

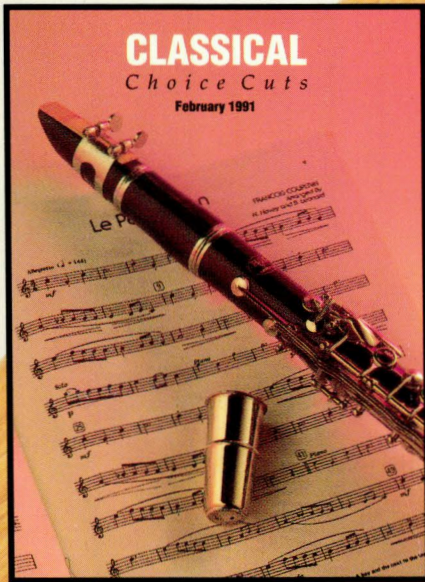
HI-FI CHOICE

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

FEBRUARY 1991 £2.95

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Classical Music Supplement

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Many Yamaha Hi-Fi system components feature RS Integrated Remote Control compatibility

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Menu

It's really worth spending so much money on a record player these days, with the stocks of LPs in High Street record shops declining at a rate of knots?

There's no denying that CDs *are* taking over, and with the best will in the world it's hard for me to endorse spending a large sum on a top quality turntable if you're just starting out in hi-fi and don't already own a large collection of good-condition LPs. Richard Black has more to say on this topic in *Choosing and Using Record Players* on page 47.

Of course, many of us *do* have prized record collections - witness last month's *Aspirations* feature where we visited the home of Hugh Scully, presenter of the TV programme *Antiques Roadshow*. His library of LPs is something to treasure as it represents a huge investment spent during a lifetime of enthusiastic collecting. And, in the world of 'serious' hi-fi, audiophiles continue to strive for perfect analogue sound reproduction. Where will we buy our vinyl records in the future? Chances are we'll be buying high quality pressings from specialist hi-fi shops (or magazines!). See the announcement from Linn Products about its LP remastering and distribution plans in this month's *Update*.

This month's FREE supplement is another in our occasional series of **Choice Cuts**, this time for classical music collectors. There'll be more editions throughout the year, while next month's *Choice* readers will be treated to a **FREE C90** cassette tape from **That's**. Don't miss out!

On the subject of tapes, hi-fi enthusiasts may well have noticed a plethora of *very* expensive (Type IV) cassettes appearing on the market. With many costing over £10 for a C90, are they really worth buying? We're planning an in-depth feature on state-of-the-art tapes for a future issue; if all goes according to plan this will be in April, along with up-to-date reviews on the latest cassette decks and DAT recorders. Meanwhile we're busy completing our measurements and listening tests on a batch of (mostly affordable) amplifiers for the March issue, which will be on sale 8th February.

John Bamford



*Photography by
Chris Richardson.*

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Write to us with your hi-fi queries. We'll do our best to help solve your audio problems.



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CHOOSING AND USING RECORD PLAYERS

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THE CHOICE DIRECTORY

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Choice Matters

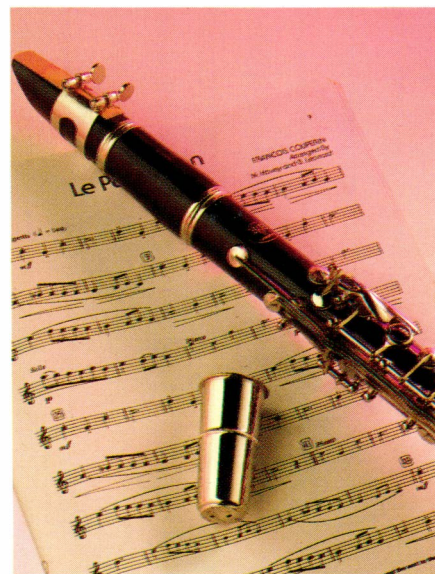
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COMING UP

Next month Paul Miller reviews a batch of new amplifiers, *Aspirations* visits the home of composer Carl Davis, there's the chance to have your home wired for round-the-



Choice visits AEL in Tottenham, specialists in crafting loudspeaker drive units.



Free with this issue: another in our series of *Choice Cuts* supplements.

house sound in a fabulous QED *Systemline* competition, and your March issue of *Choice* comes with a **FREE** cover-mounted **That's C90** cassette tape.

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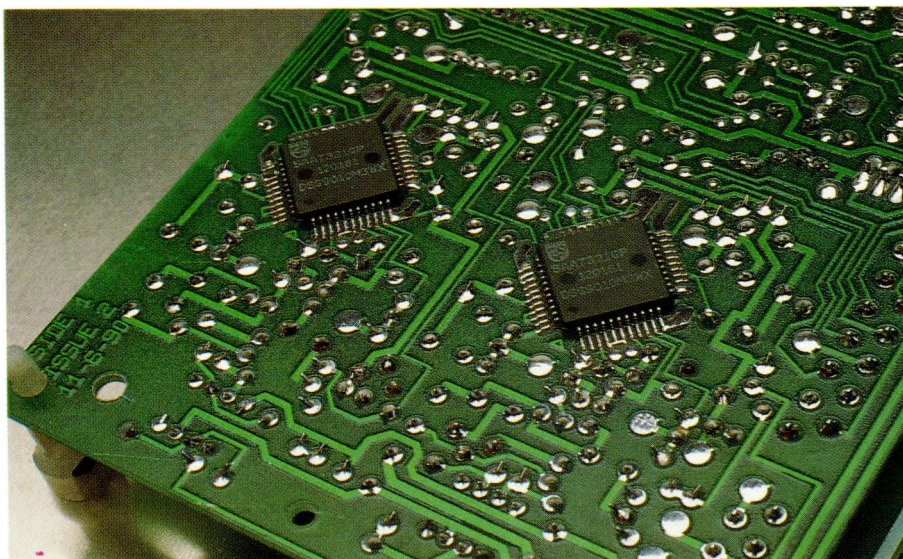
AUDIOPHILE RECORDINGS

A choice collection of superb recordings from around the world guaranteed to bring out the best in your hi-fi systems.

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Paul Messenger sets in for the long Winter nights with a hi-fi system tune-up, paying careful attention to mains contacts.



The march of PDM processing - inside Arcam's latest Black Box D-to-A converter.



IT'S NOT

NEW, JUST IMPROVED.

CDC30

Back when teenage had just been invented and Cliff was still a young one, everyone had mono players you could stack records in to build your own continuous play-list.

Which is exactly what our new Hi-Fi CD midi system is all about.

You can play tracks from up to five CD's in any order, again and again.

And because there isn't a magazine you can change any of the CD's even during play.

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Update



PRODUCTS

A sense of proportion

We couldn't resist giving a mention to the new and diminutively natty range of Epson colour televisions which have been cropping up at shows recently. Ideal if you live in a shoebox - or even a shoe - the tiny LCD TVs come in two sizes: *Mini* - with 3.3 inch screen or *Pocket* with 2.6 inch screen. There is also the *Vision* system which combines a *Mini* TV with twin active loudspeakers mounted on a 'wire' frame for better, but sadly not NICAM, sound. They do actually deliver stunning picture quality.

Little and large

Little speakers that pack a punch are all the rage, and Alphason's *Artemis* looks like being part of the action. Only 27cm high, by 17cm wide, the *Artemis* is a bass reflex design which claims to 'go down' to 40Hz when placed near a rear wall. Sensitivity is rated at 88dB (one watt). It's a two-way model with a five-inch bass/mid driver and (19mm) Supranyl tweeter, and can even be bi-wired.

The usual Alphason high quality finish of black ash,



Viewing in miniature with Epson's LCD TVs.

rosewood and walnut veneers can be expected. The black ash version costs £299 while other finishes are £30 extra.

Tuned in

At £911 one expects sophistication from a 'radio', but Revox has trained its 35 preset *H6* FM-only tuner to scan and log all available station signals, and in the case of RDS put them in alphabetical order when you start it up. Three buttons (on/off up and down scanning) make this a simple tuner to use, Revox avows. With black lacquered side cheeks the *H6* is available in black, titanium or 'champagne' gold finishes.



H6 RDS-equipped FM tuner completes the Revox line-up.

Longer by the minute

With most CDs now containing over 50 minutes of music, Memorex has released three of its most popular cassettes in a 100 minute format. The Ferric (Type I) *DBS+* and chrome (Type II) *HBSII* and *CRXIIIS* tapes are now available as 'C100s' which enable CD users "to make tapes for their cars without losing the last track on a C90 tape. . ."

Cottage industry

Entire Sound is a new company making a power amplifier and loudspeaker. The dual monoblok *EX50* is a £500 Class AB MOSFET model. ES promises high quality design components, star earthing and protection against mains surges. ES also offers a two-way speaker

using an eight inch doped paper cone bass driver and one inch metal dome tweeter. ES is based in St Andrews, Fife. Tel: (0334) 88286.

Heybrook's legend - 3rd edition

Devonish loudspeaker maker Heybrook has introduced its latest version of the legendary *HB1* - the *HB1 Series 3*. The £239 speaker retains some of the characteristics of the old favourite but has been designed to complement advances in amplifiers and



Memorex 100-minute tapes: you won't lose that last track. . .

digital sources. It is now a bi-wireable model, but eschews metal dome technology using a doped paper cone for bass and midrange frequencies and a new cloth-dome tweeter - mounted on a horn-loaded front plate. The crossover has also been revised. It is still the same size (large bookshelf) as the original *HB1* and Heybrook says *HB1* owners can buy an upgrade kit of crossover and tweeter for £75.

No valves shocker

Valve amplifier specialist Audio Innovations has produced a preamplifier without any vacuum tubes in it! But don't worry, there are no transistors either. 'Innovations' latest creation is the *Series 1000 Passive Control Unit*. Containing nothing in the way of electronics, it uses the same high grade Noble

potentiometer found in the company's top valve preamp and is equipped with five inputs and three outputs (tape plus two main outputs for bi-amping). All are gold plated. The black anodised front panel sports tape/source switching and input selection plus the aforementioned volume knob; minimalist stuff, of course. The price is pretty reasonable: £169 or £289 for the Audio Note silver-wired version.

Age cannot wither...

Naim Audio tells us it can give a facelift to its older equipment to match the new generation of components. Older Naim power supplies, amplifiers and the 01 tuner can all be cosmetically revamped. Large case units cost £190 while smaller cases will set you back £121. Interested Naimers should see their local dealer. The Salisbury-based firm says preamplifiers and some older models will be too wrinkly to handle and an update is unfeasible.



Audio Innovations' Series 1000 control box for 'passivists'.

Plastic fantastic

Cicena - the London SW6 company which makes see-through telephones and art deco lighting - has launched a couple of loudspeakers. Finished in transparent acrylic, the pyramidal *Cleo* and rectangular *Billie Jean* incorporate neon tubes of lurid pink and cocktail blue. The neon strips apparently flash in time with the music (so however good they sound you'll never 'lose' these speakers in the dark). Thoughtful design means they can also be turned constantly on or off altogether. At 15 and 17 inches high and at £299, they will probably benefit from stands, though there is no mention from Cicena of

something suitable. Perhaps the company has had difficulty with the aesthetics of filling an acrylic stand with sand and lead shot.

BUSINESS

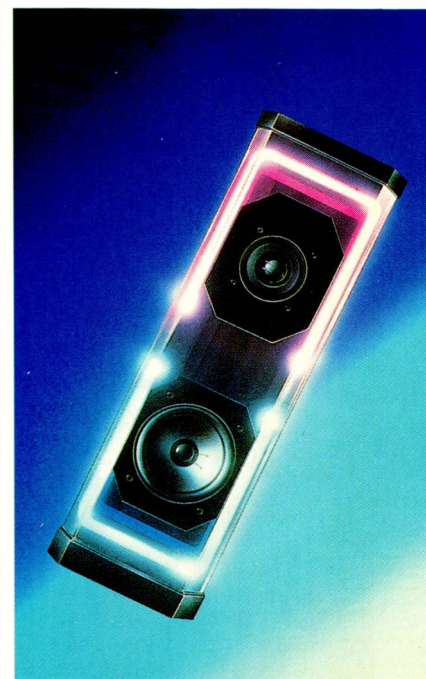
Bristol Show

Over 100 brands are promised to be exhibited at the annual Bristol Hi-Fi Show - which this year is being sponsored by *Hi-Fi Choice*. Entry costs £2.50 - the price including a complimentary copy of *Choice* (while stocks last!) and the chance to enter a free competition. Many special offers are promised for visitors.

Premier retailers Audio Excellence, Audio T and Radford Hi-Fi are co-organisers of the show which runs from Friday 15th to Sunday 17th February. See you there!

John Burns for Linn said that the Selekt scheme had come about because customers often asked where excellent recordings on vinyl could be bought. "Because of the numbers we are ordering, some of the records have been re-pressed especially for us," he added.

The Selekt records join Linn's own label recordings of the Blue Nile and Carol Kidd and may start a trend where specialist hi-fi dealers will become *the* place to go to find properly mastered LPs.



Flashing in time with Billy Jean- Cicena's neon speakers!



A nip and a tuck gives Naim amplifiers a facelift.

Selekting the best

Linn Products, the Glasgow-based hi-fi specialist, and occasional record producer, has released a limited catalogue of high quality vinyl records.

Dubbed Linn Selekt, the collection will be available from Linn's hi-fi dealers up and down the country at normal retail (£7.99) prices. Linn is hoping to offer eighty records under the scheme by the end of the year.

Initially ten titles of wide-ranging musical disciplines have been sourced for the Linn Selekt scheme. They include favourites such as *Armed Forces* by Elvis Costello, *Jerusalem* by Alpha Blondy and the Wailers, and *Blues for the Fisherman* by the Milcho Leviev Quartet.

Buy the company

The £6.13bn deal between the Japanese Matsushita company and MCA of the States puts hardware manufacturers, and especially the Japanese, in a much stronger position when it comes to bargaining with the record moguls. Matsushita had been on the lookout for a software giant for some time. "We think the combination of a hardware and a software company will make our business very effective," understated a spokesperson.

Matsushita now joins Sony-CBS and Philips-Polygram as hardware heavyweights who also own large record making and distributing concerns.

PRODUCTS

Money spooler

For the audiophile who has everything, including a small mortgage, Maxell has introduced its new top of the range metal tape. The *Metal Vertex* compact cassette tape is described by staff at Maxell as providing the ultimate in tape technology. "This is for people who like the best; you can't get a better tape than this," they say. And so they should - the *Vertex* costs £12.99 for ninety minutes.

For your money you get a tape constructed from five magnetic layers which promises to sort out the vagaries of any recording situation - especially an orchestra. "It's particularly suited to classical music where there is a lot going on - it'll pick up everything," enthused our contact at Maxell. Indeed Maxell is so precious about the new tape that it puts an individual serial number on each cassette, and will only be selling it through independent specialists.

Moth bloks

A new minimalist Moth power amplifier has arrived to complement the stylish *Series Thirty* range of



Another DAT recorder joins the fold: Denon's £799 DTR 2000 'domestic' machine.

amplifiers. Priced at £695 a pair, the sensibly-named *Series Thirty 100 Watt Mono Power Amplifier* has been designed by Stan Curtis (original designer of Cambridge Audio products). Its arresting feature is in its physical dimensions - all *Series Thirty* amps are shaped like a slim shoebox with chunky wooden front panels sporting the bare minimum of controls such as the preamplifier's two rotary controls.

Jumping on the Jap wagon

Tongue in cheek, Denon claims 'pioneering sound quality' from its new amplifier - the £159.95 *PMA350*. The new amp, the company claims, will 'meet and beat' the likes of the Pioneer *A300* and *A400* - rave topics of the moment. It has been designed in a similar

Precious metal from Maxell: £12.99 buys just 90 minutes.

fashion - with collaboration between Denon UK and the boffins at the parent company's Shirakawa factory in Japan, as well as a well-known mystery UK designer. It's an exclusive product for the British market too.

Elsewhere Denon has been

Electoral elicitions

With the introduction of two new integrated amplifiers, Rega Research will shortly - and finally - be in a position to supply a complete system from source through to



More Thirty-somethings with Moth Marketing's monobloks.

equally busy - and not surprising since the UK distributor Hayden Labs has signed an agreement with Nippon Columbia - Denon's Japanese parent company - giving the Japanese a majority slice of Hayden.

Mentioned in dispatches, the Denon *Lifestyle System*, finished in titanium, is now available at dealers priced £799. For your money you get a slimline CD player and cassette deck with matching receiver, all of which are linked together with logic circuitry. Press the CD player 'play' control and both CD player and receiver will switch on automatically.

The company also tells us of a £799 DAT recorder (the *DTR2000*), two new remote control receivers at £230 and £280, and (pause for breath) a 'best value ever' CD player at £140 - the *DCD460*. This looks interesting, especially at the price, but we're running out of space so catch an in-depth review later in the year. . .

loudspeakers.

Now one of the longest established and most successful amongst UK specialist hi-fi manufacturers, new product introductions from Rega are both rare and usually highly significant events. Such looks likely to be the case with the £298 *Élex* and £730 *Elicit*. Both are simple integrated amplifiers with no frills like tone controls and all the effort directed towards obtaining the best possible sound quality within the constraints of the single box.

Both too are built into high quality die-cast casework, sharing the same unorthodox circuitry and layout, and high quality components. The less expensive model has just two controls - the input selector and volume control. Power output is around 35W/channel. Four line level inputs are connected directly to the volume control, while the vinyl disc input is configured for conventional



(high output) moving magnet cartridges.

Elicit's price premium is due to a doubling of the power output to a very high level by integrated amplifier standards, and the inclusion of a moving coil cartridge input (that can be reset internally to match moving magnet types). Inputs are selected by illuminated touch sensors which remotely trigger comparatively costly Reed switches located close to the sockets, and twin transformers maintain layout symmetry and complete dual-mono operation.

Even in the single toroid *Elex*, circuitry is fully complementary and symmetrically arranged throughout, so as to achieve first class common mode rejection and a wide dynamic range. However, this is especially important for *Elicit*, which has to combine the high sensitivity MC stage with high power output.

Two's 2

Arcam has developed a new loudspeaker to complement its *Delta* range of hi-fi separates. The *Delta 2* replaces the company's highly rated *Arcam Two+* model and costs an inflation-matched £330.

Retaining many of the older speaker's design features (it is two-way and has the same 14-litre cabinet), it uses a new polypropylene cone mid-bass driver,

AudioQuest *F-14* internal cable and can be bi-wired. It's rated at 89dB sensitivity and suitable for amplifiers between 15 and 70watts. The drivers are rebated and the grille clips neatly around the front edge of the cabinet. The *Delta 2* is available in a choice of walnut or black real wood veneers.

An optional £59 stand is also available and is designed for the speaker which has 'T-nuts' set into the cabinet's base allowing it to be bolted securely.

SHOW REPORT

Dan Houston reports from last autumn's Northern Ireland Hi-Fi Show.

Over the last weekend in October, Zeus Audio hosted its third and most successful show to date, giving over 4,000 Northern Irish audiophiles a taste of the latest products from some 45 companies. As before, the show was held at the Stormont Hotel, opposite the parliament buildings on the outskirts of Belfast. It's a modern hotel but like much of the rest of this beautiful province, the pace of life is slower; the barmen here take ten or fifteen minutes to pour a pint of Guinness. Curiously this means you can drink the stuff more quickly. . .

But we only discovered that (of course) *after* we'd been around the show. Coming so soon as it does



Arcam's replacement for the Two+, the new Delta 2.

after Penta, one doesn't expect surprises at this show, but there were a few debuts which caught our eye. The most significant of these is an established line of loudspeakers and an amplifier from the Triangle company of France. Not to be confused with Pink Triangle UK, Triangle was showing for the first time in these islands. The £1,090 *A01* integrated amplifier, was mentioned in our *Collection* issue, and in last year's Paris show report. Its ergonomic and stylish pagoda-like design will certainly find favour with audiophiles who are discerning about the looks as well as the sound of their equipment. The speaker

range starts with the *Minimum* at £265 and goes up to a £4,000 model which isn't being imported yet. Zeus is the only dealer selling Triangle at present but is trying to set up an English distribution base for the products.

Just up the corridor, Sony had taken a couple of rooms, one of which was set aside for listening to some of its *Reference Series* kit. A pair of the *TAN R1s*, Sony's state of the art 100 watt £8,000 monoblocks were enjoying pride of place on isolation platforms in the middle of the floor, driving a pair of Audioplan *Kontrast* loudspeakers. The *Reference* series will be completed



Zenonlec's 'Aladdin's cave' at the Belfast Hi-Fi Show.



Sansui electronics forms 'The System' with Mission speakers.

shortly when Sony's £3,000 preamplifier and *Monitor Speaker* - a five-way system - arrive in the summer.

There was also a chance to see Sony's new portable DAT machine - a snip at £399 and due for release later this year. Speaking of DAT, Aiwa was also showing a first; demming its new £600 portable DAT machine, almost getting lost among the VCRs, CD midi systems, and its new *Micro Concept* system.

Continuing in the higher-end ranges, Lindley Audio had put the finishing touches on its new £1,090 *Elgin* loudspeakers, an interesting

asserting that we will be hearing more from them. (Not that these speakers appeared to be hiding anything!)

Oxford Distribution (better known as Oxford Acoustics) is now part of a new network offering Europe-wide OA turntables, OAC electronics, Equation and RAM loudspeakers. The expertly lacquered 'affordable' £1,500 Oxford *Crystelle* turntable with its optional on-board phono-stage was on show with the new *LS2* line-stage amplifier and *SA1* power amp. These models cost £895 and £595 respectively. The

high-end product making its debut was Pink Triangle's £1,175 *Anniversary* turntable, reviewed in this issue.

If all this sets the tone for a show more akin to the high-end than regular products then that was how it came across. There were several new high-end products which may have been talked about at Penta but which weren't heard there. The show wasn't without its real-world exhibitors however; many of the household names from Akai to Yamaha were all showing this season's ranges, and there was some NICAM video



Listeners compared 1-bit with 16-bit CD players in the Hi-Fi Choice room. We'll publish the results in a forthcoming issue.

bass reflex design, and was also showing a vintage Radford amplifier re-wired with silver cable. Lindley plans to introduce a new line of *Benchmark* amps shortly.

The joint Alphason and Ortofon room was just one of the superb examples of thriving analogue sound at the show. Ortofon's new £1,500 *MC5000 Mk3* cartridge could be heard for the first time, with an Alphason *Sonata* table and *HR100S* tonearm. Alphason's furniture-making prowess, namely a new isolation table made with rosewood was also at the show, but in the company's Irish distributor's room: Sonic Enterprises.

