

HI-FI CHOICE

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

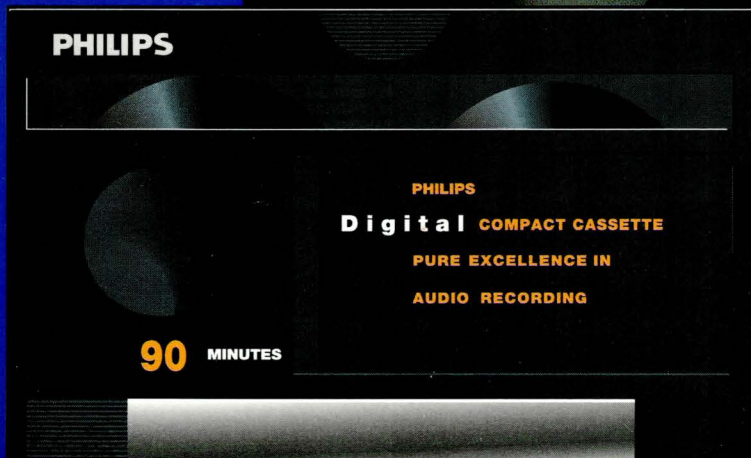
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Systems showdown

9 OF THE BEST GO HEAD TO HEAD
SEE PAGE 44

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

HI-FI CHOICE

ISSUE NUMBER 115 FEBRUARY 1993

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PUBLICATION

PRODUCTS AND EDITORIAL SUBMISSIONS

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

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THE GET OUT CLAUSE

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
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Menu

Compilations, don't you just love em? A quick flick through the discs that I've bought in the last couple of weeks revealed that eight out of 11 were compilations. Compare this to a decade ago and you wouldn't have found a single compilation album on my list. So why this change in the way that I, and it seems most people, are buying their music?

One reason may be that people are replacing vinyl with CD but don't want to buy the whole catalogue over again. Witness the Talking Heads' CD. I've got most of the albums on vinyl and nothing on the silver disc, hence it made sense to buy the 'Best Of' which enables me to blast out *Psycho Killer*, *Road To Nowhere* and *Once in a Lifetime* from the CD player without having to spend £40 on three different albums.

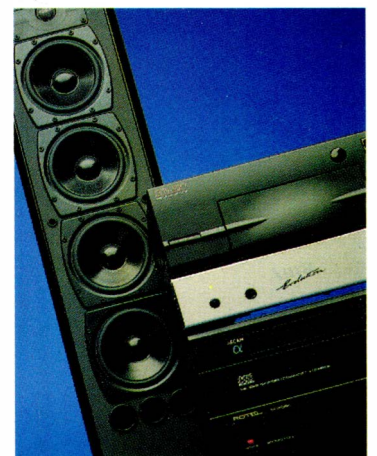
Well that's all very well for a portly ex-hippy, but it appears that its not just my generation rushing out to snap up the latest Sixties and Seventies compilations. Nowadays they seem to be the accepted way to listen to music and the public expects their favourites in three minute 'sound bites' neatly preventing the possibility of hearing anything challenging.

Such consumers are the ideal target market for both DCC and MiniDisc, which have to be the ultimate compilation formats. You no longer need to wait for the record company to release a compilation of your favourite artist's finest moments; just cut out the middle man and make up your own, albeit illegal, compilation album. Given the simplicity of digital copies, as opposed to their analogue brethren, anyone should be able to make near perfect tapes.

The problem is just what are you going to be compiling in ten years time? Its all very well putting out Joe Cocker's greatest hits but if people get out of the habit of buying and listening to albums, where's all the 'new' music for these compilations going to come from? OK, so you can invent a new format every time the back issues market has been saturated, but how long are people going to tolerate re-acquiring old favourites on a new carrier? Once you've got *Dire Straits Greatest Hits* on vinyl, CD, MiniDisc and DCC what do you buy next? Things don't look good for the record industry at the moment and if they think people are daft enough to pay £14 or £15 for a DCC or MiniDisc then perhaps they think people will go on buying compilations forever - it's certainly cheaper than spending money looking for new artists.

Enough of these happy thoughts, I'm off to borrow some discs from the art editor to put together a new compilation tape.

Andy Benham



Cover photograph by
Chris Richardson.

HI-FI CHOICE

ISSUE 115 FEBRUARY 1993



Above: systems selected by nine manufacturers take it to the max in this month's big test.

The Front End 5 UPDATE

Your monthly portion of hi-fi gossip, with tales of what's new in the audio world, together with information on forthcoming events.

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On a visit to the Japanese Marantz factory, we discover its big secret. It makes DCC recorders — for Philips!

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Left: Stirling Moss and a few of his trophies from the road and track.

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95 THE CHOICE DIRECTORY

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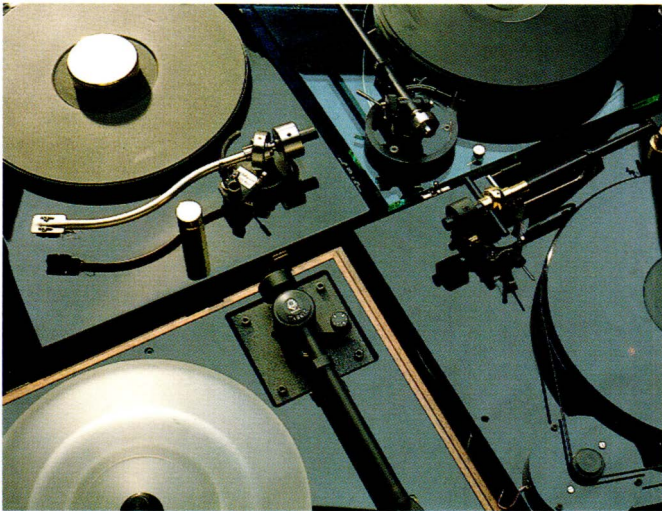
Get the full story in the relevant *Choice* back issue.

82 READER'S OFFERS

Stunning audiophile accessories and excellent recordings courtesy of the *Hi-Fi Choice* mail order pages.

128 PERSONAL MESSAGES

Following last month's group test of loudspeakers, Paul Messenger turns his attention to power amplifiers, the heart of the hi-fi system.



Above: A bevy of turntables come under scrutiny on page 65.

Choice Matters

10 COMING UP

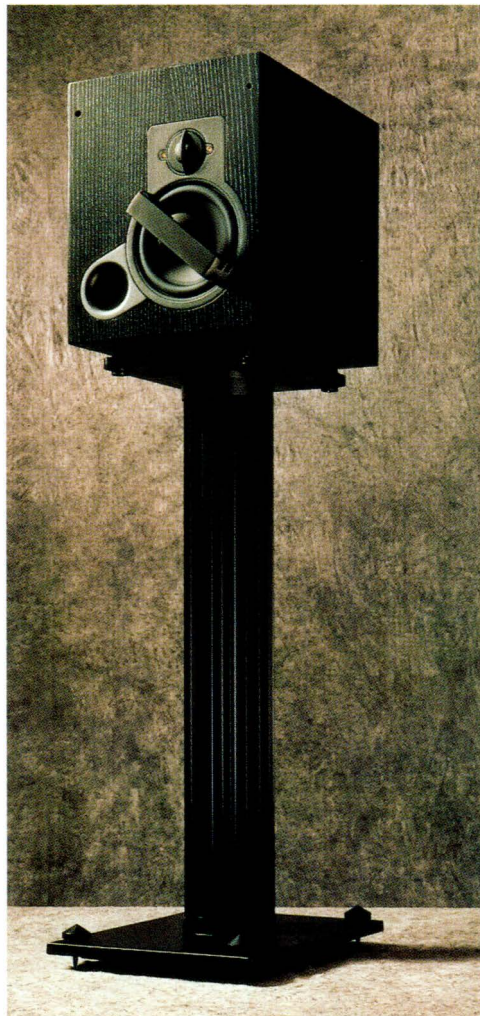
In the March issue we'll be looking at stacks of the latest integrated and pre/power amplifiers. And for those of you that find the job of changing discs too taxing we've got a supplement bursting with CD multi-players.

37 CHOICE SUBSCRIPTIONS

Imagine life without *Hi-Fi Choice* next month; it's too horrible to bear. Get the magazine delivered straight to your door courtesy of this page — there's also a special offer to take advantage of.

39 BACK ISSUES

Thinking of buying a new component for your system? Has a directory entry caught your fancy?



Left: Boston's new flagship, the Lynnfield Series 300L, features in *Update* this month.



Technics holds fire on own-brand DCC

Snapping at the heels of trailblazers like Philips and Marantz, Technics has ventured into the Digital Compact Cassette market with its new £700 RS-DC10 player/recorder. This full size player follows the same general lines as the existing machines, with broadly similar specifications. It can record and replay in both the digital and analogue domains, and has the ability to replay conventional compact cassettes. It also has comprehensive music editing facilities and features automatic track numbering when digitally recording CDs.

However, the most interesting aspect of the new machine is MASH D to A conversion, or rather the lack of it. When Technics announced the machine earlier this year, the RS-DC10 was billed as featuring Technics' MASH conversion system, and indeed the current Technics brochure features a picture of the deck, complete



Another traveller down the digital road — Technics launches the RS-DC10.

with the MASH logo on the front fascia. But the RS-DC10 uses the same D to A as Philips DCC900, as we found out when we visited the Marantz factory where both the decks are assembled.

That Technics should do a U-turn with its decks is extremely interesting and is bound to raise questions about the Japanese giant's level of support for the new media. As co-developers of the format, one would expect Technics to launch with its own machine rather than a unit which is basically a tweaked Philips DCC900.

When we approached Technics and asked why the new machine didn't contain the promised MASH chips, a spokesman refused to be drawn, the only reply being 'no comment'.

The RS-DC10 comes supplied with ten prerecorded DCCs, including titles by Prince, Madonna, Curtis Stigers and REM. At the same time, Panasonic has also announced a range of blank DCC tapes, in rather distinctive gold wrapping. The first tapes on the market are its £5.49 D-60 and £6.49 D-90. These should be in the shops now.

It's show time again

Having misplaced and then cancelled last year's Hi-Fi '92 show, this year's event promises to be better than ever. The Hi-Fi '93 show has moved back to its traditional home in the Bristol Holiday Inn, which has been completely refitted and renamed the Bristol Marriott.

The only hi-fi show during the first part of 1993 will run on Saturday 20th and Sunday 21st February, admission £3.00. Everyone from AKG to Yamaha will be attending, with tons of new products, including both DCC and MiniDisc, together with Denon's latest RDS tuner and the new Revox Evolution designer system.

In addition, there will be prizes galore. All paying visitors will be automatically entered in a competition to win over £2,000 worth of Sony MiniDisc gear. Members of the Hi-Fi Choice team will be on hand throughout the show, and will be answering your questions and presenting demonstrations.

Preamplifier activity from Michi

Rotel's Michi high-end amplification range has been expanded with the addition of the RHA-10 remote control active preamplifier. Expected to cost around £875, the RHA-10 uses discrete solid state components throughout, with a double sided circuit board and a high quality toroidal transformer for a stable voltage and current supply. It sports five line inputs and two tape outputs, with separate input and record out switching; the record out signal can be disabled.

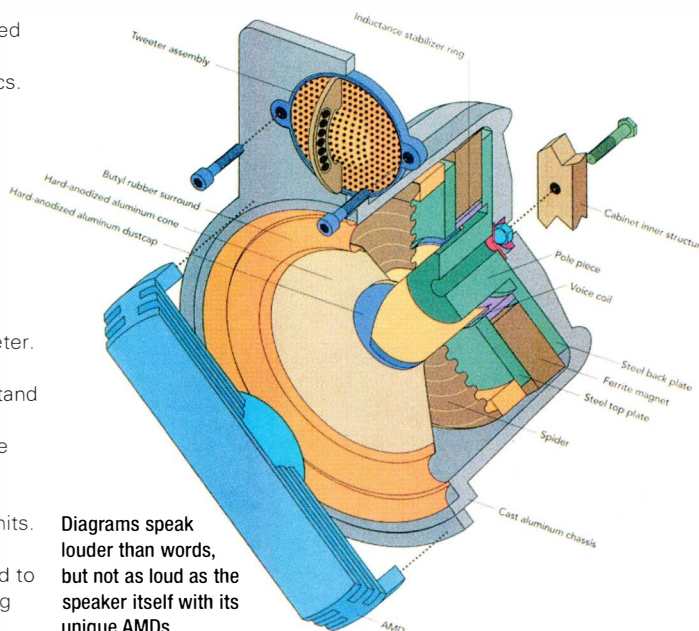
The RHA-10 parallel differential push/pull preamplifier uses a motorised volume control and is supplied with two sets of output sockets for bi-amping. Built with the same design ethos as the Michi phono stage, passive preamplifier and stereo power amplifier, the new RHA-10 extends the variety of cable types and lengths that can be successfully used.

Boston moves upmarket

A unique duo of high-end loudspeakers has been launched by American loudspeaker manufacturer, Boston Acoustics. The Lynnfield series speakers were designed primarily by Phil Jones, the co-founder of Acoustic Energy.

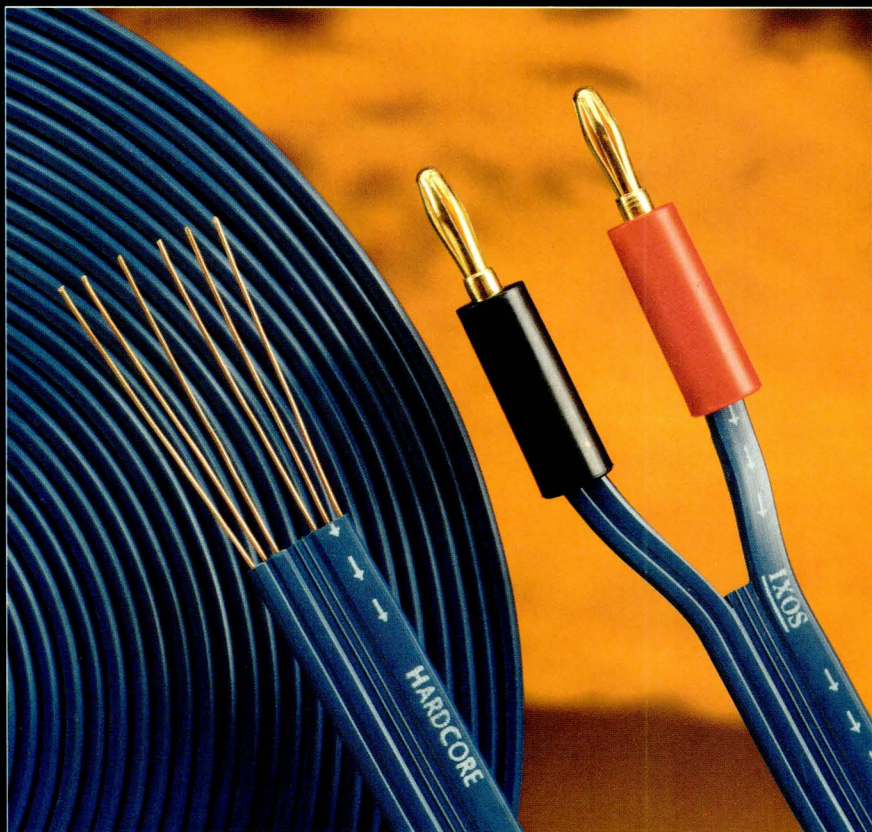
There are two models in the range, the £1,450 300L and the £4,450 floorstanding 500L. Both share the same anodised aluminium 130mm woofer and 25mm dome tweeter. The larger 500L sports two 165mm bass woofers in the stand enclosure.

Interesting aspects of these speakers are the Amplitude Modification Devices that sit across the front of the drive units. These are bridges that act as tuned acoustic filters, designed to tailor the resonance and ringing inherent in aluminium drivers.



Diagrams speak louder than words, but not as loud as the speaker itself with its unique AMDs

HARDCORE™ PHONOGRAPHY

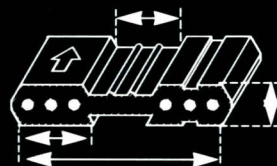


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B&W's new 'improved' loudspeakers

B&W Loudspeakers has improved its 600 series loudspeakers as a result of feedback from owners, dealers and the press, together with developments brought about by new technological advances.

The three models that have been modified are the DM-600, DM-610 and the floorstanding DM-620. The two stand-mounted models, priced at £170 and £220 respectively, incorporate a new hard-wired crossover, said to improve the integration of the drive units. There are also suggestions that this makes the speakers less system dependent.

Changes to the £370 DM-620 include a new eight inch mid/bass unit, that allows the loudspeaker to have a simpler crossover. The new drive unit uses an injection moulded



B&W ring the changes with the improved 600s.

cone/surround assembly. It is also fitted with individually adjustable spikes. Finally, all three loudspeakers, now with

the Improved suffix, are fitted with a new terminal tray, with nickel plated copper bi-wire links.

Remembrance of things past

Curiouser and curiouser. Having won the £10,000 Absolute Sounds system in Choice's first ever competition back in December 1987, the winner, Chris Burrell, said that he was having difficulty in getting such a system insured. He said that he would contact Absolute Sounds when he was ready.

Four year's later, Chris has finally been able to get the system insured. In the interim period, some of the products have altered, but the core of the system remains unchanged. The original Oracle turntable, no longer imported into this country, has been replaced by a Well Tempered turntable and arm combination, fitted with a rare Krell cartridge. The preamplifier, an Audio Research SP9, remains unchanged, but the original Audio Research D115 MkII power amplifier has been discontinued and a Classic 60 has taken its place. The competition offered the option of either Sonus Faber or Magneplanar loudspeakers and a pair of new Magneplanar MG 2.5s was fitted to the end of the system.

Not a bad upgrade on Chris' existing system, a Marantz stack that he won in a Kerrang competition. Some guys have all the luck.

Arcam's latest wave catcher

The new look Arcam Delta 290 amplifier has now been joined by a matching FM-only tuner, the £350 Delta 280. Although it's designed to match the amplifier, Arcam's MD, John Dawson, believes that the popularity of the Delta 280 tuner will 'extend beyond Arcam's own customer base to the owners of many other fine brands of hi-fi.'

A frill-free design, the 280 nevertheless sports 20 user adjustable presets and can be used with a Philips-type RC-5 infra-red remote control. Arcam will shortly be offering its own £60 system remote control handset, which will also control the Arcam Delta 290 amplifier and the current range of Arcam CD players.

The phase locked loop tuning system covers the entire FM range, from 87.5 to 108MHz. It also incorporates useful features for the station hopper, such as an IF bandwidth selector button and a logarithmic signal strength metre.



Denon's revamped amp

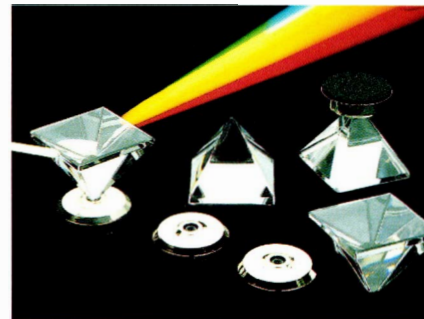
Denon has announced another set of modifications to its long running PMA-250 amplifier, the latest batch of mods being sufficient to earn the latest variant Mark III status.

Priced at £150, the PMA-250/III uses high quality components in key areas. It also uses a relay switched headphone socket that is said to be a sonic improvement over conventionally switched sockets. The power output is now rated at 30watts per channel into an 8ohm load, increasing to 50watts into 4ohms. Five sets of inputs are provided, including a moving magnet phono stage, and a single set of line out sockets caters for tape users.

High-end, lower price

Magneplanar has announced a new panel loudspeaker, for those seeking high-end sounds without high price tags. The £850 Magneplanar SMGb is a small panel design, based around the Quasi Ribbon technology used in more expensive Magneplanar loudspeakers, such as the MG.5, MG1.5 and the MG-20.

Compared to its predecessor, the SMGa, the new loudspeaker is the same size and has similar efficiency. It is also said to have slightly improved bass and greater clarity in the mid-range. There's a choice of finishes for the grille cloth, and side cheeks, the easy load of the SMGb is intended to be compatible with most hi-fi systems on the market.



Crystalline sound

There are cones and there are cones, but few are as impressive as the £49.95 Perfect Sound Crystal support cones. In fact, these cones are not cones but pyramids, so you can also sharpen your stylus while supporting your amplifier. The pyramids are made from a clear crystal material and are supplied in sets of four. Contact Goldring (0284) 701101 for details.

Hardcore cables

Path Group PLC has announced an upgradeable solid core cable. The *Ixos Hardcore* at £2.50 per metre uses three separate strands of 0.72mm diameter oxygen free copper per channel. This allows easy bi-wiring and tri-wiring from a single, flat cable. It's also possible to add more cables for the same purpose. The design of the outer sleeve, with its various grooves and slots affords *Hardcore* greater strength than conventional solid core cables, with the ability to use mass damping or suspension, which are planned as future *Ixos* upgrades.



We'll put back what you've
been missing in your CDs.



When CDs first appeared, they were hailed as being the perfect music medium.

However, some people maintained that CDs sounded harsh and lacked the warmth of vinyl records.

Now, Pioneer's Legato Link Conversion is about to change everything.

You see, when material is recorded onto CD, the format is such that frequencies above 20 kHz are abruptly cut off. And it is these upper frequencies which are abundantly present in musical instruments, giving them their warmth and natural timbre. Although you cannot hear these upper frequencies, you can actually feel when they are missing.

Pioneer's Legato Link Conversion now addresses the problem by putting back that original, natural warmth.

Using data already on the disc, Legato Link Conversion calculates almost exactly what and where the missing data should be and literally recreates a sound wave pattern that is much closer to the

original music. It's a revolutionary new technology that takes CD a real step forward and puts natural sound within the reach of every enthusiast.

Pioneer's unique Stable Platter Mechanism is also a key contribution to this more natural performance, giving full width support to the disc for reduced vibration and truly transparent sound.

Out of sight but certainly not out of mind, twin Pulseflow D/A converters cancel noise generated in and out of the audible range. While Direct Connection enables the music signal to travel along the shortest, most logical path possible for minimal interference.

So why not listen to Pioneer's new range of CD players (PD-95, PD-S901 and PD-S801) very soon? Because if CDs have left you cold until now, you'll



certainly warm to the sound of Legato Link Conversion.

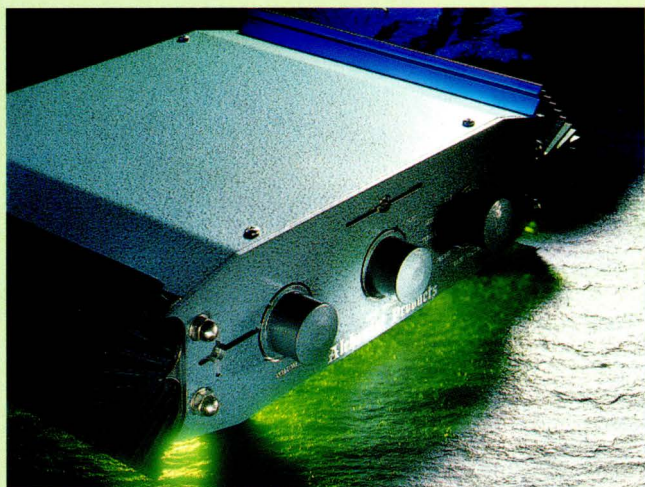
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Amplifiers on test

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HI-FI CHOICE

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coupled with low mass, helping to provide a faster dynamic response. Each 600 series model has been styled by Kenneth Grange to ensure that their looks match their high performance. With this careful attention to detail each model in the range represents the ultimate in contemporary acoustic design.

The 600 series is at your local B&W dealer now. So call in for a demonstration, because once you've heard them, there's really nothing left to say.

B&W
LOUDSPEAKERS
B&W
THE 600 SERIES

Choice Sessions

by Jason Kennedy and Alan Sircom

Ice work . . .

Good sound on the road needn't cost an arm and a leg, just get yourself a pair of drop-ins and find the screwdriver.

Ever fancied improving your car's audio system, but didn't want to spend a fortune on having serious equipment installed? Me too. After consulting a few people that are in the know, I came to the conclusion that the most cost effective way to improve matters would be to replace the factory fit loudspeakers with something a little more capable. In many cars the speakers fitted as standard are pretty basic, and in the case of my Renault 5 they consisted of a pair of four inch paper coned units that were expected to cover as much audio band as possible by virtue of having a horn shaped paper ring attached to the dust cap.

Needless to say their proficiency at higher frequencies left a lot to be desired, and they also suffered from very limited power and bass extension. Altogether not the sort of speaker system that someone used to £1,500 domestic models should have to endure.

Help came along in the form of some JBL units of the same size that are equipped with tweeters mounted in front of the woofer in a sort of dual concentric arrangement. They are called TR130s, cost £79 and couldn't be easier to source. It wasn't even necessary to measure the original units, just tell the dealer what the car is and he can look up the size in a reference manual. Being a bit of a hi-fi enthusiast on the side I thought I'd change the cable at the same time and got some suitable wire (CS-10) from our friends at Furukawa.

Then came the gritty bit of getting down to removing the old units and fitting the JBLs. Having undone the bayonet-fixed plastic grills in the doors I realised all was not going to be quite as easy as expected. The factory fit units were held in place with aluminium rivets, but the application of my trusty Black & Decker and a suitably sized drill bit soon overcame this.

The units were hooked up with press on clips of two different sizes to maintain phase and removing the old drivers was really not very difficult. Looking at the way the cable was routed through the door and underneath the dash, I realised that replacing the cable looked a bit more involved than I fancied getting on that particular rainy day. JBL thoughtfully

supply screws and threaded, er, devices made of sprung steel which you can clip on to the mounting holes in the door.

I was tempted to install the new speakers without the odd shaped plastic covers that sat behind the originals, however, the downpour made it clear that the purpose of these bits of plastic is to act as umbrella for the drive unit. Surprising as it may seem, water does manage to get between the window and its rubber seal.

The tags on the JBL matched those on the cables, so installation was again relatively straightforward. If I had decided to replace the cables that day, I would probably have considered a soldered connection, but then again the JBL tags aren't much different from banana plugs that are often used and fairly highly rated.



Life in the fast lane can sound even better with a pair of JBL drop-ins and a Temple of the Dog tape.

The sonic benefit of all this effort was most notably the appearance of treble and the detail that exists in this part of the spectrum. The system will also play louder without audible distress than it used to which is probably the most worthwhile improvement. My car isn't terribly quiet so the speakers have to be used at quite a high level to be properly heard. The drawbacks, if you can call them such, are that the extra transparency reveals engine derived interference on some radio stations and tape hiss on some tapes, but maybe that's the price of progress.

It would seem that replacing your car's speakers with drop-ins from JBL, and probably other respected hi-fi speaker manufacturers as well, is definitely worth the time and effort involved. Just because it's road music doesn't mean it has to be poor quality.

Elso Budapest hi-fi show



You would have thought that I'd have learnt by now, but no, once again your intrepid, roving reporter braved the highways of Europe and the nocturnal driving skills of Peter Qvortrup to drive to Budapest in less than 20 hours. Last year it was the Vienna show and a brief visit to Hungary, this year it was for the first Budapest hi-fi show. The event was organised by Peter's distributor Istvan Csontos of Merlin Audio, and it represented a historic moment for Hungarian hi-fi.

For the first time since the borders opened up two years ago, the country's leading audio distributors and manufacturers were gathered together in the same

hotel. And they were not alone; A J van den Hul was there promoting his new metal free interconnect, Ken Kessler was selling copies of *Hi-Fi News* and buying as many Russian watches as he could carry with the proceeds, and of course yours truly was there spreading the gospel according to *Hi-Fi Choice*.

The show proved to be very popular with the techno hungry Magyars, who crowded the corridors to an extent not experienced in western Europe last year. Which is all the more surprising when you consider that they were paying a £2 entrance fee in a country where you're doing well to earn £150 a month. For that excessive fee they got a very slick show guide and 40 demonstration rooms run by 17 companies. Despite the economic circumstances there is a wide variety of brands available (the guide claimed 124).



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WHAT HiFi, SEPTEMBER 1992

"Ultimately, the Denon managed to generate a more sustained listener interest than most players in the group."

Hi-Fi NEWS OCTOBER 1992



DENON

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The Twin Servo OTL monoblok proves that the Hungarians take their sound seriously.

In fact most of the major hi-fi companies in the world were represented including Meridian, Vandersteen, NAD, B&W, Heybrook, Conrad-Johnson, Nakamichi, Audio Innovations and Wadia. The only indigenous brand I could find was Alisca-Orange which makes some interesting amplifiers, loudspeakers and ancillaries, but there are a lot of hobbyists around who are bound to start marketing their own product in the future. And when I say a lot, I'm talking real hobbyists, knowledgeable enthusiasts abound and it's easy to see an English style cottage industry springing up.

What impressed me most was the absolute enthusiasm of everyone involved. Having suffered relatively minimal hype but craving the very best, the Hungarian audiophile is an extremely selective breed, and given the disparity between wages and Western pricetags, it's really no surprise. The professionals involved are no less intense, they care passionately about getting everything right and spend hours debating the pros and cons of various components.

There wasn't much in the way of new products apart from the aforementioned Alisca-Orange kit, though I did find an interesting OTL valve amp with some of the chunkiest tubes ever encountered and a 30W output. All the latest products were there however, the Linn Karik/Numerik and Klout, Mission 753s, the Revox Evolution system, and several A/V set-ups enthralled the crowds in pitch dark rooms with *Terminator 2*. Even the latest large chassis version of the Audio Note Ongaku was displayed for the first time in Merlin Audio's top room.

Congratulations are due to Istvan for persevering with the daunting task of organising this very successful event. Perhaps if we had a bit more of this spirit of enthusiasm in the UK, some of it might rub off on the country's many midi system bound music lovers and turn them on to decent hi-fi.

The final showdown

Science meets music in London's Royal Institute as vinyl and polycarbonate battle it out for the last time.

Every Christmas, the BBC shows a week of children's scientific lectures held at the Royal Institute in Albemarle Street, London. Throughout the year, the same Royal Institute stages grown up scientific lectures for its society members. In these hallowed halls, where Faraday once disclosed the secrets of electricity, Professor Jack Dinsdale held a packed hall of London's science community rapt.

The lecture entitled "How do Compact Discs really compare with long playing records" was dedicated to Johannes Brahms, who, when once asked about his secret of composition, said that first he wrote down all the notes he could think of, then he simply cut out the ones that were not strictly necessary. It was interspersed with musical interludes, comparing LP with CD on those rare discs that have been recorded in both analogue and digital simultaneously — Reference Recordings recent LP and CD versions of Malcolm Arnold for example. Although the black tie lecture lent itself toward classical music, Professor Dinsdale's assistants, Max Townshend of Townshend Audio and John Bamford of Pioneer (GB) Ltd, did manage to introduce the music of Frank Zappa to the crowd.

To fill a large and reverberant lecture room with high quality sound is not easy, but the massive, active ATC SCM100A loudspeakers did sterling work to reproduce the sound of the Townshend *Rock Reference* turntable and the Pioneer PD-95 CD player.

Professor Dinsdale's dry wit struck a

chord with the audience. He began by describing the history and decline of the LP in this digital age, but also mentioned that the majority of listeners had not heard vinyl at its best and that there was some confusion among those with existing record collections.

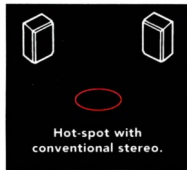
Briefly, Professor Dinsdale described the nature of music itself. He is particularly concerned with resonance, suggesting that even corpses can make sounds when they resonate. This led to the extensive work into damping, at the Cranfield Institute of Technology, that resulted in the headshell damping trough used in the Townshend turntables.

Showing both blueprints and measurements of the *Rock Reference*, Professor Dinsdale ably demonstrated that there was still life in LP collections; life that was still to be discovered. A straw poll was conducted at the end of the hour long lecture, which came down heavily on the side of the turntable. But the lecture was not aimed at undermining the dominance of CD, as the Professor suggested that this format is easier to use and more durable than LP. As most people are only concerned with something that 'sounds nice' and are not avid collectors of recordings, the CD is a convenient medium.

Today, some listeners prefer the sound of LP, while others prefer the cleanliness of the CD. Those with large existing record collections should not trade them in for CDs, but instead improve their record player. At the close of the lecture, the podium was surrounded by very interested scientific types, all of which were fascinated that such sounds could be wrested from the old format that had long since been consigned to the attic or the basement.



Erstwhile *Choice* editor John Bamford espouses the positive aspects of turntables to enthusiastic onlookers.



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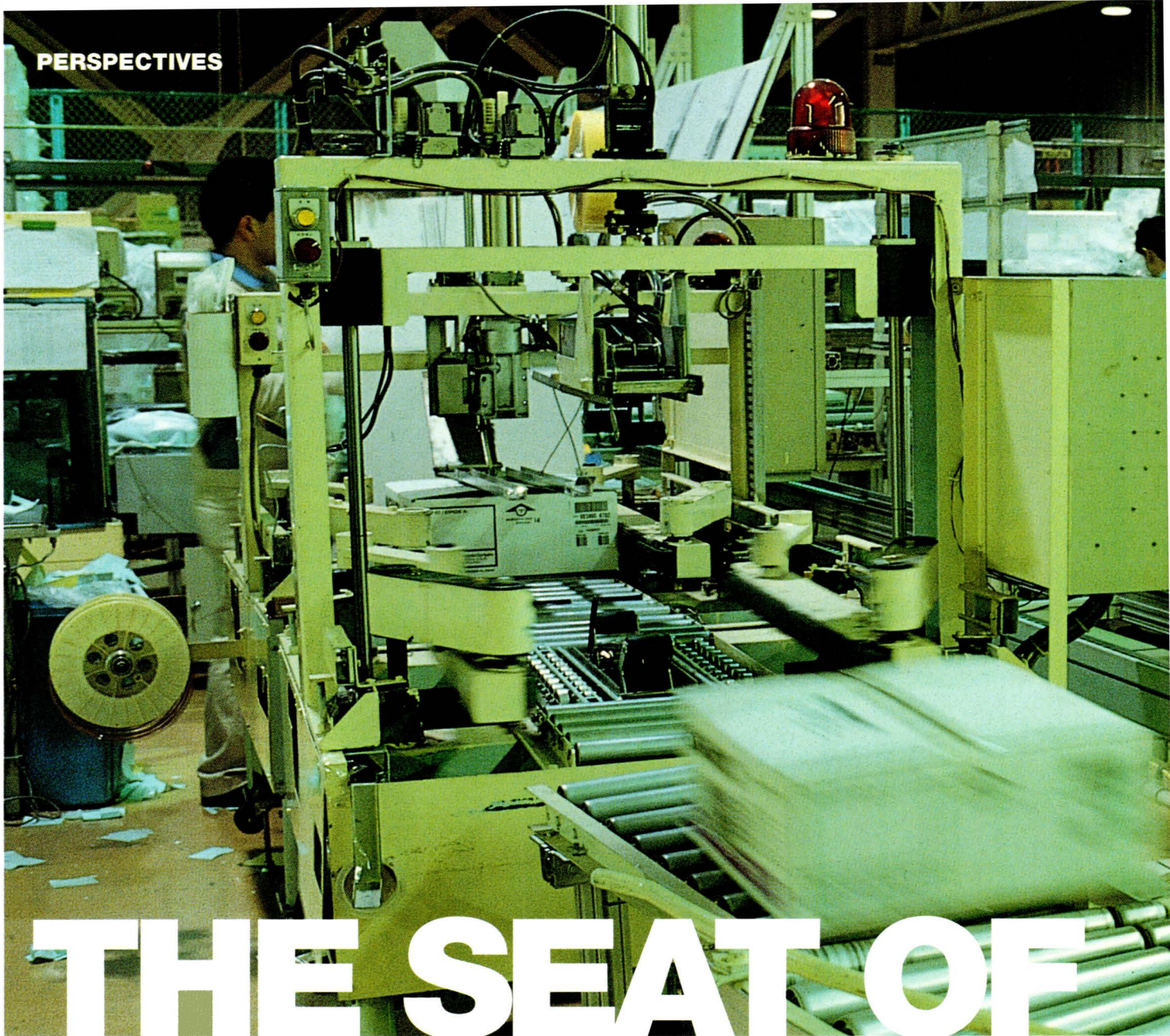
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THE SEAT OF

Dan Houston reports from the outskirts of Tokyo where Marantz is making all the DCC

It's ironic that as the Philips Digital Compact Cassette research team, led by Abraham Hoogendoorn, was celebrating its 100,000 DM Eduard Rhein award for technological achievement in Eindhoven, Holland, a team of five Marantz engineers, working in a factory in Yokohama, south west of Tokyo on the other side of the world was quietly getting the thing to work.

The Japanese have a good word for such activity, 'kaizen'. All over Japan, and certainly at Marantz, production managers and engineers are busy improving and refining designs, to make the actual production process work. They know that statistically 85 per cent of product faults occur because of the manufacturing system itself, so with almost Herculean teamwork they chip away

at the problem with this kaizen philosophy. There's no equivalent word to kaizen in English, and I doubt if one exists in Dutch.

Marantz' factory in Yokohama is one of five in Japan. It employs about 250 of the company's 1,300 employees, working

Marantz is a subsidiary of Philips and could be seen as the Dutch giant's 'audiophile' arm; Marantz Music Link and Special Edition (SE) ranges ably bridge the gap between the esoteric and more common strains of audio electronics.

on three floors. It's a 24 hour factory, with three shifts working round the clock. Components travel by conveyor belt from the ground floor to be made into printed cir-

cuit boards on the second before being assembled into products on the third.

Marantz is a subsidiary of Philips and could be seen as the Dutch giant's 'audiophile' arm; Marantz Music Link and Special Edition (SE) ranges ably bridge the gap between the esoteric and more common strains of audio electronics. It also makes loudspeakers. The company takes its name from the American founder Saul Marantz, now in his eighties. It has been associated with many well-known designers in the past, including Dick Sequerra who designed the famous Marantz 10B tuner in the Sixties and who now makes the modular and expensive Sequerra MET 7/III loudspeakers, tested in *The Collection Winter 1992/93*.

The man now responsible for the sound quality of the products is the Senior Prod-



MARANTZ

machines for itself, Philips, Technics and Panasonic.

uct Manager, Ken Ishiwata. Japanese born Ishiwata, 45, is based in Eindhoven but has spent six of the last twelve months away from home travelling the globe, taking the DCC message wherever he goes.

Cosmic sandals

Ken Ishiwata was in Yokohama during my visit and together we donned white anti-static sandals to tour the factory. Even being forearmed with the knowledge of Marantz' engineering prowess it's an impressive operation to see. Whereas Naim in Salisbury has one board stuffing machine to place components on the PCB, here there is a hall of nine production lines consisting entirely of such machinery, all computer programmed to cater for the various products in circulation. There are four staff busy just writing the software programmes. Production is critical and if a PCB is touched at this initial

Main pic: another DCC machine rolls off the line. Inset top: the all important listening room, below: batches of new circuit boards await installation.

robotic stage then it is rejected as faulty. "You never know what static electricity can do," Ishiwata commented.

Some 90 per cent of board stuffing is done by robots made by Marantz themselves. The larger components such as power supplies and capacitors are placed on the board later by hand. Little robotic trolleys trundle along magnetic strips on the floor, delivering with unerring accuracy bright blue fish boxes of components from one stage to another. The predominantly female white-gloved workforce work on up to ten different boards at once, in an attempt to quash boredom on the production line.

Above each section is a large LED with red numbers telling employees the day's target, current achievement and numbers

to go. Sections in the factory compete with each other and are currently involved in a version of golf with scores based on their daily achievements. It's a shame that in a land of golf fanatics, golf club membership can cost a Billion Yen, and they rarely get to play the game for real.

The main reason for competition is to guarantee quality control at all stages of manufacture. The robots test for themselves, with multi diodes being lowered onto boards to ensure that components work. Later, as products take their various shapes, QC is performed by engineers with music and oscilloscopes; snatches of Western hits float down the aisles as yet another DCC machine, CD player or amplifier rolls off the lines.

The exhaustive and rigorous quality control measures work — engineers boast of less than one per cent failure rate. For something new like DCC decks this may seem a disingenuous claim, but since QC

Kiss my Aura, Dora

Frank Zappa, '74



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is undertaken at every stage of manufacture, faulty components are weeded out so they never reach the final stages.

Along the production lines you can see a whole range of non-Marantz products being made. Down on the ground floor, the Goods Out bay contains boxes of DCC machines for Panasonic, Technics, Philips and Marantz. But there are also CD players being made here for Carver and Philips, together with Philips video recorders and even the odd Sony Laserdisc player. There are also other OEM products for non hi-fi names; it has made Nintendo *Game Boy* machines here recently. In fact, there were 20 different types of hi-fi standalone products being made during my visit. Yet, with all these different lines, the most complicated product takes just 50 seconds to manufacture. "We share our excess availability with some other companies. But we are also known for being a little bit more advanced than some other factories," Ishiwata explained with tacit understatement.

