

HI-FI CHOICE

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

NOVEMBER 1991 £2.95

The Directory:
Concise results of over
1,000 full reviews

**A glowing reference - nine
valve amps on test**

**Reviews on 26
of the latest**

CD PLAYERS

**Special
100th
Issue**

**Over 40 pages of reviews,
Win a £2,500 Meridian
CD system,
and much much more**



" THOSE MONITOR 14 SPEAKERS RIGHT,
THAT I JUST HEARD, PUT ME IN MIND, OF
THE FIRST TIME A CROTCHET, RIGHT,
CARESSED MY COCHLEA. I CAN FEEL IT
NOW, RISING AND FALLING IN A
CASCADING IRIDESCENT SPECTRUM, OF
AUDIO LIGHT AND SHADE, AND
CULMINATING IN A SONIC CATHEDRAL
OF SOUND... RAVE ON".

PRETENTIOUS MUSIC JOURNALIST.

"...But do they tingle the senses? They do."

- Value rating ★★★★★
- Sound rating ★★★★★

HIGH FIDELITY NOVEMBER 1990



RAM
RAM PROJECTS LTD.



M O N I T O R

A U D I O

MONITOR 14

For further information contact:

RAM Projects Ltd, Unit 27 Stretford Motorway Estate, Barton Dock Road, Stretford, Manchester M32 0ZH. Tel: 061 866 8101 Fax: 061 866 8118

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

HI-FI CHOICE

ISSUE NUMBER 100 NOVEMBER 1991

EDITOR
Andy Benham

CONSULTANT EDITOR
Paul Messenger

ART EDITOR
Andrew Ryan

REVIEWS EDITOR
Jason Kennedy

PRODUCTION EDITOR
Janet Moorhouse

SUB EDITOR
Andrew Cartmel

CONTRIBUTORS
Richard Black, Barry Fox, Alvin Gold,
Roy Gregory, Dan Houston, Ian Ward

PHOTOGRAPHY
Chris Richardson

GROUP ADVERTISEMENT MANAGER
Fiona Hunt

ADVERTISEMENT MANAGER
Rob Debenham

ASSISTANT ADVERTISEMENT MANAGER
Miriam Young

CLASSIFIED SALES EXECUTIVES
Jane Woolner, Caroline Leese

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

PUBLISHED by Dennis Publishing Ltd, 14 Rathbone Place, London W1P 1DE.
Tel: 071-631 1433. Fax: 071-323 3547 (Editorial); 071-636 1640 (Advertising)

Company registered in England.

ORIGINATION: Those nice people at Graphic Ideas.

PRINTING: Riverside Press, St Ives Plc.

DISTRIBUTED by: SM Distribution,
6 Leigham Court Road, Streatham, London SW16 2PG.
Tel: 081-677 8111.

A



PUBLICATION

Enquiries regarding the content of this journal should be made in writing to *Hi-Fi Choice* Editorial, 14 Rathbone Place, London W1P 1DE. We regret enquiries cannot be dealt with by telephone. While every care has been taken in the preparation of this journal, the publishers cannot be held responsible for the accuracy of the information herein, or any consequence arising from it. Readers should note that all judgements have been made in the context of equipment available to *Hi-Fi Choice* at the time of review, and that 'value for money' comments are based on UK prices at the time of review, which are subject to fluctuation and are only applicable to the UK market. This edition ©1991, Felden Productions. ISSN No. 0955 111 5.

Member of the Audit Bureau of Circulation.



Menu

As I sit down to write this piece it is the week before the Penta Hi-Fi show, and a mere fortnight away from the Bolton show. These shows, along with Bristol, scheduled for March next year, form the backbone of the British hi-fi show circuit and give the casual browser, as well as the dedicated enthusiast, a shop window onto the wonderful world of hi-fi.

But what sort of impression are they likely to get? I can't help comparing the British show scene to the Berlin Funkausstellung which has just finished a near two week run in Germany. The show, billed as the largest in the world, attracted an astonishing 571 exhibitors. More astonishing, however, is the attendance figure; no fewer than 515,752 visitors passed through the massive exhibition halls.

Jason Kennedy, Paul Messenger and myself visited the show and were all amazed at the amount of people that came to see what was new in the world of hi-fi, TV and video. From early morning onward the streets leading to the exhibition centre were thronged with people, including a large number of families who were treating the show as a great excuse for a day out. Inside the show there were play areas for the kids, live shows for all the family and more restaurants, hot dog stalls and ice cream vans than you could shake a stick at.

Obviously the question of why the show is such a success is a bit of a chicken and egg scenario. The people come because there are so many exhibits and so much to do. The exhibits come because they will be seen by so many people. However, the population of Germany is only slightly larger than that of the UK, so how come we are limited to a large number of shows spread around the country and housed in hotels which could comfortably be fitted inside a single one of the Funkausstellung's 27 display halls.

Let's face it, unless you are 'into' the subject, a day spent camped out in a concrete box by the side of Heathrow's main runway is hardly an ideal way to spend your weekend. I suspect that the number of people who will turn up at the Penta, or Bolton for that matter, and discover that the world of hi-fi can actually be fun, understandable and, more importantly, relevant to everyone who listens to any form of music is strictly limited. Hi-fi should appeal anybody who buys albums or CDs, and not just a privileged few.

There is a place for the small, specialised shows, but until this country gets a decent sized show, able to attract massive, national publicity and capable of giving the general public an insight into just what is available, 'specialist' hi-fi will remain a minority interest. And people will continue to waste money on second rate systems barely capable of making a noise, let alone showing the music in the form the performers intended.

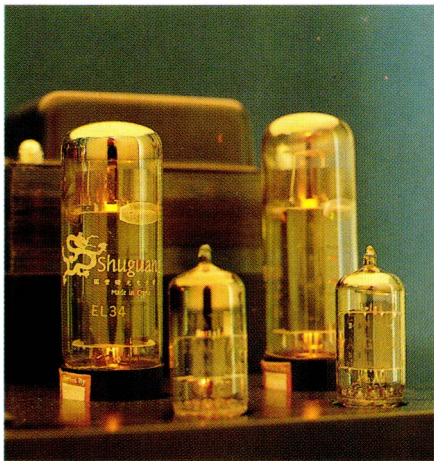
Andy Benham



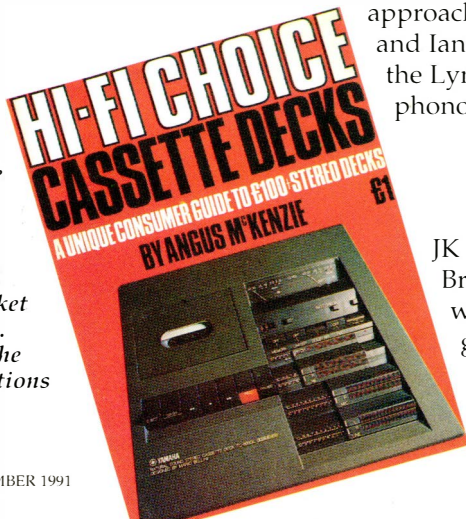
Cover photography
by Chris Richardson.

Contents

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



Top: The Can Opener could be just the solution to those headphone connection blues. Middle: A glowing reference, Roy Gregory checks out the valve amp market starting on page 49. Bottom: We start the 100th issue celebrations on page 30.



30

HAPPY BIRTHDAY TO US

A special feature for our 100th issue giving you an insider's view on how the *Choice* listening tests are carried out.

38

THE TURN OF THE CENTURY

Dan Houston looks back over our first 100 issues and talks to the previous editors about the history of the magazine.

67

READERS WRITE/CHOICE ANSWERS

We answer a selection of readers' queries from the bulging *Hi-Fi Choice* postbag.

71

21st CENTURY FOX

Barry Fox looks at the future of CD-R and how it fits in with both DCC and Mini Disc.

The Front End

4

UPDATE

All the latest news and products including Mission's new CD player and a look at new launches from the Berlin show.

14

CHOICE SESSIONS

Andy Benham investigates the world's thinnest CD player, Jason Kennedy looks at a rather different approach to headphones and Ian Ward checks out the Lynwood add-on phono stage.

20

STATEMENTS

JK auditions a new British built cartridge while Alvin Gold gets his hands on Musical Fidelity's £1,200 valve amp.

Aspirations

24

ROOM AT THE TOP

Dan Houston visits the home of *Vogue* make-up artist Mary Greenwell.

Valve Amplifiers

49

THE REVIEWS

Are you a fan of that warm, glowing feeling? Roy Gregory and Chris Binns have been testing nine of the latest valve amplifiers.

55

CONCLUSIONS, BEST BUYS AND RECOMMENDATIONS

Cheat and find out which models came out best in our comprehensive valve amplifier survey.

CD Players

75

CHOOSING AND USING CD PLAYERS

Paul Miller offers advice for those of you looking to invest in a new CD player or thinking of upgrading an older model.

77

THE REVIEWS

Check out our full subjective and technical reviews on 26 of the latest CD players.

128

TECH TALK

Confused by the technical aspects of our tests? Let our resident technical wizard Paul Miller explain the significance of least significant bits, DACs, chipsets and all the other technical terms used in the reviews.

134

CONCLUSIONS, BEST BUYS AND RECOMMENDATIONS

Find out which CD players came out best in this month's reviews and which are the ones to avoid.

Directory

153

THE CHOICE DIRECTORY

At a glance information on all the current products that we've tested in *Hi-Fi Choice*. With well over a 1,000 entries, it even includes the results from this month's CD player tests.

Beware of cheap imitations, this is the real thing; 30 pages of detailed information including comments on sound quality, compatibility, features and value for money.



Choice Matters

12

COMING UP

Next month we'll be looking at CD Mini systems and digital to analogue converters as well as bringing you all the usual features and the latest news.

63

CHOICE SUBSCRIPTIONS

Save money by subscribing, get a fabulous free gift, and have your favourite hi-fi magazine delivered to your door.

65

BACK ISSUES

Missed an issue of *Choice*, or want to read a past review or feature? Order your back issues with this page.

138

READER OFFERS

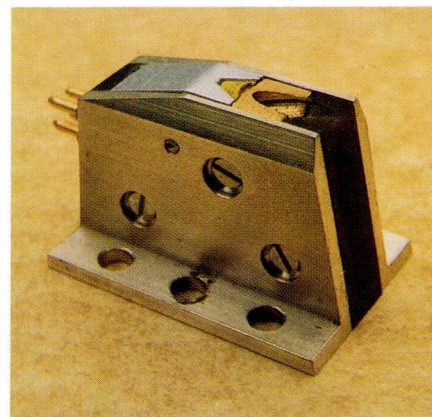
Your chance to buy cables, interconnects and a whole host of other system enhancing goodies.

We've also collected together a fantastic selection of audiophile recordings and hard to find vinyl. Buy now while stocks last.

184

PERSONAL MESSAGES

Paul Messenger brings his wit and wisdom to bear on the wonderful world of hi-fi.



Top: Paul Miller gets to grips with this little lot in this month's main review section.

Middle: Dan Houston visits Mary Greenwell to investigate a truly aspirational system, find out all about her multi-room set-up on page 24. Bottom: Jason Kennedy checks out the British built Audio Note 10 in Statements, starting on page 20.

Choice Update

NEWS FROM

AROUND THE WORLD



Mordaunt-Short skips series

The hand of Robin Marshall, the man responsible for the highly acclaimed Epos loudspeakers, has clearly been at work in the design of Mordaunt Short's latest loudspeaker range, the 5 Series.

The new range, which replaces the 3 Series (four is apparently an extremely unlucky number in the far east) utilises low resonance moulded plastic front and rear baffles clamped to a medite cabinet by means of high tension steel rods. Into these rather novel enclosures are set a metal dome tweeter and a number of single piece cone and surround mid/bass units. The mid/bass units will be familiar to anyone who has seen Tannoy's recently announced Sixes range, although the technology originated with Mordaunt-Short.

The new range is also rather unusual in that all five models have fully shielded magnets so that they can be placed close to a TV set without causing any problems.

All the models, except the baby MS5.10, come equipped



Mordaunt-Short's 5 Series uses plastic front and rear baffles.

with two sets of loudspeaker terminals to facilitate bi-wiring.

Prices start at £120 for the MS5.10 and go up to £400 for the floor standing MS5.50, this latter

unit using twin mid/bass drivers. The new speakers will be available from the end of October and come finished in either black ash or rosewood.

Your Mission . . .

Mission looks to be onto a sure fire winner with its latest CD player, the DAD5. At first glance the new player looks like a conventional midi width unit, however its diminished width is due to the fact that it is designed to be racked alongside the four by three inch front panel of the standalone DAC5 digital to analogue convertor.

Although Mission claims excellent results for the DAC5 unit, which, rather perversely, comes equipped with Philips' latest DAC7 chip set, the DAD5 comes complete with its own Philips Bit Stream DAC and can operate as a standalone unit.

Mission bills the combination as the CD equivalent of the Cyrus II/PSX combination, the Cyrus II amplifier being quite capable on its own but upgradable with the addition of the PSX power supply. Thus a customer can purchase the DAD5 for £300 and upgrade to the superior quality DAC contained in the £300 DAC5 at a later date. Alternatively the DAC5 can be used as an add on unit with another CD player.

Apollo's Arias

Stand specialist Apollo has produced a collection of equipment supports and



Tube out with Apollo's Arias.

speaker stands which it has dubbed the Aria range.

The equipment supports, which are available with either glass or medite shelves, come in two, three, four and five tier versions.

Their design varies from the norm in the use of chunky tubular uprights and 'X' shaped cross braces.

Prices range from £69 for the two tier medite shelved model to £199 for the version with five glass shelves.

There's also a range of five speaker stands. Called Aria X, they start at 300mm in height and work upwards in 100mm increments.

Expect to pay £75 for the two shorter models and £79 for the other three.



Banking on the small is beautiful ethic, Denon has produced a new mini system, the D-70, which will retail for £580 including a pair of British loudspeakers. The system comprises a CD player, receiver and cassette deck, housed in rather attractive mini width cases that are finished in titanium grey. Its intelligent source selecting system makes it pretty well drunk proof and its 30watt per channel output should be more than enough to annoy the neighbours.

Denon has also been busy working on its digital technology and come up with something called the AI-DAC, this is supposed to combine the sweetness of bitstream and the welly of multibit. Technically described as a single two micron BI-CMOS monolithic chip this new DAC was designed in collaboration with chip specialists Burr-Brown and has found its way into the DCD580, a new £180 player. Let's hope it sounds better than the DCD-1460 reviewed this month!

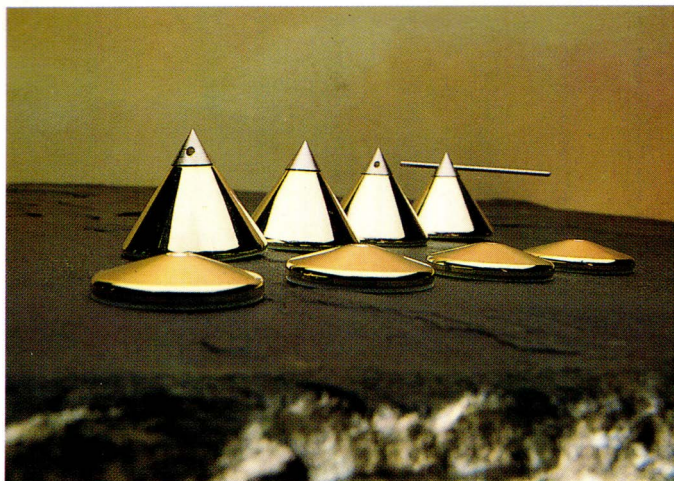
A flurry of Roktivity

In response to Linn's budget *LP12 Basik* Roksan has come up with the *Xerxes 33*, a single speed cut price *Xerxes*. Incorporating what the company calls a high quality in line power supply, the *Xerxes 33* costs £550, £235 cheaper than the standard item. The '33 can be upgraded to full spec with the addition of the *XPSII* power supply which costs an additional £295.

Roksan is also branching out into the wacky world of digits with a CD transport and DAC, called *RoK-DP1* (c£1,000) and *RoK-DA1* (£495) respectively. Detailed information about the contents of these two boxes is still scant but we've managed to glean that the transport is not a

Philips, as is the case with 90 per cent of specialist brand disc drives, but is a three beam oriental type. The DAC type looks like being an American bitstream variant.

The company is also producing cut down versions of its pre/power amplifiers, the *RoK-L2* line preamp (£995) features manual rather than electronic input switching and a stereo volume control but is otherwise very similar to the pricey *RoK-L1*. The *RoK-S1* (£1,495) is a stereo power amplifier based on the *M1* monoblok, details on power output are bit vague, but it is claimed to be just as capable of controlling loudspeakers as its bigger brother.



Goldring is bringing in the Audio Selection range of classy cones from Germany. These sexy but sharp little devices can be adjusted for height and have adhesive foam pads on their bases. They even come with dimpled stick-on discs so that you don't pierce whatever it is you are supporting. The cones are available in either chrome or black and cost between £18 and £30 depending on how many and what finish you want.

Welsh wonders

Treble A is a new name in the world of equipment supports but if its first products are anything to go by it could well have a rosy future.

The range consists of three shelving units, offering two, three and four tiers respectively, the top shelf of each unit being either medite or 10mm glass depending on the price. The stands are isolated by means of spiked feet at the base of each support column and the top shelf is further isolated by another set of spikes, bedded into brass plates to prevent the top shelf from moving. Prices range from £113 for a basic two shelf unit to £220 for a four shelf unit fitted with the glass isolation platform.

Initial auditioning suggests the units are very good performers indeed, Watch out for a full review in next month's *Sessions*, or get further details from Treble A on (0978) 845893.

Goldring turns

Cartridge specialist Goldring has branched out into turntables with a budget model called the *Excelda 1*. This £160 deck features a solid plinth, belt driven alloy platter with a felt mat, and a decoupled synchronous motor. The tonearm has a fixed headshell and comes fitted with a Goldring *Elan* MM cartridge.

Luxuries are not surprisingly

thin on the ground but the deck will autostart which makes life a little easier. When asked why it was marketing a new product in what is considered to be a shrinking market Goldring's Steve Beahan explained that decks in this price bracket are still selling well, people are buying their last turntable and want something well made but not too expensive to keep their vinyl collection alive.

Heybrook works the floor

Heybrook has produced an attractive new floorstanding loudspeaker called the *Sextet*. A three way, £899 model it has rather tasteful burr walnut veneer fillets on either side of the drive units, other veneers are also available to order.

The driver line up consists of a planar tweeter, a 140mm polypropylene midrange unit with its own sealed enclosure and a 180mm doped paper bass unit that's been built to Heybrook's specs. The latter is contained within a reflex loaded chamber with twin downward firing ports.

Floor spikes come as standard but a low profile stand is also available which would allow the ports to breath more easily. The *Sextet* is an 8ohm (nominally - it drops to six) design with a reasonable 88dB efficiency, it measures 900x271x200mm (HxWxD) and should be sited close to a rear wall.

Heybrook's sleek new *Sextet*.



A truck load of Musical Fidelity

Musical Fidelity has been working hard of late with revisions of existing products and the creation of new ones. The most exciting new piece is the CD1, a £400 Bit Stream CD player. MF isn't saying a lot about it but claims that it incorporates a modified Digilog output stage.

The B1, A1, T1 and MC4 are all now in MkII guise. The B1MkII (£230) is more refined sounding and better finished, the A1MkII (£300) has a separate power supply for the line stage and increased power and the T1MkII tuner (£270) has had its mains transformer extracted which has made it less coarse sounding. The MC-4MkII loudspeaker (£600) is now a three way design that looks more like the MC-6 than the old 4.

Finally the A100 amplifier has been replaced with the A120 which is more like the A200 than its predecessor, but delivers less power (40wpc) and is slightly smaller. The new amplifier will set you back £550.

*"For us,
the realistic
reproduction
of music
is the essential
premise."*

SAUL B. MARANTZ

The critics agree.

"But to my ears the CD's mature and involving quality is a winning combination."

High Fidelity, September 1991.



CD-62 COMPACT DISC PLAYER

See your nearest Music Link dealer for a demonstration.

ABERDEEN	HOLBURN HI FI	0224 585713
BELFAST	ZEUS AUDIO	0232 332522
CAMBRIDGE	UNIVERSITY AUDIO	0223 354237
CARDIFF	AUDIO EXCELLENCE	0222 228565
CARLISLE	PETER TYSON	0228 25891
CHESTER	PETERS HI FI	0244 319392
CHRISTCHURCH	H.A.T.V.	0202 473901
CRANLEIGH	SOUNDS EXCLUSIVE	0483 268181
CONGLETON	CONGLETON HI FI	0260 297544
DAWLEY	MID SHROPSHIRE AUDIO	0952 630172
DERBY	ACTIVE AUDIO	0332 385185
DUBLIN	CEOL PRODUCTS	0103531 961358
EDGBASTON	MUSIC MATTERS	021 692 1359
EDINBURGH	IN HI FI	031 225 8854
FOLKESTONE	V. J. HI FI	0303 56860
GATESHEAD	LINTONE AUDIO	091 477 4167
GLASGOW	MUSIC ROOM	041 832 5012
GUERNSEY	TELESKILL	0481 22323
GUILDFORD	P. J. HI FI	0483 504801
HERTFORD	ULTIMATE AUDIO VISUAL	0992 583399

HUDDERSFIELD	HUDDERSFIELD HI FI	0484 544668
JERSEY	SOUND ENGINEERING	0534 21735
LEICESTER	LEICESTER HI FI	0533 539753
LONDON	COVENT GARDEN	
	RECORDS	071 379 7635
LONDON	HI FI EXPERIENCE	071 580 3535
LONDON	BABBER	081 579 6315
LONDON	DEANS	071 723 4630
LONDON	GALAXY	071 637 2624
LONDON	HI SPEK	071 349 1166
LONDON	TIME AND TUNE	071 247 0567
LONDON	SPATIAL	071 637 8702
NEWARK	PETER ELLIS	0636 704571
NEW MALDEN	UNILET PRODUCTS	081 942 9567
NORTHWOOD	NORTHWOOD AUDIO	0927 420877
OXFORD	OXFORD AUDIO	
	CONSULTANTS	0865 790879
PRESTON	NORMAN AUDIO	0772 53057
SHEFFIELD	MOORGATE ACOUSTICS	0742 756048
SHREWSBURY	SHROPSHIRE HI FI	0743 232317
STAFFORD	MUSICAL APPROACH	0785 55154

marantz[®]
PURE HIGH FIDELITY

Audio exotica a go go

Just when you thought that there couldn't possibly be any more American audio exotica left to be brought into the UK a new company has found a bevy of seriously audiophile products to distribute. MPI will be bringing in Genesis and Theil loudspeakers, Accuphase, McIntosh, Primare and Counterpoint electronics, and Aputure cables.

Genesis is a new loudspeaker company which we hope to tell you more about next month and Theil is a highly regarded high-end company. Both are made in the US, as are McIntosh and Counterpoint electronics, the former being a rough equivalent of Quad. Primare's amplifiers have been distributed here before, but the range has recently expanded with the 200 range of distinctively



Primare's 204 Goldtop, the analogue dreamer's CD player.

styled components that are encased in stainless steel.

Perhaps most interesting amongst them is the Model 204 Goldtop CD player, this £3,129,

18-bit, eight times oversampling player has been produced for 'everyone who dreams of an analogue CD player.' For more info call MPI on (061) 777 8522.

Bit Stream from Proton

Proton has produced a new Bit Stream CD player called the AC-422 which retails for £250.

Apparently 'not just Philips parts in a box' the AC-422 incorporates Proton's own digital filters and audio circuitry.

The external appearance of this and the other components in the Proton 400 Series was created by the Chicago based industrial designer Reinhold Weiss. According to the literature it is 'deliberately minimalist'; although it doesn't have notably fewer buttons than many European players, they are slightly smaller.

Nordic tube power

Absolute Sounds has announced that it will be distributing the Scandinavian Copland range of valve amplifiers. The first unit to reach these shores is the CTA 401 integrated amplifier, this elegant model costs £1,498 and delivers 26watts with its EL34 pentode output tubes.

Facilities include four line inputs, a tape loop with monitoring and a valve phono stage for moving magnet and high output moving coil cartridges. Both four and eight ohm taps are included to suit different loads and it is claimed



Far too good looking for a tube amp, Copland's CTA401. that despite its modest power rating, it will drive fairly inefficient speakers.

NAD competition winners

We've delved into the ever bulging Choice post bag and picked some winners for August's NAD competition. The first prize which consists of the following NAD components; 5440 CD player, 5120 turntable, 6340 cassette deck, 4225 tuner, 3240 amplifier and floorstanding 8100 loudspeakers goes to Nik Hill of Umberleigh. The second prize; 5425 CD player, 5120 turntable, 6325 cassette deck, 4225 tuner, 3020i amplifier and 8225 loudspeakers was won by D Taylor of Sturton by Stow. The third prize, a 5440 CD player, goes to Steven Allan of Coxhoe and the fourth, a 5425 CD player, was won by D Humphrey of Bristol.



In-Brief

The shows go on;
19/20 October: Chiltern's, Aylesbury.
25-27 October: Zeus, Belfast.
25-27 October: In Phase, Swindon.
2-3 November: Hi-fi People, Peterborough.
1-3 November: Hi-fi Corner, Edinburgh.
23/24 November: Paul Roberts, Weston-Super-Mare.
Contact the dealers concerned for further information.

Sennheiser has been inundated with requests for its new headphone lead following our review in last month's issue. Unfortunately we were given the wrong price by the company and the new lead will now retail for £15.00. Order direct from Sennheiser, the part number is 37974/OFC.

Naim Audio has produced a (mechanical) remote control lift/lower device for the ARO tonearm. It's called ARO-MATIC and retails for 12p under £100.

Audio-technica is keen to warn you about counterfeit versions of its styli that have been appearing of late. Apparently fake styli for AT95Es and AT110Es are being sold, the genuine article can be identified by the A-T name and the triangle within a circle logo.

Hi-fi specialist Overture of Banbury will be holding a musical evening in conjunction with Arcam on Tuesday November 12th. Call (0295) 272158 for free tickets.

Zebra is Croydon's latest hi-fi store. It stocks products from Rotel, NAD, Celestion, Tannoy and Monitor Audio and is located at 18/24 Brighton Road, South Croydon. Tel: (081) 668 2491.

Our apologies are due to AKG whose K1000 headphone (reviewed last month) managed to lose its Recommended tag somewhere in the works.

STUNNING SYMMETRY



TEAC

TEAC UK LTD. 5 MARLIN HOUSE, THE CROXLEY CENTRE, WATFORD, HERTS WD1 8YA.
TEL 0923 225235. FAX 0923 36290

Berlin Funkausstellung

Berlin's massive, bi-annual hi fi show, the Funkausstellung, bills itself as the world's largest hi-fi show and with over half a million visitors passing through the doors this year, who are we to argue?

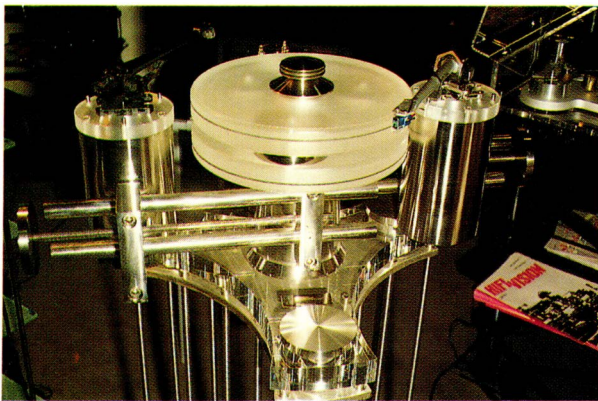
The show took place at the beginning of September and the big story was Sony and Philips slugging it out with their new digital formats, Philips' DCC seeming to have a slight edge, at least in terms of visibility. Barry Fox goes into this in more detail on page 71 so we won't dwell on it here.

The so called 'high-end' was given three halls of its own and

here were to be found the likes of Kef, Celestion, Mission and Linn to name but a few, and all with new products to brag about, including a public sighting of the much hyped but yet to be finalised Linn CD player.

Most of the new products will also be on display at the Heathrow Penta hi-fi show and we'll be covering them in more depth in our show report in the December issue.

However, for those of you who can't wait until then, here are some of the new products which caught the imagination of our eagle eyed photographers.

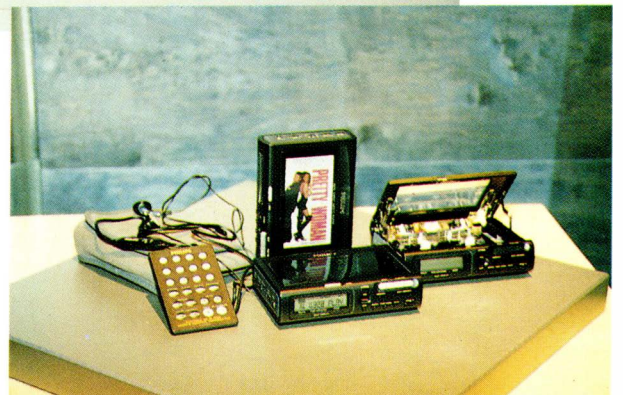


Above ; Transrotor's nothing if not substantial Vision turntable is made of perspex and stainless steel.

Right; Philips was pushing DCC very hard and had several machines on display including this portable and the full width player that it plans to introduce next spring.



Left; one of two rather attractive new composite stone based turntables from Dual.



Below left; the ATL trans-line uses flat drivers made of rigid foam, on the right Jamo's substantial new Oriel.

Below left; one of several colour options in Sony's German ES range, and right, B&W's Silver Signature has all silver wiring and coils, and comes complete with external crossovers and silver speaker cable.





The Pioneer A400 amplifier.

As recommended
by these
speakers.

WHAT HI-FI?
MAGAZINE AWARDS 1990

Best Amplifier.

Best Buy Overall.

HI-FI CHOICE MAGAZINE

Best Buy Amplifier.



 **PIONEER**
The Art of Entertainment

WHAT HI-FI? OCT 1990. "THERE IS SOMETHING INEFFABLY RIGHT ABOUT THE A400." ALVIN GOLD.

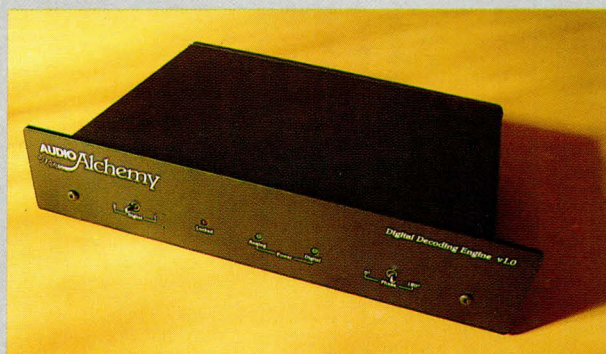
HIGH-FIDELITY. SEPT 1990. "IT LOVES MUSIC, THE A400. IT LOVES IT WITH A VENGEANCE." MARK PAYTON.

AUDIOPHILE. SEPT 1990. "EVEN IF YOUR BUDGET EXTENDS TO \$1,000, IT COULD BE EXACTLY WHAT YOU'RE AFTER." JIMMY HUGHES.

Don't miss next month's issue of

HI-FI CHOICE

Packed with in-depth reviews!



16 pages of CD Mini System reviews

We test the latest models from Aiwa, B&O, Denon, JVC, Technics, and many more.

PLUS . . . 10 pages of digital to analogue converters, including the latest models from Meridian, Wadia, Audio Alchemy and Micromega.

AND, OF COURSE . . . News, views, and much, much more!

HI-FI CHOICE

DECEMBER ISSUE ON SALE
8th NOVEMBER



Free with this issue of

HI-FI CHOICE

An AM CD cleaning tissue!

Attached to the cover of this issue you will have a free sample of AM's CD cleaning tissue. Specially formulated to keep your CDs as clean as possible, and thus to give you the best performance from your silver discs, the tissue should be used as indicated on the packaging, although please note you should not clean the label side of your disc.

As most of you will be aware, CDs can get so dirty that sometimes they won't even play and if you have any discs in this condition then a thorough cleaning is necessary. However, you shouldn't really let your discs get into this sort of state in the first place. Removing dirt and finger prints on a regular basis will give better results from your discs as well as prolonging their life.

Despite the magic of error correction a clean disc will nearly always sound significantly better than a dirty one, having a better focus, cleaner treble and better depth to the soundstage. Use your free gift on a disc in your collection and then why not write in and tell us the results. We'll publish your opinions in a forthcoming issue.

Should you require more tissues they are available at £1.99 a box of ten from selected WH Smith branches, Virgin Megastores, 4 Play record stores and within Debenhams, Andy's Records, House of Fraser department stores, Alders department stores and of course, your local hi-fi dealer.

WATCH OUT FOR ANOTHER GREAT
FREE GIFT ATTACHED TO THE
DECEMBER ISSUE!

158 REFERENCE POINTS FOR THE BEST HI-FI

Reference Point is a sound partnership between Pioneer and a nationwide network of specialist hi-fi dealers, selected because they're the most reputable independent experts. Visit any Pioneer Reference Point dealer for the best advice and service.

AVON		GLOUCESTERSHIRE		MIDDLESEX		WILTSHIRE	
Paul Roberts, Bristol	0272429370	Hutchinsons, Cheltenham	0242573012	Heathrow Hi-Fi, Hounslow	081-5721135	In-Phase Audio, Swindon	{ 0793520948
Paul Roberts, Weston-Super-Mare	0934414423	GREATER MANCHESTER		Musical Images, Hounslow	081-5695802		{ 0793526393
Radford Hi-Fi, Bristol	0272428248	Clearstone Hi-Fi, Manchester	061-835 1156	NORFOLK		P R Sounds, Melksham	0225 708045
BERKSHIRE		Hamlets Audio Visual, Ashton-u-Lyne	061-343 5127	Adcock & Sons, Watton	0953881248	P R Sounds, Trowbridge	0225 777799
B & B Hi-Fi, Bracknell	0344424556	HAMPSHIRE		MartinsHi-Fi, King's Lynn	0553761683	WORCESTERSHIRE	
B & B Hi-Fi, Maidenhead	0628 73420	BryantsHi-Fi, Aldershot	025220728	Martins Hi-Fi, Norwich	0603627010	David Waring Cameras & Hi-Fi, Worcester	0905 27551
B & B Hi-Fi, Newbury	063532474	Cristavision, Fareham	0329288660	NORTHAMPTONSHIRE		YORKSHIRE NORTH	
B & B Hi-Fi, Reading	0734583730	Now That's Hi-Fi, Portsmouth	0705811230	H.G. Rapkin, Northampton	060437515	Maxwells, Northallerton	0609 773535
Frasers Hi-Fi & Video, Slough	0753520244	Now That's Hi-Fi, Portsmouth	0705 864756	NOTTINGHAMSHIRE		Scarborough Hi-Fi Centre, Scarborough	0723 374547
Frasers Hi-Fi & Video, Wokingham	0734 794998	R. Upfields Radio & TV, Botley	0489787558	F.L. Smith Electrical, Mansfield	0623655684	Vickers Hi-Fi, York	0904 629659
BUCKINGHAMSHIRE		R. Upfields Radio & TV, Locks Heath	0489885122	F.L. Smith Electrical, Worksop	0909479770	YORKSHIRE SOUTH	
B & B Hi-Fi, High Wycombe	0494535910	Sinclair Youngs, Basingstoke	{ 025621307	Forum Hi-Fi, Nottingham	0602622150	Superfi, Sheffield	0242 723768
CAMBRIDGESHIRE		Southampton Hi-Fi Centre, Southampton	0703 228434	Nottingham Hi-Fi Centre, Nottingham	0602786919	YORKSHIRE WEST	
The Hi-Fi Company, Peterborough	0733 341755	HERTFORDSHIRE		Parker High Fidelity, Nottingham	0682476377	Amrik Electronics, Bradford	0274 722530
University Audio, Cambridge	0223354237	Chew & Osborne, Bishop's Stortford	0279656401	Superfi, Nottingham	0602412137	Amrik Electronics, Leeds	0532 752285
CHESHIRE		Herts Hi-Fi, Hoddesdon	0892441172	OXFORDSHIRE		Eric Wiley, Castleford	{ 0977 553066
Car & Home Stereo, Macclesfield	062532707	Hi-Way Hi-Fi, Hemel Hempstead	0442235755	Sound 'n' Vision, Bicester	0869 246491	Superfi, Leeds	{ 0532449075
Cobalt Hi-Fi Centre, Warrington	092536215	RadioLux, Watford	0923229734	Witney Audio Centre, Witney	0993 702414		
Hamlets Audio Visual, Cheadle	{ 061-428 5278	HUMBERSIDE		SHROPSHIRE		JERSEY	
Hamlets Audio Visual, Stockport	{ 061-428 6367	Superfi, Hull	048224051	Shropshire Hi-Fi, Shrewsbury	{ 0743 232065	Fotosound, St Helier	053459990
Tomorrow Studios, Chester	0244320414	ISLEOF WIGHT		W. Owen, Telford	0952613818	NORTHERN IRELAND	
CLEVELAND		Russells, Newport	0983 523864	SOMERSET		CO. DOWN	
Gilson Audio, Middlebrough	0642248793	KENT		Paul Roberts, Taunton	0823270000	Hi-Fi Experience, Belfast	0232249117
CORNWALL		Howes of Southborough, TunbridgeWells	{ 0892 528682	Telefringe, Frome	037362598	LRG Sound & Vision, Belfast	{ 0232 732452
ETS Electriccentres, Helston	0326573285	Kimberley Hi-Fi, Bexleyheath	081-3043272	STAFFORDSHIRE			{ 0232451381
ETS Electriccentres, Penzance	073664274	Panatec Sound & Vision, Gillingham	0634573141	Active Audio, Hanley	0782214994	CO. ANTRIM	
H.B.H. Woolacotts, Bude	0288352269	Panatec Sound & Vision, Maidstone	0622661488	Active Audio, Tamworth	082753355	LRG Sound & Vision, Larne	0574272757
Turoo Hi-Fi, Turoo	087279809	V J Hi-Fi, Folkestone	0303568660	Purkiss Hi-Fi, Hanley	0782265010	Nicholl Bros, Ballymena	026649616
CUMBRIA		V J Hi-Fi, Margate	0843 226977	SUFFOLK		SCOTLAND	
Kenneth Gardner, Barrow-in-Furness	0229820308	Whitstable Tele-Radio, Whitstable	0227272028	Avalon Audio Vision, Ipswich	0473281922	GRAMPIAN	
PeterTyson, Carlisle	{ 022846755	LANCASHIRE		Peter Watts, Bury St Edmunds	0284 703045	Autosonic, Aberdeen	0224 573777
	{ 022846756	Clearstone Hi-Fi, Bolton	020431423	System Sound, Sudbury	078772348	Holburn Hi-Fi, Aberdeen	{ 0224585713
DERBYSHIRE		Kenneth Gardner, Lancaster	052464328	SURREY			{ 0224572729
Active Audio, Derby	{ 0332380385	Norman Audio, Blackpool	0253295661	Audiolite, Thornton Heath	061-6533657	MID LOTHIAN	
	{ 0332385185	Norman Audio, Preston	{ 077253057	Cosmic, Adlestone	{ 0932854522	Bill Hutchinson, Edinburgh	031-6672877
Parker High Fidelity, Derby	0332 367546	Romers Hi-Fi, Blackburn	0772 555769	Tru-Fi, Leatherhead	0372378780	Bill Hutchinson, Glasgow	041-2482857
Roy Smith Electrical, Chesterfield	0246234953	Wigan Hi-Fi Centre, Wigan	094237977	Tru-Fi, Redhill	{ 0737 767404	STRATHCLYDE	
DEVON		LEICESTERSHIRE		SUSSEX EAST		Robert Ritchie, Montrose	0674 737675
Bernard Smith, Barnstaple	027143503	Mays Hi-Fi, Leicester	0533625625	Smythe & Barrie, Eastbourne	032329192	WALES	
Radford Hi-Fi, Exeter	0392218895	Parker High Fidelity, Loughborough	0509 269888	Sunderland Electronics, Brighton	0273 774113	CLWYD	
Radford Hi-Fi, Plymouth	0752 226011	StuartWestmoreland, Melton Mowbray	0664411511	SUSSEX WEST		Lloyds TV, Video & Hi-Fi, Wrexham	0978 364168
Upton Electronics, Paignton	0803551329	LINCOLNSHIRE		Cristavision, Chichester	0243775444	Owens, Colwyn Bay	0492530982
DORSET		Superfi, Lincoln	0522520265	Sunderland Electronics, Worthing	0903201187	GLAMORGAN	
Movement Audio, Bournemouth	0202529988	LONDON		Sussex Audio, Burgess Hill	0444242336	Tele Electrical Services, Bridgend	0656654156
Movement Audio, Poole	{ 0202730865	Babber Electronics, W13	081-5796315	TYNE AND WEAR		GWENT	
	{ 0202721983	BriansHi-Fi, W1	071-6311109	Bill Hutchinson, Newcastle-upon-Tyne	091-2303600	Hi-Fi Western, Newport	0633262790
ESSEX		Covent Garden Records, WC2	071-3797427	WARWICKSHIRE		GWYNEDD	
A C L Radio Services, Grays	0375374666	Hi Spek Electronics, N3	081-3491166	Carvels of Rugby, Rugby	0788 541341	Owens, Bangor	0248362951
A V Tech, Ilford	081-5146688	Kamia Electronics, W1	081-3232747	The Hi-Fi Company, Leamington Spa	0926888644		
Chew & Osborne, Epping	037874242	Light & Sound, E6	081-4721373	WEST MIDLANDS			
Chew & Osborne, Saffron Walden	079923728	MyersAudio, E17	081-5207277	Bridge Hi-Fi, Walsall	0922 640456		
PeterFoulkes, Chelmsford	0245491479	Spatial Audio, W1	071-6378702	Coventry Hi-Fi, Coventry	0203 440529		
PeterFoulkes, Colchester	0206767428	Stereo Regent Street, W1	071-2872458	Naam Hi-Fi Vision, Birmingham	021-633 4944		
Peter Foulkes, Maldon	0621 853148	Superfi, NW1	071-388 1300	Naam Hi-Fi Vision, Coventry	0203 632086		
Waters & Stanton, Hockley	{ 0702206835	MERSEYSIDE		Superfi, Birmingham	021-631 2675		
	{ 0702204965	Beaver Hi-Fi, Liverpool	051-7099898	Universal Electronics, Wolverhampton	0902 23741		
Waters & Stanton, Hornchurch	0402444765	Tisdalls, Southport	0704 531500				
Woolfmans, Basildon	0268285922						

No worms in this can

An alternative approach to headphone drive is investigated by ear goggle expert Jason 'lugs' Kennedy.

Last month *Choice* ran a review of a dozen new headphones, all of them moving coil dynamics and all but one requiring a jack socketed drive. I was given the task of reviewing them and thus of assessing their sonic capabilities, however, finding a good all round drive system for headphones is a lot more difficult than one might think. Unlike you, the end user looking for a headphone to go with an existing headphone amplifier, probably built into an amp, CD player or cassette deck, I needed something that was going to provide a high quality signal in order that each pair of cans be allowed to give of its best. Having used the output of a good CD player in the past I was aware that because of impedance and sensitivity variations in headphones the results that were heard were at least as much a reaction to the matching of output to headphone as they were to the headphones characteristics, what's more the amps attached to most CD players are notoriously basic.

Driving ambition

So when it came to finding a drive for the last test I made a few enquiries and was given a couple of ideas, the most successful (thanks Paul) turned out to be the ultra low impedance output of a Deltec preamp, which sounded good and worked well with all the headphones on test. However, I tracked down an alternative in Keighley called the *Can Opener*, this passive device (£77) attaches directly to the speaker output of an amplifier and attenuates the signal level so that you are left with a usable volume range. Devices like this are also made by QED and at considerably lower cost, but without the fanatical hi-fi approach that has been used in the design, component selection and construction of the *Can Opener*.

Sonically this dedication pays off remarkably well as long as you've got either an immensely quiet amplifier or low sensitivity headphones. I tried three different amps, two of them monoblocks, the other an integrated, and none were quiet enough to use with the majority of the headphones on test. However, the ones that did work sounded quite phenomenal, indeed, up until the point that I used an AKG K340 with this device, I was convinced that you weren't going to get great sound out of a

headphone unless it was an electrostatic. Admittedly the K340 has an electrostatic HF driver but nonetheless I'd not heard it sounding as open and dynamic as this before. It really made that much difference, appropriately matched headphones became listenable things that one could sit down and enjoy over a long period and not give you the impression that you were missing out. The *Can Opener's* creator recommends the more expensive models in the Beyer range like the 990 Pro, and I got good results with the less efficient models in last month's group - cans like the Quart 95 X sounded remarkably vibrant.

If you've got headphones that have a sensitivity of 90dB or less (you might get away with something a bit higher if its got a high impedance) and want to hear them at their best the *Can Opener* is a highly recommendable option. Its only drawback is that you have to connect it to the speaker outputs on your amp, there's no bypass option, but you get the same problems with electrostatics - it's the price of fidelity.

For more info contact Neil Ramsden at The Den, tel: (0535) 606086.

Above: The Can Opener could be just the device for those seeking audiophile headphone performance; while (left) Lynwood's add on phono stages provide an easy upgrade path for vinyl users.



Add on phono stages, a headphone socket that adds onto any power amplifier and an incredibly thin personal CD player come under the scrutiny of the Hi-Fi Choice team.

Choice Sessions



Stage struck

Lynwood Audio has produced a range of upgradable phono stages - Ian Ward has been investigating.

The increasing popularity of CD has resulted in some amplifier manufacturers skimping on the quality of their phono stages, or in a handful of cases, abandoning them completely. The Roksan *Artaxerxes* and the Michell *Iso* are two examples of products introduced to offer a high quality solution to this problem. Lynwood Audio's David Rusby has also been monitoring this situation for the last few years, the result being the launch of no fewer than four separate phono stages.

Rather than designing a single exotic unit, Lynwood offers a range at varying price levels, all compatible with both MM and MC cartridges. The entry level *Basic* at £95 is powered by a 12VA plug transformer, with an upgraded power supply adding an extra £79 to the price.

Both options are considered here, along with an upgraded phono stage which adds

another £80 to the cost. For those who take their vinyl very seriously, Lynwood also makes an exotic valve phono stage for £295.

The accolades heaped upon the Pioneer *A400* amp have been tempered somewhat by the observation that its phono stage, while no slouch, is not quite up to the standard of the rest of the amp. The Pioneer has therefore become a prime candidate for experimentation with out-board phono stages, and was duly wired into my system to assess the standard of the Lynwood devices. The phono stages were tested by a Pink Triangle *Anniversary* turntable fitted with SME *IV* tonearm and Audio-Technica *AT-OC9* cartridge.

The stages are supplied in utilitarian black plastic cases fitted with in, out, earth, and mains terminals on the rear. Prospective users should note that the units are quite susceptible to hum so judicious placement is necessary.

I refreshed my memory by auditioning the *A400*'s own phono stage with a couple of tracks, David Sylvian's *Orpheus*

and Jennifer Warnes' *Song Of Bernadette*. Although a competent performance was heard, by absolute standards it sounded a little bright and wayward, with some fogging of fine detail.

Clearing the fog

Plugging Lynwood's *Basic* model into a line input wrought a subtle but very worthwhile level of improvement. The slightly shouty quality imposed upon Jennifer Warnes' voice was replaced by a smoother, more human and ultimately more listenable rendition. This was achieved alongside an improved sense of transparency, offering a greater insight to the music. The David Sylvian track confirmed these initial findings, the bass and percussion lines which underpin the track proving easier to follow.

By simply disconnecting the combined plug/mini transformer and replacing it with the more substantial PSU, I was ready to assess the £178 option. I was quite taken aback by the improvements it wrought.

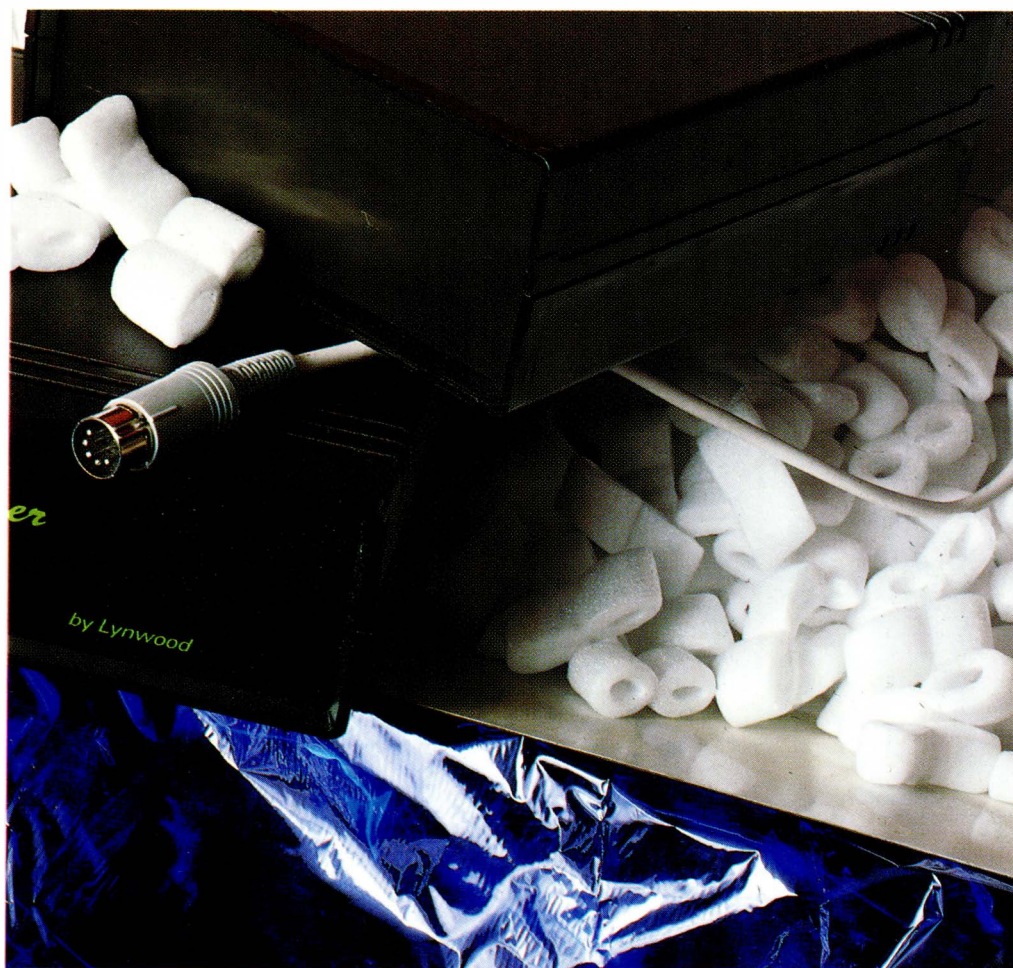
David Sylvian and those accompanying him appeared to move physically forward by a couple of feet, his voice projecting from the mix much more effectively. A similar three-dimensional improvement was heard from the Jennifer Warnes disc, resulting in a more precise location and separation of piano and voice. An early music LP of William Byrd's *Consort Music for Viols (L'Oiseau Lyre)* was also drafted in to assess the effect of the upgraded PSU.

While the *A400* offered a suitably lively rendition it tended to mask fine detail, presenting the assorted ranks of viols as a slightly congested blur. The Lynwood offered a quite dramatic improvement in this case; Treble, Tenor, Bass and Great Bass viols became easily identifiable, as did the positions of the performers playing them.

Dynamics-a-plenty

Finally, while retaining the upgraded PSU I changed over to the upgraded phono stage. Already impressed with the performance of the 'middle' option, I was eager to hear what extra benefits were on offer from the upgraded version. Not losing sight of the fact that this upgraded phono stage and PSU will set you back around £258, and thus cost more than the amplifier itself, there is no doubt in my mind that this is heady stuff.

With Byrd still on the platter the up-



THE LISTENER

You'll hear better if you use your head

Ringing telephones, vacuum cleaners, traffic — and you thought CDs meant the end of background noise. Think again.

At Sennheiser we have been putting thought into producing high-quality headphones since the HD 414s (released in 1968). We're also highly thought of — worldwide critical acclaim has included six awards in *What HiFi* magazine.

The new Sennheiser range continues to excel in terms of sound quality. All our headphones come with a two year warranty, plus our assurance that all parts are and remain replaceable (nearly a quarter of a century on, spares are still available for the HD 414s). And with all products entirely developed and manufactured by us, backed up by 100% quality testing, the craftsmanship is guaranteed too.

That's the background. Now listen. Unbeatable sound quality — no noise.



**Sennheiser —
the thinking
man's
headphone**



Sennheiser UK Ltd, Freepost, Loudwater, High Wycombe, HP10 8BR.
Fax 0628 850958. Telephone 0628 850811.

 **SENNHEISER**

graded stage revealed a host of subtle but quite eye-opening musical nuances. I noticed previously elusive details like the contact of bows on strings, timing clues, interplay between performers, and yet further improvement in three-dimensional presentation. I was also aware of the almost complete absence of subtle hash and grain. This aspect was quite disconcerting, the resulting sound initially seeming less demonstrative, more laid back. Persistent listening pays off however as one begins to appreciate the precision and purity of presentation.

One favourite test track of mine, Rickie Lee-Jones' rendition of *Walk Away Renee* from *Girl At Her Volcano*, was negotiated with considerable aplomb. The track contains dynamics-a-plenty, from whispered vocals through to heavily struck piano chords. Once again the soundstaging abilities were very much in evidence, though most notable was the resolution of small details in the mix and the way they remained in correct dynamic and rhythmic perspective to the rest of the performance. A most impressive result, the top flight performance being confirmed when I fed the phono stage signal through a passive preamp into an Avondale modified *Dr Thomas* power amp.

The potential user must decide, based upon the standard of his/her front-end and existing phono stage, not to mention the size of both budget and record collection, which of the three options to invest in. On this evidence not only do they show up the inadequacy of many phono stages within integrated amps and preamps, they also offer a step by step method of improving the source signal.

For further information contact David Rusby on tel: (0709) 873667.

Thins to make you go hmmm

A mere 18mm thick, Technics' latest personal CD player is one of the smallest on the market. Andy Benham sees if thinner is necessarily better.

Back in issue 94 we did a round up of CD personals and one of the two Best Buys in that group went to the Technics *SL-XP1A*. Just as that issue was going to press Technics announced a new arrival in its range called the *SL-XP700*. The interesting thing about this latest £200 machine is that it is an astonishing 17.9mm thick and at the

time it was widely hailed as the thinnest CD player in the world. (Although rubbing this in to a Sony press officer brought a prompt fax giving advance information on the Sony *DJ-50* which is even thinner.)

Anyway, working on the premise that he who dies with the most toys wins, a quick phonecall to Technics resulted in a review sample of the *SL-XP700* turning up at the *Choice* offices and disappearing with the editor for a comprehensive auditioning programme on the Underground.

In terms of sheer portability the diminished thickness of the *700* is a huge plus point, it is one of the first CD players that will fit inside the back pocket of a pair of



Technics SL-XP700 delivers stunning sound quality from a tiny box.

jeans, although it is a bit of a tight fit, and it is also comfortably at home in an inside jacket pocket, be it denim or otherwise.

The reason Technics has been able to produce such a slim-line machine is because it has come up with a new laser assembly which is based around a single piece collimator/objective lens and which uses an extremely thin diffraction grating as a phase rotator rather than the conventional prism. If you don't understand the technical jargon, all you have to know is that this results in a mechanism that is considerably slimmer than normal.

A complete package

One of the things that impressed the review panel when we tested the *SP-XP1A* was the fact that Technics had decided to sell its machine as a package complete with battery charger and rechargeable bat-

teries, fortunately it has stuck with this approach for the *700*. Indeed it has taken it even further because your £200 not only buys the machine itself but also a pair of Ni-Cad battery packs which claim an astonishing six hours playing time from a single charge. Also included are an add on battery pack for conventional AA cells, a set of headphones, complete with a remote control incorporated into the lead, a carrying case and a set of interconnects to patch the *700* into your main system.

In use the *700* proved to an absolute dream, we'd been impressed with the shock resistance of the *SL-XP1A* but the *700* is even better. OK, you can't go jogging with it, but it will put up with just about any other activity you care to mention, the now famous running up the escalators at Tottenham Court Road tube station test was passed with flying colours. This CD player can definitely be used on the move.

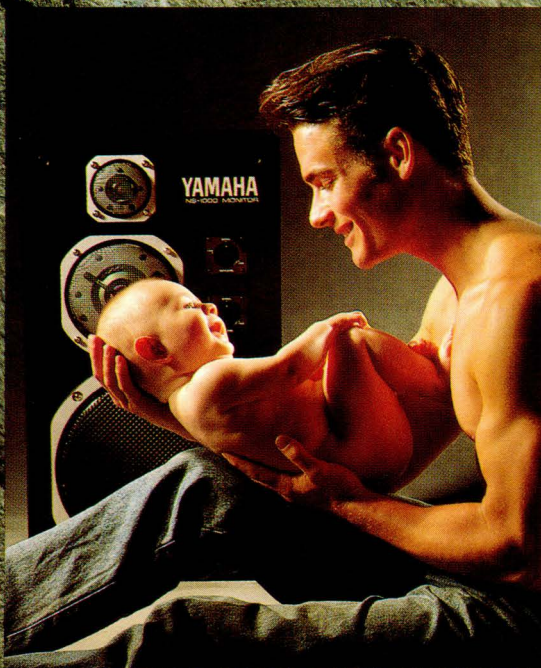
If I was impressed with the portability I was even more impressed when it came to the sound quality. The *700* is quite simply the best personal CD player I have ever heard and streets ahead of the average for this breed. Indeed this is one of the very few players which is up to the task of playing music through a decent system and which comes close to the sort of performance you would expect from a standalone unit - yes, it really is that good.

Trying the machine out via a pair of active Diamonds showed that the unit has a remarkably open sound and that, more importantly, it was capable of capturing a significant percentage of the fine detail available on a well recorded CD. Bass performance was also excellent.

Wiring the unit into my main system showed up the same attributes only more so. This is one of the few personals that understands the term soundstage and even offers a decent degree of depth to the image, although here it does suffer by comparison to an equivalently priced standalone unit, although the remarkable fact is that it bears comparison in the first place, not that it doesn't come top of the league.

All in all the *700* is a sure fire winner and would have walked a Best Buy had it been available at the time of our last CD personal round-up. The mega battery life, half decent headphones and remote control only make it an even more attractive package.

THE
NEW
GENERATION
FROM
YAMAHA



DSP-A1000 DIGITAL SOUND FIELD PROCESSING A/V AMPLIFIER



“ This extraordinary system features Yamaha DSP technology with Enhanced Dolby Pro-Logic* to bring a totally new experience in home audio/visual entertainment. ”

YST-C11 ACTIVE SERVO COMPACT STEREO SYSTEM



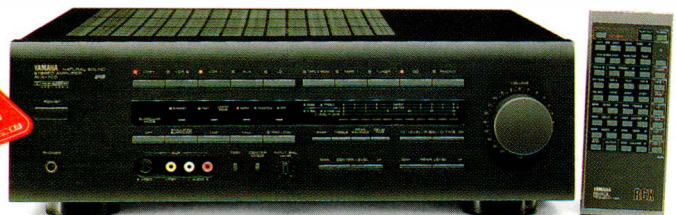
“ Award winning design and HiFi sound quality put the Yamaha YST-C11 in a class of it's own. Stunning looks, advanced technology and incredible bass performance all add up to an unbeatable system. ”

YST-99CD TABLETOP ACTIVE SERVO STEREO SYSTEM



“ Yamaha have done it again - incredible performance and stylish design providing big system sound wherever you want it around the home. ”

AVX-700 INTEGRATED A/V AMPLIFIER



“ A major breakthrough in low-cost audio/visual home HiFi - The AVX-700 combines 65W/ch, 5-Speaker amplification, Dolby Pro-Logic*, Active Servo Technology and full Remote control in an award-winning package. ”

music naturally

*Dolby and Dolby Pro-Logic are registered trademarks of Dolby Laboratories licensing Corp.

**COMPLETE
CD
BEST BUY**

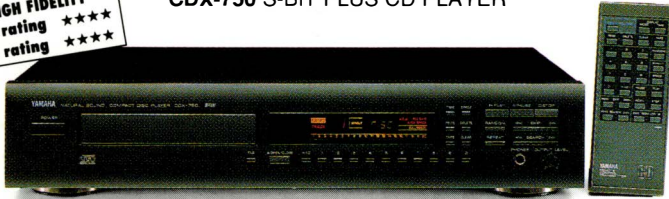
AX-550 TOP-ART STEREO INTEGRATED AMPLIFIER



“ Direct Signal Path capability, advanced technology and superior engineering quality with unbeatable power/price performance makes the Yamaha AX-550 a natural choice in any quality HiFi system. ”

**HIGH FIDELITY
Sound rating *****
Value rating *******

CDX-750 S-BIT PLUS CD PLAYER

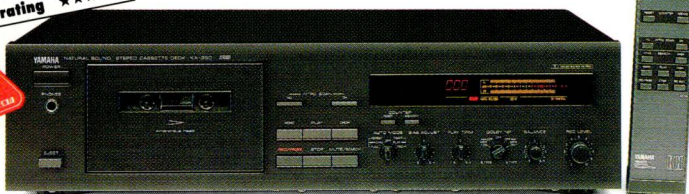


“ S-Bit Plus represents a dramatic new improvement in Single Bit design. The incredible precision and signal purity of this unique Yamaha technology results in a sound quality that sets new standards in CD music reproduction. ”

**WHAT HI FI
Facilities *****
Value rating *******

KX-330 STEREO CASSETTE DECK

**RECOMMENDED
BY THE CHOICE
MAGAZINE
AUGUST 1991**



“ Yamaha Cassette Deck engineering continues to set the standard for sound quality and value for money. The KX-330 offers a wealth of features and superior performance at a highly competitive price. ”

**HIGH FIDELITY
Value for money *****
Compatibility *****
Overall verdict *******

TX-350L AM/LW/FM STEREO HI-FI TUNER



“ The Yamaha TX-350L represents outstanding value for money. This highly sophisticated tuner combines advanced technology and a functional elegance with true HiFi sound quality. ”

Yamaha has been making music for over a century.

Our dedication and commitment to musical excellence is second-to-none.

The latest generation of Yamaha HiFi equipment reflects this continuing philosophy of excellence and represents yet another period of innovation and achievement.

Advanced technology, quality engineering and modern design are combined in a family of HiFi components and systems that cater for all ages, tastes and budgets.

If you appreciate good music, you'll love Yamaha - naturally



Yamaha offers an exclusive two-year guarantee on all its HiFi products. For further information and FREE brochure, contact us today.

YAMAHA HI-FI

Over a Century of Musical Experience

Yamaha Electronics (UK) LTD
Yamaha House, 200 Rickmansworth Road,
Watford, Herts, WD1 7JS. Telephone: 0923 33166

The last few months have seen an avalanche of new products from the prolific Musical Fidelity/Michaelson Audio stable, and the £1,150 *Odysseus* is particularly interesting, not just because it joins the underpopulated ranks of relatively affordable integrated valve amps, but because it is so good.

The Michaelson Audio *Odysseus* is not an amplifier for bean counters, though the weight and component count suggests you're getting a more than averagely good deal even if you don't actually turn it on. It looks like a mildly restyled *Chronos*, still art deco in form (art deco and valve power had the same heyday), but sharper and leaner looking. It's almost as impractical too with an improbably large footprint that is sure to overhang your equipment racking, and it mass produces heat as though it's going out of fashion. The controls - just volume, an input selector (there are six, all at line level) and power on/off - have a faintly phallic appearance but also a marvellously old-fashioned and sumptuous feel.

The old school

Amplifiers of the *Odysseus* school tend to sound luxurious, as well as warm, rich and easy on the ear, but in the absence of the disciplines that usually attach to the best solid state designs - lack of waffle, dynamics, resolving power - they are about as useful for the reproduction of music as the stuffing of an armchair is without the framework to provide physical support. In the past I have tended to lean away from valve amplification precisely because of what I have come to perceive as a general lack of solidity and structure to the sound, together with a related shortcoming which I perceive as an inability to really control the loudspeakers to which they are coupled.

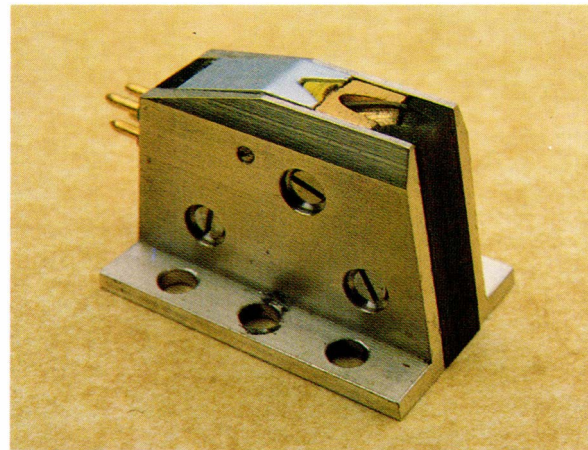
My views have been modified by some of the more recent Audio Research models, and by the Michaelson Audio *Chronos* monoblocks (I was less impressed by the matching *Chronos* preamp). But amplifiers like these cost serious money, their straightforward electrical topologies frequently betrayed (or so it seems) by grossly inflated price tickets, even taking due account of costly individual components like output transformers and the valves themselves. Most low cost valve amps are themselves betrayed by drive problems, insufficient power or simple incompetence which results in poor and/or exces-

sively valve like sound quality - which in its way is as bad as sounding overtly transistor like.

Homer and away

None of these problems applies in this case, I have yet to encounter an affordable integrated valve amp - or even a low end pre/power combination - which comes close to the *Odysseus*. Even on the very first occasion, fired up from cold, the *Odysseus* had a wonderfully luminous quality and an ability to communicate of a kind that transcended merely playing through the notes and which became something that could even be mistaken for real life music making.

Such a statement begs a lot of ques-



Statements

Monitoring what's been happening on the high-end hi-fi scene. This month we've been listening to the Michaelson Audio Odysseus and a British version of the exotic Audio Note IO.

tions of course: no this suggestion of reality wasn't apparent with any old ancillaries, nor with all types of music; and no, the sound wasn't technically better than with other good amps. As fidelity goes, the *Odysseus* is clearly high but not the summit of all achievement. Perhaps my point is best made by saying, simply, that I was able to ignore the mechanics of reproduction and concentrate on the musical content, and in this respect the *Odysseus* has few peers. There are clearer, sharper sounding amps around but few of them are valve amps, and fewer still combine being sharp and sounding so thoroughly musical.

On audition, it took all of about ten seconds to recognise that here was something special. Many valve amps suffer a bass end that is suspect because although it will often sound rich and full, it will tend to sound woolly and fluffy into the bargain. There are two solutions. One is to ignore it, which many do, and the other is to tailor the response shape so that there is little bass real bass output. The *Odysseus* takes a third route, and goes a long way to a big valve amp bass by providing a strong insight into the richly variegated tonal colours that live acoustic events can provide combined with the tightness, clarity and depth usually associated with good solid state amplification. To describe the *Odysseus* as clinical and precise would be to overstate the case, but the amp is punchy and rhythmic, and yes the level of detail extracted from known source material came as

a welcome surprise. Imagery was also of a high order, the depth plane being particularly effective in the various incarnations of the test system.

Homer is where the art is

The limitations of the *Odysseus* are few and should prove easy to live with. There are no superfluous features, not even a headphone socket or tape monitor switch. There is no phono input either, but an outboard phono step-up, said to be unusually quiet and also bottle fed, is being prepared for release in the last quarter. It draws power from the *Odysseus* power supply and will cost about £400.

Output power is 45 watts per channel, and overload is graceful above that so power limitations are not always well defined. The amplifier will sound stressed and flattened if pushed too hard, but with medium size loudspeakers this is delayed to quite high SPLs, and in general I had to

go looking for the headroom limits rather than the other way around. Nevertheless, extended bandwidth, 2 ohm floor standing monoliths should be used with some other species of hardware. I used large speakers of medium bass extension (Heco Forte 850 Superior and SD Acoustics Ribbon plus smaller speakers of various types, including, briefly, a new version of Musical Fidelity's MC4 which should rehabilitate the good name of the marque as a loudspeaker producer). In no case was the *Odysseus* in beyond its natural depth.

According to Michaelson Audio, the key idea that formed the *Odysseus* was that it would be capable of wrong footing some of the big name valve amps. In this aim, and in the more general one of making a particularly fine amplifier irrespective of the technology employed, the *Odysseus* is an outstanding success.

Alvin Gold

Followers of high-end audio and avid readers of *Hi-Fi Choice* probably associate the Audio Note brand with a small Japanese company that specialises in hand made hi-fi exotica. There have of late been a few changes going on behind the brand name; Kondo the company's founder is concentrating his efforts on amplifiers like the awesome *Ongaku*, silver cables and loudspeakers for cars and houses. He has stopped making one of the products on which the company's reputation was built, the *Io* cartridge. But Audio Note's European distributor wasn't going to let one of his top products disappear just like that and set about finding someone else to make them. He talked an old associate, Rob Dowse, into taking on the job. A trip to the Master followed, and year later the first British built Audio Note cartridges are appearing, and I'm pleased to say that one has found its way onto my turntable.

High-end masochism

The *lollv* (as this British version is known) is a cartridge with a reputation for anaemic output (0.15mV!), immense weight and high sensitivity to set-up, but then again it's a high-end cartridge and that means masochism. You'll need a well matched step-up transformer (with an output as low as this you'd be very hard pressed to find a quiet/sensitive enough active gain stage), a medium to high mass tonearm with a counterweight of SME Series 300 or higher weight (the *Io* weighs 18g) and of course a first class turntable. In this instance these parameters were adequately filled by a Voyd supporting an SME IV and an Audio Innovations

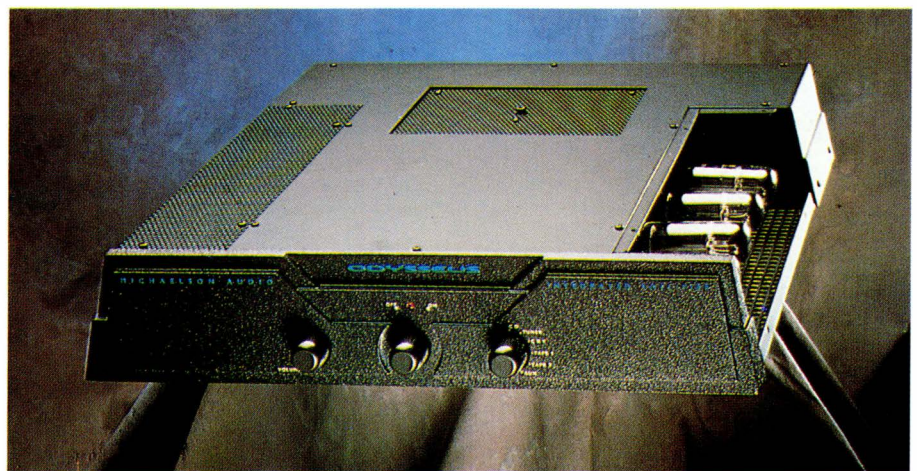
Series 1000 passive step-up. You'll also need a steady hand (there's no stylus guard) and patience - this thing has to be almost entirely set-up by ear. And of course, the £1,350 asking price comes in handy.

One of the reasons for the *Io*'s high weight is a pair of alnico magnets, these have to be larger than samarium cobalt or neodymium magnets to achieve the same flux density, but Audio Note considers them to sound better. The internal wiring is high purity silver, and the long, tapered, titanium cantilever supports a vdH type 1 stylus. The latter, which is one of the smallest tips in use, is cut and fitted in Japan.

The *Io* is encased in a pair of brass

Io was in another league, it even managed to significantly improve on one of the Ortofon's fortés; the high frequencies. This aspect enabled the cartridge to produce superbly defined acoustic spaces with incredible width and depth.

The *Io* managed to sound tight and dynamic across the entire bandwidth. Good classical recording's really made the most of the *Io*'s dynamic and imaging capabilities, it found the gusto, power and delicacy that other cartridges had suggested but failed to fully resolve. One felt that the limitations of the medium were very close at hand, only experiences with the same cartridge but better ancillaries reminding me that the full potential of the vinyl was still evading my ears.



The British-made version of the Audio Note IO proves high-end hi-fi is never easy (above), and (left) the Michaelson Audio Odysseus is definitely a classic.

panels, which are bolted together around the magnet assembly, and a rosewood surround. This forms an extremely rigid block that's devoid of internal cavities save for that around the coils. Even greater rigidity can be conferred by using all six of the bolt holes available for mounting the *Io*, but the extra weight might be too much for many counterweights.

After a lot of experimentation with vertical tracking angle and tracking force I got to the stage where the cartridge was working optimally with most records. However it is easy to imagine adjusting arm height for every record if this could be done without too much hassle, to say it's sensitive to set-up is understatement on a grand scale. But with a cartridge like this I'd rather listen to loads of records than spend my time fiddling, such is the extra life and dynamics that the *Io* extracts from the grooves. After the MC2000II (see issue 99), which isn't a bad cartridge, the

IO silver

Jimmy Hughes once wrote a piece which said that the mark of a good audio component is the ability to make all the records (tapes, CDs etc) it plays sound very good. At the time my reaction was quite negative, surely better recording, mastering and pressing should result in a higher fi sound? However, subsequent experience has taught me that he was right - a good enough system is capable of making the most of everything you play on it. Which means that what previously seemed like nasty or flat sounding records become highly enjoyable, and the *Io* has been pulling off this trick with records that I'd consigned to the boring and/or painful bin. One tends to assume that greater resolution will reveal a record's faults to a greater degree, but it would seem that if you dig deep enough into the grooves you'll find something worth playing.

The Audio Note *lollv* is an excellent cartridge, you have to work hard to get the best out of it but the rewards are such that you'll not regret it. I for one would be hard pressed to survive without it.

Jason Kennedy



PUT TOGETHER A TAILOR-MADE



COLLECTION.

SEPARATES

Classic groups are made up of great individuals, and everyone has particular favourites.

From the melancholic tone of a cello to the deafening roar of a thrash metal drummer.

Each will benefit from a different type of hi-fi reproduction. And as you're doing the listening you should be the one putting together your system.

Our range of separates are designed to bring you an infinite repertoire of sound.

But however you put them together, all our remote controlled components can be operated by the SH-R500 remote. (In fact it's so versatile it'll control most makes of TV, video and satellite as well.)

All in all this year's collection has been created to suit everyone, whichever models you choose.

Separates shown: SU-VX800 Amplifier. ST-G90L Tuner. RS-BX707 Quartz Direct Drive 3 Head Cassette Deck. SL-PS900 Programmable CD with MASH. SH-R500 Learning Remote Control for components with infra-red receivers.

Contact your nearest Technics dealer as listed in Yellow Pages & Thomsons Directories.

Technics
For Music Lovers.



The homely artistic bustle of this West London flat belies the jet-setting lifestyle of its owner.

Mary Greenwell does the make-up for magazines such as *Vogue*, and spends two thirds of her time in exotic climes making beautiful people look more beautiful.

She describes her fourth floor apartment as 'my real retreat' and as a place where she can unwind from the busy schedule of working abroad. "When I'm in the UK I try to go to the gym regularly and see my friends; things which are impossible to do while travelling because I'm too tired or too busy," she says.

She bought the flat three years ago but moved in 18 months later, after it had been extensively redecorated, the work being carried out as and when she could afford it. The finished result is a blend of styles with new coving taking the sharp edges out of the ceilings, sculpted alcoves and curved shelving all giving the place a slightly Moroccan feel. The colour schemes borrow heavily from the Seventies, but aren't so awry as in some of the designer 'pads' of that era; blues and browns are thrown together and in the upstairs hi-fi room the Tyrolean purple woollen carpet adds an imperial touch of Roman decadence.

On entering the flat one is greeted by a life-size copy of Henri Matisse's *Nudes on a Beach* taking up a lot of the wall space in the hall. It's an ex film set prop which was given to her, she'd explained, before I could comment that I hadn't read any reports saying it was missing!

Are friends eclectic?

The rest of the furniture and ornaments have been collected over a working life spent abroad with statues from Bali and Indonesia and some crossed swords on

When a design conscious

music lover wanted good

quality but unobtrusive hi-fi

Room at the top

she found a Cornflake pack-

age was the ideal solution,

as Dan Houston found out.

an ornamental shield from Argentina. "I wanted to create an eclectic atmosphere rather than follow one theme," Mary explained, "I think the apartment is a bit childlike in that there is nothing really sophisticated about it. But then nothing was done to impress and it's just a comfortable home."

The open plan kitchen keeps a cook in touch with guests but is kept as a separate space by its wooden floor: "The rules are



that you have to have carpet in these apartments," Mary said, "and we had to put layers of soundproofing material under that floor so that people below wouldn't be disturbed."

Upstairs downstairs

On the other side of the entrance a corridor leads off to a room on the same level while a dark blue carpeted staircase leads upstairs to the second living room. Blue

glass windows let in some light from the stair well in the centre of the building.

Both living rooms and the bedroom are equipped with hi-fi, although in the case of the lower living room it is a minimalist system comprising just loudspeakers and a power amplifier.

Upstairs the source equipment is arranged along a low shelf at one end of the room while the largest loudspeakers in this installation, a pair of Monitor Audio

1200MDs, are positioned on stands at the other end.

Cushions and a few artefacts are the only furniture while huge sliding plate glass doors open out onto a roof terrace - which overlooks all the other roof terraces in the area. Mary's next door neighbour on this upper level is the guitarist Jeff Beck - "but he's hardly ever here so there are no problems," she comments.

'No problems' refers to her homecom-



ing desire for loud music, late at night. Her original neighbours below have already moved and Mary likes to take the blame for this: "I think I vibed them out," she jokes.

The record collection on shelves, and cassettes in their natty Napa Valley wooden storage cases reflect the eclecticism of everything else chez Greenwell. There's a smattering of blues, some jazz which is 'hard to appreciate', contemporary pop through three decades and a burgeoning classical section.

The room at the top is ideal for her nocturnal need for music. "This is where I find myself at one or two in the morning with friends where we won't be disturbing anyone," she says philanthropically.

All the hi-fi source equipment, and Mary's record and tape collections are kept upstairs, while two audio feeds have been run to the bedroom and main lounge.

Proper hi-fi

The aspiration to have a proper hi-fi system was an integral part of designing the flat and our hostess knew that she'd need a competent installer to provide the kind of system she wanted.

"I was in New York and I read in a magazine about the Cornflake Shop working with builders at the decorating stage to hide cables. I remembered the name and when we had got to that stage I went to see them. I visited the shop three or four times and at first I really wanted the Audio Access system because you can control it from anywhere in the house. However that proved to be too expensive, though once we had worked out my needs and my price limit I got some brilliant advice about what could be done."

Under Steve Moore's guidance Mary opted for record and tape playing sources with Naim amplification for the lounges where sound was most important. Originally three separate systems were considered but that would have meant scattering records around, and Mary didn't want an 'obvious hi-fi presence' in the main lounge. As she says the upper room was "ideal for the whole enchilada. And we can make



The system's main source is a Roksan Xerxes, fitted with a Tabriz tonearm and Nagaoka MP11 cartridge, the massive tape collection is mainly for use in the Pro-Walkman.

more noise up there anyway".

The main lounge and bedroom are therefore linked to the system by good quality signal cable which was all hidden behind plaster work at the time of redecoration. The Naim preamp has enough outputs to allow the extra runs and the signal cable has been routed as far away from the mains as possible so as to maintain signal purity. The wiring was completed three years ago, although Mary did not decide on the final system until a year and half later.

The decision was governed by money and a desire for the hi-fi to be as unobtrusive as possible. As it is the hi-fi does not impose in its settings; it may not be as hidden or as flexible as the Audio Access system but it does give sound where it is needed and does have proper hi-fi credentials.

Really chic

In the upstairs lounge the equipment lineup is a Roksan Xerxes record deck, with Roksan Tabriz tonearm and Nagaoka cartridge. The Nakamichi RX505 cassette deck is the model where auto reverse is achieved by the tape being physically rotated in its perspex housing. "I love that," Mary said, "It's really chic."

A Rotel tuner allows radio to be piped through the flat during the day, while the Naim amplification and Monitor Audio speakers need little introduction. The latter are positioned on stands firing back down into the room and are connected to the Naim power amp by means of QED 79 Strand speaker cable run under the floorboards.

The Sony television and Hitachi multi-standard VCR are also wired through the amplifier, however, due to the placement of the TV, the sound appears to come from behind the viewer so this isn't such an obvious boon.

Straight to the point

It's not what one would call cooking hi-fi. Indeed this system verges on the high-end in terms of reputation and price. While most users of such equipment tend to be people who are on their third or fourth upgrade, and the sort of person who is actually interested in hi-fi, Mary professes disinterest, and oozes femininity.

"Once Steve had explained that good hi-fi was based on high quality components and proper design I could see the sense of it. I am really into music as it

should sound, and I like real instruments and classical music, so I don't want more treble or a tone control, and of course it's much simpler to use."

Mary had wanted a minimal presence of hi-fi in her downstairs living room and this is one of the best examples in installations we have come across. A Cornflake Shop-modified QED passive preamplifier takes the signal from upstairs which is then powered by a Naim NAP140 power amplifier. Two sets of mid and small sized loudspeakers are used here rather than a single large pair.

The Monitor Audio 700s on proprietary stands are capable, and, for someone who appreciates their quality, visually compatible in the setting. On the other side of the room, set in alcoves, a pair of Monitor Audio MA7 loudspeakers are installed on wall brackets to provide an in-fill.

In spite of the control equipment being up a flight of stairs Mary finds the main lounge system equally easy to use. "Look at this amplifier downstairs," she says as though she's doing an in-flight demonstration. "It's turned on or off here and there's the volume control - even a two year old child can understand that."

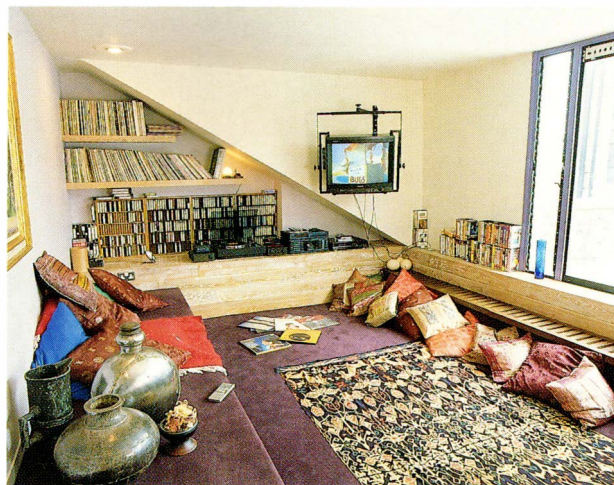
The silver disc

What with running up and downstairs every side of a record, the hostess was planning to add a CD player to the system. "As it is I find myself playing tapes because they last longer," she told us. The new addition will be a Nakamichi Music Bank machine, capable of taking a bunch of silver discs and playing them all day - random fashion if required. "I think it will be like having my own radio station," Mary enthused.

Last and, quite frankly, least, comes the bedroom where another QED passive preamplifier complete with volume control, and a Rotel RB850 power amplifier feeding Monitor 7s. These take signals from the upstairs system as well as from the bedroom's own Sony VCR and TV.

The televisions had been bought in America where they are much cheaper. Mary was pleased with her latest NYC purchase - a Sony Pro-Walkman, which had cost her \$314 in the Big Apple.

But why did she not buy all her equipment there? "Oh, I wanted the advice," she was emphatic, "I needed to listen to the equipment, I needed it installed and I needed it maintained. It's easy to go and



The system is housed in the upstairs lounge and is wired into the Sony TV and Hitachi dual standard VCR.

pick up a Sony TV or multi-standard video recorder, but I could never have done this installation myself. The (Cornflake Shop) people were here when I wasn't, they worked with the builders - I didn't need to know anything about it."

Having acquired the system, and setting, of her aspirations I asked Mary Greenwell how the girl who is jetting round the world ever found time to listen to hi-fi. "She doesn't really, it's mostly a luxury which is enjoyed by her friends." She came back to the first person: "I'm getting more into classical music now, not Pavarotti, but requiems and symphonies, and that's probably because I'm so fed up with dance music. When I'm here I like to relax, and the hi-fi is an integral part of being here for me."

The System:

Roksan Xerxes record deck	£785
Roksan Tabriz tonearm	£165
Nagaoka MP11 Boron cartridge	£40
Nakamichi RX505E cassette deck	£915
Rotel RT850AL tuner	£180
Naim NAC 72 preamplifier	£611
Naim NAP 140 power amplifiers	£602 each
Monitor Audio 1200MD loudspeakers	£950
QED passive preamplifiers	£65 each
Rotel RB850 power amplifier	£160
Monitor Audio 700 loudspeakers	£400
Monitor Audio 7 loudspeakers	£180

System supplied and installed by The Cornflake Shop, 37 Windmill Street, London W1. Tel: 071 631 0472



The Nakamichi RX505E is used to make tapes for the Pro-Walkman.

**KENWOOD'S LATEST MIDI FORMULA.
FIVE PARTS HI-FI AND ONE-BIT CD.**





As you probably know, 1-bit CD is the new standard in serious compact disc players. And it will come as no surprise that Kenwood's Hi-Fi range includes several 1-bit CD players, earning rave reviews from the critics.

But a 1-bit CD in a midi Hi-Fi system, from as little as £550? Now that's a little out of the ordinary.

At Kenwood, they don't believe that the convenience and the user-friendliness of Hi-Fi should come at the expense of sound quality. A fact that you can prove to yourself in an audition at your Kenwood dealer.

The other part of the Kenwood midi formula? Well, some midi systems only look like separates. In reality, they're just dressed-up music centres.

Not with Kenwood's new midi-series. The components look like separates and perform like separates.

Because they are separates.

Proof that it's the way that Kenwood's midi comes apart that makes it sound so together.

KENWOOD

HOME Hi-Fi ■ CAR Hi-Fi

moved by music

Kenwood M-45, M-65 (featured) and M-85 midi Hi-Fi systems. From around £550 to over £900.

Trio-Kenwood (UK) Limited
Kenwood House, Dwight Road, Watford,
Hertfordshire, WD1 3EB Tel 0923 816444

As this is the 100th issue of *Hi-Fi Choice* we thought we'd take this opportunity to give you a behind the scenes glimpse of how the magazine is put together. It takes about 100 working days to create a single issue of *Hi-Fi Choice*. That equates to approximately one day per editorial page, but as regular readers will realise, this a monthly magazine so at any one time there are no fewer than three issues on the boil.

In at the start

Choice is very much review-based; the editorial ethos has always been to try to cover as much of the market as possible, looking at one product category in each issue. Before we relaunched the magazine in its current A4 page size back in November 1987 (issue 53), the pocket-size A5 magazine was solely concerned with reviews. Between six and eight issues a year charted the development of hi-fi, starting with issue 1 back in 1975. In those days each issue was an 'annual', with amplifiers, tuners, loudspeakers, record decks, cassette decks, cartridges and later CD players being the main topics.

These little booklets are fondly remembered by both readers and staff alike but *Choice* had to be relaunched as a monthly because there were simply too many products out there to accommodate in its rather cramped format.

A lot has changed since the relaunch, and four years on the same cover price not only brings the in-depth reviews, but news, features and the famous directory with its at-a-glance commentary on all our current equipment reviews.

Covering all the options

The main review section continues to concentrate on one topic, though there may well be a secondary group review included in the same issue, such as the valve amplifiers you'll find starting on page 41. Because of this our reviewers' houses are periodically inundated with 25 sets of loudspeakers, or whatever.

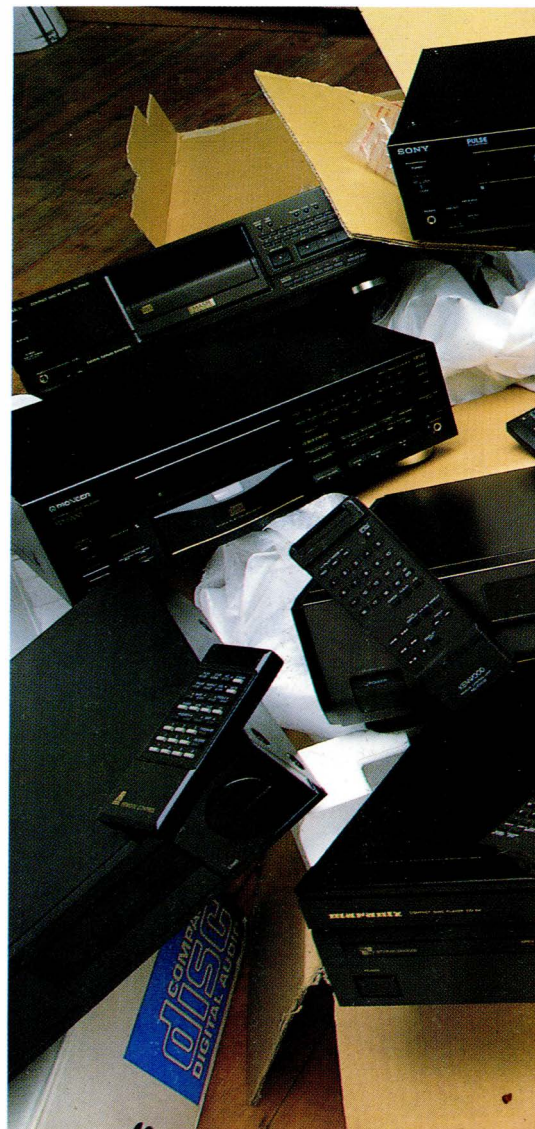
The downside of this approach is that readers may have to wait a few months for in-depth analysis on new models, but any delay is far outweighed by the advantages. Not least of these is that a reviewer will be able to see clearly the technological directions and trends happening in, say, CD player development and readers are therefore better briefed for buying



Left: Paul Miller warms up his test gear prior to getting to grips with the immense pile of CD players that have been delivered to his Surrey home (below, right).

Happy birthday

The magazine you have in your hands at this very moment is the 100th issue of Hi-Fi Choice. To celebrate the fact, and to prove that our claim to being the world's number one guide to buying hi-fi is a far from an idle boast, we asked Dan Houston to take a look at all the time and effort which went into producing the issue you are reading.



equipment by coverage of so much of the marketplace at once. Reviewers often feel more comfortable (by the time the mammoth task is finished!) with the *Choice* approach because it allows them to make a far more comprehensive analysis of the subject. "There is always an element of hit and miss in single shot reviewing," Alvin Gold told me. "The multi-test format gives you a context in which to work."

Ears and oscilloscopes

There is a two-tiered approach to *Hi-Fi Choice* reviewing; objective and subjective. In the final analysis a product can only be as good as it sounds, which is a subjective criterion - but can you trust an individual reviewer's tastes and reference

system? At *Choice* we favour the intimate listening panel approach, with half a dozen or so people (a mix of manufacturers and editorial staff) joining the reviewer for a few days to listen to equipment. Our tests are carried out under so called 'blind' listening conditions whereby no-one on the panel knows the price or name of the equipment at the time of audition. This helps to avoid the 'flavour of the month' type bias which sometimes turns up in subjective reviewing.

Having a listening panel brings some objectivity into the sound quality tests, which then become a comparative base to the reviews. Reviewers will always have their yardsticks and reference points for sound quality, but in processing a whole batch of equipment at once with a panel they can see the winners, and losers, far more easily.

Objectivity is achieved primarily through laboratory testing. A quick glance through this, or any other issue, of *Choice* will show a plethora of tests to back up the reviewer's comments. The lab results are

our own, and are not manufacturers' repeated statements. Tests such as the impedance measurement on loudspeakers show how much current is needed to drive them; frequency response graphs on cassette decks show how the deck handles different types of tape.

These tend to be absolute criteria and can be used to back up comments on performance; where lab and listening results differ reviewers are provided with a conundrum . . . luckily this is rare (and another story in itself!).