Quantum Audio was into digital bitstream, meanwhile. The gorgeous Primare 928 preamplifier and monoblocks were using a Meridian 602 to power Primare loudspeakers,

company has incidentally taken on distribution of Vecteur speaker cable and interconnects - previously handled by Presence Audio.

The largest of the Stormont's generous rooms was taken by Audio By Design which was demonstrating that it can make and tweak the design of Snell loudspeakers. A By D's amplifier concern, Audio Innovations, plans to make an 'upgraded' version of Snell's range in the UK. Originally (!) dubbed the *A I Model K*, and *Model E*, the first two of these designs were performing with 'Innovations' valve amplifiers and Voyd turntables. The company's outrageous Audio Note *Ongaku* amplifier is also worth a mention simply for the look on the listeners' faces as they learned about its £30,000 price tag. The last

activity to show off the new medium in home entertainment. Sansui-Mission was exhibiting for the first-time since the Japanese takeover and the new "*The System*" was being offered at £379. This comprises a Sansui *CDX111* CD player, *AUX111* amplifier and Mission 760 loudspeakers. Last of the new products we spotted was the

little Jamo *Cornet 40* loudspeaker (£99/pair), in the ilk of Goodmans *Maxim 2s* or Wharfedale *Diamonds* perhaps. Jamo's *SW300* System of stylish satellites and subwoofer for £299 also deserves a mention as being eminently suitable for the 'hi-fi but houseproud' among us.

Oh... and we shouldn't forget 'The Best Room at the Show', an award won by Zenonlec for its Aladdin's cave stuffed with plugs, cables and audio accessories. Flashing the Amex in here you could have walked out with a 12ft bi-wire set of *M-Sigma II* speaker cable for a mere £1,500! Frankly, we thought the best room was the *Hi-Fi Choice* room, where editor JB was conducting a series of blind listening tests on willing enthusiasts - but we weren't included in the voting system. Oh well...

Now then, about this lovely Guinness...

In Brief

Audio Excellence has opened a record shop above its Sony Centre in Cardiff. Audio Excellence Records will specialise in second-hand LPs but will also stock new reissues or specialist label LPs and CDs. Tel: (0222) 664474.

The MC version of the Danish *Gryphon* preamplifier costs £5,490, not £6,500 as stated in our review in *The Collection*. There is a tape output not affected by the volume control, but the compromise is you can't then listen to one source while recording another.

Koss headphones are being reduced in price to take account of the present pound/dollar exchange rates. Three new models of the 'guaranteed for life' American headphones are available including a £37 light-weight designed for both the hi-fi and portable.

The Polk loudspeaker company of the United States is expected to 'merge' with the British AGI Electronics firm, owner of KEF and Meridian brands.

Keith Monks, maker of professional quality record cleaning machines, has gone out of business. Keith's son is considering setting up a 'small organisation' to sell the machines and spare parts.

Quad amplifiers are being used by the Tussauds group for its brand new Scenerama exhibition in Amsterdam. Waxwork dummies depict historical scenes with special effects including sound and even smell.

We printed an incorrect 'phone number for The Musical Design Company in our High-end Directory in *The Collection*. The correct number is (081) 989 0692.

Choice Sessions

Things we hear. . . This month: on the road with a top in-car audio dealer's BMW M5; comparing Arcam's Black Box 2 with the latest 1-bit Black Box 3; listening to Analogue Electronics' Jupiter amplifier; examining how Which? reports on hi-fi components gloss over sound enthusiasts' requirements.



The third incarnation

The Black Box 3, which Martin Colloms reviewed in our November issue, is the third incarnation of Arcam's original add-on D-to-A converter. John Seabury has been fine tuning his system, and comparing the BB3 with last year's BB2.

Arcam's original *Black Box* was one of the first add-on converters, and was the most affordable. Anyone whose CD player had a 'digital out' socket could upgrade their CD sound for around £200. Connection was via a 75ohm coaxial cable.

Then came three developments: interest in optical transmission of data; domestic DAT; the launching of A&R's own CD transport, the *Delta 170*. Like most good transports, the *170* gives the option of optical or coaxial connection. So the *Black Box 2* was designed to accept input in either form, and to switch sampling rate automatically, to suit CD or DAT.

Now there's the third incarnation, carrying 1-bit rather than multi-bit conversion. The previous 16-bit, 4-times oversampling chips from Philips have been replaced by 4 Philips single-bit, 256-times oversampling chips. The *BB3* costs £349, while the plug-in design of the D/A board is proof against future changes in technology.

Although the original *Black Box* and *BB2* cannot be converted to *BB3* spec, the good news for customers new to the standalone

Inside the Black Box 3: PDM decoding has replaced the 16-bit x 4 chips.

D-to-A converter market, however, is that the original *Black Box* now costs just £199, the *Black Box 2*, £249.

CD tweaking

So to my tests. I was able to compare *Black Box 2* and *3* directly, using Arcam's *Delta 170* transport and a variety of other gear, including Meridian active speakers and Rogers *LS7ts*. I also made a careful comparison of optical and coaxial transmission, and tried three different grades of 75ohm coaxial cable from the AudioQuest range (an American brand distributed in the UK by Arcam). Who said CD killed 'tweaking'?

I certainly wasn't disappointed by the *Black Box 3*. The *BB2* may offer a good, balanced performance but the *BB3* improved on it in almost every respect. The bass was cleaner, deeper and more articulate. From rock to classical music, it was easier to hear what was going on in the bass. By the same token, the more informative bass-end meant less of the 'fatness' which some listeners associate with bass power. So a slight readjustment might be called for here - not in the equipment, but in the listener!

The *BB3* offered a more spacious and delicate presentation, with greater subtlety of instrumental timbre.

Orchestral woodwind was less likely to get 'lost' among rich string chords, for instance, and on multi-tracked material it was easier to hear where parts had been doubled-tracked, and whether in harmony or in unison.

A nice effect was the way the tail-end of notes seemed to last longer, making a plaintive instrumental line seem slower and more effective. Pauses became more an integral part of the music, too. And the clarity of vocal lines was excellent.

Of course, it's important for a front-end to reproduce detail not just *along* a musical line, but down through the vertical textures of a big chord. The *BB3* was better at this than the *BB2*, and allowed you to 'see into' some dense textures without that familiar 'top-line-plus-lightly-blurred-accompaniment' effect.

Although the bitstream converter was undoubtedly crisper-sounding, it was never aggressive. Some CDs which previously sounded splashy now sounded better controlled, though all-in-all the *BB3* is probably less 'kind' than the *BB2*. That's because there's nothing to hide behind in the sound. For me, all this added up to more hooks in the music, whether I sat back to enjoy the 'feel' or listened analytically.

Included with the *BB3* is a plastic optical connector and an AudioQuest *Video X* coaxial lead. I arrived at a marginal preference for the optical connector,

following a blind test during which I got my six-year-old son to switch between the two. (He naturally took a perverse delight in telling me whenever I got it 'wrong'. . .) There seemed slightly better midrange definition via optical, yet I had a suspicion the bass end was marginally tighter via coaxial, so there's room for personal preference here. Interestingly, with the *BB2* I had preferred coaxial to optical, even with the more modest *Drivewire* cable supplied by A&R.

Price equals performance

Regarding the three grades of AudioQuest coaxial cable, the basic laws of the universe were upheld, ie, higher price equalled better result! The choice of interconnect between converter and amplifier is now an established bit of CD tuning and my findings with the three AudioQuest interconnects confirmed the point. All were much better than run-of-the-mill cables in the job they did, and allowed the benefits of the *BB3* to come through clearly. Coming from the same family of cables, they did a similar job to each other but varied in how *much* benefit they brought.

Because cable performance can be system dependent, and long runs of top-end cable can cost hundreds of pounds, a demonstration is vital if the would-be customer is to make an informed choice. For this reason, Arcam is establishing 'AudioQuest Cable Centres' - in other words, Arcam dealers who keep all the AudioQuest cables in stock. 'Serious' customers will be able to borrow cables before making a decision, which is a welcome development in my opinion.

Summing up my listening sessions, the difference between the *BB2* and *BB3* was the biggest single difference, whatever else I did. Next in importance came the choice and quality of digital connector, then proper siting of transport and DAC on Sorbothone feet. I found the quality of audio interconnect mattered more as the other improvements in front-end performance were made.

So a thumbs up to the *Black Box 3* which brings greater clarity to CD replay. Just bear in mind that the extra definition and detail puts more of a spotlight on your system's treble performance. A rough-sounding tweeter or underpowered amplifier might not appreciate what a 'bitstream' front-end can do.

On the road again

Three and a half litres of throbbing metal plus six and a half grand's worth of ICE make for a pretty exhilarating ride. Jason Kennedy floors the pedal.

Back in September I was offered the chance to take a well equipped BMW 535i for a weekend's outing. Not being the sort to look a flash car in the mouth, I gladly accepted Bath Car Hi-Fi Centre's generous

offer. The 535i is the more sophisticated of the company's two demonstration vehicles, its counterpart being the ultimate passion wagon - a completely OTT transit van fitted with at least 22 amplifiers and even more loudspeakers! The BMW, however, whilst not exactly under endowed, has been designed to appeal to people who want something more than a beefed up midi system in their cars.

When I say not exactly under endowed I mean that it has a good £6,500 worth of equipment fitted in it, although to look around the car you'd be hard pressed to guess where the money has been spent. All 19 drive units, including a 15inch JBL subwoofer, have been concealed behind either the car's own speaker grilles or the interior trim, which is just as well really considering the car's unhealthy high profile. The amplification, active crossovers and equaliser are housed in a discreet cabinet in the boot, inevitably reducing luggage area quite considerably in the process. The CD changer, fitted on the left of the boot, is surrounded by slots for spare disc cartridges.

Because of the high ambient noise levels in a car, even one like this, it is necessary to produce relatively high volume levels with the sound system. But if you want to do this and maintain low levels of distortion at the same time the best way, according to the ICE fraternity, is to use many drive units operating at reasonable levels rather than a few being driven much harder. This is much the same approach as is found in the background music industry which kits out pubs and restaurants, as it avoids having one area where SPLs are much higher than another. The potential drawbacks are those that lead many loudspeaker manufacturers to use as few components as possible in their products, ie, the greater likelihood of crossover distortion and the difficulty in creating cohesive imaging.

Another problem peculiar to cars, specifically modern ones, is that of

reducing the effect that the car's electronics have on audio equipment. With a car like this BMW, it's necessary to go to quite extreme lengths to banish interference, including component selection and the way a system is wired up. For example, a separate ground had to be created just for the system. One area where neither the Bath Car Hi-Fi Centre nor BMW itself has managed to achieve 100 per cent satisfactory results is radio reception; whatever type of aerial is used, the car's electronics add distortion to the signal which is audible unless reception conditions are particularly good.

Civilised performance

Using the car was rather pleasant. It is by most standards pretty smooth (if remote) and getting from A to B is a far less fatiguing experience than usual. It is possible to drive for several hours whilst listening to music at high but not serious levels without inducing pain of any form, which is quite an achievement even for equipment that costs this much. By the sort of ICE standards that I'm used to (which are very basic), this system is remarkably civilised, informative and extended. On the other hand, compared to a domestic CD playing system of about half the price, it's somewhat veiled and 'electronic' sounding. I know that's not really a fair comparison as the environmental circumstances are so dramatically different that it's unlikely that ICE will ever compete with domestic equipment of the same price, but I can't help thinking that the divide could be narrowed if some purist principles were applied.

Going back to the 535i and the sound of the Kenwood/Alpine/Denon/KEF/JBL combination therein, I wasn't blown away (a plus point) at first but after prolonged exposure I still found myself wanting to listen to the CDs and tapes that I'd taken with me, the latter providing a more laid back sound but not the bandwidth or



Kenwood's KRC 851D head unit entertains while behind the wheel of a sleek BMW.

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'TOWARDS PERFECTION'

Choice Sessions

information content of CD. The sound with both sources was never strained, and despite the available power and array of bass drivers, the car never threatened to sound like one of those XR3is that boom past my front window every night. It managed to keep everything in context, the frequency balance seemed pretty even, imaging could be quite good if the rear speakers were turned down, and the system rarely hinted at aggression.

In-car hi-fi still has some way to go before it can give the sort of accuracy afforded by quite modest domestic systems, but this car proved that it is improving. Perhaps when low-bit chips make their way onto the road and domestic speaker manufacturers start making serious efforts to enlighten the ICE industry, the car will no longer be a place where audiophiles fear to listen.

Common denominators

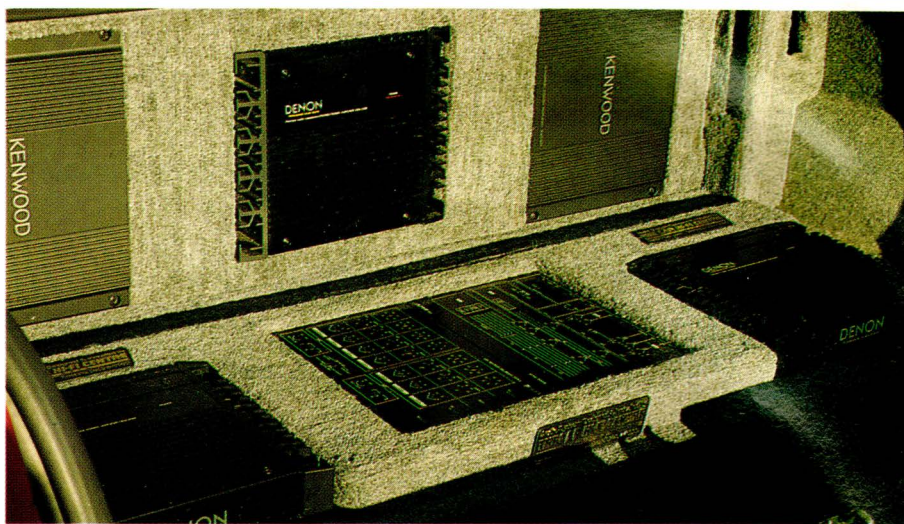
Are we guilty of being too passionate about hi-fi? As Roy Gregory points out, the 'humble' Which? report serves many consumers well, even if it doesn't cater for out-and-out enthusiasts.

When I was working in retail, there was one phrase above all others which would make my hackles rise. The scenario was usually something like this: customer enters shop. . .

"Good morning, sir. What can we do for you?"

"Good morning. I'd like to buy a . . .", whereupon the customer would name some obscure or lowly-rated product which had absolutely no audiophile cred whatsoever.

"I'm sorry sir, we don't stock those.



Alpine and Kenwood electronics tucked in the boot of Bath Car Hi-Fi Centre's M5.

The models we do stock are over here, and if I could just . . ."

"But why don't you stock them?"

"Well, you see, sir, we select the products we stock with great care, to give the best sound quality, reliability and finish for the money. And . . ."

"But according to *Which?* magazine they are the best!"

That's it, you've lost! Nothing you can say, however well intentioned, will ever overcome that infallible imprimatur, the *Which?* recommendation.

This subject surfaced the other day when my father dropped round to visit. He's one of the faithful, has been ever since he bought a Fiat Mirafiori (*Which?* said it suffered from rust and reliability problems!). Why was it, I asked, that people followed *Which?*'s advice to the exclusion of all others? The ensuing debate covered all kinds of topics from impartiality to the long term testing that *Which?* can undertake. However, one factor above all struck a chord. The main advantage of using *Which?* is that the magazine does the research and legwork for you. It presents you with a neat case

consisting of points to watch out for, choices on offer, and at the end of it a firm recommendation. No fuss, no worry and no debate; buy, install and use without having to concern yourself again.

"But you can't treat hi-fi like that! It's outrageous. What about the fact that it all sounds different? It's a real recipe for disaster," goes the response. But I'm not so sure.

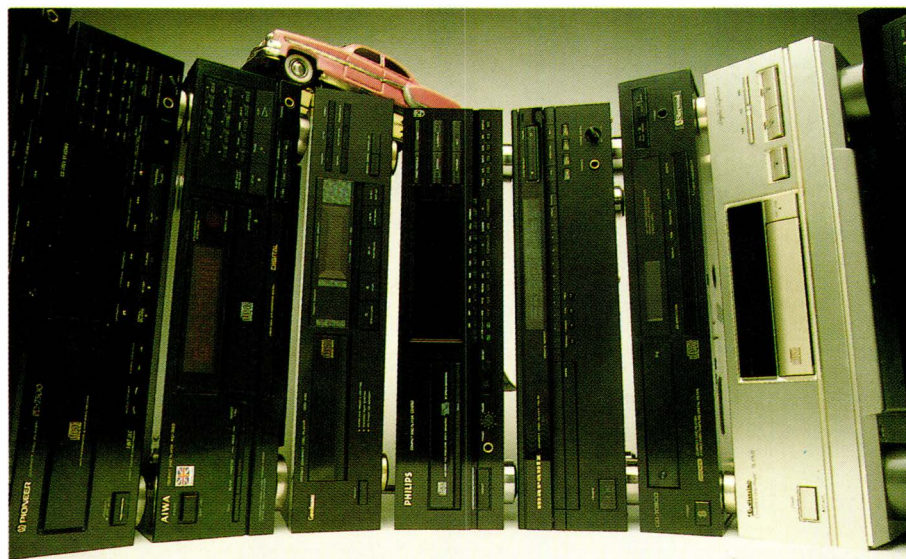
Suck it and see?

Let's consider vacuum cleaners. (*And why not? -Ed.*) When we wanted to buy a new one recently, Victoria and I decided we wanted an upright rather than an 'electric spaniel', examined the old man's *Which?* reports and promptly bought a Hoover - and very good it has been too. We just couldn't be bothered to wade through the jargon and statistics that sorting it out for ourselves would have entailed.

You can't possibly compare a Hoover with a hi-fi? Oh, but you can. In truth, a great many people consider them to be of equivalent interest. To the 'silent majority' (pun intended), the hi-fi in their homes is just another household appliance that will eventually end up worn out or broken by the kids. Hi-fi is only interesting if you care about it - and, sadly, today fewer and fewer people do, as music becomes more a part of the 'background noise' which surrounds us.

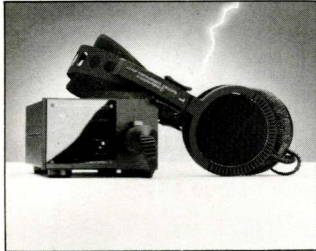
We need to recognise that *Which?* does serve a need. During the past year or so the magazine has passed judgement on small speakers and CD players. On the subject of speakers, it was the *Celestion 3* which came out tops - and although I would argue that the '3 is not as capable as models such as the JPW *Sonata* or KEF *C15* given a high quality source signal, the *Celestion* is kind of 'MOR' - and, no matter what the rest of the system, is unlikely ever to disappoint. On this showing, and considering the magazine's audience, score one for *Which?*

The CD players test is a little more confused, in the sense that some fairly



CD players: they all sound similar? Well, perhaps they do in most lo-fi systems.

CAREFUL LISTENERS ONLY PLEASE



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questionable statements are made. On the subject of sound quality, *Which?* states: "We found that the players sometimes sounded slightly different from each other, but in most cases without sounding consistently 'better' or 'worse'. And these differences are very small compared with the other variables which affect how your hi-fi system will sound in your home. This is why we don't include a 'sound quality' rating in our table."

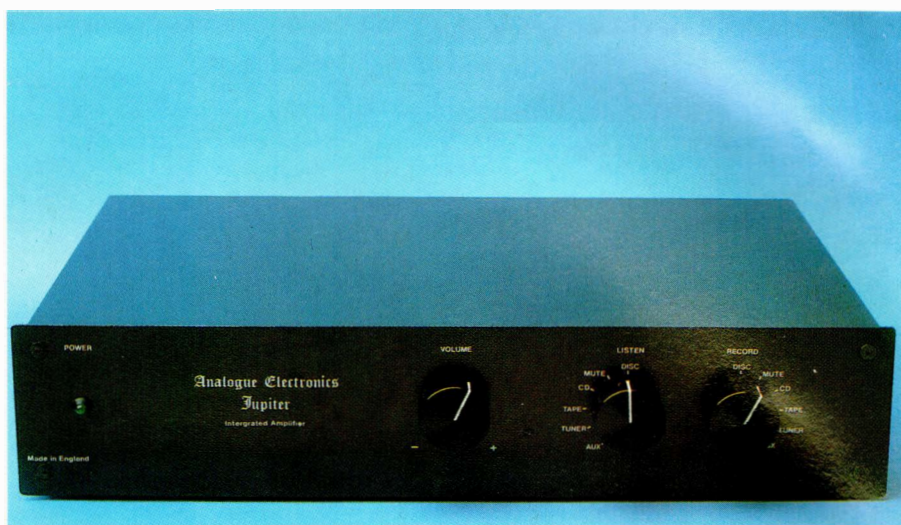
And elsewhere: "Sound quality - along with ease of use - is, of course, the big selling point (of CDs). A top-notch record player might approach a CD player's sound quality, but only if you could find a perfect crackle-free LP to play on it."

Which?'s comments about the differences in sound quality between CD players is perhaps not all that difficult to defend given the level of equipment and set-up that we're dealing with. In truth, the magazine's claim that sound quality is not a major differential is pretty fair in this context. And, yes, perhaps to most *Which?* readers, the notion of a "top-notch turntable" is not the same as to hi-fi enthusiasts. But in making such a sweeping statement, and at the same time reinforcing the notion that 'a silent background is everything', *Which?* is only reinforcing a blind prejudice.

Ignorance is bliss?

While usually offering level-headed advice aimed at 'the average consumer', *Which?* nonetheless does not allow for the fact that many of its readers may well benefit from 'better' equipment if only they knew about it. But perhaps the next time your neighbour or workmate asks you about hi-fi, you should refrain from rattling on about Linn *Sondeks* and the problems of having your 'phone or TV set in the same room as your system. I doubt you'll impress them and they won't pay any attention to your advice. Think about what they want. So they want it to match, and have a remote control. They fancy little speakers which can be tucked away. It may not be true hi-fi, but it is what they want. Maybe take them to a dealer, but remember the system is for them, not you.

When my eldest brother wanted to spend £600 on a system, I could have recommended a Rega 2 with Arcam *Alpha* amp and a pair of JPW *Sonatas*. Nice little system. Instead I told him to buy one of Yamaha's *Astarte* systems. He loves it and so do his wife and kids. The collection of children's CDs grows weekly. Did I betray him? Should I have told him that records sound better than CDs? To be frank, he doesn't care!