As for DCC, Marantz claims to be making 1,000 decks a day, of which 360 are its own £1,000 DD92 model. Production of the DD92 had only just begun in September; Marantz had already made between 20,000 and 30,000 decks for Philips and Panasonic.

Ken Ishiwata and his four colleagues began work on DCC in earnest one year ago. The birth of the medium has been fraught with claims of its unworkability. First, it was suggested that the thin film tape heads used in the machines could not be made in any great quantities, then problems were encountered relating to the logic circuitry which is used for both analogue and digital cassettes.

The recording and playback DCC head proved one of the major hurdles. In DCC one head needs to be able to play both digital and analogue cassettes. A totally joint system, where you might be able to record on analogue cassette as well, would require three heads for any decent level of sound quality, and would be extremely complicated to execute given the limitations of space within a cassette deck drawer.

Yoshiyuki Tanaka, one of the project managers, explained that when Philips began work on the system three years ago, it was expected that the digital and analogue heads would be made separately and somehow glued together in the players. It was only some 18 months ago, he said, that Philips developed a composite head which could be manufactured as a single block.

Although Marantz buys the heads from Philips it comes as no great shock to dis-

cover that they are made by Seagate in the United States, who traditionally make heads for Philips' analogue cassette devices.

Getting the head together

Head manufacture was mostly resolved by the time Marantz engineers began talking seriously to their Philips counterparts about producing the technology. Ishiwata acted as a go-between for his colleagues in Yokohama and Philips in Eindhoven. "It was quite a difficult task" he admitted. "Every day we would be on the telephone passing our ideas back and forth. Although Philips had done all the basic development, we saw our role as improving the sound quality when executing the production.

"DCC is a completely new technology, and we discovered that the effect of certain components was unbelievable. For instance the analogue to digital convertor. We could have used either a 16 or 18-bit device, both had the same specifications on paper but for sound quality they were totally different, so we used 18-bit, which of course is the best."

For the digital to analogue convertor Marantz uses DAC 7, Philips' super chip set which was designed especially for audio. Marantz has used the system already in its CD players and Ishiwata told me his company had asked, and partly paid, for its development.

"We found that using a better power supply to the digital circuitry made a real audible improvement" Ishiwata continued. "Again you can't measure it but you can clearly hear the difference. It's damn important with digital signals. Grounding is also vital because everything happens in one box. A chassis is supposed to have zero potential, but we discovered there were impedance factors with normal materials. So we now use a copper plated chassis which gives everything much better grounding.

"Then there were passive components to consider. You know every resistor or capacitor has some character which affects sound quality. You need a good combination to make a decent sound, we have spent a long time choosing components for the right balance."

The long stop in this business of balance is Ken Ishiwata himself. His interest in hi-fi began in the early Sixties while

serving as a radio officer in the Japanese merchant marine: "My early profession was at a much higher frequency," he joked. A growing interest in hi-fi, fueled by popular products of that era — most notably some two way British Ferrograph loudspeakers — led to a job with Pioneer in Europe between 1967 and 1972. After six years with a German hi-fi distributor he joined Marantz in 1978. He gained the roving title of technical commercial coordinator. The roving hasn't ceased but the technical aspect of his job has led to his helping design the Music Link and SE series, specifically for the British market.

He's undoubtedly an audiophile himself and is enthusiastic about his vinyl LP collection of jazz and classical music, as indeed are several of his colleagues.

Ishiwata says British audio tastes are among the

With fanatical attention to detail at every stage of production, Marantz employees spot any problems as early as possible.

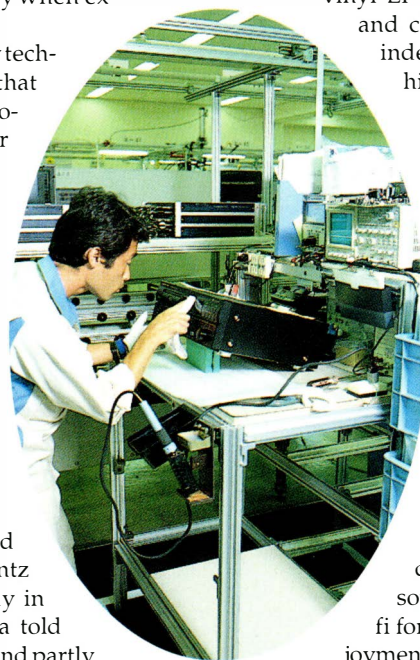
most refined: "The British were the first to discover stereo sound rather than hi-fi for its own sake. Enjoyment of music was the

first priority and I decided

Marantz should be like that. I try to encourage designs which have a good sound stage, stereo image and perspective. DCC has this."

The engineers at Marantz are shy about trumpeting their achievements with DCC, describing their manufacturing prowess as being 'harmonious' with the Philips technology. They clearly see DCC as a worthwhile venture and brush aside suggestions that a tape medium maybe dated. As an example, suggestions that analogue cassettes may leave the hidden heads unduly dirty (they can't be cleaned manually) were met with the response that one should use proprietary cassette cleaners and demagnetizers.

Whatever your criticisms of the Digital Compact Cassette it's certainly going to be around for some time. It is also encouraging that at least the early players are coming from a stable with the audiophile traditions of Marantz.



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| 1 | Abba | Greatest Hits | 2 | Lloyd Weber | Premier Collection |
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| 5 | Bryan Adams | Waking up the Neighbours | 6 | Cathy Dennis | Move to this |
| 7 | Chris de Burgh | Spark to a flame | 8 | Diana Ross | Motown's Greatest Hits |
| 9 | Dire Straits | Brothers in arms | 10 | Dire Straits | Money for Nothing |
| 11 | Dire Straits | On Every Street | 12 | Elton John | The One |
| 13 | INXS | Welcome to Wherever | 14 | James Brown | 20 All time greatest hits |
| 15 | Lionel Richie | Back to front | 16 | Marvin Gaye | Motown's Greatest Hits |
| 17 | Oleta Adams | Circle of one | 18 | Robert Palmer | Addictions |
| 19 | Shakespears Sister | Hormonally Yours | 20 | Stan Getz | Anniversary |
| 21 | Tears for Fears | Tears Roll Down | 22 | U2 | Acting Baby |
| 23 | U2 | Joshua Tree | 24 | U2 | Rattle & Hum |
| 25 | Van Morrison | Avalon Sunset | 26 | Albinoni/Pachelbel | Adagio/Canon |
| 27 | Bach | Brandenburg Concerto 3,4&5 | 28 | Beethoven | Missa Solemnis |
| 29 | Berlioz | Symphony Fantastique | 30 | Bernstein | West Side Story |
| 31 | Elgar | Enigma Variations | 32 | Gershwin | Rhapsody in blue |
| 33 | Handel | Water music | 34 | Holst | The Planets |
| 35 | Mozart | Marriage of Figaro Highlights | 36 | Mozart | Symphony Numbers40 & 41 |
| 37 | Rodrigo | Concerto de Aranjuez | 38 | Tchaikovsky | Symphony Number40 |
| 39 | Various | In Concert/Carraras/Domingo/Pavarotti | 40 | Vivaldi | Four Seasons |

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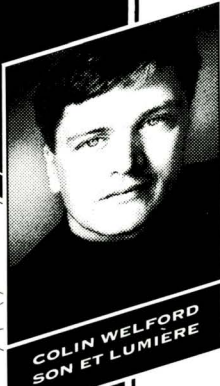
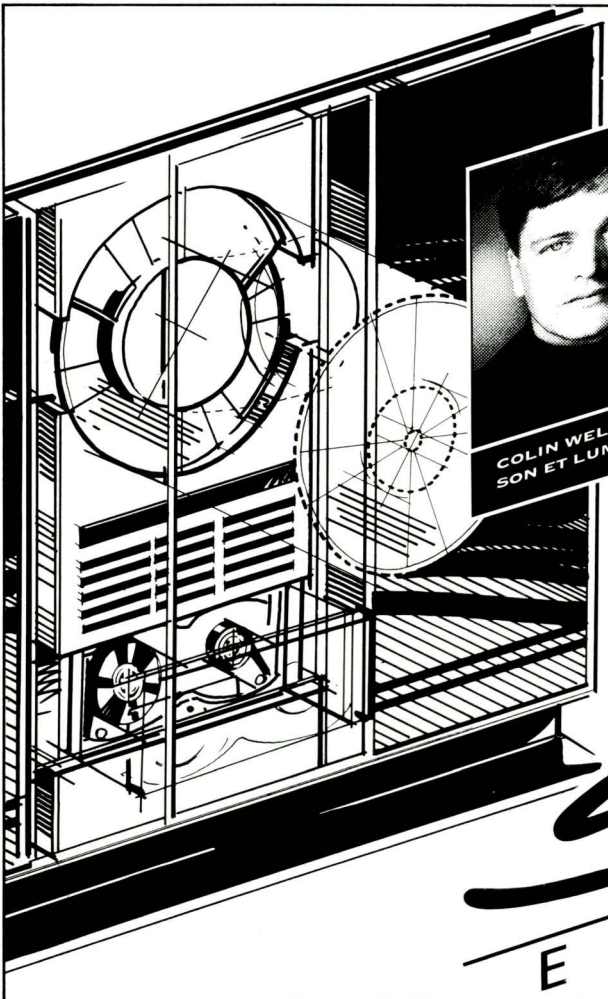
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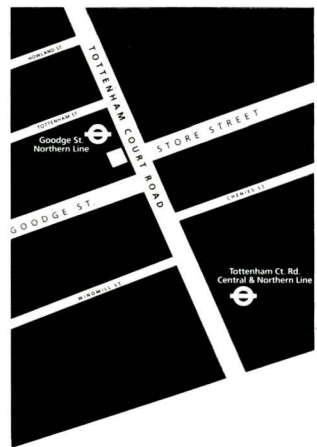
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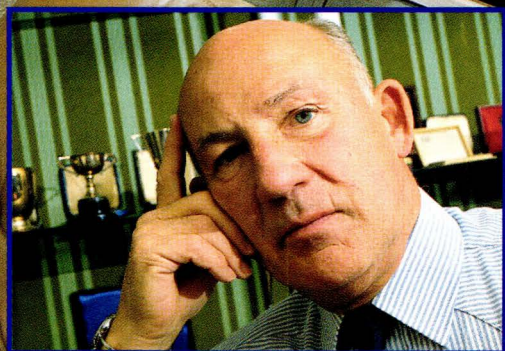
Dan Houston interviews Stirling Moss whose passion for a remote control lifestyle now extends to his hi-fi.

Stirling Moss was preparing to fly to Japan the day after our visit. The 63 year old doyen of British motor sport was due to take part in a 1,000 mile vintage racing car rally across the country. He seemed in two moods about the trip. The appeal of doing something which has been a passion since boyhood is tempered by the fact that such appearances have become a sort of regular job. "I'm not sure what the weather will be like over there. A friend of ours said it's extremely humid at this time of year," he says.

As the holder of ten British Champion Gold Stars, and the first man to travel at 100 miles per hour around Goodwood in 1960, he still attends Grand Prix and related events but admits that this is partly because he is paid to attend.

While he plays down his continuing role in the field of motor sport the event will provide a welcome break away from home. This is because his five storey house in central London is undergoing its third major refurbishment since he built it on a bomb site in 1961. A team of builders has been hard at work for 17 months.

With all but the decoration of the main lounge finished, the house has been completely altered with an extension upwards to provide an airy guest bedroom on the





Above: Nakamichi and Revox amplification living in harmony in Stirling's sideboard. Right: No danger of running out of buttons to press in this bed.

fifth floor. "We've changed a lot this time," Stirling says, "basically all that remains now from the original house is the spiral staircase and the two main RSJs (supports) which go across the 25 foot plot."

Apart from considerations like the guest bedroom and extra space, the main reason for the refurbishment was to take advantage of new technology, he explains. His L-shaped kitchen on the second floor contains every kind of culinary gadget one can think of, all housed behind conservative light grey Smallbone cupboards. It's a living area as well, and guests can be seated on a couple of small sofas next to a drinks cabinet, while a meal is prepared. His wife Sue is a Cordon Bleu cook, he says proudly.

As well as three new bathrooms — for guests, his son Elliot, himself and his wife — there is now a ground to top floor lift made by the Williams Formula One racing team. Its carbon fibre construction makes it 'extremely strong and yet light as a feather' he says.

Slip slide it away

Space is a major consideration, and the house seems like a warren as he leads you through bedrooms into rooms of shelves, some on sliding rollers, with just enough room to stand between any two of them. It creates storage and enables him to house a lifetime's worth of gadgets and paraphernalia.

Behind his garaged Mercedes 500SL, free to an ex racing team member of his calibre, there are more sliding tool shelves, better stocked than many service centres no doubt.

Gadgets and tools are part of his life.



Televisions are everywhere, there is even one on a bracket which he can swing out to view while relaxing in his colossal Jacuzzi-style bath tub. There are banks of electric buttons in his office, lounge and next to his bed which control a multitude of functions from opening the curtains to running the bath automatically; just about anything that can be operated with an electric motor is thus under push button control.

And of course there is the hi-fi, in this case a Nakamichi system run throughout the house with B&W ceiling loudspeakers, all entirely programmable with an infra red handset.

The hi-fi is linked to the Solara satellite television system via Audio Access circuitry; TV sound can be relayed through the loudspeakers. The main system is housed in a small room next to the first floor lounge known as the 'nook' while unseen wires take the audio signals out to the rooms.

Wooden panelling along one side of the nook conceals a JVC television and VCR, Nakamichi source equipment and amplification and Stirling's Revox turntable and B77 reel to reel tape recorder. Behind cloth screens in this panelling lies a pair of KEF 105 loudspeakers. These aren't easily recognisable as the two bass

units have been incorporated in a new cabinet which is installed centrally above the television screen, while the 105's separate mid and treble enclosures are suspended upside down on wire supports.

The performance of these stalwart loudspeakers is undoubtedly compromised by such an arrangement, but there is no space to site them correctly in the area. A two seater sofa puts the listener just six or seven feet from the Nicam TV which uses the KEF loudspeakers for stereo sound.

Next to the sofa on fake Tudor wood beams some chunky flip switches control the three panel doors which slide up and down to reveal or conceal the equipment. Another button brings down part of the ceiling, which is in fact a 'table' across your lap. It can be laid in the kitchen above. Stirling doesn't even need to pause the video machine to enjoy his TV dinners!

The table uses an electronic lowering tail-gate mechanism customised from a truck. The house is full of such gadgets and Stirling says he enjoys thinking up such designs which make life easier for him. Thus he talks to Sue via an intercom system which is currently being wired through the amplifiers to automatically fade down the sound every time he pushes the button.

This is because his home office is directly below hers, and shouting up the spiral staircase would be Neanderthal in comparison. The pair can even pass papers to each other without having to move from their desks. A little trap door in his ceiling and her floor opens to allow a filing tray to drop down on a clever motorised system of wires and pulleys.

Modern living

It's the modern way to live as Stirling says: "In 1992 we certainly shouldn't be doing what we were doing in 1892. I think everyone should benefit from a modern environment. So all my toilet seats are heated, and from my office I can run a bath which will be just the right temperature and depth.

"I also enjoy doing it, and there is something of a challenge in thinking up an idea and then finding an item, like the truck tailgate, which can be used for this other purpose. I am not lazy — to me movement is tranquillity. You may think it sounds strange but when you get used to it it's perfectly natural."

For Stirling the new hi-fi system complements exactly what he has been look-

ASPIRATIONS

ing for since he built the house. "I was using a remote control for my television 30 years ago, now everybody's got one, and rightly so. Now I can have music around the whole house which provides a wonderfully relaxing background."

The system has been installed by the Cornflake Shop which is a specialist in such work. Stirling contacted the shop at the right time during refurbishment, before any of the plaster work was finished. After an initial listening session to choose equipment in one of the Cornflake Shop's demonstration rooms, engineers arrived to run the loudspeaker and system communications cabling around the house.

Sound is piped from the nook to the lounge, kitchen, garage, master bedroom and bathroom. In each area a remote sensor relays commands from the handset back to the system. There are also wall pads in the rooms allowing a similar control of the system — handy when you've lost the handset.

The beauty of this system is that it effectively hides hi-fi. The B&W loudspeakers fit flush with the ceilings and are finished with white grilles so that they are hardly noticeable. All the wiring is hidden behind the plaster and the sensors and keypads are hardly larger than an average light switch.

As long as the system is switched on you can control the volume level and switch to whichever source you desire. The system is fairly simple to use and the keypads are logically laid out; the arrows for turning up and down the volume are also used for tuning the radio.

Stirling uses a Nakamichi *Music Bank* CD player which holds up to seven discs. He can fill it up and have more than eight hours of continuous music. Alternatively he can put it into random play and it will chop and change between the tracks and discs all week . . . all year!

The other sources are a cassette deck, tuner, VCR or TV for video sound, and the Revox turntable. It's the tuner which is used most in the daytime and our host invariably listens to *Melody Radio*, which he describes as a great background that also suits his musical tastes.

Having grown up in the late Forties he likes the jazz and club music of that era, citing Ella Fitzgerald, Nat King Cole, Frank Sinatra, Blossom Dearie and Ethel Ennis as favourites. He still goes to see such artists, the quick ones at any rate, if they are performing live in London. Blossom Dearie is a favourite during her regular visits to Pizza on the Park "very expen-

sive but very good" in Knightsbridge.

He opens up shelving underneath the system in the nook to reveal a comprehensive vinyl record collection which is his pride and joy. "I bought most of these from places like Sam Goody in New York while I was racing in America in the Fifties.

Some of them are very rare, and I don't think they'll appear on CD, so I'm never going to sell them. David Jacobs (the *Radio Two* broadcaster) is a friend of mine and has borrowed these records for his show — they don't even have them at the BBC. So when I want to sit and just listen to music I play records."

Both Stirling and Sue say that in the short time they have had the new system they have been listening to music more often. Of course one reason is the sheer convenience of the set up — they can choose which CD they want to get dressed to while lying in bed in the morning. But perhaps more importantly they are both enthusiastic about the sound quality and say this has re-awakened their interest in music. "The better the sound is the more you want to listen to it, and that starts the ball rolling," Sue explains. "It's a sort of self-generating thing. I think it's a bit like getting to know wine. The more you know,

The beauty of this system is that it effectively hides hi-fi. The B&W loudspeakers fit flush with the ceilings and are finished with white grilles so that they are hardly noticeable. All the wiring is hidden behind the plaster and the sensors and keypads are hardly larger than an average light switch.

the more you demand and once you have tasted (or heard) something that's good it's very difficult to go back."

Stirling also praises the sound quality, particularly of the Nakamichi equipment: "I first came across Nakamichi in America. I was driving a new Toyota *Lexus* which had a Nakamichi car hi-fi system. I was staggered by the sound quality so I was really pleased the Cornflake Shop could install this equipment here. I like listening to music in the car, but perhaps that's because you're a captive audience, and if everything is as it should be then it can be even more impressive than at home."

While such systems wouldn't appeal to the hi-fi purist, who would rather spend this kind of money on a simpler, but better quality set-up which creates a clear window onto the music itself, it is encouraging that the sound quality appeals to someone who has lived with hi-fi since the early days of stereo. For Stirling Moss, sound quality, ease of use and the sheer gadget appeal, combine to enhance and reflect his 'hands-off' lifestyle.

Below: In bed entertainment of the audio/visual variety reflects Stirling's lifestyle.





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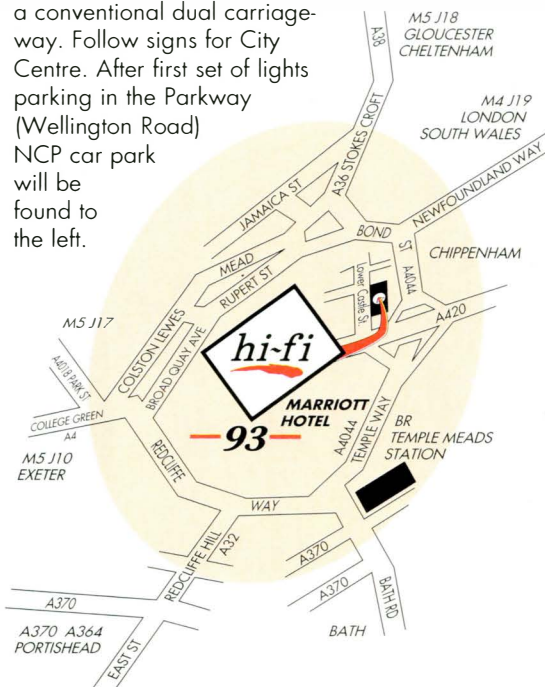
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Readers Write

CHOICE ANSWERS

Just add amp for ideal system

I am writing to you regarding a very serious problem of mine. Sometime ago, I put together a good system, as follows: Rega Planar 3 turntable (RB300 tonearm and Audio Technica AT-F5 cartridge) and Marantz CD50 Special Edition CD player. The amplifier is an integrated Audiolab 8000A MkII with B&W DM630 speakers. I was rather satisfied until I decided that I needed to improve the whole system. My system now consists of a Denon DCD 2560 CD player amplified through Hafler's SE100 preamp and SE120 power amp and the world famous Sendor SP2/2 BBC monitors. The system is wired with van den Hul MCD 102 III interconnect and CS 122 loudspeaker cables. Now having returned the Hafler pre/power amps, I am looking for the ideal amplification system, while keeping both the source and the loudspeakers.

I would like my system to give me all the musical virtues of

euphony, musicality, transparency, instrumental presence, separation, always within the limits of this particular system. Also, since I reside in Thessaloniki and all the dealers are in Athens, I can't hear them before I decide. Nick Mahairidis, Thessaloniki, Greece.

You make no mention of the status of the turntable; if it is still in use, it eliminates certain amplifiers unless used with a

separate phono stage, like the Michell Iso. I have heard of AVI amplifiers working successfully with speakers like Spondors, but this is as yet untested.

My reaction would be to opt for a good preamp, like the Croft Super Micro A, or the line-only Concordant Exultant, with a power amplifier like the Musical Fidelity P180. Such a pairing should give a pleasing combination of transistor punch with valve sweetness.



British valves at their tweakiest - Concordant's Exultant preamp.

Improvements — you've got it taped

My system comprises a Marantz CD72 Compact Disc player, Teac V-5000 cassette deck, a Musical Fidelity B200 amplifier and a pair of Tannoy E11 loudspeakers. I'm happy with the system except for the cassette deck, as I find it sounds too bright and hard when recording on all tape types. If I were to change the Teac, which cassette deck would be the best for recording without Dolby NR? Could you also recommend some good quality interconnects, together with good chrome and metal blank tapes. Aram Bettams, Victoria, Australia.

To record without Dolby noise reduction, the tape machine's recording head must be capable of being pushed to the extremes. At the

same time, the tape must also be capable of handling such range but without undue hiss.

Cassette recorders like the Nakamichi Cassette Deck Two, the Akai GX-95 or the JVC TD-V1010 would all improve upon the performance of your existing Teac machine in the areas you have suggested. Try the Nak first, as the other players seem to favour Type IV (Metal) tapes.

As for tapes themselves, TDK's AR ferric, SA pseudo chrome and MA metal all acquit themselves well, but do not discount Maxell's SXII and XLII pseudo chromes, MX metal or Philips Metal Plus as these are all capable of superb results in the right system. Finally, try out DNM, Tara Labs Prism, Quantum CD or Van den Hul's The Source interconnects for your cable worries.



Metal magic and mayhem from the Nakamichi Cassette Deck 2

Antique valves

My system comprises Linn LP12/Lingo/Ittok turntable, Marantz CD-50SE CD player, Rose RV23 preamplifier, Musical Fidelity MA-50 power amplifier and Rogers LS2a/2 loudspeakers. While on holiday, I heard a system so good that I now doubt the quality of my own. The front ends were the same, but the amplifiers were a Concordant preamp and a Leak Stereo 20 power amp which had been rebuilt, and a pair of Audio Note AN-J loudspeakers.

Would a rebuilt Stereo 20 match my preamp and prove sonically superior to my MA-50s? Would it drive my speakers reasonably, or should I upgrade? Alternatively, would Concordant Quad II amps be a better bet? How do they compare? Dave Metcalfe, Reading, Berks.

The Leak power amplifier is a very good match for the Rose preamp. If you are feeling electrically minded, the Stereo 20 is a comparatively simple chassis to restore yourself, although there are a number of high class restorers who will do a fine job for you.

It is not a question of the Leak amp being better or worse than the MA50s; the two are merely different. By the nature of the system that you already own, and also the one that you admire, you obviously like a rich, warm sounding system. The valve Stereo 20 should improve upon the transistorised Musical Fidelity amps in this area.

As long as you do not intend to crank the system up too loud, the Rogers speakers will suffice. Ultimately, a pair of more suitable loudspeakers will improve upon their performance, however. Aside from the Audio Note designs, speakers like the JPW AP2 and AP3 loudspeakers would also suit well, especially when partnered with good solid stands and decent interconnect and loudspeaker cable.

I feel that you may find the tonal balance of the Concordant Quad II amplifiers will be too close to your existing amplifiers to be of benefit. They do sound good, but trade the traditional valve softness for a bit more stark clarity.

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Which format should I record my Black Crowes albums on?

I recently put together a system consisting of a Pioneer PD-S901 CD player, driven by a Pioneer A-400 amplifier. A little later, I found a pair of Celestion SL6 loudspeakers. Having a perfectly normal hi-fi enthusiast's thirst for upgrading, I wondered if you could advise me with the following.

a) Should I go for a D/A convertor to make use of the digital output — if so which one will be suitable — and will this alter directly the fine qualities of the CD player as it is?

b) Should I invest in a more up-to-date set of speakers bearing in mind my preference is in an extremely tangible stereo image and dynamics?

c) Should I consider an upgrade of the amplifier in future?

And, most of all, a question which I'm sure a hundred readers are asking you — what recording medium should I invest in today? I am perfectly aware of their relative advantages and disadvantages and am now suitably confused. Could you give me a simple recommendation and your best guess on a reasonably long term buy.
Suraj Sonti, Geneva, Switzerland.

Although highly transparent, the Celestion SL6 loudspeakers have a reputation for being power hungry and comparatively inefficient; the last thing you want with a small integrated amplifier,



Audio Note AN-J loudspeakers — a fine match for the Pioneer A-400?

no matter how good. It would be a mistake to add a separate D/A convertor at this time and you should aim to either trade the amplification up to something with the sort of grunt needed to drive the SL6s properly, or else swap the loudspeakers for a more efficient design. Ultimately, the latter route is the less expensive one, as powerful amps are generally more revealing of source and could show up the shortcomings of the CD player.

Speakers that would suit your system as it stands include Audio Note's AN-J, Audioplan's Kontrapunkt, Castle's Chester and the KEF Q60 combined with good speaker cable. All of these would

suit your current system, but allow for future upgrades to the electronics, if necessary. When time comes to upgrade, look at improving your CD player, to something like a Meridian before the amplifier comes up for change, otherwise you may unbalance your system.

On the subject of future recording media, although it sounds like a cop-out, it is still far too early to predict which will be adopted universally. At the present, compact cassette, with its multitude of software titles and a plethora of personal or in-car players, is the safest bet, but both MD and DCC will be snapping at its heels presently.

DAC's enough complaining

As a recent hi-fi addict I have also become hooked on your magazine.

However, I am writing to complain about the DAC reviews in December's issue.

Although I have no immediate plans to buy a separate DAC for my Arcam Alpha, it is an upgrade I am likely to make in the future. Surely using DACs as an upgrade to an 'all-in-one'

CD player is reasonably common, so why were all the tests carried out on CD transports? I think that many of your readers, like myself, with CD players would have found it useful if you had also used at least one, if not two, commonly used 'all-in-one' CD players — the Marantz CD52, Rotel RCD965BX or, dare I say it, the Arcam Alpha — in your tests.
S J Wigley, Bristol.

I agree, you've got a good point and one which will be passed on to Choice digital guru Paul Miller forthwith.

DACs the way to do it. Can the Arcam Alpha support a good quality D/A convertor?

Crazy from the waves

My system is as follows; Marantz CD-94 CD player (without the separate CDA-94 D/A convertor), Systemdek IIX turntable with Linn Basik arm and Ortofon 510 cartridge, Pioneer F-656 tuner and Kenwood KX-5010 cassette recorder. All of these are played through a Pioneer A-400 amplifier and Wharfedale 505.2 loudspeakers on Stand Design Z20 stands in a room measuring 6m by 4m.

My question is this; with £650 to spend on an upgrade and as most of my listening is through the Marantz, would I be wise to invest in a DAC such as the Sugden SDA-1 as featured in your December issue, or would the money be better spent replacing the speakers with something like Castle Chesters? I listen to both classical and modern music and at present find the sound a little hard sometimes. Also I would be grateful if you could suggest speaker cable which would be best suited for this set-up (I presently use QED 79 strand doubled up).

Finally, while listening to the tuner (or even a battery powered tranny) every half hour or so I get a 10-15 second burst of buzzing interference which is driving me crazy.

What causes it and how can I eliminate it?
S V London.

The Marantz CD-94 CD player is considered by many to be one of the finest single box players of its time. Changing over to a D/A convertor like the Sugden, the level of improvement, through your system as it currently stands, will be comparatively small. The money is far better spent elsewhere in the system.

The Castle Chesters are a good match with the A-400. It cleans up the 'bloom' of the Chester's bass, while the Castles ameliorate the hard treble of the Pioneer amplifier. Combine this with a mellow sounding cable like Audio Note AN-B, or Van den Hul's The Wind and the system should sing.

The radio interference is more problematic. You do not mention if an aerial is used with the Pioneer tuner; a good directional aerial is often surprisingly adept at eliminating such nasties.

As the interference is regular, and you live in London, it could be interference from a local cab company or similar. It is worth contacting a local aerial installer about this; they may be aware of the problem and how to get around it. As a last resort, contact the BBC and inform the Department of Trade and Industry about the problem.



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THE FUTURE IS PHILIPS

What do you think about the way things are shaping up in the ever broadening world of audio entertainment? We want to know your views and ideas, so send 'em in and each month we'll award a *Hi-Fi Choice* sweatshirt (Extra large size) to the writer of the most witty or interesting contribution.

Sounds like a question of semantics

A few months ago, I decided to rise to the challenge of putting together an 'excellent-value-for-the-price' stereo system which would consist of an integrated amp, CD player and speakers — all for about \$2,000 or so.

When I discovered your magazine shortly afterwards, it was as though it had fallen from the heavens (with your product ratings and reviews promising to simplify the decision-making).

The task of careful system building is proving to be a very mysterious one, however, for, sadly, I am unable to comprehend the actual meanings of such imaginative sound description characteristics as 'forward', 'open', 'dry', 'dark', 'positive', 'airy', 'meaty', etc. As a result, I've become utterly baffled.

I've already purchased a Harman Kardon *HK6500* integrated amp, because, at the time, such descriptions as 'powerfully emotive', 'strong authoritative grip', 'marvel-

lously open and detailed', 'unswerving confidence', 'big and bold sound' and 'flighty transparency' struck me as rather impressive. They still do — it's just that I'm not exactly sure what it all means. Gregory Smith, Toronto, Canada.

The whole problem is a very complicated one. All that such adjectives and metaphors can do is go some way to suggesting sound, which is probably why a string of adjectives will be better than just one. As you point out the sort of sound that you do and don't want to hear is fairly obvious.

The metaphors and adjectives used are drawn from all kinds of areas such as dance, driving, food and drink and can be spatial, tactile or onomatopaeic. Think of the amount of times you see 'boogie', 'full', 'rich', 'open' and 'spacious' in a review.

Hi-fi has been around for a relatively short time and the language used to describe its sound is fairly juvenile, suitable words may be there but they haven't yet received the status of universally understood standard descriptions. However, there are a few words which have

achieved amalgamation into the language of hi-fi and are recognised as describing certain aspects of sound such as; imaging, coloration, depth, drive, transparency, etc.

It seems it takes time for acceptable meanings to be conveyed about fairly abstract and subjective phenomena, such as taste.

In the wine trade there is an established terminology used to convey the 'personality' of a wine, yet wine has been around for centuries longer than hi-fi and so the language used to describe it has had time to develop and mature.

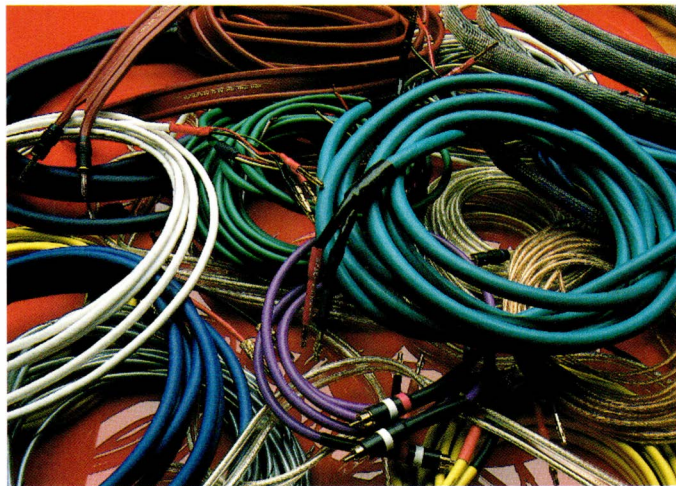
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Creative cable continuation

There has been much discussion about the pros and cons of loudspeaker cables, but I can't see the point of using expensive cable if it stops at the speaker terminals, with the signal being transmitted by semi bell wire actually within the speakers themselves. Over the years I have purchased many fine speakers from Leak to B&W, all of them have used cheap internal wiring

Some years ago I decided to continue the speaker cable from the crossover to the drive units with outstanding results. And over the years as I have changed speakers or cables I have carried out this procedure.

At present I use van den Hul *SCS-12* both inside and outside my loudspeakers. Changing the internal wiring is quite easy, the whole job takes about one hour



Cables everywhere, but which is the best one to solder into your speakers?

and the only thing to watch out for is polarity. About two metres of cable, preferably the same as

that between your amp and speaker, should do the job. Roy Cottam, Hyde, Cheshire.

Different channels of opinion

I am a *Hi-Fi Choice* subscriber and would like to pose a question concerning a particular review of an amplifier in issue 109.

The amplifier is the Kenwood *5040R* and your review of this product was fairly negative. However, a French magazine, came up with completely different results. As well as awarding it an excellent rating the amplifier was selected — along with the likes of the Harman Kardon *HK6150* and the Musical Fidelity *David* — as 1992 amplifier of the year, in its price category.

In general I have found their reviews match yours fairly closely with only slight variations until this occasion. One could say, 'different strokes for different folks', especially if those folks are on the other side of the Channel.

Why this review disparity? You indicate that classical music always plays a part in your blind listening tests, but how many of the blind listener's ratings indicate style preference (hard driving rhythm and raunchy bass for pop, lyrical and limpid tonality for classical, etc) rather than giving an absolute performance level?

I believe equipment preferences must reflect musical preferences. If your blind listening teams were split into a 'classical' and a 'pop' team and they only listened to what they preferred, some interesting variations on your reviews might result (an 'average' given by the pop group balanced against a 'very good' given by the classical group).

Now and then a review of yours does make this distinction — for example you point out that the Marantz *PM40SE* is 'better for jazz and pop than classical. Perhaps this kind of distinction could become a policy so that you report conflicting 'style' reviews where large differences of opinion arise from two team listening results.

Eric Stein, Villejuif, France.
Good point — Ed.

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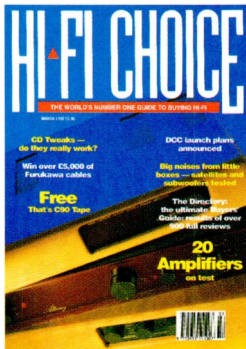


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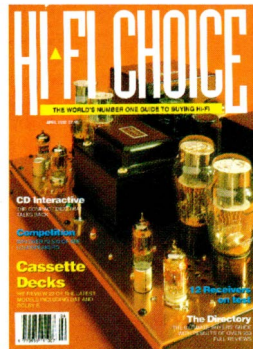


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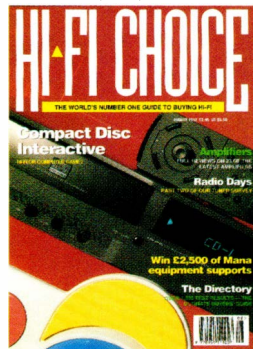
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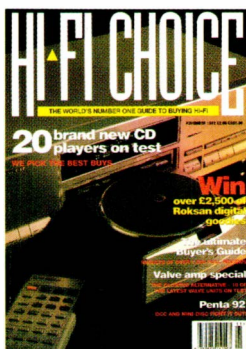
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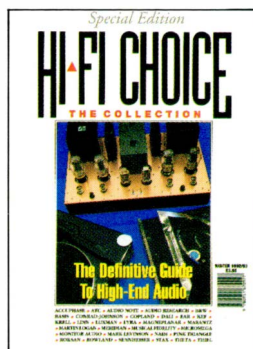
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21st Century Fox

During the long run up to the launch of DCC and MiniDisc, Philips smiled grimly as it hit problems and delays, and was often publicly humiliated. Sony just promised 'MiniDisc for Christmas', teased us with tales of exciting things from the format and fudged awkward issues. 'Its turn will come' said Philips.

It has. Sony is now paying the price of launching new technology in too much of a hurry. The price of meeting the self-imposed Christmas deadline is the risk of a bad name for MiniDisc which may be hard to shake off. No-one doubts that Sony, and partners like Sharp, will develop small, sexy and nice sounding MD units. The question is when. Even Sony's own staff privately admit the system needs another six months of development work.

In the US, the chain store Macy's published a Christmas circular which featured MD on the cover. Now Macy's is giving customers a letter which says

This month Barry Fox sharpens his teeth on Sony's premature baby and cancels his shopping trip to New York.

Sony has had 'production problems' and 'early difficulties'. Disappointed customers will get free blank or prerecorded discs in January when Sony delivers the players. There is now a row over who will pay for the discs. Polygram's PR department was soon cheerfully faxing out copies of the Macy's letter.

Says Sony UK: 'There are no problems at all with MD apart from lack of availability due to an exceptionally high demand, both in Japan and America. Some dealers are now taking steps to inform customers that there are problems with the supply and the wording may have been misinterpreted.'

But Sony's HQ in Japan admits that the difficulty of making any new technology reduced the number of players available from the factory. If Sony cannot supply Macy's — one of the most important American retail outlets — who can it supply? It looks as if US dealers are getting pairs of players per shop; one to show and one to go.

Sony's Head Office in Japan is now also telling those who ask about *Choice's* first review of the MZ-1, that the machine which the magazine got in November for two days was a preproduction sample and not what the public would be sold in December.

For the benefit of anyone being told this tale, I quote our own editor, Andy Benham: 'No way. Categorically no. One hundred per cent not. No one at any time suggested that it was in any way different from the players which are now going on sale'.

The LCD display on the MZ-1 shows the title of the music being played. It took *Choice* just 30 minutes to find that a glitch in the computer logic left the player still displaying data from one disc, when playing another. How could Sony have failed to spot this earlier? Could this be more evidence of the rush to market?

Choice also soon found that the sound from MD was below par. But when I went to the demonstra-

tions of ATRAC given by Sony earlier this year at the Metropolis studio in West London, the sound of the coding/decoding chain was virtually indistinguishable from the straight feed from CD. There was no distortion, nor did the image swing from side to side as the compressor locked onto one channel.

Were we hearing ATRAC at Metropolis, or was this another stunt? Like the demonstration of MD at Firato when the wire connection to the sound system fell out and the player magically continued playing.

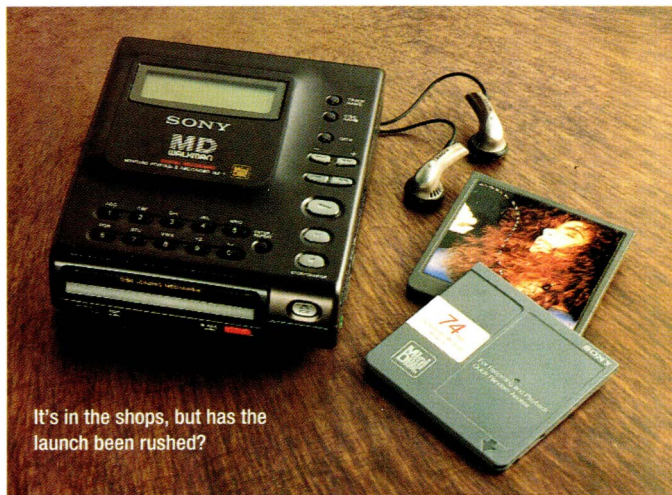
And why is Sony not yet able to supply the optical lead needed to make digital dubs from CDs? The one real and 'unique selling point' of Mini Disc and DCC is the convenience they offer of copying from CD to DCC or MD. The answer here is more likely political than technical.