Beg, steal and borrow

The work for this issue began in early June when we started pestering manufacturers to lend us CD players for the tests. We have to borrow equipment - buying it would prove too costly and most manufacturers willingly lend off the shelf products. Instances of 'doctored' equipment, with all the components hard-wired with silver solder for instance, are extremely rare and most manufacturers wouldn't risk *that* kind of publicity. Due to our comprehensive testing procedures any such tampering would soon come to light as the products are scrutinised in the lab.

Having filled his four-bedroom Surrey house full of CD players by the first week of July, Paul Miller has to arrange the three days of listening tests. The three day listening session began on July 15, with the panel aiming to listen to nine or ten models a day - starting at around ten in the morning and finishing by six.

The panellists sit in chairs in front of Paul's hi-fi system in the lounge, while the CD players are set up out of sight in the next room. Interconnects run between the two rooms and this ensures that the operator is free to insert and unload discs without any chance of a panellist catching sight of the player. It also means that Paul has the space to set all the players up and leave them to 'cook' for a couple of days prior to the tests, something we have found essential in getting the best results from some models.

The reference system

For the listening tests Paul's Deltec *DSP 100 S* preamplifier feeds Deltec power amplification driving a pair of Snell *Type Js*, in what has proved over the course of many listening sessions to be a very revealing set up.

Anyone who thinks that listening to hi-fi all day long provides the ultimate in job satisfaction is badly mistaken. Listening to *music* might be quite fun, and reviewers who are simply involved in the

to us



TANNOY®

SIXES

LOUDSPEAKERS



Please send me the Tannoy SIXES brochure, together with a price list, reprints of recent Tannoy reviews in the Hi Fi press and the name of my local Tannoy SIXES dealer.

Name _____

Address _____

Postcode _____

Send to:
Sales Department, Tannoy Ltd., Rosehall Industrial Estate,
Coatbridge, Strathclyde, Scotland. ML5 4TF

The SIXES are the brilliant result of a complete re-appraisal of Hi Fi loudspeaker design by Tannoy's team of acoustic, industrial and production engineers.

The advanced new cabinet structure and shape have many audible benefits, quite apart from being a visual pleasure.

These, coupled with tweeters that reproduce smoothly all the way up to 30kHz, moulded cone-piston bass units and

the application of Tannoy's Differential Material Technology have realised a range of loudspeakers that will be a delight to your ears and eyes.

Return this coupon to Tannoy, and we will send you the eight page colour Tannoy SIXES brochure by return.

TANNOY®

subjective assessment of individual pieces of equipment may well have an enviable job. But the more thorough approach requires a set pattern of music, which is repeated for each new player. This way the panel can get to grips with individual player's capabilities with known music. For these tests the panel was fed a cocktail of Mary Black, Chris Rea, Pachelbel and the Marti Paich Big Band. Or rather, it fed itself, with panellists choosing the music themselves from Paul's collection. After each session of music the player is discussed between the panellists and Paul makes notes on a lap-top computer. Different reviewers have different styles but Paul prefers the panel to do most of the talking: "It doesn't make any difference what I think," he avows. Players are tested on a random basis with expensive models slotted in cheek by jowl with the cheapest.

In the lab

"I then spend two weeks, seven days a week, up in that lab working 15-hour days, testing everything," Paul continues, casting a rueful eye upstairs to where his lab hums with one of the most comprehensive test rigs available.

Like the majority of hi-fi reviewers, Paul Miller is self-taught. He studied Chemistry at the Royal College of Science, part of London University's Imperial College of Science and Technology, an establishment widely regarded as the foremost engineering faculty in the country.

"I started reviewing subjectively between finishing college and starting my PhD, which I am still writing-up now," he says, "like everyone else, I had got into hi-fi while at school and university, but with me it became a bit more of an obsession. My first reviews were for the (now defunct) *Hi-Fi Now* magazine."

Technically competent hi-fi reviewers are very much a minority, and Paul laments the fact. "When I first started I invested some six or seven thousand pounds in test equipment, none of which I use now," he declares. "The reason there are so few reviewers with test



Photographer Chris Richardson relaxes with a cup of tea prior to starting work.

equipment is because it is so expensive - and most magazines aren't prepared to pay for it."

His laboratory now contains around £45,000 worth of test equipment, which he is still paying off, even after seven years' of writing. "If you thought hi-fi equipment was expensive wait 'til you find out the price of test gear," he berates. Another problem is that the tests are always evolving as more becomes known about the nature of hi-fi equipment itself and as new equipment becomes available. Building a comprehensive lab is a never ending process.

Paul has learned about hi-fi "as I went along", and has also taught himself to use most of

his test equipment - which he claims is more advanced than that used by many manufacturers. "There are only three people in the country who make a living from this kind of technical work, and you're talking to one of them," he states rather firmly.

The lab is a converted bedroom on the first floor of the house - and still curtained for an infant rather than a hi-fi heavyweight. Benches on two sides contain space for hi-fi and the equip-

Paul Miller sits in his lab surrounded by around £45,000 worth of technical test equipment.

ment to test it. A *Michell Gyrodec* languishes unused on the side: "I'd use that to test cartridges but there's not much call for it now", Paul explains.

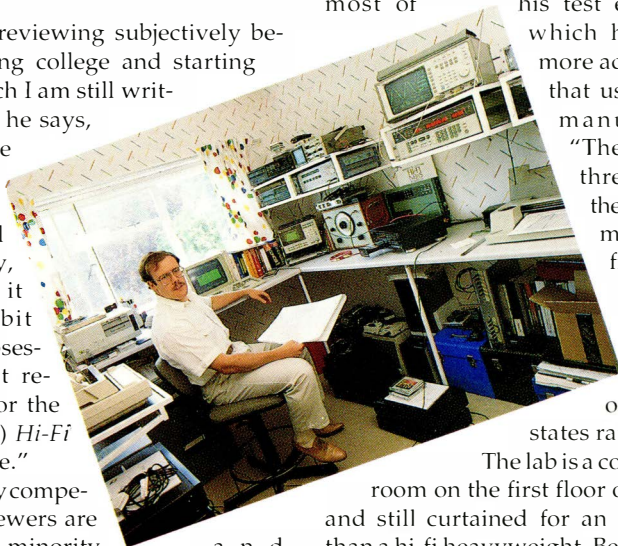
Laying down the law

Paul is governed by certain guidelines laid down by the IEC (International Electrotechnical Commission) and former American IHF (Institute of High Fidelity) in some of the tests he runs on equipment, but adds that much of the time it is a case of having ideas (about what to look for) and then finding the equipment capable of doing the job.

"The guidelines cover power measurements for amplifiers, stipulating set frequencies at set levels of distortion, for instance. With amplifiers you can be more inventive because it's up to you what you put into the back of them. With a CD player you don't have that option because you are limited to the signals available on test CDs. And it becomes a case of scouring the world for test discs and using them in the most effective way. Until recently most test discs concentrated on peak level performance leading to optimal but not strictly representative results for many CD players. But now that CD-R (recordable compact disc) is available I have been able to make some of my own.

"I am interested in the low level performance of CD players and have made a few discs with ultra low level signals and sweeps. We should be looking at the real music levels of -30dB and -60dB, which is a crucial area. Most test discs, which are alright on peak levels, don't linger at the lower levels!"

Even so at between £60 and £100 a throw one wouldn't find the latest Tech-



LIKE FATHER - LIKE SON

If music plays an important role in your life then the new 500 Series from Yamaha Hi-Fi is designed for you.

Yamaha has been making music for over a century and the 500 Series system features an integrated range of quality components that deliver true Hi-Fi performance at a realistic price.

What's more, the RS Remote Unit gives you armchair control of all system functions for a command performance - every time.

If you're into good sounds then Yamaha have got just the HiFi system for you - the 50 Series.

Yamaha HiFi has always been at the forefront of audio technology and the 50 Series system features an integrated range of components designed to deliver the finest sound quality and value for money.

Available in Black or Titanium* and Featuring RS remote control the 50 Series system sounds every bit as good as it looks - naturally.



THE 500 SERIES

AX550

Direct Signal Path Integrated Amplifier effortlessly delivers 140 W/ch DIN music power.

CDX-550 E

CD Player featuring all new S-Bit Plus technology for pure, natural sound.

TX-550

Direct PLL Synthesis AM/FM Stereo Tuner for broadcast quality listening.

KX-530

3-Motor Amorphous Head Cassette Deck featuring *Dolby Hx Pro for maximum performance.

RS REMOTE CONTROL

Full function, hand-held unit provides total system control.

SYSTEM OPTION - TURNTABLE

Complete your 500 Series line-up with the Yamaha TT-400RS fully automatic belt-drive turntable.



THE 50 SERIES

RX-450

Stereo Receiver featuring High Dynamic Power amplifier and sophisticated AM/FM Stereo Tuner with remote control and CD Direct facility.

CDX-450 E

Quality CD Player featuring Yamaha Single-Bit technology for improved performance and natural sound.

KX-250

2-motor transport Cassette Deck featuring Play Trim facility and *Dolby HxPro combines HiFi performance with value for money.

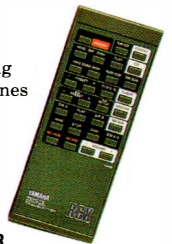
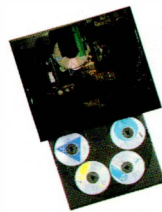
RS REMOTE CONTROL

Full function, hand-held unit provides total system control.

SYSTEM OPTION - CD MULTICHANGER

Enhance your 50 Series system with the Yamaha CDC-615 5-disc CD Player featuring S-Bit technology.

*New Titanium finish available from November 1991



music naturally

Yamaha offers an exclusive two-year guarantee on all its HiFi products. For further information and FREE brochure, contact us today.

YAMAHA HIFI

Over a Century of Musical Experience

Yamaha Electronics (UK) LTD
Yamaha House, 200 Rickmansworth Road,
Watford, Herts, WD1 7JS. Telephone: 0923 33166

* Dolby and Dolby Hx Pro are licensed trademarks of Dolby Laboratories Inc.

niche test disc jostling for position in the music chart racks of Tower Records or the Virgin Megastore, and CD-R mastering is even more expensive!

Breaking new ground

Paul is using his new discs to discover aspects of CD players that may be picked up in the listening tests, areas that affect musicality where performance may be lacking. "If I can find something in the lab which correlates with what the listening panel has heard then that's OK," he says. "But if there is nothing in the test to give us a clue then it's just tough luck; it's what it sounds like that counts."

He admits that "even at this level of sophistication the measurements are crude" and that contemporary scientific reviewing is only scratching the surface. "But that's what makes it so exciting, because you do gradually learn things," he enthuses.

The main test equipment here is computer-driven including digital gear from Hewlett Packard and Rohde & Schwarz. It saves a lot of button pushing according to Paul. The Miller lab has become famous for its three dimensional graph plots, something Paul came up with himself and which are now cropping up all over the place.

The three dimensional graphs allow one to see trends in performance which



Members of the listening panel prepares to put another CD player through its paces.

might only show up as a glitch in two dimensional graphs and therefore be easily overlooked. "Basically we have an extra axis to play with so we can show distortion versus level over the whole audio frequency band. You can see far more than with two-dimensional graphs which are just a slice across one of these 3D plots," Paul explains.

He's justifiably proud of the 3D plot and says it has shown up trends that manufacturers hadn't known about.

Tying all the ends together

After the two weeks of testing the time comes to write up the reviews and rigorous process of selecting candidates for the coveted Best Buy and Recommended certificates begins. Obviously sound quality and price are the major considerations here but we also take into account other factors such as build quality and safety.

This is how the pages you are reading are shown on the Macintosh computers we use to put the magazine together.

This is a difficult and time consuming process which can take many days to complete before the final pecking order emerges.

In the five weeks that follow before the magazine is sent to the printers the players will be photographed at the studio in London.

The reviews will be sub-edited and the graphs scanned into our Apple Macintosh computer based publishing system. Text

and graphics will then be combined to produce the finished pages you will read in the magazine.

Meanwhile the rest of the issue has been taking shape over the same period. The main features such as *Aspirations*, *Craftsman*, *Perspectives*, *Choice Sessions* and *Statements* all have to be commissioned, researched, written and photographed. The regular columns arrive, letters are answered and competitions are run, again with relevant photography and layout.

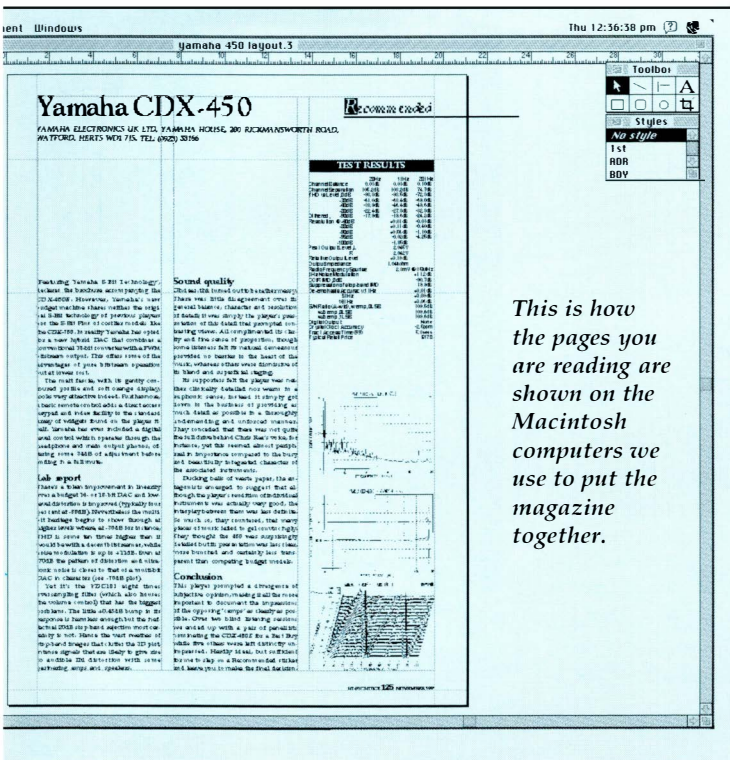
Most of these features, in what the staff refer to as the 'front end' of the magazine, concentrate on areas other than the main review topic. *Aspirations* and *Statements* chronicle the use and performance (respectively) of high end equipment, while *Perspectives* may be a feature on new technology. When we can't wait to write about the latest 'hot' amplifier, CD player or whatever, a subjective view in *Choice Sessions* can provide a stop gap.

With a 100 or so editorial pages all put together, final checks are made before the computer files and pictures are sent off to be turned into film.

A last check is made of the film to look for those classic errors, such as a back to front turntable picture, before the magazine, now heavy as a collection of celluloid double folios (four each for colour pages) is sent to the printers.

At this point the top comes off the Horlicks jar (metaphorically speaking - it's more likely to be Mexican beer) and the heart rate of the staff slows down... but not for long. Already the process on the next issue is in full swing; the reviews and full features are all in and demanding attention.

In cricketing terms we could describe our batting average as high; the 100th *Choice 100* is just another century for the magazine.



Revealed. The me Wide Imaging S

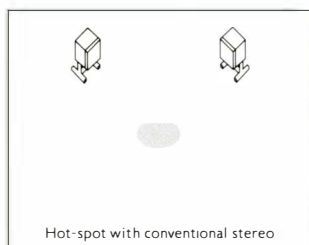
Meet our Mr Negishi and Mr Boothroyd. A bit of an unconventional pair, on the face of it.

But nowhere near as unconventional as the pair of Canon S-50's they are offering up for your scrutiny.

For the thing that's truly remarkable about these speakers is not so much the way they look, but the way they sound.

Connect a pair of S-50's to any existing hi-fi system, and they'll create stereo sound images in a way no speaker has achieved before.

Canon have called this new process 'Wide Imaging Stereo'.



And it's arguably the first real solution to a problem that has plagued stereo reproduction since its inception well over



half a century ago.

Most loudspeakers create a stereo image by beaming two highly directional streams of sound towards the listener.

The point at which these two streams intersect is known in hi-fi circles as the 'hot-spot'.

But it's only within this tightly defined area that the best stereo effect is created.

As the listener moves out

of the hot-spot (sometimes by a matter of a few inches) the stereo image is thrown dramatically off balance.

Move even further, and the sound progressively 'collapses' into the left or right hand speaker.

It was this problem that Hiro Negishi, Head of Canon Research Europe, set about tackling in the late 1980's.

Why, he mused, should speakers deliver stereo that effectively only one listener in the room could fully enjoy?

Would it not be possible to create lifelike stereo images over a far greater area of the room?

Producing a more 'sociable' hi-fi experience, in other words?

Mr Negishi literally shed light on this problem by bringing a little of Canon's unrivalled optical expertise into play.

Instead of a speaker firing outwards, he designed one that aimed downwards onto a cone

n behind Canon's tereo speakers.

shaped 'acoustic mirror'.

The sound was then bounced through ninety degrees and so dispersed far more evenly throughout the room.

(The difference, as it were, between a garden hose and a sprinkler.)

It was true that a very similar principle had been attempted before.

But what was new was the idea of off-setting the acoustic mirror from the

exact centre of the speakers by a carefully calculated amount.

The results were dramatic. Even in crude prototype form, balanced stereo images were produced over a far wider area than ever before achieved.

Wide Imaging Stereo wasn't far-fetched theory any more.

It was suddenly fact.

It was at this point that Canon Audio contacted Allen Boothroyd, one of Britain's most respected hi-fi designers.



Mr Allen Boothroyd.

Together, he and a team of acoustic engineers set about perfecting the final design of this remarkable new speaker.

Highly advanced composite materials were researched for the domed enclosure.

A special full range single drive unit was developed, capable of handling up to 50 watts power.

Whilst a massive zinc chassis was constructed, rigid enough to avoid sound colorations even at high volume levels.

Finally, in June this year, the Canon S-50 was ready to be unveiled.

Rapidly attracting more interest from the hi-fi press than any loudspeaker had a right to expect.

The S-50 is Canon's first foray into the British audio market. But by no means its last.

Already a larger S-70 model is being developed, incorporating a separate sub-woofer enclosure.

And at Canon's Research Centre in Guildford, Surrey, even more ambitious applications for the W.I.S. system are currently being investigated.

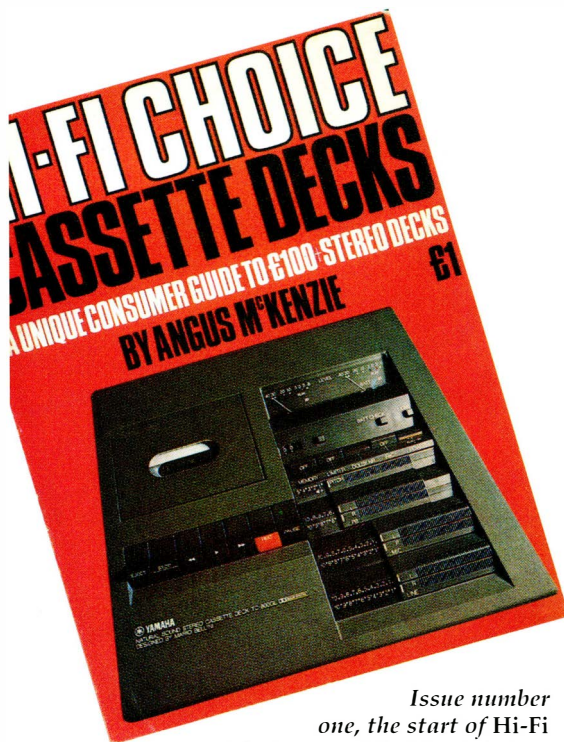
What sort of applications, exactly? And just how ambitious?

Well, that would be telling.

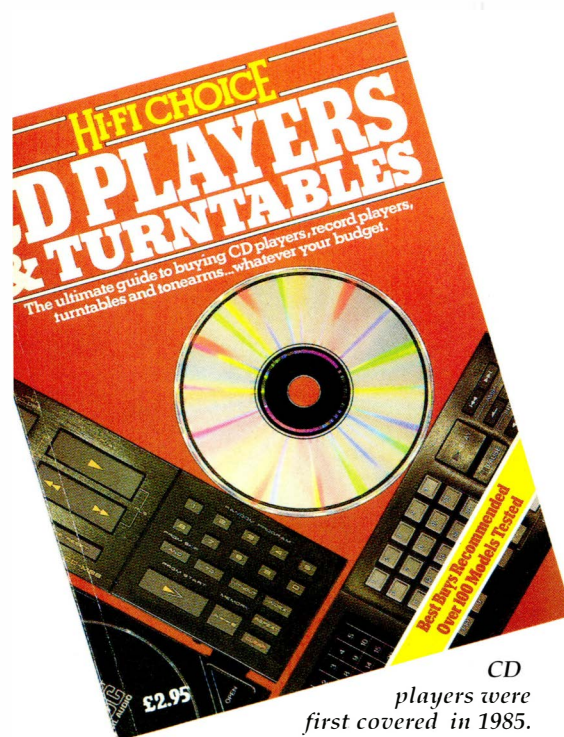
But if Mr Negishi and Mr Boothroyd have got anything to do with it, **Canon** we're all in **WIDE IMAGING STEREO** for a few surprises. LOUDSPEAKERS

How did we get where we are today? Dan Houston has been having a look through the Choice archives.

Turn of the Century



Issue number one, the start of Hi-Fi Choice, our debut topic being cassette decks.



CD players were first covered in 1985.

In these giddy days of nascent post communism it's hard to imagine a *Choice*-less society but that was what faced the hi-fi buyer before the autumn of 1975. Then a slim volume billing itself as 'A Unique Consumer Guide' was published covering the majority of cassette decks then being sold in the UK. *Hi-Fi Choice* departed radically from the format of other hi-fi magazines, offering the reader for the first time a wide comparison of products designed to do the same job, with value ratings based heavily on objective testing methods. Panel listening tests backed up the laboratory work to sort the sheep from the goats.

The Best Buy overall from that first issue was the Pioneer CTF 2121, though many of the leading cassette deck's wow and flutter ratings wouldn't warrant a 'worth considering' comment today.

The industry bible

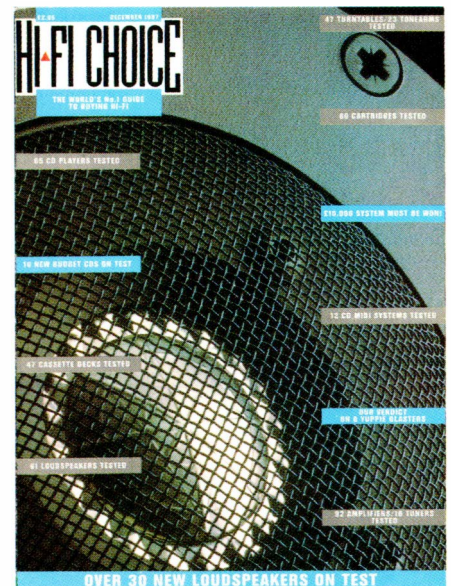
Even in those days the magazines cost £1.00 each, rising to the more reassuringly expensive £1.50 after the third issue.

This 100th issue comes in *Choice*'s 17th year, but it is only since November 1987 (issue number 53) that it has been published monthly. Before that it was a slim paper-back size volume appearing only four times per year, typically covering turntables, amplifiers, loudspeakers and cassette decks. Often there were over 80 reviews, sometimes covering entire ranges from each brand. The second issue featured no less than seven reviews of Sansui receivers, with four or five reviews on just about everybody else.

Choice immediately asserted itself as the 'industry bible' with its exhaustive test procedures, Best Buy and Recommended ratings. It also very quickly established itself as editorially independent; a famous errata slip in the second issue actually denigrated some of the review samples rather than apologising for an author's heavy handedness. It also got itself into court with a loudspeaker company over some of the editorial comments in the issue three - and won the case.

The first editor was Richard Howell, who also had the original idea for the magazine, which was published by Aquarius Books. "People were buying lots of hi-fi magazines to read reviews and it seemed like a good idea to put all the reviews into one issue," he said simply.

Richard only edited two issues before Sally Peberdy was brought in to strengthen the team. He left the magazine when it was bought by SportsScene Publishers, then run by Felix Dennis, but re-



Issue 53, the first to appear in the larger, A4 format.

turned much later for a spell as Publishing Director in 1989/90.

The original concept of *Hi-Fi Choice*, which is still employed, was that it should provide in depth analysis of products with 'at a glance' value ratings as well.

The idea, as Richard Howell explained, was to appeal to the casual and hobbyist reader at the same time. "My belief was that people never read anything else apart from the Best Buy and Recommended chapters, although there was a small percentage of hi-fi fanatics who would read it all," Richard told me.

Sally Peberdy, now running a consultancy firm in the telecommunications business, describes her 18 months at the helm as 'technically a big challenge and good experience'. She introduced Martin Colloms to the magazine which gave Angus McKenzie, the author of the first four issues, a break. These two reviewers dominated the early editorial inclination of *Hi-Fi Choice*. Peberdy (now Davis) also introduced Paul Messenger when she poached him from the deputy-editorship of *Hi-Fi News*. Paul replaced her as editor (issue nine) when she left for pastures new.

The Caterpillar

Himself an audiophile, Paul had originally trained as a teacher before working for Spondor in the early Seventies and then getting into the magazine world, which he describes as 'being paid for doing my hobby'. Always the city-shy hermit, and at his best when dispensing hi-fi wisdom in the style of Lewis Carroll's



January 1990 and Paul Messenger was putting 31 speakers through their paces.

caterpillar, Paul edited *Choice* from his home in Brighton over the four years to 1981. His career then took him off for a spell as publisher of *Hi-Fi News* and Steve Harris - erstwhile editor of *What Hi-Fi* took the (office) chair.

Steve tells me he was attracted by *Choice*'s idealism at the time; Angus McKenzie had laid down the format for truly comprehensive test procedures and the listening panel often compared recordings of music through equipment to a live musician playing in the room itself.

But with the advent of CD players the

Choice format became difficult to sustain. And as Steve mentioned it was impossible to fill an issue with tuners alone. He left for the editorship of *Hi-Fi News* in April 1986 and Paul Messenger, who had by then established himself as a reviewer (doing *Choice* Video, Amplifiers and Cartridges) returned.

In 1986 the first *Collection* 'special edition' was published. As a glossy full size tome it introduced colour to the editorial pages and was the sold-out *Vogue* of the UK audio industry; expensive models graced its pages glamourising the business of owning exotic hi-fi. With the success of *The Collection* the publishing team began putting ideas together to relaunch the title as a monthly issue with colour features and news to back up the reviews.

Having steered the magazine through the relaunch issue in November 1987 Paul wanted to get back to reviewing, and a non-commuting life. The editor's eyeshade was then passed to John Bamford - seven years deputy editor of *Hi-Fi Answers* and self-confessed valve amplifier, Frank Zappa and Golden Virginia fan.

John now speaks from a marketing chair at Pioneer GB.

Like Paul Messenger he was also an audiophile; a disciple and then guru of superlative sound. "I first got into hi-fi at art school where I was a frustrated rock star and music fanatic . . . I was an avid reader of all the magazines, I went to the shows - and I had a Linn *Sondek*," he remembers.

"Then I answered a *Guardian* advert for the post on *Hi-Fi Answers* and went from being an enthusiast to the sharp end of things." John enjoys telling people that he was the 'first reviewer to sell his Linn', moving 'up' through a Cranfield *Rock* to Townshend International's *Rock Reference*, played through the 'hi-fi-as-art' Audio Innovations amplifiers and the biggest loudspeakers he could have shipped to Putney.

Choice has seen many significant changes during its history - reflecting a degree of the editors' personal tastes, especially since the relaunch. But even though the magazine looks different it still incorporates the basic ideas that launched it. There are still over 300 products reviewed each year, each one passing through laboratory tests and a listening panel.

Add to this the *Directory*, which charts hi-fi progress as much as the magazine's, and the 'front end' features and one can see it's still 'A Unique Consumer Guide', and still reassuringly expensive.



By April 1991 DAT had been added to the cassette deck issues.



The Collection, our high end extravaganza.

ALPHASON DESIGNS

Unit 2
Linstock Way
Wigan Road
Atherton
TEL 0942 897308

*For a full
demonstration
contact your
local stockist.*

CHESHIRE
CONGLETON HI-FI
1/1A Duke Street
Congleton
TEL 0260 297544

DOUG BRADY HI-FI
TEL 0925 828009

CLEVELAND
ACTION ACOUSTICS
155-157 High Street
Redcar
TEL 0642 480723

DEVON
UPTON ELECTRONICS
31 Torquay Road
Paignton
TEL 0803 551329

ESSEX
BRENTWOOD
MUSIC CENTRE
2 Ingrave Road
Brentwood
CM15 8AT
TEL 0277 221210

RAYLEIGH HI-FI
TEL:
Rayleigh 0268 779762
Chelmsford 0245 265245
Southend 0702 435255

HAMPSHIRE
HAMILTON ELECTRONICS
35 London Road
Southampton
TEL 0703 228622

SOU DWAVES
1 Holbury Drove Centre
Holbury
TEL 0703 899131

HEREFORDSHIRE
GOSPEL MUSIC AUDIO
32A High Street
Kington
TEL 0544 230254

KENT
VOLUME ONE
41 Upper Wickham Lane
Welling
TEL 081 304 4622

LONDON
DOUG BRADY HI-FI
TEL 071 379 4010
071 497 1345

NICHOLLS HI-FI
430-434 Lee High Road
Lewisham
SE12
TEL 081 852 5780

SONA ELECTONICS
34 Pembridge Road
Notting Hill Gate
W11
TEL 071 229 6411

MERSEYSIDE
DOUG BRADY HI-FI
TEL 051 733 6859

MIDDLESEX
NORTHWOOD AUDIO
126 Pinner Road
Northwood
HA6 1BP
TEL 09274 20877

WEST MIDLANDS
ALTERNATIVE AUDIO
93-95 Hobs Moat Road
Solihull
TEL 021 742 0254

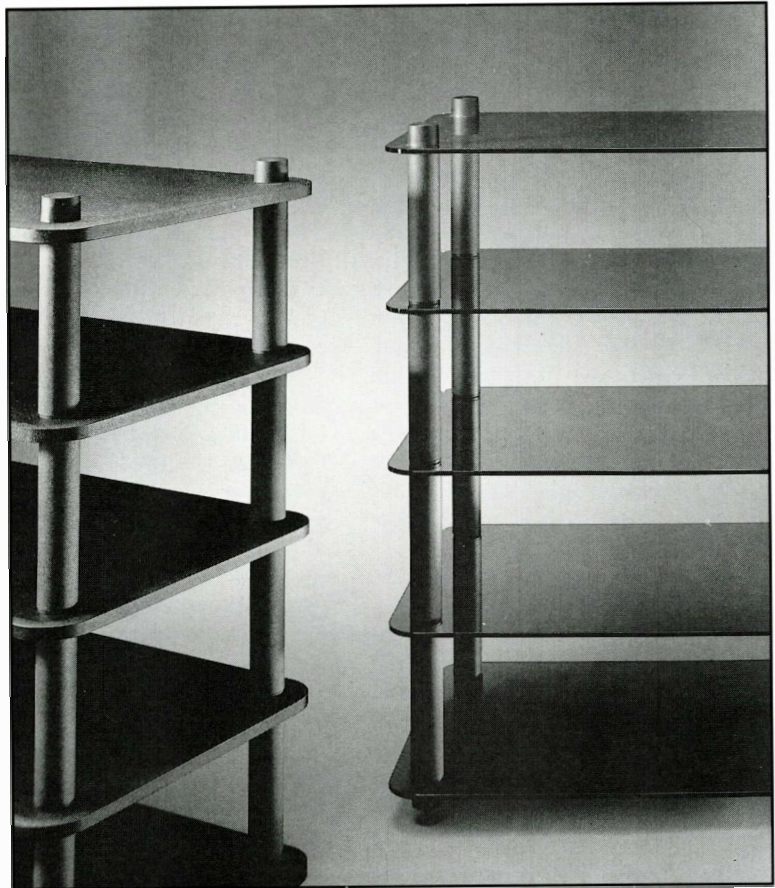
MUSIC MATTERS
351 Hagley Road
Edgebaston
B17 8DL
TEL 021 429 2811

EAST SUSSEX
AUDIO DESIGNS LTD
26 High Street
East Grinstead
TEL 0342 314569

WILTSHIRE
BURDENS
ELECTRONICS LTD
93 - 94 Victoria Road
Swindon

SN1 3BD
TEL 0793 613733

WEST YORKSHIRE
TAPE RECORDER CENTRE
3 Kings Cross Street
Halifax
TEL 0422 366832



Close your eyes and you're there

The listening experience of a Lifetime

Grynderupvejen 12
DK 9610 Nørager
Denmark
Phone +45 98 55 17 00
Fax +45 98 55 17 11



*DALI has selected some of the top specialists in the country
- dedicated enthusiasts who will demonstrate these remarkable speakers at their best.
Why not ring one now and give your ears a treat?*

DALI appointed dealers:

Audio Excellence, Bristol
0272 264975

Audio Inc, East Molesey, Surrey
081 9414234

Audio Suite, Aberdeen
0224 625635

Doug Brady Hi-Fi, London WC2
071 3794010

Dorchester Hi-Fi, Dorchester, Dorset
0305 264977

K.J. Leisuresound, London W1
071 4868262

Nottingham Analogue Studios,
Underwood, Notts.
0773 762947

The Music Room, Glasgow
041 3325012
Manchester
081 8351366

Radlet Audio, Radlet, Herts
0923 856497

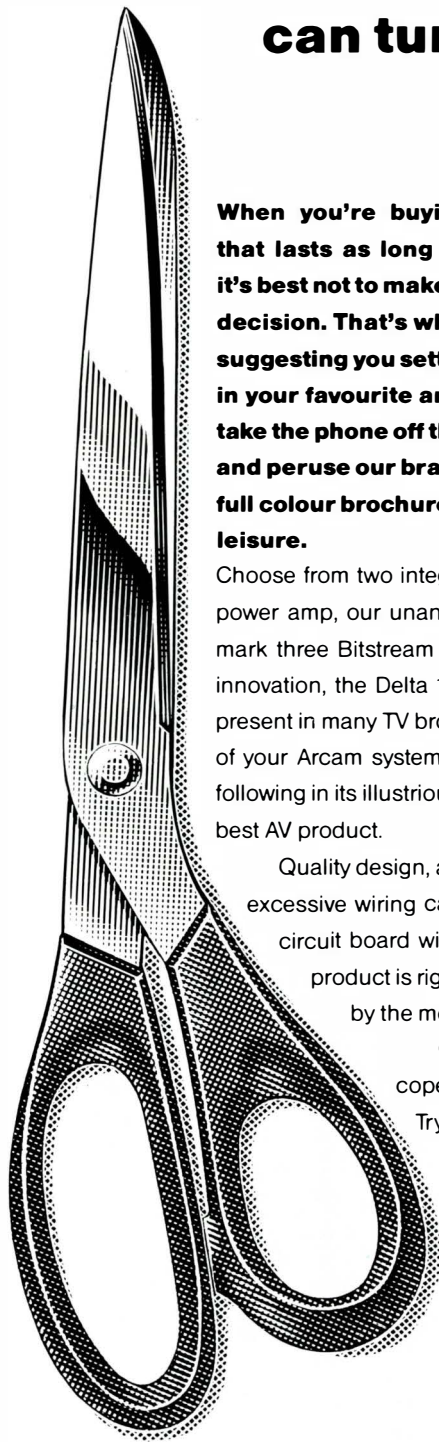
The Sound Organisation, York
0904 627108

UniversityAudio, Cambridge
0223 354237

West Midlands Audio, Worcester
0905 58046

UK Distributor:
C.S.E. tel. 0423 528537

these simple tools can turn this ad into a full colour hi-fi brochure



When you're buying hi-fi that lasts as long as ours it's best not to make a hasty decision. That's why we're suggesting you settle down in your favourite armchair, take the phone off the hook, and peruse our brand-new, full colour brochure at your leisure.

Choose from two integrated amplifiers, a tuner, a CD player, a CD transport, a digital preamp, power amp, our unanimously acclaimed Black Box digital to analogue converter (now in its mark three Bitstream version), and the Delta 2 speakers. Then, of course, there's our latest innovation, the Delta 150 NICAM TV tuner. This decodes the digital stereo sound signal now present in many TV broadcasts ... what a wizard wheeze to let you get even more enjoyment out of your Arcam system: moving pictures to accompany CD quality sound! The 150 is already following in its illustrious predecessors' footsteps by winning the 1991 What Hi-Fi? Award for the best AV product.

Quality design, allied to simplicity of construction, is the key to our success. For example, excessive wiring can cause all sorts of problems, so our boffins prefer a single fibreglass circuit board with military specification soldering. And, just to make sure, every single product is rigorously tested and repeatedly checked. By the fussiest of computers and by the most finely tuned pairs of ears.

Our 'simple is best' philosophy extends to the controls, too. If you can cope with a pen and scissors, any Arcam component will be a piece of cake. Try it and we'll send you a brochure to feast your eyes on.

Alas, to give your ears a similar treat, you'll have to visit your nearest Arcam dealer.



ARCAM
audiophile products

I'd like to look before I listen. Please send me my free colour brochure.

Name: _____

(PLEASE PRINT)

Address: _____

CCD 9 91

POST YOUR COMPLETED COUPON TO:

ARCAM, PEMBROKE AVENUE, DENNY INDUSTRIAL CENTRE, WATERBEACH, CAMBRIDGE CB5 9PB. OR TELEPHONE: (0223) 440964 FAX: (0223) 863384

IN THE USA: AUDIO INFLUX CORPORATION, PO BOX 381, HIGHLAND LAKES, NEW JERSEY 07422-0381, TEL: 201-764-8958 IN CANADA: AVALON AUDIO LTD, UNIT 17, 975 FRAZER DRIVE, BURLINGTON, ONTARIO L7L 4X8 TEL: 416 333 4633

Art Audio Quintet

ART AUDIO, 62 VAUGHAN AVENUE, HUCKNALL, NOTTS, NG15 8BT.
TEL: (0602) 653604



Art Audio has been producing valve amplifiers for a few years now. Three to be precise, although its profile in this country is fairly low because most end up abroad, mainly in the Far East and Italy. Indeed, the company only has three dealers in the UK, which means that if you want to hear its amplifiers, you'll probably have to travel.

The *Quintet* is Art's least expensive power amp, and you get a lot of metal for your money. The chassis is wide and shallow, leaving the well spaced valves looking a little sparse on the shelf in front of the transformers.

Finish is pretty utilitarian with few concessions to style. More unfortunate are the graphics on the badgework, which have the effect of placing an F in front of the company name.

Fit and finish aside, the *Quintet*, like all Art's amplifiers, offers the user a choice between triode or ultralinear output stages, with power outputs of 15 and 25watts respectively.

Switching, which can be done while the amp is playing, is accomplished by two rotary controls on the rear of the chassis, where you'll also find a six position variable feedback switch.

All input and output socketry is on the chassis top, behind the transformers, which for once makes connecting the *Quintet* a doddle. Aside from the rather OTT power switch, there's little else to mention.

Construction

Pick up the Art Audio *Quintet* and the word meaty springs to mind. Like most

stereo valve amps the *Quintet* uses three transformers, one for the mains and a pair for the output, the transformers in this case being rather larger than average.

Each channel uses a 12AX7/ECC83 voltage amplifier to feed a 12AV7/ECC82 phase splitter. In each case only one half of the twin triode is used. Both stages are solid state regulated.

The output stage consists of a pair of EL34s per channel. Rear panel switching converts these from ultralinear to triode coupling whilst a third control offers stepped changes in overall negative feedback. The output stages are arranged for cathode bias which enhances user friendliness.

Constructional quality may not be particularly pretty but it's solid enough and displays some nice touches. Component quality is average and the way the wiring is arranged shows good attention to detail. The supplied valves are to a high standard, the EL34s being sourced from Shuguang, a recognised Chinese manufacturer.

Sound quality

The variable output topology and feedback presents evaluation problems all of its own. Separate listening had indicated that triode output and minimum feedback gave the best results and it was in this configuration that the panel first heard it. Their responses were mixed: while some admired the easy, relaxed smoothness and natural perspectives, others picked up on the loose and flabby bass, and poor timing.

A quick conflagration between the operators

led to a change of preamp, and things improved, particularly in the area of dynamics and life.

The sound was rich and fluid with an inviting sense of warmth and body, giving bass dynamics an impressive sense of wallop. Music takes on an easy, almost languid sense of grace which one panelist described as 'easy on the ear'.

Separate listening in ultralinear configuration indicated that a couple of notches of feedback were desirable and in this format the amp gains in focus and separation but at the expense of that easy sense of life. Furthermore it doesn't really increase the apparent power.

Conclusion

Art Audio may be virtually unknown in this country but on this evidence, it certainly deserves considerable attention.

The *Quintet* is an awful lot of amp for the money and the larger *Maestro*, a 70watt triode, 150watt ultralinear monoblok, may well be an attractive proposition, even at £2,000 a pair!

The sound of the *Quintet* is enticing, and the longer you listen to it, the more you'll appreciate its easy grace and effortless musicality. Chris Binns, the man responsible for the lab tests, described the Art Audio as a poor man's Jadis and there's more than a grain of truth in that notion. The Art Audio gives you music with a sense of rightness that you don't really question but simply get on and enjoy.

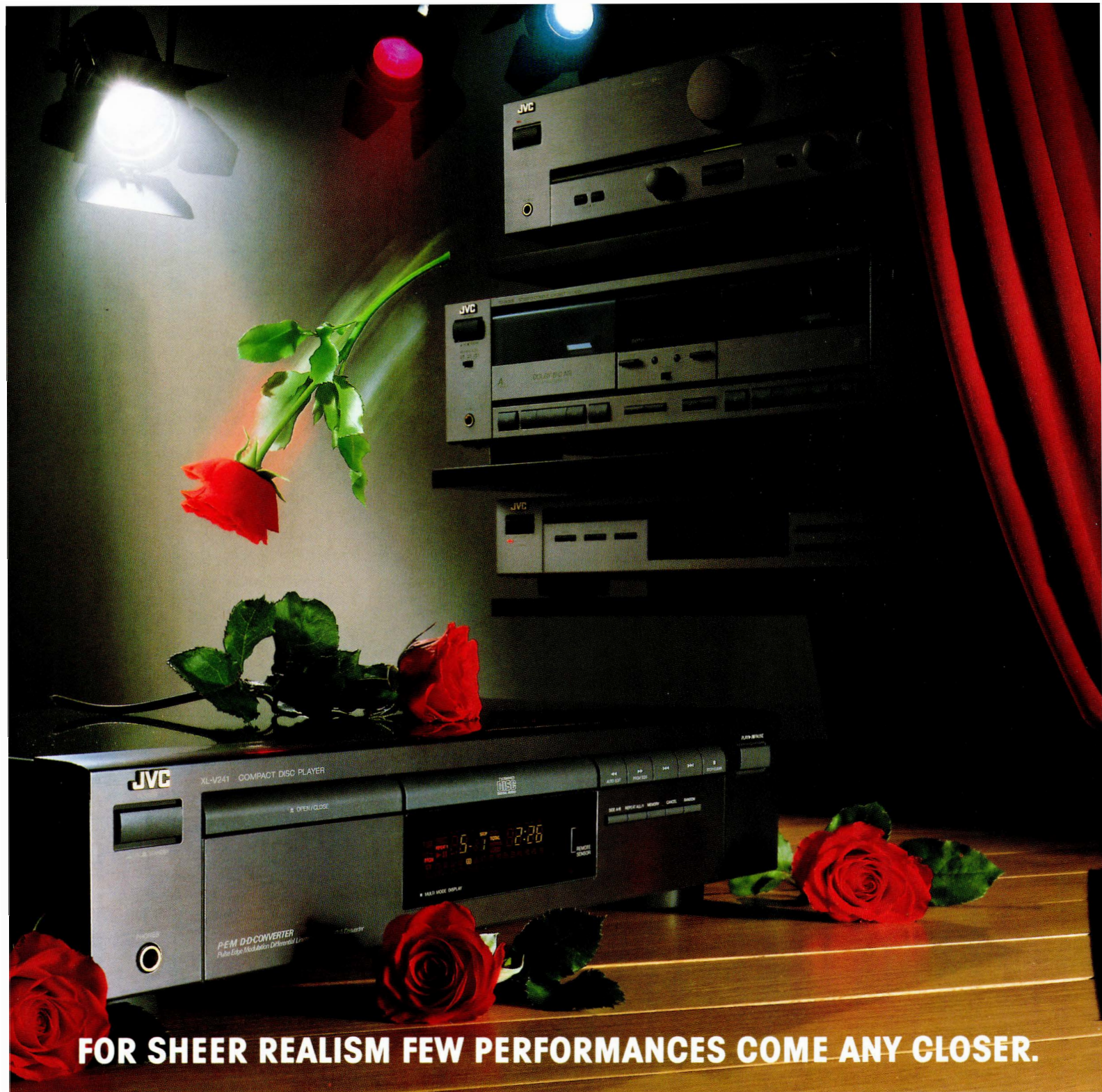
It may not go that loud, and it certainly benefits from a lively preamp, but the sheer musical pleasure that this amp can deliver makes it a relative bargain at the £725 asking price.

Definitely Recommended, the *Quintet* is well worth seeking out, feed it correctly and you should enjoy a long and happy association.



TEST RESULTS

Power output - ultralinear			
maximum feedback	20Hz	1kHz	20kHz
Left	4ohms	25w	24.1w
	8 ohms	15.4w	18.6w
Right	4 ohms	25w	24.1w
	8 ohms	15.6w	19.0w
Input sensitivity for full output (onset of clip @ 1 kHz)		L - 1.8v, R - 1.8v	
Absolute phase		Non inverting	
Input Impedance		100 kohm	
THD @ 1 kHz 8 Ω resistive load		L - 0.38%, R - 0.38%	
Retail price		£725	



FOR SHEER REALISM FEW PERFORMANCES COME ANY CLOSER.

It's hardly surprising that JVC's latest hi-fi separates have picked up so much applause from the hi-fi press.

Each component has been designed to recreate music, purely and simply, establishing new standards of accuracy in the reproduction of digital sound wherever they perform.

The XL-V241 Compact Disc player, for instance, features the highly acclaimed 1-bit Pulse Edge Modulation (PEM) DA converter, an exclusive JVC creation. It dramatically reduces zero-crossing distortion, non-linearity and glitches, offering twice the resolution of conventional 1-bit DA converters.

The PEM converter allows 4th order noise shaping which virtually eliminates re-quantization noise and together with an advanced oversampling system

provides a very high signal-to-noise ratio, close to the theoretical upper-limit.

All of this means you can sit back and enjoy the subtle caress of the most delicate nuances, or suddenly be shaken by the most stirring musical crescendo, with a total sense of realism.

Recommended as an ideal partner for this player is an amplifier such as the JVC AX-A341. Providing up to 85 watts per channel, there's also a 'CD Direct' switch to make sure your ears receive the ultimate in sound purity.

Completing the line-up is a range of matching tuners, cassette decks, and other hi-fi separates. Each component, a polished performer in its own right. Together with the right partner, definitely a class act.

JVC

Concordant Exultant

CONCORDANT PREMIER TUBE, 14 GLYN CLOSE, BARWELL, LEICESTERSHIRE, LE9 8GL. TEL: (0455) 843752



Concordant's main man Doug Dunlop is one of the pillars of the UK valve renaissance. Alongside other campaigners such as Glenn Croft, he has quietly been producing his preamplifiers and modifying existing power amps since the days when valves were nothing but a fading glow in a solid state memory. His designs have remained refreshingly individual in both appearance and execution and he has branched out from preamps to include a total redesign based on the chassis and transformers of the Quad II, offering a complete pre/power set up from £1,230.

The entry level preamp and subject of this review is the £700 *Exultant*, a two box design with a compact but surprisingly heavy outboard power supply. It offers inputs for phono (moving magnet) and three line inputs plus tape out and a single set of main outputs, but no monitoring.

Unusual features are the elegant twin mutes on the source switch, so that you can move straight to mute from any input, and the variable gain for the line stage. The balance control only affects the tape output, and is there to channel match recordings.

Construction

The control unit is refreshingly free of clutter, the four valves and single large smoothing capacitor sharing a lone circuit board with a sprinkling of smaller components.

The phono input circuitry is based around a selected 12AX7/ECC83 double triode for each channel, with passive equalisation, an arrangement very similar to the Croft design but using B9A type valves. Interestingly this is one unit in which the valves are mounted vertically. Line inputs are fed to a gain stage circuit which is coupled to a cathode follower output that's built around another pair of 12AX7/ECC83s.

Component quality is average but there

is evidence of selection at critical points. The power supply is separately housed and employs a frame transformer. Rudimentary regulation is provided for the heater supply whilst the HT passes through a 5965 double triode, although we were unable to discover a reference voltage with which to regulate it.

Operational ergonomics are fine, but unfortunately the HT umbilical employs a three pin DIN plug and a five hole socket. Not only is it possible to connect the plug in three incorrect orientations to the intended, but the 250 volt HT line is passing through a connector which is only rated at 150 volts max! This is questionable safety practice and should certainly be corrected.

Sound quality

This little Concordant preamp surprised a few people. JB gave its big brother the thumbs-up in a previous group test and listening to the *Exultant* I can certainly see (hear) why.

In many ways this is the classic budget valve preamp, the essentially simple but carefully executed circuit design giving each input the required 'leg-up' without getting in the way. In fact, transparent gives as good an idea of the sound as any of the other adjectives so beloved by hi-fi hacks.

Dynamics, clarity and articulation are the strong points, and the *Exultant* certainly impressed the panel with the sheer vivacity of its performance. The comments are littered with words like satisfying, big, bold and dramatic, and it certainly offers a direct view of the music. Every panellist gave high marks for transparency and all aspects of stereo performance.

Mind you, it's not perfect and can tend towards the ragged when the going gets tough. This slightly aggressive edge needs careful consideration over matching, but

if you like your signal unobstructed then this could well be the product for you.

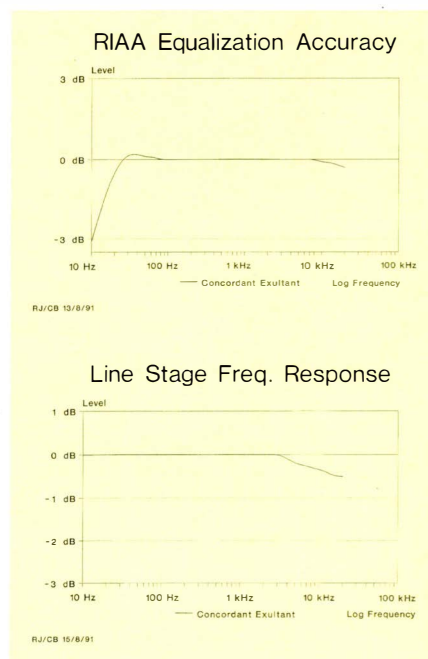
Conclusion

In many respects this Concordant represents the uneasy progress of the tiny valve manufacturer committed to sonic excellence. The musical abilities are there to be heard, but they sit uneasily with other aspects of the design. I'll defend it to the bitter end on the grounds of commonsense layout and the quality of the screen printing on the fascia, but this aspect polarizes opinion. I found two people who really liked it, but the panel was universal in its rejection.

The Concordant is indeed a mixed bag, but the spirit of valve-retro is clearly alive and well and living in little blue boxes. For the music enthusiast intent on sound quality the 'minor practical considerations' will be irrelevant and the musical qualities will be everything. These are certainly exceptional though in our view the connecting lead problem should be sorted out and for that reason formal Recommendation is withheld.

TEST RESULTS

Input sensitivity	
Phono	2.1mV
Line stage	250mV
Frequency response (20Hz - 20kHz)	
RIAA accuracy	L - 0.5dB, R - 0.5dB
Line Stage	L - 0.2dB, R - 0.2dB
Output impedance	540ohms
Maximum Output	22v
Channel Balance	-20 dB - 1.4dB -60 dB - 3dB
Retail price	£700



Croft Super Micro A OT/Series V

EMINENT AUDIO, 91 ROSEMARY CRESCENT WEST, GOLDTHORNE PARK, WOLVERHAMPTON, WV45AN. TEL: (0902) 331324



Croft is definitely the one and only. There is, has been and only ever will be, one Croft. How a tiny and distinctly cottage industry company which goes its own way could become the torch bearer and leading light of the UK valve renaissance defies all logic. More so when you've met Glenn Croft, the designer who lends his name to this truly eclectic range of products.

Aesthetics have never been one of Croft's major considerations. Current examples of his work are a vast improvement on all but the very earliest versions, but still rate somewhere between basic and basically awful. When you buy a Croft you're paying for the material content rather than 'impress the lads' looks.

The *Super Micro A OT* gains its suffix by virtue of employing octal triodes in the signal path which means that the valves are built on the large bases more normally associated with output tubes. Theoretically this should result in a more rigid internal structure. Facilities are minimal. There are inputs for a MM phono cartridge, two line sources and a single tape, but that's it. Layout is totally dual mono with separate switching and volume controls for each channel.

Line inputs are passed directly to the source switching and volume pots. Although they receive no gain, they feed a cathode follower which helps drive interconnect cables of a reasonable length, so they're not entirely passive. Socketry is all RCA phono, with heavy duty gold plate on the phono input and main output, the rest being nickel.

The *Series V* power amp now sports an all enveloping perforated cage which certainly helps it look a little more acceptable, though it's still a featureless black box. A power switch, nickel phono inputs and two pairs of binding posts sum up the fiddle value and reflect Croft's no nonsense approach.

Outwardly both units are solidly built; internally they're hard-wired with predominantly solid core cabling. The effect may not be especially neat but this kind of construction is normally associated with far higher price tags. In fact, once you get inside these products they seem to embody every desirable feature the true valve devotee could wish for.

Construction

Picking up the latest Croft *Super Micro A OT* one immediately notes the substantial

improvement in the mechanical integrity (if not the finish) of the case-work. The interior is dominated by the four large octal triodes and five big blue power supply caps.

The flexibly mounted frame transformer is fitted with an RF suppression choke. Croft's literature mentions an external RF filter network which failed to materialise, but clearly this is an area they take seriously. The 'straightline' circuitry comprises a two stage pickup circuit, utilising a 65L7 twin triode with passive equalisation for each channel.

These are valve regulated by an EL86 preceded by a 12AX7/ECC83, with voltage reference provided from an OA2 regulator, an arrangement similar to other Croft products. The otherwise passive line stage is equipped with a 65N7 cathode follower for each channel, improving the unit's ability to drive cables. Component quality is adequate with care being taken in selection of circuit elements in critical areas.

The totally dual mono approach makes the *Super's* ergonomics less than wonderful, the sheer distance between the level controls making accurate channel matching problematic. Switching is basic and not particularly well labelled.

The power amp

The *Series V* power amp follows similar constructional lines to the *Super Micro*, except that a mixture of wiring types are employed. The driver stage is fed from a regulated power supply, a beefed up version of the one described in the preamp, using a large 6080 dual triode. The driver/phase splitter is a 12AX7/ECC83 for each channel fed from one half of another 12AX7/ECC83 which acts as a voltage amplifier.

This arrangement is reminiscent of the Leak *Stereo 20*. The output stage consists of four EL84's for each channel, in a parallel push pull arrangement, operating in ultralinear mode with cathode bias.

Constructionally speaking, the *Series V* is a little untidy compared to the preamp. Component quality varies, and again care has been taken in the selection of critical parts. Socketry is once more, pretty basic with only a single set of output taps provided. These are terminated in combina-

tion binding posts. Croft recommends a load impedance in the 8-16ohm range and in our view careful matching of the speakers will be critical in obtaining acceptable performance.

Sound quality

This combination had the most 'traditional' sound in the whole group. Reading the comments on the response forms was like a blast from the past, littered with the rosy tones of 'warm' and 'sweet' and the not so rosy ones of 'muffled' and 'soft'. Coming in around the same price as the Sound Audios it's difficult to imagine two more different presentations.

The Croft combination was universally praised for a nicely three dimensional soundstage and an even tonal balance. Getting down to specifics, it was a little short on focus and transparency, the soundstage sounding a little murky and individual images a shade diffuse. One panellist used the term 'smoggy' and that sums up the combination of the lack of glare or brightness and congested spaces between performers. Nor did the soundstage really escape from the speaker boxes, giving an enclosed or shut in effect. The other failing was a lack of bass precision and authority, which some panellists felt extended to timing, musical tempo and drive.

But if the Crofts fall down in transparency and drive, the traditional midrange strength was certainly all present and cor-

rect. The tonality of midrange instruments right down as far as bassoon was spot on, and there was no problem in identifying the sporadic musical interactions from a whole host of instruments in the Decca *La Fille Mal Garde*.

Most amplifiers involve trade offs, and here the tonal magic of that midrange is offset by some lack of dynamic resolution and range. Separate listening suggests that the power amp is rather more to blame for these shortcomings. It managed to do better with a pair of the new Audio Note *Model Js* which present an easier load, but still couldn't really give music a true sense of scale and authority.

The *Super Micro A OT* continues to broaden the midband magic of the original, pushing it further down into the upper bass. If the treble remains a bit smeared and imprecise, the overall sound is a bit more generous and dynamic than the *Series V* provides.

As a combination the Crofts held the middle ground marks wise, pleasing some more than others, but failing to really impress anyone. 'Could be more effortless' and 'Didn't really grab me' are representative comments and preclude recommendation. My own experiences suggest that the preamp is certainly worth considering either in the context of a pricier all Croft setup (the *OTL* perhaps) or with one of the many respectable solid state power amps that are bedevilled by inadequate matching preamps.

Conclusion

Croft's at one time unchallenged dominance of the budget valve market is increasingly under threat. The efforts to refine the preamps have been more successful than the attempt to produce a cheaper power amp. The *V* is too close in price to the bigger and better *IV* to make its failings acceptable.

With care in matching it could well please, but saving the extra cash for big brother seems to me the far more sensible course.

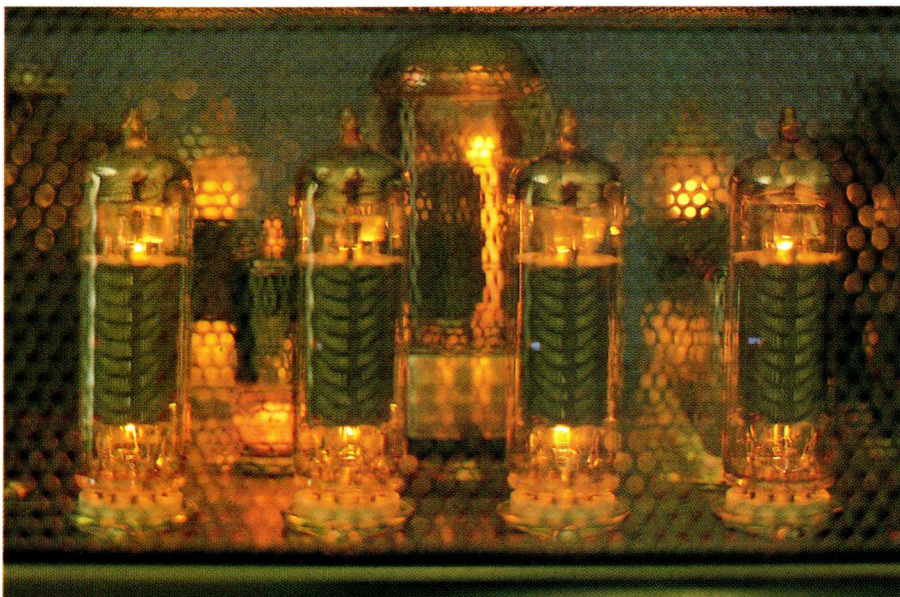
TEST RESULTS

Preamplifier: Croft Super Micro A OT

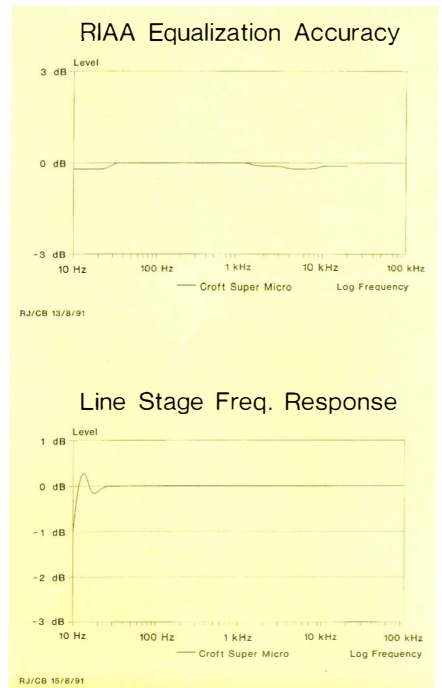
Input sensitivity	
Phono	2.3 mV
Line stage	550mV
Frequency Response (20Hz - 20kHz)	
RIAA Accuracy	L - 0.3dB, R - 0.3dB
Line Stage	L - 0.1dB, R - 0.1dB
Output impedance	470ohms
Maximum signal output before clipping	34v
Retail price	£649

Power amplifier: Croft Series V

Power Output	20Hz	1 kHz	20 kHz
Left	4ohms	16.8w	16.8w
	8ohms	19.5w	25.2w
Right	4ohms	16.7w	16.8w
	8ohms	19.4w	25.3w
Input Sensitivity for full output (onset of Clip @ 1 kHz)		L - 0.31v, R - 0.31v	
Absolute phase		Non inverting	
Input impedance		270Kohm	
THD @ 1 kHz 8Ω resistive load		L - 0.31%, R - 0.32%	
Retail price		£549	



The power amp's tubes and transformers are encased in a protective cage.



AKG
ACOUSTICS

BARFUNK!



K 33



K 44



K 33 + K 44.
Headphones that
offer more

than
meets the ear.
Hi-Fi quality from
AKG for a new
generation of
music lovers on
the move.



AKG AKUSTISCHE U. KINO-GERÄTE GESELLSCHAFT M.B.H.
Brunhildengasse 1, P.O.B. 584, A-1150 Vienna/AUSTRIA
Tel.: (1) 95 65 17-0*, Telex 131839 akgac a, Fax: (1) 95 65 17-245

AKG ACOUSTICS, LTD.,
Vienna Court, Lammas Road, Godalming, Surrey GU7 1JG/GREAT BRITAIN
Tel.: (483) 425702, Fax: (483) 428967 Telex : 859013 akgmic g

MFA Magus

REFERENCE IMPORTS, PINERIDGE, THEOBALDS GREEN, SANDY CROSS, HEATHFIELD, EAST SUSSEX, TN21 8BS. TEL: (0435) 868004



ful, bearing out MFA's claim for moving coil compatibility. The *Magus* is a remarkable performer for the price.

The build quality is exemplary and the essentially simple circuit uses premium grade components. Add the cost of importing the unit and it looks like an absolute bargain in material terms. Fortunately, the sound doesn't disappoint either.

Offering genuine compatibility with all but the very lowest output moving coils, as well as facilities to optimise loading, the MFA offers much better value for money than most valve amplifiers.

Build, parts and sound quality all add up to a very strong Recommendation, while brief exposure to MFA's power amplifiers suggest that they too offer similar sound for your pound value. For once we have not just another imported brand, but a very welcome addition to the market.



Moore, Frankland Associates has built quite a following in the USA, a close encounter with the five grand *M200C* monoblocks demonstrating why, and encouraging us to investigate the more affordable end of the range. This *Magus* two box preamp only just reaches the wrong side of a thousand pounds (£1,147). That's not cheap, but it's a bargain compared to most other American exotics.

The slimline rack mount chassis has excellent finish and unusual graphics, heavy gold script and messy layout don't help perceived value. Gold Aero valves sit in decoupled bases, Solen caps nestle amongst selected resistors, everything is laced to the solid circuit board with Kimber Kable and Tiffany sockets are used for all the in/outputs.

The phono stage is claimed to accept either moving coil or moving magnet cartridges straight in, and provides internal adjustment of resistive or capacitive loading. You can also connect two line level sources and a tape deck. As well as a mono switch, two front panel trim pots adjust balance and overall stage gain.

Construction

Unlike the other products in this test group, an exemplary, and comprehensive technical instruction manual is supplied, even down to circuit diagrams, a practice which could usefully be revived elsewhere.

The circuit is essentially straightline in nature employing paralleled 12AX7/ECC83's along with one half of a 12AT7/ECC81 plus passive equalisation for phono gain.

The line stage is built around a split 6DJ8/ECC88 the output from the anode giving a relatively high output impedance of 2kohms. Long cable runs are possible but should be chosen carefully.

The external power supply houses a

transformer, rectifiers and smoothing caps, supplying the main chassis with HT and heater supplies.

The umbilical is terminated with a good quality five pin, screw lock connector. The preamp is built on a substantial (and substantially fixed) 3mm fibreglass circuit board with bare copper tracks.

As well as the audio circuits the main chassis houses considerable solid state regulation for both HT and valve heaters. Ergonomics are generally excellent with clearly labelled and identified socketry. The trim controls help to maintain the same output level from widely differing input levels.

Sound quality

The panel unanimously voted the *Magus* a winner, second appearance confirming that result and showing excellent consistency between scores.

The MFA was admired for its combination of dynamics and definition. Bass is fast and clean with a real ability to stop and start, combined with enough weight for good 'grunt'.

This underpinned a large, transparent soundstage, filled by solid and nicely dimensioned images. Resolution and detail were both good, and the overall sound refined and relaxed.

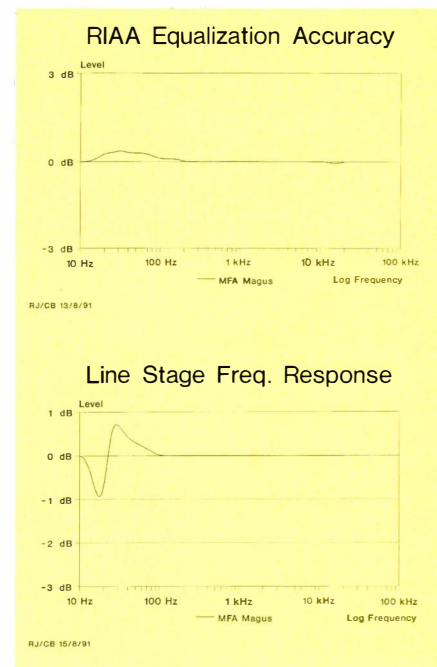
One or two panellists commented on a slight treble thinness which made vocals a touch sibilant and cymbals a shade splashy, but the effect was slight and nobody felt it would lead to long term irritation or fatigue.

Conclusion

My own listening supports these views, leaving the preamp powered up for a few days actually sweetening the treble. Experiments with the low output Morch *Da Capo* cartridge proved extremely success-

TEST RESULTS

Input Sensitivity	
Phono	0.8mV
Line stage	0.25V
Frequency response	
20Hz - 20kHz	
RIAA accuracy	L - 0.5dB, R - 0.5dB
Line stage	L - 0.2dB, R - 0.2dB
Output impedance	1.9kohm
Maximum Output	48V
Channel Balance	-20 dB - 1dB -60 dB - 1.5dB
Retail price	£1,147



Sound Audio VP-3a/HBP-60a

THE MUSICAL DESIGN CO, PO BOX 13, LONDON, E18 1EG.
TEL: (081) 989 0692



New to these shores, Sound Audio hails from Hong Kong. Billed as 'budget esoterica', the accompanying literature makes great play of the sonic criteria employed in the design. In short, if it doesn't contribute directly to the sound then out it goes.

Opening the cartons, I discovered a pair of medium sized units comprising a valve line stage and a hybrid power amp. The finish is pretty good, combining black brushed aluminium fascias and crackle paint on the casework. The graphics are in a fairly bright but pale blue, and it's safe to assume that the Sound Audios will get noticed.

The preamp has inputs for four line level sources, with one tape loop and provision for off tape monitoring. Aside from that you get volume, balance, a single set of main outputs and an on/off button.

The slightly larger and surprisingly heavy power amp comes fitted with a pair of high quality phono inputs and four binding posts.

Both units sport discreet red telltales, which can be a little difficult to see. While we're quibbling I'd like to see an earth post on the preamp, and wonder just what

is the point of putting different quality phono sockets on the power and preamplifiers.

These small points aside, both units come across as solidly built and it's hard to fault them on grounds of material value. Given their origin, the £600 apiece price tag seems very good by the standards of the homegrown competition. The VP-3a preamplifier in particular has a lovely feel with smooth, positive controls and a refreshingly different appearance.

Construction

Being a line only unit, the preamplifier avoids the clutter and complexity of a phono stage. Basic line amplification is provided by one 6DJ8/ECC88 per channel, vertically mounted on a large and solidly fixed printed circuit board. The power supply uses an enclosed frame transformer with comprehensive solid state regulation.

Component quality is high for the price, with Solen capacitors and close tolerance resistors. Reservoir capacitance is made up from a collection of small value caps instead of a single great big one, a policy adopted by several contemporary designers because a bank of small capacitors can

charge and discharge faster than a single high value unit.

Volume and balance are both controlled with large, high quality Alps pots.

Ergonomics are fine, although clearer labelling or colour coding of the input socketry would be welcome.

The control knobs are pleasant to use, but the volume control is stepped, a good or bad thing depending on your prejudices.

The power amp

The HBP 60a is a far more impressive unit. It's a hybrid design using ECL86 valves to feed one 25J50 and one 25K135 Hitachi MOSFET transistor

per channel.

The power supply employs a large and beautifully enclosed frame transformer to feed the separate supplies necessary for HT, valve heaters and output stages. Although these individual supplies are unregulated, relay protection is provided on the outputs.

Component quality is again high for the price and the parts are nicely arranged on a pair of printed circuit boards. Heat sinking for the MOSFETS is provided internally and should prove more than adequate. The socketry is good, with gold plated, teflon insulated phonos and decent nickel binding posts.

Both units are provided with rubber feet in an effort to provide some isolation from the outside world. Placement of the ventilation slots at the back of the power amp allows the shallower preamp to be stacked on top if so desired.

Sound quality

Sound Audio makes a solid state, stand alone phono stage for use with the VP3, but the cost of importing such a low cost item means we're unlikely to see it in this country.

For the panel listening we employed



Lynwood Electronics' £200 phono stage (see review in *Sessions* on page 15) which proved to be an excellent match.

The panel was immediately impressed by the big, bold, dynamic presentation. The only hybrid in the group benefits from a power advantage (on paper at least) over the other amps, and this translated into impact and solidity as well as wide range dynamics. These amps can certainly motor.

But as the test progressed their shortcomings also emerged. The SA combo was generally marked down for soundstage depth and transparency, and also for detail. The sound, notable for its presence, suffered from a flattened and slightly congested soundstage, performers and instruments tending to melt into a homogeneous group.

Whilst everybody noted the effect, the degree of concern varied. Regular valve users marked the Sound Audios well down in these areas whereas the less tubified listeners, and especially solid state owners, were somewhat less concerned - perhaps a case of not missing what you never had?

The other area which drew adverse comment was the treble, which was a little glossy and could tend towards the ragged. A number of the panellists felt

that the combo's sheer energy, coupled to that high frequency 'edge' could well become fatiguing in the long term.

The key to this combination is in the varied responses it produced in the cross section of listeners. They all identified the same traits, but the various panellists differed in how critically they viewed what was on offer. One thing is certain, this pairing can't be confused with the 'traditional' valve sound.

My own listening confirmed the panel results, but with the ability to chop and change-speakers and cabling, I was able to control any treble nastiness and make the most of the Sound Audios energetic attributes.

Further experimentation revealed that most of the blame for the woolly and unfocused presentation lies with the preamp. Whilst the power amp will never excel in these areas, a more lucid preamp will produce an appealing combination of virtues.

Conclusion

Carefully matched, particularly at the top end, the Sound Audios offer a big, generous sound which makes rock and pop music in particular sound vivid and engaging.

The stronger partner is definitely the

hybrid power amp.

The *VP3a* seems expensive in comparison, both in material and sonic terms, especially when you consider the lack of a phono stage and the extra expense that will be incurred should you opt for a vinyl based system.

The Sound Audios are nicely built and presented, but again the (more recent) *HBP 60a* is superior. Reminiscent, at least sonically, of the Counterpoint *SA12*, you get a lot of amp for your money and this is one to seek out and try.

The price versus material content equation is all the more remarkable when you consider that this heavy box has been brought all the way from the other side of the world.

The *HBP 60a* power amp can be warmly Recommended, and as for the company, Sound Audio is definitely a name to watch for in the future.



The preamp boasts a comprehensive array of connections, but no vinyl input.

TEST RESULTS

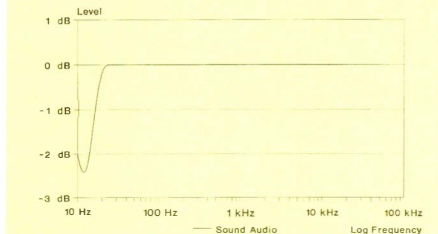
Preamplifier: Sound Audio VP.3A

Input Sensitivity	
Phono	n/a
Line stage	300mV
Frequency response	
RIAA accuracy	n/a
Line stage	L - 0.1dB, R - 0.1dB
Output impedance	3kohm
Maximum signal output before clipping	50v
Channel balance	
at -20 dB	- 0.2dB
at -60 dB	- 0.4dB
Retail price	£600

Power amplifier: Sound Audio HBP 60A

Power output	20Hz	1kHz	20kHz
Left	4ohms 100.0w	110.2w	90.2w
	8 ohms 66.1w	72w	63.3w
Right	4 ohms 96.0w	105.3w	87.4w
	8 ohms 66.1w	70.1w	62.5w
Input sensitivity for full output (onset of Clip @ 1 KHz)	L - 0.8v, R - 0.8v		
Absolute phase	Non inverting		
Input impedance	47 kohm		
THD @ 1 KHz 8 Ω resistive load	L - 0.38%, R - 0.37%		
Retail price	£600		

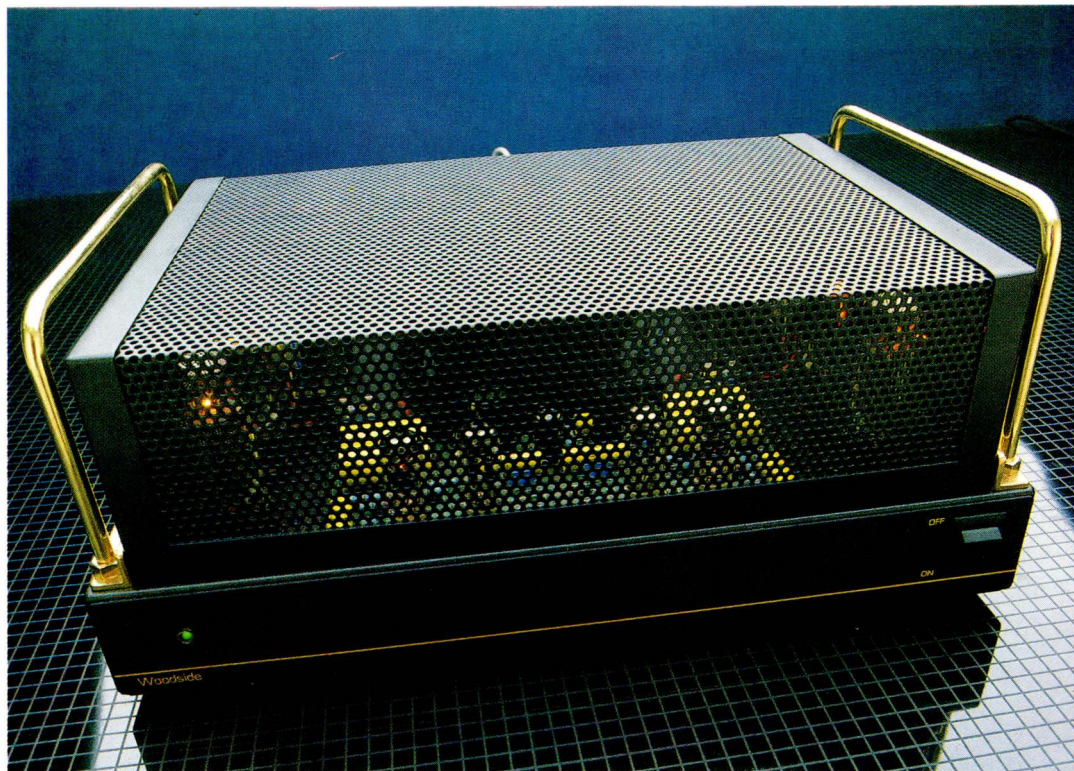
Line Stage Freq. Response



RJ/CB 16/8/91

Woodside SC26/ STA35 Renaissance

WOODSIDE ELECTRONICS LTD, P.O. BOX 105, WESTON SUPER MARE,
BS22 0GG. TEL: (0934) 520248



Woodside Electronics is the company which rejuvenated the Radford range of valve power amps (the preamps were best left undisturbed). Its range now includes a CD player, an outboard DAC and 50 watt monoblocks as well as the 35 watt stereo pre/power combination reviewed here.

Following what is becoming an increasingly common policy, Woodside has made the phono stage of the SC26 optional. The high level version offers three line inputs and two tape loops, with independent tape out switching.

A central bank of three small toggle switches allows for mute, mono and power on/off, these being tastefully top lit when the unit is active.

Rotary controls are provided for balance and volume. In this form the SC26 will cost you £1,420, which puts it up against some fairly exotic competition from the likes of Audio Research (the LS1) and Finestra. Add a dedicated moving coil or magnet phono stage, and the price jumps to £1,931. Woodside is clearly very serious about this product.

Happily, its confidence is ably supported by conservatively styled but really solid casework. Fight your way past the Torx screws and you find an extremely neat and well packed interior. The back

panel sports a double row of heavy duty, gold plated phono sockets which are well spaced and clearly labelled. You also get parallel main outputs to facilitate bi-amping. The overall impression is one of understated and carefully considered confidence.

The STA35 is a further development on the theme of the old and highly respected Radford STA25. Mind you, the layout and lineup have changed quite a bit since the venerable STA25MKIII was in the shops.

A massive, mechanically decoupled toroidal mains transformer is used and, surprisingly, the output transformers are now wound by Apex. The chassis has also stretched laterally (things tend to when they come of age) and the Radford's characteristic central block flanked by tubes has given way to an all embracing cage concealing rear placed transformers and a front mounted array of valves.

'Features' are confined to a front panel on/off switch, phono socket inputs and a single set of binding posts for each channel. Mains input is via IEC plug, and styling rests heavily on the shoulders of the gold plated handles. Love 'em or loath 'em, they're at least more practical than most of the handles which decorate power amps.

Construction

The Woodside SC26's case is home to no fewer than ten assorted valves, eight of them being individually solid state rectified. Throw in a large internal power supply and you end up with a densely populated interior.

The optional moving magnet and RIAA equalisation board occupies about a third of the space. Each channel employs two low microphony 12AX7/ECC83s, followed by a common 12AT7/ECC81 buffer amplifier.

Moving coil cartridges can be accommodated by using a pair of in line transformers fixed to the case-work between the phono inputs and equalisation board.

The line stage is mounted on a separate board, and again is relatively complicated. Two 12AT7/ECC81s are used for each channel, this time feeding a common 12AX17/ECC83.

All internal wiring is Teflon insulated silver plated copper, and considering the sheer mass of components involved, layout is neat and orderly (if it wasn't you'd probably get lost trying to build it!).

The power supply is based on a large frame type transformer which supplies regulated power to the heaters and any components which don't have individual regulation.

Signal input switching is effected close to the input socketry by means of high quality remote switching mechanisms. Ergonomics are clean and clear and the SC26 is clearly a rung above the other units in this test, when it comes to operational feel.

The power amplifier

The STA35 Renaissance power amp uses a 12AT7/ECC81 and ECF82 for each channel, driving a push pull pair of ultralinear EL34s. Component quality is of a similar high standard to that found in the preamp and the majority of parts are mounted on a single high quality circuit board.

One welcome change from days of yore, is that the inviting valve guard rails of the

Mk III have been beefed up into bona fide handles which make it very easy to move the beast around.

Additional ergonomic brownie points are awarded for the easily adjustable bias arrangement. Socketry is good and includes a single set of gold plated binding posts tapped for six ohm loading.

Output tubes are Woodside branded Shuguangs.

Sound quality

For whatever reason, this Woodside combination was far happier together than when mixed and matched with other amps. As a combination this was one of the most consistent set-ups on test, and the panel's response was remarkable for the similarity of both scores and comments.

The Woodsides displayed a cool and unflustered character and might be summed up as 'very British'. The perfect manners and absence of rough edges make this an amplifier you could take home to Mum.

The soundstage was open and clearly defined with images held stable and separate in space, an ability that was certainly helped by a lean and clean tonal balance. However comments consistently referred to a tonal 'thinness' or 'pinched' quality which robbed the music of some body and substance.

There was also a lack of definition, dynamics and weight at the extreme bottom end, although you wouldn't pick it up on speakers much smaller than the KEF 105s we used for the auditioning.

The upside of this was a sense of poise, pace and articulation which provided an insight into the structure of more complex music. The sticking point comes when you balance that ability to resolve and analyse with the amplifier's sense of involvement, or the degree to which it draws you into the musical experience. The Woodsides definitely come down on the cerebral side of this equation, and that didn't help them in the comparative listening tests.

Precision is the order of the day and the insight on offer is what appeals. Prolonged listening with a variety of (smaller) speakers found me reaching for the earlier and smaller scale classical works.

Rock and pop material didn't really feature, and if it did then it was the lighter acoustic variety. Chamber music came over particularly well, and the Geurnari and Melos ensembles got a particularly thorough going over.

Conclusion

The Woodside pre/power combo is an interesting answer to the question of what an expensive system should do. The most costly combination in the test, the company has gone all out for quality and refinement, possibly at the expense of power transfer, although the measurements don't suggest as much.

In stark contrast to the energy and involvement of 'valve-retro' designs from the likes of Art Audio and Audio Innovations, the Woodsides employ solid state rectification and pentode output stages. High on refinement, focus and detail, they

lack a bit of grunt, and it's this particular character which needs to be considered. If it suits you'll undoubtedly be more than happy, but if you like your music to get down and get dirty, you might do better to look elsewhere.

Too expensive and not enough of an all rounder for formal Recommendation, the Woodside pairing is none the less well worth a listen, especially if you list Quad *ESL63s* or BBC *LS3/5as* amongst your favourite loudspeakers.

TEST RESULTS

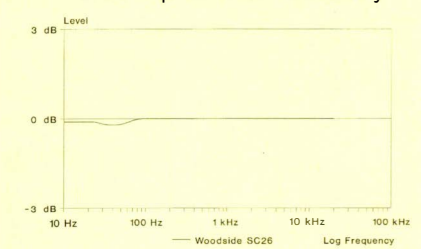
Preamplifier: Woodside SC-26

Input sensitivity	
Phono	2.
Line stage	100mV
Frequency response 20Hz - 20kHz	
RIAA accuracy	L - 0.16dB, R - 0.16dB
Line Stage	L - 0.1dB, R - 0.1dB
Output impedance	470ohms
Maximum signal output before clipping	33v
Channel balance	-20 dB - Not measurable -60 dB - 0.2dB
Retail price with/without phono board	£1,323/£1,931

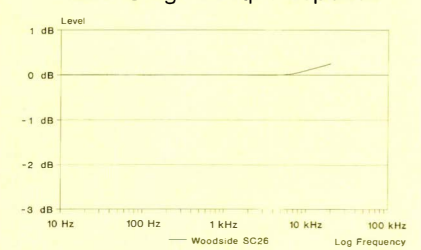
Power amplifier: Woodside STA-35

Power output	20Hz	1kHz	20kHz
Left	4ohms	31.2w	56.2w
	8 ohms	18.9w	38.3w
Right	4 ohms	31.3w	56.2w
	8 ohms	19.0w	38.3w
Input sensitivity for full output (onset of Clip @ 1 KHz)		L - 0.65v, R - 0.65v	
Absolute phase		Non inverting	
Input impedance		100 kohms	
THD @ 1 kHz 8Ω resistive load		Left 0.18%, Right 0.19%	
Retail price		£1,323	

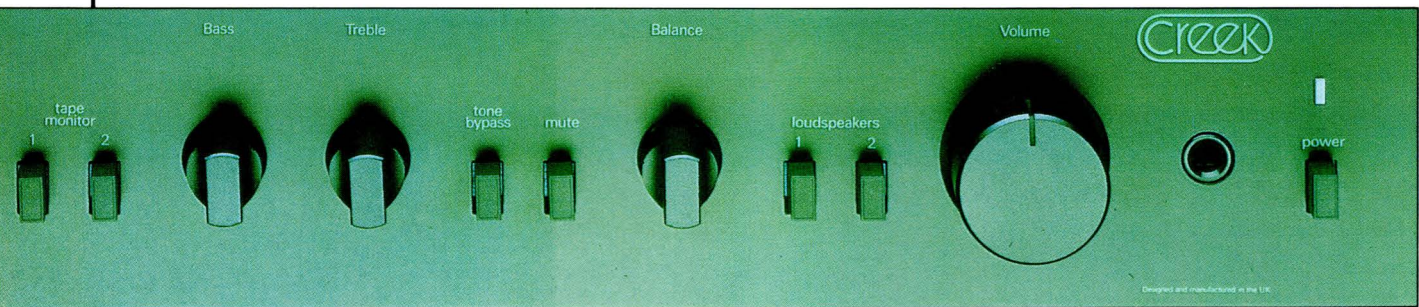
RIAA Equalization Accuracy



Line Stage Freq. Response



The SC26 comes with three line and two tape inputs but vinyl is an added extra.



OVER THE EDGE

The deceptively clean and simple exterior designs of the Creek range of hi-fi components might lead you to think that our performance claims are somewhat exaggerated.

A listening test and conversation with your Creek stockist will prove different. Creek. Emotional rescue for your music.



Creek Audio Systems
 Rosehall Industrial Estate,
 Coatbridge, Strathclyde ML5 4TF,
 Scotland.
 Tel: (0236) 20199. Fax: (0236) 28230

Edicron

Edicron are specialist suppliers of current production valves in manufacturing quantities. As a major supplier to the industry for over 30 years, we have long established co-operation with valve manufacturers worldwide. Extensive stocks of Audio, Professional, Industrial and Special Quality Valves, including discontinued and obsolescent types ensure prompt delivery.

Edicron - No fancy names, no gimmicks, where the Audio Manufacturers get their valves. When Quality, Reliability and Continuity matter.



For more details 'phone, fax or telex to:

Edicron Limited
 9, Bethune Road, London NW10 6NJ
 Tel: 081.961.2020 Tlx: 265531 EDICRN G Fax: 081.961.2285



"What did you say they were?"
"Inexpensive high end electronics from Hong Kong"
"Be serious!"

Sound Audio

**Serious valves from Hong Kong.
 (Not for the Doubting Thomas)**

**Cause a serious stir at sensible dealers around the UK.
 For further product and dealer information please contact.**



**P.O. Box 13
 LONDON
 E18 1EG
 081 989 0692**

Conclusions, Best Buys and Recommendations

The number of valve products on the market shows that the lowly vacuum tube still retains its importance in the world of musical reproduction. The greatest threat to its existence, the lack of quality tubes, is receding with the emergence of valve selection houses like Gold Aero and RAM Tubes, and with the commissioned re-manufacture of key audio designs by plants in the USA, Eastern Europe and China.

At a time when solid state designers are divided on the best route for development, manufacturers which rely on tube technology seem content to hone and refine their products, safe in the knowledge that as far as valves are concerned it's all been done before.

This cross section of the current market place concentrates on the lower end of the price spectrum, nibbling at the bottom end of the real esoterica, and in most cases represents a manufacturer's cheapest offering. The variety of approach and standard of finish is extremely wide, from the ultra complex Woodside preamp to the wide open Concordant, from the switchable ultralinear/triode circuitry of the Art Audio to the hybrid Sound Audio.

Which valve amplifiers made the grade? Roy Gregory and Chris Binns sum up the best and the rest from this month's group test.

Sound Audio's combination of a valve line stage with a hybrid power amp makes a lot of sense, although in practice they are a rather mixed pair, the preamp being the poorer partner. The power amp is an impressively weighty unit that's nicely put together, it sounds energetic and lively with a generous sense of solidity that it trades for the last word in subtlety. It can't match the all valve designs for spatial separation or focus, but it lends a real sense of power to the proceedings. More at home with rock and pop than classical, it is nonetheless well worth seeking out.

The Croft combination comes from a company whose reputation is for hair shirt products which offer exceptional sound at the expense of visual refinement, and this pair is no exception. The *Series V* represents a commendable effort to reduce the ruinous price of owning a valve power amp although I'm not convinced that it really comes off and certainly requires extreme care in speaker matching to achieve acceptable results. It left our panel wanting more, and suffers in comparison to Croft's own, and only slightly more expensive, *Series IV*. In many ways, the refinement and poise offered by the Woodside combination offers a foil to the Sound Audio's blood and guts version of events. Some listeners will want more grunt, and shortcomings in that area preclude a general recommendation, but those seeking the highest levels of definition should certainly investigate.

The MFA *Magus* made an auspicious debut. It combines an excellent and even sonic performance, with the ability to accept low output moving coils.

The nicest surprise is the price. If you detect enthusiasm for this product, you'd be right, and I'd certainly short list it. The only thing that stands between it and a Best Buy award is its price, however, if you have the funds available then it is well worth considering.

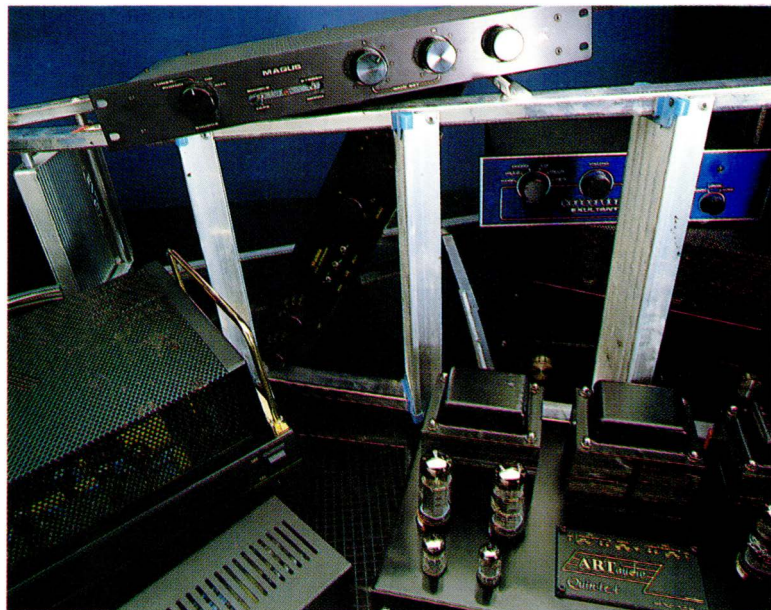
The *Exultant* is Concordant's cheapest phono compatible preamp, but don't get the wrong idea - it's a little cracker. Not without a character, it tends towards the lively and exuberant at the expense of outright control, it would be an excellent match for Concordant's own *Quad II* based power amps.

The Art Audio *Quintet* was the surprise of the group, and a very pleasant one too. Sweet, open and lucid, the music is produced with an easy sense of naturalness which makes long term listening fatigue free and especially rewarding. Its driving abilities are quite surprising for the rated output, and if absolute levels stop short of the average rock concert, they're adequate for all but the most dedicated head banger. The sonic results and more than reasonable pricing make the *Quintet* a clear Recommendation.

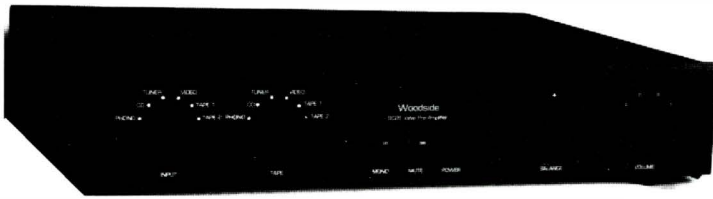
Conclusion

If I was choosing winners based purely on sound quality then I would have to go for the combination of Concordant *Exultant* and Art Audio *Quintet*. This is truly a marriage made in heaven, the preamp's verve and enthusiasm being a potent match for the *Quintet's* easy grace.