Full of character - Analogue Electronics' £295 Jupiter integrated amplifier.

A rich brew

John Bamford listens to the Jupiter integrated, a recent addition to the Analogue Electronics range of amplifiers.

Analogue Electronics, for the uninitiated, is a cottage industry making hi-fi amplifiers in Bath, Avon. With something of a local fan club down in the south west, Analogue Electronics' handmade amplifiers are aimed to offer high value for money in the 'quality of sound per pound' that they provide.

The models *Hi-Fi Choice* has encountered in the past have been nothing special to look at, and while proprietor Robert Slack has expressed a desire to shrug off any made-on-the-kitchen-table image of the brand, this recent *Jupiter* integrated model still can't quite avoid looking distinctly home-brewed - despite a marked improvement in the metal casework compared with previous AE models. The fact that 'integrated' has been spelled incorrectly on the front panel probably doesn't help!

Rated at 30 watts, the *Jupiter* integrated (sic) is like many fine 'audiophile' budget amps in having just a volume control and two source selector switches, one routing the signal to the main outputs ('Listen') and the other routing signals to the tape output sockets ('Record'). What makes this compact amplifier a little different from the norm - certainly at this price point - is the fact that the pre- and power amp stages can be separated by removing linking wires on the rear panel - particularly useful for future upgrading.

While the *Jupiter* cannot avoid betraying its cottage industry heritage, the rotary controls do have a positive and quite expensive 'feel'. The phono input can accommodate both MM and MC cartridges. As a standalone integrated amplifier, the *Jupiter* produces an exceedingly rich and warm sound, with an exaggerated bass 'lift' which might prove just the tonic for bass-light and

'hard' sounding loudspeakers. Using the phono input (MC), I observed a slightly diffuse and 'thick' vocal quality, but with a very 'lush' and dynamic sound. On CD much of these qualities were retained, though there was some sibilance on female vocals.

My listening sessions coincided with my having a £1,000 Linn *Vega* pre/power combination at home, so a bit of mix 'n' matching made for some entertaining auditioning. Splitting the *Jupiter*'s pre- and power amp stages and using the *Vega* preamplifier into the integrated amp showed that the *Jupiter*'s fullsome bass 'bloom' originates in its preamp. Now the sound was leaner and tauter, with improved definition throughout the spectrum. Vocals were 'cleaner', too.

Using the *Jupiter* as a preamp to feed the Linn power amplifier re-established the rich bass quality which I found rather enjoyable, while the slight sibilance noted when the *Jupiter* was used on its own had all but vanished. This proved the best option of all in my opinion, and it showed that should you plan to upgrade your system over the years with improved power amplification, the *Jupiter*'s preamp stage is more than equal to the task.

The bottom line with the *Jupiter* is that it is coloured. Indeed, it's one of the most characterful amplifiers I've heard in many years. But the sound it makes does have much charm. I enjoyed listening to it immensely, in fact, and as many owners of 'budget' systems often complain of brashness and listener fatigue, the *Jupiter* has obviously been designed to alleviate such problems. And due to its extraordinary bass weight, it's also an excellent amplifier for listening to music at low volume settings late at night.

Sounds interesting? As dealers may be hard to find beyond the south west, check with Analogue Electronics for your nearest stockist. Analogue Electronics, Hartley Farm, Upper Swainswick, Bath, Avon BA1 8AF. Tel: (0225) 859473.

The piano player's privilege

Described, with an unfair advantage, as being 'the best sound' at the Belfast Hi-Fi Show, the piano player is also able to make music with his gramophone.

By Dan Houston with Chris Richardson behind the camera.

When we arrived at the house of this month's host we had misgivings about its potential to accommodate an audiophile, his record collection, hi-fi and grand piano. "I think you should have brought a smaller camera," I said to Chris as we stared balefully at the two-up-two-down terraced cottage on the outskirts of Belfast.

The house is in fact a superb advertisement for open plan living. The three bedrooms and their ceilings on the first floor have been taken out to make one spacious music room - where Jim Moore both teaches and listens to music.

Jim Moore at play: "Old piano players never die, they just 'fake' away," he told us.

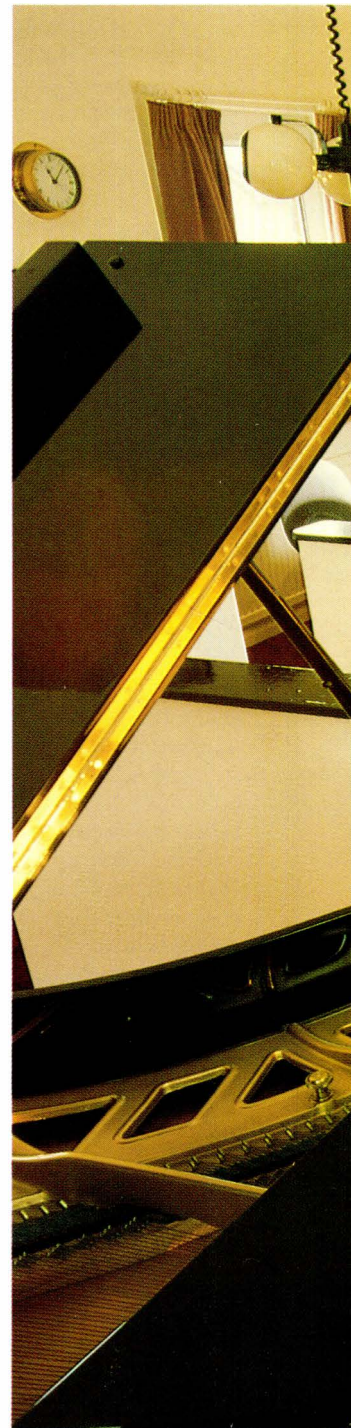


Jim's lived here since 1959 and decided to gut the first floor in 1985 when he had no further use for the upstairs bedrooms. He now 'lives' downstairs, while upstairs houses thirty years' worth of classical music record collection, his hi-fi, including a pair of large Celestion 7000 floorstanding ribbon loudspeakers and a grand piano. And there was enough room for Chris's tripod.

Bombed

The house is adjacent to the treeful parklands surrounding the Stormont parliament buildings, and only a stone's throw from the Stormont Hotel where Zeus Audio was holding its third annual hi-fi show. Jim is the piano player at the Stormont four nights a week, and we heard one jaded hi-fi salesman describe him as 'the best sound at the show'. He tinkles the ivories here when he's not at his day job - teaching piano at the Ulster College of Music. He's played around Belfast all his life, first in a band and then in black tie at hotels such as this. Softly spoken, he casually mentioned that he was probably the most 'bombed piano player in the world'. He was resident pianist at the Europa Hotel in Belfast between 1970 and 1976. At that time it was so common for the Europa to be bombed that guests were given special ties certifying they were present while it was attacked. Jim played in the cocktail bar and was lucky to escape injury. "We always used to go into the kitchens which were right in the middle of the hotel - it would have been much more dangerous to be out on the street," he said. "In the end I got fed up with having to clear bits of plaster and sugar out of my keyboard. But those were the days!"

Jim's also nostalgic about his first hi-fi system. That was in the days of mono but he says: "I think it was the best sound I have ever had until recently, although it is probably nostalgia that makes me say that." He also remembers early hi-fi systems being "very expensive - I was paying £25 a piece for the amplifiers and



earning about £9 a week in those days."

The continuing passion for hi-fi and music was the main reason he decided to open up the first floor of his house. "I wanted a better acoustic but I didn't want to move, so that's why I did this," he explained. "It took about six months to do - and I moved out for that time. The ceiling had to be raised to give the room better proportions, but I decided to leave the stairwell where it was in the middle of the room rather than move it to one side which would also have disrupted the plan downstairs. I suppose I should have put a polished wooden floor under the grand piano - they sound better on something like that, but at the time I was considering putting in a porta-studio, to increase my credibility with the kids I teach!"

The piano now takes up almost one half of the space, which is itself segregated by the waist-high staircase in the centre of the room. "It's a Kawai - that's kay, ay, double you, ay, I," explained our host. "They're very good and I much prefer the sound to that of a Steinway." On the other side of the room hi-fi, sofa and armchairs are arranged cosily - listeners sit about six feet from the soundstage with the loudspeakers in the alcoves either side of the original room's chimney breast. Jim admits this is a little close for some of his recordings where the soundstage is a touch wide, but says that opera sounds

The first floor of Jim's terrace house: The staircase separates the hi-fi and piano areas of this most musical room.

OK in this room for him. "I tend to try to listen every day but when I get off work sometimes I just like to come up here and sit in silence," he added.

Leafy views

The room is very light, with windows on three sides and leafy views over to the park. Between picture windows on the long side of the room Jim's record collection and sheet music occupies three levels of shelving. Jim prefers classical vocal music with Maria Callas, Peggy Lee and Anita O'Day being favourites. The vast majority of the collection is on vinyl with many valuable Decca recordings from that company's golden age of production (late fifties to mid sixties). "I do like the older recordings because you



can hear the musicians actually working; you can hear them moving about - they are much more real because of that. And I always had a slight tendency to go for Decca stuff in those days . . . but not now. And of course Maria Callas was always with EMI so I wasn't just buying Decca records."

Jim's record collection has been responsible for his knowledge of music. "I don't get much time to go to live concerts," he said, "and that may be a bad thing because it tends to make you too selective. But it's been the gramophone which has broadened my taste in music."

He's also recently started a CD collection. "I like the sound of both CD and vinyl, and a lot of recorded music is only available on CD now. Though if I was given the choice I would always buy the record. One of the reasons for that is that I tend to keep the CD player switched off in the system. I do that because the CD player was interfering with the tuner and I had to get a stronger aerial. I thought it was to do with the amplifiers at first but I discovered the reason when I put up the new aerial. I find that the records tend to sound a bit electronic when the CD player is just switched on as well."

Referring to the present controversial

The hybrid ribbon Celestion 7000 speaker takes pride of place here, backlit for effect in the corner



debate about EC plans to force manufacturers to clean up their act regarding radio frequency sensitivity in equipment, Jim put the hassled consumer's view. "I'll be delighted when you can buy a piece of equipment and plug it in without having to do anything to get rid of RF problems. I used to use a Linn head amplifier and it was picking up Radio 2 and Radio 3 - it was great at picking up local taxis as well. I had to keep moving the speaker cables around just to reduce the RF to a level where it wasn't too loud."

"That never used to happen with the Quad equipment though. But don't think I'm a Quad fan for all that. Quad says all amplifiers sound the same but I can tell you that not even Quad amplifiers sound the same. I was a Quad fan until I bought the 405 - the first was faulty and then the second was faulty - it was months of trouble!"

Before this turns into a hi-fi user's grievance soap-box what does Jim think of his present equipment?

He's using a two-year old Roksan Xerxes turntable with Artemiz tonearm and Ortofon moving coil Quasar cartridge. These and a Meridian 206 CD player - an £800 machine using Philips' 16-bit, four times oversampling chip set, are the main sources, with cassette decks from Aiwa and Technics and an Hitachi tuner as competent alternatives. The amplifiers are Cambridge, specifically the C100 pre and brace of A100 monobloks. Along with the Meridian, the Celestion loudspeakers are among the newest components here - and were bought after the Northern Ireland hi-fi show last year. "I heard the 7000s as I was passing the Celestion room at the show last year and as soon as I heard them I knew I wanted them; there was no doubt in my mind at all, they give a very real sound and I'm very pleased with them."



Mendelssohn broods over Cambridge amplification: it replays his music faithfully, says our host.

So I went down to John the hotel manager and said 'look you've got to give me another few quid so I can buy these' . . . which he did.

"I think this is the final system; I'm not spending any more money. With all the systems I've had since the Quads I never had what I wanted until now - I could enjoy them periodically but not all the time. And I could never go as far as some of the high-end equipment that's around. I think spending thousands of pounds on an amplifier is immoral - and to me what I do is bad enough!"

The great con trick

Being a piano player, has he got a system which reproduces the instrument well, if not perfectly? "Yes. But in some ways hi-fi is just one great con trick - you can never get a hi-fi system to sound just like a grand piano - they are physically so different. I know they say musicians are bad judges of good hi-fi, because a musician is always making up in his imagination what isn't there from the system. I think that's bull; I'm unaware that I'm missing anything from this system, and it is a system I can live with. I find the Cambridge amps very realistic and good value for the price as well; I used to have the Naim amplifiers and Mordaunt-Short loudspeakers and found that sound very unreal. With this system, a piano sounds more like a piano, whereas with the older set-up, it sounded like a honky-tonk. The Cambridge preamplifier did blow up after five months but I put up

with it because I like the sound."

Speaking with seasoned cynicism, Jim added: "I expect some trouble with electrical gear at some time, but not when it's new." Before Jim paid for his equipment, he borrowed it from Zeus Audio to audition within his system at home. Doing that was a necessary precaution considering the sum involved, he said.

Means to an end

His philosophy is that a hi-fi system should just be a means to an end. "With all due respect to yourselves I find some hi-fi magazines are on the level of the Dandy or the Beano - some of them haven't even reached the standard of the Eagle. It is always the equipment instead of the music. I have sometimes fallen into the trap of buying something on recommendation and it has been a mistake. The problem is that most reviewers, and most people in fact tend to listen to pop music which is already canned before it goes onto the tape. The same is true with some of the newer classical recordings I know - I have a copy of Beethoven's *Fifth* where there is an obvious tape join and I have thought 'how on earth could a conductor pass that? He must be deaf.' It certainly makes you doubt the the quality of the final decision-making process for that product. It didn't do the conductor's reputation any good as far as I was concerned. Having said that I can remember as a kid being fascinated by the fact that you could just stick a needle in the groove of a record on a wind-up gramophone and then this music would come out, so I can understand people's fascination with the equipment itself. But it should be about music in the end."

While the hi-fi equipment here may simply be a means to an end, albeit a pleasant sounding one, Jim says the single biggest improvement to his listening pleasure has been with the room's extension. "But I discovered that years ago when I used to play in the band in Belfast - we used to have our office in a large studio. I was there quite a lot and so I set up my hi-fi there. There is a tremendous difference in sound between rooms. Opera took on a scale and depth in that studio which I had never had at home. I realised then that if ever I could afford it I would make it a priority to get a larger room."

The system:

Roksan *Xerxes* record player
Roksan *Artemis* tonearm
Ortofon Q cartridge
Meridian 206 CD player
Cambridge C100 preamplifier

The system with Roksan record deck, and Meridian CD player which sounds better 'off' according to Jim.

Cambridge A100 monoblok amplifiers
Aiwa ADF880 cassette deck
Technics M260 cassette deck
Hitachi tuner
Celestion 7000 ribbon loudspeakers
Furukawa PC-OCC loudspeaker cable

System supplied by Zeus Audio, 6 Hope Street, Belfast (also at Coleraine and Donaghmore). Tel: (0232) 332522.



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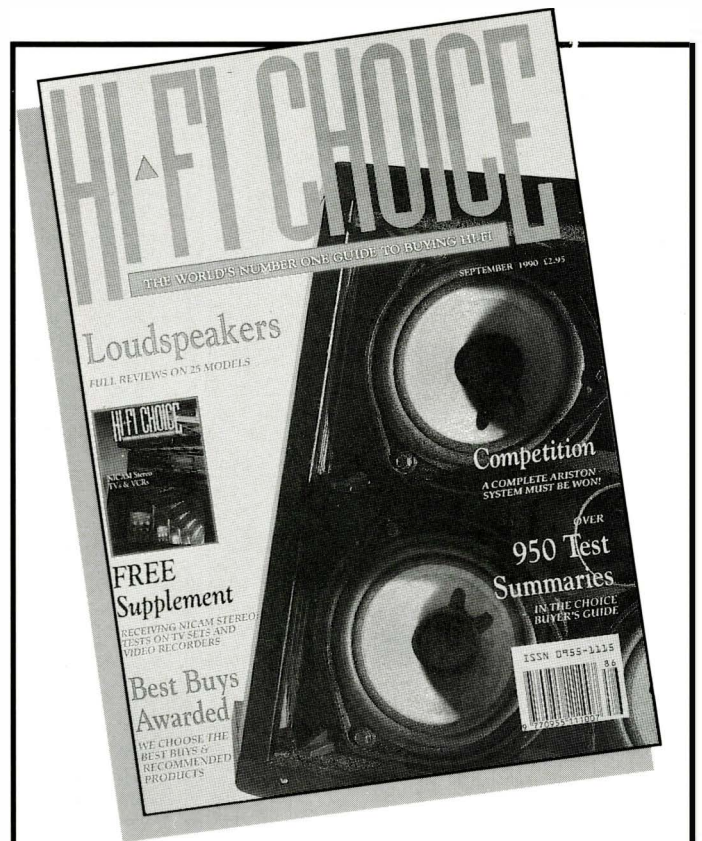
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Statements

Monitoring what's happening on the high-end scene. . .

This month, John Bamford is bowled over by a new concept in British hi-fi system design, while Ian Ward reaffirms the need for 'clean' mains in our search for hi-fi bliss.

Amongst all the pizzazz and glamour of last September's Penta hi-fi exhibition at Heathrow airport, with huge promotional campaigns in evidence from the likes of Sony (with its DAT player), one of the most interesting exhibits - for me, at least - was tucked away in a small room at the end of a corridor. The name on the door was new: AV International.

A British firm based in Gloucestershire, AV International is making very stylish, fully remote controlled components which are perhaps most easily described as being of a 'British audiophile Bang & Olufsen' style. No, they don't have the hi-tech modern Scandinavian look, but they do have the full remote-control hi-tech, and they're aimed to attract customers who want good quality sound, B&O-style convenience, slightly more sober and discreet visual appearance than B&O's 'designer home' image - and don't mind paying a goodly sum for it.

The goodly sum in question, I guess, will be around £7,000 for a comprehensive system. This would comprise CD player, tuner, cassette deck and amplifier, all capable of being integrated into a round-the-house remote-controlled system for relatively modest extra cost (£780 for the first extra room, then £395 per room thereafter - plus the cost of 'satellite' speakers for each of these extra rooms). Add to this the cost of main loudspeakers for the living room and a top quality record player if desired.

It's expensive, but. . .

Sounds over the top? Well, a few sentences back I did describe AVI's product line as British *audiophile* combined with hi-tech flexibility, and that's *exactly* what it looks like becoming. I've recently been auditioning the brand new *Series 2000* integrated amplifier (£1,995), and while some seat-of-the-pants audiophiles will certainly prefer the sound of triode valve amps, for example, or massive solid state 'power stations' with which to drive

inefficient loudspeakers, the '2000 is nonetheless *very* good hi-fi indeed - and supremely practical with it.

Note that the company has been named AV International (the 'AV' standing for audio-visual, naturally enough), this *Series 2000* amplifier incorporating a rear panel SCART socket for switching of component video signals. A forthcoming 'Central Controller' has been configured to receive signals from transmitters in other rooms (£395), will take four audio line inputs, and two AV inputs on two SCARTs. This Controller can be tailored to suit your requirements, a choice of switching cards (£75-£95 depending on complexity) accommodating and switching input signals from sources which are audio-only, audio-plus-video, or audio-plus-video modulated onto RF.

. . . it's well thought out

That last option displays how considerate is this system's conception, the designer clearly thinking, "I must remember that some prospective customers might not own up-to-date modern TV sets which have SCART sockets." Consequently, even if the TV set at the foot of your bed is a cheap 'n' cheerful little portable which you bought a couple of years back for £149, you can still use it to watch video tapes which you've inserted into the VCR residing in the living room downstairs. For £395 per room, AV will be providing a small remote line amplifier (2 x 35 watts) which can be wall or surface mounted (it's 290 x 90 x 100mm deep - the latter being the depth of one house brick) which receives the commands from infra red handsets - any handsets - to control the VCR in the living room, control the *Series 2000* CD player, tuner, or cassette deck, and drive the pair of loudspeakers which you've chosen to install in that particular room.

Using KEF, B&W or Infinity in-wall loudspeakers (for example) would make the cost of this round-the-house entertainment luxury about £600 per

room; the price could be kept as low as £495 per room using 'conventional' miniature loudspeakers, mounted on wall brackets. These remote amplifiers/receivers also have local source input, a full set of manual controls (in case you lose the remote handset under the duvet), will pick up any compatible infra-red commands and re-transmit them to the Central Controller which re-modulates it for sources in the living room system (as necessary), and uses the same front extrusion used on the *Series 2000* amplifier (see our photograph, where we purposefully flipped down the fascia panel to show you the manual control panel beneath).

Sure, this kind of kit is available if you look for it (there are a few brands around, such as Carver, Bose and Meridian), the closest comparison perhaps being with the most up-to-date Revox system components. To my knowledge, however, AV International is the first British manufacturer to make such a full-blooded and so thorough an attempt to tackle this area of the market.

Formed by one half of the partnership which was responsible for establishing the Kelvin Labs brand of electronics in the UK, these components are designed with an audiophile's requirements in mind. So



we're not talking gadgets for gadgets' sake, we're talking superb audio performance too. Which is why I regard this as a major step forward for specialist British hi-fi manufacturing.

And it sounds delightful

Perhaps I hinted a few paragraphs back that the *Series 2000* amplifier (which can be split to separate the pre- and power amplifier stages, by the way), is not state of the art. Well, no, it might not challenge some high-end audiophile esoterica, but I must put its sound quality performance into perspective by saying that if you won the pools tomorrow you could, if you wished, listen to Martin-Logan *CLSI* electrostatics in the living room, Townshend *Glastonbury Tors* in the 'den', Tannoy *DC3000s* in the study, KEF *C95s* in one bedroom, JPW *Sonatas* in childrens' bedrooms, and a massive pair of Cerwin Vegas in the guest room, ready for when your in-laws come to stay (only a joke!). Seriously, the high quality of sound is such that this (bizarre?) hypothetical proposition would not be hampered by

Series 2000 amplifier: the rechargeable remote handset will operate AV International's complete home entertainment system.

the amplifier's sonic capabilities.

While Kelvin Labs intends to continue aiming its products such as the *Integrated* and *Integrated Digital* amplifiers at audiophiles who require reasonably high quality sound at affordable prices, designer Martin Grindrod has branched off to form AV International and develop this *Series 2000* range, the heart of the amplifier being based on (advanced) circuits used in Kelvin Labs' once top-of-the-line *Absolute Zero* preamplifier and monoblok power amplifiers (to my understanding, now discontinued). Consequently, while £1,995 might seem exorbitant for a remote-controllable integrated amplifier, it's actually a very serious bit of kit which many aspiring hi-fi enthusiasts would love to enjoy having in their living rooms. Again, with audiophiles' ideals at heart, the remote control facility has been carefully configured, gain adjustment is via a motorised potentiometer, and for reasons which I haven't the room to discuss here, the amplifier is especially good when listening to CD and DAT sources. I was just slightly disappointed by a lack of top-notch transparency in the MC phono stage.