Sony has played down dubbing to the point of silence, both in publicity material and presentations to the press. It has made no secret of the reason for this. Sony owns CBS (now Sony Music) and the record company does not want to support a format which is designed to copy its CDs. The company is relying on the press and trade to educate the public on the joys of dubbing.

Philips, however, would like it to be known that although Sony may be scared to publicise dubbing, Philips is not. The company is now running adverts which unashamedly plug the idea of digital copying from CD to tape. This, says Philips, is with the full agreement of Polygram.

Philips' interpretation of the Athens agreement on copyright and SCMS copy control is that there is now a deal. The record companies will not object to the sale of digital recorders, or publicity for digital dubbing, in return for agreement by the hardware companies not to oppose the record industry's lobby for a tax on blank tape or discs.

If Philips publicly plugs the delights of digital dubbing with DCC, then Sony will have to do likewise for MD, and not just rely, as at present, on the press and trade to do the dirty work. The record companies know that this will help them win a tax on tape. But they also know it will take a long while to get the necessary laws passed. Will they be patient? Not on your life. Watch for flying fur between Philips, Polygram, Sony and CBS/Sony Music.

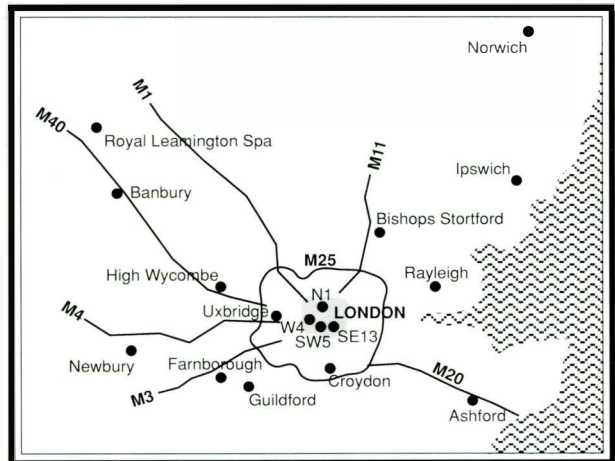


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A Systematic approach

The following test of matched hi-fi systems was based on a rather different premise than usual. The idea was to look at a group of systems which sell at the same price, around £1,200. Each system was to include a CD player, amplifier, loudspeakers and cables (though not equipment supports or speaker stands) within the price limit. Standard hi-fi separates and not packaged systems were specified, which meant that sound quality rather than convenience or flexibility was the key issue to be addressed. The suppliers were given freedom to specify the complete system, if necessary including components from third party manufacturers. This freedom was used in particular by those like Aura who, for now at least, list electronics but not loudspeakers.

Nine manufacturers picked out the best separates system they could put together with a budget of £1,200. Alvin Gold reports.

Cables also sometimes came from other sources, and we ended up with a mixed and not always satisfactory assortment. Some manufacturers expressed no particular preference, and in the end I changed some of the cables around to give the equipment the best chance. Supra cable, for example, was simply not up to the job, as the finely stranded cable sounded soft and lossy, while Monster cables, as supplied with one of the systems, sounded grainy and unattractive. Most of the systems worked best with a solid core cable, though multi-strand Audioquest cable also fared well.

Systems of the type we're looking at here accurately mirror the way that systems often tend to be chosen in real life. Although in theory a buyer has the choice of components from different sources, anyone who works behind the counter of a hi-fi dealer will recognise that this rarely happens in practice. Many people have a residual worry that buying a CD player from brand A and an amplifier from brand B will in some way result in incompatibility, or at least a less than optimum match; that synergy comes from having the same label on the front panel. There is less general concern about buying loudspeakers from alternative manufacturers, however. Most people understand that some manufacturers specialise in electronics, others in loudspeakers, and the visual differences of course only serve to reinforce the division.

The diversity of options available when putting systems such as these together is well illustrated by the differences in the systems actually submitted. One particularly interesting point that saw little agree-

ment was the proportion of budget allocated to the different parts of the system. To take two extreme examples, Mission chose a relatively costly CD player and some of the least expensive possible loudspeakers from their range, while Pioneer has taken the opposite course of action with a pair of loudspeakers that swallow up nearly half the total system budget.

A resourceful history

Through the course of hi-fi history, there have been different views on this subject. In the dim and distant past, it was usual to allocate resources according to an arbitrary (and it really was arbitrary) formula, typically 30 per cent each for the source and amplifier and 40 per cent for the loudspeakers.

Linn Products, whose *LP12* turntable revolutionised the market in its day (turntables previously were the chosen source for good sound quality for those who couldn't afford high speed half-track Revox open reel tape decks!) taught us that the source was of pre-eminent importance, and that the best sounding systems were the ones with the best turntables that could be crammed in at the price. Linn pointed to the computer industry maxim GIGO — garbage in, garbage out — to justify this position, which over the years had a tremendous effect on the industry by systematically undermining the market for big, costly loudspeakers. As a historical sidelight, Britain's powerful loudspeaker industry is even today largely associated with small loudspeakers; most of the large, expensive leading edge designs now come from the States.

Now that CD has become the preferred primary source of music in the home, the situation has changed. In fact, it has been almost imperceptibly changing for the last decade or so. By their nature, turntables reacted very badly to poor low frequency control in a hi-fi system, which militates against big, wide bandwidth loudspeakers. Compact Disc is quite different. The bass tends to go down almost to DC and is largely unaffected by the rest of the system, which makes it very usable.

Of course, garbage in still means garbage out; the laws of physics haven't suddenly been repealed. But the various components in a system can now be viewed in a much more even handed basis, and there are no clear rules to follow. Amps and speakers should be chosen together with regard to the loudspeaker's sensitivity and perhaps its power handling capacity.

The consequences of mismatching are often not as important as you may think, unless taken to extremes, for example by using very low sensitivity speakers with obviously puny amplifiers. The source can now simply be chosen on its own merits in the knowledge that the better it is, the better the final system will sound. This is a nice, egalitarian moment in audio history.



Arcam System

Arcam CD player, Arcam amplifier, Arcam loudspeakers

With a clear eye to the main chance, Arcam equipment is designed to attract customers who would otherwise buy Japanese. Their game plan firstly involves seducing the buyer with well designed exteriors that suggest mainstream products, with mainstream features and facilities (tone controls being an obvious example). Minimalism has no part in Arcam's products. The other part of the Arcam strategy is to provide equipment that meets specialist audio standards, despite being more heavily burdened with potentially sound robbing features than others.

The Arcam system chosen for this report is one of several that Arcam offer at more or less reasonable prices. The two *Alpha* products are among the best liked and most successful in their sectors of the market. The *Delta 2* also has a fine reputation, though for quality rather than absolute value as the *Delta* range is more expensive and intended to be of more exacting performance. The *Delta 2* nevertheless appears to suit the other components well and is compatible in technical and even aesthetic terms. But appearances can be deceptive.

Audioquest speaker cable and *Quartz* interconnects, which are distributed in this country by Arcam, were specified for this system, along with Sorbothane feet for the CD player which perform a similar job for this system as the Isoplat equipment sup-

port does for the Mission system. These cables were quite successful. The speaker cables gave a cleaner sound than equivalent Monster, and a better balance than Supra. Over short runs I would still opt for solid core cables, which give improved low level resolution and greater consistency, but in spite of this the Audioquest *Quartz* is a star. It was supplied in short lengths (50cm) which are ideal for the job, and gives excellent sound quality all round.

Arcam Alpha Plus Compact Disc player

In keeping with Arcam's conservative corporate character, referred to above, it is no surprise that its mainstream CD players persevere with Philips based multibit convertors. There is more to the *Alpha Plus* than meets the eye. The decision to stick with multibit has nothing to do with tradition or sloth. Given the Bit Stream hype in the early days it almost looks like commercial suicide to have stuck with multibit. Yet several manufacturers have done so, and Arcam is a prominent member of this minority group.

The *Alpha Plus* is based on the 16-bit *TDA1541* DAC, with a number of changes to the operation of the DAC and the analogue output designed to add a touch of snap and bite to a style of music making that was beginning to sound a tad lazy.

From the user's point of view, the *Alpha Plus* defines the mainstream. There's little of what might be described as spare baggage, but the *Alpha* comes with the usual set of search, repeat and programming controls, with index search and random track access available from the remote control, and a coaxial digital output on the rear. It's all very neatly executed in a low key kind of way, but if you want something to impress the neighbours, look elsewhere.

Arcam Alpha 3 amplifier

The Arcam *Alpha 3* was conceived as a response to the tremendous inroads made in Arcam's traditional marketplace by Japanese manufacturers such as Pioneer and Marantz. From a distance it looks like earlier versions of the *Alpha*, but it isn't, quite.

Controls cover bass, treble, source selection, tape monitor and 'direct' which bypasses the tone and balance controls. A headphone socket is fitted. Speakers can be connected to unswitched or switched outputs, the switch being the headphone socket. The unswitched output, in which the loudspeaker feed remains undisturbed when a headphone plug is inserted, offers theoretically improved sound quality, but although I fancied I could hear the effect on occasions, I'd hesitate to put money on being able to do so. On the other hand, when the amplifier gets older and the various contacts begin to

tarnish, the differences may become more obvious.

Earlier versions of the *Alpha 3* lacked the bypass facility, and gave 30watts per channel output while the new one is rated at 40watts. More important, the circuit has been improved in various ways to bring sound quality into line with the better competition. The *Alpha 3* also introduces some subtle but highly effective cosmetic changes. The new all metal control knobs and revised panel graphics are particularly effective, while the price remains very attractive. But whether this is the right amplifier for the *Delta 2* is a quite different matter, a point we'll be returning to.

Arcam Delta 2 loudspeakers

Arcam has never been heavily involved with loudspeakers, they have always been a second string product line. Arcam's first loudspeakers were introduced much later than its electronics, and new models have been slow in coming, and have tended to stay in the range a long time. Musically as well as physically Arcam's speakers have tended to veer on the conservative side of the line, but this is very much the Arcam house style anyway, and they have always been models of integrity and good taste. The *Delta 2* hardly breaks the mould, but is one of the company's better models. I nearly wrote 'nicer' but that wouldn't be strictly appropriate. The *Delta 2* is many things, but nice isn't one of them . . .

The *Delta 2* is a medium compact design rendered reasonably aerodynamic (by brick standards) courtesy of an enclosure of unusual depth, which increases internal volume without increasing the visual 'eyepoint' from the listening position. Reflex port loaded, the braced and damped enclosure is a solid lump of woodwork, coated in a choice of real wood veneers, black ash — from the well known black ash tree — or walnut. The bass driver has a vacuum moulded flared polypropylene cone and the small (20mm) tweeter has a soft dome. Provision is made for bi-wiring.

Also fitted is a carefully designed minimum diffraction baffle cover assembly. In the absence of a stand from Arcam itself, I used these speakers on the medium height frame stands supplied by Mission for the *780*, which is probably typical of the kind of stand that most dealers would offer for a system of this type. In fact the *Delta 2* is unusually sensitive to the stand used, and will audibly benefit from the use of more solid (and probably more costly) stands. This is not a speaker to buy if you intend to cut corners.

Sound quality

Given a certain base level of competence, which this system certainly has, there are few absolutes. It is simply not supportable to say, for example, that this system is no good, or conversely that it leaves all others for dead. That base level of competence means that good music should be there if only you can find out how to unlock it. Usually the secret resides in a combination

of factors; thorough running in of equipment, clean power supplies (not always within the user's ready control), adequate speaker supports, suitable cables and a hundred and one other frequently overlooked points. But I couldn't make this system sing.

I tried everything. I used each of the components separately in other systems and achieved extremely good results. In one key test I managed to make the *Delta 2s* sing with real passion and integrity with some rather fine Mozart piano concerto recordings when they were driven by a Pioneer *A-400*, but it seems that the combination of *Alpha* CD player and amplifier couldn't quite bring the required degree of authority and speed to bear, and the results were always a little sloppy, even off colour.

Don't misunderstand me. This was by no means a bad sounding system, but the Arcam is pitched against some very tough competition from other entrants in this project, and in this company it simply underperformed.

For a start, the system sounded distant. Everything was set back a long way from the listening position, much of it well behind the plane of the loudspeakers. Treble detail was good, but this was at the expense of some screechiness, and there was some loss of midrange body and weight.

There was no overall lack of bass, the music went down a long, long way when really called for and there were times when I was surprised how potent it could sound. In fact bass reproduction was far and away the most impressive feature of these speakers and of the system as a whole. Orchestral basses came across with genuine power and depth. The upper bass, however, was light and rather thin in tone.

There was some benefit to be had from placing the speakers about a foot or so from the rear wall, but there were increases in coloration when this was done, and experimentation is called for. The optimum speaker position will vary from room to room, by the way.

In the end I am forced to the conclusion that the *Delta 2* needs a rather more potent amplifier than the Arcam *Alpha*, which excellent though it is turns out to be under

qualified for this job. The Pioneer *A-400* is the obvious bargain basement choice. It is considerably quicker and sharper than the Arcam, and that seems to be what the system requires. Otherwise we're talking about real money for a much bigger amplifier, I'm afraid.

The CD player sounded excellent. It is indefinably right in much the same way that the system as a whole was indefinably wrong. It has poise, power and gentleness in turn, always in the right combination, and usually set in the in the context of a palpable and believable soundstage. Despite the harsh words above, I am not inclined to be too critical of the amplifier either. It can work really well, but in a way this is the problem. In this system, it could often be heard working at some almost subliminal level. The sound was never truly transparent, and never completely under control.

Conclusion

It is an unpalatable but unavoidable fact that although the *Delta 2* is a loudspeaker with tremendous capabilities, it is not particularly easy to exploit, and the *Alpha Plus* amplifier had the knack of rubbing it up the wrong way, emphasising weaknesses rather than strengths.

These weaknesses include a certain amount of cabinet talk, which in practice means some wooden, boxy colorations, which are best tackled with very solid stands, sometimes with a blob of Blu-tack at each corner instead of the usual upwards facing spikes.

Used with an amplifier capable of driving them hard, and of controlling them well, the sound comes alive. The coloration recedes and the music begins to tell.

I experienced just such performance standards with a Pioneer *A-400* amplifier and Arcam's own CD player, and from experience Arcam's own *Delta 90* amplifier should also prove suitable (the new *290* is unproven at the time of writing, but could be added to the shortlist). An alternative would be the slightly easier going *Alpha* loudspeaker, which was designed with this amplifier in mind, and which would probably have been a better choice.



GENERAL DATA

Compact Disc Player	£450
Remote control	yes
Headphone socket	no
Digital output	coaxial
Dimensions	43x8.5x29(wxhxd)cm
Amplifier	£200
Power output	40watts/channel
MC cartridge compatible	no
No of inputs (ex tape)	4
No of tape circuits	1
Dimensions	43x8.5x21.5(wxhxd)cm
Loudspeakers	£300
Type	2-way bass reflex
Recommended placement	open, on stands
Impedance	8ohm
Sensitivity	88dB
Power handling	70watts (approx)
Dimensions	22.3x28.1x37.8(wxhxd)cm



Aura System

Aura CD player, Aura amplifier, B&W loudspeakers

On one level, Aura is just another of a number of Britain's legion of cottage industry manufacturers, companies that over the years have produced simple, reasonably priced equipment of integrity which has been distributed without the benefit of multi-million advertising budgets through a comparatively small band of dedicated (typically BADA) dealers.

Aura fits the generalised description above in all respects except one: The company enjoys the patronage of B&W Loudspeakers, which is one of the biggest and most successful of all indigenous loudspeaker brands. For reasons that are not entirely clear, Aura has nevertheless continued to function in the role as a small, dedicated and apparently somewhat laid back producer of just a very small range of electronics products, which now includes two integrated amplifiers, a tuner and, most recently, a CD player.

To go with this system, you will not be surprised to discover that Aura has co-opted a design from its parent company in the shape of the B&W *DM620 Improved*, a full size, floorstander, and incidentally one of the only two such speakers in this project. Cabling is courtesy of bi-wire Cable Talk *Talk 3* for the speakers (two seven metre lengths for bi-wiring at £50 a pair) and Chord Co *Cobra* interconnects, which cost £46.

Aura equipment is available in the usual

sober black, but also in the chromed finish shown in the accompanying photos. The finish obviously mirrors the equipment surroundings (how could it do otherwise?) so the effect tends to differ from room to room. Like it or not, it makes an interesting change, and you can be certain it will turn heads. The B&W Zelda wood finish also sounds pretty exotic, but in this case appearances are (literally) deceptive. The finish is plastic woodgrain, not real wood, and the dark charcoal grey colour is little different from ubiquitous black ash, though the finer grain structure is an improvement. Or would be, if the finish was real wood . . .

Aura CD50 Compact Disc player

The *CD50* takes a well worn route in using key components from Philips. Following in the path established by Aura's fine but essentially conservative existing components, there's little here to cause surprise or consternation to the chattering classes. This is a neat, slimline player based on the CDM-9 transport in a new low-loading format especially designed for this model which facilitates an unusually shallow construction—the player is just 66mm high. Even so, it's a little taller than the amplifier which doesn't matter when they're stacked vertically—the Pentagram inspired design has an unusual stepped front to ensure this—but the two can't be lined up side by side. I under-

stand Aura is looking at the possibility of making taller feet available for the amplifier (and tuner) for those who want to use the two components side by side, but they do stack well, the amplifier on top, with negligible hum leakage or other obvious problems. This said, there was a noticeable improvement in sound quality when the two components were used side by side.

The converter is an SAA7321 single-ended bitstream processor, but the analogue output stage, based on selected Burr Brown FET op-amps, is an in-house design. So too is the servo board, which is said to offer tighter control over the laser than the standard Philips item, and reduced long term drift courtesy of a circuit that regularly monitors laser servo behaviour. The physical design of the transport has been subject to vibrational analysis (not at B&W by the way, but at a car research establishment), and is critically damped by a handful of strategically placed pads. Aura promises that the large area cover, which is thin, unsupported and therefore rather rattly, is to be improved in later production.

I was warned in advance that the player is unusually sensitive to mains polarity, which is easy to switch using the miniature figure-of-eight lead used here. This is true, one polarity (the optimum one changes with the local situation) produces a more focused and dynamic sound, and the difference in

my case was readily and repeatedly identifiable, though this too can be expected to vary from one location to the next.

Aura VA-100 amplifier

Aura's first product was the *VA-50*, and the *VA-100* is a straightforward, linear derivative with more power (50watts per channel) aimed at a slightly higher price point. It takes full advantage of the doughnut transformer shape in its low, sleek packaging, which like the CD player is dramatised by the (optional) chrome plated front facia treatment.

Elegance was one major aim of the design brief; simplicity of operation was another which has been achieved by a very simple layout based on a volume control, a source selector (phono MM/CD/Tuner/2xline) and a separate tape switch allowing real time monitoring from three head tape decks. A headphone socket completes the front panel furniture, while the only notable feature stage rear is doubled up bi-wire brass 4mm terminals for the loudspeakers.

The *VA-100* is notable for its use of comparatively modest value reservoir capacitors in the power supply. The 200VA transformer is more than juicy enough for the purpose, and allows the small reservoirs to be quickly recharged when drained. Converting this into real world terms, the *VA-100* is not intended for high level, continuous dissipation such as must be expected in sine wave testing, but is well optimised for real world transient-rich music waveforms, a conclusion reinforced by the limited heat-sinking provided. Early *VA-100s* evidently sometimes ran too hot, but rebiasing of the output devices (MOSFETS, chosen partly for their robustness) and other changes have cooled it down, and the amplifier is said to meet all European standards in this as well as other respects.

B&W DM620 loudspeakers

First launched a little over a year ago, the *DM620* is a freestanding two and a half way design which should be used well clear of room boundaries. In practice this means at least half a metre of free air between the rear wall and the back of the enclosures. The *DM620* has recently been upgraded to the *DM620 Improved*, which features important changes to the bass driver and the crossover. The former, which used a pressed cone with a separate glued surround, has been changed for a one-piece injection moulded cone formed with a welded surround. This has allowed a 'dramatic increase' in consistency, and a new variable thickness over the cone radius, which means that cone structural behaviour can be controlled in a more nearly ideal way. The changes have also allowed important simplifications to be made to the crossover.

Perhaps the most noticeable change to the user will be the modified voicing, which retreats a little from what has been described as a 'tizz and boom' type balance. Provision has been made for spiking, and the terminal block has been updated for one with better materials (nickel plated, high-purity copper) which allow easier bi-wiring.

Sound quality

It is B&W's *DM620* loudspeaker, which is what might be called a utility full-size model, that dominates the sound of this system. During the course of the tests I used this speaker in several systems, and spent some time with it plugged into the Pioneer (reviewed separately) which was supplied with the similar size though more costly and elaborately engineered Mission 753s, in an attempt to pin down exactly what it does. On the whole this turned out to be a waste of time.

Some loudspeakers are chameleons, changing in character transparently according to the music and the equipment in use, but the *DM620* has quite a strong aural character of its own, its personality being just mildly modified by the partnering equipment. The cables supplied with this system worked well, but the sound became a little slow and soggy when longish solid core cables were substituted, the inference being that the B&W needs to be firmly damped by the system amplifier.

So what is the *620's* character? Let's start with what it isn't; by no stretch of the imagination is the *620* a maximum information design. It swallows fine detail with impunity, and on some recordings it was virtually impossible to hear certain instrumental lines at all.

There is an area around 2kHz or so that is particularly affected, rendering certain percussion sounds less incisively and with a duller, dirtier tonal character than usual, and making many recordings sound rather distant. In general terms, the B&W added distance and scale to recordings — not necessarily a bad thing — but it detracted from the sense of focus and tangibility that is such a prominent part, to give just one example, of the Reference Recordings Compact Disc that came with the December '92 issue of *Hi-Fi Choice*.

The other side of the *620* is a speaker with a warm and emphatic, if sometimes slightly ploddy deep bass, and a smooth, slightly recessed treble from B&W's metal dome tweeter, which has developed over the years into one of the more refined and civilised of the breed.



The amplifier has similar capabilities. It is full and dynamic, and can fill a room with sound in a manner that suggests it has hardly drawn breath. It also behaves organically, breathing naturally and with none of the destructively excessive analysis that mars some amplifiers. It is not the subtlest or most graceful amplifier around though, and like the speakers it has a problem with fine detail, even when explicitly drawn.

The CD player is clearly a product of the same team. The system really doesn't allow it to sing in its full glory, but the Pioneer/Mission system did, showing it to be well voiced, with a perceptibly euphonic mid bass, and a slightly bland midband, though detail resolution was good, and the treble was smooth, if not as delicately hued as some. It is a fitting if undistinguished partner to the rest of the system.

Conclusion

If this system is to be summed up in one easy phrase it would have to be with the deceptively prosaic phrase 'user friendly'. In the first instance it is user friendly because the controls are few and well labelled, though in the case of the CD player a full set of bells and whistles is available from the well designed handset.

The system also offers a user friendly sound. A warm, cuddly and approachable sound that should prove resistant to listener fatigue. Although it is not strictly ideal, the deep, warm bass is a feature that many people will instinctively enjoy, and the positive, easy going quality of the amplifier is well judged to make the most of this quality. Worries over its robustness remain however, two samples tried switched themselves off intermittently — the second sample very intermittently.

Those who will react less favourably to this system are those who resent the floor area consumed by the speakers, and those looking for a system which is crisper and more analytical in tone. I count myself in this number — I think in the end I would find this system's limitations irritating — but this is not to detract from what by any standards is an enjoyable and attractive system which often gets close to the spirit of the music.

GENERAL DATA

Compact Disc Player	£400 black £450 chrome (as tested)
Remote control	yes
Headphone socket	no
Digital output	electrical
Dimensions	33.5x6.6x43(wxhxd)cm
Amplifier	£300 black, £340 chrome (as tested)
Power output	50watts/channel RMS/Bohm/both)
MC cartridge compatible	no
No of inputs (ex tape)	5
No of tape circuits	1
Dimensions	33.5x6.3x30.5(wxhxd)cm
Loudspeakers	£370 pair
Type	2 way + ABR
Recommended placement	open space, free-standing
Impedance	8ohm nom
Sensitivity	90dB/w/m
Power handling	100 watts (approx)
Dimensions	23.6x74.2x30.2(wxhxd)cm



Creek System

Creek CD player, Creek amplifier, Creek loudspeakers

Not long ago, Creek was a fully independent small company which built its name on value for money electronics, its most celebrated product being the 4140 amplifier which is included in the system tested here. A couple of years back, Creek was purchased by the TGI group which is also responsible for Tannoy and Mordaunt Short, but contrary to expectations at the time, the new management has been slow to develop the line, perhaps for fear of alienating a loyal band of owners. Nevertheless the product line is slowly growing. A long overdue CD player was added about a year ago, and a pair of Creek speakers are available, though if you peel away the green labels you will find a design that is close to the Goodmans *Maxim*. Together these items constitute a system that falls within the brief for the project. Well within in fact: even with a healthy allowance for cables, the system fell well within the four figure mark.

Creek CD60 Compact Disc player

Like many other manufacturers before it, Creek decided to take the Philips route to its first Compact Disc, but not as you might suppose Philips' Bit Stream. Instead it has adopted the TDA1541 16-bit, four times oversampling differential mode convertor, and if that's gobbledeygook, we're talking about the second generation of Philips con-

vertors (the first was 14-bit) which many thought would have been replaced by now by Bit Stream chips like the SAA7321. Bit-stream generally means simplified power supply requirements and allows cheaper circuit configurations.

Creek regards the TDA1541 as being intrinsically more 'tweakable' than Bit Stream equivalents which do more processing on chip, and are therefore harder to change using external circuitry (though this is not strictly true of the top DAC7 Bit Stream chipset). In the event, customisation is extensive. Rather than use one of Philips' standard PC boards, Creek has designed its own, and the power supply is quite different, with a low field toroidal transformer where Philips players normally use more leaky frame designs. Many of the components are specially chosen audiophile types, and the output filters and opamp are proprietary and quite original. 'Lots of power supplies, regulation and grounding' was how the player was described to me by Creek's designer.

To house all this, Creek has designed a case which is fully in keeping with the brand's traditions. It is, if you'll excuse the word, creaky. The display is not correctly centred in its cutout, and is too low to be seen properly from head on (the designer explains that it was aligned so that the track display along the bottom edge is invisible

from a distance to avoid visual clutter — which might have sounded like a good idea on paper), and the controls lack feel, though organisation is good. The loading drawer tended to stick at first, but loosened off, a known fault said to have been cured on recent production. The Creek has quite an extensive range of mainly useful features, including a switchable digital output and a display off button. It is also solidly built, courtesy of massive power supplies and a metal housing.

Creek 4140S2 amplifier

There's nothing very new about the 4140. Even geriatric is perhaps too recent a term for a style of amplifier design that went out of fashion with the Ark. Small and button bound, the Creek has nevertheless sought to keep more or less abreast of last week, say, and the S2 designation refers to a *Series 2* change that was introduced by the Tannoy group after the takeover. It consists of some minor modifications, mainly to the phono stage, designed to improve sound quality (of course). It also has a beefed up power supply, though there is little room inside the 4140's tight dimensions to do anything too radical.

One sure sign of the amp's relative antiquity is the very limited number of inputs. There are just four altogether, three if you omit the phono input, and just one is a full

tape circuit. Other widgets include tone controls. Construction is OK except for those horrible control buttons that seem to be indelibly associated with the marque.

Creek CLS-10 loudspeakers

The *CLS-10* is a miniature two way loudspeaker designed to achieve a respectable (but still limited) bass by being placed close to a reflecting wall surface. As noted in passing in the introduction, the Creek *CLS-10* is essentially a modified and upgraded Goodman's *Maxim*, itself a response to the old, dumpy looking Wharfedale *Diamond*, which for a number of years was the market leader of its type. There is nothing wrong in this; the *Maxim* was always a rather better speaker than the models whose success it was designed to emulate, and useful work has been done in the *CLS-10* to make it better still. The rather light miniature enclosure has been strengthened with internal bracing, and the small dome tweeter — in the Creek house colour, a sort of bilious green — is a definite improvement on the original vanilla Audax model.

Sound quality

It's as well to recognise your preconceptions (read: prejudices) when reviewing equipment. My knowledge of the evergreen *4140* amplifier is hardly extensive, but I have crossed its path (or it mine) on quite a few occasions over the years, and have always walked away from the encounter with ambivalent feelings. Yes it seemed like a nice amplifier, but it also seemed to me somewhat coloured and a little 'shut in.' I could accept its niceness, but I never fully understood its enormous and enduring popularity, though I was and remain happy to accept that the problem is mine, not necessarily the amplifier's.

My problem with it was that I felt short-changed. Nice as it was, it seemed to me to fail to get close to the edge. A veritable Volvo of an amplifier, when the music became dangerous, the Creek stayed sounding warm and safe. 'Ideal for the winter' one wit opined. With the current *Series 2* release, however, I feel the design is shifting in the right direction. There is still a suggestion of excessive warmth and coloration, and there is a degree of holding back in the sonic pictures it paints that diminishes the grandeur and scale of great music making. But I no longer feel short-changed. The amplifier has become subtler and therefore more interesting over the years.

One of the litmus tests I commonly apply is the orchestral music of Ravel, and in particular a rather beautiful but distant recording of his ballet *Ma Mère l'Oye* (Dutoit/Orchestre symphonique de Montreal on Decca). Ravel was a masterful orchestrator, and his scores tend to be complex in character and lush in tone. This one is no exception, the recording being full of surprising colours and changes in mood. It is extremely taxing for hi-fi systems to reproduce meaningfully, but the Creek system excelled, partly because its resolution of fine detail was of a very high order, and partly because

the equipment was good enough to order the detail in a musical way. There were no obvious, overriding colorations, the warmth of the amplifier being largely counteracted by the comparative leanness of the speakers, and the system rose to the challenge presented by the music wonderfully.

These comments say much about the speakers and the CD player of course, and over succeeding listening sessions it became obvious that the system had real synergy. The CD player shares with the amplifier an ability to reproduce fine detail without exaggeration, but unlike some of the competition it doesn't stick out uncomfortably, it doesn't sound obviously digital. It has its limitations, but they are scarcely relevant to this review. They only begin to show when the quality (and price) stakes are raised a lot higher than is the case here.

It is implicit that the good qualities I've described here apply to the speakers too, but they are also responsible for some of the system's limitations. These are simply stated: the system will not go loud. There is only so much air that the little bass cones can move before they stop following the strict instructions issued by the amplifier, and the sound begins to shut down. First the airiness at the top end goes, then the stereo image begins to recede. The impression of a wealth of detail is lost as the sound takes on a homogenised tone, and finally the sound begins to become honky as the little enclosure starts to become excited and impose its own intrinsic colorations on the music.

Symptoms such as these are common to many systems as the volume is raked higher and higher. The difference here is that it all happens at very moderate volume levels. Having set what I considered to be a perfectly reasonable 80-something decidedly average volume level (it really was 80-something too — I used a sound pressure level metre) for the aforementioned Ravel for example, the sound began to unravel (no pun intended) in the manner described when the powerful finale came around.

All of which doesn't matter too much if you inhabit a matchbox or student digs, or if you like your music gentle and neighbour-friendly even on your birthday. If you don't

happen to fall into this rather narrow and constricting category, however, you will end up frustrated by the system's propensity to compression, and indeed by the loudspeaker's obvious cabinet coloration when energised. Of course the coloration is always there, but it is much less obvious at lower replay levels.

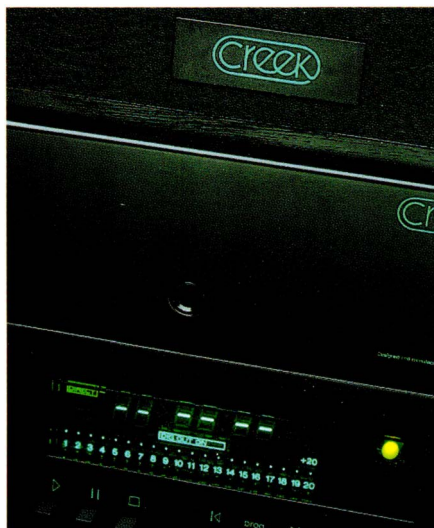
Conclusion

A key part of any system test must be to identify what type of buyer would appreciate or benefit from the system under test. In this case there are some obvious points apart from the necessity to get on well with the colour green. The system is built around a rather costly and high quality CD player, which is partnered with a warm but slightly laid back amplifier and a pair of low cost miniature loudspeakers.

The speakers are ideally used on tall stands with their backs all but touching the rear wall — stands were supplied for this purpose — but they can also be used on shelves. They are voiced in such a way that small changes in siting are not likely to have a calamitous effect on the music, and for this reason if no other, the Creek system is an easy one to accommodate. It doesn't eat up acres of valuable carpet space, and it could be used on standard bookshelves at a pinch without being higher than many of the books that surround it.

The predominant aural characteristic of this system is a cough and sensible sound at moderate volume levels. Even its most ardent fan would not describe the *4140* as a powerhouse, or claim that the speakers give much output below about 100Hz. Bigger compacts may have anything up to an extra octave on the bottom end, adding immeasurably to the range and richness of tonal colour, image scale and that indefinable yet important quality sometimes described as authority.

On the positive side, we have here a subtle and refined sounding system, a little polite perhaps but always unfailingly musical, and capable of doing justice to fine recordings when pressed. On balance, that 'ideal for winter' epithet is perhaps a little too harsh.



GENERAL DATA

Compact Disc Player	£500
Remote control	yes
Headphone socket	no
Digital output	coaxial
Dimensions	42x6.4x22(wxhxd)cm
Amplifier	£250
Power output	30watts/channel
MC cartridge compatible	yes
No of inputs (ex tape)	3
No of tape circuits	1
Dimensions	42x9x29(wxhxd)cm
Loudspeakers	£120
Type	2-way bass reflex
Recommended placement	near wall, on stands
Impedance	8 ohm
Sensitivity	86dB
Power handling	100watts (approx)
Dimensions	17x27x20.3(wxhxd)cm



Denon System

Denon CD player, Denon amplifier, Epos loudspeakers

OK, so put yourselves in the position of the folks at Denon. You handle Denon amplifiers, and you also act for Monitor Audio, a respected manufacturer of loudspeakers, and a brand it professes to believe in and which it sells to dealers nation wide. You are asked to assemble a system for the review in *Hi-Fi Choice* based on Denon electronics, and as Denon is scarcely a credible name in loudspeakers (ignoring a £100 pair that is generally sold with its systems), what could be more natural than to choose a loudspeaker from Monitor Audio?

Denon didn't see its job in quite this simple minded way. Instead of making the obvious choice, it came to the conclusion that the system needed something different, something perhaps a little leaner, more analytical, more in keeping in fact with the nature of the electronics. This is no insult to Monitor Audio, but a pragmatic decision to do things in a particular way by putting the music first. Not content to leave matters at that however, Denon shipped some suitably proved Monitor Audio loudspeakers, namely the Monitor 11 to illustrate the point. Cables for this system came from QED.

Denon DCD-890 CD player

I don't think Denon would object too strenuously if I suggested that the *DCD-890* is not the star of this particular show. It sells in the

crowded territory around £250, and is yet another in its continuing range of designs equipped with Lambda convertors, which is a proprietary multibit design using two DACs per channel in differential mode. It employs offset or bias signals, which are cancelled at the output to eliminate bit switching problems. Resolution is said to be 20-bit, and eight times oversampling is employed. Over the top few dB of the DAC's operating range the Lambda circuit is switched off to avoid overload, but by then switching errors are drowned deep in the music. Or so the theory goes.

The *DCD-890* is a comparatively inexpensive version of this technology, and holds few surprises for those who have crossed paths with other recent Denon players. You get the standard Denon display, a somewhat over bright panel with a thermometer type track status readout, and a wide range of play, search and programming modes, plus strong support for tape editing purposes. Those with Denon recording hardware can take advantage of the record sync socket fitted to the player.

Like most players in its class, the Denon has a digital output, but unlike most of them the output is electrical rather than optical, which will stand you in good stead if you decide to use an onboard convertor or digital recorder of some kind. A display off switch would have been nice.

Denon PMA-450 amplifier

The success experienced by Pioneer with the *A-400* and Marantz with the *PM40SEII* has had a galvanising effect on a market starved of sales volume by the recession. As a company not known for sitting on its backside while the market slips away in other directions, Denon decided to do something about it, and the *PMA-450* is the result. Like the other named amplifiers, much of the design work was done in this country, and the parent company was asked to build the amplifier to the specification decided on, though I understand that small but significant changes, presumably to expedite production, occurred between finishing the design and receiving deliveries from Japan.

The result is as you see, a simple, purposeful chunk of an amplifier with source and record selectors, independent switching for two pairs of speakers (I kept both sets of terminals switched on test, allowing the speakers to be bi-wired) and a split, friction coupled volume control. A headphone socket is also fitted. There are four inputs including an MM phono input and two tape circuits, the tape selector allowing the tape record-out source to be selected separately from the 'listen' selector, but that's about it. You will have noticed the absence of tone control networks.

Other design highlights of this amplifier are short, channel-symmetric signal paths, a

bare minimum of hardwiring, a large power supply and high quality components in critical areas, notably Ansar Super Sound capacitors.

The only thing missing from this 60 watt package is style. You can tell just by looking that the *PM450* was *not* designed by Porsche . . .

Epos ES11 loudspeakers

The *ES11* is the mainstay of the Epos range, and has now become something of a latter day classic. It uses a metal dome tweeter and a small plastic cone bass driver attached to a plastic baffle which incorporates the drive unit basket mouldings. The back panel is similarly constructed, and the two moulded panels are wrapped by a wood carcass, then clamped by four compression bolts running from the front of the enclosure to the rear. The *ES11* ends up being an extremely heavy unit and astonishingly solid too, with virtually no trace of overhang from the enclosure when excited by the rap test (basically you hit the enclosure sharply with the knuckles and then nurse the bruises).

The bass driver is operated without a crossover, which means it is coupled directly to the amplifier which exerts optimum control. A minimal network is used by the tweeter which would otherwise have to bare the full output of the amplifier, this would be impossible for any domestic tweeter to sustain.

A great deal of attention has been paid to minutiae of the design that are taken for granted or simply overlooked elsewhere, and the results are, predictably, special, though not everyone's cup of tea.

The *ES11* is superbly finished and looks like what it is — an extensively and expensively engineered product, with particularly pleasing proportions. A boundary design, the *ES11* is intended to be used hard up against a rear wall on open frame stands which were supplied for this test.

Sound quality

Er, um. Ho hum. Just playing for time here — what can I say? Last year a pair of the same speakers was submitted for a similar test, in that case partnered by a Roksan record player and Lecson amplifier. I wrote there that 'the system can't get its electronic voice around big orchestral works, and the subtle cobweb of . . . ambience was largely suppressed. The sound has presence by the bucketload, and the system does a tremendous job of bringing the musicians into the listening room, but they are divested of 'space' and the result sounds rather dry. . . The special factor here is that the Epos is not voiced like other loudspeakers; it has a pronounced mid/treble bias, and as a result you lose scale, architecture and sonority, and gain detail, precision and analysis. It's a straight trade, and in many smaller rooms, it's probably the right one. But it's not achieved without cost.' End of quote.

Too right. Many of the systems in this test are dominated by the loudspeakers to an extent scarcely anticipated by the contemporary orthodoxies in the days prior to

Compact Disc. But few systems are dominated so completely as this one. The *ES11* has certain predispositions, peculiarities if you like, which can be 'handled' by the right kind of system. In the case of the Roksan/Lecson system for example, the sound was of sufficient grace and warmth that the Epos worked well, though the predisposition to excessive leanness was still obvious enough, which explains the tone of the comments above.

The two Denon items, however, seem to underline everything that can cause problems in this design. The system very nearly comes to grief — I use my words advisedly — attempting to scale the brightly lit colours and astringent textures of Handel's *Eternal Joy of light Divine*, a typical enough vocal cum orchestral piece written to celebrate a royal occasion of some description. The vocal line became cold and inexpressive, and the orchestra lost much of its individuality and warmth. If I had been told the main orchestral sound was being reproduced by a squeeze-box I would not have demurred, but with the Pioneer/Mission system (used as a reference point for many of the comparisons in this test) there was no mistaking the size of the orchestra.

The coldness of the voice came as the real shock as much of the warmth and expression had departed from the sound. Indeed so striking was the shortcoming that I unplugged the bass unit leads and checked operation of each tweeter from close quarters, but whatever I did the sound was as though heard from just around a corner. The speakers failed to stir the soul — this soul anyway — and the music remained stubbornly locked into the apparatus used in its reproduction.

The sensuous, almost snake-like rolling chords of the first of Chopin's 24 Preludes (*Nikita Magaloff*) sounded clumsy and heavy, with a clattery piano sound above middle C. The bottom half octave fell victim to the *ES11*'s lack of grunt, though this at least is excusable. The *ES11* makes no pretence of being bigger than it is.