On this evidence the domestic valve industry is thriving and these units provide a very real alternative to the heavyweight American high-end contenders. There's even confidence that valves are emerging into the mainstream marketplace and products like the Sound Audio's match anything produced by the dominant sub £1,000 solid state manufacturers in terms of finish. Yes, all is well in the land where the hi-fi glows.



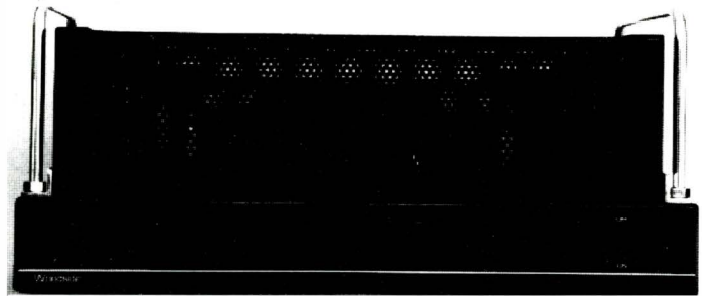
Valve Amplification by Woodside



SC26 PRE-AMPLIFIER
 STA35 STEREO AMPLIFIER
 MA50 MONOBLOCK

"The SC26 pre-amp, though, is the real surprise. I expected the power amp to perform well, judging by earlier experience of the MA50 and the STA25 Mk IV. And I wasn't shocked to find that the STA35 seemed nicer to live with than its mono-block sibling. But the pre-amp dazzled me because of its composure. The fact that it's an 'open window' is enough to make it stand out among all valve pre-amps."

Ken Kessler Hi-Fi News July 91



Please send full details of the Woodside product range to:-

Name: _____
 Address: _____

 _____ Tel: _____

Woodside Electronics

PO Box 105
 Weston super Mare
 Avon BS22 0GG

Tel: 0934 520248
 Fax: 0934 520233

GROUP THERAPY

Confused?...Bewildered?...Seeking the best in reproduced sound? Look no further than the new **ROGERS Loudspeakers for the Nineties**. Thrash out all your problems with the LS2a/2, LS4a/2 and LS8a. You'll soon find the solution.



Winner



Rogers

THE NATURAL CHOICE

WHAT HI-FI? AWARDS

Manufactured by Swisstone Electronics Limited, 310 Commonsides East, Mitcham, Surrey CR4 1HX. Tel No: 081-640 2172. Fax No: 081-685 9496. Telex: 893980 Rogers. Distributed by Audio Influx Corp. N.J. USA. Plurison P.O. Canada, Audio 2000 NSW Australia. Excel Hi Hi Hong Kong. Denco Audio New Zealand. Atlas Hi Fi Singapore.



248 Lew High Road
Lewisham
London SE13 5PL

What Price Real Music?

0% A.P.R.*

**You Can't Listen To Music
In A Magazine! But You
Can In Our Listening Rooms!
Find Out Which Components
Best Suit Your Needs.**

**We Offer: 2 Listening Rooms, 2 Year Guarantee,
Free Local Delivery, Installation on Request,
Free U.K. Mainland Mail Order.**

*** 10% deposit 0% A.P.R. UP TO £1000 INTEREST-FREE
CREDIT AVAILABLE TO PERSONAL CALLERS AT OUR
SHOP. PLEASE RING OR WRITE FOR DETAILS.**

APPLICANTS MUST VISIT THE SHOP TO VERIFY ID. BILLY VEE SOUND SYSTEMS ARE CREDIT BROKERS.
*ALL APPLICANTS ARE SUBJECT TO SINGLE £10.00 ARRANGEMENT FEE UPON ACCEPTANCE.



Telephone: 081-318 5733 or 081-852 1321



Get active - and win over £2,500 of Meridian hi-fi

Travel the great circle route with Meridian this month in Choice's latest (and still free-to-enter) competition. On offer we have a pair of Meridian's M30 Mark II active loudspeakers, a 206 CD player and a 201 preamp - all of which might be yours. Just pick up a pen and prepare to do battle with the questions and coupon on the page opposite . . .



How To Enter

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

The Prizes

The first correct entry drawn from our mailbag after the closing date will win the Meridan 206 CD player (£970), the 201 preamp (£710) and a pair of M30 speakers (£914).

The Questions

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

1. What hi-fi shop installed the system featured in this month's *Aspirations*?
2. *Hi-Fi Choice's* current editor is Andy Benham. Who was his immediate predecessor?
3. What is the name of the British craftsman who is now building Audio Note's *Io* cartridges?
4. Which preamplifier is used by Paul Miller in his reference system?
5. In what year did *Choice's* annual *Collection* first appear?
6. Which personal CD player is 17.9mm thick?



Evolution of Sound



Triple Neodymium "rare earth" magnets: high efficiency and superior transient response. *Computer designed diaphragms:* extraordinary sonic accuracy. *Circumaural open and closed design:* choice of environment. *"Bass-reflex" Technology:* exceptional reproduction of lowest bass frequencies. *Ergonomically designed headbands:* accurate, lightweight positioning for incredible performance. *Replaceable velour ear cushions:* long-term comfort and pleasurable listening. *Gold-plated connectors:* accuracy in equipment connections. Features and benefits leading towards the *Evolution of Sound* from beyerdynamic...

Please send me more information.

Name, _____

Address, _____

beyerdynamic)))

Lewes, Sussex BN8 6JL
tel. (0273) 479411 fax (0273) 471825

GLY
T

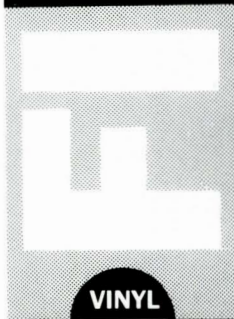


0273 775978

approachable staff

Onix, Epos, Castle,
equipment

BASICALLY



VINYL
CD

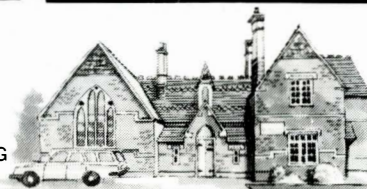
STOCKISTS OF LEADING HI-FI

SOUND

■ ARCAM ■ ACOUSTIC ENERGY
■ AUDIO TECHNICA ■ AUDIOLAB
CREEK ■ CELEF ■ CHORD
COMPANY ■ DENON ■ EXPOSURE
■ EPOS ■ GOLDRING ■ HEYBROOK
■ JPW ■ LINN ■ LINX
MORDAUNT-SHORT ■ NAKAMICHI
■ NAIM ■ ONIX ■ PROAC ■ PINK
TRIANGLE ■ REGA ■ RADFORD
■ ROYD ■ SOUND ORGANISATION
■ SENNHEISER ■ SME ■ SOUND
FACTORY ■ SPENDOR ■ WADIA
■ ALSO THRESHOLD BY PRIOR
ARRANGEMENT.

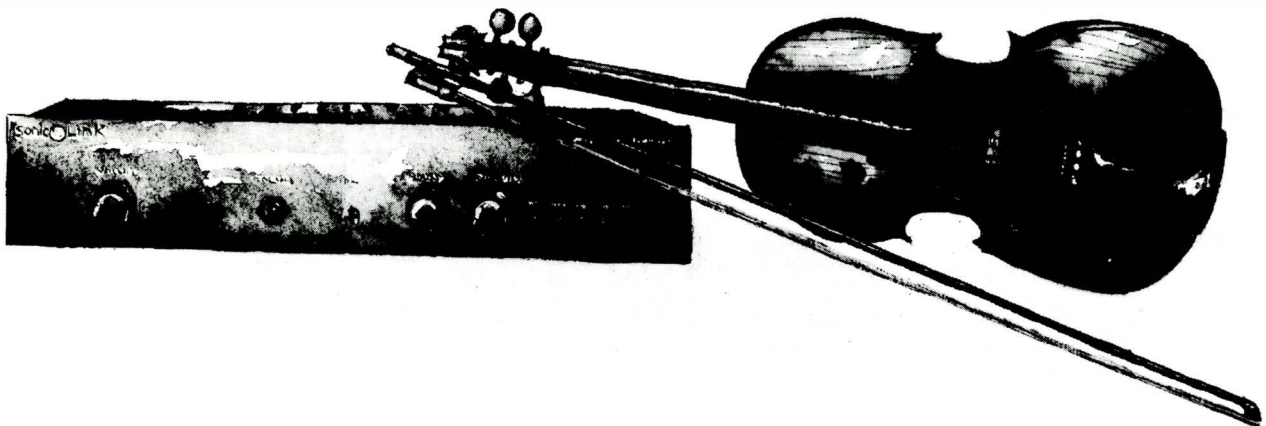
CLOSED SUNDAYS & MONDAYS

BASICALLY SOUND
OF NORFOLK
THE OLD SCHOOL
SCHOOL ROAD
BRACON ASH
NORWICH NR14 8HG
TEL: 0508 70829



OF NORFOLK

SONIC LINK



SONIC LINK Amplifiers

- DM20 Dual Mono Integrated Amplifier 20 w/channel
- * DM20 'Masterpiece Gold' integrated amplifier

THE SONIC LINK DM20 AND DM20 MASTERPIECE GOLD HAVE BEEN SPECIALLY DESIGNED TO RECREATE THE SOUNDS OF A LIVE MUSICAL PERFORMANCE IN YOUR OWN LIVING ROOM.

SONIC LINK AMPLIFIER DEALERS

SONIC LINK amplifiers and cables can be heard at a number of specialist hifi retailers, all of whom are recommended by Graham Nalty to AUDIOKITS customers who wish to purchase hifi equipment.

HEAR THEM AT THESE DEALERS' STUDIOS:

ACTON GATE AUDIO, Wrexham
0978-364500
*ACOUSTIC ARTS, Watford 0923-245250
ALBION AUDIO, Sunderland 091-510-9969
AUDIOCRAFT, Uxbridge 0895-53340
AUDIO INC. East Molesey, Surrey
081-941-4234
AUDIO SUITE, Aberdeen 0224-625635
AUTHENTIC AUDIO, Stratford upon Avon
0789-414533
AVONDALE AUDIO, Chesterfield
0246-200096
AYLESBURY HI-FIDELITY, Aylesbury
0296-28790

*DOUG BRADY, Covent Garden, London
071-379-4010
*DOUG BRADY, Warrington 0925-828009
IN CONCERT HIFI, Wallasey 051-630-5055
LISTEN HEAR, Ilkeston, Derbyshire
0602-304602
MJS HIFI, Barwell, Leicestershire
0455-846977
OMNI AUDIO, Leeds 0532-758326
PORTSMOUTH HIFI, Portsmouth
0705-664411
*RADLETT AUDIO, Radlett, Hertfordshire
0923-856497

SOUNDS GOOD, Ealing 081-579-3963
SPEAKERS CORNER, Norwich
0603-743457
STANDENS HIFI, Tonbridge 0732-353540
*STEVE BOXSHALL AUDIO, Cambridge
0223-68305
WARSTONES HIFI, Wolverhampton
0902-345114
ZEUS AUDIO, Belfast 0232-332522
EUTERPE AUDIO, Nogent, France
010-33-48-78-34-74
*DM20 MASTERPIECE GOLD STOCKIST.

Recommendations from AUDIOKITS customers of dealers whom they consider capable of promoting the quality associated with the SONIC LINK brand and its symbol would be welcomed with appreciation.

SONIC LINK AMPLIFICATION 6 Mill Close, Borrowash, Derby, DE7 3GU
Telephone 0332-674929



THE • ART • OF • SOUND



With a true work of art, the more you look, the more you see. Similarly, with our new Series 5 loudspeakers, the more you listen, the more you hear. A range of 5 speakers in the forefront of design and technical innovation.

From the compact MS5.10 to the floorstanding MS5.50, each using advanced drive units in revolutionary cabinets.

Achieving an exceptional sound quality that is truly a work of art. The art of sound.

Mordaunt-Short
CLOSER TO PERFECTION

Unit A1, Hazleton Interchange, Horndean, Hampshire, PO8 9JU,
Great Britain. Telephone: (0705) 597722 Fax: (0705) 598365



Name _____
Address _____
Post Code _____
Alternatively, telephone
0705 597722
CH

Please send me full details of Mordaunt-Short Series 5 loudspeakers and the name of my nearest dealer.

Improve your hi-fi system by becoming a **HI-FI CHOICE Gold Subscriber** and receive gifts and savings valued at over £200

ABSOLUTELY FREE!

This month sees the introduction of our Gold Subscriber Scheme - an extension of our standard subscription service which features exclusive introductory offers of exceptional value to improve and enhance your listening pleasure. As the only hi-fi magazine to run large scale comparative lab and listening tests Hi-Fi-Choice already offers better value than any other hi-fi magazine and we feel sure that our Gold Subscription package makes Hi-Fi Choice the best value on the market!

OPTION ONE

If you take out a subscription to Hi-Fi Choice for 24 issues, you will receive:

- a set of Furukawa FS2T14 Speaker Cables worth £56

PLUS

- a set of Furukawa FD1010 Interconnects worth £85

PLUS

- Hi-Fi Choice discount vouchers saving you up to £50 on CDs and cassettes

PLUS

- Hi-Fi Choice Special Collection issue worth £3.95

PLUS

- 12 vouchers offering 10% discount on any mail order item on offer in Hi-Fi Choice

All for the price of £69.95

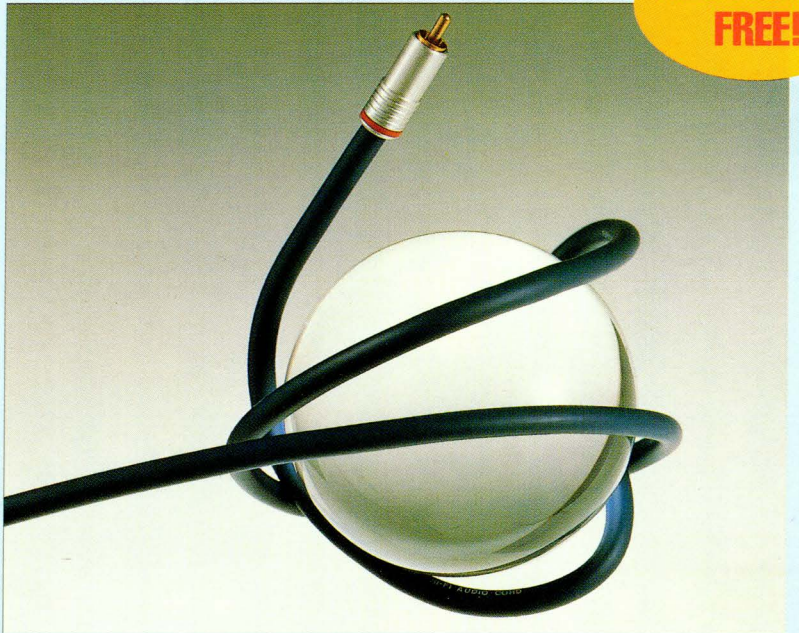
OPTION TWO

Subscribe for only 12 issues and you will receive the speaker cables, together with the CD and cassettes savings vouchers, plus the 12 vouchers offering 10% discount on any mail order item on offer in Hi-Fi Choice.

12 issues - £39.95

OPTION THREE

Alternatively, you can simply take out a standard subscription and miss out on all the free gifts for only £22.95.



GOOD CONNECTIONS

It is an accepted fact that good cables and interconnects can dramatically improve the performance of your hi-fi system. This is why we are so pleased to be able to offer our subscribers the chance to improve their systems by using Furukawa speaker cable and interconnects. The leading Japanese cable specialist Furukawa is considered to be at the forefront in the development of conductive materials. All Furukawa cables, interconnects and plugs are manufactured using PCOCC (Pure Copper by Ohno Continuous Casting - Ohno being the name of the original inventor of the casting method). Patented by Furukawa, this continuous casting method results in a grain free, single crystal conductor ensuring minimal transmission loss, extremely low distortion and wide band resolution.

FURUKAWA FS-2T14 SPEAKER CABLE

Your free FS-2T14 PCOCC speaker cables from Furukawa is a stranded 1.4mm square cable with polypropylene insulation to the conductors and cotton yarn to insulate from mechanical energy. The speaker cables come complete with a choice of terminations and will be supplied in three metre lengths. All terminations are gold plated and attached using a solderless connection to the cable.

FURUKAWA FD1010 INTERCONNECT

The FD1010 PCOCC is an unbalanced 75 ohm co-axial interconnect supplied complete with hermetically sealed gold plated RCA plugs. The FD101 has been designed specifically for use between the analogue output of a CD (or DAT) player and the pre-amp or between a pre and power amp and will be supplied in one metre lengths.

YES! I would like to become a Hi-Fi Choice Gold subscriber. My option choice is (please tick one box)

Option 1 £69.95 24 issues	<input type="checkbox"/> saving over £200 (UK only)
Option 2 £39.95 12 issues	<input type="checkbox"/> saving over £100 (UK only)
Option 3 £22.95 12 issues	<input type="checkbox"/> standard subscription UK
£32.95 12 issues	<input type="checkbox"/> standard subscription Eur/Eire
£49.95 12 issues	<input type="checkbox"/> standard subscription Rest of World
£62.95 24 issues	<input type="checkbox"/> standard subscription Eur/Eire
£79.95 24 issues	<input type="checkbox"/> standard subscription Rest of World

Please return completed form, with your payment to:
 UK only
Hi-Fi Choice, Subscriptions Dept, Freepost 7, London W1E 4EZ
 Overseas
Hi-Fi Choice, Subscriptions Dept, 14 Rathbone Place, London W1P 1DE, England.
 Or better still telephone the **Hi-Fi Choice Subscription Hotline on 071 580 8908** or send completed form by **Fax on 071 636 5668**

LIMITED OFFER ONLY - Offer closes 14th October 1991

I enclose my cheque/Postal Order* for £ made payable to:
Dennis Publishing Ltd (all payments should be drawn in £sterling on a UK bank).
 *delete which is applicable.

I would like my speaker cables supplied with Banana plugs Spades Pins
(Please tick one box only)

I enclose my cheque/postal order made payable to **Dennis Publishing (Hi-Fi) Ltd.**

Or please charge my Visa Mastercard (Access)
 Credit card number..... Expiry Date.....

Signature.....
 Name.....
 Address.....
 Postcode.....

Your details may be added to our mailing list, please tick box if you would prefer not to receive details of special offers and promotions.

McIntosh[®]

MC 7300 Power Amplifier



electronic uk limited - Wood Lane - Manchester M31 4BP - Tel. 061-7778522

Back Issues

All the issues you wish you'd never missed. Here's how to order back numbers and binders for your copies of Hi-Fi Choice.



TO ORDER BACK ISSUES: Please tick those you require

- 84 SYSTEMS July 90
Also includes: Free rock music supplement
Plus: Moving coil cartridges
-
- 85 AMPLIFIERS Aug 90
Also includes: Free classical records supplement
Plus: Magnetic cartridges
-
- 86 LOUDSPEAKERS Sept 90
Also includes: Free NICAM TV/VCR supplement
Plus: A visit to La Maison de L'audiophile in Paris
-
- 87 CASSETTE DECKS Oct 90
Also includes: free gift from CDxtract
Plus: Further reviews on CD players
-
- 88 CD PLAYERS Nov 90
Also includes: Free *Metal Fatigue* supplement
Plus: Statements on the Morch tonearm
-
- 89 CD MIDI SYSTEMS Dec 90
Also includes: A free tape from Memorex
Plus: Aspirations visits sculptor Andrew Logan
-
- 90 LOUDSPEAKERS Jan 91
Also includes FREE blank tape supplement -
- over 30 cassette tapes tested
-
- 91 TURNTABLES AND TONEARMS Feb 91
Also includes: Further reviews on cartridges
Plus: Free classical music supplement
-
- 92 AMPLIFIERS Mar 91
Also includes: Perspectives on Philips DCC
Plus: Lifestyle feature on Bang & Olufsen's latest system
-
- 93 CASSETTE DECKS Apr 91
Also includes: Perspectives on 'The Supertapes'
Plus: Free tuners supplement
-
- 94 LOUDSPEAKERS May 91
Also includes: An in-depth look at multi-room systems
Plus: Free supplement on DAT and CD personals
-
- 95 CD PLAYERS June 1991
Also includes: Results of the Bit Stream v multibit tests
Plus: Free classical music supplement
-
- 96 SEPARATES SYSTEMS July 1991
Also includes: Full reviews on ten CD drive units
Plus: Free in-car entertainment supplement

- 97 AMPLIFIERS August 1991
Also includes: Future formats: Mini Disc and DCC
Plus: Perspectives on Dolby S-Type noise reduction
-
- 98 LOUDSPEAKERS Sept 1991
Also includes: Further reviews on ghetto blasters
Plus: Free opera supplement
-
- 99 CASSETTE DECKS Oct 1991
Also includes: Further reviews on headphones
Plus: Craftsman on Sony's top digital audio pioneer
-
- C90 THE COLLECTION 1990/91 Special Edition
Complete reviews on some of the best hi-fi in the world
(UK £4.50 inc. postage and packing, overseas £5.25)

COMING SOON

- 101 CD MINI SYSTEMS Dec 91
-
- 102 LOUDSPEAKERS Jan 91
-
- 103 TURNTABLES Feb 91

TO ORDER BINDERS:

Keep your copies of *Hi-Fi Choice* in prime condition with our eight-issue binder finished in black and gold. £5.95 (UK), £7.95 (air service) inc. postage and packing.

PAYMENT:

Individual issues including postage and packing: UK £4.00, rest of the world £5.00 (air service). Overseas payments: we can only accept Visa/Mastercard, Eurocheques in £ sterling and sterling cheques drawn on a London bank.

I enclose my cheque/postal order for £ _____ made payable to *Dennis Publishing (HFC)*

Please charge my Access/Visa (delete as appropriate)

Total number of items ordered _____

Credit card number _____

Expiry Date _____

Signature _____

Name _____

Address _____

Postcode _____

(100) Please send order form and payment to: **Hi-Fi Choice, Mail Order, P.O. Box 320, London N21 2NB**

COVENT GARDEN RECORDS

84

CHARING CROSS ROAD

Telephone: 071 379 7635 7427

Open: Mon-Sat 10am-7.30pm

LONDON WC2H 0JA

FAX 071 836 1345

2 mins from Leicester Sq. Tube

THE COMPLETE SERVICE

EQUIPMENT & DISCS

QUALITY AUDIO

We stock an excellent range of audio equipment of the highest order including Arcam, Audiolab, B & W; Marantz, Meridian, Nakamichi, Philips, Pioneer, Quad, Rogers, Rotel, Sony, Technics, and more

SPECIALISTS IN DIGITAL REPLAY

Not only do we carry over 40 different CD Players in stock, we have D/A convertors from Arcam, Audio Alchemy, Deltec, Meridian & Wadia (Audiolab and Rotel coming soon). What's more, we have DAT players, and tapes and Laserdiscs (Both formats)

DEMONSTRATION

Two private demonstration rooms to audition equipment. Just phone to make an appointment

DELIVERY AND INSTALLATION

A full delivery and installation service is available by trained staff including wiring and multi rooming.

SERVICING

We give a full two year guarantee and have our own workshop and qualified technicians

NEW RELEASES

Discount on new releases for the first 30 days after issue. From £10.95 for full price classical CD's and £7.95 for mid-price

LISTENING FACILITIES

Not only the cheapest new releases in town but also individual listening facilities - try before you buy

8,000 CDs IN STOCK

A continually updated and growing stock of the best classical compact discs.

PIONEER

REFERENCE
POINT

LISTEN TO SOME SOUND ADVICE.



If you're thinking of investing in some new hi-fi equipment you'll need some sound advice.

Why not audition the Pioneer A-300 and A-400 amplifiers for example. The A-400 won the 1990 What Hi-Fi? Awards for "Best Amplifier" and "Best Overall Product" and was voted "Best Buy" in 1991 in Hi-Fi Choice magazine. But don't just take our word for it. Highly acclaimed hi-fi critics have said:

A-400 "One of the best audio bargains of the past ten

years or more."

"Make sure you audition it."

(AUDIOPHILE, Sept 90)

A-300 "No other budget amp in my experience can match the detail and definition possible from this amp". (AUDIOPHILE, Oct 90)

Call in and hear these amplifiers and indeed the full range of Pioneer products. As we have been appointed as your local Reference Point dealer, we can advise you on what's best, and provide an unparalleled level of service.

**THE COMPLETE SERVICE TO ALL MUSIC LOVERS IS HERE
AT LONDON'S FINEST COMPACT DISC CENTRE**

Readers Write

CHOICE ANSWERS

Alternative options

I am considering upgrading my amplifier from a Linx *Nebula* to a Linx *Vega* pre/power combination. Would my bi-wired Linn *Helix II* loudspeakers be up to the change? And would they be better served by bi-amping? If not, what would you recommend as replacements given a £1,000 budget.

Secondly my turntable, *Little Pink Thing/Tabriz/Corus Black*, is sited three or four metres away from my amplifier and I'm considering upgrading the Kimber *PSB Interconnect* that is used to bridge that gap and throughout the system. With a £500 budget what would you recommend I go for? A Widdowson, Chippenham, Wiltshire.

The first priority would be to shorten the link between the turntable and some form of gain stage, by which I mean a phono stage such as the Moth (£172) or Lynwood (£99

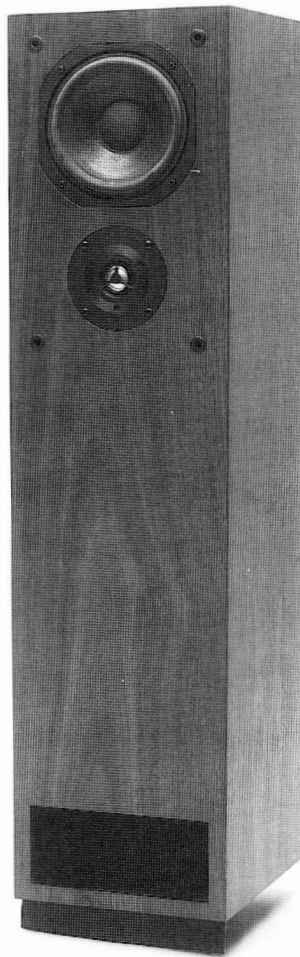
upwards). This would not only significantly reduce cable induced losses but give you a high quality, upgradable phono stage as well.

We haven't reviewed the Mark II Helixes yet but they are probably capable of revealing much of the improvement that an amplifier upgrade would introduce. Then again a better speaker, such as the Castle Chester or Audio Note Model K, could prove more beneficial than replacing the Nebula.

Cable recommendation is less easy. One way of narrowing down the options would be to compare your findings with those in the Directory for the Kimber PSB and use that as a gauge to pick something better.

Alternatively, buy the most expensive Audio Note you can afford.

Castle's Chester - star of the last speaker review and a darn entertaining speaker.



**Roksan Interconnect
Winner**

Expanding Relationships

I would like you to expand on the relationship between measured sound quality and perceived - ie subjective - sound quality or musicality. Maybe you could feed this data into a neural network computer program (of course you would have to parametrise the subjective concept of musicality), and come up with a model for musicality.

In the long run you could probably even feed scans of the 3D frequency sweeps into such a program. It seems to me you might spark off several interesting debates by doing this in the magazine. It could run and run. J Peter de Jong, Haarlem, Netherlands.

Reviewers have been expanding their tests over the years to measure new facets of performance. But the idea of using a neural network (a computer configured and programmed to mimic aspects of the brain, including 'learning') is a good one, with the potential to highlight correlations between measurements and sound. Many measurements are already computerised anyway, and it should be possible to parametrise 'musicality' by means of mutually agreed key words and phrases, so data input wouldn't be a problem. Problems will arise in two main areas: one, when reviewers don't agree, and two, when the measurements don't cover some significant area. Even so, the lack of correlation in the latter case could be useful in pointing up the need for new measurements.

Richard Black.

Patriotic purchase

I want to buy a good British built integrated or pre/power amplifier for around £600-£700. My system consists of a Michell *Syncro/RB300/Ortofon Quattro* front end and Wharfedale *Teesdale* loudspeakers, I'm thinking of replacing the latter with some TDL *Studio 1s* next year. I am also considering buying a CD player in the

near future.

What do you think of Sugden amps? I haven't noticed these being tested in *Hi-fi Choice* but understand that they are well regarded. C R Hurst, Huddersfield, W. Yorkshire.

We have tested the Sugden A21 power amp. It didn't do so well but

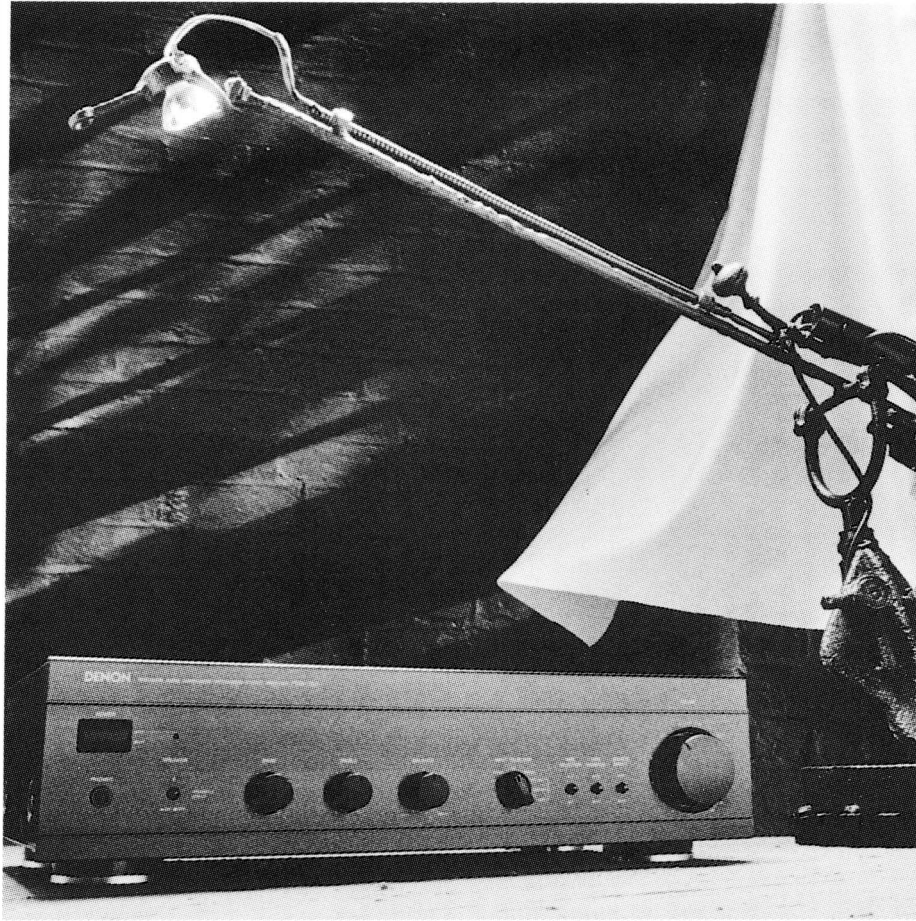
the brand has a dedicated following and you might find other models to your taste. British amps we can wholeheartedly endorse include the Arcam Delta 90.2 and Audiolab 8000A both at £410, Lecson's Quattra (£350) and the integrated amps from Naim and Musical Fidelity. All the good British pre/power combos that we have tested cost more than £700.



Audiolab's latest version of the 8000A is a well made British amplifier with fine sonic skills.

The PMA 350

A Giant Killer



The PMA 350 is the result of a collaboration between the Denon Skirakawa factory, Denon's UK staff and a noted UK amplifier designer.

The object of the exercise was the production of an amplifier that by sound quality alone would establish Denon as the premier amplifier supplier in the under £200 market. As with the highly successful Denon PMA 250/II, the PMA 350 is an exclusive model for the UK and has circuit features and componentry not seen in other markets.

BRIEF CIRCUIT DETAILS

50 watts per channel RMS into 8 ohms (over 80 wpc into 4 ohms) • The internal circuit path is straight line • Expensive 'cerafine' audiophile

capacitors have been used at critical points throughout • An oversize power transformer is fitted for high power output and substantial power reserves • The tone control circuit is completely passive to eliminate sound degradation

WHAT THE PRESS SAY

"The Denon PMA 350 is the finest £160 amplifier I've ever had the pleasure to audition"

HIGH FIDELITY, JANUARY '91

"...much as I hate to use the term, I think it's rightly called a bargain."

HI-FI WORLD, MARCH '91

"The PMA 350 is a fine amplifier, a solid performer that will suit a wide range of budget ancillaries ...Recommended."

HI-FI CHOICE, MARCH '91

HOME HI-FI, LIFESTYLE PRODUCTS, CAR AUDIO, CD PORTABLES,
CD SOFTWARE AND PROFESSIONAL BROADCAST EQUIPMENT.

DENON

Enquiries to: Denon Freepost Enquiries, Chiltern Hill, Chalfont St. Peter, Gerrards Cross, Buckinghamshire, SL9 9BS.

New life for the round turntable

I have recently been upgrading my eight year old Systemdek 2 (the round one). To date it has been fitted with an acrylic platter and aluminium armboard together with a Helius *Scorpio 3* arm instead of an Audio-Technica AT-1120. These changes have resulted in a marked improvement in sound quality. My thanks go to Kevin at Definitive Audio, Nottingham for setting the deck up.

However, further reading through back issues of *Hi-fi Choice* leads me to seek your advice on further turntable improvements. As I see it there are three areas I could improve on; firstly the power supply. Is it worth investing in a mains purifier of the *Pandora* or *Lynwood* variety? Secondly, I've come to the conclusion that the phono stage on my Pioneer *A400* isn't perhaps as good as it could be and the purchase of a separate stage such as the

Michell *Iso* would be beneficial. However, I can't afford it; are there any alternatives?

And finally there is slight smear and shrillness to the system's sound. Would this be cured by either of the aforementioned upgrades or could my Audio-Technica AT-F3 cartridge be causing the problem? Don Ross, Scunthorpe, S. Humberside.

Starting at the end of your letter, I suspect that the AT-

F3 is the main cause of your high frequency problems and you could do a lot worse than replacing it with a good moving magnet such as the Roksan Corus Black or Goldring 1040, if Kevin can get hold of one. If you are still hungry for better sound, a separate phono stage would be the way to go. Both Lynwood and Moth make reasonably priced examples (£100-£200) that can be upgraded at a later date with

improved power supplies. As for improving the power supplied to the Systemdek's motor, you could buy some form of mains improver but a better bet would be a dedicated power supply. There are probably several companies that make such devices but the only one that comes to mind is Anex, and Systemdek itself of course. Either of these would be worth using but the cartridge should be given higher priority.

Ye olde Systemdek II - a stylish deck of yesteryear that's well worth upgrading.



A new brick for the wall

Over the past few years I have gradually upgraded to a reasonable system, but now I've come to a brick wall. I have a Marantz *CD65DX*/Arcam *Black Box 2*, original

Mission *Cyrus 2* amplifier and Monitor Audio *352MD* loudspeakers.

If I go for a new amp should I look at a Musical Fidelity *A100* or perhaps an Audio Innovations *Series 400*? Alternatively, would a CD transport or bitstream converter be a better idea? Where do I go next? Julian Hart,

Sanderstead, Surrey.

Good question. Down to the dealer's dem room, methinks. There is, as you have ascertained, no obvious next step for your system, which is why you're going to have to do a bit of listening to sort out a

Meridian 200 transport- good systems start at the front.

direction. If you weren't the long term upgrader that you appear I'd advise you to get an A400, a PD-8700 and sit back and enjoy. But it looks as though you want to take your system a bit further than that, so you need to formulate a goal and work towards it.

The source and amp are the weaker components in the system and I dare say that in due course you will replace both of them. But for the mean time I'd look at upgrading the transport to either a standalone unit like the Meridian 200 or the new Pioneer PD-75, which is the top of the range 'stable platter mechanism' player (see reviews in this issue) and a high quality transport in its own right, both cost about £800 but the Pioneer is equipped with a 1-bit DAC.



BBC RADIO

Does your radio need more tuning than your car?

Not with an RDS radio. Because an RDS radio literally travels ahead of you, comparing frequencies and inaudibly re-tuning to ensure the best possible reception.

No more hazardous fiddling with the radio on the motorway. No more frustration as your favourite programme crackles, hisses and then disappears.

RDS (which stands for Radio Data System) was developed by the BBC and is a free service.



An RDS radio conveniently shows the station's name rather than its frequency.

Some sets also feature an incredibly accurate clock which never needs re-setting. Even when the battery has been disconnected or when crossing time zones.

The RDS Travel Service allows your radio to receive relevant local travel news even when you're listening to a cassette or travelling in silence.

And now the latest sets incorporate a new feature called Enhanced Other Networks or EON. This dramatically improves both the auto-tuning function and provides an even better Travel Service by interrupting national radio with Local Radio travel news.

So make sure your next car radio is RDS equipped.

It'll change your tune. Automatically.

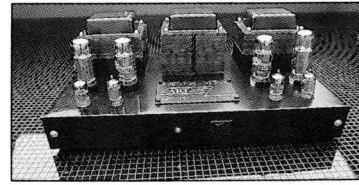


S - O - U - N - D — T - H - I - N - K - I - N - G

RDS SECRETARIAT, ROOM 104, 1 DUCHESS STREET, BBC BROADCASTING HOUSE, LONDON W1A 1AA. Facsimile: 071-436 2760

ART audio

PHONE (0602) 653604 FAX (0602) 637795
62 Vaughan Avenue, Hucknall,
Nottingham, England, NG15 8BT.



THE QUINTET

UK DEALERS

Doncaster:
The Hi-Fi Studios 5,
Norman Cres. Sunny Fields.
Tel: 0302 781387

London:
Vinyl Tube Audio,
43-45 Fortress Road,
Tel: 071 4854854

Nottingham:
Chantry Audio,
18A Eldon Street,
Tuxford.
Tel: 0777 870372

OVERSEAS DEALERS

America:
Active Audio,
890 University Avenue,
Apartment 5,
Rochester, New York 14607.
Tel: 716 2445 755

France:
Enyeppe Audio S.A.R.L. 4,
Rue Thiers 94130 Nogent-Sur-Mame,
Tel: (33-1)48763474

Belgium:
Link Audio,
kolonel,
Begaultlaan 15, B-3010
Wilsele.
Tel: 16231692

Germany:
Focal Vertrieb,
Feldhelder Str 42-44 4006 Erkrath 2
Tel: 2104 39 123

Australia:
Audio Synergy,
Unit 1, 204 Sterling Highway
Caremout.
Tel: 5614293

Hong Kong:
Intatrade Ltd, 8C Onkui Street,
On Loktsuen, Fanling N.T.

Canary Islands:
Audio studio,
Apartado de Correos,
851 35080 Las Palmas.
Tel: 370508

Italy: Altra Fedelta Via Pellizsa,
4a Volpedo 20/bc40137. Bologna.
Tel: 51544270

Denmark:
Matrix Bylgen 4,
Blistrup DK-3230 Graested.
Tel: 02 117677

Philippines:
Luxin Ventures,
P.O. Box 551 Grenhills Metro Manila.

Singapore:
Ovation, Acoustics,
Raffles City P.O.Box 9117.
Tel: 339-1991

Taiwan:
Taifu Electronics,
No. 5 Alley 6 Lane 995 Min Sheng E Road Taipei.
Tel: 341-9137-9

PEOPLE LIKE YOU

WHO ENJOY HI-FI WILL ENJOY THE HI-FI EXPERIENCE



HI-FI EXPERIENCE are unique. With an enthusiastic and knowledgeable staff ready to help and advise, a range of products second to none plus guaranteed future service throughout Britain through our affiliation to The British Audio Dealers Association (B.A.D.A.).

All our shops feature several demonstration rooms (8 in our London store) at your service 6 days every week with special late night openings (Monday to Friday until 7pm in our London store).

You'll find our prices more than fair and stock on demonstration includes:- ARCAM - AUDIOLAB - BANG & OLUFSEN - CREEK - DENON - DUAL - EXPOSURE - KEF - LINN - MARANTZ - MONITOR AUDIO - MUSICAL FIDELITY - MERIDIAN - NAD - NAKAMICHI - PIONEER - PINK TRIANGLE - QUAD - ROTEL - ROGERS - TANNOY - TECHNICS - YAMAHA etc.,

(Some Regional Variations may occur).

PLUS

2 years guarantee - Free Local Delivery
and most credit cards accepted -
Personal export



SUPERB IN-HOUSE SERVICE & REPAIRS TO ALL HI-FI & VIDEO EQUIPMENT

227 TOTTENHAM COURT ROAD
(BASEMENT)
LONDON W1P 0HX

TEL: 071 580 3535. FAX: 071 436 4733

YOU'LL ALSO FIND HI FI EXPERIENCE IN LEAMINGTON - GLASGOW - BRADFORD - BELFAST

21st Century Fox

Both sides in the Mini Disc versus DCC battle badly bodged their presentations at the Berlin Funkausstellung. It is a measure of the strength of DCC, and the good promotional work previously done by Philips engineers, that the pantomime performance by Philips Audio MD Wim Wielans and ex-Tomorrow's World presenter Peter McCann at Berlin did not sink the system like a stone.

The fact that Sony got egg on its face by claiming software support that proved to be a Scotch mist will doubtless help Philips survive the daft and unsubstantiated claim by Messrs Wielans and McCann that "everybody is supporting DCC".

Barry Fox is definitely not impressed by the marketing of DCC and Mini Disc.

In fact the only significant new supporters at the time of Berlin were Sanyo, Sharp and Yamaha, with TDK remaining silent on its likely commitment.

Sony's almost-as-bad press conference at Berlin made it clear that there was no hardware support for MD. Software support evaporated under questioning. Back in London, I spent the best part of a day trying to find someone who even knew that Sony claimed Virgin as an MD supporter.

"If the public wants it we will sell it" was the closing quote from Virgin, confirming that there had been no statement of support either for MD or DCC.

Although Wielans and McCann missed the trick of getting this firmly and cleanly on the record (by ending the press conference abruptly without a Question and Answer session) Philips does have far stronger support for DCC from the record industry than Sony and MD.

The fact that "everybody" may very well support DCC in the future is likely to be clinched by a remarkable admission by Sony.

Sony has now acknowledged that it may not be ready to launch Mini Disc with magneto-optical recording facility next year. This confirms mounting suspicion in the record industry that Sony plans to launch MD late next year with portable units which can only play back factory-pressed discs, like miniature CDs, and will not offer units which can record on blank discs until the following year.

Despite Sony's public claim that BMG (RCA, Ariola and Arista) was a supporter of MD, Michael Dornemann, Chairman of BMG recently wrote privately to Michael Schulhof, President of Sony's music division, "Clearly BMG needs more information on MD before we can begin to consider marketing and manufacturing preparations".

So far all Sony's demonstrations of MD have been of playback only. The demonstrator plays a disc containing previously recorded music and shows how the system is so jog-proof that it can even go on playing for three seconds after the disc has been removed. But there has been no demonstration of recording capability.

Says Sony's Head Office in Japan: "We are currently pursuing the development of two MD portable models, one with record/playback capability and

one with only playback capability. It is too early at this stage to say if both models will be ready on time for a joint introduction or if they will be introduced separately."

Philips pledges that DCC will be launched in Spring 1992 and be able to record from Day One. "Record-capability is just not an issue" says Philips. "We have to be able to record on the tape to demonstrate playback".

Philips is now in a unique position to evaluate Sony's chances of making record-capable MD units ready for sale. In a bizarre truce both companies lent each other a rival system for display at the recent Funkausstellung consumer electronics exhibition in Berlin. The truce quickly broke down and neither company showed either system to the public. Philips just sent Sony's MD straight to its research centre in Eindhoven for technical evaluation.

What the company finds will, of course, have to remain confidential. But my bet is that what the Eindhoven engineers find will give them confidence. As long as the Philips management and advertising department can be restrained from cooking up any more phrases to rival the original CD slogan, "perfect sound for ever", everybody could well end up supporting DCC.

Thor and the orange book

Whatever happened to Thor - the CD-R, recordable CD system announced by Tandy several years ago? News of the Thor made headlines and pushed up Tandy's share price. It was promised, at under \$500, in eighteen months or two years. That time slot has now passed, without any explanation from Tandy.

In the meantime Tandy has backed Philips DCC and Sony has come up with Mini Disc, which the company now neatly describes as a "highly compact disc".

At the Berlin Funkausstellung John Roach, Chairman of Tandy, was present at the press conference which Philips gave to announce progress on DCC. I asked him about Thor. "It is alive and well", said Roach. "But we are very committed to DCC, and DCC will go on sale before CD-R. But it is very likely that both will be announced in the same year".

As Tandy is committed to launching DCC next year, 1992, we can only take that to mean that Tandy plans to announce Thor recordable CD next year, too.

Philips is just on the point of finalising the Orange Book, the latest in the long line of CD standards. The Orange Book defines how recordings must be made on a blank CD, to make them compatible with existing players (which follow the original audio CD Red Book standard) and future CD-R players.

This would make all CD-R systems compatible, even though they may use different methods of recording, such as coloured dye, deformed plastic or pits burned in a metal layer.

So, with or without MD, 1992 could be the year when home disc recording becomes a reality. And for most people the convenience of having a recordable CD which plays on a conventional CD player will outweigh the miniaturisation and cleverness of Mini Disc. MDs, whether pressed or home recorded blanks, will not play on any conventional CD player.

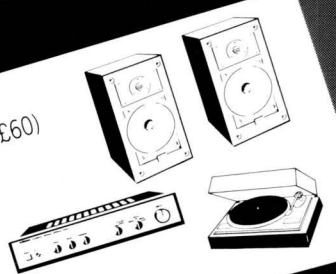


SEVENOAKS HI-FI & VIDEO

This advertisement is valid until at least 31st October 1991.

SAVE £80 SYSTEM OF THE MONTH £269.95
Including cartridge and all leads.

- NAD 5120 or (Dual CS505/4 add £60)
- Rotel RA820AX
- JPW Sonata (vinyl)
(real wood veneer add £10)



SUGGESTED SYSTEMS

The suggested systems priced below all include the popular Dual CS503/2 turntable but an alternative turntable or CD player is available at extra cost. Please see "OPTIONS" list below for further details.

SPEAKERS	Widale Delta 30.2 JPW Minim Gale GS210 JPW Sonata (vinyl) Mission 760	Celestion 3 JPW Sonata M/Short MS 3.10 W/Dale Diamond 4 Royd A7 Tannoy 603	Celestion DL4 II Tannoy E11 JPW Sonata+ M/Short MS3.20 Mission 761	Nad 8225e Celestion 5 B&W DM600 Kef K120 Tannoy 605	Monitor Audio R7 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 Tannoy 607	Castle Durham Heybrook HB1/3 Tannoy 609 Tannoy DC 2000 (Add £70) Rogers LS4A B & W DM620 (Add £50)
AMPS							
Rotel RA820AX	324.95	336.95	356.95	368.95	388.95	404.95	444.95
Rotel RA820BX4	348.95	359.95	379.95	392.95	412.95	428.95	468.95
Kenwood KA3020	308.95	319.95	339.95	352.95	372.95	388.95	428.95
Pioneer A300	324.95	336.95	356.95	368.95	388.95	404.95	444.95
Rotel RA930AX	324.95	336.95	356.95	368.95	388.95	404.95	444.95
Harman HK6100	336.95	348.95	372.95	384.95	399.95	416.95	459.95
Sony TAF440E	339.95	352.95	372.95	412.95	424.95	449.95	499.95
Sony TAF540E	379.95	392.95	412.95	424.95	444.95	459.95	499.95
Technics SUV6500K	324.95	336.95	368.95	388.95	432.95	436.95	476.95
NAD 3240	356.95	399.95	404.95	419.95	416.95	436.95	509.95
Marantz PM40SE	388.95	384.95	404.95	404.95	416.95	436.95	492.95
Kenwood KA5020	372.95	344.95	348.95	348.95	359.95	379.95	436.95
Nad 3225PE	332.95	328.95	328.95	348.95	359.95	379.95	436.95
Nad 3020 i	316.95	328.95	328.95	348.95	344.95	364.95	419.95
Marantz PM 30SE	316.95	312.95	312.95	332.95	399.95	419.95	476.95
Rotel RA920AX	299.95	368.95					
Technics SUV600K	356.95						

FREE
Cartridge supplied with these systems
Leads provided with these systems (QED 79 strand add £1/metre)
Carriage for mail order customers on all systems in excess of £300 (UK mainland only)
NB speaker stands are NOT included but highly recommended - wide range available from £20 per pair



Rotel
Last chance to buy these award winning products at outrageously low prices. Stocks are limited so hurry to avoid disappointment.

	Was	Now
Rotel RA820AX Amp	£159.95	£119.95
RT850AL Tuner	£179.95	£126.95
RD865 Cass. Deck	£229.95	£159.95
RA820 BX4 Amp	£189.95	£132.95
RCD 865 CD Player	£299.95	£239.95

OPTIONS

The following Compact Disc Player or Turntable may be ordered instead of the Dual CS503/2 in the above systems.

- CDs**
- Avia XC700
 - Denon DCD480
 - Denon DCD580
 - Denon DCD660
 - Denon DCD860
 - Denon DCD960
 - Marantz CD41
 - Marantz CD42
 - Marantz CD52
 - Marantz CD62
 - Marantz CD72
 - Marantz CD505E
 - Marantz CD605E
 - Nad 5420
 - Nad 5425
 - Nad 5440
 - Philips CD604
 - Philips CD618
 - Philips CD624
 - Philips CD634
 - Philips CD850 MkII
 - Pioneer PD4700
 - Pioneer PD7700
 - Pioneer PD8700
 - Rotel RCD855
 - Rotel RCD865
 - Rotel RCD865AX
 - Rotel RCD965BX
 - Technics SLPG200AK
- TURNABLES**
- Technics SLPG400AK add £35
 - Technics SLPG500AK add £55
 - Dual CS505-4 add £55
 - AR EB 101 add £25
 - Nad 5120 add £100
 - Ariston Q Deck add £20
 - Rotel RP855 add £55
 - Systemdek IX900 + MOTH + AT110E add £155
 - Thorens TD801I add £45

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

BUY WITH CONFIDENCE

IN STORE & MAIL ORDER - You can buy with confidence from **Sevenoaks** Hi-Fi & Video. We've been in business for nearly 20 years and have lots of experience with personal callers and Mail Order customers. All goods are **BRAND NEW, FULLY GUARANTEED** and maintained by our own SERVICE DEPARTMENT. For personal attention and demonstration call into any of our branches, if you live too far away, simply post or phone your order through and our efficient Mail Order department at **Sevenoaks** head office should have your equipment safely delivered within 7 days, subject to availability. Carriage is only £7 per order and generally **FREE** if total exceeds £300 (UK mainland only). All goods are insured against loss or damage in transit. Payment may be made by cash, cheque, Access or Visa (Barclaycard). Prices include VAT.

Amplifiers

- Arcam Alpha II £139.95
- Arcam Alpha III £199.95
- Arcam Delta 60 £299.95
- Arcam Delta 90.2 £519.95
- Arcam Delta 120 £519.95
- Arcam Delta 110S £409.95
- Arcam Delta 110 £474.95
- Arcam Delta 110S £504.95
- Audiolab 8000A/91 £549.95
- Audiolab 8000M (each) £199.95
- Audiolab 8000P/91 £229.95
- Aura VAS0 £249.95
- Cyrus One II £349.95
- Cyrus Two II £139.95
- Detic 50S £169.95
- Denon PMA250 II £209.95
- Denon PMA350 £239.95
- Denon PMA 860 £174.95
- Denon PMA 860 £139.95
- Hamman HK5100 £129.95
- Kenwood KA5020 £149.95
- Kenwood KA5020 £239.95
- Marantz PM30 £549.95
- Marantz PM 30SE £299.95
- Marantz PM 40SE £139.95
- Marantz PM 40SE £229.95
- Musical Fidelity A1 Mk II £399.95
- Musical Fidelity B1 £199.95
- Musical Fidelity B1.1 £349.95
- Musical Fidelity FRC3A £429.95
- Musical Fidelity A100 £729.95
- Musical Fidelity B200 £189.95
- Musical Fidelity P130 £169.95
- Musical Fidelity P173 £149.95
- Musical Fidelity P180 £199.95
- Nad 322PPE £129.95
- Nad 320DI £159.95
- Nad 324DI £239.95
- Nad monitor range £249.95
- Pioneer A229 £339.95
- Pioneer A300 £369.95
- Pioneer A400 £429.95
- QED A240CD II £429.95
- QED A240SA II £329.95
- QED A270CPA £794.95
- QED A270CPA £366.95
- QED C300 £322.95
- Quad 66 inc R1 £635.95
- Quad 34 £109.95
- Quad 306 £189.95
- Quad 506 £219.95
- Rotel RA810A £309.95
- Rotel RA820B4 £339.95
- Rotel RA870B4 £339.95
- Rotel RC870B4 £159.95
- Rotel RB870B4 £159.95
- Rotel RT850L pre-tuner £129.95
- Rotel RC850 power £179.95
- Rotel RA840B4 £159.95
- Rotel RA920A £179.95
- Rotel RA920A £159.95
- Rotel RB980B £179.95
- Rotel RB980B £179.95
- Rotel RC980B £159.95
- Sony TAF540E £199.95
- Technics SLN550K £429.95
- Technics SLN600K £199.95
- Technics SLN700K £449.95
- Technics SLN800K £189.95
- Yamaha AX450 £189.95

Cassette Decks

- Aiwa ADF410 £99.95 (FT)
- Aiwa ADF500 £159.95 (FT)
- Aiwa ADF600 £189.95 (FT)
- Aiwa ADF610 £199.95 (FT)
- Aiwa ADXW777 £189.95 (FT)
- Denon DAT £159.95 **
- Denon DRN500 £139.95
- Denon DRN510 £239.95 **
- Denon DRN600 £199.95
- Denon DRN700A £229.95 **
- Denon DRN710 £239.95
- Denon DRW650 £299.95
- Denon DRW750A £199.95 (FT)
- Denon DRN800A £149.95 *
- Dual CC8010 £169.95
- Kenwood KK650 £169.95
- Marantz SD40 £229.95 **
- Marantz SD50 £349.95 (FT)
- Nad 6340 £129.95 **
- Nad 6340 £149.95 (FT)
- Nad 6340 £179.95 **
- Nakamichi Cass Deck 2 £229.95 **
- Pioneer CT229 £149.95 (FT)
- Pioneer CT339 £149.95 (FT)
- Pioneer CT855 £189.95 (FT)
- Rotel RD865 £169.95 (FT)
- Rotel RD945A £169.95 (FT)
- Rotel RD955A £199.95 (FT)
- Rotel RD965B £129.95 (FT)
- Sansui DX211 HK-R £149.95 (FT)
- Sony TCX500 £179.95 (FT)
- Technics RSBA404K £249.95 **
- Technics RSTR12K £249.95 **
- Technics RSTR13K £249.95 **
- Technics RSTR15K £249.95 **
- Technics RSTR155K £249.95 **
- Technics RSTR165K £249.95 **
- Yamaha KX330 £199.95 (FT)
- Yamaha KX330 £299.95 (FT)
- Yamaha KX650 £299.95 (FT)

Present this Ad to claim Free Stands & Cable (79 Strand) with loudspeakers over £115 pair (excluding S Systems)

Present this ad to claim 10% off products displaying * 20% off products displaying ** 30% off products displaying ***

Tuner Amps/Receivers

- Denon DRX335 £299.95
- Denon DRX435 £209.95
- Nad 722PE £249.95 **
- Rotel RX850AL £429.95 ***
- P.O.A. £199.95
- Arcam Alpha £339.95
- Arcam Delta 2 £149.95
- Arcam Delta 2 £189.95
- A/Research 112 SE £159.95
- AR Red Box (one) £199.95
- B & W DM610 £199.95
- B & W DM620 £599.95
- B & W Solid £229.95
- Castle Chester £159.95
- Castle Durham (Grey) £129.95
- Castle Trent (Grey) £229.95
- Castle Warwick (Grey) £199.95
- Castle Windsor £639.95
- Castle Winchester £1399.95

Speakers

- Acoustic Energy AE1 £199.95
- Arcam Alpha £339.95
- Arcam Delta 2 £149.95
- Arcam Delta 2 £189.95
- A/Research 112 SE £159.95
- AR Red Box (one) £199.95
- B & W DM610 £199.95
- B & W DM620 £599.95
- B & W Solid £229.95
- Castle Chester £159.95
- Castle Durham (Grey) £129.95
- Castle Trent (Grey) £229.95
- Castle Warwick (Grey) £199.95
- Castle Windsor £639.95
- Castle Winchester £1399.95

- Chelston 3 £114.95
- Chelston 5 £154.95
- Chelston 7 £199.95
- Chelston 10 £239.95
- Chelston 11 £279.95
- Chelston 100 £499.95
- Chelston DLA II £144.95
- Chelston DLE II £199.95
- Chelston DLS II £189.95
- Chelston 5000 £139.95
- Chelston 7000 £219.95
- Cerwin Vega AT20 £119.95 **
- Cerwin Vega AT40 £249.95
- Gale GS210 £279.95
- Heybrook HB13 £159.95
- Heybrook HB100 £144.95
- Heybrook Solo £134.95
- JPW Mini £99.95
- JPW Sonata £84.95
- JPW Sonata Plus £84.95
- JPW Sonata (vinyl) £84.95
- JPW Minim £84.95

- Kel R101.2 £694.95
- Kel R102.2 £694.95
- Kel R103.4 £995.95
- Kel R104.2 (dem) £1994.95
- Kel R105.3 £1394.95
- Kel R106.3 £139.95
- Kel R107.2 £199.95
- Kel R108.2 £379.95
- Kel R109.2 £499.95
- Kel R110.2 £649.95
- Kel R111.0 £399.95
- Kel R112.0 £199.95
- Kel R113.0 £299.95
- Kel R114.0 £479.95
- Kel R115.0 £699.95
- Kel R116.0 £749.95
- Kel R117.0 £749.95
- Kel R118.0 £749.95
- Kel R119.0 £749.95
- Kel R120.0 £749.95
- Mission 760 £479.95
- Mission 761 £699.95
- Mission 762 £749.95
- Mission 763 £749.95
- Mission 764 £749.95
- Mission 765 £749.95
- Mission Cyrus 780 £179.95
- Mission Cyrus 781 (dem) £249.95
- Mission Cyrus 782 (dem) £349.95
- Mon Audio Junior £139.95
- Mon Audio Studio 5 £129.95
- Mon Audio 7 £129.95
- Mon Audio 9 £129.95
- Mon Audio 11 £129.95
- Mon Audio 14 £129.95
- Mon Audio R1200 (dem) £109.95
- Mon Audio R1200 (dem) £109.95
- Mon Audio R1800 (dem) £139.95
- Mordant Short MS 3.10 £199.95
- Mordant Short MS 3.20 £299.95
- Mordant Short MS 3.30 £149.95
- NAD 8100 £299.95
- NAD 8225e £149.95

Turntables

- A/Research EB101 £499.95
- Anston Pro £694.95
- Anston Q Deck £995.95
- Dual CS503.2 £1994.95
- Dual CS503.4 £1394.95
- Nad S120 £139.95
- Pink Export £199.95
- Pink Nextel LPT £199.95
- Pink Piano Bix LPT £199.95
- Roksan Xerox (dem) £199.95
- Roksan PB855 £299.95
- Rotel RP855 £379.95
- Systemdek IX 900 (lex) £499.95
- Systemdek IX 900 + Moth £649.95
- Systemdek IX 900 + Tabriz £399.95
- Systemdek IX 900 Elect £299.95
- Systemdek SL1200 II £189.95
- Technics SL1210 II £189.95
- Thorens T280II £339.95

Tuners

- Arcam Delta 80 £179.95
- Alpha Tuner II £249.95
- Aura TU50 £299.95
- Cyrus Tuner £109.95
- Denon TU260L £189.95
- Denon TU560L £249.95
- Denon TU650L £179.95
- Harman YF9400 £249.95
- Marantz ST50L £269.95
- Musical Fidelity T1 Mk1 £159.95
- Musical Fidelity T1 II £199.95
- Nad 4225 £199.95
- Pioneer F656 £249.95
- Pioneer F676 £367.95
- QED T260 £109.95
- QED FM4 £139.95
- Rotel RT830AL £179.95
- Rotel RT845AL £179.95
- Rotel RT850AL £179.95

Compact Disc Players

- Aiwa KC700 £179.95 (FD)
- Aiwa KC900 £209.95 (FD)
- Arcam Delta 70.2 £599.95 **
- Arcam Delta 70.3 £649.95 (FD)
- Arcam Delta 170 (Dem) £619.95 (FD)
- Alpha CD £599.95 **
- Arcam Black Box III £259.95 (FD)
- Arcam Maxim CD £349.95 (FD)
- Arcam Little Bit II £139.95
- Detic POM 11 £179.95
- Denon DCD480 £199.95
- Denon DCD580 £259.95
- Denon DCD660 £299.95
- Denon DCD860 £369.95
- Denon DCD1460 £179.95 (FD)
- Denon DCD2560 £199.95 (FD)
- Kenwood DP4030 £299.95 (FD)
- Kenwood DP5030 £199.95 (FD)
- Kenwood DP7030 £179.95 (FD)
- Marantz CD41 £199.95 (FD)
- Marantz CD42 £249.95 (FD)
- Marantz CD50SE £299.95 (FD)
- Marantz CD52 £349.95 (FD)
- Marantz CD60SE £599.95 (FD)
- Marantz CD62 £499.95 (FD)
- Marantz CD72 £399.95 (FD)
- Marantz CD80 £199.95 (FD)
- Marantz CD94I £299.95 (FD)
- Musical Fidelity CD1 £169.95 **
- Nad 5420 £129.95
- Nad 5420 £199.95
- Nad 5440 £229.95
- Nad 5440 £349.95 (FD)
- Philips CD618 £399.95 (FD)
- Philips CD624 £129.95 (FD)
- Philips CD634 £179.95 (FD)
- Philips CD650 £199.95 (FD)
- Philips CD850 II £249.95 (FD)
- Pioneer PD4700 £544.95 (FD)
- Pioneer PD6700 £299.95 **
- Pioneer PD7700 £299.95 **
- Pioneer PD8700 £299.95 **
- Quad 66 £239.95 (FD)
- Quad 66 £299.95 (FD)
- Rotel RCDB55 £159.95 (FD)
- Rotel RCDB65 £179.95 (FD)
- Rotel RCD955A £229.95 (FD)
- Rotel RCD955B £159.95 (FD)
- Sony CDP 491 £229.95 (FD)
- Sony CDP 591 £269.95 (FD)
- Sony CDP 791 £349.95 (FD)
- Sony CDP 991 £139.95 (FD)
- Technics SLP5700K £199.95 (FD)
- Technics SLP900K £179.95 (FD)
- Technics SLPG100AK £199.95 (FD)
- Technics SLPG200AK £199.95 (FD)
- Technics SLPG400AK £199.95 (FD)
- Technics SLPG500AK £199.95 (FD)
- Yamaha CDX530E £199.95 (FD)
- Yamaha CDX530E £249.95 (FD)

WATFORD NOW OPEN

See our address panel for details.

PLEASE CALL US
BEFORE TRAVELLING TO
VERIFY PRICE
AND AVAILABILITY
Some branches close
all day Wednesday

109-113 London Road
SEVENOAKS (0732) 459555

51 Beckenham Road
BECKENHAM (081) 658 3450

1 The Grove Centre,
ESSEX
10 miles from Colchester, 13 miles Chelmsford, 10 miles Braintree.

34 Mount Ephraim
TUN. WELLS
0376 501733

Sevenoaks Branch Only
MAIL ORDER (0732) 458985

4 Railway Street
CHATHAM (0634) 846859

73b North Street
GUILDFORD (0732) 458985

162 Powis Street,
LONDON (081) 855 8016

41 St. Clements
OXFORD (081) 241773

73b North Street
GUILDFORD (0483) 36666

162 Powis Street,
LONDON (081) 855 8016

41 St. Clements
OXFORD (081) 241773

478 St. Albans Road
WATFORD (0923) 212736

24 Pittville Street
CHELTENHAM (0242) 241171

55 Preston Street
BRIGHTON (0273) 733338

20a Lower Bridge Street
CANTERBURY (0227) 462787

109-113 London Road
SEVENOAKS (0732) 458985

51 Beckenham Road
BECKENHAM (081) 658 3450

1 The Grove Centre,
ESSEX
10 miles from Colchester, 13 miles Chelmsford, 10 miles Braintree.

34 Mount Ephraim
TUN. WELLS
0376 501733

Sevenoaks Branch Only
MAIL ORDER (0732) 458985

4 Railway Street
CHATHAM (0634) 846859

73b North Street
GUILDFORD (0732) 458985

162 Powis Street,
LONDON (081) 855 8016

41 St. Clements
OXFORD (081) 241773

478 St. Albans Road
WATFORD (0923) 212736

24 Pittville Street
CHELTENHAM (0242) 241171

55 Preston Street
BRIGHTON (0273) 733338

20a Lower Bridge Street
CANTERBURY (0227) 462787

109-113 London Road
SEVENOAKS (0732) 458985

51 Beckenham Road
BECKENHAM (081) 658 3450

1 The Grove Centre,
ESSEX
10 miles from Colchester, 13 miles Chelmsford, 10 miles Braintree.

34 Mount Ephraim
TUN. WELLS
0376 501733

Sevenoaks Branch Only
MAIL ORDER (0732) 458985

4 Railway Street
CHATHAM (0634) 846859

73b North Street
GUILDFORD (0732) 458985

162 Powis Street,
LONDON (081) 855 8016

41 St. Clements
OXFORD (081) 241773

478 St. Albans Road
WATFORD (0923) 212736

24 Pittville Street
CHELTENHAM (0242) 241171

55 Preston Street
BRIGHTON (0273) 733338

20a Lower Bridge Street
CANTERBURY (0227) 462787

109-113 London Road
SEVENOAKS (0732) 458985

51 Beckenham Road
BECKENHAM (081) 658 3450

1 The Grove Centre,
ESSEX
10 miles from Colchester, 13 miles Chelmsford, 10 miles Braintree.

34 Mount Ephraim
TUN. WELLS
0376 501733

Sevenoaks Branch Only
MAIL ORDER (0732) 458985

4 Railway Street
CHATHAM (0634) 846859

73b North Street
GUILDFORD (0732) 458985

162 Powis Street,
LONDON (081) 855 8016

41 St. Clements
OXFORD (081) 241773

478 St. Albans Road
WATFORD (0923) 212736

24 Pittville Street
CHELTENHAM (0242) 241171

55 Preston Street
BRIGHTON (0273) 733338

20a Lower Bridge Street
CANTERBURY (0227) 462787

109-113 London Road
SEVENOAKS (0732) 458985

51 Beckenham Road
BECKENHAM (081) 658 3450

1 The Grove Centre,
ESSEX
10 miles from Colchester, 13 miles Chelmsford, 10 miles Braintree.

34 Mount Ephraim
TUN. WELLS
0376 501733

Sevenoaks Branch Only
MAIL ORDER (0732) 458985

4 Railway Street
CHATHAM (0634) 846859

73b North Street
GUILDFORD (0732) 458985

162 Powis Street,
LONDON (081) 855 8016

41 St. Clements
OXFORD (081) 241773

478 St. Albans Road
WATFORD (0923) 212736

24 Pittville Street
CHELTENHAM (0242) 241171

55 Preston Street
BRIGHTON (0273) 733338

20a Lower Bridge Street
CANTERBURY (0227) 462787

109-113 London Road
SEVENOAKS (0732) 458985

51 Beckenham Road
BECKENHAM (081) 658 3450

1 The Grove Centre,
ESSEX
10 miles from Colchester, 13 miles Chelmsford, 10 miles Braintree.

34 Mount Ephraim
TUN. WELLS
0376 501733

Sevenoaks Branch Only
MAIL ORDER (0732) 458985

4 Railway Street
CHATHAM (0634) 846859

73b North Street
GUILDFORD (0732) 458985

162 Powis Street,
LONDON (081) 855 8016

41 St. Clements
OXFORD (081) 241773

478 St. Albans Road
WATFORD (0923) 212736

24 Pittville Street
CHELTENHAM (0242) 241171

55 Preston Street
BRIGHTON (0273) 733338

20a Lower Bridge Street
CANTERBURY (0227) 462787

109-113 London Road
SEVENOAKS (0732) 458985

51 Beckenham Road
BECKENHAM (081) 658 3450

1 The Grove Centre,
ESSEX
10 miles from Colchester, 13 miles Chelmsford, 10 miles Braintree.

34 Mount Ephraim
TUN. WELLS
0376 501733

Lift Homesystems.



The best for your collection.
 Perfect storage solutions for
 Music and Video. Call Lift
 on 0296 615151 for your
 nearest Homesystems stockist.

LIFT LTD., Unit 13, Triangle Business Park, Quilters
 Way, Wendover Road, Stoke Mandeville, GB-BUCKS
 HP22 5 BL, Phone: 0296 / 615151, Fax: 0296 / 612865

LIFT[®]
 Systems with future

A & R • Audiolab • Audio Technica • B & W • Beyer • Creek • Cyrus
 • Denon • Dual • Epos • Goldring • Jacklin • KEF • Linn • Marantz • Mission • Monitor Audio •
 • Sennheiser • SME • Spendor • Spica • Stax • Tannoy • Target • Wharfedale • Yamaha

The Right Place, the Right Products, at the Right Price!

All the **best buys** under one roof. No need to chase from dealer to dealer. Our prices are among the most competitive around.

CD Players	Yamaha	CDX750	£249
	Arcam	Alpha	£419
	Musical Fidelity	CD1	£399
	Nakamichi (Music Bank)	CD3	£499
	Marantz	CD52	£199
Amplifiers	Cyrus	1/2/PSX	£229/349/249
	Audiolab	8000A	£410
		8000P & C	£920
	Musical Fidelity	B1 MkII	£239
	Linn Intek		£399
Cassette/Recorders	Yamaha	KX530	£229
	Denon	DRM710	£229
	Denon	DRW750 Db1	£239
	Nakamichi	CAS1	£699
	Nakamichi	CAS2	£349
Turntables	Dual	CS505/4	£169
	Linn	Basik	£250
	Linn	Axis	£443
	Linn LP12	All versions	
Speakers	Monitor Audio	MA1	£139
	Monitor Audio	MA11	£329
	B&W	DM600	£159
	Epos	ES11	£330
	Cyrus	780/781/782	£179/249/349

New — Kef K & Q Series New — Tannoy Sixes Range
 See Border Details for Brands & Ranges Stocked

HARROW AUDIO

27 Springfield Rd., Harrow, Middlesex Telephone: 081-863 0938

British Audio Dealers Association
TOP TAPE

• Musical Fidelity • Nagaoka • Nakamichi • Ortofon • QED • Quad

What's New in the UK Pussycat?

Concordant Premier Tube Pre amps
 home dems from Concordant agents
 4 Year Guarantee including the valves

CONCORDANT PREMIER TUBE

14 Glyn Close
 Barwell
 Leicestershire
 LE9 8GL
 England

TEL:- 0455 843752

Compact Disc has come a long way in eight years, and is now starting to represent a significant percentage of hardware and software sales (particularly by value). Rather surprisingly, the UK has proved one of the slower growing markets, though this partly reflects a greater difference in price between a CD and its LP or music cassette equivalent than in some overseas markets. Whereas disc prices have only reduced slightly since the format was launched (one or two budget labels notwithstanding), player prices have dropped to a third of those charged when the system was first launched. £160 is now a typical budget price, some machines cost as little as £120, and cheap mechanisms are built into systems and portables.

CD certainly has a number of advantages over its rivals. It is inherently quite rugged and unaffected by careful use, free of surface and background noise and wow and flutter effects, while signals processed in digital form are theoretically immune from degradation. This said, a book could be written on how the theoretical incorruptibility of digital signals has proved to be something of a red herring. Regular

emphasising the commitment of the record companies to the format.

From the general consumer's point of view, price is still a key factor. While early CD users were clearly prepared to pay a 100 per cent premium, the pricing of CDs has now become something of a political issue as consumer pressure groups are becoming incensed at the lack of freedom of choice. History has shown that the broad base of recorded music sales is very price-sensitive but not especially quality conscious.

The players

The conventional CD player may simply be plugged into any hi-fi system, as one would a tuner or cassette deck. The amplifier's 'aux', or 'tape' inputs will be perfectly adequate, though the results might be a little loud through the speakers, and require a lower volume control setting than usual. Many more recent amplifiers have a 'CD' input, and this may have a more appropriate sensitivity. Some specialist amplifier manufacturers have taken the trouble to connect the CD input directly to the preamp volume control, so as to minimise interference of the signal.

There is also a mild risk that a CD user will find his amplifier no longer seems to go as loud. The reason for this is that recording engineers put a wider dynamic range onto to CD than most of them did with vinyl. Consequently for the same peak output, the mean (average) output from CD with the same recording will be slightly lower than before. One can of course compensate by cranking up the volume, but if an amplifier is already being used close to its limits, the CD peaks could cause premature 'clipping', for which the only solution is to obtain a more powerful amplifier.

The prospective purchaser faces a wide range of choice at wildly varying prices, starting below £150 and going up to above £2,000. Players are available for in-car use, are incorporated in large portables, and exist as tiny personals, with some doubling as unconventional domestic machines. The mains models can be manual or remote controlled, and simple or complicated in terms of ergonomics and programmability. Autochanger variations can accept and play from a caddy of half a dozen discs, selected and programmed remotely. For enthusiasts looking for top quality performance, there is now a preponderance of 'two-box' players, where the disc transport and complex digital-to-analogue circuitry are physically separated and have independent power supplies.

Despite protestations of 'perfect' sound, CD players show significant audible and measurement differences, and these are discussed in detail in our reviews. That said, most machines measure very competently, showing occasional weakness at the cheapest end of the market and among low voltage portable machines. Though correlation with measurement still proves elusive, listening tests prove quite capable of consistently distinguishing between the different decks. While the poorer examples can make the new medium sound quite unpleasant, the best can provide eminently satisfactory results with refreshing repeatability and the promise of longevity.

Choosing and Using ... CD Players

CD players are now the most popular component in the hi-fi chain. For the uninitiated, Hi-Fi Choice explains what's what in today's machines.

observers of the hi-fi scene will be well aware of the 'discovery' that in CD replay even changing the interconnect cable used to transmit digital data between disc transport and standalone D-to-A convertor can alter the perceived sound.

The discs

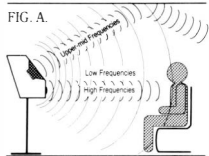
Only five inches in diameter and attractively silvered, the compact disc currently costs up to twice the price of an LP or music cassette (in the UK). It can carry more than an hour of music and comes packaged in an irritatingly fragile and awkwardly designed 'jewel case', containing additional printed 'sleeve' information.

For the record companies in particular, establishing a brand new format is an exceedingly difficult task, in view of the vast inventory needed to represent a play only format effectively, and in this instance, the technical problems of pressing with necessarily great precision. Inevitably there was a learning curve in the disc manufacturing processes, and full quality potential is still not reached in many cases. However, the range of titles available on CD has grown spectacularly, now exceeding those available on vinyl as more and more LPs are being deleted,

HOLOGRAPHIC IMAGING™ IS SO EXTRAORDINARY IT EVEN SOUNDS GOOD ON PAPER.

And Julian Hirsch wrote it.* In *Stereo Review* he said Holographic Imaging offers "perhaps the most natural music sound stage...we have heard from any conventional or unaided speaker."

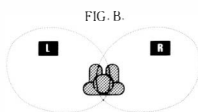
No wonder. AR Holographic Imaging Speakers are more focused than conventional speakers so you



pinpoint instruments with striking accuracy. The music is recreated in its proper perspective. We combined better focus with more spacious, natural ambience that envelops you in the Spatial Soundstage.™ (Fig. A) The effect is so three dimensional, Hirsch heard "much of the depth, width, and height that we associate with a live performance."

STARTLING SOUND BECAUSE WE BROKE THE VERY RULES WE MADE.

In the H/I Series, M1 thru M4 have the woofer set at an angle towards the top of the cabinet. This placement controls acoustic



roll-off and thus minimizes crossover components, leaving nothing between you and the music. Hirsch said the speakers "rarely appeared to be the source of the sound we heard." The offset dome tweeter adds strong, precise imaging in a broader sweet spot. (Fig. B)

In the M5 and M6 we've mounted the midrange driver at an angle at the top. The narrow speaker cabinet (Minimal Baffle Design) cuts reflected information and produces an enormous sound from a surprisingly small amount of space. "The music came from that end of the room... but never seemed to emerge from those small black boxes," Hirsch added.

The woofers are mounted in an acoustic suspension enclosure (which we invented) that fires into a filtered chamber. The Filtered Suspension provides tight bass response with dynamic, efficient performance.

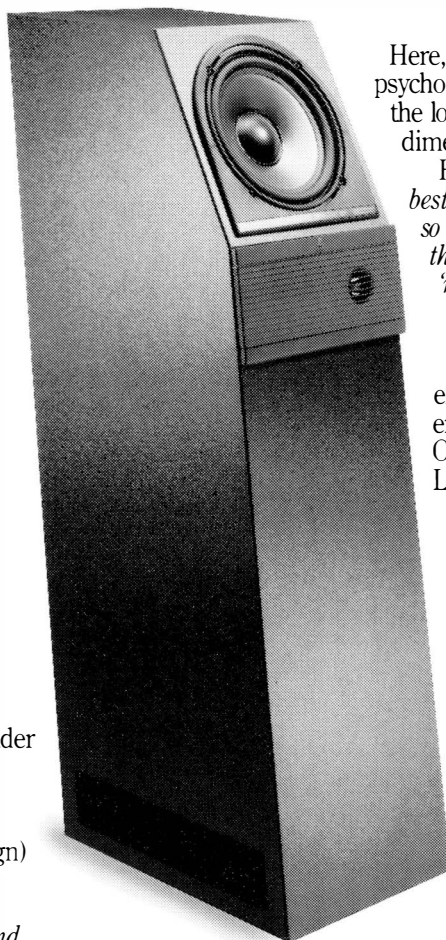
SOUND DESIGN DICTATED COSMETIC DESIGN.

Here, 'form follows function.' Specific physics and psycho-acoustic principles determined every facet of the look. A look befitting this startling new dimension in stereo listening.

Hirsch concluded H/I represents "one of the best values in today's speaker market. These days so many products seem to be equal to each other that it is refreshing to find one that is strikingly 'more equal' than most of the competition."

FREE CD OFFER.

Receive a free Nova CD when you hear the extraordinary H/I demo at selected AR dealers. For more information, call 0483-425702. Or write AKG Acoustics, Vienna Ct., Lammas Rd., Godalming, Surrey GU7 1JG.



**WE CAN BREAK
THE RULES
BECAUSE WE MADE
THE RULES.**

© 1991, AR, Holographic Imaging, Spatial Soundstage and H/I Series are registered trademarks of Acoustic Research.
**Stereo Review*, June '91 review of AR H/I Model M4.



Acoustic Research CD-07

ACOUSTIC RESEARCH LTD, ALEXANDRA STREET, HYDE,
CHESHIRE SK14 1DY. TEL: (061) 367 8871



Not long after our review of Acoustic Research's *CD-06SE* in issue 95, that model was replaced by the new £300 *CD-07*. This player bears all the visual hallmarks of other AR separates, with its sloping satin-black fascia and large disc-like control, but has been made especially elegant by transferring every function except play and load to a matching remote control.

This handset will also fire-up various tuner, tape and amp functions, so don't get the buttons confused. Furthermore, if you lose or damage the remote you'll find that operation of the player is severely restricted. Otherwise it's a doddle to use.

The CD mechanism is a more recent CDM4 item from Philips, though the guts of the player come courtesy of Rotel's OEM division. This might be Acoustic Research's first venture into bitstream territory but the player itself is actually taken from Rotel's second model, the *RCD-865BX*.

We never saw the *865BX* in this country, still there's plenty here to keep the enthusiasts happy with plantations of BGF electrolytics and quality Raytheon op-amps making up the analogue output stage.

Lab report

AR's player uses the same SAA7321 PDM DAC in a very similar application to both the Philips *CD618* and Micromega *Logic*, hence the directly comparable 3D 'fingerprints' with their rippled stopband images (the V-patterns) and dominant third/fifth order harmonics. The -70dB/1kHz plots are very similar too, though the proprietary filtering has reduced ultrasonic quantisation noise by a further 6-8dB.

The DAC is deployed in single-ended mode so neither linearity nor signal-to-noise ratio are optimised: values of 97-98dB are a good 10dB behind the best bitstream players. The ripple in the fre-

quency response is also a function of the SAA7321 or, more correctly, its integral four times FIR filter. The rippling seems enhanced on the -60dB response though this is unlikely to have much subjective impact.

Sound quality

Our listeners quickly linked the sound of this player with both the *CD618* and Micromega *Logic*, players that employ the same basic technology and which were heard earlier on the same day. This sound was distinguished by its crisp and dynamic bass quality which was solid, liting and rhythmic if not especially full or heavy.

In tonal and dynamic terms the player seems very even-handed, though our panel did suggest it could sound a little pinched on strings, just as it lacked the full resonant chestiness with our Chris Rea selection.

Nevertheless, the overall presentation was very likeable and civilised. There is the faintest loss of high frequency detail and low-level ambient information, but this is certainly not sufficient to take the edge off the sound.

The stereo imaging was also a touch suspect at times, compromising the stability of central performers as well as its front-to-back resolution. Easy listening, the panel thought, but not the most thrilling player ever devised.

Conclusion

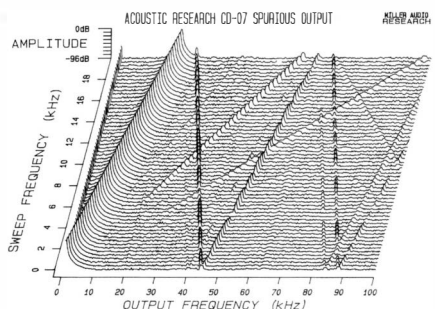
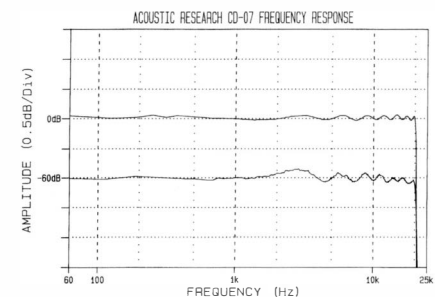
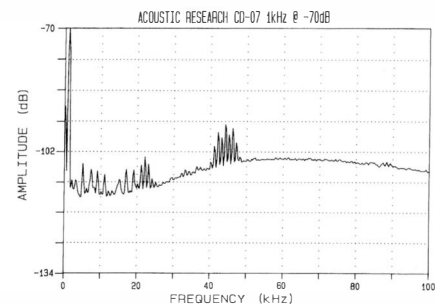
In this instance AR has bought in a tried-and-tested model from elsewhere, and the *CD-07* is clearly superior to either the *CD-06* or *CD-06SE*.

Its slightly vague imagery and easy-going demeanour may limit its competitiveness but this is certainly a step in the right direction for Acoustic Research and is rewarded by a slightly tentative Recommendation.

Recommended

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.05dB	0.05dB	0.07dB
Channel Separation	85.5dB	87.2dB	82.6dB
THD vs Level, 0dB	-94.1dB	-94.1dB	-72.2dB
-30dB	-76.6dB	-67.7dB	-69.0dB
-60dB	-44.8dB	-45.2dB	-38.9dB
-80dB	-16.4dB	-24.0dB	-17.0dB
Dithered, -90dB	-4.75dB	-10.2dB	-4.45dB
Resolution @ -60dB		-0.03dB	-0.14dB
-80dB		-0.81dB	-1.31dB
-90dB		-1.56dB	-4.20dB
-95dB		-1.95dB	-0.30dB
-100dB		+0.55dB	
Peak Output Level, L	1.966V		
R	1.977V		
Relative Output Level		-0.13dB	
Output Impedance		204ohm	
Radio Frequency Spurious			<1mV broadband
1Hz Noise Modulation			+4.9dB
CCIR IMD, 0dB			-96.2dB
Suppression of stop-band IMD			55.3dB
De-emphasis Accuracy, 1kHz			0.00dB
5kHz			+0.07dB
16kHz			+0.16dB
S/N Ratio (A-wtd), w emp, 0LSB			99.9dB
w/o emp, 0LSB			97.7dB
w/o emp, 1LSB			97.4dB
Digital Output			Coaxial
Crystal Clock Accuracy			-16.3ppm
Track Access Time (99)			3secs
Typical Retail Price			£300



The Sound Exchange.

Musicians and critics throughout the world agree that the Ortofon range of moving coil cartridges achieve the highest levels of pure and unbiased reproduction.

With our unique Exchange Scheme you can share this experience by trading in your existing cartridge for a new Ortofon moving coil cartridge with a **15% discount**.

For details of your local participating Premier dealer contact us today and exchange your old sound for the musicians choice.



The 1000 series of moving coil cartridges £600 - £1500

ortofon
accuracy in sound



The Q range of moving coil cartridges £130 - £450

Ortofon (UK) Ltd., Chiltern Hill, Chalfont St. Peter, Bucks SL9 9UG. Tel. 0753 889949

Aiwa XC-900

Recommended

AIWA (UK) LTD, UNIT 5, HEATHROW SUMMIT CENTRE, SKYPORT DRIVE, WEST DRAYTON, MIDDLESEX, UB7 0LY. TEL: (081) 897 7000



Six months ago Aiwa's XC-700 showed us the danger of having preconceived notions about a product. For here was a perfectly ordinary, lightweight player that quite unexpectedly stormed through to a Best Buy. It was only later when reducing the player to small piles of screws, wire and integrated circuits that I discovered the hidden secret: here was a sub-£200 player equipped with what was, at the time, Philips' top Bit Stream DAC.

So, with the benefit of hindsight, expectations for Aiwa's XC-900 were obviously running high. But what was that about preconceived notions? On the face of it this player looks like a tarted-up version of the XC-700, doubling-up the size of the direct access keypad and adding extras like a timer facility and motorised volume control for its headphone and variable outputs. (Odd this, because there's also a digital fader control built into the same circuit.)

The remote handset is that much bigger too, though this simply duplicates more of the features already available on the player itself. Speaking of which, you're faced with the same clumsy black plastic fascia, centralised drawer mechanism (with a fifth foot!) and rather cluttered fluorescent display.

Lab report

As expected, the XC-900 uses the same combination of NPC eight times oversampling filter and Philips SAA7350 DAC as the XC-700. In fact the implementation is similar to Marantz's CD-52 though Aiwa has avoided the vast mountains of ultrasonic noise (see -70dB plot) by using a 16.9MHz clock and running the DAC at 384 times oversampling instead of 256 times.

However, compared to the XC-700 (issue 95), it's equally clear from the -70dB plot that audiband noise has deteriorated by about 8dB. Perhaps this ties in with the remarks made by our panel con-

cerning low-level ambient detail.

Otherwise the conventional THD and IMD measurements show that the XC-900 has a slight advantage over the XC-700, just as figures for linearity show the same constantly positive deviation.

Both the slight ripple on the frequency response and stop-band noise (the V-patterns) on the 3D plot are caused by the NPC filter, by the way.

Sound quality

If the XC-700 was greeted with enthusiasm, then the XC-900 prompted little more than equanimity from our panel. One dissenter found it difficult to relax when listening to this player though his colleagues seemed more appreciative of its open, fairly dynamic and expressive character. The contrast between Mary Black's vocals and the accompanying guitar seemed realistic enough, the inherently dead sound of the guitar counterpointing the richer vibrancy of her voice.

Similarly, the Pachelbel baroque sounded light and pleasantly airy, but now some of the finer detail was masked by the more dominant character of the main strings. All the listeners then concurred that this loss of fine low-level detail and subtle ambience could be attributed to a certain constriction of stereo depth and shortening of perspective. So, the XC-900's music is not unpleasantly compressed but neither does it enjoy the fresh, immediate and engrossing quality of the cheaper XC-700.

Conclusion

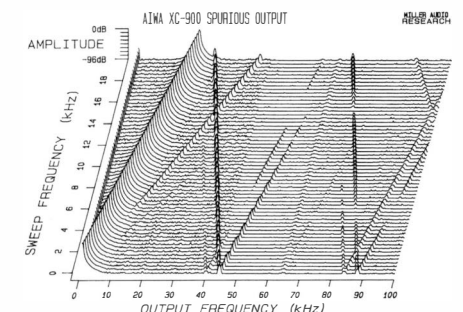
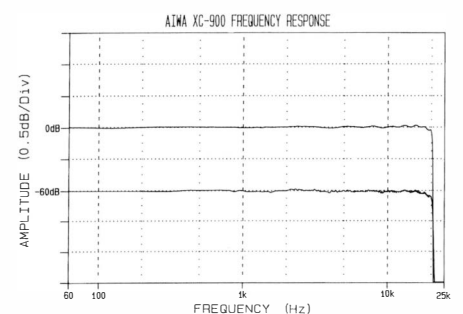
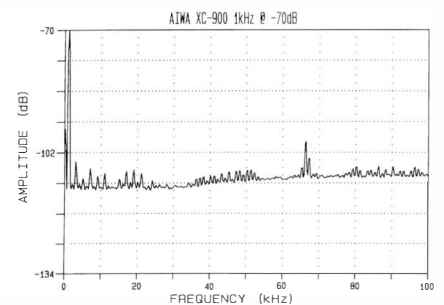
As we've found with amplifiers in the past, and are now discovering with CD players, instigating the slightest revisions to a basically sound product can often throw the whole thing out of kilter. So it is with Aiwa's XC-900, which sounds suspiciously like a strangled XC-700.

It's sufficiently well-equipped and free of nasties to it scrape a begrudging Rec-

ommendation, but, as I said in the introduction, you really shouldn't take anything for granted in this business.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.01dB	0.00dB	0.04dB
Channel Separation	105.9dB	107.2dB	87.6dB
THD vs Level, 0dB	-94.7dB	-92.0dB	-76.4dB
-30dB	-77.2dB	-73.5dB	-72.4dB
-60dB	-43.2dB	-43.3dB	-43.0dB
-80dB	-22.5dB	-26.3dB	-24.0dB
-90dB	-17.8dB	-17.9dB	-15.2dB
Dithered, Resolution @ -60dB		+0.05dB	+0.03dB
-80dB		+0.78dB	+0.48dB
-90dB		+1.78dB	+1.23dB
-95dB		+2.00dB	+4.25dB
-100dB		+2.45dB	
Peak Output Level, L		2.079V	
R		2.081V	
Relative Output Level		+0.34dB	
Output Impedance		953ohm	
Radio Frequency Spurious		1.9mV @ 17MHz	
1Hz Noise Modulation		+2.8dB	
CCIR IMD, 0dB		-98.6dB	
Suppression of stop-band IMD		61.8dB	
De-emphasis Accuracy, 1kHz		+0.01dB	
5kHz		+0.02dB	
16kHz		+0.02dB	
S/N Ratio (A-wtd), wemp, 0LSB		104.5dB	
w/o emp, 0LSB		104.2dB	
w/o emp, 1LSB		100.0dB	
Digital Output		Optical	
Crystal Clock Accuracy		-81.3ppm	
Track Access Time (99)		4.2secs	
Typical Retail Price		£209	



WHEN THE SUM IS EVEN GREATER THAN THE PARTS.

Improbable, you may think, considering that here we have three outstanding audio components, each one highly acclaimed in its own right.

For example, no single integrated amplifier has been so widely praised around the world as the NAD 3020 series, making it the largest selling amplifier in audio history.

With the introduction of the new, upgraded 3020i, Hi-Fi Choice commented; 'This latest version of the classic 3020 is as competitive as ever, it sounds fresh and buoyant but still sharply focused and delightfully detailed.' Not surprisingly, the NAD 3020i was judged as a 'Best Buy' by the same magazine.

The NAD 5420 compact disc player has also received extraordinary acclaim from the audio critics. 'Genuinely convincing music that lives and breathes!' is one quote from Hi-Fi Choice which we feel says it all. Once again, a

'Best Buy' was awarded.

