heavy cables

soldered to the drivers.

If the enclosure looks very promising, the drivers are much less prepossessing, the main unit having a small magnet, a pressed steel frame and a shallow flare doped pulp cone.

The tweeter has a 25mm plastic dome. The main driver was tightly fixed, the tweeter slightly less so, though fine pitch bolts and T-nut fastening will allow for periodic re-tightening.

## Test report

Sensitivity is a resolutely low 84dB here, so a reasonably powerful amplifier is advisable, though current demands are not excessive. The very respectable bass extension for the enclosure size is, of course, the bonus.

The frequency balance looks particularly well judged, as long as the speaker is kept well clear of room boundaries.

Crossover integration is excellent, though there's significant local unevenness across most of the band, both bass and treble, the latter in particular looking a trifle exposed and peaky.

## Sound quality

Despite its generally even overall balance, the *Swordsman Plus* inspired little enthusiasm amongst the panel, several listeners commenting that it started well, but became steadily less interesting as the session progressed.

To a degree the performance seemed to vary somewhat with the programme, the speaker being less impressive on more complex material. The balance is definitely on the thin side of neutral, partly because there's a distinct lack of warmth and substance in the bass but also because the treble is a little detached and spitty.

Despite the measurements, a little wall assistance does seem beneficial, up to a point at any rate.

There's quite an appealing coherence to the midband, with decent focus and timing, and a general liveliness helped by the freedom from thickening and chestiness. But the bass lacks both drive and authority, and there's a hard, edgy almost metallic quality to the treble too, which is not always obvious, but is never far beneath the surface either. The tweeter lacks sweetness and fine detail, and seems to clog up with fine textures, the net result being that true transparency is not achieved.

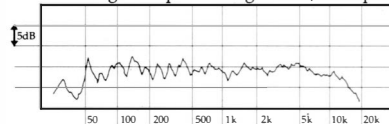
## Conclusion

This undoubtedly pretty little speaker shows evidence of good enclosure engineering and build, but the good midband coherence seems to be let down by the rather indifferent quality of the drivers, neither of which work particularly well towards their frequency extremes. The result is often pleasant enough, but falls somewhat short of the subtlety expected at £280.

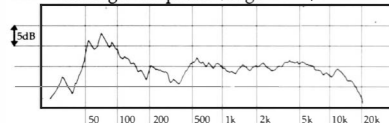
## TEST RESULTS

Size (hxxwxd)	38x20x28cm
Weight	7kg
Recommended amplifier power	20-80W
Recommended placement	stands in free space
In room averaged response limits 50Hz-10kHz	+/-4dB
Large room/space LF rolloff (-6dB ref midband)	28Hz
Large room/wall LF rolloff (-6dB ref midband)	30Hz
Large room output at 20Hz (ref midband)	-11dB
Estimated midrange sensitivity (ref 2.83V, 1m)	84dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£279

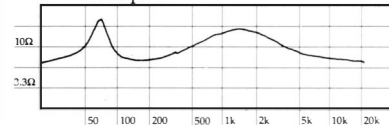
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



# Shan Shimna

AUDIO DIMENSIONS, 506 UPPER NEWTOWNARDS ROAD,  
BELFAST PT4 3HB. TEL: 0238 512 085



I'm really not sure why this has come in for review, since I recall putting it through its paces a couple of years ago (issue 71), patting it on the back and giving it a little Recommended flag at the top of the page. About the only thing that seems to have changed since is my word processing technology, so I'm going to have start all over again from the beginning.

Shan Acoustics comes from the Northern part of the Emerald Isle, so one reason I know virtually nothing about them may well be that East Kent is just about as far away as it's possible to travel without a passport. The speakers themselves are quite tiny and far from cheap (£315), but feature unusual construction and appearance and quality ingredients by way of justification.

They make a pretty enough picture too, sitting on the little matching stands which were also supplied. If my memory serves me correctly, the latter have been modified slightly since last time, and now use a heavy metal base to support the MDF pillar and top plate - getting the speaker off again after fitting proved quite difficult. And the cabinet finish is now beyond reproach - I did find one or two reproaches last time around.

The enclosure itself is moulded from a resin-based material, so that the top, base, baffle and sides, complete with cutaways for the drivers, are all in one piece, with just the flat back added later. The material is very dense, and the walls are about 15mm thick, so the whole thing feels very solidly built.

Good from the point of view of mechanical rigidity, this technique also lends itself to unorthodox shapes, which not only look attractive and distinctive but also confer some acoustic advantages. The *Shimna* is therefore a truncated

rectangular pyramid; baffle and both sides taper from the small plinth base up to the even smaller flat top, with nicely radiused baffle edges. All of which serves to distribute internal reflection modes (just as well since there's no internal damping whatsoever), provide optimum lateral dispersion and improve main and treble driver time alignment. The speaker is normally supplied in the buff, but a foam grille is an optional extra for the squeamish.

The drivers were fixed pretty tightly, using machinehead bolts (of rather limited purchase) into T-nuts. A tiny little port tuned to 60Hz is fitted to the back panel, along with bi-wire/amp terminals and a fairly simple hardwired crossover, connecting to the drivers with solid-core cables. The main driver has a cast alloy frame, a decent enough magnet and a tiny 90mm plastic cone, while the tweeter is a 19mm soft plastic dome.

## Test report

The measurement procedures have changed more than the loudspeaker itself over the past couple of years. The *Shimna* records an identical impedance trace, representing a nice easy amplifier load, and a similarly low sensitivity rating of 84dB (which will make up for the easy load, demanding plenty of volts rather than amps). Notwithstanding which, bass extension is about as close to nonexistent as it's possible to get away with.

Nevertheless, with a little help in the midbass from a wall carefully placed about a foot behind the speaker, it's possible to obtain a pretty flat overall balance in-room, albeit with sufficient variation to introduce some colour and individuality. Whatever the final bass alignment, the midrange is a shade forward, the presence

**Recommended**

recessed, and the mid-treble distinctly exposed - much the same as last time, in fact.

## Sound quality

Again much as before, the *Shimna* emerged with credit from the blind listening tests. Despite the obvious lack of bass welly, grunt or power, low frequencies are precise, controlled and well timed, without unwanted overhang though with a mild coloration that's all its own.

This clean dry bass tends to draw attention to the *Shimna's* most immediately obvious characteristic, which is a topky, bright and slightly spitty balance that tends to exaggerate sibilants. It's perhaps a little less well defined and focused than MA's comparable *Studio 5*, for example, but has an inherent sweetness that usually manages to stop short of aggressiveness. There's a touch of nasal coloration, and dynamics are rather pinched, especially through the bass. But there's fine coherence and information retrieval for all that. Voices have unusual realism despite the lack of weight, though serious loudness is not on the agenda.

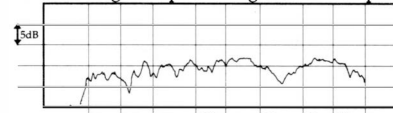
## Conclusion

This review has simply served to confirm the validity of the original findings, noting the improvement in presentation and finish. This is an attractive design in almost every respect, lacking only in bass welly and loudness capability, and characterised by a lack of boxiness and a slightly bright balance. Recommendation confirmed.

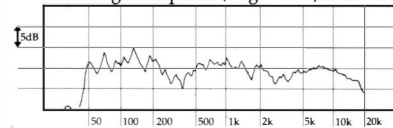
## TEST RESULTS

Size (h x w x d)	31 x 21 (max) x 17 (max) cm
Weight	6 kg
Recommended amplifier power	20-70 W
Recommended placement	stands quite close to wall
In room averaged response limits 50Hz-10kHz	+/-5dB
Large room/space LF rolloff (-6dB ref midband)	50Hz
Large room/wall LF rolloff (-6dB ref midband)	48Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.8 V, 1m)	84dB
Impedance characteristic (ease of drive)	very good
Typical price per pair (inc VAT)	£315

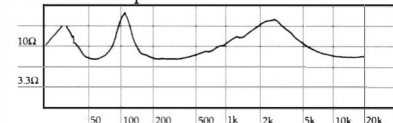
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



# Technics SB-EX2

PANASONIC UK LTD, PANASONIC HOUSE, WILLOUGHBY ROAD, BRACKNELL, BERKS. TEL: (0344) 862444



Although major Japanese brands like Technics dominate the mass market for hi-fi electronics, none has yet achieved the same success in loudspeakers. Quite why this should be the case remains a bit of a mystery, given the strength and wide recognition of the brand names, though engineers at Technics' Japan HQ have an interesting theory that relates variations in national tastes to variations in the sound of the respective languages.

Technics for one could not be accused of failing to make the effort - indeed it has made some interesting contributions to the technology over the years - but British dealers and customers have continued to favour partnering home grown speakers with imported electronics.

Whether the SB-EX2 will do anything to change that must remain to be seen. Certainly it's a prettily enough presented bookshelf size loudspeaker that looks decent value at £179, though there's nothing whatsoever that could be described as radical on this occasion.

In fact it's built in a Panasonic factory in Spain, and so to some extent it's a pan-European model, though pan-part-of-Europe is probably a more accurate term, as I'm sure production destined for Germany, for example, will be voiced (balanced) rather differently from the UK equivalent, despite having much in common.

It's taller than most of its ilk, fashionably narrow and quite deep too, the hefty 20mm baffle and box accounting for most of the substantial 8kg total weight.

The vinyl woodgrain is effective enough, heavily post-formed baffle edges which aid lateral dispersion and damping trim around the tweeter enhance the appearance and so encourage the removal of an otherwise neat and relatively

innocuous moulded frame grille.

The cabinet, reflex ported at the rear and half filled with a roll of damping felt, provides a firm basic foundation, though that's perhaps the design's strongest feature. Nearly half the baffle is routed back to mount the main driver - quite tightly, but only with coarse-pitch woodscrews and via plastic trim.

Neither driver looks particularly distinguished, the bass/mid unit having a rather modest magnet, pressed steel frame and 135mm doped paper cone, while the tweeter has a 25mm hard plastic dome behind a phase compensator. Double terminals permit bi-wire/amp operation, though the internal wiring is flimsy stuff with tag connectors and a rather diddy crossover.

## Test report

Bass extension is good for such a compact loudspeaker, though the price is extracted in a load which will suck plenty of current from the driving amplifier - and quite a few volts too, since the sensitivity is also a couple of dB below average.

There's no question that this model needs to be kept well clear of large reflective surfaces, especially walls and floors, and even then the balance is just a shade rich in the midbass. The upper bass and main midrange is very well handled, but a broad (two octave) and quite deep (7dB at worst) trough emerges in the crossover region between the two drivers (far field measurement). In context, the fact that the treble subsequently recovers to a broad peak from 4-9kHz may not be entirely welcome.

## Sound quality

The panel was pretty consistent in its criticism of the two main flaws in this

design, neither of which was unexpected from the response measurements. Specifically the 'darkened', recessed presence and the rather heavy and ponderous bass both impose themselves like a fingerprint on a sound which elsewhere is impressively civilised and well behaved.

The midband is even, with good intelligibility, low coloration and good upper bass control, while the bass itself is encouragingly weighty, but lacks both agility and authority - 'grumbly' was one adjective used by a panelist. It's a touch spitty but not seriously so, the overall impression being a politeness and inoffensiveness that borders on the bland, thanks to a degree of confusion and masking on material with complex textures and rhythms.

Stereo soundstages are quite well developed, though slightly let down by a degree of defocusing in the presence region. This lack of crispness at least ensures the EX2 never sounds aggressive, and could provide a welcome palliative on the end of an aggressive system.

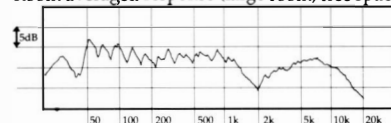
## Conclusion

The lasting impression left by this loudspeaker is that promising enclosure engineering is rather let down by the very average quality of the drive units. The end result is generally quite inoffensive, except by default in the lack of pace and excitement.

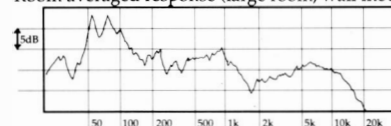
## TEST RESULTS

Size (hwxwd)	48x23.5x27cm
Weight	8kg
Recommended amplifier power	20-80W
Recommended placement	stands in free space
In room averaged response limits 50Hz-10kHz	+/-6dB
Large room/space LF rolloff (-6dB ref midband)	20Hz
Large room/wall LF rolloff (-6dB ref midband)	20Hz
Large room output at 20Hz (ref midband)	-6dB
Estimated midrange sensitivity (ref 2.83V, 1m)	86dB
Impedance characteristic (ease of drive)	current hungry
Typical price per pair (inc VAT)	£179

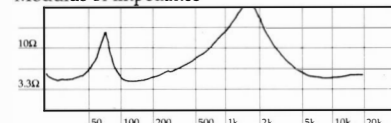
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)

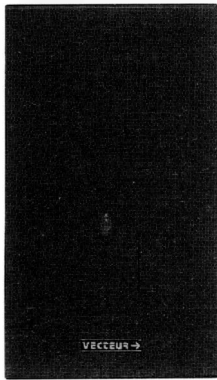


Modulus of impedance



# Vecteur Premiere

OXFORD DISTRIBUTION LTD, UNIT 21 BANKSIDE, STATION FIELD  
INDUSTRIAL ESTATE, KIDLINGTON, OXON OX5 1JE. TEL: (08675) 6202



The French make lots of loudspeakers, and have a number of long established brands operating successfully on the home market. Unlike claret, however, the speakers don't seem to travel too well. It may be British Francophobia or French Anglophobia but I can't remember reviewing a single example over the past fifteen years.

Vecteur itself is not known as a loudspeaker maker, but rather as a high end specialist. The *Premiere* is a nicely made little box, just about typical bookshelf size and covered in good quality tree wood veneer, but the only thing that superficially seems to distinguish it from models clustering around the £159 price point is that the sides are tapered towards the top, so that the baffle slants backwards, a feature that makes a lot of sense from the point of view of time alignment and of spreading internal standing wave modes. However, neither that nor the quite modest 5.5kg weight really prepared me for the news that this demure little beauty carries a £695 UK pricetag.

Grille removal reveals a slightly modified version of everybody's favourite little 20mm Audax tweeter, as featured in many of the most successful £100 UK budget miniatures over the past few years. However, careful examination does reveal considerable attention to the fine detailing, as outlined in the accompanying propaganda, and some interesting unorthodox besides.

The main driver is very unusual. It has a massive magnet to drive the small 95mm plastic cone, but also uses four rather than the conventional two terminals. The blurb refers to a dual voice coil arrangement, but I don't see why that would need more than three terminals. And judging by the way cross-connections short circuit each

of the main terminals to one of the secondaries, my guess (and it is only a guess) is that parts of the coil may be being shorted to provide some extra dynamic braking control.

The deceptively simple looking crossover uses a somewhat unusual serial configuration, which explains why no bi-wire/amp option is available, and just a single pair of classy gold plated terminals is fitted. Internal wiring and components are top quality, and just light felt damping is used to line the exceptionally rigid 20mm thick panels.

A thin sheet of rubber covers the baffle up to the edge of the grille frame, reducing the latter's obtrusiveness and rendering driver rebating largely unnecessary. The port, set into the back, is a long and quite large diameter tube also in some soft rubbery material. Even though the fixings are pretty solid, the drivers were not at all tightly screwed in place, which is reprehensible.

## Test report

Sensitivity is a usefully high 88-89dB, part of which is due to the extra current drawn by the lowish impedance main driver, though it's not severe enough to cause much amplifier embarrassment. Unsurprisingly, bass extension is pretty limited: what you get below 50Hz isn't really worth mentioning.

Crossover integration is excellent, and the cheap little tweeter turns in a fine performance - all the smoother for the removal of the phase plug on our far-field measurement, apart from a slight kick at a virtually inaudible 16kHz.

## Sound quality

The *Premiere* attracted a generally positive response from the listening panel, though

no great enthusiasm, and indeed was the source of a certain amount of confusion. The open, detailed midrange is the major asset, though some felt it was a trifle ragged, forced and forward too.

The illusion of power and scale is most impressive from such a small box, and the sound has a liveliness and speed that few larger models can match. However, the bass was considered a bit 'big and soft', with some overhang to help slow down otherwise impressive pace and timing.

A change of stand wrought a worthwhile improvement, and although this Vecteur still won't set any speed records, it does possess a delightful midband coherence. It is a little hyped and forward, to be sure, which introduces a degree of coloration, but it somehow manages to avoid sounding unpleasantly hard at the same time. There's a fundamental sweetness of the kind that remains inviting without cloying or taking the edge off the music at the same time.

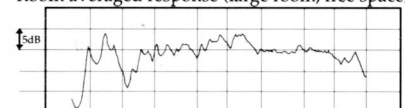
## Conclusion

However good the sound, I'm still quite unable to believe that a speaker with these basic ingredients can cost nearly £700. That said, I also have to confess that I don't know of another speaker of a similar size that does a better overall job. If you must have a miniature and aren't into counting pennies, make sure you give this one a listen.

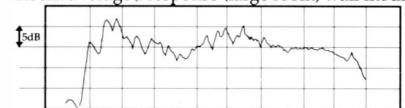
## TEST RESULTS

Size (h x w x d)	34 x 19.5 x 25 (max) cm
Weight	5.5 kg
Recommended amplifier power	20-80 W
Recommended placement	stands clear of walls
In room averaged response limits 50Hz-10kHz	+/- 6dB
Large room/space LF rolloff (-6dB ref midband)	48Hz
Large room/wall LF rolloff (-6dB ref midband)	48Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB
Impedance characteristic (ease of drive)	current hungry
Typical price per pair (inc VAT)	£695

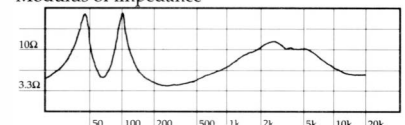
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



# Wharfedale Delta 30.2

**Best Buy**

WHARFEDALE LOUDSPEAKERS LTD, SANDLEAS WAY, CROSSGATES, LEEDS LS15 8AL. TEL: (0532) 601222



The *Delta 30.2* is very much the budget model in the Wharfedale range, and these days 'budget' starts at £99, twenty quid up on the launch price of the original *Delta 30* three and a bit years ago. Said predecessor was rated a Best Buy by *Choice* in its day (issue 59), so the *30.2* has a tough act to follow.

Stacked up amongst a couple of dozen other hi-fi speakers, the *Delta 30.2* looks an odd shape, with quite a large front panel area and comparatively little depth. In fact if you were to set out to disguise a hi-fi speaker as a midi system refugee, these basic dimensions would be a good place to start, so maybe Wharfedale has its eyes on the midi speaker upgrade market.

Then there's the graphics, or should that be graffiti, emblazoning the model name in stylised extra bold white script across the uncovered part of the front panel.

One reason why this speaker is such an unconventional shape is that the main bass/mid driver has a somewhat larger cone than most £99 miniatures, a feature that should ensure somewhat greater sensitivity and loudness than others of its ilk. In fact it uses a 125mm paper cone, so the baffle has to be somewhat wider than most speakers of a similar volume.

Finish is strictly econobox, the priority clearly being to provide the most rather than the prettiest loudspeaker within tight cost constraints. To which end, the all up weight is a respectable 4.5kg, and that's not just a function of a large magnet. In fact the magnet is quite small for a reflex ported enclosure - as is the apology for a port itself, set into the rear panel and tuned to a lowish 50Hz.

All drivers were well secured by tight coarse-pitch woodscrews into the 16mm particle board baffle, the same substantial

material ensuring the whole enclosure makes a solid mechanical foundation. Internal damping is limited to a handful of wadding, which should be enough to suppress rear panel reflections and standing waves without overdoing things. The crossover is a minimal affair mounted on a little PCB attached to the terminal block.

## Test report

The logic in the largish baffle and main driver comes in a quite generous 88dB/W sensitivity rating, combined with an easy impedance for the accompanying amplifier to drive. Even the least capable driving system should manage to generate pretty decent levels, even though the price is extracted in bass that doesn't attempt to extend below 50Hz.

The room measurements show that the *30.2* has been well aligned to take advantage of the midbass boost provided by close-to-wall sitting, though a significant loss of midrange smoothness is an unfortunate by-product. The most significant feature of the curves, however, is the mid-treble peak of about 5dB, a feature so prominent in relation to output just above and below as to guarantee subjective ramifications.

## Sound quality

After the panel had given the *30.2* the thumbs down, I put them up for hands-on listening with no great expectations - and found myself really enjoying the music they were making. Examining the listening test data with hindsight, it's clear that the relative volume setting ought to have been set somewhat higher when the *Delta 30.2* was presented, and that this possibly explains the rather disappointing

formal listening results.

Not that the speaker is entirely blameless. A hollow boxy upper bass coloration - probably correctly identified by one panellist as the internal front-to-rear reflection - is quite obvious and somewhat distracting, while the presence dip and treble peak also add to the character.

But what really distinguishes the *30.2* from most of its contemporaries - and what is not assessed in the formal listening tests - is the way that it goes surprisingly loud with relative grace and integrity, and without the hardening and aggression that is the budget miniature norm. Speed and dynamics are not exceptional, and the sound lacks a genuinely firm and solid foundation, but timing is very good indeed, with the impressive crispness and coherence that ensures good fundamental musical communication, the most important attribute of all.

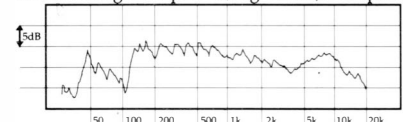
## Conclusion

Less pretty sonically and aesthetically than some of its rivals, the *Delta 30.2* nevertheless shows them a clean pair of heels by maintaining considerable composure when asked to go indecently loud. This evidence of good basic engineering integrity distinguishes the *30.2* sufficiently from the herd to deserve a Best Buy rating, especially for teenage midi system owners who wish to bring the delights of heavy metal to the whole family.

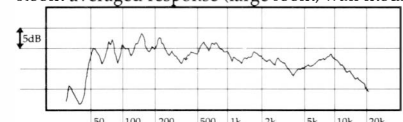
## TEST RESULTS

Size (h x w x d)	38x22x17cm
Weight	4.5kg
Recommended amplifier power	10-60W
Recommended placement	stands close to wall
In room averaged response limits 50Hz-10kHz	+/-5dB
Large room/space LF rolloff (-6dB ref midband)	48Hz
Large room/wall LF rolloff (-6dB ref midband)	48Hz
Large room output at 20Hz (ref midband)	below -20dB
Estimated midrange sensitivity (ref 2.83V, 1m)	88dB
Impedance characteristic (ease of drive)	fairly good
Typical price per pair (inc VAT)	£99

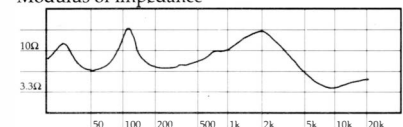
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



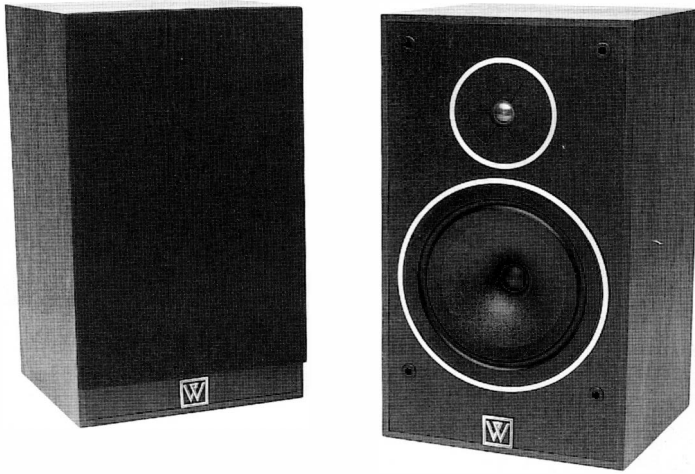
Modulus of impedance



# Wharfedale 505.2M

**Recommended**

WHARFEDALE LOUDSPEAKERS LTD, SANDLEAS WAY, CROSSGATES, LEEDS LS15 8AL. TEL: (0532) 601222



The 505.2 has been one of the mainstays of the Wharfedale catalogue for the past several years, aided and abetted no doubt by the fact that this largish bookshelf model not only looks like plenty of loudspeaker for the money, but also received a Best Buy rating when reviewed in *Choice* nearly three years ago (issue 66).

Now we're re-examining the 505.2 dressed (apart from the back panel) in a new suit of clothes, the M suffix accounting for an extra £60 on the price and referring to a real and decidedly reddish mahogany veneer that is currently just the thing to put in today's lounge over on the European mainland.

Whether or not it will fit in with your decor, it certainly makes an attractive change from the mass of black plastic and wood that has become such a tedious norm in the UK. And the move from plastic to veneer board facing will also of course change the behaviour of - and presumably stiffen - the various panels to which it's applied.

The shape is the slightly squat stereotype of a largish 'bookshelf' model, the 9kg weight and the 20mm wide rim around the inset (for stiffening) rear panel attesting to the solidity of the carcass. The thick-framed grille should perhaps be left stored inside the carton, the baffle being veneered and the drivers neatly finished with silver trimwork and additional protection for the tweeter's metal dome, the most ugly feature being the grille retaining lugs.

I haven't the remotest idea whether the drivers are well secured, nor what lies inside the box, simply because I haven't the remotest idea how the drivers are secured.

I understand that a bayonet fixing is used, and that the inside is therefore

strictly non-user-serviceable - some sort of special tool being needed. There's no port to peer down - it's a sealed box - and there isn't even the option of removing the usual plastic terminal block, again because there isn't one - just a pair of terminals poking through the inset back panel.

All I can say for sure is that the main driver has a quite large (140mm) textured plastic cone with wide surround termination, and the tweeter uses a 19mm metal dome.

## Test report

The test programme has changed quite considerably since the original 505.2 review, so direct comparison is difficult. However, the impedance appears to be much as before, and the responses show much the same overall trends so presumably any changes are minimal.

The 87dB sensitivity is close to average, and the impedance only falls to a lowish figure at high frequencies where energies tend to be dropping. The reflex loading with its fast ultimate rolloff takes serious bass extension off the agenda, though some worthwhile in-room output remains at 30Hz, the port being tuned to a lowish 35Hz.

Indeed the output around 40-50Hz does look a shade strong, making room matching a bit tricky. Too close to the wall will tend to be boomy; too far away leaves the upper bass and lower mid a little strong, so somewhere in between should work best.

Wherever, there remains a fair amount of local unevenness, and although the crossover region is well enough handled there's certainly a touch too much relative output through the mid treble, and a fairly early ultimate rolloff.

## Sound quality

Albeit with a couple of dissenters, the 505.2M received comfortably above average ratings in two separate listening test presentations. The real strength of this speaker lies in its balance. Not just the frequency balance, which is respectable though unexceptional, but in the way all the various parameters have been blended to give a mix that avoids the worst pitfalls while remaining evenhanded, engaging and lively on the majority of material.

The balance is basically good, and voices are nicely focused, with an attractive open quality, if slightly thinned and nasal in colour. Timing is pretty good, though the bass could certainly be more authoritative, and dynamics generally are slightly softened. There is also a measure of congestion on complex material, and this tends to mask lower level information, limiting transparency and subtlety. Additionally, the treble is always a little obvious and detached, almost as if it needed to remind you there's a tweeter in there too.

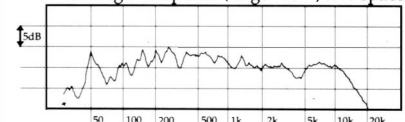
## Conclusion

Much like the vinyl version, the 505.2M is a fine allround loudspeaker that will deliver a lively and big hearted sound without being too fussy about the rest of the system. Recommendation is clearly appropriate: only you can decide whether to pay the extra for the mahogany veneer.

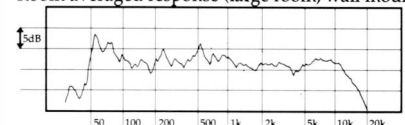
## TEST RESULTS

Size (hwxwd)	44x25.5x25.5cm
Weight	9kg
Recommended amplifier power	20-80W
Recommended placement	stands 30-60cm from wall
In room averaged response limits 50Hz-10kHz	+/-5dB
Large room/space LF rolloff (-6dB ref midband)	45Hz
Large room/wall LF rolloff (-6dB ref midband)	43Hz
Large room output at 20Hz (ref midband)	below -15dB
Estimated midrange sensitivity (ref 2.83V, 1m)	87dB
Impedance characteristic (ease of drive)	good
Typical price per pair (inc VAT)	£260

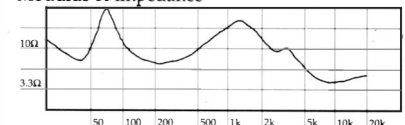
Room averaged response (large room, free space)



Room averaged response (large room, wall mount)



Modulus of impedance



# Tech Talk

*Paul Messenger explains how the loudspeaker listening tests and measurements were performed, and outlines what the findings reveal about the products.*

**T**hese days the *Choice* loudspeaker test schedule involves almost continuous appraisal of batches of around 25 models, which are published thrice a year, alongside occasional one-offs and smaller groups of niche models (miniatures, giants or whatever).

'One-site' testing is the only sane and sensible way of handling the logistics, even though it does leave my home inundated by black vinyl and cardboard for many months of the year.

The main listening room therein is used for the 'blind' panel and subsequent hands-on listening, and also for the test measurements, which does help provide correlation between the two, but which inevitably means said room will exert a major influence on results. Which may not be ideal, but which is probably unavoidable.

## Listening

The 'blind' tests on this occasion lasted three days, 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. A highly experienced operator places the loudspeakers carefully and securely. Grilles are left on.

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, sourced from Linn Sondek/ *Naim ARO/ Troika* vinyl disc and Meridian 200/203 two-box CD players all mounted on Mana tables.

Bookshelf models were used on Linn *Kan*, Foundation *Designer*, and Heybrook *HBSI* stands, with Slate Audio and other Foundations brought in for hands-on work. Bi-wiring is adopted where available, using heavy multi-strand cables (Naim *NACA5*, Linn *LK20*) in the blind tests, backed up hands-on by Mission Cyrus and Heybrook Heywire solid core and Naim *NACA4* and Rotel *Supra* multi-strands.

Manufacturers were requested to furnish details regarding optimum siting and ancillaries, and nearly half took the trouble to respond. These suggestions were used to determine listening test siting.

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), Peter Comeau (Heybrook), Guy Sergeant (Audio Innovations), Russell Kauffman (Lecson/AAS), David Inman (KEF), Steve Hopkins (Meridian), Alan Ainslie (Technics) and Dave Wiley (freelance).

## Measurements

Every loudspeaker has its own distinct frequency balance. This 'fingerprint' says much about the way a specific model will sound, though it isn't the only factor that discriminates between the good, the bad and the indifferent.

Without decrying the value of anechoic work, especially for a manufacturer developing a single product in isolation, there's no doubt that far field room averaged response measurement is much closer to the real world situation, gives much better correlation with listening test findings, and is particularly relevant to comparative group testing.

A single isolated in-room frequency response of any specific loudspeaker is of

limited value, but averaging a number of measurements taken at a number of points in the listening area provides a good indication of the subjective frequency balance. Further, comparison of a number of loudspeakers allows some of the effects of the room to be taken into account.

The test programme is based on two separate sets of room measurements, one taken with the speaker placed close against a rear wall (but more than a metre from side walls), the other a metre out into the room; intermediate positions produce more or less intermediate results.

A conventional pen recorder/mike set-up (Neutrik) is used to carry out sequential sinewave sweeps (high pen and paper speeds) for a succession of microphone positions. Experiment has shown that seven such plots are ample to define the averaged response in the listening area.

A perfectly flat straight line is not a realistic target. Low frequencies are inevitably heavily modified by the main room modes - most notably the c10dB boost at 30Hz. Room reflections also create interference well up into the midband, especially when the speaker is close to the wall.

Careful comparison with listening findings and established references suggests that the ideal balance should be as flat and smooth as possible. Gentle variations are preferable to sharp discontinuities, and prominences tend to be subjectively more irritating than dips, while a gentle high frequency rolloff above c5kHz sounds perfectly acceptable.

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 value and a speaker will suck twice the

current and therefore twice the power for the same amplifier volume setting. By adopting 4ohms rather than 8ohms 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 largely negated in practice.

## The listening room

The room itself is a sturdily built, sparsely furnished 4.3x5.5x2.6m, with wooden floor. Painted plaster walls and ceiling are broken up by wooden beams, while the open fireplace, alcove doorways and large semicircular bay help distribute standing waves.

One consequence of the room-based testing is that the low frequency extension is defined as much by the room as the speaker. Low frequency roll-off is traditionally expressed as the -6dB (sometimes -3dB) point referred to the sensitivity. Such a technique can be applied with 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 go down much below 50Hz, never mind 20Hz. Until I can figure out a better approach, I am quoting the -6dB points for both free space and wall mount conditions, plus the 20Hz level.

The Directory 'bass from' entries for the recent reviews carried out using room measurement techniques therefore refer to the best position -6dB point for the speakers concerned, and cannot be compared directly with earlier 'anechoic' entries, though each has its own internal consistency.