All this would have been explicable had I not taken the precaution of running the equipment in. The loudspeakers received an

extra long stirring during this phase as experience has taught me that many high resolution speakers, especially those with metal dome tweeters, take quite a long time to settle down.

I also experimented with siting and angling, but the original setting, with the tweeters at just above ear level and pointing more or less directly at the ears, turned out to be close to optimum. In any case the sound didn't vary too much over quite wide vertical and lateral arcs. Whatever other problems there may be, the Epos *ES11* produces a pretty homogenous soundfield.

The upside is that although the *ES11* may be a bit soulless, it has the control and precision of a ballet dancer. It has a very firm, positive quality that anchored the sound solidly in space. It presented music forcefully, but needed something from the drive electronics that this system wasn't supplying. The Monitor Audio loudspeakers sounded a little blurred and amorphous in this company, but it is arguable that despite this their rather comfortable, lucid quality was more in tune with the capabilities of the amplifier, which was plainly stretched by this high resolution amplifier, and by the CD player, which though lively was somewhat unrefined.

Conclusion

Substituting alternative electronics, including an amplifier from Copland and a new CD player from Meridian, showed that the Epos can do more than is demonstrated by the Denon amplifier and CD player, which has a residual rawness that the speaker seems to leap on and highlight.

With well behaved electronics the sound tends to become more civilised and wide ranging, and the mid treble loses that unmistakable cold quality, but the raw — perhaps unpalatable — fact is that the amplifier in particular and the Compact Disc player to a degree simply don't belong with these speakers. The Epos didn't do well with the Denon electronics, but the Epos is not really at fault. With care in the choice of partnering equipment and setting up, there is no reason why the *ES11* should not deliver to a very high standard.



GENERAL DATA

Compact Disc Player	£270
Remote control	yes
Headphone socket	no
Digital output	coaxial
Dimensions	43.4x12 x28.8(wxhxd)cm
Amplifier	£250
Power output	60 watts/channel
MC cartridge compatible	no
No of inputs (ex tape)	4
No of tape circuits	2
Dimensions	43.4x13.7x 34 (wxhxd)cm
Loudspeakers	£350
Type	2-way reflex
Recommended placement	on stands, near wall
Impedance	8ohm
Sensitivity	87dB
Power handling	75watts (approx)
Dimensions	37.6x20x25(wxhxd)cm



Marantz System

Marantz CD player, Marantz amplifier, Marantz loudspeakers

Marantz is a company with a past. Founded by the legendary Saul Marantz in the US in 1952, Marantz produced some classic products including the *Model 10b* (designed by Dick Sequerra) with a built in oscilloscope, and the *Model 7* preamplifier, both designs that helped define and establish the high-end. Production was eventually moved offshore to Japan, and when the company fell on hard times during the Seventies, it was taken over by the European multinational Philips. Today, Marantz, Philips and Technics DCC decks are rolling off Marantz production lines. There has always been a certain amount of friendly rivalry between the Marantz and Philips sales organisation, Marantz often having greater street credibility, and creaming off a lot of sales, notably of Compact Disc players, that would otherwise have gone to Philips.

The system chosen by Marantz to represent the marque is interesting. It features the *PM-40SEII*, Marantz' equivalent of Pioneer's *A-400* — the two were released simultaneously to a similar brief, with similar styling and at the same price — and the latest version of the *CD52* Bit Stream CD player. The loudspeaker is a new and idiosyncratic looking design called the *DS220*.

Marantz didn't supply cables or other accessories for this system, but did make some suggestions. The prime one for loud-

speaker cables was the somewhat impractical suggestion of using Furukawa speaker cable at no less than £50 a meter, which except in the very shortest lengths simply wouldn't be cost effective in a system of this type. The real world alternative suggested was to use solid core cables such as Heybrook *Heywires* or the Chord equivalent. I substituted DNM solid core as I had neither of these types to hand.

Marantz CD-52II Compact Disc player

Marantz held itself aloof from the headlong lemming-like rush into Bit Stream conversion a few years ago, but finally succumbed, first with a short-run model of no great distinction called the *CD-41*, and latterly with the *CD-52*, which was an altogether more carefully considered and successfully implemented Bit Stream design based on the *SA47350* DAC. The *SE* (Special Edition) upgrade was produced soon after, and featured a change from Signetics output opamps to a special JRC type, plus a bunch of high grade capacitors in the power supply and output stage sourced from Black Gate and Silmic. The *52SE* also featured a rubber damper on the clock crystal to reduce noise, and the output decoupling caps were changed from a single polarised type to back to back Silmics to operate in a non-polarised configuration. As usual, the *SE*

modifications were performed by an outside contractor who removed unwanted components from the completed PC boards before replacing them, an inevitably labour, and therefore cost, intensive operation.

Marantz then realised that most of these changes — the single exception being the back to back output decoupling stage — could be incorporated into the Philips production lines at minimal cost. This is the genesis of the *CD52II* which for £230 offers virtually everything that was previously offered by the *CD-52SE* at £280. There has been a degree of confusion about this model since some early samples (but not, Marantz insists, production models) escaped without the full set of changes having been carried out. I report this as told, I have no further insights into the story except that the player submitted for this test appears to be kosher. By the time you read this there will be an *SE* version of the *52II* with an improved transformer and other changes, to sell at £300. Those interested in this system might wish to consider this option.

The *CD-52* has a full set of operating controls, with random track access keys on the player and the remote control, extensive programming, a double FTS (Favourite Track Selection) memory and a well designed and comprehensive display. One tip: don't use the headphone socket for serious monitoring as the sound audibly breaks up if any

SEPARATES SYSTEMS

appreciable level is demanded with medium impedance headphones, and is therefore next to useless.

Marantz PM-40SEII amplifier

In contrast to the *CD52II*, the *PM40SEII* is almost too well known to need introduction. Last upgraded about a year ago, this 50watt per channel amplifier is a classic minimalist design with front panel controls covering source switching and volume control, but is otherwise largely gimmick free. It is designed to drive a single pair of loudspeakers or headphones, and will handle all types of phono cartridge and up to two tape decks.

Throughout its lifetime, the *PM-40* has been seen as the natural alternative to the more glamorous Pioneer *A-400*, with the slightly softer edged Marantz being arguably better suited to life in the company of its price peers, while the Pioneer often makes less sense with such equipment but works better with high grade source components and loudspeakers. On the subject of loudspeakers . . .

Marantz DS220 loudspeakers

The *DS220* is a new and initially rather untidy looking medium size two way stand mounting loudspeaker. Head on, the *DS220* looks like a big, black throat lozenge, which is handy as I was suffering from a throat infection as I was preparing this review.

The cut away corners demand a more elaborate physical design so as not to lose strength. Therefore, the enclosure is internally braced, uses a lot of glue and is extremely solid. The tweeter has a 19mm titanium dome, chosen above aluminium because it is softer and therefore has a better damped HF resonance, which in any case is pushed well up the audio band by its small size and weight. The bass driver has a paper cone, chosen in preference to synthetic materials for its greater 'speed', which allows it to integrate more successfully with the very quick metal dome tweeter. Marantz has taken advantage of the small tweeter's good dispersion to design the *220* for inverted operation, maximising the distance between the bass unit and the floor. Experiment suggests that the speaker should be used near, but not hard up against the rear wall of the listening room.

Sound quality

The amplifier and CD player have a tremendous reputation. On past form Marantz is an uneven source of loudspeakers, and for most people, this writer included, the big unknown in this system was the *DS220*. First indications were that it was a let down. The sound was woodenly inexpressive, the bass unimpressive, and . . . well, you get the picture. The packaging had been opened and I assumed that the review samples had been run in, but evidently that wasn't the case since within the space of a few hours the sound went all the way from being raw and inflexible to being surprisingly subtle and organic. A range of rather coarse colorations simply vanished into thin air.

One Ravel recording showed the *220*'s

capabilities, and another its limitations. The first, a typically lush orchestral piece, reproduced with a deliciously sultry quality. The speaker not only reproduced a tremendous amount of detail off disc, it did so without pulling the music apart, or exaggerating particular parts. The effect was very together and ultimately very enjoyable.

The second Ravel piece was a piano recording. Pianos are notoriously difficult to reproduce, and it was here that the Marantz *220* demonstrated its limitations. In this case it sounded mildly defocused. Transients didn't happen quite as forcibly as I would have liked, and the range of tonal colours was perceptibly sweetened and lightened, though I liked its openness and vivacity, its midband clarity and its general integrity. On balance the good clearly outweighs the less good (even the bad is too good to be called bad, if that isn't too confusing). This is an archetypal good value loudspeaker that would do credit to anyone's produce range.

The making of this system, however, was the amplifier and CD player. I have always liked the *PM-40*, and it seems to me as good as ever, albeit in a rather undramatic way. Its treble is refined and clean, and the musical pictures it paints are colourful and authoritative. In combination with the rest of the system it demonstrated surprisingly good timing when this aspect of performance was explored with some of my favourite jazz and blues material.

I was equally happy with the CD player, which has remarkably similar properties to the amp, even down to slightly restrained quality. Perhaps because an early sample I looked at some months ago wasn't quite what it purported to be (see earlier), but possibly for other reasons, the test sample provided superior performance, and is now probably second to no other at the price. Put it another way, £220 is a significant bargain for such an accomplished player. The bass was assured, the midband expressive. I was impressed by the Marantz' natural string colour, its lack of grain when instruments such as violins were played at close quarters. Vocal quality was also open and articulate, a quality that was propagated through the system as a whole.

The only quality I did feel was slightly shortchanged by this otherwise promising and capable system was a certain feeling of liveliness and vitality provided, for example, by the Mission *780* loudspeaker which was specified for two of the other systems tested. The Marantz always sounded as though it was holding a little in reserve, though the resulting mildly understated quality was no bad thing.

Conclusion

Curiously, one of the features of this system that might attract criticism from the less technically aware is its complexity. The amplifier is an avowedly pared down design with few if any unnecessary controls, yet it has managed to spoil its essential simplicity with an unnecessarily fussy implementation of the tape switching. The CD player makes no pretence of being a minimalist product in any sense, and is chock full of controls. It is not always immediately obvious from examination how they all work. On the other hand the player comes with a remote control which at least means you can get confused in the comfort of your favourite armchair. The player's display is clearly laid out, but also somewhat complex, and in common with other Marantz players it is not possible to turn this one down or off.

Musically there are no such qualms. It offers a particular style of music making, with an almost calm, deliberate stance that suits certain types of music better than others. I don't see this as an archetypal rock system. As it happens it can be played quite loud without compression and it has great timing into the bargain, but it carries less conviction here than it does when reproducing acoustic instruments and voices, which is definitely the Marantz's forte.

This is a system of some sophistication. It doesn't diminish the music it is playing, and it doesn't exaggerate or conceal subtle background noises or the myriad of incidental sounds that define the difference between a real musical event and a simulacrum. It is tonally near accurate, with a trace of added warmth, and when the speakers are optimally positioned, stereo reproduction has good width, depth and body.



GENERAL DATA

Compact Disc Player	£230
Remote control	yes
Headphone socket	yes
Digital output	coaxial
Dimensions	42x13.7 x28(wxhxd)cm
Amplifier	£250
Power output	50 watts/channel
MC cartridge compatible	yes
No of inputs (ex tape)	4
No of tape circuits	2
Dimensions	42x11.8x29(wxhxd)cm
Loudspeakers	£300
Type	Compact inverted 2-way bass reflex
Recommended placement	on stands, free space
Impedance	6 ohm
Sensitivity	90dB/w/m
Power handling	60 watts continuous (approx)
Dimensions	23x36.5x26.5(wxhxd)cm



Mission System

Mission CD player, Mission Cyrus amplifier, Mission Cyrus loudspeakers

Scratch a dyed-in-the-wool audiophile, and he is quite likely to do something antisocial, like pontificating about the logical ranking order of different components in a hi-fi system. When turntables reigned supreme, received wisdom was that the turntable played a dominating role in the sound, an idea that held sway until only a few years ago, and which led to the sale of thousands of systems with extremely costly turntables and ultra-low cost loudspeakers.

GIGO — Garbage in, garbage out — was the quick and dirty rationalisation for this policy, but the idea worked, frequently producing stunning results from some unlikely systems. The reason this worked was perhaps because of the inadequacy of most turntables, and the problems that large, high resolution speakers caused to typical systems of the day.

The absolute pre-eminence of the source has been challenged by the introduction of Compact Disc which doesn't show the gross variations in standards with price, or the more obvious physical failings of records which lead to such nasties as gross feedback. As a result, these days we tend to take a much more relaxed, even handed approach to system choice, but this system serves to highlight that old debate in a new context. Here we have a relatively costly CD player with what might be called a lower-

middle class amplifier and loudspeakers, and the result of the test serves to show that there's life left in acronyms yet.

The system was supplied with an *Isoplat* equipment support — basically a rectangular piece of faced chipboard set on compliant Sorbothane feet — which was used to excellent effect with the CD player. The £29.95 *Isoplat* represents a middle course between the use of costly (and not always effective) equipment supports and using nothing at all, and it is now a well proven item that works consistently well. In the case of this system, it could be detected in blind comparisons as a deepening and extra focus in the stereo soundstage. Nothing dramatic mind, but well worth having.

Mission supplied bi-wire Mission *Solid core* cable for this system, which is one of the cheapest cables on the market at £2.50 a metre. Because it is more resistive than many specialist cables, it is best in short lengths and benefits disproportionately from bi-wiring. Like other solid core cables, it gives a more focused result at lower and middle levels, free of the hash and grain associated with complex multistrand cable constructions. Also included are pedestal stands for the loudspeakers, costing £75.

As a point of interest, Mission equipment specified for this project is not limited just to this system. The 753 loudspeaker was nominated by Pioneer to accompany its

amplifier and CD player, and the 780, another speaker, was specified by Rotel (see separate reviews). Note that the Pioneer system was based around the use of an inexpensive amplifier and Compact Disc player to drive large and relatively costly wide-bandwidth loudspeakers, the very opposite of the approach used here.

Mission DAD5/DAC5 Compact Disc player

The *DAD5* is only Mission's second CD player, and it breaks few of the rules of CD player design. Under the skin it is a Philips model, made on its production lines for Mission. Some mild customisation has been included, but in its essentials it is standard stuff. It is built in much the way that other recent Philips models are built; a plastic base with some internal reinforcement, and a bent tin lid. The strong front panel treatment is unusual and vaguely interesting, but the model is otherwise chiefly remarkable for its comparative simplicity, the usual gaggle of minor extra controls being consigned to the remote control.

The electrical hardware is also mainstream, the convertor being the popular and generally well liked Philips SAA7321 single ended Bit Stream chip.

The real interest here lies with the *DAC5*, which is a small self-powered digital convertor that sits alongside the *DAD5*. Mission



Musical Fidelity System

Musical Fidelity CD player, Musical Fidelity amplifier, Musical Fidelity loudspeakers

Musical Fidelity is nothing if it is not prolific. The company has grown from its roots as a purist amplifier manufacturer to a very successful exporter, now producing a range of products including CD players, tuners, amplifiers (still its core business) and loudspeakers.

The pre and power amplifier used here was supplied with its own dedicated balanced interconnect, though various lengths are available, allowing the power amplifier to be used remotely, that is as close as possible to the loudspeakers. The manufacturer did not specify other cables for this system, or supply stands for the loudspeakers, and after some experimentation, I proceeded with Roksan interconnects and Mission solid core, though there was some evidence that this system is a little less sensitive to cable types than some of the other systems which might be described as more highly tuned. Epos *ES11* frame stands were used for the speakers.

Musical Fidelity CD2 Compact Disc player

A sexy looker, the *CD2* epitomises the dichotomy apparent in many Musical Fidelity products. It looks wonderful. The player is built into the same basic casework first used for the *B1* amplifier, and was subsequently used by the second Musical Fidelity tuner to wear the *T1* name (not many manufacturers

can boast of running two successive and quite different models with exactly the same model name). The *CD2*, however, is the first to look really comfortable in its own skin, and in my opinion is the first truly successful looking product in this style. Close up, however, the lack of attention to detail shows. The controls look and feel poor, and the display is on the tacky side. You need to take a good step back to get a feel for the design strengths.

Typically, Musical Fidelity has concentrated on the main reason for having a CD player; to play discs. There is very little else you can do with it apart from selecting tracks or cueing particular sections of a track — or when you want to catch your breath — select pause. These things can be operated by the supplied remote control handset.

The long and honourable list of omissions from the *CD2* include a headphone socket and a digital output. The former won't upset many, and the latter may not seem particularly important at first sight. After all, who would seriously contemplate buying a machine of this type with a view to adding an outboard DAC, given that such a move would inevitably only make sense if the transport was being upgraded at the same time. But this isn't the only reason for digital outputs on CD players.

Anyone contemplating adding a digital recorder to a system, be it DCC, MD or DAT,

will want to be able to dub digital source material in the digital domain. The *CD2* won't allow you to do this.

Musical Fidelity The Preamp/Typhoon pre/power amplifier

This system is one of just two in this project to be built around component pre and power amplifiers. But this pre/power amplifier is very unusual, if not unique, in being a dedicated pair — separated for convenience only — which is not designed to be used with foreign preamps or power amplifiers. Communication between the two components is based exclusively on balanced circuits, using XLR connectors which aren't exactly commonplace in this country. In the form supplied for this test, the amplifier delivers 45watts per channel, but a second power amplifier can be added, which increases power output to 150watts per channel. The means by which this is achieved involves a change in the pre/power amp wiring, and reconnecting the speakers using a different combination of the same sockets. No switching or reprogramming is required.

There is no phono input, this amplifier handles line sources only and up to six can be connected. The input selector is marked as follows; CD, Tuner, CDV and Auxiliary, plus Tape 1 and Tape 2. The record and listen selectors point towards each other,



Pioneer System

Pioneer CD player, Pioneer amplifier, Mission loudspeakers

Few producers of high fidelity equipment better show the changing face of the industry. Pioneer, a large, commercial organisation, has joined the ranks of the audiophile brands, producing mainstream products at popular price points that combine Japanese production expertise, cost control and distribution with audiophile sensibilities and performance standards. Pioneer's strengths are limited to certain areas, however.

Amplifiers, CD players, cassette decks and tuners are the strong points, but success with loudspeakers has eluded the company. Pioneer has therefore nominated the recently introduced Mission 753, a distinctive and sharply priced loudspeaker that is selling like hot cakes. No cables were specified or supplied; and I chose to use Roksan *Isolda* interconnects and Mission *Solid core* cable in five meter lengths in bi-wire form.

Pioneer PD-S801 Compact Disc player

This player gets about as close as Japanese makers get to the kind of minimalist ideals that inform the true specialist producers. The general shape and presentation of the player is conventional enough, but only the major controls have been incorporated onto the front panel — minor ones are still available on the remote handset — and the display itself can be switched off.

It is even possible to turn off the electrical digital output, or the analogue output when the digital feed is in use, though the usefulness of the electrical feed is compromised as it takes the form of a single TOSLINK optical connector. Even those who don't go a bundle on minimalism will appreciate the clear, open and friendly set of controls that remain.

The discs are loaded upside down, the label side being supported full width by a record player-like platter. I only mention this because it's such an unlikely thing to do that I invariably forget, and count the design as a damn nuisance.

Pioneer A-400 amplifier

The *A-400* is a restrained and even elegant looking integrated amplifier featuring a 50 watts per channel power output and inputs for phono (MM/MC), two tape decks and three line sources. A separate tape selector allows the tape output to be defeated, to track the source selected, or to be fixed on tuner or CD, and also allows tape to tape dubbing in either direction.

Balance is adjustable by differential operation of the split, friction-coupled volume control, and a headphone socket is provided. And so endeth the description which is otherwise unremarkable but is at least unspoiled by needless buttonry or tomfoolery.

Mission 753 loudspeakers

Without delving deeply into the design of the Mission 753s, there are certain points that must be made. First and foremost this is the largest loudspeaker in the test, only the B&W (see *Aura* system) which is a bit broader in the beam and a few inches shorter, being in the same ballpark. Yet for most people the 753 will be no more intrusive than much smaller loudspeakers.

The enclosure extends downwards seamlessly all the way to the floor, to which it interfaces via spikes which are disguised by a neat plinth. Compare and contrast this to the usual mass of ironmongery that most of the other speakers seem to require before they work at their best. As the speakers are unusually narrow, the floor area consumed is less than is the case with the majority of stand mounted loudspeakers. And because they're designed to be used in firing squad mode — with their backs to a wall — there is very little intrusion into the listening room.

Furthermore, the 753 is an unusually attractive design which is covered in real wood finishes, with faceted edges and corners designed to further reduce the visual impression of bulk.

The speakers Mission supplied for this test were the black woodgrain version, but from experience the walnut alternative is much superior.



Rotel System

Rotel CD player, Rotel tuner/amplifier, Mission loudspeakers

Rotel decided to specify a Mission loudspeaker to accompany its choice of electronics — Mission did the same. A couple of years or so ago this wouldn't have been necessary, as Rotel was still selling its *RL850* loudspeaker. Since then that model has been discontinued and not replaced, which is more a tribute to the strengths of the indigenous loudspeaker making industry than a reflection on Rotel's ability to turn out a presentable noise box.

The advantage of the common loudspeaker choice was that it enabled direct comparison between the rather different approaches of the two manufacturers towards the electronics of their respective systems. While Mission used a relatively costly CD player (£600 for player and convertor combined) and an inexpensive amplifier, Rotel did the opposite. Its system includes a relatively inexpensive (£300) one box CD player, paired with a two box amplifier whose preamplifier includes an FM/AM tuner. Because the tuner is built in, it is not possible to say exactly what the preamplifier alone would cost, but starting with the brochure description of the preamp section as being similar to the £150 *RC-960BX*, and as the power amp costs £200, we arrive at a combination priced at about £100 above Mission levels (the Mission *Cyrus One* costs £250), and over twice as powerful.

Loudspeaker cables supplied were from

Supra, which has a finely stranded but otherwise conventional construction. Attractively priced, it has been distributed by Rotel for roughly the last decade.

Rotel RCD-965BX Compact Disc player

A classic package, the Rotel *RCD-965BX* is an extensively customised player based on Philips components, notably the SAA7323. This is an updated variant of the SAA7320 single ended bitstream DAC used in the *RCD-865*, the *965's* predecessor. The *865* was the first true bitstream model and hit the market several years ago, beating Philips' own offering by a few weeks.

Apart from a change in the DAC itself, the *965* also differs from its predecessor in the more purist approach to circuit configuration. The main circuit layout is now highly channel symmetric, and makes extensive use of specially selected components, notably capacitors, in the audio signal path.

A neat remote control is included with this player which is otherwise simply and attractively laid out in a manner calculated to cause few problems for those who are technologically illiterate.

Rotel RTC-950AX tuner preamp & RB-960BX power amplifier

The *RTC-950AX* sets the agenda for the system as a whole. It is a preamplifier (Con-

trol Amplifier in *Rotelspeak*), which also incorporates a high spec tuner section and remote control.

As a preamplifier, the Rotel is surprisingly flexible. There are two tape circuits, three line inputs and a moving magnet phono input. There is even a processor loop, a rear panel patch which allows, say, a Dolby Pro Logic processor to be added for those interested in home cinema applications. There are also two parallel sets of outputs which could be used to drive two stereo power amplifiers in multi-room applications. Well engineered tone controls that don't interfere too much with midband reproduction are also included, but these can be bypassed when not required.

Combining a tuner and preamplifier in a single box is unusual in this country, where such combinations have never been flavour of the month for reasons that are probably as much to do with history and fashion as any other factor. In an ideal world all the component parts of a hi-fi system would be housed separately, but there is a real synergy between preamplifiers and tuners, especially as they both operate at low voltage levels, though radio frequency interference is a potential limiting factor unless great care is taken.

The tuner section covers all the Medium and Long Wave in addition to FM stereo, which gives complete coverage of UK origi-

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Other new items eagerly awaited are the AVI tuner; the AMC CD6 CD player to complement their truly great bargain, the CNT3030 hybrid valve amplifier. This £470 integrated amplifier really does upgrade many a system.

On the loudspeaker front the new RUARK TEMPLAR floor standing units, the SD4's plus the JAMO pro-logic surround sound system 4 setup are all worth an audition. Constantly changing, please ring for latest situation.



Choosing and Using . . . Turntables

It is often amusing watching people attempting to justify the purchase of a turntable these days. Walk into the average high street record store and it's like vinyl never existed. Enthusiasts now have to work harder for their slabs of black plastic. It looks like the next year will be even worse for the vinyl junkie.

However, the turntable has a long way to go before it ceases to be of use. Those scouting around for reissues of material on CD often have access to the original recording on vinyl, at a greatly reduced cost. The second-hand market is looking healthier than ever, although the increased demand has forced prices up considerably in the past few years.

With CD now dominating the album market, some have decided to 'go digital' and sell off their entire analogue collections, so there are still bargains to be had. Both second-hand shops and record fairs are known haunts of today's vinyl buyer, while the hum-

Long live turntables? Jason and Alan take a look at what's on offer to keep your vinyl collection alive.

ble carboot sale can often be a gold-mine for cheap LP gems, although not all in mint condition.

A good rule of thumb here is to look at the number of records that are worth playing in your collection, multiply that by the cost of a CD reissue and weigh that figure against the cost of a new record player. If you have several hundred albums, in fair to good condition, purchasing a top flight turntable can be more economically viable than replacing them with Compact Discs.

Besides, there are more subjective reasons for buying a turntable and records. It is only comparatively recently that reviewers and audiophiles have accepted the CD and some still look on it as a necessary evil. Generally turntables have a sound that is softer on the ear than similarly priced CD players.

Having to place the record on the platter and then cue it adds a satisfying sense of ritual to the whole procedure. Conversely, most CDs disappear into a drawer, giving the experience a 'hands off' feel. Even the size of an analogue record is more satisfying, giving a tangible package for the money as well as allowing the cover artist greater scope.

In the Seventies and Eighties, the hi-fi industry developed a hierarchical philosophy. The front end was king, getting the lion's share of the budget in any particular system. As the turntable is principally an exercise in mechanical engineering, this hierarchy was largely justified. Building a better turntable involves improved tolerances in production and solid craftsmanship, both of which cost money.

Today, this hierarchy has been overthrown with the dominance of the CD player. Compared to vinyl, the difference between cheap and expensive CD players is comparatively small. Although the quality of a high-end CD player justifies its use in an expensive system, using the same player in a cheaper system will generally not bring about the vast levels of improvement that a similarly priced turntable would.

Buying a turntable today takes us back to that hierarchy principle once again. Those with an expensive system will find that tacking on a cheap turntable is worthless, while adding an expensive turntable to a cheap system usually pays dividends.

The same applies to the choice of cartridge. Generally, stick to the cheaper moving magnet designs on less expensive decks, while dearer turntables can sustain a reasonably priced moving coil cartridge. With regard to high-end decks, when they are combined with good arms the sky's the limit as far as cartridges go. It is always wise to check the amplifier's capabilities first, however, as it may not have provision for a moving coil cartridge.

Best Buys

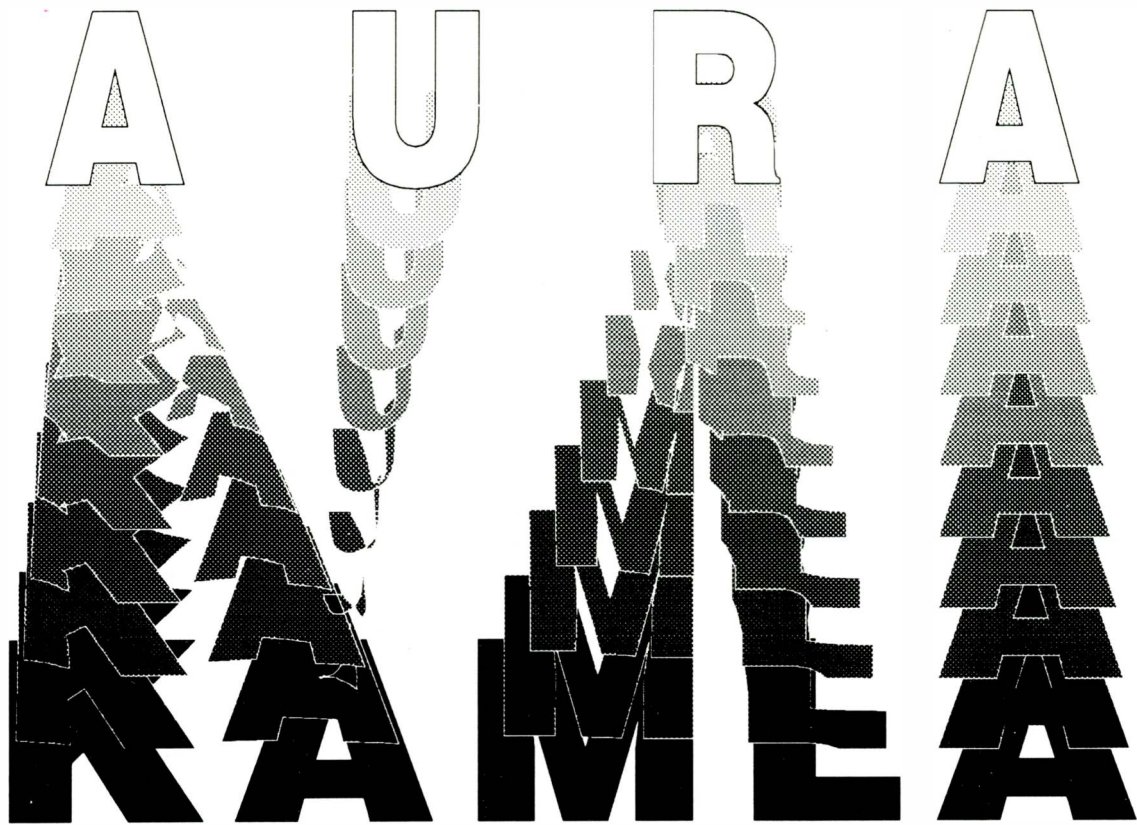
There were few contenders for the Best Buy crown in this group of final vinyl spinners. Although all the turntables were of merit, in their own ways, only the Thorens *TD280/IV* warranted Best Buy status. Why? With turntables of this price, it puts in a performance that can't be bettered. In addition, the build quality is very solid and the new arm design adds a level of refinement and fuss-free tweakability not seen in such an inexpensive deck before.

Recommendations

This is where the choice becomes more laboured. In theory, all the turntables in the test deserve Recommendation, with even those that fell short of the mark being worthy of merit and well worth a listen. At the budget end of the scale, both the Systemdek *I.920* and the *Project 2* are built of good stock. The *Project 2* came mighty close to a Best Buy due to its laid back character, but the design of the arm let it down. At the other extreme, the new Systemdek *I.920* is packed with life, but the £50 price hike for all that extra isolation takes it out of the Best Buy league.

The excellent Michell *Mycro* offers a scaled down version of the sound of the original *Gyrodec*. It will not support very expensive cartridges, nor will it shine in a high-end system. Yet for the money, the *Mycro* is capable of conveying the music with sweetness, air and space.

Of the more expensive turntables, the Pink Triangle *Export GTi* surprised us with its clearly defined mid-band and neutral, easy going performance. It is not as dynamic as some, but does get admirably close to the master tape in many respects.



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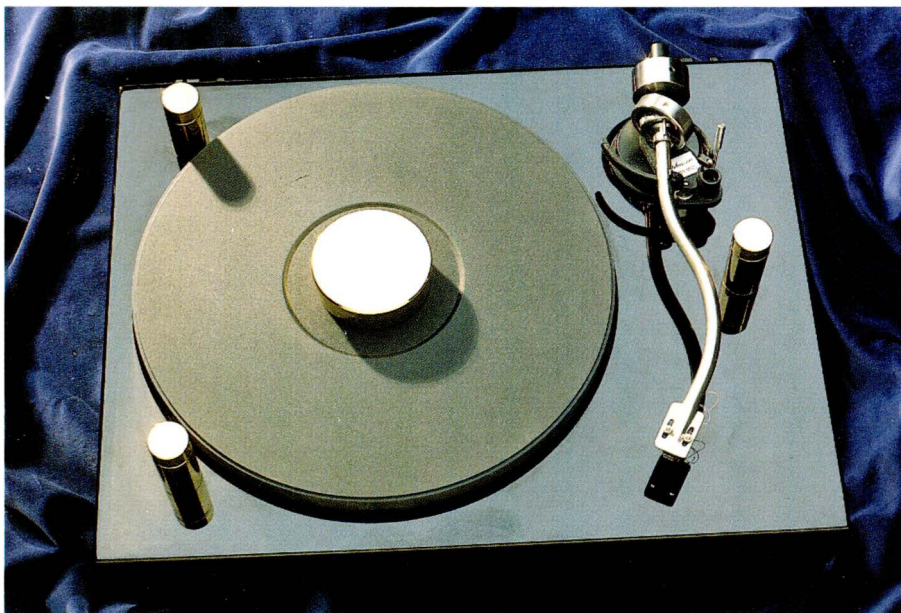
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Alphason Symphony

Alphason Designs Ltd, Unit 2, Linstock Way, Wigan Road, Atherton, Manchester M29 0QA. Tel: (0942) 897 308



Based on the classic Eighties turntable, the *Sonata*, the up-market £1,860 *Symphony* is Alphason's turntable statement for the digital Nineties. Designed to rest upon Alphason's *New Concept* furniture (that comes to £210 in its full guise) and to be used with both the £549 S-shaped *HR100S MCS* arm and *Atlas* power supply, the *Symphony* follows the same philosophy as the *Sonata* but in a far more uncompromising manner.

The original concept behind the Alphason turntable was to maximise the performance of the *HR100S* arm. The first *Sonatas* were fitted with a metallic subchassis, but this was discovered to influence the cartridge used. Alphason researched into finding a better material, without compromising the performance benefits of the metallic subchassis, and subsequently developed a proprietary composite material. The platter is made from a similar material, but is ballasted with inserts, and is slightly roughened to couple with the record, especially when used with the puck. This material is said to have a very close impedance to vinyl.

Unlike the original Alphason tables however, the piano black finish of the *Symphony*, combined with the brass of the suspension towers and clamping puck, gives it an expensive appeal. The single discordant feature is the brushed chrome tonearm, that clashes like brown shoes with a black suit.

The *Atlas* power supply has but one front control, namely power on/off. Curiously, the button to change speeds is at the rear. As such, the power supply cannot be hidden away and access is needed to both the front and back on a regular basis.

Using two motors, a suspended subchassis and a solid platter, the *Symphony* is

extremely difficult to set up and is best left to the experts. Fitting the belt is a major problem; even the three motor *Voyd* is easier to set up, as it uses a lighter acrylic platter. Levelling the suspension is comparatively straightforward, using three brass coloured towers.

Levelling the turntable itself is not a problem, as the four feet are completely adjustable. The difficulty here is that the feet do not adhere well to the glass-topped three tier Alphason table recommended for use with the *Symphony*. As such, heavy handed listening sessions are not to be encouraged. Inviting your friends back to hear a few records after a case of Jack Daniels can prove disastrous, as you watch your new turntable, together with a favourite disc, plummet floorwards.

The *HR100S MCS* arm is wired with van den Hul cable, which adds an extra £100 to the standard *HR100S* tonearm. The arm, the longest standing product in Alphason's portfolio, was originally designed around a high-end Ortofon cartridge, the company supplying an *MC 5000* with the review sample.

Sound quality

It is hardly surprising that the *Symphony* is supplied with an Ortofon cartridge, as their two characters are so similar. Basically neutral, with a deep solid bass, both products add a slight gloss to the overall sound. Changing over to a non-Ortofon model is less successful, as the turntable imparts its character on the cartridge. This is no bad thing, as the sound of the complete turntable is very listenable, but it does limit the options greatly.

Looking at the turntable as a complete package then, the *Symphony* is one of the few decks around that can sound very natu-

ral, especially with the right recording and the right system. In the past, Alphason's slogan has been 'Close your eyes and you're there' and the *Symphony* lives up to this label well. Music with a light, natural air is played with verve and a surprising ambience. Those who favour this sort of music, will find the *Symphony* expressive and able to sonically disappear. Change material, however, and the holes in its performance start to show through.

Densely recorded rock music lacks some life and bounce. Some would argue that this is a fault of the recording itself, but on certain tracks there is a clear lack of the energy that was heard with my reference. It never sounds flat, or undynamic, but just lacks the spark of interest factor that is needed for music with a bit of grunge to it.

Aside from that, there is very little to criticise about the performance of the *Symphony*. It has a tendency towards cuppyness and nasality on female vocals and acoustic solo piano sounds a little too vivid; again characteristics shared by both turntable and cartridge. Its portrayal of imagery is first rate. Instruments stand out of the soundstage accurately, having their own physical space and without loss of solidity of bass voices.

The *Symphony* is superbly articulate, matching my own reference turntable in delineating male and female spoken voices. This also highlights the *Symphony's* detailed, but not stark, information retrieval. I felt that its strongest plus point was its seamless coherence, tying together a musical performance, and never once making the sound too 'hi-fi'.

My biggest criticism of the turntable, however, does not lie in its performance, but in the pricetag. In many, but not all aspects, it matches the performance of my own reference model (the *PT Anniversary*). However, at the price, one would expect it to perform as well in all aspects, or even exceed my PT in some areas. Also, I believe that it is difficult to justify the increase in price between the *Symphony* and the *Sonata* in subjective terms. It is clearly better than the *Sonata*, but probably not *that* much better.

Conclusion

Alphason's top turntable is capable of giving a delightful performance, with certain kinds of music. Unfortunately, it lacks a little 'oomph' for playing hard rock, and partnering it with anything other than a Alphason arm and Ortofon cartridge is questionable. On the other hand, its easy openness make it an obvious choice for those with large collections of Fifties' jazz or similar. For audiophiles who like their music reproduced with a slight bloom and a warm touch, the *Symphony* is well worth investigating.

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Audiomeca Romance

Kronos Distribution, 35 Farlough Road, Dungannon, Northern Ireland, BT71 4DU. Tel: (08687) 48632



Audiomeca is run by French designer Pierre Lurné, a man who in the past designed turntables for Goldmund — including the highly regarded *Studio* — and who in recent times has concentrated on shiny black disc transport systems of both the analogue and digital variety. Consequently the oil rig like appearance of the *Romance* will come as something of a surprise to those of you used to his more conventionally shaped designs, specifically the top of the range *J1* model.

The *Romance* retails for £1,199 sans arm which though not insubstantial is the least you're are going to get away with if you want this sort of sex appeal. If you can cope with the oil rig factor the *Romance* is a beautiful turntable, there's nothing like layers of polished black acrylic for creating the impression of luxury. However, I wouldn't fancy having to clean it, it's definitely a product for an extremely dust free room or for a cleanliness fanatic, which unfortunately tends to exclude most hi-fi reviewers. I'm told that it's not in fact that hard to keep in pristine condition and that a soft cover is available for those that don't want to take advantage of its sculptural qualities when not in use.

A lid of some form might be useful, but due to its complex shape and large physical size, small scale production has not proved economically viable.

The Audiomeca *Romance* is made up of two layers, a base incorporating the power supply and suspension system and a platform that supports the arm, platter and motor. The base is made up of four pods, the two at the rear sit on an acrylic plate which is supported by small adjustable spikes which provide a mechanical earth. Along with the two pods on this plate, one housing

the power supply and on/off switch and the other provided for constructional balance, is an aluminium post with a conical indent on the top which provides an earth for the main platform. The latter has a matching adjustable spike, the idea being that this acts as a vibration drain down into the table or shelf that the player is sitting on. This is a particularly French practice and can be seen in Micromega CD players, however for it to work effectively one needs a well isolated reasonably massy support — unlike most British turntable tables.

At the front of the base are two suspension pods, these contain foam damped springs and little cups which accept rods that support the main platform and provide levelling adjustment. These two pods and the rear pair are connected by tubes, unfortunately this sample had been on the road for longer than an esoteric turntable should be, and one of these tubes had sheared off. Kronos told us that this would not affect its performance given that the deck would operate in the same way even if the front pods were totally disconnected from those at the rear, so the review went ahead.

The 20mm thick acrylic platform supports a large inverted bearing for the polished acrylic platter, a twin diameter pulley that drives the latter peripherally with an 'O' section belt, and the arm base. In this case the arm base is a more complicated than average affair, which has been designed to support the Audiomeca *Romeo* unipivot pick up arm.

The *Romeo* is an extremely attractive beast finished in anodised aluminium and gold plate that can be purchased with the turntable for a £400 premium. Its features include an adjustable cross bar to offset heavy cartridges, a variation on the thread

and weight bias theme, and output sockets rather than an arm cable.

As no alternative arm bases were supplied all the listening was done with this fine device using Audio Note cable.