On to the final link. British loudspeaker design at its very best. The NAD 8225 Mini-Monitor – the latest advance

beyond measure ... the 8225 gets you closer to the music than other speakers at this price – and closer than some at twice this price or more.'



from our research and development team. Here's what High Fidelity magazine had to say; 'Captivating ... this little speaker impressed me

Now, add up the parts, and what do you get? Quite simply, the classic hi-fi system from NAD.

A system which is perfectly matched and perfectly balanced, with each component drawing the maximum performance from the others. The sound is clear and open. Exciting and detailed. Vocals are projected well forward. Instruments can be defined and placed. Bass is extended, clean and tight, and the stereo sound-stage combines depth and spaciousness. There are no unnecessary frills, just the bringing together of audio engineering at its very best.

In fact, the only sum which is less than you may have thought is the price.

Check it out at your nearest NAD specialist dealer today.

The Classic System

NAD
BRITISH BY DESIGN

CEC 880CD

HECO UK LTD, FOURBURY HOUSE, 36 VICTORIA ROAD, MORTIMER, READING, BERKSHIRE RG7 3SE. TEL: (0734) 333 636



Alarm bells started ringing the moment I clapped eyes on this player. Primitive display, old-fashioned lightweight construction and basic facilities. And for how much? Still, this approach hasn't hampered companies such as NAD in the past. An appropriate analogy in this case since the 880CD, CEC's top player, employs the same hybrid multibit/PWM DAC that NAD used in its old 5320 and 5325 machines. Only on this occasion something has gone seriously wrong.

Press the open/close button and an insubstantial disc tray whirrs into view. CEC may have included both coaxial and optical digital outputs, but I would not be tempted to use this player as a standalone CD transport. Facilities are limited to the basics on the 880CD itself, including 20-track programming, while a matching remote adds a zero to nine digit keypad to bolster its flexibility. Still, the quality of construction and range of features are hardly impressive at this price.

Nevertheless, Sanyo's hybrid DAC is rather novel, employing a conventional 9-bit DAC whose output is trimmed using the four least significant bits (bits 13-16) of each sample. The three intermediate bits are utilised in a final PWM output stage which can generate one of eight different pulse 'widths' per oversample period. The major glitches and zero-cross distortion of a full 16 or 18-bit DAC are therefore avoided, though I should stress this DAC is a something of a very cost-effective halfway house!

Lab report

Let's be frank. Any player that clocks up a set of results like this has little right to exist in the latter part of 1991.

OK, so the signal-to-noise ratio is pretty good at 105dB (A-wtd) but its hybrid DAC abandons all notion of linearity below -80dB or so, especially at 20kHz where huge errors swing from -11dB to +12dB. Then there's distortion which

ranges from typically 0.07 per cent at 0dB and two per cent at -60dB, up to 30 times that of a £200-plus bitstreamer.

The second to fifth harmonics radiating out across the 3D plot are caused by the DAC but the thumping great stopband images (just -21dB down) are the preserve of the accompanying four times oversampling filter. This filter - and I use the term loosely - is also responsible for the high-order IM products that infest the upper part of the audio range.

More importantly, it introduces vast 1.5dB ripples in the low-level frequency response, compounding the fuzz of distortion visible on the 1kHz/-70dB plot. The multibit portion of the DAC even manages to suffer some +22dB of noise modulation. A clock error of -189ppm plus a single-component RF parasite at 34MHz are the icing on an exceptionally under-baked cake.

Sound quality

Most of our listeners agreed that the strongest asset of this player was its very 'physical' bass, the mid and treble being somewhat cold and relentless by comparison. The string tone from Pachelbel's *Canon* was a little cold and clinical. It sounded alright technically but was bereft of natural richness and warmth. Its treatment of Chris Rea's voice was also less than sympathetic, highlighting the hardness and edginess of the vocals rather than their fullness and resonance.

The jazz selection brought about a fierce and shouty brass quality, not really bright or even aggressive, but oddly jumpy in its balance of perspective between individual performers. Our listeners thought it capable of pulling out a fair amount of detail, but its presentation could never be described as smooth or engaging.

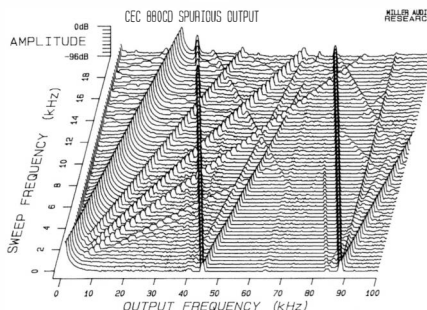
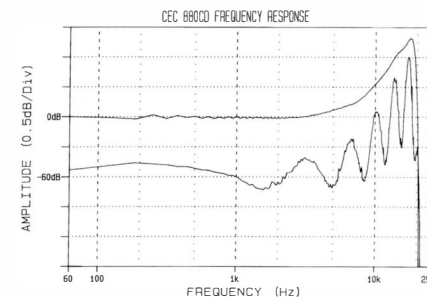
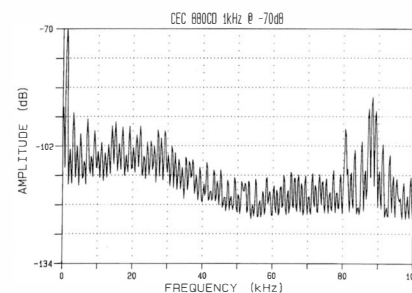
Conclusion

CEC's 880CD is something of an anachronism, a player with all the hallmarks of

yesteryear trapped in the ferociously competitive market of today. If it were £100 cheaper then it might stand a chance, but £230 is hopelessly out of touch.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.00dB	0.00dB	0.13dB
Channel Separation	77.1dB	83.8dB	55.7dB
THD vs Level, 0dB	-62.0dB	-63.1dB	-59.1dB
-30dB	-41.0dB	-53.2dB	-64.4dB
-60dB	-13.4dB	-34.1dB	-40.0dB
-80dB	+1.15dB	-5.40dB	-20.3dB
Dithered, -90dB	-5.10dB	-13.4dB	-16.8dB
Resolution @ -60dB		-0.29dB	-0.06dB
-80dB		-1.43dB	+4.32dB
-90dB		+5.13dB	-11.25dB
-95dB		+5.25dB	+11.90dB
-100dB		+5.65dB	
Peak Output Level, L		1.842V	
R		1.841V	
Relative Output Level		-0.72dB	
Output Impedance		2.23kohm	
Radio Frequency Spurious		25.8mV@34MHz	
1Hz Noise Modulation		+22.2dB	
CCIR IMD, 0dB		-56.9dB	
Suppression of stop-band IMD		21.2dB	
De-emphasis Accuracy, 1kHz		-0.16dB	
5kHz		-0.73dB	
16kHz		-0.09dB	
S/N Ratio (A-wtd), w emp, 0LSB			106.1dB
w/o emp, 0LSB			104.2dB
w/o emp, 1LSB			105.3dB
Digital Output			Opt/Coax.
Crystal Clock Accuracy			-188.8ppm
Track Access Time (99)			6secs
Typical Retail Price			£230



The Sound Organisation

Sale starts
saturday
26th oct
for 2 weeks

London the moving sale
10%-35% off all demonstration stock

TURNTABLES ETC: Linn LP12, Lingo - £1049, Linn Ekos - £949, Linn Troika - £550, Roksan Xerxes - £595, Roksan Artemiz & Shiraz - £995, CD PLAYERS: Woodside (Radford) WS2 - £895, Micromega CDF1 Classic - £895 (s/hand), Micromega Logic - £449, AMPLIFIERS: Creek CAS4040II - £179, Exposure XV - £559, Naim NAC62, NAP140 - £895, SPEAKERS: Epos ES14 - £425, Ruark Talisman Active - £575, Naim SBL - £1195 Plus lots more of everything. All sale items are ex-demo or good condition used ■■■

4 Pickfords Wharf,
Clink Street,
London,
SE1 9DG.
071 403 2255

THE MFA MAGUS



If you are looking for a pre-amp without compromise in the lower price bracket of the high end, look no further. The performance of the magus is well in advance of many other pre-amps at twice the price.

Couple the Magus with:---

Lumley Reference

Valve power amplifiers

Basis Graham Shinon

turntable arm & cartridge

Diamond Acoustics

loudspeakers

And you have an unbeatable system in its price range.

Write or phone for stockists and more information.

CHORD. CARY. ACOUSTAT. CONVERGENT AUDIO TECHNOLOGY. FORSELL COGAN/HALL. TESSERAC. MAS. METAXAS. NRG. MAGLINK. CARDAS

REFERENCE IMPORTS

0435 868004 Phone



Pine Ridge, Sandy Cross,
Heathfield,
Sussex TN21 8BS
0435 864481 Fax

Denon DCD-1460

HAYDEN LABS LTD, HAYDEN HOUSE, CHILTERN HILL,
CHALFONT ST PETER, BUCKS SL9 9EW. TEL: (0753) 888 447



I am rapidly coming to the conclusion that 'Denon' is Japanese for 'Estate Agent'. A harsh comparison, perhaps, but Denon will insist on boasting of 'Real 20-bit Lambda Super Linear Convertors' even though its players employ various different DACs and support circuitry to achieve, ostensibly, the same ends. So it is with the *DCD-1460*, which actually uses mono 18-bit DACs from Burr Brown in place of the 20-bit DACs from Analogue Devices found in the *DCD-2560*. Yet both players are headlined in a similar fashion.

Anyway, I have no criticism of the player's build quality, nor of its luxurious finish which is on a par with similarly priced models from Philips and Sony. Operationally it's very straightforward with most of the peripheral facilities like direct track access, random, repeat and program play concealed beneath a pull-down flap.

The volume control is motorised and feeds both the variable and headphone outputs, even though the fade-in and fade-out option is performed digitally. This ties up with the player's comprehensive tape editing feature, which rearranges the track order to suit tape length (pick and time edit) while also combining one CD with another (link function).

Inside the player, however, there are a wealth of ICs designed to implement Denon's 18-bit + 2-bit DAC, offset correction scheme and proprietary filtering. The end result is a player that is considerably more complex - and presumably more expensive to produce than a modern bitstream design.

Lab report

One thing you can say about these multibit players is they do have a decent signal-to-noise ratio, achieving 108dB (A-wtd) without resorting to the digital trickery of a Sony or Technics DAC. Denon has also taken the trouble to adjust the MSB and hence the linearity of this particular ma-

chine, which offers a respectable error margin of just +1.3dB at 1kHz and -1.5dB at 20kHz.

On the other hand, it suffers a huge +14.4dB 1Hz noise modulation as a result of its multibit DAC - a decent PDM DAC will trounce this performance. A poorer eight times oversampling filter (compared to the *DCD-2560*) shows in the extended stop-band images (V-patterns) on the 3D plot. Distortion on the -70dB plot is also more extensive while any ultrasonic filtering seems quite mild.

Sound quality

Halfway through the listening one of our more astute panellists remarked, quite casually, that this sounded 'just like a CD player'. What he meant, it transpired, was that though the machine was doing nothing obviously wrong, neither was it doing much to inspire the imagination. Certainly this player has a rather unemotional, almost detached view of events, simply going through the motions but rarely betraying much enthusiasm for the task.

Technically, however, it has a smooth and very even tonal balance that suits simple vocal recordings down to the ground. Here it can sound surprisingly expressive even if the overwhelming character of the player is one that generally lacks atmosphere, depth and involvement. Furthermore, it hardened up slightly with our rock and pop selection, losing the composure it had demonstrated with simpler passages.

Conclusion

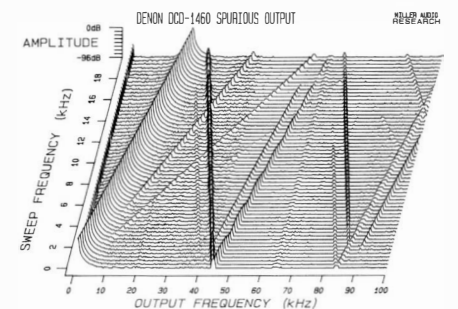
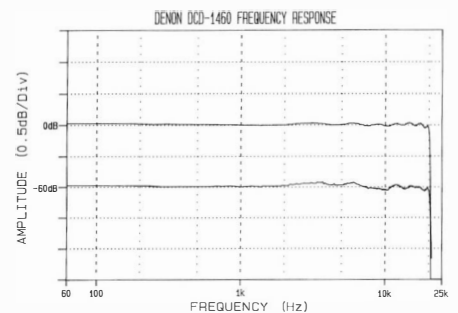
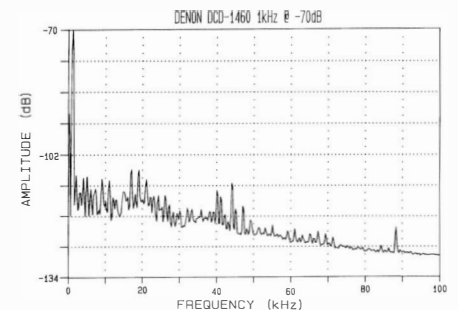
All in all, this is a chunky and well-equipped machine, if one that's hamstrung by unnecessarily complex electronics and cheap components in crucial areas. It really does seem that Denon is making a rod for its own back by pursuing this costly '20-bit' scheme down to lower and lower price points.

If Denon has a genuine phobia about

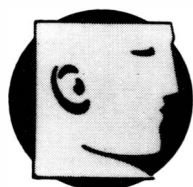
'going bitstream' then perhaps it should ease the transition by employing hybrid multibit/PWM DAC's in future models. After all, that's what NAD decided upon and it didn't do that company any harm.

TEST RESULTS

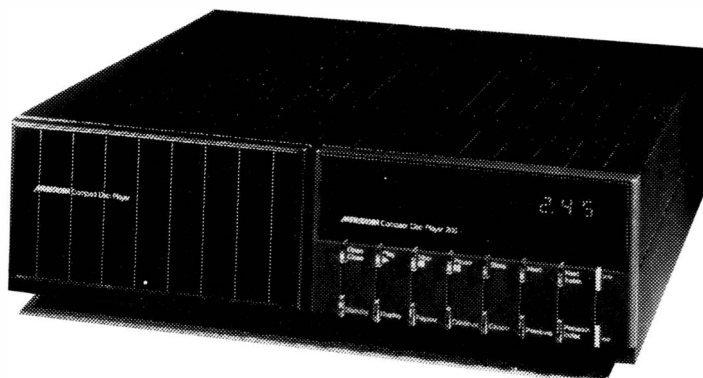
	20Hz	1kHz	20kHz
Channel Balance	0.07dB	0.06dB	0.07dB
Channel Separation	124.7dB	109.6dB	98.3dB
THD vs Level, 0dB	-97.0dB	-94.3dB	-74.3dB
-30dB	-65.9dB	-65.9dB	-73.7dB
-60dB	-39.9dB	-46.6dB	-55.2dB
-80dB	-18.6dB	-22.4dB	-31.9dB
Dithered, -90dB	-16.6dB	-20.1dB	-21.5dB
Resolution @ -60dB	-0.02dB	-0.02dB	-0.04dB
-80dB	-0.62dB	-0.30dB	
-90dB	+0.51dB	+1.09dB	
-95dB	+0.75dB	-1.50dB	
-100dB	+1.28dB		
Peak Output Level, L	1.984V		
R	1.969V		
Relative Output Level	-0.10dB		
Output Impedance	357ohm		
Radio Frequency Spurious	<1mV	broadband	
1Hz Noise Modulation			+14.4dB
CCIR IMD, 0dB			-98.9dB
Suppression of stop-band IMD			46.4dB
De-emphasis Accuracy, 1kHz			+0.04dB
5kHz			+0.03dB
16kHz			-0.22dB
S/N Ratio (A-wtd), w emp, 0LSB			110.0dB
w/o emp, 0LSB			107.5dB
w/o emp, 1LSB			107.5dB
Digital Output			Opt/Coax.
Crystal Clock Accuracy			-38.8ppm
Track Access Time (99)			5secs
Typical Retail Price			£400



Where better to listen than



THE listening rooms



Whether you are simply thinking of buying a new cartridge or, at the other end of the spectrum, listening to the all-digital Meridian systems or other top end sounds, our aim is to always provide the best possible service. The Listening Rooms is one of London's leading specialist Hi-Fi shops, with the principal staff having over thirty years' experience between them.



BOOTHROYD STUART
MERIDIAN

We have two comfortable

Listening Rooms where you can audition Hi-Fi in a relaxed and friendly atmosphere.

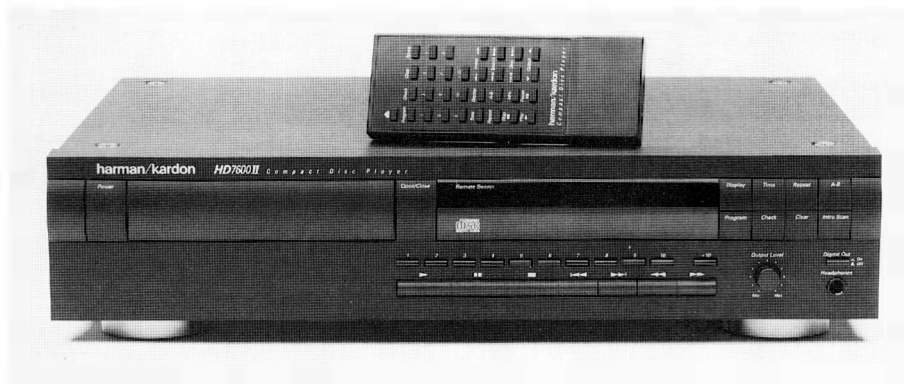
The Listening Rooms is also London's leading multi room Hi-Fi specialist and provides a full planning and installation service.

LINN ♦ EPOS ♦ QUAD ♦ ARCAM ♦ MUSICAL FIDELITY
CELESTION ♦ SME ♦ MISSION ♦ MERIDIAN ♦ MARTIN
LOGAN ♦ AUDIO RESEARCH ♦ DUAL ♦ MARANTZ
YAMAHA ♦ DENON ♦ NAKAMICHI ♦ ACOUSTIC ENERGY
♦ SD ♦ SONUS FABER ♦ KOETSU ♦ APOGEE
GOLDMUND ♦ KISEKI ♦ PIONEER ♦ REVOX ♦ ROGERS
MAGNEPLAN ♦ MICHELL ♦ DELTEC ♦ STAX ♦ KRELL
TANNOY ♦ MICROMEGA ♦ AUDIOLAB ♦ PINK TRIANGLE
SYSTEMDEK ♦ WADIA ♦ BB AUDIO ♦ AUDIO PLAN ♦ ETC

THE LISTENING ROOMS LTD.,
161 OLD BROMPTON ROAD, LONDON SW5 0LJ.
TEL: 071-244 7750/59. FAX: 071-370 0192.
VISA ACCESS · AMERICAN EXPRESS
EXPORT AND CREDIT FACILITIES
Monday - Saturday - 10 am - 6 pm
Nearest Tube: Sth Kensington or Gloucester Rd

Harman Kardon HD7600MkII

HARMAN (AUDIO) UK LTD, MILL STREET, SLOUGH,
BERKS SL2 5DD. TEL: (0753) 76911



The HD7600MkII is a powerful object lesson in the fine balance between success and failure in CD player design. A balance that, in this instance, has been spoiled by attempting to dress up a standard HD7500MkII with, ostensibly, the most mundane of extras.

Viewed from the front the HD7600 looks little different from the 7500 that performed so convincingly in issue 95. It shares the same contoured fascia, curved display window and row of direct track access keys. By way of addition HK has also fitted 15-second intro scan and A-B repeat options, though these were always available on the 7500's remote control.

The same volume control pokes clear of the plastic fascia but this is now motorised to facilitate remote adjustment. And then there's the optical and coaxial digital outputs which can now be defeated from the front panel.

Inside, however, the same complex PCB is pressed into service complete with its multiple power supplies, all-discrete analogue stage and bitstream DAC from Technics. But go to pick up the 7600 and you'll quickly discover it's a good three kilos heavier than the 7500. Much of the extra £80, it would seem, has been spent on additional metal slabs bolted to the top and bottom of its chassis!

Lab report

Broadly speaking, the HD7600MkII is a carbon copy of the HD7500MkII, at least as far as the basic measurements are concerned. Distortion hovers between 0.0014-0.022 per cent across the audio band (0dB) and, as is clear from the 3D plot, is principally second harmonic in nature. In fact both the 3D and 1kHz/-70dB plots are indistinguishable from those of the HD7500MkII in issue 95, because both the residual stop-band and ultrasonic noise are characteristic of the MN6471 PWM DAC. Even the -60dB frequency response shows its customary glitch around 10kHz.

Otherwise there are subtle differences. RF interference, for instance, has about doubled and occurs as a complex AM signal with noise at 67.8MHz (double the clock rate) repeated every 5.6MHz (one-sixth clock rate). Modulation noise is also some three times higher than I would have expected from this MASH/PWM convertor, while the offset (real) signal-to-noise ratio staggers in at a poor 99dB (A-wtd). And subtle influences like these may well be sufficient to change the basic 'fingerprint' of a CD player.

Sound quality

This player prompted a divergence of opinion among the panel; some listeners found it expressive and exciting while others thought it rather loud and even brash at times. 'Rather like winding up the contrast on a TV set', suggested one of its detractors. There was no denying its dynamic prowess, but two listeners thought it overstated the natural speed and edginess of brass or percussive instruments and, consequently began to wear on their nerves.

The 7600's supporters countered with the suggestion that the Pachelbel ensemble seemed very well integrated, individuals playing sympathetically rather than as disparate elements. The music was integrated and spacious, if not especially transparent. However, the red corner complained of a lack of control and a thin screeching quality that coloured its rendition of the strings. Similarly, brass from Marty Paich's jazz selection had a tendency to shout while Chris Rea's vocals suffered unduly from sibilance.

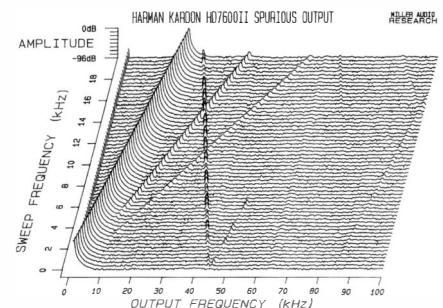
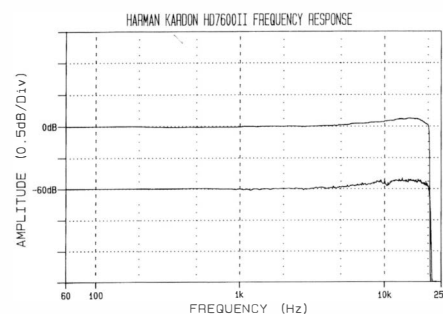
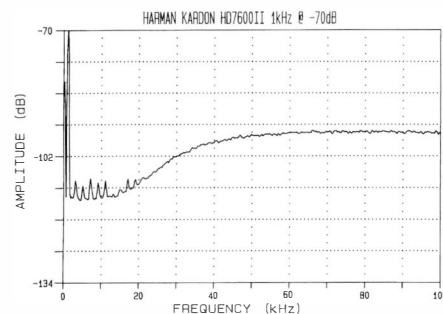
Conclusion

Clearly the presentation of this player is sufficiently mixed to polarise opinion. Consequently, whether you consider it good, bad or indifferent is just a matter of interpretation. Either way it is obviously not the expected success, bearing in mind

the positive reaction enjoyed by the HD7500MkII. If only to be on the safe side, I'd opt for this cheaper version and spend the extra £80 on new CDs.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.00dB	0.00dB	0.11dB
Channel Separation	117.4dB	118.8dB	87.0dB
THD vs Level, 0dB	-96.8dB	-95.3dB	-73.2dB
-30dB	-81.5dB	-76.4dB	-57.2dB
-60dB	-64.2dB	-50.3dB	-30.6dB
-80dB	-28.5dB	-31.4dB	-9.90dB
Dithered, -90dB	-30.6dB	-20.5dB	-1.65dB
Resolution @ -60dB	-0.01dB	-0.01dB	-0.01dB
-80dB	0.00dB	-0.06dB	
-90dB	+0.29dB	-0.12dB	
-95dB	-0.35dB	-1.55dB	
-100dB	-0.15dB		
Peak Output Level, L	2.221V		
R	2.220V		
Relative Output Level	+0.91dB		
Output Impedance	105ohm		
Radio Frequency Spurious	7.8mV @ 5.6MHz	67.8MHz	
1Hz Noise Modulation		+6.2dB	
CCIR IMD, 0dB		-99.2dB	
Suppression of stop-band IMD		83.1dB	
De-emphasis Accuracy, 1kHz		-0.01dB	
5kHz		-0.07dB	
16kHz		+0.01dB	
S/N Ratio (A-wtd), w emp, 0LSB		112.3dB	
w/o emp, 0LSB		109.0dB	
w/o emp, 1LSB		99.0dB	
Digital Output		Opt/Coax.	
Crystal Clock Accuracy		+37.5ppm	
Track Access Time (99)		4.0secs	
Typical Retail Price		£429	



- 2 years guarantee on all hi-fi • 7 Day exchange scheme • Half a million satisfied customers •

Great Hi-Fi Stories... No. 7



Established for 22 years • Music enthusiasts throughout •

The Tramp and the Amp.....

I was in the shop one rainy November day when my colleagues disappeared and I suddenly found myself alone. Looking up, I realised why. Standing in the doorway was a rather smelly tramp.

He asked if he could look around. Assuming he was just sheltering from the weather, I said "Of course, please do." After a few minutes I asked if I could help. He said he wanted to upgrade his turntable and possibly the rest of his system!

Over the next hour I demonstrated combinations of Mission speakers and a Mission CD player, with a Cyrus amp and power supply (frequently going outside for fresh air...). He was impressed. "Can you arrange finance for me, mate?"

Filling out the forms, I was still sceptical.

"What's your occupation Sir?"

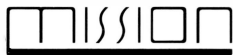
As I handed him a receipt for £3,500 he said: "I'm a refuse collector - sorry, that's why I'm in a bit of a state."

I swore to myself that I would never judge anybody by their appearance again.....

Mission/Cyrus - More to us than meets the eye

Stuart Winder - Audio T, 442-444 Cranbrook Road, Gants Hill, Ilford, Essex Tel: 081-518 0915

• Single speaker demonstration rooms •



and



BASINGSTOKE 4 Feathers Lane Tel: (0256) 24311
 CHELTENHAM 40-42 Albion Street Tel: (0242) 583960
 EDGWARE 173-175 Station Road Tel: 081-952 5535
 ENFIELD 159a Chase Side Tel: 081-367 3132

GANTS HILL 442-444 Cranbrook Road Tel: 081-518 0915
 HAMPSTEAD 190 West End Lane Tel: 071-794 7848
 OXFORD 19 Old High Street Tel: (0865) 65961
 SWINDON 60 Fleet Street Tel: (0793) 538222



Great Hi-Fi Stores

AN EXCLUSIVE



HI-FI DEALER

REFERENCE
POINT

SUPPORTING THE DRIVE FOR PURE SOUND.



Pioneer CD players with Stable Platter Mechanism.

Totally unlike conventional CD players because the disc is supported by a turntable which eliminates vibration and helps provide stable disc rotation. And the result? A natural purity and

clarity of sound reproduction.

Come and hear the difference.

We are a Pioneer Reference Point dealer, selected because of our expertise in hi-fi. We can provide sound advice and an unparalleled level of service.



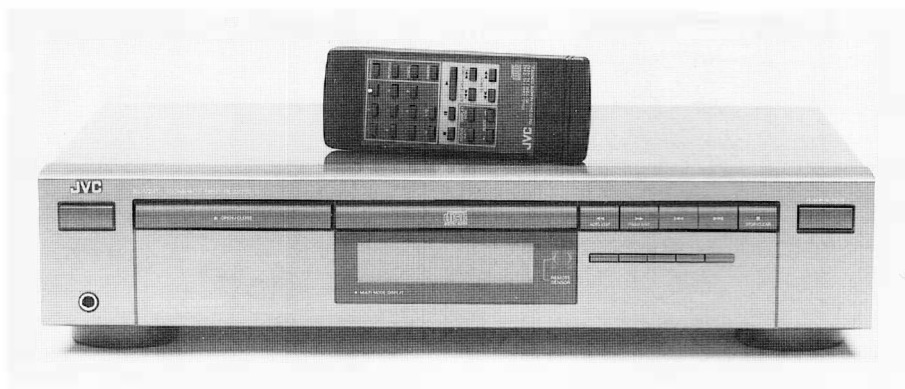
CAMBRIDGE HI-FI LTD

1-3 HAWTHORN WAY, CAMBRIDGE CB4 1AT
 TELEPHONE: 0223 67773 FAX: 0223 353741
 NATIONAL HI-FI DEALER OF THE YEAR - 1987/88

Many other quality Hi-Fi.
 Ample Parking.
 Listening Room.
 For more information call Cambridge Hi-Fi.

JVC XL-V241

JVC (UK) LTD, ELDONWALL TRADING ESTATE, 12 PRIESTLEY WAY, STAPLES CORNER, LONDON NW2 7BA. TEL: (081) 450 3282



As if to reflect the importance of the sub-£200 market, JVC has launched yet another budget CD player. The established XL-V235 is still available for the time being, but for a premium of just £5 the new XL-V241 scores with its centralised drawer mechanism, slick looks, full remote control and - sharp intake of breath - a MkII PEM DAC.

PEM, if you remember, is JVC's version of bitstream, employing two DACs to generate a composite PWM signal from which the final data stream is derived. It's a complex system that enables JVC to get away with using a lower clock frequency than would otherwise be necessary.

Either way this new version (called JCE4501) doubles-up the number of DACs, increases the oversampling from 32 times to 64 times while also seeking to prevent interference between its digital and analogue stages using independent power supplies and clocks. JVC calls this 'Fine Pulse Interface Technology' but in reality it's rather like a bargain-basement K2 interface. (See Z1011 review on page 89 for more information on K2).

None of this is evident from the sleek titanium fascia and orange display, of course. Neither does it have any influence over the various facilities which include a 32 step memory, tape edit, repeat and random play modes. You'll also find a direct track access keypad on the remote together with an index skip facility.

Lab report

JVC has squeezed out lower levels of distortion from its new PEM DAC but the huge (0.16dB) passband ripple and poor 44dB stop-band rejection suggest the oversampling filter has taken a turn for the worse. Compared to the XL-V431, which uses the older 4302 DAC, there is an improvement in THD from 0.54 to 0.26 per cent at -60dB, while resolution stays within tight 0.4dB limits all the way down to -100dB.

The -70dB plot clearly demonstrates how the revised oversampling, noise-shaping and analogue filtering have influenced the pattern of ultrasonic noise which is now some 16-20dB lower than before. Yet this fine result is tempered by a 3D plot which reveals strong stop-band images to the right of the main 20-20kHz sweep. Compare this with the clean plot obtained from the XL-V431 in issue 95. Furthermore the high +7dB noise modulation implies the presence of jitter or an instability in the latest noise-shapers and the crystals could have been selected with greater care, too.

Sound quality

On the whole our listeners thought this was a pleasant enough sounding machine even if it did shake us from our slumber with an occasional hint of sharpness. The bass was neither quite as strong nor as clearly defined as it might have been but, once again, this did not destroy the basic sense of rhythm.

The most peculiar feature of the V241's performance lay in its seemingly random stereo imagery, almost as if the player were guessing where things should sit in the soundstage. As a consequence the overall sound was often both swimmy and exaggerated - not brash or forward, but big and vague. All the panel agreed that this player needed to get a better grip of its music and pull individual instruments back into focus.

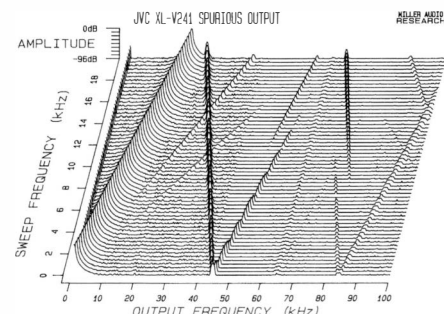
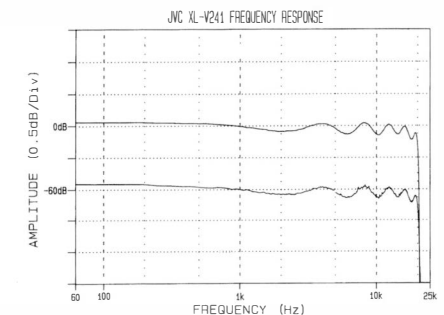
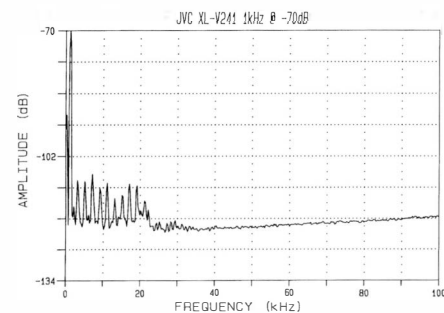
Conclusion

On the technical front, JVC's revised PEM DAC would appear to trade lower distortion for a deterioration in the player's frequency response and stopband rejection. The linearity of the original PEM DAC was beyond reproach anyway, so there's no worthwhile improvement here. Perhaps it's change for change sake, tickling up the digital technology to complement the hi-tech appearance.

Either way, the XL-V241 lacks the crispness, solidity and sheer involvement of the best budget machines. This is a pity because the aesthetics of the XL-V241 are certainly a step in the right direction.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.04dB	0.04dB	0.08dB
Channel Separation	111.6dB	101.5dB	91.7dB
THD vs Level, 0dB	-74.5dB	-100.2dB	-77.7dB
-30dB	-91.4dB	-81.2dB	-79.2dB
-60dB	-49.0dB	-51.6dB	-51.5dB
-80dB	-28.4dB	-28.8dB	-32.7dB
-90dB	-18.4dB	-22.5dB	-24.6dB
Dithered, Resolution @ -60dB	-0.02dB	-0.02dB	-0.03dB
-80dB	+0.31dB	+0.36dB	
-90dB	+0.37dB	+0.22dB	
-95dB	+0.50dB	-0.75dB	
-100dB	+0.26dB		
Peak Output Level, L	1.913V		
R	1.903V		
Relative Output Level	-0.41dB		
Output Impedance	484ohm		
Radio Frequency Spuria	2.7mV @ 8.5MHz		
1Hz Noise Modulation	+7.1dB		
CCIR IMD, 0dB	-95.8dB		
Suppression of stop-band IMD	44.0dB		
De-emphasis Accuracy, 1kHz	-0.01dB		
5kHz	-0.04dB		
16kHz	+0.08dB		
S/N Ratio (A-wtd), w emp, 0LSB	108.6dB		
w/o emp, 0LSB	108.2dB		
w/o emp, 1LSB	107.9dB		
Digital Output	None		
Crystal Clock Accuracy	+168ppm		
Track Access Time (99)	5.5secs		
Typical Retail Price	£160		



- 2 years guarantee on all hi-fi • 7 Day exchange scheme • Half a million satisfied customers •

Great Hi-Fi Stories... No. 3



Established for 22 years • Music enthusiasts throughout •

The Customer is always right (sometimes).....

"I'd like to buy the best double cassette player you've got," he said, striding into the shop. Without hesitation, I recommended the Yamaha KXW900. "What sort of system will you be using it with, sir?" "Oh, the best of course." How stupid of me; I should have known.

My recommendation must have brought out his impulsive side: he said he'd take it straight away. Later that day he phoned.

"That Yamaha cassette player I bought from you - it's not making a sound. My son's an expert on hi-fi, and he can't hear anything either!"

"I'm very sorry to hear that, sir - are you sure the loudspeakers are properly connected?"

"Well, all I know is that the cassette player isn't working..."

"How about the amplifier - is that properly wired up?" He sounded confused by my question. I tried another one.

"Sir, you do have an amplifier and speakers, don't you?"

"Er, no - would that make a difference?"

Yamaha - Hearing is Believing

Jason Moran - Audio T, 173-175 Station Road, Edgware, Middlesex. Tel: 081 952 5535

• Single speaker demonstration rooms •



YAMAHA

at **audio T**

BASINGSTOKE 4 Feathers Lane Tel: (0256) 24311
 CHELTENHAM 40-42 Albion Street Tel: (0242) 583960
 EDGWARE 173-175 Station Road Tel: 081-952 5535
 ENFIELD 159a Chase Side Tel: 081-367 3132

GANTS HILL 442-444 Cranbrook Road Tel: 081-518 0915
 HAMPSTEAD 190 West End Lane Tel: 071-794 7848
 OXFORD 19 Old High Street Tel: (0865) 65961
 SWINDON 60 Fleet Street Tel: (0793) 538222



Great Hi-Fi Stores

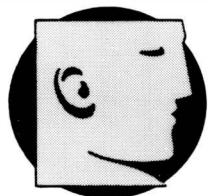
If you live in **S. Kensington, Chelsea, Fulham**, we are your local Hi-Fi specialist. However, if you live in **Surrey, Kent, Berks., Herts. etc** we could be your "local" dealer, since we supply and install systems all over Greater London and Home Counties and even Abroad. **The Listening Rooms** is one of London's leading specialist Hi-Fi shops, with the principal staff having over **thirty years' experience** between them.

We cater for a wide range of budgets and whether you are thinking of buying a new cartridge or a top end system, our aim is to always provide the best possible sound.

We have **two comfortable Listening Rooms** where you can audition Hi-Fi in a relaxed and friendly atmosphere. We offer a full **installation service** and all equipment comes with a **two year warranty**.

The Listening Rooms is also London's **leading multi-room Hi-Fi specialist** and provides a full planning and installation service.

- LINN ♦ EPOS ♦ QUAD ♦ ARCAM
- ♦ CELESTION ♦ MUSICAL FIDELITY
- ♦ S M E MISSION ♦ MERIDIAN ♦
- MARTIN LOGAN ♦ AUDIORESEARCH
- ♦ DUAL ♦ MARANTZ ♦ YAMAHA
- ♦ DENON ♦ NAKAMICHI ♦
- ACOUSTIC ENERGY ♦ SD ♦
- SONUS FABER ♦ KOETSU ♦ APOGEE ♦
- GOLDMUND ♦ KISEKI ♦ REVOX ♦
- ROGERS ♦ MAGNEPLAN ♦ MICHELL
- ♦ DELTEC ♦ STAX ♦ KRELL ♦ TANNOY
- ♦ MICROMEGA ♦ AUDIOLAB ♦
- PINK TRIANGLE ♦ SYSTEMDEK ♦
- WADIA ♦ BB AUDIO ♦ KEF ♦ AUDIO
- PLAN ♦ PIONEER ♦ MONITOR
- AUDIO ♦ AUDIO ALCHEMY ♦ ETC



THE listening
rooms

THE LISTENING ROOMS LTD.,
 161 OLD BROMPTON RD, LONDON, SW5 0LJ.
 TEL: 071-244 7750/59. FAX: 071-370 0192.
 VISA ACCESS AMERICAN EXPRESS
 EXPORT AND CREDIT FACILITIES
 Monday - Saturday - 10am - 6pm
 Nearest Tube: Sth Kensington or Gloucester Rd

JVC XL-Z1011

JVC (UK) LTD, ELDONWALL TRADING ESTATE, 12 PRIESTLEY WAY, STAPLES CORNER, LONDON NW2 7BA. TEL: (081) 450 3282

Recommended



After the disappointment of PEM's latest incarnation we turn our attention to the XL-Z1011, JVC's flagship model which combines K2 with first-generation PEM technology. In terms of features and appearance this heavyweight player is no different from the 18-bit XL-Z1010 it replaces. It conceals direct access, tape edit, program and repeat play facilities behind a pull-down flap, so that when all hatches are battened down the XL-Z1011 is left looking purposeful but uncluttered. You can even switch off the orange display.

Extra features like intro search, fade and index skip are available on a matching remote which also commands a motorised volume control found on the player itself. Faced with this and the sophistication of the technology within, the insubstantial disc tray and lightweight transport mechanism seem a trifle misplaced.

Still, any jitter or noise introduced by these half-hearted mechanics are effectively discarded by JVC's internal K2 interface. This is not a simple re-timing circuit but an optically isolated interface that lies between the signal processor and oversampling filter plus PEM DAC. The K2 identifies and then regenerates the desired digital code without duplicating the interference.

Lab report

In this instance the measured results are consistent with other players using the earlier JCE 4302A DAC with its lower 32 times oversample rate. Resolution is quite superb with minimal errors of just 0.3-0.35dB down to -100dB and a frequency response that tails-off by an equally acceptable 0.25dB at 20kHz. The absence of any ripple here together with the freedom from stopband products on the 3D plot bear testament to the quality of the digital filters.

The K2 interface eases THD down to around 0.009 per cent at -30dB and 0.18 per cent at -60dB though any improve-

ment at higher frequencies is offset by the increase in ultrasonic quantisation noise (see -70dB plot). THD above 1kHz or so is primarily third order, as shown on the 3D plot. Otherwise all is well with moderate levels of RF, an acceptable +4dB noise modulation, a Class One clock accuracy and 'real-life' signal to noise ratio of 106dB. The fixed output impedance is pretty low too, so long interconnects won't cause a problem.

Sound quality

Right from the outset this player proved to be a strong favourite with the listeners, maintaining their interest from one piece of music to the next. This was one time when the musical cycle of Pachelbel's *Canon* seemed especially meaningful, assisted by the unstrained character of the strings and natural vibrancy of the harpsichord. There is an engaging neutrality and transparency about this player that reveals the full richness and colour of instruments without any false emphasis.

The XL-Z1011's music sounds both generous and hearty with a bass that's surprisingly full and rumbustious-entertaining but never contrived. Our panel commented on the vivid spirit of Chris Rea's guitar and the full-blooded resonance of the xylophone from our jazz selection. They also felt the music had a much greater sense of purpose than is common, urged along by a genuinely deep and well-resolved bass.

Conclusion

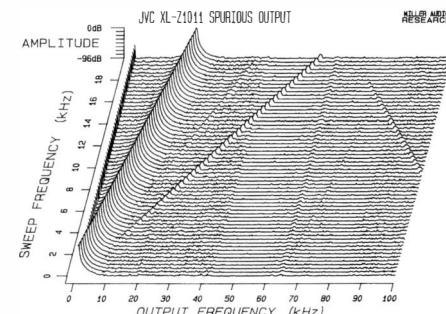
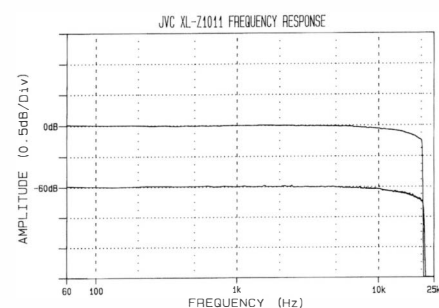
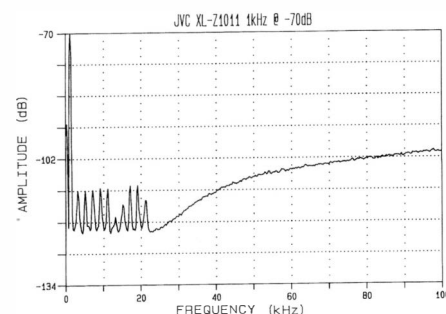
This is certainly the most successful implementation of JVC's original PEM bitstream DAC, which is ironic when you consider that the K2 interface was developed alongside older multibit technology. Nevertheless the XL-Z1011 was applauded by our listeners as a fine all-rounder with no obvious weaknesses.

Crucial to its success is the fact that it enjoys the refinement of other high cost

players while escaping their customary blandness. So anyone who still believes that bitstream players lack pace and dynamics should listen to the XL-Z1011, our costliest Recommendation this issue.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.02dB	0.01dB	0.02dB
Channel Separation	125.9dB	113.9dB	88.5dB
THD vs Level, 0dB	-92.8dB	-101.3dB	-80.0dB
-30dB	-92.5dB	-80.5dB	-66.4dB
-60dB	-57.4dB	-55.0dB	-37.3dB
-80dB	-28.0dB	-35.6dB	-17.8dB
Dithered, Resolution @ -60dB	-18.4dB	-21.3dB	-7.45dB
-80dB		-0.01dB	-0.01dB
-90dB		-0.04dB	-0.03dB
-95dB		-0.31dB	-0.33dB
-100dB		-0.13dB	-0.15dB
Peak Output Level, L		+0.35dB	
R		2.138V	
Relative Output Level		2.142V	
Output Impedance		+0.59dB	
Radio Frequency Spurious		100ohm	
1Hz Noise Modulation		3.6mV @ 65MHz	
CCIR IMD, 0dB			+3.9dB
Suppression of stop-band IMD			-96.9dB
De-emphasis Accuracy, 1kHz			102.0dB
5kHz			+0.04dB
16kHz			+0.01dB
S/N Ratio (A-wtd), w emp, 0LSB			-0.01dB
w/o emp, 0LSB			110.7dB
w/o emp, 1LSB			110.3dB
Digital Output			106.2dB
Crystal Clock Accuracy			Opt/Coax
Track Access Time (99)			+42.5ppm
Typical Retail Price			5.8secs
			£520



CONGRATULATIONS

100th ^{ON YOUR} ISSUE

FROM

KAMLA

MAY WE TAKE THIS OPPORTUNITY TO RAISE ONE OR TWO ISSUES OF OUR OWN...

 **1**

WHY DO SO MANY COWBOYS IN THE WONDERFUL WORLD OF HI-FI TAKE THEMSELVES SO SERIOUSLY?

 **2**

WHY ARE SO MANY HI-FI IMPORTS SO OUTRAGEOUSLY OVERPRICED BY THE COWBOYS THAT REPRESENT THEM?

 **3**

HOW LONG CAN THE INDIANS AT KAMLA KEEP RUNNING THE SAME OLD JOKE?

 **4**

WHY DON'T SOME OF THE 'SPECIALIST' RETAILERS ACTUALLY SELL WHAT THEY REALLY WANT TO - I.E. MODEL STEAM ENGINES

 **5**

WHY DON'T YOU COME IN AND SEE A BRILLIANT RANGE OF HI-FI AND TALK TO SOMEONE WITH A DISTINCT LACK OF COWBOY ATTITUDE

AIR TIGHT . AIWA . AKAI . ALBARRY . ALCHEMIST . ALLISON . ALPHASON . AUDIO INNOVATIONS . AUDIO NOTE . AUDIO TECHNICA . AURA . B&W . CAMBRIDGE . CERWIN VEGA . CONRAD JOHNSON . DCM . FURUKAWA . GOLDRING . HECO . INFINITY . JBL . JEFF ROWLAND . JPW . JVC . KEF . KENWOOD . KUZMA . LINX . MAXELL . MICROMEGA . MITSUBISHI . MONSTER . MORDAUNT SHORT . MOTH . NAKAMICHI . NVA . ORACLE . ORTOFON . PANASONIC . PHILIPS . PIONEER . QED . REVOLVER . ROTEL . ROTHWELL . RUARK . SD ACOUSTICS . SENNHEISER . SHARP . SOUND AUDIO . SOUND ORGANISATION . STANDSIGN . STRAIGHT WIRE . SUPRA . SYSTEMDEK . TARGET . TDK . TEAC . TECHNICS . THATS . THORENS . TOSHIBA . VDH . WHARFEDALE

We shall always endeavour not to be undersold by any authorized dealer of the above products

KAMLA

RUN BY INDIANS — NOT A BUNCH OF COWBOYS

251 Tottenham Court Road, London, W1

Tel: 071-323 2747

OTHER ADS ARE NOT APACHE ON OURS — DISAGREEMENT WILL RESULT IN A SPEAR UP THE REAR.

Kenwood DP-5030

Recommended

TRIO-KENWOOD UK LTD, KENWOOD HOUSE, DWIGHT ROAD, WATFORD, HERTS WD1 8EB. TEL: (0923) 816 444



The Trio-Kenwood Corporation is a comparative latecomer to the bitstream party but its implementation of other people's technology has been a great success so far. Including the £200 DP-5030, I might add, a player that shares the external appearance of the budget DP-4030 with electronics that are culled from the DP-7030.

The 5030's chunky alloy fascia is dominated by a large fluorescent display that covers details of track and time if not indices. In fact, index cueing is about the only major facility missing from this unit. Otherwise you have a broad choice of program, random and repeat play modes, direct track access, peak search and comprehensive tape editing.

You can dim the display, operate the motorised volume control by remote or even store favourite selections from up to 80 CDs in the Disc File memory. Not quite up to Sony standards, it's still a tidy enough package for £200. Interestingly enough, a Sony PLM DAC is used, with particular attention paid to the quality and jitter-performance of the master clock that 'times' each transition of the bitstream DAC.

Lab report

Bearing in mind that Kenwood has adapted Sony's PLM bitstream technology to suit its own ends, comparisons between this and the CDP-591 or CDP-991 are quite revealing. The pattern of distortion and linearity is, broadly speaking, comparable, though the DP-5030 does achieve a 20Hz THD of just 0.00023 per cent; one for the record books, methinks.

Nevertheless there are crucial differences both in the reduction of 1Hz noise modulation to +1.4dB and in the suppression of ultrasonic quantisation noise (see -70dB plot), both courtesy of Kenwood's proprietary Master Clock system.

Other differences are explained by the eight times oversampling filter which

comes from NPC rather than Sony. Hence the V-shaped stop-band images on the 3D plot bear a closer resemblance to Aiwa's XC-900, as does the slight ripple on the frequency response. Other gripes? Well, the DAC's 'cheat mode' is obvious enough from the zero least significant bit signal-to-noise measurements, though the real life figure of just 99.5dB (A-wtd) is actually quite poor for this bitstreamer.

Sound quality

The luxurious, silky-smooth sound of this player had everyone fooled into thinking they were listening to a far costlier beast. But then, that's the beauty of a truly blind listening test. The balance, poise and sense of proportion displayed by this machine quite belies the modest asking price.

In many respects the 5030's sound is mildly understated, yet there's no loss of detail. It successfully disentangled the two violins that play at a very similar pitch through the Pachelbel track, for instance, enabling us to enjoy the subtleties of each instrument without feeling that the music had been pulled mercilessly apart.

Moreover, this player allows the music to flow, so that even our rock selection sounded big and comfortable as the sound swelled in response to dynamic variations within each track. This sense of scale was retained with the jazz track, developing a terrific sense of space. It could sound loud when the music so demanded, but would otherwise maintain a rare sense of composure. Polite but still able to bark, thought our listeners.

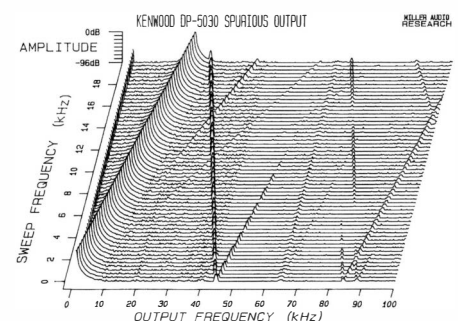
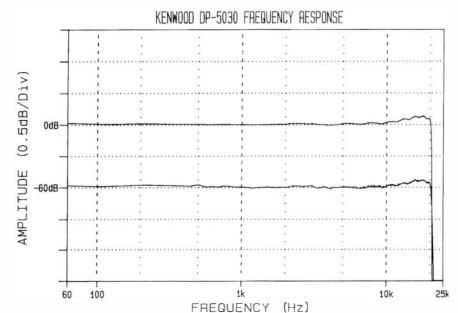
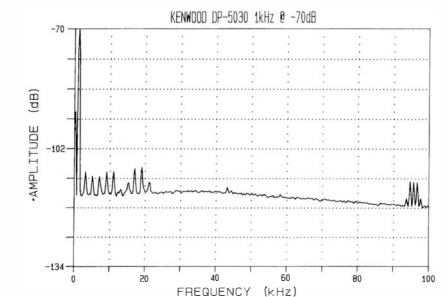
Conclusion

Having already covered Kenwood's other players it's fair to say that the DP-5030 is the most successful of the bunch. Only its occasional reluctance to 'rough it' with the most high-spirited of musical styles separates it from the very best at £200. Nevertheless, the 5030 provides a sound that's disarmingly smooth and detailed -

giving champagne quality at a beer budget price. A whisker short of a Best Buy, it nevertheless deserves the firmest Recommendation.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.42dB	0.43dB	0.30dB
Channel Separation	124.1dB	118.2dB	94.3dB
THD vs Level, 0dB	-112.7dB	-103.1dB	-79.9dB
-30dB	-78.3dB	-78.5dB	-76.7dB
-60dB	-46.1dB	-46.9dB	-49.6dB
-80dB	-26.3dB	-31.4dB	-29.6dB
Dithered, -90dB	-16.7dB	-20.2dB	-20.4dB
Resolution @ -60dB		+0.01dB	-0.03dB
-80dB		+0.27dB	-0.06dB
-90dB		+0.75dB	-0.52dB
-95dB		+1.39dB	+0.90dB
-100dB		+1.15dB	
Peak Output Level, L		2.027V	
R		2.127V	
Relative Output Level		+0.33dB	
Output Impedance		967ohm	
Radio Frequency Spurious		18.7mV @ 45MHz	
1Hz Noise Modulation		+1.4dB	
CCIR IMD, 0dB		-95.5dB	
Suppression of stop-band IMD		61.7dB	
De-emphasis Accuracy, 1kHz		-0.01dB	
5kHz		-0.04dB	
16kHz		+0.11dB	
S/N Ratio (A-wtd), w emp, 0LSB		122.8dB	
w/o emp, 0LSB		122.9dB	
w/o emp, 1LSB		99.5dB	
Digital Output		Optical	
Crystal Clock Accuracy		-5ppm	
Track Access Time (99)		4secs	
Typical Retail Price		£200	



Excellent names, superb sounds.



for “Conceptual” hi-fi call in at

A·U·D·I·O C·O·N·C·E·P·T

081-567 8703

27 BOND STREET · EALING · LONDON W5

Kenwood L-1000D

TRIO-KENWOOD UK LTD, KENWOOD HOUSE, DWIGHT ROAD, WATFORD, HERTS WD1 8EB. TEL: (0923) 816 444



Back in the dim and distant past Trio-Kenwood used to parade its separates in the shadow of a flagship range, the so-called L-OD series. Now the concept has been partly resurrected by Kenwood's deluxe 1000 series of pre and power amp, digital tuner and CD player.

The L-1000D is certainly a luxurious machine which, judging by the diecast fascia and sidecheeks, plus its massive midship transport, could well be worth the £830 asking price. All but the most essential of controls are relegated to a remote handset, preserving the unbroken contours of this sleek heavyweight. It's even possible to douse the attractive yellow displays.

XLR connectors enable the L-1000D to be hooked up to Kenwood's matching preamp and so maintain the balanced topology that extends right through the system. Otherwise the player's conventional unbalanced phonos must be used, which fails to show off this unit to its best advantage.

Either way, this turns out to be a highly sophisticated, and quite probably unique, digital design. For inside Kenwood has chosen to implement two very special integrating 16-bit DACs. These devices are quite unlike any other multibit convertor because they latch each 16-bit word into eight MSBs and eight LSBs which switch-in any combination of 256 quantisation levels up to 255 times per sample period. And with just two times oversampling this demands a crystal clock frequency of 67.7MHz - the fastest clock rate of any CD player, living or dead.

Lab report

As you might expect, this digital puzzle is extremely difficult to execute, its own very individual foibles reflected in the measured performance. The +0.25dB treble boost won't hurt, while the low 35ohm output impedance means it'll easily drive long interconnects. Distortion is low, too,

and particularly so where most modern bitstream players get into trouble: 1.7 per cent at 20kHz and -90dB is almost unheard of these days.

The 108dB signal-to-noise ratio is excellent, linearity pretty good and stop-band noise almost banished (you can see traces popping up across the top of the 3D plot). Nevertheless, it's the leakage of the 88.2kHz oversampling frequency (-85dB) that's most prominent on both the 3D plot and, especially, the 1kHz/-70dB trace. Perhaps Kenwood should employ the services of an in-line notch filter.

Sound quality

Our listeners were initially very impressed with this player, applauding its general clarity and excellent sense of space and depth. It highlighted the faint synthesiser tones that wander across the back of Mary Black's *Columbus* to good effect, prompting one listener to remark on its 'ethereal' quality. Vocals, on the other hand, seemed to lack a sense of integration with the remainder of the music, and this began to pull the fabric of the soundstage apart.

Distracted by this anomaly the panel became a little agitated, suggesting that the player failed to communicate the natural heart and soul of its music. They liked the boldness and architecture of the sound but found it difficult to settle down, relax and enjoy the music for its own sake.

Conclusion

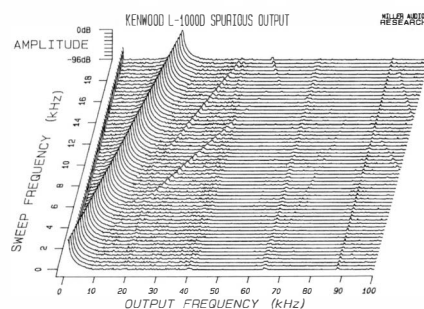
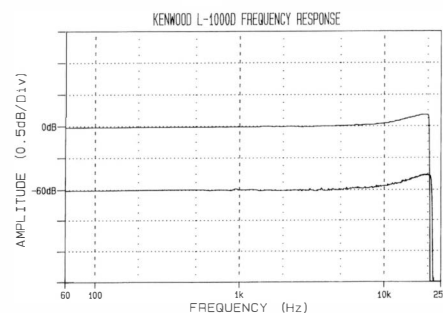
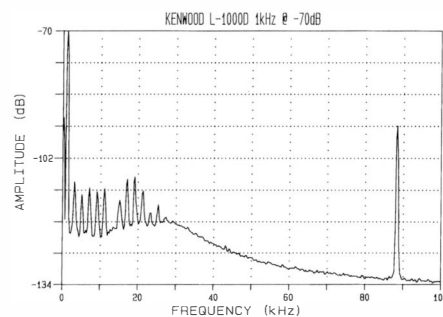
Viewed as a standalone player the L-1000D fails to invoke the sort of powerful, emotive music you might anticipate from such an exquisitely engineered unit. It builds a large sound but one that lacks cohesion, so different instruments go their separate ways and dilute the impact of the whole.

Nevertheless, it is worth remembering the L-1000D is like a fish out of water when separated from its partnering electronics. Auditioned in balanced mode it takes on a whole new lease of life as both

the integration and emotive impact of its music snaps securely into focus. So if you have sufficient funds to go for the entire system then the L-1000D must get my personal endorsement.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.13dB	0.12dB	0.05dB
Channel Separation	134.9dB	119.7dB	103.9dB
THD vs Level, 0dB	-102.8dB	-108.1dB	-83.4dB
	-30dB	-84.7dB	-80.2dB
	-60dB	-53.5dB	-54.4dB
	-80dB	-27.7dB	-31.8dB
Dithered, -90dB	-17.3dB	-20.8dB	-35.2dB
Resolution @ -60dB		+0.04dB	+0.04dB
	-80dB	+0.26dB	+0.51dB
	-90dB	+1.01dB	+1.65dB
	-95dB	+0.95dB	-1.80dB
	-100dB	+0.22dB	
Peak Output Level, L		2.006V	
		2.034V	
		+0.09dB	
Relative Output Level			35.2ohm
Output Impedance			<1mV broadband
Radio Frequency Spurious			+7.3dB
1Hz Noise Modulation			-82.9dB
CCIR IMD, 0dB			100.9dB
Suppression of stop-band IMD			+0.02dB
De-emphasis Accuracy, 1kHz			+0.05dB
			+0.11dB
S/N Ratio (A-wtd), w emp, 0LSB			112.5dB
			108.3dB
			108.3dB
Digital Output			Opt/Coax.
Crystal Clock Accuracy			+45ppm
Track Access Time (99)			2.3secs
Typical Retail Price			£830



THIEL
 GENESIS
 PRIMARE
 MCINTOSH
 ACCUPHASE
 COUNTERPOINT

mpi electronic uk ltd
 wood lane manchester m31 4bp
 tel 061 777 8522 fax 061 777 8533

THE REAL **HI-FI**
Story

Only
 at



J *hi-fi*
Jeffries

69 London Road
 Brighton
 0273 609431

4 Albert Parade
 Green Street
 Eastbourne
 0323 31336

29 London Road
 Portsmouth
 0705 663604

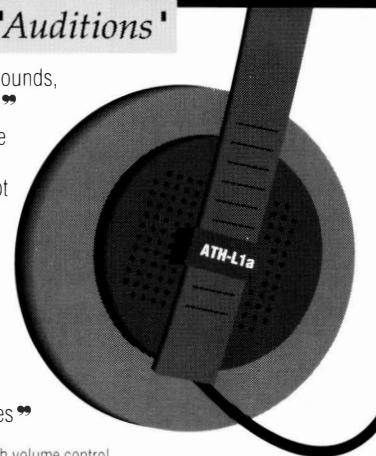
Excellent Listening Facilities
 LATE NIGHT — WEDNESDAY — 8PM
 CLOSED MONDAYS



ATH-L1a

WHAT HI-FI? 'Auditions'

- “This product looks, and sounds, much more than £18-worth”
- “All sorts of nuances in the backing were revealed, but still the ATH-L1a sound kept the whole thing musical”
- “What's more, persistent users will find them light and comfortable enough to withstand the rigours of long term listening”
- “Buy a pair before Audio Technica comes to its senses”



*ATH-L1a/TV - model available with volume control

Technica House, Royal London Trading Estate, Old Lane, Leeds LS11 8AG. Tel: (0532) 771441 Fax: (0532) 704836



audio-technica[®]
 □ INNOVATION □ PRECISION □ INTEGRITY

Marantz CD-52

Best Buy

MARANTZ HI-FI (UK) LTD, KINGSBRIDGE HOUSE, PADBURY OAKS, 575-583 BATH ROAD, LONGFORD, MIDDLESEX UB7 0EH. TEL: (0753) 680 868



Up until now bitstream has been avoided by Marantz. But all that's about to change with this new and trend-setting budget player. The £200 CD-52 is actually one of three new players that all share the same basic circuit design, leaving the CD-62 as an odd-man out in the current range.

Marantz has also taken the trouble to re-style these new players, though the bulbous plastic fascia and contoured drawer of the CD-52 seem to me hardly an improvement on their earlier designs. I also find it irksome having to push the drawer in order to load a CD - why couldn't Marantz duplicate the open/close button found on the remote?

Still, the player is otherwise well equipped, offering no less than two FTS memories, a switchable digital output, full repeat, random and program play modes plus direct track access and tape edit. There's no index cueing nor a variable output, though the headphones socket does have its own manual volume control. If the fluorescent blue display looks familiar, that's because Marantz has pinched it from Philips' latest 6 series players.

Lab report

In contrast with the CD-62, the CD-52 employs an NPC eight times oversampling filter ahead of the SAA7350 DAC. So, though the overall rate remains unchanged at 256 times, this does mean it has avoided the frequency response ripples while also improving the stop-band rejection from a poor 55dB to a slightly less poor 61dB. There's no real improvement in the 100dB signal-to-noise ratio while linearity has taken a downturn with errors of nearly 5dB below -90dB. This is a very disappointing result for the SAA7350 DAC.

Unfortunately the CD-52 also suffers from the same potentially damning levels of ultrasonic noise produced by the CD-62, Arcam Delta 70.3, Philips CD850MkII

and any other player using this DAC at 256 times rather than 384 times oversampling. This is obvious both from the 1kHz/-70dB and 3D plots, while pushing up nominal low-level high frequency distortion beyond 100 per cent.

Sound quality

Having built this player from the ground up, Marantz enjoyed far greater flexibility in engineering its sound than it did with, say, the CD-62. This is reflected in the mellow and decidedly euphonic character, a warmth and richness of tone which filtered through regardless of our selection of music.

On this occasion Mary Black's voice with its sweet, almost husky tone and solidly focused, genuinely believable image had a marked impact on our panel. By the same token our listeners thought its embellishment of strings from the Pachelbel selection was far from neutral, even if the rhythmic interplay between the cellos, violins and harp was beautifully depicted. Technically it is flawed, but on an emotional level it really seems to hit the mark.

There is a veritable pool of richness, a velvety depth that's regularly drawn upon by this player to give the music as much impact as possible. This was particularly evident with our Marty Paich CD where the sax, trumpet and vibes leapt from the speakers with a solid and purposeful sound, not loose or blousy but tactile and confident.

Conclusion

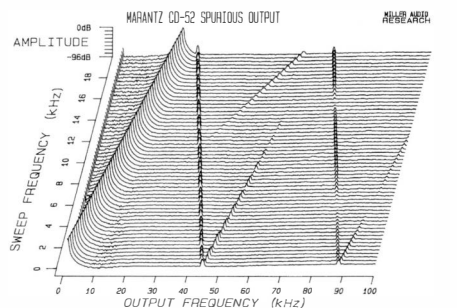
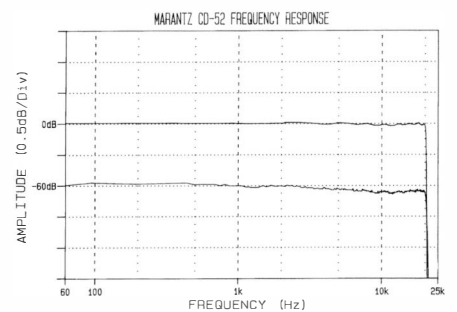
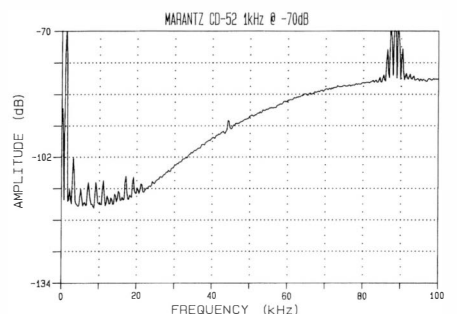
A hearty, full-blooded 'warts and all' presentation, commented one listener who applauded the CD-52 for 'really having a go'.

It doesn't take a genius to realise that Marantz is attempting to recreate the full and gutsy sound of its earlier 16-bit players with the CD-52. And if this player is representative of the up-and-coming CD-

42 and CD-72, Marantz is not only on the right track but can look forward to grasping the reins in the vanguard of the bitstream bandwagon.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.05dB	0.06dB	0.03dB
Channel Separation	108.6dB	106.3dB	87.4dB
THD vs Level, 0dB	-94.7dB	-96.8dB	-70.6dB
-30dB	-72.3dB	-75.0dB	-48.8dB
-60dB	-38.4dB	-42.5dB	-18.6dB
-80dB	-20.5dB	-25.7dB	+1.45dB
-90dB	-19.5dB	-10.7dB	+9.95dB
Dithered, -90dB			+0.10dB
Resolution @ -60dB			+0.01dB
-80dB		+1.24dB	+0.33dB
-90dB		+3.56dB	+0.65dB
-95dB		+4.95dB	+3.45dB
-100dB		+4.75dB	
Peak Output Level, L		2.226V	
R		2.211V	
Relative Output Level		+0.90dB	
Output Impedance		207ohm	
Radio Frequency Spuria	19.2mV @ 22.6MHz	113MHz	
1Hz Noise Modulation			+5.5dB
CCIR IMD, 0dB			-95.2dB
Suppression of stop-band IMD			61.4dB
De-emphasis Accuracy, 1kHz			0.00dB
5kHz			+0.01dB
16kHz			-0.01dB
S/N Ratio (A-wtd), w emp, 0LSB			103.6dB
w/o emp, 0LSB			103.3dB
w/o emp, 1LSB			100.5dB
Digital Output			Coaxial
Crystal Clock Accuracy			+45ppm
Track Access Time (99)			4.1secs
Typical Retail Price			£200





Definitely not Carver buyers

When you consider the bewildering array of brands and models available today, it's easy to conclude that all audio equipment is pretty much alike. And you'd be right.

However, unlike other companies, which have felt compelled to constantly release 'me-too' products, Carver has deliberately set out to solve previously unsolvable problems. Problems which can limit your musical enjoyment.

Through painstaking research, innovative circuit engineering – and a deep love of music – Carver have produced totally new technologies and designs which help their products stand out from the mass of electronics on the shelves.

If you're a more discerning hi-fi buyer visit your dealer and demand to see the Carver range – don't accept any woolly excuses.



PRE-AMPLIFIER/TUNER – CT17

Remote control, 5-channel surround sound processor, A/V facilities, Dolby Pro Logic, 20 FM/AM presets

10 DISC CD PLAYER – TLM3600

Remote control, uses pop-in magazines, 18 bit/8x oversampling, 32 track random programming, intro scan, random play

CASSETTE DECK – TD1400

Remote control, Dolby HX Pro and B/C, adjustable bias and tape EQ, MPX FM taping filter, metal tape

MAGNETIC FIELD POWER AMPLIFIER – TFM45

375 watts RMS/channel into 8 ohms, 20-20KHz with no more than 0.5% THD, dual analogue power meters

UNIVERSAL REMOTE CONTROL – PRH-1

Single hand held remote will learn functions of other Carver remotes plus your TV, VCR etc., up to 128 functions

CARVER

Sole UK Distributor: HW International, 3-5 Eden Grove, London N7 8EQ. Tel: 071-607 2717

To: HW International, 3-5 Eden Grove, London N7 8EQ. Please send me details of the Carver Hi-Fi Range.

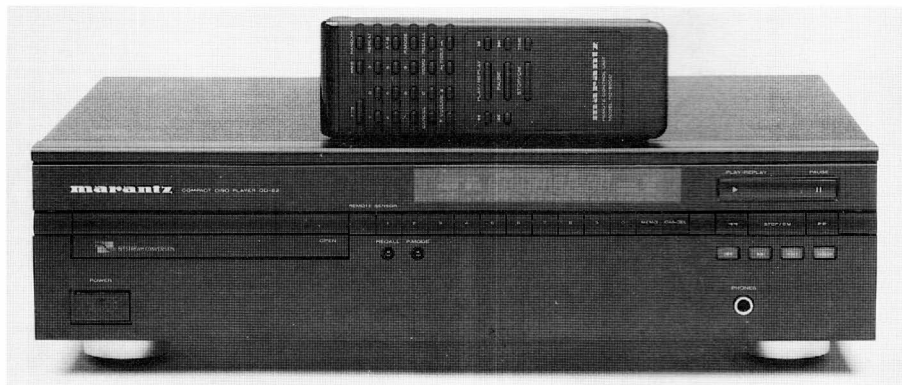
HFC 11/91

Name _____ Address _____ Post Code _____

Marantz CD-62

MARANTZ HI-FI (UK) LTD, KINGSBRIDGE HOUSE, PADBURY OAKS, 575-583 BATH ROAD, LONGFORD, MIDDLESEX UB7 0EH. TEL: (0753) 680 868

Recommended



Take a Philips *CD850MkII*, lose a few of its fancy facilities, equip it with a slightly cheaper version of the *CDM4* transport, plonk the whole thing in an old *CD-50* case and - hey presto - you've got a Marantz *CD-62*. A bit of a cheek, you might think, but then saving £100 on the price of an *850* is not to be sniffed at.

Featurewise of course the *CD-62* is no different to the 16-bit *CD-50*, even if there has been a fundamental upgrade in technology. Single FTS memory and index skip facilities are provided on a remote which also includes Philips' ubiquitous eight step volume control circuit.

In addition there's the customary range of direct track access, program, repeat and random play facilities. A lone coaxial digital output also enables the *CD-62* to be deployed as a CD transport at some later date.

Marantz has tried to make the best of the Philips building blocks by tinkering with the op-amps that form the heart of the post-DAC filter. So, out go the Motorola *LM833Ns* to be replaced by Signetics *NE5532s* which account for the slightly warmer and more rounded character.

Lab report

Changing the type and gain of the op-amps has also resulted in minor technical differences between the *CD-62* and *CD850MkII*. For a start, peak output level is some -0.95dB under spec at 1.79V even though the output impedance (206ohms) and frequency response remain unchanged. The response ripple is caused by the initial four times filter, which is also responsible for the relatively poor 55dB rejection of stop-band noise seen on the 3D plot.

Distortion is also a little higher on this model (typically 0.002 instead of 0.0009 per cent), though the wave of ultrasonic noise produced by the *SAA7350* DAC tends to disguise this fact on the 3D plot.

Once again the -70dB plot reveals this huge output of re-quantisation or truncation noise which persists at levels some 15dB above machines using the *SAA7321* DAC and 35dB or more above the best bitstream and multibit players.

The fact that this noise increases so markedly at 256 times rather than 384 times oversampling (cf the Aiwa *XC-700* and *XC-900*, Deltec *Little Bit*, *PDM1* and *PDM2*), suggests an oversight in the design of the *SAA7350* Bit Stream DAC.

Sound quality

Surprisingly enough, our listeners compared this player to the *CD-52* (*Player X* as far as they were concerned) liking the way it retained the music's natural bounce, even if its overall character was less appealing. It seemed rich in balance but oddly contained or gagged, almost as if missing the foremost edge of each note.

Instruments that ordinarily set the pace within a piece of music are faintly smeared, so although the basic rhythm is retained there isn't quite the sense of urgency or speed achieved by other players. In this respect it's a little like the *CD850MkII*, lacking the bite of a truly confident player but still providing a sound that enables individual instruments to pull together in a smooth and even-handed fashion.

The sound is not disparate then, but neither is it a model of clarity.

Conclusion

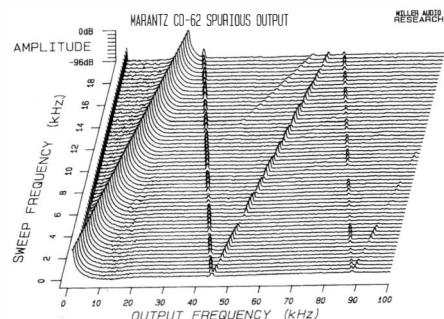
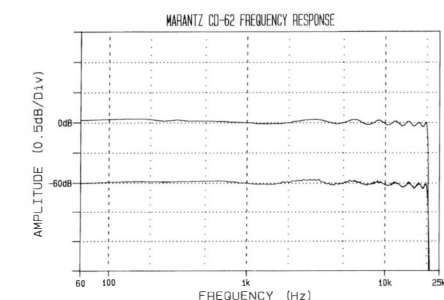
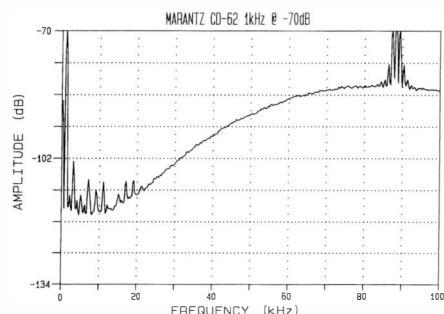
Cobbling together a player from established bits and bobs may make economic sense, but leaves the *CD-62* sitting very uneasily in among the *CD-42*, *52* and *72* - all players that were designed from the ground up by Marantz.

Retaining the old *CD-50* case is hardly an inspiring move either, but the slight sonic advantage over Philips' *CD850MkII* plus the saving of £100 should not go unobserved. So when all is said and done the *CD-62* is not a bad player, simply

undermined by the *CD-52* which does a more convincing job for less dosh.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.03dB	0.03dB	0.04dB
Channel Separation	108.4dB	106.6dB	96.1dB
THD vs Level, 0dB	-96.4dB	-93.4dB	-72.9dB
-30dB	-71.3dB	-71.1dB	-47.9dB
-60dB	-43.3dB	-42.6dB	-20.1dB
-80dB	-20.7dB	-25.3dB	+0.15dB
-90dB	-17.0dB	-18.1dB	+0.16dB
Dithered, Resolution @ -60dB		+0.09dB	+0.01dB
-80dB		+0.76dB	+0.04dB
-90dB		+1.79dB	+0.85dB
-95dB		+1.95dB	+1.25dB
-100dB		+2.45dB	
Peak Output Level, L	1.792V		
R	1.799V		
Relative Output Level	-0.94dB		
Output Impedance	206ohm		
Radio Frequency Spurious	14mV @	45.2MHz	
1Hz Noise Modulation		+1.7dB	
CCIR IMD, 0dB		-95.3dB	
Suppression of stop-band IMD		55.1dB	
De-emphasis Accuracy, 1kHz		0.00dB	
5kHz		0.00dB	
16kHz		-0.03dB	
S/N Ratio (A-wtd), w emp, 0LSB		104.5dB	
w/o emp, 0LSB		100.9dB	
w/o emp, 1LSB		100.7dB	
Digital Output		Coaxial	
Crystal Clock Accuracy		+43.8ppm	
Track Access Time (99)		4secs	
Typical Retail Price		£300	



THE KEF 105/3 TECHNOLOGY OF THE FUTURE ...



... DEDICATION
OF THE PAST.

3 FLOORS – 3 SINGLE SPEAKER DEMONSTRATION ROOMS
3000 SQ FEET IN THE PURSUIT OF HI-FI EXCELLENCE

SELECTED PRODUCTS FROM SELECTED AGENCIES

A & R CAMBRIDGE
ARISTON
AUDIO TECHNICA
BEARD
BOSE
CAMBRIDGE AUDIO
CELESTION
CREEK
DENON
DUAL
EPOS
GOLDRING
FOUNDATION AUDIO
HEYBROOK
INCA TECH
JPW

KEF REFERENCE
LINN PRODUCTS
MARANTZ AUDIO
MAXELL
MISSION
MORDAUNI SHORT
MUSICAL FIDELITY
NAKAMICHI
NAD
NAIM AUDIO
ORTOFON
QED
QUAD
REVOLVER
ROGERS

ROTEL
RUARK
SHURE
SOUND FACTORY
SONIC LINK
SONY ES
SOUND ORGANISATION
SENNHEISER
SYSTEMDEK
TANNOY
TARGET
THORENS
YAMAHA
WHARFEDALE
VAN DEN HUL

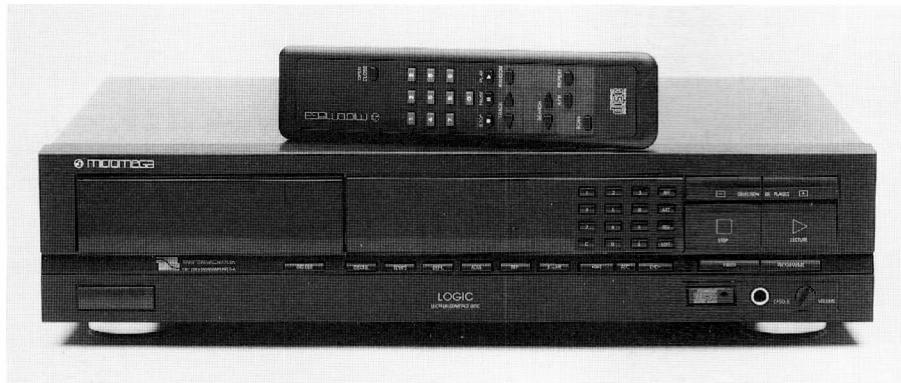


BECAUSE PEOPLE LIKE MUSIC
FRANK HARVEY

163 SPON STREET, COVENTRY CV1 3BB. 0203 525200

Micromega Logic

THE MUSICAL DESIGN COMPANY, PO BOX 13, LONDON, E18 1EG. TEL: (081) 989 0692



Having read a glowing testament to this £500 player way back in August, it was with eager anticipation that I lifted Micromega's 'implementation of bitstream' from its cardboard box. You can imagine my surprise then when I was faced with a re-badged version of Philips' CD624!

For a start the *Logic* uses the same plastic casework and control layout as Philips' CD624, though it has added a smoked front to the drawer to complement the fluorescent display. Micromega has also abandoned Philips' FTS and preset memory facilities, introducing display off (AFF) and a 12dB mute (ATT) by way of recompense.

Standard facilities are retained, though you'll have to decipher the French abbreviations that litter its many buttons. 'Defil', for instance, means intro scan while 'Alea' translates as random play. Inside, Micromega has specified a posh version of the CDM4 transport mechanism that uses a rubber-damped steel plate under the disc tray (in common with the CD850).

Otherwise it uses exactly the same PCB with the same PCF3523 digital output and SAA7310 decoder that you'll find in either the CD618 or CD624. So there's nothing new as far as implementing the SAA7321 DAC is concerned. If this contrasts with what you've read elsewhere, then 'elsewhere' simply isn't all that reliable.

Other tweaks? Well, Micromega pays Philips to fit one per cent rather than 2.5 per cent tolerance caps in the filter network, just as the 'cooking' JRC op-amp is replaced by a Signetics NE5532AN. And all this adds up to an extra £300.

Lab report

Despite claims for improved component selection, any measured differences between the Micromega *Logic* and either the CD618, CD624, CD634 or Marantz CD-41 can be accounted for by normal produc-

tion tolerances. For instance, the 97-98dB signal-to-noise ratio is pretty good but the -3.6dB error in linearity at -95dB (which settles to a fine +0.55dB at -100dB) is less impressive.

The 0dB frequency response suggests a degree of instability at low frequencies too, though below 0dB the pattern of distortion follows its customary trend. Otherwise I'll simply refer you to the results for associated players in this issue and in issue 95.

Sound quality

A big, warm and friendly sound greeted our listeners. A sound that seemed able to carry over contrasts ranging from the delicate flush of strings in Pachelbel's *Canon* to the more robust quality of Chris Rea's *Auberge*. There was not quite the sense of space created by Marantz's CD-52, for instance, but the *Logic*'s overall demeanour seemed similarly rich, warm and pacy.

Broadly speaking, the player seems to match the natural urgency and enthusiasm of the music, though there are times, particularly when the music becomes busier, when this innate sense of bass rhythm begins to die away. Yet it always seeks to provide a bubbly, bouncy sound that refuses to harden-up in the face of the fiercest brass instruments. In this respect the correlation with Philips' CD618 is quite obvious, as both players prompted a similarly up-beat reaction from our listeners.

Conclusion

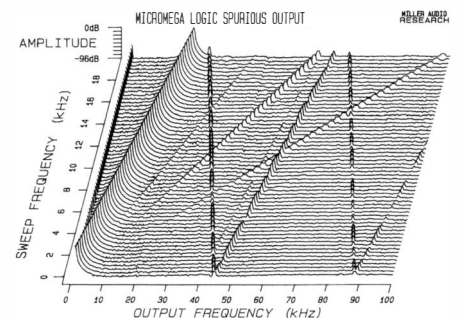
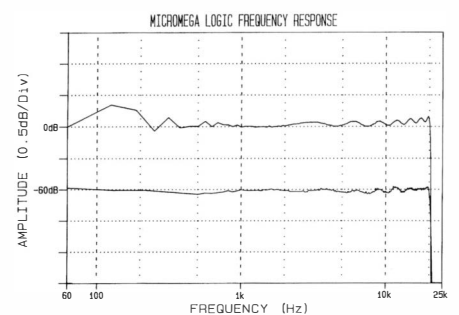
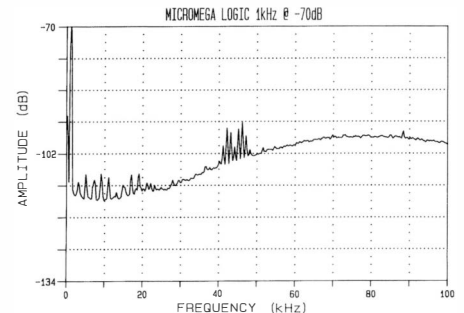
Enthusiastic the panel may have been, but faced with a decision over the player's value it was almost inevitable that the budget CD618 would win through. This is not to denigrate the *Logic*, for it offers a substantial and thoroughly engaging sound, its extra warmth more a product of the Signetics op-amp than anything else. But this alone is insufficient to justify the huge increase in price.

Unfortunately the cost of limited produc-

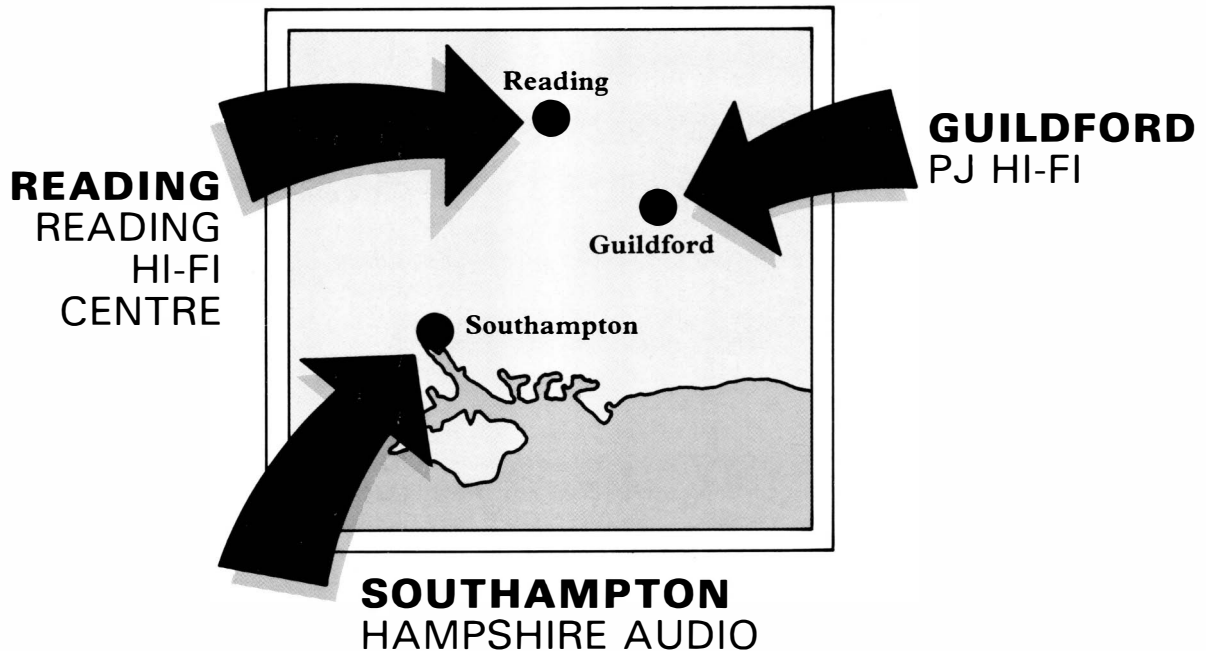
tion runs (despite its Philips heritage), importation and distribution have all taken their toll. So perhaps we'd better wait until 1992 before Micromega has a stab at more realistic pricing.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.13dB	0.14dB	0.13dB
Channel Separation	85.8dB	87.5dB	87.1dB
THD vs Level, 0dB	-93.8dB	-91.3dB	-67.4dB
-30dB	-74.5dB	-72.1dB	-64.0dB
-60dB	-42.6dB	-49.3dB	-32.8dB
-80dB	-16.2dB	-25.2dB	-11.2dB
Dithered, -90dB	-1.55dB	-7.35dB	-2.95dB
Resolution @ -60dB	-0.02dB	-0.02dB	-0.09dB
-80dB	-0.51dB	-0.83dB	
-90dB	-2.50dB	-2.65dB	
-95dB	-3.62dB	-2.05dB	
-100dB	+0.55dB		
Peak Output Level, L	1.850V		
R	1.879V		
Relative Output Level		-0.61dB	
Output Impedance		205ohm	
Radio Frequency Spurious		10.5mV @ 11.3MHz	
1Hz Noise Modulation		+3.9dB	
CCIR IMD, 0dB		-95.7dB	
Suppression of stop-band IMD		55.0dB	
De-emphasis Accuracy, 1kHz		-0.18dB	
5kHz		-0.09dB	
16kHz		+0.12dB	
S/N Ratio (A-wtd), w emp, 0LSB		100.0dB	
w/o emp, 0LSB		98.2dB	
w/o emp, 1LSB		97.0dB	
Digital Output		Coaxial	
Crystal Clock Accuracy		+45ppm	
Track Access Time (99)		4.1secs	
Typical Retail Price		£500	



Your Hi-Fi choice



3 IN THE SOUTH

Each store is a prominent independent BADA member, and offers a minimum of 2 single speaker demonstration studios and 17 years of specialised hi-fi sales and service. The stores are totally independent but share the same enthusiastic dedication and professionalism giving you guidance and unrivalled expertise.



Each store has in common 10 significant quality manufacturers — ARCAM, AUDIOLAB, CELESTION, CREEK, LINN, MERIDIAN, NAKAMICHI, PROAC, QUAD and ROTEL.

Each store offers a selection from KEF, MICHELL, MARANTZ, MUSICAL FIDELITY, REVOLVER and ROGERS but also has its own chosen favourites such as DENON, MONITOR AUDIO, NAD, REGA, REVOX and SONY.



4 Queens Walk, Broad Street Mall,
Reading, Berks. RG1 7QF
Tel: 0734 585463
Opening hours:
Tues-Sat 10am-6pm
Thurs 10am-7pm. (Closed for
lunch 2pm-3pm except Sat)
Open Mondays during December

The Hi-Fi Shop

3 Bridge Street, Guildford,
Surrey, GU1 4RY
Tel: 0483 504801
Opening hours:
Mon-Sat 9am-6pm

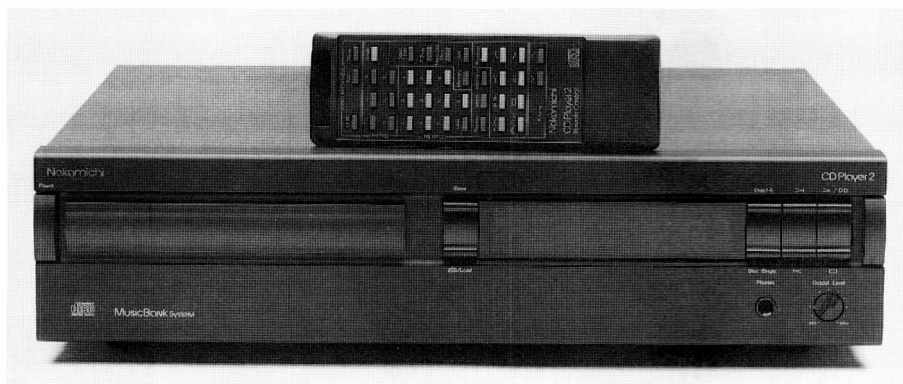
HAMPSHIRE
AUDIO

8-12 Hursley Road,
Chandlers Ford, Hants. SO5 2FU
Tel: 0703 252827 & 265232
Opening hours:
Tues-Sat 10am-6pm
Thurs 10am-8pm. Closed
Mondays except in December.



Nakamichi CD Player 2

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



Our last CD player issue featured Nakamichi's least expensive machine, one of three models to usher in a new and inimitable style. Residing at the top of the range, the £625 *CD Player 2* is no less elegant in appearance though the inclusion of Nakamichi's *Music Bank* system makes it considerably more flexible.

Music Bank is a storage system that stockpiles up to six CDs within the player itself. There's no need for an external cartridge or magazine because each disc is loaded or withdrawn via a conventional single-disc CD mechanism. So, at any one time there can be up to seven discs within the player; six in storage and one in play.

Synchronised recording from any one or combination of discs is possible, assuming you've already got a Nakamichi tape deck, while other features include program, repeat and random play plus a ten second intro scan that covers all seven discs. Most of these facilities, including direct track access, are entrusted to the remote handset which also fires up the player's motorised volume control. This helps the player maintain its unbroken, curvaceous appearance but does make it very reliant on the remote control.

Inside the player there are further developments, as Nakamichi has taken to using a pair of two-channel *PCM1700* 18-bit DACs which, coincidentally, I last remember seeing in a cheap Kenwood multi-player. In this instance, however, one half of the DAC processes a code relating to signals above -24dB while the other is responsible for signals below -24dB. The latter are boosted by four bits to maximise the linearity of the DAC but must be reduced by the same level after conversion before they're added to the output of the other DAC. Talk about making life difficult.

Lab report

This sort of digital jiggery-pokery is all well and good, but it does have its draw-

backs. The performance of the entire system depends on the precise accuracy of its analogue attenuator, as any deviation will manifest as a crossover-like discontinuity in the music waveform. And this, in turn, results in extended odd-order distortions that are likely to be audible. So, on the plus side you've a fine 108dB A-wtd signal-to-noise ratio and excellent steady-state linearity down to -100dB.