Forthcoming attractions

The bottom line is that this project is all

very exciting, and AV International deserves to be a name on all audio enthusiasts' lips as we go into the final decade of the 20th Century. While the '2000 amplifier, which I consider to be meticulously designed and manufactured, is available as I write, a matching high quality CD player (£1,995), FM-only tuner (£1,295) and all the round-the-house remote control components are due for availability in Winter 1990 and Spring 1991. We'll have to wait perhaps a year for an AVI cassette deck, but one is promised - possibly draw-loading in order to keep each *Series 2000* component visually identical. Information gleaned so far is that the tuner uses all discrete signal circuitry (including for the stereo decoder) and has 12 presets; the CD player is a 1-bit (PDM) machine employing the latest BS DACs, and it maintains differential signals through the filtering and de-emphasis stages before converting to single-ended through a 'studio grade' line transformer which has been specially imported from the US.

Doubtless you'll be reading much more about AVI's *Series 2000* components during 1991. Although far from inexpensive, they promise to be exceptionally desirable both for hi-fi buffs and hi-tech gadgetophiles, and *Hi-Fi Choice* will be keeping you up to date with the developments as they happen.

Now if only I could afford that Sony flicker-free TV for the bedroom, projection video system for the living room, NICAM tuner, studio-grade portable TV monitor for the kitchen, S-VHS VCR, LaserDisc player, Dolby Pro-Logic processor... Well, we can sometimes try to run too fast. After all, AVI designer Martin Grindrod did install a BSB satellite system in his home - to enjoy superior quality D-MAC component video along with digital stereo sound - just three weeks before the 'merger' with SKY...

John Bamford

Whilst accepting the importance of source components within a system, some astute observers have pointed out that as virtually all hi-fi equipment is reliant upon electricity then surely the mains supply is the true 'front end'.

As if to reinforce the point, think of the number of turntables with power supplies specially developed to reduce the adverse affect of 'dirty' mains. Linn's recently introduced *Lingo* supply for the *LP12* springs to mind, particularly as it is intended as an upgrade to the existing *Valhalla* circuitry which was itself originally developed to deal with erratic mains quality. It is also worth noting the example of Pink Triangle which has developed rechargeable battery power



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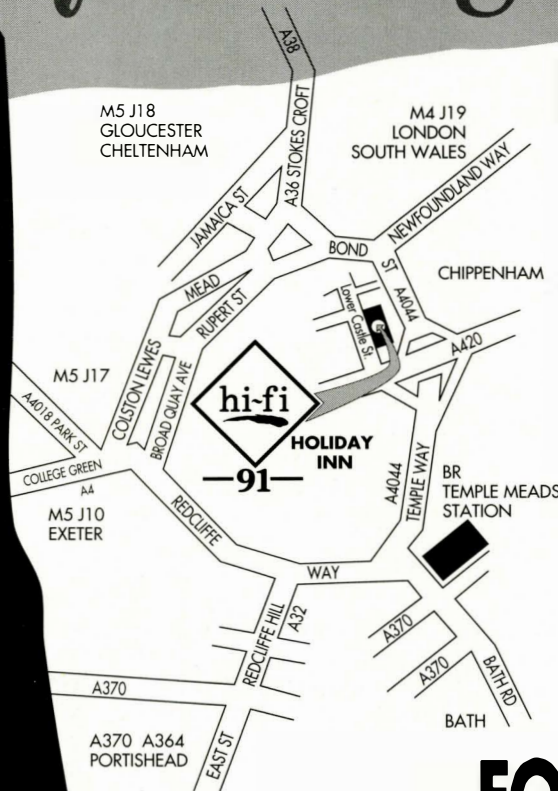
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FOR PRODUCT

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Get an EXTRA 10% off our already competitive prices if you purchase equipment at Hi-Fi '91. A FULL 10% discount is offered on most products. Don't miss this opportunity to choose from the widest selection of the best hi-fi products at special low prices.

Equipment ordered or bought at Hi-Fi '91 can be collected from any branch of Audio Excellence, Audio T or Radford Hi-Fi — to be arranged at the time of purchase.

supplies for both its *PIP* preamplifier and turntables; what better way to deal with the problems inherent within the mains than to dispense with it altogether!

Separate spurs

One of the the most effective ways in which to provide a relatively clean power source to hi-fi components is to have a friendly neighbourhood electrician provide a separate mains 'spur' from which to run your system. This really does help matters but can do little about external demands on the mains supply.

The extent to which dirty mains can affect a hi-fi system largely depends on the demand upon the electricity supply in the area in which you live. Those residing in built up areas, large blocks of flats or near an industrial estate, for example, will in theory suffer more from distortion on the mains than those fortunate enough to live in quiet rural areas.

Until recently I was aware of only two standalone mains conditioners made purposely for hi-fi components, yet now there seems to be a plethora of ostensibly similar devices appearing on the market. All claim to tackle mains problems, though few offer any hints of how they actually do it. After my own experiments proved positive, I invested in one of Lynwood's *Basic* conditioners, this taking the form of an expanded mains plug with a 500watt capability (sufficient for most systems).

The company recently supplied me with its *Advanced* conditioner for similar appraisal. This takes the shape of an anonymous but heavy compact black box which accommodates two standard mains sockets for connection of equipment, and a captive three core lead for connection to the mains supply. This version can supply up to 1500watts of continuous power, ideal for large systems or current hungry power amplifiers. Its performance is said to be superior to multiples of the *Basic*.

Keeping stumm

Without giving away too many secrets, the explanation of the device's operation is as follows. The conditioner draws the raw supply from the mains, which is promptly processed to remove deleterious effects. The resulting smooth supply is then stored in a form of electrical reservoir, from which the attached equipment can draw a permanently clean supply.

It is worth noting that this type of device has its work rate and effectiveness partially governed by the time of day that you are listening to your system. Without the benefit of a mains conditioner, your

hi-fi should sound better at 3am than it does at 6pm due to the reduction in demand on the electricity supply.

With regard to individual components, the most effective improvements were evident when the conditioner was attached to the CD player (Marantz *CD80*) and preamp (Avondale-modified *MF Preamp 2*). Both of these units benefited from the removal of a subtle layer of grain and electronic hash resulting in a discernable improvement in clarity. The turntable (*PT TOO*) assumed a slight improvement in both precision and atmosphere, while there also appeared to be an enhanced sense of 'being there' when listening to live broadcasts via the tuner (Hitachi *FT-MD5500 Mk2*). My power amp also benefited via a greater sense of authority and sweetness. With the conditioner linked to the system as a whole, the resulting sound seemed to ebb and flow with greater ease and confidence.

However, I must not over emphasise these subjective improvements. They were pretty subtle (I live in a quiet country locations), though certainly worthwhile in the context of a high resolution system. My curiosity was nevertheless sufficiently aroused to investigate further in less favourable surroundings.

A sterner test

The *Advanced* was duly unplugged and transported to a friend's abode, which is within a block of flats in a built-up area of Leeds. This represented a much sterner test of the conditioner's capabilities; a greater demand on the supply especially

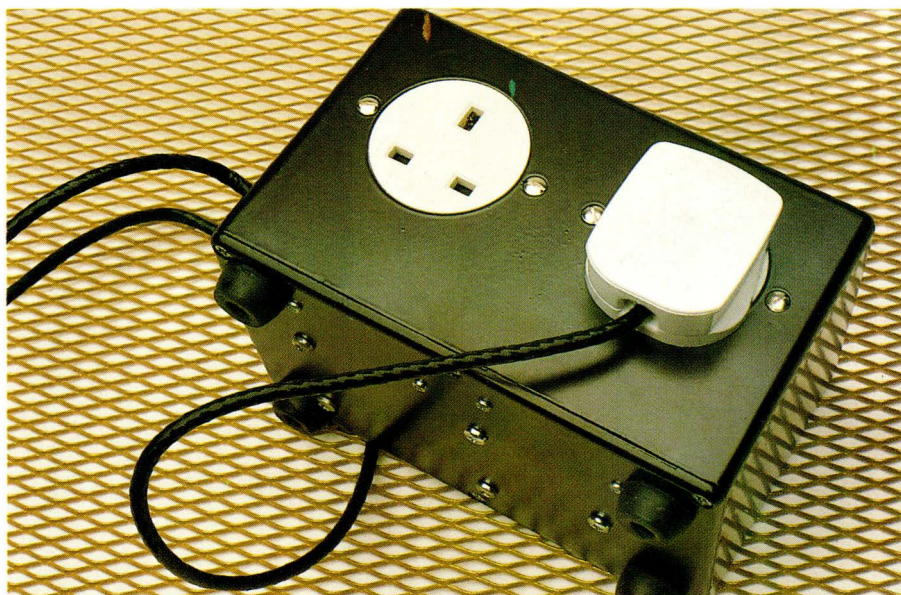
during peak periods and no separate spur in the flat for the hi-fi.

Used with a Linn *Axis* turntable through a Harman *PM650vxi* amp, driving monitor Audio *R300MD* speakers, there was an obvious reduction in 'boxiness' and hardness to the sound, resulting in a more civilised and therefore listenable presentation. This was achieved without any evidence of a loss of dynamics or excitement. (I make this latter point because there are a few sceptics who have claimed that mains conditioners tend to rob the music of these particular qualities). The soundstaging and imaging qualities also improved, the location of musicians and performers becoming more distinct.

Remember that the worse your mains quality, the more benefit can be had from such conditioners. In my opinion, £175 for the *Advanced* version is a worthwhile investment in the company of a high quality system. However, if this outlay seems a little daunting, first try the *Basic* at £49.95. This latter version is perfectly capable of offering a taste of the larger unit's capabilities; try attaching it to a CD player or D-to-A converter.

It's worth bearing in mind that Lynwood offers a money-back-if-not-convinced policy. Having said this, the company does have a growing number of dealers who stock and can demonstrate these conditioners. Interested parties should contact Lynwood for details. Lynwood Electronics, Coley Lane Larm, Wentworth, Rotherham S62 7SQ Tel: (0709) 873667.

Ian Ward



Lynwood's *Advanced* conditioner proves that mains matters.



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

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

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

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

I’ve grasped the basics of the TAF 420 in that it incorporates spontaneous twin drive – whereby the power supplies to both stages of the power amp are kept separate to ensure there are no fluctuations in supply at either stage – and the use of super legato output transistors – selected to offer superior linearity and a reduction in switching noise and cross over distortion is essential to produce a clear sound.

And on the CD player an advanced digital to

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

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



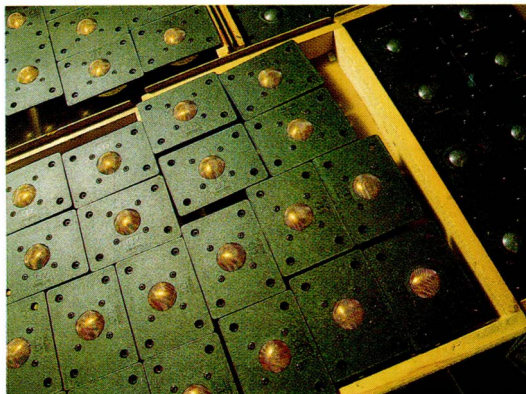
And interestingly, in the speakers, Sony’s APM (Accurate Pistonic Motion) diaphragm means less of the ‘cavity’ effect which all speakers have to some extent.

Also, the acoustic specifications were developed by British ‘ears’ which only goes to show, as I’ve always said, if it sounds right you really don’t need to know any more.”

A handwritten signature in black ink that reads "Mark King". The signature is stylized and includes a long horizontal line underneath.

SONY.

WHY COMPROMISE?



The Bespoke Speaker Enterprise

*Dan Houston visits a loudspeaker factory in
North London which builds the only metal
dome drivers in the UK.*

Photographs by Chris Richardson.

Have you ever thought of becoming a loudspeaker manufacturer? Probably not; making your own brand of loudspeaker in this country is a comparatively expensive, not to mention specialised and competitive business. Consultancy, research and development fees (the hiring of an anechoic chamber and proprietary test equipment) are all significant early costs if you're serious about getting it right. While it is quite easy to buy component drivers, some Medite, a coping saw and make a cabinet which produces 'sound', advanced loudspeaker technology is now far from simple, even if this was how the likes of KEF, Wharfedale and B&W started in the early days of hi-fi.

Nevertheless, the UK boasts a plethora

of native loudspeaker makers from the likes of those mentioned above down to cottage industry type names such as Seventh Veil or Acoustic Energy. Even market leaders like Sony, selling about as many loudspeaker systems as all the indigenous brands put together in the UK, have the majority of their speakers supplied by OEM (original equipment manufacture) contractors. The UK market is also humming with activity (albeit a fairly subdued hum since interest rates forced hi-fi and other luxuries off the immediate shopping list as far as most purchasers are concerned): a recent head count in the *Hi-Fi Choice* office produced well over 100 brand names of loudspeakers on sale in Britain. From abroad, British loudspeakers are highly

regarded and many foreign manufacturers adopt British design criteria as a recipe for success, seeing the UK market as critical in their sales strategy.

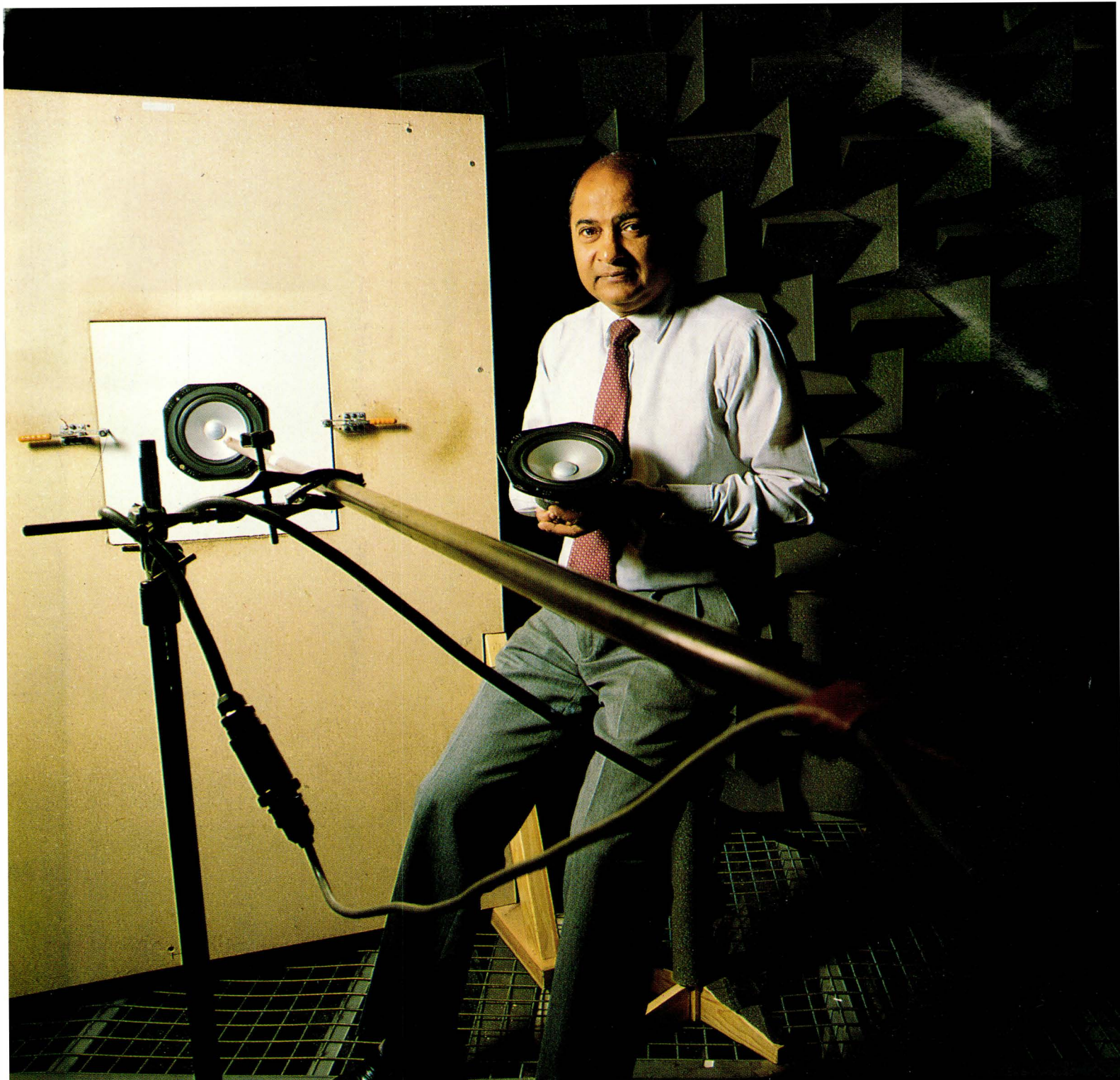
The divers and varied competition reflects a healthy situation for a capitalist society but for many small manufacturers the development costs - especially to design their own drivers - can be prohibitive.

Overseas OEM

As a result many are buying OEM drive units from established companies - many of them overseas (or should that be 'overSEAS'?). Factories like Scanspeak or Vifa of Denmark, SEAS of Norway and MB in Germany are where many hallowed 'British' loudspeakers begin life. While British design, and the British ear are seen throughout the world as critical marketing forces (in closing its UK factory last year the American AR brand kept on its British design team who now supply blueprints for US manufacture), there are those who believe that in using foreign components the British loudspeaker is losing its heritage.

AEL, or more fully Acoustic Engineering Limited, is a new company recently established to change this. AEL was founded to offer a complete loudspeaker design service - cheaply.

The factory is situated in Tottenham, North London, in a building which used to belong to ELAC (Electrical Acoustic Engineering Ltd). When ELAC pulled out of loudspeaker driver manufacture halfway through 1990, AEL was already established and due to go into production in Cambridge. The firm was founded by Vernon Innis who had previously worked for ELAC and Mo Iqbal, who runs the Monitor Audio loudspeaker company - based in Cambridge. Monitor Audio's connection with the factory goes back five years to when Mo Iqbal pioneered the first metal dome tweeters using ELAC's facilities. Iqbal put up 80 per cent of the funding for this new venture with 20 per cent coming from Innis. But Mo was at pains to stress that it was not a Monitor Audio factory. "I regard myself as a banker in this partnership, and it is Vernon who is running things here," Mo told me.



"Monitor Audio is a good customer, but as far as most other customers are concerned, I don't exist. The opportunity arose to buy the factory and I had always wanted to have investment in a drive unit plant - in order to be able to make my own drive units and to have access to a research and development facility. But apart from that we really need this in the UK. At the moment many British loudspeaker firms are buying off-the-shelf units from foreign companies; we've all done that in the past I am ashamed to say. This company now gives them the chance to develop their own tweeters and main drivers - to give them whatever they want. All you need to know when you come here is what kind

Vernon Innis with one of the new Monitor Audio metal cones in AEL's on-site anechoic chamber.

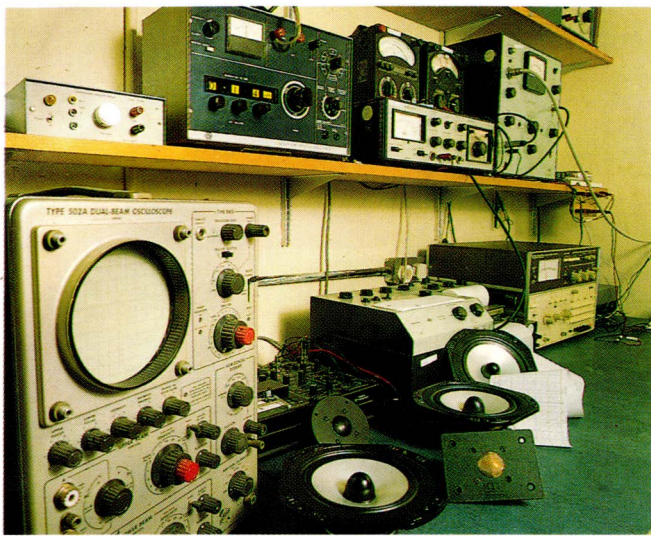
of sound you want. And we are the only people in this country who can manufacture metal dome tweeters - that is AEL's specialisation."

Metal dome production

The basis of the design service is founded on Iqbal's own development of metal dome tweeters at the factory. "I persuaded ELAC to go into metal dome production five years ago - to make the metal dome tweeters that I had developed right here. The advantage of a place like this is that

you can have something made up quickly, and then go into the test area to see if it is right. Then you go upstairs again and have another turn put on the voice coil or whatever, to tweak it. That was how I did it, but you don't have to be as involved as that and AEL is offering a complete design service. Such a design would cost between £2,000 and £5,000 depending on how complex the system is. This is much cheaper than anywhere else, I can tell you. If you want to do it all yourself the anechoic chamber can be hired for £150 a day, which is also cheaper than elsewhere and includes the use of everything - down to graph papers for the test equipment."

There is the niggling doubt that one



Left top: test equipment awaits users in the R&D facility. Left below: tweeters taking shape. Right: deft hands at work turning voice coils.



becoming involved with Mordaunt-Short, first with the company's consultancy team and then becoming product manager in 1986. From Mordaunt-Short he joined ELAC to develop the company's hi-fi and TV markets. Only ten per cent of the company's business was in hi-fi and when Harman bought ELAC in 1989, preparing for a European foothold by 1992, he says the hi-fi side became neglected.

"We first formed AEL

might not get a confidential service at AEL. With a revolutionary design, isn't there the danger that Monitor Audio might steal the idea and put it into production itself? Mo again: "Absolutely not. When a customer comes here they sign a contract of secrecy with AEL and their design is their design. You can't have what other customers have, but we'll help you design what you want." He's emphatic about this point and says that there are already half a dozen firms interested in the facility so he can be believed. "The point is," he continues, "that a customer can get the expertise of this company and our engineers - we'll even design a one-off. This facility has never been available in this country before, and anybody can have access to our facilities."

Fascination

Mo's partner, Vernon Innis, has been involved with audio engineering all his life including being Chief Engineer for the famous Hacker radio company in the Sixties. He was born in India and arrived in England as a child. A fascination with audio and electronics led to first jobs being with companies like Dynatron. From Hacker, he spent eight and half years with Sonaudax (loudspeakers) before

in January of 1990 with the intention of starting in Cambridge," he said, "but then we learned that ELAC was going to close down its Tottenham factory and so we negotiated to take over the plant and the workforce."