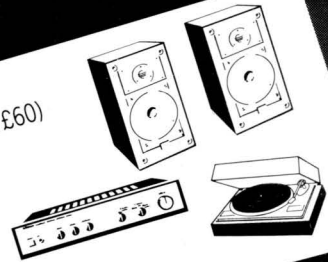


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SPEAKERS	Goodmans Maxim II Widale Delta 30.2 JPW Minim Gale GS210 JPW Sonata (vinyl)	Celestion 3 JPW Sonata M/Short MS 3.10 W/Dale Diamond 4 Mission 760 Royd A7	Celestion DL4 II Tannoy E11 JPW Sonata+ M/Short MS3.20 Widale 410 Mission 761	Nad 8225e Celestion 5 B&W DM600	Monitor Audio R7 Hibrook P15 Celestion DL6 II Tannoy M15 Wharfedale 505.2	Mission 762 Castle Warwick Celestion DL8 II Monitor Audio R9 M/Short MS 3.30 B&W DM610	Castle Durham Heybrook HB1/3 Tannoy M20 (BK) Tannoy DC 2000 (Add £70) Rogers LS4A
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- Denon DCD860
- Denon DCD960
- Marantz CD40
- Marantz CD41
- Marantz CD50SE
- Marantz CD60SE
- Nad 5420
- Nad 5425
- Nad 5440
- Philips CD604
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- add £125
- add £160
- add £30
- add £70
- add £120
- add £130
- add £60
- add £75
- add £160
- add £10
- add £50

- Philips CD624
- Philips CD634
- Philips CD850
- Pioneer PD7700
- Rotel RCD865
- Rotel RCD865
- Sansui CDX211
- Technics SLPG200AK
- Technics SLPG400AK
- Technics SLPG500AK

#### TURNTABLES

- Dual CS503-2
- Dual CS505-4
- AR EB 101
- Nad 5120
- Ariston Q Deck
- Rotel RP855
- Systemdek IIX900 + MOTH + AT110E
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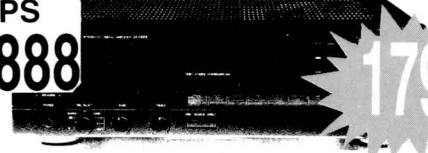
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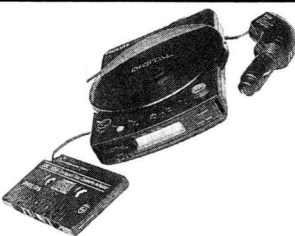


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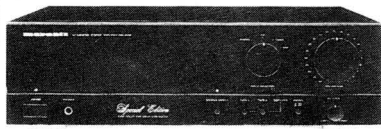


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# Conclusions, Best Buys and Recommendations

*Paul Messenger sums up the general and the particular findings of this latest loudspeaker review project.*

Let any group of 25 loudspeakers select itself more or less at random, and you're bound to get a fascinating cross-section of the market. Not necessarily a representative selection mind, but there's sure to be plenty of variety and interest to tax the reviewer's sense of perspective.

That was certainly the case with this project, though the group was somewhat differently balanced than most, leaning very much towards the middle ground on size and price.

## Bookshelf dominance

The small dimensions of the bookshelf speaker may limit its low frequency and/or loudness capabilities, but the small panels are a considerable advantage in creating a stiff cabinet with minimum coloration. Add in the comparatively recent development of the speaker stand and you get the current market-dominating combination, the stand doing much to help the speaker maximise its potential.

Whether or not the 'bookshelf' speaker is aligned for free space or close-to-wall siting, the stand on which it should always be used makes more than one vital contribution. It not only minimises reflection colorations by getting the drive units well clear of the deck, but also holds the speaker as still as possible mechanically, to maximise the dynamic range.

Any stand is bound to add some coloration of its own, though this should certainly be a much smaller contribution than the cabinet's. It also interacts with the speaker in various less predictable ways - some types deliberately mass-load and so modify the behaviour of the speaker cabinet itself.

The various ramifications of pillars versus frames, damped or undamped fills,

spike or Blu-tack coupling are hideously complex and not fully understood, and well beyond the scope of this roundup. The fact of the matter remains that the well supported bookshelf model is very often superior to a floorstander of the same price, even when the cost of the stand is part of the equation, and disregarding the extra stand/speaker matching flexibility.

## The floorstanding conundrum

That said, some floorstanders are much more equal than others. The traditional three-way designs (Philips *FB820* and Infinity *Ref 50*) were sonically very disappointing in terms of timing and coherence. The 'two-and-a-half-ways' (Allison *AL120*, Monitor Audio *M14*) which use an extra main driver just to augment the bass fared slightly better. But the most successful floorstanders on this occasion were certainly the two-ways.

The NAD provides an excellent example of the contrast between miniature and compact floorstander, since the *8100* shares virtually the same drivers with the miniature *8225* reviewed back in issue 86, the extra cabinet-work and floor coupling adding £120 to the price - not much different to the cost of a top quality stand.

The larger enclosure provides sufficient extra bass to allow the speaker to be moved well out from the rear wall, improving coloration and stereo imagery. However, the extra bass seems a little less well controlled and a trifle detached - the stand-mounted miniature is a little more rhythmically coherent. The choice, of course, is the customer's.

The Castle *Chester* is for me comfortably the most interesting and original speaker in the whole group. The two way driver line-up -

and the bass extension - is not too different from some of the better bookshelf models, but the floorstanding enclosure is used quite differently. Tapered quarter wave loading is not an efficient user of enclosure volume, so it doesn't provide bass extension commensurate with its size. But the bass that is delivered is qualitatively impressive, and the exceptional main driver control afforded by pressure loading is reflected in the deliciously realistic midband sound quality.

Used creatively and intelligently like this, the floorstanding enclosure becomes a positive asset that confers real benefits. However, the reaction to some of the alternative examples in this report shows that such potential benefits are often squandered, sometimes it would seem in an attempt to impress possible customers with an imposing multi-driver array.

## Best Buys

Right down at the beer budget end of the market comes the not so very little **Wharfedale Delta 30.2**, which uses a larger main driver and shallower cabinet than most £100 rivals. The result is certainly more coloured than some, but has a dynamic exuberance and extra loudness capability that more than compensates.

The **Heybrook HB1 S3** is now entering its third generation, and this well established £250 large bookshelf size wall-mount would seem to be just as competitive as ever. It may not be quite such a fashionable shape as more recent introductions, but first class build ensures a big-hearted, agile, coherent and informative - though not entirely neutral - sound.

The £600 **Castle Chester** snuck up on me quite late in the project, and mercilessly

proceeded to shatter a number of my preconceptions and prejudices. It sacrifices some bass extension by adopting a horn-related loading technique that delivers remarkable midband delicacy and coherence - and it's a very pretty box for the price too.

Although this speaker is comfortably above the price limit we impose for Best Buy status, it is many years since we last looked at this threshold. Developments over the last year or so mean that it is time the Best Buy limit was moved rather further upmarket. In the light of this the Castle *Chester* becomes our most expensive Best Buy to date and effectively sets the upper limits for our Best Buy category.

## Recommended

For the second edition running, one of B&W's new 600 series models distinguished itself in the blind listening with an impressively even, well balanced and uncoloured sound. The £150 **B&W DM600** is not quite as sharply priced as the much larger 620, especially if you add the price of stands, but it's very good value for money nevertheless. The other B&W in this group, the £915 **B&W Matrix 805** also clears the Recommended barrier, although perhaps with a little less room to spare. Conceived as a compact free space professional monitor, remarkable stereo imaging properties do much to validate the hi-tech approach, accuracy taking priority over musicality in this instance.

US brand **Infinity** has a fine track record for producing fine small loudspeakers, and the £159 **Reference 10** - the baby of a new six-strong range - only reinforces the reputation, with an engagingly lively and solid sound from an unusually solid little box. The sound has its own



character to be sure, but is essentially communicative and appealing, which is arguably the more important asset.

Even better perceived value and even more encouraging listening test responses distinguish the £200 **Celestion 7**, a generously proportioned and attractively finished wall-mount model. The engineering falls a little short of the cosmetics, and the balance is a little lean and aggressive, but the sound packs a real punch, and some subtlety too, especially if due care is taken over the choice of stand.

At the same £200 price point, the **Royd Sapphire** presents a complete contrast. It's tiny, and very self-effacing, but features a very classy little main driver and exceptionally solid build. The result is unbeatable speed, coherence and solidity at this sort of price, but at some cost in a rather lean and aggressive presentation that won't be to every taste.

Wharfedale's £200 vinyl wrapped **505.2** was a Best Buy back in issue 66, and the £260 **Wharfedale 505.2M** only

*This month's speaker test again spanned the whole market.*

serves to confirm this model's continued competitiveness. A free space large bookshelf size model with very well balanced overall performance, though whether the pretty red mahogany veneer is worth the £60 premium must be a matter of personal taste.

The £269 **NAD 8100** could actually work out quite a bit cheaper than the Wharfedale, since this slim, compact floorstander has no need of an additional stand. Based on the **8225** (issue 86), it's still a miniature at heart, lacking a little welly in its belly. But it's a nice miniature nonetheless, with enough additional bass output (albeit not quite of the highest quality) to be moved well clear of walls.

The £315 **Shan Shimna** is a true miniature, distinguished by an interesting shape moulded from resin based material. There's a neat £95 matching stand too, and the sound is attractively sweet and coherent, if rather thin and lacking in serious bass. Originally Recommended back in issue 71, the second

visit merely serves to confirm that status.

The £475 **Epos ES14** is in an altogether different class, in size and performance as well as price. This long overdue review weighs the **14** in the market context and finds it very good value, with exceptional midrange delicacy, generally well controlled bass and a treble which is sometimes just a shade obvious.

The final Recommended model from this bunch is the £500 **Monitor Audio Studio 5**, a beautiful little miniature with rare qualities of midrange and presence focus and coherence, though the lack of any serious bass combined with the distinctly forward upper mid leads to a rather spotlighted, edge-of-the-seat experience.

**Best of the rest**

A couple of the other models also deserve special mentions, even though formal recommendation is withheld. Each has its own special qualities, though all are on

the expensive side for the total package on offer.

The only possible justification for the £695 pricetag of the **Vecteur Premiere** must come from the quality of the subjective experience, and this pretty little Frenchman very nearly makes the grade. It certainly oozes the legendary Gallic charm, with an upfront and informative balance that nevertheless stays on the right side of the line between sweetness and aggressiveness, while the bass is a lot more impressive than the size leads one to expect.

The £1,200 **Meridian Argent 1** carries off the beauty prize for its stunning shape and finish. It doesn't go particularly loud, instead delivering unusual bass extension from one so small, and a delicious freedom from the boxy effects that are the bane of less well engineered enclosures.

If it had been just a little cheaper then Recommendation would have been in order, but we've left it up to you to decide just how much extra you are prepared to pay for the stunning design job.

# Choice Offers

Welcome to our new mail order section, where along with old favourites such as the Furakawa interconnects and CD extracts you will now find a whole new range of goodies to improve the performance of your system. These pages are only the start of the service that we hope to provide and we will be sourcing a number of new and interesting products as the next few months go by which will be added to our offers pages as they become available.

## Static Elimination Spray And Lubricant £7.99

200ml of specially formulated record cleaning and lubricating fluid, contained in a pump action fine spray bottle which affords a protection from static electricity. The fluid forms a fine, harmless, lubricating layer in the grooves of the disc which results in lower stylus drag, a cleaner, smoother high frequency sound delivery and prolonged record life when applied regularly.

## Static Elimination Spray And Lubricant With Four Wet/Dry Record Cleaning pads £10.99



As above but with the addition of four wet and dry record cleaning pads.

## Record Clamp £11.99

Damps vinyl resonance by clamping the record to the turntable's platter thus increasing the ability of the stylus to retrieve information from the disc's grooves without the disc's own inherent resonant frequencies interfering with the groove to stylus interface.

Will work with most popular turntables.

## Record Cleaning Pad And Stylus Cleaning Kit 1 £12.99

An entire record cleaning kit containing 50ml of static elimination spray and lubricant, a Teak handled velvet applicator pad and 20ml of isopropyl alcohol based stylus cleaner and brush.

Everything necessary for prolonging the life of LPs and cleaning stylus all in one handy kit.

## Record Cleaning Pad And Stylus Cleaning Kit 2 £4.99

An entire record cleaning kit consisting of 75ml of isopropyl based record cleaning fluid, four applicator pads and a stylus cleaner and brush.

## Manual CD Cleaning Kit £5.99

45ml of CD cleaning fluid together with an applicator, jig and a cleaning pad for the removal of harmful dirt from Compact Discs.

## Carbon Fibre Record Groove Cleaning Brush £4.99

A record cleaning brush for the removal of dirt and dust from deep in the grooves of records. Should be used before every play of a record in order to remove dirt and dust which otherwise interferes with sound and becomes deeply imbedded in the record.

The carbon fibres are single strand as opposed to two joined strands and as such are less likely to fall out. A copper conductor contacts the strands and removes static electricity through a metal handle.

## Mk 10 Carbon Fibre Brush With Velvet Pad £9.99

The carbon fibres efficiently remove dirt from the record grooves, which is then collected by an integral felt pad. This can be easily cleaned with the supplied cleaner after use.

## System Cleaning Kit 1 £15.99

Everything needed for maintaining a hi-fi system, all contained in one handsome wallet pack. Stylus cleaner, auto reverse wet tape head cleaner and cleaning fluid, manual Compact Disc cleaner and cleaning fluid and a carbon fibre record cleaning brush.

## System Cleaning Kit 2 £11.99

As above but for those of you who don't have a turntable to contend with. Contains auto reverse wet tape head cleaner and cleaning fluid, a manual CD cleaner and cleaning fluid.

## Tape Head Cleaner £1.49

Dry type cassette head cleaner to remove the build up of oxides from the tape heads.



## Monotrak Support Cones £8.00

Supplied in packs of four, these turned steel support cones are ideal for supporting just about any item of hi-fi, from sub-woofers through to amplifiers. Effective isolation and decoupling at a bargain price.

## Interconnects

We have a variety of interconnects on offer, all sourced from the respected Japanese specialist Furakawa.

## The FV11 Series unbalanced digital interconnect cables

The FV11 Series comprises a range of unbalanced digital interconnects designed to carry a high frequency square wave pulse signal such as that transmitted from a CD transport to a separate DAC, or a video to a TV set.

## The FD11 Series unbalanced digital interconnect cables

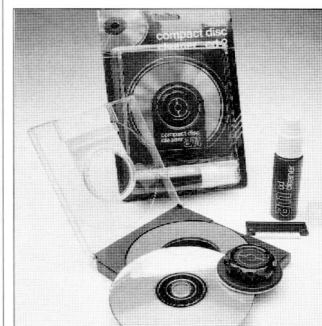
The FD11 Series of digital interconnects, which is supplied in matched pairs, differ from the FV Series insofar as they are designed for the interface following conversion from digital to an analogue signal of 75ohms impedance such as that from a CD player or a tuner to preamp or an integrated amplifier.

The outer sleeve consists of soft PVC and Furakawa hermetically sealed all PCOCC plugs are employed for termination.

## The FA21 Series balanced analogue interconnect cables

The FA21 Series of analogue interconnects is supplied in matched pairs employing the Furakawa all PCOCC RCA plug with a flying earth or ground lead which is designed to be terminated to the ground tag of the source component for the purpose of transmitting a balanced signal with a totally separate ground path.

These interconnect cables are recommended for the connection of analogue devices where RCA sockets are provided, such as power amplifier to preamp and tape deck, turntable, step-up transformer etc. to a preamp or integrated amplifier. They can introduce a wide stereo image with good depth and height.



## Furakawa FA11S Series balanced analogue interconnect cables

The FA11S Series of analogue interconnects is supplied in matched pairs employing the Furakawa hermetically sealed all PCOCC RCA phono plug with a flying earth or ground lead.

# Choice Offers Order Form

The *FA11S* super cast PCOCC series of balanced cables represents the ultimate in cable design utilising extremely high quality cast PCOCC.

These interconnect cables are recommended for the connection of high quality analogue devices. The cable's ability to transmit a vast amount of information has the effect of creating an awe inspiring bass, transparent mid range and simply superb unfettered treble.

## Speaker Cables

### Furukawa FS-2T14 PCOCC speaker cable

FS-2T14 PCOCC speaker cable is Furukawa's entry level speaker cable consisting of two 1.4mm square drawn PCOCC concentric strands.

### Furukawa FS-2F09 PCOCC speaker cable

Two 0.09mm square drawn PCOCC strands are contained in a neat, flat, flexible PVC insulation. The FS-2F09 is highly regarded by audiophiles around the world.



### Furukawa FS-2T30F Evencap speaker cable

PCOCC speaker cable consisting of two 3mm square drawn PCOCC rope lay strands. FS-2T30F speaker cable, by virtue of its low resistance and 3mm section, increases the audible bandwidth, most particularly in the low frequencies.

**FS-2T20P PCOCC speaker cable**  
PCOCC cable consisting of two twisted 2mm<sup>2</sup> drawn PCOCC strands laid in a concentric pattern. The two conductors are insulated in polypropylene and contained in a circular outer sleeve of soft PVC.

### Furukawa FS-2T35P PCOCC speaker cable

Produced from six concentric laid conductors in a rope lay this large cable has a low DC resistance and an appropriately larger occupation area for the skin effect, therefore bass is larger and treble is even sweeter.

### Furukawa FS2T55F Evencap speaker cable

FS2T55F is a 5.5mm 2 rope lay cable of similar construction to the FS2T30F.

## Furukawa Price Table

Please circle the cables you require.

### Interconnects

	0.5m	1.0m	1.5m	2.0m
FV11 (each) RCA-RCA	42.50	45.50	52.50	57.50
FD11 (pair) RCA - RCA	75.00	85.00	95.00	NA
FA21 (pair) RCA-RCA	NA	95.00	105.00	NA
FD11S (pair) RCA-RCA	NA	220.00	NA	NA

### Fibre optics

	0.5m	1.0m	1.5m	2.0m
FO11 (each) TOSLINK	NA	37.50	42.50	NA
FO12 (each) TOSLINK	NA	90.00	100.00	NA
FO13 (each) TOSLINK	NA	105.00	120.00	NA

### Speaker cables

Please state termination required, solderless, gold plated banana plugs, spades or pins or any combination. All prices are per pair.

	FS2T14	FS2FO9	FS2T20P	FS2T30F	FS2T35P	FS2T55P	FS2T15
1.0m	38.00	37.00	44.00	53.00	56.00	74.00	129.00
1.5m	42.50	41.00	51.50	65.00	69.50	96.50	179.00
2.0m	47.00	45.00	59.00	77.00	83.00	119.00	229.00
2.5m	51.50	49.00	66.50	89.00	96.50	141.50	279.00
3.0m	56.00	53.00	74.00	101.00	110.00	164.00	329.00
3.5m	60.50	57.00	81.50	113.00	123.50	186.50	379.00
4.0m	65.00	61.00	89.00	125.00	137.00	209.00	429.00
4.5m	69.50	65.00	96.50	137.00	150.50	231.50	479.00
5.0m	74.00	69.00	104.00	149.00	164.00	254.00	529.00
6.0m	83.00	77.00	119.00	173.00	191.00	299.00	629.00
7.0m	92.00	85.00	134.00	197.00	218.00	344.00	729.00
8.0m	101.00	93.00	149.00	221.00	245.00	389.00	829.00
9.0m	110.00	101.00	164.00	245.00	272.00	434.00	929.00
10.0m	119.00	109.00	179.00	269.00	299.00	479.00	1029.00

## Cleaning Accessories

Please indicate which items you require by ticking the appropriate box.

- |  |        |   |        |
|--|--------|---|--------|
| <input type="checkbox"/> A1 Static Elim. Spray & Lubricant                 | £7.99  | <input type="checkbox"/> A7 Carbon Fibre Record Groove Cleaning Brush | £4.99  |
| <input type="checkbox"/> A2 Static Elim. Spray & Lubricant & Cleaning Pads | £10.99 | <input type="checkbox"/> A8 Mk10 Carbon Fibre Brush with Velvet Pad   | £9.99  |
| <input type="checkbox"/> A3 Record Clamp                                   | £11.99 | <input type="checkbox"/> A9 System Hi-Fi Cleaning Kit 1               | £15.99 |
| <input type="checkbox"/> A4 Record Cleaning Pad & Stylus Cleaning Kit 1    | £12.99 | <input type="checkbox"/> A10 System Hi-Fi Cleaning Kit 2              | £11.99 |
| <input type="checkbox"/> A5 Record Cleaning Pad & Stylus Cleaning Kit 2    | £4.99  | <input type="checkbox"/> A11 Tape Head Cleaner                        | £1.49  |
| <input type="checkbox"/> A6 Manual CD Cleaning Kit                         | £5.99  | <input type="checkbox"/> A12 Monotrac Support Cones                   | £8.00  |

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# Choice Offers

Ever wondered why some people get taken seriously in hi-fi shops while others are given the run around? Wonder no more. The answer to all your hi-fi problems is the **Hi-Fi Choice** sweatshirt. Tastefully printed in red and black on grey, as well as being this year's most crucial fashion accessory, it will also readily identify you as a reader of Britain's fastest growing hi-fi magazine. With the weight of our technical reviews behind you, you'll almost certainly be taken more seriously and end up with a better system - and all for a mere £15. We can supply the shirts in almost any size - providing it's Extra-Large.

To order, complete the coupon on opposite page.



## Audiophile Recordings

This month we've re-introduced Reference Recordings to our offers pages, having managed to sort out the problems we had over the last couple of months and obtain a guaranteed source

of supply for the recordings. After last month a lot of you have written in asking for further details of the records detailed on the offers page, so each month we will be taking a look at one of

the labels on offer. We are starting off with a look at Linn Records which you will find below, and will concentrate on the other labels as the months go by.

## Linn Records

Although the name Linn Products will need no further introduction, the associated record label, Linn Records, is perhaps less well known. The company's involvement with the recording side of the process began when the LP12 was being developed and test pressings were required for evaluating the turntable.

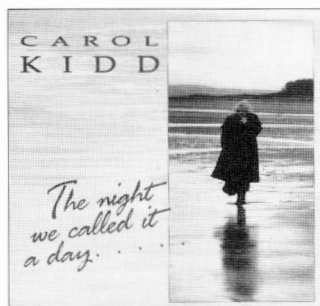
This led Linn to Castlesound studios in Edinburgh and

engineer Calum Malcolm. Linn began work on its own cutting lath, a modified Scully, and one of the masters it borrowed to check out the lath was from a then unknown band by the name of The Blue Nile. The band became the first signing to Linn Records and the label has never looked back.

Although Linn no longer uses the modified Scully, (the company's output is now being

cut at the Exchange in London), it is still very much involved in the cutting and mastering processes. Linn records are still cut on lacquer and are cut as close to constant pitch as possible. When cutting from digital sources, the material is loaded into a hard disc editor, clocked off with an oscillator and then converted to analogue by means of the Linn Numerik converter.

## Linn Albums



Carol Kidd: *Nice Work*  
Carol's third album for Linn  
Recorded at Castlesound Studios  
in 1987.

Carol Kidd: *The Night We Called It A Day*  
Recorded at Castlesound using the Linn Numerik recording system in February 1990 and awarded *Pick of the Week* in *Music Week* December 1990.

David Newton: *Victim Of Circumstance*

A piano trio album from Carol Kidd's pianist and musical director. Recorded by Linn in 1989.

Carol Kidd: *Carol Kidd*  
Carol's first album for Linn.

Recorded at Castlesound Studio near Edinburgh in 1984. Cut by Linn at the Exchange. Described by Ronnie Scott as "one of the best singers I have heard".

Carol Kidd: *All My Tomorrows*  
Recorded by Calum Malcolm at Castlesound in 1985 and cut by Linn at the exchange. Features Martin Taylor on one of Carol's most beautiful interpretations, *When I Dream*.

Martin Taylor: *Don't Fret*  
Hailed as Britain's best jazz guitarist, Taylor's album got rave reviews in the press, *Jazz FM* magazine going so far as to comment "Taylor has produced an album which I shall be surprised to hear bettered". Taylor has been voted Top Guitarist in the British Jazz awards for five years running from 1987 to 1991. Recorded by Linn in 1989.



## Classical Releases

**English Classical Players.**  
Conducted by Jonathon Brett  
*Mozart 40th Symphony & Schubert 5th Symphony.*

**William Conway & Peter Evans**  
*Poulenc Sonata, Debussy Sonata, Frank Martin Ballade.*

**Polish Chamber Orchestra**  
conducted by Jonathon Brett  
*Mozart Divertimento in D, Vivaldi Concerto in Bm for four violins, Bach Violin Concerto in A Minor, Bartok Divertimento, Elgar Introduction and Allegro.*

All of the above were recorded using the Linn Numerik as the mastering recorder and the best microphones and electronics that Linn were able to find. Linn took particular care in the choice of artists and repertoire, and in the generous amount of rehearsal and recording time taken for each record so that in its words "these records are as good musically as they are technically."



# Choice Offers Order Form



## Records and Compact Disks

### Carol Kidd: *Carol Kidd*

- Ref LP39 (£9.99)
- Ref CD39 (12.99)

### Carol Kidd: *All my Tomorrows*

- Ref LP40 (£9.99)
- Ref CD40 (12.99)

### Carol Kidd: *Nice Work*

- Ref LP41 (£9.99)
- Ref CD41 (12.99)

### Carol Kidd: *The Night We Called It A Day*

- Ref LP42 (£9.99)
- Ref CD42 (12.99)

### David Newton: *Victim Of Circumstance*

- Ref LP43 (£9.99)
- Ref CD43 (12.99)

### Martin Taylor: *Don't Fret*

- Ref LP44 (£9.99)
- Ref CD44 (12.99)

### Chico Freeman: *Brainstorm*

- Ref LP45 (£9.99)
- Ref CD45 (£13.99)

### Buster Williams: *Something More*

- Ref LP46 (£9.99)
- Ref CD46 (£13.99)

### Gene Harris: *Listen Here*

- Ref LP47 (£9.99)
- Ref CD47 (£13.99)

### M&S Stockhausen: *APARIS*

- Ref LP48 (£9.99)
- Ref CD48 (£13.99)

### Keith Jarrett: *Paris Concert*

- Ref LP49 (£9.99)
- Ref CD49 (£13.99)

### Don Grusin: *Raven*

- Ref LP50 (£9.99)
- Ref CD50 (£13.99)

### Don Grusin: *Mountain Dance*

- Ref LP51 (£9.99)
- Ref CD51 (£13.99)

### John Surman: *The Road to St Ives*

- Ref LP52 (£9.99)
- Ref CD52 (£13.99)

### Pat Metheny: *As Falls Wichita*

- Ref LP53 (£9.99)
- Ref CD53 (£13.99)

### NYC: *Steps Ahead*

- Ref LP54 (£9.99)
- Ref CD54 (£13.99)

### Jon Hassell: *Power Spot*

- Ref LP55 (£9.99)
- Ref CD55 (£13.99)

### Shankar: *Song for Everyone*

- Ref LP56 (£9.99)
- Ref CD56 (£13.99)

### Susannah McCorkle: *No More Blues*

- Ref LP57 (£9.99)
- Ref CD57 (£13.99)

### Carl Anderson: *Pieces Of A Heart*

- Ref LP58 (£9.99)
- Ref CD58 (£13.99)

### David Torn: *Cloud About Mercy*

- Ref LP59 (£9.99)
- Ref CD59 (£13.99)

### Busoni, Piano Music: John Ogdon

- Ref LP 60 (LP only) (£9.99)

### Bartok & Enescu: Sherban Lupu

- Ref LP61 (LP only) (£9.99)

### Weill, Songs: HK Gruber

- Ref CD62 (CD only) (£13.99)

### Kevin Volans: Various

- Ref CD63 (CD only) (£13.99)

### Judith Weir, Operas: Various

- Ref CD64 (CD only) (£13.99)

### Meredith Monk: Vocal Ensemble

- Ref LP65 (£9.99)
- Ref CD65 (£13.99)

### Mozart, Vivaldi, Bach, Bartok, Elgar: Polish Chamber Orchestra

- Ref LP66-Double LP (£12.99)
- Ref CD66 (£12.99)

### Debussy, Poulenc & Martin: William Coway & Peter Evans

- Ref LP67 (£9.99)
- Ref CD67 (£12.99)

### Mozart 40th and Schubert 5th: English Classical Players

- Ref LP68 (Double LP) (12.99)
- Ref CD68 (12.99)

### Mussorgsky: *A Night on the bare Mountain / Pictures at an Exhibition*: Royal Philharmonic Orchestra

- Ref LP69 (12.99)
- Ref CD69 (12.99)

### Ravel: *Daphnis et Chloe*: Boston Symphony Orchestra

- Ref LP70 (£12.99)
- Ref CD70 (£12.99)

### Clarke Terry: Portraits

- Ref LP71 (£12.99)
- Ref CD71 (£12.99)

### Ana Caram: *Rio After Dark*

- Ref LP72 (£12.99)
- Ref CD72 (£12.99)

## Reference Recordings

### Prof Johnson's Astounding Sound Show:

- Ref LP73 (LP only) (£17.99)

### Berlioz: *Fantastique*

- Ref LP74 (£24.99)
- Ref CD74 (£17.49)

### Tafel Musik: *Baroque*

- Ref LP75 (£17.49)
- Ref CD75 (£17.49)

### Your Friendly Neighbourhood Big Band:

- Ref LP76 (£17.49)
- Ref CD76 (£17.49)

### Respighi: *Church Windows*

- Ref LP77 (£17.49)
- Ref CD77 (£17.49)

### Walton: *Facade Suitet*

- Ref LP78 (£17.49)
- Ref CD78 (£17.49)

### Stravinsky: *L'Histoire*

- Ref LP79 (£17.49)
- Ref CD79 (£17.49)

### Reflections: *Mountain Dance*

- Ref LP80 (LP Only) (£17.49)

### Copland: *Apalacian Spring*

- Ref LP81 (£17.49)
- Ref CD81 (£17.49)

### Helicon Ensemble: *Vivaldi*

- Ref LP82 (£17.49)
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### Three Way Mirror:

- Ref LP83 (£17.49)
- Ref CD83 (£17.49)

### Nojima Plays Liszt:

- Ref LP84 (£17.49)
- Ref CD84 (£17.49)

### Jim Brock: *Tropic Affair*

- Ref LP85 (£17.49)
- Ref CD85 (£17.49)

### Dick Hyams Plays Fats Waller:

- Ref LP86 (£17.49)
- Ref CD86 (£17.49)
- Ref CD87 (£17.49)

### Nojima Plays Ravel:

- Ref LP88 (£17.49)
- Ref CD88 (£17.49)

### Mike Garson: *Oxnard Sessions*

- Ref LP89 (£17.49)
- Ref CD89 (£17.49)

### Dallas Wind Symphony: *Fiesta*

- Ref LP90 (£24.99)
- Ref CD90 (£17.49)

### Dallas Wind Symphony: *Holst*

- Ref LP91 (£17.49)
- Ref CD91 (£17.49)

### Reference Classic Sampler:

- Ref CD92 (CD only) (£12.99)

### Reference Jazz Sampler:

- Ref CD94 (CD only) (£12.99)

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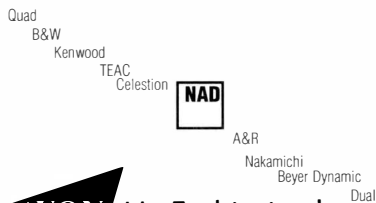
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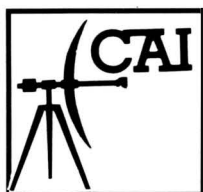
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# The Choice Dealer Directory

*Choosing a good hi-fi dealer is the most vital step in acquiring the system that is right for you. This unique directory gives full information on dealers in your area.*

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WENTWORTH AUDIO, 83 High Street North, Dunstable. (0582) 663383. Pioneer, Marantz, Pink Triangle, Musical Fidelity, Yamaha, Ariston, Linn, Acoustic Energy, Revox, Monitor Audio. 2 large single speaker dem. rooms. 1 general showroom. No appt. nec. Home trial. Free install. Service dept. Access & Visa. Tue-Sat 10-6

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HYPERTEC, 86 Bridge St, Rivergate, Peterbro' (0733) 890533. Nakamichi, B&W, Denon, Marantz, Musical Fidelity, Rotel, Tannoy, Wharfedale, Linn, Alphason. Demo facilities including private demo room by appointment. Home trials, Free installation, Service dept. Access, Visa, Hypertec, Credit charge. 9.30-5.30, 6 day trading, late night Thurs 9.30-8.00.

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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. credit up to £1000. 9-5.30 Mon-Sat. 9-1 Weds

## DORSET

SUTTONS HI-FI, 18 Westover Road, Bournemouth. 0202 555512. Call for details.

DORCHESTER HI-FI, 15 High West St, Dorchester, Dorset DT1 1UW. Aiwa, Celestion, Deltac, Heybrook, Infinity, Philips, Pioneer, Rogers, Rotel, Spondor, etc. Single speaker demo lounge. Home trials available. Free installation. Service department, guarantee on all products. Access, Visa. 9-5.30 6 days.