On the down side these are still multibit DACs so the 1Hz noise modulation is relatively poor at +8dB. And, as expected, the 3D plot shows a very unusual spray of third, fifth and seventh harmonics amounting to some 0.006-0.01 per cent at 0dB on the L channel. More importantly this player consistently produced THD some 20dB higher (a ten times increase) at all frequencies on the right channel, suggesting the right hand attenuator is very poorly matched.

Sound quality

In spite of all this a quiet, spacious and nicely detailed sound greeted our listeners, a sound that possessed a strong sense of drive and weight and which, in turn, lent most sorts of music a sense of purpose and conviction. Our panel suggested that the music was rarely gummed-up by the busiest sounds, though its presentation could hardly be described as crystal-clear or transparent at the best of times.

Instead, the treble is mollified by a sweet and warm coloration, a softness that blunts the edge and decay of percussive transients but which is uncommonly easy on the ear. Although this player does lack the see-through quality and sheer 'presence' of the best modern bitstreamers, the structure of its music is bonded together very convincingly indeed.

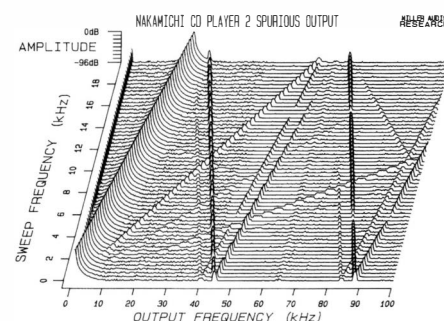
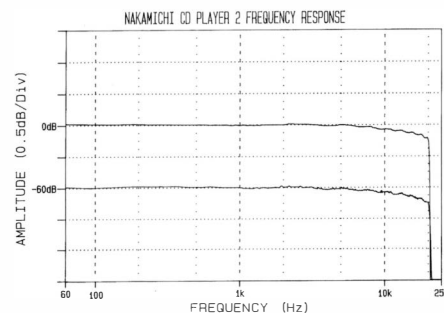
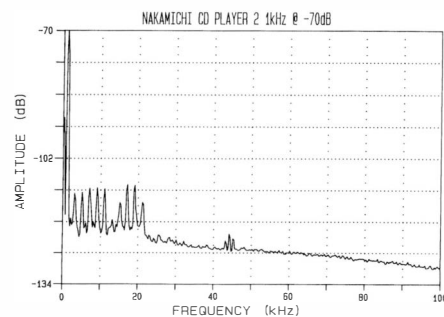
Conclusion

Here at last is a multi-player that is not compromised by a tacky transport mechanism, but at a cost! In this instance it's the

partnering electronics that stamp their mark all over the sound, delivering a syrupy albeit euphonic sound that fails to match the promise of the modern apparel.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.01dB	0.02dB	0.01dB
Channel Separation	110.5dB	104.1dB	79.7dB
THD vs Level, 0dB	-82.0dB	-84.2dB	-79.8dB
-30dB	-81.0dB	-77.6dB	-75.0dB
-60dB	-47.7dB	-46.1dB	-46.6dB
-80dB	-27.7dB	-35.5dB	-25.4dB
Dithered, -90dB	-17.5dB	-23.3dB	-17.9dB
Resolution @ -60dB	0.00dB	0.00dB	0.00dB
-80dB	+0.11dB	+0.13dB	
-90dB	-0.02dB	+0.10dB	
-95dB	+0.02dB	+1.60dB	
-100dB	+0.30dB		
Peak Output Level, L	2.113V		
R	2.109V		
Relative Output Level	+0.47dB		
Output Impedance	627ohm		
Radio Frequency Spurious	13.7mV @ 101MHz	spikes	
1Hz Noise Modulation		+7.8dB	
CCIR IMD, 0dB		-95.6dB	
Suppression of stop-band IMD		61.9dB	
De-emphasis Accuracy, 1kHz		0.00dB	
5kHz		0.00dB	
16kHz		-0.17dB	
S/N Ratio (A-wtd), w emp, 0LSB		108.9dB	
w/o emp, 0LSB		108.7dB	
w/o emp, 1LSB		108.0dB	
Digital Output		Coaxial	
Crystal Clock Accuracy		-206.3ppm	
Track Access Time (99)		3.5secs	
Typical Retail Price		£625	



He should have gone to audio excellence

Buying hi-fi by post is easy – choosing the best system and getting the right sound is another matter entirely – ask Bradley.

At Audio Excellence you can sit in our comfortable listening rooms and choose from a selected range of the world's best hi-fi.

We're neither aloof nor sales mad – we'll simply help you select a system that suits you and your budget. And we'll install it in your living room free, depending on how far you live from your local branch.

You'll find we have a range of essential accessories and an in-house service department.

So don't be like Bradley – experience the music at Audio Excellence.

Hendrix? Sinatra? Beatles?

For collectable secondhand vinyl and re-issues **SPIKE WALTON** at Audio Excellence Records on Cardiff (0222) 664474. We're above the Sony Centre opposite Cardiff Castle.

BRADLEY EXPLAINED TO MR DONALDSON THAT HE DIDN'T KNOW HOW TO SWITCH ON THE WRETCHED SYSTEM.



audio excellence

WHERE THE MUSIC MATTERS

Tuesday - Saturday 9.00 - 5.30 CLOSED MONDAY

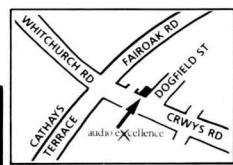


Audio Excellence are leading members of BADA – the British Audio Dealers Association. Audio Excellence have 4 times been voted best dealer in the South West and South Wales in the Sony Hi-Fi News Awards.



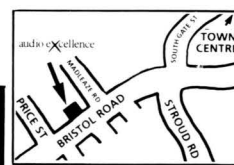
BRISTOL

65 Park Street, Bristol BS1 5PB
Fax (0272) 251327
Telephone (0272) 264975



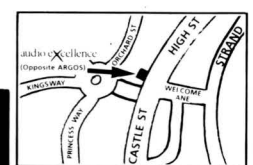
CARDIFF

134/6 Crwys Road, Cardiff
South Glamorgan CF2 4NR
Fax (0222) 398201
Telephone (0222) 228565



GLOUCESTER

58 Bristol Road, Gloucester
Gloucestershire GL1 5SD
Fax (0452) 310680
Telephone (0452) 300046



SWANSEA

9 High Street, Swansea
West Glamorgan SA1 1LE
Fax (0792) 645087
Telephone (0792) 474608

ACOUSTAT, ACOUSTIC ENERGY, ARC, ARCAM, AUDIOLAB, AUDIO RESEARCH, CASTLE, CELESTION, DELTEC, DENON, DUAL, HEYBROOK, KEF, KOETSU, KRELL, LINN, MAGNEPLANAR, MARANTZ, MERIDIAN, MUSICAL FIDELITY, MISSION, NAD, NAKAMICHI, NAIM, PINK TRIANGLE, QUAD, REVOLVER, REVOX, ROTEL, SD ACOUSTICS, SME, SONY, STAX, TANNOY, WHARFEDALE, YAMAHA AND FULL RANGE OF ACCESSORIES.

Philips CD618

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

Recommended



With the introduction of this new sub-£200 Bit Stream CD player, Philips is squeezing out what remains of its 16-bit range. In fact, the equally new £130 CD604, which uses the economy TDA1543 chipset, is likely to be its last multibit player. So in effect the CD618 unseats the popular CD610, advancing its technology and adding extra features for good measure.

In fact this player uses the latest iteration of Philips' CD624 circuit board complete with the same CDM4 transport, power supplies, third generation decoder and SAA7321 Bit Stream DAC. However, and despite the pictures in Philips' brochure, the CD618 does not share the same remote control but features its own, oddly shaped handset. This together with facilities included on the player itself add up to everything the CD624 has to offer, except FTS and preset memories.

Oh yes, the digital output is not switchable in this instance and you'll have to make do with nickel rather than gold-plated phonos. So that's where the extra £30 went . . .

Lab report

If you compare the specs for this player with those of the CD624 in issue 95 you'll find them broadly similar. The -70dB plot highlights the same hump of ultrasonic quantisation noise while the 0dB and -60dB responses suffer the same rippling, courtesy of the DAC's primary four times oversampling filter. This filter is also responsible for the characteristic stop-band products visible on the 3D plot while the DAC itself is held accountable for the strong third and fifth harmonics.

Where differences do exist they can be put down to the tolerance and selection of individual components. So the linearity of the DAC is actually within Philips' upper bracket while the increase in second harmonic at 0dB causes the overall THD to fall from typically 0.0018 to 0.0061 per cent in this instance. Noise modula-

tion is a low +2.3dB (typical for a good PDM DAC) but the final signal-to-noise ratio falls near the lower end of Philips' tolerance at just 95-96dB. Values up to 100dB are possible with the SAA7321.

Sound quality

After the disappointing showing of both Philips' CD624 and CD634, the very positive response of our listeners to the CD618 was an unexpected, if pleasant, surprise. All were impressed by the broad, spacious and unforced sound of a player which was also regarded as having a great sense of stereo depth. Listeners repeatedly remarked on the sense of cohesion and integration which allowed the music to flow in a thoroughly natural and unhurried fashion.

The soundstaging was very broad, although some central performers could seem a little stretched as a result. Other mild criticisms centred on a bass which was not especially full and even slightly lumpy at times. Yet it was the strength and definition of percussion that drew most compliments, especially as this sparkling quality was free of fatiguing coloration. Interestingly enough, one listener compared the player to Micromega's Logic (without knowing the true identity of either machine), suggesting that the CD618 was actually the better of the two.

Conclusion

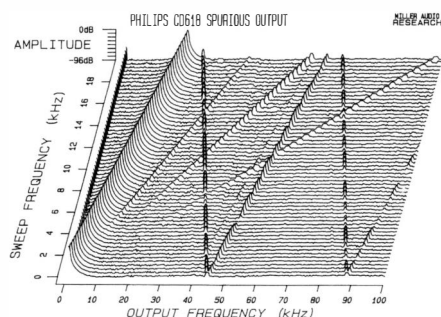
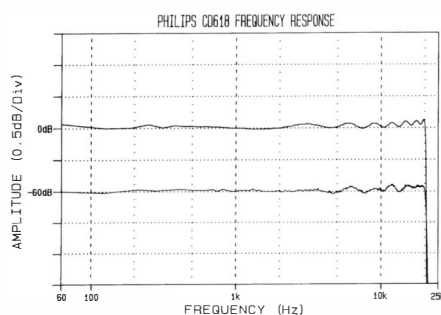
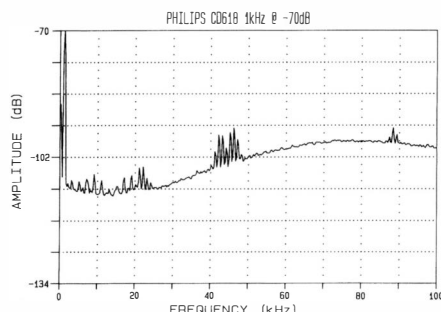
This budget player is no less substantial nor any less swift in operation than either the CD624 or CD634, players which share the same basic configuration. Nevertheless, in its latest guise (iteration three by my reckoning) this Bit Stream circuit offers a worthwhile improvement in sound quality. So much so that the fizzy, enthusiastic sound of the CD618 was judged head and shoulders above either the CD624 or CD634 we reviewed in issue 95.

Assuming these players are also using the latest boards, perhaps they too have

witnessed similar subjective improvements. Either way, this leaves us with Philips' best 7321-based model at the lowest list price, just short of a Best Buy but heartily Recommended.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.07dB	0.08dB	0.08dB
Channel Separation	87.5dB	86.9dB	90.7dB
THD vs Level, 0dB	-83.1dB	-84.3dB	-67.6dB
	-30dB	-70.5dB	-64.4dB
	-60dB	-45.6dB	-46.6dB
	-80dB	-19.8dB	-26.3dB
Dithered, -90dB	-14.6dB	-11.0dB	-6.25dB
Resolution @ -60dB	-0.01dB	-0.01dB	-0.06dB
	-80dB	-0.29dB	-0.05dB
	-90dB	-2.55dB	-0.80dB
	-95dB	-1.50dB	+1.10dB
	-100dB	+1.30dB	
Peak Output Level, L	1.900V		
	R	1.918V	
Relative Output Level		-0.40dB	
Output Impedance		205ohm	
Radio Frequency Spurious		8.1mV @ 11.3MHz	
1Hz Noise Modulation		+2.3dB	
CCIR IMD, 0dB		-83.3dB	
Suppression of stop-band IMD		55.2dB	
De-emphasis Accuracy, 1kHz		-0.18dB	
	5kHz	-0.11dB	
	16kHz	+0.08dB	
S/N Ratio (A-wtd), w emp, 0LSB		97.6dB	
	w/o emp, 0LSB	95.6dB	
	w/o emp, 1LSB	95.7dB	
Digital Output		Coaxial	
Crystal Clock Accuracy		+18.8ppm	
Track Access Time (99)		4.9secs	
Typical Retail Price		£170	





Where you can choose from the best in hi-fi.

MARANTZ, A&R, MUSICAL FIDELITY, SD ACOUSTICS, DUAL, ROTEL, AUDIO TECHNICA, GOLDRING, QED, TARGET, HEYBROOK, KEF, RUARK, WHARFEDALE, ARISTON, ROKSAN, CHORD COMPANY, MOTH, INFINITY, NAKAMICHI, REVOLVER, PINK TRIANGLE, ALLISON ACOUSTICS, DYNAVECTOR, EQUINOX, YAMAHA, PIONEER, SME ... and many more.

A small, friendly Hi-Fi shop, specialising in personal service – home demonstrations and free delivery anywhere within the M25 radius. Personal demonstration room at the shop.

AUDIO CHOICES

66 LEYTONSTONE ROAD, STRATFORD, LONDON E15

TEL: 081-534 6987

OPENING HOURS 10.00 – 7.30

Philips CD850MkII

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

Recommended



Caught napping by the success and potential of its own BitStream technology, it took Philips about a year to really get its corporate act together and create the CD850, a cracking player that gave established contenders like Arcam's *Alpha* a real run for their money at £400.

However, Philips' brochure at the time showed a picture of this player alongside a later-generation chip, the so-called BS DAC or SAA7350. Only now, with the launch of *son-of-850* do we find a player from Philips that does actually use this DAC.

It's pretty obvious that Philips hasn't felt the need for wholesale cosmetic revisions, even if the insides are all brand spanking new. Hence the CD850MkII looks suspiciously like a CD850 with a little gold badge on its drawer. Otherwise you're faced with the same baffling array of features including two FTS memories, full alphanumeric titling, personal presets, shuffle, repeat, program and auto-play, direct track access and the biggest, boldest display you're ever likely to come across.

Remote index cueing and an eight step thick-film hybrid volume control are provided too, plus switchable optical and coaxial digital outputs that make the best of Philips' composite CDM4 mechanism and newish PCF3523 ADOC (audio digital output circuit).

Lab report

Those who are interested in such things might care to look up the Arcam *Delta 70.3* (issue 95) because the CD850MkII is based on the same combination of SAA7310 decoder, SAA7321 (as four times oversampling filter) and SAA7350 PDM DAC. Many of the results are similar, including the huge bump of ultrasonic quantisation noise caused by the 256 times oversampling and third order SSN.

This is obvious enough on the -70dB plot but it also tends to submerge much of

the stop-band detail on the 3D plot taken at peak level. Hence distortion at higher frequencies (0.022 per cent at 0dB rising to 11 per cent at -60dB) is more a measure of noise than anything else. All this grief could so easily have been avoided had Philips run the SAA7350 at 384 times oversampling - the rate for which the chip was originally optimised.

Sound quality

The spacious and even-handed sound of this player contrasts with the poorer integration but crisper and more transparent quality of the original CD850. Our listeners certainly felt that the reproduction of deep and strong bass notes was detailed if not especially rugged or, indeed, memorable.

On the other hand Mary Black's voice was heard to grow convincingly, adding drama, scale and pace to music which might otherwise have lacked a sense of purpose and conviction.

There was the suggestion that percussion, especially with our rock tracks, could sound a little too bright or even strident at times, and vocal sibilance was often emphasised as a knock-on effect. Otherwise the player would seem a model of decorum; indeed in this respect it was judged to be a little superficial.

So although the *850II* was not truly disliked, neither did it have our panel bubbling with enthusiasm. Somewhere along the line the grip and vitality that lent the original CD850 its enthralling character has somehow been lost.

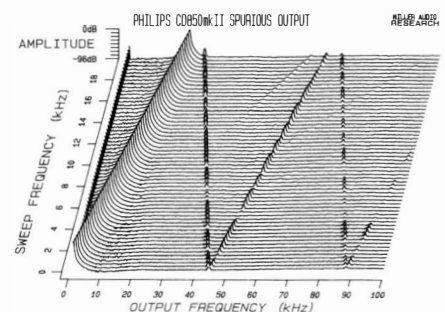
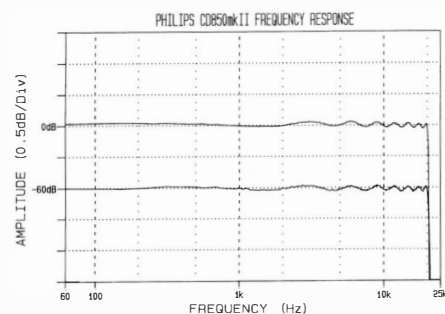
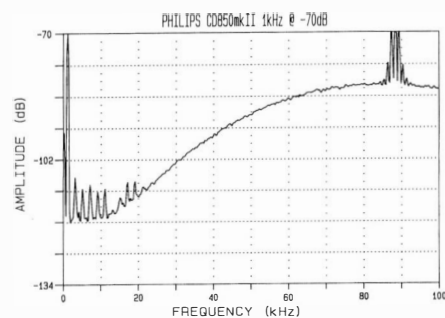
Conclusion

In reality this is no mere revision of the original CD850, but an entirely new player plonked into an old and familiar chassis. Anyone expecting to recognise the sound of the CD850MkII will come away confused, especially as the great splurge of out-of-band noise may well have unforeseen subjective repercussions with differ-

ent amplifiers. Recommended, but really only for old times' sake.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.05dB	0.05dB	0.05dB
Channel Separation	114.5dB	111.5dB	97.2dB
THD vs Level, 0dB	-101.9dB	-101.1dB	-73.0dB
-30dB	-71.4dB	-72.7dB	-50.1dB
-60dB	-52.4dB	-50.0dB	-19.2dB
-80dB	-27.1dB	-34.8dB	-0.55dB
Dithered, -90dB	-17.7dB	-21.0dB	+9.15dB
Resolution @ -60dB	+0.05dB	+0.01dB	+0.01dB
-80dB	+0.25dB	-0.02dB	-0.02dB
-90dB	+0.15dB	+0.09dB	+0.09dB
-95dB	+0.40dB	+0.45dB	+0.45dB
-100dB	+1.15dB		
Peak Output Level, L	1.95V		
R	1.94V		
Relative Output Level	-0.22dB		
Output Impedance	199ohm		
Radio Frequency Spurious		23mV @ 33.9MHz	
1Hz Noise Modulation		+2.6dB	
CCIR IMD, 0dB		-96.1dB	
Suppression of stop-band IMD		55.1dB	
De-emphasis Accuracy, 1kHz		-0.01dB	
5kHz		-0.02dB	
16kHz		+0.04dB	
S/N Ratio (A-wtd), w emp, 0LSB		106.6dB	
w/o emp, 0LSB		101.5dB	
w/o emp, 1LSB		100.3dB	
Digital Output		Opt/Coax	
Crystal Clock Accuracy		+28.8ppm	
Track Access Time (99)		5secs	
Typical Retail Price		£400	



Masterpieces at



Technology moves on and this beautifully crafted horn gramophone has long since become a museum piece. At KJ we have to keep pace with technology and are well established as London's leading audio consultants.

We are always mindful of recommending equipment to customers that represents the best value for money in whatever price area they may be buying. Whether you are interested in a CD player or a complete system KJ can offer the best advice in a friendly and informal atmosphere. What's more we will back it up with demonstrations (preferably by appointment), a two year guarantee and on site after sales service. We can even make it easier for you to afford by way of Interest Free credit.

The Meridian range of audio equipment incorporates the technology of the 90's and represents the pinnacle of British electronics design. Our enthusiasm for Meridian started many years ago when the Company was first formed and our dedication to the brand has remained undiminished. So much so in fact that we are now their number one dealer in England. In this digital age Meridian have much to offer that is both visually attractive and technically in advance of its time.

The Meridian 200 range offers the option of a system format or individual components. As a system you benefit more from the stunning visual impact of Alan Boothroyd's modern design concept, but the stand alone components such as CD players are so outstanding in their own right that they fit quite happily in any high performance system.

MERIDIAN



The 200 range comprises Pre & Power amplifiers, Tuner, Speakers both active and passive, plus a comprehensive range of CD options starting with the new 206B bitstream CD player, the 200 CD transport only, the incredible 203 D/A converter (already a landmark in digital technology), and the 208 CD player which incorporates a pre-amp.

Just recently introduced is the 600 series as "State-of-the-Art" digital design. It comprises a 602 CD transport, paired to the 603 D/A converter with pre-amp control unit or the 606 D/A converter only. These exciting products are just breathtaking; gorgeous to look at and with a performance that simply guarantees instant success.

Come and share our enthusiasm for Meridian, it really is a winner!

INTEREST-FREE CREDIT 0% APR

WHERE TO FIND US



NEW CAVENDISH STREET W1
CITY OF WESTMINSTER

THE BRANDS WE STOCK

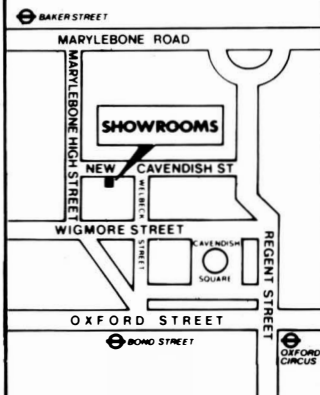
INTEREST FREE CREDIT

On purchases with a minimum value of £750 at our normal prices. Minimum deposit 33.3% and the balance in 12 monthly payments.

Subsidised Credit

Up to 24 months to pay on purchases with a minimum value of £550 at our normal prices. Minimum deposit 10% and the balance in 24 monthly payments. **FLAT RATE 9.9%. APR typically 19%.**

(Written quotations are available on request)



KJ WEST ONE

26 NEW CAVENDISH STREET,
LONDON W1M 7LH

TEL: 071-486 8262/8263

Fax: 071-487 3452

Open: Mon-Sat 10am-6pm
Thurs until 7pm



"Worldwide Export"

- ACOUSTIC ENERGY • ALBARRY • ALEXANDER • APOGEE • ARCAM • AUDIOLAB • AUDIO DIMENSIONS • AUDIOPLAN • AUDIO RESEARCH • BEARD • BRITISH AUDIOPHILE PRODUCTS • CELESTION • CLASSE • COUNTERPOINT • CREEK • CROFT • DAHLQUIST • DELTEC • DENON • DUAL • DYNAVECTOR • EPOS • KEF • KELVIN LABS • KOETSU • KISEKI • KRELL • LECTRON • LEXICON • LINN • LINX • MAGNEPLANAR • MARANTZ • MARTIN LOGAN • MERIDIAN • MICHELL • MICROMEGA • MILLTEK • MISSION CYRUS • MOD SQUAD • MORCH • MOTH • MUSICAL FIDELITY • NAKAMICHI • P.S. AUDIO • PRO-AC • PINK TRIANGLE • QED • QUAD • ROGERS • ROKSAN • ROTEL • SHAN • S.D. ACOUSTICS • S.M.E. • S.P. AUDIO • SONUS FABER • SPENDOR • SYSTEMDEK • TANNY • VOYD • YAMAHA • ZETA

Pioneer PD-7700

PIONEER HIGH FIDELITY (GB) LTD, 1-6 FIELD WAY, GREENFORD, MIDDLESEX UB6 8UZ. TEL: (081) 575 5757

Recommended



Much to the irritation of its competitors, Pioneer is on something of a high at the moment. Indeed, the much publicised success of the A-400 amplifier looks set to be re-enacted by a CD player or two. There are seven new players in total, each equipped with Pioneer's own 1-bit 'Pulseflow' DAC in either a single-ended or differential configuration. The top four players, including the PD-7700 featured here, are also distinguished by Pioneer's 'Stable Platter Mechanism'.

Hit the eject button and a mini-turntable platter, complete with its own little rubber mat, slides into view. The CD is loaded silver-side up while a motor spindle engages the platter from above, driving both platter and disc in unison. Conceptually it's claimed to be a good idea because the increase in rotational inertia plus the added support of the rubber mat will cut down on motor noise and other vibrations that could disturb the disc. On the other hand, this does place added stress on the CLV (constant linear velocity) servos, especially as there's no guarantee that the CD and platter are precisely concentric.

Still, there's a host of other gadgets to keep you busy. A 24-track memory is aided by a direct access keypad while other facilities like repeat and random play, peak search, hi-lite scanning, auto and manual tape editing plus fade-edit modes complete a very comprehensive package. Unfortunately, the digital output is optical only, so we'll never know the true mettle of the player's novel CD transport mechanism.

Lab report

Since Pioneer is deploying its own PD2026A DAC, many of the measurements are very specific. Distortion, for instance, is much lower at 20kHz than it is with other PDM DACs (0.0058 rather than typically 0.03 per cent) though its performance at low and mid frequencies is

on a par with other bitstreamers. The lower HF distortion is evident from the 3D plot as are the V-patterns of innocuous (-64dB) stop-band noise. (You can thank the primary stage of Pioneer's digital filter for this.)

Still, with a composite oversampling rate of 384 times, the PDM DAC operates over a wide 17MHz spectrum so the quantisation noise (see -70dB plot) is better distributed than it would be in, say, a Philips PDM system. In terms of audio signal-to-noise, however, the PD-7700 offers no advantage over an SAA7321-based player. The 0.5dB frequency response dip is unlikely to be inaudible.

Sound quality

All our listeners responded with enthusiasm to the impressive and, ironically enough, very 'stable' sound of this player - a sound that combines drive with an appreciation of the subtlest musical detail. This was not the biggest or most expressive sound to greet our panel, yet it provided a very tight and confident view, free of fatiguing nasties but still very often penetrating and sharply articulate.

Several listeners did recognise a mellow and often sonorous character, yet this simply reflects the satisfying combination of talents that ensure this player is musically involving as well as dynamically impressive.

Indeed, there's an up-beat but very wholesome spirit about the music that maintains a strong grip on reality rather than sounding artificial or typically 'hi-fi'. Compared to its stablemate it does lack stereo depth, but tempers this with a sound that's tighter and more exciting.

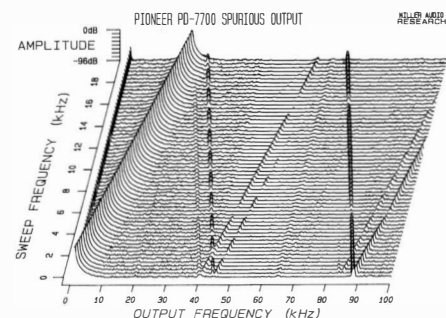
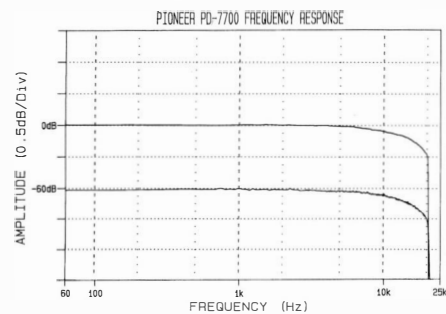
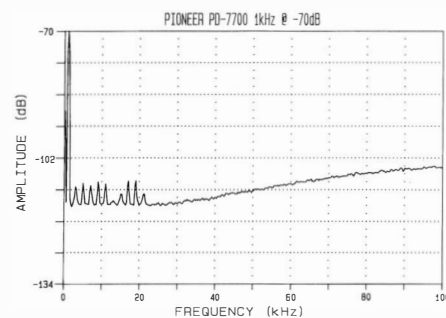
Conclusion

With a keen and lively outlook, Pioneer's PD-7700 will bring an astringent freshness to the dustiest of systems. This it achieves without recourse to a hard or relentless style; it is simply very positive,

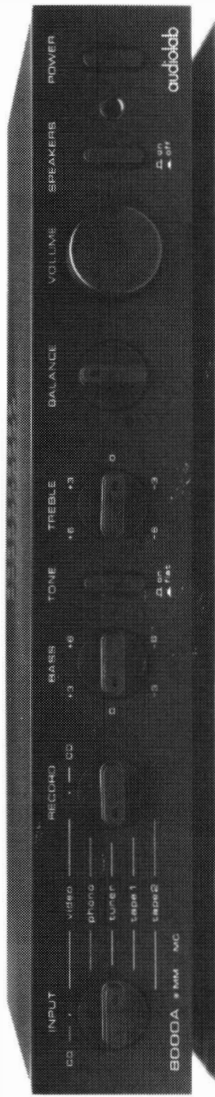
very confident and, all things considered, very good value. Put to the vote our listeners demanded that the PD-7700 be 'seriously Recommended'. So be it.

TEST RESULTS

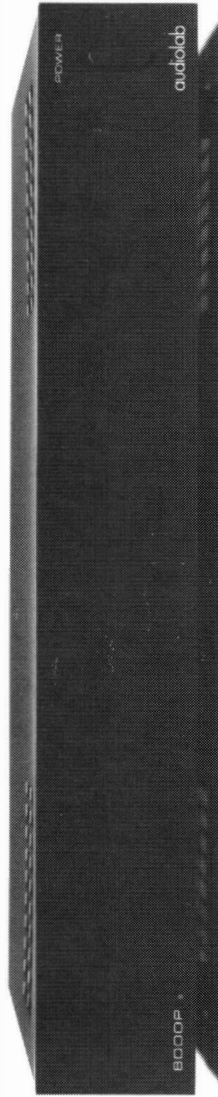
	20Hz	1kHz	20kHz
Channel Balance	0.05dB	0.05dB	0.04dB
Channel Separation	135.2dB	111.3dB	86.3dB
THD vs Level, 0dB	-96.7dB	-96.9dB	-84.7dB
-30dB	-94.8dB	-79.9dB	-70.0dB
-60dB	-56.8dB	-51.2dB	-40.6dB
-80dB	-28.5dB	-30.5dB	-21.2dB
Dithered, -90dB	-18.2dB	-18.6dB	-11.2dB
Resolution @ -60dB		0.00dB	-0.02dB
-80dB		-0.14dB	-0.13dB
-90dB		-0.55dB	-0.65dB
-95dB		-0.35dB	-0.51dB
-100dB		-0.21dB	
Peak Output Level, L		2.023V	
R		2.036V	
Relative Output Level		+0.13dB	
Output Impedance		1.08kohm	
Radio Frequency Spuria		<1mV broadband	
1Hz Noise Modulation		+2.1dB	
CCIR IMD, 0dB		-96.9dB	
Suppression of stop-band IMD		63.8dB	
De-emphasis Accuracy, 1kHz		+0.01dB	
5kHz		-0.02dB	
16kHz		-0.27dB	
S/N Ratio (A-wtd), w emp, 0LSB		120.7dB	
w/o emp, 0LSB		120.7dB	
w/o emp, 1LSB		98.7dB	
Digital Output		Optical	
Crystal Clock Accuracy		+235ppm	
Track Access Time (99)		4.2secs	
Typical Retail Price		£250	



H i - F i t h a t s p e a k s f o r i t s e l f :



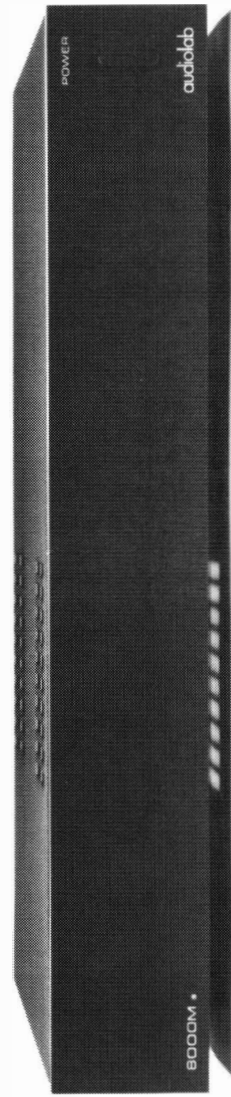
8000A Integrated Amplifier



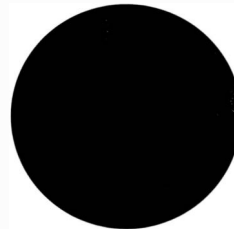
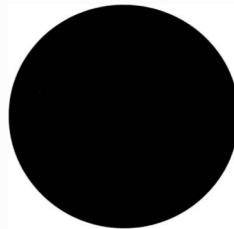
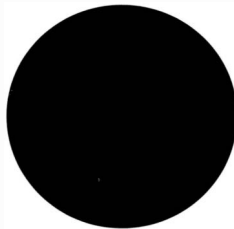
8000P Stereo Power Amplifier



8000C Pre-amplifier



8000M Monoblock Power Amplifier



AUDIOLAB

Pioneer PD-8700

Best Buy

PIONEER HIGH FIDELITY (GB) LTD, 1-6 FIELD WAY, GREENFORD, MIDDLESEX UB6 8UZ. TEL: (081) 575 5757



Surely the only differences between a *PD-8700* and a *PD-7700* are a couple of index skip and auto-fader controls, a timer facility, display 'off' and motorised volume control? Er, no. Because Pioneer has re-equipped this player with separate mains transformers for the digital and analogue circuits, while also isolating the two *PD2026A* DACs and analogue filter stages up onto a separate PCB.

So, even if the *PD-8700* offers little advantage in terms of convenience, these internal revisions have a profound impact on its sound quality. Of course the wealth of widgets that litter the black alloy fascia do little to enhance Pioneer's 'audiophile' pretension. Nevertheless, a pat on the back is deserved for developing its own PDM bitstream DAC. Like Philips' 7320 and 7350 series this is a true 1-bit device, though the use of second order noise-shaping at an elevated 384 times oversampling is closer in execution to Yamaha's rather than Philips' latest devices.

Lab report

With two stereo PDM DACs operating in differential mode, an improved audio network and isolated power supplies, the *PD-8700* stretches the performance of the *PD-7700* in several key areas. For a start, THD is lower, especially at high frequencies where there is also some cancellation of ultrasonic quantisation noise (see -70dB plot). 20kHz Distortion from -30dB to -90dB is consistently 10dB better (3.2:1) than that of the *PD-7700*, itself no mean achiever in this regard.

Stop-band rejection is unchanged because the integral 384 times upsampler is simply not as effective as, say, dedicated filters like the Sony *CXD1244*. Nevertheless there is a slight improvement in the 'real' signal-to-noise ratio of 103dB though, judging by the 0LSB figures of 123-124dB, these PDM DACs also use a 'cheat mode' which switches them off

during measurement.

Linearity is just great, with maximum errors of 0.7dB across the entire band (0 to -100dB); channel separation is fantastic and 1Hz noise mod suitably quashed to just +1.3dB. Gripes? Yes, Pioneer should pay closer attention to the tolerance of its crystals. A +218 to +235ppm error pushes it deep into shoddy Class Two territory.

Sound quality

In spite of my token winge, unanimous praise greeted this player as its thoroughly natural, transparent and engaging sound was voted the best of the day. The midband is especially open and three dimensional, bringing a wonderful sense of solidity and scale to all forms of music. The sheer presence of Mary Black's voice was uncanny, precise and intimately articulate.

This forward but big and inviting sound will build upon the natural acoustic of even the simplest recordings, filling the room with bubbling, sparkling music. Dynamics are handled in an equally engaging fashion, bringing a new dimension to the brass on our jazz track just as Chris Rea's voice seemed to ooze immediacy and character. The music propels the guttural weight and power of Rea's vocals with an enthusiasm that makes other players seem positively lacklustre.

The balance, spaciousness and integration of the strings from Pachelbel's *Canon* was also quite superb, captivating our listeners. Still, there was some dissension over the quality of the bass, for though there was certainly enough of it, not all were convinced of its control or focus. But what do you expect for £300? Perfection?

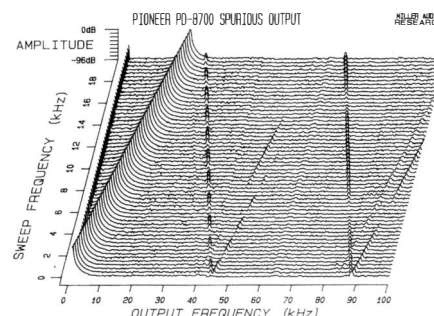
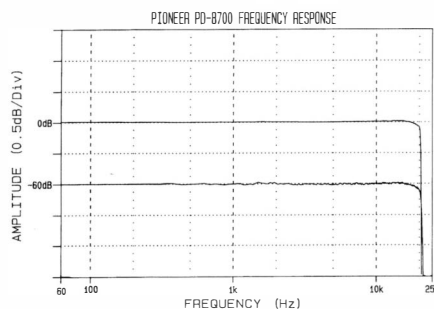
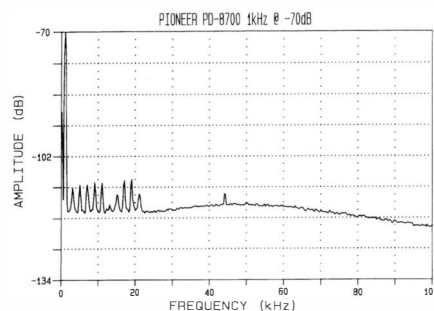
Conclusion

Along with Rotel's new player, this clumsy-looking bitstreamer from Pioneer looks set to stomp all over the competition. The *PD-8700* may not be as pithy as the *PD-7700* nor as uniform as the *RCD-965BX* but, like the very best PDM play-

ers, it has the ability to reach out and send shivers down your spine.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.05dB	0.06dB	0.10dB
Channel Separation	149.4dB	137.5dB	107.4dB
THD vs Level, 0dB	-100.3dB	-100.1dB	-90.5dB
-30dB	-94.6dB	-82.4dB	-78.5dB
-60dB	-56.2dB	-53.8dB	-51.0dB
-80dB	-28.3dB	-32.7dB	-30.7dB
Dithered, -90dB	-18.6dB	-22.3dB	-20.1dB
Resolution @ -60dB	0.00dB	-0.02dB	
-80dB		-0.12dB	
-90dB		-0.54dB	
-95dB		-0.58dB	
100dB		-0.20dB	
Peak Output Level, L	2.359V		
R	2.343V		
Relative Output Level		+1.40dB	
Output Impedance		1.065kohm	
Radio Frequency Spurious		<1mV	broadband
1Hz Noise Modulation			+1.3dB
CCIR IMD, 0dB			-95.7dB
Suppression of stop-band IMD			63.7dB
De-emphasis Accuracy, 1kHz			+0.01dB
5kHz			+0.01dB
16kHz			-0.01dB
S/N Ratio (A-wtd), w emp, 0LSB			123.6dB
w/o emp, 0LSB			124.2dB
w/o emp, 1LSB			102.6dB
Digital Output			Optical
Crystal Clock Accuracy			+217.5ppm
Track Access Time (99)			4.5secs
Typical Retail Price			£300



How To Enjoy Your Hi-Fi For 4 years Absolutely Free!

Active Audio have negotiated an exclusive UK first - a fully underwritten 5 year Buy Back Guarantee Scheme*. For a limited period only, selected items of Hi-Fi from the manufacturers listed below will qualify for a cash refund of

80% of the purchase price at no extra cost. Phone Active Audio now and we will be pleased to discuss your requirements. Our enthusiastic and knowledgeable staff will explain fully how you can take advantage of this unique offer.



SONY	5 YEAR BUY BACK GUARANTEE	AIWA [®]
CELESTION		MISSION ELECTRONICS
PIONEER [®]		KENWOOD Hi-Fi
marantz [®]		NAD
SANSUI		Dual
MUSICAL FIDELITY	YAMAHA	KEF
ARCAM audiophile products from A&R Cambridge	Rogers	DENON
TANNOY	BOOTHROYD STUART MERIDIAN	ROTEL
	-exposure-	RUARK ACOUSTICS LTD.

Full demonstrations and home trial facilities available

*Exclusively designed for quality Hi-Fi products.

Call our hot line for more details **0332 200132**
Or visit one of our branches

Active Audio

BADA WINNERS OF 1990 BEST DEALER AWARD
AS PRESENTED BY BADA CHARGE CARD.

- | | |
|---|--|
| > DERBY. Active Audio, The Spot, Derby.
Telephone: (0332) 380385. Fax: (0332) 371220 | > TAMWORTH. Active Audio, 29 Market Street, Tamworth, Staffs.
Telephone: (0827) 53355. Fax: (0827) 59513. |
| > DERBY. The Stereo Store, 16 Osmaston Rd., The Spot, Derby. Telephone: (0332) 385185. | > HANLEY. Active Audio, 95 Stafford St., Hanley, Staffs.
Telephone: (0782) 214994. |

Rotel RCD-965BX

Best Buy

GAMEPATH, 25 HEATHFIELD, STACEY BUSHES,
MILTON KEYNES MK12 6HR. TEL: (0908) 317 707



Rotel's original RCD-865 whipped up a storm, especially from Philips which was a trifled miffed at someone else pipping it to the post with its own technology! And then there were the golden-eared reviewers who thought bitstream would never amount to much anyway.

We know better now of course, and so do the UK arm of Rotel which has spent the intervening two years working on its replacement - the RCD-965BX. Visually it's hardly a departure from the original, though the satin-black alloy fascia with its clear fluorescent display is a little softer on the eye. Extra features include index skipping which joins traditional track skip, search, repeat, random and program play options. There's a new slimline remote too, an attractive little handset that adds direct track access to the tally of widgets.

Inside it's all change with Philips' new SAA7323 PDM DAC replacing the SAA7320 used before. The 7320 family are all single-ended DACs using a total of 256 times oversampling and second order noise-shaping. Nevertheless the SAA7323, with its 352kHz dither, is much closer in execution to the 7320 than the intermediate 7321.

Meanwhile Rotel has a completely new and wholly symmetrical board layout for this combination of SAA7310 decoder, SAA7323 DAC and analogue filter.

Lab report

This player conforms to accepted standards with a nominal 2V output, though its performance elsewhere is still far from conventional. In particular although the SAA7323 DAC avoids the sporadic high-level idle tones of the SAA7320, various fixed signals, including the CLV reference tone of 7.35kHz, are still present. This drone is visible on the -70dB plot and, naturally enough, compromises the signal-to-noise ratio to the tune of about 5dB or so.

Meanwhile the 3D plot highlights the

third and fifth harmonic distortions that mark the 7320 family while extended hum products can be seen to influence the player's frequency response at low levels. Interestingly, the new 1Hz noise modulation test reveals the 965BX to be the least affected of the group even if figures for linearity and stop-band rejection are far from state of the art.

Sound quality

There was no mistaking the calibre of this player, which was greeted with unanimous applause from our panel. Yet if one over-riding feature of its sound struck our listeners, other than its generally engaging character of course, then this was its sheer poise and elegance in handling all percussive sounds. Whether it was the lone cymbal from Mary Black's *Columbus*, the harpsichord from Pachelbel's *Canon*, or the vibes and percussion from Marty Paich, all possessed an uncommon delicacy and clarity.

This sense of control and integration of even the most complex passages seems almost intuitive, for though the music has a comfortable 'at home' feel, the overall presentation is far from over-civilised or dusty. Our listeners complimented the player for its bubbly but incredibly refined performance, the music sparkling with enthusiasm and vitality but always tempered with a remarkably realistic sense of proportion.

More importantly, although our listeners were duly impressed with its technical proficiency, they were utterly transfixed by the sheer conviction and passion of the music itself.

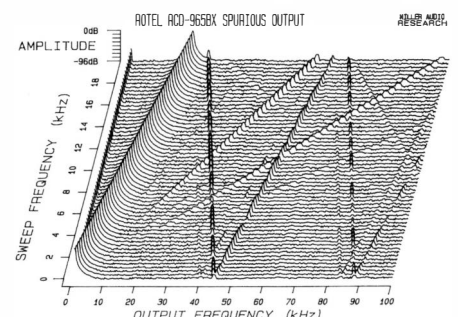
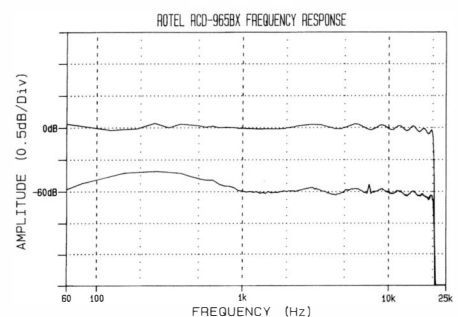
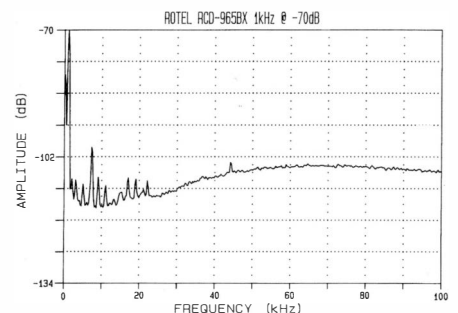
Conclusion

Every group test has its star performer and, this time around, it's Rotel that carries home the honours. The RCD-965BX is a shrewdly balanced player, equipped with a sensible range of facilities, solidly built and engineered to produce the sort

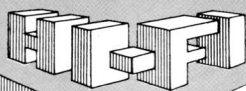
of sound that many high-end products wouldn't have a hope of achieving. This is a Best Buy with knobs on.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.01dB	0.01dB	0.00dB
Channel Separation	92.6dB	101.4dB	96.4dB
THD vs Level, 0dB	-95.5dB	-93.6dB	-70.8dB
-30dB	-79.1dB	-76.7dB	-66.6dB
-60dB	-51.4dB	-47.6dB	-40.1dB
-80dB	-24.2dB	-24.0dB	-17.6dB
Dithered, -90dB	-4.95dB	-11.2dB	-6.25dB
Resolution @ -60dB	-0.07dB	-0.07dB	-0.08dB
-80dB	-0.60dB	-0.83dB	
-90dB	-3.52dB	-3.85dB	
-95dB	-1.62dB	+0.95dB	
-100dB	-1.05dB		
Peak Output Level, L	2.075V		
R	2.077V		
Relative Output Level	+0.32dB		
Output Impedance	208ohm		
Radio Frequency Spurious	2.1mV @	11.3MHz	
1Hz Noise Modulation			+0.91dB
CCIR IMD, 0dB			-95.5dB
Suppression of stop-band IMD			55.2dB
De-emphasis Accuracy, 1kHz			-0.04dB
5kHz			0.00dB
16kHz			-0.01dB
S/N Ratio (A-wtd), w emp, 0LSB			94.3dB
w/o emp, 0LSB			93.1dB
w/o emp, 1LSB			93.6dB
Digital Output			Coaxial
Crystal Clock Accuracy			+8.8ppm
Track Access Time (99)			3secs
Typical Retail Price			£300



RIVERSIDE



Export enquiries welcome

Free delivery UK mainland on orders over £150

RICHMOND'S LOCAL HI-FI SHOP

JUST A SELECTION FROM OUR LARGE RANGE NOW IN STOCK

DIGITAL SOUND FIELD PROCESSORS - YAMAHA

DSPA 1000 (Dolby Prologic) DSP modes	
7-channel, AV amp.....	£799.90
DSPE 300 (DSP Prologic, 5 channel amp)	
.....	£559.90
AVX 700 (Prologic, Surround, 5 channel amp)	
.....	£409.90
YSTSE 10 (Effect speaker, DSPE 30).....	£99.90

REEL TO REEL

Revox B77 II	£1850.00
--------------------	----------

CASSETTE DECKS

Aiwa ADF410.....	£99.90
Aiwa ADWX777.....	£189.90
Denon DRM710A.....	£229.90
Nakamichi 1.....	£699.90
Nakamichi 2.....	£349.90
Nakamichi CR7E.....	£1650.00
Nakamichi RX202E.....	£599.90
Nakamichi RX505E.....	£999.90
Nakamichi Dragon.....	£1850.00
Revox H1.....	£1119.00
Rotel RD965.....	£229.90
Yamaha KX250.....	£149.90
Yamaha KX330.....	£179.90

TUNERS

Arcam Alpha 2.....	£184.90
Denon TU260L.....	£109.90
Denon TU660L.....	£189.90
Meridian 204 Tuner/Timer.....	£609.90
Musical Fidelity T1 MkII.....	£270.00
Quad FM4.....	£399.90
Revox H6 RDS.....	£949.00
Rotel RT950BX.....	£189.90

TURNTABLES

Dual CS505-4.....	£169.90
Michell Syncro/RB250 Arm.....	£399.90
Michell Gyrodec/RB300 Arm.....	£789.90
Rotel RP855.....	£199.90
Systemdek IIX 900/RB250 Arm.....	£282.00
Systemdek IIX E900/RB250 Arm.....	£365.00

SPEAKERS

Arcam Delta 2.....	£339.90
B&W DM600.....	£159.90
BOSE AM5 II.....	£549.90
Castle Durham.....	£259.90
Castle Pembroke II.....	£379.90
Castle Chester.....	£599.90
JPW Sonata.....	£115.00
KEF 103/4.....	£159.90
KEF 104/2.....	£1300.00
KEF 105/3.....	£1995.00
KEF K120.....	£159.90
KEF Q60.....	£379.90
Meridian M30 (Active).....	£914.90
Meridian Argent (Passive).....	£875.00
Monitor Audio MA14.....	£399.90
Musical Fidelity MC2.....	£349.90
Quad ESL63.....	£2072.00
Rogers LS7T.....	£499.90
Spendor LS3/5A.....	£345.00
Spendor S20.....	£500.00
Spendor SP1/2.....	£900.00
Tannoy 611.....	£399.90
Wharfedale Diamond IV.....	£119.90

AMPS

Audio Innovations S500 (Valve).....	£899.90
Arcam Alpha 3.....	£199.90
Arcam Delta 90.2.....	£409.90
Carver CM1090.....	£495.00
Denon PMA350.....	£169.90
Luxman LV107U.....	£759.90
Musical Fidelity B1 II.....	£230.00
Musical Fidelity A1 II.....	£300.00
Musical Fidelity A100 (ex demo).....	£450.00
Musical Fidelity A120.....	£550.00
Marantz PM40SE (modified).....	£239.90
Michaelson Odysseus.....	£1090.00
NAD 3240PE.....	£199.90
Nakamichi AMP2.....	£369.90
Rotel RA920AX.....	£129.90
Rotel RA930AX.....	£159.90

COMPACT DISC PLAYERS

Arcam Alpha CD.....	£419.90
Arcam Delta 70.3.....	£649.90
Arcam Delta 170.....	£619.90
Aiwa XC700.....	£179.90
Marantz CD52SE.....	£199.90
Meridian 203.....	£505.76
Meridian 200.....	£812.30
Meridian 206B.....	£970.00
Micromega Logic.....	£499.90
Micromega Duo.....	£499.90
NAD 5425.....	£199.90
Nakamichi CD4.....	£349.90
Philips CD850 (ex demo).....	£399.90
Quad 66CD.....	£544.90
Rotel RCD955AX.....	£259.90
Rotel RCD965BX.....	£299.90
Yamaha CDX750.....	£249.90
Sony CDP990 (ex demo).....	£250.00

PRE-AMPS

Arcam Delta 110 (Bitstream).....	£719.90
Carver C5.....	£395.00
Meridian 201.....	£710.00
Musical Fidelity Pre-amp 3A.....	£400.00
Musical Fidelity P173.....	£730.00
Quad 34.....	£366.90
Quad 66 with Remote Panel.....	£794.90
Rotel RC960BX.....	£149.90
Rotel RC980BX.....	£259.90

POWER AMPS

Arcam Delta 120.....	£619.90
Carver TFM25.....	£595.00
Hafler XL600.....	£1146.90
Meridian 205 (Mono).....	£510.00
Musical Fidelity P180.....	£900.00
Musical Fidelity P270.2.....	£1500.00
Quad 306.....	£322.90
Quad 606.....	£636.90
Rotel RB960BX.....	£180.00
Rotel RB980BX.....	£340.00

Prices correct at time of going to press.

Many hi-fi accessories also in stock

Now Bang & Olufsen Stockists



Riverside Hi-fi

081-892 7613

or Fax us on: 081-892 7749

RIVERSIDE HI-FI
422 Richmond Rd, East Twickenham,
Midd'x TW1 2EB.

MAIL ORDER COUPON: FREE NEXT DAY DELIVERY U.K. MAINLAND ON ORDERS OVER £150
£8 CARRIAGE CHARGE FOR ORDERS UNDER £150. PLEASE ALLOW 7 DAYS FOR CHEQUE CLEARANCE

Please supply (make & model nos.) _____
 Name _____
 Address _____ Daytime phone _____
 I enclose Cheque £ _____
 or Credit Card No. and Expiry Date _____

Sansui CD-X311MkII

SANSUI UK, 93/95 GLOUCESTER PLACE, LONDON
W1H 3PG. TEL: (071) 487 4844

Recommended



Our last CD player issue saw Sansui's cheapest player, the *CD-X211E*, romping home to a Best Buy. This time we're concentrating on the next model up, which, despite similarities in its styling, is a completely unrelated product. In this instance Sansui has opted for a standard Sony transport with RF, decoder and signal processing ICs from the same stable. Meanwhile the crucial number-crunching is performed by Technics' budget MASH/PWM DAC, even though Sansui refers to this as 'our one bit MASH system'.

The player is no heavyweight but is equipped with a modest range of useful gadgets. There's a 20-track memory that ties in with the music calendar on the main display, while synchronised editing and taping is possible using one of Sansui's matching cassette decks. Otherwise there's a choice of direct track access, music scan, random and repeat play in addition to a couple of volume keys on the accompanying remote. This gives the user fine control over the top 20dB of the player's output, including the headphone socket but not the coaxial digital output.

Lab report

This player might use Sony support ICs and a proprietary analogue stage but it's Technics' *MN6474* PWM DAC that dominates most of the measurements. Once again CCIR intermodulation distortion is a very low -96dB but the third order products clock in at a much higher -71dB. Likewise, THD achieves a minimum of 0.0006 per cent (1kHz, 0dB) but increases to a typical 0.044 per cent by 20kHz.

The second and third harmonics are clear enough on the 3D plot, as is the characteristic streak of stop-band noise: just compare this with Technics' *SL-PG200A*. Sansui has given its player a slight +0.18dB treble boost yet the DAC still produces its customary hiccup at 10-11kHz on the -60dB trace. Nevertheless

its linearity remains a model for other players to emulate.

Differences? Well, Sansui's ultrasonic filtering is not quite so effective (-70dB plot) though RF output is gratifyingly low. The analogue op-amp also produces a lot of third order distortion at 20Hz (typically 0.011 instead of 0.0014 per cent), but at least Sansui has had the good manners to disable the DACs' 'cheat mode', enabling truly representative signal-to-noise measurements to be obtained.

Sound quality

Our listeners praised this player for a lush and involving sound that had weight and warmth even if it did lack 'concrete' solidity. Vocals were generally very clear and expressive while Mary Black's *Columbus* also benefitted from what seemed, subjectively at least, a very quiet background. Similarly our Pachelbel selection was also neatly resolved, capitalising on a fine sense of depth even if the bass did tend to drone slightly.

The music did seem to retain a good sense of structure, enabling us to hear subtle tonal variations in strings, for instance, without there being any added hardness or emphasis. It was particularly free of the hard and edgy colorations that plague the vocal quality of many lesser players. On the other hand there was a fuller and fatter brass sound than with similar MASH-based players while it also tended to sit on higher, timbral harmonics. All this added up to a very pleasant and undemanding sound albeit one that lacks the most incisive detail.

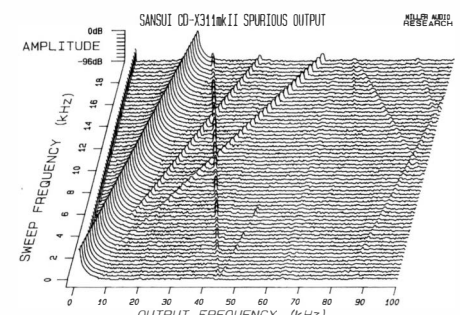
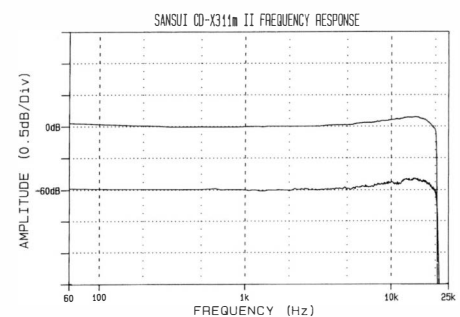
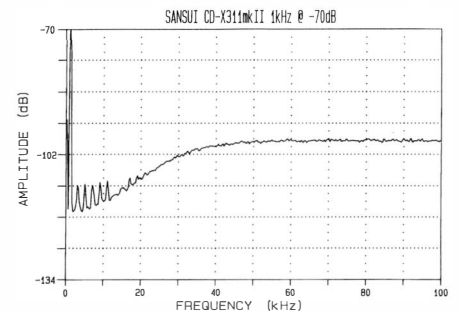
Conclusion

This is not the most accurate or neutral of players, yet its warm and friendly balance struck a chord with our listeners. Because the player doesn't try too hard it never ends up over-stretching itself and this, in the panel's opinion, was a justifiable compromise. Still, the *CD-X311MkII* is not

particularly cheap at £250 and so is unlikely to have the commercial impact of its cheaper stablemate, the *CD-X211E*. A rather cautious Recommendation seems most appropriate.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.08dB	0.08dB	0.17dB
Channel Separation	108.3dB	102.9dB	69.9dB
THD vs Level, 0dB	-79.0dB	-104.3dB	-67.1dB
-30dB	-90.4dB	-81.5dB	-59.3dB
-60dB	-56.7dB	-52.0dB	-33.5dB
-80dB	-28.3dB	-32.0dB	-11.9dB
Dithered, -90dB	-18.2dB	-20.0dB	-4.15dB
Resolution @ -60dB		-0.01dB	-0.01dB
-80dB		+0.03dB	-0.20dB
-90dB		-0.35dB	-0.47dB
-95dB		-0.19dB	-0.48dB
-100dB		-0.08dB	
Peak Output Level, L		2.139V	
R		2.116V	
Relative Output Level		+0.54dB	
Output Impedance		1.403kohm	
Radio Frequency Spurious		2.1mV @	11.3MHz
1Hz Noise Modulation			+3.1dB
CCIR IMD, 0dB			-95.9dB
Suppression of stop-band IMD			83.3dB
De-emphasis Accuracy, 1kHz			+0.11dB
5kHz			+0.05dB
16kHz			-0.15dB
S/N Ratio (A-wtd), w emp, 0LSB			105.7dB
w/o emp, 0LSB			100.6dB
w/o emp, 1LSB			100.2dB
Digital Output			Coaxial
Crystal Clock Accuracy			+48.8ppm
Track Access Time (99)			4.5secs
Typical Retail Price			£250



WHAT'S NEW

AT STEVE BOXSHALL AUDIO...

- Amplifiers - latest by KRELL, AUDIOLAB
- D/A Converters - by DELTEC, AUDIOLAB, THE ENGINE
- Speakers - new range by TANNOY, CELESTION
- Turntable - latest Radius from ROKSAN
- Compact Disc - players from ROTEL, DENON, MARANTZ, YAMAHA

*Call us now to arrange
a demonstration in one of
our listening rooms.*

BRITISH AUDIO DEALERS ASSOCIATION

BADA

THE ULTIMATE IN
SOUND ADVICE

Steve
Boxshall
AUDIO

41 VICTORIA ROAD, CAMBRIDGE. (0223) 68305. FAX 354975

ALL
MAJOR
CREDIT
CARDS
WELCOME

CONFIDENTIAL
FOR YOUR EARS ONLY

24hr
delivery
service
throughout
the UK
TAX-FREE
EXPORT
WORLDWIDE

TEL: 071-233 0774 FAX: 071-233 7226

For Quality Hi-Fi Components Look No More!

We have one of the finest collection of high quality
Hi-Fi Components

Exclusive range:

Carver - David Hafler - Kelvin Lab - Orell - PROAC

ROTEL APPLIANCES ARE ON SPECIAL OFFER

FREE ADVICE, Single Speaker Demo. Room,
After Sales Service, & now the added benefit of;

INTEREST FREE CREDIT

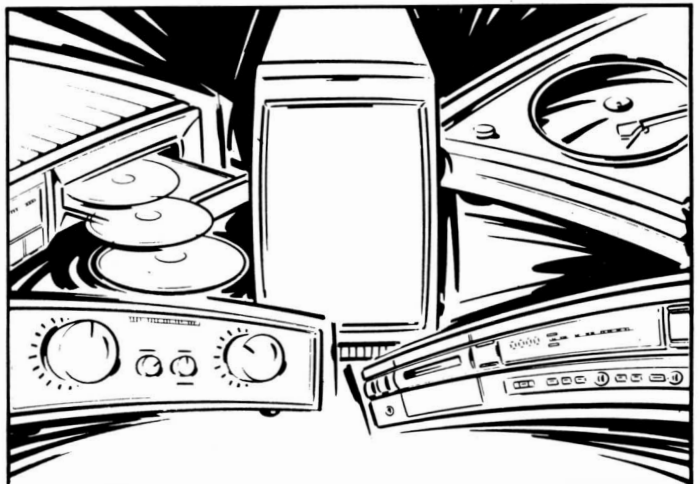
Agencies include:

Albery - Audio Innovations - Ariston - Arcam - ATC - Acoustic Energy - Alphason
- AR - AKG - Audio Technica - B&W - Bose - Creek - Celestion - Carver -
Cambridge - Cerwing Vega - Deltec - Denon - Dynavector - Harman - Heybrook
- Heco - Infinity - JBL - JPW - Luxman - Mark Levinson - Mordaunt Short - Musical
Fidelity - Manticore - Micromega - Monitor Audio - Marantz - NVA - NAD -
Nakamichi - Ortofon - Origin - Live - Proton - Pink Triangle - ProAc - Pioneer - Quad
- Rogers - Rothwell - Rotel - Ruark - Revolver - Sony - Stax - SME - Sennheiser -
SD Acoustics - Shure - Spondor - Systemdek - Tannoy - TEAC - Tascam -
Technics - Throens - Van den Hul - Wharfedale - Yamaha -
and many accessories.

34 Buckingham Palace Road, London SW1W 0RE
(Near Victoria Station)

TEL: 071-233 0774 FAX: 071-233 7226

Opening Hours: Mon-Fri 10-6pm Sat 10-3pm



▶ **THE SOUND
GALLERY** .

MERIDIAN • LINN • NAIM • REGA

ROTEL • CREEK • MORDAUNT

SHORT • DENON • ETC • ETC

▶▶ 0494 531682 ◀◀

65 CASTLE STREET HIGH WYCOMBE BUCKS HP13 6RN.
FAX: 0494 464770

Sony CDP-591

SONY UK LTD, SONY HOUSE, SOUTH STREET, STAINES, MIDDLESEX TW18 4PF. TEL: (0784) 467 000



They don't do things by halves, those Sony people. For this season no fewer than 10 new bitstream players have been launched, priced from £140 to £400. The three players we have here should give you a flavour of the range, beginning with the £160 CDP-591, big brother to the CDP-491 and replacement for the CDP-590.

Styling is based on the previous range, but Sony has engineered a softer all-round appearance, with gentle contours on the banks of controls and front of the CD tray. A comprehensive fluorescent display is situated under the drawer and this covers most of the widgets activated from the front panel. A Just Edit facility fits CD tracks neatly onto any length tape while a Link Mode enables tracks from other discs to be introduced afterwards.

Programming can be extended across a maximum of six CDs at a time while music scan, repeat, peak search, fade and shuffle play fill up the remainder of its black plastic fascia. The icing on Sony's cake, however, is a decent variable output that uses a motorised volume control rather than a cheap digital attenuator. This, in common with most features, comes under the command of a matching remote control.

All this plus a maximum track access time of three seconds adds up to a pretty impressive package. But has sound quality come second in this season's race for convenience?

Lab report

The technical performance of this unit is monopolised by Sony's sophisticated CXD1244 eight times oversampling filter and CXD2552 PLM DAC, so most of the figures tally with those of the CDP-991 and CDP-990 (issue 95). The digital filter all but banishes any stop-band noise so that traces of second and third harmonic distortion are all that remain on the 3D plot.

Similarly, the frequency responses are

free of any rippling while the linearity of the DAC holds true to within 0.37dB at all frequencies - excellent results, at any price. However, Sony has been caught cheating on the signal-to-noise tests as its DAC switches itself off to bring home an artificial range of 122-123dB. Using an offset digital 'zero' reveals a true signal-to-noise ratio of 107dB which, in all honesty, is still more than sufficient.

Sound quality

You could listen to this player for hours without fatigue, suggested one listener, but in the long run it'd just send you to sleep. This, it transpired, was the unfortunate conclusion of all panel members who found the presentation oddly indistinct - dull yet not obviously rolled-off. When asked to be more precise they added that a muting of dynamics, rather than a downturn in treble, robbed the music of its crispness or bite.

It's tempting to think this is a contrived effect, calculated to contrast with the rather stronger treble of its predecessor, the CDP-590. Yet, by all accounts, the CDP-591 would appear to go too far. The best our listeners could manage was to suggest it was inoffensive, possessing a fair sense of drive and stability with the simpler passages from our selection. But play something more complex and a murky interference would bubble up to confuse the interplay between different instruments.

Conclusion

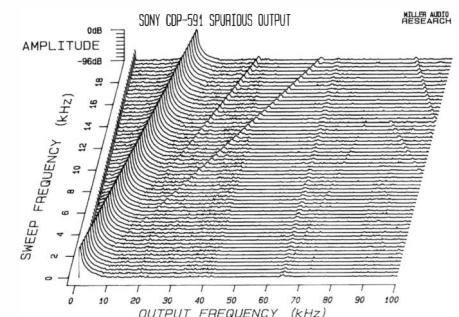
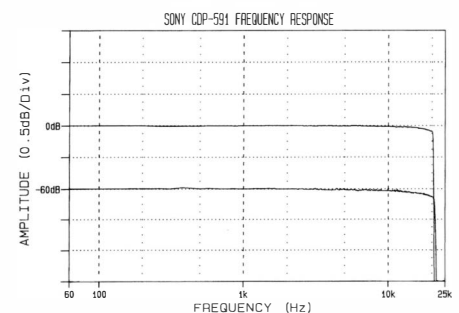
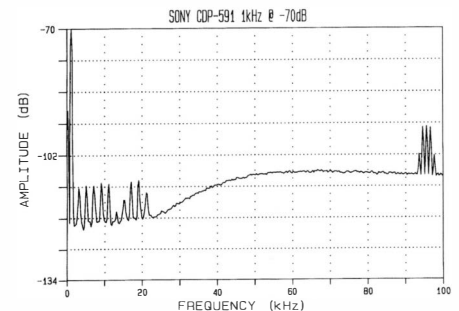
The CDP-591 is a most comprehensively equipped player at this price, its facilities are swiftly executed while the internal design is a model of simplicity. On paper at least, though not as it transpired in the listening room, it would seem a sure-fire winner.

Interestingly, this was the last Sony to be auditioned in our random, blind listening tests and the panel successfully identified it as such. Which says some-

thing for the consistency of Sony's approach, if not for the direction it has chosen.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.03dB	0.03dB	0.05dB
Channel Separation	126.1dB	113.2dB	89.9dB
THD vs Level, 0dB	-103.4dB	-102.8dB	-80.1dB
-30dB	-92.9dB	-82.1dB	-71.6dB
-60dB	-54.8dB	-53.9dB	-42.5dB
-80dB	-27.7dB	-34.5dB	-21.0dB
Dithered, -90dB	-18.2dB	-22.4dB	-12.3dB
Resolution @ -60dB	-0.01dB	-0.01dB	-0.01dB
-80dB	-0.07dB	-0.07dB	-0.07dB
-90dB	-0.37dB	-0.37dB	-0.37dB
-95dB	-0.26dB	-0.26dB	-0.30dB
-100dB	+0.10dB		
Peak Output Level, L	1.958V		
R	1.964V		
Relative Output Level		-0.17dB	
Output Impedance		1.02kohm	
Radio Frequency Spurious		5mV @ 45MHz	
1Hz Noise Modulation		+6.5dB	
CCIR IMD, 0dB		-96.0dB	
Suppression of stop-band IMD		102.0dB	
De-emphasis Accuracy, 1kHz		-0.10dB	
5kHz		-0.11dB	
16kHz		-0.15dB	
S/N Ratio (A-wtd), w emp, 0LSB		122.4dB	
w/o emp, 0LSB		122.5dB	
w/o emp, 1LSB		106.9dB	
Digital Output		None	
Crystal Clock Accuracy		-1.3ppm	
Track Access Time (99)		3secs	
Typical Retail Price		£160	



AUDIO NOTE IOIIv CARTRIDGE

In June 1989, Robert Dowse, Guy Sergeant and myself made an almost historic trip to Japan, with the purpose of bringing back the technology and rights of manufacture to the Audio Note cartridges, I say historic, since this to my knowledge is the first time this type of know how has been transferred from Japan to the UK, it normally happens the other way round!

The IO cartridge design appeared first in late 1978 and achieved wide acclaim as one of the absolute references in terms of dynamic range, tonal balance, lack of colouration, timbre reproduction, etc. etc.

The IO design incorporates a number of key elements that contradicts past and present accepted design practices as such it provides an interesting study into how careful research, and meticulous execution of the results, can lead to a design that is not just very different, but also better than all accepted references, new or old alike.

Several features in the IO's design have been studied and copied by other manufacturers, but in spite of that and the fact that it has remained unchanged from the day it was introduced the IO design has maintained its sonic superiority in comparison to what is available today as it did when it was first launched. So much for development.

The IO cartridges are available in two versions, the IOIIv uses two high quality ALNICO magnets combined with pure iron yoke to make a very powerful, well focused and extremely "stiff" magnetic field around the coil. (Easily the best conventional magnetic circuit used in any available cartridge), the IOItd.'s magnetic circuit is even more sophisticated as it uses an energized field. This is generated by an electromagnet inside the cartridge, which takes its supply from an external power supply via two extra wires in the arm, but despite the fact that the field strength is slightly lower than the IOIIv's, it is much more linear, due to its greater "stiffness" and evenness.

The two IO models share the same Titanium cantilever, van den Hul stylus, gun metal body, Audio Note silver wire and exceptional non-resonant body structure which combine to make these cartridges final analogue statements.

The IOIIv will set you back £1 295.00 and the IOItd. £2 950.00 including power supply. There is an economy version of the IOIIv on the way, dubbed the IOIiv it is planned at £895.00.

Matching Transformers.

When you look at buying a quality MC cartridge one aspect that is often overlooked is the quality of the matching input stage used to amplify and/or impedance convert the signal from the MC-cartridge. This subject is very controversial, as most amplifier manufacturers will tell you that their MC-input stages are not only adequate but ideal for most MC-cartridges and whilst there can be some truth in this, it is even more significant that all the MC-cartridge manufacturers that market their product under their own name, only offer transformers. So who is more credible? The amplifier manufacturers or the people who actually design and make moving coil cartridges? (I am here excluding the considerable number of companies that market MC-cartridges under their own name which are made by an external supplier.)

The economic facts speak for themselves. It is much cheaper and simple to make a small amplifier stage and tag it on to a phono stage to cater for low output cartridges. In the current facility-oriented market it adds to sales, but beware, when an amplifier manufacturer says "better" he might mean "cheaper".

Transformers, on the other hand, are costly to make and require considerable technological skill to design, on top of that it is only really possible to design them with two input impedances, so they generally offer less flexibility at a higher price (except for the inexpensive and excellent Ortofon T5s), but what about the performance and sound quality?

As a general rule a well designed transformer is far superior in bandwidth linearity and dynamic transfer to an active amplifier, no matter how quiet, and as such normally sound better, but not all transformers are ideal, the relationship between a given cartridge's impedance and the input impedance of the transformer is very critical and not all cartridge manufacturers disclose their coil impedance. Therefore for practical reasons it is in some cases better to stick with the MC-input provided in your pre-amplifier. You can always check the quality of your amplifier's MC-input by buying a pair of Ortofon T5s, if they sound better then you have a problem. You could also consult a knowledgeable dealer, the cartridge manufacturers representative, or buy a transformer (only after having tried several to ensure longterm satisfaction).

If you are buying or already own a top flight MC cartridge, however, you really must use a transformer, and with an Audio Note IOIIv or IOItd. it is an imperative for optimum performance. Fortunately Audio Note make a couple of very good transformers, the AN-6D and AN-7D, offering both switchable in- and output impedances. They are the best and most versatile MC-transformers available (what else did you expect from the designers of the ON-GA-KU?), but, being silver wired both inside and out they carry the usual "penalty" for ultimate quality; price. The AN-S6D costs £1 995.00 and the AN-S7D £3 495.00, you may want to look at a less expensive alternative. the Audio Innovations Series 800 and Series 1000MC matching transformers will prove the best choice for most cartridges.

Lastly, following in the vane of last month's letter, I think it is appropriate to draw some conclusions from the observations made there.

Change for the sake of change and not improvement or advancement proves worthless in the long run, and this is amply demonstrated by how well a given piece of equipment survives the test of time. We all like to own quality, to most people a Mercedes or BMW represents a desirable car to own, they generally maintain their value very well and are sought after secondhand. In common with these cars the audio equipment that is sought after features a product philosophy that aims at a longer performance window, which results in an end product containing less "fashion" and more real world performance engineering.

The lessons that can be learned from all this are therefore obvious, buying a valve amplifier of good quality, or buying a speaker that contains less "POP and fashion features" guarantees, in more cases than not, a product whose basic performance stands the test of time very well and therefore represents a far better investment (not just in terms of sound quality) than the equivalent "trendy, latest gadget, flavour of the month technology" product that could be acquired for the same price at the time.

Quick model changes do not advance sound quality and are diametrically opposite to longterm product value and viability. Fundamental research and development does not advance very quickly, despite what manufacturers' advertising will have you believe.

Increasingly, the music is left to serve the sale of the equipment, not the other way round. I think it is high time the whole audio industry reviewed its priorities.

Enough said?

More later.

Peter Qvortrup

Audio Note Co. 0273 821371. Brighton

Sony CDP-991

SONY UK LTD, SONY HOUSE, SOUTH STREET, STAINES, MIDDLESEX TW18 4PF. TEL: (0784) 467 000



Leap-frogging the *CDP-791* with a jump of £70 takes us from the *CDP-591* to Sony's costliest non-ES player, the *CDP-991*. It looks similar enough to the budget model but Sony has stipulated better casework and an alloy fascia for this version. All the features of its cheaper models are present too, plus a few tantalising extras like Custom File programming.

There are four facets to Sony's Custom File which can store the details for up to 185 CDs at any one time. Custom Memo allows you to assign a personalised alphanumeric title while Custom Index means you can define specific start and stop times within any one disc. Then there's the Program Bank which memorises your favourite tracks and the Level File which remembers just how loud you want the disc to sound. This is achieved by automatically resetting the motorised volume control, but do remember to hook-up the player via its variable outputs.

Under the bonnet the *CDP-991* is, to all intents and purposes, a beefed-up version of the *CDP-591* with a slightly chunkier transport and superior component selection, especially in the analogue section. Sony's interpretation of bitstream lives on, using third order MASH (like Technics) but operating over a wider 16-bit to 2.8-bit dynamic range. This means the PWM DAC (called PLM by Sony) has only seven different pulse widths to play with and this, together with the higher 64 times oversampling, pushes the total operating speed up to 45MHz. Timing accuracy and freedom from digital jitter are therefore crucial to the success of these bitstream DACs.

Lab report

Textbook stuff from Sony once again. The 3D plot demonstrates the effectiveness of its eight times oversampling filter with just a whisper of very high frequency stop-band images creeping in to the right of the picture. The frequency response is

as flat as practicable while distortion does its usual trick of increasing from around 0.001 to 0.012 per cent across the audio range.

Of course at lower levels the HF distortion is jacked-up by the curve of ultrasonic quantisation noise (see -70dB plot), a problem not associated with earlier multibit players. Still, by way of compensation, the linearity of this PLM DAC is quite superb even though the +5dB noise mod figure points a finger at both jitter and low-level monotonicity.

Sound quality

A bit of a mixture, ventured one listener to break the silence that followed the auditioning of this player. On the one hand there seemed to be plenty of detail, especially towards the top end of the spectrum which fizzed with enthusiasm. This often lent a grandness to the proceedings, though even this turned out to be a little superficial in the long run.

With the simplest of tracks (especially the 1kHz level tone, it was suggested) the player would sound airy and transparent but with mounting complexity began to lose its sense of order. And as it becomes progressively more confused the *991* also starts to sound brash and coarse if not obviously bright.

At the same time very low bass sounded sloppy and indistinct while the lower midrange sank into the background. All this strips weightier instruments of their body and brings forward harder tonal detail that can make the player sound both louder and more fatiguing than perhaps it should.

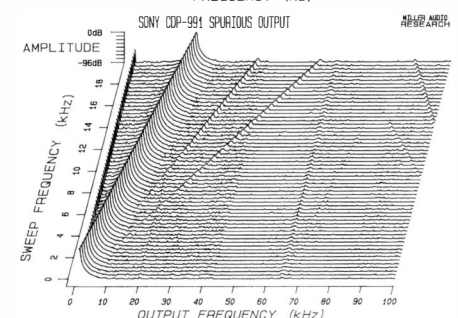
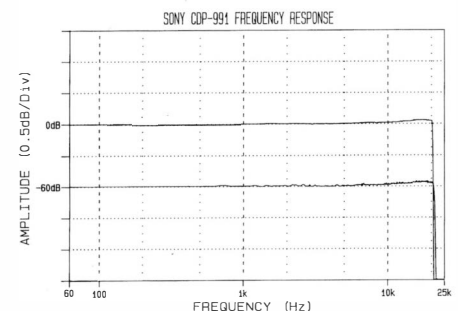
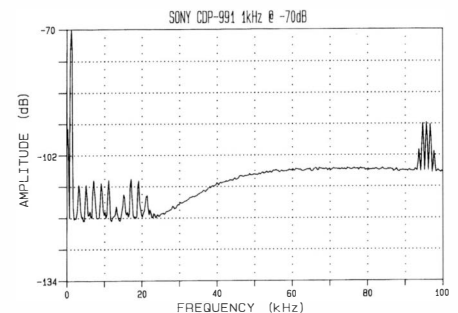
Conclusion

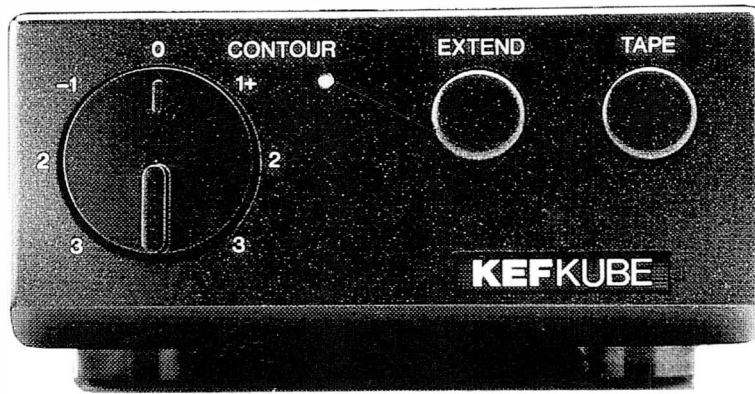
On a personal note I should say that I've heard a *CDP-991* sound absolutely sparkling, but the sheer unpredictability of these new machines coupled with the necessity for a most extensive warm-up is, frankly, driving me up the wall. On this

occasion our listeners were left unmoved, for although the player suffered no one overwhelming coloration, neither did it succeed in communicating much beyond a basic outline of the music.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.04dB	0.04dB	0.09dB
Channel Separation	139.8dB	117.0dB	93.4dB
THD vs Level, 0dB	-95.0dB	-100.1dB	-78.3dB
-30dB	-95.9dB	-82.5dB	-70.4dB
-60dB	-54.3dB	-54.0dB	-41.1dB
-80dB	-26.5dB	-30.8dB	-15.8dB
-90dB	-16.6dB	-20.9dB	-11.7dB
Dithered, Resolution @ -60dB	0.00dB	0.00dB	0.00dB
-80dB	-0.02dB	-0.01dB	
-90dB	-0.80dB	-0.57dB	
-95dB	-0.52dB	-0.25dB	
-100dB	-0.45dB		
Peak Output Level, L	1.959V		
R	1.969V		
Relative Output Level		-0.16dB	
Output Impedance		650ohm	
Radio Frequency Spurious		4.4mV @ 45MHz	
1Hz Noise Modulation		+5.0dB	
CCIR IMD, 0dB		-95.2dB	
Suppression of stop-band IMD		102.5dB	
De-emphasis Accuracy, 1kHz		-0.10dB	
5kHz		-0.09dB	
16kHz		-0.04dB	
S/N Ratio (A-wtd), w emp, 0LSB		122.5dB	
w/o emp, 0LSB		122.5dB	
w/o emp, 1LSB		105.7dB	
Digital Output		Optical	
Crystal Clock Accuracy		+7.5ppm	
Track Access Time (99)		3.8secs	
Typical Retail Price		£230	





**THIS LITTLE DEVICE MAKES THE
KEF REFERENCE 102 AND 103/3 SOUND
MUCH BIGGER.**



~~£750.00~~ £395.00



~~£395.95~~ £249.95

**AT AUDIO LEISURE, WE'VE MADE THE PRICE
MUCH SMALLER**

It's called KUBE. (KEF User-Variable Bass Equalisation).

We've shown it actual size.

It makes a small loudspeaker sound like a big one.

As an integral part of the system, it doesn't cost any more.

On the contrary, at Audio Leisure, we're offering the Reference 102 and 103/3 complete

with KUBE for considerably less.

As well as stocking only the best in quality hi-fi, we specialise in designing and installing multi-room systems to every specification.

In fact, Audio Leisure is the complete hi-fi specialist.

AUDIO LEISURE

SPECIALISTS IN QUALITY HI-FI INSTALLATIONS

0474 873416

3 BRANDS HATCH COTTAGES · GALLOWS WOOD · FAWKHAM · KENT DA3 8NE

KEF · DENON · REVOX · CARVER · QUAD · HARMAN KARDON · SONY · TECHNICS · ETC

Sony CDP-X333ES

SONY UK LTD, SONY HOUSE, SOUTH STREET, STAINES,
MIDDLESEX TW18 4PF. TEL: (0784) 467 000



If you are looking for a thoroughly modern CD player, built like Fort Knox and bristling with every conceivable feature Sony's CDP-X333ES should fit the bill. Impressive construction is no guarantee of an impressive sound, of course. But for now let's take a brief tour around this heavyweight, a player that's reinforced by a frame and beam enclosure, die-cast transport chassis and composite 'G' (for Gibraltar) base material. And, like the CDP-X77ES, there's not one but two stereo 'Pulse' DACs to beat out its music.

All the facilities that grace the CDP-991 are available here too, though most of the major controls have a more positive, purposeful feel. Continuous, shuffle, program and Custom File play modes are provided, along with full tape edit, peak search and fader options. The remote control is, quite simply, a tour-de-force of graphics and buttons.

Sony's dot-matrix display is also very easy on the eye, three brightness levels allowing it to be doused in stages. But why is the CD transport hamstrung with a ghastly optical digital output? Actually I know the reason: it eases compliance with regulations covering RF interference. So the Germans and Eurocrats are happy and we're left with no worthwhile route for upgrading.

Lab report

Operating the DACs in complementary mode should confer certain advantages, like lower distortion and an improved signal-to-noise ratio. In the first instance Sony is bang on target with state of the art figures like 0.00038 per cent at 0dB, 0.0067 per cent at -30dB and 0.18 per cent at -60dB. Intermodulation distortion and stop-band noise are also vanishingly low; just take a look at the 3D plot.

The -70dB trace shows that there has also been a worthwhile 4dB decrease in ultrasonic quantisation noise, even though the in-band signal to noise ratio allows no

real improvement. Once again, the 0LSB results show that Sony has attempted to artificially bolster the practical signal-to-noise figures and, by inference, its potential resolution. In reality we're looking at about 17 bits worth rather than the 19 bits or so suggested by the 'fake' figures.

Do watch the high 2.5V output of this player, by the way, especially if you're conducting an A/B comparison against another player at your dealer. Remember, every player was precisely matched for level in our listening tests.

Sound quality

In practice this player started out well enough but faded along with the interest of the panel. Its music is undeniably smooth, tidy and well ordered but the overall effect is somehow a little inconsequential. For instance, the solid, confident sound of Mary Black's *Columbus* prompted a degree of enthusiasm but this soon turned out to be premature. Similarly, Chris Rea's track also sounded unusually deep and full, but his vocals were overly emphasised - a big, inarticulate and sibilant voice which lacked a true sense of proportion.

Initially quite impressed by its definition and stereo imagery, a short time later the panel found the Pachelbel baroque to sound thin, stilted and rather mechanical. All this led to a degree of consternation and, ultimately, a lack of involvement. Once again this is not an outrageously nasty or abrasive sound simply, in the view of one panellist, boring.

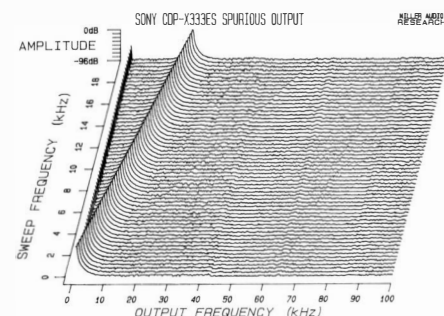
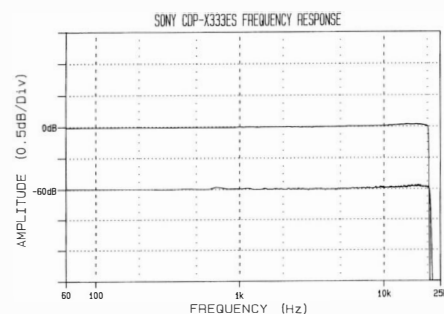
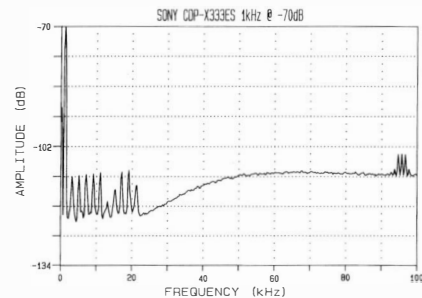
Conclusion

From the pooled results of our panel plus my own experience with other Sony players, I am drawn to the conclusion that much of this new range falls short of the previous, first generation PLM players. So the 333 is beautifully built, lavishly appointed and exceptionally well specified, but also proved a little too 'hi-fi' for

our tastes. And like many players that are so disposed, the CDP-X333ES is also far too easy to ignore.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.03dB	0.03dB	0.04dB
Channel Separation	123.8dB	118.4dB	117.4dB
THD vs Level, 0dB	-106.5dB	-108.4dB	-89.6dB
-30dB	-94.9dB	-83.5dB	-74.1dB
-60dB	-55.7dB	-55.0dB	-43.7dB
-80dB	-28.0dB	-35.0dB	-24.4dB
Dithered, -90dB	-17.8dB	-21.7dB	-15.0dB
Resolution @ -60dB	0.00dB	0.00dB	-0.01dB
-80dB	-0.04dB	-0.04dB	-0.08dB
-90dB	-0.47dB	-0.47dB	-0.47dB
-95dB	-0.25dB	-0.25dB	+0.50dB
-100dB	-0.03dB	-0.03dB	
Peak Output Level, L		2.525V	
R		2.532V	
Relative Output Level		+2.04dB	
Output Impedance		203ohm	
Radio Frequency Spurious		<1mV	broadband
1Hz Noise Modulation			+3.0dB
CCIR IMD, 0dB			-98.4dB
Suppression of stop-band IMD			104.7dB
De-emphasis Accuracy, 1kHz			-0.09dB
5kHz			-0.10dB
16kHz			-0.07dB
S/N Ratio (A-wtd), w emp, 0LSB			116.6dB
w/o emp, 0LSB			116.8dB
w/o emp, 1LSB			105.5dB
Digital Output			Optical
Crystal Clock Accuracy			+3.8ppm
Track Access Time (99)			1.9secs
Typical Retail Price			£400



SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s

SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s

TOP BRAND QUALITY • PRICE • SERVICE

It takes weeks to make a record...



Our record speaks for itself...

Big enough to matter... small enough to care!

VJ

HI - FI

- STOCKISTS OF
- AIWA
 - ARISTON
 - AUDIO TECHNICA
 - CASTLE
 - CERWIN VEGA
 - CELESTION
 - D.C.M.
 - DENON
 - DUAL
 - FOUNDATION
 - HECO
 - INFINITY
 - JPW
 - JBL
 - KENWOOD
 - KEF
 - MARANTZ
 - MUSICAL FIDELITY
 - MORDAUNT SHORT
 - NAD
 - PIONEER
 - PHILIPS
 - QUAD
 - REVOLVER
 - REVOX
 - ROTEL
 - ROGERS
 - SENNHEISER
 - TANNOY
 - TARGET
 - THORENS
 - WHARFEDALE
 - YAMAHA

Most products carry a minimum of 2 YEARS manufacturer's warranty. 5 YEAR parts and labour guarantees available for a small extra charge. Credit facilities available

MAIL ORDER HOTLINE (FOLKESTONE ONLY) 0303 59299
PLEASE SUPPLY

PART EXCHANGE AVAILABLE
(Personal Callers Only)

I enclose cheque/PO for £ _____
debit my Access/Visa/Amex card
No _____ Expiry date _____
Name _____
Address _____
Postcode _____
Tel _____

SEND TO: 29 GUILDHALL STREET, FOLKESTONE KENT CT20 1EB Carriage and insurance £7 (UK mainland)



INTEREST FREE CREDIT AVAILABLE

Written details on request
Licensed credit broker



VJ

HI - FI

29 GUILDHALL STREET, FOLKESTONE, KENT CT20 1EB
TEL: 0303 59299 or 56860

119 HIGH STREET, MARGATE, KENT
TEL: 0843 226977

Open Monday to Saturday
Demonstration rooms at both shops.
Easy parking at both shops

SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s

SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s SAVE £££'s

Technics SL-PG200A

Best Buy

PANASONIC UK, WILLOUGHBY ROAD, BRACKNELL,
BERKS, RG12 4FP. TEL: (0344) 853 157



Replacing an existing and well-received player like the *SL-P277A* might seem a trifle risky. But in the event there's no need to worry, because the new *SL-PG200A* turns out to be a real cracker - packed with widgets and armed with a sound to challenge the very best below £200.

In fact this player looks pretty similar to its predecessor, the slim bronze fascia occupied by a multi-function fluorescent display and a bank of peripheral features that include comprehensive tape edit, disc link and time fade options. In fact the *SL-PG200A* is bedecked with every facility that graced its predecessor plus, in this instance, a new peak search option.

Even the comprehensive remote is retained and extra space made available for - yep, you guessed it - a peak search button. Either way, with features like a 12dB digital volume control, direct track access, various repeat, random and program play modes, the *SL-PG200A* is one tough cookie to beat. Technics has even opted for Philips' CDM4 transport mechanism once again, a decision that saves it money on this European-built model while giving the remainder of the digital electronics something of a head start.

Lab report

The *SL-PG200A* is also equipped with Technics' MN6474 bitstream DAC, an IC that contains two oversampling filters (amounting to 32 times) followed by partial truncation to 3.5 bits, third order MASH and four PWM DACs operating in differential mode. Got that? Good, because this strategy results in very low THD figures (typically 0.0085 per cent at -30dB and just 0.21 per cent at -60dB) in addition to a resolution that holds to 0.25dB limits all the way down to -100dB. A pity, then, that third order IMD increases to -63dB.

The peculiar dip at 11kHz in the -60dB response is also a feature of the MN6471 /

6474 family as is the partial streak of stop-band noise (81dB down on 3D plot). This chip produces a lot of ultrasonic quantisation noise, though Technics' analogue filter is still very effective (see -70dB plot). Noise modulation is also very low (+2.2dB) but Technics has been caught cheating on the signal-to-noise test; just look at the difference between the 0LSB and 1LSB offset results.