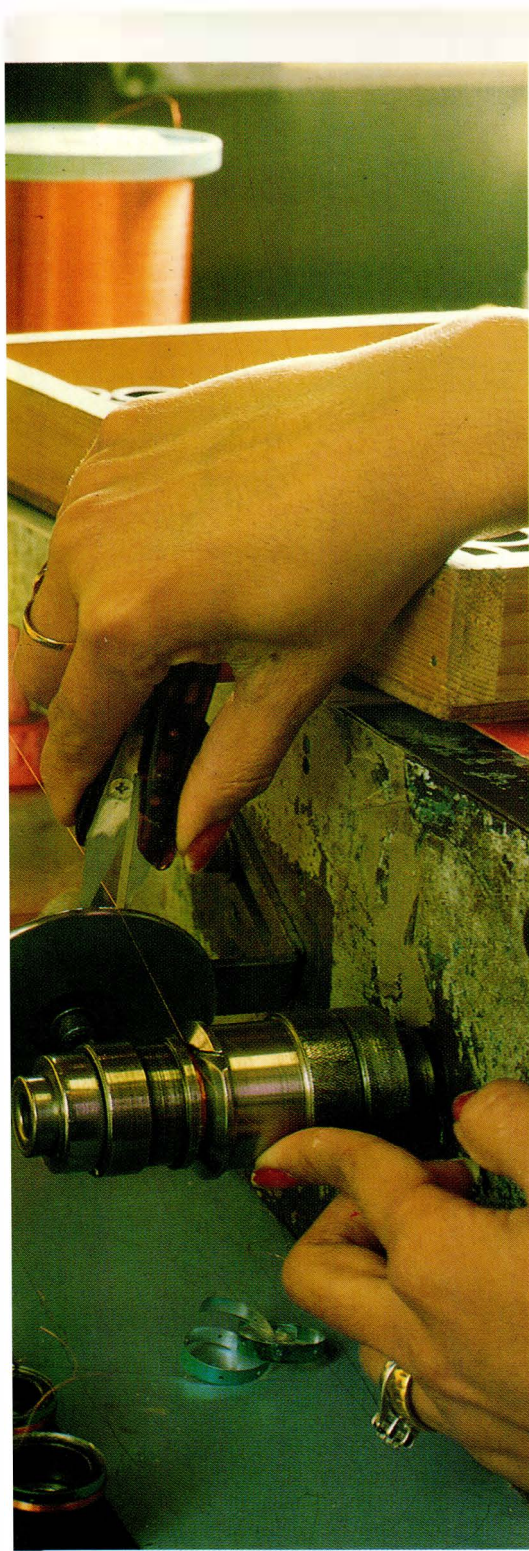
The factory itself is a drab, unprepossessing place that suffers from tired-looking Fifties furnishings and a purely functional atmosphere. Situated in a light industrial area, it has two floors with the research and development facility on the ground level. The R&D rooms boast sparse but apparently adequate test equipment including the trusty oscilloscopes used to develop the metal dome tweeters. The anechoic chamber isn't the largest in the world at around ten feet cubed but is again described as adequate for its purpose. The rest of the ground floor contains areas for packing, a posse of machine tools and lathes and some drive unit manufacture in the open plan layout. Upstairs is also open plan but for offices down one side of the production area. Tweeter and main drivers are made here with two assembly lines in operation. Voice coils are expertly wound and the alloy domes finely glued by a group of workers who remained when ELAC moved out. The production lines were



running at less than capacity (it's a new company - give them a break) when we visited and AEL had to shed some of the workforce when it took over. There are now 21 people working where there had been 46. The partners say the old workforce was very much a team and they would like to re-employ its former members. However they'll only be able to do this if they can get turnover up from the first year's forecast £600,000 to £1.5 million.

Intricate work

Many of the workers are women described by Mo as ideal for the intricate work needed in putting the finicky tweeters



Vernon. "The plan is to strip out some of the redundant offices on the first floor and put in another assembly line when business grows to a sufficient level," he told me. However, he added that while he hopes the business will grow, there is no intention of serving a mass market. AEL sees itself as becoming especially popular with the smaller loudspeaker companies, who want to get into metal dome manufacture, but want their own designs to maintain their individuality. "It's a tremendous thing to happen for small loudspeaker companies," Mo enthuses. "They won't have to invest in expensive equipment and they can come here and order small quantities from ten units onwards - no problem.

Aim to serve

"Our intention is to serve the hi-fi market, and the specialist manufacturers. We want people to see us as the most professional company anywhere serving the quality end of the driver market," he says.

The professionalism of the company isn't in doubt. Monitor Audio consolidated an already strong position in the loudspeaker market when it introduced the metal dome tweeter in 1986. "Everybody was sceptical and said the sound was too bright and hard but they soon followed suit," Mo told me. He has recently taken the development one stage further, introducing the *Studio Range* of Monitor Audio loudspeakers which use extruded alloy drivers. "An alloy produces much better results than pure aluminium," he explained, "and it is also easier to extrude. We wanted to make a driver to match our tweeters so that both materials in a loudspeaker system have the same speed and characteristic sound. The trouble before was that with metal domes and plastic drivers there were discontinuities and one had to do clever things with the crossover to achieve a good result. We spent four years working on the metal driver and the investment was huge. It cost us £150,000 to develop the *Studio 10*, which would have gone down the drain if it hadn't worked. The success came in anodising the cone with a

ceramic coating. Ceramics dampen the cone so that there is no metal resonance, it also acts as a heat sink and keeps the cone cool. We haven't perfected the extrusion method yet; we're still throwing away 80 per cent of the cones and we're working on better methods. But it's taken the world by storm because nobody realised a small loudspeaker could sound so big, and we've sold 650 pairs of the *Studio 10* in the nine months since February."

Iqbal believes that by its very specialist nature, AEL will not be a money spinner, and claims that he is playing a largely philanthropic role in giving the industry a service it needs if it is to maintain credibility abroad, or if it is to continue to lead the world in the area of loudspeaker design. If customers of AEL can turn out a track record similar to that of Monitor Audio he'd be pleased, he says.

Acoustic Engineering Limited, 60/68 Markfield Road, Tottenham, London N15 4RD. Tel (081) 801 6575.

Heavier work can also be turned out...



together. "Making loudspeaker drivers is a very skilled business," he said, "and we're lucky to have such a skilled workforce here. For some of this work, I can't even see what they are doing - most people would need a microscope! I think that maybe it is because they do a lot of sewing at home, their eyes are used to the intricate detail," he opined. "But this is one of the strengths of AEL. The highest level of precision can be delivered. Many other manufacturers can't make pukka A1 drive units; here, everything's done by hand with meticulous care."

At present the factory can turn out some 1,400 tweeters and a similar number of mid or bass drivers a week according to

**OUR AUDIO EQUIPMENT
DOESN'T HAVE
GRAPHIC EQUALISERS,
TONE CONTROLS
OR SOUND
PRESSURE METERS.**

**SO WHAT ARE
THE REVIEWERS
RAVING ABOUT?**

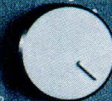
MUSICAL FIDELITY B1 INTEGRATED AMPLIFIER



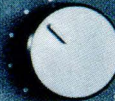
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VOLUME



OUTPUT TO TAPE 2



SOURCE

PHONO

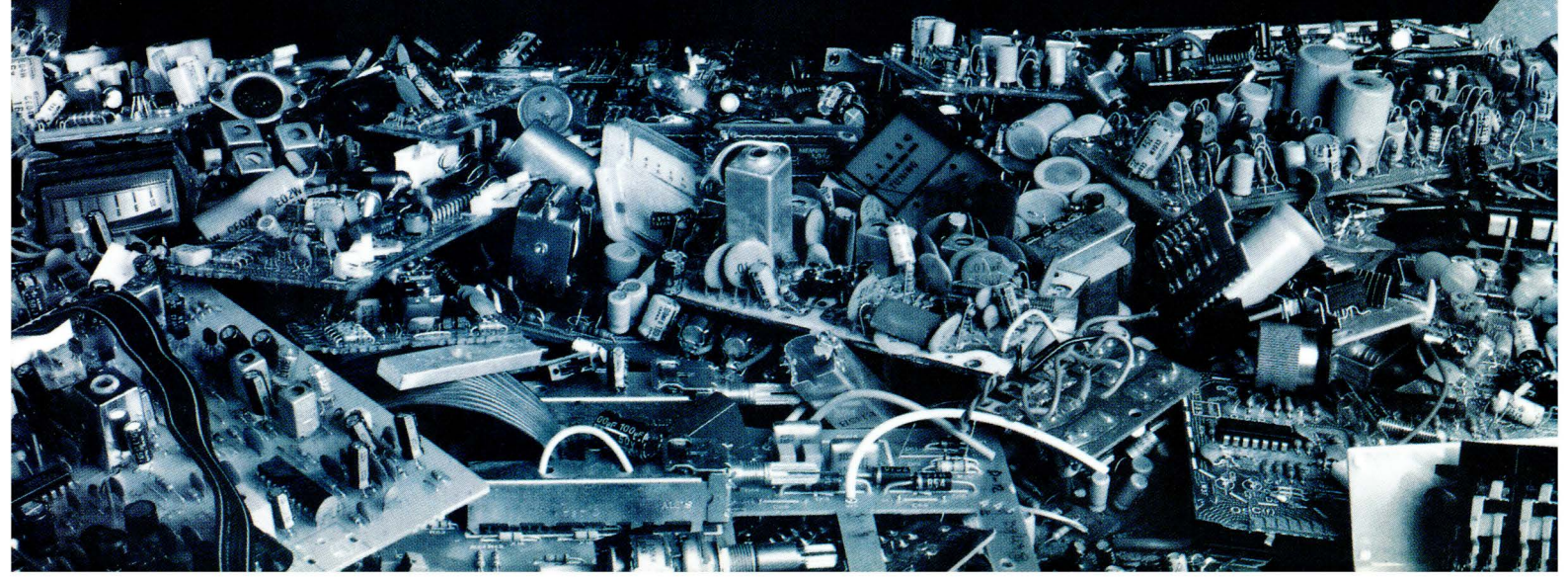
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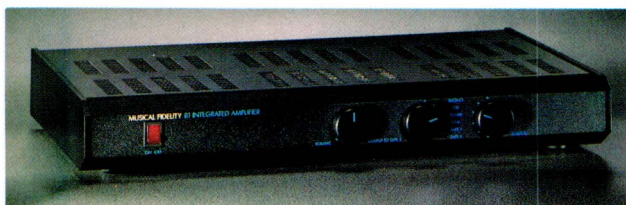
CDV

TAPE 1

TAPE 2



Look at most hi-fi and you'll see that it has as many twinkling lights and bobbly bits as a Christmas tree. Why? Do you really need a built-in lava lamp that throbs in time with the music? If not, you will be interested in the audibly different hi-fi made by Musical Fidelity. Our hi-fi is designed to deliver



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than Gramophone Magazine says that our B1 integrated amplifier "is one of the finest sounding integrated amplifiers I have had the pleasure to use." Our B200 integrated amplifier sounds

"The B200 is designed first and foremost to appeal to the purist side of the audiophile's nature. There are no concessions to the spurious luxury that is an unvarying feature of so-called mass market hi-fi."
CD Review



good to CD Review Magazine, which calls it "a near ideal all-rounder . . . crisp and detailed and very much in command of

events." And Audiophile with Hi-Fi Answers likes our MA50 monoblok amps for "the total ease in their musical presentation." In fact, we make a wide range of hi-fi separates and loudspeakers that, dare we say it, are a pleasure to listen to. To hear hi-fi that sounds better than a Christmas tree, visit a Musical Fidelity stockist. You'll soon know why *hearing is believing*.

MUSICAL FIDELITY

Doug Brady Hi-Fi

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Readers Write

CHOICE ANSWERS

Late night Lingo'ing

With reference to Paul Messenger's *Personal Messages* article on the Linn Lingo (December, issue 89), I would like to ask if sitting-up-'til-dawn test listening to a thing like this is a part of the job? One assumes it must be, seeing that he writes about the matter thereafter.

If in fact it is, then can he really still be concentrating fully at three or four am after listening to music for four or five hours, as would be necessary for him to be totally objective in his assessment?

We all know he must be one of those blessed with golden ears - and with Mana from heaven as well - but I find it hard to believe that these faculties are still completely sharp after such a session.

L.G.Neville, Ashted, Surrey

Whatever the colour or material of my ears, I would never claim to listen objectively. Listening and its responses are quintessentially subjective.

What is objective, at any rate up to a point, is behaviour. To find myself sitting up all night re-exploring my record collection is an observation that contains a good measure of objectivity. It is also just about the most reliable indication of the performance of my hi-fi system that I know, as the objective reaction to subconscious/subliminal stimuli. Concentration doesn't enter into it!

Paul Messenger

Texas style audio extremism!

For those poor dweebs in audio who have under \$50 000 systems, I thought I would give you a taste of 'The Good Life', as experienced by me with the help of my near-perfect stereo system. Those of you who think you can get away with \$5,000 systems can move on to the next letter now.

I had been away from home for three days for a trade show, so I had to check the system before powering



Guts 'n' all Linn's Lingo, the insomniac's companion.

everything up. First, I applied power to the individual environmental conditioning units for each system component. As we all know, each component has an optimal operating temperature, and this can be achieved only with the most exacting temperature control. I let the ECUs stabilise for two hours, resulting in a barely-acceptable temperature fluctuation of about $\pm 0.02\text{C}$. I then powered up the audio components and allowed another two hours time for restabilising. Temperature deviation was then $\pm 0.04\text{C}$; this can lead to audible problems as the electrons speed up and slow

down in passing from one component to the next, but I was in a hurry and had to suffer with it.

Next up was a check on the liquid nitrogen bath surrounding the D/A converters. It was a pint low, so I topped it off, accidentally freezing one finger and breaking it off. Ah, the price one must pay for top-notch audio! At this point, I noticed that the room humidity was 51 per cent, one per cent higher than the humidity conditions prevailing at the time of the recording session. After replacing the humidifier and recalibrating, things looked a little brighter. But I recalled that the 0-gauge

speaker cables were going on three weeks old, which would mean that some oxygen might have crept into the copper. A quick cable check using the ol' electron microscope revealed copper oxide at 0.0002 per cent by weight, certainly audible to anyone who knows good audio. So I replaced the cables.

Feeling adventurous, I decided to play a CD. I know, 64 bits and 198 kHz just isn't enough to capture those subtle nuances - the conductor's stomach grumbling, the sound of dust in the air conditioner in the next building - but they *are* convenient. However, as soon as the CD was out of its temperature-controlled box, it hit me! I had forgotten to don my clean-room suit before touching the CD! Doubtless, millions of dust specks had floated down onto the disc surface, causing countless correctable errors! So I had to put the sucker on the bench and go over it with an electron microscope again until I had picked all the dust off. It was worth it, though, to be able to know with assurance that there would be fewer corrected errors. I will admit, however that picking pieces of lint out of the pits on those little suckers is a challenge!

Finally, the system was warmed up and ready to go. I



If you think that this looks like a pretty esoteric set-up, read about the things Texan audiophiles get up to!

GET ON DOWN

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**GREAT HI FI SALE
 ENDS 2ND FEB**

coated the CD carefully with the standard Armor-All and Karo syrup coating and slapped it into the player. First, the calibration run. The airborne robot floated about in its usual purposeful manner, looking for the sweet spot between the speakers. Oh, I know that some of you wimps will say: "but doesn't the sweet spot stay the same, why do you have to look for it each time?" Pshaw! Change that room temp by 0.1 degree, and tell me if that sweet spot's moved? It sure has! Some people will never know this, because they've never heard a system like mine!

Once I had located the spot, I strapped myself into the listening chair, making sure that my head excursions were limited to no more than 0.05cm in any direction, assuring a stable stereo image. I pressed "play" on the remote. Ahhh! A vast 3D sound stage opened before me, stretching limitlessly in all directions. I could hear the dressing rooms behind the recording studio with perfect clarity. Reaching out to touch the palpable violins, I could mute the more strident performers by simply putting my hand over their instruments. Very nice!

But, suddenly, an alarm sounded! The magnetic field strength meter indicated that my across-the-street neighbor had turned on some appliance which was emitting a magnetic field, upsetting the entire D/A process and the amplification chain very audibly. Distortion was up to 0.0002 per cent and signals within 3dB of the noise floor were just horrible. I activated the auto-dialer with the remote, selecting the standard "You are impinging upon my perfect listening environment, please turn off all electrical devices and stand very still" message for delivery. A minute later, the noxious magnetic intrusion ceased.

Finally getting a chance to listen to the music, I noticed a certain quality about the sound that was very audibly imperfect. With a start, I realized the problem. The sound of the oboists' nose hairs vibrating in tune with the music was not as finely

etched as it should have been. It took a while, but I located the problem. As I inhaled and exhaled, the environmental control units' power consumption fluctuated wildly ($\pm 0.000732W$), and this was causing the voltage at the inputs to the system to vary by as much as 10-13 volts. The result, of course, was an unacceptable frequency response deviation in the CD playback (down 0.066dB at 13 KHz!). . . Larry Spence, Dallas, Texas.

Onix omission

As an audiophile and subscriber to your very fine publication, I have noticed something of an omission in your amplifier reviews. I appreciate that it's impossible to review every single product on the market but for some reason you don't appear to have ever reviewed the Onix OA21 integrated amplifier.

Having used this amp for just over a year, I'm probably biased, but in the context of my system, CD50SE/BB and Rogers LS4a, I have found it to be a very natural sounding amp and preferable to the likes of Cyrus 2, Audiolab 8000A, MF B200 etc.

I realise that many factors enter into personal preference, ie, musical tastes etc, but I feel that the OA21 greatly deserves some recognition. G.P. Palmer, Slough, Berks.

We have requested a sample of

the OA21 for review on several occasions, but despite Onix's apparent enthusiasm for the idea, no product was forthcoming. However, as you are so impressed with the OA21 we'll endeavour to get one in for our August issue, the amps having already been collected for March.

Dynamics, imaging and bass

I am writing in the hope that you will be able to guide me in upgrading my loudspeakers. My current system comprises a Meridian 200 CD transport coupled with a Meridian 203 DAC source. Amplification is the current spec Mission Cyrus 2 with PSX power supply. I am using Furukawa optical and coaxial interconnects, and supporting the components on Ariston bases and Sorbothane CD feet atop Sound Organisation stacking tables.

I have a pair of the older model KEF Reference 102s, and wish to purchase a new pair of speakers with a more dynamic and analytical sound. I have shortlisted the Acoustic Energy AE1 and AE2, but have read reports that the AE1 can be a little bass shy. Would the AE2 be closer to what I am looking for, bearing in mind that I want the dynamics and imaging of the AE1s, but still wish to have a fair bass response as well. I have also read good reports on the

Celestion 3000 ribbons. I know I will have to audition these for myself, but your comments on my choices would help, along with any others you may think I should hear before a purchase is made.

My listening room is 12 x 14 feet by 10 feet high, and the speakers will be supported on custom made solid marble stands, 24 inches high. I have no intention of adding further source components, and have a maximum budget of £1,000.

Your comments will be most appreciated. A. Saunders, Croydon, Surrey.

Dynamics, imaging and bass for under a grand isn't that easy. Bass of the extended, articulate and dynamic variety is hard to come by at the best of times and inevitably with a budget like yours some compromise is necessary. But fear not, some of the better compromises sound remarkably good.

Given the relatively low power of your amp, it would be wise to steer clear of anything less sensitive than about 89dB (8ohms), as bass is the first thing to suffer when a speaker is under driven.

For the latter reason and the fact that neither the AE1 or AE2 have particularly well extended bass (unless you drive them with hernia-inducing power amps perhaps), Acoustic Energy loudspeakers that fall within your budget are probably not suitable. The Celestion is also a little inefficient but it's worth a listen.

Our shortlist would have to include Snell JIIs (£750) which have excellent dynamics and good bass extension/articulation but relatively subtle imaging. An alternative that excels in imaging and bass extension is KEF's Quattro née C15/C200 system (£380 including brackets for the satellites), which combines LS3/5a sized speakers with a pair of floor standing subwoofers to remarkable effect. A couple of other models worth listening to are Monitor Audio's R852/Gold (£450) and KEF's 104/2 (£895 without KUBE) floorstanders. As you're aware it's your taste that counts, so track down some, if not all, of the above recommendations and have a listen. Happy trails.



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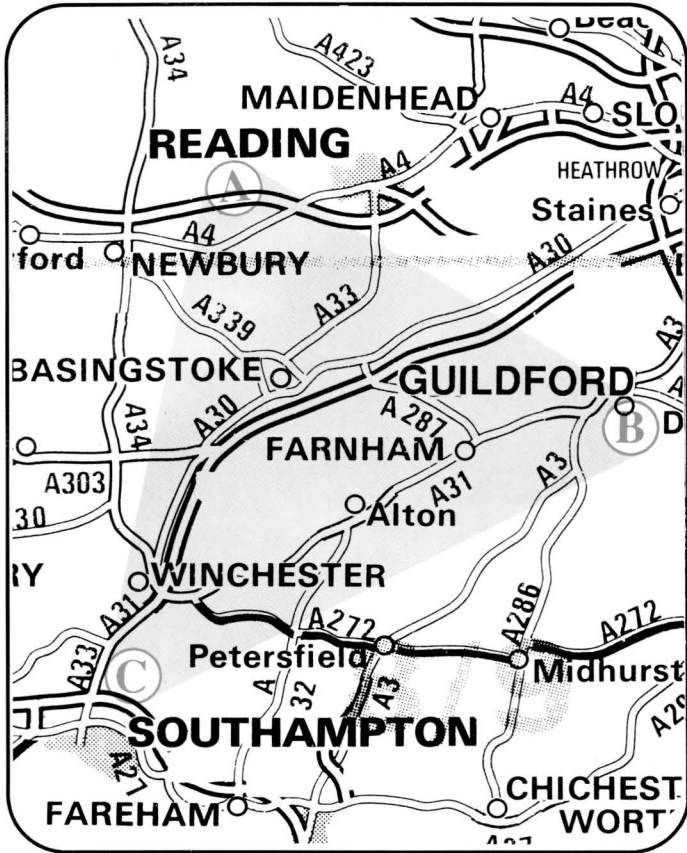
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Choosing and Using . . . Record Players

Thinking of buying a record player? Richard Black explains what makes record players tick, guides you through the maze and explains the whys and hows.