Initial impressions suggested that the *Romance* lived up to its name and in the long run the deck's inherent smoothness made the deepest impression. Nearly everything I played on it sounded sweeter and more palatable than usual, but to be fair the Project cartridge supplied with the deck was probably not the best match. Substituting a Goldring 1042 stylus assembly cut through the gloss with its somewhat abrasive top end, and put some definition into leading edges. It was clear however, that something with a little more aplomb was going to be required.

Despite my best efforts with the Blu-tack I couldn't get the mighty *IO* (19g) to balance on the Audiomeca arm and resorted to the affordable and capable Denon *304* to inject some life into the proceedings. This it managed to do surprisingly well, pulling vitality and openness from the previously rather shut in and clogged up sound. The fundamental smoothness remained and with it a degree or two of restraint on the dynamics front. In fact with this cartridge the *Romance* started to sound remarkably similar to the Marantz *CD12* disc player I was using as a reference. Technically very good with fair imaging skills and substance at low frequencies but not enough low level resolution or high frequency extension to create a living, breathing musical event.

It has to be said that the *Romance* is quite capable of showing up differences in recordings, which suggests that its character, although not the most dynamic, is fairly neutral. It's rhythmically adept without labouring the point and its high frequency control is such that it never loses track of events, even when they get intense. The latter is partly offset by its inability to really open up and reveal what's going on at the top of the band, but it's the sort of balance that many would call neutral and it works well with classical material.

Conclusion

The Audiomeca *Romance* is certainly a beautiful record player. For those who are seriously into black it's virtually impossible to beat at the price. Its sonic skills don't quite live up to this appearance unfortunately, but it's a capable beast nonetheless and quite possibly with a carefully chosen cartridge or a more incisive arm it could well cut the mustard.

Romantic by name and nature it's not quite recommendable but if you can't pull with one of these then you're just going to have to give up using audio equipment to impress the opposite sex!

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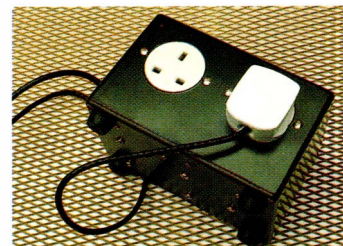
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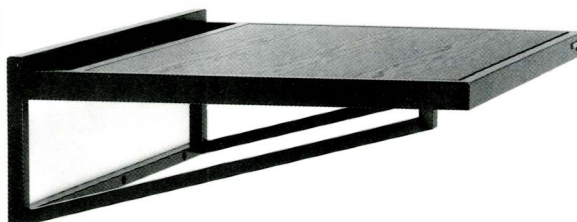
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Maplenoll Ariadne

Wollaton Audio, 134 Parkside, Wollaton, Nottingham NG8 2NP.
Tel: (0602) 284 147



The £2,495 Maplenoll *Ariadne* is one of the last, true, lunatic, fringe turntables. It is an air-bearing design, supplied with its own parallel tracking, air-bearing tonearm. The arm comes complete with pump, filter, plenum chamber to smooth air flow and about 90m (l) of plastic tubing to give some distance between the comparatively (compared to the average fish-tank) quiet pump and the listening room.

Its highly adjustable arm sports a damping trough at the headshell, in the manner of the Townshend *Rock Reference* turntable. This trough is filled with a high viscosity oil, as opposed to the silicon fluid used in Townshend designs. Originally, Maplenoll used car engine oil, but early owners soon complained that their living rooms smelled like garages.

To fit this parallel tracking arm, the *Ariadne* is deeper than it is wide, which could cause problems siting the turntable. It is also damn heavy, as it comes fitted with 40lbs of lead platter, which could wrench a poorly fitted wall shelf completely off its mountings — or a shoulder from its socket, if used as a frisbee.

There is no form of suspension as trying to cue the *Ariadne*'s arm is difficult enough without it. The three feet are adjustable to level the deck, but it is more important to ensure that the arm is parallel to the platter.

Aside from setting up and using the arm, there is little that is difficult about the *Ariadne*'s set up and use. There are no leadout cables from the tonearm, but the *Ariadne* is supplied with a set of the superb and very expensive handmade XLO analogue cables. It has a single on/off push button at the front and speed change is performed by shifting the belt on the motor spindle. Unfortunately, the belt has an an-

noying tendency of slipping off when playing 45 rpm tracks.

My biggest gripe concerns the unsophisticated finish of the table. I appreciate that our sample, fitted with an AudioQuest AQ 7000 cartridge, has been used extensively at shows, but the level of finish is, at best, scrappy. Cables hang out seemingly at random from the rear of the turntable, while those of the arm lead hang naked through a hole in the top plate that looks as if it has been cut by someone who was blindfolded and using a blunt chisel.

I am also concerned with the use of a viscose oil in the damping trough. Although while using the turntable the oil never once strayed from its trough, when swinging it over my records I could not get thoughts of the *Amoco Cadiz* spillage disaster out of my mind. The same problems are as likely to occur with a trough filled with silicon, but I feel that because the synthetic oil used in the *Ariadne* is less viscous it is therefore more likely to spill.

Sound quality

As one would expect from so heavy a platter, turntable start up and slow down times are long. It took well over a minute for the platter to come to rest after playing an LP. The *Ariadne* has a healthy tonal balance, with an admirably low level of surface noise and not a harsh note in its musical vocabulary. This gives it a silken character throughout its range.

Most noticeable is the sheen given to the treble, and the removal of the harsh, splashy characteristics often attributable to conventional arms. The *Ariadne* combination sounds more than capable of 'gettin' down' with its deep, tuneful and rhythmic bass lines that suit any music from Liszt to Lynyrd Skynyrd,

revealing the musicianship behind the recording with ease. With such a deck, substituting arms is nigh on impossible and as such it could not be ascertained whether these bass lines are a function of the turntable or the arm. But experience with air-bearing arms suggests that the deck itself could tend towards bass heaviness if not used with this type.

The turntable's character is complemented by the AudioQuest cartridge. Changing over cartridges showed a propensity toward a bloom and warmth in the upper bass and midband. In the hands of the wrong cartridge, this could lead to a touch of the bloats. I would suggest that, aside from the AudioQuest AQ 7000, cartridges like the Lyra *Clavis* or *Parnassus*, *Transfiguration* or the big Ortofonos would suit it well. The warm character of cartridges such as a Koetsu could show up the shortcomings inherent in the Maplenoll, making the combination sound uncomfortably rich in the bass.

Only a few high quality turntables have a confident, authoritative presentation. The *Ariadne* falls within this small, distinguished group, yet is without the sterile dryness normally attributed to such players. Music comes alive under the *Ariadne*'s swing, largely due to the light, deft touch of the parallel tracking arm. It lacks the 'Dynamics-R-Us' scale of a Voyd, but sounds no more or less dynamic than some other high quality turntables, such as a Pink Triangle *Anniversary* or a Townshend *Rock Reference*.

Imaging is very strong, with instruments carved solidly into the soundstage. Even timpani, floor toms and bass drums have their own locations in space when more often the positioning of these instruments is, at best, vague. On this turntable, the sense of absolute solidity of image throughout the frequency range is reassuring and extremely realistic.

Sonically, there was only one failing that marred an otherwise exemplary performance: It is possible to hear a faint whooshing sound from the tonearm, just before it comes to rest on the disc itself. However, it takes a highly revealing disc stage to reveal this.

Conclusion

Were it not for its DIY appearance, Maplenoll's *Ariadne* turntable and arm combination would receive a firm recommendation. It has much to offer, and would not sound out of place at the front of an extremely expensive high-end system. As it stands, its superb near neutral, lively performance and simple, solid build is only marred by a scrappy unsophisticated finish. Unfortunately, such a build quality weighs heavily against it. Talk about spoiling the ship for a ha'p'orth of tar.

Michell Mycro

J A Michell Engineering, 2 Theobald St, Borehamwood, Herts.
Tel: (081) 953 0771



I was daunted by the prospect of setting up the £539 Michell *Mycro*, fitted with the *RB 300* arm, imagining that it would be an engineer's turntable. I had visions of spanners at dawn, oil over the floor and having five small unrecognisable bits left over. Nothing could be further from the truth; from opening the box to fitting a cartridge, all was completed in under ten minutes.

J A Michell Engineering have a reputation for building a solid, reliable product and the *Mycro* will only build upon that admirable reputation. Simply constructed, the *Mycro*'s design is the sort that leaves little to go wrong over the years. The transparent green base and lid are hard wearing, while the three point suspension system is rudimentary, but effective.

The turntable sits on three adjustable feet, that couple the suspension directly to the base it sits upon. These large feet seem to isolate the deck from its surroundings very successfully. This does mean that it is possible to have the turntable plinth set at one angle and the platter and subchassis another, but it is very difficult to set the table that badly, and has to be done with intent. Once set, the *Mycro* does not lose its setting readily, as long as it is not tweaked or fiddled with constantly.

In essence, the *Mycro* combines the platter of the up-market *Gyrodec* with the simple design of the lower priced *Syncro*. The improved platter is said to give a more neutral and dynamic performance and unofficially it compares very favourably to the standard *Gyrodec*, supplied without its *Gyropower* power supply. The platter is designed to suit a Michell clamp, like the *Gyrodec*, and to this end, the centre of the platter is recessed. I would suggest that the

Michell clamp would be a good addition to the arsenal.

It is as simple to operate as it is to set up. Stripping the turntable down is not so easy, however; the useful bent wire tool to attach the bearing to the platter does not give enough torque when it comes to taking the turntable apart for transportation. Both the power on/off button and the speed control are mounted directly to the plinth in the top left hand corner of the turntable. Speed control is completely manual, with a two position spindle atop the motor housing. Although many turntables come supplied with OEM versions of Rega's *RB 250* arm, the *Mycro* is one of the few decks that Rega has allowed to use its more advanced *RB 300* arm.

The manual supplied with the *Mycro* is clear and concise. It describes the setting up procedures with handy diagrams. Unfortunately, the section of the small card manual given over to care and attention suggests using spray furniture polish, most of which may keep the deck clean, but are bad news for electrical contacts. Use a good anti-static cloth instead.

Sound quality

It has often been suggested that the Michell turntables are only as good as the cartridge fitted, and this is evidenced by the *Mycro*. A perfect match for decent cartridges in the £200 class, such as the Denon *DL-304*, it can sound superb, showing off the lean, but fundamentally even-handed character of the cartridge. Put on something cheap and cheerful, in the mould of the Audio Technica *AT-95E*, and the turntable shows up the flaws clearly.

As such it is difficult to pin-point the sound of the *Mycro*, especially when the

price is taken into account. It borders on the richer side of neutral, but never sounds anything less than musical and alive. It makes a lot of sense of the music played, delving into the harmonic structure of the performance.

Given a good cartridge that is suited to the *Mycro*'s neutrality, the turntable puts in an admirable, if a little warm, musical performance. One would expect acres of glass like plinth to sound shrill and sharp, but instead, the *Mycro* is pleasantly relaxing.

This relaxing quality can be too overbearing on occasion, but the music itself has to be really soporific to cause the system to sound dead. Perry Como aside, the *Mycro* is as alive as the disc played.

There is a lot of detail hidden within the *Mycro*; not to the detriment of the musical performance, but simply information that makes the Michell deck sound clear and well defined. As such, it does not favour any kind of music, be it rock, jazz or classical. To this end, its timing abilities again match those of its peers, in that it is able to keep up with all but the most complex of rhythms.

Imagery is first rate, portraying solid, powerful instruments in a slightly compressed, but very natural soundstage. Added to this, the *Mycro* has a superb, near seamless coherence throughout its range. Its abilities to cope with dynamics are as good as any of its peers; although it will be found lacking against the more expensive decks. Paradoxically, this gives the *Mycro* an advantage in a mid-price system, as it needs a reasonably good quality phono stage, but will not tax its dynamic capabilities.

This is a double edged sword, however, as it can sound flat in a high-end system. The *Mycro* sounds as if it has a form of built in limiter; feed it into a very expensive amplifier, or use a more revealing cartridge and it simply fails to improve over the standard set in a complementary system. Considering the snobbishness inherent in the high-end, it is unlikely to be seen in systems beyond £1,000. This is sad, as the *Mycro* could easily grace a system at twice that sum.

Conclusion

More natural than neutral, the excellent little *Mycro* gets very close to the music. It can only be criticised for failing to shine in a high-end system, which is only to be expected at the price. It does live up to the 'Gyrodec on the cheap' label it has sometimes been lumbered with.

It is a superb mid-priced table that rarely sounds hi-fi in a similarly priced system, and for those looking for an upgrade from their basic turntable, without wanting to spend vast amounts of money, it receives strong Recommendation. But don't forget the good cartridge, or you'll wonder what all the fuss is about.



Project 2

Kronos Distribution, 35 Farlough Road, Dungannon, Northern Ireland, BT71 4DU. Tel: (0868) 748 632



Project is a new name to the turntable scene over here, though its products have been exhibited at European shows for the last couple of years. The company's design and marketing operation is based in Austria but the turntables are actually manufactured in Czechoslovakia which undoubtedly helps keep costs down. The last turntable to hail from those parts that we looked at was the novel *Rational Audio*.

This caught Richard Black's imagination with its parallel tracking arm and acrylic platter but disappeared from the scene due to its unconventional appearance. Project, probably as a result of its Austrian design, seems to have carved a more permanent place for itself in Europe at least and could well prove a success over here.

The £225 Project 2 is the middle model from a range of three that starts with the £149 Project 1, a basic version of the 2, and runs up to the new £349 Project 6, which has a silicone damped suspension system. The Project 2, although ostensibly another Rega clone, is in fact quite an unusual design, most notably in its two part platter construction.

Sitting on the plastic sub-platter is a dynamically balanced cast platter some 15mm thick and on top of this is a 3mm thick glass disc, which of course requires that the casting be accurately machined to provide a flat surface for the glass to mate with. Topping off this sandwich is a felt mat and a large screw on clamp that covers most of a record label. The bearing cannot be removed by conventional means so it was difficult to assess, but externally it appears to be reasonably substantial if nothing else.

The sub-platter is driven via a flat belt from a rubber suspended motor with two

pulley diameters for the required speeds. Changing speed is made a little easier by two large holes cast in the platter and a little plastic key for hooking the belt from one pulley to the other, the key sits under the platter as well.

The Project 2 is built around a fairly chunky 32mm thick mediate plinth with a large circular recess for the motor and sub-platter assembly. It sits on four compliant feet and features a rather agricultural looking tonearm which has cabling terminating in a pair of phono sockets rather than the cheap cables that are virtually universal on budget decks. This means that you can upgrade the deck without excessive expense by fitting high quality cable, the lead supplied is pretty basic and easy to improve upon.

The arm itself is made up of a straight tube with its end flattened to make a headshell in which radiused slots have been cut. The finger lift is a separate item that bolts on with the cartridge bolts. At the other end of the tube are gimbal bearings and beyond that a plastic stalk for the rather light counterweight.

Down force is achieved dynamically with a pretty accurately calibrated dial on the weight. Anti skating is handled by that tried and tested system the thread and weight, which behaved itself as long as you didn't try changing the cartridge. Arm height can be adjusted with a standard collar and post arrangement.

The Project 2 can be supplied with a Project cartridge for an extra £50, saving £10 over purchasing the two separately. This cartridge is a badged Goldring Series 1000 model, presumably equivalent to the 1012, and seems to suit the deck quite well. Therefore, most of the listening was carried out with this cartridge.

Sound quality

Using the Project with its standard lead my initial impressions were of a slightly warm and safe sounding player with reasonably good drive and rhythmic coherence. Its ability to recreate scale seems a bit limited but it's not too messy and paid quite close attention to detail. Essentially it's a mellow sounding record player with subtractive rather than additive tendencies, by which I mean that it leaves things out — as one expects of all turntables at this level — but it doesn't seem to add many of its own colorations.

What it lets through is a smooth midband, but limited extension at the frequency extremes. However, these latter points were largely redressed by the application of a decent interconnect. I tried a piece of DNM as it's reasonably priced and got on well in our cable tests. Being unscreened it's not terribly well suited to this application but the results were a significant improvement over the standard issue. It improved high frequency extension, adding some air and space to the previously somewhat shut in sound.

The next step was to move up even further to the least expensive Audio Note *Silver*, all right it costs more than the cartridge but it shows you how good the player can get, much like the Mana table I was using to good effect. Both these elements improved dynamics, the cable managing to resolve the treble further and the table reinforcing the other end of the band. What you end up with is a player that's capable of giving music reasonable depth, along with good height and width image wise.

Definition could still be improved, it tends to smooth leading edges somewhat which is fundamentally what's behind its laid back character. However, it can put some welly into music if it's called for — Johnny 'Guitar' Watson sounded pretty solid and funky — in fact most material that didn't get too statistically dense (ie Frank Zappa) sounded good, almost 3D, and appealing from a tonal viewpoint.

Conclusion

The Project is in many respects very good value for money. Features like the sandwich platter, output phono plugs and its general structural integrity are unusual at this price level. I have slight reservations about the pick up arm, which having done the rounds before it got to me was beginning to look a bit the worse for wear. It's not a bad device but comparison with the almost ubiquitous Moth does it no favours.

If you are looking for a capable, relaxed sounding, budget turntable this has to be a strong contender. It comes very close to Best Buy status but will have to make do with a Recommendation.



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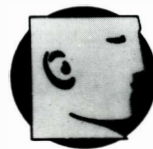
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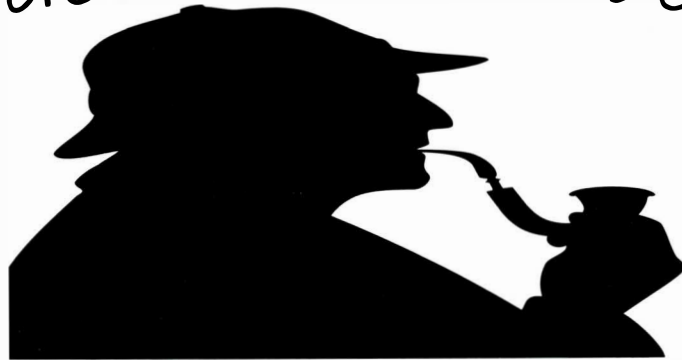
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Pink Triangle PT Export GTi

Pink Triangle Projects Ltd, 4 Brunswick Villas, Camberwell, London, SE5 7RR. Tel: (071) 703 5498



The Pink Triangle *Export* is the current incarnation of a design that goes back to the early Eighties, when it started life simply as the *Pink Triangle*. Since then it has been the PT *TOO* with an outboard power supply and now that the supply has retreated into the deck, the *Export*. Over the period certain aspects of its design have remained constant, most obvious is the acrylic platter, which Pink was the first to use, in this country at least, and below the skin an aerolam subchassis and an inverted main bearing.

Like its long term adversary, the Linn *LP12*, it has remained fundamentally the same, with gradual refinements being made over the years.

Its latest incarnation incorporates a dished platter with a small screw on clamp and an onboard twin phase power supply indicated by the *GTi* suffix. This option was previously available as the *Pacesetter* outboard supply, and formed the heart of the cheeky *Pinnk Link*, an alternative *LP12* upgrade kit. The *Export GTi* replaces the standard *Export* and retails for £885, both the supply and clamped platter can be retrofitted to existing *Exports*, the cost depending on the vintage of the deck with late models being the least expensive.

The supply upgrade was a logical, even predictable move for the *Export* but the clamp came as something of a surprise. Pink claims that it has been on the back burner since day one, but quite why it's taken 11 years to get onto the deck remains a mystery, and one that's not fully explained by the company's various arguments.

But I digress, let's talk about the mechanical make up of the *Export GTi*. It comprises a fairly traditional style solid wood frame and thick black acrylic top plate. This

has a cut out for the mediate armboard which in turn bolts onto the honeycomb aluminium, aerolam subchassis. The latter is suspended by three springs which can be easily adjusted by bolts on either side and at the rear of the plinth — those at the side operating an unusual wedge and see-saw arrangement to achieve height variation.

One of the more important differences between the *Export* and its predecessor, the *TOO*, is that the motor moved from the usual ten o'clock position to one at about the seven thirty mark, continuing an imaginary line from the armboard via the bearing. This, Pink Triangle argues, is where motor vibration will create the least disturbance of the stylus/vinyl interface.

From a more general point of view the PT *Export GTi* appears to be a well built product, and a considerable improvement over Pinks of the past. Its pink tint acrylic lid looks good and fits perfectly and the large dual colour on/off/speed switch is a nice touch.

Sound quality

With any deck in this class, from a manufacturer which doesn't make its own tonearms, the question of which arm to use inevitably crops up. The PT *TOO* and latterly the *Export* have often been partnered with SMEs, specifically the *IV* and *V*, but these are expensive things and there are at least two budget alternatives which can be used quite effectively to get the deck up and running. One is the ubiquitous Moth/Rega, and another more recent introduction, that has been finding broad approval, is Roksan's *Tabriz*. In this instance PT chose this £175 beast to show me what the *Export* was capable of in relatively modest company.

With a Denon *304* firmly bolted onboard the *Export* made a fine impression. It shares

a lot with the *Voyd* that I usually listen to, inasmuch as both are short on character of their own and thus they allow the music to speak for itself with the minimum of interference. I spent longer than average just listening to good records on the *Export*, its transparency and ability to extract a broad and dynamic bandwidth made reviewing it both easy and difficult. Easy, because I was inclined to listen to it for extended periods and difficult, because it took a lot of effort to listen to the player rather than the records.

Subsequently the majority of my notes seem to refer to comparisons made with the *Voyd*, which I made using SME *Vs* on both. The main difference was that the dearer deck (the *Voyd* costs £1,570) was able to focus information more precisely, and its resolution of dynamics was more pronounced. The Pink put up an impressive fight though, resolving virtually as much fundamental information, especially in the midband which was particularly clean. As a result lyrics are unusually easy to follow, and music boogies along in a natural, convincing fashion.

There were times when I thought that it was emphasising the bass unduly, particularly when I used the *IO* and SME *V* together, but they were few and far between, and I suspect a reflection of the material being played. Bass extravaganzas like Stanley Clarke's first album sounded solid and dynamic, and my eventual conclusion was that the Pink can indeed play bass along with the best of them.

Its speciality is the resolution of detail which it does with more finesse than most of the competition at this price level. This, combined with a very neutral character, makes it a very competent player that's worthy of the most revealing partnering equipment.

Conclusion

The *Export GTi* continues the Pink Triangle theme of neutrality and resolution. The other side of the coin is that it's devoid of the sort of characteristics that can make a lot of records sound more exciting; the sort of characteristics that are exhibited by some very successful designs I might add. However, the drawback is that characteristics that suit one type of music may not necessarily mix with another type, and the only way to find out what is actually present in the grooves is to use as clean a record player as possible.

This Pink Triangle is such a machine, it's not perfect, but in its price arena its one of the strongest contenders and well worth your attention. Back in 1983 *Choice* awarded a Recommended flag to what was simply called the *Pink Triangle*, ten years on the *Export GTi* is still well worthy of the commendation.

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Systemdek I.920

Systemdek Ltd, Unit 34, Kyle Road, Irvine Industrial Estate, Irvine, Scotland KA12 8LD. Tel: (0294) 71251



We first reviewed this youngest and least expensive Systemdek in last year's turntable roundup. Then it was in its mere *I.900* form, complete with an inexpensive oriental tonearm and retailing for the princely sum of £188. At the time it was criticised for having poor pitch stability and insufficient structural integrity. Possibly as a result of such comments the deck has now been re-armed, updated and re-released as the *I.920*. It now comes complete with the popular Moth tonearm and a modified but rather ungainy pricetag of £234.88 (£200 plus VAT less 12p!).

The deck now bears a striking resemblance to another budget favourite of considerably greater age, the Rega *Planar 2*, though closer inspection reveals a few subtle but potentially important differences. The current Systemdek *I* comprises a 25mm solid medite plinth finished in a nice nextel-like matt grey, with an 8mm glass platter sporting the standard felt mat of yore and Systemdek's standard clear plastic lid. The latter has sprung hinges but only opens up to 45 degrees, it won't sit vertically and thus access is a bit limited unless the deck is on a reasonably high shelf. The advantage of this is that the deck can sit marginally closer to the wall if you are limited for shelf space.

Take a close look at the deck in profile and you'll notice the unusually large sprung feet. These are intended to improve isolation from support borne vibrations, something that most solid plinth designs desperately need. Systemdek has also used springs and rubber grommets to suspend the synchronous motor, this is an attempt to minimise the amount of spurious energy getting into the plinth.

The motor drives a plastic sub-platter with a twin diameter pulley, speed change

is thus manual, and this Systemdek uses an 'O' ring belt. The main bearing is pretty straightforward but reasonably chunky with a big brass nut underneath the plinth. A syringe of bearing oil is supplied for future topping up purposes.

For a budget deck the *I.920* has quite a big footprint (and big feet for that matter) and was a tight fit on the glass platform of my Mana table. Which means that it will sit on Targets and the like but not some wall shelves. It's a well built and good looking deck that merely requires a mains plug and a cartridge to get it up and running. For the purpose of this review I used a Project badged variation on the Goldring *1000 Series* theme, probably a *1012* in disguise, which is sold with the Project turntable in this group for around £50.

Sound quality

Similarities to the Rega *Planar* don't stop at appearance. This Systemdek bears a striking sonic resemblance to what I remember of the Rega *Planar 3* I used to own. In stark contrast to the other budget deck that I reviewed for this test (the Project *2*) the *I.920* was an up tempo, lively sounding deck whose character often ended up close to the thin line that divides excitement from aggression. On the positive side this means that it made records sound fast and alive which works well with a lot of material, adding extra pep to dance music and giving guitar solos some real bite. On the other side of the coin there is a risk of the sound becoming fatiguing in the long run and of acoustic instruments sounding brighter than they naturally are. This edginess should not be too difficult to tame however, using a more mellow cartridge such an Audio Technica *AT-420E* would most likely do the

trick. Whether such a transducer would maintain the rhythmic skills of the Goldring however, is less easy to predict.

It's important to emphasise that the *I.920* is an enjoyable record player, the KLF tracks sounded more danceable than usual, the turntable emphasising the upper bass lines which provide the foot tapping factor. There wasn't a great deal in the way of low bass, but given the player's limited isolation in this region, this is probably for the better. All the records I played on it sounded like they had more energy in them than usual and for the most part this was quite fun, although the lack of anything beyond the fundamental made for a rather two dimensional sonic image. The *I.920* tended to leave out the low level detail that creates a sense of depth and substance to music, and therefore it failed to give the impression of music transcending the boundaries of the room. I don't remember any of the records I played creating a soundstage wider than loudspeakers. However, it's worth noting that this is the case with most other budget turntables and one of the fundamental reasons why CD has managed to make such a large impression on the non hi-fi oriented public, used as it is to the excuses for record players attached to midi systems.

But it's time to get back to the Systemdek *I.920* and stop whinging about digititus. I tried the deck on two supports, a wall bracket and a Mana *Reference*, the mere single tier variety. And as has been the case with all the turntables I've tried this experiment with, the Mana, despite its close vicinity to a largish loudspeaker, brought out the best in the Systemdek, improving dynamics, bass extension and rhythmic coherence. OK it's a bit unrealistic using a £300 table with a deck like this, but it's also important to see just how well it can perform under optimal circumstances.

Conclusion

Given the similarities it would have been interesting to have had a Rega *Planar 2* to compare with this deck, and have heard whether the extra isolation work that Systemdek has done is worth the premium (nearly £50). As it stands the *I.920* whose bigger brother, the *IIX*, has been the budget turntable for longer than I can remember, is a sprightly and enthusiastic record player that's capable of bringing the life out of your record collection. It never lacked enthusiasm, and is eminently suitable partner for many of the rather tame budget speakers currently being produced.

In the context of a budget system and with a sympathetic cartridge this is definitely a recommendable record player, however, the stiff competition in this sector of the market means that a decent audition is a must before parting with your cash.



Thorens TD280/IV

Portfolio Marketing, 67 New Road, Little Kingshill, Great Missenden, Bucks HP16 0EU. Tel: (0494) 890 277



The ever popular turntable manufacturer Thorens has redesigned the *TD280/UK/II* and given it an ingenious new name, the *TD280/IV*. I have no idea what happened to the *TD280/III* nor to the UK part of the name — perhaps in a unified Europe, a turntable that is country specific is no longer politically correct. I'm now waiting for the *TD280/Maastricht/IV*.

Cynicism aside, the £200 *TD280* capitalises upon the success of the *MkII* by improving the arm fitted to the turntable. The new *TP35* arm sports an improved geometry over its predecessor, together with a considerably more rigid metal bearing block and tonearm base. Aside from all the conventional movements common to such arms, this one is capable of adjustments to the cartridge in the horizontal plane as well as the vertical, by physically shifting the counterweight assembly.

In the rather Germanic English of the manual, it suggests that turntables supplied fitted with cartridges will be set up beforehand. In this country at least, the *TD280/IV* is supplied with an Audio Technica *AT-95E* as an optional extra. I would suggest that if you are feeling particularly tweaky, resetting the tonearm is a worthwhile exercise, as it makes a great difference to the sound quality. The addition of the new arm gives the Thorens more potential for fine tuning, yet without compromising its convenience.

There are also substantial improvements to the turntable itself. Aside from the thicker lid, Thorens has radically modified the *TD280/IV* by changing over to an inverted main bearing, in the style of the up-market manufacturers Roksan and Pink Triangle among others. The split phase power supply provided with the *TD280/IV* is normally seen in

turntables far beyond this price band, and shows an attention to quality rare at this level.

Although in hi-fi circles, the *TD280/IV* could be considered a budget design, its build quality never discloses this fact and is beyond criticism. The standard of finish is very high, bettering many more expensive 'audiophile' designs. Thorens has attempted to keep the automatic arm lift as noiseless as possible.

Automatic arm lift arrangements have fallen from grace in purist hi-fi circles, yet outside of the cognoscenti, this is often a major selling point in budget tables — finding one that makes no clunking noises is an obvious plus point.

Sound quality

Following the trend set by its predecessor, the *TD280/IV* is an expressive beastie. It communicates detail, especially treble detail, with plenty of drive and speed. Performances are always hewn into 'edge of the seat' stuff and this is the Thorens' greatest asset, yet at the same time its major downfall. While the fast, punchy presentation is very impressive — reminiscent of the Roksan *Xerxes* — the compromises made in a low cost turntable manifest themselves in a rather scratchy top end.

I feel that the overall balance of the turntable suits those who like their music lively and exciting, rather than mellow and laid back. The unrelenting nature of the turntable is, well, unrelenting. And although this means that it can make sense of surprisingly difficult music, the *TD280/IV* can also be hard to sit in front of for long periods of time.

Also, the standard choice of cartridge, an Audio Technica *AT-95E*, capitalises on this

sheer detail. With the wrong disc (Zodiac Mindwarp's *Prime Mover* sticks in my mind here), the combination of *TD280/AT-95E* falls into strident brightness.

Changing from the Audio Technica to other cartridges showed up the tweakability of the turntable, as well as the ultimate limitations of the arm in particular. It is not the sort of arm that can readily support a decent moving coil cartridge, as it wasn't exactly over the moon with a Denon *DL-304*, but then only fools and reviewers use £200 cartridges on £200 turntables. I wouldn't look any further than a Roksan *Corus Black* or a Goldring *1042* to use in the *TD280*. With judicious arm adjustment, such cartridges go a good way towards ameliorating the brightness inherent in the turntable.

It was suggested that in the past, *TD280*s have suffered from instability of pitch. The latest Thorens appears remarkably pitch stable by comparison. It will not stand up to the likes of a Linn *LP12* with *Lingo* power supply, or even that of the cheaper Linn *Basik*, but the *TD280*'s rhythmic abilities are up there with the best in its class. In my system, I detected a static crackle each time a record was removed from the platter which could well be a fault of my system, but I have encountered this on very few occasions before.

Looking back at the review of the previous *TD280/UK/II*, in issue 103, it was suggested that the improvements to the previous turntable helped lighten the sound while maximising the imaging and detailing properties, although it still lacked authority, stereo depth and focus. I feel that the inclusion of the inverted bearing does much to address the imaging properties, as the soundstage has tangible image depth and good stereo focus. It still lacks some ultimate solidity and weight to the sound, but the lightweight character will go unnoticed on a small loudspeaker.

What does not go unnoticed is the way in which the bass notes can blur together into an amorphous whole, but this is still small beer, when compared to the overall performance.

Conclusion

The *TD280* was a Best Buy in its previous guise and the *Mk IV* version does nothing to countermand that label. Although there are a few turntables that are as well built for the price I can think of no other that is as complete.

Perhaps a little rough edged and relentless, its clarity and excitement makes music full of sound and fury. I'm still not convinced by the new arm, but it offers a level of tweakability not normally associated with semi automatic arms. Besides, at £200 for the package, who's complaining?



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	Mission 762 Rogers LS2A-2 JPW AP3 Kef 140	308.95	Mission 762 Rogers LS2A-2 JPW AP3 Kef 140	308.95	Mission 762 Rogers LS2A-2 JPW AP3 Kef 140	308.95	Mission 762 Rogers LS2A-2 JPW AP3 Kef 140	308.95	Mission 762 Rogers LS2A-2 JPW AP3 Kef 140	308.95	
Castle Durham II Heybrook HB173 Tannoy 609	Marantz CD72	311.95	Marantz CD72	311.95	Marantz CD72	311.95	Marantz CD72	311.95	Marantz CD72	311.95	
	Technics SLPG420AK Technics SLPG520AK Technics SLPS620AK Sony CDP397 Sony CDP497 Sony CDP797	311.95	Technics SLPG420AK Technics SLPG520AK Technics SLPS620AK Sony CDP397 Sony CDP497 Sony CDP797	311.95	Technics SLPG420AK Technics SLPG520AK Technics SLPS620AK Sony CDP397 Sony CDP497 Sony CDP797	311.95	Technics SLPG420AK Technics SLPG520AK Technics SLPS620AK Sony CDP397 Sony CDP497 Sony CDP797	311.95	Technics SLPG420AK Technics SLPG520AK Technics SLPS620AK Sony CDP397 Sony CDP497 Sony CDP797	311.95	Technics SLPG420AK Technics SLPG520AK Technics SLPS620AK Sony CDP397 Sony CDP497 Sony CDP797
Rogers LS4A-2 B&W DM620 Heybrook HB100 Kef 160	Marantz CD72	315.95	Marantz CD72	315.95	Marantz CD72	315.95	Marantz CD72	315.95	Marantz CD72	315.95	
	Marantz CD52SEII	315.95	Marantz CD52SEII	315.95	Marantz CD52SEII	315.95	Marantz CD52SEII	315.95	Marantz CD52SEII	315.95	

- FREE** with suggested Systems
- Cartridge (turntable based systems only)
- Speaker Leads (80 strand cable)
- Carriage (Systems over £300)

Options

The following Compact Disc Player or Turntable may be ordered instead of the NAD 5120 in the above systems.

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- Aiwa XC300 Add £29
- Denon DCD590 Add £79
- Denon DCD690 Add £99
- Denon DCD890 Add £169
- Denon DCD1290 Add £229
- Marantz CD42II Add £99
- Marantz CD52II Add £129
- Marantz CD52SEII Add £199
- Marantz CD62 Add £189
- Marantz CD72 Add £289
- NAD 5420 Add £69
- NAD 5425 Add £89
- Pioneer PDS701 Add £149
- Pioneer PDS801 Add £199
- Rotel RCD955AX Add £149
- Technics SLPG320AK Add £39

Turntables

- Dual CS503.2 Add £49
- Dual CS505.4 Add £79
- Thorens TD280 IV Add £99
- Systemdek IIX900 P.O.A. (+ choice of arm)

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We carry a comprehensive range of superb interconnects. Choose from **Audioquest, Monster, IXOS** and **Furakawa**. There's one ideally suited to your system. We also stock a complete selection of Speaker Cables.



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Hi-Fi Choice

mail order offers

Our Mail Order Section this month features, among the old favourites such as Furukawa interconnects, some great new accessories to help improve the performance of your system

We're also pleased to be able to offer a selection of audiophile recordings from specialist labels from around the world.

Goldring Magic Record Cleaner £11.95
Kit consisting of a double sided velvet brush and spray on Goldring Magic record rejuvenating fluid

The Purifier £16.90 per pair
The Purifier is a ferrite cable clamp designed to reduce RF induced noise in audio, video and computer systems. The clamps will accept single or multiple cables of up to half an inch in diameter and can be used on both signal and mains cables. Can be particularly beneficial for digital interconnects

Nagaoka Anti-Static Record Sleeves No 102 £6.99
Packs of 50 plastic record sleeves that can be used on their own or inserted into an existing card or paper sleeve. The sleeves keep records dust free and eliminate static.

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.

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 CD cleaner and fluid plus a carbon fibre record cleaning brush.

Milty Work Mat £7.99
The Milty Work Mat is a large rubber mat that has been designed to support records, Laserdiscs and Compact Discs while they are being cleaned. It holds the disc firmly in place, without any danger of damaging it. It's a real boon to disc cleaning and makes using cleaning brushes and solutions completely painless.

Newnes Audio and Hi-fi Engineer's pocket book (second edition) £10.95
This useful little book covers a wide range of audio topics with concise explanations to clarify the information. The book covers everything from turntables and cartridges to DCC and DAT with as much technical information as the mere mortal could wish for. If you really want to know what makes your CD player tick this is the book for you.



Technics Auto Compact Disc Cleaner £39.95

A powered wet/dry CD cleaner that can be run off batteries or the mains. It works by rotating the disc and applying the wet cleaner first (cleaning solution is supplied), then reversing direction and dry cleaning it. The whole process takes just 40 seconds and a set of batteries should clean 80 discs.

Audio Technica CD lens cleaner AT-6078 £16.95

The focusing assembly for the laser head of a CD player is a very delicate affair and yet it requires cleaning from time to time to give of its best.

Rather than fumbling about with cotton buds, and perhaps wrecking your CD player into the bargain, we would suggest you employ an Audio Technica AT-6078 CD lens cleaner.

This is a standard size disc with a set of eight tiny brushes set into it. To clean your laser, just apply a drop of cleaning fluid on to one of the brushes, place the cleaning disc in to your player and press play.

Ten seconds, and some rather dismal music later, hey presto, a clean laser assembly, and a cleaner sound from your Compact Discs as a result.

CD Jewel Cases £5.00 pack of five
Who invented these bloody awful things in the first place? Replace your broken jewel cases and ensure that your discs are properly protected.

Last SF-100 Extra Strength Record Cleaner £19.95

Last SF-100 is designed to remove the compounds left over from the pressing process. Use for a first cleaning of new records as well as to revitalise older vinyl.

Last SF-200 Record Preservative £21.95

Without going too deeply into the technical details Last SF-200 is absorbed into the surface of the vinyl and stabilises the vinyl to prevent gouging and fracturing of the groove wall that can occur during playback. A single application can keep records sounding 'brand new' for 200 plays or more.

Last SF-300 All Purpose Record Cleaner £15.95

The one to use to for day to cleaning after your records have been cleaned and protected with SF-100 and SF-200.

available at only £21.95 but as stocks are limited we must restrict this offer to one sample kit per reader.

As well as products to protect and clean your record collection, Last also makes a range intended to perform the same service on Compact Discs.

The SF-600 CD Cleaner and protection kit consists of a special CD cleaner/polish to remove dirt, scratches and finger prints from CDs as well as protective shields, an applicator, an application base and a brush. Refills of cleaner/polish are also available separately.

CD cleaner and protection kit £17.95
Cleaner only £13.95

Gold plated 4mm banana plugs £7.95
Top quality solderless gold plated banana plugs for use with speaker cables. Simply push the speaker cable into the body of the plug and tighten for a perfect connection. This Furukawa plug accepts cables up to 4mm in diameter. Sold in packs of four

Kontak cleaning solution £19.90

Kontak is a two stage contact cleaner for all audio and mains connections. All connections are susceptible to oxidation and contamination which impairs electron flow and thus affects sound quality.

Here's what Paul Messenger had to say when he tried some on his system; "The effect on the power amps alone was so astonishing I had to carry on and cover the whole system. By the time I was finished the system was utterly transformed. Timing and coherence were back with a vengeance; surface noise and coloration were both much less audible and the soundstage had liberated itself from the boxes"

The Art of Digital Audio - John Watkinson (revised reprint) £49.50

This book describes all of the essential theory of digital audio, and a good deal of practice, but it is not a history book. Nor is it a conventional textbook, largely because such things have to choose a target audience and stick to that academic level.

The need for understanding in digital audio is too wide and the subject is too interdisciplinary for that. As you can imagine this is a comprehensive tome that covers all aspects of digital technology including disc drives, rotary and stationary head recorders and even interconnects. It is a must for anyone wanting to get fully acquainted with the subject.



In order to let you try out the Last record cleaning and protection system we have negotiated a special price to enable you to purchase a full size bottle of both

the extra strength cleaner and the preservative for just £34.95.