Sound quality

Mellow, delicate and thoroughly engaging - that's the initial and lasting impression - of our panel. And though it's not an aggressive or forward-sounding unit, neither is it flat or overly-civilised. Instead its music possesses a very natural balance, a fluidity and smoothness that keeps everything bobbing along in the most beguiling fashion.

A rash of compliments greeted the conclusion to our Mary Black selection which sounded beautifully open, transparent and airy. Furthermore, it seemed full of the kind of subtle detail easily missed by other, far costlier players. The delicate patter of percussion was especially alive and vibrant, drawing out the natural brightness of the music without introducing any artificial spotlight of its own.

Still, the sound was mildly less convincing with the busier and raucous tone of Chris Rea's voice, tending to sound a little lighter in weight and impact than perhaps it should. However, only two listeners thought it less involving here while a total of five others consistently voted it a 'genuine cracker' on two separate occasions.

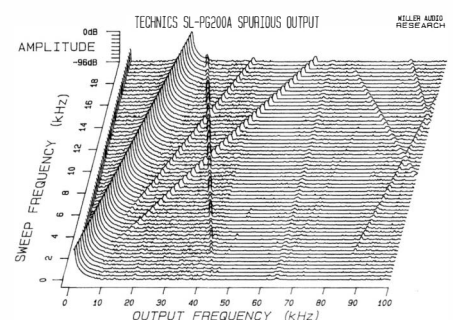
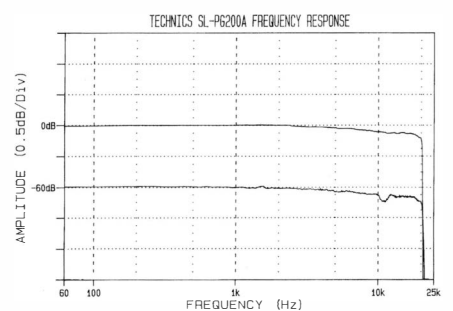
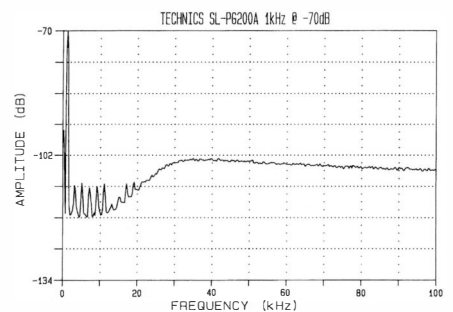
Conclusion

Technics has simply plonked the old player in a slightly updated box, added one extra feature and, Kato's-your-uncle, the *SL-P277A* lives on to fight another day. Nowadays of course it's called the *SL-PG200A*. Our panel knew nothing of

this intriguing situation, but when informed of the retail price announced that Technics was giving it away. And who am I to disagree? So let's give it an unreserved Best Buy.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.07dB	0.08dB	0.22dB
Channel Separation	103.4dB	102.5dB	60.7dB
THD vs Level, 0dB	-97.1dB	-97.3dB	-74.3dB
-30dB	-85.7dB	-81.4dB	-64.9dB
-60dB	-56.0dB	-53.5dB	-38.2dB
-80dB	-28.3dB	-32.7dB	-18.5dB
Dithered, -90dB	-17.5dB	-21.9dB	-8.55dB
Resolution @ -60dB	+0.01dB	+0.15dB	+0.15dB
-80dB	+0.02dB	+0.04dB	+0.04dB
-90dB	-0.17dB	-0.55dB	-0.55dB
-95dB	+0.30dB	-1.50dB	-1.50dB
-100dB	+0.25dB		
Peak Output Level, L	2.087V		
R	2.105V		
Relative Output Level	+0.41dB		
Output Impedance	784ohm		
Radio Frequency Spuria	4.2mV @ 2.8MHz		
1Hz Noise Modulation	+2.2dB		
CCIR IMD, 0dB	-85.7dB		
Suppression of stop-band IMD	81.3dB		
De-emphasis Accuracy, 1kHz	0.00dB		
5kHz	+0.01dB		
16kHz	+0.02dB		
S/N Ratio (A-wtd), w emp, 0LSB	111.9dB		
w/o emp, 0LSB	108.4dB		
w/o emp, 1LSB	101.3dB		
Digital Output	None		
Crystal Clock Accuracy	+2.5ppm		
Track Access Time (99)	2.9secs		
Typical Retail Price	£160		



“At home I use valve amplification and prefer listening to vinyl. CD misses the air and ambiance of a recording.” *Niro Nakamichi, Hi-Fi Choice, June 1991*

If you want to hear what Mr Nakamichi is talking about, come and listen to our selected range of valve amplification.

We are the only dealer in the UK to specialise exclusively in the valve sound. Here you can compare and contrast various pre and power amplifier combinations and really hear the difference they make. Even CD players can be helped by using valve amplification.

We have a range of turntables, cartridges and speakers to suit. Recent additions to the range are the fabulous Pentachord System, Grado cartridges, Mytho and Magnaplanar speakers.

Telephone us to arrange a demonstration and bring along your records to hear how they should sound.

You'll find no hard sell Just sound advice.

VINYL TUBE AUDIO

where music matters

Art Audio - two stereo power amplifiers and the excellent Maestro mono blocks. All are switchable from triode to pentode and offer excellent sound quality at a realistic prices.

Audio Innovation - a very wide range of amplification combining detailed triode sound with good looks.

Concordant Audio - three pre-amplifiers that are truly exquisite. Smooth, detailed sound with depth and all partner well with the Exultant Quad II mono amplifiers.


Croft - a wide range of pre and power amplifiers. Well established designs, offering immaculate sound quality at affordable prices.

Orange - a new range from Germany with accurate spacious sound and high build quality.

Sound Design Studios - seamless, faithful and very spacious sound, from their reasonably priced integrated pre-amplifiers to the awesome 150 watt OTL mono blocks.

Ex-demonstration, second-hand equipment and rare records available, please phone for details.

43-45 Fortess Road, London NW5 1AD
Tel: 071-485 4854



ZEBRA
HIFI SEPARATES

ROTEL
£199
CD PLAYER 8538

18 24 BRIGHTON ROAD · SOUTH CROYDON · 081 688 2093/2491
(OPPOSITE THE SWAN AND SUGAR LOAF)

CREDIT AVAILABLE
DEMONSTRATION FACILITIES
PART EXCHANGE

Musical Approach

UNIT 7, WOODINGS YARD, BAILEY ST.
0785 55154
37 HIGH ST. ALDRIDGE
0922 57926

LINN PRODUCTS · EXPOSURE · NVA · ONIX · RUARK · MANTRA · REVOLVER · CREEK · ARISTON · ROYD · AUDIO TECHNICA · CHORD · EPDS
ARCAM · MONITOR AUDIO · HEYBROOK · TANNAY · ROTEL · CELEF · MAD · MARMANTZ · STAX · QUID

PLEASE NOTE THAT THE STAFFORD SHOP
HAS MOVED FROM NEWPORT ROAD
TO BAILEY STREET

Technics SL-PS900

PANASONIC UK, WILLOUGHBY ROAD, BRACKNELL, BERKS, RG12 4FP. TEL: (0344) 853 157



Recently Technics has moved to consolidate its position at the budget end of the market, introducing no less than four new sub-£200 models for 1991/92. This makes the *SL-PS900*, at just £350, the flagship player of the current range. And what an ambassador this is for Technics' MASH technology, a new machine equipped with the very latest PWM DAC, features like direct track access and programming, and an unusual facility marked 'Function Manager'. This key opens the way to a further 17 peripheral facilities ranging from various tape edit, auto-space, fade, peak search and track management options to play modes that include time fade, random, A-B and full repeat, track cueing and index selection.

You simply dial up the function you require, all the while watching the fluorescent display for appropriate messages, and then hit F5 for action. The first four functions are permanently stored in the player under F1-F4 while F5 serves as a volatile memory, storing the last of the 17 functions to be utilised. If all this sounds too complicated then just wait till you clap eyes on the remote control!

Another hidden feature is the player's variable output, covering a usefully wide 60dB range and denoted by a series of little cross-hatches on the main display. But this is no digital control, instead Technics has fixed a motorised potentiometer to the back of the case near the output phonos.

Lab report

Technically, this is a treasure trove of digital engineering. For a start there's a new servo system that converts laser focus and tracking error signals into eight bit codes that are processed digitally before passing them back to the focus, tracking and transverse motor coils! Then there is the new MN6476 DAC which employs eight PWM outputs running at a full 64 times oversampling and this, together

with a double-differential filter network, helps suppress the ultrasonic noise produced by the third order noise-shapers.

Just look at the 1kHz/-70dB plot. This shows the best noise suppression of any current bitstream player, and even gives the best multi-bit machines a run for their money (minus the spikes of course). Distortion and noise modulation are low while the 3D plot demonstrates the effectiveness of the two eight times oversampling filters. Linearity is superb too, with maximum errors of just 0.3dB at -90dB.

Do watch the output level, however, which is some +2dB higher than most other players. Plus Technics has been caught cheating on the signal to noise test, once again. Naughty, naughty.

Sound quality

The fact that this player failed to cause anyone any great displeasure was gratifying, though its very safe, natural and civil sound also failed to set our pulses racing. A major cause for concern was its inability to get to grips with the most potent dynamics of a performance. It simply did not bounce responsively, even though it never sounded stodgy or slow. Oodles of detail poured out in a delightfully fresh and easy-going fashion - there's absolutely no sense of strain with this player at all.

Yet so cautious, so anxious to please is this player that it's as if the music were bound within strict limits. Tonally it is beyond reproach but the essential buzz of excitement is sadly missing.

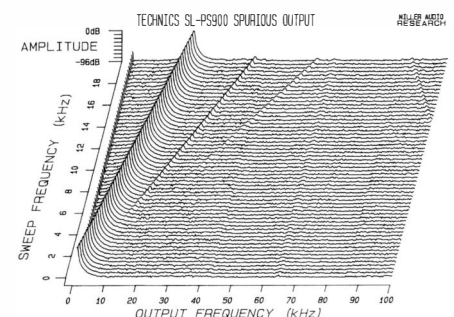
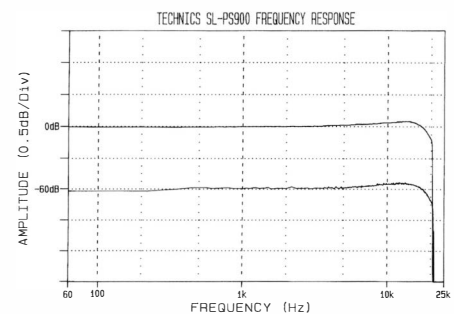
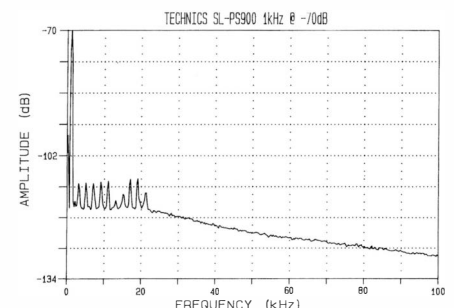
Conclusion

A picture of elegance, or the height of sophistication. Whichever way you choose to look at it, the *SL-PS900* is one of the slickest players on the planet. There's no lack of body to its sound either - in fact our listeners commented favourably on its sheer wealth of detail and refinement. But

ultimately this player is too refined, its music never straining at the leash and, as a consequence, never quite bursting free. Too sophisticated, then, for its own good.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.11dB	0.12dB	0.17dB
Channel Separation	126.6dB	115.0dB	93.4dB
THD vs Level, 0dB	-97.4dB	-96.2dB	-83.1dB
-30dB	-96.8dB	-81.2dB	-78.9dB
-60dB	-57.6dB	-52.1dB	-57.5dB
-80dB	-28.4dB	-33.4dB	-36.8dB
-90dB	-17.5dB	-21.8dB	-28.2dB
Dithered, Resolution @ -60dB	-0.01dB	-0.01dB	-0.01dB
-80dB	-0.04dB	-0.10dB	-0.10dB
-90dB	-0.33dB	-0.32dB	-0.32dB
-95dB	0.00dB	+0.30dB	+0.30dB
-100dB	-0.20dB	-0.20dB	-0.20dB
Peak Output Level, L	2.477V	2.477V	2.477V
R	2.512V	2.512V	2.512V
Relative Output Level	+1.92dB	+1.92dB	+1.92dB
Output Impedance	949ohm	949ohm	949ohm
Radio Frequency Spurious	<1mV broadband	<1mV broadband	<1mV broadband
1Hz Noise Modulation	+2.2dB	+2.2dB	+2.2dB
CCIRIMD, 0dB	-96.7dB	-96.7dB	-96.7dB
Suppression of stop-band IMD	100.1dB	100.1dB	100.1dB
De-emphasis Accuracy, 1kHz	+0.08dB	+0.08dB	+0.08dB
5kHz	+0.40dB	+0.40dB	+0.40dB
16kHz	-0.05dB	-0.05dB	-0.05dB
S/N Ratio (A-wtd), w emp, 0LSB	120.2dB	120.2dB	120.2dB
w/o emp, 0LSB	119.0dB	119.0dB	119.0dB
w/o emp, 1LSB	101.2dB	101.2dB	101.2dB
Digital Output	Optical	Optical	Optical
Crystal Clock Accuracy	+11.3ppm	+11.3ppm	+11.3ppm
Track Access Time (99)	3.7secs	3.7secs	3.7secs
Typical Retail Price	£350	£350	£350



P. C. PRECISION CABLES LTD.

LOOK EAR!

Who really NOSE how to achieve the highest quality cable and components that will tie up nicely whatever HI-FI system is chosen? Then lets FACE it if you want the best then you expect to pay a high price DON'T YOU? After all wouldn't you like to buy a Rolls Royce for the price of a Lada?

We are sure you will see EYE to EYE with us, when we say, "we supply the ultimate in cable assemblies, at well below the price of others." So if you need one cable or a complete harness, even maybe something custom made, especially for your system, remember the OLYMPIC range from P. C. HANDS you the LEAD in the race for perfect MEDAL WINNING results.



Our cable assemblies will bring music to your ears and you wont have to pay through the nose for them.

P. C. we really do STAND ALONE for unbeatable service both in quality and price, making our customized cable simply the best available today and tomorrow.

All prices include V.A.T.
Please add £5.00 for postage.

OLYMPIC RANGE OF HI-FI CABLE

Description	Length	Price
Phono-Phono pair	1 metre	£10.00
Phono-Phono pair	2 metres	£14.00
Phono-Phono quad	1 metre	£20.00
Phono-Phono quad	2 metres	£27.00
Jack - Jack	1 metre	£08.00
Jack - XLR	1 metre	£08.50
XLR-XLR	1 metre	£08.80

Spec. Gold plated phono plugs.
Neutric jack/XLR connectors
Musiflex cable.
(Add £1.00 per extra metre required)

P. C. We go to any LENGTH to please.

Eyes down, cut out the rest to obtain the best.

TO: PRECISION CABLES LTD., 53 EFFINGHAM ROAD, LEE GREEN, LONDON, SE12 8NT. TEL:081-297-0255.

Please send me: _____

I Enclose Cheque/Postal Order (Made out to Precision Cables Ltd.) /Cash For £ _____

Name: _____

Address: _____

Post code: _____ Tel: _____

Yamaha CDX-450

Recommended

YAMAHA ELECTRONICS UK LTD, YAMAHA HOUSE, 200 RICKMANSWORTH ROAD, WATFORD, HERTS WD1 7JS. TEL: (0923) 33166



'Featuring Yamaha S-Bit Technology', declares the brochure accompanying the CDX-450E. However, Yamaha's new budget machine shares neither the original S-Bit technology of previous players nor the S-Bit Plus of costlier models like the CDX-750. In reality Yamaha has opted for a new hybrid DAC that combines a conventional 10-bit converter with a PWM bitstream output. This offers some of the advantages of pure bitstream operation but at lower cost.

The matt fascia, with its gently contoured profile and soft orange display, looks very attractive indeed. Furthermore, a basic remote control adds a direct access keypad and index facility to the standard array of widgets found on the player itself. Yamaha has even included a digital level control which operates through the headphone and main output phonos, offering some 34dB of adjustment before ending in a full mute.

Lab report

There's a token improvement in linearity over a budget 16- or 18-bit DAC and low-level distortion is improved (typically four percent at -80dB). Nevertheless the multi-bit heritage begins to show through at higher levels where, at -30dB for instance, THD is some ten times higher than it would be with a decent bitstreamer, while noise modulation is up to +11dB. Even at -70dB the pattern of distortion and ultrasonic noise is closer to that of a multi-bit DAC in character (see -70dB plot).

Yet it's the YDC101 eight times oversampling filter (which also houses the volume control) that has the biggest problems. The little +0.45dB bump in its response is harmless enough but the ineffectual 20dB stop-band rejection most certainly is not. Hence the vast swathes of stop-band images that clutter the 3D plot, intense signals that are likely to give rise to audible IM distortion with some partnering amps and speakers.

Sound quality

Oh dear, this turned out to be rather messy. There was little disagreement over its general balance, character and resolution of detail; it was simply the player's presentation of this detail that prompted contrasting views. All complimented its clarity and fine sense of proportion, though some listeners felt its natural demeanour provided no barrier to the heart of the music, whereas others were dismissive of its bland and superficial staging.

Its supporters felt the player was neither clinically detailed nor warm in a euphonic sense, instead it simply got down to the business of providing as much detail as possible in a thoroughly undemanding and unforced manner. They conceded that there was not quite the full drive behind Chris Rea's voice, for instance, yet this seemed almost peripheral in importance compared to the busy and beautifully integrated character of the associated instruments.

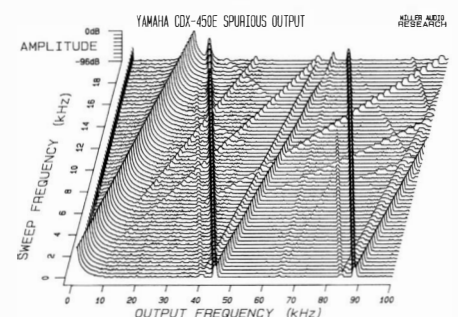
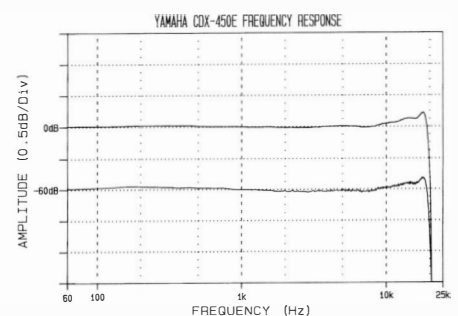
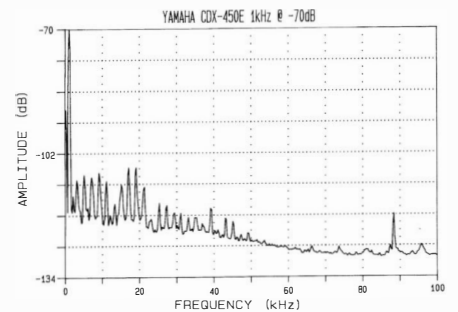
Ducking balls of waste paper, the antagonists emerged to suggest that although the player's rendition of individual instruments was actually very good, the interplay between them was less definite. So much so, they countered, that many pieces of music failed to gel convincingly. They thought the 450 was surprisingly detailed but its presentation was less clear, more bunched and certainly less transparent than competing budget models.

Conclusion

This player prompted a divergence of subjective opinion, making it all the more important to document the impressions of the opposing 'camps' as clearly as possible. Over two blind listening sessions we ended up with a pair of panellists nominating the CDX-450E for a Best Buy while five others were left distinctly unimpressed. Hardly ideal, but sufficient for me to slap on a Recommended sticker and leave you to make the final decision.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.01dB	0.01dB	0.10dB
Channel Separation	105.2dB	108.2dB	74.7dB
THD vs Level, 0dB	-93.3dB	-93.5dB	-72.8dB
-30dB	-61.0dB	-63.4dB	-69.0dB
-60dB	-33.9dB	-46.4dB	-49.6dB
-80dB	-22.4dB	-27.8dB	-32.8dB
-90dB	-17.9dB	-19.6dB	-24.2dB
Dithered, Resolution @ -60dB		+0.01dB	-0.01dB
-80dB		+0.11dB	-0.40dB
-90dB		+0.56dB	-1.10dB
-95dB		-0.02dB	-4.25dB
-100dB		-1.85dB	
Peak Output Level, L	2,045V		
R	2.042V		
Relative Output Level		+0.19dB	
Output Impedance		1.04kohm	
Radio Frequency Spurious		2.8mV @ 85MHz	
1Hz Noise Modulation			+11.2dB
CCIR IMD, 0dB			-90.7dB
Suppression of stop-band IMD			-19.9dB
De-emphasis Accuracy, 1kHz			+0.01dB
5kHz			+0.09dB
16kHz			+0.06dB
S/N Ratio (A-wtd), w emp, 0LSB			109.5dB
w/o emp, 0LSB			109.6dB
w/o emp, 1LSB			109.6dB
Digital Output			None
Crystal Clock Accuracy			-2.5ppm
Track Access Time (99)			5.8secs
Typical Retail Price			£170



MUSIC TO YOUR EARS!

At **Chiltern Sound & Vision** we can guide you through the maze of equipment currently available, be it a single component or a complete A/V Hi-Fi system with NICAM TV and Video.

We choose the products that we stock very carefully, ensuring that every piece of the Hi-Fi jigsaw comes with our own full endorsement. Our extensive system comparator allows instant comparisons to be made between different components at the touch of a button, and when, and only when you are completely satisfied with your selection, you can buy with the confidence of our **Price Match Guarantee**.



YAMAHA

HI-FI SEPARATES A/V & DSP MINI SYSTEMS

Technics

HI-FI SEPARATES MIDI & MINI SYSTEMS

SONY

HI-FI SEPARATES NICAM TV & VIDEO

Panasonic

NICAM TV & VIDEO

KENWOOD

MIDI & MINI SYSTEMS

Dual

HI-FI SEPARATES

PIONEER

HI-FI SEPARATES

DENON

HI-FI SEPARATES

Mordaunt-Short



KEF



CASTLE



TANNOY



CELESTION



B&W



WESSEX

CABINETS

TARGET

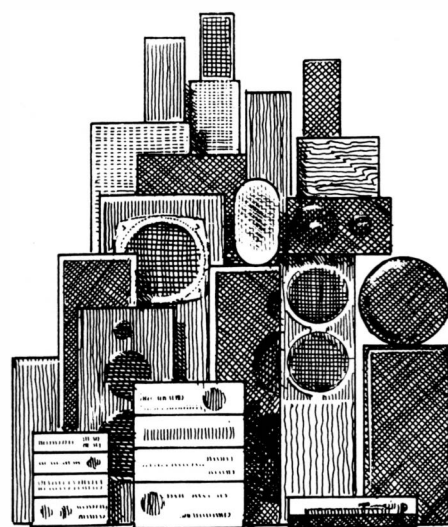
L/S STANDS & RACKS

QED

CABLE & SWITCH BOXES

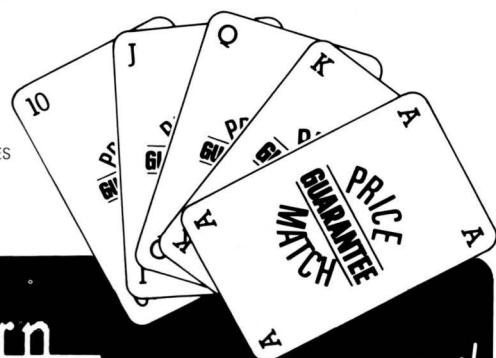
SENNHEISER

HEADPHONES



Whether a first time buyer or up-grading enthusiast, we want to ensure total peace of mind. We shall be happy to guide you to the products best suited to your needs — but remember the most important rule of all — listen before you buy. Why not bring along one or two of your own C/D's for your audition.

Chiltern Sound & Vision — good advice, good products, and good prices. Now isn't that Music to Your Ears.



LEIGHTON BUZZARD	AYLESBURY	ST ALBANS
1a Exchange Parade, Lake Street, Beds LU7 8RS 0525-383021 Manager: David Gatham	8 Bourbon Street, Bucks HP20 2RR 0296-84470 Manager: Andy Kinch	7 The Colonnade, Verulam Road, Herts AL34DD 0727-866935 Manager: Roy Mather

Yamaha CDX-750

YAMAHA ELECTRONICS UK LTD, YAMAHA HOUSE, 200 RICKMANSWORTH ROAD, WATFORD, HERTS WD1 7JS. TEL: (0923) 33166



If Yamaha's early flirtation with bitstream was not entirely successful then it has not been put off. Instead it has just changed tack, abandoning Technics' MASH/PWM chips for genuine one bit PDM DACs of its own manufacture. These so-called 'S-BitPlus' DACs lie at the heart of the CDX-750E, a player that employs the same chassis, fascia and range of facilities as the older CDX-730.

Hence there's the same repeat, random and program play options with a motorised volume control instead of a cheap digital attenuator feeding the variable outputs. You can jump from one index point to another via the remote control though this does not duplicate the File Memory facility included on the player itself. As Yamaha's answer to FTS, the File Bank allows you to store around ten favourite tracks from up to 100 different discs.

The back-lit LC display is also a nice touch because it reduces RF interference within the player - important now this model is bitstream through and through. It's also interesting to note that Yamaha's PDM DAC has no direct Philips equivalent, the combination of 384 times oversampling with second order noise-shaping bearing closer ties with Pioneer's latest system.

Lab report

The pattern of distortion versus level for Yamaha's YM7141 PDMDAC is also comparable with Pioneer's bitstream IC, as by the way, is the excellent low-level linearity. You might also like to compare the -70dB plots. Furthermore LF THD is truly state of the art with values of 0.0013 per cent (-30dB) and 0.15 per cent (-60dB) exceeding even the top Sony and Technics bitstreamers.

But there are problems. First there's the high +8dB noise modulation and relatively poor 68dB channel separation at 20kHz. Much more serious, however, is

the ghastly eight times oversampling filter which is responsible for the characteristic 'bump' in the frequency response and herds of stop-band noise that stamper across the 3D plot. Just compare these results with the CDX-450. The CDX-750 may use an integral signal processor/digital filter (the YM3417) but its mathematics are identical to the YDC101 mentioned overleaf.

Sound quality

On the whole our listeners thought this machine played it very safe - too safe perhaps. There were times when the bass seemed a little too rich and the treble a touch bright, but otherwise its music was pleasantly transparent and airy. Nevertheless it failed to get to grips with the full expression and subtlety of our vocal selection, and whether through a slight muting of dynamics or a loss of fine treble detail it failed to command attention.

The decay of piano or even the synthesised percussion from Mary Black's track seemed mildly stilted, for instance. On the other hand the panel still felt this player portrayed the basic rhythm of the music well enough - it stopped and started with confidence even if the bits in the middle were less convincing.

Conclusion

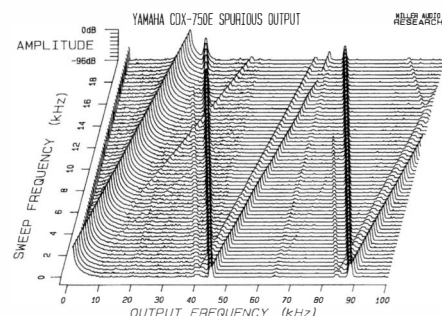
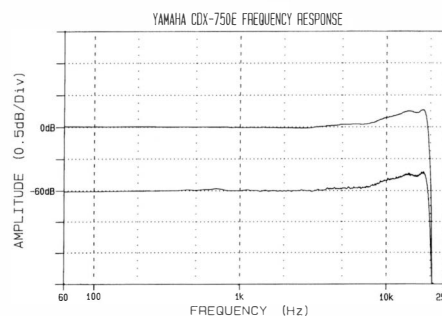
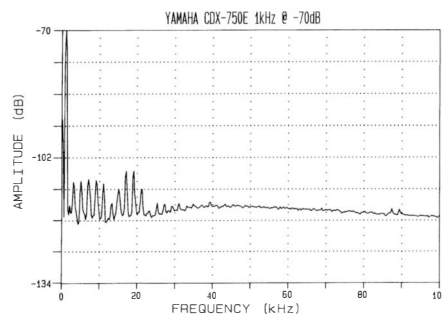
By the end of our listening session I had come to the conclusion that the panel was ready to damn the CDX-750 with faint praise. It seemed a perfectly adequate performer though one that lacked any star quality, a verdict that seemed entirely fair at the time.

On the other hand it's worth bearing in mind that the high-level stop-band images produced by this player will influence the performance of partnering amplifiers in an unpredictable fashion. After all, some people tolerate certain forms of distortion quite readily. So if in the broadest sense the 750 cannot be recommended,

I would not discount the possibility of good results from a sympathetic player/amp/speaker combination.

TEST RESULTS

	20Hz	1kHz	20kHz
Channel Balance	0.15dB	0.15dB	0.21dB
Channel Separation	125.9dB	102.4dB	68.4dB
THD vs Level, 0dB	-101.3dB	-95.9dB	-82.0dB
-30dB	-97.6dB	-82.1dB	-76.0dB
-60dB	-56.7dB	-53.0dB	-48.3dB
-80dB	-28.3dB	-33.4dB	-28.6dB
Dithered, -90dB	-18.0dB	-20.3dB	-18.4dB
Resolution @ -60dB		0.00dB	+0.01dB
-80dB		-0.13dB	-0.03dB
-90dB		-0.32dB	+0.03dB
-95dB		-0.90dB	-0.35dB
-100dB		+0.95dB	
Peak Output Level, L		2.031V	
R		1.995V	
Relative Output Level		+0.06dB	
Output Impedance		948ohm	
Radio Frequency Spurious		<1mV broadband	
1Hz Noise Modulation		+8.3dB	
CCIR IMD, 0dB		-87.9dB	
Suppression of stop-band IMD		20.2dB	
De-emphasis Accuracy, 1kHz		-0.01dB	
5kHz		-0.12dB	
16kHz		-0.26dB	
S/N Ratio (A-wtd), w emp, 0LSB		109.1dB	
w/o emp, 0LSB		105.3dB	
w/o emp, 1LSB		105.1dB	
Digital Output		Opt/Coax.	
Crystal Clock Accuracy		+12.5ppm	
Track Access Time (99)		6secs	
Typical Retail Price		£250	



As you've probably noticed, on *Hi-Fi Choice* we employ a variety of independent listeners to audition each and every CD player under blind conditions. Each player is thoroughly warmed up and level-matched to within a fraction of a dB before being auditioned in isolation, using a fixed series of CDs, until every member of the panel has come to appreciate its relative strengths and weaknesses. Then they discuss what they have heard amongst themselves before attempting to convey something of the player's unique character. I type their impressions directly into the computer, reading back and adjusting the notes until they are satisfied these best reflect the collective opinion. Only then is the panel informed of the player's price so that they

Tech Talk

Paul Miller describes the battery of tests used to evaluate CD player performance and explains the results.

can make a value judgement which, later tempered by build quality and facilities, forms the basis of our Recommendations and Best Buys.

Our ancillary equipment included 100S-series pre and power amplifiers from Deltec together with Snell *Type III* speakers, the preferred choice of our panel.

Measurement Programme

For the first time specialised CD-R (CD-Recordable) discs were introduced along with conventional test CDs from Sony, Technics, Philips and CBS to provide a wealth of information about each machine. Furthermore, dedicated computer programs were implemented to control a range of digital test equipment via an IEEE interface BUS, resulting in the various plots that accompany each review.

Channel balance, separation, output level and signal-to-noise ratio

Most CD players adhere to a nominal standard of 2V as far as their peak output is concerned, though many manufacturers will hike this up to 2.2V or more to give them a dB's edge in A/B listening tests. Remember, the loudest CD player is not necessarily the best CD player.

If you intend using long interconnect leads or a passive volume control then do check the player has a suitably low output impedance, probably less than 1kohm.

The signal to noise is determined both with and without de-emphasis as a ratio of this maximum output (all DAC current sources on = 0dB) against full digital zero (all DAC current sources off), measured in third octave mode over a 20Hz-20kHz bandwidth and with A-weighting to reduce the contribution of hum. The balance and separation between left and right channels are both assessed relative to this 0dB level at 20Hz, 1kHz and 20kHz.

Distortion and resolution versus signal level

In contrast with analogue systems like tape decks, phono cartridges and audio amplifiers, distortion in a digital system will increase as the level is decreased. The quieter the sound, the more distorted it becomes. This is because the CD format uses a linear quantisation to describe the amplitude of each audio sample and there are some 216 or 65536 equally-spaced quantisation levels spanning the full 16-bit range. Each of these levels is equal to one Least Significant Bit (LSB).

Consequently there are proportionally more levels available to describe the amplitude of a high-level than a lower-level signal. Fewer levels means a relative decrease in the accuracy of the coding (a quantisation error) and that, upon D/A conversion, means both added distortion and a shift away from absolute linearity. Most CD players will give off their best at 0dB (peak level) because here all the quantisation levels are engaged -figures as low as -100dB or 0.001 per cent distortion are not uncommon.

However, even at peak level, distortion is likely to increase with frequency because of the added strain this places on the DAC's op-amps and later analogue stages. Slew-limiting is the principal culprit here, increasing THD from -100dB to -80dB (0.01 per cent) or more. Other effects such as zero-cross distortion and glitches also make their presence felt at higher frequencies though, in the main, these problems are overcome by single-bit DAC's such as the PDM, PWM or PEM devices found in most current CD players.

Figures for harmonic and intermodulation distortion are provided in each table, the former taken at 20Hz, 1kHz and 20kHz and at decreasing levels from 0dB to -90dB (dithered). Accordingly the linearity of the DAC is also revealed, both at 1kHz and 20kHz and down to a level of -100dB (dithered). Theoretically the DAC should reproduce a -90dB tone at -90dB and a -100dB tone at -100dB for instance. In practice they rarely do, so the error in resolution of the DAC is written as the difference between the level that is expected and the level that is obtained.

Ideally they should be as close to 0dB as possible or, at least, any error that crops up at 1kHz should be matched at 20kHz. If not then you'll witness a change in the player's frequency response at progressively lower levels - changes that can be revealed on the two responses published for each machine. In a perfect world the peak-level response (upper trace) should be maintained at -60dB (lower trace), give or take a little noise.

The 3D Spurious Output and 2D 1kHz @ -70dB plots

Having already discussed how distortion can arise, the result is portrayed most graphically on the accompanying 3D plots which show a complete audio band sweep over its full dynamic range. Have a look at the example plot on the right. Firstly there are the simple harmonic products (2)-(5) which are multiples of the main 20Hz-20kHz sweep (1). So, just as the main sweep (1) ends at 20kHz so the second harmonic (2) ends at 40kHz, the third harmonic (3) ends at 60kHz and so on.

Additionally many plots will also reveal two V-shape tracks either in full or part. These are sampling images or aliasing distortion, reflections of the main sweep (1) either side of the 44.1kHz sampling and oversampling frequencies of 88.2kHz, 132.3kHz, 176.4kHz and so on. Of course, because my horizontal frequency scale only extends to 100kHz you only get to see the first two of these images in full. Sum and difference intermodulation products go to make up each 'V': either 44.1kHz plus (1) or 44.1kHz minus (1). The first option gives (6), the second gives (7) and both of these are called second order effects.

The same thing occurs either side of 88.2kHz which is the first oversample frequency, producing (8) and (9) respectively. Higher-order images caused by multiples of (1) at higher oversampling frequencies can also occur. The tracks (10)-(13) are the tail-end of just such images which begin at 176.4kHz, the four times oversample frequency. Only the very latest oversampling filters are able to suppress these images below the level of noise (look for the stop-band figure in the tests), the type of filter used in Sony's CDP-X77ES for instance!

At lower levels other problems come to the surface - hence the plot of 1kHz taken at -70dB. For instance, this plot can tell you at a glance whether the player is using a conventional multibit or bitstream DAC simply by looking at the pattern of noise above 20kHz. You see a bitstream DAC generates an awful lot of quantisation noise as it reduces the 16-bit data into manageable 1-bit chunks, so it uses a technique called noise-shaping to shovel as much of this noise as possible out of the audio band.

Hence the great hump of noise that curves upwards of 20kHz, the terminus of the audio band. With an ordinary 16- or 18-bit DAC you'll find the noise actually decreases above 20kHz revealing 'spikes' of distortion and sampling images. At higher frequencies still we find contamination from various clumps of radio frequency (RF) noise that 'leak' from the crystal clock and various digital processors that go to make up each and every CD player.

Just how an amplifier responds to the huge differences in the level and type of ultrasonic noise produced by these players could give us some clue to their characteristic differences in sound quality. You might like to re-read the section on RF IMD which was last published in issue 92 and tie-up the unwanted RF produced by these CD players with the sensitivity to such RF demonstrated by many amplifiers.

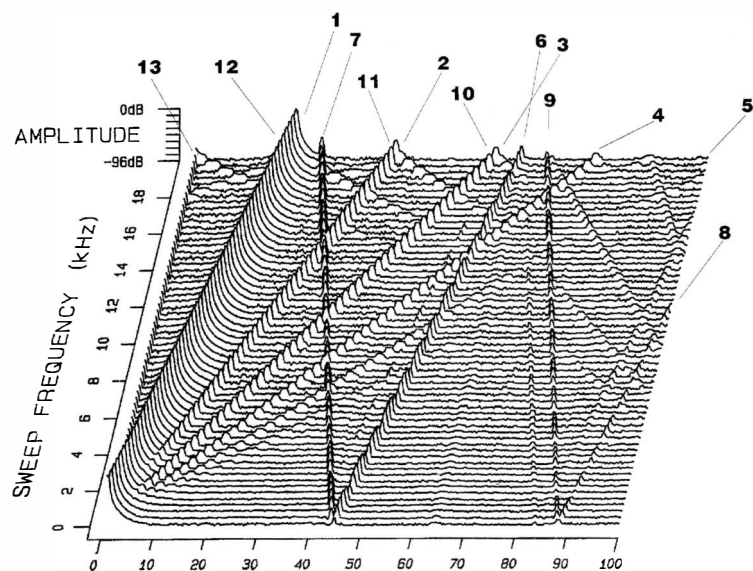
Still, I feel I must reiterate my warning voiced in the Tech Talk for amplifiers. That is, do not use these plots as some sort of guide to the absolute quality of the CD players because this is simply not the case. Instead both the 3D and 1kHz/-70dB plots are very much a 'fingerprint' of the oversampling filters, noise-shapers and DACs that are employed in each player. It's very easy to recognise whether a player is using a Philips, NPC or Sony oversampling filter for instance or whether the DAC is a 16-bit or 1-bit chip from Philips, a MASH/PWM DAC from Technics or a PLM bitstream DAC from Sony. In most cases I've tried to link the electronics with these plots to give

you a feel for what's going on inside the player - just refer to the individual Lab Reports.

Knowing all this without even having to look inside the player can give you a pointer towards its potential sound quality, even though the quality of its transport, power supplies and final analogue electronics will all have vital roles to play. Clues like these plus the unpredictable influence of RF noise are all pieces in a very complex subjective jigsaw.

An update

You may have noticed a number of extra measurements in the test tables and one, in particular, marked '1Hz Noise Modulation'. This new test is based on a technical paper presented in *Proc. Institute of*



Output Frequency (kHz)

Acoustics (Vol. 12, 8, 1990) by Bob Stuart of Meridian. It concerns a type of distortion that is produced by the D/A convertor as it handles peak-level signals at very low frequency, a distortion that manifests as a broad increase in the noise floor of the CD player.

Because this change in noise is dependent on both the frequency and amplitude of the converted signal the phenomenon is called Modulation Noise and, just like RF IMD in amplifiers, will only serve to encourage harsh or fatiguing colorations. Interestingly, the very best sounding players in our survey all possessed very low levels of Modulation Noise, typically in the 0 to +2.8dB range. The graph on page 131 shows how Modulation Noise can be measured directly in my development of this test. These third octave traces show the overall increase in the player's noise floor that occurs when it is converting a 1Hz undithered tone at 0dB. If there were no change (ie, no modulation noise) then all three traces would appear as straight lines on the base of the plot.

Three third octave traces are superimposed by way of example, showing the change in noise suffered by a multibit player (Denon DCD-1460), a PWM bitstream player (Sony CDP-591) and a PDM Bit Stream player (Pioneer PD-8700). Rather than print

☎ 081-569 5802

MUSICAL FIDELITY

CASTLE

REVOX

spendor

MICROMEGA

DEMO ROOM

Dual

AIWA®

**BEST DEAL
IN TOWN**

THORENS Turntables.



M O N I T O R
A U D I O

Nakamichi

CELESTION

TARGET
AUDIO

ARCAM

KENWOOD

10 MIN FROM HEATHROW

PIONEER

YAMAHA

NAD

SENNHEISER

+ MANY
MORE



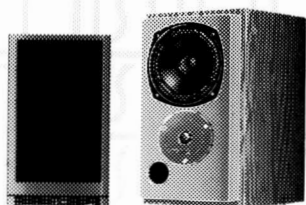
MUSICAL
IMAGES

45 HIGH STREET, HOUNSLOW

MIDDLESEX TW3 1RH

TEL: (081) 569 5802

FAX: (081) 569 6353



MISSION 760
£99.90

* NEW *
CD PLAYER
MISSION
DAD5

MISSION

CYRUS ONE



£230

10 MIN FROM HEATHROW

CYRUS
TWO
£350

CYRUS
PSX
£250

CYRUS 780
SPEAKERS
£180

BUY WITH CONFIDENCE

☎ 081-569 5802

an extra plot for each player in our survey, a simple +dB figure is calculated from the area under each 3rd-octave 'curve'. Clearly, the lower the figure the better.

Several mechanisms have been suggested to explain Modulation Noise. Jitter is a potential culprit because random variations in the timing of digital transitions will lead to an increase in quantisation errors and, in turn, to an increase in noise. Sony's high-speed 45MHz PLM DACs would appear to be compromised by jitter, an hypothesis supported by the improvements in Modulation Noise enjoyed by Kenwood's players: players that use the same PLM DAC but with an improved Master Clock circuit. Quantisation errors will also depend upon the level and accuracy of truncation within the digital filter, though this effect becomes less significant if, say, 18-bit wide digital words pass between the oversampling filter and DAC.

This leaves us with the biggest culprit: non-monotonicity of conversion within the DAC. It is this facet of DAC performance that's put under the fiercest spotlight by a 1Hz digital code, ascending and descending through the full 16-bit scale once per second. In this instance the DAC is required to increase or decrease in increments of just 3LSB's per 44.1kHz sample period. So any deviation in the precise size (amplitude) of these 65536 LSB's will result in uneven 'jumps', causing quantisation errors that accumulate as Modulation Noise.

Hence multibit converters, which are the least monotonic, suffer the greatest in this regard while most bitstream DACs witness a significant improvement. If two players are using the same bitstream DAC, like the Sony *CDP-591* and Kenwood *DP-5030* or Philips *CD618* and Acoustic Research *CD-07*, but incur differing levels of Modulation Noise then other factors, such as jitter, are obviously being called into play.

Jiggery-pokery

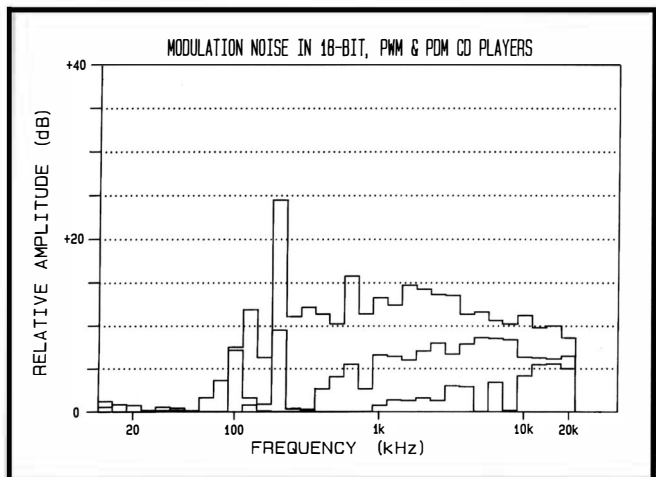
While we are on the subject of noise, it seems that a number of Japanese manufacturers have been indulging in digital jiggery-pokery to obtain 'enhanced' signal-to-noise ratio figures. The S/N ratio is measured by comparing the peak output of the player with the residual noise produced by a digital silence (zero) signal. However many bitstream DACs produce more steady-state noise than their multi-bit cousins because the noise-shapers continue to tick-over and feed an idling signal to the switched-capacitor networks. So, in an effort to ensure 'consistency of measurement' many Japanese bitstream DACs are designed to switch themselves off when they detect a continuous stream of digital zero's (ie, digital silence). As a result the noise floor falls and the S/N ratio clocks-in at an impressive 120dB or so.

However, as this will never happen when replaying a music CD it's pretty obvious that the digital 'shut-down' mode will only operate when the player is being put through its paces on the test bench. Nevertheless it's possible to fool the DAC by feeding in digital silence data that is offset by 1 LSB, so the DAC stays switched on and you end up with a realistic if inferior S/N ratio. For each test you'll see two S/N ratio results, both without emphasis but

with one that is offset by 1 LSB. The two figures should be nigh-on identical but if the 0 LSB result is much better than the 1 LSB result then you'll know the company has been trying to pull a fast one.

Other trends? Well, it does seem that more and more Far Eastern players are being equipped with optical in place of coaxial (electrical) digital outputs. Unfortunately the reduced data capacity, impaired rise time, bandwidth and transmission range of these optical outputs offsets any advantage that might be gained by their freedom from RF interference. Consequently standard optical digital outputs usually give inferior results to a coax connection when the CD player is upgraded with an outboard DAC. So why the move away from the superior-sounding coax? Quite simply because this enables manufacturers to satisfy European Community regulations covering radiated interference with the minimum fuss and bother. Sound quality, in the meantime, takes a back seat. Many European manufacturers, on the other hand, seem content to ignore their own regs and use unswitched coaxial digital outputs!

Finally there's the tale of Philips' popular *SAA7350* BitStream DAC and why companies other than Philips are extracting a superior technical performance. This DAC was designed to operate at either 11.3MHz (256



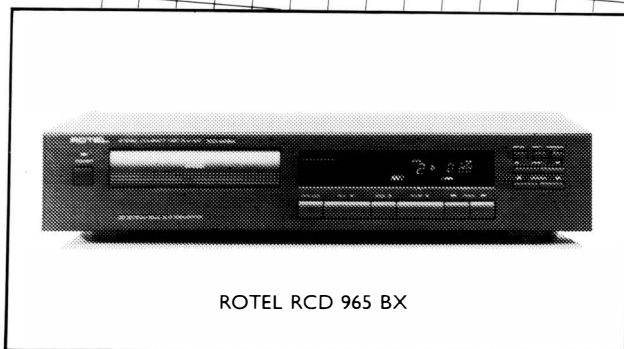
times) or 16.9MHz (384 times), though the former gives rise to far higher levels of spurious re-quantisation noise just outside the audioband. Unfortunately Philips' hi-fi division is stuck at 11.3MHz because its own-brand decoder (the *SAA7310*) won't work with a 16.9MHz clock!

This presents the ridiculous scenario of other companies, like Aiwa and Deltec, enjoying a better technical performance with one of Philips' own devices because they've the option of using a different (ie 16.9MHz) decoder. Just compare the huge excess of ultrasonic re-quantisation noise emerging from the Marantz *CD-52/CD-62* or Philips *CD850II* (1kHz/-70dB plots) with that of the Aiwa *XC-900* for instance.

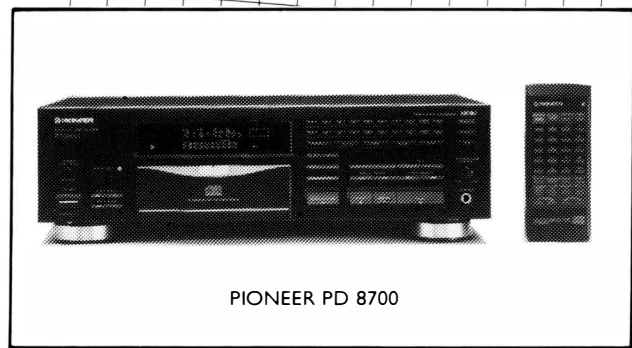
This level of noise will cause intermodulation distortion to fold-back into the audio range of some amplifiers, making the sound quality of these players slightly unpredictable. Philips' engineers are now investigating the problem for themselves!

music made live... music made live... music made live... music made live... music made live...

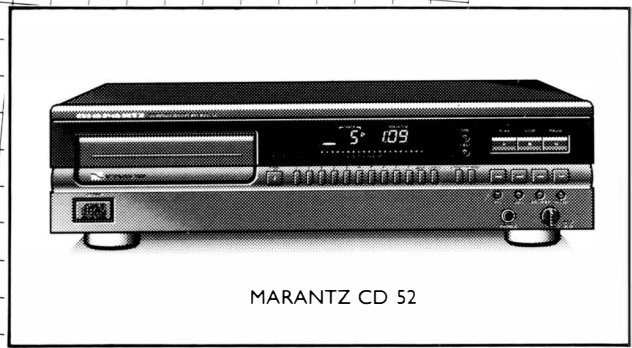
music



ROTEL RCD 965 BX



PIONEER PD 8700



MARANTZ CD 52

SUGGESTED SYSTEMS

Amps	Speakers						
	Mission 760 Wharfedale Delta 30.2 JPW Sonata Vinyl Finish	Celestion 3 Royd A 7 II Tannoy 603 Wharfedale Diamond 4 JPW Sonata	Mission 761 KEF C 15 Royd Seven JPW Sonata +	Tannoy 605 Celestion 5 B&W DM 600 KEF K 120 Infinity Ref 10	Wharfedale 505.2 Tannoy 607 Mission 762 B&W DM 610 Royd Sapphire	KEF K 140 Cerwin Vega AT 20	Rogers LS4A Tannoy 609 (KEF K 160) Cerwin Vega (AT 40) (B&W DM 620) (Extra £30)
Pioneer A300	344.95	361.95	378.95	395.95	429.95	446.95	476.95
Marantz PM30	318.95	335.95	344.95	369.95	403.95	420.95	446.95
Marantz PM30SE	369.95	386.95	403.95	420.95	454.95	471.95	501.95
Marantz PM40	386.95	403.95	420.95	437.95	471.95	488.95	518.95
Marantz PM40SE	412.95	429.95	446.95	463.95	497.95	514.95	544.95
NAD 3020i	335.95	352.95	369.95	386.95	420.95	437.95	467.95
NAD 3225PE	352.95	369.95	386.95	403.95	437.95	454.95	484.95
NAD 3240PE	378.95	395.95	412.95	429.95	463.95	480.95	510.95
NAD 7020I	386.95	403.95	420.95	437.95	471.95	488.95	518.95
Rotel RA920AX	310.95	327.95	344.95	361.95	395.95	412.95	442.95
Rotel RA930AX	344.95	361.95	378.95	395.95	429.95	446.95	476.95
Sony TAF440 E	378.95	395.95	412.95	429.95	463.95	480.95	510.95
Sony TAF 540	403.95	437.95	446.95	471.95	505.95	522.95	548.95
Technics SUVX 600	378.95	395.95	412.95	429.95	463.95	480.95	510.95
Yamaha AX 550	412.95	429.95	446.95	463.95	497.95	514.95	544.95



Free cable, 3-year guarantee, carriage
All systems supplied with speaker cable and 3-Year Parts and Labour Guarantee Carriage is FREE for UK Mainland

All systems come with Dual CS503-2

IMPROVED TURNTABLES (INC. CARTRIDGE)

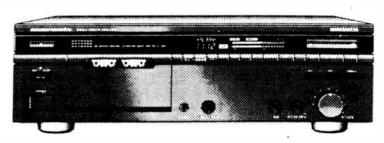
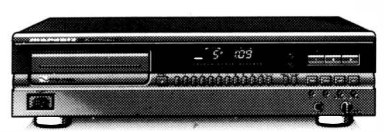
Dual CS 430 deduct ... £38.00	Dual CS 505-4 add ... £23.00	NAD 5120 deduct ... £47.00
Revolver Rebel add ... £14.00	Revolver BRC add ... £89.00	Rotel RP 855 add ... £30.00
Systemdek ONE/900 inc AT110E add ... £57.00	Systemdek IIX/900 + inc Moth Arm + AT110E add ... £147.00	

CD INSTEAD OF TURNTABLE FRONT END

Aiwa XC 700 add £30.00	NAD 5440 add £132.00	Sony CDPM51 add £13.00
Denon DCD560 add £30.00	Philips CD618 add £23.00	Sony CDP591 add £13.00
Denon DCD660 add £47.00	Philips CD624 add £47.00	Sony CDP791 add £30.00
Denon DCD860 add £98.00	Philips CD634 add £72.00	Sony CDP991 add £72.00
Denon DCD960 add £132.00	Philips CD850 add £217.00	Sony CDPK1 add £47.00
Marantz CD42 add £30.00	Pioneer PD6700 add £23.00	Sony CDP 222ES add £132.00
Marantz CD52 add £47.00	Pioneer PD7700 add £90.00	Technics SLPG 200 add £13.00
Marantz CD62 add £132.00	Pioneer PD8700 add £132.00	Technics SLPG 500 add £47.00
NAD 5420 add £30.00	Rotel RCD955 add £98.00	Yamaha CDX 450E add £23.00
NAD 5425 add £47.00	Rotel RCD865 add £132.00	Yamaha CDX 550E add £47.00
		Yamaha CDX 750E add £90.00

CASSETTE DECK INSTEAD OF TURNTABLE

Aiwa ADF500 add £55.00	Pioneer CT676 add £145.00	Sony TCW320 add £25.00
Aiwa ADWX515 add £25.00	Pioneer CT339 add £45.00	Technics RSB565 add £45.00
Aiwa ADWX777 add £85.00	Pioneer CTW650 add £95.00	Technics RSTR355 add £95.00
Marantz SD40 add £45.00	Rotel RD945 add £45.00	Yamaha KX250 add £45.00
Marantz SD50 add £125.00	Rotel RD955 add £75.00	Yamaha KX330 add £75.00
Marantz SD315 add £75.00	Sony TCK470 add £45.00	Yamaha KX530 add £125.00
NAD 6325 add £65.00	Sony TCK520 add £65.00	Yamaha KXW232 add £95.00
NAD 6340 add £115.00	Sony TCK570 add £95.00	



made live

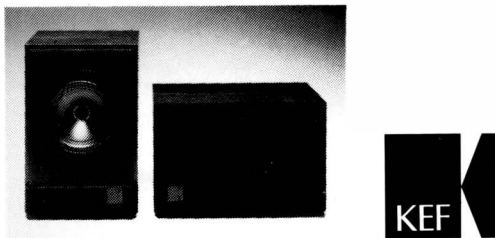
Bartletts HI-FI

STOCKISTS OF

Aura
Arcam
Aiwa
Audiolab
Alchemist
Audio Technica
B&W
Cyrus
Celestion
Conrad Johnson
Cable Talk
Cervin Vega
Denon
Dual
Exposure
Furukawa
Gemini Records
Goldring
Infinity
JPW
JVC
KEF (Reference)
Linn
Linn Selekt Records
Marantz
Micromega
Mission
MFSL
NAD
Nakamichi
Odin
Opus 3
Panasonic
PRO-AC
Philips
Pioneer
Proprius Records
Quad
Revolver
Rotel
Royd
Rogers
Reference Recordings
Sony
Systemdek
Straight Wire
Sennheiser
Sheffield Lab
Sound Organisation
Tannoy
Technics
Target
Tripod
Wharfedale
Wilson Audiophile
Yamaha
Yfere

Make an appointment, and listen, with the amplification system of your choice, to the KEF 105/3 loudspeakers, or others in the Reference Series range, which we always have in stock.

As you appreciate the comfortable surroundings of our listening rooms, you'll certainly appreciate these fine loudspeakers.



Accessories

MODEL	DESCRIPTION	PRICE
CD CARE		
AUDIO TECHNICA		
AT 6030	CD CLEANICA (SEMI AUTO)	22.95
AT 6059	CD CLEANER (AUTOMATIC)	49.95
AT 6078	CD LENS CLEANER	16.95
AT 6079	GREEN CD STABILIZER RINGS	5.95
AT 674	CD STABILIZER	19.95
AUDIOPRISM		
CD STOP LIGHT	MARKER PEN FOR CD EDGES	11.99
AUDIOQUEST		
SORBOETHANE CD FEET	DAMPING FEET FOR PLAYERS (4)	25.00
DISCWASHER		
CD CLEANER	MANUAL CD CLEANER	15.95
HUNT		
P 3 KIT	CD CLEANING KIT	10.99
P 3 REFILL	REFILL KIT FOR P 3	6.99
CD EDGE PEN	MARKER PEN FOR CD EDGES	7.99
MICHELL		
TENDERFEET LARGE	LARGE CONE SUPPORT (EACH)	2.99
TENDERFEET SMALL	SMALL CONE SUPPORT (EACH)	1.99
TENDERCUP	CUP FOR CONE SUPPORT (EACH)	1.99

Interconnects

CABLE TALK		
ADVANCED	PHONO LEADS 1 METRE PAIR	34.95
PROFESSIONAL	PHONO LEADS 1 METRE PAIR	74.95
DIGITAL	CD TO DAC CABLE 1 METRE	37.95
REFERENCE	PHONO LEADS 1 METRE	144.95
FURUKAWA		
FD 1010	PHONO LEADS 1 METRE PAIR	85.00
FA 2010	PHONO LEADS 1 METRE PAIR	95.00
FO 1110	FIBRE OPTIC 1 METRE	37.50
FO 1210	FIBRE OPTIC 1 METRE	90.00
FO 1310	FIBRE OPTIC 1 METRE	105.00
FV 1010	CD TO DAC CABLE	45.50
STRAIGHT WIRE		
LASER LINK	PHONO LEADS 1 METRE	49.99
FLEXCONNECT	PHONO LEADS 1 METRE	34.99
SILVER LINK	CD TO DAC LEAD 1 METRE	59.99
YFERE		
TWIN	PHONO LEADS 1 METRE PAIR	50.00
QUAD	PHONO LEADS 1 METRE PAIR	85.00

If you're interested in hi-fi, you'll find everything you could wish for at Bartletts. There's a vast range of equipment to talk about and listen to with the best advice going.

We offer a Price Guarantee which states, quite simply, that if you can buy cheaper, including 3-year parts + labour guarantee and carriage, we will match it.

HI-FI IN STYLE

Send for your copy of Bartletts "Hi-Fi in Style" catalogue. Please enclose a cheque or postal order for £1.25 to cover postage.

Bartletts – the complete hi-fi specialist.



Price Guarantee

If you can buy cheaper – including leads, carriage and 3-Year Guarantee – we will match it. Prices correct at time of going to press, but are subject to change.

E&O.E.

Bartletts HI-FI

175 HOLLOWAY ROAD
LONDON N.7. TEL: 071-607 2148/2296
FAX: 071-607 3825

Access. Visa cards accepted. Demonstration by appointment.
Please phone. Opening times: 9.30–6.00 Mon-Sa.

CARRIAGE £2.50 PER ORDER

music made live... music made live... music made live... music made live...

Conclusions, Best Buys and Recommendations

Let Paul Miller guide you through the best and the rest in this month's roundup of CD players

I've noticed quite a few references to something called the 'multibit versus bitstream debate' recently. This doesn't refer to the everyday operation of different players because, whatever their internal architecture, they are all compatible with one another and are all perfectly capable of offering the same range of facilities. Bitstream is simply a newer way of converting the CD's digital code into living, breathing music. It's not a change in format or flexibility.

No problems here, then. Instead the debate concerns an apparent downturn in the sound quality of players since 1-bit or bitstream technology took the stage. Interestingly enough the prime movers in this small but very vocal minority are those same individuals who, just two years ago, failed to foresee the impact bitstream technology would have on the future of the CD market. On an academic level it's all very interesting but, back in the real world, the market seems to have gone ahead and made up its own mind anyway. For instance, just six months ago we had a fair spread of technologies represented in our test but now, well, do a head count for yourself.

Your starter for 28

Out of 28 starters (the Proton AC-422 and NAD's 5420 were dropped halfway), we've just two conventional multibit players, one using a high-speed integrating DAC (the Kenwood L-1000D), two players equipped with hybrid multibit/PWM devices and no less than 21 models that are bitstream through and through. All models, I hasten to add, that are the very latest to come rolling off the world's production lines.

Yet however rapid this transition from multibit to bitstream technology may seem, it's not all been plain sailing. For a start, these bitstream DACs are more difficult to implement than their tried-and-tested 16-bit cousins, largely because their operations are conducted at such high speed. As a result the problems of timing accuracy (jitter) and radiated interference become very much more important. All this was corroborated by Philips (the instigators of BitStream) at a recent technical meeting.

Indeed our average hi-fi designer needs to start thinking more like an RF engineer. And that's not something that sits comfortably with stick-in-the-muds who believe life stops at 20kHz. For some then, the predictable nature of classic 16-bit DACs (particularly the ever-popular TDA1541 from Philips) will always represent an attractive, easy option. Bitstream is progress but it also requires both intelli-

gence and diligence on the part of the designer before it bears its sweetest fruit.

Fortunately there are plenty of manufacturers ready and willing to take up the bitstream challenge and, as a result, our listening tests uncovered a number of superb-sounding machines. Players that represent a genuine advance without stripping you of everything but your shirt.

JVC's XL-Z1011 was the costliest player to extract a recommendation from our panel, a player that combines first-generation PEM technology with good ol' K2 (JVC's jitter-buster) and a pathetically insubstantial transport. Nevertheless, it works, offering a decidedly beefy and confident sound that contrasts with the wishy-washy uncertainty of JVC's budget offering. Philips' re-born CD850 also scraped a recommendation, though this is as much for its excellent build quality and flexibility as its sound which, to be frank, is two steps sideways and half a step back from the original.

So, once again, it was the budget players that really made their mark in the listening tests. Of course it's always easy to kid yourself that player A sounds better than player B simply because the former is more expensive. Freed of such distractions our listeners recognised a certain common spirit between players like the Micromega Logic, Philips CD618 and Acoustic Research CD-07, just as there was between the Philips CD850II and Marantz CD-62. AR's player is certainly its best to date, smoother and more evenhanded than the CD-06SE if not the most dynamic or thrilling of players. Much the same was thought of Marantz's CD-62 which sounds sober and refined like the CD850II (upon which it is based) yet enjoys a little extra warmth and fullness.

Exceptional fare

Aiwa and Sansui both fared exceptionally well six months ago with top-flight budget players. This time around, and with the bigger relative of each player on test, the reaction of our panel was a tad cooler. Aiwa's XC-900 is near enough identical in design to the XC-700, for instance, yet the addition of one or two extra features plus slight changes in layout have only served to confuse what was once a transparent, delicate and thoroughly charming sound. A begrudging recommendation, then.

By contrast Sansui's CD-X311MkII bears no technical resemblance to the CD-X211 though its very warm and lush presentation is equally distinct from competing MASH/PWM-based players. The ruddy

hue of its music serves to conceal its shortcomings, making this a valid alternative to established favourites at £250.

Unfortunately, the response of the panel on two separate occasions was less united when faced with Yamaha's *CDX-450*, a beautifully built machine equipped with a new hybrid PWM DAC from Burr Brown. On the one hand it can pull out the subtlest and most meaningful of details without sounding contrived but, on the other, its mild demeanour causes it to shy away from exciting dynamics. No consensus here, so you'll have to make up your own mind.

Then there were three

This leaves us with three very special recommendations, a trio of players that escaped a Best Buy by the slimmest of margins. Philips' *CD618* offers a very clean and fresh sound that's both relaxed and satisfyingly crisp - a bargain compared to costlier players that are based on the same basic circuit layout. Once

Technics' *SL-PG200A* for instance. Here's a player that offers just about every feature you'll need plus full remote control in an attractive and well-built package. It's based on the favourite *SL-P277A* and so retains the open, uncluttered and refreshingly vibrant sound that made this player a winner in its own time. At just £160 it is a bargain, nudging ahead of Philips' *CD618* with its expertly-judged blend of composure, detail and an incorrigible effervescence.

Not exactly neutral

At £200 Marantz's new *CD-52* will bring a certain spice to your listening, crushing the ill-fated *CD-41* with its rich, warm and uncommonly full-blooded sound. It is not exactly neutral nor especially refined, but its lavish colour remains faithful to the heart if not the tone of the music. If you like your music to sweep boldly from the speakers then fire-up the *CD-52* and make for the lifeboats, as Marantz is finally riding high on the crest of the Bit Stream wave.

Our remaining £300 Best Buys are also true 1-bit PDM bitstream players, reflecting a move away from higher-speed PWM bitstream converters that I expect to continue over the next few years. Yep, there's bitstream and then there's Bit Stream . . .

For Pioneer this is all new ground, but in one fell swoop its leapt to the top of the pile with its own 1-bit PDM DAC and a rather dubious if novel CD drive system. The sound of the *PD-8700* is mellower than the lookalike *PD-7700* but it is also grander in scale, a big and decidedly physical sound that's

unflustered by the most daunting of acoustics. Moreover, its music is remarkably emotive, charged with a tension that brings individual instruments to life. If you like the look of Pioneer's new players then the *PD-8700* is the one to audition.

Otherwise there's the long-awaited *son-of-865* from Rotel, a player that is undoubtedly more uniform and mature and yet imbued with a clarity that distinguishes it from all competition. The *RCD-965BX*'s reproduction of music is both potent and beguiling, capturing its silvery fire without adding any fuel of its own. Listen to this player and you'll wonder what the 'high-end' is all about.

As a parting note I must offer my sincerest thanks to our 'blind' panel, without whose ears none of this would have been possible: Alan Ainsley (Technics), John Bamford (Pioneer), Mike Martindale (Arcam), Tony Mills (Rotel), Terry Murphy (Yamaha), and Guy Sargeant (Audio Innovations). And as the man said (after voting in yet another budget player) 'we really aren't doing ourselves any favours here' . . .



Christmas morning under the digital tree: a cross section of the review sample.

again, simplicity wins out. Then there's the *DP-5030* from Kenwood, clearly the best player in its current range with a mildly understated but luxurious and disarmingly detailed sound. And all this from the same PLM DAC that is giving such disappointing results in the current crop of Sony players - I'd suggest a little industrial espionage is in order!

Last, but certainly not least, we have Pioneer's cheapest 'turntable' CD player. The *PD-7700* is certainly an up-beat performer with a tight, confident and zippy quality to its music that'll keep you on the edge of your seat. It's not harsh or fatiguing and simply bubbles with enthusiasm.

So what of the cream? Well, I'm pleased to say we uncovered no less than four Best Buys on this occasion. Four new bitstream CD players that will wreak havoc with the competition at their respective price points without ripping you off in the process. Take

The Canon S-50 revealed at Deans.



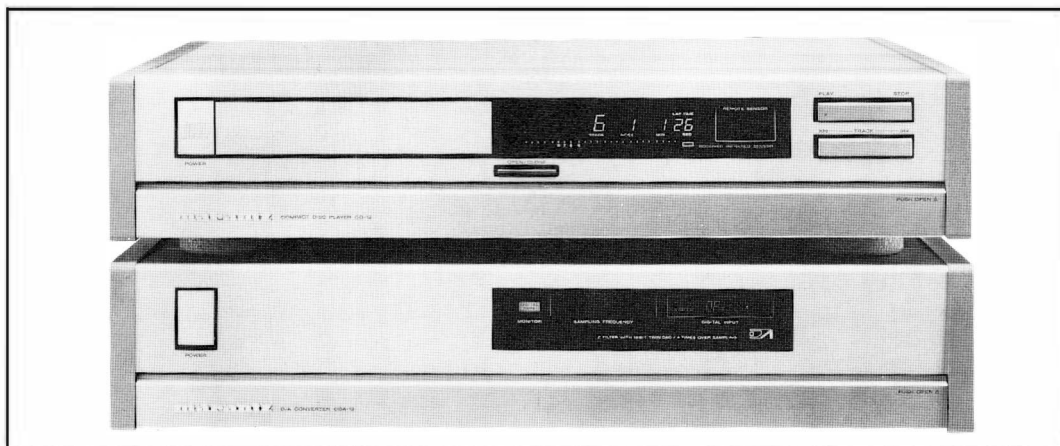
The remarkable new Canon S-50 loudspeaker can be found at Deans Hi-Fi, 283 Edgware Road. This new WIDE IMAGING STEREO™ system creates a large 'sweet area' of sound which gives you stereo to the left, to the right and in the middle. Experience the new Canon speakers at Deans.

DEANS

Canon
WIDE
IMAGING
STEREO™

283 EDGWARE ROAD, LONDON W2 1BB, ENGLAND. TEL: 071-402 6666 (3 LINES) 071-723 4630/4426. FAX: 071-724 2135.

Your chance to win a £3000 C.D. Player from Marantz



Marantz CD 12

All you have to do is to make a purchase of £100 from our large range of hi-fi, TV, video, camcorders & in-car hi-fi supplied by quality brands and we will enter you automatically in the draw. If you use this you double your chances of winning and on purchasing a Marantz unit we'll double your chances again. So come and shop at Deans and you could be the proud owner of one of probably the best CD players in the world.

Offer ends on 15/1/92 Ask for details

ALSO

SPECIAL OFFER

FREE £99.95

Worth of Philips Universal Remote RC779 when you spend over £499.95 + on any product including TV, Video, In-Car Hi-Fi. NOT APPLICABLE to items of clearance special offers & trade ins.

INSTANT CREDIT AVAILABLE ON ALL BRANDS

AIWA, AKAI, B&W, BOSS, BLAUPUNKT, CANON, CLARION, HARMAN-KARDON, JVC, JBL, JAMBO, KENWOOD, MARANTZ, PANASONIC, PHILIPS, PIONEER, PROTON, SHARP, SONY, SENNHEISER, TECHNICS, TARGET, TEAC, THORENS, TOSHIBA

DEANS

MAIL ORDER 071 402 6666

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 'urntable'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 2mm² 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 |

Please complete the coupon in BLOCK CAPITALS and send with correct payment to:
HI-FI CHOICE MAIL ORDER, PO BOX 320, LONDON N21 2NB

Total number of items ordered Total for order £

Please add £1.50 per order to cover postage.

I enclose my cheque/postal order made payable to Dennis Publishing (Hi-Fi) Ltd.

Or please charge my Visa Mastercard (Access)

Credit card number Expiry Date

Signature Name

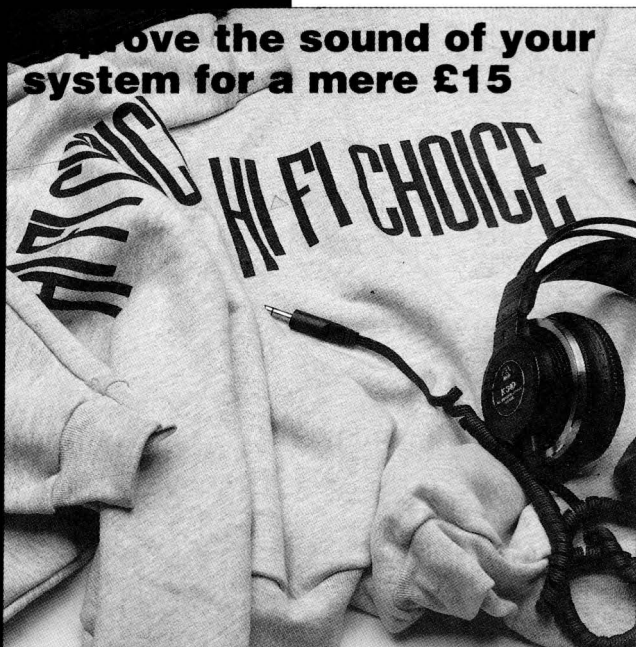
Address

..... Postcode

All prices include VAT. Offer applies to UK only. Items subject to availability; please allow 28 days for delivery.

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.



Reference Recordings

This month we're taking a look at some of the titles on offer from Reference Recordings. All Reference Recordings are engineered by Keith O Johnson and are mastered directly from a hand built focussed-gap analogue recorder.

Microphone techniques range from single point Blumlein to spaced omnis to complex studio pickups, depending on the

musical forces involved and the performing space.

RR Compact Discs are made from digital masters wherever possible and this means that two separate recording systems are run during each recording session, one to provide the analogue master used for the albums and one to provide the digital master used for the Compact Disc.

Below you will find details of the first half dozen or so titles and over the coming months we'll be examining the rest of the range as space permits.

We've also managed to get along to a recent RR recording session in London and will be bringing you a feature on just how these remarkable recordings are put together in the very near future.



Copland: *Appalachian Spring Suite, Eight poems by Emily Dickinson.* Keith Clark/Pacific Symphony Orchestra, Marni Nixon, Soprano (in the poems).

Music by America's best loved composer, *The Appalachian Spring Suite* is presented in its original version for 13 instruments. Also included is the world premiere recording of Copland's orchestration of eight of his Emily Dickinson songs.

This recording was a Grammy Award nominee in 1987. The CD version also contains *An Outdoor Overture*.

Prof Johnson's Astounding Sound Show: Sampler. Orchestral Fanfare - Red Norvo Quintet - Cal Arts Ensemble - Richard Morris - Organ - Susan Mc Donald, Harp - Kronos Quartet - David Rosenthal, Tubulong.

A perennial audiophile favourite, this sampler of Prof Johnson's early work shows what Reference can do with a wide variety of musical and sonic experiences. Includes the only known recording of an unusual tuned mallet instrument, the Tubulong. Guaranteed to give your playback system a royal wringing out!

Kronos Quartet: In Formation. The funky chicken - Remember - Blues - When - Enantiodromia - Joan's Blue - Wind on my back - The Junk food blues - Dark razz - Whatever happened to the hoodoo meat bucket?

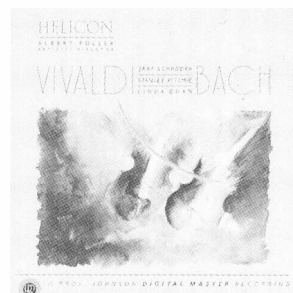
Ever heard a quartet play the blues? Kronos, celebrated exponents of 20th Century masterpieces have another side, represented by this collection of lighthearted tuneful scores, all written specially for the group.

Recorded in St Mary's Cathedral, San Francisco, for an unusual, highly effective soundstage.

Berlioz: Fantastique. *Symphonie Fantastique.* Varujan Kojian, The Utah Symphony Orchestra.

This is widely considered to be the recording of this magical work. The Utah Symphony Orchestra, playing in Salt Lake City's Symphonic Hall, gives world class performance, and the excellent recording captures it in its entirety. The CD contains two versions of the explosive finale, one with standard orchestral bells, and another with digitally recorded church bells.

The 2-disc 45RPM LP set contains two copies of *March To The Scaffold* and *Dreams Of A Witches Sabbath*.



Helicon Ensemble: Vivaldi/Bach *Vivaldi: Sinfonia in C-Trio Sonata in G minor - Double Concerto in E-Flat. Bach: Trio Sonata in C - Double Concerto in D minor.* (Compact Disc also contains *Prelude in C*)

Albert Fuller conducts from the harpsichord a varied original instrument ensemble in works featuring two solo violins, including the great *Double Concerto* by Bach and three rare, ingratiating works by Vivaldi. Featured solo artists are Japp Schroeder, Stanley Richie and Linda Quan.

Recorded at the John Harnes Centre for the Performing Arts in Englewood, New Jersey. CD also contains Bach's *Prelude in C*.

Walton: Facade Suite. **Walton: Facade Suite - Strauss/ Hasnohrl: Till Eulenspiegel - Scriabin/Elliott: Waltz in A-Flat - Neilsen: Serenata in Vano.** Chicago Pro Musica.

An instrumental from Walton's whimsical *Facade* in the composer's original scoring makes a perfect vehicle for these brilliant musicians. A chamber version of *Till Eulenspiegel* and the seldom heard pieces of Scriabin and Neilsen complete this engaging programme.

The Absolute Sound magazine even went so far as to comment: "Walton's *Facade* has seldom seemed so spanky fresh as this crystalline recording. Congratulations to all concerned."

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: *Vivaldij Bach*

- Ref LP82 (£17.49)
- Ref CD82 (£17.49)

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)

Yes! Please send me Hi-Fi Choice sweatshirts at a mere £14.99 each.

Total number of items ordered

Please add £1.50 per order to cover postage

Total for order

I enclose my cheque/postal order made payable to **Dennis Publishing (Hi-Fi) Ltd.**

or charge my Visa Mastercard

Credit card number

Expiry Date Signature

Name

Address

.....

..... Postcode

Please complete the coupon in **BLOCK CAPITALS** & send with correct payment to: **HI-FI CHOICE MAIL ORDER, P.O. Box 320, London N21 2NB**

All prices include VAT. Offer applies to UK only. Also note: the items on offer are subject to availability. Please allow 28 days for delivery

DEALER GUIDE

ENGLAND

BEDFORDSHIRE

WENTWORTH AUDIO

Hi-Fi Specialists
GOOD SOUND FOR A SOUND PRICE

TWO BASEMENT DEMONSTRATION ROOMS

BRANDS STOCKED

Marantz, Musical Fidelity, Pink Triangle, Pioneer, Quad, Sony, Systemdek etc.

10% WORTH ACCESSORIES FREE

with any sale over £100, from Sept-Dec inclusive

INTEREST FREE PROMOTION ALSO

Wentworth Audio, 81 High Street North, Dunstable, Beds.
LU6 1JJ. Tel: Dunstable 663383
Open Tues to Sat. 10-6

BERKSHIRE

B & B Hi-Fi

Berkshire's Leading Specialist

Aiwa, Akai, Bang & Olufsen, Bose, B + W, Cambridge, Celestion, Denon, Dual, Heco, Heybrook, JPW, Kef, Kenwood, Marantz, Mission, Mitsubishi, Monitor Audio, Monster, Mordaunt/Short, NAD, Nagaoka, Nakamichi, Ortofon, Panasonic, Philips, Pioneer, QED, Quad, Revolver, Rogers, Rotel, Sennheiser, Sony, Tannoy, Target, Technics, TDK, Thorens, Wessex, Wharfedale, Yamaha.

Ask about Free delivery & Free installation

11-12 Market Place, **Reading*** Tel: 0734 583730
18, King Street, **Maidenhead*** Tel: 0628 73420
4, Priory Road, **High Wycombe** Tel: 0494 535910
62, North Brook Street, **Newbury** Tel: 0635 32474
Princess Square, **Bracknell*** Tel: 0344 424556

DEMONSTRATION ROOMS*

CAMBRIDGESHIRE

University Audio

NEW PRODUCTS FROM ROKSAN

Now On Permanent Demonstration
At

1&2 PEAS HILL, CAMBRIDGE CB2 3PP
TEL: 0223 - 354237 FAX: 0223 - 322079

Cam Audio

ARCAM, CASTLE ACOUSTICS, CREEK, DENON, EPOS, EXPOSURE ELECTRONICS, JPW, LINN PRODUCTS, MARANTZ, MICROMEGA, MISSION, MORDAUNT SHORT, NAIM AUDIO, NAKAMICHI, REGA RESEARCH

0% Interest free credit

SPECIALIST AUDIO RETAILERS (0223)
110 MILL ROAD, CAMBRIDGE 60442

CHESHIRE

The Hi-Fi Showroom
Peter Martin

4 Duke Street, Congleton (0260) 273206
1 Stanley Street, Leek. (0538) 383780

- AIWA ■ ALBARRY
- ALPHASON
- AUDIOLAB ■ AURA
- B & W ■ CASTLE
- CELESTION ■ CREEK
- DELTEC ■ FERGUSON
- HARMON KARDON
- HITACHI ■ INFINITY
- MORDAUNT SHORT
- MUSICAL FIDELITY
- PANASONIC ■ PHILIPS
- PINK TRIANGLE ■ QED
- REVOLVER ■ ROTEL
- RUARK ■ SONY
- SYSTEMDEK ■ TANNOY
- TEAC ■ TECHNICS
- THORENS

CHESHIRE

ASTON AUDIO HI-FI SPECIALISTS

4 WEST STREET,
ALDERLEY EDGE,
CHESHIRE.

TEL: 0625 582704



DISCOUNT CD & TAPE

EXTENDED GUARANTEE

INTEREST FREE CREDIT

WRITTEN DETAILS ON REQUEST.

CELESTION · YAMAHA · CYRUS

MONITOR AUDIO · CAMBRIDGE

AURA · WHARFEDALE · AIWA ·

AKG · TANNOY · SENNHEISER

MARANTZ · DUAL · DENON

QUAD · SANSUI · TECHNICS ·

SPENDOR · MISSION · SME

NAKAMICHI · AUDIOLAB

ROGERS · AUDIOQUEST ·

MORDAUNT-SHORT

MERIDIAN · DELTEC

ROKSAN · ARCAM

AUDIO-TECHNICA

KEF · NAD · B & W

HI-FI SALE

the hi-fi centre

Green Lane, Wilmslow,

Cheshire SK9 1LW.

Tel: 0625 524766

(Closed Wednesday)

Quad, TDL, Sony, Technics, Teac, Nakamichi.

CUMBRIA



6 ABBEY STREET, CARLISLE 46756

CUMBRIA'S PREMIER HI-FI CENTRE

MISSION CYRUS, MARANTZ, DUAL, LINN, DENON, AIWA, WHARFEDALE, TECHNICS, PIONEER, PHILIPS, MUSICAL FIDELITY, CREEK, NAKAMICHI, REVOLVER, AUDIO INNOVATIONS, ALLISON

DEMONSTRATION AND PART EXCHANGE AVAILABLE

SEARLE AUDIO

STOCKING:

AIWA, B&W, BEYER, CELESTION, CAMBRIDGE AUDIO, DENON, DUAL, KENWOOD, MARANTZ, NAD, SONY ES, TARGET STANDS, TECHNICS & WHARFEDALE.

Demonstrations given with pleasure - No hard selling - All equipment guaranteed with full in house service - Credit facilities available

WELL WORTH A VISIT BARROW-IN-FURNESS

223-229 RAWLINSON ST.

(0229) 821233/839692

CALL FOR DETAILS



DERBYSHIRE

EAST MIDLANDS AUDIO SERVICES STUDER REVOX

SALES SERVICE SPARES

REVOX R77 HS MK TWO, USED	£800.00
REVOX B77 HS MK ONE, USED	£700.00
REVOX PR99 MK ONE, TROLLEY	£1 400.00
REVOX A700 TWO TRACK	£780.00
REVOX B215 CASSETTE EX DEM	£1 000.00
REVOX B260 FM TUNER EX DEM	£700.00
REVOX B126 CD PLAYER EX DEM	£500.00
STUDER B67 STEREO 2 TRACK	£1 800.00
REVOX G36 MK II NS 2 TRACK	£ 550.00
STUDER B62 STEREO 2 TRACK	£1 200.00
REVOX B77 MK II NEW HS	£1 400.00
REVOX C270 STEREO 2 TRACK	£2 800.00
REVOX B226S CD PLAYER	£895.00
REVOX B126 CD PLAYER	£710.00
REVOX B215 CASSETTE DECK	£1 440.00
REVOX B780 RECEIVER	£400.00
REVOX B250 AMPLIFIER	£1 270.00
REVOX B250S AMPLIFIER	£1 325.00
REVOX B260 FM TUNER	£967.00
REVOX M3500 MICROPHONE	£128.00
REVOX B260S FM TUNER	£1 015.00
REVOX B260S RDS TUNER	£1 118.00
REVOX H ONE CASSETTE DECK	£975.00
REVOX H TWO CD PLAYER	£808.00
REVOX H FIVE AMPLIFIER	£950.00
REVOX H SIX FM TUNER	£795.00
REVOX H NINE TURNTABLE	£1 100.00
REVOX B242 POWER AMP	£1 400.00

ALL PRICES PLUS VAT

WE WILL SERVICE ALL REVOX PRODUCTS
INCLUDING 36 SERIES TAPE MACHINES

CALL 0246-275479

ESSEX



ADC · AKAI · ARCAM* · BANG & OLUFSEN · CELESTION
CAMBRIDGE AUDIO* · DUAL · HARMAN KARDON
MERIDIAN · MORDAUNT-SHORT · MUSICAL FIDELITY
PIONEER · QUAD* · RUARK · SONY · YAMAHA

*Epping and Saffron Walden only

148 HIGH STREET · EPPING · ESSEX · TEL: (0378) 74242

26 KING STREET · SAFFRON WALDEN · ESSEX · TEL: (0799) 23728

70 SOUTH STREET · BISHOP'S STORTFORD · HERTS · TEL: (0279) 656401

DERBYSHIRE

Active Audio

ARCAM, AUDIO INNOVATIONS, CELESTION, CYRUS, DENON, KEF REFERENCE, MERIDIAN, MARANTZ, NAKAMICHI, PIONEER, REVOLVER, RAYMOND LUMLEY, ROKSAN, ROGERS, ROTEL, TANNOY ETC, ETC

FULL DEMONSTRATION AND HOME TRIAL FACILITIES
ACCOUNT AND CREDIT CARDS

Active Audio
12 Osmostat Road, The Spot, Derby
Tel: (0332) 380385/385185



DEALER GUIDE

HAMPSHIRE

ALTERNATIVE SOUNDS

9 Dragon Street, Petersfield (0730) 66554 See us also at:
10 Eastgate Square, Chichester, West Sussex PO19 1JH
Tel: (0243) 784710

MISSION, SONY, ROTEL, CAMBRIDGE AUDIO,
MARANTZ, MUSICAL FIDELITY JPW, YAMAHA,
TANNOY, KEF, also the TOWN'S OFFICIAL
AUTHORISED NAKAMICHI DEALER

One Hi-Fi Demonstration Room, One Audio
Visual Room, Home Trials, and Free
Installation Service Department.
Credit Available, Access, Visa
9.30 - 5.30 Mon-Thurs 9.30 - 6.00 Fri-Sat

The Audio Gallery

51 Town Lane, Sheet Green,
Sheet, Nr Petersfield, HANTS.
GU32 2AF
TEL: (0730) 66556

Micromega, Audio Innovations, Rogers, **MANA TABLES**, Pioneer,
Acoustic Energy, QED, Wadia, Threshold, NAD, Forte,
Pink Triangle, Deltec, Denon, Moth, Mordaunt-Short, Teac,
Van Den Hul, Ortofon, Dual, Monitor Audio, Royd,
Good quality Records & CDs £10.99.
Cables and Interconnects. Home Demos.
Single Speaker, Demo Room 2 yr guarantee on
some products. Car parking on site. 10-5 Tues-Sat



HOPKINS HI-FI Sound Advice, Naturally.

38-40 FRATTON ROAD,
PORTSMOUTH, HANTS.
TEL: 0705 822155

SOUNDWAVES

For the best of British Hi-Fi

Demonstration and home trial facilities
3 year warranty on all hi-fi
Interest free credit Access Visa etc

SOUTHAMPTON 0703 899131 WORTHING 0903 2123133

HEREFORDSHIRE

ENGLISH audio IN HEREFORD

Arcam, Audio Innovations, Celestion, Creek,
Cyrus, Deltec, Denon, Dual, Heybrook, JPW,
Marantz, Micromega, Mission, Moth, Musical
Fidelity, NAD, Nakamichi, Pink Triangle,
Rogers, Rotel, Ruark, Systemdek, Tannoy, TDL

Free installations; Credit Facilities; Service Dept.
Mon-Sat 10-6

95, Whitecross Road, Hereford (0432) 355081

HERTFORDSHIRE

The Audio File

Quality
is not expensive
it's priceless

Linn, Naim, Meridian, Quad, Rega, Arcam, Sony, Denon,
Rotel, Mission, Audiolab, Pro Ac, Acoustic Energy,
Monitor Audio, Roksan, etc. etc.....

27, Hockerill St.,
Bishops Stortford,
Herts. 0279 506576.

BADA

Hi-Fi City

Brands stocked include:

Acoustic Research, Aiwa, Cambridge Audio, Canon, Celestion,
Cerwin Vega, Cyrus, Denon, Dual, Infinity, JPW, Kenwood,
Marantz, Mission, Monitor Audio, Musical Fidelity, NAD,
Onkyo, Philips, Pioneer, QED, Rogers, Rotel, Sansui,
Sennheiser, Tannoy, Target Audio, Wessex Cabinets,
Wharfedale.

FRIENDLY PROFESSIONAL ADVICE
WATFORD (0923) 226169
15 CHARTER PLACE, WATFORD



INSTANT CREDIT,
WRITTEN DETAILS ON REQUEST



HUMBERSIDE

MANDERS HI-FI LTD.

For: Nakamichi, Quad, Dual,
Kef, Michell, Denon, Revox, Harman-Kardon,
A+R, Thorens, QED, Spondor, Monitor
Audio, Rotel, Ariston, Revolver, Technics,
Musical Fidelity, Wharfedale, Celestion,
Meridian, Proton, A.E. Speakers etc.

Two year guarantee on hi-fi.

2 Edward St, Grimsby,
Humberside
(0472) 351 391

KENT



Come in and listen.

Marpaul Hi Fi, 3a The Parade, Ash Road,
Hartley, Dartford, Kent, DA3 8HE

0474 703098

Radford CD, Pink Triangle, SME, Moth, Ortofon, Audio
Technica, Croft & Radford valve amps, Monitor Audio,
Mordaunt Short, SD Acoustics, Kammerzell speakers,
plus KEF, Mentmore & Sound Research valve amps.

Valve Repair Service Available
Give us a call for our best prices
& to Book an appointment. Parking Available.



LANCASHIRE

MS MONITOR SOUND

Hi-Fi
Specialists

■ A & R Cambridge ■
Ariston ■ B&W ■ Castle
■ Celestion ■ Creek ■

Denon ■ Dual ■ Foundation ■ Kenwood
■ Marantz ■ Monitor Audio ■ Mordaunt Short
■ Pioneer ■ Philips CD ■ Quad ■ Rogers ■
Rotel ■ Revox ■ Sony ■ Spondor ■
Tannoy ■ Technics ■ Thorens ■
Wharfedale ■ Yamaha etc.

Two year guarantee
Private listening room
Excellent comparator demonstrations

54 Chapel St., Chorley, Lancs.

Telephone (02572) 71935

LEICESTERSHIRE

SOUND ADVICE

ESTABLISHED 13 YEARS

THE MIDLANDS LEADING BRITISH
EQUIPMENT SPECIALISTS,
FOR OVER A DECADE

NAIM • LINN • MICROMEGA • MISSION CYRUS •
ROYDAUDIO • REVOX •
SENNHEISER • ROTEL • YAMAHA • NAKAMICHI •
EPOS • CREEK • REGA • JPW • ARCAM •
HEYBROOK • MORDAUNT-SHORT

EXCLUSIVEREGAGENT:
LEICESTERSHIRE & NOTTINGHAMSHIRE
TEL LOUGHBOROUGH : 0509 218254

LONDON

▲ AUDIO ▼ AVENUE

— AUDIO CONSULTANTS AND RETAILERS —

24, CHURCH ROAD, CRYSTAL PALACE,
LONDON SE19 2ET - TEL: 081-771 7787

Stockists of: Mana Acoustics, Linn Hi-Fi, Naim
Audio, Creek, Rotel, Audio Tech, Epos,
Denon, Dual, Revolver, BLQ, Yamaha,
Marantz, Monitor Audio, Cambridge etc.

Ring for special deals on Nakamichi.
2 single speaker demonstration rooms,

Interest Free credit facilities available.

All equipment delivered & installed. Comprehen-
sive turntable rebuilds etc. 2 year warranty.

Open 10-5.30pm
Closed all day Wednesday and Sunday

GALAXY AUDIO VISUAL

Audio - Video -
Hi Fi - Television
Tel: 071 637 2624/5

• BLAUPUNKT
• KENWOOD
• BOSE
• AKAI
• TECHNICS

Time & Tune

Audio, Video, TV, Hi-Fi.
218/220 Whitechapel Road,
London E11BJ
Tel: 071 247 0567
Fax: 071 247 2736

• SONY
• PANASONIC
• PIONEER
• AIWA

CLASSIFIED

DEALER GUIDE

LONDON



B.A.D.A. MEMBER

EVERYTHING YOU'VE EVER WANTED IN A GOOD HI-FI STORE

OCTOBER is **MISSION** month in London and at most stores. Special displays and demonstrations. Plus the latest information and some exclusive Super Deals.