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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

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MARTON MUSIC, 5 Ventnor Way, Fareham, Hants. (0329) 231773. AV International, Marantz, Kelvin Labs, Townshend Audio, TDL, Spendor, Grant Amplifiers, Audio Technica, Dynavector, Origin Live. Demos by appt. Home Trial Facilities. Free Installation. Phone anytime.

STANS, 8 The Mall, Bridge Street, Andover, Hampshire. Fax: (0264) 361624. Aiwa, Harman-Kardon, Musical Fidelity, Pioneer, Monitor Audio, Dual Bose, Kef, Celestion, Castle. Next day money back guarantee. Installation and delivery service, service dept. Access, Visa, credit facilities available - interest free on selected items. 9-5.30, late Thurs & Fri to 7pm, 6 days.

TRU-FI SOUND & VISION, 10-12 Grosvenor Road, Aldershot, Hants. Tel/Fax: (0252) 26390/332424. Aiwa, Audio Technica, B&W, Nakamichi, Mission, Mordaunt-Short, Nagaoka, 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.

GOSPEL MUSIC AUDIO, 32A High St Kington, Herefordshire. (0544) 230254. Alphason, Alison, Revolver, Luxman, Yamaha, QED, Audio Systemline, Wharfedale, Sanyo, Micromega. No appts nec., home trial facilities, service dept. -5.30+evening dems.

## HERTFORDSHIRE

ACOUSTIC ARTS LTD, 101 St Albans Rd, Watford, Herts. (0923) 245250. A&R, Audiolab, Audio Research, Apogee, Denon, Krell, Marantz, Meridian, Quad, TDL. Mon-Sat 9.30-5.30.

DARBYS OF ST. ALBANS, 6 Market Place, near the clock tower, St. Albans, Herts. (0727) 50961. Alphason, A&R Cambridge, Bang & Olufsen, Denon, JBL, Harman Kardon, Musical Fidelity, 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 SG5 1JQ. (0462) 452248. B&W, Denon, Marantz, Musical Fidelity, Pioneer Reference Point, Rotel, Tannoy, Wharfedale, Bang & Olufsen, Linn, Alphason. 2 dem rooms without appt. Private dem room + evening dem by appt. Home trial. Free install. Service dept. Access, Visa, Hypertec credit charge. 9.30-5.30. Closed Wed.

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.

## NORTH HUMBERSIDE

MURRAY HI-FI, Princes Dock Side, Hull. (0482) 227867. Linn, Naim, Rega, Arcam, Yamaha, Royd, Epos, Creek, Nakamichi, Rotel. Full demo facilities. No appts nec. Free install & delivery. Service dept. Full 2 year guarantee on all products. Access, Visa, Lombard Tricity, Licensed credit broker. 10-6 Tue-Sat.

JUST AUDIO, 2A Foston Lane, North Frodingham, Driffield, Tel 0262 488700, call for details.

## KENT

HI-FI CENTRE LTD, 65 King Street, Ramsgate, (0843) 590321. A.R., Aiwa, Ariston, Celestion, Goodmans, Kenwood, Marantz, NAD, Radford, Tannoy 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, Credit charge. Service dept.

KIMBERLEY HI-FI, 193 Broadway, Bexleyheath, Kent. (081) 304 3272. Pioneer, Technics, Kenwood, Denon, NAD, Aiwa, Tannoy, Mission, Wharfedale, Castle. Separate dem room, no appt nec. Free installation. Service Dept. Instant credit facilities. 9.30-5.30. No early closing.

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) 52858 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. TONBRIDGE HI-FI, 31 High Street, Tunbridge Wells, Kent. (0892) 24677. Linn, Naim, Rega, Pink Triangle, Exposure, Creek, JRT, Sony, Ruark, KEF, Arcam etc. If your interest is music pay us a visit and find out what we do. VOLUME ONE, 41 Upper Wickham Lane, Welling, DA16 3AD. 081 304 4622. Arcam, Creek, Dual, Epos, Exposure, Mordaunt Short, Monitor Audio, Nakamichi, Pink Triangle, Rotel. Large demo room, no appt nec, darts & snooker facilities. Evening dems in shop by appt. Home trial & demo, free delivery & installation. Access & Visa, credit up to £1000. 9.30-5.30 Mon-Sat.

V JHI-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.  
V J 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, Denon, Dual, Pioneer, Quad, Rogers, Rotel, Spendor, Technics, Thorens, etc. 2 dem rooms. Open Mon-Sat, closed Weds. Free installation. Credit to £1000. Access, Visa. Service dept.

NORMAN AUDIO, 216 Church Street, Blackpool FY1 3PT. 0253 295661. For details see Preston branch entry (below). Open 9-5.30, Closed Wed.  
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. Lounge, 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

ALPHA AUDIO, 1-3 Guildhall Lane, Leicester LE1 5FD. (0533) 530 330. Allison, AR, Denon, Luxman, Proton, Revox, Teac, Thorens, plus lots more. 3 demo rooms. Jovial, friendly, crazy staff. Relaxed atmosphere. Home trial facilities, free installation, service dept on premises. Credit facilities (sort of interest free), 10-5, closed Thurs afternoons (sometimes). 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. Tel: (0533) 539753 Fax: (0533) 626097. Arcam, Creek, Marantz, Mission/Cyrus, Musical Fidelity, Nakamichi, QED Hi-Fi, Quad, Rogers, Roksan, "and oodles more". 2 dem rooms, home trial arranged, free install, service dept. Credit facilities. Access, Visa, Diners, Amex. 6 days 9.30-5.30. Leicestershire's first Bada member.

**BADA**

SOUNDS AROUND, 146A Clarendon Park Road, Leicester LE2 3AE. (0533) 702442. (Specialists in used Hi-Fi). A.R. Celestion, TEAC, Mordaunt Short, Tannoy, Marantz, Wharfedale, Philips. No appts necessary, free installation. Service dept. Access, Visa. Tue-Sat 10-5

## LINCOLNSHIRE

BOSTON HI FI CENTRE, 65a Wide Bargate, John Adams Way, Boston, Lincs PE21 6SG. (0205) 365477. Quad, Nakamichi, Arcam, Marantz, NAD, Castle, JPW, Rogers, etc. Separate demo studio. Home trial. Free installation. Service dept. Access, Visa, Hi-Fi Markets Chargecard. Tues-Sat 9-5.30pm.

**BADA**  
STAMFORD HI-FI CENTRE, 9 Red Lion Square, Stamford, Lincs PE9 2AJ. (0780) 62128. Pioneer, Technics, Cyrus-Mission, Rotel, NAD, Yamaha, Kenwood, Marantz, Quad, plus all major speaker manufacturers. Expert advice, compositor demonstrations, on two floors, part exchange Hi-Fi purchased for cash. No appointments necessary, home trial facilities, free installation, service department. Mastercard, Visa & credit charge, finance available. Mon-Sat 9-5.30pm, closed Thursdays

## LONDON

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 ACOUSTIC, West Ealing. (081) 998 9041. Audio Dimensions, Audio Innovations, Audion, Audio Note, ATC, D.C.M, Glastonbury, Goldring, Helius, Infinity & Modulas, JPW, Lynwood, Mana Acoustics, Marantz Audiophile, Michell, Nova, Ongaku, Oracle, Originlive, Ortophon MC3000II + MC5000 + T3000, Pirates, Rata, Revox, Rotel, Rose Industries, Rock Reference, Snell, Supra, Systemdek, Target, Triangle Products, Valdi, Vecture, Voyd & Reference Voyd. Home demos. Free install. Single Spker Demo. Free System Design. Free knowledgeable service. Access, Visa. 9.30-6pm. Till late Mon-Sat. Demo by appt. please

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**  
AUDIOT, 190 West End Lane, West Hampstead, London NW6 1SQ. (071) 794 7848, Fax (071) 431 3570. Great hi-fi from Linn, Arcam, Denon, Meridian, Mission/Cyrus, Rotel, Proac, Micromega, Yamaha and many more. Tue-Sat 10-6pm. 2 single spker dem room. Free del. and instal.

**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 St (just off Tottenham Court Rd), London W1. (071) 631 0472. Mon-Sat 10-7. Rega, Roksan, Naim, Monitor Audio, Koetsu, Marantz, Yamaha, SME, DNM, Epos. 3 dem rooms. Del and instal. service. Credit facilities, Access, Visa



# The Choice Dealer Directory

BRITISH AUDIO DEALERS ASSOCIATION

**BADA**  
THE ULTIMATE IN  
SOUND ADVICE

COVENT GARDEN RECORDS, 84 Charing Cross Road, London WC2 HQJA. (071) 379 7427, Fax (071) 836 1345. London's premier digital audio centre, single speaker dem rooms, appointments suggested, installation service available, service department. All major credit cards accepted. Mon-Sat 10am-7.30pm.

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.

DEANS, 283 Edgware Road, London W2 1BB. TEL (071) 402 666, FAX (071) 724 2135. Aiwa, B&W, Dual, Harman Kardon, JBL, JVC, Kenwood, Marantz, Pioneer, Technics. Mail order, fast efficient delivery, all goods dispatched same day. Service department. Guarantees on all products. All major credit cards accepted. Open 6 days to 6pm, Thurs till 8pm.

GALAXY AUDIO VISUAL, 230 Tottenham Court Road, London. (071) 637 2624. Aiwa, Akai, Dual, Hitachi, Philips, Pioneer, Sony, Rotel, Technics, Infinity. Demos available on request. In car audio dept. No appts nec. Service dept. Access, Visa, Amex, Diners, Switch, instant credit subject to status. 9.30-6pm.

GRAHAM'S HI-FI, Canonbury Yard, 190a New North Rd, London N1 7BS. (071) 226 5500. Winner Sony/HFN Greater London Dealer Award 1986-1989-1990. Linn, Naim, Rega, etc. £400-£3000-£13,000.

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.

KAMLA ELECTRONICS, 251 Tottenham Court Road, London W1. (071) 323 2747. Alchemist, Alphason, Audio Innovations, B&W, Cerwin Vega, Conrad Johnson, Furukawa, Infinity, Jeff Rowland, JPW, Kenwood, Kuzma, Linn, Micromega, Moth, Nakamichi, Oracle, Philips, QED, Revolver, Ruark, SD Acoustics, Systemdek, TEAC, Wharfedale & millions more. Demo facilities and home trial. Major cards and currencies accepted. Mon-Sat 10-6.

KJ WEST ONE, 26 New Cavendish St, London W1M 7LH. (071) 486 8262/63. Fax (071) 487 3452. Arcam, Audio Research, Acoustic Research, Apogee, Arcam, Audioblab, 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 Thur til 7pm).

THE LISTENING ROOMS, 161 Old Brompton Road, London SW5 0LJ. Tel (071) 244 7750/59, Fax (071) 370 0192. Linn, Epos, Quad, Arcam, Musical Fidelity, Meridian, Rogers, Acoustic Energy, Audioblab, Pink Triangle, etc. - See main advertisement - Two dem rooms, appointments preferred, home trial facilities, free installation, service department. Visa, Access, Amex, Full credit facilities, including interest free. Mon-Sat 10-6.

NICHOLLS HI-FI, 430-434 Lee High Road, Lewisham, London SE12 8RW. 081 852 5780. Sony, Technics, Harman, JBL, Mordaunt Short, Kenwood, Panasonic, Hafler, Sumo, B&W. Demo facilities, no appt. nec., home trial facilities, free installation, service dept. Credit available, Visa, Access. Open 9.30-6 Mon-Sat, Thurs 9.30-1pm

SOUND ORGANISATION LONDON, Unit 4 Pickfords Wharf, Link St, London, SE1 9DG. (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.

SOUND SENSE, 350 Edgware Road, London W2 1DX. (071) 402 2100. Alphason, B&W, Nakamichi, Celestion, Cambridge Audio, Dual, Denon, Monitor Audio, Marantz, NVA, Sony ES. Appts preferred. Installations available. Access, Visa, Standard credit facilities. Mon-Sat 9.30-6.30.

SOUTH LONDON HI-FI & VIDEO, 210 Brixton Hill, Streatham SW2. (081) 674 4433/2033. Denon, Rotel, Yamaha, Kenwood, Tannoy, B&W, Inakamichi, Dual, Thorens, Technics, Monitor Audio, Single speaker demo room. Appts. not nec. Installation available. Service Dept. Access, Visa, Amex. Interest Free & Standard credit. 9-6, 6 days.

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, 10-6Sat.

TIME AND TUNE, 218/220 Whitechapel 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 HP. 9.30am-6pm Mon-Fri, 9.30am-2pm Sun, Sat Closed.

TUNE INN, 124-126 St. Mildreds Road, Lee, London SE12 0RG. 081 698 4446. Huge range of fully guaranteed used equipment, Part exchange welcome. Full service facilities. Great after sales. Demos available on all equipment. Best offers for unwanted equipment., collection arranged. Access, Visa, Amex, credit facilities. Mon-Sat 10-6.30.

VOLUME ONE, 41 Upper Wickham Lane, Welling. (081) 304 4622. For full details see entry under Kent.

## 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, Licenced credit brokers up to £1000 instant credit. 10.00-5.30 Tues, Weds, Sat; 10.00-7.30 Thurs, Fri. Closed Mon.

CENTRAL RADIO, 30-32 Shudehill, Manchester M4 1 EY. Tel: (061) 834 6700. JBL, Mission, B&W, Wharfedale, Grundig, Harman-Kardon, Panasonic, Technics, sony, Bose, Aiwa, Trio Kenwood. Call for details.

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 shop - total absence of bull\*\*\*\*.

MURRAY HI-FI, 19 Middle Hillgate, Stockport. (061) 429 7666. Linn, Naim, Rega, Arcam, Yamaha, Royd, Epos, Creek, Nakamichi, Rotel. Full demo facilities, free installation & delivery, service dept. Full 2yr guarantee on all products. Access, Visa, Lombard Tricity, licensed credit broker. 10-6 Tue-Sat.

SWIFT HI-FIDELITY, 12 Chapel Street, Cheadle. (061) 428 7222. Arcam, Denon, Kenwood, Marantz, Nad, Cyrus, Rotel, Pioneer, Mission, Tannoy Demo room. 9.30-6. Closed Wed.

## MIDDLESEX

AUDIO T, 159a Chase Side, Enfield, Middx EN20PW. (081) 367 3132, Fax (081) 367 1638. Great hi-fi from Linn, Arcam, Denon, Linn, Mission/Cyrus, Philips, Rotel, Yamaha, and many more. Tue-Sat 10-6pm 2 single spker dem rooms. Free del. and instal

HARROW AUDIO, 27 Springfield Rd, Harrow. (081) 863 0938. Mon-Sat 9.30-5.30. A&R, Audioblab, Cyrus, Denon, Dual, Heybrook, Linn, Monitor Audio, Musical Fidelity, Quad, Rotel, Tannoy etc

NORTHWOOD AUDIO, 126 Pinner Road, Northwood, Middlesex HA6 1BP. (0927)420877. Exposure, Musical Fidelity, Pink Triangle, Manticores, Audio Innovations, Rotel, Ruad, Ruark, SD Acoustics, Moth. Dem room. Home trial. Free install. Access, Visa. 9-6 Mon-Sat

RIVERSIDE HI-FI LTD, 422 Richmond Road, East Twickenham, Middlesex TW1 2EB. Tel. (081) 892 7613. Fax (081) 892 7749. A.R., Arcam, Audio Innovations, Castle, Dual, Denon, KEF, Luxman, Michell, Musical Fidelity, Micromega, Marantz, Nakamichi, Rotel, Spenhdor, Systemdek, Tannoy, Yamaha. One demo room, in-car demo for car hi-fi systems. Appts not always necessary. Home trial facilities. Free installation, service dept. Lombard Tricity, Access, Visa, Amex, Diners Club. Mon-Sat 9.30-6, Thurs, Fri 9.30-7.

UXBRIDGE AUDIO LTD, 278 High St, Uxbridge, Middx UB8 1LZ. (0895) 230 404, Fax (0895)273 626. Acoustic Energy, Arcam, Ariston, Audioblab, Castle, Creek, Cyrus, Denon, Epos, Exposure, Heybrook, Ion, JPW, Kef, Linn, Marantz, Meridian, Michell, Mission, MA, NAD, Naim, Nakamichi, QED, Quad, Revolver, Revox, Rotel, Rogers, Royd, Ruark, Stax, Tannoy, Thorens, Wharfedale. 2 dem rooms. Installations. 2 yr guarantee. 7 day exchange. Service dept. Access, Amex, Diners, Visa. Mon-Sat 10-6.

## MERSEYSIDE

BETTER HI-FI, 16 Cook St, Liverpool L2 9RF. (051) 227 5007. 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.

IN CENTRAL 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.

PETERS HI-FI, 11 St Werburgh Squ., Grange precinct, Berkenhead. (051) 647 5626. 9-5.30 closed Thurs. See Cheshire branch for full details.

PETERS HI-FI, 8 High St, Bromborough, Wirral. (051) 334 1874/2825. 9-5.30 6 days. See Cheshire branch for full details.

## WEST MIDLANDS

AUDIO CENTRE MAINWAY, Sharing Asda Car Park, High Street, Bloxwich, Walsall, W. Midlands. (0922) 473499./493499. Meridian, Kef Reference, Arcam, Quad, Rogers, Musical Fidelity, TD, System Dek, Moth, QED Elect, Ariston, Linn, Audio Technica, JPW, Van den hul etc. The Midlands most exclusive Hi-Fi Centre with private listening studio. Open evenings by appt. Home trial. Free install. Own service dept. 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.

FRANK HARVEY HI-FI EXCELLENCE, 163 Medieval Spon Street, Coventry (0203) 525200. All major agencies. Free inst. Service dept. Part ex. 3 dem rooms. Mon-Sat 9.30-5.30. Wed till 8pm

GRIFFIN AUDIO LTD, 94 Bristol Street, Birmingham. (021) 692 1359/ (021) 622 2230. Castle, Creek, Cyrus, Denon, Linn, Marantz, Naim, Quad, Rega, Rotel. Tues-Sat 10-6.

HORNTON ELECTRONICS (1987) LTD, 8-9 Lower Temple St, Birmingham B2 4JD. (021) 643 0972. Aiwa, Acoustic Research, Denon, Marantz, Mordaunt Short, JVC, Mission, Sony, Technics, Wharfedale. Credit to £1000. Access, Visa. 9-5.30 Mon-Sat. Service dept.

MUSICAL APPROACH, 37 High Street, Aldridge, Walsall, W. Mids. (0922) 57926. Linn products, Arcam, Creek, NVA, Revolver, Onix, Epos, Marantz, Rotel, Quad & more. Dem facts. Home trial. Service dept. Credit facts available. Access, Visa. 9.30-5.30 Mon-Sat. 9.30-1 on Thurs.

MUSICAL MATTERS, 351 Hagley Road, Edgbaston, Birmingham B17 8DL. (021) 429 2811. Roksan, Nakamichi, Arcam, Audioblab, Musical Fidelity, Mission/Cyrus, Meridian, KEF, Monitor Audio, Pink Triangle. 2 single speaker luxury demo rooms. Appts nec, home trial facilities, free installation, service dept. Access, Visa, instant credit up to £1000, interest free credit available. Tue-Thur 10.30-6, Fri 10.30-8, Sat 10-5.30.

NAAM HI-FI VISION, 122-123 New Street, Birmingham. (021) 633 4944. Pioneer, Akai, Aiwa, Panasonic, Toshiba, Hitachi, Bose, Wharfedale, Sony. Demo facilities available, appointments preferred. Access, Visa, 10 month interest free credit. Amex, Lombard Tricity Creditcharge. Mon-Sat 9-6.00.

SUPERFI, 67 Smallbrook, Queensway, Birmingham B5 4HZ. (021) 631 2675. Specialist Hi-Fi stockists of: Audio Lab, Musical Fidelity, Quad, Pioneer, Yamaha, Rotel, Wharfedale, Tannoy, Celestion and many more. Single spker rooms by appt.

## NORFOLK

BASICALLY SOUND, The Old School, School Rd, Bracon Ash, Norwich NR14 8HE. (0508) 70829. Arcam, Linn, Naim, Denon, Spondor, 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. Est. 1968.

MARTINS HI-FI, 85/91 Ber Street, Norwich. (0603) 627010. Est. 1968.

SOUND APPROACH, 161a 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 facts. 9.30-5.30pm

CLASSICAL SOUNDS, 84e Walling St East, Towcaster NN12 7BS, Tel. 0327 359588, call for details

THE AUDIO SHOP, Coffee Tavern Court, High St, Rushden. (0933) 56651. Denon, Goldring, Ariston, Tannoy, Royd, Mordaunt Short, JPW, Ion Systems, Rotel, Creek. Dem room. Home trial and free installation. Mon-Sat 9.30-5.30 (Thurs 9.30-2). Service dept.

## NOTTINGHAMSHIRE

CHANNY AUDIO, ChantryWalk, 18a Eldon Street, Tuxford, Nr Newark, Notts NG22 0LH. (0777) 870372. Pink Triangle, Deltac, Rotel, SD Acoustics, Ruark, NVA, Michell, Art Audio, Croft Acoustics, Kelvin Labs, and much more. 2 dem rooms. Home trial, free installation. Access, Visa & credit facilities and mail order. Mon-Fri 10am-4.30pm. Sat 9.30-5.30. Sun & evenings home dem by appt. Closed Weds.

DEFINITIVE AUDIO, (0602) 813562. For a carefully considered approach to building a true hi-fidelity audio system with components derived from the following manufacturers; Systemdek, Goldring, Revox, Voyd, Audio Innovations, Snell, Audionote, SME, Helius, Impulse, TEAC, Deltac, Wadia, Ortofon Premier dealer, Pioneer dealer, Huygens loudspeaker stands. Demos by appt. Please phone for further details. Installation free of charge. Mon-Sat 10-7pm, Closed Wed a.m.

NOTTINGHAM HI-FI CENTRE, 120-122 Alfreton Road, Nottingham, (0602) 786919. Over 25 years experience, superb demo rooms, extensive range, free parking. Mon-Sat 9-5.30.

## OXFORDSHIRE

ASTLEY AUDIO LTD, 3 Market Place, Wallingford. (0491) 39305/34349. Technics, Panasonic, Pioneer, Kenwood, Sony, Yamaha, Denon, Dual, Mission, Tannoy. Home trial, free installation. Service dept. Access, Visa, Amex, Diners. Instant credit. Tue-Fri 9-5.30, Sat 9-5. Records & CDs stocked.

AUDIO T, 19 Old High St, Headington, Oxford OX3 9HS. (0865) 65961, Fax (0865) 60415. Great hi-fi from Linn, Arcam, Denon, Meridian, Mission/Cyrus, Rotel, Yamaha, B&O and many more. Tue-Sat 10-6pm. 2 single spker demo rooms, A/V dept. free del. & instal.

OXFORD AUDIO CONSULTANTS LTD, Cantlay Hse, Park End Place, Oxford OX1 1JE. (0865) 790879. Oxford Acoustics, Audio Research, Krell, Magneplanar, Apogee, Aragon, Stax, Marantz, Wharfedale, Cambridge Audio. Home trial and free installation. Instant credit, Access, Amex, Visa. 10-6 Tues-Sat. Service dept.

# The Choice Dealer Directory

BRITISH AUDIO DEALERS ASSOCIATION



WITNEY AUDIO VISUAL, 28 High St, Witney, Oxford. (0993) 702414. Aiwa, Akai, AR, Bose, B&W, Cambridge, Dual, Mordaunt-Short, NAD, Onkyo, Pioneer, Roberts, Sony & Sony ES, Tannoy, Wharfedale, Yamaha, Reference Point Dealer. Dem facilities. Mon-Sat 9-5.30. Free installation, credit to £1,000. Access, Visa. Service dept.

## SHROPSHIRE

AVON HI-FI, 12 Barker Street, Shrewsbury, Shropshire SY1 1QJ. (0743) 55166. NAD, Quad, B&W, Arcam, Kenwood, Aiwa, Bose, Nakamichi, Revolver, Onkyo, Dem room. Home trial. Free install. Service dept. Access, Visa. £1000 instant credit. Mon, Tues, Wed, Fri, Sat 9-5.30. CREATIVE AUDIO, 9 Dogpole, Shrewsbury. (0743) 241924. Linn, Naim, Roksan, Mission, Arcam, Rogers, Denon, Marantz, Rotel, Celestion, etc. Dem room. Home trial and free installation. Credit to £1000. Access, Visa. Tues-Sat 9.30-5.30. Service dept. SHROPSHIRE HI-FI, St. Michael's St., Shrewsbury, Shropshire. (0743) 232065. Ariston, Audio Technica, Cambridge Audio, Deltec, Denon, Dual, Infinity, Kenwood, Mordaunt Short, Musical Fidelity, Etc. Demo room, free parking, free installation, repairs.

## SOMERSET

MIKE MANNING AUDIO, 110 Middle Street, Yeovil, Somerset BA20 1NE. (0935) 79361, Fax (0935) 32923, Mobile(0850) 325965. Linn, Naim, Roksan, Pink Triangle, A+R (Arcam), ION, NAD, Pioneer, Rotel, Denon, etc. Dedicated listening lounge, for relaxed and unpressured demonstrations. Appts not usually nec. but best to phone first. Home trial facilities on request, free installation, service department. Instant credit, Access & Visa, etc. 9-5.30 closed Mondays. PAUL ROBERTS HI-FI, 32 North St., Taunton. (0823) 270000. For facilities see entry under Avon. WATTS RADIO - the engineers, Jim Badman, 1 West Street, Somerton (0458) 72440. Aiwa, Castle, Dual, Denon, KEF, Ortofon, Quad, Rogers, Tannoy, Thorens, Yamaha. Dem and home trial facilities. Mon-Sat 9-1, 2-5.30, Wed 9-1. Free installation. Credit to £1,000. Access, Visa. Service dept.

## STAFFORDSHIRE

ACTIVE AUDIO, 29 Market Street, Tamworth, Staffordshire. (0827) 53355. Arcam, Ariston, Celestion, Denon, Exposure, Heybrook, Kef, Cyrus, Musical Fidelity, Marantz, Revox, Rotel, Rogers, etc. etc. The only BADA Member in Staffordshire. Full dem & home trial facs. Account and credit cards. Ring for opening times and free Fact Pack.

ACTIVE AUDIO, 95 Stafford Street, Hanley, Stoke-on-Trent. (0782) 214994. Arcam, Ariston, Celestion, Cyrus, Denon, Exposure, Kef, Kef Reference, Marantz, Rogers, Rotel, etc. etc. The only BADA Member in Staffordshire. Full dem & home trial facs. Account and credit cards. Ring for opening times and free Fact Pack.

GRANGE HI-FI LTD, 153 Branston Road, Burton-on-Trent, Staffordshire DE14 3DQ. (0283) 33655. Audio Innovations, Arcam, Castle, Denon, Pink Triangle, Rotel, Rogers, Systemdek, SME, Quad, Voyd. Demonstrations facilities available, appointments necessary on Saturdays. Free installation. Service department. Access, Visa. 9.00-5.30pm. Closed Wednesday. Closed for lunch 12.00-12.30.

INTERSOUNDS, 62 Bennett Precinct, Longton, Stoke-on-Trent. (0782) 336233. Arcam, Denon, Dual, Mission, Musical Fidelity, NAD, Nakamichi, Revolver, Rotel, Systemdek, etc. G.000 8 different speaker manufacturers. 2 dem rooms. Free install. In-house service dept. Access, Visa, £1000 credit subject to status. 9.30-5.30 Mon-Sat. Closed Thurs.

MUSICAL APPROACH, Unit 7, Waddings Yard, Baillys Str., Stafford (0785) 55154. Linn Products, Arcam, Creek, NVA, Revolver, Audiotec, Onix, Epos, Marantz, Rotel and more. Home trial. Free installation. Service dept. Credit facilities available. Access, Visa. 9.30-5.30 Mon-Sat.

## SUFFOLK

EASTERN AUDIO, 41 Bramford Rd, Ipswich. (0473) 217217. Quad Audio Lab, Denon, Dual, Marantz, Mission, NAD, Nakamichi, Technics, Arcam. Mon-Sat 9.30-6.

THE STEREO SHOP, 94 Norwich Road, Ipswich, Suffolk. (0473) 233832. Linn, Exposure, Musical Fidelity, Creek, Epos, Monitor Audio, Mordaunt Short, Marantz, Rotel, Philips, NAD, 2 single speaker listening rooms. Multi rooms specialists. Free installations. Service dept. Plus 3 year guarantee. Access & Visa. Licensed credit broker. 10.00-6.00 Tue-Sat. Thurs 10.00-8.00 (by appointment).

## SURREY

AUDIO INC, 44 Walton Road, East Molesey, Surrey KT8 0DQ. (081) 941 4234. Acoustic Energy, Conrad, Johnson, JA Michell, Proac, Croft, VPI, Thorens, Pink Triangle, Rotel, Luxman. Single speaker demo room. Home trial facilities. Free installation. Access, Visa. Interest Free Credit on some items, standard credit terms. 10-6 Mon-Sat. 10-8 Thurs. 10-4 Sun.

AUDIO SOUTH, 5 Mead Lane, Farnham, Surrey GU9 7DY. (0293) 619295. Audio Innovations, JPW, Luxman, Marantz, Ortofon, Rotel, Snell, Sugden, Teac, Voyd. Dem room and evening appointments available. Home trial facilities. Free installation. Access, Visa. 10.30-6 Mon-Sat. Closed Tuesday. DATASOUND, 23 South Street, Dorking, Surrey RH4 2JZ. (0306) 882897. Arcam, Celestion, Denon, Dual, Marantz, Mission, Musical Fidelity, NAD, Rotel, Tannoy. Dedicated listening room. Free install. Service dept. Up to £1000 instant credit subject to status. 9.30-5.30 6 days

PJ HI-FI - the Hi-Fi Shop, 3 Bridge Street, Guildford, Surrey GU1 4RY. Tel: (0483) 504801. 9-6 Mon-Sat. Linn, Meridian, Creek, Arcam, Quad, Revox, Musical Fidelity, Rotel, NAD, Nakamichi, Marantz.

RIVERSIDE HI-FI, 422 Richmond Road, East Twickenham, TW1 2EB. Tel: (081) 892 7613. Fax: (081) 892 7749. See main entry under Middlesex.

ROGERS HI-FI, 13 Bridge Street, Guildford, Surrey. (0483) 61049. Aiwa, Denon, Dual, JPW, Marantz, Monitor Audio, Philips, Pioneer, Systemdek, Tannoy. Demonstration facilities available, no appointment necessary. Free installation. Service department. Access/Visa. Instant credit up to £,000 subject to status. Monday-Saturday 9.30-6pm, later by appointment. SOUNDS EXCLUSIVE, 1 Kent House, High Street, Cranleigh, Surrey GU6 8AU. (0483) 268185. Marantz, Sumo, QED, Michell, Alphason, SME, Ortofon, Finestra, Proac, Bose. Home trial. Dems a pleasure. Appts preferred. Service dept. Free install. Access, Barclaycard.

SPALDINGS HI-FI, 352-4 Lower Addiscombe Rd, Croydon, Surrey. (081) 654 1231/2040. 3 dem rooms and home dem. Free installation, credit. Mon-Sat 9-6. Tues to 8. Closed Wed. Service dept.

SURBITON PARK RADIO, 48 Surbiton Rd, Kingston-Upon-Thames, Surrey. (081) 546 5549. Quad, Dual, Denon, Kenwood, Nakamichi, Rotel, Pioneer, QED, B&W, Tannoy. Dem and home trial facilities. Access, Visa. 9.30-5.00 Tues-Sat. Service dept.

SURREY HI-FI, 45 High Street, Godstone, Surrey RH9 8LS. (0883) 744755. Parking, easy access - just 2 mins off junction 6, M25. Marantz, Musical Fidelity, QED, Radford, Tannoy, TDL, Kelvin Labs, Gyrodec, Reference Imports, Acoustal. Single speaker demo room. Appts not necessary, home trial facilities, free installation, service dept. Access, Visa, Mastercard. 9-6 6 days a week.

TRU-FI SOUND AND VISION, 2 Central Parade, Redhill, Surrey. (0737) 767404/766128. Aiwa, Audio Technica, B&W, Nakamichi, Mission, Mordaunt-Short, Nakoaka, Sony, Technics. Dem. facilities. Free installation. Service dept. 0% finance. Access, Visa. Mon-Sat 9.30-6. TRU-FI SOUND & VISION, 10 Church Street, Leatherhead, Surrey (0372) 378780. Sony, Technics, Panasonic, Mitsubishi, Ferguson, Aiwa, Pioneer, Sanyo, B&W, Mission. Free installation. Credit facilities. Access, Visa. 9.15-5.30 Mon-Sat. Closed Wed. Service dept.

UNILET HI-FI, 35 High Street, New Malden, Surrey KT3 4BY. (081) 942 9567. Kef, Mission, Musical Fidelity, NAD, Nakomichi, Quad, Rotel, Tannoy. Dem. Amex, Access, Visa, etc.

## SUSSEX (EAST)

DEFINITIVE AUDIO Brighton, (0273) 208649. Voyd, Systemdek, Audio Innovations, Heliuss, Audionote, JPW, Snell, Pirate Stands, Goldring, SME, Impulse, TEAC, Pioneer, Ortofon, etc. Home dems throughout Sussex and South East. Credit facilities. Phone for further info and appointments.