In this section last year, I devoted some space to a justification of LP in the days of CD. Since then the situation has stabilised somewhat, in that CD is clearly the leading software format for classical music, and heading that way for other musical styles. There are still thousands of LP releases coming out, but since a lot of these are digitally mastered in the first place, it's doubtful whether there is ultimately much point buying them on LP (given that digital and analogue systems are both flawed, why add one system's flaws to the other's?), so that leaves principally reissues of older material and second-hand record purchases - and, of course, existing record collections, which are becoming increasingly hard to replace and therefore deserving of the greatest respect and care.

This last category is in itself ample justification for many people to buy an expensive, upmarket LP replay system. Even a relatively small record collection may warrant the best possible turntable; for example, suppose you happen to worship every note conducted by the late Otto Klemperer, and have an extensive collection of carefully preserved recordings by him. The value of hearing these at their best, so as not to miss a single nuance, is beyond direct expression in monetary terms, and no one is to say that the collector, who pawns his shirt to pay for (effectively) more of the music he loves, is wrong.

Still, it does seem a shame that LPs are being abandoned left, right and centre by major record companies just as research by various people into LP recording and replay was starting to yield

interesting results. But in today's convenience- and cost-oriented society the writing was on the wall for LP even before CD came along, and since CDs are easier and cheaper than LPs to make, store, transport and sell, it's hardly surprising that manufacturers, distributors and retailers tend to like them too.

There is no doubt that at best LPs are capable of very faithful reproduction. Variable record pressing standards over the years, and the enormous variety in the quality of available record players, has always threatened to obscure this fact, but a well-cut record on a decent player can sound remarkably close to the tape from which the record was made, and by inference (since tape recordings can be very good indeed) to the original performance. None of the record players reviewed here is perfect (of course not), but they mostly achieve a high level of realism.

The works

What can cause a record player to come between the music and the listener? Because the act of playing a record involves a mechanical process, the mechanism used must be very precise. Any lack of precision causes an error to be introduced in the signal picked up by the cartridge, which basically means that distortion of some sort is being added. Almost all of a record player's 'sound' is due to a lack of mechanical precision - a small amount is due to electrical effects in the cartridge, wires etc.

One might think that it would be sufficient to make a record player very strong and rigid in order to make it precise, but while this is true of static measuring

instruments like micrometers, a record player must measure the groove at high frequencies. At these high frequencies, a solid lump of matter does not behave in the same way as at very low frequencies, but tends to resonate due to the finite time it takes for vibration to get from one end of it to the other. Many musical instruments rely on this for their operation.

It's all very well for musical instruments, but a record player is supposed to reproduce sound, not originate it, and the last thing we want is for it to start playing along unbidden. If it does, it will corrupt the music signal and make the music harder to follow precisely. If you want to demonstrate the effect of adding resonances to music, just listen to a few records with your hands cupped behind your ears, or an empty dustbin next to one of the loudspeakers, or (if you have the opportunity) a piano in the same room with the sustaining pedal held down. The sound becomes confused, ill-defined, less precise, coloured, and ultimately tiring to listen to.

The critical part of a record player is the cartridge generator. Here, the relative movement of the cantilever and the cartridge body defines the output signal. Any unwanted movement (i.e. not dictated by the modulation of the record groove) produces a distorted signal. Unfortunately, because the cantilever must be restrained in the cartridge by a springy suspension, its movement causes a reaction on the cartridge, pushing it away. A similar reaction acts on the record. This results in a small loss of signal, but if simple signal loss were the only effect we would be much better off. As it is, high frequency components of this (alternating) reaction force cause the record, arm, subchassis, platter and every other part of the record player to vibrate, to a greater or lesser extent.

As long as this vibration is not frequency selective, we're still OK, but in general every mechanical component has a tendency to resonate at certain frequencies, and this causes the vibration to have a different amount of effect at different frequencies.



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ACIDDHARTHA

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ALMOST A RELIGIOUS EXPERIENCE

Therefore, the unwanted relative movement of cantilever and cartridge body is different at different frequencies too, and the signal becomes 'coloured' - affected by rings, buzzes and whistles due to the resonance of various record player components.

The art of designing a record player for accurate replay consists of minimising these resonances, or at least minimising their audibility (since at some frequencies they will be very much more audible than others). The art of designing a record player for acceptable performance consists of deciding which resonances you can live with, and which are just too much. Sometimes, resonances are actually designed into a record player to give it a particular characteristic such as an enhanced 'kick' in the bass, or a bit of extra brightness, but this approach, while attractive, is a bit of a dead end; you inevitably lose some detail resolution in the system by introducing resonances, which cannot be recovered later in the chain.

Fly in ointment

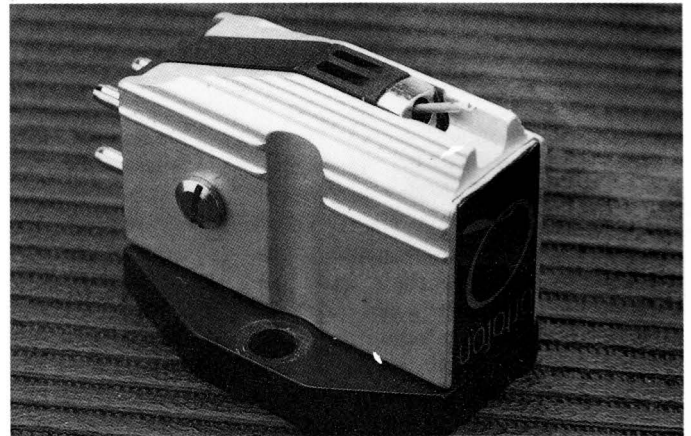
There is an extra fly in the ointment, apart from vibration caused by the act of playing records; vibration introduced from outside, specifically, vibration transmitted back from the loudspeakers to the record player, or feedback. This is invariably somewhat frequency selective, depending on the room, the loudspeakers, how the record player is supported etc. etc., and should be minimised if the record player is to be allowed to do its job accurately. Because of the time delay, due to the speed of sound, between the speakers and the deck, this feedback adds randomly in and out of phase with the signal, and can only corrupt it. It is, in fact, unequivocally a Bad Thing, but again some record players rely on a certain amount of feedback

for their character, an approach I, for one, don't like. I prefer to isolate the system as far as possible, and if I could put a record player in a vacuum chamber and hang it from sky hooks, I would.

Having chosen a record deck, there is only one thing (short of structural changes) that the user can do about vibration caused internally, and that is to change the cartridge. If the cartridge has stiff suspension and/or a heavy stylus and cantilever, it imparts a greater reaction on the record and arm, thus causing a greater level of vibration, and high compliance cartridges, all things being equal, tend to sound better than low compliance ones for this simple reason. However, all things are usually not equal, and high compliance cartridges have a bad reputation because of other, unrelated flaws in many of them. One must also bear in mind the business of arm/cartridge matching to achieve an acceptable low frequency resonance (or use arm damping), and this can limit the application of very high compliance cartridges in some instances.

As for external vibration, one can influence this considerably by choice and application of turntable support, depending on the deck chosen. A deck with good vibration isolation will be less critical, but all decks react in some degree to their support, and there are many turntable tables, stands and shelves available to help solve this problem. Your dealer is usually the best person to advise on this. It is worth spending some time experimenting yourself; even little things (like whether a spiked table rests on floorboards directly above joists or in between them) can have a significant effect.

For the rest, precise alignment of a record player is vital. Set up the cartridge carefully using an alignment gauge or protractor, and



The choice of cartridge is critical. The Ortofon Quartz produces a lifelike sound and is good value for money.

ensure that tracking force and bias are set right. These two, and also vertical tracking angle (arm height, in practice) are best fine-tuned by ear. Don't be too afraid to turn up tracking force a little if a cartridge sounds edgy; it might be starting to mistrack, which is far more dangerous to the record than a little extra tracking weight.

Handle your record player (and records!!!) with great care; keep it clean, check it carefully for damage or misalignment if it receives any knocks, observe the manufacturer's recommendations for checking the oil in the bearing, and have the stylus checked by a dealer every few months or if it sounds rough. If in doubt, replace it anyway, since some types of wear, though invisible even through a medium-power microscope, can be harmful to records.

Listen for detail

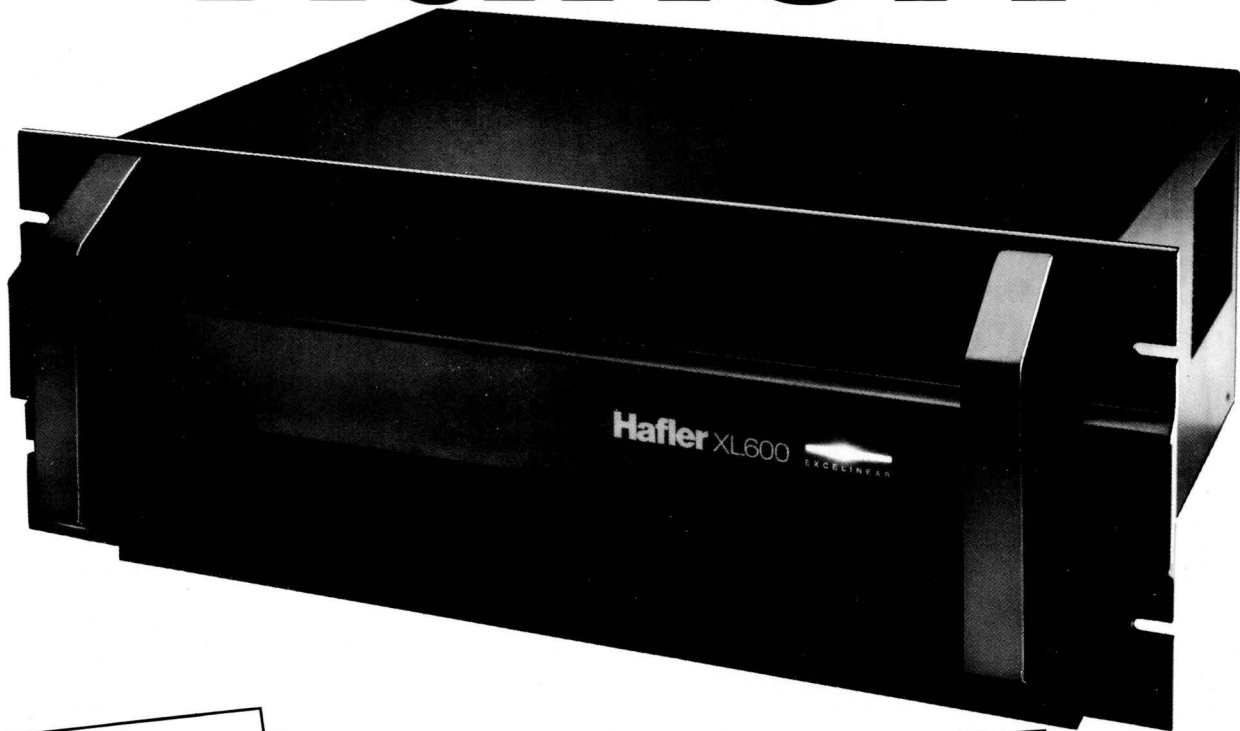
That seems to have covered most of it except for one thing; how do you choose a record player? Listen! Try a few, listen for things that you like and don't like about the sound, and try to imagine how you might like the equipment in the long term. Specifically, listen for detail in the music, as this is the one component which is easily compromised by a record player and impossible to

recover. There are many references to detail, and especially ambience detail (the feeling of space and natural acoustic around the performers, assuming of course they were recorded in one), in the reviews that follow. A perfectly detailed record player would have no 'character' of its own, and would be the most accurate. But nobody has made it yet...

We have also covered a few cartridges in this set of reviews. On the whole, the above remarks apply, but there is an added constraint on cartridges in the form of tracking ability; the ability to follow the groove modulations accurately at any level and frequency. If this is not done, the cartridge has little chance of doing much else very well, and it is the fundamental criterion of cartridge performance. As record decks improve, so mistracking (and marginal tracking, when the stylus is having trouble) becomes more obvious, and very few cartridges avoid it altogether. High compliance helps at low frequencies, while at high frequencies low tip mass (hence high tip resonance frequency) is imperative.

The intention in what follows is to pass on the findings of technical and subjective assessment of a wide variety of equipment. The next step is between you and your dealer. Good luck, and happy listening!

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Alphason Super Nova

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Recommended



Alphason may once have been principally an arm manufacturer, but the company now also makes loudspeakers, amplifiers, hi-fi furniture - and a range of three record decks, of which the new *Super Nova* is the budget model. Designed to compete on relatively thinly-populated territory, the *Super Nova* is also halfway between the budget sector and the high-end in construction.

The basis of the deck is a black acrylic plate, which forms the subchassis. On this are mounted the main bearing and the arm (one of Alphason's own, of course - nominally an *Opal*, although a *Delta* was supplied for review). This plate stretches right across the deck, and is supported from underneath on three springs to give a slightly crude but effective suspension. The plinth is well made in veneered particle board, and looks just sufficiently distinctive, with its curved top edge and characteristic large on/off switch, to make the deck easily recognisable.

Alphason has never followed the common path of using a metal platter with a felt or rubber mat to damp its inevitable resonances. Instead, its decks use a platter which is already relatively non-resonant, and which provides some damping of the record. The platter on the *Super Nova* is made of acrylic, only 6mm thick since acrylic is expensive stuff. It is fitted to a small central hub/bearing assembly with three countersunk-head screws, and to avoid possible damage to the bearing this should be done before the bearing is assembled. Since the belt runs round the hub, and round a small motor pulley which is concealed under the platter, fitting the belt would now be difficult if Alphason did not provide a simple wire hook to do the job. Don't throw this hook away, as it is also needed

to change speed by selecting larger or smaller diameter sections of the motor pulley - a slightly inconvenient feature. A thin felt mat is supplied.

The *Delta* arm is a simple but sound-looking (if slightly 'industrial') affair with a one-piece arm/headshell, quite a large diameter tube, and gimbal bearings. As supplied on the *Super Nova*, the output leads are fixed to the deck.

Construction of the *Super Nova* leaves a little to be desired in certain areas. I was not impressed by the hole in the top plate where the motor sticks through, which appeared to have been hacked out with a hand drill. Also, the platter rides so far forwards that a very slightly oversized record crashed on the lid. Otherwise, all is pretty much in order.

On Test

Having rapidly established that the main function of the felt mat seems to be to worsen detail resolution, I listened quite happily without it. The *Super Nova* sounds impressively clear and detailed, with only a few minor points to carp at. Bass can sound very slightly thumpy in some music (especially rock) while being on the contrary a little light in classical chamber music, and solo electric guitar developed a degree of shout on a couple of records. Otherwise, the general impression is of a clear, open sound, relaxing to listen to and pleasingly informative.

In the lab, the *Super Nova* shows a highly respectable set of results. The disc impulse test shows a good degree of platter damping at higher frequencies, vibration breakthrough is quite well attenuated by the suspension, and rumble is good (although the motor made a little audible noise). Wow and flutter is on the high side. The arm, too, is well behaved.

Conclusion

Given misgivings about its construction, this deck is a very competitive performer in its class. Recommended.

TEST RESULTS

Motor section

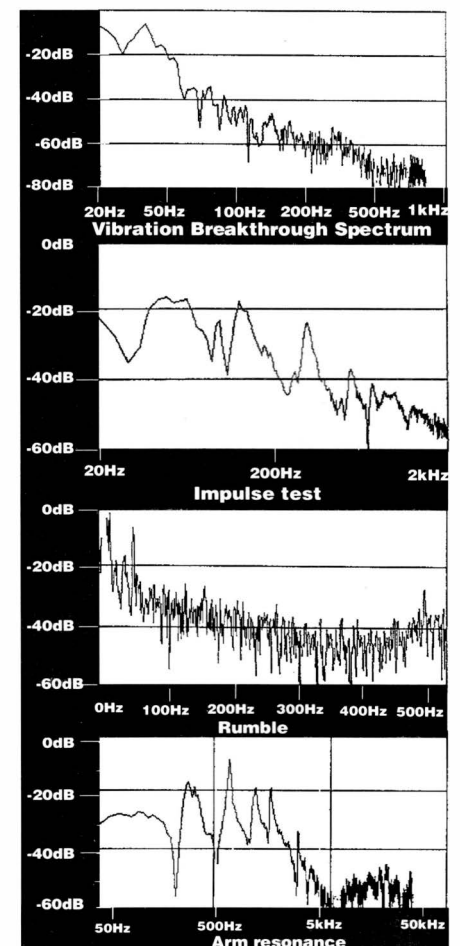
Type	suspended subchassis, belt drive
Platter type	solid acrylic on metal hub, optional felt mat
Build and finish	good (see text)
Mains connection	capitive lead
Speeds	33.45 (manual)
Wow and flutter (DIN wtd)	0.09%
Speed error	0.4% slow
Start-up time	2s
Rumble (DIN B wtd)	-75dB

Arm (Delta)

Approx. effective mass	12g
Type	Linn-compatible, fixed headshell
Adjustments provided	height, overhang
Build and finish	good
Ease of set-up/use	good
Friction approx, lat/vert	<10mg/<10mg
Bias application method	weight and thread
Bias force, rim/centre	200mg/220mg
Downforce calibration error (2g)	n/a
Cue rate up/down	0/3s
Arm resonances	good
Arm damping method	none

System as a whole

Size (h x w x d/clearance for lid)	13 x 40 x 33/6cm
Ease of use	OK
Acoustic breakthrough	good
Vibration breakthrough	good
Shock resistance	quite good
Subjective sound quality of system	good
Typical price inc. VAT	£300



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David Clark—*Audio Magazine*

Ensemble

BY HENRY KLOSS

Ensemble is a speaker system that can provide the sound once reserved for the best speakers under laboratory conditions. It virtually disappears in your room. And because we market it directly, it costs hundreds less than it would in stores.

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



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

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

Unlike satellite systems which use a single large subwoofer, Ensemble features separate compact bass units for each stereo channel. They fit more gracefully into your living environment, and help minimize the effects of the listening room's standing waves.

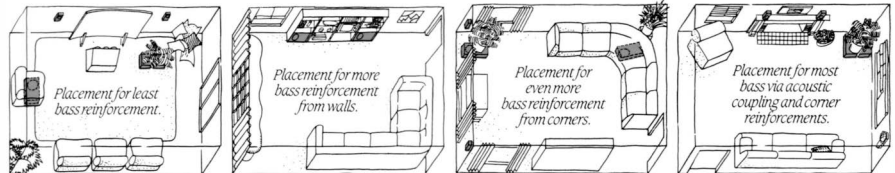
30-day money-back satisfaction guarantee.

At only £299—complete with all hardware and 100' of speaker cable,—Ensemble is *the* value on today's speaker market. America's *Esquire* magazine describes them by saying, “You get a month to play with the speakers before you either return them or keep them. But you'll keep them.” *Stereo Review* said “It's hard to imagine going wrong with Ensemble.” For literature, reviews or to order, write us at the address in the coupon, or call 0 800 622 862* or 0 800 622 286*

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

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

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You can put Ensemble's low-frequency units exactly where they should go for superb bass. You can't do this with conventional speakers because you have to be concerned about the upper frequencies coming from the same enclosures as the low ones.

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

Ambiance

BY HENRY KLOSS

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

40Hz region than any “mini speaker” we've encountered. *Stereo Review* magazine described Ambiance as “...beautifully balanced, delivering a full-size sound image with not a hint of its origin in two small boxes...very few small speakers we have heard can match the overall sound of Ambiance, and we know of none that surpass it.” Available in Nextel or primed for painting for £179 pr. Or in solid oak for £199 pr.—backed by our 30-day money-back guarantee—direct from Cambridge SoundWorks.



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

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

Inc. Magazine

"Henry Kloss brought Dolby sound, CrO₂ cassette tape, and large-screen projection television into living rooms, and made the dominant speakers systems of three decades: Acoustic Research in the 1950's, KLH in the '60s, and Advent in the '70s. Now he's at it again at Cambridge SoundWorks, selling direct to the public."

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

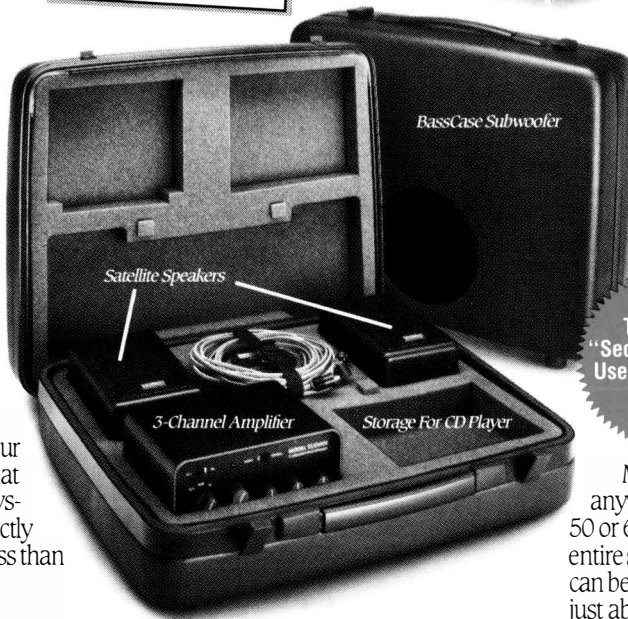


"They were designed to play music—and make it sound like music. This they do very well, in a most unobtrusive way, at a bargain price... it's hard to imagine going wrong with Ensemble!"
Stereo Review

MODEL ELEVEN

BY HENRY KLOSS

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



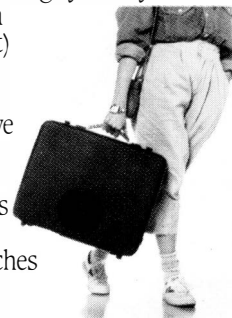
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- Is backed by a unique 5-year warranty.

• Perfect for boating, camping & holidays anywhere in the world.

The Ideal "Second Stereo" Use It 52 Weeks A Year

sound virtually identical to our acclaimed *Ensemble*[®] speaker system.

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



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

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



Performance that rivals the best home component systems.

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

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

Try Ensemble... Or Model Eleven... Or Ambiance... Risk Free For 30 Days. Call 0 800 622 862* or 0 800 622 286*.