We also secured a limited number of trial samples of all three products which are



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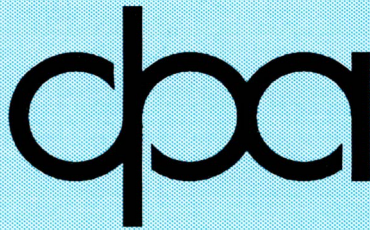
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However, rave reviews are not just the exclusive domain of DPA's PDM2. Hi-Fi World, on the PDM1 S3 said "Any enthusiast who wants the best from CD at a reasonable price should consider (the PDM1)." What Hi-Fi, Nov '91 said ..."the Bigger Bit is set to destroy all its competition." Our amplifiers are equally well respected with Hi-Fi Choice saying of the 50S pre-power ..."unmatched detail resolution, control and transparency."

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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 current retail price is placed in its respective category in alphabetical order. The prices of the products are updated on a regular basis, although it should be noted that our value rating are based on the product's price at the time of review.

The next column contains 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. Please note that these comments are those of the reviewer and not, as is the case with some magazines, those of the manufacturer.

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 meritworthy. 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. Please note that an expensive Recommended product will nearly always sound better than a cheap Best Buy. An ideal situation would be to choose suitably priced Best Buy or Recommended products from relevant categories and create a Best Buy system, but, due to the variety in tonal balance that exists in much audio equipment, 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.

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To order back issues, please turn to page 39.

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.

The first step in putting together a system is to decide which sources you require. There are now three different prerecorded music media competing for the affection 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.

Cassette has never really challenged vinyl's superior quality,

but it's a multiple role format, offering 'go anywhere' flexibility, a 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 relative newcomer but in the last decade it has come to dominate the market. The sound quality remains controversial, hailed as near perfect by its fans but derided by vinyl freaks. It is probably fairest to say that CD is fine for the majority of listeners, but may not suit everyone. Certainly the lack of background noise and deterioration are major strengths.

The advent of two box audiophile players has certainly

helped to gain better acceptance for the format and unless you are prepared to spend a substantial sum, CD arguably offers the best performance in terms of sound per pound. Players are now exceptionally cheap, having been reduced dramatically since the format was launched, however, the prices of the discs remains extortionate.

Choosing the components of a system is only part of the task of getting the system as a whole working as well as possible. Both components and loudspeakers benefit to a surprising degree from proper support in the form of stands that enable them to give their best performance, whether floor-standing or wall mounted.

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 simi-

lar immediate acoustic environment, unencumbered by other furnishings and structure, and a similar distance from listeners, 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 rigid support.

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 as a guide in the sense that you should use the information in it to make a shortlist of equipment and then audition it before taking the plunge. Tastes inevitably differ and it's unwise to buy purely on the basis of our recommendation, as dealers are the most experienced people around when it comes to making systems work as a whole.

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 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-006 £135	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-47 £200	Very Good Good +	Something of a surprise from Akai: a made-for-Germany amp with plenty of widgets and an unexpectedly sharp, open and detailed sound. Looks ghastly but sounds strainfree.	104W, 3 tape, 4 line and MM disc inputs. 4mm speaker outlets.	R	104
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 convertors were less successful than its conventional analogue CD input.	112W, coax and optical dig inputs, MM/MC		68
Akai AM-95 £620	Average Average -	A revamped version of the older AM-93 with newer onboard bitstream DACs. Its sound is just too eager, however	110W, 3 tape, 3 line, MM/MC plus coax/opt digital inputs		109
Albarr PP1 £400-£500	Average Good +	Available with or without various MM/MC disc options, the 'basic' PP1 has an attractively warm, earthy sound. The budget MM stage needs some further work, however.	48W, 4 inputs with extra gain available for low-level sources	R	104
Alphason Apollo £295	Average - Average +	A year and a half later and Alphason's Apollo is still beset with technical problems. This sample buzzed like a distant bandsaw	38W, 5 line, tape and MM/MC inputs. Solid wood fascia		109
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 R 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 3 £200	Good Average	After the enthusiastic reception earned by the older Alpha 2 the generally lacklustre and bland sound offered on this occasion met with (unexpected) disapproval.	53W, 3 line, tape and MM disc inputs. Direct option.		104
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 + four line inputs + coax/opt digital inp	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
Art Audio Quintet £725	Average Very Good	Switchable triode/ultralinear output stage. There's 15W and 15W, but in triode mode these are 15 of the sweetest watts around. Surprisingly gutsy	15/25W, variable feedback	R	100
Audio Innovations 1000/2nd AA £1499/£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, monobloks	R	63
Audio Innovations Series 200 £349/£499	Poor + Good	Recently updated, this pre/power combo turns-in a fuller and more substantial performance via MM rather than CD. Otherwise its sound can seem slightly bleached and lacking expression.	10W, 3 line, 1 tape and MM or MC inputs. 'Isolate' switch		109
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(1) integrated valve amp with tape, 3 line and MM disc inputs	R	97
Audio Note Ongaku £34,000	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
Aura VA-100 Evolution £270 and £300	Average - Good +	This beefed-up VA50 might overheat when driving insensitive, low-impedance speakers but was applauded for its sense of scale and daram via CD	81W, 4 line, 1 tape and MM inputs. Bi-wire outputs	R	109
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/£695	Very Good Good	Very rugged Canadian pre/power combo that sounds cool, confident and punchy. Headamp available to suit MC cartridges	65W, MM and 4 line sources, overload LEDs on power amp	R	74
Bryston 12B/4B £1295/£1395	Good + Good	Bryston's massive 4B power amp stood out as the backbone of this combo, the preamp sounding a trifle unbalanced between MM and MC inputs	272W, bridgeable to 800W. 6 line, 2 disc inputs, subsonic filter		68
Carver CM-1090 £595	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

AMPLIFIERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Cello Audio Suite £1200	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
Concordant Exultant £700	Average+ Very Good	Individual appearance of this valve pre contrasts with sonic invisibility. An extremely dynamic performer. Recommendation withheld pending more appropriate p.s. plug	3 line, MM, variable gain		100
Conrad-Johnson PV-10 £1100	Excellent Excellent	Pricey, yes, but a fabulous preamplifier which confirms C-J's high reputation in the States. Beautiful imaging, superb detail, plenty of gain on the phono stage - classy build quality too.	MM plus 4 line inputs	R	78
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
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 4140 S2 £230	Average Average +	Running production changes inspired us to re-review this amp which now sounds thicker and 'blurred' compared to the original	41W, 3 line and MM/MC inputs, mono and mute facilities		109
Creek CAS 6060 £470	Good Good	An amp that looks like the '5050 but employs the sort of big, confident and meaty-sounding electronics used in the earlier '4040. Dynamic and impressive.	81W, 3 line, 2 tape and MM/MC disc inputs. Bridge-mono facility		104
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
Croft Super Micro A OT/Series V £689/£555	Average+ Good	Micro is still unashamedly "cottage" but offers good performance. Combo is let down by the very low powered Series V	15W, valve, dual vol.control, 2 line, MM, tape out		100
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 R line inputs	R	80
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
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
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
DNM 3A £1590	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
Deftec 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
Deftec DSP-50S/DPA-50S £725/£925	Excellent Excellent	Remarkable pre/power combo based around the highly linear DH-OA32 hybrid op-amp. Unmatched detail resolution, control and transparency	63W, external feedback wiring. 3 line, MM/MC no tone controls	R	68
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 £140	Good Good +	Spacious yet tactile and gutsy sound via all inputs. Worthwhile upgrade over original PMA-250	53W, MM 3 line inputs, source-direct	R	80
Denon PMA-350 £170	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 p	Excellent 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
Dual CV600RC £150	Good + Good	The heart of Dual's latest budget range enjoys a very lively, open and vibrant sound. Slightly sanitised via CD perhaps, but still damn good for a features-first integrated amp!	63W, 3 line, 2 tape and MM inputs. Remote control	R	104
E.A.R. 549 £3628 pair	Very Good Very Good	A valve monoblok that measures like a solid state amp is itself an achievement, but exceptional power delivery and bass 'slam' is not fully matched by delicacy and transparency elsewhere	200W monoblok, bias setting		60
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
EMF Audio Sequel £349	Good - Good +	A fresh start for Mike Creek has resulted in the Sequel, a minimalist amp with a very refined but mildly restrained sound	47W, 3 line, 1 tape, MM or MC inputs.		109
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*/VIII £1580	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 £530/£580	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 £1900	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
Hafler DH120 assembled £365	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
Hafler SE-100/SE-120 £370/£380	Good + Good +	The smallest of Hafler'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
Hafler XL-600 £1200	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 HK6150 £160	Good Good +	Based on the older HK6100 but with a more solid, punchy and expressive performance that attracted considerable praise from our listeners	44W, 3 line, 2 tape and MM inputs, loudness, tone controls	BB	109
Harman Kardon HK6850 £700	Good + Good	This monster is derived from the HK6800 with a similarly deep and powerful sound but a rather steep price tag	101W, 4 line, 2 tape and MM/MC inputs. Preamp direct		109
Heybrook C3/P3 £479/£660	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

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The Directory

AMPLIFIERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Heybrook C3/P3 £479/£660	Average + Average	Since we last looked at this combo Heybrook has improved the manufacture of its power amp though flaws in the preamp's disc input remain unchecked	146W, oodles of current, passive line inputs		104
Heybrook Signature £649-£150/£92	Good + Very Good	Heybrook have re-boxed the best facets of the old C3/P3 to produce a stunningly powerful and vivid-sounding combination which is equally impressive via vinyl or CD	148W, 3 line, tape and MM/MC inputs. Outboard transformer	R	109
JVC AX-A342 £169	Very Good Average	A value-conscious budget amp offering plenty of power but a slightly untidy and inconsistent sound	77W, 3 line, 2 tape and MM inputs, tone, loudness controls		109
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
JVC AX-A441 £210	Good+ Average	A return to the traditional style of mass-market design brought an inconclusive reaction from our panel. Blowing 'hot and cold', our listeners ultimately found its music uninteresting	93W, 3 line, 3 tape, MM/MC inputs. CD direct facility		104
JVC AX-Z1010 £650	Very good Good+	JVC's flagship amplifier also houses a couple of ancient 16-bit DACs for good measure! One of the best behemoths: a big amp with a big, boppy and unmuddled sound	124W, 6 line and MM/MC inputs plus opt/coax digital inputs	R	109
Jadis JP30/JA30 £4990/£4900	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/Mod	Very Good Very Good	The technical design of these amps is very elaborate but ensures they achieve an extraordinarily transparent and potent sound. However, the CD i/p is clearly superior to the disc inputs	448W monoblok MM/MC with loading options, Balanced topology	R	72
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 £395/295/595	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-4040R £220	Good + Average +	In many respects this sophisticated amp is a 'digitised' version of the KA-4020 with relay-switched inputs and full remote control. Unusual looks but can seem insubstantial via CD.	82W, 3 line, 2 tape, MM/MC inputs. Full remote control		104
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
Kenwood KA-5040R £270	Good + Average	A flexible, remote-controlled amp that uses the old KA-5020 as a building-block. Unfortunately it lacks dynamics, sounding stifled and uninteresting	100W, 3 line, 2 tape and MM/MC inputs. Source Direct		109
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
Lescon 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
Lescon Stereo £200	Poor Very Good	Can reflect the full weight and ambience of a tense, classical performance. A genuinely deep, detailed and enthralling sound marred by unreliability of our sample. New stock will be cured.	76W, 4 line, 2 tape, MM/MC inputs.		104
Lectron 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 Intek £398	Good - Average +	Linn have slashed its price and made various internal revisions, but their no-nonsense Intek still lacks the authority and confidence to support its forward balance.	55W, 3 line, 2 tape, MM/MC inputs, rec-out, mono + mute		104
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 sockets		68
Linx Nebula £500	Average + Average +	Ambitious both in style and design this amp was less impressive in the sonic arena — positive but two-dimensional	88W, logic-controlled i/p switching		85
MFA Magus £1147	Good Very Good	Versatile valve preamp from USA, genuine MC compatibility and high class construction make the Magus a bargain	3 line, MC, tape out, variable gain	R	100
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-30 £130	Good + Good +	The building-block for Marantz's popular budget 'SE' amplifier is no slouch, providing a lively and very expressive sound with plenty of strong bass. A good 'un.	49W, 3 line, 2 tape and MM inputs, source-direct	BB	104
Marantz PM-30SE £150	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 £260	Good + Average +	One of Marantz's new breed, the PM-50 has a big and beefy sound yet one that lacks refinement	92W, MM/MC, 4 line inputs, source- direct		80
Marantz PM-72 £300	Good + Average	This is a very neutral, pleasantly detailed and even-handed performer but one that lacks a sense of emotion or expression	155W, 3 line, 2 tape and MM/MC inputs		109
Marantz PM-75 £500	Good Average	More successful than most amps with on-board DACs but still not as balanced as other Marantz products	136W, opt/coax dig inputs, 6 line + MM/MC		68
Marantz 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
Meridian 201/205 £760/£525each	Very Good Good +	A fine preamp with additional luxury option of full system remote, plus competent and attractive monoblok power amplifiers with generally good performance	100W MM/MC 6 line inputs remote capable straight line	R/-	62
Moth Series 30 £132/ £203 (£254)	Good Very Good	A modular system capable of cracking results. The passive preamp and power amp combination is especially good value and warrant a Best Buy in their own right.	35W, 4 line inputs on passive pre, MM/MC on phono eq unit	R/BB	109
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
NVA AP20 £260 or £290	Average - Good +	Available with or without a disc stage this utilitarian amplifier sounds gentle and restrained but is euphonic and utterly engaging	35W, 2 line, tape and either MM or MC inputs	R	109
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
Naim Separates £750 pl	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
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

AMPLIFIERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Orell SA-040SE £400	Average Average +	Very natural, relaxing if not overly exciting via CD, the sound closed-in to become 'pinched' or fettered via disc	64W, 5 line + MM/MC i/p's Tweaky 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 d/fsc. Can appear soft and unbalanced via CD	108W, MM/MC source-direct tone		74
Philips FA-930 £200	Average Average +	Radical styling hides a digital switching facility plus full remote control over what is Philips' best effort to date	99W, tape, analogue and digital inputs with ESI BUS	R	109
Philips FA-890 £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 FA-960 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-229 £130	Average + Average	An unambitious amplifier that fights shy of tricky speakers with a sound that's equally unadventurous. Slightly soft and comfortably even-handed presentation	60W, 2 line, 2 tape and MM inputs, loudness and direct		104
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 £250	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
Pioneer A-676 £280	Good + Average -	A lusty amplifier at a modest price yet one that failed to inspire our listeners with its bland, indifferent sound	98W, 4 line, 3 tape and MM/MC inputs + subsonic filter		109
Pioneer A-777 £400	Very Good Average -	A larger version (!) of the A-676 that offers more power but an equally sluggish and uninspiring sound	121W, 4 line, 3 tape and MM/MC inputs + muting facility		109
Proton 520 £115	Average Average	Very well equipped budget amp with a slightly flat and undynamic sound - acceptable at the price though	31W, MM/MC with variable MC gain, 4 line inputs	R	74
Proton AP-1000/AA-1150 £250/£395	Good + Average +	Bags of headroom available from this pre/power combo, but can seem bloated or unrefined via MM	67W, MM/MC, adjustable MC gain, 5 line inputs		80
QED A240 CD II £249	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 A270CD/PA £369/£429	Good Good +	Recent updates have bolstered the output of the A270 without adding to its colourations. The PA option is a touch expensive	61W, 2 tape, 3 line + MM or MM/MC from PA board	R/-	97
QED C300/P300 £329/£370	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 p	Average Good +	Monstrous valve monoblocks which represent good value. What they lack in musical subtlety they make up for in sheer muscle. And these are Lumley's small monoblocks!	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 given the competitive price	MM plus 3 line inputs	R	77
Rotel RA-930AX £160	Good - Very Good	Based on the original RA-820AX but featuring a new look and a tweaked circuit design, this budget wonder captivated our listeners with its clean, vibrant and thoroughly involving sound	53W, 3 line, tape and MM inputs, tone bypass	BB	104
Rotel RA-940BX £200	Good Good	Rotel's cheapest 'BX' amplifier prompted a mixed reaction, some finding it muddled while others thought it 'exceedingly musical'	53W, 3 line, 2 tape plus MM/MC inputs. Tone defeat	R	109
Rotel RC-960BX/RB-960BX £150/£180	Very Good Good -	With excellent standards of construction, flexibility and plenty of power under the bonnet, this duo represents an ideal choice for the first-time buyer.	80W, bridge-mono facility, 3 line, 2 tape and MM/MC on preamp	R	104
Rotel RC-980BX/RB-980BX £275/£350	Excellent Average	Plenty of watts per pound sterling from a technically flawless combination. Its sound is equally expansive but lacks a sense of poise, of control and fine detail - a disappointment	143W (33A!), 3 line, 2 tape and MM/MC inputs + headphone socket		109
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 + 2 liner and 2 tape, tone memory, spk switching		74
Sansui AU-X111 £100	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-F440E £180	Very Good	A new budget amp based on tried-and-tested circuits but free of spurious widgets like tone controls. It has a fresh and up-beat sound with plenty of detail, can sound smeared via CD	109W, 3 line, 2 tape and MM + rec out	R	104
Sony TA-F540E £230	Very Good Good -	An extra £50 buys you an MC input but little else over and above the TA-F440E. This version sounds more consistent from input to input but is still rather superficial or unconvincing	108W, 3 line, 2 tape, MM/MC + rec out		104
Sony TA-F670ES £400	Very Good Good	Nothing fancy, just a heavyweight amplifier that puts up 'a damn fine show'. Fresh and sharp-sounding but a little too expensive	133W, 3 line, 2 tape, direct and MM/MC inputs. Pre-out facility		109
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
Sony TA-F770ES £600	Good + Average -	Another monster amp offering full remote control and buckets of power. It's also another monster amp that sounds boring	125W, 3 line, 3 tape, direct and MM/MC inputs. Remote operation		109
Sound Audio VP3a/HBP60a £599/£599	Good Average ++	Hybrid power amp and valve line stage. Big 'n' beefy power amp is the stronger partner	4 line, 1tape 60W	R	100
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 inPure 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-VX600 £200	Good + Good	What looks like a fairly ordinary mass-market offering is actually the first 'tweaked' amp from Technics, its solid and sharply focussed sound a taste of things to come.	90W, 3 line, 2 tape, MM/MC + power-amp inputs	R	104
Technics SU-VX800 £450	Very Good Average	On the other hand, this is a mass-market amp still hampered by over-enthusiastic protection circuits! It sounds raw and congested when the going gets tough - positive but raucous	148W, 3 line, 3 tape, balanced input + MM/MC		104
Technics SU-VZ220 £100	Good Average -	Cheap, cheerful and pretty flexible to boot yet the SU-VZ220 quickly sounds thin, splashy and relentless when the going gets tough	50W, 3 line, tape and MM inputs plus tone and loudness controls		109

The Directory

AMPLIFIERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Threshold FET 10e system/ Woodside SC26/STA35 Renaiss	n/a Very Good Good Good+	Almost valve-like limpidity and excellent soundstaging are star qualities of the Threshold amps. Line input resistive loading is too low Synergistic pairing with a cool, controlled sound, good focus and transparency. More about poise than grunt	Component FET phono stage, line pre, FET power amp 100w 35W, valve, 3 line, optional MM or MC, 2 tape outs		Coll. '9 100
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 high 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
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	neutral yet lacks the ability to involve on an emotional level	131W, 5 line + MM/MC. Pure Direct + remote control		97
Yamaha AX-750 £399	Very Good Average	Big and bulky with remotely-controlled input and volume. Impressive handling, but two samples split the opinion of our listeners, one sounded squashed the other fast and articulate	149W, 3 line, 2 tape, MM/MC inputs + remote control		104

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.

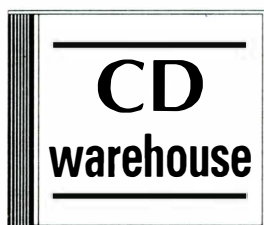
MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Acoustic Research RD-06 £300	Average Average	Acceptable middle market player with very simple facilities and cramped control section, but unusually good looks	Dolby B/C/HX Pro, fine bias, counter memory, repeat		69
Aiwa AD-F410 £100	Average Average	Comparable to AD-F500 but cheaper: Good all round performance, well adjusted, useful basic and not so basic features	2 head, Dolby B/C/HX Pro, bias adjust	BB	99
Aiwa AD-F500 £160	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-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-WX616 £160	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	R	93
Aiwa XK-S9000 £700	Good + Good +	Genuine state of the art in battleship pale gold/wood gloss clothes. Fabulous build, clunky transport and sharp, refined sound quality with Dolby S or B and metal tapes	Dolby B/C/S/HX Pro, built in DAC, R tape alignment	R	105
Akai DX-57 £200	Good Good	Confident sounding price deck which eschews fancy gadgets for a good transport and decent electronics. Sound quality is firm and tidy under most conditions of use; avoid Dolby C.	3 heads, dual capstans, Dolby B/C/HX Pro, variable bias		105
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
Akai GX-65 £300	Average Average	Fine un gimmicky middle ranking deck with simple, purposeful controls, works best with metal tapes. Performance standards fair to good	3-head, dual capstan, Dolby C/HX Pro		87
Akai GX-95 £400	Good Very Good	Well designed and finished cassette deck with features well judged to please the audiophile. The calibration system is simple and effective, and the deck sounds great	Dolby B/C/HX Pro, 3 head, manual tape set-up	R	69
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	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	Auto-reverse (optically triggered), Dolby B/C/HX Pro, bias adjust		99
Akai GX-W45 £299	Average Average	Costly but musical high-spec dual deck, doesn't like modern high energy Type IIs and IVs, but with careful tape matching it has all the key attributes, including stability and clarity	Dual auto reverse, record/play transports, Dolby B/C/HX Pro	R	111
Arcam Delta 100 £850	Excellent Excellent	Ambitious first cassette deck from Arcam has a superb transport and a ripe, spacious sound. The Dolby S installation more successful than most. Some replay incompatibility	3 heads, dual capstans, Dolby B/C/S, tape calibration	R	111
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-710 £230	Average Average	Although this is a fair performing model, the design has lost some of the competitive edge of its predecessor, the DRM-700. Memo: must try harder - and where's the timer standby?	Dolby B/C/HX Pro, fine bias adjust, record return		105
Denon DRS-610 £200	Average+ Good	Unique loading mechanism provides stability, and the deck has a crisp, clean quality. But has occasionally anaemic bass and a channel mismatch with metals	Drawer loading, Dolby B/C/HX Pro, R fine bias, track search,		111
Denon DRS-810 £300	Poor Average	Basically good deck with non-stressful material let down by an inability to deal with high energy tapes properly. The horizontal loading mechanism is a success.	CD style loading drawer, real time remaining display, Dolby B/C/		105
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 CC800RS £150	Average - Average -	Low(ish) cost auto-reverse deck has mic input but lacks some niceties. Delivers a punchy but ultimately rather crude impersonation of source material, and a thin, lightweight bass	Auto reverse, Dolby B, C, HX Pro, microphone input.		105

An invitation from Bill Wilson

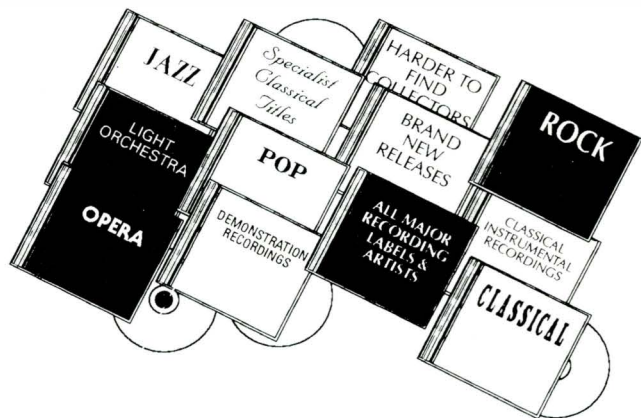


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CASSETTE DECKS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
JVC TD-R441 £170	Average - Poor	This deck would make a good choice for those who need the unattended recording time to deal with absentee recording off air, but is a less than wholly convincing musical advocate.	Auto reverse transport, Dolby B/C/HX Pro, CD direct input		105
JVC TD-V1010 £400	Good+ Excellent	Very high grade enthusiasts deck with almost-CD like resolution and stability, especially with Type IV tapes	3 heads, Dolby B/C/HX Pro, variable bias, sens, 3 line,	R	111
JVC TD-V541 £280	Very Good Very Good	Crisp, lively sounding deck with excellent timing and occasionally slightly thin tonal quality. Best with metals and Dolby B	Dolby B/C/HX Pro, 3 heads, fine bias, display off	BB	105
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-5530 £190	Average - Average -	Neat looking and well equipped deck, adequately engineered but somewhat lacking musically. Worth considering if auto-reverse is the key to your happiness.	Dolby B/C/HX Pro, auto reverse, auto biasing, auto fader		105
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 £00 G	Average od- su	This is a competitively priced portable recorder though not suited to repn only on 3 heads,	ual capstans, bias/	9	£
eties by the £400	TEAC V Average	7000 Good Intrinsically sharp, clear and solid sound spoiled by exaggerated detail with domestic cassette deck. dbx is useful for location work; results with Dolby B are acceptable	prerecordedhead, dbx, fine bias, charger/adaptor	R	87
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 i		93
Marantz SD40 £150	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 SD50 £230	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 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, HX Pro, parallel recording		93
Marantz SD60 £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
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 1.5 £500	Good Very Good	High grade 3 head deck with minimal features but fine engineering and sweet, open though slightly coloured sound quality.	Dolby B/C/3 heads, bias adjust	R	105
Nakamichi Cassette Deck Two £350	Very Good Very Good	Not completely neutral, this deck is assured, dynamic and quick, with abundant detail and some coarseness. Stable transport but rudimentary features accompany fine under the skin engineering	Dolby B/C, manual tape type selection, bias adjust	R	93
Nakamichi RX-202E £600	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-91a £550	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
Pioneer CT-S410 £200	Average+ Average+	Powerful selection of features, excellent ergonomics and the fine, explicit sound with metals, though some instability was noted and the first test sample was faulty	3 heads, Dolby B/C/HX Pro, automatic tape alignment	BB	111
Pioneer CT-S610 £270	Good Very Good	Exactly engineered and highly articulate up-market cassette deck. Electronics are slightly coloured, but imagery and dynamics are finely resolved	3 heads, Dolby B/C/HX Pro, Super Auto BLE, CD Sync	R	111
Pioneer CT-W601R £200	Average- Average-	Mediocre performance attributable to flimsy build and less than stable transport. Frequency responses not wholly accurate even with Auto BLE. Not ideal ergonomics	Dual auto reverse, one records, Dolby B/C/HX Pro, Auto BLE		111
Pioneer CT-W650R £200	Average Average	There were some intermittent problems with the tape alignment system on the test sample, but the deck was otherwise good, despite a coloured bass and inability to exploit Type IV tape	Twin deck, both reverse, one records, auto align, B/C/HX Pro	R	105
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
Revox H11 £938	Average + Average +	Costly and well engineered deck which boasts the bare minimum of facilities and which is primarily designed for the Revox multi-room H-Line system. Moderate performance.	3 head, Dolby B/C/HX Pro, manual tape alignment		105
Revox Pro Series C115 £843	Good Good	Not for the numbers freaks, it's unobtrusively musical, with a slightly wayward top and a very clean, extended bass	Professional 3 head, Dolby B/C/HX Pro, variable bias & sensitivity.		111
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-X111E £120	Poor Poor-	Very high levels of flutter, and a shabby, hollow sound with metallic colorations and a severe loss of detail - is it necessary to go on?	Dolby B/C/HX Pro, fine bias adjust		105
Sansui D-X117WR £220	Poor Poor	Bass is thin and coloured, and the sound lacks dynamics, pitch accuracy and overall stability - the sound is neither stable nor solid. Prerecorded cassette quality is also poor	Dual, one transport records, both auto reverse, Dolby B/C/HX Pro.		111
Sansui D-X211HXR £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	BB	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		99
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-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 Pr		99

The Directory

CASSETTE DECKS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
TEAC V-7000 £400	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		99
Teac R-9000 £450	Good + Good	Much better than average auto-reverse deck, well worth considering, though short of the special qualities required for formal endorsement at this price. Nicely engineered too.	Auto-reverse, 3-head, tape calibration, Dolby B. C, HX Pro		105
Teac V-8000S £700	Good + Good	Superb stability and real subtlety from a cassette deck, this must be the best Teac yet. The only disappointment was the Dolby C circuit which was coloured and lacking in transparency.	3 heads, dual capstans, Dolby B/C/S/HX Pro, tape calibration	R	105
Technics RS-BX626 II £180	Good Good	First rate deck at a bargain price. Losses when recording are low and mostly benign, and dynamic range with high energy tapes is excellent. An all-round achiever	3-heads, Dolby B/C/HX Pro, optional remote control	BB	111
Technics RS-BX707 £220	Average Average -	Uneven but ultimately messy sounding deck with a number of oddities, including a tape calibration system lacking in accuracy and poor Dolby alignment	3 heads, Dolby B/C/HX Pro, bias & level calibration		105
Technics RS-BX828 II £300	Good + Good	Fine middle ranking deck, with explicit detail and stability, but which in the final analysis doesn't go much further musically than the cheaper RS-BX626	3 heads, Dolby B/C/HX Pro, tape bias/sensitivity lineup,		111
Yamaha KX-260 £150	Average Average	Lively, entertaining deck that trades gadgets for a convincing performance at an attractive price point	Dolby B/C/HX Pro, Play Trim, bias adjust	BB	111
Yamaha KX-360 £179	Average Average	Updated KX330, performance has a very KX-260 like dryness and precision. Good - but doesn't 'breathe,' and occasionally sounds unstable	2 heads, Dolby B/C/HX Pro, bias, Play Trim, intro scan,		111
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-W362 £250	Average- Average-	Almost a good deck, it is let down by audible levels of wow & flutter, apparent even with prerecorded material. The audio circuits are good	Two auto reverse, 1 records. Dolby B/C/HX, Play Trim		111

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-300 £130	Average + Average +	Cheap, cheerful and gratifyingly free of digital 'nasties', this new bitstreamer is well-equipped but safe rather than thrilling on the sonic front.	Remote control, optical output, Toshiba bitstream DAC.	R	107
Aiwa XC-700 £180	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 £210	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-52 £249	Good Good	A nice surprise from Akai, genuinely good sound from this mid-priced model. Better linearity will help further	Remote, digital output, headphone socket	BB	64
Akai CD-55 £230	Good Average -	Budget model which fails to compare with the CD52	Remote, hdph, Good programming		83
Akai CD-57 £180	Average + Average +	A very flexible machine with a slightly lumpy but fullsome bass, no model of clarity but very entertaining!	Remote control, motorised volume, hybrid PWM DAC.	R	107
Akai CD-62 £330	Average Very Good	Looks, build quality and the technical specification are right up to date. As it stands it sounds very good but if the indifferent lab performance is improved, it would probably sound even better	Remote, programme, hdph, comprehensive display etc	BB	70
Akai CD-73 £450	Good Average	A little uneven musically, the Akai tends to smother fine detail, but has first class dynamics and stereo imagery. Worth auditioning	Track entry keypad remote, menu display (switchable)		62
Akai CD-93 £700	Good Very Good	Undoubtedly a CD player of real class in build, presentation, lab performance and sound quality, but also a shade expensive for formal Recommendation though that's not to dissuade lovers of	Track entry remote, menu display etc.		58
Arcam Alpha Plus £420	Good - Good +	As its name suggests, this is the 1992-version of a classic 16-bit player with an all-round smoother sound!	Remote control, 20-track memory, digital o/p, 16-bit DAC	R	112
Arcam Delta 70.3 £650	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 dig outputs. 7350 PDM		95
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
Carver TL-3220 £495	Good Average	A lightweight player with primitive display. We thought it sounded rather sparse and dry, and though Carver's DTL feature certainly fleshed-out the bass it also softened the stereo focus	Remote control with volume keys, 'Digital Time Lens', 18bit 8x		95
Carver TL-3300 £595	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
Cary Audio Design CAD-955 £899	Average Average +	Rotel's latest 16-bit wonder with an add-on valve processor to filter-out any residual RF garbage. Nice idea but the player sounds very dry and taut, lacking warmth and body.	Remote control, triode-output stage, Philips 16-bit chipset.		107
Creek CD60 £500	Good + Good	A big and confident sound from a player that's stuck with a green display, green lettering and green-fronted drawer. So it looks ghastly even if the internal design is very thoughtful.	Remote, spring-loaded buttons, coaxial digital output, 16-bit.		107
Denon DCD-1290 £319	Good Good -	This player certainly looks the business but its sound is a real five-minute wonder. Its compelling fizz lasts about as long as your average firework.	Remote, pitch control, index skip, variable output, 18-bit		107
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 £570	Very Good Good	Beautifully built and generously equipped yet with a sound that's decidedly sluggish, particularly through the bass. Vocals are more forward but can sound a little glassy	Remote, pitch, tape edit features, opt/coax digital output, 20bit 16	R	95
Denon DCD-860 £250	Average+ Good+	This is a well designed and generously equipped budget player that offers a very spacious and appealing sound. There's a hint of treble emphasis but it still sounds great at high volumes!	Remote, pitch and full tape edit facilities. 18bit 8x.		95
Denon DCD-890 £270	Good + Good -	Similar to the DCD-1290 in its execution though manages a better technical performance. Sounds lively and powerful but lacks subtlety.	Remote control, 20-track memory, tape edit, 18-bit DACs		112
Dual CD1080RC £200	Very Good Average -	A rather strange-sounding player with a top-heavy treble that does little to redress its lack of vibrancy and emotion. The back-lit LC display and clean digital output are plus points.	Remote, coaxial digital output, digital volume, MASH/PWM DAC.		107

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CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
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 £260	Poor Average +	This player looks little different to other HKs but its performance is dominated by a budget decoder/oversampling IC. Good bass nonetheless but pop tracks can sound fizzy and tiring	Remote control, display-off, timed-shared mono 18-bit DAC	107	
Harman Kardon HD7500II £300	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	R	95
Harman Kardon HD7600II £400	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
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-V152 £130	Very Good Average	Based on earlier budget designs but minus a remote control. The voluminous but vague sound is equally familiar.	Tape edit, DDRP, PEM bitstream DAC		112
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	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		95
JVC XL-Z441 £200	Very Good Good	The smoothest-sounding of JVC's budget machines - clear and bold but also very even-handed. One if not their best sub-£500 players to date and strongly recommended.	Remote control, tape edit, index skip, PEM bitstream DAC	R	107
JVC XL-Z452 £180	Very Good Good +	Another lightweight player but graced with a surprisingly bold and detailed sound. Impressive stuff for the money.	Remote control, 32-track memory, volume control, PEM DAC	R	112
Kenwood DP-3040 £180	Good + Good +	The sophisticated sound of this budget player could teach Kenwood's costlier offerings a thing or two!	Remote control, 20-track memory, volume, NPC bitstream DAC	R	112
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, disc file, Sony PLM DAC.	R	100
Kenwood DP-5040 £200	Very Good Average	Better built and technically superior to the older DP-5030 but its untidy, detached treble quality proved a real disappointment in our listening tests.	Remote, display control, tape edit, peak search, Sony PLM DAC.		107
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 bitstream	R	95
Kenwood DP-7040 £300	Very Good Good	A classy, polished sound from a decidedly refined piece of engineering. Close to the older DP-7030 in terms of performance but better value in construction and technology.	Remote control, Disc File memory, display control, Sony PLM DAC.	R	107
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-42 £180	Average + Good +	Not as warm or rugged-sounding as the CD-52 but still wonderfully spacious and intimately detailed. Currently the best player under £200, plus it's got a decent coaxial digital output.	Remote control with direct track access, SAA7350 Bit Stream DAC	BB	107
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-52SE £280	Average + Very Good	A similarly dramatic yet far more neutral sound than the basic CD-52. Either way, its engaging and believable performance was a real hit with our listeners.	Remote, FTS memory, switchable digital output, Bit Stream DAC	BB	107
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	R	100
Marantz CD-72 £400	Good - Good +	A heavily-constructed player based on the same digital electronics as the CD-42 and CD-52. This implementation sounds astonishingly solid and immediate but also rather too 'clean'	Remote, variable and digital outputs, FTS, Bit Stream		107
Marantz CD-72SE £500	Good Good +	A recommendation just eluded the grasp of this superbly built player thanks to its very polished but restrained sound.	Remote control, 20-track memory, FTS, volume, BS DAC		112
Marantz CD-80 £560	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

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CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
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 206B (DAC7) £971	Good + Very Good	Plenty of tight, strong bass but a little mechanical or even sparse at times. Its technical presentation of music is spot-on, only the sense of drama or anticipation needs working on.	Remote control, novel direct-loading transport, DAC7		107
Meridian 208 £1,550	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
Micro Seiki CD-M100 £5541	Very Good Good	One of the hernia inducing bricks of hi-fi, the Micro is extravagantly styled, finished and built. The good lab performance led to an 'only good' sonic display when the price demanded excellent	Balanced output, remote, display blanking		72
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		100
Mission DAD5 £300	Good Average +	Similar-sounding to Philips' 600-series players: lively, plenty of space and full of 'bounce' but a little too eager to impress in the short term.	Stylised remote, no 'stop' key on player, digital out, Bit Stream		107
Musical Fidelity CD1 £400	Average + Good -	Put together in Taiwan to MF's specifications, the main PCB and digital electronics are also used by Rotel's RCD-965BX! This version lacks the creamy, engaging quality of the latter.	Simple remote, index and track skip, digital out, SAA7323 DAC		107
Musical Fidelity CDT £500	Poor - Good +	An oddball player equipped with a cheap top-loading transport and appalling digital gubbins yet saved by the euphony of its valves!	No remote, no memory, hybrid DACR with valve output stage		112
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 that 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 subtlety rather than have	Remote with direct track access, variable output, MASH/PWM	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 rather than complex classical works which seem to lack focus and secure soundstaging	Remote with track access, coax dig. output. 18bit 8x		95
Philips CD930 £180	Good + Good -	Featuring new 900-series livery and digital circuitry similar to Marantz's players but a sound that's a little too ripe and soft.	Remote control, Personal Presets, FTS, 30-trk memory, BS DAC		112
Philips CD950 £350	Very Good Good +	Philips' top 900-series player is the first to employ its advanced DAC7 chipset. Sounds very crisp, clear and confident.	Remote control, FTS, volume, display off, DAC7 Bit Stream	R	112
Pioneer PD-201 £150	Good + Good	A budget player with a genuinely fizzy and exciting sound. Hardly neutral but audacious and entertaining nonetheless.	Remote control, 24-track memory, R volume, PFM Bit Stream DAC		112
Pioneer PD-75 £800	Very Good Very Good	A confident yet beautifully poised and relaxing sound from an equally luxurious package. Oodles of refinement plus Pioneer's hi-tech Stable Platter transport, but still expensive.	Remote, index and track skip, display off, PDM Bit Stream DACs		107
Pioneer PD-93 £1430	Very Good Good+	The extremely civil, understated feel of its music contrasts markedly with the over-engineered construction of this unit. It will not offend anyone but then neither will it spark much excitement	Remote with fader and index facilities. Two dig o/p's. 20bit 8x		95
Pioneer PD-S501 £190	Good + Average +	This is the cheapest player thus far to be equipped with a Stable Platter mech, but compromises elsewhere have suffocated its flair	Remote control, 24-track memory, hi-lite scanning, Bit-Stream DAC		112
Pioneer PD-S801 £300	Unusual! Good	Pioneer's version of Wadia's Digimaster digital filtering provides odd technical results with an equally unpredictable sound. Capable of poor or superb results, depending on system.	Remote control, stable platter mech, Legato Link + bitstream DAC		112
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-955AX £260	Good + Average	Touted as a repackaged version of the evergreen RCD-855. In practice, however, our sample disappointed on several visits lacking the clean, cohesive quality of the original.	Remote control, digital output, repeat, scan, Philips 16-bit		107
Rotel RCD-965BX £320	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 involved	Remote (inc volume), skip, scan etc.		58
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-X317 £300	Good + Average	Not in the same class as Sansui's older CD-X311mkII. Same technology and a similar appearance but the sound is neither as responsive or engaging.	Remote, fixed, variable and digital outputs, MASH/PWM DAC		107
Sansui CD-X617 £300	Good + Average	This 'double-DAC' version of the CD-X317 is no more impressive, sounding light and tizzy with pop but dull with classical CD's	Remote control, 24-track memory, display dim, MASH/PWM DACs		112
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
Sony CDP-397 £140	Very Good Good	The first CD player to be almost entirely composed of miniature surface-mount components. Unsophisticated but enthusiastic sound	Remote control, 24-track memory, fade, tape edit, PLM DAC	BB	112
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 Sony players lacks the grip and purpose of the last generation	Remote control, variable and optical digital out. PLM bitstream		100
Sony CDP-797 £200	Good + Good -	Another day, another DAC. This new budget player succeeds with its taut imaging, clean and impressive soundstaging. Can seem a little too lean or dry, however	Remote, motorised volume, edit and scan facilities, PLM DAC	R	107
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-X229ES £300	Excellent Good -	Built to the same standards as the CDP-X339ES but with a colder and less forgiving sound. Lacks a sense of integration and warmth	Remote control, Custom Edit and Custom File, PLM bitstream		112
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		100
Sony CDP-X339ES £430	Excellent Very Good	Superbly constructed, this tour-de-force of features and technology offers a tightly detailed almost cavernous sense of acoustic. The mid and treble can sound positively magnetic.	Comprehensive remote, Custom Navigation System, new PLM DAC	R	107
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,	Remote, everything but Custom File titling. Complementary PLM		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-P3500 £170	Good + Average	A well-meaning attempt to pare-down the CD-P4500 results in a similar looking player with a thoroughly uninspiring sound	Remote control, volume, cue-lock, index skip, Philips BS DAC		112
TEAC CD-P4500 £250	Good + Good	TEAC's first genuine 1-bit player uses Philips BS DAC to great effect, its sound described as having a certain 'organic warmth', very composed and easy-going.	Remote, pitch control, variable out. SAA7350 Bistream	R	107

CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Technics SL-PG320A £140	Good + Good +	A cheaper and remote-less version of the '420A with an equally dry but vivid, spacious and astringent sound. A good 'un	No remote, synchro-edit, auto-cue, 20-track memory, MASM	R	112
Technics SL-PG420A £160	Good + Good +	No repackaged version of the SL-PG200A but a new player in familiar clothes. Still offers an open, transparent and uncommonly fresh sound but a little of the 'magic' is missing.	Remote, digital volume, synchro edit, auto cue, MASH/PWM DAC	R	107
Technics SL-PG520A £200	Good + Very Good	A cracking player that builds upon the astonishing out-of-the-box sound of earlier budget players. Superb clarity and dynamics, thrilling but musically involving too.	Remote, shuttle search dial, edit mode, peak search, MASH/PWM DAC	BB	107
Technics SL-PS620A £230	Good + Very Good	A costlier, tarted-up version of the SL-PG520A that loses very little in the way of clarity, sparkle or in compelling dynamics	Remote control, synchro-edit, 20-trk memory, MASH/PWM DAC	BB	112
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 too but the overall result won't set your pulse racing	Huge remote control, function manager MASH/PWM DAC		100
Wadia WT-2000/Digimaster 2000 £	n/a Very Good	Very high grade player which provides state of the art in believable music making from CD, and promises a degree of upgradeability	Transport/multi bit DAC - 32, 44.1, 48kHz o/s		Coll. '91
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, 16bit		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 at the price.	Remote control, track access, variable out. 18-bit hybrid DAC	R	100
Yamaha CDX-560 £180	Good Good	A real advance on the old CDX-450 though the light, up-front if not entirely welcoming sound of this newcomer could shock the timid listener	Remote control, volume, tape edit, 18-bit hybrid DAC		112
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 more complex passages	Remote control, variable and digital out, LC display. PDM DAC		100
Yamaha CDX-860 £280	Very Good Good +	A strong recommendation for what is probably Yamaha's best CD player to date: powerful and confident yet delicate and nimble when the occasion demands.	Remote control, variable o/p, dimmer, 25-trk memory, PDM DAC	R	112

CD TRANSPORTS AND DACS

A CD player can be split into two basic components, the mechanism which reads the information from the disc, known as the transport, and the device which turns the digital numbers contained on the disc into the music that comes out of your speakers, this device being referred to as a digital to analogue convertor or DAC. Although at the lower end of the market both of these are contained in a single box, at the top end of the market two box machines consisting of a CD transport and a separate DAC become more common.