HASTINGS HI-FI, 33-35 Western Road, St. Leonards, E. Sussex TN37 6DJ. (0424) 442975. Linn, Musical Fidelity, Quad, Nakamichi, Arcam, Celestion, NAD, Denon, Yamaha, Tannoy. 2 listening rooms. Home trial. Free installation. Service dept. All credit cards welcome. Instant credit up to £1,000, written details on request. 9-6pm Mon-Sat.

JEFFRIES HI-FI, 69 London Road, Brighton, East Sussex. (0273) 609431. 2 dem rooms, closed Mon, late night Wed. Parking, bus route. Credit facilities.

JEFFRIES HI-FI, 4 Albert parade, Green St, Eastbourne, East Sussex. (0323) 31336. 2 dem rooms, closed Mon. Late night Wed. Parking, bus route. Credit facs.

LASER SOUND & VISION, 72 Terminus Road, Eastbourne, East Sussex BN21 3LX. (0323) 640911. Laserdiscs specialists P.A.L. & N.T.S.C. (new & secondhand). Phone for free catalogue, mail order throughout UK, Visa, Access. 9-6pm Mon-Sat.

THE POWERPLANT, 66 Upper North Street, Brighton BN1 3FL. (0273) 775978. Roksan, Musical Fidelity, Onix, Marantz, Rotel, Yamaha, Bryston, Tannoy, Monitor Audio, JPW, etc. Comfortable single speaker demonstration rooms. No appts. nec. Home trial facilities, free install. Service dept. Credit facilities available on request. Mon-Sat 10-1.00, 2.00-6pm.

## SUSSEX (WEST)

AUDIO DESIGNS, 26 High Street, East Grinstead, W. Sussex RH19 3AS. 0342 314569. Linn, Naim, Alphason, Arcam, Rotel, NAD, B&W, Tannoy, Thorens, TEAC, etc. Very comfortable listening room. No appts nec., Home trial facilities, free installation, service dept. Access/Visa. 9-5.30 Mon-Sat, late Tue till 8pm.

BOWERS & WILKINS LTD, 1 Becket Buildings, Little Hampton Rd, Worthing, (0903) 64141. B&W, Nakamichi, Castle, Denon, JVC, Mordaunt Short, Philips, Quad, Sony, Technics. 3 dem rooms. Mon-Sat 9-5.30, Wed 9-1pm. Home trial facilities, free install. Credit to £1000. Access, Visa. Service dept. \*

CHICHESTER HI-FI, 7 St. Pancras, Chichester, W. Sussex PO19 1SJ. Tel: (0243) 776402. Linn, Naim, Rega, Creek, Nakomichi, A&R, Denon, Roksan etc. Tues-Sat, 10-1, 2-5.15 (closed Mon).

MALCOLM AUDIO, 12 South Street, Chichester, W. Sussex. (0243) 787562. Sony, Technics, Denon, Yamaha, Sherwood, Mordaunt Short, Wharfedale, Allison, Dual, NAD. Appointments necessary. Home trial facilities. Free installation. Service Dept. Access, Visa. 9.15-5, Mon-Sat.

## TYNE & WEAR

BILL HUTCHINSON LTD, 87A Clayton Street, Newcastle-Upon-Tyne. Tel: (091) 230 3600. A.R., Aiwa, Denon, Dual, JVC, Mission, Mordaunt Short, Omar, Technics, Yamaha, etc. Demonstration facilities. Free installation, service department. Instant credit, Access, Visa. Mon-Sat 10-6.

RED RADIO SHOP AND HI-FI CENTRE, 11 Olive Street, (Off Park Lane), Sunderland. (091) 567 2087. Castle, Denon, Bose, JVC, Kenwood, Mordaunt Short, Michell, Teac, Tannoy, Shure. Dem room, large with comparator facility. Free install. Service dept. Interest free credit and no deposit interest free credit. 9am-5.30pm daily.

NEWCASTLE HI-FI, 153 Kenton Road, Gosforth, Newcastle-Upon-Tyne NE3 4NQ. (091) 285 7179. Linn, Arcam, Creek, Marantz, JPW, NAD, Denon, Ruark, Custom Design, Aiwa, etc. 2 single speaker demonstration rooms. Installation, delivery, 2 yr guarantee on all products. Access, Visa. 10-5.30 Tue-Sat.

## WARWICKSHIRE

NAAM HI-FI VISION, 78 Lower Precinct, Coventry CV1 1DX. (0203) 632086. Technics, Pioneer, Kenwood, AR, Akai, Aiwa, Panasonic, Toshiba, Wharfedale, KEF. Demo facilities. Access, Visa, Amex, Lombard Tricity credit charge. 9.00-6.00 Mon-Sat.

## WILTSHIRE

AUDIO T, 60 Fleet St, Swindon, Wilts. SN1 1RA. (0793) 538222, Fax (0793) 487260. Great hi-fi from Linn, Denon, Meridian, Mission/Cyrus, Rotel, Sony, Yamaha and many more. Tue-Sat 9.30-5.30. Single spker dem room, free del and instal.

## WORCESTERSHIRE

WEST MIDLANDS AUDIO, 158 Ombersley Road, Worcester WR3 7HA. (0905) 58046. Linn, Naim, Rega, Absolute Sounds, Meridian, Mission, Arcam, Ion Systems, Roksan. 3 dem rooms for budget. High end & Audio Visual appointment necessary. Home trials. Free installation. Service Dept. Access, Visa, Amex, Diners, Lombard/Hitachi. Mon-Fri 9.30-8.30 by appt Sat 9-5.30.

## YORKSHIRE (NORTH)

SCARBOROUGH HI-FI CENTRE, 53 Dean Road, Scarborough, N. Yorks YO12 7SN. (0723) 374547. Aura, B&W, Mission, Quad, NAD, Oxford, Alphason, Rogers, Nakamichi, Ruark, Voyd. Dem room, appointment preferred. Home trial facilities. Free installation. Service dept. Access/Visa/Credit charge/£1,000 instant credit/Amex/Diners. 10-6 Tues to Sat.

HARROGATE HI-FI CENTRE, 15 Commercial Street, Harrogate, N. Yorks HG1 1UB. (0423) 504274. Aura, B&W, Mission, Quad, NAD, Oxford, Alphason, Rogers, Nakamichi, Ruark, Voyd. Dem room, appointment preferred. Home trial facilities. Free installation. Service Department. Access/Visa/Credit charge/£1,000 instant credit/Amex/Diners. 10-6 Tuesday to Saturday.

SOUND ORGANISATION YORK, 16 Gillygate, York YO3 7EQ. Tel: (0904) 627108. Linn, Naim, Rega, Roksan, Sony, Arcam, Mission, Denon, Ion, Rotel. 2 single speaker dem rooms. Appts. preferred. Home trial. Free installation. Service dept. Access, Visa. Instant free credit available. 10am-6pm Tues-Sat. Sony dealer. Award nominated '86, '87, '88.

TRC HI-FI, 3 Kings Cross St, Halifax HX1 2SH. 0422 366832. Full demonstration facilities at any time, no appts nec, free install, service dept. Access, Visa, Lombards credit charge available. 9-5.30 Mon-Fri, Closed Thur, 9-5 Sat 10-4.

VICKERS HI-FI, 24 Gillygate, York (0904) 629659. Audiolab, Harman-Kardon, Marantz, Musical Fidelity, Pink Triangle, Quad, Systemdek, Tannoy, Technics, & lots more. 3 demonstration studios (2 by appointment) superb showrooms, 2 year guarantee on all hi-fi products. Appts as above, home trial facilities, free installation, service department. Qualified and experienced staff, over 20 years experience. 12 months interest free credit. 10.30-5.30 Mon-Sat.

## YORKSHIRE (SOUTH)

HI-FI STUDIO, 5 Norman Cres., Sunnyfields, Doncaster. (0302) 781387. Heybrook, Monitor audio, Art Audio, TDL, Michell, Sugden, Acoustic Energy, Alphason, Teac, Dual. Listening room demos. Home trial. Free installation. Licensed credit broker, 2 yr guarantee on all equipment. Service available. Access, Visa. 10-8pm 6 days. Phone for further info & FREE fact pack.

# The Choice Dealer Directory

BRITISH AUDIO DEALERS ASSOCIATION

**BADA**  
THE ULTIMATE IN  
SOUND ADVICE

MOORGATE ACOUSTICS, 184 Fitzwilliam St, Sheffield. (0742 756048. Roksan, Linn, Musical Fidelity, Denon, Meridian, Krell, Quad, Audio Research, Exposure, Nakamichi. 2 demo rooms. Free installation. Service Dept. Access, Visa, Credit. 9.30-5.30 Closed Mon

**BADA**

MOORGATE ACOUSTICS, 8 Westgate Chambers, Rotherham. (0709) 370666. Roksan, Linn, Musical Fidelity, Denon, Meridian, Krell, Quad, Audio Research, Exposure, Nakamichi. A multitude of demo rooms. Free installation. Service dept. Access, Visa, credit facilities. 9.30-5.15 Closed Thurs.

**BADA**

## YORKSHIRE (WEST)

AUDIO PROJECTS, 45 Headingley Lane, Leeds. (0532) 304565. A&R, Audiolab, Creek, Heybrook, Linn, Musical Fidelity, Naim, Quad, Rega, etc Tues-Fri 9.30-6, Sat 2.30-5.30.

AUDIO VISION (BRIGHOUSE) LTD, 5 Bethel St, Brighouse, W. Yorks H D6 1JR. (1 mile from junc. 25, M62). 0484 713996. Largest range of Technics hi-fi in Yorkshire. Authorised stockist of the new Technics digital reference series. Panasonic stereo Nicon TVs. Hi-Fi VCRs & Camcorders, Hi-Fi furniture. Excellent CD dems. using comparator facilities from a choice of over 1000 compact discs for sale. Appts. pref., home trial, please phone us. Free expert install. In-store Service dept. Visa, Access, Credit charge. Licensed credit broker. Open Mon-Fri 9-6, Sat 9-5.30.

ERIC WILEY, 85 Beancroft Rd, Castleford. (0977) 553066/556774. Arcam Audio, Cambridge Audio, Celestion, Kenwood, Marantz, NAD, Pioneer Reference Piont, Rotel, Technics, Quad. Car audio specialists. Demo facilities. No appts nec. Access, Visa, Lombard tricity credit charge Mon-Sat 9-5.30, closed wed.

ERRICKS, Rawson Square, Bradford, (Near John St Market). (0274) 309266. A&R, Linn, Quad, Exposure, Nakamichi, Mission, Denon, Kenwood. Private demo rooms, no appt nec, home trial facilities, free installation, service dept. Access, Visa, licenced credit broker. Mon-Sat 9-5.30 (Tue 10-5.30)

**BADA**

HUDDERSFIELD HI-FI CENTRE, 4 Cross Church St, Huddersfield. (0484) 544668. B&W, Kenwood, Denon, Dual, Arcam, Musical Fidelity, Quad, NVA, Audio Lab, Philips, Mission, etc. Dem facilities - appointment reqd Mon-Sat 9-5.30, Thurs 9-8. Closed Wed. Free installation, credit facilities. Access, Visa.

IMAGE HI-FI Ltd, 8-10 St Annes Rd, Headingley, Leeds. (0532) 789374. AR, Audio Lab, Denon, Linn, Marantz, Meridian, Mission, Monitor Audio, NAD, Quad

**BADA**

IMAGE HI-FI, 17 The Springs, Wakefield, WF1 1QE. (0924) 200272. AR, Audio Lab, Denon, Linn, Marantz, Meridian, Mission, Monitor Audio, NAD, Quad.

**BADA**

T.R.C. HI-FI, 3 Kings Cross St, Halifax. (0422) 366832. Alphonson, Castle, Denon, Harmon/Kardon, Kenwood, Quad, Rotel, Technics, Wharfedale. Free Installation, Service dept, No Appt nec. 9.00-5.30, closed Thur.

## NORTHERN IRELAND

### ARMAGH

LYRIC HI-FI, 84 Bridge Street, Portadown, Armagh, N. Ireland. (0762) 358 059. Linn, Naim, Rega, Arcam, Denon, Rotel, Musical Fidelity, Revox, Mission, Akai, Panasonic, etc. Mon-Sat 10am-6pm

**BADA**

### BELFAST

LYRIC HI-FI, 163 Stranmills Road, Belfast. (0232) 381 296. Linn, Naim, Rega, Arcam, Denon, Rotel, Musical Fidelity, Revox, Mission etc. Mon-Sat 10-6, Late night Thurs.

**BADA**

ZEUS AUDIO, 6 Hope Street, Belfast. (0232) 332522. Audio Innovations, Pink Triangle, Roksan, Marantz, Celestion, Linn, Meridian, Mission Cyrus, Ortofon, etc. Mon-Sat 10.00-5.30, Late night Thurs

**BADA**

### COUNTY DOWN

ASTON AUDIO, 17 Hillhead Road, Dundonald, Belfast. 0247 872431. Akai, Technics, JVC, Pioneer, Mitsubishi, Panasonic, Toshiba, Sharp, Sanyo. Demos available. No appts nec, service dept. Please phone for directions. Mon-Fri 2-8, Sat 10-4.

## LONDONDERRY

ZEUS AUDIO, 23a Kingsgate Str, Colrairie, BT52 4LB. (0265) 56634. Marantz, Mission Cyrus, Aiwa, Akia, Alphason, Sony, Pink Tri, Celestion, Rotel. Open Mon-Sat 10-5.30, Closed Thurs.

**BADA**

## EIRE

CEOL PRODUCTS, 185 Lower Rathmines Road, Dublin 6. Tel: 0001 975984 961358. Alphason, Audio Innovation, Exposure, Linn, Marantz, Monitor Audio, Mordaunt Short, Musical Fidelity, Rega, Roksan. Single Speaker listening rooms. Free installation. All major cards. Mon-Sat 9.30-6.00.

## SCOTLAND

### CENTRAL

HI-FI CORNER, 44 Cow Wynd, Falkirk. (0324) 29011. Nakamichi, Denon, TDL, Ruark, Technics, Luxman, Thorens. 9.30-5.30 Mon - Sat Closed Weds. Demo room available.

**BADA**

### EDINBURGH

BILL HUTCHINSON Ltd, 43 Clarke St, Edinburgh. (031) 667 2877. AR, Aiwa, Denon, Dual, JVC, Mission, Mordaunt-Short, Omar, Technics, Yamaha etc. Dem facilities. Mon-Sat 10-6. Free installation, instant credit Access, Visa. Service dept.

HI-HI CORNER, 121b Rose Street Pedestrian Precinct, Rose St, Edinburgh EH2 3DD. 031 220 1535. Large range of products such as Nakamichi, Arcam, AudioLan, Quad, Cyrus, Mission, Allison, Proton, NAD, Technics Mon-Sat, 10-5.30pm, Thurs 10-7.00pm

**BADA**

RUSS ANDREWS HI-FI, 34 Northumberland St, Edinburgh. (031) 557 1672. Linn, Naim, Rega, Arcam, Rotel, Marantz, Nakamichi, Quad, MS, MA, Yamaha. Demos. 10-5.30 Mon-Fri, 10-5 Sat.

**BADA**

### GLASGOW

BILL HUTCHINSON Ltd, 43 Hope Street, Glasgow. (041) 248 2857. A.R., Aiwa, Denon, Dual, JVC, Mission, Mordaunt-Short, Omar, Technics, Yamaha etc. Dem facilities. Mon-Sat 10-6. Free installation, instant credit. Access, Visa. Service dept

HI-FI CORNER, 52 Gordon Street, Glasgow (041) 248 2840. The best in unbiased sound advice. Open 10-5.30 Tues - Sat. Demo room etc.

**BADA**

HI-FI EXPERIENCE 145 Bath St, Glasgow. (041) 226 4268. Linn, Meridian, DNK, Celestion, Quad, Mission-Cyrus, Denon, Wharfedale, Ruark. 2 Demo Rooms. Tue-Sat 9.30-5.30. Contact James or Gordon.

**BADA**

STEREO STEREO, 278 St. Vincent St, Glasgow G2 5RL. (041) 248 4079. Linn, Naim, Rega, Arcam, Creek, Epos, Exposure, Revox, PT, etc. Mon-Sat 10-6. Interest free credit.

**BADA**

### GRAMPIAN

THE AUDIO SUITE, 42 St Andrew Street, Aberdeen. 0224 625635. Absolute Sounds, Mordant Short, Creek, Alphason, Acoustat, Spectra, M.A.S., Systemdek, Teac, Heco, Micromega. Dem Room. Appts nec., Home trial facilities, Free Installation & Delivery, service dept.. Access, Visa, Mastercard, Eurocard, Licensed credit brokers. Mon-Wed 9-7, Thurs 9-8, Fri-Sat 9-6.

HOLBURN HI FI Ltd, 441 Holburn St, Aberdeen (0224) 585713. Arcam, Audiolab, B&W, Celestion, Denon, Dual, Epos, Heybrook, ION, Kenwood, Linn, M.A., Marantz, Meridian, Mission Cyrus, M.S., NAD, Nakamichi, Pioneer, QED, Quad, Revox, Rogers, Rotel, Ruark, Tannoy, Technics, Wharfedale, Yamaha. 9.30-5.30 Mon-Sat.

**BADA**

### ROSS-SHIRE

HIGHLAND ANALOGUE, 'Lismore', Avoch, Ross-shire IV9 8RF. (0381) 20655. Acoustat, Basis, Cary, CAT, Cogan-Hall, Diamond-Acoustics, Ensemble, MFA, NRG, SOLEN. 1 demo room, appts nec, home trial facilities, free installations, owner is trained electronics technician. UK's most northerly high-end dealer Open 7 days.

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HI-FI CORNER, 1-3 Main Street, East Kilbride, Strathclyde. 0355 244145. Phone for details.

## TAYSIDE

J.D. BROWN, 28-36 Castle St, Dundee DD1 9NZ. (0382) 26591. Technics, Pioneer, Rotel, QED, Castle, Celestion, Mordaunt Short, Wharfedale, Bose. All equipment ready for demonstration. No appt nec, free installation, service dept. Mon-Sat 9-5.30.

W.M. COUPAR, 33 Reform Street, Dundee, Tayside. (0382) 29588. Bang & Olufsen, NAD, Technics, Denon, Kenwood, Dual, Nakamichi, B&W, Acoustic Research, JBL. No appointment necessary, free installation, service department. All demonstration systems wired through a demonstration comparator. Licensed credit broker, Access, Visa. Monday-Saturday 9.00 am-5.30.

ROBERT RITCHIE HI-FI, 102 Murray St, Montrose, Angus. (0674) 73765. Linn, Naim, Rega, Quad, A&R, Cambridge, Creek, Epos, Pioneer, Kenwood, Sony & Technics. 2 demo rooms (1 single speaker). Appts nec., home trial fac., free installation, service dept. Access, Visa, credit facilities. 9-5.30, except Wed 9-1pm

## WALES

### CLWYD

ACTON GATE AUDIO, 4 Ruabon Road, Wrexham, Clwyd. (0978) 364500. Arcam, Cambridge, Celestion, NAD, Quad, Radford, Rotel. Semilink, Tannoy, Yamaha etc. Dem room, appts. nec. Free install. Service Dept. Access, Visa, Amex. 9-5.30 Mon-Sat. Closed Weds.

ELECTRO TRADER, 19 Colwyn Crescent, Rhos On Sea, Colwyn Bay, Clwyd. (0492) 48932. Ariston, Arcam, B&W, Heco, Infinity, Onkyo, Rotel, Tannoy, TDL, Yamaha etc. Dem room. Appts preferred. Home trial. Free installation. Access, Visa, American Express, Diners. 9.30-1.00, 2.00-5.30 Mon-Sat.

### DYFED

LEWIS AUDIO, 2 Queen Street, Carmarthen, Dyfed. (0267) 236463. NAD, Dual, Kenwood, Harmen-Kardon, Rotel, Marantz, Denon, JPW, Wharfedale, JBL, Dem. room. Hometrial facilities, free installation, Service dept. Access, Visa, Amex, £1000 instant credit. Phone for details. Mon - Sat 9.30-5.15.

## SOUTH GLAMORGAN

AUDIO EXCELLENCE, 134 Crwys Road, Cardiff. (0222) 228565. Audio Research, Krell, Linn, Naim, NAD, Yamaha, Quad, Arcam, Mission + lots more. Closed Mon.

**BADA**

## WEST GLAMORGAN

AUDIO EXCELLENCE, 9 High St, Swansea. (0792) 474608. Audio Research, Linn, Arcam, Mission, Quad, Naim, NAD, Yamaha, etc. Closed Mon.

**BADA**

## GWYNEDD

I&H GRIFFITHS & SONS, 313 High St, Bangor LL57 1YA. (0248) 370655. Yamaha, Tannoy, Teac, Goodmans, Dual, Sherwood, Wharfedale. Demos available, no appts nec, home trial facilities, free installation, service dept. Access, Visa, Lombard credit charge. Mon-Sat 9-5.30, Wed 9-1. PETERS HI-FI, Victoria Buildings, Mostyn Ave., Craig-y-don, Llandudno. (0492) 876788. 1 single spker dem room. Open 9-5.30, closed Wed. See Cheshire branch for full details.

**HI-FI CHOICE**  
**THE WORLD'S NUMBER ONE**  
**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 solid 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 - for example a cassette deck rated 'excellent' in sound quality will not usually offer the same standard of fidelity as a similarly rated turntable or CD player (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 we would advise you to refer to the original review for this, of which more later.

The next column 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 in the case of 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 electromagnetical elements - that is to say the cartridge and the speakers), system building is unfortunately 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 *Hi-Fi Choice Directory* is constantly updated with the latest reviews and price changes as well as having any 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, together with an asterisk in order 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 to be 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 prerecorded 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 prerecorded music cassette material. As a hi-fi medium cassette suffers from prerecorded 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 plays 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 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 each 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 demonstrates 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 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.

## 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 compatible cartridges.

## INTEGRATED TURNTABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES ARM EFF. MASS	VALUE	ISSUE
<b>Acoustic Research EB-101</b> £230	Good Good	This genuine high fidelity product offers an impressive package at a competitive price	Subchassis, manual, 13.5g	BB	48
<b>Alphason Solo/Xenon MCS</b> £440/£320	Average Good	The deck is warm and euphonious with high levels of clarity. Wow artefacts occasionally just audible	Suspended motor unit, optional quartz PSU,13g		67
<b>Alphason Sonata/HR-100S</b> MCS/Atlas £760/£500/£360	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
<b>Alphason Super Nova</b> £300	Good Good	Informative, easy to listen to and quite lively deck with good detail and occasionally uneven bass. Build quality of review sample not perfect	Subchassis, manual, belt drive, detachable arm.12g	R	91
<b>Ariston Forte</b> £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
<b>Ariston Icon</b> £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
<b>Ariston Pro</b> £180	Good Good	Remarkably clear and detailed for the price, very neutral. Benefits from cartridge upgrade	Manual, belt drive.12g	BB	91
<b>Ariston Q-Deck</b> £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
<b>Dual CS430</b> £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
<b>Dual CS5000</b> £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
<b>Dual CS503-2</b> £145	Good - Average	Not wholly inspiring; generally coarse and wolly sound is at least not offensive, but easily bettered by the CS505-4. Good value in material terms	Semi auto, belt drive, 10g	R	91
<b>Dual CS505-4</b> £170	Good - Good -	The old-time favourite which never gives up. Sound is enjoyable if not perfectly clear, all-round value is excellent	Semi-auto, belt drive	BB	91
<b>Goldmund ST4</b> £4589	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 h/shell	R	60
<b>Heybrook TT2 turntable &amp; arm</b> £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, R belt drive, 14g		67
<b>JVC AL-FQ555</b> £170	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
<b>Kuzma Stabi/Stogi Reference</b> £900/£699	Very Good Very Good	Beautifully made in a solid oak plinth, the Stabi also sounds very clear, detailed and extended. Stogi Reference is also most capable.	Manual, belt drive, subchassis.12g	R	91
<b>Linn Axis/Akito</b> £443	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
<b>Linn LP12-Lingo/Ekos/Troika</b> £1149/£1097/£798	Good + Good +	The classic reference is improved (at a price) by the Lingo but character remains the same - not as detailed or neutral as the best. Ekos arm, though pricey, is well made and suited to many decks	Manual, subchassis, belt drive, 9g -/R/-		91
<b>Manticore Mantra/Musician</b> £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
<b>Marantz TT400</b> £150	Average - Poor	Everything one hopes a budget deck won't be; coarse, confused, muddled and woolly. Construction isn't wonderful, either	Manual, belt drive16g		91
<b>NAD 5120</b> £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 armtube/weight, 9g	BB	67
<b>Omega Point Silver/Black</b> £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
<b>Opus 3 Continuo/Decca London International</b> (Revise £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
<b>Rational Audio Aura 01</b> £189	Poor Good	Poor lab results reflect bad rumble, but midrange and treble are very pure and clean; idiosyncratic sound and styling should be tried!	Manual, belt drive, linear tracking arm10g	R	91
<b>Rega Planar 2</b> £155	Average + Good	A remarkable product at the price, surprisingly articulate and confident	Manual, 11.5g	BB	48
<b>Rega Planar 3</b> £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
<b>Revolver Rebel</b> £185	Average Good -	Quite lively and detailed but not the strongest on subtlety, with slightly lumpy bass. Motor breakthrough audible, and watch for bent motor shaft on delivery!	Manual, belt drive, semi-suspended 12g	R	91
<b>Revox B291*</b> £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
<b>Rotel RP-855</b> £160	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
<b>Systemdek IIX</b> £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

# The Directory

## INTEGRATED TURNTABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES ARM EFF. MASS	VALUE	ISSUE
<b>Technics SL-DD33</b> £110	Average Average	As with the QD33 though better value	Automatic, direct drive, solid plinth, 7.5g, P-mount	BB	48
<b>Technics SL-L20</b> £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
<b>Technics SL-QD33</b> £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
<b>Technics SLBD-22</b> £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
<b>Thorens TD 166 Mk V</b> £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
<b>Thorens TD 280 Mk II</b> £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
<b>Thorens TD 316 Mk II</b> £220	Good Good -	Very solid deck with neat split-chassis construction. Sound is a bit insecure in the bass, but it could suit classical music lovers well	Belt drive, suspended, electronic PSU, 12g	R	79
<b>Thorens TD2001</b> £630	Good Good -	Similar to TD320 but much dearer - why? Sound is comfortable but not very detailed	Semi-auto, belt drive, subchassis 15g		91
<b>Thorens TD320 Mk II</b> £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
<b>Townshend Rock Reference/Excalibur</b> £1995/£695	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
<b>Voyd Reference/Helios Cyalene</b> £5299/£1066	n/a Excellent	Voyd's flagship is equipped with three of the biggest motors in the business, a Lexan platter and a real brute of a power supply (it dwarfs most power amps!). A strong contender for best turntable in the known universe	Belt drive, 3 motors, subchassis, outboard PSU, 12/14g	R	Coll. '90
<b>Well Tempered WTAT</b> £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
<b>Zarathustra S4/Pluto 5A</b> 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

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Ariston Superior</b> £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
<b>CEC ST930</b> £599	Good Very 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
<b>CS Audio Resan kit for Rega</b> £90	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
<b>Michell Gyrodec</b> £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
<b>Michell Syncro</b> £265	Good Good	A happy blend of qualities endows the Synchro 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
<b>NVA Senior</b> £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
<b>Oracle Alexandria Mk III</b> £1195	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
<b>Oracle Paris</b> £595	Good - Average	Looks good but sounds coarse, confused and uneven, with bass liable to thump	Belt drive, semi-suspended, electronic		91
<b>Origin Live Oasis A</b> £495	Good - Average	Rather coarse sound with lack of detail resolution - but lively presentation may appeal. Appearance is industrial	Belt drive, external mains filter, 33rpm only, suspended		79
<b>Origin Live Oasis B</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, 33Gy1/3Gyrpm only, solid plinth/subchassis		79
<b>Oxford Acoustics Crystal</b> Reference £2495	Very Good Excellent	This big, open and powerful sounding turntable works beautifully with Airtangent arm to give superb 3-D imagery. Recently updated to mk.II form	Manual, belt drive, subchassis, stand	R	60
<b>Pink Triangle Anniversary</b> £1175	Excellent Excellent	Possibly the most detailed, clear, neutral and therefore accurate deck around. Likeness to master tape is almost uncanny	Suspended, belt drive, electronic, motor on subchassis	R	91
<b>Pink Triangle Export</b> £676	Very Good Excellent	Basically a PT T00 with built-in power supply. Retains features of great transparency and neutrality. Review sample had highish motor noise - presumed untypical	Suspended, belt drive, electronic	R	91
<b>Pink Triangle Little Pink</b> Thing £392	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
<b>Revolver</b> £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
<b>Systemdek IIXE</b> £248	Good Very Good	Fine, honestly specified and well built player which easily betters its closest stablemate, the IIX. Frankly, at the price it's a sonic bargain	Manual 2-speed, external PSU	R	67
<b>Systemdek IV</b> £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
<b>Voyd 0.5</b> £3062	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	Belt drive, 3 motors, subchassis, outboard PSU	R	72
<b>Voyd Valdi</b> £868	Good - Very Good	Recent power supply upgrade has resulted in around improvements. This Perspex plattered, two motor deck is remarkably competent, revealing and neutral	Belt drive, suspended subchassis, electronic PSU		79
<b>VPI HW-19Mk3</b> £1500	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

## TONEARMS

MODEL PRICE	LAB SOUND	COMMENTS	ARM EFF, MAS	VALUE	ISSUE
<b>Airtangent 1B</b> £1990	n/a Excellent	A complex but superbly built arm for high quality systems, giving excellent stereo and resolution	7.5g (vertical)	R	60
<b>Alphason Delta</b> £190	Good Average +	A highly competent design from Alphason gives good sound quality but with slight blurring and treble fizz	16g	R	48

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## TONEARMS

MODEL PRICE	LAB SOUND	COMMENTS	ARM EFF, MAS	VALUE	ISSUE
<b>Alphason HR100S</b> £440	Very Good Very Good	This S-shaped arm sounds smooth, but nevertheless reproduces transients with fine attack	10g	R	Coll. '86
<b>Alphason Opal</b> £130	Good Average	This is a straightforward adequate sounding low cost arm, priced just above where it rightly belongs	10g		55
<b>Alphason Xenon</b> £260	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
<b>Ariston Enigma</b> £99	Average Average +	Good but not the best in its class: mid-band sounds a little uneven; treble a trifle "brash"	11.5g		48
<b>Audio Technica AT1130</b> £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
<b>Decca London International</b> £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		48 Summ
<b>Eminent Technology</b> £1000	Good + Very Good	One of the best sounding tonearms around, the linear tracking Eminent delivers impressive stereo imagery, focus and transparent sound	9g (vertical)	R	Coll. '86
<b>Goldmund T3F arm</b> £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. '87
<b>Helius Drion 2</b> £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
<b>Kuzma Stogi Reference</b> £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
<b>Linn Ekos</b> £1097	Very Good Very Good	Superb, state of the art design which builds significantly on Ittok's strengths	9g	R	67
<b>Moth Arm</b> £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
<b>Naim Aro</b> £699	Good Good -	Designed for use on the Linn LP12, the Aro is a little bright and congested.	10.5g		91
<b>Rega RB300</b> £115	Very Good Very 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
<b>Roksan Artemiz</b> £669	Average Good	Interesting design which works a treat on the Xerxes deck. Fits Rega cut-out.	8g		67
<b>Roksan Tabriz</b> £165	Good Good +	Though obviously targeted at Roksan's own Xerxes, it is also a good alternative to the Rega arms in many applications. A trifle bright.	9g	R	91
<b>SME 3009 Series III</b> £253	Good Average +	Comprehensively adjustable and very well made, suited to MM and high compliance MC cartridges	5g		48
<b>SME 3009 Series IIIS</b> £182	Good Average +	A simplified less flexible (as regards adjustment) Series III with a similarly 'soft' sonic character	5g		48
<b>SME 3009R</b> £335	Average + Average +	A higher mass version of the Series III designed for low compliance MC cartridges	12g		48
<b>SME 309</b> £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
<b>SME Series IV</b> £810	Excellent Very Good	Superb engineering and finish with a finely balanced sound giving impressive stereo focus and low coloration	10.5g	R	60
<b>SME Series V</b> £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

## 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.

MODEL PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/TYPE	VALUE	ISSUE
<b>Arcam C77</b> £22	Average + Average +	A sensible moving magnet package with good bounce at a competitive price	6-16g Normal, MM	BB	48
<b>Arcam C77Mg</b> £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
<b>Arcam E77Mg</b> £50	Average Average	Our sample had a disappointing stylus, but gave a coherent, rich and laid back sound, with good 'scale'	3-8gN Normal, MM	R	48
<b>Arcam P77Mg</b> £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
<b>Arcam PMX10</b> £100	Good + Very Good	Not the very clearest in complex high-frequency sounds, but lively and exciting, good transients	5-11g Low, MC	R	85
<b>Audio Technica ART1</b> £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
<b>Audio Technica AT-420E</b> £35	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
<b>Audio Technica AT95E</b> £19	Average - Average	Clear, dynamic if richly balanced, the magnetic '95E is a definite Best Buy	8-14g Normal, MM	BB	48
<b>Audionote I02VDH</b> £895	Good Very Good	One of the best, giving 'an extraordinarily relaxing midrange clarity', needs a transformer	8-18g Very low, MC	R	43
<b>Audioquest AQ 404i-L</b> £400	Very Good Good +	Slight harshness detracted from the performance of this otherwise clear-sounding and detailed cartridge	8-16g Low, MC		84