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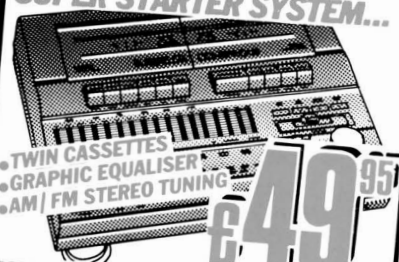
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AIWA ADF300 Catch 'em while you can, at this crazy price we've managed to secure a massive quantity, but be rest assured they'll be going fast! This quality deck features Dolby® B&C NR and fine bias adjustment for spot-on performance.

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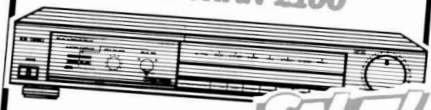
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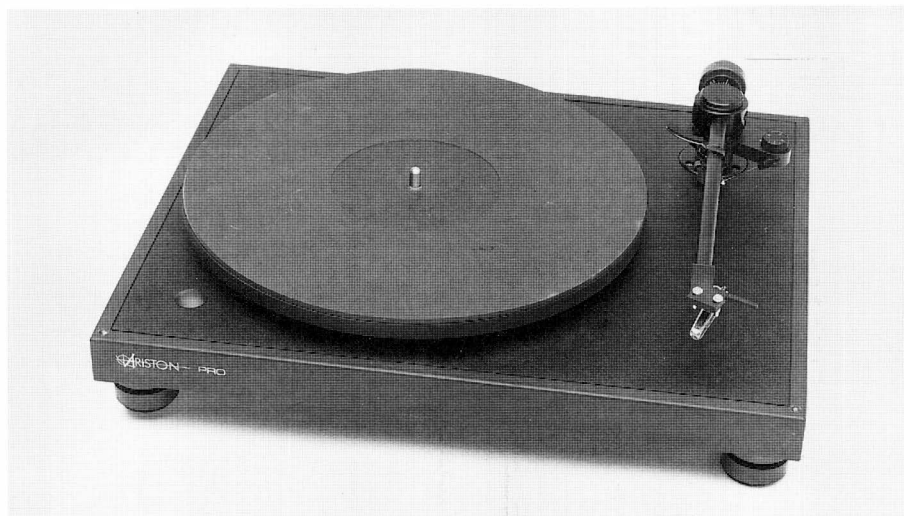


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Best Buy



Since the introduction several years ago of the *Q* deck, Ariston has proved quite a successful contender in the budget turntable stakes. The *Icon*, reviewed here last year, shows one direction in which the company has moved: towards increased simplicity of operation. The *Pro* deck, on the other hand, is more minimalist, with all the money spent on sound quality, leaving the user to lift his/her own arm at the end of each side. Horses for courses. . .

The *Pro* is simplicity itself. It is based on a thick slab of Medite, which acts as plinth and subchassis all in one. This sort of construction is not uncommon - the Rega decks, for example, are similar in concept - but Ariston has added a few little touches to improve on the basic performance of the solid deck. For one thing, the plastic trim which surrounds the deck also has a sonic function, acting as a 'peripheral wave trap' which reduces the effect of resonances within the Medite. Since Medite tends to be rather a lively material at frequencies where it matters (not least in the upper midband, where the ear is very sensitive), this is likely to be beneficial.

One problem with any solid deck is mounting the motor so as not to induce hum breakthrough to the platter and arm. Some manufacturers use compliant mounts to give some decoupling, but Ariston has taken a different tack and fitted a DC motor - the sort of thing one finds in a cassette recorder. This generates lower levels of vibration, and what it does produce is at higher frequencies and more easily kept out of the system, so motor breakthrough is less of a problem than it might be. This motor also has fine speed control, as it happens, but only the dedicated user would wish to remove the

bottom from a *Pro* and fiddle around with a fine screwdriver to achieve that end.

Ariston's platter is an unremarkable metal casting in one piece, with the bearing pin ready-fitted at the factory. A decent quality standard-type arm is fitted to the *Pro*, and the whole sits on four compliant feet, which provide the sole suspension. A rubber mat is used, and Ariston supplies an Ortofon *OMB10* cartridge ready-fitted.

On Test

The *Pro* has many fine qualities. It produces a well-balanced, clear and open sound, which never becomes harsh or congested. Bass is well defined and - especially with the deck on an isolation base - remarkably free of oppressive thuds on transients. This makes it a good performer with percussive music (piano, for instance) which is easily degraded by any such flaw. In very complex passages, the *Pro* can start to sound a little woolly, but on the whole, its separation of different-sounding instruments is commendably good. Replacing the cartridge with a Glanz *MFG 310* brought up the deck's qualities even more clearly. Whatever the music, from Fifties rock to small ensemble jazz to full orchestra, the *Pro* is a very neutral deck, the sonic evidence belying its low price.

Lab tests show that the *Pro* behaves well in respect of the basic parameters; wow and flutter is particularly good for a budget deck, and rumble is also good. The arm bearings seem a little sticky, but not badly so. Vibration isolation is moderate at low frequencies, improving higher up, and the disc impulse is typical of a rubber mat - not bad. The arm is fairly well behaved, and the arm resonance plot shows no particular evidence of high frequency deck resonances.

Conclusion

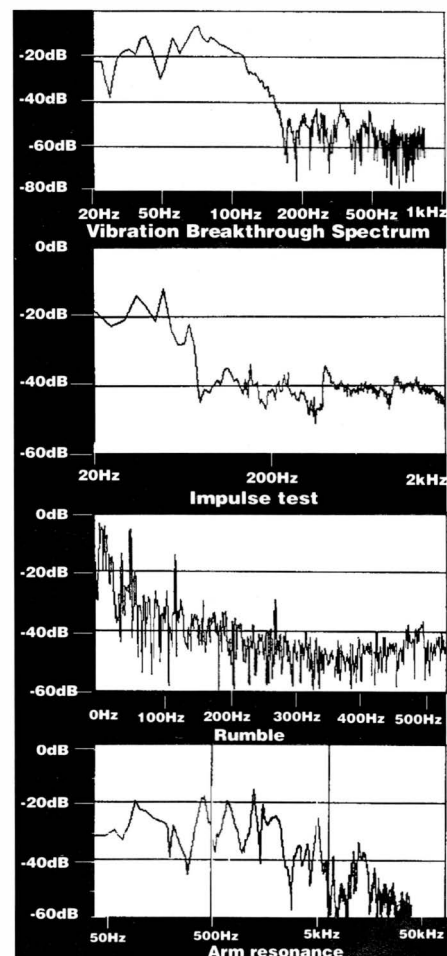
The *Pro* is well made, simple and effective. It is sonically pleasing and likely to give good and long service. Best Buy.

TEST RESULTS

Motor Section	
Type	solid, belt drive
Platter type	one-piece metal, rubbermat
Build and finish	good
Mains connection	captive lead
Speeds	33/45 (switched)
Wow and flutter (DIN wtd)	0.05%
Speed error	0.4% slow
Start-up time	2s
Rumble (DIN B wtd)	-75dB

Arm	
Approx. effective mass	12g
Type	fixed
Adjustments provided	overhang
Build and finish	good
Ease of set-up/use	very good
Friction approx, lat/vert	20mg/50mg
Bias application method	calibrated dial
Bias force, rim/centre	180mg/220mg
Downforce calibration error (2g)	-0.15g
Cue rate up/down	0/2s
Arm resonances	good
Arm damping method	none

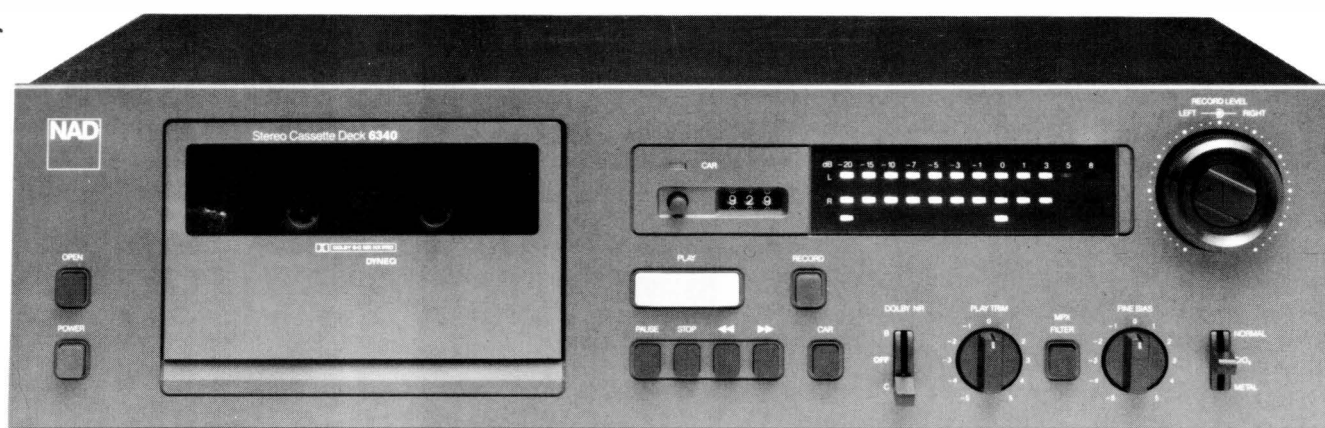
System as a whole	
Size (h x w x d/clearance for lid)	14 x 42 x 34/7cm
Ease of use	very good
Acoustic breakthrough	good
Vibration breakthrough	quite good
Shock resistance	good
Subjective sound quality of system	good
Typical price inc. VAT	£180



THE NAD 6340 CASSETTE DECK

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HI-FI REVIEW



We didn't make the statement that we considered ourselves to be ' Britain's only cassette deck experts' — the statement was made by a leading audio critic in a recent technical report on a number of leading decks. While we were gratified to hear this verdict, we were not surprised. Sonic performance has always had first priority with NAD. The deceptively simple no-frills NAD 6340 may be the only cassette recorder in its price range that can faithfully copy the full brilliance and dynamic range of any recorded source without dulling its sonic impact. Compared to other decks that cost more but don't sound as good, the NAD 6340 sets a new standard for value. Audition one at your NAD stockist today.



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Dual CS503-2

RAM PROJECTS, UNIT 27, STRETFORD MOTORWAY ESTATE, BARTON DOCK ROAD, STRETFORD, MANCHESTER M23 0ZH. TEL: (061) 866 8101



In a way, the 503-2 seems like a modernised version of the classic CS505, of all new construction but retaining the traditional Dual feel and appearance. The deck is a smart, slimline unit made mostly of Medite with high quality black vinyl wrap and a 'smoked' lid and is very well finished to Dual's usual standards.

Within the plinth, the works of the deck are built on to a sheet steel subchassis, somewhat decoupled by a very stiff suspension. The bearing is factory-assembled, and all the user needs to do to set the deck up is remove the transit wedges, fit the platter, fit the counterweight on the arm and balance the arm. Power is supplied from an outboard adaptor, a small transformer-in-a-plug.

All the controls on the 503 are located on the right-hand side of the deck. Moving the arm from its rest towards the platter starts the motor, and the arm lift/lower lever is mounted near the front of the deck, making use extremely easy and convenient. At the end of each side, the arm lifts and the motor stops. Speed is selected by a two-way switch.

Dual's arm retains the traditional look, with its C-section bearing yoke at the rear. It is not a particularly sturdy item, but it seems to have been well made and the bearing show no signs of play. Unusually for a budget arm, it has spring-applied downforce, which helps make the deck immune to shocks. The headshell is removable, should one wish to upgrade the fitted Ortofon OMB10 cartridge.

On Test

Compared with the CS505, or indeed with various other turntables on the market at not much higher prices, the CS503-2 is a little disappointing. The best budget decks these days require no apology, no (or very

little) mental adjustment to the fact that one is listening to a relatively small sum of money playing the record. That cannot honestly be said for the '503. Starting from the beginning, surface noise is distinctly more audible with this deck than with most others. That implies that various resonances are at work adding their little zings and buzzes to every bit of information on the record. When the music starts, it tends to be coarse, confused and muddled, with sounds like full orchestra becoming harsh and strident at the first hint of a crescendo. Bass is rather unclear, and the performance tends to sound altogether untidy.

At best, the midrange is quite open and reasonably neutral as long as the music is not too loud, but the high treble persists in sounding coarse and lacking detail, while bass is often muddy when there's a lot going on. Even in music which has little or no intrinsic subtlety, the 503 seems to create a barrier of colorations. The deck has no one particularly offensive vice; it's just indifferent in most areas.

Lab tests show reasonable behaviour in the areas of speed, rumble, disc impulse and arm characteristics, but a high sensitivity to vibration.

Conclusion

Although the CS503 is an impressively finished product, it lacks the feeling of structural solidity which has tended to characterise the 505 through various incarnations. The plastic moulding on which the arm and controls are mounted, for instance, is very floppy. On the other hand, the deck is clearly sufficiently well made to last for many years and resist a certain amount of unkind treatment.

Despite this, it is a fact that the CS503-2 is very cheap, good material value for

Recommended

money and from a firm with a good reliability track record. It therefore comes Recommended - but do see if you can't stretch to the CS505-4 at least.

TEST RESULTS

Motor section

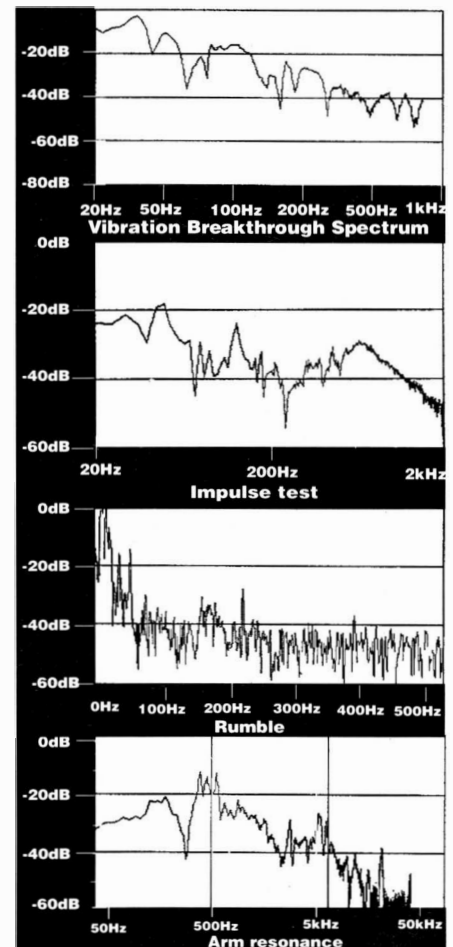
Type	semi-suspended, semi-automatic, belt drive
Platter type	one-piece metal, rubber mat
Build and finish	good
Mains connection	socket for external transformer
Speeds	33.45 (switched)
Wow and flutter (DIN wtd)	0.1%
Speed error	0.4% slow
Start-up time	2s
Rumble (DIN B wtd)	-78dB

Arm

Approx. effective mass	10g
Type	fixed
Adjustments provided	overhang
Build and finish	good
Ease of set-up/use	very good
Friction approx, lat/vert	10mg/15mg
Bias application method	calibrated dial
Bias force, rim/centre	190mg/180mg
Downforce calibration error (2g)	0
Cue rate up/down	0.5s/1s
Arm resonances	good
Arm damping method	none

System as a whole

Size (h x w x d/clearance for lid)	13 x 44 x 37/6cm
Ease of use	very good
Acoustic breakthrough	moderate
Vibration breakthrough	moderate
Shock resistance	good
Subjective sound quality of system	fair
Typical price inc. VAT	£140



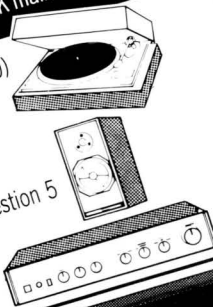


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- Rotel RA810A or (Nad 3020i add £10)
- Celestion DL4 II or (Superb New Celestion 5 add £10)



SUGGESTED SYSTEMS

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

SPEAKERS All system prices include the Dual CS503/1	AMPS	Turntable/CD Player Options						
		Goodmans Maxim II Widale Delta 30.2 JPW Minim Gale GS210	Celestion 3 JPW Sonata M/Short MS 3.10 W/Dale Diamond 4 Mission 760 Royd A7	Celestion DL4 II JPW Sonata - M/Short MS3 20 Widale 410	Tannoy E11LE Monitor Audio R7 (Add £15) Nad 8225e Celestion 5	H/brook P15 Celestion DL6 II Tannoy M15 Wharfedale 505.2 Monitor Audio R9 M/Short MS 3.30	Castle Warwick KEF C45 Celestion DL8 II Arcam Alpha	Castle Durham Heybrook HB173 Tannoy M20 (BK) Tannoy DC 2000 (Add £70) M Audio Mon II (Add £50) Rogers LSA4
Rotel RA820AX	284.95	299.95	319.95	339.95	369.95	379.95	419.95	
Rotel RA820BX4	319.95	334.95	349.95	369.95	399.95	409.95	449.95	
Cambridge P50	349.95	359.95	389.95	399.95	419.95	439.95	489.95	
Pioneer A300	349.95	379.95	409.95	419.95	439.95	469.95	519.95	
Rotel RA840BX4	369.95	379.95	399.95	414.95	444.95	449.95	499.95	
Harman PM6100	299.95	309.95	329.95	309.95	339.95	389.95	434.95	
Rotel RA810A	259.95	279.95	299.95	299.95	309.95	349.95	399.95	
QED *240CD II	334.95	354.95	379.95	379.95	399.95	429.95	474.95	
Yamaha AX330	249.95	264.95	279.95	279.95	299.95	329.95	379.95	
NAD 3240	329.95	344.95	359.95	384.95	384.95	419.95	459.95	
Marantz PM40SE	329.95	349.95	369.95	369.95	384.95	409.95	479.95	
Kenwood KA5020	349.95	349.95	309.95	314.95	329.95	369.95	424.95	
Nad 3225PE	339.95	299.95	299.95	309.95	329.95	354.95	409.95	
Nad 3020i	289.95	289.95	349.95	349.95	369.95	389.95	439.95	
Marantz PM 30SE	274.95	329.95	329.95	309.95	369.95	349.95	409.95	
Technics SU 810K	309.95	284.95	309.95	309.95	319.95	349.95	409.95	
Musical Fidelity B1	274.95	344.95	369.95	369.95	379.95	409.95	459.95	

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OPTIONS

The following Compact Disc Player or Turntable may be ordered instead of the Dual CS503/1 in the above systems.

CDs

- Denon DCD560
- Denon DCD660
- Denon DCD860
- Denon DCD960
- JVC XLV231
- Marantz CD40
- Marantz CD41
- Marantz CD50
- Marantz CD50SE
- Marantz CD60
- Marantz CD60SE
- Nad 5320
- Nad 5325
- Philips CD624
- Philips CD634

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- add £65
- add £90
- add £70
- add £120

- Philips CD850
- Philips CD610II
- Pioneer PD6500
- Rotel RCD855
- Rotel RCD865
- Sony CDP790
- Technics SLP277
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- Technics SLP590
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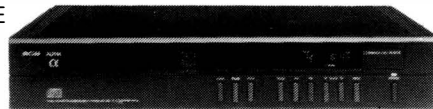
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Dual's 505 is built very much in the style of the Sixties, on a sheet metal subchassis which is supported on springs - the description 'suspended' might be misleading as it suggests something a bit more refined. Still, the measure does build in some resistance to vibration feedback, and the deck is also noted for being immune to shocks. Naturally, Dual has updated the appearance of the MK IV version somewhat to fit in with current trends, and the deck's surround is now veneered Medite instead of the plastic moulding once employed.

The platter on the 505 is a simple metal casting, with an integral 'subplatter' around which the belt runs. Drive is from a small motor at the left front corner of the deck, and variable speed is provided by a rather cunning feature; rotating a small knob concentric with the 33/45 selector causes the drive pulley to expand or contract, thus varying its diameter and hence the speed of the platter. The adjustment is uncalibrated, and Dual provides a stroboscope to allow accurate setting under mains lighting.

One distinctive feature of the 505 has always been the arm, which has bearings housed in an impressively strong-looking yoke at the rear. This is retained in the Mk 4, but is not as chunky as it once was, and the arm itself seems less secure than of old. However, it is still a well made item, and if the detachable headshell seems a little flimsy, it is no worse than par for the course. As always, the arm lift/lower lever is mounted at the right of the deck, and is totally safe in operation, being damped both up and down. An Ortofon OM20 is fitted (badged as a Dual cartridge), without the weight plate, and in fact the arm will not accommodate cartridges heavier than about 5g unless an additional

counterweight (available from Dual dealers) is fitted.

Construction of the CS 505 is to Dual's usual high standards, and the deck is famously robust and reliable.

On Test

Like everyone else (it sometimes seems), I grew up with a CS 505 - but sentiment aside, it's easy to see why the deck is so perennially popular. It's not perfect, it's not even remarkably good in any particular area, but what it does wrong is mostly fairly harmless and what it does right is most likeable.

Good points include a fair degree of excitement in suitable music; for example, Little Feat sounded lively, upbeat and generally invigorating. Weak points include subtlety and detail, and although both of these improve somewhat if the cartridge is upgraded, the deck is not really very strong on clarity. Large bands and orchestras rapidly become thick and muffled as the texture grows, and the bass can sound a little strange at times, varying between thinness and muddiness depending on programme. A note I made when comparing the deck against master tapes sums it up; 'you get a fair idea of what's going on'.

No particular horrors showed up on the test bench. Speed is pretty stable, and the deck was delivered running only 0.3% fast. Rumble is not great, but adequate. The arm seems OK, although the main resonance is quite low and not well damped. Vibration breakthrough benefits at low frequencies from the sprung support.

Conclusion

It's still a highly competitive product, and if the Dual CS 505-4 fails to inspire awe, it

does at least impress as a competent all-round performer. If this is as far as the budget goes, it fully merits its Best Buy rating.