Although many of these units will be purchased as two box machines, which are generally considered to sound better than a one box equivalent, a DAC can also be used to upgrade an existing CD player. A good example is where an early machine with a satisfactory drive unit but a rather dated DAC can be brought up to the latest spec by the addition of a new DAC.

When upgrading an existing player best results are usually obtained using the electrical digital output rather than optical, and obviously

to be upgradeable your CD player must have a digital output in the first place.

The choice of interconnect is crucial in linking drives and DACs and conventional interconnects used for analogue signals should be avoided, a dedicated 75ohm digital cable will give far better results.

Mixing and matching transports and DACs from different manufacturers can be a bit of a lottery and readers are referred to the full reviews where this subject is discussed in more detail.

CD TRANSPORTS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
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
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
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
Meridian 200 £895	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 602 £1,750	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
TEAC P-10 £1499	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 1	R	96
TEAC P-2 £2849	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 1		96
TEAC P-500 £649	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
Wadia WT2000 £5614	Very Good Good +	Based on TEAC's P-2 with outboard mains transformers, active digital output and solid alloy casework. Dynamic and crisp sound best realised with Wadia DACs, otherwise less impressive	CD transport, AT&T opt + direct -coupled coax outputs, Class 1		96
Wadia WT3200 £1800	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

DIGITAL TO ANALOGUE CONVERTORS (DACs)

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
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,	R	88
Arcam Black Box 5 £450	Good Good	Equipped with a Sync Lock for connection to Arcam's D170.3 CD transport. Nevertheless it still gives off its best with a standard 75ohm transport like the TEAC P-10.	Coaxial and optical inputs, Sync Lock, phase invert, hybrid DAC		113
Audio Alchemy Digital Decodin	Good Very Good	A very sweet and seductive sounding unit that gives good results with a wide range of CD players/transport	Coaxial and optical inputs, phase invert, Bit Stream DAC	BB	101
Audio Research DAC1-20 £3898	Very Good Good	This expensive DAC works surprisingly well with Meridian's cheaper 200 transport, an impressively weighty and engaging combo that proved entertaining on audition.	BNC, Toslink and AT&T optical inputs, phase invert, 20-bit DACs		103
Audio Synthesis DSM-M £1234	Good + Good +	A weighty but neutral and highly calculated performer best suited to transports like the P-10, despite AS's application of Arcam's Sync Lock facility.	Coaxial and AT&T optical (option), Sync Lock, 20-bit DAC		113
Audiolab 8000DAC £695	Very Good Good	Needs to be used with a genuine Class 1 digital drive. At its best with the Wadia WT3200 where it sounds vivid and alive. Otherwise can sound a little antiseptic.	Coax and opt inputs, phase invert, crystal lock, Bit Stream		103

DIGITAL TO ANALOGUE CONVERTORS (DACs)

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Beard DAP-1 £975	Poor Average -	Attractively clad in a wooden case this marriage of digital technology and valves has hit the rocks, technically flawed with a disappointingly flat sound to match.	Coaxial and optical inputs, phase invert, three 16-bit DACs		113
ds/d Decode-1 £495	Good + Good	An elegantly designed bitstreamer with plenty of inputs though one that can sound too bright, immediate or artificial for its own good.	Three BNC + one Toslink optical input, phase invert, BS DAC		113
DPA Digital Bigger Bit £650 + £98	Good Very Good	Partnered with either TEAC P-10 or Meridian 200 transports, the Bigger Bit delivers a very taut and dynamic sound, bathed in an open acoustic. DPA's RF mains filter is a must.	Coax and opt. inputs, Deltran sync facility, DAC7 Bit Stream	R	103
DPA Digital Little Bit (Optical) £400	Very Good Good	Our sample suffered from radiated RF interference but new LB's are now cured. Works especially well with Meridian's 200 transport but does require the services of DPA's 'Power' mains filter.	Coaxial and optical inputs, SAA7350 Bit Stream DAC		101
DPA Digital PDM1 Series 3 £1195 + £196	Very Good Good +	Hailed as a budget version of the PDM2, it bears technical comparison with both the PDM2 and Bigger Bit but - in terms of sound quality - is no great advance on its cheaper relative.	Coax and opt inputs, two-box construction, DAC7 Bit Stream		103
DPA Digital PDM2 £2000	Excellent Excellent	State-of-the-art technical performance with a pristine sound to match. Repertoire includes a solid,	Coaxial and optical inputs, phase invert, two-box DAC7	R	101
Forté Audio Model 50 £950	Good Very Good	The first American DAC7 design and one that offers a typically big and full-blooded sound, infiltrated by a slightly euphonic quality but never hard or gritty.	2 Coax and 2 optical inputs, DAC7 Bit Stream technology	R	103
Kelvin PDM DAC £200	Average + Average +	Don't disregard this DAC-in-a-matchbox for though it can sound a little unconvincing it is capable of developing a surprisingly lyrical and natural sound with the right transport.	Single coaxial input, low analogue outputs, SAA7320	R	103
Meridian 203 DAC7 £510	Good Very Good	This is another broadly compatible DAC that's free of fatiguing nasties yet remains bubbly and exciting. If you find the 606 too sober then the 203 will undoubtedly suit	Coaxial and optical inputs, single-box DAC7 Bit Stream	R	101
Meridian 606 DAC7 £1220	Very Good Good	Extra cash buys you a better standard of construction and finish over the 203 yet by refining its sound further Meridian have also tempered its vibrancy and 'life'. Fickle with other transports	Two coaxial and optical inputs, phase invert, DAC7 chipset		101
Micromega Duo BSII £500	Average Good	This DAC has a tendency to sound light, airy and 'last' but it can also become a little hard or - fatiguing with some digital outputs. At its best with Meridian's 200	Coaxial and optical inputs, phase invert, SAA7321 Bit Stream		101
Micromega Microdac £325	Average - Average +	Described as a modest but entertaining performer, achieving its sweetest balance with Arcam's D170.3 transport	Coaxial and optical inputs, SAA7321 Bit Stream DAC		113
Mission DAC5 £299	Very Good Good +	Another modest DAC but one capable of a lean but clean and detailed sound that's typical of the DAC7 breed.	Coaxial input only, phase invert, Philips DAC7 converter	R	113
NVA DAC-ON £730-£960	Very Good Very Good	The subject of much controversy at the time, NVA's DAC-ON actually turns out to be a QED Digit linked to substantial external supplies. A ruse that undoubtedly improves its sound	Coaxial input only, SAA7323 Bit Stream DAC	R	113
PS Audio Superlink £1498	Average Good -	Another transport-fussy DAC that, once again, does the business with Meridian's 200 but can sound bloated, smeared and even vaguely electronic with standard 75ohm digital outputs.	Touch-sensitive coax and optical inputs, phase invert, 18-bit		103
Proceed PDP2 £1595	Average Good -	The PDP2 has a wobbly input impedance that's suited to specific drives, ie Meridian 200, or Proceed's own. At its best expressive and enticing, otherwise it can seem gutless and smeared.	Coax and XLR inputs, balanced outputs, 18-bit DACs		103
QED Digit £125	Very Good Good +	Bearing in mind its expressive but very forgiving performance the Digit is almost embarrassingly cheap. Virtually bomb-proof and will deal with the dodgiest of digital outputs!	Coaxial input only, SAA7323 Bit Stream DAC	BB	113
Roksan ROK-DA1/ROK-DS4 £495/£495	Good Good +	Roksan's first dabbling in digital audio is a creditable affair, both expansive and expressive in character but rather also lean in balance.	Coaxial input, optional onboard PSU, Crystal Bit Stream DAC		113
Stax DAC-Talent £1400	Excellent Good +	Natural, refined and never over-zealous, the DAC Talent is also capable of sounding very spicy and dynamic. Capable of wielding a maturing influence over a light or bright-sounding system	Coaxial and optical inputs, phase invert, mute, 20-bit DACs		101
Sugden SDA-1 £650	Good + Very Good	Something of a surprise from the fuddy-duddies of audio but a very pleasant one judging by its 'masses of high resolution detail and tremendous dynamics'	Coaxial input, TDA1541 Crown 16-bit DAC	R	113
Sugden Stemfoort PDA-10 £1200	Good + Good +	Unfortunately this 'upgraded' SDA-1 is less impressive than the original, losing out on dynamics, airiness and subtle detailing	BNC and coaxial inputs, phase invert is inactive, 16-bit DAC		113
TEAC D-500 £399	Good + Good +	An unusual combination of NPC oversampling filter and no less than two Philips' DACs. Its reliable 75ohm input infers broad compatibility. A dynamic and 'interesting' sound	Coax and optical inputs, complementary 16-bit DACs.	R	103
Threshold DAC 1/e £3150	Very Good Very Good	The DAC 1/e can sound beautifully detailed with a marvellous sense of scale and sharp, solid images. Its unpredictable behavior with unknown transports precludes recommendation.	Coax and opt inputs, balanced outputs, phase invert, MASH/PWM DA		103
Wadia DigiMaster X-32 £2000	Average - Good -	Wadia's freaky input circuit gives unpredictable results with non-Wadia transports. Otherwise it can sound bold, dynamic and crisp but lacks the warmth to bind its music together	BNC and optical(TOSLINK & HP) inputs, 18Bit, 32x		101
Wadia DigiMaster X-64.4 £5000	Average Good*	The X-64.4 positively buzzed with vibrant, sharply-etched detail. An exciting sound	BNC + Toslink/AT&T optical inputs, phase invert, 18-bit 64x		101
Woodside DAC 1 £895	Good Good	Fine but slightly dated and costly package in performance terms - but flexible, musical and t well built	2 electrical + optical i/p. tape ou		87
Woodside DAC2 £510	Good Good +	Based on Woodside's earlier 16-bit CD player and offering a similarly sharp and dynamic sound, all the more captivating for its lack of graininess and 'tizz'. Should be a reliable upgrade	BNC coaxial input (no optical), 16-bit 4x	R	101

DIGITAL AUDIO TAPE

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-S100 £450	Average - Average -	Largely bulletproof in non-critical and semi-critical applications. Despite the usual limitations of DAT as a hi-fi medium, the HD-S100 is a practical and well built tool.	Portable, ADC, mic in, phone/line sockets (3.5mm), 70 min battery	R	105
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/analogue out		99
Casio DA-7 £400	Average Poor	Below average notebook size portable, and in some ways inferior to Casio's own DA-R100 pocketable due to high noise floor, flat dynamics and poor soundstaging	Portable DAT with case. SP record mode, basic editing		111
Casio DA-R100 £410	Average Average-	Somewhat flat sounding and lacking differentiation through the analogue inputs but good via the digital ones, a masterpiece of miniaturisation, wonderful tool where size is important	SP/LP record, optical/electrical in/out, 2.5hr battery life	R	111
Denon DTR-2000 £700	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.	Digital LP/digital & analogue SP rec/play, LP analogue play only	R	93
JVC XD-Z1010TN £1050	Good Average-	Ambitious but ultimately disappointing deck which marries poor ergonomics and an opaque musical delivery to a feature roll call longer than the weekly shopping list	SP/LP record, mic input, remote control, display off, auto fade		111

DIGITAL AUDIO TAPE

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
JVC XD-Z505 £620	Good Good	Competent middle market DAT with uncomplicated (but still flawed) user interface, but good basic sound quality. A fine CD dubbing machine.	DAT SP/LP en/decode, low bit conversion, remote control	R	105
Kenwood DX-7 £500	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	Mains recorder, LP mode. Optional accessory packs adds battery/ADC		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	Remote control, stand-alone DAC facility, optical/coaxial in/out		99
Panasonic SV-3700 £1111	Good Average	Slick, powerfully equipped and reasonably priced, this pro DAT has a clear, quick and colourful sound somewhat lacking in weight and substance	Professional DAT, infra-red remote, S/PDIF & AES/EBU I/O		111
Pioneer D-500 £600	Good - Average	Looks extremely good. Fascia design is complex yet accomplished, and offers very slick tape handling. Musically however it is on the messy side compared to others in this price area.	SP/LP en/decode 1-bit converters, many search/display aids		105
Sony DTC-750 £450	Good Good	Superb value for money: the lowest price full size DAT on the market, fine features, build, measurements and sound approaching the best DAT has to offer at any price.	SP/LP record, real time/date recording	BB	105
Sony DTC-77ES £1000	Excellent Average	Superb engineering, many well implemented features (including off tape monitoring) and technical near perfection (!) don't offset perceptibly slowed, thickened sound	4-head, tape monitor, many search/display options, SP/LP		105
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	Mid-width, alpha-numeric display, remote, optical/interfaces	R	63
Sony TCD-D3 £500	n/a Very Good	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	BB	94 Supp.
Tascam DA-30 £1199	Good Average+	Interesting pro DAT deck with solid, tangible sound quality which is nevertheless lacking in analysis	Wired remote control, S/PDIF, AES/EBU and standard analogue I/O		111

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.

HEADPHONES

MODEL PRICE	FIT SOUND	COMMENTS	TYPE	VALUE	ISSUE
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
AKG K500 £119	Good Very Good	Distinctively open and clear, they reproduced music with impressive definition, balance is on the light side but transparency is high for the price	Circumaural, open-back, dynamic	R	111
Aiwa HP-X30 £31	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
Audio-Technica ATH-308 £26	Good- Average-	These small cans have a fairly forward balance which helps perceived clarity but they can become wearing over time, good for personals	Supra-aural, semi-open, dynamic	R	111
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-9000 £246	Very Good Good	These electret cans connect up to the amps speaker outputs via an adaptor, it sounds a little too smooth and relaxed but would suit aggressive amps	Circumaural, open-back, electret		111
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 DT411 £49	Good Good	A reasonable but not very thrilling headphone that doesn't really offer enough at the price	Supra-aural, open-back, dynamic		111
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 DT911 £179	Good Very Good	Probably too revealing for many headphone amps these are very subtle and fine if expensive cans	Circumaural, open-back, dynamic	R	111

HEADPHONES

MODEL PRICE	FIT SOUND	COMMENTS	TYPE	VALUE	ISSUE
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
JVC HA-D690 £40	Average Average	Competent but rather undistinctive cans, a bit middle of the road and well suited to aggressive sources	Supra-aural, closed-back, dynamic		111
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
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
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 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
Sennheiser HD 480II £50	Good+ Good	Not the most accurate cans on the market but amongst the most enjoyable	supra-aural, open-back, dynamic	BB	111
Sennheiser HD 540II £100	Good+ Good+	A good but not great headphone that due to its high impedance and efficiency should work well with most sources	circumaural, open-back, dynamic		111
Sennheiser HD40 £20	Very Good Good -	Very light and comfortable headphones with an even sonic balance that will suit most sources, but jack is 6.3mm and not suited to personals	Supra-aural, semi-open, dynamic	BB	75
Sennheiser HD450II £40	Good+ 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+ 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 + Good +	A very comfortable and musically capable headphone. If you've got this sort of bread to blow on cans, give 'em a blast	Circumaural, semi-open, dynamic	R	75
Sennheiser HD530 £75	Very Good Good +	One of the better dynamics in its group, the 530s create a sense of space that eludes most sub £100 cans, and they're dead comfy to boot	Circumaural, semi-open, dynamic	R	75
Sennheiser HD540 Ref Gold £160	Good Very Good	The 540 Golds prove that dynamic headphones can be subtle, informative and capable of creating a remarkable sense of space	Circumaural, open-back, dynamic	R	55
Sennheiser HD560 Ovation II £120	Very Good 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 - 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-CD1000 £150	Very Good Very Good	A fine sounding and comfortable headphone that's likely to work well with most sources	circumaural, closed back, dynamic	R	111
Sony MDR-CD3000 £300	Very Good 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+ 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+ 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-CD750 £73	Good+ Good+	Reasonably comfortable and eminently listenable these Sonys have characteristically good bass power and relaxed hf	Circumaural, closed-back, dynamic	R	111
Sony MDR-R10 £2500	Excellent Excellent	Costly state of the art sealed moving coil design built to the highest standards using the finest materials. Sound quality reflects this care, being big, clear, sweet and refined	Circumaural, closed-back, dynamic	R	72
Stax Gamma pro/SRD-X pro £296/£2	Very Good Excellent	The Gamma pros are like a stethoscope for your hi-fi, revealing subtleties that many loudspeakers fail to resolve	Circumaural, open-backed, electrostatic	R	63
Stax Lambda Signature/SRM-T1 £470/£8	Very Good Excellent	The Signature when combined with the SRM-T1 valve driver must be the most transparent headphone available	Circumaural, open-backed, electrostatic	R	72
Stax SR Gamma £299 (i)	Very Good Very Good	The next model down the Stax range from the Lambda, the Gamma is an excellent headphone with little to criticise but the price	Circumaural, open back, electrostatic	R	55
Stax SR Lambda Pro/SRD-7SB	Very Good Very Good	A bit of an industry reference, the Pros are frighteningly revealing, bringing across more information than loudspeakers costing twice as much	Circumaural, open-back, electrostatic	R	55
Stax SR Lambda Pro/SRM-1 Energis	Very Good Excellent	This combination extracts layers of information that other headphones only hint at. The SRM-1 has more edge than the SRM-T1, but it's good	Circumaural, open-back, electrostatic	R	75
Stax SR34 £140	Average Very Good	The least expensive Stax headphones around, the SR34s are lively and rhythmic with good tight bass and a sweet midrange	Supra-aural, open-back, electret		55
Stax SR84 £210	Very Good Very Good	The stepping stone between dynamics and full electrostatics, these electret phones are revealing, open and highly enjoyable	Supra-aural, open-backed, electret	R	63
Technics RP-F3 £100	Poor Average	Robocop styling coupled with a turbo bass switch and an uncomfortable fit, rhythmically OK but not up to the price	Supra-aural, closed back, dynamic		111
Yamaha YHD-1 £46	Good+ Good	Stylish semi-folding design with a slightly forward balance that very nearly scraped a recommendation	supra-aural, open-back, dynamic		111
Yamaha YHL-006 £30	Average Average	Unusual personal stereo oriented phones that curl up when not in use. Earphones are like golf balls and balance is well suited to Walkmans	Supra-aural, open-back, dynamic		75

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.

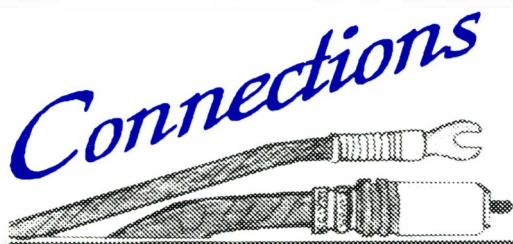
The average loudspeaker consists of a smallish enclosure, much of which may have begun life as part of a tree, plus a couple of drive

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 formulae 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
ATC SCM20 £1419	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 28Hz (in room)		86
Acoustic Energy AE1 £767	Good Good	Amongst the best miniatures around, this metal driver pioneer shows exceptional mid focus and coherence, but is pricey and could be faster and more agile.	29.5x18x25cm stands clear of wall	84dB 48Hz (in room)		102
Acoustic Energy AE2 £950	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	88dB 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 23Hz (in room)	R	86
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 85Hz	R	74
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 wal	88dB 75Hz		66
Acoustic Research AR M.5 £140	Average- Average-	Pretty enough but a bit too tiny for its own good, it's better suited to auxiliary surround sound duties	22 x 16 x 23cm quite close to wall	88dB 50Hz (in room)		114
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 wal	87dB 68Hz		68
Acoustic Research AR M1 £199	Good Good	Cutey shaped miniature delivers splendidly unboxy bass and midrange, but is a little marred by a rather bright treble	27 x 20 x 26cm close to wall	85dB 30Hz (in room)	BB	110
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 50Hz		66
Acoustic Research Pi 3 £219	Average- Average	Lively good value box has extra bass driver to give plenty of thump, but lacks refinement and extension	51.5 x 21 x 23cm close to wall	88dB 50Hz (in room)		110
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
Alexander SE11 £299 (s)	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 25Hz (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 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 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 45Hz (in room)		78
Allison AL110 £220	Good+ Good-	Compact bookshelf model is a little dry and mid forward, but bass is extended and solid. Free space balance is good, though build quality could be improved.	40x24.5x22.5cm stands 1-2ft from wa	86dB 28Hz (in room)	R	102
Allison MS 200 £220	Average- Average-	Built as small and solid as a brick, this micro-miniature has limited bass and bright balance, but sounds agile and communicative	25.5 x 14.5 x 15cm close to wall	85dB 50Hz (in room)		106
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 45Hz	R	71
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
Alphason Artemis £299	Average Average -	Pretty little miniature sounds nicely unboxy but is also a bit short of punch and balanced rather too bright	27 x 17.5 x 22cm stands 1ft from wall	86dB 50Hz (in room)		94



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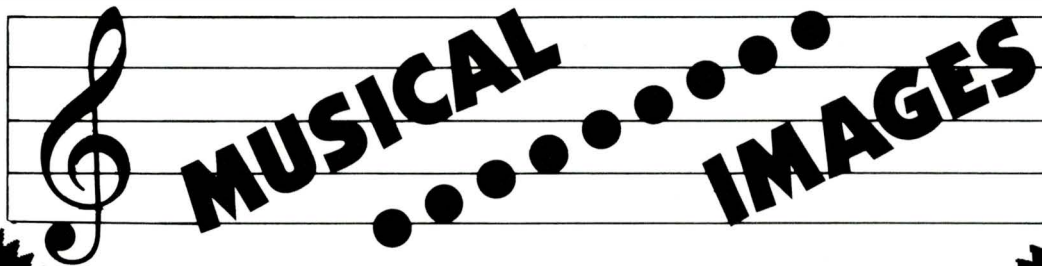
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LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
Alphason Amphion £695	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 47Hz (in room)		78
Alphason Orpheus £1070	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 43Hz	R	71
Apogee Caliper Signature £3998	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 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 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 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 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 space	85dB 30Hz (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	87dB 40Hz	R	68
Audio Note AN-J £799	Very Good Very Good	Light damping and local unevenness adds some coloration, but doesn't spoil the very lively, dynamic and coherent sound. Fine sensitivity and balance.	58.5 x 33 x 24.5cm heavy stands, free space	90dB 25Hz (in room)	R	110
Audio Note AN-E £1300	Very Good Very Good	Lovely coherence, great midband dynamics and transparency, extended bass and high sensitivity — pity it's so darn ugly!	80 x 36 x 28cm 20Hz (in room)	90dB low stands, free space	R	106
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 48Hz (in room)	R	86
B&W DM600 £160	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 610 £200	Good Average	Fine presentation and good perceived value, with good in-room bass extension and impressive loudness credentials too, but rather indifferent integration and coherence	49x23.5x30cm stands clear of wall	89dB 25Hz (in room)		102
B&W 620 £320	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 25Hz (in room)	BB	94
B&W Matrix 805 £795	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 space	87dB 30Hz (in room)		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 space	86dB <20Hz (in room)	R	81
Bose Interaudio 3000XL £160	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 45Hz		71
Bose 305 £360	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 40Hz (in room)	R	78
Bose 401 £430	Average - Average	Cheaply built but distinctively styled semi-omni floorstander suffers from heavy midbass but still manages to sound lively and open	78.5 x 30 x 28.5cm clear of walls	89dB 28Hz (in room)		110
Bose 901 MK6 £1650	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	90dB midband) 28Hz (in room)		86
Boston HD5 £115	Average Average	Tiny and prettily shaped miniature has an attractive lack of boxiness, but is a little short of drama and dynamic drive	25 x 16 x 18.5cm close to wall	86dB 30Hz (in room)		110
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	88dB 63Hz		41
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 48Hz	R	86
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 wall	87dB 30Hz (in room)	R	82
Brinkmann Endymion £395	Average- Average+	Omnidirectional design with rococo styled urn-shaped ceramic enclosure. Distinctly bass light, but sounds impressively coherent and solid	48 x 29 (diam)cm 50/150Hz (in room)	85dB stands in free space		106
C-J Synthesis LM210 £895	Good Good+	Elegant compact US floorstander is eminently relaxing and listenable, with open and coherent midband, if a bit short on welly and drive	90 x 26 x 27cm 28Hz (in room)	86dB clear of walls	R	106
Cabasse Bisquine £600	Good+ Good+	Classy French large bookshelf speaker has great coherence and dynamic grip, but a rather mid-forward overall character	48 x 26 x 30.5cm 20-30cm from wall	91dB 30Hz (in room)	R	110
Cambridge SoundWorks Ambient £150	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 45Hz (in room)		94
Canon S-30 £150	Average Average+	Clever and unusual moulded design has attractive lively coherence, along with 'wide imaging stereo' effect. Neat matching stand	27 x 22.5 x 23.5cm quite close to wall	88dB 50Hz (in room)	R	114
Canon S-50 £349	Average Average+	Though only a small cone miniature at heart, the fascinating styling and extended stereo listening area feature make it utterly original and unique.	30x24(diam)cm stands in free space	84dB 48Hz (in room)	R	102
Castle SG Trent £129	Average Average	The grey paint finish looks much more modern than black vinyl woodprint, and this miniature wall-mount sounds lively and engaging, if a bit rough at the top.	33.5x18x20cm stands close to wall	88dB 50Hz (in room)	R	102
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 50Hz		66
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 67Hz	R	46
Castle York £340	Good Average+	Pretty little real wood compact has an engaging transparency, good balance and fine timing, but could do with more authority and welly	43 x 22 x 26cm clear of walls	86dB 30Hz (in room)		110
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 46Hz	R	31
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 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 25Hz	R	90
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 60Hz	R	66
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 55Hz		71
Celestion 1 £100	Average Average	Pretty basic performance but at a very basic price — it all sounds a bit scrappy and untidy, but its heart's in the right place	27.5 x 16 x 21cm quite close to wall	87dB 50Hz (in room)	BB	114
Celestion 3 £115	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 55Hz (in room)	R	78
Celestion 5 £155	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 30Hz		90

LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
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 DL8 Series II £205	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	87dB 60Hz	R	59
Celestion 9 £249	Good Average	Nicely presented and fair material value, with impressively flat bass-to-mid balance, the 9 doesn't really make a convincing case for the return of the three-way.	49.5x20.5x24cm stands clear of wall	89dB 30Hz (in room)		102
Celestion 15 £350	Average Good	Big box and bang for your bucks, short on subtlety and control, but long on both enthusiasm and perceived vinyl woodgrain	103 x 20.5 x 25.5cm clear of walls	90dB 28Hz (in room)	R	114
Celestion SL6Si £409	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 wa	86dB 30Hz (in room)		94
Celestion SL12Si £615	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 clea	85dB 50Hz		66
Celestion SL600Si £820	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 52Hz		68
Celestion 6000 £1510	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	82dB	R	60
Creek CLS 10 £119	Average+ Average	Almost identical to the Goodmans Maxim 3, this neat miniature is very competently engineered, but not desperately exciting	26 x 17 x 21cm close to wall	85dB 50Hz		114
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 45Hz		90
Dali 102 £219	Good Average	Attractive bookshelf model has fine midband focus and bass extension, but treble's a bit restrained and bass a bit detached	37 x 21 x 25cm away from walls	86dB 30Hz		114
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 20Hz		90
Dawn Chorus FS £698	Good Good	Compact floorstander with superb coherence but rather forward midband. Would suit smaller rooms best	91 x 26 x 21cm 1ft from wall	86dB 30Hz		114
Diamond Acoustics RefIII £895	Average Good+	Lovely freestander suffers from indifferent bass alignment, but is fast, coherent, solid and very informative indeed.	87 x 27.5 x 28cm 30Hz (in room)	90dB well clear of walls	R	106
Eftax 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 £330	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 45Hz (in room)	BB	94
Epos ES14 £485	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 wa	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 wal	85dB 45Hz	R	90
Faraday FS1 from £225	Average+ Average+	Concrete box on a budget, works surprisingly well despite cheap drivers, no wood veneers here. Direct sale only	47 x 27 x 28cm 1ft from wall	86dB 45Hz	R	114
Faraday Siren £330	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 48Hz (in room)		94
Faraday FS5 £589	Good Good	Pricey and ugly, but with its own sonic charm nonetheless, thanks to the substantial (largely positive) influence of the concrete enclosure has upon the sound	46x27x26cm stands in free space	90dB 28Hz (in room)		102
Genexxa SE100 £150	Average Average	Pretty little Tandy-stocked miniature is attractively lively, coherent and communicative, but could do with more grunt and welly and lower coloration	28 x 15.5 x 19cm close to wall	84dB 50Hz (in room)		110
Goodmans B-Max/Maxim 2 £100/£9	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 55Hz (in room)		78
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 50Hz (in room)	R	86
Goodmans M300 £110	Average Average -	Conveying much of the charm and life which has made the Maxim 2 so popular, the M300 is sensitive, bu hampered by upper bass cabinet coloration	38.5 x 21.5 x 17cm stands close to rear	89dB 50Hz (in room)	R	82
Goodmans Maxim 3 £110	Good Average	Smooth and accomplished wall-mount miniature makes a worthy replacement for the bestselling Maxim 2	26 x 17 x 21cm 50Hz (in room)	85dB stands against wall	R	106
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 50Hz (in room)		94
Harbeth LS3/5A £379	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 60Hz		66
Harbeth HL Compact £584	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	87dB 65Hz		59
Heco Reflex 10 £160	Average+ Average	This nicely balanced and well mannered small bookshelf wall-mount is a competent rather than exceptional package for the price, thanks to indifferent build.	32x21x23cm stands up to 1ft fro	90dB 30Hz (in room)		102
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 30Hz (in room)		78
Heco Presto Superior 750 £600	Good+ Average	Tall slim and attractive floorstander delivers a fine, even in-room balance but lacks transparency, coherence and dynamic drive	95 x 24 x 27cm 22Hz (in room)	87dB clear of walls		106
Heco Superior 940 £999	Good Good	This large and beautifully finished floorstander has an impressively smooth and transparent midband. Bass is well extended but follows rather than drives the music	110 x 26 x 31.5cm free space	88dB 20Hz		86
Heybrook Prima £120	Average+ Average+	Neat and discreet miniature delivers fine coherence, pace and timing, though balance is a trifle forward and bass a bit light	29 x 19.5 x 18cm close to wall	86dB 50Hz (in room)	R	110
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 28Hz	R	90
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 £300	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 50Hz	BB	66
Heybrook Sextet £1079	Good Very Good	Elegant floorstanding 3-way is engagingly coherent and a highly analytical, partly due to distinct and not always comfortable upper-mid forwardness.	96x27x20cm close to wall	85dB 25Hz (in room)	R	102
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 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 50Hz (in room)	R	78
Infinity Reference 20 £220	Good Average	Large bookshelf size model is well presented and balanced with good bass control, but somehow lacks convincing cohesion and agility; build was slightly suspect too.	46x27x24cm stands 1-2ft from wa	88dB 27Hz (in room)		102
Infinity Reference 30 £330	Good Good	Drivers from Ref 20 in box from Ref 50 creates a well balanced and extended floorstander at a very competitive price	85 x 26.5 x 25cm 25Hz (in room)	87dB clear of walls	R	106

LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
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
Infinity Modulus £695	Good Average +	Luxury high-tech miniature, carefully conceived and beautifully built. Undeniably attractive in the mid and treble, it failed to handle the bass as successfully	30 x 18 x 26cm high stands 1ft from wall	84dB 85Hz (in room)		86
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 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 33Hz		72
JBL XE2 £160	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 Control 1 Plus £206	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 50Hz		90
JBL LX33 £270	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 48Hz	R	82
JBL LX44 £350	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 40Hz		71
JBL LX55 £400	Good Average	This big bluff three-way provides lots of speaker, bandwidth and loudness for the asking price, but is ultimately a bit of a dinosaur	66x34.5x29cm stands clear of wall	91dB below 20Hz (in room)		102
JPW Minim £79	Average + Average -	Very civilised but dynamically limited, the Minim is well suited to the smaller room and where limited loudness is acceptable	27.5 x 18 x 19.5cm stands against wall	85dB 28Hz (in room)	R	82
JPW Sonata £115	Good Average +	Well balanced and integrated, this near-miniature offers fine sound if limited bass and dynamic range, plus real free wood at a nearly silly price	32 x 23 x 20cm stands near rear wall	86dB 55Hz	BB	71
JPW P1 Vinyl £135	Good Average	Not particularly pretty, this is still a lot of highly competent loudspeaker for the price, with a safe and middle-of-the-road sound that's unlikely to disappoint.	43.5x25.5x26cm stands 1-2ft from wa	87dB 32Hz (in room)	BB	102
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 30Hz		90
JPW P1 £155	Good Average +	Honest and basically articulate if not very sophisticated, resolution is good but it can sound a little wearing in bright systems	44 x 25.9 x 26.1cm free space on stands	89dB 60Hz	R	59
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 65Hz	R	53
JPW AP2 £180	Good Average	Good size bookshelf model offers real wood veneer at a bargain price; performance is cleaner but broadly comparable to P1 Vinyl overall	43.5 x 25.5 x 26cm 45Hz (in room)	86dB stands in free space	R	106
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 57Hz	R	46
JRT AD1 £500 (s)	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 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 50Hz (in room)	R	94
Jamo Cornet 40 £110	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
Jamo Cornet 50 £150	Average Average+	Good value bookshelf size speaker has a rough and ready sound but good heart, engaging liveliness and fair timing	42 x 23 x 22.5cm away from wall	87dB 28Hz (in room)	R	110
Jamo Concert II £300	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 48Hz		66
Jamo Silhouette £400	Average Average+	Tall, slim and rather elegant in its way, doesn't sound bad for a styling exercise, just a bit rich and polite	122.4 x 24.7 x 16.8cm clear of walls	88dB 45Hz		114
Jamo Concert V £500	Average Average	Compact, solid, nicely finished floorstander delivers unusually extended bass at the expense of lowish sensitivity; midband is smooth but laid back.	86x24x28cm well clear of walls	85dB below 20Hz (in room)		102
Jamo Concert VII £800	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 25Hz (in room)		94
Jordan JH400 £504	Average- Average+	Beautiful piano finish hexagon has single full range driver and controversial sound, with uneven balance but delightful mid coherence	33 x 24 x 30.5cm 50Hz (in room)	83dB 1-2ft from wall	R	106
KEF K120 £159	Good Average	Physically pretty and sonically competent but undistinguished medium bookshelf size model has good sensitivity but limited extension	34 x 20.5 x 26cm 45Hz (in room)	87dB 1ft from wall		106
KEF Q60 £379	Good Good	Uni-Q co-axial driver provides fine imaging and mid coherence, while magnet decoupling reduces cabinet coloration. Bass not entirely convincing	48x25x27cm stands close to wall	90dB 25Hz (in room)	R	102
KEF 101/2 £495	Good Good-	Small high class wall-mount has a beautifully even, slightly dull balance, fine freedom from boxiness, but not much bass drive	33 x 26.5 x 26cm close to wall	86dB 50Hz		114
KEF Q80 £499	Good Average+	Uni-Q floorstander has good stereo and fine midband coherence, but bass lacks extension, drive and resolution	85 x 24.5 x 26.5cm 45Hz (in room)	87dB free space		106
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 spa	92dB 50Hz	R	60
Kammerzelt Reference Mini Monitor	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	27x17x24cm stands 1-2ft from wa	85dB 50Hz (in room)		94
Kenwood LS-770E £260	Good Good	Impressively communicative made-in-Japan large bookshelf size model has fine vigour, scale and dynamics, if not the smoothest sound around	48 x 27 x 25cm 25Hz (in room)	89dB stands in free space	R	106
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 25Hz		90
Linn Helix II £357 (s)	Good Good+	Ku-Stone supported, this is one of the best 'large bookshelf' size models around. Dry, controlled bass and very open, it slightly aggressive balance.	57x24x30cm KuStones 1-2ft from	88dB 33Hz (in room)	R	102
Linn Index II/KuStone £110	Good Good	Stand and speaker looks and sounds very good for the price, 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 28Hz	BB	90
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 60Hz		59
Linn Keilidh £492	Very Good Very Good	Compact floorstander, stunning timing and coherence and awesome bass drive, especially with ceramic plinth; sounds a bit shut in	83 x 20 x 27.5cm clear of walls	87dB 22Hz	R	114
Linn Kan II £495	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 35Hz (in room)		78
Linn Kaber LS500 £1198	Average Good +	Wall-mount package trades sensitivity for fine bass extension and midbass performance; little relentless but has prodigious dynamic capabilities	93 x 19 x 28cm floor against rear wall	86dB 28Hz (in room)	R	82
Magneplanar SMGa £688	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 56Hz		46
Magneplanar MG1.4 £1090	Good + Good +	Replaces the stalwart MGC 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 40Hz	R	72