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MODEL PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/TYPE	VALUE	ISSUE
<b>Audioquest AQ 7000</b> £1200	Good Good +	Stunning stereo imaging and good detail at low levels are spoiled by less-than-perfect tracking and high sensitivity to arms.	6-20g Low, MC		91
<b>Audioquest MC5</b> £220	Average Average	Offers high-output benefits but the drooping frequency response and severe VTA error preclude recommendation	10-20g Normal, MC		54
<b>Cello Chorale</b> £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
<b>Denon DL 103</b> £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
<b>Denon DL110</b> £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
<b>Denon DL160</b> £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
<b>Dynavector 17D2</b> £280	Very Good Very Good	Clear, detailed, neutral and generally very informative - excellent	6-18g L ow, MC	R	91
<b>Dynavector DV-50X</b> £99	Good Average	A high-output MC model with impressive lab performance, but whose tip and sound quality both disappointed	6-14g Normal, MC	R	48
<b>Dynavector DV10X IV</b> £125	Average Average +	Fine sounding and realistically priced, damping is recommended to ensure successful tracking ability	8-18g N Normal, MC	R	48
<b>Dynavector DV23RS</b> £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
<b>Dynavector XX-1</b> £680	Very 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
<b>Dynavector XX-1L</b> £680	Very 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
<b>Empire Benz-Micro MC-2</b> £699	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
<b>Glanz GMC-10EH</b> £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
<b>Glanz GMC-10LX</b> £80	Average + Average +	Bearing some of the hallmarks of the '10EH, the '10LX is still less competitive in the sonic stakes	7-15g L Low, MC		67
<b>Glanz GMC-20E</b> £129	Good + Good +	Very good tracking, smooth sound and good detail. Very slight surface noise enhancement	5-10g Low, MC	R	91
<b>Glanz MFG-110EX</b> £25	Average Average	A little bright but giving detailed bass and clear treble, this was competitive at the price	6-16g Normal, MM	R	43
<b>Glanz MFG-310LX</b> £50	Good + Very Good	Detail and treble outstanding for sub-£100 cartridge. Slight coloration may be due to body resonance	6-10g Normal, MF	BB	85
<b>Glanz MFG-610LX</b> £90	Good + Good +	Similar to cheaper '310 but slightly clearer transients and bass. Benefits from lowish impedance loading	3-10g Normal, MF	R	85
<b>Goldmund Clearaudio</b> £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
<b>Goldring 1012</b> £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
<b>Goldring 1022</b> £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
<b>Goldring 1042</b> £85	Good + Good	Not terribly subtle, and not such good value alongside 1012 and 1022. Quite lively, though	7-12g Normal, MM		91
<b>Goldring Elan</b> £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
<b>Goldring Epic II</b> £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
<b>Goldring Eroica</b> £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
<b>Goldring Eroica LX</b> £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
<b>Goldring Excel</b> £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
<b>Grado ZF3E + *</b> £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
<b>Grado ZTE +1</b> £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
<b>Kiseki Blackheart</b> £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
<b>Kiseki Blue Goldspot</b> £450	Very Good Good +	Good bass and imaging, but hints of spit and coloration let the side down slightly	8-15g Low, MC		84
<b>Kiseki Lapis Lazuli</b> £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
<b>Kiseki Purpleheart Sapphire</b> £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		48
<b>Koetsu Black S</b> £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
<b>Linn Asaka</b> £373	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	Coll. '86
<b>Linn K5</b> £39	Average Average +	Not as crisply focused as the costlier Linn magnetics, the K5 offers a smoother presentation	7-16g Normal, MM	R	67
<b>Linn K9</b> £89	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	Coll. '86
<b>Linn Karma</b> £564	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	Coll. '86
<b>Linn Troika</b> £798	Very Good Good +	Good all-rounder, but still some hint of unhappiness at very high levels. Good imaging and bass.	6-18g Low, MC		91
<b>London Maroon</b> £149	Average Average +	Now manufactured under the London brandname this Decca cartridge is as iconoclastic as ever	9-20g (damp) Normal, MM		67
<b>London Super Gold</b> £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



## CARTRIDGES

MODEL PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/TYPE	VALUE	ISSUE
<b>Milltek Aurora</b> £249	Good + Good +	An overall feeling of relaxed ease characterised this clear and atmospheric Kiseki-built cartridge	8-16g Normal, MC	R	Coll. '86
<b>Milltek Olympia</b> £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
<b>Nagaoka MM4</b> £9	Average - Average -	Clear punchy sound that delivers the rudiments of a good performance	6-16g Normal, MM	R	54
<b>Nagaoka MP10</b> £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
<b>Nagaoka MP11 Boron</b> £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
<b>Nagaoka MP11 Gold</b> £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
<b>Nagaoka Stilton TS10</b> £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
<b>Nagaoka Stilton TS11</b> £70	Good - Good	Differs from TS10 in having Vital stylus with better tracing but still some high frequency harshness.	5-10g Normal, MM		85
<b>Ortofon 510</b> £30	Good Good +	For the price, a good blend of virtues - weight, clarity and neutrality.	3-11g Normal, MM	BB	85
<b>Ortofon 520</b> £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
<b>Ortofon 530</b> £80	Good + Good +	Very clean and assured sound; transients not quite perfectly pure but plenty of detail.	4-11g Normal, MM	R	85
<b>Ortofon 540</b> £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
<b>Ortofon MC10 Super</b> £70	Average Good	"What a delightfully sweet-sounding cartridge this is..." we said	5-15g Low, MC	BB	48
<b>Ortofon MC20 Super</b> £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	Coll. '86
<b>Ortofon MC30 Super</b> £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		Coll. '87
<b>Ortofon MC3000 MkII</b> £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
<b>Ortofon MC5000</b> £1500	Good + Good	Review sample could not be fully run-in, which might explain limited tracking ability and bright and forward sound, though imaging is excellent. Fussy about s.	12-20g Low, MC		91
<b>Ortofon Quartz</b> £120	Good + Good	Lively, quite detailed, and a touch bright, the Quartz has many qualities of the much dearer Quasar	3-12g Low, MC	R	91
<b>Ortofon Quasar</b> £300	Very Good Very Good	Many of the qualities of the MC3000, although a touch bright. Good detail and delicacy	8-15g Low, MC	R	84
<b>RATA RP20</b> £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
<b>RATA RP40</b> £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
<b>RATA RP70</b> £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
<b>RATA RP70vdH</b> £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
<b>Rega Bias</b> £34	Average Average +	Difficult to mount in some arms due to its shallow build, the bias offers a gentle, refined SQ that certainly makes it worthy of audition	4-10g Normal, MM		67
<b>Rega Elys</b> £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
<b>Revolver</b> £20	Average + Average	This modified AT-95E enjoys a very lively mid and treble even if the bass is somewhat 'slower' in comparison. A firm budget buy	8-16g Normal, MM	BB	67
<b>Roksan Corus Black</b> £110	Good + Good	Recognisably related to Corus Blue, but distinctly more civilised and smoother.	7-12g Normal, MM	R	91
<b>Roksan Corus Blue</b> £65	Good + Good	Roksan-specified modified Goldring 1012; slight harshness detracts from otherwise good sound.	7-11g Normal, MM		91
<b>Shure M104E</b> £36	Average - Average	Capable in many ways, but giving no substantial improvement over the 92E in our view	5-15g Normal, MM		38
<b>Shure M105E</b> £49	Average Average -	A slightly 'pitty' 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 Summ
<b>Shure M110HE</b> £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 Summ
<b>Shure M111HE</b> £72	Average Average	Early reviews of this cartridge complained principally of the price - which has since come down	5-10g Normal, MM		38 Summ
<b>Shure M92E</b> £17	Average - Average	Though lacking depth, the overall sound quality was competent, but treble was not its forte	10-15g Normal, MM		43
<b>Shure M99E</b> £29	Average - Average -	Sister to the 92E this is a solid but not particularly exciting cartridge	5-10g Normal, MM		38 Summ
<b>Shure ME75ED</b> £26.50	Average Average -	Rather bright and splashy in the high frequencies but nevertheless a competent model	5-10g Normal, MM		38
<b>Shure ME97HE</b> £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
<b>Shure ML120HE</b> £95	Average + Average +	Quite decent sound quality and a generally fine balanced performance	6-18g Normal, MM		48
<b>Shure ML140HE</b> £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
<b>Shure Ultra 500</b> £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
<b>Shure V15 VMR</b> £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
<b>Shure VST V</b> £173	Very 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
<b>Stilton/AT-F3</b> £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

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MODEL PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/TYPE	VALUE	ISSUE
<b>van den Hul MC One</b> £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
<b>van den Hul MC Two</b> £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
<b>van den Hul MC1 Super</b> £800	Very 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
<b>van den Hul MC10</b> £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

## 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.

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Acoustic Research A03</b> £170	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
<b>Acoustic Research A05</b> £200	Good + Good +	Capitalises on the strengths of the A-03 and A-07 but escapes the ignominy of their deficiencies. The amp for all AR-based systems	67W, 2 tape, 3 line and both MM/MC inputs. Tone defeat	R	97
<b>Acoustic Research A07</b> £300	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
<b>Aiwa XA-005</b> £130	Good + Average -	A technically competent amp with big, friendly but not overly engrossing sound quality	61W, MM 5 line inputs, source-direct		80
<b>Aiwa XA-006</b> £130	Good Average	Competent enough performer with plenty of facilities. A gutsy sound though one that's rougher via CD than MM.	67W, MM and 5 line i/p's plus independent rec out.		92
<b>Akai AM-52</b> £230	Average + Average -	Basically equipped, this amplifier offers a comfortable but hardly over-detailed sound	95W, MM/MC disc, 5 line inputs, loudness		74
<b>Akai AM-65B</b> £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
<b>Akai AM-93</b> £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
<b>Alphason Apollo</b> £300	Average- Average+	Our early production sample was beset with a variety of niggling problems. Laid-back though not unmusical sound.	54W, 5 line, tape and MM/MC inputs. Solid wood fascia		92
<b>Amadeus Gold</b> £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
<b>Amadeus Silver</b> £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
<b>Aragon 4004</b> £1795	Good Good	Despite its imposing bulk, the Aragon is something of a sofly at heart. It can deliver oodles of power but its musical presentation is more laid-back	231W power amp		72
<b>Arcam Alpha 2</b> £195	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
<b>Arcam Delta 110/120</b> £720/£520	Good+ Good	Overall performance is limited by the power amp - in isolation the PDM-preamp offers a remarkably open and detailed sound, particularly in 'digital' mode.	112W power amp, MM/MC + 4 line inputs + coax/opt digital input.	R/-	92
<b>Arcam Delta 60</b> £300	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
<b>Arcam Delta 90.2</b> £410	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
<b>Ariston Amp</b> £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
<b>Audio Innovations Series 1000/2nd Audio Amplifier</b> £449	Poor Excellent	This valve combination offers awesome dynamic range with superb transparency and power to match. Compatibility with other brands is unpredictable	15W, MM, 6 inputs, monobloks	R	63
<b>Audio Innovations Series 200</b> £499	Poor Very 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
<b>Audio Innovations Series 300</b> £499	Poor Very Good	Something of an anomaly, the 300 is an integrated valve amp that looks awful in the lab but sounds remarkable in a system - now in mk II guise	10W, MM, 6 inputs	BB	63
<b>Audio Innovations Series 300II</b> £500	Poor Good +	Under-powered and over-distorted yet capable of realising an open and captivatingly expressive sound. Sensitive speakers are a must	9W(!) integrated valve amp with tape, 3 line and MM disc inputs	R	97
<b>Audio Innovations Series 400</b> £669	Poor Very 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'	12W, MM and 4 line inputs	R	77
<b>Audio Note Ongaku</b> £29,950	n/a Excellent	An out and out audiophile product, a single ended, zero negative feedback, triode, line level integrated amp. Probably the best amplifier in the world!	6 line inputs, 27W	R	Coll '90
<b>Audiolab 8000A</b> £410	Very Good Very Good	Recent mods have cured the slightly glassy treble, replacing it with a smoother but richer and more solid style of music making	81W, 3 tape, 4 line and both MM/MC inputs. Tone defeat	R	97
<b>Audiolab 8000A</b> £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
<b>Audiolab 8000C</b> £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

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MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Audiolab 8000C/8000P</b> £375/£545	Very Good Good	Audiolab has revamped its pre/power combo though the very distinctive almost stark neutrality that results will not appeal to all listeners. Good value engineering, nevertheless	157W pow amp + bi-wire outputs. 3 Tape, 4 line + MM/MC on preamp		97
<b>Audiolab 8000P</b> £495	Excellent Good +	A dynamic powerhouse, load tolerant and sonically reliable	100W	R	62
<b>Audion CD-1</b> £399	Average + Very 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
<b>Aura VA-40</b> £190	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
<b>Aura VA-50</b> £200	Good Very Good	Superficially similar to the cheaper VA-40 but with much more of the old MA-80's magic! Great sound from a slimline package	65W, one tape, 4 line and MM only. New tape monitor switch	BB	97
<b>Beard 506</b> £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
<b>Beard Audio CA35/P35mkII</b> £695/£895	Average + 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
<b>Beard M70</b> £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
<b>Bryston 0.5B/2B</b> £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
<b>Bryston 12B/4B</b> £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
<b>Cambridge P25</b> £180	Good+ Average	Despite clocking-up a solid set of measurements the sound of the P25 proved to be as grey as its appearance.	37W, 4 line and MM/MC inputs + tone defeat.		92
<b>Cambridge P50</b> £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
<b>Carver CM-1090</b> £495	Average Average +	Looks very professional with its meters and handles but suffers from a loose and dirty sound that shies away from busy tracks	141W, 2 tape, 4 line and MM disc. Sonic Holography feature		97
<b>Cello Audio Suite</b> £1200	Excellent 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
<b>Chord SPM-900</b> £1850	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
<b>Concordant Excelsior</b> £856	Very 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
<b>Conrad-Johnson Motif MC-8</b> £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
<b>Conrad-Johnson Premier 7A</b> £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.	MM, 4 line inputs, sep. Rec Out, versatile cartridge matching	R	Coll.'90
<b>Conrad-Johnson PV-10</b> £1100	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	MM plus 4 line inputs	R	78
<b>Creek CAS 4040s3</b> £200	Good Good	Now in mk3 guise the '4040 offers a dry but tidy sound via disc and one that's slightly leaner and better focussed on CD.	41W, 3 line and one MM disc i/p. Tone controls.	R	92
<b>Creek CAS 4140s2</b> £230	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
<b>Croft Series 4S</b> £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
<b>Croft Series 4SA</b> £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
<b>Croft Super Micro A</b> £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. Now in mk.II form	4 inputs, MM, straight line	R	57
<b>Cyclone Catalyst</b> £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
<b>Deltec DPA 100S</b> £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
<b>Deltec DSP-50S DPA-50S</b> £725/£925	Excellent Excellent	Remarkable pre/power combo based around the highly linear DH-OA32 hybrid op-amp. Unmatched detail resolution, control and transparency	63W, external feedback wiring. 3 line, MM/MC no tone controls	R	68
<b>Denon DAP-2500/POA-4400A</b> £550/£600 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
<b>Denon PMA-250II</b> £130	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
<b>Denon PMA-350</b> £160	Average+ Good	Bold claims were made at its launch but the sweet and inoffensive sound, though very pleasant, is not mould-breaking at the price.	88W, 5 line and MM disc inputs + source direct.	R	92
<b>Denon POA-6600</b> £1000 pr.	Excellent Very Good	Delivers abundant high quality sound, solid engineering expertise and content clearly compensating for any compromising of purist audiophile principles - now in revised A form	250W monoblok, remote power	R	60
<b>DNM 3A</b> 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
<b>Dual CV-5670</b> £250	Very Good Good	Magnificent build and prodigious output to its credit, the CV-5670 still fails to capture the delicacy and enthusiasm of its cheaper companion	128W, 5 line, 2 tape and MM/MC inputs + loudness and CD Direct		97
<b>Dual CV5600</b> £160	Good+ Very Good	Made by Rotel and possessing the highly articulate vocal/string quality of their best budget amps. Very communicative, especially with a good CD player.	57W, 3 line, 2 tape and one MM input. CD direct	BB	92
<b>E.A.R. 549</b> £3628 pr	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	200W monoblok, bias setting		60
<b>E.A.R. 802/509mkII</b> £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
<b>Entire Sound EX50</b> £500	Average- Average+	A new and fairly costly Mosfet power amp of limited output. Resolution of detail is pretty good but sound is cold-hearted.	40W Power amp, Internal P/S included for ES preamp.		92
<b>Exposure VI/VII*/VIII</b> £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
<b>Exposure VII/VIII</b> £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
<b>Exposure XI/XII/VIII Super</b> £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
<b>Goodmans GSA-600</b> £140	Good Poor	Designed to form the heart of a Goodmans separates system, the wishy-washy and faceless sound of this amp fails to stack up	76W, tape, 3 line and MM inputs. Remote control		97
<b>Grant G60AMS</b> £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

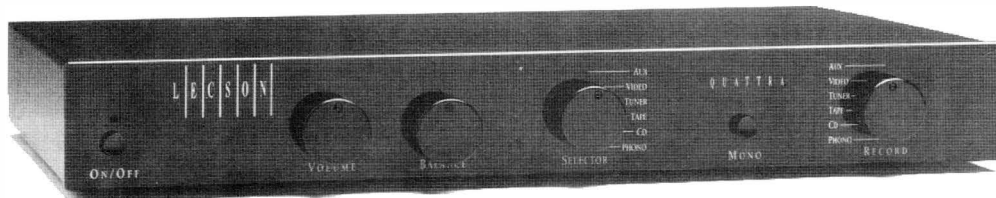
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MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Hafner DH120 assembled</b> £360	Very Good Average	Sound quality results were decent enough, but this power amp won't set the world on fire at this price	60W		44
<b>Hafner DH120 kit form</b> £295	n/a Average	Er, we didn't build one; see assembled version below	60W		44
<b>Hafner SE-100/SE-120</b> £365-375/£375	Good + Good +	The smallest of Hafner's pre/power range but still imbued with the open, sparkling quality of their bigger models. Preamp sounds significantly better via CD than MM or MC	96W, bridging option. 2 Tape, 3 line + Aux or MM/MC	R	97
<b>Hafner XL-600</b> £1145	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
<b>Harman Kardon Citation 25/22</b> £699/£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
<b>Harman Kardon HK6100</b> £170	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
<b>Harman Kardon HK6200</b> £250	Good Good	Supposedly a beefier version of the HK6100 but in practice there's little to distinguish the two amps	50W, 5 line inputs + MM, tone controls		97
<b>Harman Kardon HK6500</b> £380	Good+ Good+	The best of HK's current range. A firm sound that enjoys an impressive grip on the most complex music. Great bass!	74W, 3 line, 2 tape and MM/MC Tone controls + loudness	R	92
<b>Harman Kardon HK6600</b> £500	Good + Average +	This amp comes as a real disappointment after the HK6500. Differences in design yield a flat and uninspiring sound	87W, 2 tape, 4 line and MM/MC inputs. Tone defeat		97
<b>Harman Kardon HK6800</b> £700	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
<b>Heybrook C3/P3</b> £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
<b>Jadis JP30/JA30</b> £4145/£4200	Average 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	30W 2-box pre-, monoblok power, MM-only, 4 line inputs	R	60
<b>Jeff Rowland Coherence</b> One/Model 7	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	448W monoblok MM/MC with variable loading options. Balanced topology		R 72
<b>JVC AX-A3TN</b> £140	Very Good Good	A true minimalist amp from the masters of mass-production! Offers a very comfortable, accessible sound yet with some loss of deep bass and extreme treble.	50W, 3 line, 1 tape and MM i/p's CD DiRT and 'Bass Compensator'	R	92
<b>Kelvin Digital Integrated</b> £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
<b>Kelvin Integrated</b> £449	Good Good	Recent mods have reversed the Integrated's previous good fortune, this unit was just too syrupy.	21W with 10-12W in Class A. Four line + MM/MC		92
<b>Kelvin Labs Absolute Zero/M30</b> £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
<b>Kenwood KA-3020</b> £140	Good + Good +	An unassuming little amplifier that turns in a remarkably balanced and entertaining sound. Lively, detailed and engaging	66W, 2 tape, 3 line + MM disc. Source direct	BB	97
<b>Kenwood KA-4020</b> £170	Good + Average +	On paper this is a beefier version of the '3020 yet our listeners thought it sounded weaker, lacking richness and detail	103W, 2 tape, 3 line + MM/MC Source direct		97
<b>Kenwood KA-5020</b> £220	Very Good Good+	Something of a powerhouse on the cheap this amp can keep pace with the most challenging of dynamics. Its sound is vibrant but some fine detail is lost.	115W, 3 line, 3 tape and MM/MC. Source direct.	R	92
<b>Klyne SK5a</b> £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
<b>Lecson Quattra</b> £350	Average+ Good	Underpowered but with the flexibility of four independent power amps. Very deep, captivating sound with 3D soundstaging.	19W via all 4 channels. 5 line and MM/MC inputs.	R	92
<b>Lectron JH50</b> £2300	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
<b>Linn LK1/LK280</b> £598/£763	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		68
<b>Linx Nebula</b> £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
<b>Magnum MP150/MF150</b> £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
<b>Marantz PM-30SE</b> £180	Very Good Good+	The breathed-on version of Marantz' PM-30 offers an engagingly detailed and spacious sound though one that's warmer via MM disc than CD.	50W, 3 line, 2 tape and MM disc. Source direct	R	92
<b>Marantz PM-40SE</b> £240	Very Good Good +	The improved version of their basic PM-40 model has itself been updated to provide a bigger and more exciting sound. A good 'un	61W, tape, 3 line + MM/MC disc. Source Direct	R	97
<b>Marantz PM-50</b> £250	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

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MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Marantz PM-75</b> £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
<b>Marantz PM-80</b> £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
<b>Marantz PM-95</b> £2000	Very Good Average +	Beautifully constructed, this amp was less convincing via its digital input than via line. Class A option best suited to sensitive speakers. Costly	151W with 30W available in Class A. Opt + coax inputs		74
<b>Meridian 201/205</b> £695/£500 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 remoteR/-capable straight line		62
<b>Mission Cyrus I</b> £230	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
<b>Mission Cyrus II</b> £350	Very Good Very Good	Recently updated this popular favourite captured our attention, once again, with its robust and very convincing sound.	60W, 4 line and both MM/MC disc. No tone controls	R	92
<b>Mission Cyrus PSX</b> £250	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
<b>Musical Fidelity A1</b> £299	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
<b>Musical Fidelity A100</b> £499	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
<b>Musical Fidelity B1</b> £200	Average + Good +	The subject of much controversy, this 50W wonder offers a very deep, solid and powerful sound utterly dead by comparison.	50W, MM/MC, 5 line inputs, tape monitor	R	80
<b>Musical Fidelity B200</b> £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
<b>Musical Fidelity MA50</b> £875 pair	Good Excellent	An audiophile bargain. One of the best sounding power amplifiers made	50W, monoblok	R	62
<b>NAD 3020i</b> £150	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	BB	85
<b>NAD 3225PE</b> £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
<b>Naim Separates</b> £750 plus	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 NVA's speaker cables are a must, the amp offering well-integrated but not particularly crisp sound	40-70W, MM/MC etc	R	60
<b>NVA P70MC/A60</b> £830	Average 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
<b>Onix OA-21s/SOAP</b> £350/£180	Average + Good -	Via MM disc this amp comes alive with a fresh and vibrant sound though its CD input sounds utterly dead by comparison.	60W, 1 tape, 3 line and either MM or MC. Outboard PSU option		97
<b>Orell SA-040</b> £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
<b>Orell SA-040SE</b> £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
<b>Philips DFA-888</b> £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
<b>Philips FA-880</b> £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
<b>Philips FA890</b> £230	Good + Good -	Based on their FA880 model but tarted-up with a remote control facility. Inoffensive, civilised but unexciting sound is retained	120W, 6 line + MM/MC logic-controlled input switching		97
<b>Philips FA960 MkII</b> £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
<b>Pioneer A-300</b> £160	Very Good Good	The cheapest of Pioneer's dynamic duo gives off its best with CD rather than MM disc which failed to shine quite so brightly.	55W, 3 line, 2 tape and MM. Independent rec out facility.	R	92
<b>Pioneer A-400</b> £230	Very Good Very Good	Pioneer's design concept snaps into focus with the A-400, an amp that seems to bubble with musical detail. A bench-mark that other manufacturers should strive for.	71W, 3 line, 2 tape, MM/MC. Independent R-out switching.	BB	92
<b>Proton 520</b> £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
<b>Proton AP-1000/AA-1150</b> £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
<b>QED A240 CD II</b> £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
<b>QED A240 SA II</b> £259	Very Good Good +	Redesigned 240SA has significant improvements 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
<b>QED A270</b> £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
<b>QED A270CD/PA</b> £300/£400	Good Good +	Recent updates have bolstered the output of the A270 without adding to its colourations. The PA option is now looking a touch expensive	61W, 2 tape, 3 line + MM or MM/MC from PA board	R/-	97
<b>QED C300/P300</b> £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
<b>Quad 34</b> £366	Very Good Average	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
<b>Rational Audio</b> £175	Average- Average+	This wacky newcomer from Czechoslovakia offers a very open and fluid sound via CD but its performance via MM depends very much on the cartridge's load impedance.	129W, caters for line and MM disc sources but has no i/p selector.		92
<b>Ray Lumley Model 75</b> £1995 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
<b>Revox B150</b> £1047	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
<b>Revox B250</b> £1467	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
<b>Rose RV-23</b> £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
<b>Rotel RA-810A</b> £120	Very Good Average	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, hdp, tone controls	BB	62
<b>Rotel RA-820AX</b> £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
<b>Rotel RA-820BX4</b> £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.	R	85
<b>Rotel RA-840BX4</b> £250	Good Good +	Very sedate and controlled in presentation but check phasing for optimum stereo effect	63W, MM/MC, 4 line inputs, tone controls		80

# The Directory

## AMPLIFIERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Rotel RA-870BX</b> £300	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
<b>Rotel RC/RB-850</b> £140/£160	Very 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
<b>Rotel RC/RB-870BX</b> £220/£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 bridged CD direct, 4R line, 2 tape and MM/MC		68
<b>SAE P102/A202</b> £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
<b>Sansui AU-X111</b> £120	Good Average	Sansui has engineered an amp that's both solid and flexible for the price, but its sound is rather bland compared to competition in the £110 sector	5 line inputs, MM, 52W		92
<b>Sansui AU-X911DG</b> £700	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
<b>Sony TA-F630ESD</b> £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
<b>Sony TA-F730ES</b> £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
<b>Sugden A21a</b> £395	Average+ Good	The modern-day relative of Sugden's original Class A amp and one that offers a smooth, easy-going sound. Best partnered with sensitive speakers.	25W power amp with a good 16W in Pure Class A.		92
<b>Teac A-X400</b> £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
<b>TEAC A-X5000</b> £229	Good Average -	This amplifier is compromised by a grey and muddled sound that taxed the concentration of our listeners. Better via MM disc	107W, 3 tape, 3 line + MM/MC Source Direct		97
<b>Technics SU-810</b> £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		85
<b>Technics SU-V900</b> £511	Very Good Good+	Massively built but with a light, fresh and essentially very neutral sound. Bulk notwithstanding it's not particularly suited to life with a difficult speaker.	125W, 5 line and both MM/MC inputs. Tone controls + power amp.		92
<b>Threshold FET 10e</b> system/Stasis SA-4 £5824/£6028	n/a Very Good	Almost valve-like limpidity and excellent soundstaging are star qualities of the Threshold amps. Line input resistive loading is too low	Component FET phono stage, line pre, FET power amp 100w		Coll. '90
<b>Yamaha AX-330e</b> £100	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
<b>Yamaha AX-550</b> £240	Very Good Good	Beautifully built and offering the flexibility of remote control, the AX-550 sounds tidy and neutral yet lacks the ability to involve on an emotional level	131W, 5 line + MM/MC, Pure Direct + remote control		97
<b>YBA 1 power amp</b> £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
<b>YBA 1 preamp</b> £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
<b>YBA 2 pre &amp; pwr</b> £1395/£1695	Very Good Very Good	Superbly finished French 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
<b>YBA Model 3</b> £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.		72

## 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 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	ISSUE
<b>Acoustic Energy AE1</b> £764	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
<b>Acoustic Energy AE2</b> £916	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, free	88.5dB/w 45Hz	R	66
<b>Acoustic Energy AE3</b> £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	63 x 26.5 x 37cm low stands in free space	85dB/w 23Hz (in room)	R	86
<b>Acoustic Research AR-112</b> £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
<b>Acoustic Research AR-122</b> £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
<b>Acoustic Research AR-132</b> £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	87dB/w 50Hz		66
<b>Acoustic Research AR-152</b> £373	Good Good-	Large bookshelf size model with luxury finish has a slightly thin overall balance, but fine coherence and agility makes it well worth considering	44 x 23.5 x 28cm stand 1-2ft wall	87dB 25Hz in room		98
<b>Acoustic Research Red Box</b> £100	Average Average	Lively and balanced if a bit crude and uneven, this 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
<b>Alexander SE11</b> £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	52 x 14 x 17.5cm stands close to wall	86dB/w 25Hz (in room)	R	82
<b>Alexander SE5</b> £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	40.5 x 12 x 15cm ALS stands near wall	82dB/w 50Hz (in room)		78
<b>Allison AL100</b> £120	Average- Average	Loud and lively budget wall-mount is bigger and beefier than most of the competition, if lacking some subtlety and refinement	33.5 x 24 x 21.5cm stands against wall	87dB/W 30Hz (in room)	BB	94
<b>Allison AL105</b> £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

## LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
<b>Allison AL120</b> £429	Good Average	Cleverly engineered compact floorstander is pretty well balanced if slightly mid forward, but sound quality is a little disappointing for the price	63 x 28 x 27cm floor, clear of walls	88dB 30Hz (in room)		98
<b>Allison CD6</b> £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	88dB/w 45Hz	R	71
<b>Alphason Amphion</b> £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
<b>Alphason Artemis</b> £299	Average Average+	Pretty little miniature sounds nicely unboxy but is also a bit short of punch and balanced rather too bright.	27 x 17.5 x 22cm stands 1ft from wall	86dB/W 50Hz (in room)		94
<b>Alphason Orpheus</b> £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
<b>Apogee Caliper Signature</b> £3350	Good + Very Good	Pretty but power hungry full range panels have remarkable transparency and delicacy, though loudness and bass 'grunt' are both a bit lacking	122 x 59-70 x 6.5-28cm floor, free space	81dB/w 30Hz (in room)	R	81
<b>Arcam Alpha</b> £200	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	46 x 26.5 x 26cm stands close to wall	89dB/w 30Hz (in room)	BB	82
<b>Arcam Delta Two</b> £340	Average+ Good	Pretty luxury compact sounds a shade forward and coloured but has dynamic and lively bass for its size	37.5 x 22.5 x 27.5cm stands 1-2ft from wall	87dB/W 40Hz (in room)	R	94
<b>Ariston Image</b> £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
<b>Ariston Q</b> £395	Average + Average	The prettily shaped Q delivers a good impression of scale from a small box, but a rather laid back, ponderous and over-rich overall sound	35 x 16.5-25 x 20-27cm high stands in free	85dB/w 30Hz (in room)		86
<b>ATC SCM20</b> £1320	Very Good Good +	Massively built to no-compromise Pro monitoring standards, the SCM20 is invariably informative but the rather forward presentation can be uncomfortable	44 x 24 x 31cm stands close to rear wall	82dB/w 28Hz (in room)		86
<b>Audio Electronics TC10 II</b> £599	Good - Good +	Oddball appearance is rescued by a respectable technical performance, interesting and impressive engineering and fine sound quality	70 x 33.5 x 33.5cm low stands in free space	87.5dB/w 40Hz	R	68
<b>Audioplan Kontrapunkt</b> £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 free space, matching stands	83dB/w 48Hz (in room)	R	86
<b>B&amp;W 620</b> £299	Good Good	Good value floorstander has well balanced, laid back and slightly lazy sound that is pleasantly easy on the ears; could do with its own spikes	74 x 23.5 x 30cm floor, free space	89dB/W 25Hz (in room)	BB	94
<b>B&amp;W CM1</b> £400	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>B&amp;W DM550</b> £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>B&amp;W DM560</b> £199	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>B&amp;W DM600</b> £150	Good+ Average+	Attractive hi-tech appearance and clever engineering makes for an impressively smooth overall balance, but sound is a touch bland with it	35 x 20.5 x 25cm stands 1-2ft from wall	85dB 30Hz (in room)	R	98
<b>B&amp;W Matrix 801</b> £3295	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 imaging	77/99 x 56 x 43cm floor or stands, free	86dB/w <20Hz (in room)	R	81
<b>B&amp;W Matrix 805</b> £915	Very Good Good	A genuine compact monitor, stylish, with remarkable imaging properties, good balance and low coloration, though less successful at communicating musical	42(max) x 26 x 22.5cm Slate stands in free	87dB 30Hz (in room)		98
<b>B&amp;W Vision DS1</b> £120	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
<b>B&amp;W Vision DS2</b> £180	Average Average -	Although the box is generous for the price, the DS2 is a rather uneven performer, both on the measurement and listening.	50 x 24 x 25cm stands in free space	89dB/w 43Hz (in room)		86
<b>Bose 305</b> £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
<b>Bose 901 MK6</b> £1600	Good Average	Still controversial after all these years, the pre-equalised multi-driver 901 is cleverly engineered to deliver exceptional loudness.	33 x 54 x 32cm rigid stands in free space	(92dB/w midband) 28Hz (in room)		86
<b>Bose Interaudio 3000XL</b> £150	Average Average -	Lots of perceived value and well enough balanced, but low cost cabinet and driver engineering results in a crude and unsubtle sound	46.5 x 29 x 23cm stands in free space	89dB/w 45Hz		71
<b>Boston A120</b> £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 bass	62.5 x 31.5 x 25cm stands in free space	89dB/w 48Hz	R	86
<b>Boston A40II</b> £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
<b>Boston Acoustics T830</b> £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	87dB/w 30Hz (in room)	R	82
<b>Cambridge SoundWorks Ambiance</b> £179 (mail order only)	Average Poor	Attractively styled sub-miniature sacrifices sensitivity in the interests of bass extension, but manages to lose dynamics along the way too	28 x 18 x 14cm close to wall	83dB/W 45Hz (in room)		94
<b>Castle Chester</b> £599	Good Very Good	A brilliant throwback, using horn-type approach to provide startling midrange dynamics and coherence.	94 x 23 x 27cm floor, experiment	87dB 45Hz	BB	98
<b>Castle Durham</b> £259	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
<b>Castle Pembroke</b> £379	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
<b>Castle Warwick</b> £229	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	88dB/w 50Hz		66
<b>Castle Winchester</b> £1400	Very Good Very Good	This unconventional and beautifully crafted model is physically large for its bass extension but is engagingly agile and sounds attractively open and airy	114 x 24 x 47cm in free space	87dB/w 25Hz	R	90
<b>Celef CF2 Nimbus</b> £230	Good - Good -	Nicely balanced overall but a little uneven with it, this lively and dynamic largebookshelf model came close recommendation	46 x 25.5 x 24cm stands in free space	88dB/w 55Hz		71
<b>Celef Cirrus</b> £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
<b>Celestion 3</b> £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
<b>Celestion 5</b> £149	Good Average	Cunningly conceived and balanced, the 5 may be a little slow for some tastes, but is well suited to CD-oriented budget systems	35 x 20.5 x 26cm heavy stands close to wall	89dB/w 30Hz		90
<b>Celestion 6000</b> £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
<b>Celestion 7</b> £200	Average Average+	Good value, good looking large bookshelf size wall-mount has lively up front presentation. Can sound a bit coarse and stand selection is critical.	45 x 24.5 x 32cm heavy stands close to wall	87dB 30Hz (in room)	R	98
<b>Celestion DL6 Series II</b> £179	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
<b>Celestion DL8 Series II</b> £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

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## LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
<b>Celestion SL12Si</b> £599	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	85dB/w 50Hz		66
<b>Celestion SL600Si</b> £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 free air on tall stands	82dB/w 52Hz		68
<b>Celestion SL6Si</b> £399	Average+ Average+	This stereotype luxury compact can sound a bit dull and congested, but really opens up on Slate Audio stands; favours CD	37.5 x 20 x 25cm stands 1-2ft from wall	86dB/W 30Hz (in room)		94
<b>Creek CLS20</b> £200	Good Average -	Looks good material value, but sound is distinctly over-rich and thick in the mid-bass region; maybe the box is a little too large.	49 x 24.5 x 24cm open frame stands, free	88dB/W 30Hz		90
<b>Dahlquist DQ8</b> £850	Good Good	Large floorstander uses out-of-box tweeter to give delightfully out-of-box presence and treble; bass is much less impressive	100.5 x 36 x 28cm floor, free space	88dB/W 30Hz (in room)	R	94
<b>Dali 700</b> £600	Very Good Average	Good material value and fine bass extension for size and price, but overall sound is disappointing, perhaps due to complexity of driver array	110 x 28 x 35cm clear of walls	88dB/w 20Hz		90
<b>DCM Timeframe TF250</b> £350	Average + Average	Neat and unusual floorstanding presentation, marred by indifferent build and cuddly but rather coloured sound, especially on spoken word	86 x 32 x 16cm close to rear wall	88dB/w 45Hz		90
<b>Doxa 5 - 2</b> £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
<b>Duntech PCL1000 Crown Prince</b> £6120	n/a Excellent	Immensely 'listenable', refined sounding speaker capable of creating lifesize musical images. Not overly transparent to source, but very civilised	180 x 30.5 x 43.5 free standing away from	90dB/w 42Hz	R	72
<b>Duntech PCL500 Marquis</b> £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 40cm free standing away from	92dB/w 48Hz	R	65
<b>Eitax Linear Response 8</b> £399	Average- Average+	Good material value Danish floorstander suffers from 'loudness contour' balance due to twin main drivers, but nevertheless has pleasing coherence	97 x 21 x 33cm floor, free space	88dB 22Hz		98
<b>Epos ES11</b> £300	Good Good+	Pretty luxury compact uses integral baffle/driver to give a remarkable combination of low coloration, transparency and speed; bass is a bit shy	37.5 x 20 x 25cm stands 1ft from wall	86dB/W 45dB (in room)	BB	94
<b>Epos ES14</b> £449	Good Very Good	Substantial stand mount model delivers delightful midrange focus and delicacy with good bass control. Tends to be system sensitive	49 x 22.5 x 29cm own stands 1-2ft from wall	85dB 25Hz (in room)	R	98
<b>Equation 0</b> £1290	Average + Very Good	Expensive but most attractive floorstanding miniature. Bass is limited and mid tends to shout but sound is fast and lively with fine dynamics and timing	85 x 20 x 35.5cm floor, c1ft from wall	85dB/w 45Hz	R	90
<b>Faraday Siren</b> £330 (direct sale)	Average- Average-	Interesting if ugly high mass concrete cabinet is let down by imbalance of ageing driver combination	46 x 27 x 27cm stands, free space	87dB/W 48Hz (in room)		94
<b>Goodmans B-Max/Maxim 2</b> £100/£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
<b>Goodmans HIM 440</b> £350	Good Average -	Amazing perceived value, sensitivity and good bass extension, marred by serious cabinet coloration, a nasty tweeter and a difficult amplifier load	87 x 38 x 40cm low stands clear of walls	94dB/w 24Hz		90
<b>Goodmans M100</b> £80	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
<b>Goodmans M300</b> £100	Average Average -	Conveying much of the charm and life which has made the Maxim 2 so popular, the M300 is sensitive, but hampered by upper bass cabinet coloration	38.5 x 21.5 x 17cm stands close to rear	89dB/w 50Hz (in room)	R	82
<b>Goodmans M500</b> £130	Average Average-	Large 'bookshelf' size means plenty of speaker for the money plus good sensitivity, let down by unruly mid/bass performance and indifferent build	47 x 24.5 x 21.5cm stands, free space	89dB/W 50Hz (in room)		94
<b>Goodmans Maxim 2</b> £90	Average + Average	More wham-bam-thank-you-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
<b>Harbeth HL Compact</b> From £539	Very Good Average	The clean and neutral sound lacks resolution and gives rather unobtrusive though well differentiated stereo. Can be bi-wired to advantage	52 x 27.2 x 28.1cm open space, on high	87.5dB/w 65Hz		59
<b>Harbeth LS3/5A</b> £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
<b>Heco Interior 120</b> £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
<b>Heco Interior 430</b> £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
<b>Heco Interior 90</b> £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
<b>Heco Interior Plus 404</b> £400	Average+ Average+	Odd shape and size; twin main driver arrangement creates a slight 'boom'n'tizz' effect, but mid focuses well and bass extension is impressive	58 x 26 x 31cm low stands free space	88dB/W 25Hz (in room)		94
<b>Heco Superior 740</b> £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
<b>Heco Superior 940</b> £999	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
<b>Heybrook HB1 S3</b> £250	Average+ Good	Latest version of long established favourite delivers good liveliness and fine coherence for the price, even though the shape looks a bit dated	47 x 29 x 24cm HBS1 stands close(ish) to	88dB 30Hz (in room)	BB	98
<b>Heybrook HB100</b> £279	Average + Good	Well matched for wall siting, 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
<b>Heybrook HB150</b> £369	Average Good	Convincingly communicative but a bit coloured 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	89dB/w 42Hz (in room)		82
<b>Heybrook HB200</b> £429	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
<b>Heybrook Point 5 S2</b> £179	Good Good	Lively, revealing and enjoyable wall-mount can sound unruly with multi-strand but comes dramatically into focus with solid core cable.	37.5 x 23 x 24.5cm HBS1s against wall	85dB/W 28Hz (in room)	BB	94
<b>Heybrook Point 7</b> £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	85dB/w 60Hz		68
<b>Heybrook Solo</b> £159	Average + Average +	Discreetly styled wallmount sounds a little untidy in both bass and treble but handles complex rhythmic material much better than most	36 x 23 x 22cm HBS1 stands close to wall	87dB/w 28Hz	R	90
<b>Infinity Kappa 6</b> £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
<b>Infinity Kappa 8</b> £1850	n/a Very 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	89dB/w 33Hz		72
<b>Infinity Modulus</b> £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
<b>Infinity Reference 10</b> £149	Average Average	Follows the Infinity tradition in providing an engaging and lively sound from a prettily finished and substantial small bookshelf size model	36 x 23 x 23cm stands in free space	87dB 50Hz (in room)	R	98
<b>Infinity Reference 50</b> £499	Average Average-	Despite hi-tech drivers, attractive presentation, good bass extension and sensitivity, this three-way floorstander suffers from a forward, coloured sound	86 x 26.5 x 25cm floor in free space	89dB 25Hz (in room)		98



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MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
<b>Infinity RS2001</b> £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
<b>Jamo Concert II</b> £250	Good Average -	A thoroughly respectable 'bookshelf' performer that needs free space siting but includes attractive cabinetwork and a neat grille	41 x 24 x 25cm stands in free space	85dB/w 48Hz		66
<b>Jamo Concert VII</b> £650	Average+ Average	Beautifully built large floorstander uses unusual double reflex bass system, unsuccessfully as far as low frequency resolution is concerned	96 x 28 x 31.5cm floor, free standing	87dB/W 25Hz (in room)		94
<b>Jamo Cornet 40</b> £100	Average- Average	Pretty little Danish-built miniature with respectable rather than exceptional sound quality for the price	32 x 20 x 22cm stands 1-2ft from wall	86dB 48Hz (in room)		98
<b>JBL Control 1 Plus</b> £229	Average Average	Sub-miniature with forward midrange and no real bass; highish price partly justified by cute, near-indestructible Pro styling and build	23 x 15.5 x 14cm close to rear wall	89dB/w 50Hz		90
<b>JBL L20T3</b> £249	Average- Average-	Compact bookshelf model delivers bouncy miniature-type sound when free space mounted; pleasant enough but uneven and undistinguished	39 x 23 x 20.5cm stands free space	87dB/W 48Hz (in room)		94
<b>JBL LX33</b> £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	80 x 25 x 21cm floor, 1ft from wall	89dB/w 48Hz	R	82
<b>JBL LX44</b> £339	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
<b>JBL TLX12</b> £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
<b>JBL XE2</b> £149	Average- Average-	Budget Danish-built 'bookshelf' model has anomalous 'laid back' balance and lacks the genuine JBL spirit	38 x 23 x 23cm stands in free space	88dB 48Hz (in room)		98
<b>JBL XPL 90</b> £699	Good Average +	Though undoubtedly pretty and very expensively engineered, this elaborate near-miniature didn't really convince our listeners.	39.5 x 24 x 24cm stands in free space	85dB/w 45Hz (in room)		86
<b>JPW AP2</b> £175	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	89dB/w 65Hz	R	53
<b>JPW AP3</b> £225	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
<b>JPW Minim</b> £85	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
<b>JPW P1</b> £145	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
<b>JPW Sonata</b> £115	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
<b>JPW Sonata Plus</b> £135	Average Average -	This luxury variation on the redoubtable Sonata theme features a metal dome tweeter, and is not the better for it	32 x 23 x 21cm about 1ft from wall	87dB/w 30Hz		90
<b>JRT AD1</b> £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	59.5 x 28 x 36cm own stands close to rear	86dB/w 28Hz (in room)	R	86
<b>JRT AD1 Micro</b> £389	Average Good	Beautiful bijou miniature has delightful life and coherence and gives surprising impression of scale; some aggressive tendencies but very open to system tuning	28 x 17 x 21cm stands against wall	87dB/W 50Hz (in room)	R	94
<b>Kammerzelt Reference Mini</b> Monitor £545	Average+ Good	Lovely miniature has a beguilingly sweet sound with good pace and drive, but scale is restricted and presence a little dulled considering the high price	stands 1-2ft from wall 85dB/W	50Hz (in room)		94
<b>KEF 104/2</b> £1,295	Very Good Very Good	A reference point for dynamics, preferred without KUBE, suited to many rooms. Good stereo, high sound level	90 x 28 x 41.5cm floor standing in free space	92dB/w 50Hz	R	60
<b>KEF C15</b> £129	Good Average	One of the tiniest around delivers a surprisingly 'big' and well balanced sound, with excellent stereo from free space siting	26.5 x 18 x 14cm stands in free space	85dB/w 60Hz	R	71
<b>KEF C25</b> £159	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
<b>KEF C45</b> £239	Good Average -	Conventional and competitively priced, C45 delivers an impressively consistent and competent sound. As one listener commented: "Offensively inoffensive"	47.5 x 28 x 24cm uncritical	87dB/w 30Hz (in room)		86
<b>KEF C55</b> £269	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
<b>KEF C75</b> £429	Good Good	Compact floorstanding model's Uni-Q driver provides fine crossover integration, giving stable stereo and fine dynamic range within a slightly rich tonal balance	72 x 24.5 x 25.5cm floor in free space	90dB/w 45Hz	R	71
<b>KEF C85</b> £599	Good Good	Essentially a simplified vinyl finish version of C95, the 85 delivers a similarly coherent, neutral, rich and slightly lazy sound	88 x 25 x 22cm well clear of walls	89dB/w 27Hz	R	90
<b>KEF C95</b> £699	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
<b>Lindley New Age</b> £1100	Average - Average +	Attractively different presentation with classy finish, this tall cylindrical floorstander has fine bass extension but a rather uneven overall balance	105 x 23 x 23cm clear of walls	86dB/w 25Hz		90
<b>Linn Index II/KuStone</b> £235/£109	Good Good	Combination of stand and speaker looks and sounds very good for the price, with good bass extension and control, fine dynamic range. Clean, clear if a shade slow	44 x 21 x 23.5cm (box only) close to rear	86dB/w 28Hz	BB	90
<b>Linn Kaber LS500</b> £1098	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
<b>Linn Kan II</b> £439	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	82dB/w 35Hz (in room)		78
<b>Linn Nexus LS250</b> £458	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	89dB/w 60Hz		59
<b>Magneplanar MG1.4</b> £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 57cm open space	88dB/w 40Hz	R	72
<b>Magneplanar MG2.5R</b> £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
<b>Magneplanar MG11la</b> £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
<b>Magneplanar SMGa</b> £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
<b>Marantz LD-50DMS</b> £230	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	106 x 22 x 32cm floor, free space	88dB/w 30Hz (in room)	R	71
<b>Martin Logan CLS II</b> £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
<b>Meridian Argent 1</b> £1,200	Good+ Good+	Beautifully built, finished and shaped but pricey compact has fine bass extension and virtual absence of 'boxiness'; needs a big amplifier	33 x 27(max) x 27(max)cm Slate stands	83dB 28Hz (in room)		98
<b>Meridian Argent 2</b> £995	Good+ Good	This beautiful but pricey high-tech 'large compact' delivers an extended, smooth and neutral sound with fair speed. Slate Audio stands are almost essential	48.5 x 21 x 29.5cm stands free space	85dB/W 23Hz (in room)		94
<b>Meridian M30</b> £895	Average + Average	Pricey 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

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■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ SIZE ■ PLACEMENT	■ SENSITIVITY ■ BASS FROM	■ VALUE	■ ISSUE
<b>Mission 760</b> £100	Good Average +	Smart presentation and an engaging sound, this sensitive budget miniature sounds notably more lively and less boxy than most of its peers	29 x 18 x 20cm stands close to wall	88dB/w 50Hz	BB	90
<b>Mission 761</b> £140	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
<b>Mission 762</b> £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
<b>Mission 763</b> £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/w 40Hz	BB	68
<b>Mission 764i</b> £480	Good Average	Despite improvements, this large floorstander still lacks low frequency authority, which is probably a function of its comparatively modest price	1ft from wall, freestanding 87dB/W	below 20Hz		94
<b>Mission 767</b> £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 <20Hz (in room)	R	81
<b>Mission Cyrus 780</b> £180	Good Average +	Pricely but very pretty miniature based on Mission 760 but with beefed up box and crossover network to enhance sound quality still further	29 x 18 x 26cm light stands close to wall	88dB/w 50Hz	R	90
<b>Mission Cyrus 781</b> £250	Average + Good	Properly run in, the pretty little 781 delivers a fast, dynamic and informative sound which more than justifies its price.	43 x 22.5 x 28cm matching stands 1ft	88dB/w 28Hz (in room)	R	86
<b>Mission Cyrus 782</b> £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
<b>Monitor Audio MA1200</b> £900	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
<b>Monitor Audio MA1800</b> £1400	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
<b>Monitor Audio Monitor 11</b> £330	Average Good	This tall and slim and attractive free space compact has an extra driver to help out in the bass, giving extra urge at some price in delicacy	52 x 20 x 24cm stands free space	87dB/W 48Hz (in room)	R	94
<b>Monitor Audio Monitor 14</b> £400	Average Average	Floorstanding version of M11 suffers from excess upper bass, giving a thick, chesty coloration beneath a quite lively and well focused mid and treble	78 x 20 x 24cm floor well clear of walls	86dB 30Hz (in room)		98
<b>Monitor Audio Monitor 7</b> £180	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
<b>Monitor Audio Monitor 9</b> £220	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	85dB/w 30Hz		78
<b>Monitor Audio Studio 10</b> £1200	Average Average +	Expensive, luxury build/finish and all-metal driver diaphragms provide engagingly transparent midrange and treble, spoilt by over-strong mid-bass.	40 x 20 x 25cm heavy stands clear of walls	87dB/w 45Hz		90
<b>Monitor Audio Studio 5</b> £500	Average+ Average+	All metal diaphragm luxury miniature has splendid presence coherence but sound can be aggressive and lacks welly.	32 x 18 x 20cm stands close to wall	83dB 28Hz (in room)		98
<b>Mordaunt-Short MS 3.10</b> £110	Average Average +	Probably the liveliest and most communicative miniature around, this beautifully presented design is probably better suited to budget 'real hi-fi'	28.5 x 17.5 x 20cm	88.5dB/w 48Hz	BB	78
<b>Mordaunt-Short MS 3.20</b> £140	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
<b>Mordaunt-Short MS 3.30</b> £200	Average Average +	A little too mid-forward for neutrality or formal recommendation, this attractive, good-sized model nevertheless has more than enough appealing	46 x 23.5 x 27cm high stands 1-2ft from wall	87dB/w 38Hz (in room)		78
<b>Mordaunt-Short MS 3.40</b> £260	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	57 x 23.5 x 27.5cm stands in free space	87dB/w 30Hz (in room)		86
<b>NAD 8100</b> £269	Average+ Average+	Floorstanding variation on attractive 8225 miniature adds some half convincing extra bass thump and saves the price of stands - very cost effective	75 x 20 x 25cm floor clear of walls	88dB 25Hz (in room)	R	98
<b>NAD 8225</b> £150	Good Average +	Notwithstanding lacklustre styling and an unprepossessing appearance, this NAD miniature has a smooth and even midband plus an appealing overall jauntiness.	34 x 20 x 18cm stands close to wall	87dB/w 45Hz (in room)	R	86
<b>Naim NA IBL</b> £798	Average+ Good	This tiny and elaborately engineered floorstanding wall mount delivers outstanding dynamics, speed and detail, marred by pronounced upper mid forwardness	wall, freestanding 84dB/W	30Hz (in room)	94	
<b>NVA Cube 1</b> £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
<b>NVA Cube 2</b> £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
<b>NVA Cubix</b> £1100	Average Good	Too idiosyncratic for formal recommendation, the Cubix possesses remarkable bass extension for its size, but is tricky to optimise	60 x 32.5 x 32.5cm	84dB/w 28Hz (in room)		78
<b>Opus 3 Capella</b> £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	86.5dB/w 45Hz		66
<b>Opus 3 Credo</b> £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
<b>Pearl &amp; Oakley Victoria 200</b> £1099	Average - Average -	Extraordinary – and to many very attractive – 'ginger jar' presentation in Staffordshire ceramics, but let down by need for further acoustic development	93 x 33 x 33cm on floor in free space	87dB/w 30Hz (in room)		78
<b>Philips FB815</b> £250	Average Average	An impressively – indeed imposing – physical package for the price, clever engineering gives a very competent if slightly hard and brittle sound quality	63 x 27 x 27cm low stands in free space	85dB/w 30Hz		86
<b>Philips FB820</b> £450	Good Average	Big-but-less-than-beautiful three-way is well enough balanced but lacks communication skills in the time domain	86 x 27 x 35cm floor clear of walls	87dB 28Hz (in room)		98
<b>Philips FB825</b> £650	Good Good	Generous sounding and impressively uncongested for the type, loudness and bass extension don't quite match the large and rather plastic box	110 x 29 x 41cm on cones clear of walls	88dB/w 25Hz	R	90
<b>QLN Model One</b> £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	85dB/w 28Hz (in room)		82
<b>QLN Signature</b> £1100	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
<b>Quad ESL-63</b> £2072	Good + Very 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	84dB/w 34Hz	R	60
<b>RAM Hermes</b> £425	Average- Average+	Slim small floorstander is a bit tall for its footprint. Good sensitivity is combined with an attractively lively sound, but it's uneven and not truly coherent	70 x 21.5 x 23cm floor, freestanding	91dB/w 45Hz (in room)		94
<b>Richard Allan CD5</b> £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
<b>Rogers LS2a</b> £193	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
<b>Rogers LS4a</b> £255	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
<b>Rogers LS6a</b> £316	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
<b>Rogers LS7t</b> £449	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

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## LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY	VALUE	ISSUE
<b>Rogers Studio 1a</b> £612	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
<b>Roksan Darius</b> £1569 (£389 integral stand)	Good Very Good	Now totally realigned, the current Darius provides an exceptionally impressive combination of transparency and delicacy with fine information retrieval and speed	47 x 27 x 40cm own stands angled in space	82dB/w 20Hz	R	86
<b>Royd A14 II</b> £199	Average Good	Not the smoothest or prettiest around, this is still an informative if sometimes aggressive large bookshelf model, with plenty of welly for the price	40 x 26 x 23cm stands 1ft from wall	87dB/W 30Hz (in room)	R	94
<b>Royd A7 Series 11</b> £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	86dB/w 75Hz	R	53
<b>Royd Apex</b> £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
<b>Royd Eden</b> £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 wall	87dB/w 85Hz	R	66
<b>Royd Sapphire</b> £200	Average+ Good-	Neat little miniature sounds a touch cold and thin but unusual main driver delivers remarkable speed and coherence for such a reasonably priced model	30.5 x 20.5 x 21cm frame stands 1ft from	88dB 28Hz (in room)	R	98
<b>Royd Sintra</b> £330	Average + Good	Balance is bass light and a little bright, but superb dynamics, speed and timing make this luxury miniature musically very informative and satisfying	30.5 x 20.5 x 19cm stands close to wall	88dB/w 50Hz	R	90
<b>Ruark Swordsman</b> £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	R	71
<b>Ruark Swordsman Plus</b> £269	Good Average	This real wood variation on the established Swordsman theme looks and measures rather better than it sounds, probably due to rather prosaic drivers	38 x 20 x 28cm stands 1-2ft from wall	84dB 27Hz (in room)	R	98
<b>Ruark Talisman</b> £629	Average Good	Clever and beautifully finished compact floorstander has some coloration but is impressively informative and communicative, with fine pace and timing	83.5 x 21.5 x 31 (max) cm close to rear wall	86dB/w 30Hz	R	90
<b>SD Acoustics OBS</b> £845	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	92dB/w 30Hz (in room)	R	82
<b>SD Acoustics Ribbon</b> £2150	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	91dB/w 30Hz (in room)	R	81
<b>SD Acoustics SD1</b> £1350	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
<b>SD Acoustics SD3</b> £379	Average Good	Neither cheap nor perfect, this near miniature sounds unusually lively and dynamic within inevitable physical constraints. Both engaging and entertaining!	38 x 19 x 29cm stands 10cm from wall	83dB/w	R	86
<b>Seventh Veil System IV</b> £1290 (£340 integral stand)	Average Good +	Lacks welly and loudness but delivers astonishing results with female vocals in particular. Antithesis of the 'good allrounder'	72 x 44 x 21 x 29cm own-stands close to	84dB/w 28Hz (in room)	R	86
<b>Shan Shinna</b> £315	Average+ Good-	Pretty little miniature with resin-based enclosure has a bright, thin but sweet and communicative sound; loudness and welly are both limited	31 x 21 x 17cm own stands 1ft from wall	84dB 48Hz (in room)	R	98
<b>Snell Type C</b> £2350	n/a Very Good	Pricy, yes, but an extremely capable loudspeaker. Musical and transparent; excellent bass extension which improves with the addition of a Pirate plinth	112 x 38 x 33cm free standing, free space	90dB/w 35Hz	R	65
<b>Sony APM-101ES</b> £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 23.5cm stands, free space	86dB/w 52Hz	R	71
<b>Sony APM-121ES</b> £150	Average Average -	Good perceived high tech value, but the balance has an artificial 'loudness' character, too rich in the bass and too strong in the treble	43 x 25 x 28cm stands, free space	86dB/w 25Hz (in room)	R	86
<b>Sony APM-141ES</b> £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 stands in plenty of	88dB/w 30Hz (in room)	R	78
<b>Sony APM-181ES</b> £300	Very Good Average	Big and beefy but equally fat and bass heavy, this well engineered 3-way has notable strengths but lacks transparency and sounds better at lower levels	57.5 x 29 x 36cm low stands, free space	87dB/w 40Hz	R	71
<b>Sony APM-66ES</b> £700	Average + Average +	Powerful heavyweight sound with a brilliant midband - clear articulate and transparent. But bass is on the boomy side and the treble can sound grainy	66 x 38 x 36.5cm low stands, free space	89dB/w 60Hz	R	59
<b>Spendor SP1</b> £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, free space	87dB/w 41Hz	R	60
<b>Spendor SP2/2*</b> £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 stands, free space	87dB/w 45Hz	R	59
<b>Spica Angelus</b> £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	R	60
<b>Spica TC50</b> £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	R	71
<b>Spica TC50SE</b> £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	R	71
<b>Studio Power DMS100</b> £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
<b>Tannoy DC1000</b> £210	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	R	71
<b>Tannoy DC2000</b> £340	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
<b>Tannoy DC3000</b> £670	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.	94 x 26 x 31cm Floor 1ft+ from wall	94dB/w 30Hz (in room)	R	78
<b>Tannoy E11</b> £140	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)	R	82
<b>Tannoy J95</b> £520	Good Good	Substantial cabinet engineering explains the unusually authoritative bass delivered by this big, good value floorstander, though the upper range is a bit dull and shut in	93 x 26 x 32cm floor, freestanding	90dB/W 30Hz (in room)	R	94
<b>Tannoy M15</b> £190	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	88dB/w 40Hz (in room)	R	78
<b>Tannoy M20</b> £260	Good Good	Alongside fine build and presentation, the M20 provides an unusually clever combination of the 'traditional' virtues of transparency and low coloration	50 x 25 x 22cm stands in free space	87dB/w 25Hz (in room)	R	86
<b>Tannoy Westminster</b> £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	96dB/w (manuf.)	R	Coll '87
<b>TDL Monitor</b> £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	85dB/w 28Hz	R	66
<b>TDL Studio 0.5</b> £399	Average Good	This tiny floorstanding transmission line has good agility but doesn't provide the coherence or even balance of the slightly bigger Studio 1	55 x 20 x 30cm own stand, free space	85dB/W 40Hz (in room)	R	94
<b>TDL Studio 1</b> £599	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	84dB/w 25Hz (in room)	R	78
<b>Technics SB-CS5</b> £70	Average Average	Clearly fine material value for money, the CS5 nevertheless betrays its midi 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	R	86
<b>Technics SB-EX2</b> £179	Average- Average	Nicely presented, well built and decent size enclosure sounds solid but somewhat dull, thanks presumably to rather ordinary, low cost drivers	48 x 23.5 x 27cm stands clear of walls	86dB 20Hz (in room)	R	98

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## LOUDSPEAKERS

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ SIZE ■ PLACEMENT	■ SENSITIVITY	■ VALUE	■ ISSUE
<b>Technics SB-RX50</b> £600	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
<b>Technics SBC 250</b> £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
<b>Toshiba SS33-M</b> £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	40 x 26 x 21.5cm stands in free space	86dB/w 55Hz	BB	68
<b>Townshend Glastonbury IIS*</b> £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	91.5 x 28 x 4.6 free standing in room	88dB 27Hz	R	65
<b>Townshend Glastonbury Tor</b> £1495	Average - Very Good	Prodigious bass extension, stunning stereo focus and low cabinet coloration, but limited loudness from low sensitivity and power handling	99 x 26.5 x 33cm well clear of walls	82dB/w below 20Hz	R	90
<b>Vandersteen Model One</b> £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	100 x 30.7 x 25.6cm floor clear of walls	87dB/w 23Hz (in room)		86
<b>Vecteur Premiere</b> £695	Average Good	Expensive for its material content, this pretty French compact nevertheless has a beguiling sound quality that indicates painstaking development	34 x 19.5 x 25cm light stands clear of walls	88dB 48Hz (in room)		98
<b>Videotone Minimax 2</b> £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 90Hz	R	74
<b>Visonik David 6001</b> £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
<b>Wharfedale 410</b> £130	Good Average-	One step up from the Diamond, this attractive and sensitive small bookshelf model sounds smoother but is also rather bland and uninvolved	34.5 x 22 x 22.5cm stand against wall	89dB/W 45Hz (in room)		94
<b>Wharfedale 505.2M</b> £260	Average+ Good-	Luxury red mahogany finish version of 505.2, confirms that this well balanced design remains fully competitive nearly three years after the original	44 x 25.5 x 25.5cm stands in free space	87dB 45Hz (in room)	R	98
<b>Wharfedale 505/2</b> £190	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
<b>Wharfedale Coleridge</b> £499	Average Good	Compact, beautifully finished and extravagantly engineered box sacrifices bass extension in the cause of high midband sensitivity; communicative	48 x 26 x 26.5cm stands 1ft from wall	91 dB/w 48Hz (in room)	R	82
<b>Wharfedale Delta 30.2</b> £100	Average- Average	This hundred pounder has a bigger main driver than many of its rivals, and so packs a bit more welly and loudness. Coloration is rather obvious, but timing is good	38 x 22 x 17cm stands close to wall	88dB 48Hz (in room)	BB	98
<b>Wharfedale Diamond IV</b> £109	Good Average +	Thanks to a new metal dome tweeter, the new Diamond is much more civilised than its predecessors, with an attractive lively bounce but some boxiness	27 x 18 x 18.5cm stands close to wall	86dB/w 48Hz	R	90
<b>Yamaha NS 1000M</b> £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

## 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

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ FEATURES	■ VALUE	■ ISSUE
<b>Acoustic Research RD-06</b> £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
<b>Aiwa AD-F270</b> £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
<b>Aiwa AD-F370</b> £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
<b>Aiwa AD-F500</b> £150	Average Good	Noise levels are a little higher than usual, but sound quality is otherwise very good - open, explicit and very neutral tonally.	Dolby B/C/HX Pro, cue/review, fine bias, record sensitivity adjust	R	93
<b>Aiwa AD-F700</b> £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
<b>Aiwa AD-F800</b> £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
<b>Aiwa AD-R470</b> £150	Average Good	For once, an auto-reverse deck with the performance of a decent uni-directional one at a similar price. The Aiwa is modern in concept, and has good, transparent electronics	Dolby B/C/HX Pro, auto reverse, cue & review, bias adjust	BB	69
<b>Aiwa AD-WX616</b> £150	Poor Poor	Sonically sub-standard twin transport deck which has sensible range of well implemented features, yet which sounds compressed and uneven.	Twin full logic, 1 records, Dolby B/C track search		93
<b>Aiwa AD-WX777</b> £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
<b>Aiwa AD-WX888</b> £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
<b>Aiwa AD-WX909</b> £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
<b>Aiwa XK-007 Excelia</b> £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
<b>Aiwa XK-009 Excelia</b> £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
<b>Aikai GX-32</b> £170	Average Poor	Constrained and smeared sum up 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