Tel. Enquiries to (071) 580 3535

LONDON - 227 Tottenham Court Rd - BIRMINGHAM
GLASGOW - LEAMINGTON - BELFAST - BRADFORD


A.U.D.I.O. C.O.N.C.E.P.T.

27 Bond Street, Ealing, London W5 5AS
Tel: 081-567 8703

A & R Cambridge, Bang & Olufsen, Beyer Dynamic, Cambridge Audio, Castle, Denon, Dual, Infinity, Kef, Mission/Cyrus, Monitor Audio, Mordaunt Short, Musical Fidelity, NAD, Nakamichi, Onix, Proton, Rogers, Rotel, Sennheiser, Tannoy, Target Audio, TEAC, Thorens, Wharfedale.

Opening hours: 10-6 Mon, Tues, Fri, Sat.
10-7.30 Thursday. Closed Wednesday

MANCHESTER



MANCHESTER LTD. EST. 1946

30-32 SHUDEHILL, MANCHESTER M4 1EY
Tel: 061-834 6700

Main Agents for:
JBL, Mission, B&W, Wharfedale, Aiwa, Teac, Harman-Kardon, Dual, Thorens, Panasonic, Pioneer, Technics, Sony, Bose, Trio-Kenwood

WEST MIDLANDS

NEW HORIZON AUDIO

WOLVERHAMPTON
Tel: 0902 751302

Agencies include:
Albarray, Audio Innovations, Audio Note, JPW, Micromega, Ortofon, Snell, Systemdek, Voyd.

Free Home Demos & Installation

WEST MIDLANDS

ALTERNATIVE

AGENCIES INCLUDE: Acoustic Energy, Aiwa, Alphason, Arcam, Audiolab, Bose, Canon, Celestion, Cyrus, Denon, Dual, Exposure, Infinity, Kef, Mantra, Marantz, Meridian, Michell, Mission, Monitor Audio, Musical Fidelity, NAD, Nakamichi, Philips, Quad, Roksan, Rotel, Ruark, Systemdek, Wharfedale.

Open until 7pm Mon-Fri.
ALTERNATIVE AUDIO
Tel: 021 742 0254
93-95 Hobs Moat Road,
Solihull, West Midlands B29 8JL.
Mon-Fri 10.30-7pm, Sat 10-5pm

BRIDGE HIFI

3 Tudor House, Bridge Street, Walsall. (0922) 640456.
NAD, Dual, Yamaha, Sennheiser, Wharfedale, Bowers & Wilkins, Kenwood, Technics, Pioneer, Mission, Celestion, Denon, Mordaunt Short, Marantz, Aiwa, Akai.

Demonstrations, Home trial and free installations. Access, Visa, Diners, Amex.
Credit to £1,000. 9.15-5.30. Mon-Sat.
Service Dept.

HI-FI VISION

Birmingham City Centre's Biggest range of Hi-Fi, TV & Nicaam Video Recorders
AIWA, AKAI 101 DEALER OF DISTINCTION, BOSE, CANON, HITACHI, KEF, KENWOOD CENTRE DEALER, PANASONIC, PIONEER REFERENCE POINT, SHARP, SONY, TOSHIBA, WHARFEDALE

OPEN 6 DAYS A WEEK 9-6PM
122-123 NEW STREET, BIRMINGHAM B2 4JU
021 633 4944

Norman H. Field Hi-Fi

Consultants for Home High Fidelity

- B&W ■ Thorens
- Denon ■ Tannoy
- Castle ■ Yamaha
- Dual ■ Kenwood
- Mordaunt-Short
- Technics

NAD


Two-year guarantee
Private listening room
HURST STREET
BIRMINGHAM B5 4BJ
Telephone: 021-622 2323

MAINWAY Est. 1981


THE MOST EXCLUSIVE INDEPENDENT HI-FI STUDIO
Instant credit up to £1,000 - Open 6 days a week
- Ample parking - 2 year guarantee - Free delivery - Service department

MERIDIAN, KEF REFERENCE, ARCAM, MARANTZ, DELTEC, SYSTEMDEK, QUAD, AUDIO TECHNICA, CAMBRIDGE, HARMAN, JPW, LINX, MICROMEGA, MISSION, MOTH, MUSICAL FIDELITY, ORTOFON, QED, ROGERS, SOUND FACTORY, ARISTON, TDL, VAN DEN HUL, WHARFEDALE, XPL, YAMAHA

Just off the High Street
Bloxwich
Walsall, West Mids.
Tel: 0922 473499/493449



NORFOLK



Near Norwich Norfolk.
Tel: (0508) 70829

Basic Sound of Norfolk (0508) 70829

Arcam, Linn, Naim, Rega, Exposure, Creek, Epos, Acoustic Energy.

NORTHAMPTONSHIRE

State of the Heart Hi-Fi

Rotel, Marantz, Kenwood, Yamaha, Philips, Musical Fidelity, Mission, Monitor Audio, Rogers, Celestion, Wharfedale, Mordaunt Short, & many more.

Free delivery * 2 year guarantee on all Stereo Components * Unbiased Advice

Classic Hi-Fi Tel: 0536 515766
School Lane, Kettering, Northants 0536 515706

NOTTINGHAMSHIRE

PETER ELLIS AUDIO

A comprehensive range of Hi-Fi separates in stock including:

TECHNICS, DENON, MARANTZ, NAKAMICHI, KENWOOD, PHILIPS, YAMAHA,

AKAI, ARCAM, SUGDEN, CASTLE, CELESTION, CREEK, KEF, TANNOY, CAMBRIDGE AUDIO, GOODMANS, QUAD, STAX, MUSICAL FIDELITY, QED, ONYX, ROGERS, MORDAUNT-SHORT, BAYER, SENNHEISER, TEAC, THAT'S.

29, KIRKGATE, NEWARK, NOTTINGHAM.
(0636) 704571

OXFORDSHIRE

o v e s t u r e

arcam
acoustic energy
audiolab
creek
cyrus
denon
dual
epos
heybrook
jpw

linn products
marantz
meridian
mission
mordaunt-short
naim audio
quad
rotel
systemline
yamaha

3 Church Lane, Banbury, Oxon
(0295) 272158

IF

You like talking to helpful people with sound advice. A shop that has demonstration facilities, workshop, and after sales care: PLUS stocks of well known Hi-Fi, Video, and TV

THEN PHONE

WITNEY AUDIO VISUAL

28 High St. Witney OXON
TEL. 0993 702414. FAX 0993 779584

CLASSIFIED

DEALER GUIDE

SHROPSHIRE

SHROPSHIRE'S HI-FI CENTRE!

Quad
B&W
Kenwood
TEAC
Celestion
NAD
A&R
Nakamichi
Beyer Dynamic
Dual

AVON Hi-Fi Limited

12 Barker Street, Shrewsbury
(0743) 355166

SHROPSHIRE HI-FI THE HI-FI SPECIALIST

ARISTON, AUDIO TECHNICA, CAMBRIDGE
AUDIO, DELTEC, DENON, DUAL, INFINITY,
KENWOOD, MARANTZ, MORDAUNT SHORT,
MUSICAL FIDELITY, MONITOR AUDIO,
ORTOFON, PIONEER, PROAC, QED, ROKSAN,
RUARK, ROTEL, SONY, TANNOY, TARGET,
TEAC, THORENS, TOWNSHEND,
WHARFEDALE, ETC.

2 Demonstration Rooms, Free Parking,
Free installation, Repairs.

SHROPSHIRE HI-FI, ST. MICHAEL'S
STREET, SHREWSBURY 0743 232065
SMC GROUP

Mid Shropshire Audio

4, Holland Court, Dawley, Telford, Shropshire.
Tel. & Fax. (0952) 630172

Sansui
MISSION
ELECTRONICS

2 demonstration lounges. Access, Visa. Open six days
a week, Sundays and evenings by arrangement. We
specialise in audio visual and surround sound
(Marantz SP50) also pub/club sound systems (no
labour charges).

STAFFORDSHIRE

Active Audio

ARCAM, AUDIO INNOVATIONS, CELESTION, CYRUS, DENON, KEF REFERENCE,
MERIDIAN, MARANTZ, NAKAMICHI, PIONEER, REVOLVER,
RAYMOND LUMLEY, ROKSAN, ROGERS, ROTEL, TANNOY ETC, ETC

FULL DEMONSTRATION AND HOME TRIAL FACILITIES
ACCOUNT AND CREDIT CARDS

Active Audio
29 Market Street, Tamworth, Staffs
Tel: (0827) 53355



Active Audio

ARCAM, AUDIO INNOVATIONS, CELESTION, CYRUS, DENON, KEF
REFERENCE, MERIDIAN, MARANTZ, NAKAMICHI, PIONEER, REVOLVER,
RAYMOND LUMLEY, ROKSAN, ROGERS, ROTEL, TANNOY ETC, ETC

FULL DEMONSTRATION AND HOME TRIAL FACILITIES
ACCOUNT AND CREDIT CARDS

Active Audio
95 Stafford Street,
Hanley, Stoke-On-Trent
Tel: (0782) 214994



Private Carpark
At Rear

SURREY



SPECIALIST HI-FI OUTLET
DEMONSTRATION ROOM - PARKING

• CHORD • MARANTZ •
• METAXAS • BASIS • KEF • MUSICAL •
• FIDELITY • MICHELL • TDL •
• TANNOY • ROTEL •
'REFERENCE IMPORTS DEALER'

Just 2 minutes off Junc. 6 M25, (A25)

GODSTONE 0883 744755
45 High St, Godstone, Surrey RH9 8LS

HI-TECH AUDIO

69 HIGH STREET, REIGATE, SURREY RH2 9AE.
TEL: 0737 242197

SALES & SERVICE

AR. ALLISON. BOSE. CASTLE. CELESTION. DENON
DUAL. HARMAN. INFINITY. JBL. KENWOOD
MARANTZ. MISSION. MORDAUNT. SHORT. NAD
PIONEER. PHILIPS. ROTEL. SENNHEISER. SANSUI
TANNOY. TARGET. YAMAHA
Demonstration Room, Free Delivery & Installation
ACCESS VISA AMEX

SUSSEX

**P
H
A
S
E
3**

Hi Fi Sales Demonstrations & Service

NAD, Denon, Yamaha, Marantz, Dual,
Kenwood, Rotel, Musical Fidelity, Aiwa, Aura,
Ariston, Kef, Tannoy, Wharfedale, B&W,
Spendor, Celestion, Rogers, Sennheiser,
Audio Technica, Ortofon.

53 Brighton Rd, Worthing, Sussex
0903-206820



Audio Innovations, B&W, Castle, Celestion, Deltec,
Micromega, Musical Fidelity, Nakamichi,
Pink Triangle, Oracle, QED, Quad, Radford, JPW,
Spendor, Tannoy, Target, Yamaha and many more.

16, Albert Parade, Green Street, Eastbourne,
BN21 1SD. Tel: (0323) 25828

definitive audio

Audio Innovations, Audionote, Voyd, Impulse,
Snell, Systemdek, Teak, Goldring, etc.

Brighton Tel: (0273) 208649

Telephone appointments preferred

Late opening and home demonstrations by appointment

WARWICKSHIRE

Castle HiFi Ltd

WARWICKSHIRE'S NEWEST
SPECIALIST DEALER
Stockists of all leading brands.

Castle Hi Fi Ltd
59 Smith's Street
Warwick, Warks CV34 4HV
Tel: 0926 499 963

HI-FI VISION

AIWA - AKAI 101 CENTRE OF EXCELLENCE-
KENWOOD CENTRE- PIONEER REFERENCE
PONIT - SONY - TECHNICS - WHARFEDALE -
PANASONIC - KEF - BOSE - CANON - AR

78 Lower Precinct, Coventry,
Warwickshire CV1 1DX
0203 632086

YORKSHIRE

SOUND WITH STYLE

LINN-NAIM-REGA
ARCAM, Etc....

...AND ALL THATS BEST IN HI-FI

81 NETHER HALL RD. DONCASTER DN1 2QA
TEL: 0302 - 321421

EIRE

DUBLIN

CLONEY
Audio

55 MAIN STREET
BLACKROCK
DUBLIN.
TEL: 01-2889449
2888477
FAX: 2834887

MAGNEPLANAR
MUSICAL FIDELITY
NAKAMICHI
ARCAM
PHILIPS
LINN
NAIM
REGA

TECHNICS
SPENDOR
APOGEE
ROGERS
CLASSE
DELTEC
CREEK
SONY

AND THE BEST FO THE REST!!
CLOSED MONDAY - OPEN LATE TILL 9 PM THURSDAY/FRIDAY

STUDIO ONE
VIDEO - HI-FI - T.V.

DENON : MISSION : REGA : DUAL :
SENNHEISER : AR : SONY :

TECHNICS : PIONEER : NAGAOKA

Trade ins taken

17/18 Upper O'Connell St.,
Dublin 1, Ireland.
Tel. 742550

CLASSIFIED

DEALER GUIDE

EIRE

DUBLIN

CLASSIC HI-FI AUDIO

ARCAM ▷ AIWA ▷ BOSE ▷ CELESTION
KENWOOD ▷ LINN ▷ MUSICAL FIDELITY
NAD ▷ Q.E.D. ▷ ROGERS ▷ REGA ▷ SANSUI
SENNHEISER ▷ TANNOY ▷ YAMAHA

DOLBY PRO LOGIC AND SURROUND
A.V. SPECIALIST

4 Cathal Brugha St., Dublin 1. Tel: 745910

SCOTLAND

ANDREW THOMSON

Arcam, QED, Kenwood, Quad, Denon, Technics,
Nakamichi, B+W, Tannoy, Monitor Audio

19-23 High St., Dunfermline Tel: (0383) 724541	195 Morningside Rd., Edinburgh Tel: (031) 447 5229 (031) 447 6880	3 Whytescaue Way, Kircaldy Tel: (0592) 205997
--	--	---

The Best Prices, Quality, Personal Attention & Guarantees

VIDEO: Canon, Hitachi, Sharp, Finlux, Philips
Grundig etc.

HI-FI: Yamaha, Rotel, Bose, Aiwa, Marantz,
Philips, Wharfedale, Infinity, Kef etc.

THE BEST CHOICE

155 BUCHANAN STREET
GLASGOW 041 248 5242
Between St. Vincent Street and George
Street, close to Underground Station



NORTH WALES

ACTON GATE AUDIO THE HI-FI CENTRE IN WREXHAM

B&W, NAD, Yamaha, Quad, Ortofon, Rotel, Mission, Cyrus,
Thorens, Wharfedale, Cambridge, Tannoy, Celestion,
Marantz, Audio Technica, Acoustic Research, Radford,
Proton, ARCAM, Rogers, Spendor, Michell, Nakamichi Rega.

4 RUABON ROAD, WREXHAM
TEL: 0978 364500

ELECTRO-TRADER HI-FI

Phone John Hodgkinson for expert advice,
personal service & keen price

PRODUCT LIST:

ROTEL, YAMAHA, HARMAN/KARDON,
TEAC, NAKAMICHI, ALPHASON, ARISTON,
B&W, HECO, INFINITY, JBL, MISSION,
MONITOR AUDIO, TANNOY, TDL, THORENS,
& MORE!

19 COLWYN CRESCENT, RHOS-ON-SEA,
COLWYN BAY, NORTH WALES.
PHONE: 0492 548932

MAIL ORDER

PANATEC SOUND & VISION CENTRE
LTD 83b High street, Gillingham, Kent.
0634 573141 Kenwood, Pioneer, Sony,
Technics, Bose, Tannoy, B&W,
Goodmans.

MAIL ORDER RETAIL

Babber ELECTRONICS

Akai, Aiwa, A&R, Celestion, Dual, Goodmans, Harman
Kardon, JBL, JVC, Kenwood, Marantz, Panasonic, Sennheiser,
Sony ES range, Tannoy, Technics, Wharfedale, Yamaha.

Send to:

BABBER ELECTRONICS

158 UXBRIDGE ROAD, WEST EALING, LONDON W13 8SB

TEL: 081 579 6315

MUSIC

the **CLASSICSDIRECT** service

For the best in classical music - on CD, tape & video

Call for our comprehensive brochure,
or simply phone or write with your requirements.

Free Post & Packing: Prices below RRP

Compact Classics Ltd, Freepost, London W11 2BR.

071 221 1735 (24hrs)



TEL: (0222) 472323 (24hrs) /
(0222) 473670
FAX: (0222) 472324 (24hrs)

THE AUDIOPHILE MAIL
ORDER SPECIALIST.

Available to order from us on compact disc or
vinyl (where available) the following labels:

Altarus, Audiophile, Audioquest, Cardas,
C.M.P., History of recorded sound,
Kaleidoscope, Kiku, Klimo, Odin, Proprius, Reference,
Sheffield Lab, Stereophile, Townhall, Water Lily,
Wilson, American Gramophone, Bainbridge, Mobile
Fidelity, M&K, Quartet, Three Blind Mice and
Audio/Stereoplay Elite.

Please send large S.A.E. for full catalogue.
Quoting ref no. HIC 1

15, THE GLOBE CENTRE, WELLFIELD ROAD,
ROATH, CARDIFF, WALES, UK.

acorn MUSIC

Incorporating
Peter Russell's
Hot Record Store
Est 1959

Mail Order Specialists for Jazz, Latin-American, Big
Bands, Blues, R&B, Nostalgia etc. Huge stocks of CDs,
LPs and tapes: Noted for Jazz Books and Videos.
Free lists. Callers welcome by appointment.

GROVE HILL, VICTORIA ROAD, BARNSTAPLE
DEVON EX32 8DS. TEL: 0271 43477

WANTED

BUY! SELL! EXCHANGE!

We accept for cash or exchange
ALL 2nd hand Audio & Video
equipment. Everything
accepted in **ANY**
condition - **ABSOLUTELY** nothing refused!
MUSIC & VIDEO EXCHANGE

56 Notting Hill Gate, London W11
Open 7 days 10am - 8pm
Tel: 071 243 0506

FOR SALE TRADE

● Shan Acoustics ● Aural Alchemy
● Audio Dimensions ●

UK Agent

ATS Sales and Marketing

49 Ty-Mawr Rd, Cardiff CF3 BB3

Tel/Fax: (0222) 793924

ACCESSORIES



Lynwood Electronics

COLEY LANE FARM,
WENTWORTH,
ROTHERHAM S62 7SQ.

Super Analogue Phono Stages	£ 95.00
Plinth Mounting Head Amp	£ 95.00
Valve Phono Stages	£295.00
Audio Mains Cleaners	£ 49.95
	£195.00
	£295.00

campaign audio design

"Cables to make your mouth water!"
SOLID SILVER, SOLID CORE.

0.5m.....gold phono plugs.....£24.99

1m.....gold phono plugs.....£44.99

*14 day money back guarantee.

*Post and packaging FREE! (UK ONLY).

*Will supply any termination your little heart desires.

*Allow 28 day delivery.

Campaign Audio Design

Hollins Grove (HFC), Manchester M12 5RR
Tel: (061) 225 2438

SERVICES



II TRACK AUDIO SERVICES



HAVE YOUR REVOX SERVICED BY THE MOST EXPERIENCED REVOX ENGINEERS IN THE UK.

(Combined 25 yrs experience)

● All Engineers -EX BAUCH / REVOX ● The only service centre specialising in REVOX Equipment ●
Turn-around time 2-12 hrs / 1 year warranty

BAUCH NO LONGER SERVICE REVOX, IF YOU WANT THE SAME STANDARD OF WORKMANSHIP. THEN CALL US NOW!

●●●SALES●●●

● REVOX ● NEUMANN ● GEFELL Microphones ● DENON ● SENNHEISER ●
● And many more ●

TEL: 081 905 1333 FAX: 081 905 1293 MOBILE: 0831 569278

2 Penta Court, Station Road, Borehamwood, Herts WD6 1SL

CLASSIFIED

DEALER GUIDE

The
dealers presented here
are specialists in the art
of installing remote controlled
MULTI-ROOM HI-FI AND VIDEO SYSTEMS.

From planning to installation – consult the experts



**Come and listen to our
Audio/Visual systems.**

45 HIGH ST., HOUNSLOW, MIDDLESEX. FAX: 081 569 6353
TEL: 081 569 5802



THE listening rooms
Londons foremost
QED systemline consultants
Complete service - planning, design & installation.

161 Old Brompton Road TEL: 071 244 7750/59
London SW5 0LJ FAX: 071 370 0192

SOUND IMPLICITY
Specialists in Multi-Room Hi-Fi
Integrated with Video, Satellite
Telephone & Door Entry Systems

081-783-1257

MULTI-ROOM HI-FI & VIDEO SYSTEMS



68 CHURCH STREET RUNCORN TEL 0928 572578



30 WATER LANE WILMSLOW TEL 0625 537141

FROM PLANNING TO INSTALLATION

MULTI ROOM AUDIO VISUAL SYSTEMS

- Remote control from any where in the house
- Choice of all available systems
- Systems designed to suit your requirements using any brand of Hi-Fi
- Prices to suit all budgets
- Free quotations
- Call today for a copy of our colour brochure

SOUND
Creation

TELEPHONE: (0234) 713975 FAX: 0234 241134
UNIT 4, OSBORNS COURT
OLNEY, BUCKS MK46 4LA

GRAHAMS HI-FI

Canonbury Yard,
190a New North Road,
London N1 7BS
Phone: 071-226 5500

London's Multiroom Specialists
Meridian, QED Systemline, Roomlink, In-wall Speakers...
Consultancy, design and professional installation.
"One of the 5 best hi-fi shops in the world"
Ring for a chat and a map!

THE VIDEO FACTOR LTD

11-13 Packhorse Road, Gerrards Cross, Bucks SL9 7QA.
Phone 0753 883243/884552 Fax: 889005

Visit our showrooms for a practical demonstration of the
QED systemline & roomline multiroom sound systems
Please phone 0753 884552 to arrange an appointment.

**To Advertise on this Page,
Please Call
Miriam Young
on:-
071 631 1433**

**This feature is sponsored by QED AUDIO PRODUCTS LTD.
The specialist manufacturer of multi-room and home installation products.**



CLASSIFIED

The Choice Dealer Directory

BRITISH AUDIO DEALERS ASSOCIATION

BADA

THE ULTIMATE IN
SOUND ADVICE

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.

AVON

AUDIO EXCELLENCE, 65 Park Street, Bristol. (0272) 264975. Audio Research, Linn, Arcam, Mission, Quad, Naim, NAD, Yamaha, etc. Closed Mon. **BADA**

PAUL GREEN HI-FI LTD, Kensington Showrooms, London Road, Bath. (0225) 316197. Linn, Musical Fidelity, Krell, A&R, Creek, Rogers, Quad, Cust. car park. Best selection in the West. **BADA**

RADFORD HI-FI, 52-54 Gloucester Rd, Bristol. (0272) 428247. Choose from a huge selection of the world's leading hi-fi manufacturers in one of our 3 modern dem rooms. Expert advice and personal service guarantee your total satisfaction. FREE home trial, FREE installation. Visa, Access credit facilities. 9-5.30 Mon-Sat. **BADA**

RADFORD HI-FI, 4 Merchant St, Broadmead, Bristol. (0272) 294183. One dem lounge. 9.30-6 Mon-Sat. Other details as above. **BADA**

RADFORD HI-FI, 12 James St West, Bath. (0225) 446245. All details as Gloucester Road shop above. **BADA**

PAUL ROBERTS HI-FI, 31-33 Gloucester Road, Bristol. (0272) 429370. Huge selection from the world's leading names, comprehensive demo facilities including comparator, demo rooms, and home trial. Total after sales care. Compact Disc specialists - guaranteed best deal in the UK on any CD player from stock. Credit facilities. Open Mon-Fri 9.30-7.30, Sat 9.30-6. Best Price Promise

PAUL ROBERTS HI-FI, 203 Milton Road, Weston-Super-Mare. (0934) 414423. For facilities see entry above. **BADA**

V' AUDIO, 36 Druid Hill, Stoke Bishop, Bristol B59 1EJ. (0272) 686005. ATC, Acoustic Energy, Ruark, AVI, Exposure, Dahlquist, Threshold, Pink Triangle, Wadia. Demos by apt only, home trial facilities, free installation, service facilities. **BADA**

BEDFORDSHIRE

HYPERTEC, 66-68 Saint Lyles St., Bedford. (0234) 325066. Pioneer Reference Point, Tannoy, Bang & Olufsen, Musical Fidelity, B&W, Rotel, Wharfedale, Dual, Marantz, Alphason. Demo facilities, Private demo room by apt. Home trial facilities, Free installation, Service dept. Access, Visa, Hypertec, credit charge. Mon-Sat 9.30-5.30, closed Thurs. **BADA**

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 apt. nec. Home trial. Free install. Service dept. Access & Visa. Tue-Sat 10-6. **BADA**

BERKSHIRE

B&B HI-FI, 11-12 Market Place, Reading, Berkshire, RG1 2EG. (0734) 583730. Aiwa, Denon, Kenwood, Mission, NAD, Panasonic, Pioneer, Rotel, Sony, Technics. Free installation, Service dept. Access, Visa, Credit Facilities including interest free credit subject to status. 9.30-5.30, Sat 9-5.30. Also at: Bracknell, Maidenhead, High Wycombe, Newbury. NEWBURY AUDIO, 2 Weavers Walk, Northbrooke St., Newbury, Berkshire RG13 1A1 (0635) 33929. Linn, Naim, Roksan, Exposure, Creek, Epos, Royd, Denon, Nakamichi. Single speaker dem. Room. Apts. necessary. Home trial facilities. Free installation. Service dept. Late appointments. Access, Visa. Interest free credit subject to status. 6 days 9.30am-6pm. **BADA**

RADFORD HI-FI, 43 King Edward Court, Windsor. (0753) 856931. Choose from a huge selection of the world's leading hi-fi manufacturers in one of our modern dem rooms. Expert advice and personal service guarantee your total satisfaction. FREE home trial, FREE installation. Visa, Access credit facilities. 9-5.30 Tue-Sat. **BADA**

READING HI-FI CENTRE, 4 Queen's Walk, Reading RG1 7QF, (0734) 585463. 'The best equipment, advice and service from Berkshire's premier Hi-Fi emporium'. **BADA**

BUCKINGHAMSHIRE

AUDIO INSIGHT LTD, 53 Wolverton Rd, Stony Stratford, Milton Keynes (0908) 561551. Arcam, Audiolab, Heybrook, Ion, Linn, Meridian, Quad and more. Access, Visa, Finance, Dem. Room etc. **BADA**

AYLESBURY HI FIDELITY, 98 Cambridge St, Aylesbury (0296) 28790. Denon, Dual, Exposure, Heybrook, Marantz, Musical Fidelity, NAD, Roksan, Rotel, Systemdek. 2 Dem rooms, apt reqd. Mon-Fri 10-6, Sat 9.30-5.30. Home trial, free installation, credit to £1,500. Access, Amex, Diner, Visa. Service dept. **BADA**

DEJAC HI-FI CONSULTANTS, 21 The Broadway, Old Amersham, Bucks, HP7 0HL. (0494) 431290. NAD, Rotel, Musical Fidelity, Quad, A&R, Cambridge, Denon, Monitor Audio, Tannoy, Celestion, Dual. Single speaker Dem. room. No apt. necessary. Home trial facilities. Free install. Custom remote controlled systems. Instant credit tricity finance. 9.30-5.30 Mon-Sat. **BADA**

TECHNOSOUND, 7 Graville Square, Willen Centre, Milton Keynes. (0908) 604949. Bang & Olufson, Denon, Rotel, Technics, Yamaha and enthusiast Hi-Fi. Also at Luton and Dunstable

CAMBRIDGESHIRE

AUDIO FILE, 2 Foundry Walk, Market Hill, St. Ives, Cambridgeshire. (0480) 66123. Linn, Naim, Rega, Quad, Cyrus, Arcam, Musical Fidelity 9.30am-6pm 6 days. 0% Credit. **BADA**

CAM AUDIO, 110 Mill Road, Cambridge, CB1 2BD. (0223) 60442. Linn, Naim, Rega, Arcam, Micromega, Denon, Marantz, Nakamichi, Creek, JPW. 2 single speaker demo rooms, appointments preferred. Free installation, Access & Visa. Interest Free Credit. 9.30-6.00 Mon-Sat, closed Thurs. **BADA**

CAMBRIDGE HI-FI, 1-3 Hawthorn Way, Chesterton, Cams, CB4 1AT (0223) 67773. Mission-Cyrus, Rotel, Kenwood, Pioneer, Manticore, Revolver, Ariston, I.T.L., KEF, Meridian, Technics, Ruark, Monitor Audio Single speaker dem. room. Tues-Sat 9.30-5.30 closed Mon. Free installation. Service Dept. Visa, Access, Credit facilities. **BADA**

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. **BADA**

STEVE BOXSHALL AUDIO, 41 Victoria Rd, Cambridge CB4 3BW. (0223) 68305. 10-6 - 6 days. 3 dem rooms, home trial, apts. preferred. Free installation and service dept. Access, Visa & credit. **BADA**

UNIVERSITY AUDIO, 1-2 Peas Hill, Cambridge. (0223) 354237. Roksan, Quads, Meridian, Arcam, Musical Fidelity, Marantz, ATC, Pioneer, Yamaha, Infinity. 2 dems, 1 single speaker. Home trial, free install, Service Dept. Visa, Access, Amex, Credit. 9-5.30

CHANNEL ISLANDS

BASE HI-FI, 34-35 Hilgrove St, St Helier, Jersey. 0534 58518. Linn, Meridian, Arcam, KEF, Denon, Yamaha, Rotel, Wharfedale, Nakamichi, RCF, etc. Single speaker demo lounge, home trial facilities, free installation, service dept. 10 month or 6 month % FREE credit. Access & Visa. 9-5.30 6 days. (multi room installations) **BADA**

CHESHIRE

ASTON AUDIO, 4 West St, Alderley Edge. (0625) 582704. Wide range of specialist audio, interest free credit. Visa, Access. Home trial. **BADA**

DOUG BRADY HI-FI, Kingsway Studios, Kingsway North, Warrington. (Padgate 0925) 828009. 'Largest choice of specialist Hi-Fi in N.W.' All credit cards. 3 Dem rooms. Open 6 days **BADA**

CHRIS BROOKS HI-FI, 29 Gaskell St, Stockton Heath, Warrington (0925) 61212/3. Tues-Sat 10-6. 2 dem rooms. Credit facilities. All credit cards. Total absence of bull**** **BADA**

CONGLETON HI-FI, 1/1a Duke St, Congleton, Cheshire, CW12 1AP (0260) 297544. Arcam, Linn, Naim Audio, Nakamichi, Epos, Audio Innovations, Marantz, Voyd, Royd, Rational Audio. Superbly appointed single speaker demo facilities. No apts nec, home trial facilities, free installation. 2 year guarantee on all equipment. Access, Visa. Mon-Fri 10-6, Sat 9.30-5.30. Other times by apt. **BADA**

NEW DAWN HI-FI, 1-3 Castle St, Lower Bridge St, Chester. (0244) 324179. Linn, Quad, Technics, National Panasonic, Denon, Rotel, Dual, Meridian, Aiwa, Philips **BADA**

PETERS HI-FI, 4 St Michaels Squ., Grosvenor Precinct, Chester. (0244) 322063/319392. Linn, Arcam, Technics, Sony, Marantz, Dual, Denon, Tannoy, Wharfedale, Quad. 2 single spker dem rooms, no apts nec., free installation, service dept. Access, Visa, Amex, Peters credit chargecard. Mon-Sat 9-5.30. **BADA**

SWIFT OF WILMSLOW, 4-8 St Annes Parade, Wilmslow. (0625) 526213. Arcam, Denon, Kenwood, Musical Fidelity, Marantz, NAD, Cambridge. 2 dem rooms. Tues-Sat 9.15-6pm. No pressure! **BADA**

CLEVELAND

ACTION ACOUSTICS, 155-157 High Street, Redcar, Cleveland TS10 3AN. 0642 480723. Audio Innovations, Cambridge, Harman-Kardon, JBL, Michell, Musical Fidelity, Pink Triangle, Revox, Rogers, Thorens, etc. Dem Room. Apts nec. Home trial facilities, free installation, service dept. Access, Visa & H.P. Open 9.15-5.30 **BADA**

GILSONAUDIO LTD, 172 Borough Road, Middlesbrough. (0642) 248793. Linn, Exposure, Arcam, Mission, Cyrus, Denon, Marantz, Rotel, Pioneer, Audiolab, Tannoy. Demonstration facilities in main shop and 1 dem. room, apt nec, home trial facilities, free install. on request, service department. Access, Visa, HP. 10-5 - 6 days. **BADA**

CORNWALL

DEFINITIVE AUDIO, St Austell, Cornwall TR16 5NH. (0726) 844039. Voyd, Audio Innovations, Snell, Helius, Audio Note, System Dek, JPW, Deltac, Goldring, TEAC, SME, etc. Free Home Demo and Installations throughout Cornwall. Credit facilities. Open 7 days **BADA**

TRURO HI-FI at E.T.S., 25 Kings Street, Truro. 0872 79809. Linn, Quad, Mission-Cyrus, A&R, Denon, Pioneer, Aiwa, Technics, Mordaunt Short, Tannoy. Single speaker demo room. Apts. available if required by customer, free installation on many products, service dept. Access, Visa, instant credit up to £1000 subject to status. Open 9-5.30 Mon-Sat

CUMBRIA

PETER TYSON, 6 Abbey St, Carlisle, Cumbria CA3 8TX. "Cumbria's premiere hi-fi centre". Part exchange welcome. (0228) 46756. Linn, Musical Fidelity, Cyrus, Marantz, Denon, Philips, Nakamichi, Technics, Pioneer, Creek & more. Dem room. Demos without obligation. Home trial. Free Install. In-house service dept. Visa, Access, HP. 9-5.30. Closed Thurs. **BADA**

DERBYSHIRE

ACTIVE AUDIO LTD, 12 Osbaston Rd, The Spot, Derby. (0332) 380385/385185. Arcam, Ariston, Celestion, Denon, Exposure, Kef, Kef Reference, Cyrus, Marantz, Revox, Rotel, Rogers, etc. Account and credit cards. Ring for opening times and free 'Fact Pack'. The only BADA member in Derbyshire. **BADA**

DEVONSHIRE

CHELSTON HI-FI, 38 Walnut Road, Chelston, Torquay, Devon TQ2 6HS. Tel: (0803) 606863. Denon, Marantz, Rotel, Musical Fidelity, Acoustic Energy, NAD, Castle, Heybrook, Celestion, JPWetc. 2 dem rooms. Home trial. Free installation. Access, Visa, Amex, Diners, Hi-Fi Markets Chargecard. Credit facilities. 9.30-7.30 Mon-Fri, 9.30-6 Sat. **BADA**

THE HI-FI ATTIC, 58 New George St, Plymouth, Devon PL1 1PJ. (0752) 669511. One of the South West's oldest hi-fi shops. We stock all leading manufacturers & is out of the ordinary, we'll get it for you. We are about to be completely re-furnished to give a large demo room with free coffee!! (& whiskey to console the big spenders!!) We have a genuine interest in hi-fi & believe the customer always comes first. Single speaker comparators & a (hopefully) relaxed atmosphere. Bring your own equipment/dics etc along to have a listen. We offer a 7 day "buy back" period. Home demonstrations & installations & interest free credit over £700. Open 9.30-5.30 & demos can be by apt **BADA**

RADFORD HI-FI, 6 Fore St, St Marychurch, Torquay, (0803) 326723. Choose from a huge selection of the world's leading hi-fi manufacturers in one of our 3 modern dem rooms. Expert advice and personal service guarantee your total satisfaction. FREE home trial, FREE installation. Visa, Access credit facilities. 9-5.30 Mon-Sat **BADA**

RADFORD HI-FI, 107 Cornwall St, Plymouth. (0752) 226011. 2 dem rooms. Other details as above. **BADA**

RADFORD HI-FI, 28 Cowick St. St Thomas, Exeter. (0392) 218895. All details as Torquay shop above **BADA**

RICHLOW ELECTRONICS, 264 Torquay Rd, Preston, Paignton, Devon (0803) 523734. Pioneer, Technics, Panasonic, Toshiba, Goldstar, Yamaha, Harman Kardon, JBL, Cerwin Vega, Hecco. Demo room, free installation, service dept, home trial facilities. Access, Visa, Amex, instant credit up to £1000 subject to status. Mon-Sat 9-5.30, closed for lunch 1-2.15, closed all day Wed. **BADA**

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. Apts. pref. for dems. Free Install. Own service dept. Access, Visa, inst. credit up to £1000. 9-5.30 Mon-Sat. 9-1 Weds. **BADA**

DORSET

SUTTONS HI-FI, 18 Westover Road, Bournemouth. 0202 555512. Call for details. **BADA**

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. **BADA**

ESSEX

AUDIO T, Gants Hill, 442-444 Cranbrook Rd, Gants Hill, Ilford, Essex IG2 6LL. Tel: 081 518 0915 Fax 081 554 8463. Great Hi-Fi from Linn, Arcam, Denon, Meridian, B&O, Mission/Cyrus, Rotel, Yamaha & many more. Tues-Sat 10-6. Wedthill 8pm. 2 single spker dem rooms. Free del. & instal **BADA**

The Choice Dealer Directory

BRITISH AUDIO DEALERS ASSOCIATION

BADA
THE ULTIMATE IN
SOUND ADVICE

1ST AND FOREMOST HI-FI CENTRE, 49-55 North Station Road, Colchester, Essex CO1 1RQ. Tel: (0206) 549842. Fax: (0206) 762900. Tlx: 987873 SAIDG. Trio Kenwood, JVC, Akai, Aiwa, Sony, Pioneer, Technics, Nakamichi, Panasonic, Revox, etc Home trial, free installation. Service credit. Instant credit available + all credit cards accepted. Mon to Sat 9am-6pm.

AUDIO T, 442/4 Cranbrook Rd, Gants Hill, Ilford. (081) 518 0915. Mon-Sat, 10-6. Two dem rooms. Access, Visa. Sony Hi-Fi News Best Dealer '86 & '88 (National)

BRENTWOOD MUSIC & HI-FI CENTRE, 2 Ingrave Rd, Brentwood. (0277) 221210. Alphason, Denon, Marantz, Quad, DNM, Rock/Glastonbury, E.A.R., Exposure, Kelvin Labs, Rotel, plus many more. Dem facilities, home trial, evening appts. (high end). Home installations. System problem diagnosis. Mon-Sat 9.30-5.30 (Thurs from 10am, Sat from 9am). Credit facilities, Access, Visa, Hi-Fi Markets Chargecard. Service facilities.

LYON AUDIO, 16 Peartree Business Centre, Peartree Road, Stanway, Colchester, Essex CO3 5JN. (0206) 560259. Quad, Rogers, Mission, Denon, Cyrus, Marantz, Audiolab, Rotel, NAD, Wharfedale. Dem facilities. Mon-Sat 9-6. Installations. Access, Visa, Instant credit. Service dept RAYLEIGH HI-FI, 44a High Street, Rayleigh, Essex. (0268) 779762/747571. 216 Moulsham St, On-the-Parkway, Chelmsford. (0245) 265245. 132-134 London Road, Southend-on-Sea. (0702) 435255. A&R, Creek, Cyrus, Denon, Epos, Ion, Linn, Mission, Naim, Quad, Rega, Roksan, Rotel, Royd. 0% finance.

THOMSONS, 2 High Street, Great Baddow, Chelmsford, Essex. Tel: (0245) 71465, Fax 0245 77528. JVC, Kenwood, Mitsubishi, Toshiba, Tannoy, Mordaunt-Short, Wharfedale, Philips, Audio-Visual dealer. Home trial. Free installation. Service dept. Access, Visa, HP. Open 9-1, 2-5.30 Mon-Sat. Open 9-1 Wed.

GLOUCESTERSHIRE

AUDIO EXCELLENCE, 58 Bristol Road, Gloucester. (0452) 300046. Audio Research, Arcam, Mission, Quad, Linn, Naim, NAD, Yamaha and lots more. Closed Mon.

AUDIO I, 40-42 Albion St, Cheltenham, Glos. GL52 2RQ. (0242) 583960, Fax (0242) 226435. Great hi-fi from Linn, Arcam, Denon, Meridian, Audiolab, Mission/Cyrus, Rotel, Sony and many more. Mon-Sat 10-6pm. Single spkr dem room. Free del. and instal.

ROBBS OF GLOUCESTER, 13/15 Worcester Street, Gloucester GL1 3AJ. (0452) 419777. Sony, Technics, Aiwa, Pioneer, Denon, Bose, Celestion, Dual, Kenwood, JVC. Largest selection in Gloucestershire. Dem facilities. Home trial. In house service dept. Access, Visa. 9-5.30 6 days.

HAMPSHIRE

AUDIO T, 4 Feathers Lane, Basingstoke, Hants. RG21 1AS. (0256) 24311, Fax (0256) 24430. Great hi-fi from Linn, Arcam, Denon, Meridian, Mission/Cyrus, Rotel, Sony and many more. Mon-Sat 9.30-5.30pm, closed Wed. Single spkr dem room. Free del. and instal.

HAMPSHIRE AUDIO LTD, 2-12 Hurstley Rd, Chandlers Ford. (0703) 252827/265232. Quality CD and analogue agencies, 5 dem studios. Large free car park

HOPKINS HI-FI, 38/40 Fratton Rd, Portsmouth PO1 5BX. (0705) 822155. Technics, Quad, Monitor Audio, Tannoy, Denon, Nad, Heybrook, Onkyo, Dual, Marantz, Rotel, Wharfedale, JVC, Creek, Sansui, plus others. Dem room by appt. Access, Visa. 9-5.30. Open to 6 Thurs. Closed Wed. Service dept.

JEFFRIES HI-FI (PORTSMOUTH), 29 London Road, Portsmouth PO2 0BH. (0705) 663604. 2 dem rooms. Closed Mon. Late night Wed. Parking Bus Route. Credit fac.

MARTON MUSIC, 5 Ventnor Way, Fareham, Hants. (0329) 231773. AV International, Marantz, Kelvin Labs, Townshend Audio, TDL, Spondor, 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 Whitcross Road, Hereford HR4 0DG. (0432) 355081. Musical Fidelity, Arcam, Pink Triangle, Denon, Marantz, Mission-Cyrus, Audio Innovations, Rotel, NAD, Nakamichi, TDL, and others. Single Speaker Dem room. Home trial. Free install. Service dept. Access, Visa, Credit arranged. Open Mon-Sat 10am-6pm.

GOPEL MUSIC AUDIO, 32A High St, Kington, Herefordshire. (0544) 230254. Alphason, Alison, Revolver, Luxman, Yamaha, QED, Audio Systemline, Wharfedale, Jamo, 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.

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.

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.

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.

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 J HI-FI, 29 Guildhall St, Folkestone. (0303) 56860. Mon-Sat 9-6. NAD, Yamaha, Marantz, Cambridge Audio, Denon, Kenwood, Rogers, Dual, Musical Fidelity, Quad, Dem and home trial facilities, free install, credit to £1000. Amex, Diners, Visa, Access. Service dept

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, Spondor, 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.

LEICESTERSHIRE

ALPHA AUDIO, 1-3 Guildhall Lane, Leicester LE1 5FQ. (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, Heliuss, 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.

SOUND ADVICE, The Factory, Duke St, Loughborough LE11 1ED. (0509) 218254. Mission Cyrus, Rega, Naim, Linn, Meridian, Yamaha, Rotel, Arcam, Nakamichi, JPW. 3 demonstration areas, no appts necessary, free installation, service department. Lombard credit charge, Access, Visa. Mon-Fri 9.30-6.00, Sat 9.30-5.30.

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. Access, Visa. Tues - Sat 9-5 pm.

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

ANALOGAUDIO, 849 High Road, London N12. (081) 4453267. Cambridge, Denon, Rotel, Yamaha, Marantz, Wharfedale, Teac, Mordaunt-Short, Cerwin Vega, Nad. Free install. Service dept. Instant credit up to £1000. Visa & Access. 9.30-6.6 days.

AUDIO ACOUSTIC, West Ealing. (081) 998 9041. Audio Dimensions, Audio Innovations, Audion, Audio Note, ATC, D.C.M, Glastonbury, Goldring, Heliuss, Infinity & Modulas, JPW, Lynwood, Mana Acoustics, Marantz Audiophile, Michell, Nova, Ongaku, Oracle, Originlive, Orthophon MC3000II + MC5000 + T3000, Pirates, Rata, Revox, Rotel, Rose Industries, Rock Reference, Snell, Supera, Systemdek, Target, Triangle Products, Valdi, Vecture, Voyd & Reference Voyd. Home demos. Free install. Single Spkr 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.

AUDIO T, 190 West End Lane, West Hampstead, London NW61SQ. (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 spkr dem room. Free del. and instal.

The Choice Dealer Directory

BRITISH AUDIO DEALERS ASSOCIATION

BADA
THE ULTIMATE IN
SOUND ADVICE

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.

COVENT GARDEN RECORDS, 84 Charing Cross Road, London WC2 HOJA. (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.

BADA
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.

BADA
JUST MUSIC, 52 Upper Tooting Road, London SW17 7PB. (081) 767 1233. Aiwa, Dual, Denon, Marantz, Quad, Rogers, Thorens, Musical Fidelity, Sugden, Heybrook and many more. Dem facilities. Appts can be arranged. Home trial. Free installation available. Access, Visa, Amex, Hi-Fi Markets Chargecard, Creditcharge, finance arranged. 10am-7pm Mon-Thurs, 10-6 Fri & Sat

KJ WEST ONE, 26 New Cavendish St, London W1M 7LH. (071) 486 8262/63, Fax (071) 487 3452. Arcam, AudioResearch, AcousticResearch, 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, Halfer, 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, 4 Pickfords Wharf, Clink St, London, SE1 9DG. (071) 403 2255. 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, Swiss Cottage, London NW6. (071) 624 8855. Linn, Naim, Meridian, Rega, Quad, Nakamichi, Mission/Cyrus, KEF, Bang & Olufsen, Yamaha, Creek etc. 2 single speaker dem rooms. Appts. nec. Home trials, free install. Service dept. Visa/c, Access/c & finance terms. 10-7 Mon-Fri, 10-6 Sat.

BADA
TIME AND TUNE, 218/220 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.

ZEBRA, 18-24 Brighton Road, South Croydon CR2 6AA. 081 688 2093. Rotel, NAD, Technics, Philips, Aiwa, Kenwood, Tannoy, Wharfedale, MA, Infinity, and large range of AV equipment. Single speaker & comparator demo in a more casual environment. Service department. Mon-Sat 9.30-6.00. Access, Visa & instant credit up to £1000 subject to status.

GREATER MANCHESTER

THE AUDIO COUNSEL, 12 Shaw Road, Oldham, Manchester OL1 3LQ. (061) 637 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****

BADA
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, licenced credit broker. 10-6 Tue-Sat.

SWIFT HIFIDELITY, 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 EN2 0PW. (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 spkr dem rooms. Free del. and instal.

BADA
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.

BADA
NORTHWOOD AUDIO, 126 Pinner Road, Northwood, Middlesex HA6 1BP. (0927) 420877. Exposure, Marantz, Mission Cyrus, Monitor Audio, Musical Fidelity, Pink Triangle, AudioInnovations, Sansui, Rotel, Ruark. 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.

BADA

MERSEYSIDE

W.A. BRADY & SON, 401 Smithdown Rd, Liverpool L15 3JJ. (051) 733 6859. Largest choice of specialist Hi-Fi in N.W. £100-£20K. All credit cards. 3 dem rooms. Closed Monday.

BADA
IN CONCERT HI-FI, 144 Seaview Road, Wallasey, Wirral, Merseyside. (051) 630 5055. Denon, Kenwood, QED, G-Alexander, Spica, Shan Acoustics, Systemdek, Musical Fidelity, Audio Dimensions, Voyd. Single speaker dem. room. Home trial, free installation. 10-6 - closed Mon. Access, Visa.

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, TDL, 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 til 8pm

GRIFIN 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.

BADA
HORNTONELECTRONICS (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, Walsal, W. Mids. (0922) 57926. Linn products, Arcam, Creek, NVA, Revolver, Onix, Epos, Marantz, Rotel, Quad & more. Dem facs. Home trial. Service dept. Credit facs available. Access, Visa. 9.30-5.30 Mon-Sat. 9.30-1 on Thurs

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 spkr rooms by appt.

NORFOLK

BASICALLY SOUND, The Old School, School Rd, Bracon Ash, Norwich NR14 8HE. (0508) 70829. Arcam, Linn, Naim, Denon, Spendor, Exposure, Audio Technica, Creek, Rega, Epos, etc. 2 comprehensive dem rooms. Home trial. Free installation. Visa, Access, HP facilities. Tues-Sat 9.30-1, 2-5.30.

MARTINS HI-FI, 5 High Street, Kings Lynn, (0553) 761683. Est. 1968.

BADA
MARTINS HI-FI, 85/91 Ber Street, Norwich. (0603) 627010. Est. 1968.

BADA
MUSICAL APPROACH, 161a Unithank Road, Norwich. (0603) 622833. Kuzma, Ariston, Castle, Denon, Exposure, Ion, Royd, NVA, Roksan, Ruark, etc. Dem and home trial facilities. Mon-Sat 9-6.30. Free installation. Credit to £1,500. Visa, Access, Diners Club. Service dept.

NORTHAMPTONSHIRE

CLASSIC HI-FI + VIDEO, School Lane, Kettering, Northants. (0536) 515766. Rotel, Musical Fidelity, Wharfedale, Monitor Audio, Yamaha, JBL, Dual, Marantz, Kenwood, Kef, Celestion, and many more. Home trial, free instal., service dept. Access, Visa, credit facs. 9.30-5.30pm.

CLASSICAL SOUNDS, 84E Watling 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

CHANTRY AUDIO, Chantry Walk, 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, Huggens 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 Marketplace, 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 spkr demo rooms, A/V dept. free del. & instal.

The Choice Dealer Directory

BRITISH AUDIO DEALERS ASSOCIATION

BADATHE ULTIMATE IN
SOUND ADVICE

OXFORD AUDIO CONSULTANTS LTD, Cantay 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.

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, Deltac, 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 facts. Account and credit cards. Ring for opening times and free Fact Pack

BADA

ACTIVEAUDIO, 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 facts. Account and credit cards. Ring for opening times and free Fact Pack.

BADA

GRANGE HI-FI LTD, 153 Branston Road, Burton-on-Trent, Staffordshire DE14 3DQ. (0283) 336655. 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

MUSICAL APPROACH, Unit 7, Woodings Yard, Bailey 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, J.A. 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 GU14 1RY. Tel: (0483) 504801. 9-6 Mon-Sat. Linn, Meridian, Creek, Arcam, Quad, Revox, Musical Fidelity, Rotel, NAD, Nakamichi, Marantz

BADA

RIVERSIDE HI-FI, 422 Richmond Road, East Twickenham, TW1 2EB. Tel: (081) 892 7613. Fax: (081) 892 7749. See main entry under Middlesex

ROGERS HI-FI, 13 Bridge Street, Guildford, Surrey. (0483) 61049. Aiwa, 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.

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 8. Closed Wed. Service dept

BADA

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, Acoustat, Basis Turntables, M.A.S., Rotel, Chord, KEF. Single speaker demo room. Appts not necessary, home trial facilities, free installation, service dept. Access, Visa, Mastercard. Open 9-6, closed Wed

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)

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.

BADA

JEFFRIES HI-FI, 4 Albert parade, Green St, Eastbourne, East Sussex (0323) 31336 2 dem rooms, closed Mon. Late night Wed. Parking, bus route. Creditfac.

BADA

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, Dual, 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).

BADA

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) 2303600. 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, Arcam, Ion Systems, Roksan. 3 dem rooms for budget & high end audio. Appointments necessary 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/Creditcharge/£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/Creditcharge/£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

BADA

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

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

The Choice Dealer Directory

BRITISH AUDIO DEALERS ASSOCIATION

BADA

THE ULTIMATE IN
SOUND ADVICE

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 Headingly 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. Stockist of the new Technics digital reference series. Aiwa hi-fi separates, Mordaunt-Short & Castle Acoustic speakers; Panasonic, Finlux & Mitsubishi Nicam Stereo TVs & hi-fi video recorders, Technics dolby surround sound systems, reproduction furniture. Excellent CD dems. using comparator facilities from a choice of over 1000 compact discs for sale. Please phone us, free expert install., in-store service dept. Visa, Access, Credit charge. Open Mon-Sat 9-5.30.

CLEARTONE (Formerly 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**

ERIC WILEY, 85 Beacroft 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.

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, Audio Lab, Quad, Cyrus, Mission, Allison, Proton, NAD, Technics. Mon-Sat, 10-5.30pm, Thurs 10-7.00pm

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

HI-FI EXPERIENCE 145 Bath St, Glasgow. (041) 226 4268. Linn, Meridian, DNM, 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, Mordaunt 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.

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

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. Home trial facilities, free installation, Service dept. Access, Visa, Amex, £1000 instant credit. Phone for details. Mon - Sat 9.30-5.15.

SOUTH GLAMORGAN

AUDIOEXCELLENCE, 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 electromagnetic 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
Acoustic Research EB-101 £230	Good Good	This genuine high fidelity product offers an impressive package at a competitive price	Subchassis, manual, 13.5g	BB	48
Alphason Solo/Xenon MCS £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
Alphason Sonata/HR-100S 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
Alphason Super Nova £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
Ariston Forte £350	Average - Average	Heavy on engineering, short of soul? The Forte almost makes it, losing out only because of some residual pitch variations and a lack of bass power. The arm is modestly good	Manual 2-speed belt drive player and detachable arm, 10g		67
Ariston Icon £215	Good Good	A thoughtful and efficient design that offers good sound, excellent value and semi-automatic operation too! Good vibration isolation eases siting	Belt drive, suspended, semi-automatic, 10g	BB	79
Ariston Pro £180	Good Good	Remarkably clear and detailed for the price, very neutral. Benefits from cartridge upgrade	Manual, belt drive, 12g	BB	91
Ariston Q-Deck £165	Good Average +	Well engineered and good sounding low cost package which is both easy to set up and to use	Semi-auto, belt drive, solid	BB	67
Dual CS430 £100	Average Average -	Ragged, sometimes unpleasant cartridge mixes with a modest pleasing player in a very sharply priced package	Belt drive, with cartridge, auto return, 5g	R	67
Dual CS5000 £230	Average Average +	The rare 78 facility may give grandma's collection a new lease of life but the player did not merit recommendation on price vs sound	Electronic, belt drive, subchassis, 10g		48
Dual CS503-2 £145	Good - Average	Not wholly inspiring; generally coarse and woolly 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
Dual CS505-4 £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
Goldmund ST4 £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
Heybrook TT2 turntable & arm £424/£269	Average Good +	A gradual process of informed evolution and a sensibly designed arm combine to make this a good sounding middle of the road package. Well supported by dealers	Manual subchassis motor with arm, R belt drive, 14g		67
JVC AL-FQ555 £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
Kuzma Stabi/Stogi Reference £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
Linn Axis/Akito £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
Linn LP12-Lingo/Ekos/Troika £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
Manticore Mantra/Musician £340/£170	Good + Good +	Well engineered deck with satisfying sound. The arm is particularly fine and very good value	Belt drive, suspended, 15g	R	79
Marantz TT400 £150	Average - Poor	Everything one hopes a budget deck won't be: coarse, confused, muddled and woolly. Construction isn't wonderful, either	Manual, belt drive 16g		91
NAD 5120 £90	Average Average	A number of running improvements have given this player a range and tautness denied its lazier sounding antecedents.	Semi-auto belt drive, detachable armtube/weight, 9g	BB	67
Omega Point Silver/Black £895/£295	Good Good +	An avowedly stripped down turntable that lacks even an on/off switch, the Omega Point Silver offers fine midrange clarity and good stereo, but some HF compression and a lack of 'wellie'	Manual, solid, belt drive, unipivot, 11g		55
Opus 3 Continuo/Decca London International (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
Rational Audio Aura 01 £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 arm 10g	R	91
Rega Planar 2 £155	Average + Good	A remarkable product at the price, surprisingly articulate and confident	Manual, 11.5g	BB	48
Rega Planar 3 £207	Good Good	A long time leader in its price category, the '3 (with its excellent RB300 arm) sounded nicely 'musical' in a balanced and coherent manner	Manual, 11.5g	BB	48
Revolver Rebel £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
Revox B291* £892	Average - Average -	Sound quality ranks as below average. Subjective bandwidth is narrow and the music lacks grace and energy. Ease of use however is unrivalled	Automatic, remote controllable, direct drive parallel arm, prefitted cartridge		55
Rotel RP-855 £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
Systemdek IIX £248	Good Average +	Poised, clean sounding deck, forward and explicit in character. A good value deck under £250, and a relatively cheap and satisfactory suspended model	2 speed belt drive manual turntable and arm, 11g	R	67

The Directory

INTEGRATED TURNTABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES ARM EFF. MASS	VALUE	ISSUE
Technics SL-DD33 £110	Average Average	As with the QD33 though better value	Automatic, direct drive, solid plinth, 7.5g, P-mount	BB	48
Technics SL-L20 £115	Poor Average -	A rather lightweight parallel tracker achieving a poor overall rating, with little to recommend it unless you dig facilities	Electronic, solid plinth, 5g, P-mount		48
Technics SL-QD33 £140	Average Average	The quartz speed controlled version of the DD is short on sound quality but not features. But it did have fair focus and some depth	Automatic, Quartz, direct drive, solid plinth, 7.5g, P-mount	R	48
Technics SLBD-22 £90	Average - Average -	Not bad for the price and a great improvement on the L20, it performs reasonably when not stretched	Semi automatic, solid plinth, electronic, 6g P-mount	R	48
Thorens TD 166 Mk V £200	Good Good	Classic suspended-subchassis deck with clear, stable sound of no particular character. Unlikely to make enemies	Belt drive, suspended, 12g	BB	79
Thorens TD 280 Mk II £180	Good - Good -	Legendary Thorens build quality on the cheap - slightly unsubtle sound but eminently liveable-with and very good value	Belt drive, solid, electronic PSU, 12g	BB	79
Thorens TD 316 Mk II £220	Good Good -	Very solid deck with neat split-chassis construction. Sound is a bit insecure in the bass, but it could suit classical music lovers well	Belt drive, suspended, electronic PSU, 12g	R	79
Thorens TD2001 £630	Good Good -	Similar to TD320 but much dearer - why? Sound is comfortable but not very detailed	Semi-auto, belt drive, subchassis 15g		91
Thorens TD320 Mk II £350	Good Good	Good, consistent sounding deck with much improved (but not ideal) arm. A little expensive for performance offered	Semi-auto two speed belt drive, 14g		67
Townshend Rock Reference/Excalibur £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 improves LF detail significantly	Belt drive, suspended, electronic PSU, front-end damping, 12g	R	79
Voyd Reference/Helios Cyalene £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
Well Tempered WTAT £1690	Average Very Good	Intriguing and challenging design. Musically it is not ideal, but it has a limpid quality and a lack of artificiality that sets standards as well as turning the ear, though it's not completely uncoloured. A charmer yet mainstream enough in its virtues to be viable	Manual 2-speed, damped, suspended arm, 7.5g	R	67
Zarathustra S4/Pluto 5A Prestige/PSU £1500/£2500/£500	n/a Excellent	The very well made and finished heavy platter S4 with the superb Pluto arm make a devastating combination ranking up there with the very best	Subchassis, manual, available without PSU	R	72

MOTOR UNITS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Ariston Superior £598	Good + Good	Good but slightly damped sound quality, with powerful and stable bass. The pro quo is a certain lack of pace, energy and resolution	Belt drive, subchassis, electronic		55
CEC ST930 £599	Good 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
CS Audio Resan kit for Rega £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
Michell Gyrodec £595	Good Good	Sweet and natural sounding player, well exploited by the Rega RB300 arm. Aesthetics, and the acres of acrylic, are unique	Manual, belt drive, suspended motor unit		55
Michell Syncro £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
NVA Senior £450	Good - Average	Very high sensitivity to low-frequency vibration, especially on NVA stand, gives strange subjective bass response and confused sound. Looks are unusual but pleasing	Belt drive, electronic PSU, two-part plinth		79
Oracle Alexandria Mk III £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
Oracle Paris £595	Good - Average	Looks good but sounds coarse, confused and uneven, with bass liable to thump	Belt drive, semi-suspended, electronic		91
Origin Live Oasis A £495	Good - Average	Rather coarse sound with lack of detail resolution - but lively presentation may appeal. Appearance is industrial	Belt drive, external mains filter, 33rpm only, suspended		79
Origin Live Oasis B £199	Average Average +	Aesthetics are not its strong point, but its lively and articulate - if idiosyncratic - sound will please some tastes. Highly resonant construction is very sensitive to feedback	Belt drive, 33Gy1/3Gyrpm only, solid plinth/subchassis		79
Oxford Acoustics Crystal 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
Pink Triangle Anniversary £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
Pink Triangle Export £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
Pink Triangle Little Pink 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
Revolver £150	Average Average	Nicely balanced, but unimpressive timing and lightweight bass made this deck rather average for the price. Manufacturer has since made several changes, but not re-submitted for review	Manual, belt drive, solid plinth		48
Systemdek IIXE £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
Systemdek IV £495	Good Very Good	The level of wow is a theoretical concern at least, but elsewhere this player shines, combining euphony, information and imaging in a polished, untemperamental package	Two-speed manual belt drive	R	67
Voyd 0.5 £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
Voyd Valdi £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
VPI HW-19Mk3 £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
Airtangent 1B £1990	n/a Excellent	A complex but superbly built arm for high quality systems, giving excellent stereo and resolution	7.5g (vertical)	R	60
Alphason Delta £190	Good Average +	A highly competent design from Alphason gives good sound quality but with slight blurring and treble fizz	16g	R	48

☎ 081-569 5802

BUY WITH CONFIDENCE



MAIL ORDER



ARCAM



KEF Reference



BOSE

SPECIAL OFFERS

KEF Reference

CELESTION

DENON



CYRUS

KEF Reference

PART EXCHANGE FACILITY

J4 Michell Engineering



KEF Reference

marantz

MICROMEGA



MUSICAL IMAGES

45 HIGH STREET, HOUNSLOW
MIDDLESEX TW3 1RH
TEL: (081) 569 5802
FAX: (081) 569 6353

MISSION

M O N I T O R
A U D I O

MUSICAL FIDELITY

KEF Reference

Nakamichi

DEMO ROOM

PIONEER



QUAD

KEF Reference

REVOX

Rogers

TAX FREE EXPORTS



ROTEL hiFi



SONY ES

KEF Reference

TANNOY

10 MIN FROM HEATHROW



KEF Reference



KEF Reference

+ MANY MORE

☎ 081-569 5802

The Directory

TONEARMS

MODEL PRICE	LAB SOUND	COMMENTS	ARM EFF, MAS	VALUE	ISSUE
Alphason HR100S £440	Very Good Very Good	This S-shaped arm sounds smooth, but nevertheless reproduces transients with fine attack	10g	R	Coll. '86
Alphason Opal £130	Good Average	This is a straightforward adequate sounding low cost arm, priced just above where it rightly belongs	10g		55
Alphason Xenon £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
Ariston Enigma £99	Average Average +	Good but not the best in its class: mid-band sounds a little uneven; treble a trifle "brash"	11.5g		48
Audio Technica AT1130 £186	Good Good	Well suited to most cartridges including high compliance ones, the AT is smooth and tonally neutral, if slightly lacking in 'balls'	8.5g	R	67
Decca London International £49	Average + Average +	This uni-pivot design gives a rather rich tonal balance and some bass muddling. Could be good with Decca cartridges, but not well built	12g		48 Summ
Eminent Technology £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
Goldmund T3F arm £4400	Excellent Excellent	This complex parallel tracker created an "ear-opening" experience when tested with a (since updated) Goldmund Studio turntable	16.5g	R	Coll. '87
Helius Orion 2 £490	Very Good Very Good	Excellent engineering with rigid bearings, free from slack. It remains expensive but the level of performance deserves Recommendation	12g	R	48
Kuzma Stogi Reference £699	Very Good Very Good	A large, solid and well-made arm that holds the cartridge firmly, giving exceptionally clear sound with just a hint of brightness	12g	R	79
Linn Ekos £1097	Very Good Very Good	Superb, state of the art design which builds significantly on Ittok's strengths	9g	R	67
Moth Arm £78	Good Good +	The ultimate budget arm? Refined, detailed, sweet and natural – performance improves in line with the rest of the system	12g	BB	60
Naim Aro £699	Good Good -	Designed for use on the Linn LP12, the Aro is a little bright and congested.	10.5g		91
Rega RB300 £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
Roksan Artemiz £669	Average Good	Interesting design which works a treat on the Xerxes deck. Fits Rega cut-out	8g		67
Roksan Tabriz £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
SME 3009 Series III £253	Good Average +	Comprehensively adjustable and very well made, suited to MM and high compliance MC cartridges	5g		48
SME 3009 Series IIIS £182	Good Average +	A simplified less flexible (as regards adjustment) Series III with a similarly 'soft' sonic character	5g		48
SME 3009R £335	Average + Average +	A higher mass version of the Series III designed for low compliance MC cartridges	12g		48
SME 309 £495	Very Good Very Good	Beautifully made, finished and presented, this arm is fully and easily adjustable and a highly neutral performer	10g	R	79
SME Series IV £810	Excellent Very Good	Superb engineering and finish with a finely balanced sound giving impressive stereo focus and low coloration	10.5g	R	60
SME Series V £1247	Excellent Very Good	Excellent in terms of design engineering and sound quality, this arm arguably sets a new reference standard regardless of price	10.5g	R	60

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
Arcam C77 £22	Average + Average +	A sensible moving magnet package with good bounce at a competitive price	6-16g Normal, MM	BB	48
Arcam C77Mg £30	Average - Average	Punchy sound quality with plenty of extra energy to liven things up. The solid body seems well worth the extra £10	4-8g Normal, MM	BB	67
Arcam E77Mg £50	Average Average	Our sample had a disappointing stylus, but gave a coherent, rich and laid back sound, with good 'scale'	3-8gN Normal, MM	R	48
Arcam P77Mg £60	Average + Average +	Cautiously recommended, the P77Mg was preferred to its cheaper partner by virtue of a better tip. Channel balance could have been better	4-9g Normal, MM	R	48
Arcam PMX10 £100	Good + Very Good	Not the very clearest in complex high-frequency sounds, but lively and exciting, good transients	5-11g Low, MC	R	85
Audio Technica ART1 £800	Good + Very Good	This is a delicate and very fluid-sounding MC that tracks well, offers very low distortion and exceptionally good stereo separation	9-18g Low, MC	R	72
Audio Technica AT-420E £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
Audio Technica AT95E £19	Average - Average	Clear, dynamic if richly balanced, the magnetic '95E is a definite Best Buy	8-14g Normal, MM	BB	48
Audionote I02VDH £895	Good Very Good	One of the best, giving 'an extraordinarily relaxing midrange clarity', needs a transformer	8-18g Very low, MC	R	43
Audiquest AQ 404i-L £400	Very Good Good +	Slight harshness detracted from the performance of this otherwise clear-sounding and detailed cartridge	8-16g Low, MC		84

The Directory

CARTRIDGES

MODEL PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/TYPE	VALUE	ISSUE
Audioquest AQ 7000 £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
Audioquest MC5 £220	Average Average	Offers high-output benefits but the drooping frequency response and severe VTA error preclude recommendation	10-20g Normal, MC		54
Cello Chorale £750	Average + Good	Now available through a new distributor at a saving of some £300, the Chorale is still blessed with a delicate but highly detailed treble. Arm matching is a problem	3-9g Low, MC		72
Denon DL 103 £99	Average Good	This classic spherical stylus model gives a lively sound with powerful bass, and is popular in broadcast studios	6-16g Low, MC	R	48
Denon DL110 £69	Good Good	Firmly recommended as a fine all-rounder, this high-output moving coil model is likely to perform well in nearly all circumstances	6-16g Normal, MC	BB	48
Denon DL160 £89	Average + Good	Although listeners just preferred the 110, its brother here proved a twin in lab tests and is still "thoroughly competent"	6-16g Normal, MC		43
Dynavector 17D2 £280	Very Good Very Good	Clear, detailed, neutral and generally very informative - excellent.	6-18g L ow, MC	R	91
Dynavector DV-50X £99	Good Average	A high-output MC model with impressive lab performance, but whose tip and sound quality both disappointed	6-14g Normal, MC	R	48
Dynavector DV10X IV £125	Average Average +	Fine sounding and realistically priced, damping is recommended to ensure successful tracking ability	8-18g N Normal, MC	R	48
Dynavector DV23RS £230	Average + Good	Sound quality was described as "shut-in", lacking energy and sparkle but with some "edginess" in high frequencies	10-22g Low, MC		28
Dynavector XX-1 £680	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
Dynavector XX-1L £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
Empire Benz-Micro MC-2 £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
Glanz GMC-10EH £50	Good Good	The rising HF trend of this high o/p MC may cause problems in certain systems but with a favourable wind its seductive qualities will win out	8-14g Normal, MC	R	67
Glanz GMC-10LX £80	Average + Average +	Bearing some of the hallmarks of the '10EH, the '10LX is still less competitive in the sonic stakes	7-15g L Low, MC		67
Glanz GMC-20E £129	Good + Good +	Very good tracking, smooth sound and good detail. Very slight surface noise enhancement	5-10g Low, MC	R	91
Glanz MFG-110EX £25	Average Average	A little bright but giving detailed bass and clear treble, this was competitive at the price	6-16g Normal, MM	R	43
Glanz MFG-310LX £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
Glanz MFG-610LX £90	Good + Good +	Similar to cheaper '310 but slightly clearer transients and bass. Benefits from lowish impedance loading	3-10g Normal, MF	R	85
Goldmund Clearaudio £1500	Average + Very Good	Something of a mixed bag overall, its sonic character bears a strong resemblance to the Pradikat though it shares some of the hallmarks of the more expensive Accurate	5-12g Low, MC		60
Goldring 1012 £40	Good + Good	Slightly harsh sound but plenty of life and quite good detail. Some very high frequency coloration apparent	6-12g Normal, MM	R	85
Goldring 1022 £60	Good + Good	As with 1012, a touch harsh; detail and transient purity improved, though, and it goes well with electric guitar!	5-11g Normal, MM	R	85
Goldring 1042 £85	Good + Good	Not terribly subtle, and not such good value alongside 1012 and 1022. Quite lively, though	7-12g Normal, MM		91
Goldring Elan £16	Average + Average	A lightweight and frisky-sounding MM that appears to be based upon the same body as the Nagaoka mm4	7-15g Normal, MM	R	67
Goldring Epic II £26	Average Average +	An excellent budget choice though the limitations of the stylus are rather obvious at higher frequencies	5-12g Normal, MM	R	67
Goldring Eroica £100	Good Good -	More confused and coloured than its low-output sibling - high output less of an issue in these days of cheap MC-compatible amplifiers	8-15g Normal, MC		84
Goldring Eroica LX £115	Good + Good	Not the most subtle cartridge in the world; can sound edgy at times, but lively and informative	8-14g Low, MC	R	84
Goldring Excel £500	Average + Good	Goldring's most expensive cartridge to date errs on the warm and heavy side of neutral. Strong bass lines are its forte though its ability to resolve subtle treble details is weaker	6-13g Low, MC		72
Grado ZF3E + * £47.50	Average - Average	Downtilting balance disguises the brightness of this cartridge; bit of a mixed bag at this price	9-20g (damping) Normal, MM		54
Grado ZTE +1 £26.50	Average - Average	Bass and treble are a trifle coloured but the midband proved highly enjoyable. Ideal for budget systems	6-13g (damping) Normal, MM	R	54
Kiseki Blackheart £1795	Good Good	This cartridge demonstrated refined poise and a delicate but at once potent security, however, the price did seem a little on the high side compared to other Kisekis	6-16g Low, MC		60
Kiseki Blue Goldspot £450	Very Good Good +	Good bass and imaging, but hints of spit and coloration let the side down slightly	8-15g Low, MC		84
Kiseki Lapis Lazuli £4000	Good Very Good	Combining very sensible design concepts at a silly price, the Lapis Lazuli is best thought of as combining the detail of the MC3000 and the fluidity of the Clearaudios	4-12g Low, MC		60
Kiseki Purpleheart Sapphire £799	Good + Good +	Rare, beautiful to look at and sweet to listen to, our review of this high-flyer conjured up images of Japanese art	5-14g Low, MC		48
Koetsu Black S £612	Average Good +	The S is an OEM design built to Koetsu's blueprint. It features a sturdier fixing plate and offers a brighter, faster and more tactile sound than the earlier K	8-15g Low, MC	R	72
Linn Asaka £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
Linn K5 £39	Average Average +	Not as crisply focused as the costlier Linn magnetics, the K5 offers a smoother presentation	7-16g Normal, MM	R	67
Linn K9 £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
Linn Karma £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
Linn Troika £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
London Maroon £149	Average Average +	Now manufactured under the London brandname this Decca cartridge is as iconoclastic as ever	9-20g (damp) Normal, MM		67
London Super Gold £300	Poor Average -	Immediate and (in the midrange at least) detailed, but very coloured, very nonlinear and questionable effect on records. Devotees swear by it	9-15g, damp Normal, fixed stylus MM		84

The Directory

CARTRIDGES

MODEL PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/TYPE	VALUE	ISSUE
Milltek Aurora £249	Good + Good +	An overall feeling of relaxed ease characterised this clear and atmospheric Kiseki-built cartridge	8-16g Normal, MC	R	Coll. '86
Milltek Olympia £349	Average + Good +	Warm and detailed sound - packs the punch of the best MCs with high output as a bonus	12-20g, (damping) Normal, MC	R	54
Nagaoka MM4 £9	Average - Average -	Clear punchy sound that delivers the rudiments of a good performance	6-16g Normal, MM	R	54
Nagaoka MP10 £18	Average Average	High frequencies sounded "shut-in" with this spherical-stylus model, but mid and mass were energetic, bouncy and punchy	5-13g Normal, MM	R	48
Nagaoka MP11 Boron £40	Average Average +	Responding well overall in PM's equipment and listening room, this model was mildly criticised for low level and dynamic limitations	5-13g Normal, MM	BB	48
Nagaoka MP11 Gold £47	Average - Average +	There were mild criticisms directed at most areas, but in general the sound was clear, open and even	3-8g Normal, MM	R	48
Nagaoka Stilton TS10 £50	Good - Good	Stilton-designed solid body (with three-point mounting) certainly gives remarkably resonance-free sound, but tip and generator are less good - a little rough at times.	5-10g Normal, MM	R	85
Nagaoka Stilton TS11 £70	Good - Good	Differs from TS10 in having Vital stylus with better tracing but still some high frequency harshness.	5-10g Normal, MM		85
Ortofon 510 £30	Good Good +	For the price, a good blend of virtues - weight, clarity and neutrality	3-11g Normal, MM	BB	85
Ortofon 520 £50	Average Average +	Very sensitive to load capacitance this new Ortofon maintains the company tradition for a lively, effervescent SQ	7-16g Normal, MM	R	67
Ortofon 530 £80	Good + Good +	Very clean and assured sound; transients not quite perfectly pure but plenty of detail.	4-11g Normal, MM	R	85
Ortofon 540 £100	Average - Average	Graced with an advanced FGII stylus our sample possessed too high a compliance for broad arm matching. It could also sound a little unforgiving	3-8g Normal, MM		67
Ortofon MC10 Super £70	Average Good	"What a delightfully sweet-sounding cartridge this is . . ." we said	5-15g Low, MC	BB	48
Ortofon MC20 Super £200	Average + Good +	An "inviting" sound quality; polite rather than exciting it approaches much more expensive models, but does not better them	6-15g Low, MC	R	Coll. '86
Ortofon MC30 Super £270	Very Good Good +	Beautifully engineered and well-balanced, it was slightly criticised as bland, though some may appreciate the lack of rough edges	5-14g Low, MC		Coll. '87
Ortofon MC3000 MkII £850	Very Good Excellent	Low levels of body resonance are a real ear-opener. Nothing to criticise elsewhere; one of the very best	9-16g Low, MC	R	84
Ortofon MC5000 £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
Ortofon Quartz £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
Ortofon Quasar £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
RATA RP20 £22	Average - Average	Good integration, a clear dynamic midrange and the beginnings of fine stereo imagery merits clear recommendation	6-14g Normal, MM	R	48
RATA RP40 £44	Average Average +	The '40 did a good job of sorting out the layers and complexity of the mix, with good focus, excellent stereo spread and fine scale	6-15g Normal, MM	R	48
RATA RP70 £77*	Average Average +	Clearer and sweeter than the '40 this also seemed heavier and less lively. For £99 you can have a van den Hul stylus	6-14g Normal, MM		43
RATA RP70vdH £99	Average + Good	Able to retrieve bags of musical detail (thanks to the vdH stylus), RATA's top cartridge ranks as one of the most articulate MM's available	11-18g Normal, MM	R	67
Rega Bias £34	Average Average +	Difficult to mount in some arms due to its shallow build, the bias offers a gentle, refined SQ that certainly makes it worthy of audition	4-10g Normal, MM		67
Rega Elys £74	Good Good	Clearly superior to the Bias, despite their common heritage, the Elys is both more detailed, accurate and musically convincing	8-15g Normal, MM	R	67
Revolver £20	Average + Average	This modified AT-95E enjoys a very lively mid and treble even if the bass is somewhat 'slower' in comparison. A firm budget buy	8-16g Normal, MM	BB	67
Roksan Corus Black £110	Good + Good	Recognisably related to Corus Blue, but distinctly more civilised and smoother	7-12g Normal, MM	R	91
Roksan Corus Blue £65	Good + Good	Roksan-specified modified Goldring 1012; slight harshness detracts from otherwise good sound.	7-11g Normal, MM		91
Shure M104E £36	Average - Average	Capable in many ways, but giving no substantial improvement over the 92E in our view	5-15g Normal, MM		38
Shure M105E £49	Average Average -	A slightly 'spitty' sound lacking deep bass and dynamic contrast, but can be used in virtually every system where it will perform "unobtrusively"	5-12g Normal, MM		38 Summ
Shure M110HE £60	Average Average	Sound quality was thought eminently presentable, but not exciting; smooth clear high frequencies, but a loss of bass definition	5-10g Normal, MM		38 Summ
Shure M111HE £72	Average Average	Early reviews of this cartridge complained principally of the price - which has since come down	5-10g Normal, MM		38 Summ
Shure M92E £17	Average - Average	Though lacking depth, the overall sound quality was competent, but treble was not its forte	10-15g Normal, MM		43
Shure M99E £29	Average - Average -	Sister to the 92E this is a solid but not particularly exciting cartridge	5-10g Normal, MM		38 Summ
Shure ME75ED £26.50	Average Average -	Rather bright and splashy in the high frequencies but nevertheless a competent model	5-10g Normal, MM		38
Shure ME97HE £49	Average Average +	It won't turn a sow's ear of a turntable into a silk purse, but will at least keep going and produce an acceptable result	8-20g Normal, MM	R	48
Shure ML120HE £95	Average + Average +	Quite decent sound quality and a generally fine balanced performance	6-18g Normal, MM		48
Shure ML140HE £120	Average + Good	Qualitatively the treble of this well-balanced moving magnet model was a match for many moving coil cartridges	6-16g Normal, MM		43
Shure Ultra 500 £499	Good Good	There was no doubting the accomplishments of what could well be the finest moving magnet cartridge around	6-14g Normal, MM		48
Shure V15 VMR £215	Good Average +	Initial listening gave promising results, but extended familiarity gave the feeling of a lack of energy and a "shut-in" sound	5-12g Normal, MM		38
Shure VST V £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
Stilton/AT-F3 £110	Good + Good +	At a premium of some £40 this modified AT-F3 offers a startlingly refined performance and is strongly recommended	8-18g Low, MC	R	67

The Directory

CARTRIDGES

MODEL PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/TYPE	VALUE	ISSUE
van den Hul MC One £699	Good Very Good	This extended all the positive qualities of the '10 but added greater authority and scale - worth it for the extra money	6-12g Low, MC	R	60
van den Hul MC Two £899	Good Very Good	Connected directly to any standard MM input the vdH MC Two rewards with a highly detailed yet fluid and musically convincing portrayal	6-13g Normal, MC	R	72
van den Hul MC1 Super £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
van den Hul MC10 £499	Good Good +	A neutral balanced performer giving transparent midrange, fine depth and focus with firm extended bass. Gosh!	5-10g Low, MC	R	60

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
Acoustic Research A03 £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
Acoustic Research A05 £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
Acoustic Research A07 £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
Aiwa XA-005 £130	Good + Average -	A technically competent amp with big, friendly but not overly engrossing sound quality	61W, MM 5 line inputs, source-direct		80
Aiwa XA-006 £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
Akai AM-52 £230	Average + Average -	Basically equipped, this amplifier offers a comfortable but hardly over-detailed sound	95W, MM/MC disc, 5 line inputs, loudness		74
Akai AM-65B £299	Good Average	On-board 18-Bit DAC's actually give better sound than standard CD inputs! Punchy via MM disc	101W, MM, 6 line, digital inputs		80
Akai AM-93 £550	Average Average -	Unfortunately Akai's on-board D/A converters were less successful than its conventional analogue CD input.	112W, coax and optical dig inputs. MM/MC		68
Alphason Apollo £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
Amadeus Gold £360	Average - Good	There is some indication of instability but otherwise sounds very rich, warm and musical. High-ish IMD	56W, MM/MC plug-in cards, 3 line inputs	R	74
Amadeus Silver £270	Average - Good	Limited headroom via disc but still offers a sweet, lush sound. Limited current delivery	37W, MM/MC, 3 line inputs	R	80
Aragon 4004 £1795	Good Good	Despite its imposing bulk, the Aragon is something of a softy at heart. It can deliver oodles of power but its musical presentation is more laid-back	231W power amp		72
Arcam Alpha 2 £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
Arcam Delta 110/120 £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
Arcam Delta 60 £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
Arcam Delta 90.2 £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
Ariston Amp £219	Average Average +	Slightly veiled and thin sound but proved suitably attractive in the listening tests	32W, full logic control, MM and 4 line inputs	R	68
Audio Innovations Series 1000/2nd Audio £1399/£2999	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, monoblocks	R	63
Audio Innovations Series 200 £449	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
Audio Innovations Series 300 £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
Audio Innovations Series 300II £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
Audio Innovations Series 400 £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
Audio Note Ongaku £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
Audiolab 8000A £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
Audiolab 8000C/8000P £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
Audion CD-1 £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

The Directory

AMPLIFIERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Aura VA-40 £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
Aura VA-50 £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
Beard 506 £1195	Good + Good +	A versatile valve preamp – the bass sounded lively if a touch softened, while the treble was detailed but lacked a little sparkle and air.	4 inputs MM/MC		50
Beard Audio CA35/P35mkII £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
Beard M70 £1995 pair	Good Good +	A substantial British monoblok power amplifier, but not a great deal more impressive than the P35 at half the price	70W		50
Bryston 0.5B/2B £695/£1395	Very Good Good	Very rugged Canadian pre/power combo that sounds cool, confident and punchy. Headamp available to suit MC cartridges	65W, MM and 4 line sources, overload LEDs on power amp	R	74
Bryston 12B/4B £1295/£1395	Good + Good	Bryston's massive 4B power amp stood out as the backbone of this combo, the preamp sounding a trifle unbalanced between MM and MC inputs	272W, bridgeable to 800W. 6 line, 2 disc inputs, subsonic filter		68
Cambridge P25 £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
Cambridge P50 £200	Good Average +	A pleasant enough sound with full bass yet with a slightly mechanical quality that reduced its sense of 'naturalness'	56W, 4 line inputs + MM/MC + tone		85
Carver CM-1090 £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
Cello Audio Suite £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
Chord SPM-900 £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
Concordant Excelsior £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
Conrad-Johnson Motif MC-8 £1995	Very Good Very Good	A cheaper alternative to the '7, this preamp is an undoubted success in maintaining the Motif sound but does not compare on sound quality	MM/MC	R	50
Conrad-Johnson Premier 7A £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
Conrad-Johnson PV-10 £1100	Excellent Excellent	Pricy, 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
Creek CAS 4040s3 £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
Creek CAS 4140s2 £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 R and mute	R	80
Croft Series 4S £850	Good Good	The original IV is still available now supplemented by the higher price and power (S), both are fine performers	40(60)W channel	R	57
Croft Series 4SA £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
Croft Super Micro A £549	Average + Very Good	The looks are somewhat improved, while this 'hot rod' version with tuned components performed very well indeed. There is still no gain on the line inputs. Now in mk.II form	4 inputs, MM, straight line	R	57
Cyclone Catalyst £1995	Good + Very Good	Exceptionally load tolerant and very refined in delivery. Extra options available in future	74W, external MM or MC stages, 3 line inputs	R	80
Deltec DPA 100S £2200	Very Good Very Good	A top-quality transistor power amp, sounding fast, articulate and well controlled, though maybe a touch clinical for some tastes	80W	R	50
Deltec DSP-50S DPA-50S £725/£925	Excellent Excellent	Remarkable pre/power combo based around the highly linear DH-0A32 hybrid op-amp. Unmatched detail resolution, control and transparency	63W, external feedback wiring, 3 line, MM/MC no tone controls	R	68
Denon DAP-2500/POA-4400A £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
Denon PMA-250II £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
Denon PMA-350 £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
Denon POA-6600 £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
DNM 3A From £1000	Good + Very Good	The DNM3 in its acrylic case is a remarkably revealing and neutral state of the art preamp	5 inputs MM/MC twin vol controls	R	44
Dual CV-5670 £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
Dual CV5600 £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
E.A.R. 549 £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
E.A.R. 802/509mkII £1098/£1868	Average Very Good	Extremely well made and combining the sonic strengths of both transistors and valves this EAR combo warrants attention	100W, MM, 6 inputs, monobloks	R	63
Entire Sound EX50 £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
Exposure VI/VII*/VIIS £320/£500	Good Very Good	An established company like Exposure could do more to improve the 'look' of these amps which, nevertheless, sounded confident, dry and musical. Dual version no longer available	63W, Super mod. 4 line and 2 disc inputs with full rec-out switching	R	68
Exposure VII/VIII £430/£470	Very Good Good	Supplied as a combination without the separate preamp power supply, this pre power combination performed satisfactorily especially on the moving coil input	50W, MM/MC, 3 inputs, straight line		62
Exposure XI/XII/VIII Super £1600	Good Very Good	New preamp and improved power amp led to a smooth and refined sound, MM/MC less transparent than CD	61W, MM/MC, 5 line inputs	R	80
Goodmans GSA-600 £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
Grant G60AMS £948 pr	Good Very Good	This neat and compact 60W valve monoblok gave good sound on the 8ohm tap, better still on 4ohms. The midrange was particularly natural	60W monobloks 8ohms	R	57
Hafner DH120 assembled £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
Hafner DH120 kit form £295	n/a Average	Er, we didn't build one; see assembled version below	60W		44

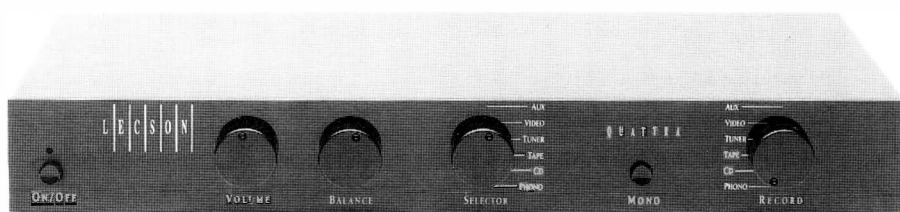
The Directory

AMPLIFIERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Haffer SE-100/SE-120 £365-375/£375	Good + Good +	The smallest of Haffer'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
Haffer XL-600 £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
Harman Kardon Citation 25/22 £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
Harman Kardon HK6100 £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
Harman Kardon HK6200 £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
Harman Kardon HK6500 £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
Harman Kardon HK6600 £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
Harman Kardon HK6800 £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
Heybrook C3/P3 £400/£500	Average + Average -	There's a chance our power amp was a dud for the combo sounded very disappointing on the whole - glassy and uncouth	138W with plenty of current. Passive line inputs		85
Jadis JP30/JA30 £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
Jeff Rowland Coherence One/Model 7 £3950/£9900	Very Good Very Good	The technical design of these amps is very elaborate but ensures they achieve an extraordinarily transparent and potent sound. However, the CD i/p is clearly superior to the	448W monoblok MM/MC, variable loading options. Balanced topology	R	72
JVC AX-A3TN £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
Kelvin Digital Integrated £550	Good + Very Good	Not so Class A as before but now fitted with a PDM DAC which offers a smooth, detailed and naturally 'musical' sound	34W, digital, line and MM i/p's only	R	85
Kelvin Integrated £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
Kelvin Labs Absolute Zero/M30 £395 + £295/£595pr.	Good + Average +	Latest versions of the M30 offers a true 30W Class A and a slightly muddled but very comfortable sound. MC preamp is a very linear design	33W monoblok MC only + 4 line inputs. Separate L/R balance	R	74
Kenwood KA-3020 £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
Kenwood KA-4020 £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
Kenwood KA-5020 £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
Klyne SK5a £2590	Very Good Very Good	Beautifully made and presented, this American thoroughbred has a good lab performance, but although versatile, is rather expensive for the quality of sound offered	Balanced output, versatile cartridge loading		72
Lecson Quattra £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
Leotron JH50 £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
Linn LK1/LK280 £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
Linx Nebula £500	Average + Average +	Ambitious both in style and design this amp was less impressive in the sonic arena - positive but two-dimensional	88W, logic-controlled i/p switching		85
Magnum MP150/MF150 £320/£320	Average + Good	This is no technical masterpiece but the strain-free, fluid sound augers well for CD-based systems. Excellent value	89W, 3 line + MM/MC i/p's. No tone cont.	R	85
Marantz PM-30SE £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
Marantz PM-40SE £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
Marantz PM-50 £250	Good + Average +	One of Marantz's new breed, the PM-50 has a big and beely sound yet one that lacks refinement	92W, MM/MC, 4 line inputs, source- direct		80
Marantz PM-75 £500	Good Average	More successful than most amps with on-board DACs but still not as balanced as other Marantz products	136W, opt/coax dig inputs, 6 line + MM/MC		68

LECSON QUATTRA. THE FIRST INTEGRATED AMPLIFIER TO OFFER BI-AMPING. LISTEN TO IT. THE CRITICS HAVE.