LOUDSPEAKERS

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ SIZE ■ PLACEMENT	■ SENSITIVITY ■ BASS FROM	■ VALUE	■ ISSUE
Marantz DS110 £200	Average- Average+	Pretty near-miniature trades bass extension for sensitivity, delivering fine midband dynamics but little grunt	33 x 19.5 x 20.5cm close to wall	88dB 55Hz		114
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 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 45Hz	R	72
Meridian Argent 2 £875	Good+ Good	Beautiful but pricey high-tech 'large compact' delivers 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 23Hz (in room)		94
Meridian M30 £950	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	AcdB 40Hz		46
Meridian Argent 1 £995	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 stan	83dB 28Hz (in room)		98
Mission 760i £120	Average+ Average+	Attractively styled little wall-mount miniature has livelier dynamics and bass drive than most of its type, but sounds as little shut in	29.5 x 18 x 20cm close to wall	87dB 48Hz	R	110
Mission 761i £170	Good Average	760 theme adds an extra main driver for easier amp loading and power handling. Sound judged slightly inferior to its simpler, cheaper stablemate.	38x19x24cm stands close to wall	88dB 48Hz (in room)		102
Mission Cyrus 780 £180	Good Average +	Pricey 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 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 28Hz (in room)	R	86
Mission Cyrus 782 £350	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 50Hz		71
Mission 764i £450	Good Average	Despite improvements, this large floorstander still lacks low frequency authority, which is probably a function of its comparatively modest price	88.5x25x32.5 1ft from wall	87dB 20Hz		94
Mission 753 £600	Very Good Good+	Gorgeous presentation and potential for open transparency. Floorstander with lots of drivers that gives lots of loudness	90 x 22 x 30.5cm try 1ft from wall	88dB 45Hz	R	114
Mission 765i £700	Good Average+	Big heavyweight floorstander has good sensitivity and bandwidth, but somehow lacks agility, authority and dynamic grip	102 x 25 x 33cm clear of walls	91dB 22Hz		110
Monitor Audio Monitor One £150ewoo	Average+ Average+	Pricey but very cute little micro-miniature just about gets away with it sonically, though performance envelope is inevitably limited	24 x 15 x 16cm stands against wall	85dB 55Hz (in room)	R	106
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 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 30Hz		78
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 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 MA700 Gold £400	Good Average	Lovely luxury compact does a good job of voice reproduction, but sounds a bit lazy and off the tempo with faster, busier material	35 x 21.5 x 25cm clear of walls	85dB 50Hz		110
Monitor Audio MA800 £600	Very Good Good	Beautifully finished compact has a delightfully even and uncoloured midband transparency, sensitivity and bandwidth are limited	51.5 x 20 x 27.5cm clear of walls	85dB 45Hz		114
Monitor Audio Studio 5 £700	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
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 wall	87dB 45Hz		90
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 30Hz (in room)		81
Monitor Audio Studio 15 £1,600	Average+ Good	A little slow and lazy but better balanced than the smaller Studio models, the midband coherence and focus is superb, but it ain't cheap	51x20x26cm free space	87dB 45Hz (in room)	R	102
Mordaunt - Short 5.10 £119	Good Average	Plenty of well engineered speaker for the money, and smoother than most of the competition, but lacks timing and enthusiasm	30.5 x 18.5 x 21.5cm c20cm from wall	85dB 50Hz		110
Mordaunt - Short 5.20 £150	Average- Average	Lots of speaker for your money, but not as smooth or well balanced as other M-S 5-series models	36 x 21.5 x 21.5cm clear of walls	87dB 45Hz		114
Mordaunt - Short 5.30 £200	Average+ Average-	Good hi-tech material value for money, but a disappointingly dull and rather bland sound. Safe but uninspiring.	42.5 x 25 x 28cm 28Hz (in room)	86dB stands clear of walls		106
Mordaunt - Short 5.40 £299	Average+ Good	Elegant near-floorstander has an even balance that makes it very easy on the ears, yet also inviting and informative	64 x 21.5 x 26.5cm low stand clear of w	85dB 28Hz	R	110
Mordaunt-Short Classic 20 £395	Average+ Average+	Luxuriously finished compact delivers beguiling mid transparency but bass is altogether less convincing — one for the carpet slippers generation perhaps	37x22x27cm stands in free space	86dB 45Hz (in room)		102
Morel Bassmaster 602 from £1095	Average- Good+	Superbly built compact stand-mount, did well in listening tests but suffers (enjoys?) upper midband peak	24.5 x 40 x 22.5cm clear of walls	84dB 25Hz		114
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 45Hz (in room)	R	86
NAD 8100 £300	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
NVA Cube 1 £600 (s	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 wa	85dB 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 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 28Hz (in room)		78
Naim NA IBL £798	Average+ Good	This tiny floorstanding wall mount delivers outstanding dynamics, speed and detail, marred by pronounced upper mid forwardness	80x18x15-20 against wall	84dB 30Hz		94
Naim SBL £1475	Good Very Good	Impressive scale full bandwidth coherent an attractively discrete floor standing wall-mount coloured midband very well balanced and agile with it.	88x26.5x17-27cm close to wall	86dB 25Hz (in room)	R	102
Neat Petite £525	Average Good+	Pricey and far from perfect, this near miniature is nevertheless one of the most entertaining and enjoyable speakers around, colorations notwithstanding.	30.5x20x18cm stands close to wall	86dB 33Hz (in room)	R	102
Nobis DM7 £560	Average+ Good	Pretty but pricey US boosshelf size model has more than enough speed, timing and coherence to make up for a measure of coloration	38 x 21.5 x 28.5cm 30-60cm from wall	85dB 25Hz		110
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 65Hz		74
Opus 3 Capella £599	Good Good	The sound of this Scandinavian curiosity certainly benefits from the crushed marble enclosure, though presentation is strictly DIY	32 x 40.5 x 26(ave)cm amongst books in	86dB 45Hz		66

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MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
Origin Live QL1 £499	Very Good Good	Luxury miniature has very good overall balance, sacrificing sensitivity to achieve remarkable bass extension for the box size	30.5 x 19 x 21cm 25Hz (in room)	82dB stands close to wall		106
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 30Hz (in room)		78
Professional Monitor Co LB1 £998	Good+ Good+	Delightful smoothness and transparency distinguishes this classy compact, though bass extension and sensitivity are both limited	53.5 x 18 x 26cm high stand well clear	86dB 33Hz	R	110
Professional Monitor Co AB1 £1600	Good Good	Bulky stand-mount transmission line has lovely panel-like transparency, slightly shut in balance, and needs a big room	79 x 27 x 43cm well clear of walls	89dB 22Hz		114
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 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 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 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 45Hz (in room)		94
Rega Kyte £198	Good Good	Stylish near-miniature has splendid timing and coherence, sounds very explicit and informative, if a bit bright and short of grunt	31 x 19 x 20cm close to wall	87dB 50Hz	BB	114
Rega ELA £405	Average+ Good	Very compact floorstander with integral stand has serious coherence and dynamics, but a measure of brightness and untidiness	84.5 x 20 x 30cm c20cm from wall	86dB 30Hz	R	110
Richard Allan CD5 £176	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 80Hz		68
Rogers LS2a/2 £220	Good+ Good	Balance is a bit warm and rich but 2a/2 has delightful mid-to-treble coherence and transparency, and more welly than Mk1	35.5 x 23 x 22cm 30Hz (in room)	84dB stands clear of walls	BB	106
Rogers LS4a/2 £300	Good Average+	Very civilised but a trifle lazy with it, this large bookshelf size model hasn’t quite the timing or agility to be particularly engrossing or exciting	43 x 25.5 x 25.5cm clear of walls	86dB 25Hz		110
Rogers LS6a/2 £350	Good Good	Slightly old-fashioned largish stand-mount is well built, measures well, good material value, but sounds a bit heavy and lacklustre	51 x 28 x 29.5cm well clear of walls	87dB 22Hz		114
Rogers LS8a £450	Average + Average +	This modestly priced floorstander is a mixed bag, with plenty of scale and welly but lacking the subtlety, clarity and agility delivered by some rivals	89x25.5x25cm clear of walls	91dB 48Hz (in room)		102
Rogers Studio 1a £599	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 36Hz	R	66
Roksan Darius £1569	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 spa	82dB 20Hz	R	86
Royd Topaz £173	Average Average+	Cheerful, articulate and essentially communicative miniature can also sound a trifle scrappy and shut in; well worth trying	30.5 x 20.5 x 19cm 1ft from wall	87dB 50Hz		114
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 fro	88dB 28Hz (in room)	R	98
Royd Eden £245	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 85Hz	R	66
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 50Hz	R	90
Royd Apex £500	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 33Hz (in room)	R	78
Ruark Swordsman £219	Good Average	Very attractively styled and finished, the Swordsman is a well built ‘small bookshelf’ model that delivered better test than listening results	38.5 x 20 x 27.5cm stands 0.5m from wal	84dB 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 wal	86dB 30Hz	R	90
SD Acoustics OBS £865]	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 30Hz (in room)	R	82
SD Acoustics SD3 £399	Good Good	Port firmly blocked, the new SD3 has the agility and charm of a quality miniature, with good bass extension but low sensitivity	38 x 19.5 x 29cm 25Hz (in room)	83dB stands 1ft from wall	R	106
SD Acoustics SD4 £699	Very Good Good	Tall slim floorstander has fine balance, good bass extension and lovely open midband transparency; sounds particularly good at modest levels	100.5 x 20 x 30.5cm clear of walls	85dB 25Hz		114
SD Acoustics SD1 £1650	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 50Hz	R	60
SD Acoustics Ribbon £2295	Average Good +	A little underdeveloped and rather amplifier sensitive, 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 30Hz (in room)		81
Sequence 30 £200	Average Average	Radical slimline hang-it-on-the-wall design has performance comparable to a typical miniature, with reasonable overall balance	87 x 25 x 7cm close to wall	85dB 50Hz		114
Shahinian Arc £1062	Average Good	Unusual and occasionally wonderful small floorstanding omni; too bright but exceptionally coherent and revealing	69 x 35 x 25cm well clear of walls	85dB 24Hz		110
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
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 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 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 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 40Hz		71
Spendor S20 £510	Very Good Good	This solid and elegant luxury compact maintains Spendor’s tradition for peerless mid-to-treble coherence and perspectives. Bass is rather unconvincing.	38x22x26cm stands 1-2ft from wa	83dB 25Hz (in room)	R	102
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 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 55Hz		71
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	86dB 50Hz		60

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LOUDSPEAKERS

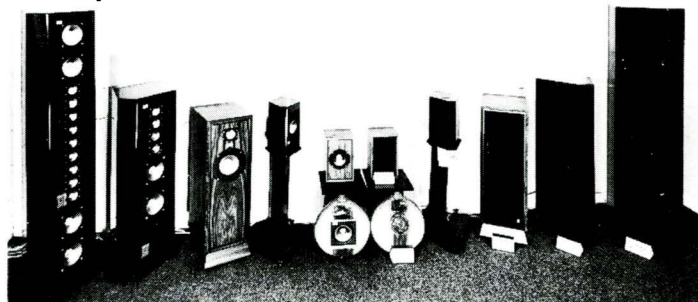
■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ SIZE ■ PLACEMENT	■ SENSITIVITY ■ BASS FROM	■ VALUE	■ ISSUE
Studio Power DMS100 £249	Average + Average +	Close to a BB rating, and in many respects remarkable value for money. Delivers an impressively smooth and large sound, but sheer ugliness will limit its appeal	51 x 26 x 32cm open stands 1ft from wall	86dB 25Hz (in room)	R	82
TDL Studio 0.5 £450	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 40Hz (in room)		94
TDL Studio 1 £650	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 Free space	84dB 25Hz (in room)	R	78
TDL Monitor £1999	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 28Hz	R	66
Tannoy 603 £120	Average+ Average+	Pretty hexagonal cabinet miniature is optimised for free space siting and delivers fine imaging with little boxiness, but little in the way of welly and power either.	33.5x22(max)x16cm high stands in free	85dB 45Hz (in room)	R	102
Tannoy 605 £150	Good Average+	Largish bookshelf size hexagon is potentially fine performer, though unusual stand sensitivity makes optimisation difficult	40 x 27.5 x 18cm 25Hz (in room)	85dB stands 1-2ft from wall	R	106
Tannoy 605LE £189	Average- Good	Mass-loaded audiophile variation of 605 sounds lively, with decent weight and timing	40 x 27.5 x 18cm 1-2ft from wall	87dB 30Hz		114
Tannoy 609 £250	Good Good	Distinctive hexagonal cabinet reduces box colorations, and new dual concentric driver is sweeter than its predecessors, making this one very superior speaker	50x32(max)x22cm stands clear of wall	90dB 25Hz (in room)	BB	102
Tannoy 611 £399	Good Average	This compact floorstander would seem to have plenty going for it, but somehow failed to gel musically under our listening conditions	72 x 32 x 24cm clear of walls	92dB 25Hz		110
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	R	Coll '87
Technics SB-EX2 £180	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 wall	86dB 20Hz (in room)		98
Technics SB-RX50 £650	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 40Hz	R	46
Thiel SCS £975	Good Good+	Luxury piano-gloss compact sets class-leading standards for coherence and communication, can sound a shade dark and shut in	40 x 22 x 23cm 1-2ft from wall	87dB 45Hz	R	114
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 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 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 wall	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 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 130Hz		74
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 is good	38 x 22 x 17cm stands close to wall	88dB 48Hz (in room)	BB	98
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 uninvolved	34.5 x 22 x 22.5cm stand against wall	89dB 45Hz (in room)		94
Wharfedale Diamond V £130	Average+ Average	This miniature is smoother than most, but rather stodgy with it, inspiring little enthusiasm among our listeners.	27x18x20cm quite close to wall	86dB 50Hz		114
Wharfedale 515 £260	Good Good	Effectively a technical update on the continuing 505 theme, this is still more evenhanded, with better bass extension and smoother treble.	40 x 25.5 x 30cm 28Hz (in room)	85dB stands clear of walls	R	106
Wharfedale 517 £400	Good Average	Similar to the 515 but half as big again, the hefty 517 should offer an improvement, but somehow has a less effective overall subjective balance	53 x 26.5 x 34 stands clear of wall	86dB 25Hz		110
Wharfedale Coleridge C £600	Good Good	Very prettily dressed and sounds pretty good as well, though whether enough to justify the £600 pricetag is open to debate. Well balanced, smooth and a little dull.	48x25.5x25.5cm stands clear of wall	86dB 30Hz (in room)		102
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, stan	90dB 40Hz	R	46
Zyp A1 £199	Average Average+	Cute metal cased micro-miniature is quite coloured but great fun, with surprising dynamics and fine wall-loaded room balance	22.5 x 14.5 x 13 close to wall	85dB 30Hz	R	110

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LOUDSPEAKERS - SATELLITE AND SUBWOOFER SYSTEMS

Satellite and subwoofer systems, sometimes referred to as three way systems, consist of a small pair of speakers (the satellites) and an extra box (or two) to handle the low frequencies.

By freeing the main speakers of the necessity of generating deep bass they can be made much smaller than a standard design and as a result sat and sub systems are usually visually unobtrusive.

Positioning of the sub-woofer is usually not as critical as the positioning of a conventional speaker and as a result the largest part of the system can be hidden away entirely, although please refer to the placement notes below as this does not apply to every system.

In general the sonic performance of these systems will fall below the performance of a good, comparably priced, conventional speaker. The value ratings given below are judged in the

context of sat and sub woofer systems only and are not judged by the same criteria as the main speakers, thus a Recommended sat and sub system probably won't sound as good as a Recommended traditional speaker.

If you are prepared to compromise slightly in terms of sound quality then a sat and sub-woofer system might represent a good solution for those situations where the loudspeaker should be heard but not seen.

LOUDSPEAKERS - SATELLITE AND SUBWOOFER SYSTEMS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE (cm) PLACEMENT	SENSITIVITY BASS FROM	VALUE	ISSUE
Allison MS 205 £420	Average Good -	Tasty high quality satellites give this quite pricey 3-box system a touch of class. Subwoofer is very compact and only slightly boomy.	25.5x14.5x15 + 29x 29x36 stands close to wall	86dB 30Hz	R	104
Bose Acoustimass AM3 £289	Average Average	Ultra compact 3-box is well balanced though limited in loudness and bass. Tiny satellites are a bit fierce, and grilles unhelpful	9x11x11 + 20x37x19 close to wall	85dB 48Hz		104
Bose Acoustimass AM5 £569	Average + Average +	Pricey but cleverly engineered 3-box system is well balanced and uses tiny twin-driver satellites to good effect	16x7.7x12 + 36x19x48 sats at wall, sub 2ft from wall	85dB 40Hz	R	104
Heco Libero £375	Average Average	Attractive 3-box package uses neat metal satellites with versatile mounting accessories, but subwoofer is boomy in the midbass	18x11x12 + 21x55x 31.5 uncritical	85dB 45Hz		104
Jamo SW/SAT300 £300	Average Average	Attractively finished 3-box package has 'tunable' subwoofer that allows boom to be minimised and a good balance achieved	21x15x8 + 21x48x34.5 uncritical	85dB 40Hz	R	104
RSS Solid/Bass Station £550	Average Average	Multi-driver macho subwoofer adds mucho muscle to Solid satellites, but it's much more midbass than serious extension	24x12x12 + 47x 48 x 20 sub at wall, sats in free space	91dB 45Hz		104
Wharfedale 2130 £300	Average Average +	3-box system marred by indifferent boomy subwoofer but rescued by novel wide-dispersion satellites that give an open sound	14x24x11 + 19x32x 50 sub away from wall	86dB 48Hz	R	104

PERSONAL CDS

MODEL PRICE	SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Aiwa XP-6 £150	Good	Punchy sound both via headphones and when used in a system but transport lets the side down a bit - not one to take out jogging	Digital output, mains adaptor, remote, headphones	R	106
Kenwood DPC-41 £130	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 headphones		94 Supp
Kenwood DPC-81 £200	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 charger and batts, digital output		94 Supp
Philips AZ6897 £200	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, headphones	BB	94 Supp
Philips AZ6819 £300	Excellent	Unusual looking machine with interesting radio headphones. Excellent sound quality but not one to walk with, superb styling	Radio headphones, rechargeables, plinth, infra-red remote	BB	106
Sanyo CP-12 £260	Good +	Sonically amongst the more enjoyable CD players and capable of revealing the musical aspects of a disc in an interesting and entertaining fashion	Wired remote, headphones main adaptor	R	66
Sony D-11 £135	Average -	Chunky player with old fashioned styling, a rather lightweight sound and limited dynamic range.	Headphones, AC adaptor bass boost		106
Sony D-202 £160	Average +	Good sound quality twinned with relatively good portability accounts for the recommendation, can also sound OK in a main system. Nice entry level machine	Headphones, AC adaptor rechargeables, remote, digital out	R	106
Sony D-303 £280	Excellent	Tidy design with adequate features but not as cluttered as the D-350. Excellent sound quality and will even serve as a CD transport	Headphones, AC adaptor rechargeables, remote, digital out	BB	106
Technics SL-XP1 £140	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, headphones	BB	94 Supp
Technics SL-XP505 £180	Average -	Excellent transport makes this one of the most stable players on the market and the infra-red remote control is a nice bonus. Sound quality leaves a little to be desired	Headphones, AC adaptor rechargeables, infra-red remote		106
Technics SL-XPS900 £280	Excellent	Great sound quality both via phones and in the home backed up with an impressive array of accessories. Transport is not up to use on the move	Headphones, AC adaptor rechargeables, infra-red remote	R	106

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. For more information on choosing and aerial see the feature in issue 108

Tuners come in two basic types. Analogue

models tune gradually (and usually manually) across the bands, and can have analogue or digital displays; they are often preferred for sound quality, and are certainly best for AM bands. Digital tuners offer convenient automatic tune facilities and hold many station positions in pre-set memories. (The Lab and Sound results for models tested in issue No. 65 refer to FM only. For AM results see under Comments.)

TUNERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
Aiwa XT-003 £105	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-56L £170	Good Good -	Listenable, but not exciting, was the overall verdict - it had no gross flaws but failed to capture the imagination	FM/MW/LW digital, 20 presets, 2 aerial sockets, switchable IF bandwidth		108
Akai AT-93L £250	Good + Good +	By AM standards presentable (good) while FM delivers the goods	All bands, aerial switch	R	65

The Directory

TUNERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
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
Aura TU-50 £230	Good Good	Tonally neutral, but with rather poor imaging and a certain woodenness to the sound.	FM digital, 16 presets		109
Creek T40s3 £220	Average+ Average	Creek's FM-only analogue tuner is now in series 3 form, though the aesthetics remain unchanged. Ours was hampered by 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.
Denon TU-660L £190	Good Good	Not so successful under 'ideal' conditions, the '660 nevertheless made a fair fist of real reception, if a little muddled and lacking life.	FM/MW/LW digital, 30 presets, switchable IF bandwidth, remote	R	108
Harman Kardon Citation 23 £600	Good Very Good	Fine performance, interesting features and ease of use are this tuner's forté, and the sound quality is top notch	FM/AM seek/manual adjustment muting 16 presets remote control	R	60
Harman Kardon TU9200 £170	Average Average	The listening panel appreciated its liveliness, but found it a little muddled. Excessive pilot tone breakthrough may be distressing to listeners under 30 and indicates some design slip-up.	FM/MW digital, 16 + 16 presets		109
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, signal strength meter	R	93 Supp.
Harman Kardon TU9600 £299	Average Good	Good bass and detail, and good - perhaps slightly 'enhanced' - dynamics, but measured performance is odd in normal mode and poor in 'Active Tracking' mode.	FM/MW digital, remote control, 24 presets, 2 aerial sockets		109
Linx Theta £475	Good Very Good	A Magnum Dynalab on the cheap with the hallmark styling of this small British newcomer. Some of the best midrange from any tuner	Manual analogue tuning, no presets, signal strength meter	R	72
Magnum Dynalab FT101 £599	Good Very Good	Although expensive for its fairly minimum set of facilities, its excellent sound makes up for what it lacks elsewhere	Analogue manual tuning, no presets, signal strength meter	R	72
Marantz ST-40L £140	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 £660	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 £1377	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
NAD 4225 £160	Good Good ++	Slightly edgy at times and a tad coloured too, but the sound is so free and open that the tuner must be regarded as one of the most enjoyable models of its type.	FM/MW digital, 14 presets.	BB	108
Nakamichi Tuner 2 £350	Good Good +	Generally a believable sound with good detail in complex music, but imaging is not 100%. The price seems rather high for the performance offered.	FM digital, 30 presets, switchable IF bandwidth		109
Nakamichi ST-7E £765	Good + Good +	Exceptionally good for weak-signal areas, and good all round	16 AM/FM presets, auto time digital		55
Pioneer F-676 £200	Good + Good ++	Pioneer's extensive homework on the design seems to have paid off in a tuner that's detailed and clean-sounding. Perhaps a little bright, but not unpleasant.	FM/MW digital, 36 presets, switchable IF bandwidth, 2 aerial sockets	R	108
Pioneer F91 £360	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
Quad FM4 £399	Very Good Good +	Fine sound, excellent ease of use, good build and finish and a more than satisfactory technical performance	7 presets. Digital	R	50
Revox B260 £1120	Excellent Very Good	Sophisticated and expensive, the B260 is ideally suited to the rest of the Revox range and should also work well in other systems	FM - virtually everything	R	60
Rotel RT-930AX £150	Good Good -	A competent rather than exciting performer, with low audible interference though slightly compressed and muddled sound.	FM/MW/LW digital, 20 presets	R	108
SAE T-102 £449	Good + Good +	Expensive for all the radio you get, but sounds interesting. AM - poor	FM/MW only	R	65
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.
Sony ST-S570ES £200	Good Average	A host of features, but the sound is muddled, compressed and lacking in frequency extremes.	FM/MW/LW digital, 30 presets, RDS, switchable IF bandwidth		109
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, signal. str. mtr.	R	93 Supp.
Yamaha TX-950 £260	Good + Good +	Very clean and civilised - a bit too much so for one listener. But tonal balance, detail and clarity are all very good; lots of useful features add to its value.	FM/MW digital, up to 40 presets, switchable IF bandwidth, 2 aerial sockets	R	108

TURNTABLES - CARTRIDGES

Very much the 'slave' of turntable and tonearm and to some extent undermined by the supply of free 'starter' cartridges on many turntables, 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 records - and the cartridge also plays a significant role in determining the system balance.

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 MM 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.

TURNTABLES - CARTRIDGES

MODEL PRICE	LAB SOUND	COMMENTS	ARM EFFECTIVE MASS 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

The Directory

TURNTABLES - CARTRIDGES

MODEL PRICE	LAB SOUND	COMMENTS	ARM EFFECTIVE MASS OUTPUT/TYPE	VALUE	ISSUE
Audio Note IO2VDH £1295	Good Very Good	One of the best, giving 'an extraordinarily relaxing midrange clarity', needs a transformer	8-18g Very low, MC	R	43
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 AT-95E £19	Average - Average	Clear, dynamic if richly balanced, the magnetic '95E is a definite Best Buy	8-14g Normal, MM	BB	48
Audio-Technica OC-10 £307	Good + Good +	Good treble and good detail too, but some congestion and coloration reduces its informativeness.	4-12g Low/MC	R	103
Audio-Technica OC-5 £123	Good + Good	For the price, it's unusually effortless and detailed, but it tends to become rather relentless and tiring after a while.	5-14g Low/MC	R	103
Audioquest 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
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 DL103 £99	Good Average +	An oldie but in many ways a goodie, the 103's good performance in bass and general 'life' is seriously let down by its spherical stylus which kills subtle details.	9-22g Low/MC		103
Denon DL110 £69	Good Good	Firmly recommended as a fine all-rounder, this high-output moving coil model is likely to perform well in nearly all circumstances	6-16g Normal, MC	BB	48
Denon DL160 £89	Average + Good	Although listeners just preferred the 110, its brother here proved a twin in lab tests and is still "thoroughly competent"	6-16g Normal, MC		43
Denon DL304 £200	Very Good Excellent	Uncoloured, detailed, neutral, superb tracking; top notch altogether, and a top notch bargain too.	4-12g Low/MC	R	103
Dynavector 17D2 £280	Very Good Very Good	Clear, detailed, neutral and generally very informative - excellent .	6-18g Low, 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 (damping) 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-Gold £130	Good + Good	Nothing is obviously wrong, but nothing is stunningly right either and tracking isn't perfect. Safe, but perhaps a little too safe	7-17g Low/MC		103
Empire Benz Micro MC-Silver £130	Good Good	High output MC that though ultimately not the peer of the MCGold is more appropriate to the sort of equipment it's likely to be partnered with	8-18g Normal/MC	R	103
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 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 £50	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 £70	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 £90	Good + Good	Not terribly subtle, and not such good value alongside 1012 and 1022. Quite lively, though	7-12g Normal, MM		91
Goldring Elan £20	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 Elite £200	Good + Good	The basics are right, and the Elite will cheerfully tackle any source material, but its sound possesses a certain dirtiness which can irritate	8-18g Low/MC		103
Goldring Epic II £32	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 H £105	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 £120	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 £549	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
Goldring Excel GS £600	Very Good Good +	The Excel has some true high end quality in its lack of annoying colorations, but tracking seems indifferent and high levels tend to sound rough and edgy.	9-20g Low/MC		103
Grado ZF3E + * £47.50	Average - Average	Downtitling 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

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TURNTABLES - CARTRIDGES

MODEL PRICE	LAB SOUND	COMMENTS	ARM EFFECTIVE MASS OUTPUT/TYPE	VALUE	ISSUE
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 (damping) 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 (damping) Normal, fixed stylus MM		84
Milltek Aurora £249	Good + Good +	An overall feeling of relaxed ease characterised this clear and atmospheric Kiseki-built cartridge	8-16g Normal, MC	R	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 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
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 MC15 Super £100	Good + Very Good	A good all-rounder, with outstanding performance in detail retrieval, even if it can be very slightly bright and close-up at times.	10-24g Low/MC	BB	103
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 MC3 Turbo £100	Average + Good	Not terribly subtle, but it obviously doesn't aim at that. The 3 Turbo is bright, cheerful and bouncy - take it as it comes!	10-24g Normal/MC	R	103
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
Ortofon Quattro £200	Good + Good +	Undoubtedly a competent performer, the Quattro however seems a less obvious choice than the other Qs. Generally neutral, but can be edgy and bright in loud passages	6-18g Low/MC		103
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
Rega Bias £34	Average Average +	Difficult to mount in some arms due to its shallow build, the bias offers a gentile, refined SQ that certainly makes it worthy of audition	4-10g Normal, MM		67
Rega Elys £74	Good Good	Clearly superior to the Bias, despite their common heritage, the Elys is both more detailed, accurate and musically convincing	8-15g Normal, MM	R	67
Revolver £20	Average + Average	This modified AT-95E enjoys a very lively mid and treble even if the bass is somewhat 'slower' in 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

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TURNTABLES - CARTRIDGES

MODEL PRICE	LAB SOUND	COMMENTS	ARM EFFECTIVE MASS OUTPUT/TYPE	VALUE	ISSUE
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 £4.99	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
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 £799	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 £5.99	Good Good +	A neutral balanced performer giving transparent midrange, fine depth and focus with firm extended bass. Gosh!	5-10g Low, MC	R	60
van den Hul MM1 £200	Good + Very Good	If its wooden-sounding midrange coloration could be tamed, the excellent imaging and admirable all-round security of the MM1 would make it an excellent performer.	7-15g Low/MC	R	103

TURNTABLES

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 'record players' with a variety of automatic facilities, sometimes tied into a system remote control. But engineering compromises usually severely limit sound quality, cartridge choice may be P-mount restricted, and nowadays such machines are rarely stocked by specialist hi-fi dealers.

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 components, but 'naturally sympathetic' combinations exist, and a good dealer can help. Listed separately as integrated players and

as motor units and tonearms, our sound quality rating is based on results achieved using a high quality system - but in point of fact the deck is usually the limiting factor soundwise in any system.

Lab performance rating 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.

TURNTABLES - INTEGRATED

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 Sonata/HR-100S MCS/Atlas £835/£550/£400	Very Good Very Good	Good sound in all areas - bass, clarity and neutrality all in the top class and bettered by very few decks. Atlas PSU expensive but worthwhile	Belt drive, suspended, optional PSU, 13g	R	79
Ariston Pro £160	Good Good	Remarkably clear and detailed for the price, very neutral. Benefits from cartridge upgrade	Manual, belt drive, 12g, cart.	BB	91
Ariston Pro Maxim/RB250 £210	Average Fair	Warm, full sound with a deep bass and solidity is partly offset by lack of fine detail in mid and top. On a suitable surface, with a crisp sounding cartridge, it easily qualifies for shortlisting	Solid plinth, belt drive, manual, 11.5g		103
Ariston Q-Deck £180	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, inc. cart	BB	67
Dual CS-505-4 £170	Average Average	Easy to set up and to use, this is a consistent sounding and well isolated turntable with a long pedigree. It is slightly lacking in balls, but compensates with a consistently unmuddled presentation and good stereo focus perspectives.	Auto-armlift, interlocked cueing, 2 speed, pitch control	R	103
Dual CS-750 £300	Average- Average-	Attractive but lazy performance from a deck with many good ideas and which is a pleasure to use. Cartridge is past its sell by date. Has 78rpm facility	Solid plinth, belt drive, cart. 3-speed, quartz referenced, auto lift		103
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 CS-503-2 £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
Goldmund ST4 £4589	Very Good Excellent	The Studio turntable takes on a cheaper tonearm than the T3F, yet provides a similar reference standard performance at £2,000 less, in a neatly integrated though bulky package	Solid subchassis, direct drive, parallel arm, detachable h/shell	R	60
Goldring Excelda 1 £160	Poor Poor	Untidy, resonant sound, narrow effective dynamic range and lack of tracking security. The cartridge (the only authentic Goldring part) is quite nice	Manual integrated arm, synchronous motor, auto-start/stop		103
Heybrook TT2 turntable & arm £469/£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	R	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

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TURNTABLES - INTEGRATED

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES ARM EFF. MASS	VALUE	ISSUE
Kuzma Stabi/Stogi Reference £995/£899	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 Basik £250	Good Average+	Strong midband analysis and imagery, clean if sharp treble is matched to a good if occasionally wooden bass. Good at the price, and requires no complex setting up or fine tuning in service	Solid plinth, inc cartridge, manual speed change	R	103
Linn LP12 Basik/Akito £599/£137	Very Good Good	Familiar Linn virtues and vices - plenty of the former though and few of the latter. Trails the full LP12 significantly, but pace, rhythm, timing etc. still in top class, and bass tauter than of old	Suspended subchassis, belt drive, single speed, 45rpm adaptor	R	103
Linn LP12-Lingo/Ekos/Troika £1168/£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
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
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 £185	Average + Good	A remarkable product at the price, surprisingly articulate and confident	Manual, 11.5g	BB	48
Rega Planar 3 £250	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, cart		55
Roksan Radius/Tabriz zi £635	Good Good	Truly modern turntable in appearance. The design is subtle, refined and easy on the eye. Musically it offers exceptional performance with a minimum of setting up and operational fuss	Semi-suspended, belt drive, mains plug PSU	R	103
Roksan Xerxes 33/Tabriz zi £550/£255	Good Good	Good but not exceptional sound quality from expensive package. At its optimum with a relatively inexpensive arm/cartridge unless upgrade to full Xerxes is contemplated. XPSII PSU adds 45rpm and much to sound quality	Semi-suspended, belt drive, 33rpm only, mains plug PSU, one piece arm tube, 'intelligent' counterweight		103
Roksan Xerxes/Artemiz /Artaxerxes £785/£655/£559	Excellent Excellent	Superb though costly record playing hardware, highly integrated and synergistic in nature, but suitable for use with any good MC cartridge. Will not suit all tastes, however	Semi-suspended, belt drive, quartz locked 2 speed PSU	R	103
Rotel RP-855 £200	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 1/900 £188	Poor Average-	The motor unit is derivative of the Rega Planar 2, but sounds inferior by virtue of insufficient structural integrity. Pitch stability is also far from acceptable	Solid plinth, manual speed change, no cartridge		103
Technics SL-DD33 £120	Average Average	As with the QD33 though better value	Automatic, direct drive, solid plinth, 7.5g, P-mount	BB	48
Technics SL-L20 £120	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 £150	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 £100	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 £240	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 £190	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 £250	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 TD-3001/TP90SF £850	Very Good Good	Excellent middle ranking esoterica, with strong all round abilities rather than excellence in particular areas. Engineering content is particularly high	Suspended subchassis, belt drive, available w/o arm	R	103
Thorens TD166 VI/UK/RB250 £270	Good Average-	Refined and articulate sound with well focused imagery, suitable for use with good MM and budget MC cartridges. The Rega arm is the best at its price, a good purist deck	Manual, belt drive, suspended, 11.5g	BB	103
Thorens TD2001 £650	Good Good -	Similar to TD320 but much dearer - why? Sound is comfortable but not very detailed	Semi-auto, belt drive, subchassis 15g		91
Thorens TD280 II/UK £189	Average Average	Excellent value for money from a built to last player which is also easy to use. Will benefit from a cartridge upgrade in due course, but has an energetic and detailed sound	Solid plinth 2-speed player, inc cartridge	BB	103
Thorens TD320 Mk II £400	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 £2295/£745	Excellent Excellent	Overall the closest reproduction to master tape we've yet heard, with stunning real bass and excellent neutrality. Front end damping trough improves LF detail significantly	Belt drive, suspended, electronic PSU, front-end damping, 12g	R	79
Voyd Reference/Helios Cyalene £5414/£1350	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 limp 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
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

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MOTOR UNITS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	ISSUE
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
Oracle Paris £695	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 IIX/900 £200	Good Good	The Systemdek IIX is a high performance, low cost turntable which is particularly strong in the areas of fine detail resolution and imagery. Tested with Rega RB250	Suspended subchassis, metal armboard, glass platter, 2 speed	BB	103
Systemdek IIXE/900AP £358	Good Good+	A development of the IIXE/900, with a comparably detailed sound reinforced by better frequency extremes, timing etc. Needs careful setting up	Suspended subchassis, metal armboard, acrylic platter, PSU	R	103
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. Superb build and finish; colourful, dramatic performance.	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 £1600	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

TONERMS

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 £230	Good Average +	A highly competent design from Alphason gives good sound quality but with slight blurring and treble fizz	16g	R	48
Alphason HR100S £490	Very Good Very Good	This S-shaped arm sounds smooth, but nevertheless reproduces transients with fine attack	10g	R	Coll. '86
Alphason Xenon £286	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
Audio-Technica AT-1130 £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
Kuzma Stogi Reference £899	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 £95	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 £752	Good Good -	Designed for use on the Linn LP12 turntable and Troika cartridge, the Aro is a little bright and congested.	10.5g		91
Rega RB300 £139	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 £655	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 £568	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 £828	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 £1232	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

Personal Messages

Following on from last month, this column starts out as the story of three very classy amplifier systems, each using transistor circuitry, costing a fair chunk of money and deserving considerable respect. On balance I could probably live happily enough with any of them. But each represents such a different set of sonic compromises it's very unlikely they'll hold equal appeal to any one individual's personal tastes — or, more significantly, slip equally sympathetically into any given system.

It's these differences that make upmarket hi-fi equipment so endlessly fascinating. To each of the manufacturers concerned (Linn, Naim and NVA), these amplifiers (*Kairn/Klout*, *NAC52/2xNAP135*, *Phono 2/P50/2xA80*) represent an ultimate statement of intent and philosophy. Each regards its own package as the definitive amplification system, a standpoint which is natural, inevitable and undoubtedly sincerely held. But the very fact that they all sound so different from one another highlights hi-fi's perennial controversy over defining objectives.

In search of compatible combinations Paul Messenger puts three amplifiers through their paces with selected components.

I referred last month to an unexpectedly happy combination of Audionote *IO* vinyl disc cartridge (on Linn *Sondek/Lingo*, with Naim *ARO* arm and Mana supports) with NVA *Phono 2* step-up/EQ unit, which I recently used extensively through my normal Naim pre and power amps. When I subsequently went over to NVA's passive preamp and monoblock power amps, there was an immediate and dramatic improvement in the overall euphony of the system. The presumed reason is that, whatever their individual merits, the various different stages of amplification were now pulling together better, with a distinct and united sense of direction and intent. Irrespective of the loudspeakers used, and even on thoroughly familiar recordings, the NVA combo created delightful delicacy and transparency, revealing extra musical detail and superb stereo focus especially in the relatively grain-free mid and top end.

Change the turntable system to a complete Linn front-end (*Sondek/Lingo/Ekos/Arkiv/Trampolinn*) and the amplifier preference pendulum swung firmly back in the Naim direction. This alternative source has a tighter, faster sound with less subjective time-smear, but lacks the air, grace and tonal delicacy of the other. Much the same description applies to the differences between the two alternative amplifier systems. Which is the more accurate and correct must be a matter of debate, and is arguably irrelevant anyway. I find I can enjoy each in its different ways, which makes choosing between them a far from easy decision. But what is much more important is that the right front end should be used with the right amplification, and ultimately loudspeakers as well, if optimum symbiosis is to be achieved.

Introducing a third pre/power amp combination to the equation, the Linn *Kairn/Klout* shifted the overall perspectives significantly. Predictably and gratifyingly enough, the Linn amps followed much the same sonic philosophy set by the complete Linn turntable system, the dry, fast and coherent bass of the amps dovetailing beautifully with the fine low frequency power and extension of the *Arkiv/Ekos* cartridge/tonearm.

This left the Naim amplifiers sitting in the middle, doing well enough with both turntables and arguably best balanced overall, but not perfectly suited to either. Replacing the *IO* with the *Arkiv*, or perhaps one of the fine Lyra cartridges, and changing the *Lingo* for one of Naim's own turntable power supplies, could well have provided just the right turntable combination for the Naims, which is something I may have established by next month.

More important than any of these specific observations, the general conclusion must be that the selection of any one component as an element in a chain of hi-fi components will always introduce a particular bias over the subsequent selection of the other partnering system components. Quite where one should start, however, I'm much less sure, though I've gradually been coming around to believe that the speakers should be high on the list, partly for practical reasons of siting and room fit.

The story thus far was based mostly on using Tannoy *Westminster Royal* speakers at the end of the chain. Even though the *WR* is an exceptionally even-handed speaker, it's still a particular set of compromises that adds its own bias to the findings. Change the loudspeakers and the perspectives will shift all over again.

As indeed they did when the *WRs* were rolled out and replaced by a pair of even more monstrously intrusive, and even more dramatically sensitive, horn speaker systems that someone called Living Voice has named the *Air Partner*. These extraordinary devices will receive a full and detailed review in due course, but the first part of the setup process (prior to getting down to the thermionics of the situation) involved going through the same set of amp and turntable combinations I had tried with the Tannoys a few days earlier.

The results were reassuringly consistent, though the differences between the loudspeakers rather unexpectedly tilted the overall preference somewhat away from the *IO/NVA* combo and towards the all-Linn system. First, the Living Voice *AP* has a richer, fuller and duller overall frequency balance than the *WR*, and second, it has a somewhat faster and more time coherent delivery, both of which tie in with the differences observed between the various drive systems auditioned through the Tannoys.

Such speakers as these do tend to act as magnifying glasses, highlighting the inherent limitations of every component further up the chain. But maximising either the transparency or the time coherence throughout any given system, and achieving a sympathetic blend between these often conflicting ideals, will go a long way towards providing genuine satisfaction with the end result.

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