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## CASSETTE DECKS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Akai GX-52</b> £250	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
<b>Akai GX-65</b> £300	Average	Fine un gimmicky 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
<b>Akai GX-95</b> £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
<b>Denon DRM 700A</b> £150	Very Good	Simple but adequate features, lacks only timer standby. Musically this deck equals the best at this price level despite some clouding of transients with Dolby B.	Dolby B/C/HX Pro, fine bias, 3 heads, record return	BB	93
<b>Denon DRM-400</b> £140	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
<b>Denon DRM-500</b> £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
<b>Denon DRM-700</b> £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
<b>Denon DRM-800</b> £330	Good Very Good	There are some niggling 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
<b>Denon DRW-650</b> £200	Average	This simply equipped model is a little fiddly to operate at time, partly because of the way the single set of transport keys is assigned. But sound quality is generally workmanlike - good value	Twin transport, Dolby B/C/HX Pro	R	93
<b>Denon DRW-750</b> £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
<b>Dual 5850RC</b> £269	Poor Average	Average-to-middling 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
<b>Goodmans GSW-5200</b> £90	Poor	Musically unimpressive but at least it's cheap!	Dolby B, twin, one records		69
<b>JVC TD-V621</b> £300	Very Good Good +	Sharp, stable sound with rock solid transport. Features count is extensive and useful. Only raw sounding electronics detract from the scoring.	3 head. Dolby B/C/HX Pro, 3 inputs, fine bias	R	93
<b>JVC TD-X321</b> £130	Average	Typical modern budget deck with acceptable sound quality, especially when making and playing it's own tapes. The transport is a little rough, but recommended on the basis of good value	Dolby B, C & HX Pro	R	93
<b>Marantz CP230</b> £330	Average	This is a competitively priced portable recorder though not suited to replay of musicassettes	Dolby B, bias adjust	R	52
<b>Marantz CP430</b> £400	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, charger/adaptor	R	87
<b>Marantz SD-40</b> £170	Average Very poor	Obstructive aesthetics are offset by apparently good build and sensible features, but sound quality is uneven or worse.	Dolby B/C/HX Pro, fine bias	R	93
<b>Marantz SD-50</b> £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
<b>Marantz SD-60</b> £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
<b>Marantz SD315</b> £180	Average	Sound quality is promising, but somewhat offset by 'shut in' top end. Pitch integrity suspect	Dolby B/C/HX Pro, twin transports, one rec/play, one play only. Mic input		93
<b>Marantz SD515</b> £350	Poor	Good electronic design is let down by mediocre alignment and poor transport stability. Disappointing at the price.	Twin auto-reverse, both transports record, Dolby HX Pro, parallel record capable	R	93
<b>Memorex SCT-5</b> £150	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
<b>Memorex SCT-84</b> £200	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 deck with auto-reverse record, unidirectional play	R	69
<b>NAD 6300</b> £550	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
<b>Nakamichi Cassette Deck Two</b> £300	Very Good	Not completely neutral, this deck is assured, dynamic and quick, with abundant detail and some coarseness. Stable transport but only rudimentary features accompany fine engineering	Dolby B/C, manual tape type selection, bias adjust	R	93
<b>Nakamichi RX-202E</b> £545	Good Very Good	Fine, clear and articulate sounding player. Excellent with prerecorded material, but idiosyncratic and sometimes obstructive control	Auto reverse, Dolby B, C, 2 head	R	63
<b>Philips FC566</b> £179	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
<b>Philips FC567</b> £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
<b>Philips FC870</b> £250	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
<b>Pioneer CT-225</b> £99	Poor Poor +	Budget deck with a strictly budget sound - but surprisingly strong range of features. An opportunity lost.	Dolby B/C, logic controls, track search		93
<b>Pioneer CT-337</b> £130	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
<b>Pioneer CT-447</b> £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
<b>Pioneer CT-656 Mk II</b> £250	Average +	Reworking of original 656 has led perhaps unintentionally to a somewhat ill-conceived set of compromises. Excellent with prerecorded material, the deck is otherwise unbalanced.	Dolby B/C/HX Pro, 3 heads, track search, fine bias		93
<b>Pioneer CT-757</b> £350	Very Good Poor	Ostensibly fine deck is let down by inability to drive tape hard without loss of focus and consistency. Even prerecorded material, which didn't suffer these shortcomings, lacked detail.	Dolby B/C/HX Pro, 3 head, assisted tape calibration		93
<b>Pioneer CT-91a</b> £500	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 moulid breaker	3-head, tape calibration, Dolby B/C/HX Pro	R	75
<b>Pioneer CT-959</b> £450	Very Good	Near state of the art for £450. Engineering is of a high order. 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
<b>Revox B215</b> £1727	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
<b>Revox B215-S</b> £1826	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
<b>Rotel RD-845</b> £130	Average -	Extremely fine transport and clean sounding electronics for the price. Bass lacks weight, but deck works remarkably effectively with chrome tapes.	Dolby B/C, manual tape selector	R	81
<b>Rotel RD-855</b> £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

# The Directory

## CASSETTE DECKS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Rotel RD-865</b> £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
<b>SAE C102</b> £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
<b>Sansui D-X211HX</b> £170	Good Good+	Clean, stable and open sounding recording quality distinguishes this player, - and auto-reverse too. A great improvement on earlier mid price Sansui models, and excellent value.	Auto reverse, Dolby B/C/HX Pro, bias adjust	R	93
<b>Sansui D-X301i</b> £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
<b>Sansui D-X501</b> £230	Poor Poor	Unhappy mixture of good looks, excellent ergonomics and mediocre, sometimes poor sound	Dolby B/C, random track search		81
<b>Sansui D-X701</b> £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
<b>Sherwood DS-1135C</b> £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
<b>Sherwood DS-7000R</b> £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
<b>Sony (WMD6C) Pro Walkman</b> £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
<b>Sony TC-FX120</b> £90	Poor Poor	Neat and very simply equipped model has decent electronics but poor, unstable transport with predictable consequences.	Dolby B & C, variable bias		93
<b>Sony TC-K520</b> £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
<b>Sony TC-K650ES</b> £250	Average Average	Facilities are utilitarian but nicely presented, but sound quality, which is basically good, is slightly marred by some coarseness of tone.	3 head, Dolby B/C/HX Pro, fine bias	R	93
<b>Sony TC-K730ES</b> £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
<b>Sony TC-K850ES</b> £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
<b>Sony TC-RX110B</b> £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
<b>Sony TC-TX55</b> £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
<b>Teac V-270C</b> £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
<b>Technics RS-B905</b> £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
<b>Technics RS-B965</b> £350	Very Good Very Good	Messy control layout, but ultra capable deck with clear electronics and excellent headroom, low noise, an ultra-stable transport - and first rate sound quality.	3 head, dual capstan, Dolby B/C/HX Pro, dbx, assisted tape alignment.	R	93
<b>Technics RS-TR355</b> £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
<b>Yamaha KX-1200</b> £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
<b>Yamaha KX-250</b> £150	Good Good	Excellent if somewhat fiddly deck with all mod cons. Play trim helps bring recalcitrant tapes back into line. Refined, expressive sound quality and stable transport	Dolby B/C/HX Pro, Intro Scan, Play Trim	BB	93
<b>Yamaha KX-330</b> £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
<b>Yamaha KX-530</b> £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
<b>Yamaha KX-930</b> £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

## CD PLAYERS

Now nearly a decade old, this all digital music source is well established despite high disc prices and the opposition of many hi-fi enthusiasts. Compact Disc's strengths over conventional vinyl are complete freedom from surface noise, ease of use, and more robust software. Remote control is just about standard on all new players.

However, many vinyl enthusiasts find CDs

sound less involving than top quality vinyl.

Prices average out at a little over £200, although entry level models are now available for little more than £100. Even the most basic models can sound very good indeed and employ state of the art decoding chips and the most useful play features. Extra money can buy remote volume control, audio 'tweaks', plus improved build and component quality control.

Digital outputs facilitate an easy upgrade path

Machines can be split into bitstream and multi-bit with each school having its adherents. Bitstream is the newer technology and will probably win in the end, although the development time spent on multi-bit systems means that excellent results can still be obtained.

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Acoustic Research CD-06SE</b> £450	Average- Average-	Basic Philips machine with beefed-up chassis and a revised analogue board. Distortion is higher than normal while the sound lacks both immediacy and clarity.	Remote control, programming but no direct track access, 16bit 4x		95
<b>Aiwa XC-333</b> £149	Average - Average	Looks costly, well featured, well balanced technical performance and sound for money	multi bit, keypad remote, hdph (fixed)	R	88
<b>Aiwa XC-700</b> £170	Good+ Very Good	Generously equipped player that harbours a top Philips' Bit Stream DAC. Offers a characteristically smooth and effortless 'bitstream sound'. Exceptional value	Remote control plus index skip, midship transport and 7350 PDM DAC	BB	95
<b>Akai CD-52</b> £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
<b>Akai CD-55</b> £230	Good Average -	Budget model which fails to compare with the CD52	Remote, hdph, Good programming		83
<b>Akai CD-62</b> £330	Average 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

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## CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Akai CD-73</b> £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
<b>Akai CD-93</b> £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
<b>Arcom Alpha</b> £420	Very Good Very Good	Arcom's new star, its best CD player yet and great value	Remote, etc, coax dig. out	BB	83
<b>Arcom Black Box 1</b> £210	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
<b>Arcom Black Box 2</b> £260	Very Good Very Good	An addition to the BB 1, it also offers improved sound and more inputs	Optical and wired input digital decoder	BB	76
<b>Arcom Black Box 3</b> £360	Good + Very Good	Top of a series of three decoders it can offer a high sonic standard with top class transports	Bitsream, auto input switching, optical & coax	R	88
<b>Arcom Delta 170.2 transport</b> £620	Very Good Good	An upgraded Delta transport, it sounds different but not really better. More research is required here	Transport only, display off, usual programming		88
<b>Arcom Delta 70.2</b> £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
<b>Arcom Delta 70.3</b> £699	Good Good+	Latest in a line of Delta 70 CD players and one that offers a distinctly rugged, beefy sound. Plenty of power behind individual instruments but lacks a feeling of involvement	Remote control, display dimmer, variable and digital outputs.		95
<b>Ariston CD1</b> £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
<b>Ariston Maxim</b> £500	Good+ Good+	Re-worked Philips player with chunky alloy casework and sophisticated analogue stage. Narrowly escaped a Recommendation with its dynamic and purposeful sound. Slightly grainy treble	Remote control, coax digital output. 16bit 4x chipset.		95
<b>Cambridge Audio CD3</b> £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
<b>Carver TL-3100</b> £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
<b>Carver TL-3220</b> £495	Good Average	A lightweight player with primitive display. We thought it sounded rather sparse and dry, and though Carver's DTL feature certainly fleshed-out the bass it also softened the stereo focus	Remote control with volume keys, 'Digital Time Lens', 18bit 8x		95
<b>Carver TL-3300</b> £695	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
<b>Deltec PDM-One</b> £500	Average Very Good	A no frills audiophile bitstream converter at an affordable price	Coax-in, special cable and mains filter options	R	83
<b>Denon DCD 960</b> £300	Good + Average	A fine feature package with good lab results, but unfortunately an unexceptional sound quality	Remote inc vol, hdph, keypad, well featured		88
<b>Denon DCD-2560</b> £550	Very Good Good	Beautifully built and, once again, generously equipped yet with a sound that's decidedly sluggish or reserved, particularly through the bass. Vocals are more forward but can sound a little glassy	Remote, pitch and tape edit features, opt/coax digital output, 20bit 16x.		95
<b>Denon DCD-860</b> £250	Average+ Good+	This is a well designed and generously equipped budget player that offers a very spacious and appealing sound. There's a hint of treble emphasis but it still sounds great at high volumes!	Remote, pitch and full tape edit facilities. 18bit 8x.	R	95
<b>Dual CD5150</b> £300	Very Good Good +	In a real sense cloned from the rave Rotel RCD-855, this is also a great value all rounder: multi bit rules OK!	keypad remote, hdph (fixed), Philips based	BB	88
<b>Ferguson CD007</b> £130	Good Average	The cheapest recommendation in the test group; don't expect the earth but the value is good	Manual, digital output, headphone socket	R	64
<b>Ferguson CD008</b> £150	Average Average	Not as strong as its relatives, sample fault perhaps? Though performance is fair enough overall	Remote, midi digital output, 2x O/s, timeshare 16 bit		64
<b>Goodmans GCD-435</b> £140	Poor Average -	Goodmans has the power to source with more care than this, music centre quality!	multibit, remote, basic facilities		88
<b>Grundig CD9000</b> £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
<b>Harman Kardon HD7450</b> £300	Good Average	A very stylish machine but one that is let down by its aggressive and dirty treble quality which pierces through most types of music. Weak bass resolution undermines the 'roots' of the player	Remote control but no headphone socket. MASH/PWM bitstream DAC.		95
<b>Harman Kardon HD7500II</b> £350	Good+ Good+	An update of the original HD7500 but featuring superior analogue electronics to the HD7450. Tonal integration is much improved, packed with detail that's expressed with youthful enthusiasm.	Remote, variable, digital and R headphone outputs. MASH/PWM DAC		95
<b>Harman Kardon HK7300</b> £200	Average Average -	Budget low bit technology, does not deliver enough for a recommendation	No remote, no digital out; basic control features		83
<b>Harman Kardon HK7500</b> £330	Average + Average	Decided improvement over 7300 in all respects. Still fairly unimpressive sound	Remote, hdph + vol, good programming		83
<b>JVC XL-V231</b> £149	Excellent Average -	Text book lab result but below par sound, nice and boring. Must be some potential here	Remote, hdph (fixed), JVC 1-bit PFM		88
<b>JVC XL-Z1010</b> £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
<b>JVC XL-Z431</b> £200	Very Good Average-	This is a player that started life off the back of the successful XL-V231 but whose performance fails to come up to scratch. The sound is weak and uninspiring - poor use of JVC's PEM DAC.	Remote operation, motorised volume + tape edit. PEM bitstream DAC		95
<b>Kenwood DP-4030</b> £180	Good+ Good+	Kenwood's first and cheapest bitstream player enjoys a deceptively detailed and refined sound but one that is mildly veiled right across the spectrum. Excellent value nonetheless.	Remote, variable and opt digital outputs. NPC bitstream DAC	R	95
<b>Kenwood DP-7030</b> £300	Good+ Good+	By adapting established Sony bitstream technology Kenwood has moulded its own exceptionally smooth and polite sound. Very nicely built machine with midship transport mechanism.	Remote, index scan, variable and optical outputs. Sony PLM bitstream DAC	R	95
<b>Kenwood DP-X9010</b> £500	Average Average +	Compromised by jitter, RF noise and poor clock selection this transport generally encourages a dynamic but bright and edgy sound with most DACs	CD transport, optical + coax outputs, Class 2		96

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## CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Luxman D105u</b> £699	Average Average	Visible valves are essentially for show in this rather ordinary player - both sound and lab	"valves", remote inc vol, hdph, well equipped		88
<b>Marantz CD-40</b> £200	Very Good Good +	Like the Philips CD620 equivalent, this is the Philips/Marantz performance/value equation at its best	Multi bit, remote, hdph (fixed)	BB	88
<b>Marantz CD-41</b> £230	Good Average	Based on Philips' CD624/634 but stashed in the older CD-40 case, this player suffered from a loose, boomy bass quality together with an impure treble. Not a good advert for PDM Bit Stream.	Remote, index scan but no digital output. SAA7321 PDM DAC		95
<b>Marantz CD-50SE</b> £330	Very Good Very Good	Souped up CD50 delivers reference performance in its class. Worthy successor to the '65SE legend	Full remote, power volume. Hdph, (fixed). FTS. Good programming	BB	83
<b>Marantz CD-60</b> £330	Very Good Very Good	Lacking the SE flair, the 0 remains a fine player by market standards. Second best is more than good enough	Multi bit, remote inc. vol., hdph, FTS etc	BB	88
<b>Marantz CD-60SE</b> £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
<b>Marantz CD-80</b> £550	Very Good Good	A dynamic and bold sound from a machine that is equally bold in appearance. It betrays no fear of the most thundering crescendos yet can sound a little hard or glassy with pop CD's.	Remote, motorised volume + FTS programming, 16bit 4x.		95
<b>Marantz CD-95DR</b> £1500	Very Good Good	At its best with Philips-based DACs, this transport sounds confident if not totally pure, sparkling or fresh	CD transport, optical + coax digital, Class 1		96
<b>Memorex CD1650</b> £200	Poor Poor	An overpriced music entre player. Surely the giant Tandy corp. can get a better standard than this?	remote, keypad, multi bit, midi		88
<b>Meridian 200</b> £750	Very Good Very Good	Broadly compatible with most DACs and offering a light, fresh and very bubbly sound that is both natural, engaging and unflagging	CD transport, optical + coax outputs, Class 1	R	96
<b>Meridian 203</b> £495	Very Good Excellent	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
<b>Meridian 206B</b> £950	Excellent Excellent	What a stunner! Audiophile quality from the reference one box CD player, and at a most realistic price	Differential bitstream, keypad remote, prgming	R	88
<b>Meridian 208</b> £1575	Excellent Excellent	State of the art CD sound combined with a decent preamp and full remote control	Hdph + remote level. Programming, R phase invert, various outputs		83
<b>Meridian 602</b> £1500	Very Good Good	This dedicated CD transport teams-up most successfully with the 606 DAC. Otherwise it lacks the life and pizzaz of the 200	CD transport, optical + coax outputs, Class 1		96
<b>Micro Seiki CDM100</b> £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
<b>Micromega Duo BS</b> £499	Good Excellent	With a good transport it delivers a sweet musical sound at a high quality level	Bitsream D/A convertor, auto input switching	R	88
<b>Micromega Optic BS</b> £695	Average Good +	A bitstream rebuild of a Philips chassis, this player shows promise for the future	Bitstream, remote, hdph (fixed)		88
<b>Mission Cyrus PCM II</b> £400	Very Good Good +	Improvements in price and performance keep this classic remote player in the running	Remote vol, phase inv, dig op. PSX option	R	83
<b>NAD 5425</b> £200	Very Good Very Good	Not much in the way of facilities on offer but a sound that is both wonderfully open, detailed and appealing. This is a very communicative player that sounds positive without being brash	Worthless remote control, track skip/scan. MASH/PWM bitstream DAC	BB	95
<b>NAD 5440</b> £290	Very Good Good+	The 'no compromise' version of NAD's 5425 but still rather lacking in facilities. Its sound is smoother and richer than the 5425, preferring to seduce with subtlety rather than have you perch on the edge of your seat	Remote with direct track access, variable output, MASH/PWM DAC	R	95
<b>Nakamichi CD Player 4</b> £300	Average+ Good-	Attractively styled but suffers high-ish distortion for a modern CD player. Best suited to up-beat pop tracks rather than classical works which seem to lack focus and secure soundstaging	Remote with track access, headphone, coax dig. output. 18bit 8x		95
<b>Nakamichi OMS-5EII</b> £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, I		51
<b>Nakamichi OMS-7EII</b> £2000	Good + Good	The only serious criticism here is of the price. And in our opinion you can get better sound quality for less elsewhere in Nakamichi's range	10 digit track entry programming, hdph		51
<b>Philips CD 850</b> £400	Very Good Very Good	An upgrade of the 840, Philips has got bitstream to work well here. A fine allrounder	Bitstream, keypad remote, FTS etc, etc	BB	88
<b>Philips CD624</b> £200	Good Good-	Philips' cheapest Bit Stream machine is still equipped with a vast array of features. Sounds pretty civilised too but lacks the crispness and freedom necessary to set it apart.	Remote, FTS programming, digital output. SAA7321 Bit Stream DAC		95
<b>Philips CD634</b> £250	Good Good-	The all-singing all-dancing version of Philips' budget Bit Stream player and one that seems better able to cope with the pizzaz and dynamics of a decent recording. Nevertheless it still lacks the lucidity and conviction of the best at this price.	Remote, FTS + Title + personal programming. SAA7321 Bit Stream		95
<b>Philips CDD882</b> £500	Good Good	A butchered CD880 CD player-cum-CD transport that pairs up well with most Philips-based DACs. Dynamic and lively but can also sound a little mechanical	CD transport, optical + coax outputs, Class		96
<b>Philips CDV185</b> £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
<b>Pioneer PD-7500</b> £280	Very Good Average	Has potential but has not brought it off on sound. Good aspects of earlier models have been lost with the new technology	Low bit dual DAC, full remote, hdph		88
<b>Pioneer PD-8500</b> £400	Very Good Good+	A genuine 20bit unit, the PD-8500 enjoys a thoroughly unrestrained and full-bodied sound. It rarely sounds hard or abrupt but prefers civilised classical CD's over pop, it has to be said.	Remote with tape edit and fader controls. Variable o/p. 20bit 8x	R	95
<b>Pioneer PD-91</b> £899	Excellent Excellent	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	R	64
<b>Pioneer PD-93</b> £1400	Very Good Good+	The extremely civil, understated feel of its music contrasts markedly with the over-engineered construction of this player. It will not offend anyone but then neither will it spark much excitement	Remote with fader and index facilities. Two dig o/p's. 20bit 8x		95
<b>Pioneer PD-9300</b> £499	Excellent Average	A mid price flagship of excellent build and lab performance but only average sound - interesting though	Remote, 24 track programming, 2 dig. op		76
<b>Proton AC-120</b> £180	Average Average -	Fine styling, low price but barely average performance	15 track memory, simple design, remote, hdph		76
<b>Radford DAC1</b> £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
<b>Radford WS2</b> £1095	Good Good+	Prompted a mixed reaction on audition, responding well to our jazz and classical selection but sounding bright and grainy with the pop CD's. RF emission is very high	Remote control, display defeat, variable and digital outputs, 16bit 4x chipset.		95
<b>Revox B126</b> £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 system compatible		70
<b>Revox B226S</b> £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
<b>Rotel RCD-855</b> £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
<b>Rotel RCD-865</b> £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
<b>SAE D102</b> £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	Remote (inc volume), skip, scan etc.		58



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## CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Sansui CD-X211</b> £200	Good+ Good+	A new cheapie based on Philips' successful CD582 technology with a bold orange display and an equally bold, invigorating sound that is mercifully free of brightness or grittiness	Simple remote, programming and shuffle play. 16bit 4x	BB	95
<b>Sansui CD-X711</b> £600	Excellent Very Good	Luxury features, finish and sound from this classy Sansui; no excuses required here	Hdph + vol, remote full programming	R	83
<b>Sharp DX150</b> £129	Average Average	This is one 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
<b>Sharp DX750</b> £179	Average Average	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
<b>Sonographe SD1 (by CJ)</b> £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	Coll. '87
<b>Sony CDP-228ES</b> £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
<b>Sony CDP-338ESD</b> £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		76
<b>Sony CDP-790</b> £200	Good Average	Great on the test bench but new tech sounds worse than its predecessor. Who does the listening?	Low bit, full remote, comprehensive facilities		88
<b>Sony CDP-990</b> £300	Very Good Good+	Every feature under the sun is available on this busy-looking machine though its sense of pace and drive at bass frequencies is less hectic. Treble detail is crisp and sparkling by contrast.	Remote, Custom File program on scrolling display. PLM bitstream.	R	95
<b>Sony CDP-X77ES</b> £1000	Excellent Good+	Rather like Pioneer's PD-93 this flagship player is beautifully put together but simply lacks the thrill or conviction of cheaper and perhaps more ragged-sounding machines. Still, this sample was well-used from demonstration stock...	Remote, everything but Custom File titling. Complementary PLM DAC		95
<b>Stax Quattro</b> £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
<b>Teac CD-P3000</b> £169	Good+ Average	A new budget bitstreamer though one that fails to match the success of recent NAD and Kenwood players. Pleasantly open and airy sounding but lacks guts and solidity.	Most facilities moved to remote. Midship drive. MASH/PWM DAC		95
<b>Teac CD-P4000</b> £299	Good+ Average-	An updated version of the CD-P400 but one that seems less successful with its rather thin and scratchy sound. Very poor bass resolution dilutes the impact of all recordings.	Most features on remote, two parallel outputs on player. MASH/PWM		95
<b>Teac CDP-400</b> £249	Good Average	Fine in the lab, but good build quality is not reflected in the rather average sound	Low bit, keypad remote, hdph, versatile prgm'ing		88
<b>TEAC P-10</b> £1400	Good Very Good	A chunkier and altogether more successful transport than the P-500 with an especially beefy and compelling sound. TEAC's best	CD transport, coax + optical outputs, Class	R	96
<b>TEAC P-2</b> £2750	Very Good Good	TEAC's flagship CD transport is beautifully styled and constructed but its sound is bleached and generally less inspiring than that of the P-10	CD transport, coax + optical outputs, Class		96
<b>TEAC P-500</b> £600	Good Good +	Provides a smooth and very sympathetic sound with most DACs yet is also rather vague, lacking the crispness and resolution of its peers	CD transport, coaxial and optical outputs, Class 2	R	96
<b>Technics SL-P277A</b> £160	Very Good Average +	High value, budget priced, yet well equipped and finished, a strong example in its group	Remote, programming, hdph + level. No d. op.	BB	83
<b>Technics SL-P550</b> £220	Very Good Average	Superb, slick presentation, well equipped, average sound, fine build	Hdph, rem. prog., edit/fade, dig. optical		83
<b>Technics SL-PA10</b> £450	Good + Good	Built to partner the SU-MA10 upmarket integrated amp/DAC, this transport has the unusual limitation of only optical output. Reassuringly solid and more immune to vibration than most	CD transport, optical output only, remote		88
<b>Wadia WT-2000/Digimaster 2000</b> £5495/£6500	n/a Very Good	Very high grade player which provides state of the art in believable music making from CD, and promises a degree of upgradeability	Transport/multi bit DAC - 32, 44.1, 48kHz o/s	Coll. '90	
<b>Wadia WT2000</b> £5495	Very Good Good +	Based on TEAC's P-2 with outboard mains transformers, active digital output and solid alloy casework. Its dynamic and crisp sound is best realised with Wadia DACs	CD transport, AT&T opt + direct coupled coax outputs, Class 1		96
<b>Wadia WT3200</b> £1995	Excellent Very Good	Based on Marantz's CD-95DR with new casework, active digital output and revised grounding Very clean, clear and authoritative sound with Wadia and Philips-based DACs	CD transport, AT&T opt +direct coupled coax outputs, Class 1	R	96
<b>Yamaha CDX-530E</b> £180	Average + Average	A well balanced example using established DAC technology - worthy of consideration if not recommendation	Multi bit, keypad remote, hdph (fixed)		88

## 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 considerably bigger than 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, and double 'dubbing' cassette decks. The top end of the market is developing with surround sound audio/video-ready packages.

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Aiwa NSX-800</b> £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 and speakers dual auto reverse tape etc		89
<b>Akai FX-800CD</b> £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
<b>JVC Midi-W53</b> £500	Average Average	A potentially excellent middle price system spoiled by the loudspeakers and - to a lesser extent - the record player	Midi system with SEA equaliser		89
<b>Memorex System-550</b> £500	Average Average +	Above average electronics let down by very poor loudspeakers. Worth considering if the latter are replaced	Dual CD & cassette deck, tuner/timer, semi-auto turntable		89
<b>Pioneer S-555</b> £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, dual disc CD player	R	89
<b>Proton AI-3000II</b> £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
<b>Sanyo 59CD</b> £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		89
<b>Sanyo SYS-801CD</b> £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

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## CD MIDI SYSTEMS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Sharp 320E</b> £500	Poor Poor	Poor quality system featuring tacky styling, a lack of sophistication - and overpriced	One box midi & turntable with surround matrix		89
<b>Sony Compact 302CD</b> £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 eq etc.	R	89
<b>Sony Compact 702CD</b> £700	Average + Good	Creditable up-market system with reasonable 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
<b>Technics CDC30</b> £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
<b>Technics CDX50</b> £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
<b>Yamaha AST-C10</b> £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
<b>Yamaha YST-C11</b> £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 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)

acrossthe 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.)

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Aiwa XT-003</b> £100	Average Average-	Economically designed and built in the UK, but trade-offs have a marked influence on FM and AM sound quality.	FM/AM digital, 30 presets, no signal strength meters.		93 Supp.
<b>Akai AT-52L</b> £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
<b>Akai AT-93L</b> £250	Good + Good +	By AM standards presentable (good) while FM delivers the goods	All bands, aerial switch	R	65
<b>Arcam Alpha 2</b> £185	Good Average+	Re-styled to blend in with the Alpha system, Arcam's cheapest tuner makes up for its lack of features with a sensitive front-end and mellow sound.	FM/AM analogue, no presets, manual tuning + AFC	R	93 Supp.
<b>Arcam Delta 80</b> £340	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
<b>Creek T40s3</b> £220	Average+ Average	Creek's FM-only analogue tuner is now in series 3 form, though the aesthetics remain unchanged. Our sample had an obvious bass 'hump' though production units are said to be cured	FM-only analogue, no presets, manual tuning + AFC		93 Supp.
<b>Denon TU-260L</b> £100	Very Good Good+	A new cheapie from Denon with the bare minimum of features. Careful designwork promises a surprisingly open and vivacious sound, so don't overlook it!	FM/AM digital, 20 presets, manual and auto tuning.	BB	93 Supp
<b>Harman Kardon Citation 23</b> £600	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
<b>Harman Kardon TU9400</b> £250	Good Very Good	Striking in appearance and with a sound to match, this new digital tuner comfortably exceeded our expectations. On stereo FM it's HK's best yet.	FM/AM digital, 24 presets, auto-tuning + hi-blend + signal str. meter.	R	93 Supp
<b>Linx Theta</b> £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
<b>Magnum Dynalab FT101</b> £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
<b>Marantz ST-40L</b> £130	Average + Good	A little slow to tune but once accomplished it provides a meaty and dynamic sound on FM. AM too has a little extra bite to its performance	FM/AM digital, 30 presets, manual/auto tuning	R	93 Supp
<b>Meridian 204</b> £595	Good + Good	Pleasant sounding with a fine finish but does not make the grade at this price	FM only, auto scan, digital, remote, timer		55
<b>Naim NAT 01</b> £1294	Very Good Excellent	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
<b>Nakamichi ST-7E</b> £750	Good + Good +	Exceptionally good for weak-signal areas, and good all round	16 AM/FM presets, auto time digital		55
<b>Pioneer F-447L</b> £130	Average+ Average+	Equipped with a various IC-controlled servo and tuning aids, great fun to play with but of little practical benefit. Sounds OK but, on past form, we would expect more from Pioneer.	FM/AM digital, 36 presets, CCTS + R SS + manual/auto seek tuning.	R	93 Supp.
<b>Pioneer F91</b> £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
<b>Proton AT-300</b> £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
<b>Quad FM4</b> £399	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
<b>Revox B260</b> £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
<b>Rotel RT-830AL</b> 55	Good + £110 Good	Fine sounding budget audiophile material, no frills, no fuss	Manual dial analogue, FM, MW, LW	BB	
<b>Rotel RT-850AL</b> £180	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
<b>Rotel RT-870L</b> £230	Very Good Very Good	Rotel's top tuner is ruggedly built and includes plenty of sophisticated electronics. It's a very slick machine to use with a sound that's equally confident and refined.	FM/AM digital, 16 presets, IF/RF + RF attenuation + signal readout.	R	93Supp.
<b>SAE T-102</b> £449	Good + Good +	Expensive for all the radio you get, but sounds interesting. AM - poor	FM/MW only	R	65
<b>Sony ST-S530ES</b> £200	Good+ Good	The cheaper version of Sony's revered '730 certainly looks and feels the part but its sound is, well, less startling. Civilised, yes, but lacks much enthusiasm.	FM/AM digital, 30 presets, hi-blend + Cal tone + manual/auto tuning.		93 Supp.
<b>Technics ST-G70L</b> £200	Good+ Good+	Another very polite and refined-sounding tuner but one that does retain just enough sparkle to keep your interest. Plenty of widgets to play with too...	FM/AM digital, 39 presets, selectable RF/IF + fine tuning facility, decent signal strength meter.	R	93 Supp.

# The Directory

## 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

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, as well as irritating the hell out of 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.

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.