"We were all struck by the wonderfully open and deep sound soundstage that seemed large and tactile enough to walk into."
Paul Miller - Hi-Fi Choice



Audio Magazine Germany - The Quattra has a higher rating than Linn Intek, Naim Nait, Mission Cyrus Two. **Price £349.90**

"Time shift into four-amp drive. Now we began cooking. The presentation opened out giving more insight into the music and the performance."
Malcolm Steward for Audiophile, March 1991

"The Lecson Quattra is the most radical & innovative amplifier for years" - Paul Messenger, Hi-Fi Choice, October 1991

Advanced Assembly Service Ltd, B1-2 Edison Industrial Estate, St Ives, Huntingdon, Cambridgeshire, PE17 4LF, 0480 65552

The Directory

AMPLIFIERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Marantz PM-80 £400	Very Good Good +	Technically robust with an equally beefy and tactile sound. Great sense of power and control but spatially a little flat	133W, 3 tape, 4 line + MM/MC. Class A option	R	85
Marantz PM-95 £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
Meridian 201/205 £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
Mission Cyrus I £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
Mission Cyrus II £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
Mission Cyrus PSX £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
Musical Fidelity A1 £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
Musical Fidelity A100 £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
Musical Fidelity B1 £200	Average + Good +	The subject of much controversy, this 50W wonder offers a very deep, solid and powerful sound	50W, MM/MC, 5 line inputs, tape monitor	R	80
Musical Fidelity B200 £349	Very Good Good +	Running cooler than other MFs, the B200 delivered fine musical and dynamic sounds with plenty of power	80W MM/mc 4 line inputs straight line	BB	62
Musical Fidelity MA50 £875 pair	Good Excellent	An audiophile bargain. One of the best sounding power amplifiers made	50W, monoblok	R	62
NAD 3020i £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
NAD 3225PE £160	Average + Average +	Light and detailed if not as rich or weighty sounding as others. MM input sounds warmer than CD	42W + 70W dyn. headroom; soft-clipping, MM only	R	68
Naim Separates £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	40-70W, MM/MC etc	R	60
NVA P70MC/A60 £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
Onix OA-21s/SOAP £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
Orell SA-040 £359	Good Good +	This promising newcomer from a brand new company sounded pretty good and should improve as production settles	45W MM/MC, 4 line inputs, straight line	R	56
Orell SA-040SE £400	Average + Average +	Very natural, relaxing if not overly exciting via CD, the sound closed-in to become 'pinched' or lettered via disc	64W, 5 line + MM/MC i/p's. Tweakey components.		71
Philips DFA-888 £300	Good Average	As above but including a modified disc input and onboard DAC. Sounds tight but also slightly thin	107W, as above + opt and coax digital inputs		74
Philips FA-880 £200	Good Average	A new and cheaper design from Philips that sounds best via MM disc. Can appear soft and unbalanced via CD	108W, MM/MC source-direct tone		74
Philips FA890 £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
Philips FA960 MkII £300	Good + Average	The MkII '960 still failed to grasp our listeners' attention, but it remains a competent amp nonetheless	122W, 6 line & 2 disc inputs + tone controls		68
Pioneer A-300 £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
Pioneer A-400 £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
Proton 520 £115	Average Average	Very well equipped budget amp with a slightly flat and undynamic sound - acceptable at the price though	31W, MM/MC, variable MC gain, 4 line inputs	R	74
Proton AP-1000/AA-1150 £250/£395	Good + Average +	Bags of headroom available from this pre/power combo, but can seem bloated or unrefined via MM	67W, MM/MC, adjustable MC gain, 5 line inputs		80
QED A240 CD II £199	Good + Good	Latest 240CD is fine value for CD and has competent MM disc input as well	45W MM 5 line inputs straight line	BB	62
QED A240 SA II £259	Very Good Good +	Redesigned 240SA has s 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
QED A270 £299	Good - Good +	Building on the strengths of the '240, the '270 sounds weighty, fast and dynamic. A bit 'lumpy' via MC	51W, 5 line and 2 disc inputs, pre-out	R	68
QED A270CD/PA £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
QED C300/P300 £300/£300	Good Good	A cost-effective combo, limited in its resolution but no less beguiling as a result. Disc stage is sweeter but samey	58W, 2 tape, 3 line, MM/MC + mono/biamp opt.	R	85
Quad 34 £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
Rational Audio £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
Ray Lumley Model 75 £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
Revox B150 £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
Revox B250 £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
Rose RV-23 £395	Good Very Good	Beautifully built classy British 'hybrid' preamplifier. You can spend more to get a more transparent sound — but it's hard to criticise the Rose given the competitive price	MM plus 3 line inputs	R	77
Rotel RA-810A £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, hdph, tone controls	BB	62
Rotel RA-820AX £150	Very Good Very Good	The spacious, detailed and very musical performance of this budget amp is almost too good!	47W, MM, 4 line inputs	BB	80
Rotel RA-820BX4 £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
Rotel RA-840BX4 £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
Rotel RA-870BX £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

The Directory

AMPLIFIERS

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ FEATURES	■ VALUE	■ ISSUE
Rotel RC/RB-850 £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
Rotel RC/RB-870BX £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, 4 line, 2 tape and MM/MC	R	68
SAE P102/A202 £499/£599	Average + Average +	Microprocessor-controlled pre and power amp that sounds much better at low rather than high volume levels. Pro-oriented aesthetics	151W, MM/MC + CD tuner and 2 tape tone memory, spk switching		74
Sansui AU-X111 £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
Sansui AU-X911DG £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
Sony TA-F630ESD £350	Good Average	Based on the '530 but equipped with PDM D/A convertor. Amp is competent but DAC sounds truly magnificent!	130W, as above + opt. and coax digital inputs	R	74
Sony TA-F730ES £450	Very Good Good	A very stable and coherent amp but one that lacks a crucial sense of involvement	133W, MM/MC, 3 tape, 2 line, full rec-out		80
Sugden A21a £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
Teac A-X400 £115	Average Average	Sibilance and a lack of crisp vitality hamper the performance of this amp, as does the stringent protection circuitry	59W, 4 line + MM + tone + mic i/p level control		85
TEAC A-X5000 £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
Technics SU-810 £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
Technics SU-V900 £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
Threshold FET 10e 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
Yamaha AX-330e £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
Yamaha AX-550 £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
YBA 1 power amp £2995	Good Excellent	This equally well finished power amp offers front rank stereo staging and transparency, and is capable of driving the most difficult loads	85W	R	62
YBA 1 preamp £2895	Very Good Excellent	A front line French audiophile product. Great stereo and a fine Krell style finish	MM/MC, 3 inputs, straight line	R	62
YBA 2 pre & pwr £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
YBA Model 3 £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
Acoustic Energy AE1 £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
Acoustic Energy AE2 £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
Acoustic Energy AE3 £1650	Very Good Very Good	Solid, authoritative and impressively accurate – if a shade ponderous and slow – AE's latest 'big one' is a much better bet than the earlier '4, combining	63 x 26.5 x 37cm low stands in free space	85dB/w 23Hz (in room)	R	86
Acoustic Research AR-112 £125	Average Average -	Nicely presented and engineered, but sounds a bit small and boxy without true coherence	36 x 19 x 18.5cm stands near rear wall	87dB/w 75Hz		66
Acoustic Research AR-122 £150	Average Average	Despite a promising enough list of ingredients, the 122 failed to excite real enthusiasm amongst the listening panel	38.5 x 19 x 22cm stands near rear wall	87dB/w 68Hz		68
Acoustic Research AR-132 £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
Acoustic Research AR-152 £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
Acoustic Research Red Box £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
Alexander SE11 £299 (stands £69)	Good Good	Clearly better than its cheaper stablemates, the metal jacket delivers a different – and in some respects superior – sound than the wood-based	52 x 14 x 17.5cm stands close to wall	86dB/w 50Hz (in room)	R	82
Alexander SE5 £199	Average Average	Particularly well suited to surround sound A/V applications, the SE5 can give any miniature a run for its money on bass performance; hardness and coloration	40.5 x 12 x 15cm ALS stands near wall	82dB/w 50Hz (in room)		78
Allison AL100 £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
Allison AL105 £150	Average Average -	Pretty enough in appearance, sonically the AL105 doesn't really make the grade at the £150 asking price	37 x 24 x 21cm high stands against wall	87dB/w 45Hz (in room)		78

The Directory

LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
Allison AL120 £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
Allison CD6 £290	Average Good -	An unusual cube-shaped model designed for wall mounting gives exceptional bass extension from a small box, though it's also a bit heavy, coloured and slow	28.5 x 28.5 x 28.5cm stands against rear	88dB/w 45Hz	R	71
Alphason Amphion £680	Good Good	This fine-sounding, nicely finished compact wall-mount is just a little too expensive for formal Recommendation, but is a good performer for all that	44 x 23 x 27.5cm high stands against wall	88dB/w 47Hz (in room)		78
Alphason Artemis £299	Average Average+	Pretty little miniature sounds nicely inobx 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
Alphason Orpheus £1000	Good Good +	Large hi-tech two-way features unusual, sweet-sounding isodynamic tweeter; well engineered and balanced if a shade odd in appearance	65.5 x 28 x 34cm stands near rear wall	87dB/w 43Hz	R	71
Apogee Caliper Signature £3350	Good + Very Good	Pretty but power hungry full range panels have remarkable transparency and delicacy, though loudness and bass 'grunt' are both a bit lacking	122 x 59-70 x 6.5-28cm floor, free space	81dB/w 30Hz (in room)	R	81
Arcam Alpha £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
Arcam Delta Two £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
Ariston Image £180	Average - Average -	Despite a sweet treble character, the Image fails to impress with a 'lumpy' over-rich balance that has room integration problems	42 x 22 x 27.5cm stands in free space	89dB/w 28Hz (in room)		82
Ariston Q £395	Average + Average	The prettily shaped Q delivers a good impression of scale from a small box, but 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
ATC SCM20 £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
Audio Electronics TC10 II £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
Audioplan Kontrapunkt £799	Good Good +	Cute little German miniature sounds as sweet as it looks, dressed expensively in real wood with matching stands. Not for bass or loudness freaks	31 x 24 x 13cm free space, matching stands	83dB/w 48Hz (in room)	R	86
B&W 620 £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&W CM1 £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&W DM550 £149	Good + Average -	Beautifully presented, well engineered near-miniature with precise sound but a distinct lack of 'wellie'. Ideal for considerate flat dwellers	35 x 20.5 x 22.5cm stands in free space	86dB/w 70Hz		71
B&W DM560 £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&W DM600 £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&W Matrix 801 £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&W Matrix 805 £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&W Vision OS1 £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&W Vision OS2 £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
Bose 305 £350	Average Good -	A bit of an oddball, fine dynamic liveliness and a good room match more than make up for the strange stereo imaging and treble	28 x 45 x 23cm high stands near wall	88dB/w 40Hz (in room)	R	78
Bose 901 MK6 £1600	Good Average	Still controversial after all these years, the pre-equalised multi-driver 901 is cleverly engineered to deliver exceptional loudness.	33 x 54 x 32cm rigid stands in free space	(92dB/w midband) 28Hz (in room)		86
Bose Interaudio 3000XL £150	Average Average -	Lots of perceived value and well enough balanced, but low cost cabinet and driver engineering results in a crude and unsubtle sound	46.5 x 29 x 23cm stands in free space	89dB/w 45Hz		71
Boston A120 £349	Average + Good -	Ugly but cleverly engineered, the 120 combines a tiny main driver with much larger ABR to give a generous, bighearted and lively sound despite little bass	62.5 x 31.5 x 25cm stands in free space	89dB/w 48Hz	R	86
Boston A40II £120	Average Average -	Competent performance for size and price but below average relative to the UK competition	34 X 21 x 20cm on stands near wall	88.5dB/w 63Hz		41
Boston Acoustics T830 £399	Good Good	A lot of speaker for the money, the T830 is a smooth and accomplished performer with a big and easy - or alternatively a lazy and laid back - sound	82.5 x 25.5 x 24cm floor, away from walls	87dB/w 30Hz (in room)	R	82
Cambridge SoundWorks Ambiance £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
Castle Chester £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
Castle Durham £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
Castle Pembroke £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
Castle Warwick £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
Castle Winchester £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
Celef CF2 Nimbus £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
Celef Cirrus £180	Average Good	It's nice to see Celef back in the UK, with this decent sounding small reflex box that seems unusually tolerant of siting	39 x 20.5 x 23cm stands in free space	84dB/w 60Hz	R	66
Celestion 3 £109	Average + Average	This attractive little wall-mount gives good balance and stereo imagery, with a character which leans more towards inoffensiveness than excitement	31 x 18.5 x 21cm high stands against wall	86dB/w 55Hz (in room)	R	78
Celestion 5 £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
Celestion 6000 £1470	Very Good Very Good	A genuine fullrange audiophile quality speaker system - with Star Wars styling to suit a high tech environment	Complex, on floor in free space	82.5dB/w	R	60
Celestion 7 £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
Celestion DL6 Series II £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
Celestion DL8 Series II £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

The Directory

LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
Celestion SL12Si £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
Celestion SL600Si £799	Good + Good	This Aerolam high tech miniature has certain remarkable qualities that some will find irresistible, but needs careful system and room matching	27 x 20 x 23cm free air on tall stands	82dB/w 52Hz		68
Celestion SL6Si £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
Creek CLS20 £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
Dahlquist DQ8 £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
Dali 700 £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
DCM Timeframe TF250 £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
Doxa 5 - 2 £900	Average Good	The high sensitivity and seductive midband makes an obvious partner for valve amplifiers, though obtaining a good room match may prove a little tricky	98 x 21 x 28cm floor well away from walls	91dB/w 30Hz (in room)	R	82
Duntech PCL1000 Crown Prince £6120	n/a Excellent	Immensely 'listenable', refined sounding speaker capable of creating lifelike 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
Duntech PCL500 Marquis £3998	n/a Very Good	Better value for money than the Crown Prince - and arguably more dynamic, with real bass 'slam' but a little less refined in the higher registers	147.5 x 27 x 40cm free standing away from	92dB/w 48Hz	R	65
Eltax Linear Response 8 £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
Epos ES11 £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 45Hz (in room)	BB	94
Epos ES14 £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
Equation 0 £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
Faraday Siren £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
Goodmans B-Max/Maxim 2 £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
Goodmans HIM 440 £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
Goodmans M100 £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
Goodmans M300 £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
Goodmans M500 £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
Goodmans Maxim 2 £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
Harbeth HL Compact 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
Harbeth LS3/5A £343	Good Average	Still a classic miniature, though not to every taste, and none the better for the recent update under our listening conditions. Limited dynamic range	30.5 x 19 x 16cm stands in free space	81dB/w 60Hz		66
Heco Interior 120 £169	Good Average	Drab appearance belies a lively enough character, though the balance is altogether a bit bright for UK tastes	32 x 23 x 23cm high stands against wall	88dB/w 50Hz (in room)		78
Heco Interior 430 £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
Heco Interior 90 £159	Good Average -	Neatly finished and engineered miniature, but the disappointingly 'lifeless' sound left the listening panel decidedly underwhelmed	27 x 18 x 16cm on high stands	87.5dB/w 90Hz		74
Heco Interior Plus 404 £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
Heco Superior 740 £599	Good Good -	A similar sonic package to the cheaper Interior 530, these Superior clothes are very pretty indeed, though spikes are still awaited	84.5 x 22 x 25cm on floor in free space	88dB/w 30Hz (in room)		78
Heco Superior 940 £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
Heybrook HB1 S3 £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
Heybrook HB100 £279	Average + Good	Well matched for wall sitting, the HB100 is a lively and informative performer in the tradition of the popular HB1	47 x 26 x 28cm stands near rear wall	86dB/w 50Hz	BB	66
Heybrook HB150 £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
Heybrook HB200 £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
Heybrook Point 5 S2 £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
Heybrook Point 7 £185	Average Average	Physically an attractive package, but not entirely convincing in lab or listening panel test; interesting for all that	40.5 x 23 x 23cm stands against rear	85dB/w 60Hz		68
Heybrook Solo £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
Infinity Kappa 6 £795	Good Good	Interestingly styled US loudspeaker has unusual high tech drivers and good neutrality, but the sound seriously lacks excitement	63 x 38 x 24cm stands, free space	85dB/w 35Hz		66
Infinity Kappa 8 £1850	n/a 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
Infinity Modulus £695	Good Average +	Luxury high-tech miniature is carefully conceived and beautifully executed. Undeniably attractive in the midrange and treble, the Modulus failed to handle the bass end of the spectrum as successfully	30 x 18 x 26cm high stands 1ft from wall	84dB/w 45Hz (in room)		86
Infinity Reference 10 £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
Infinity Reference 50 £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

The Directory

LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
Infinity RS2001 £180	Average Average +	A little coloured and unruly in the treble, the 2001 nevertheless retains the lively dynamic bounce of its predecessor; pity the price has gone up	36.5 x 22.5 x 20cm lightweight stands	87dB/w 50Hz (in room)	R	78
Jamo Concert II £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
Jamo Concert VII £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
Jamo Cornet 40 £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
JBL Control 1 Plus £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
JBL L20T3 £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
JBL LX33 £259	Average + Good	A bit of a cheat, but a lot of speaker for the money, which manages a better room balance than many 'large bookshelf' rivals, and delivers a fine acoustic	80 x 25 x 21cm floor, 1ft from wall	89dB/w 48Hz	R	82
JBL LX44 £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
JBL TLX12 £149	Good - Average	This smart near-miniature has a 'boppy', lively bottom end, but beware of the fizz in its top	37 x 23 x 23cm stands 0.5m from rear wall	87dB/w 55Hz	R	71
JBL XE2 £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
JBL XPL 90 £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
JPW AP2 £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
JPW AP3 £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
JPW Minim £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
JPW P1 £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
JPW Sonata £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
JPW Sonata Plus £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
JRT AD1 £500 (stands £100)	Average + Good +	A most auspicious Choice debut for relative newcomers JRT. A fair share of cosmetic deficiencies do little to spoil the impressive coherence and timing	59.5 x 28 x 36cm own stands close to rear	86dB/w 28Hz (in room)	R	86
JRT AD1 Micro £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
Kammerzell Reference Mini 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
KEF 104/2 £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
KEF C15 £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
KEF C25 £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
KEF C45 £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
KEF C55 £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
KEF C75 £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
KEF C85 £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
KEF C95 £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
Lindley New Age £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
Linn Index II/KuStone £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
Linn Kaber LS500 £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
Linn Kan II £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
Linn Nexus LS250 £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
Magneplanar MG1.4 £1190	Good + Good +	Replaces the stalwart MG1c with a revised panel layout. Offers a very crisp and articulate sound, particularly revealing of upper mid vocal details	155 x 8 x 57cm open space	88dB/w 40Hz	R	72
Magneplanar MG2.5R £1998	Good Good	Offers the low coloration and profound musical insight of better electrostatic loudspeakers but without loss of low frequency extension	183 x 56 x 4.5cm Open space	83-85dB/w 35Hz	R	60
Magneplanar MGIIIa £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
Magneplanar SMGa £675	Average - Average	Tonally 'rich', in the right room it proved a satisfactory musical experience	122 x 48 x 4.5cm on floor clear of wall	85dB/w 56Hz		46
Marantz LD-50DMS £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
Martin Logan CLS II £3998	n/a Very Good	Much improved high resolution design, fussy about system set-up and demanding of ancillaries and software alike. It rewards the efforts though	60 x 28 x 7.5cm open space	86dB/w 45Hz	R	72
Meridian Argent 1 £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
Meridian Argent 2 £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
Meridian M30 £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

The Directory

LOUDSPEAKERS

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ SIZE ■ PLACEMENT	■ SENSITIVITY ■ BASS FROM	■ VALUE	■ ISSUE
Mission 760 £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
Mission 761 £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
Mission 762 £200	Average Average -	Mission's 'bookshelf middleweight' offers high sensitivity and loudness capability, but at the expense of a somewhat untidy and rather 'heavy' sound	50 x 25 x 27cm stand, experiment advised	91dB/w 55Hz		66
Mission 763 £300	Average + Average +	A very artful combination of generous volume and good bass extension at a modest price. Works well in the listening room despite a few rough edges	77 x 25 x 32cm near rear wall	86dB/w 40Hz	BB	68
Mission 764i £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
Mission 767 £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
Mission Cyrus 780 £180	Good Average +	Pricy 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
Mission Cyrus 781 £250	Average + Good	Properly run in, the pretty little 781 delivers a fast, dynamic and informative sound which more than justifies its price.	43 x 22.5 x 28cm matching stands 1ft	88dB/w 28Hz (in room)	R	86
Mission Cyrus 782 £350 (stands £80)	Good - Good -	Lively, articulate and beautifully finished, this compact wall-mount model with twin main drivers has good integration but a rather rich, 'Loudness' balance	50 x 25 x 32.5cm Cyrus stands near wall	90dB/w 50Hz		71
Monitor Audio MA1200 £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
Monitor Audio MA1800 £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
Monitor Audio Monitor 11 £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
Monitor Audio Monitor 14 £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
Monitor Audio Monitor 7 £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
Monitor Audio Monitor 9 £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
Monitor Audio Studio 10 £1200	Average Average +	Expensive, luxury build/finish and all-metal driver diaphragms provide engagingly transparent midrange and treble, spoiled by over-strong mid-bass.	40 x 20 x 25cm heavy stands clear of walls	87dB/w 45Hz		90
Monitor Audio Studio 5 £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
Mordaunt-Short MS 3.10 £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
Mordaunt-Short MS 3.20 £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
Mordaunt-Short MS 3.30 £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
Mordaunt-Short MS 3.40 £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
NAD 8100 £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
NAD 8225 £150	Good Average +	Notwithstanding lacklustre styling and an unprepossessing appearance, this NAD miniature has a smooth and even midband plus an appealing overall jauntiness.	34 x 20 x 18cm stands close to wall	87dB/w 45Hz (in room)	R	86
Naim NA IBL £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
NVA Cube 1 £600 (stands £200)	Good - Good +	Attractive, cube-shaped semi-omni is very sturdily built, and gives an idiosyncratic but unusually open, spacious and informative sound	33 x 32 x 32cm own stands c0.5m from wall	85dB/w 52Hz	R	71
NVA Cube 2 £380	Average Good	A rude but exciting miniature, with unusually accomplished bass capabilities for its size	28.5 x 27 x 28.5cm NVA stands against wall	85dB/w 48Hz (in room)	R	82
NVA Cubix £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
Opus 3 Capella £599	Good Good	The sound of this Scandinavian curiosity certainly benefits from the crushed marble enclosure, though presentation is strictly DIY	32 x 40.5 x 26(ave)cm amongst books in	86.5dB/w 45Hz		66
Opus 3 Credo £399	Average Average	Credo's odd-shaped silicate-based cabinet confers good box and bass performance, but the sound could be more neutral for the price	32 x 28 x 32cm stands in free space	88dB/w 65Hz		74
Pearl & Oakley Victoria 200 £1099	Average - Average -	Extraordinary – and to many very attractive – 'ginger jar' presentation in Staffordshire ceramics, but let down by need for further acoustic development	93 x 33 x 33cm on floor in free space	87dB/w 30Hz (in room)		78
Philips FB815 £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
Philips FB820 £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
Philips FB825 £650	Good Good	Generous sounding and impressively uncongested for the type, loudness and bass extension don't quite match the large and rather plasticky box	110 x 29 x 41cm on cones clear of walls	88dB/w 25Hz	R	90
QLN Model One £700	Good Average	Similar to Signature at two thirds the price, Model One exaggerates the latter's rich and heavy midbass and lacks its velvet smoothness	35 x (16-25) x (21-27)cm pillar	85dB/w 28Hz (in room)		82
QLN Signature £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
Quad ESL-63 £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
RAM Hermes £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
Richard Allan CD5 £184	Average - Average -	This neatly presented small reflex design can sound engagingly communicative, but is flawed sonically and technically and quite expensive too	38 x 19 x 23cm on rigid stands	88dB/w 80Hz		68
Rogers LS2a £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
Rogers LS4a £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
Rogers LS6a £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
Rogers LS7i £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

The Directory

LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY	VALUE	ISSUE
Rogers Studio 1a £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
Roksan Darius £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
Royd A14 II £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
Royd A7 Series 11 £115	Average + Average	Lively clear sound; good upper bass and dynamics, but treble "ramp" made vocals sound shut in. Try before you buy	31 x 20 x 17cm shelf or 50cm stands near	86dB/w 75Hz	R	53
Royd Apex £485	Average + Good	Not the smoothest sound around, it more than compensates with an impressively communicative and informative musical presentation	85.5 x 20 x 30cm on floor close to wall	87dB/w 33Hz (in room)	R	78
Royd Eden £235	Average Average +	Delightful mid/treble speed and transparency but determinedly bass light, this oddball miniature threatens cult status but could use a sweeter tweeter	31 x 20.5 x 18.5cm stands close to wall	87dB/w 85Hz	R	66
Royd Sapphire £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
Royd Sintra £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
Ruark Swordsman £219	Good Average	Very attractively styled and finished, the Swordsman is a well built 'small bookshelf' model that delivered better test than listening results	38.5 x 20 x 27.5cm stands 0.5m from wall	84dB/w 50Hz		71
Ruark Swordsman Plus £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)		98
Ruark Talisman £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
SD Acoustics OBS £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
SD Acoustics Ribbon £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)		81
SD Acoustics SD1 £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
SD Acoustics SD3 £379	Average Good	Neither cheap nor perfect, this near miniature sounds unusually lively and dynamic within inevitable physics constraints. Both engaging and entertaining!	38 x 19 x 29cm stands 10cm from wall	83dB/w	R	86
Seventh Veil System IV £1290 (£340 integral stand)	Average Good +	Lacks welly and loudness but delivers astonishing results with female vocals in particular. Antithesis of the 'good allrounder'	72 x 44 x 21 x 29cm own-stands close to	84dB/w 28Hz (in room)	R	86
Shan Shimna £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
Snell Type C £2350	n/a Very Good	Pricey, 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
Sony APM-101ES £100	Good Average	Big hearted sound from small bookshelf successor to BB '10ES, sounds a little untidy at frequency extremes, so suits CD better than vinyl	39.5 x 22.5 x 23.5cm stands, free space	86dB/w 52Hz	R	71
Sony APM-121ES £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)		86
Sony APM-141ES £200	Average Average	A great deal of loudspeaker for the money, the rich sounding '141 needs a big room and still shows significant 'loudness' (boom'n'tizz) tendencies	61.5 x 26 x 32cm stands in plenty of	88dB/w 30Hz (in room)	R	78
Sony APM-181ES £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		71
Sony APM-66ES £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		59
Spendor SP1 £800	Very Good Good	A very subtle and musical performer that works particularly well with digital material. An exceptional allrounder	63.5 x 29.5 x 30.5cm stands, free space	87dB/w 41Hz	R	60
Spendor SP2/2* £500	Very Good Good +	Conceding little to the SP1, this 30 litre model displayed good tonal balance with a highly articulate midrange, only slightly marred at frequency extremes	50 x 25 x 30cm stands, free space	87dB/w 45Hz	R	59
Spica Angelus £1295	Good Average	A little bass shy and soft in the bass and lower mid, the free standing Angelus is otherwise tidy, extremely lively and fluid, if uneven overall	116.8 x 53.3 x 26cm away from walls	86.5dB/w 50Hz		60
Spica TC50 £599	Good - Good	This triangular-profile 'grown up' miniature is a shade boxy and laid back but has good rhythmic and musical integrity	40.5 x 33 x 29cm stands in open space	88dB/w 55Hz		71
Spica TC50SE £799	Good - Good	A heavily UK-modified TC50, the SE sounds less boxy and more spacious, but lacks some of the urgency of the standard model	40.5 x 33 x 29cm stands in open space	88dB/w 55Hz		71
Studio Power DMS100 £249	Average + Average +	Close to a BB rating, and in many respects remarkable value for money. Delivers an impressively smooth and large sound, but sheer ugliness will limit its appeal	51 x 26 x 32cm open stands 1ft from wall	86dB/w 25Hz (in room)	R	82
Tannoy DC1000 £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		71
Tannoy DC2000 £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
Tannoy DC3000 £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
Tannoy E11 £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)		82
Tannoy J95 £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
Tannoy M15 £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
Tannoy M20 £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
Tannoy Westminster £3600	n/a Good +	These awesome horn loaded speakers are remarkably controlled and impressive, if only suited to a few pockets and rooms	Huge, flat against rear wall, away from	96dB/w (manuf.)	R	Coll '87
TDL Monitor £1799	Very Good Very Good	Fine solidity and good accuracy, with enough bass extension to satisfy even organ freaks. Needs a big room and can sound a bit lazy and a shade tinkly	118.5 x 30 x 47cm 0.5m from walls	85dB/w 28Hz	R	66
TDL Studio 0.5 £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)		94
TDL Studio 1 £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
Technics SB-CS5 £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
Technics SB-EX2 £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)		98

The Directory

LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY	VALUE	ISSUE
Technics SB-RX50 £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
Technics SBC 250 £140	Average + Average -	Despite a fairly even tonal balance, the 250EK sounded muddled in the midrange and dull in character	36.5 x 23.5 x 20.5cm free space, stands	86dB/w 60Hz		46
Toshiba SS33-M £100	Average Average	Providing a benchmark for budget loudspeakers, this Toshiba-inspired but UK designed and manufactured model is a lot of loudspeaker for the money	40 x 26 x 21.5cm stands in free space	86dB/w 55Hz	BB	68
Townshend Glastonbury IIS* £1700	n/a Very Good	What? No bass? Actually, like the KEF 107, Glastonbury II goes down so low you might not notice how good it is. A truly remarkable performer. Superb	91.5 x 28 x 4.6 free standing in room	88dB 27Hz	R	65
Townshend Glastonbury Tor £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
Vandersteen Model One £1000	Average + Average +	This compact American floorstander's elegant staggered baffle arrangement contributes to a refreshing freedom from boxiness, but the price is quite high	100 x 30.7 x 25.6cm floor clear of walls	87dB/w 23Hz (in room)		86
Vecteur Premiere £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
Videotone Minimax 2 £80	Poor Average -	Cheap in build and QC as well as price, but cheerful (if coarse) with it - if a little too cheerful after extended listening	27.5 x 17 x 20cm near rear wall	84dB/w 90Hz	R	74
Visonik David 6001 £173	Average - Poor	Sharp styling a classy looking miniature makes, but the complex grillework worsens a sound which starts off with too much top and not enough bottom	20 x 12 x 13cm against rear wall	87dB/w 130Hz		74
Wharfedale 410 £130	Good Average-	One step up from the Diamond, this attractive and sensitive small bookshelf model sounds smoother but is also rather bland and uninvolving	34.5 x 22 x 22.5cm stand against wall	89dB/W 45Hz (in room)		94
Wharfedale 505.2M £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
Wharfedale 505/2 £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
Wharfedale Coleridge £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	91dB/w 48Hz (in room)	R	82
Wharfedale Delta 30.2 £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 uis good	38 x 22 x 17cm stands close to wall	88dB 48Hz (in room)	BB	98
Wharfedale Diamond IV £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
Yamaha NS 1000M £900	Good Good +	Living up to its monitor label, and tonally well suited to digital material, the NS 1000M is superbly crafted and capable of high levels	67.5 x 37.5 x 32.5cm 30cm from wall, stands	90dB/w 40Hz	R	46

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
Acoustic Research RD-06 £300	Average Average	Acceptable middle market player with very simple facilities and cramped control section, but unusually good looks	Dolby B/C/HX Pro, fine bias, counter memory, repeat		69
Aiwa AD-F500 £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
Aiwa AD-F700 £199	Good Average	Somewhat less than the sum of the (most fine) individual parts, this deck has an artificial quality which spoiled the efforts of a fine transport	Dolby B/C/HX Pro, fine bias, CD Direct input		75
Aiwa AD-F800 £250	Good Very Good	Close to first class performance - and superb value. The Aiwa is purposeful and finely engineered. It provides a near irresistible blend of good mechanics and electronics	3 head, dual capstan, Dolby B/C/HX Pro, tape calibration	BB	75
Aiwa AD-F810 £200	Good Good	First class budget 3-head machine with a dual capstan transport that really works at reducing the 'fudge' factor	Dolby B, C, HX Pro, bias adjust, track search, variable hdp	BB	99
Aiwa AD-R470 £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
Aiwa AD-WX616 £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
Aiwa AD-WX777 £180	Very Good Very Good	Excellent, middle price dual deck with quick side change and a living, breathing sound - though prerecorded tapes sound bright	Twin auto-reverse, one records. Dolby B/C, fine bias	BB	75
Aiwa AD-WX888 £250	Good Good	Inaccurate set-up spoils metal tape operation, but with other tapes the deck works well. This deck offers fine engineering, facilities and sound	Dual auto-reverse twin deck, Dolby B, C and HX Pro	R	75
Aiwa XK-007 Excelia £400	Good Good	Downmarket version of XK-009 with simplified bias/equalisation adjustment section and more forgiving but less informative sound. Still good, but less exciting than XK-009	Dolby B, C, dbx, HX Pro, 3 Head, tape alignment		63
Aiwa XK-009 Excelia £550	Very Good Very Good	Excellent detail, stable articulate midband and slightly obvious treble. The most interesting Aiwa for yonks	Dolby B, C, dbx, HX Pro, 3 Head, tape alignment, CD direct	R	63
Akai GX-32 £170	Average Poor	Constrained and smeared sum 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
Akai GX-52 £250	Very Good Very Good	Well finished and a pleasure to use, this well specified deck sounds clean and defined with all tape groups, with or without Dolby	Dolby B, C, HX Pro, track locate features	BB	57

The Directory

CASSETTE DECKS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Akai GX-65 £300	Average Average	Fine 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	R	87
Akai GX-95 £400	Good Very Good	Well designed and finished cassette deck with features well judged to please the audiophile - especially switchable Dolby HX Pro and switchable panel display. The calibration system is simple and effective, and the deck sounds great	Dolby B/C/HX Pro, 3 head, manual R tape set-up	R	69
Akai GX-95II £400	Good Very Good	Sharp, clear and articulate sounding deck, with superb performance extending to frequency extremes	3 heads, dual capstans, tape calibration, Dolby B/C/HX Pro (switchable)	R	99
Akai GX-R35 £200	Average Average	Middling sound quality at best with Dolby B; deteriorates with Dolby C and unsatisfactory anyway with testing material due to loss of low level information bias adjust, track search	Auto-reverse (optically triggered), Dolby B/C/HX Pro,	R	99
Denon DR-750A £250	Average Average	Workmanlike and simply equipped dual deck which is more appealing on audio grounds than most of its type	Dual transport, Dolby B, C & HX Pro	R	99
Denon DRM-510 £140	Good Average+	An amnesic Dolby switch and lack of timer standby detract from an otherwise strikingly successful deck with a consistently good performance	2 heads, Dolby B/C/HX Pro	R	99
Denon DRM-700A £230	Very Good 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
Denon DRW-650 £200	Average 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
Dual 5850RC £230	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
JVC TD-R431 £170	Poor Poor	Modestly specified auto-reverse cassette deck which suffers the usual problems of the breed, to wit unstable, homogenised sound quality	2-head, Dolby B/C/HX Pro, auto reverse		99
JVC TD-V531 £260	Average Average	A simple but potentially Good deck with an excellent transport, let down by poor setting up. With all tapes, sound quality was thin and lacking in both substance and colour	3 heads, dual capstans, Dolby B/C/HX Pro, var bias		99
Kenwood KX-5030 £200	Good Average	confusing mishmash of listening impressions caused by poor set-up afflicting metal tapes and Dolby C in particular. Promising otherwise	2 head, Dolby B/C/HX Pro, auto-bias, track search		99
Kenwood KX-7030 £260	Good Good	Fine, articulate middle price cassette deck whose only (mild) failing with some programme material is a just perceptibly synthetic glaze	3 heads, dual capstans, Dolby B/C/HX Pro, auto bias	R	99
Marantz CP230 £330	Average Average	This is a competitively priced portable recorder though not suited to replay of musicassettes	Dolby B, bias adjust	R	52
Marantz CP430 £400	Average Average	Uniquely flexible and compact package for outside work which at a pinch can double as a domestic cassette deck. dbx is useful for location work; results with Dolby B are acceptable	Portable 3 head, dbx, fine bias, charger/adaptor	R	87
Marantz SD-40 £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
Marantz SD-50 £220	Good Very Good	Fine, exacting all-rounder offering good stereo, precision and focus. Good with prerecorded tapes too.	Dolby B/C/HX Pro, track & intro search, variable bias etc	R	81
Marantz SD-60 £350	Good Very Good	A first rate, highly capable deck offering energetic yet refined sound largely due to good electronic design	3-head, Dolby B/C/HX Pro, variable bias & sensitivity	R	81
Marantz SD315 £180	Average Average	Sound quality is promising, but somewhat offset by 'shut in' top end. Pitch integrity suspect . Dolby C sound quality and dubbing performance poor	Dolby B/C/HX Pro, twin transports, one rec/play, one play only, Mic input	R	93
Marantz SD515 £350	Poor 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
Memorex SCT-5 £150	Poor 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
Nakamichi Cassette Deck 1 £700	Good Good	New modernised Nakamichi is still curiously old fashioned in many ways, but offers unusually articulate sound of great insight	Dolby B/C, 3 heads, dual capstans, var azimuth	R	99
Nakamichi Cassette Deck 2 £300	Very Good 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
Nakamichi RX-202E £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
Philips FC870 £250	Average Average	Disappointing at the price, this is a well equipped deck with off-tape monitoring, but a somewhat listless, smeared musical style	Dolby B/C/HX Pro, 3-heads, track/intro search etc		81
Pioneer CT-676 £250	Average Poor	Dull, compressed and hard sounding deck, which is hamstrung by high measured transport flutter. Good points include sophisticated (and accurate) tape alignment	Dolby B/C, manual tape type alignment, 3 heads		99
Pioneer CT-900S £500	Good Average	High spec and well built derivative of CT-93, but disappointingly lacklustre sound	Dolby B/C/S/HX Pro, dual capstans, 3 heads, auto tape alignment		99
Pioneer CT-91a £560	Very Good Very Good	Superb, near state of the art recorder with an excellent dual capstan transport and very capable electronics. At the price, this one is a mould breaker	3-head, tape calibration, Dolby B/C/HX Pro	R	75
Pioneer CT-93 £800	Excellent Excellent	State of the art deck, built like something out of NASA's shuttle, with superb all round performance. Dolby S can muddle ambient information, but increases effective dynamic range	Dolby B/C/S/HX Pro, auto tape align, 3 heads, dual capstans	R	99
Revox B215 £1727	Very Good Very Good	Fine, consistent and solid sound quality, with excellent under the skin engineering and many useful features — but you're also paying for the same	Dolby C/HX Pro, 3 heads, dual capstans, auto tape align	R	87
Revox B215-S £1826	Very Good Very Good	This is a superbly engineered deck with a classically fine performance that almost transcends the stereotypes. Ergonomics are flawed but the user interface is both powerful and flexible	3-head, dual capstan, Dolby B/C/HX Pro, auto calibration	R	75
Revox H1 £1,145	Very good Very good	Bare bones version of B215 is still a sophisticated piece of kit, and lacks for none of the 215's engineering prowess	3 heads, Dolby B/C, auto tape align, semi-auto record level set.		99
Rotel RD-845 £130	Average - 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
Rotel RD-855 £180	Average Good	The transport is OK and the various frequency responses are erratic, but good basic electronics help the Rotel deliver. Coherent, enjoyable and informative	Dolby C memory stop & repeat, track search	R	87
Rotel RD-865 £230	Good Very Good	Fine, architecturally solid sound quality in a package with a low gimmick count and strong audiophile appeal	Dolby B/C/HX Pro, fine bias	BB	75
SAE C102 £549	Average Good	Looking most unlike a cassette deck designed in the States and proving competitive in its price group. Not sonically that outstanding, however	Real-time counter, track search, Dolby B & C		52
Sansui D-X211HX £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
Sansui D-X311WR £250	Poor Poor+	Not wholly successful auto-reverse deck which suffers because it has tried to be all things to all people. Lack of clarity is the main limitation	Twin optically triggered auto-reverse, Dolby B, C & HX Pro, track search		99

The Directory

CASSETTE DECKS

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ FEATURES	■ VALUE	■ ISSUE
Sherwood DS-1135C £100	Average Average	Excellent value. There is a low level constant background drone, and Dolby C recordings sound flat and coloured. Elsewhere sound quality exceeds expectations	Dolby B/C/HX Pro	R	87
Sherwood DS-7000R £230	Average Poor	Rough and ready cassette deck in which sound engineering has been sacrificed on the altar of extra selling features, namely three heads for real time off-tape monitoring	3-head Dolby B/C/HX Pro		87
Sony (WMD6C) Pro Walkman £249	Good Very Good	One of the finest sounding cassette decks on the market today. A mandatory Best Buy, which also fits in your pocket	Dolby B, & C	BB	60
Sony K870ES £350	Average+ Average+	Good but not outstanding deck which proved slightly disappointing on audition. This model is no standard setter	3 heads, dual capstan transport, Dolby B/C/HX Pro, tape calibration		99
Sony TC-K520 £170	Average Good	Fine, assured and detailed performer with a very well designed and straightforward user interface	Dolby C/HX Pro, variable bias, display on/off	BB	87
Sony TC-K570 £200	Good Average+	Good if slightly untransparent sounding recorder, comfortable with all noise reduction circuits and all tape groups	3 heads, Dolby B/C/HX Pro, bias adjust	R	99
Teac V-270C £89	Average Average	Not quite cheap enough to compete solely on price, the V-270C is a rather messy and unstable sounding deck	Dolby B & C, bias adjust		63
Teac V-5000 £300	Average+ Good-	Fine middle ranking heavyweight with blemish free overall performance, beaten only on subtleties by the best at the price	3 heads, dual capstans, bias/sensitivity adjust, Dolby B/C/HX Pro		99
Teac V-7000 £400	Good Good	Intrinsically sharp, clear and solid sound spoiled by exaggerated detail with prerecorded material and losses imposed by Dolby circuits	3 heads, quartz locked dual capstans, tape align, Dolby B/C/HX Pro		99
Technics RS-B965 £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
Yamaha KX-250 £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
Yamaha KX-330 £180	Average Good	Cramped control panel but a strong, dynamic and comparatively stable performance distinguish this strong middle-price deck	Dolby C/HX Pro, optional remote control	R	87
Yamaha KX-530 £230	Good Good	Excellent all-rounder that does most things at least competently and many things well. One of the best middle price decks	Dolby C/HX Pro, 3 motors, optional remote control	BB	87
Yamaha KX-650 £300	Average+ Good	Fine audio manners, especially in the midband and treble, mark this high class deck out from the crowd	3 heads, dual capstans, Dolby B/C/HX Pro, play trim, bias adjust	R	99
Yamaha KX-930 £400	Good Average	Worthy but ultimately slightly disappointing mixture of fussy ergonomics and tidy but cluttered sonics	3 heads, dual capstans, Dolby C/HX Pro, remote control		87

DAT RECORDERS

DAT, or digital audio tape, has been on the market for quite some time now but has never really 'made it' as a consumer medium, probably due to the fact that very little prerecorded software has been made available.

In the last year or so it has begun to carve itself a niche at the top end of the market replacing reel to reel tape recorders as the audiophile's tape based medium.

The DAT standard specifies a 48kHz sampling rate, which is higher than CD, so direct copying in the digital domain is only possible on those machines with dual sampling frequencies, ie 48kHz and 44.1kHz. Some machines also record at 32kHz to give a longer recording time for a given length of tape.

To try and get around the copying problem many machines incorporate SCMS, the Serial

Copy Management System, a device which enables you to record from a CD but not to 'clone' one digital tape from another.

Portable machines are now entering the market but make sure the price you are quoted includes an analogue to digital converter, with some portables these have to be purchased separately and increase the price considerably.

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ FEATURES	■ VALUE	■ ISSUE
Aiwa HD-S1 £600	n/a Average	The first DAT recorder, and already looking expensive and a little under endowed. Nevertheless, good build, controls and display help, and sound quality is adequate.	DAT recorder with separate A/D converter/battery unit. SP only, mic/line i/p		94 Supp
Aiwa XD-S1100 £550	Poor Average -	A muddled fascia detracts from the appeal of this inexpensive deck, but the real no no is a significant loss of the finer virtues: detail, imagery etc	SCMS, analogue, coaxial & optical in/outputs, full subcode editing		99
Aiwa XD-S260 £500	Poor Poor	Unlovely sounding deck lacks weight, clarity and presence. Low pricing and mini dimensions excuse many sins however	SCMS, optical/coaxial and analogue in, optical and analogue out		99
Denon DTR-2000 £800	Good Very Good	Not cheap, but first rate DAT recorder, good to excellent fidelity in all modes, with a slightly cool detached quality when differences are detectable. only, digital fade, fine cueing, remote control.	Digital LP/digital & analogue SP record/play, LP analogue play	R	93
Grundig Fine Arts DAT-9000 N/a	Good Good	Conventional DAT recorder offering standard facilities. The deck is well made and equipped, and is engineered to a satisfactory quality standard. It performs to an acceptable standard, though it is not state of the art.	2/4 hour recording, mic inputs, digital in/out		69
Kenwood DX-7 £500/£150	n/a Average	Sound quality is pretty fair, but a little rougher than the best of the breed. Controls are good, the display however is poor - and most users will require the accessory pack	AC powered recorder, no analogue LP mode. Optional accessory packs adds battery/ADC & case		94 Supp.
Kenwood DX-7030 £700	Average Average-	Bland sounding deck that lacks low level clarity and imaging. No analogue LP mode. Build quality is good however and ease of use ranks highly	SCMS Remote control, stand-alone DAC facility, analogue/optical/coaxial in/out		99
Luxman KD-117 £1499	Good Good	Slightly soggy, earth-bound sound quality, this model trails the other DAT decks tested so far	Two analogue inputs, remote twin address		63
Sony DTC-1000ES £1299	Very Good Very Good	Only available from professional outlets. Fine, consistent performer with accomplished tape handling and good build quality	Standard track ID and search, remote	R	63
Sony DTC-55ES £550	Very Good Good	Broadly comparable to a middle ranking CD player sonically, the Sony is particularly well equipped and well priced.	DAT with all record modes, inc LP (analogue) record	R	93
Sony DTC-M100 £799	Very Good Very Good	Only available from professional outlets. Clean clear sounding second generation model with most of the features and sound of the DTC-1000ES interfaces	Mid-width, alpha-numeric display, remote, optical	R	63
Sony TCD-D3 £500	n/a Very Good	Compact, well equipped, easy to use and excellent sound, it undercuts rivals by a clear £100. At the time of writing, this model represents the state of the art, and beats all comers.	DAT recorder, detachable rechargeable power pack, LP/SP record modes	BB	94 Supp.

The Directory

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
Acoustic Research CD-06SE £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
Acoustic Research CD-07 £300	Good Good	AR's first Bit Stream CD player relies heavily on Rotel know-how to produce a smooth, detailed but undemanding sound	Few features on player, remote, dig o/p. SAA7321 PDM DAC	R	100
Aiwa XC-333 £149	Average - Average	Looks costly, well featured, well balanced technical performance and sound for money	multi bit, keypad remote, hdph (fixed)	R	88
Aiwa XC-700 £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
Aiwa XC-900 £209	Good + Good -	The loss of transparency and general awkwardness of this player comes as a surprise after the XC-700. Extra features have taken their toll	Remote control with variable o/p, midship transport, 7350 PDM DAC	R	100
Akai CD-55 £230	Good Average -	Budget model which fails to compare with the CD52	Remote, hdph, Good programming		83
Akai CD-93 £700	Good Very Good	Undoubtedly a CD player of real class in build, presentation, lab performance and sound quality, but also a shade expensive for formal Recommendation - though that's not to dissuade lovers of black lacquer wood finish	Track entry remote, menu display etc.		58
Arcam Alpha £420	Very Good Very Good	Arcam's new star, its best CD player yet and great value	Remote, etc, coax dig. out	BB	83
Arcam Black Box 1 £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
Arcam Black Box 2 £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
Arcam Black Box 3 £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
Arcam Delta 170.2 £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
Arcam Delta 70.3 £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
Ariston CD1 £345	Good Good	Easy on the ear compact disc for those who like their music Radio 2 flavoured. And it looks good	digital output, remote control	R	87
Ariston Maxim £500	Good+ Good+	Yet another re-worked Philips player with chunky alloy casework and sophisticated analogue stage. Narrowly escaped a recommendation with its dynamic and purposeful sound. Still a hint of graininess through the treble	Remote control, coax digital output. 16bit 4x chipset.		95
Cambridge Audio CD3 £649	Poor Good +	Unique internal configuration gives the CD3 a fluid and detailed sound falling off at the frequency extremes. The controls and displays are primitive	Optical/electrical digital out, remote control		87
Carver TL-3100 £340	Average Average -	The sound quality did not live up to the excellent fascia. Carver's DTL did not aid the indifferent sound	DTL sound shaping, usual facilities, remote, memory		76
Carver TL-3220 £495	Good Average focus	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	Remote control with volume keys, 'Digital Time Lens', 18bit 8x		95
Carver TL-3300 £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
CEC 880CD £230	Poor Average	The dynamic and spritely sound of this machine is gratifying in the light of its primitive design but is otherwise poor value	Remote control, direct track access, dig o/p, hybrid PWM DAC		100
Deltec PDM-One £500	Average Very Good	A no frills audiophile bitstream converter at an affordable price	Coax-in, special cable and mains filter options	R	83
Denon DCD-1460 £400	Good+ Average+	Here's a player that benefits from solid casework and decent features yet the overly complex electronics knock the stuffing from its sound	Remote control, volume, index search. 18+2-bit DACs		100
Denon DCD-2560 £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 output, 20bit 16x.	Remote, pitch and tape edit features, opt/coax digital		95
Denon DCD-860 £250	Average+ Good+ volumes!	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	Remote, pitch and full tape edit facilities. 18bit 8x.	R	95
Denon DCD-960 £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
Dual CD5150 £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
Ferguson CD007 £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
Ferguson CD008 £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
Goodmans GCD-435 £140	Poor Average -	Goodmans has the power to source with more care than this, music centre quality!	multibit, remote, basic facilities		88
Harman Kardon HD7450 £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
Harman Kardon HD7500II £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 enthusiasm.	Remote, variable, digital and headphone outputs. MASH/PWM DAC	R	95
Harman Kardon HD7600II £429	Good+ Average+	Based on the HD7500II but with a motorised volume control and extra-heavy casework. Either way it lacks the transparency and sparkle of the cheaper machine	Remote, variable and digital outputs. MASH/PWM DAC		100

The Directory

CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Harman Kardon HK7300 £200	Average Average -	Budget low bit technology, does not deliver enough for a recommendation	No remote, no digital out; basic control features	83	
JVC XL-V231 £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	
JVC XL-V241 £160	Good Average	Even with its mkII PEM DAC this new machine sounds pleasant but not especially interesting. Stereo imaging is a trifle suspect	Remote control, slim centralised drawer, PEM bitstream DAC	100	
JVC XL-Z1011 £520	Very Good Good+	JVC's current flagship combines old K2 technology with PEM bitstream to deliver a full, beefy and engagingly dynamic sound	Remote control, variable and digital outputs, PEM bitstream DAC	R	100
JVC XL-Z431 £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	
Kenwood DP-4030 £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
Kenwood DP-5030 £200	Good+ Good+	This looks like the DP-4030 but has more in common with the DP-7030 inside. Either way its neutral, uncluttered and intimately detailed sound is better than both	Remote control, motorised volume, R disc file. Sony PLM DAC.	100	
Kenwood DP-7030 £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 DAC	R	95
Kenwood DP-X9010 £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	
Kenwood L-1000D £830	Very Good Good	A beautifully constructed and very stylish player that really only gives off its best when teamed-up in balanced-mode with Kenwood's matching pre/power combination	Remote control, balanced XLR's, 16-bit integrating DACs	100	
Luxman D105u £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	
Marantz CD-52 £200	Average+ Good+	Hardly the most neutral player on the planet but its rich, full and very generous sound cannot fail but warm the coldest of hearts	Remote control, FTS and dig outputs. SAA7350 PDM DAC	BB	100
Marantz CD-62 £300	Good Good-	Basically this is a Philips CD850II with Signetics op-amps all plonked into an old CD-50 chassis. Something of a range-filler	Remote control, index, 8-step volume and FTS. SAA7350 PDM DAC	R	100
Marantz CD-80 £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	
Marantz CD-95DR £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	
Memorex CD1650 £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	
Meridian 200 £800	Very Good Very Good	Broadly compatible with most DACs and offering a light, fresh and very bubbly sound that is both natural, engaging and unfatiguing	CD transport, optical + coax outputs, Class 1	R	96
Meridian 203 £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
Meridian 206B £970	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

Northwood
A U D I O

AIWA
AUDIO INNOVATIONS
CAMBRIDGE AUDIO
CASTLE
EXPOSURE
HECO
INFINITY
LUXMAN
MARANTZ
MISSION
MONITOR AUDIO
MORDAUNT SHORT
MOTH
MUSICAL FIDELITY
NAD
PINK TRIANGLE
PROTON
QED
REVOLVER
RODGERS
ROTEL
RUARK
SD ACOUSTICS
TANNOY
TARGET
TDL
TEAC
THE SOUND ORGANISATION
THORENS
VOYD
WHARFEDALE

where
music
matters

Northwood
A U D I O

126 PINNER ROAD (Nr. IRONBRIDGE)
NORTHWOOD MIDDLESEX HA6 1BP
TEL: (09274) 20877

The Directory

CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Meridian 208 £1,600	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
Meridian 602 £1,630	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
Micro Seiki CDM100 £3850	Very Good Good	One of the hernia inducing bricks of hi-fi, the Micro is extravagantly styled, finished and built. The good lab performance led to a good sonic display when the price demanded excellent	Balanced output, remote, display blanking		72
Micromega Duo BS £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
Micromega Logic £500	Good- Good	A rather expensive version of Philips CD624 with new op-amps and CD tray. Still, it does sound rather meatier, better integrated and more purposeful	Remote control, no FTS but switchable digital output, SAA7321 DAC		100
Micromega Optic BS £695	Average Good +	A bitstream rebuild of a Philips chassis, this player shows promise for the future	Bitstream, remote, hdph (fixed)		88
NAD 5425 £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- it sounds positive without being brash	Worthless remote control, track skip/scan, MASH/PWM bitstream DAC	BB	95
NAD 5440 £300	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 subtly rather than have you perch on the edge of your seat	Remote with direct track access, variable output, MASH/PWM DAC	R	95
Nakamichi CD Player 2 £625	Average+ Average+	This may look like a CD Player 4 but features a special transport able to store 7 CD's with one in play. Nevertheless its digital electronics are flawed and its sound powerful but blunt	Music bank, remote, volume control, digital o/p, 18 bit DACs		100
Nakamichi CD Player 4 £300	Average+ Good-	Attractively styled but suffers high-ish distortion for a modern CD player. Best suited to up-beat pop tracks rather than complex classical works which seem to lack focus and secure soundstaging	Remote with track access, headphone, coax dig. output. 18bit 8x		95
Nakamichi DMS-5EII £1500	Good + Very Good	"... delivers near state of the art performance and build quality in a deliberately starkly functional package, but at a very high price..."	Skip and scan, simple track programming, I		51
Nakamichi OMS-7EII £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
Philips CD618 £170	Good Good	Cheapest of Philips bitstreamers and quite possibly the best with its excellent definition, punch and sparkle	Remote control, shuffle play, variable headphone, SAA7321 PDM DAC	R	100
Philips CD624 £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
Philips CD634 £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
Philips CD850mkII £400	Very Good Good	This looks just like the original but sounds completely different, trading a little transparency and pizzaz for an altogether smoother but slightly less memorable performance	Remote control, 2 FTS, personal presets. SAA7350 Bit Stream DAC	R	100
Philips CDD882 £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
Philips COV185 £350	Average + Average	Hard to value with the video singles facility but it all works well enough for a recommendation	Video singles + CD scart + digital out etc	R	76
Pioneer PD-7700 £250	Good+ Good+	A busy-looking player with an upside-down transport yet one that offers a very tight, confident and dynamic sound. Bubbly and entertaining but still very refined	Remote control, turntable drive mechanism. 1-bit PDM DAC	R	100
Pioneer PD-8700 £300	Good+ Very Good	A pair of PDM DACs builds upon the sound of the '7700, crafting a generous soundstage populated with big-hearted and thoroughly captivating musical images	As 7700 plus index skip, display off and motorised volume. 1-bit	BB	100
Pioneer PD-91 £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
Pioneer PD-93 £1400	Very Good Good+	The extremely civil, understated feel of its music contrasts markedly with the over-engineered construction of this player. 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
Proton AC-120 £180	Average Average -	Fine styling, low price but barely average performance	15 track memory, simple design, remote, hdph		76
Revox B126 £649	Very Good Good	Made in Switzerland so the build quality and technical performance is high, but then so is the price and the sound quality is only good	Programming, Revox system compatible		70
Revox B226S £840	Good Average	Top quality build and finish for the Revox system enthusiast. For high value sound look elsewhere	Remote vol, hdph, 19 track memory, digital op		76
Rotel RCD-965BX £300	Average+ Excellent	Two years on and the 865's replacement turns out to be an exceptionally refined bitstreamer: transparent, exquisitely detailed and powerfully emotive. A landmark player	Remote control, index skip, digital out. SAA7323 PDM DAC	BB	100
SAE D102 £700	Good Good	Considering the high price of this player, most of the innards seem fairly prosaic. Sound quality and lab performance are both respectable enough, but hardly justify the price premium.	Remote (inc volume), skip, scan etc.		58
Sansui CD-X211 £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
Sansui CD-X311mkII £250	Good+ Good	Sansui's mid-ranked player uses Technics' technology but provides a warm and cuddly sound that's atypical of the breed	Remote control, variable and digital out, MASH/PWM DAC	R	100
Sansui CD-X711 £600	Excellent Very Good	Luxury features, finish and sound from this classy Sansui; no excuses required here	Hdph + vol, remote full programming	R	83
Sharp DX150 £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
Sharp DX750 £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
Sonographe SD1 (by CJ) £799	Good Very Good	Distinctive with oak end-cheeks, using Philips based 14 bit x 4 oversampling, Conrad Johnson electronics make this a musically rewarding player	Full search programme and timing	R	Coll. '87
Sony CDP-591 £160	Good+ Average+	Tons of features at a highly affordable price but let down by its lacklustre if inoffensive sound quality. The sound of these new players lacks the grip and purpose of the last generation	Remote control, variable and optical digital out. PLM bitstream		100
Sony CDP-991 £230	Good+ Average+	Another well-equipped and well-specified machine and one that can sound very up-beat and detailed with simple material. Tends to loose its way with complex stuff, however	Remote control, Custom File programming, variable out. PLM DAC		100
Sony CDP-X333ES £400	Very Good Good-	This beautifully built player has a very tidy and well-ordered style of music-making, but in the long run it lacks the ability both to excite and involve	Remote control, Custom File programming, Complementary PLM DACs.		100
Sony CDP-X77ES £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
Stax Quattro £2995	Very Good Very Good	Now in mkII guise this substantial player recreated exceptionally strong and convincing bass lines together with a beguilingly musical midband	18-bit DACs, 20-track memory, full IR remote, variable o/p	R	72
Teac CD-P3000 £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. Too wishy-washy	Most facilities moved to remote. Midship drive. MASH/PWM DAC		95
Teac CD-P4000 £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.		95

The Directory

CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Teac CDP-400 £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
TEAC P-10 £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
TEAC P-2 £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
TEAC P-500 £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
Technics SL-PA10 £470	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
Technics SL-PG200A £160	Good+ Good+	This season's version of last season's favourite (the SL-P277A) offers extra features and a similarly punchy, dynamic and up-beat sound. All this plus an uncommon poise makes for a BB	Remote control, random play, variable out, MASH/PWM bitstream DAC	BB	100
Technics SL-PS900 £350	Very Good Good-	Just about the quietest transport in existence and a sound that is equally unobtrusive, polite and refined. There's plenty of detail, but the overall result won't set your pulse racing	Huge remote control, MASH/PWM DAC		100
Wadia WT2000 £5614	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 with Wadia DACs, otherwise it's less impressive	CD transport, AT&T opt + direct-coupled coax outputs, Class 1		96
Wadia WT3200 £2100	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
Woodside DAC1 £895	Good Good	Fine but slightly dated and costly package in performance terms — but flexible, musical and well built	DAC with 2 electrical + optical i/p, tape out		87
Woodside WS2 £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, 16x4		95
Yamaha CDX-450 £170	Average+ Good	A contentious player this and one that prompted a range of reactions from enthusiasm to disinterest among our listeners. It could prove too safe-sounding but worth a try	Remote control, track access, variable out. 18-bit hybrid DAC	R	100
Yamaha CDX-530E £180	Average + Average	A well balanced example using established DAC technology - worthy of consideration if not recommendation	Multi bit, keypad remote, hdph (fixed)		88
Yamaha CDX-750 £250	Good Average+	A sleek machine that can sound rich and vibrant with simple material but seems to lack expressiveness and subtlety when dealing with busier, more complex passages	Remote control, variable and digital out, LC display. PDM DAC		100

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
Aiwa XT-003 £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
Akai AT-52L £150	Very Good Very Good	Holds its own on FM against many much more expensive tuners, but AM is very poor	All bands	BB	65
Arcam Alpha 2 £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.
Arcam Delta 80 £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
Creek T40s3 £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
Denon TU-260L £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.
Harman Kardon Citation 23 £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
Harman Kardon TU9400 £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.
Linx Theta £475	Good Very Good	A Magnum Dynalab on the cheap with the hallmark styling of this small British newcomer. Some of the best midrange from any tuner	Manual analogue tuning, no presets, signal strength meter	R	72
Marantz ST-40L £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.
Meridian 204 £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
Naim NAT 01 £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
Pioneer F-447L £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		93 Supp
Pioneer F91 £350	Excellent Good +	Easy to use, this model has excellent RF performance and scored very high ratings on the listening tests	FM/AM 24 presets	R	60
Proton AT-300 £199	Good Good	The AT-300 is pretty on the outside, orthodox on the inside and rather dear. AM - poor	FM/MW only	R	65
Revox B260 £1120	Excellent Very Good	Sophisticated and expensive, the B260 is ideally suited to the rest of the Revox range and should also work well in other systems	FM - virtually everything	R	60
Sony ST-S530ES £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.
Technics ST-G70L £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	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	FIT SOUND	COMMENTS	TYPE	VALUE	ISSUE
Aiwa HP-V99 £50	Good - Average +	Horn loaded in-ear miniatures with plenty of guts but not enough transparency or bass to compete with the headbanded competition	Intra-aural, closed-back, dynamic		75
Aiwa HP-X30 £30	Good Good -	A flashy personal stereo phone which alternatively could be used at home. A slight LF tonal preference slightly colours the response, but it ain't a bad can	Supra-aural, closed-back, dynamic		75
Aiwa HP-X80 £50	Good Good	A headphone that's highly suited to non acoustic music and portable sources, nicely made and slickly finished. Sound quality doesn't quite match the price	Supra-aural, closed-back, dynamic		75
Aiwa HPEX-200 £90	Good Good	Modern looking and well finished, the Excelias, as they are dubbed, had meaty bass and sounded reasonably open for the type	Circumaural, closed-back, dynamic		63
AKG K1000 £500	Very Good Excellent	One of the best moving coil headphones on the market, hooks directly to speaker outputs and makes much of the competition sound lame. Looks a tad weird	Extra-aural, open-back, dynamic	R	99
AKG K135 £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
AKG K145/S £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
AKG K240 Monitor £60	Very Good Good	Something of a classic, these AKGs are very user friendly in all respects; sonically on the warm side of neutral	Circumaural, semi-open, dynamic	R	63
AKG K280 Parabolic £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
AKG K340 £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
AKG K44 £40	Good+ Average	Good quality personal oriented phone, could have a better sense of space but is musically quite communicative	Supra-aural, open-back, dynamic		99
Audio-Technica ATH-609 £31	Average Average-	Warm feeling and sounding with impressive physical substance for the price, could be more relaxed and open	Circumaural, open-back, dynamic	R	99
Audio-Technica ATH-611 £51	Average Good	Same basic design as 609 but bigger thinner diaphragm makes this a more relaxed and informative headphone	Circumaural, open-back, dynamic		99
Audio-Technica ATH-909 £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
Audio-Technica ATH-910 £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
Audio-Technica ATH-911 £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
Beyer DT 325 £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
Beyer DT330 Mk II £50	Good Poor	Not the most revealing 'phones encountered, the 330s were nevertheless enjoyable and rarely offended	Circumaural, semi-open, dynamic		55
Beyer DT550 £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
Beyer DT880 £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
Beyer DT990 £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
Beyer IRS690 £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
Jecklin Float Electrostatic £399	Good Excellent	One version of the state-of-the-art, these electrostatics have an openness of sound rarely found in the breed, with good dynamic range to boot	Circumaural-ish, open-back, electrostatic	R	55
Jecklin Float Model One £79	Good Very Good	Whilst very unusual in appearance, the Floats give remarkable sound quality and openness at a reasonable price	Circumaural-ish, open-back, dynamic	BB	55
Jecklin Float Model Two £99	Good Very Good	Helmet shaped and pretty unflattering but open sounding and comfortable in the long term. Note lack of adjustment means you should try before you buy	Circumaural-ish, open-backed, dynamic	R	63
JVC HA-D990 £65	Good + Good +	Good looking well made cans that offer good sound quality for the money. Sonic nature is of the easy-going, laid-back variety	Supra-aural, closed-back, dynamic	R	75
Koss K/6X Plus £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
Koss TD/60 £20	Good Average	Although they're devoid of channel identification and have a decidedly Stateside approach to sound, these are very listenable phones for the price	Supra-aural, closed-back, dynamic		75
Pioneer SE-72 £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
Quart Phone 30 X £40	Good Average	Slightly dark character makes these more suitable for some sources/material than others, specifically music that needs bass weight	Supra-aural, open-back, dynamic		99
Quart Phone 70 £70	Good Good	Competent performers that were hard to criticise but lacked the life and sparkle of which some of the competition are capable	Circumaural, closed-back, dynamic		63
Quart Phone 95 X £100	Good+ Good+	Can sound even handed, relaxed and open with a good drive system but may be a bit too transparent for lesser headphone outputs	Circumaural, open back, dynamic	R	99
Realistic Pro-X £25	Poor Average -	Robust, unanimously uncomfortable and heavily veiled in sonic terms - not a great success	Supra-aural, closed-back, dynamic		75
Ross RE-2760 £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
Ross RE2530 CD £20	Average Average	Rather an 'average' £20 phone that some found uncomfortable due to high pressure on the ears. Sonic balance is on the bright side	Supra-aural, closed-back, dynamic		75
Ross RE2560 CD £25	Good Average +	If you're not too fussy about quality of finish and don't have an elfin head then these British phones warrant attention. Sound could be smoother	Supra-aural, semi-open, dynamic		75

The Directory

HEADPHONES

MODEL PRICE	FIT SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Sennheiser HD40 £20	Very Good	Very light and comfortable headphones with an even sonic balance that will suit most sources, but jack is 6.3mm and not suited to personals	Supra-aural, semi-open, dynamic	BB	75
Sennheiser HD450II £40	Good+	A neat looking supra that makes quite acceptable noises with a variety of outputs, could sound more spacious but is pleasantly relaxed	Supra-aural, open-back, dynamic		99
Sennheiser HD480 Classic II £60	Good	The same basic design as the 450 but improved sound quality as a result of aluminium coil and extra damping, natural with good bass	Supra-aural, open-back, dynamic	R	99
Sennheiser HD520 £65	Good +	A very comfortable and musically capable headphone. If you've got this sort of bread to blow on cans, give 'em a blast	Circumaural, semi-open, dynamic	R	75
Sennheiser HD530 £75	Very Good	One of the better dynamics in its group, the 530s create a sense of space that eludes most sub £100 cans, and they're dead comfy to boot	Circumaural, semi-open, dynamic	R	75
Sennheiser HD540 Ref Gold £160	Good	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
Sennheiser HD560 Ovation II £120	Very Good	A comfortable and nicely styled headphone that could be more natural sounding at HF, but is detailed and open with good power	Circumaural, open-back, dynamic		99
Sony A21EX £20	Good -	Forward facing in-ear drivers on a folding plastic band provide exceptional clarity for such an inexpensive phone. However, no bass, and fit isn't to everyone's taste	Intra-aural, semi-open, dynamic	BB	75
Sony MDR-CD3000 £300	Very Good	Better than most of the headphone outputs around so hard to make the most of, potentially up there with the electrostatics	Circumaural, closed-back, dynamic	R	99
Sony MDR-CD350 £32	Good+	Very impressive for the price the 350 is possibly the most open sounding cheap closed back can around, lightweight in balance but transparent	Circumaural, closed-back, dynamic	BB	99
Sony MDR-CD550 £50	Good+	A very competent headphone for the price, creates a remarkable sense of space for a closed back design and sounds natural to boot	Circumaural, closed-back, dynamic	BB	99
Sony MDR-R10 £2500	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
Stax Gamma pro/SRD-X pro £296/£230	Very Good	The Gamma pros are like a stethoscope for your hi-fi, revealing subtleties that many loudspeakers fail to resolve	Circumaural, open-backed, electrostatic	R	63
Stax Lambda Signature/SRM-T1 £470/£895	Very Good	The Signature when combined with the SRM-T1 valve driver must be the most transparent headphone available	Circumaural, open-backed, electrostatic	R	72
Stax SR Gamma £299 (inc. SRD-6 Adaptor £100)	Very Good	The next model down the Stax range from the Lambda, the Gamma is an excellent headphone with little to criticise but the price	Circumaural, open back, electrostatic	R	55
Stax SR Lambda Pro/SRD-7SB II Adaptor £360/£185	Very Good	A bit of an industry reference, the Pros are frighteningly revealing, bringing across more information than loudspeakers costing twice as much	Circumaural, open-back, electrostatic	R	55
Stax SR Lambda Pro/SRM-1 Energisier £360/£635	Very Good	This combination extracts layers of information that other headphones only hint at. The SRM-1 has more edge than the SRM-T1, but it's good	Circumaural, open-back, electrostatic	R	75
Stax SR34 £140	Average	The least expensive Stax headphones around, the SR34s are lively and rhythmic with good tight bass and a sweet midrange	Supra-aural, open-back, electret		55
Stax SR84 £210	Very Good	The stepping stone between dynamics and full electrostatics, these electret phones are revealing, open and highly enjoyable	Supra-aural, open-backed, electret	R	63
Yamaha YHL-006 £30	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 STEREOS

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
Aiwa HS-PL300 £110	n/a	Good looking, simply laid out player with a sensible selection of features and reasonable sound quality for a small player of this price	Dolby NR, chrome/metal eq, remote		78
Aiwa HS-PX303 £150	n/a	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
Panasonic RQ-P505 £100	n/a	Very attractive and neat little player with nicely designed controls and XBS bass boost, but sonically it's limited by distinct wow and flutter	Dolby, chrome/metal eq, remote		78
Panasonic RQ-P525 £120	n/a	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
Saisho PS90R £40	Poor	A bit of a jumble of features and gadgets, the PS90R has on-board speakers, an extending aerial and even records, but sound quality is dubious	Graphic EQ, types I, II & IV, AM/fm, recorder		56
Sharp JC-270E £130	n/a	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

The Directory

PERSONAL CASSETTES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Sony Walkman Pro £249	Good + Very Good	One of the finest sounding cassette decks on the market today. A mandatory Best Buy, it takes other personals to the cleaners (except on weight and power consumption)	Dolby B, C, types I, II & IV, record, line in/out, varispeed	BB	52/56
Sony WM-701C £200	n/a Good -	Beautiful little machine with all the necessary buttons/n/switches and a fundamentally exceptional sound quality, marred unfortunately by wow and flutter	Dolby B & C, chrome/metal eq, remote, folding phones		78
Sony WM-BF65 £90	n/a Average +	Regular size radio/clock/cassette player with a bright even open balance and Sony's forward facing phones. Not as glamorous as slightly more expensive models but sonically not bad	Dolby, chrome/metal eq, radio, alarm clock	R	78
Toshiba KT-4549 £80	n/a Poor	Fully equipped with 10 preset radio and alarm clock, the KT-4549 is a bit aggressive on the sonic side and the bass boost system lacks balls	Dolby, chrome/metal eq, radio, alarm clock		78

PERSONAL CDS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Aiwa DX-P50 £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
Denon DCP-100 £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
Denon DCP-50 £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.
Goodmans GCD-10 £120	Average - Poor	Cheap, flashy and not short on accessories, the GCD-10 is a rather noisy player that left a lot to be desired on the sound quality front	13.5 x 3.7 x 18cm, 478g, mains adaptor		66
Kenwood DPC-41 £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.
Kenwood DPC-77 £270	Good + Very Good	Very chunky and well made, the DPC-77 is the only player to include a digital output and sounds very good through its analogue output - a suitable domestic alternative	12.8 x 3.5 x 14.5cm, 750g, digital output, mains & in-car adaptors	R	66
Kenwood DPC-81 £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
Philips AZ6897 £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.
Sanyo CP-12 £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
Sony D-350 £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
Sony D-66 £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
Technics SL-XP1 £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
Audio Technica AT6115 £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
Audionote Copper ANA £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
Audionote Flexible Silver ANS £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
Audionote Silver ANV £154	Poor Excellent	Far weightier-sounding than the flexible ANS, ANV interconnect also possesses a fair degree of treble clarity and sparkle	21 strand silver Litz		59
Audioquest Livewire Ruby £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
Audioquest Livewire Topaz £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
Budget OFC Circa £7	Average Average	Subjectively, this cable did lift much of the aural fog experienced with scrawny standard hook-up leads.	OFC		59
Budget Patch Cords (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
Chord Mono-t £27/1.2m	Average + Average +	Offers a slightly rolled-off treble but its rich sound is an upgrade from patch-cords	Unsymmetrical 4-conductor cable	R	83 Supp.

The Directory

INTERCONNECT CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Deltec Black Slink £152	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
Deltec Gortex Black Slink £152	Very Good Excellent	A true reference quality cable providing an exceptionally detailed and transparent sound	Symmetrical, 8-conductors, Gore-tex ins.	R	83 Supp.
Deltec Slink £32	Good Very Good	Ideally used in lengths of under 4 metres, it errs on the lean side of neutral but has an uncommon transparency in the midrange	4 silver plated OFC strands PTFE dielectric	BB	59
Denon LC-OFC 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
DNM Solid-core £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
Isoda Electric HC-05-PSR £54	Good Good	A pleasantly lively and fluid sounding cable though softens some subtle, midband detail	Aluminium + brass multistrand cable	R	83 Supp.
Kimber Kable KC-1 £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
Kimber Kable PSB £41.40	Very Good Very Good	An exceedingly transparent midband but slightly 'clanky' treble. It always managed to sound remarkably uncluttered and open	OFC, PTFE dielectric	BB	59
Monster Interlink 300 £24	Average + Average	A big, larger-than-life sound but with some emphasis of midband detail and loss of bass	Screened, symmetrical cable		83 Supp.
Monster Interlink 400 £34	Good Good	Bass is solid and punchy, counterpointed by a slightly overblown midband which tends to make vocalists sound larger-than-life	Multi-gauge	R	59
Origin Live Soli-Core Super £60	Good 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
QED Incon Graphite GP1 Gold £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
QED Incon P1-Gold £15.95	Good Good	A lively open presentation that just borders on the lean side of neutral, the quick and lucid delivery affording considerable musical insight	OFHC, gold plated Deltron plugs	BB	59
Sterling £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
Supra EFF-1 £60/0.75m	Average Average	A new, costly and mildly disappointing addition to the range. Edgy, smeared sound	Screened, symmetrical dir. cable		83 Supp.
Thorens SAC 100 £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
van den Hul MC-D300II £45	Poor Good	It tended to highlight some upper mid detail, but a generally open and spacious acoustic proved its saving grace. Slightly soft at LF	Silver plated single strand VdH plugs	R	59
van den Hul MC-Gold £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
van den Hul MC-Silver £750	Good Good	Although remarkably transparent for an asymmetric design this costly cable was not considered to be of 'state-of-the-art' standard, and is bettered by cheaper models	19 silver plated copper strands		59
van den Hul MCD-1021II £69	Good Good	Possessing the same endearing qualities as the D300, it presented open and transparent soundstages and improved timbral resolution	Twin axial silver plated copper	R	59
van den Hul Thunderline £150	Good 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
Yfere LC-OFC Quad £85	Very Good Very Good	New cable with a very refined sound. Very transparent with good sense of focus and space	Symmetrical, star-quad with screening	R	83 Supp.

LOUDSPEAKER CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Absolute Wire Force 4 £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
Audio Innovations OR-200 £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
Audio Technica AT6120 £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
Audionote AN-SP £100 per metre	Average - Excellent	A clean and open sounding cable that offered a deep and pleasantly detailed perspective, Bass was slightly restricted, but seemed tight and coherent	15 silver strands, polyethylene dielectric		64
Audioquest Livewire Black £15 per metre	Good Good	It proved clear and punchy but with some grain across the treble. Nevertheless Black remains an interesting concept and proved better than Livewire Green	OFHC, surface only - foam core construction	R	64
Audiospec Latitude L4 £3 per metre	Average + Average +	Warm, ruddy but also mildly muddy sound with some slight emphasis of bass notes	Fig.-of-eight multi-strand, PVC diel.	R	83 Supp.
Bellwire 12p per metre	Poor Average -	Broadly speaking it delivered a bright and tizzy sounding treble with a fairly open and detailed mid with little or no bass resolution	0.5mm single strand, PVC dielectric		64
Deltec 8S £144 - 5m pair	Good Good +	The unerring transparency and detail resolution of 8S throughout the midband makes it a cleaner and more spacious sounding cable than others at the price	4 silver plated OF copper strands, PTFE	R	64
Deltec Gortex Black 16 £528 - 4.5m pair	Very Good Excellent	Improvements in bass resolution, transparency and treble poise maintains status of this cable	Silver-plated OF copper with Gore-tex ins.	R	83 Supp.
DNM Solid core £3 per metre	Average 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
Exposure £2.50 per metre	Good Good	It could sound a trifle matter of fact but this emotive flattening was also somewhat dependent on the music program. It is also highly suited to long runs	56 OFC strands, webbed PVC dielectric	R	64
Furukawa FS-2F09 £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.
Furukawa FS-2T15S £50 per metre	Good + Very Good	An advanced solid-core cable with a highly fluid, detailed and inherently musical sound	Single 1.5mm Super PC-OCC	R	83 Supp.
Kimber 4VS £7.15 per metre	Average + Average	Similar construction to 4TC but dissimilar materials infer a slightly tizzy sound	Open-weave, multistrand, PVC ins.		83 Supp.
Kimber Kable 4PR £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
Kimber Kable 4TC £17.65 per metre	Good Good +	4TC made a great impression in the listening tests with an open midband, a smooth and unfatiguing treble with slightly rich but suitably weighty bass	OF copper, PTFE dielectric	R	64

The Directory

LOUDSPEAKER CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Linn K20 £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
Marantz ML-55S £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
Mission Cyrus £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
Monitor PC Silverline PC4 £5.75 per metre	Good Average	Sonically, it laboured under a heavy and claustrophobic balance, lacking the see through transparency and lucidity of the better solid core cables	2072 x 0.07mm silver plated copper strands		64
Monster Original £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
Monster SCI 16-4 £3 per metre	Average Average	Not as thick-sounding as early Monster cables but still slightly unbalanced. Versatile construction	4 x 16-gauge conductors, OFC strands		83 Supp
NVA LS1 £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
Origin Live Soli-Core Ordinary £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
QED 79-Strand £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
QED Flat 200 £2.20 per metre	Good Good	I detected a degree of confusion at low frequencies but this did not stifle the acoustic atmosphere which remained open and positive	200 strands, flat webbed PVC dielectric	R	64
QED Incon Graphite £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
Rotel Supra 10 £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
Rotel Supra 4 £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
Solid core lighting cable 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
Sterling £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
Townshend Isolda £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
van den Hul CS-122 £5.95 per metre	Average + Good -	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 dielectric	R	64
van den Hul CS-352 £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
van den Hul SCS-12 £29.95 per linear metre	Good + Good +	SCS-12 set a high standard with a tight and well focused soundstage populated with tactile stereo images. Bass wasn't as extended or resolved as some other cables	19 silver plated strands of 12 different gauges, PTFE dielectric	R	64
van den Hul SCS-2 £99.95 per linear metre	Good + Good +	Overall it was commendably neutral and transparent but nothing less would be acceptable bearing in mind the tremendous cost of a stereo pair	665 silver plated matched crystal copper strands, PTFE dielectric	R	64
Vecteur R-CV30 £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 BB strands		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
Appolo A10 £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
Appolo A820 £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
Audio Dimensions Classic 2 £110	4 leg Average	Built in the heavyweight tradition and damped with chalk. Solid, stable, tactile sound	20.3 x 20.3 x52cm	R	83 Supp.
Foundation Fred £70	2 leg Average	With sand filling the Freds made speakers sound tight and coherent with a more even balance.	19 x 19cm 36/43/59cm		58
Foundation Maggi £159 to order	Plinth Very Good	Made for Magneplanar and other similar panel speakers they seem to have a healthy effect on the sound quality thereof.	50 x 2cm 2cm	R	58
Foundation Pi £269 to order	2 leg Very Good	Overpriced in material terms the Pi nevertheless has a very positive effect on the low frequency performance of conventional speakers.	20 x 20cm 25/38/46/5	R	58
Foundation Sir Fred £80	2 leg Good	Upgraded 'Fred' with special in-fills. Sweet sound but one that also lacks bite and edge	19 x 19 x46.5cm		83 Supp.
Goldring Black Satin £65	1 leg Very Good	Screw together stand tastefully hewn from medite. Some loss of bass but still pleasantly rhythmic	18 x 20 46cm	R	83 Supp.

The Directory

LOUDSPEAKER STANDS

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ TOP PLATE SIZE, HEIGHT	■ VALUE	■ ISSUE
Heybrook HBS1 £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
Heybrook P5S £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
Linn Kan II £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
Linn Sara £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
Monotrak Engineering M1 £58	1 leg Good	The M1 gave the mid and treble a commendably smooth and detailed presentation but bass sounded rather lacklustre and muddy.	19 x 18.5cm 48cm		58
Monotrak Engineering M4 £58	4 leg Very Good	Begging comparison with Heybrook's HBS1 the M4 maintained much of the openness and forthright detail of that model.	23 x 21.5cm 53cm	R	58
Monotrak Engineering M4S £58	4 leg Very Good	Its stature and stability would seem to mark it out as most suitable for smaller, lighter cabinets. The M4S possessed an open midband and clear treble.	20 x 17.5cm 53cm		58
Origin Live Advanced £145	3 leg Good	One of three related tripod-like stands. Stable sound with good sense of depth and power	22 x 20.6 44cm		58
Origin Live Three Leg £89	3 leg Good	An unusual tripod stand devoid of top plate and taking up more floor space than normal, subjective and technical performance was exemplary.	(support area) 22 x 17.5/ 52cm	R	58
Partington PP4 £60	1 leg Good	The PP4 offers a rather mixed performance, though when damped with sand infill it was less ready to embellish the overall sound and low frequencies became lauter and quicker.	18 x 16.5cm 48cm		83 Supp.
QED TS22 Tristand £60	3 leg Very Good	Most tracks sounded uplifted or buoyant, never thick nor coloured. It worked well with most of the speakers tried and encouraged a fluid and revealing midband.	19 x 17cm 45/50/58cm	BB	58
Standesign Z20 £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.
Target HJ15/3 £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
Target HS20 £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
Target T-40 £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
Alphason R444 £120	Rack Good	A heavyweight structure with stressed MDF shelves, ideally suited to the Sonata turntable	82 x 60 x 39.5cm	R	83
Audioquest Sorbothane Feet £40 for four	Feet Good	These large gumdrops are very useful for damping vibrations in amplifiers and especially CD players.	6.5 x 2.5cm (circular)	R	57
Cornflake TCS6 £60	Shelf Good	A squat and rigid frame supports a Medite top board with four adjustable spikes, better suited to suspended sub-chassis turntables.	43 x 23 x 33cm		83 Supp.
Foundation Stable Table £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
Origin Live Skyline Super £100	Table Good	An asymmetric table that helps provide a quick, lucid and solid sound with most decks	41 x 50 x 40cm	R	83
Roksan Equipment Table £169	Rack Good	An upgradable/expandable system suited to Roksan's Xerxes if not other competing turntables	65 x 52 x 38cm		58
Sound Organisation Table £55	Table Very Good	A deceptively simple structure that just happens to be engineered in a thoughtful, and ultimately successful manner.	37 x 45 x 35cm	BB	57
Sound Organisation Wall Stand £40	Shelf Very Good	The first of its ilk and still amongst the best, this simple framework represents a vast improvement over standard furniture shelves.	27.5 x 43 x 35cm	BB	57
Sound Organisation Z022 £97	Table Excellent	A small but costly table made from thin steel tubing. Suited to the LP12 but not other decks	49 x 45.5 x 36cm		58
Stand Design Duplex £75	Table Very Good	Well made and nicely finished, this table is broadly compatible with most heavy turntables	63.5 x 46.5 x 36cm	R	83
Target TT2 £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



JUST RELEASED - A new range of Kimber Silver cables. Better Performance - Lower Price



Russ Andrews Turntable Accessories Limited

Edge Bank House, Skelsmergh, Kendal, Cumbria LA8 9AS

Telephone: Selside (053 983) 247

The Directory

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 Fastext (enhanced teletext), and many have on-screen graphics and flexible in/out socketry.

MODEL PRICE	LAB SOUND	COMMENTS	SCREEN SIZE, FEATURES	VALUE	ISSUE
Ferguson 51L5 £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, Fastext, OSG	R	86 Supp.
Grundig ST-63-460TT £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, Fastext		76
ITT Nokia £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, Fastext		76
JVC AVS250 £500	Average + Average -	Compact and delightfully versatile non-NICAM set, respectable on-board stereo sound, lovely screen graphics, 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, Fastext, o/s graphics		76
Panasonic Prism TK-24 W1 £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, Fastext, o/s graphics		76
Philips 9752 £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, Fastext, OSG, S-VHS socket		86 Supp.
Pioneer SD-21AV1 £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, Fastext, OSG/LED	R	86 Supp.
Sony KVX 2132U £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, Fastext, OSG	R	86 Supp.
Toshiba 217D9B £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
Akai VS-75EK £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
Akai VS-967EK £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.
Grundig VS680 £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.
Nordmende V4405K £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
Panasonic NV-F65 £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.
Panasonic NV-FS1 £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
Philips VR-6585 £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.
Sanyo VHR-D4890E £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.
Sharp VC-S1000H £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.

Personal Messages

Having edited about half the issues and written contributions in a further third, I'm sorely tempted to indulge in a few rheumy eyed reminiscences for this centenary edition of the magazine to which I've devoted more than half my working life.

Yet while I'm wiping the moisture from the keyboard, with the sun setting and the air heavy with the first bonfires of autumn, it occurs to me that anyone who's struggled right to the end of this substantial volume will already have had quite enough of a history lesson, thank you very much. So I shall celebrate the occasion with a little homespun and decidedly part-baked philosophising instead.

The era we live in today is dominated by the drive to maximise efficiency and/or productivity in the pursuit of progress. We accept these modern shibboleths with little question or challenge, yet I keep coming across instances — in hi-fi but also in the big world outside — where 'progress' in some respect only comes complete with sacrifices elsewhere that one has no option but to accept.

Paul Messenger ponders the current trends in technology and feels an autumn chill.

It's the irony of an age that has brought economic plenty and considerable discretionary spending to the majority of the population, that mass consumption in whatever area inevitably seems to erode quality per se to a common denominator level.

You can be sure with shellac

I've no personal experience of the 78rpm era, but I've heard results from those shellac discs that makes it clear that something was lost, even though much may also have been gained, in the transition to LP.

Now we are nearly a decade into the digital audio age. Compact Disc is established as the efficient and productive source of revenue for the music business, and several other digital applications are under or on the way. Yet just as I automatically choose vinyl over Compact Disc for pleasure, so I relax back with some relief to FM radio after listening to an hour or two of NICAM stereo TV.

"Nice reception, pity about the music", commented an audiophile friend who attended the BBC's recent digital radio (DAB) demonstration in Birmingham. Meanwhile the Berlin hi-fi show press conferences made it quite clear that both DCC (Philips' digital compact cassette) and MD (Sony's Mini Disc) will be sub-CD in quality.

All of which only goes to confirm that digital audio has more to do with adequacy and acceptability than the striving for excellence for its own sake which has always motivated hi-fi people. Indeed the philosophical distinction between digital and analogue audio is that the former must be fitted into the predetermined framework of whatever coding system is adopted.

In contrast, warts-and-all analogue is essentially open-ended, and therefore has a potential for excel-

lence not available with a rigid engineering-defined digital structure.

Only the other month (issue 98) my fellow *Choice* columnist Barry Fox consigned the LP to the dustbin of history, alongside the steam engine and the horse and carriage, beaten by CD's combination of user convenience and commercial advantage. Barry's prediction that the LP will gradually wither and die might prove correct, but the world will be a sadder, greyer and more mediocre place without it, and one in which the concept and ideals of specialist, enthusiast hi-fi will have much less relevance.

Vinyl chance

It would be mischievous to mount a defence of steam engine or horse and carriage, though even these had virtues that were sacrificed on the altar of progress. But two obvious examples from more recent history suggest the LP might still be in with a chance — or might have been were it not for the still more pernicious and debilitating effects of digital audio right through the recording chain.

Only a generation back, the food and brewing industries were respectively responsible for foisting the sliced loaf and keg beer upon the indiscriminating British palate, to such an extent that it became quite difficult to find alternatives to either.

Nowadays 'real' bread and ale are again widely available, and neither looks in any imminent danger of extinction. Neither dominates the mass market any more, but each supplies a discriminating minority prepared to pay a premium price.

Lager will be swilled in copious quantities and Discmen will continue to pump up the jam (at least until MiniDiscman or DCCWoman come on the scene). But I see no reason why the LP can't continue to serve its discriminating minority of audiophiles, however inconvenient this may be for music industry moguls and retailers, and even though we may have to pay a premium for the privilege.

The most serious threat to the future of the LP and to 'real' hi-fi itself lies in the deteriorating musical quality of what's coming out of the recording studios themselves.

I suspect digititis bears much of the responsibility, though the technocratic culture itself is the root cause, and processing of every kind since the introduction of the mixing desk has persistently left its dirty sonic footprints all over our treasured discs.

Most disturbing of all is the insidious blandness that lies like a wet fog over the sound of a number of recent album purchases from 'established' artists. Compare Joni Mitchell's tedious 1991 *Night Ride Home* with the stunning musical realism of *Mingus* (1979), to pick just one from maybe a hundred possible examples.

Not all the good recorded music has withered and died, but discovering it, often hiding away in the Indy, Ethnic and World Music browsers, is becoming increasingly difficult. Although I've always believed that hi-fi magazines should stick strictly to the hardware side of things, this may have to change if we're moving towards an era where quality is software rather than hardware limited.

Reach for the best



RCD955AX

COMPACT DISC PLAYER DUAL D/A CONVERTER

This new C.D. Player is based upon Rotel's award winning RCD855 - utilising the 'Classic' 16 bit 4 times oversampling system together with Rotel's no nonsense approach to quality engineering and outstanding build quality. A product that offers lasting value and very high standards of musical enjoyment. The RCD955AX builds upon this fine tradition of being the reference multi-bit player. Now in new 9 series livery, we strongly urge you to audition this fine product at the earliest opportunity.



RCD965BX

COMPACT DISC PLAYER PULSE DENSITY MODULATION

Rotel were one of the first companies to employ the bit-stream PDM conversion system and the resulting RCD865 became one of the top selling C.D. Players in the UK with much critical acclaim including the coveted award from What Hi-Fi? magazine for best C.D. Player of the year for 1991. The new RCD965BX seeks to move forward the very high musical performance standards previously established with significantly greater precision and refinement. This new model features a totally revised circuit board layout, improved components, larger power supply and the latest generation chip set, all of which contribute to a level of musical involvement hitherto not available from compact discs. Selected by What Hi-Fi? magazine as their 'Recommended Buy' between £251 and £500 for C.D. Players for 1991/92 and also now the recipient of Hi-Fi Choice magazine's 'Best Buy' award.

These fine components are but a small selection from Rotel's award winning range of performance Hi-Fi products which offer very high standards of technical excellence and musical enjoyment. The RCD955AX and RCD965BX are supplied with a numeric remote control handset and are fully remote compatible with Rotel's RTC Tuner-Preamplifier which also offers full remote control of Radio Tuner and matching Cassette Deck functions. Phone or fax Rotel UK for further information and nationwide dealer list.

U K D E S I G N A N D D E V E L O P M E N T

ROTEL UK, Gamepath Ltd.,
25 Heathfield, Stacey Bushes,
Milton Keynes, MK12 6RH
Tel (0908) 317707 Fax (0908) 322704

ROTEL *hi-fi*
Ask someone who knows...

because people like music

The logo consists of the word "MISSION" in a stylized, outlined font, centered on a dark, textured speaker grille. The grille has a fine, woven pattern. The logo is illuminated from below, creating a subtle glow.

MISSION