MODEL PRICE	LAB SOUND	COMMENTS	TYPE	VALUE	ISSUE
<b>Aiwa HP-V99</b> £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
<b>Aiwa HP-X30</b> £30	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
<b>Aiwa HP-X80</b> £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
<b>Aiwa HPEX-200</b> £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
<b>AKG K135</b> £33	Poor Average	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
<b>AKG K145/S</b> £60	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
<b>AKG K240 Monitor</b> £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
<b>AKG K280 Parabolic</b> £90	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
<b>AKG K340</b> £140	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
<b>Audio Technica ATH909</b> £60	Average Average	Quite impressive in the treble though a bit bass shy, the 909s worked well at highish levels	Circumaural, semi-open, dynamic		55
<b>Audio Technica ATH910</b> £70	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
<b>Audio Technica ATH911</b> £80	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
<b>Beyer DT 325</b> £32	Very Good Average	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
<b>Beyer DT330 Mk II</b> £50	Good Poor	Not the most revealing 'phones encountered, the 330s were nevertheless enjoyable and rarely offended	Circumaural, semi-open, dynamic		55
<b>Beyer DT550</b> £61	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
<b>Beyer DT880</b> £80	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
<b>Beyer DT990</b> £102	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
<b>Beyer IRS690</b> £203	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
<b>Jecklin Float Electrostatic</b> £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
<b>Jecklin Float Model One</b> £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
<b>Jecklin Float Model Two</b> £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
<b>JVC HA-D990</b> £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
<b>Koss K/6X Plus</b> £30	Average 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
<b>Koss TD/60</b> £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
<b>Pioneer SE-72</b> £30	Good + Average -	Neat, very nicely made personal stereo phones along the lines of Sony V3s. Sound is on the veiled side, good for aggressive sources	Supra-aural, closed-back dynamic		75
<b>Quart Phone 30</b> £40	Good Average	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
<b>Quart Phone 70</b> £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
<b>Quart PMB 25II</b> £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
<b>Quart PMB 65</b> £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
<b>Quart PMB 85</b> £90	Average 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
<b>Realistic Pro-X</b> £25	Poor Average -	Robust, unanimously uncomfortable and heavily veiled in sonic terms – not a great success	Supra-aural, closed-back, dynamic		75
<b>Ross RE-2760</b> £35	Poor Average	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
<b>Ross RE2530 CD</b> £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

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## HEADPHONES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Ross RE2560 CD</b> £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
<b>Sennheiser HD40</b> £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
<b>Sennheiser HD450</b> £35	Good Average	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
<b>Sennheiser HD480</b> £45	Good Average	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
<b>Sennheiser HD520</b> £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
<b>Sennheiser HD530</b> £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
<b>Sennheiser HD540 Ref Gold</b> £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
<b>Sony A21EX</b> £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
<b>Sony MDR V3</b> £30	Average 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
<b>Sony MDR V7</b> £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
<b>Sony MDR-CD999</b> £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
<b>Sony MDR-R10</b> £2500	Excellent Excellent	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
<b>Stax Gamma pro/SRD-X pro</b> £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
<b>Stax Lambda Signature/SRM-T1</b> £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
<b>Stax SR Gamma</b> £299 (inc. SRD-6 Adaptor £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
<b>Stax SR Lambda Pro/SRD-7SB2</b> 2 Adaptor £360/£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
<b>Stax SR Lambda Pro/SRM-1</b> Energiser £360/£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
<b>Stax SR34</b> £140	Average 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
<b>Stax SR84</b> £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
<b>Yamaha YHL-006</b> £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 the top Discmen going for £300 or more.

Despite their diminutive size personals attempt to incorporate as many gimmicks and features as possible, cassette players often incorporating tuners, Dolby noise reduction or even graphic equalisers.

CD players are still relatively expensive, although prices have come down a lot, and don't tend to vary that much on the features front, rather the amount and quality of accessories differs. Rechargeable batteries are extremely useful and increasingly popular, some can now be recharged within the unit and charge capacities are also being increased.

Most models come with a mains adaptor, which in some cases doubles as a battery charger and some include a wired remote control. A few are now appearing with infra-red remote control although this is more applicable to CD players.

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, although newer models are starting to buck this trend. 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 PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Aiwa HS-PL300</b> £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
<b>Aiwa HS-PX303</b> £150	n/a Good	Chunky and macho styling combines with comprehensive features and a half decent transport to make a powerful personal	Dolby BC, chrome/metal EQ, remote	R	78
<b>Panasonic RQ-P505</b> £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
<b>Panasonic RQ-P525</b> £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
<b>Saisho PS90R</b> £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
<b>Sharp JC-270E</b> £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

## PERSONAL CASSETTES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Sony Walkman Pro</b> £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
<b>Sony WM-701C</b> £200	n/a Good -	Beautiful little machine with all the necessary buttons/switches and a fundamentally exceptional sound quality, marred unfortunately by wow and flutter	Dolby B & C, chrome/metal eq, remote, folding phones		78
<b>Sony WM-BF65</b> £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
<b>Toshiba KT-4549</b> £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 PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Aiwa DX-P50</b> £150	n/a Average -	A tad aggressive both through earphones and domestic systems, not very walkable but it has got two stage bass enhancement	Digital output, mains adaptor, remote		94 Supp.
<b>Denon DCP-100</b> £250	n/a Good	Solidly constructed and nicely finished in the slightly impractical Velvex, almost walkable, competent if uninspiring sound quality	Remote, mains adaptor, no earphones, rechargeable batts		94 Supp.
<b>Denon DCP-50</b> £180	n/a Average +	Not very walkable, but lightweight and nicely finished in a nextel like grey. Sound through a system is a tad unexciting but not too bad	No headphones, remote, mains adaptor		94 Supp.
<b>Goodmans GCD-10</b> £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
<b>Kenwood DPC-41</b> £150	n/a Average -	Lightweight, not very walkable but nice control layout. Sound through the phones is on the thin side, through the line output it's pretty average for a portable	Mains adaptor, rechargeable batts		94 Supp.
<b>Kenwood DPC-77</b> £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
<b>Kenwood DPC-81</b> £200	n/a Good +	Chunky metal cased player that makes pretty confident sounds through a system but sounds dry via earphones and ain't exactly walkable	Remote control, mains adaptor/charger and batts, digital output		94 Supp.
<b>Philips AZ6897</b> £150	n/a Good +	Unusually designed and equipped with a radio the Philips is almost joggable, it sounds remarkably good via a system and a little cautious through the phones	Mains adaptor with built in plug, wired remote, clock	BB	94 Supp.
<b>Sanyo CP-12</b> £260	Average 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
<b>Sony D-350</b> £300	n/a Good	More buttons and widgets than any of the others but not the sound quality or walkability to go with it	Mains adaptor, clock, comprehensive facilities		94 Supp.
<b>Sony D-66</b> £180	n/a Average +	One of the few walkable CD players on the market, sound quality is a little muddled but not offensive	Mains adaptor, rechargeable battery pack	R	94 Supp.
<b>Technics SL-XP1</b> £130	n/a Good +	Remarkably competent and enjoyable player that you can actually use on the move and sounds enthusiastic through a domestic system	Rechargeable batts, mains adaptor/charger	BB	94 Supp.

## 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 the plugs yourself. The features column contains information on the material makeup of the different cables with the following abbreviations: OFC - oxygen free copper, OFHC - oxygen free high conductivity (Audionote defines HC as high crystal), PC-OCC - pure copper by ohno continuous casting, LC-OFC - linear crystal oxygen free copper.

## INTERCONNECT CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Audio Technica AT6115</b> £40	Very Good Average	This cable sounds somewhat 'quieter' than the original LC-OFC interconnect, but is also less transparent and three dimensional	PC-OCC copper coaxial		59
<b>Audionote Copper ANA</b> £44	Average 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
<b>Audionote Flexible Silver ANS</b> £99	Average 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
<b>Audionote Silver ANV</b> £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
<b>Audioquest Livewire Ruby</b> £49	Average 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
<b>Audioquest Livewire Topaz</b> £35	Good Average	Sounding 'bigger' and faintly richer than Reference 2, Topaz was also slightly grainy at the top end	Gold-plated plugs, OFHC copper		59
<b>Budget OFC</b> Circa £7	Average Average	Subjectively, this cable did lift much of the aural fog experienced with scrawny standard hook-up leads.	OFC		59
<b>Budget Patch Cords</b> (see text)	Average Poor	As thrown in gratis with cassette decks and the like - frequency extremes were restricted and performances were veiled	Thin coaxial		59
<b>Chord Mono-t</b> £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	R	83 Supp.

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## INTERCONNECT CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Deltec Black Slink</b> £152	Excellent Excellent	Inherently neutral, the cable faithfully reproduced broad and deep stereo soundstages with precise focus and a sense of facility	8 silver plated OFC strands PTFE dielectric	R	59
<b>Deltec Gortex Black Slink</b> £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.
<b>Deltec Slink</b> £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
<b>Denon LC-OFC</b> N/A separately	Very Good Average	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
<b>DNM Solid-core</b> £23	Average 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
<b>Isoda Electric HC-05-PSR</b> £54	Good Good	A pleasantly lively and fluid sounding cable though softens some subtle, midband detail	Aluminium + brass multistrand cable	R	83 Supp.
<b>Kimber Kable KC-1</b> £65.55	Very Good Average	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
<b>Kimber Kable PSB</b> £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
<b>Monster Interlink 300</b> £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.
<b>Monster Interlink 400</b> £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
<b>Origin Live Soli-Core Super</b> £60	Good Average	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
<b>QED Incon Graphite GP1 Gold</b> £18.95	Average Average	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
<b>QED Incon P1-Gold</b> £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
<b>Sterling</b> £250	Average 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
<b>Supra EFF-1</b> £60/0.75m	Average Average	A new, costly and mildly disappointing addition to the range. Edgy, smeared sound	Screened, symmetrical dir. cable		83 Supp.
<b>Thorens SAC 100</b> £50	Good Average	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
<b>van den Hul MC-D300II</b> £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
<b>van den Hul MC-Gold</b> £250	Average 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
<b>van den Hul MC-Silver</b> £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
<b>van den Hul MCD-1021II</b> £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
<b>van den Hul Thunderline</b> £150	Good Average	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
<b>Yfere LC-OFC Quad</b> £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	ISSUE
<b>Absolute Wire Force 4</b> £4.75 per metre	Good Average +	By current standards there was a loss of fine, sharp detail at the frequency extremes, but it has a big, friendly sound	744 OFC strands, PVC dielectric		64
<b>Audio Innovations OR-200</b> £16 per metre	Average + Average +	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
<b>Audio Technica AT6120</b> £10 per metre	Average + Average	Compared to earlier LC-OFC cables, this PC-OCC derivative sounded smoother and less aggressive	PC-OCC, PVC dielectric		64
<b>Audionote AN-SP</b> £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	15 silver strands, polyethylene dielectric		64
<b>Audioquest Livewire Black</b> £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
<b>Audiospec Latitude L4</b> £3 per metre	Average + Average +	Warm, ruddy but also mildly muddy sound with some slight emphasis of bass notes	Fig.-of-eight multi-strand, PVC diel.	R	83 Supp.
<b>Bellwire</b> 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
<b>Deltec 8S</b> £144 - 5m pair	Good Good +	The unerring transparency and detail resolution of 8S throughout the midband makes it a cleaner and more spacious sounding cable than others at the price	4 silver plated OF copper strands, PTFE	R	64
<b>Deltec Gortex Black 16</b> £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.
<b>DNM Solid core</b> £3 per metre	Average Average	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		64
<b>Exposure</b> £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
<b>Furukawa FS-2F09</b> £3.50 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.
<b>Furukawa FS-2T15S</b> £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	R	83 Supp.
<b>Kimber 4VS</b> £7.15 per metre	Average + Average	Similar construction to 4TC but dissimilar materials infer a slightly tizzy sound	Open-weave, multistrand, PVC ins.		83 Supp.
<b>Kimber Kable 4PR</b> £54 - 5m pair	Average Average +	This directionally marked cable benefited 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 diel.		64
<b>Kimber Kable 4TC</b> £17.65 per metre	Good Good +	4TC made a great impression in the listening tests with an open midband, a smooth and unflagging treble with slightly rich but suitably weighty bass	OF copper, PTFE dielectric	R	64

## LOUDSPEAKER CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Linn K20</b> £2.95 per metre	Good Average	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
<b>Marantz ML-55S</b> £30 - 10m	Average Average	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 diel.		64
<b>Mission Cyrus</b> £2.50 per metre	Average + Good	Because of its impedance characteristic this cable will deliver a smooth and unfatiguing treble balance with loudspeakers offering an easy load	0.8mm single strand, PVC dielectric	BB	64
<b>Monitor PC Silverline PC4</b> £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
<b>Monster Original</b> £3.49 per metre	Good Average +	Original sounded relatively congested and murky at higher frequencies but possessed weight and conviction in the bass	Multistrand		64
<b>Monster SCI 16-4</b> £3 per metre	Average Average	Not as thick-sounding as early Monster cables but still slightly unbalanced. Versatile construction	4 x 16-gauge conductors, OFC strands		83 Supp.
<b>NVA LS1</b> £6 per metre	Average + Good	A light and breezy sounding cable best suited to short lengths, NVA benefited from a clear and transparent outlook	7 x 0.25mm silver alloy strands, PTFE	R	64
<b>Origin Live Soli-Core Ordinary</b> £1.80 per metre	Good Average +	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
<b>QED 79-Strand</b> £1 per metre	Good Average	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
<b>QED Flat 200</b> £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
<b>QED Incon Graphite</b> £2 per metre	Average + Average +	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 aural fog	OFHC, polymeric screen		64
<b>Rotel Supra 10</b> £8.95 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
<b>Rotel Supra 4</b> £3 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
<b>Solid core lighting cable</b> 36p per metre	Average + 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
<b>Sterling</b> £99 per metre	Average Average	This pre-production sample possessed a strangely muddled and reserved sound quality. It suffered from a progressive instrument modulation	Pure Silver, PTFE dielectric		64
<b>Townshend Isolda</b> £400 - 5m pair	Average + 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
<b>van den Hul CS-122</b> £5.95 per metre	Average + Good - treble dielectric	Characterised by a driving and powerful bass, CS-122 is 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	R	64
<b>van den Hul CS-352</b> £12.95 per metre	Good Average +	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 diel.		64
<b>van den Hul SCS-12</b> £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 guages, PTFE dielectric	R	64
<b>van den Hul SCS-2</b> £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
<b>Vecteur R-CV30</b> £5.40 per metre	Average Good	Subjectively the better of Vecteur's cable line-up offering a neutral overall perspective but slight loss of detail resolution at both frequency extremes	4 x 0.8mm LC-OFC PTFE insulated strands	BB	64

## 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 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	LAB SOUND	COMMENTS	TOP PLATE SIZE, HEIGHT	VALUE	ISSUE
<b>Apollo A10</b> £52.50	4 leg Average	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
<b>Apollo A820</b> £44	4 leg Average	A light open-framed budget design slightly lacking in rigidity and subjectively superceded by other stands costing £10 more.	19 x 19cm 53cm		58
<b>Audio Dimensions Classic 2</b> £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.
<b>Foundation Fred</b> £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
<b>Foundation Maggi</b> £159 to order	Piinth 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
<b>Foundation Pi</b> £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 25/38/46/5	R	58

## LOUDSPEAKER STANDS

MODEL PRICE	LAB SOUND	COMMENTS	TOP PLATE SIZE, HEIGHT	VALUE	ISSUE
<b>Foundation Sir Fred</b> £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
<b>Golding Black Satin</b> £65	1 leg Very Good	Screw together stand tastefully hewn from medite. Some loss of bass but still pleasantly rhythmic	18 x 20 46cm	R	83 Supp.
<b>Heybrook HBS1</b> £109	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
<b>Heybrook P5S</b> £69	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
<b>Linn Kan II</b> £101	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
<b>Linn Sara</b> £112	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
<b>Monotrak Engineering M1</b> £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
<b>Monotrak Engineering M4</b> £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
<b>Monotrak Engineering M4S</b> £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
<b>Origin Live Advanced</b> £145	3 leg Good	One of three related tripod-like stands. Stable sound with good sense of depth and power	22 x 20.6 44cm		58
<b>Origin Live Three Leg</b> £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
<b>Partington PP4</b> £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		83 Supp
<b>QED TS22 Tristand</b> £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
<b>Standesign Z20</b> £75	1 leg Excellent	Well built and finished with optional sand in-fill. Ideally suited to Wharfedale 505.2's	16.5 x 19 50cm	R	83 Supp.
<b>Target HJ15/3</b> £107	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
<b>Target HS20</b> £64	1 leg Excellent	This monopod stand can be used either filled or unfilled and encourages different characteristics in the speakers sound accordingly	19 x 16.5cm 53cm		58
<b>Target T-40</b> £51	2 leg Very Good	Not very stable, tends to infer a slightly forward, ragged sound with diluted pitch	19 x 19 40cm		83 Supp

## EQUIPMENT SUPPORTS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE (H x W x D)	VALUE	ISSUE
<b>Alphason R444</b> £120	Rack Good	A heavyweight structure with stressed MDF shelves, ideally suited to the Sonata turntable	82 x 60 x 39.5cm	R	83
<b>Audioquest Sorbothane Feet</b> £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
<b>Cornflake TCS6</b> £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		83 Supp.
<b>Foundation Stable Table</b> £100 (with Supe)	Table Good	Similar to Stand Design's table though less well finished and certainly less stable	64 x 46.5 x 36cm		58
<b>Origin Live Skyline Super</b> £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
<b>Roksan Equipment Table</b> £169	Rack Good	An upgradable/expandable system suited to Roksan's Xerxes if not other competing turntables	65 x 52 x 38cm		58
<b>Sound Organisation Table</b> £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
<b>Sound Organisation Wall Stand</b> £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
<b>Sound Organisation Z022</b> £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		58
<b>Stand Design Duplex</b> £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
<b>Target TT2</b> £64	Table Very Good	Standing up to the best in most areas, the TT2's only real foible concerns a slight loss of bass 'slam'. Design was updated in 1990	52 x 46.5 x 35.5cm	BB	57

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## TELEVISIONS

The standalone television set is rapidly evolving into a key component in integrated home entertainment systems.

NICAM digital stereo sound is now being broadcast for many hours every week, although you will have to check to see what is available in your area. The IBA are quite open about it, but the BBC tend to be more secretive.

Most up-market stereo CTVs are now equipped with NICAM decoding and rather more attention is being paid to the built-in amplifier

and speakers.

NICAM is also available on Hi-fi stereo videorecorders (see above), and this is usually the more practical route for hi-fi system integration, as well as allowing favourite musical events to be saved on tape. To both watch and record with stereo sound will require NICAM on each of course, but the decision to update one or the other first will probably have as much to do with the age of the respective components than the convenience of the interconnections.

The ten CTVs tested so far are all luxury stereo models with 'flatter squarer' 59cms tubes of various kinds. Best suited to a viewing distance of about 7ft, these are one size up from the most popular 51cms size sets and take about 23 per cent of the top 30 per cent of the market.

All have remote control as well as Fasttext (enhanced teletext), and many have on-screen graphics and flexible in/out socketry.

MODEL PRICE	LAB SOUND	COMMENTS	SCREEN SIZE, FEATURES	VALUE	ISSUE
<b>Ferguson 51L5</b> £499	Average Good	This nicely (monitor) styled set delivers a fine all round performance at a very competitive price. Ergonomics are better than most thanks to good on-screen graphics	51cm MP FST, NICAM, Fasttext, OSG	R	86 Supp.
<b>Grundig ST-63-460TT</b> £649	Average - Average +	Bulky set's shape resembles a square-rigged sail; screen tilts back slightly, so might suit floor mounting, though beware room reflections. Picture quality is good, if a touch bland, but ergonomics are fairly impenetrable - no on-screen graphics either. Halfway respectable sound quality is over-enriched by cabinet drone.	59cm FST, NICAM, Fasttext		76
<b>ITT Nokia</b> £629	Average + Average -	Bulky square-rigged shape helps deliver a respectable standalone sound quality at a modest enough price. A versatile set with good handset but no on-screen graphics, the picture quality of our sample lacked fine detail resolution, lending a 'soft focus' effect	59cm FST, NICAM, Fasttext		76
<b>JVC AVS250</b> £500	Average + Average -	This compact and delightfully versatile non-NICAM set has respectable on-board stereo sound and lovely screen graphics, along with an infernal handset. Our sample suffered a tuner problem which marred a picture quality which was pretty good when monitoring baseband signals off tape.	59cm FST, Fasttext, o/s graphics		76
<b>Panasonic Prism TK-24 W1</b> £699	Average + Average -	Handsome but bulky set delivers serious standalone sound quality. Lovely ergonomics but off-air picture quality marred by tuner section noise on our sample (works fine as a monitor.) Good NICAM (SCART) output.	59cm FST, NICAM, Fasttext, o/s graphics		76
<b>Philips 9752</b> £500	Average Average +	Detachable speakers ought to be an asset, but those supplied are too cheap'n'cheerful. Picture quality is nicely balanced, if a shade 'soft', the handset is nice, but the on-screen graphics are a bad joke	51cm FST, NICAM, Fasttext, OSG, S-VHS socket		86 Supp.
<b>Pioneer SD-21AV1</b> £599	Average + Good +	The set that can do anything if you've the patience to find out how to drive it: fine picture, decent sound and good flexibility in a neat compact monitor package, plus a handset that deserves its own instruction manual	51cm FST, NICAM, Fasttext, OSG/LED	R	86 Supp.
<b>Sony KVX 2132U</b> £530	Average - Average +	This is an attractive, ergonomic and competitive package, trading picture resolution in favour of stability. The on-set sound is naff, so Trinitron fanciers should use it as a monitor alongside a hi-fi system	51cm Trinitron FST, NICAM, Fasttext, OSG	R	86 Supp.
<b>Toshiba 217D9B</b> £480	Average Average -	A superficially impressive looking package for the price, picture quality was disappointing on our sample	51cm FST, NICAM, text, OSG		86 Supp.

## VIDEO RECORDERS

For some time there's been a move to improve both the video and the audio quality of video recorders and TV sets alike as a necessary prelude to a proper integration between the two. Hi-fi video is obviously an important element in the story, and so is Dolby Stereo, the ambient 'surround sound' system.

The weak link of course is on the broadcast side. Although TV sound is well up to normal hi-fi standards, it has always been in mono and unjustly or otherwise has rarely attracted much audiophile interest. But TV sound is - or shortly will be - freed of the shackles of mono by the introduction of NICAM stereo. NICAM - an

acronym for Near Instantaneous Companding and Modulating - is the missing link that will help facilitate the much feted integration of video with audio. And then we have S-VHS, a system which does for picture quality what the other developments promise to do for the sound

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
<b>Akai VS-75EK</b> £550	Average Good	Excellent performance and a slick set of controls make this recorder a pleasure to use. Good price is a bonus	Hi-fi, NICAM, programmable remote	BB	71
<b>Akai VS-967EK</b> £500	Average Good	Many well implemented facilities, but unsuitable for dedicated audio use due to lack of LP mode, manual record levels or audio input	Hi-fi, NICAM, on-screen programming	R	86 Supp.
<b>Grundig VS680</b> £1250	Very Good Average	State of the art technology gives top notch sound with tremendous flexibility but somewhat disappointing picture quality. It's also very hard to drive	Hi-fi, NICAM, LP/SP, teletext programming, on-screen titling & graphics		86 Supp.
<b>Nordmende V4405K</b> £549	Good Good	Fine basic sound and picture quality, but the RF converter introduced significant losses. An excellent model, but configured for German home market. The recorder lacks NICAM	Hi-fi, transmitter handset, digital FX	BB	71
<b>Panasonic NV-F65</b> £500	Good Average	Uninspired but competent and well made deck. Plenty of features, decent sound and reasonable video ensure recommendation	Hi-fi, NICAM, LP audio only, bar code programming	R	86 Supp.
<b>Panasonic NV-FS1</b> £1000	Poor Good	The control system is poorly organised, with cramped legends and some strange machine logic. Bar code programming is hardly a great achievement either. Picture and sound quality are good, but not state of the art	S-VHS, Hi-fi, NICAM, bar code programming	R	71
<b>Philips VR-6585</b> £500	Average Average	Fine middle-ranking deck with full LP operation and easy controls and displays	Hi-fi, NICAM, transmitter LCD remote, LP/SP		86 Supp.
<b>Sanyo VHR-D4890E</b> £1000	Poor Excellent	High grade S-VHS recorder with digital effects which gives first rate screen-based results but relatively poor sound recording	Hi-fi, NICAM, S-VHS, PIP etc		86 Supp.
<b>Sharp VC-S1000H</b> £1000	Good Poor	Clean, accurate and stable off air and from tape, and LP modes are satisfactory - but on-screen S-VHS results are well below par	Hi-fi, NICAM, LP, S-VHS, titling		86 Supp.

Last month's parting shot queried whether the Naim CD player brings the CD medium within spitting distance of vinyl. It certainly makes a much more convincing fist than other players I've tried, but a little more familiarity with Compact Discs today still leaves me fundamentally contemptuous of the medium.

It's not that the discs aren't enjoyable enough in their way, and much the same can be said for Nicam stereo TV sound. Rather it's that every direct comparison I've made between vinyl and CD leaves the silver disc in second place, sounding comparatively bland and lacking in delicacy, transparency and texture, especially at the treble end of things.

## Unpasteurised pleasure

Certainly CD replay quality is improving steadily, but the irony is that vinyl is doing so too - and at a significantly faster rate, partly thanks to the source itself but also due to improvements in resolution throughout the chain.

Even the go anywhere convenience of CD has its darker side. I've had hours of pleasure from the Nakamichi in-car CD player, but the car itself, aided and abetted by the children therein, is not the best environment for the long term good care of the silver disc. Small surface scratches and fingermarks are all too easily accidentally acquired in handling, and these are presumably the cause of some gradual tracking deterioration noted on some of my discs.

I suppose we're all going to have to come to terms with CD in the end, as shops stocking vinyl get increasingly thin on the ground, and as fewer and fewer significant recordings are pressed. But I'm already finding myself passing by the mainstream browsers and digging around amongst the indies and the 12inch singles, for music that hasn't been pasteurised into irrelevance.

The way things are going I find myself increasingly sympathetic towards the anachrophile perspective. And it's not just CD that's providing the stimulus. The latest speaker review project which fills up the bulk of this issue has also served to puncture any complacency about the way loudspeakers have evolved over the past few decades.

Completely unexpectedly, I fell in love with a pair that costs a modest enough £600 and doesn't even have real bass extension. That doesn't mean I've already fallen out of love with the giant £6,000 Naim DBLs, but the Castle

distinguishes a horn-related from a box-loading technique (a gross simplification I know, but with more than a germ of truth).

This isn't just a simple either/or dichotomy, of course. Enclosure design, and horns in particular, makes brain surgery look straightforward, with all sorts of conflicting advantages and disadvantages in every direction. Nevertheless, significant strengths of the horn type approach include the way that pressure keeps tight control of and damps the diaphragm, and the efficiency with which energy is transmitted to the air.

# Personal Messages

*Still in loudspeaker-mood after all those reviews, Paul Messenger waxes lyrical about the genuine full range horn-loading types of the good old days.*

*Chester* nevertheless does certain things so very well that I'm looking forward eagerly to the arrival of a production pair.

It's not an easy, comfortable sound on initial acquaintance, but has a delightfully natural and lifelike presence quality that is impressively communicative and disturbingly seductive - and comfortably beyond that normally attained by conventional box-loaded loudspeakers.

The baby Royds capture some of this magic quality too, so the big magnet, cast frame, light paper cone main driver approach which both follow might be a contributing factor. But I suspect a major reason for the Castle's success lies in deliberately forsaking air-mass for air-pressure loading, which in very broad terms is what

By complete coincidence, last week provided my first opportunity in years to hear a genuine full range (three-way) horn system. Tannoy organised day trips to Glasgow in order to introduce its new *Sixes* range of (seven) loudspeakers. We spent the morning enjoying several of these interesting and attractive hexagonal box loudspeakers, and although it's difficult to make low frequency judgements in unfamiliar systems and surroundings, the voicing seems very good and the horn tweeter in the dual concentric models is now far sweeter than its predecessor in the successful *DC* models.

However, the real treat was the dessert, when a pair of the magnificent *Westminster Royals* were wheeled in. Significantly larger even than the original *Westminster*, and

now built throughout in birch ply, most of these ten grand a pair monsters are destined for Japan or South Korea, but I'm hoping to persuade a pair to drop in for a visit soon. The colorations of all those panels are still apparent, but the essential effortlessness and dynamic realism of the horn approach was again rammed home.

## Crying shame

The bottom line is that horns do it quite differently from either box (monopole) or panel (dipole) loudspeakers. One might criticise the colorations that horn loading invariably seems to introduce, but one can't deny the vitality and excitement of an experience that can leave the alternatives far behind.

The crying shame is that the genre has been all but ignored in the UK for the past quarter century, mostly because horns are very inefficient users of enclosure volume.

The *Chester* (which isn't even a pukka horn) is maybe four times the size of a box loudspeaker of similar low frequency extension, while the Tannoy *WR* dwarfs the Naim *DBL*, yet doesn't match it for bass reach. (I suspect there's an interesting relationship between bass quality, extension and cabinet volume, but don't have the space to explore it right now.)

Tannoy, Vitavox and Lowther are still manufacturing horns, but effectively only for export markets, and I shall have to reinvestigate the Impulse models that Jimmy Hughes likes so much, having rather lost touch since Brian Taylor's original prototypes nearly a decade ago. Then there's the architectural specialists Axhorn, but they're based in Wales, which is an awfully long way from here.

But whilst pondering these and other possibilities (like pulling up the floor and building something ludicrously large into the void), I shall be eagerly awaiting the return of the *Chesters*. Because I miss them, dammit.

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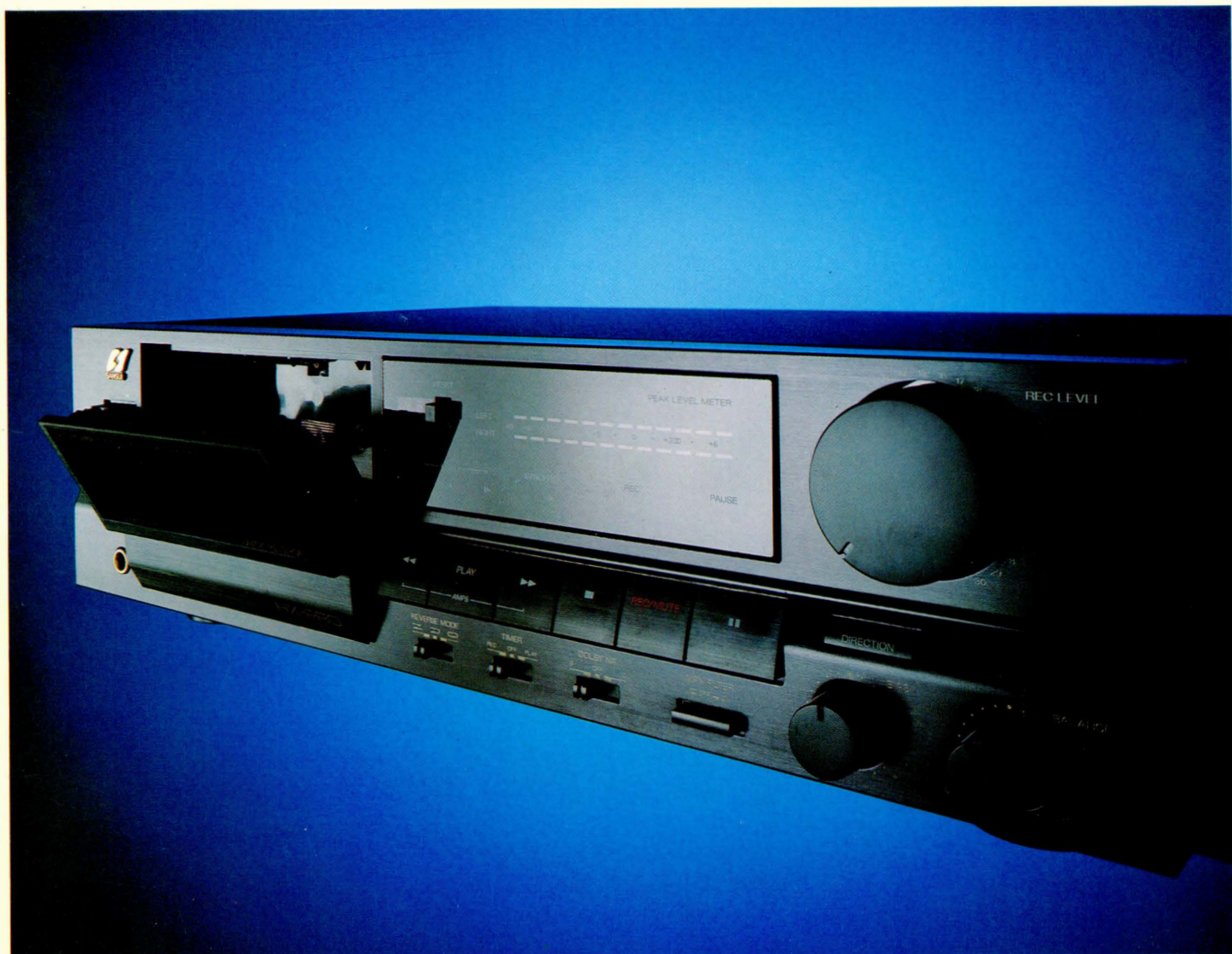
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