TEST RESULTS

Motor Section

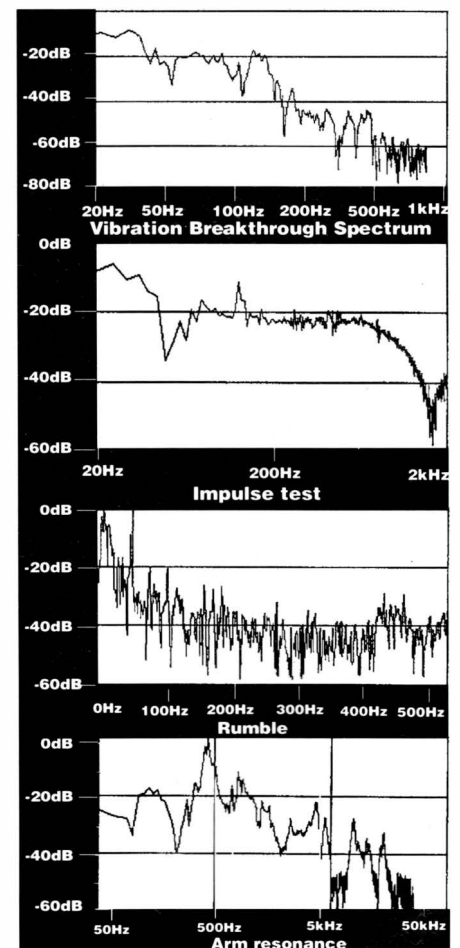
Type	suspended subchassis, belt drive
Platter type	one-piece aluminium, rubber mat
Build and finish	good/good
Mains connection	socket for outboard transformer
Speeds	33/45 switchable
Wow and flutter (DIN wtd)	0.06%
Speed error	adjustable; supplied at +0.3%
Start-up time	3s
Rumble (DIN B wtd)	-72dB

Arm Section

Approx. effective mass	11g
Type	fixed, detachable headshell
Adjustments provided	overhang
Build and finish	good
Ease of set-up/use	good
Friction approx, lat/vert	15mg/30mg
Bias application method	calibrated dial
Bias force, rim/centre	180mg/160mg
Downforce calibration error (2g)	+0.1%
Cue rate up/down	0.5s/1s
Arm resonances	fair
Arm damping method	none

System as a whole

Size (h x w x d/clearance for lid)	15 x 44 x 38/6cm
Ease of use	very good
Acoustic breakthrough	fair
Vibration breakthrough	fair
Shock resistance	good
Subjective sound quality of system	good
Typical price inc. VAT	£160



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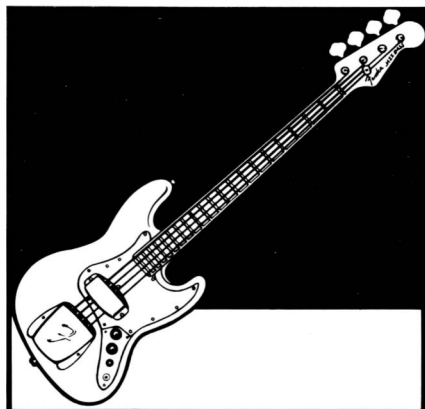
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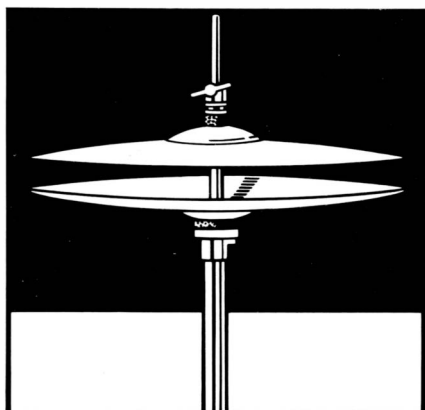
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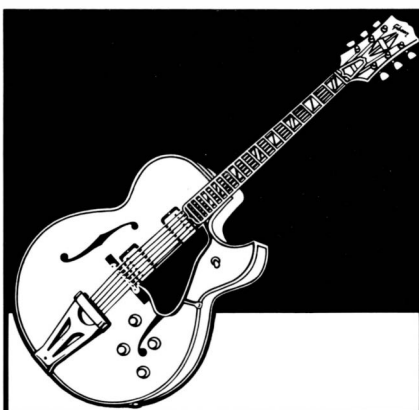
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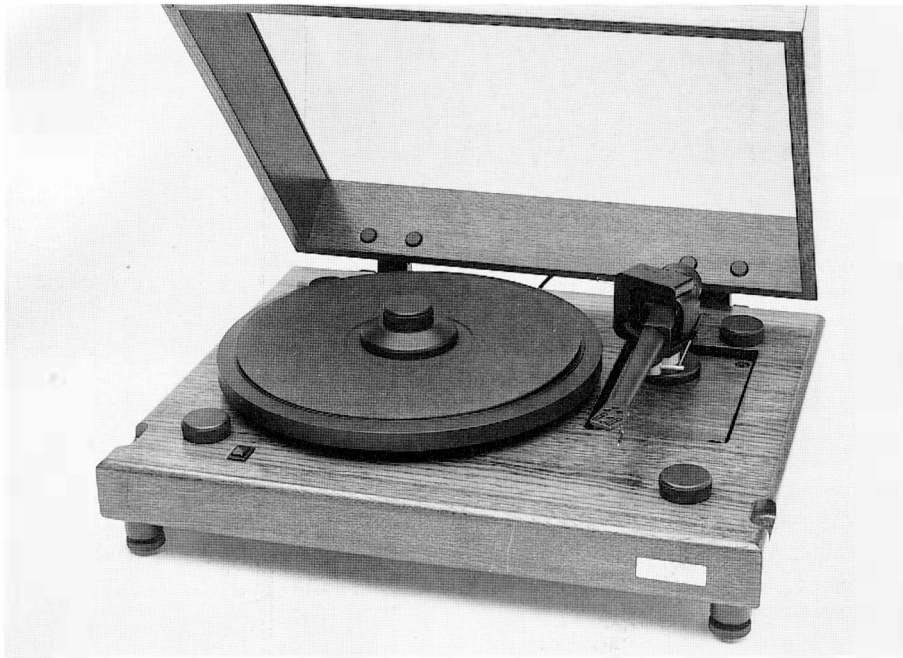
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Kuzma Stabi/Stogi Reference

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There is no denying that £900 is a lot of money for a turntable, but at least the purchaser of the Kuzma *Stabi* can feel he/she has really bought something. It's no guarantee of performance, of course, but there is an impressive amount of high quality materials in a *Stabi*. Take the external appearance: the frame of the deck is made of solid oak - none of your thinly disguised Medite here. The lid is of smoked glass, not dark polycarbonate, and the standard of construction and finish on everything is exceptionally high. If this deck were made in Britain it would probably cost twice as much, and by comparison every sub-£1,000 turntable I know looks decidedly cost-conscious.

The *Stabi* is in fact made in Yugoslavia, hardly a country from which one expects high-end exotica, but obviously the home of at least a few perfectionists. Wherever one looks on the deck, there is evidence of great care being taken in its design and construction, be it in the joinery or the suspension. Just picking up the *Stabi* is sufficient indication that cosmetic details were not the only consideration in the deck's design, since it would hardly have to weigh 21kg if so.

I suppose the name, '*Stabi*', has something to do in Yugoslavian with 'stable'; at any rate, the *Stabi* obviously aims to provide a stable record playing platform. It is a suspended deck, in which the suspended mass is high, and the subchassis is designed to be as 'dead' as

possible, so as not to colour the deck's reproduction. The suspension is quite thoughtfully designed, especially in the area of adjustment. Many suspended decks are quite a pain to set up, involving twiddling screws from underneath the deck or even bending various members to obtain the desired setting. The *Stabi* uses four springs, one at each corner of the deck, and these are very simply adjusted by turning a knob at the top of each spring. Needless to say, the knobs are immaculately finished and conveniently knurled.

The manual (a fine example of how a manual should be done, incidentally, for all its simple production) explains that the setting is right when the platter is level and about 2mm above the top of the plinth, a situation which is both easy to achieve if one follows the instructions to adjust diagonally opposed springs in pairs. When this has been done, the subchassis bounces slowly and linearly.

Dashpot dampers are used on the *Stabi* to damp the movement of the suspension somewhat. These apply only quite light damping in practice, making the deck suitably resistant to shocks and handling (cueing the arm), without transmitting too much vibration through the structure. It is sometimes supposed that a heavily damped suspension is the ideal, but in fact any amount of damping serves only to couple subchassis and plinth. This is because the vicious nature of a normal

damping system causes its resistance to relative movement of subchassis and plinth to increase at high velocities, and therefore at high frequencies, effectively coupling the two parts together. What one wants, ideally, is for the subchassis to be completely free, in which case it will be completely immune to the ill effects of external vibration of any kind (apart from directly coupled sound, which is, however, generally much less of a problem than structure-borne vibration).

However, a completely free suspension makes a deck rather touchy in use, and potentially sensitive to external shocks. It also makes the deck rather critical of suspension adjustment, especially if there is any tendency to twist. Kuzma seems to have hit quite a happy medium in the *Stabi* between freedom and operational stability, and the deck is certainly profoundly insensitive to footfalls and other such intrusions, which can with some decks cause groove skipping.

A solid aluminium platter, painted black, is used on the *Stabi*, and current models come with a glued rubber mat. This started to lift a little on the review sample, perhaps due to glue creep, or maybe I just left the deck in direct sunlight by accident (never a good idea). A screw-down record clamp is provided.

Like the majority of specialist record decks, the *Stabi* uses a synchronous motor. It has become generally accepted in the last few years that raw mains is not sufficiently clean and stable for driving such motors, and Kuzma makes a high quality, split-phase, external power supply to drive the deck (this used to be an option but is now standard). Unusually, this supply includes a fine pitch adjustment facility, consisting of miniature switches accessible from beneath the supply, to adjust speed in 0.05% steps from -0.4% to +0.4% of nominal 50Hz.

The *Stogi Reference* arm was reviewed in *Choice* last year on its own, and has not changed since then. It is designed, above all, to resist resonance, by virtue of shape, materials and sheer size - the latter especially in the bearing yoke, which is far and away the biggest I've ever seen. The arm tube has a very large diameter, is internally damped, and is of non-linear taper. The arm designer must choose between providing azimuth adjustment (which allows correction for slight errors in cartridge construction etc., but may

compromise rigidity) and leaving it out, and Kuzma has decided on the former course. Unusually, the arm is jointed halfway along its length and the front part can be rotated a little if a locking screw at the join is loosened.

Construction of the *Stogi* is to a very high standard, and although the finish is no match for the *Stabi*, it is smartly painted in textured black. The bias arrangement is a little odd, consisting of an adjustable weight, lever arm and thread mechanism behind the bearing yoke, of which the thread hits the lever arm as the arm moves. Geometry is basically Linn-compatible.

On Test

The Kuzma's sonic qualities are not hard to find: it is a very clear, neutral deck, capable of extracting a great deal of information from the vinyl. With a good cartridge it can produce excellent results, and in fact the qualities of the arm make it quite forgiving of cartridges generally, so that the best will be extracted from any decent example. Against my reference master tape recordings, it was possible to discern a loss of some detail and ambience, especially in very heavy textures, but in isolation the *Stabi/Stogi Reference* combination is highly revealing. Whether the music be Mozart or Cocteau Twins, there is no feeling of strain, glare, edginess or harshness, and balance between top, middle and bottom of the audio spectrum is excellent.

Reviewing the *Stogi Reference* on its own last year, I commented on some slight brightness in its presentation; either that was due to its dislike of my *Rock* turntable, or the *Stabi* exactly offsets that characteristic, for I could find no such trait this time round. It is always encouraging to find a deck that can

continue to recover details at one end of the spectrum while there is a lot going on at the other end. The Kuzma combo is good at this; for example, the combination of violin and piano can be tricky to reproduce when the piano is thundering away in the bass while the violin explores its higher reaches, but the *Stabi* and *Stogi* sorted this out as well as almost any. In complex orchestral music, it is just possible to tell that there is some slight confusion of details; however, this deck is certainly one of the leaders in this sort of (very demanding) situation.

Of the measurements, the only one which looks a little strange is disc impulse, but that is doubtless due to the impaired disc/mat interface, due in turn to the lifting mat mentioned above (which was still stuck fast when I did the listening, by the way). The most impressive area is vibration breakthrough, which is very good. This is most important if a record deck is not to suffer from feedback from the loudspeakers, coupled through the floor and the turntable support. Common symptoms of feedback include lack of detail in the bass and a feeling that sound has been 'muddied'; the *Stabi*'s resolution of violin and piano seems to vindicate its suspension.

Because the spindle on the *Stabi* is threaded to accept the record clamp, it was not possible to fit the rumble coupler properly, and the rumble figure is necessarily a little approximate - probably pessimistic. The arm shows a fairly strong main resonance, one subsidiary peak, and very little else - a good result.

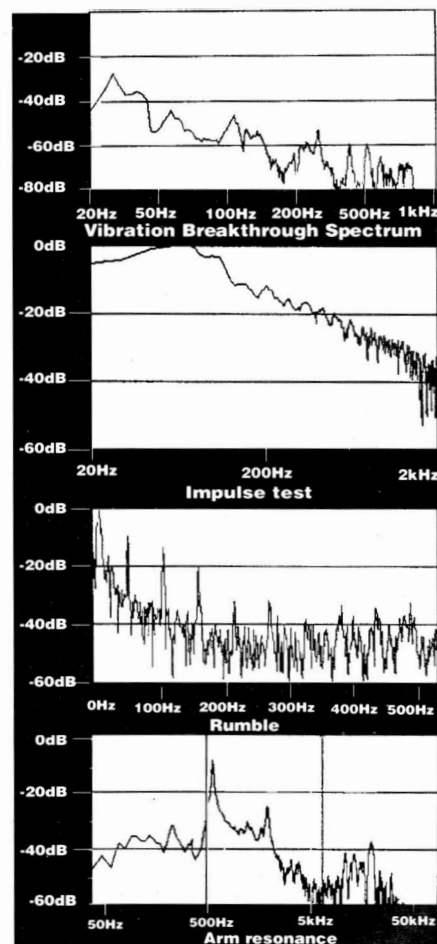
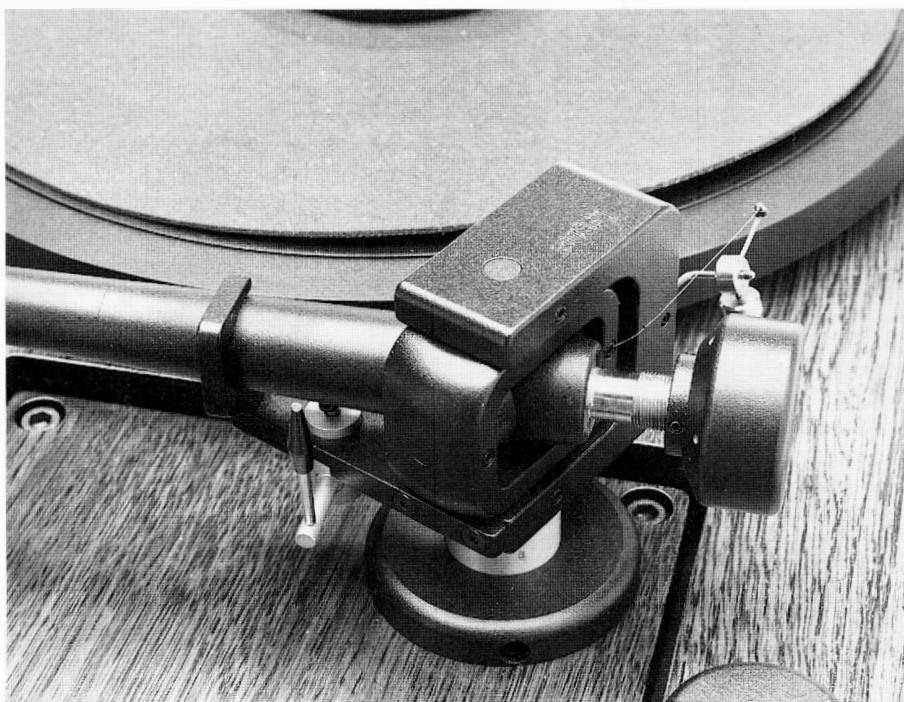
Conclusion

This Kuzma combination is obviously in the front rank of record replay systems. Its reproduction is always clear and

informative, while also being relaxed and unforced. The good isolation should make the deck relatively insensitive to siting, and it is easy to set up. It is also stunningly well made and finished, and for that reason alone quite exceptional value for money. Taking all into consideration it certainly warrants recommendation.

TEST RESULTS

Stabi	
Type	suspended subchassis, belt drive
Platter type	one-piece aluminium, glued rubber mat
Build and finish	excellent/excellent
Mains connection	socket for onboard power supply
Speeds	33/45 (electronic change)
Wow and flutter (DIN wtd)	0.04%
Speed error	-0.1% (adjustable - see text)
Start-up time	4s
Rumble (DIN B wtd)	-75dB (approx. - see text)
Stogi Reference	
Approx. effective mass	12g
Type	Linn-compatible, fixed headshell
Adjustments provided	height, overhang
Build and finish	very good
Ease of set-up/use	good
Friction approx, lat/vert	<10mg; <10mg
Bias application method	adjustable thread and weight
Bias force, rim/centre	160mg/200mg
Downforce calibration error (2g)	0
Cue rate up/down	0/3s
Arm resonances	good
Arm damping method	none
System as a whole	
Size (h x w x d/clearance for lid)	18x 51 x 41/8cm
Ease of use	good
Acoustic breakthrough	good
Vibration breakthrough	very good
Shock resistance	very good
Subjective sound quality of system	very good
Typical price inc. VAT	
Stabi	£899
Stogi Reference	£699



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If ever a hi-fi product needed no introduction, that product must be the Linn *Sondek*; but it is a new addition to the product that prompts its re-evaluation here, the *Lingo* power supply.

In essence, the *Sondek* is a simple design, a classic suspended-subchassis turntable with belt drive and a removable arm. Its appearance is elegant and unfussy; the review sample had a plinth in afrosomia (similar to teak), with Linn's distinctive ribbing, which nicely complements the silver top of the deck and the black armboard. Black ash is also available, if you must.

The *Sondek's* subchassis is a coffin-shaped section made of sheet metal which extends across the deck with the head under the armboard. It's braced and damped by another straight section which is glued to its underside. Three conical compression springs, damped with rubber bushes, support the subchassis from the top plate of the deck. The armboard is a separate member, made of melamine-faced Medite, which is screwed to the subchassis. This means that armboards can readily be changed to accommodate different arms.

The Linn's bearing is made to a very close tolerance to ensure smooth and stable running of the platter. However, it is the conventional way up (bearing point at the bottom), which means that any play in the journal will result in the platter precessing as it rotates, with resultant wow; this

places even higher demands on the bearing's accuracy.

Atop the bearing shaft, the *LP12* platter is made in two pieces of heavy alloy, and like the bearing, it is a precision unit. The drive belt runs round the subplatter, and a felt mat completes the assembly. The motor, a standard AC synchronous type, is mounted on the deck's top plate in the usual position, opposite the headshell. General construction of mechanical parts is very good, the rest of the deck being sensibly cost-effective.

One feature of the *Sondek* which is a cause of some debate is the matter of setting it up. Of course, the adjustment of the suspension in any sprung deck depends on the arm used, and therefore a degree of work can be expected to get optimum results. There is more to the *Sondek*, however, than just the three springs that support it. Because these springs are not symmetrically arranged around the centre of gravity of the subchassis/platter/arm assembly, the subchassis has a tendency to rotate about the platter when excited, which would result in frequency modulation, or wow. To counter this, the cable from the arm base to the rear of the plinth (where it is tied in a P-clip) acts as a fourth suspension member, applying a force against the twisting moment of the subchassis.

Setting up, therefore, involves adjusting the springs and the arm cable so as to make the deck bounce neatly up and

down when prodded from above. This done, the twisting tendency has obviously been overcome and the suspension is well behaved; the simple proof is to make the deck bounce while playing a record and listen for wow - there shouldn't be any. However, the arm cable is now quite tight, and it acts as a feedback path from the plinth to the subchassis, a bit like a 'tin-can-and-string' telephone.

Because of this, and because in any case the deck's suspension is quite tight (resonance at about 4Hz), feedback is a problem with the *Sondek* (though not to the point of howlround). The wide proliferation of supports for the deck bears witness to its sensitivity to the surface on which it stands, which is largely due to its susceptibility to vibrational feedback through the floor (you've only to touch a suspended wooden floor lightly with your bare foot to realise just how much vibration even wall-mounted speakers can induce) so part of the setting-up process could be said to include the selection of a suitable support (and this certainly applies to many other decks). Consensus favours light but rigid supports - Linn in fact recommends an Ikea coffee table as convenient and well matched.

Linn's original *Valhalla* power supply for the motor is an improvement on the mains, offering crystal-derived accuracy and stability and lower vibration drive. Now, however, Linn has launched the *Lingo*, an outboard box containing a more sophisticated drive circuit which supplies two very accurate sinewaves to the motor. The *Lingo* offers improved distortion figures and more accurate amplitude and phase relations of the two sinewaves, hence lower motor vibration. It also gives a reduction in 'phase noise', or jitter in the signal. Linn noted that the *Valhalla* circuit, which has quite crude power supply filtering for its electronics, produces a 'beat' signal between the accurate 50Hz derived from the crystal, and the approximate 50Hz of the mains, resulting in a small but potentially audible degree of very slow wow in the deck. The *Lingo*, with much more supply filtering and a more advanced oscillator circuit, avoids this problem - at a price.

Very well built, the *Lingo* costs an outrageous £500; outrageous given that it is only a sinewave generator and is driving a motor that costs a fiver, but, like much else in hi-fi, not unreasonable if its job cannot be done for less.

The *Ekos* arm has been previously reviewed in *Choice* (issue 67). It is a straightforward design, using an aluminium tube, glued headshell and ball race bearings. Tracking force is applied (after balancing the arm with the counterweight) by a calibrated spring, which gives superior vertical stability to a gravity-applied downforce. Construction is to a very high standard, and the arm feels solid and is a pleasure to use. Naturally, it has a third bolt hole for mounting Linn's *Troika* cartridge.

On Test

Given the awesome reputation the *Sondek* has in some quarters as *the* record deck, it is hard to approach it without preconceptions. Still, connecting it up and playing a few tracks, one soon remembers that it is after all just another piece of hi-fi kit, inevitably more or less flawed. In fact, such flaws as the *Sondek* has are not immediately obvious, and the deck is apt to make a very good impression, whether heard with the *Troika* cartridge (as here) or any other capable transducer. Detail seems on the whole to be good, pitch stability is excellent, and the frequency range is nicely balanced, if possibly a little dull by some standards.

The more one listens, however, the more it seems that there is something amiss. Especially on recordings of quite complex music, there is a lack of very low-level detail, a feeling that the sound is slightly muddled. Ambience suffers quite noticeably, and this in turn makes the sound appear rather two-dimensional and a little compressed.

Comparing the *Lingo*'d Linn with a sample using *Valhalla* (and a different arm, unfortunately), suggested that the *Lingo* does confer a greater feeling of stability

and hence better resolution in the bass, but still not to the level of the best around. The same comparison, however, convinced me that the *Ekos* arm is a good match for the deck and indeed a good arm, period. At no time did I feel that I was listening to arm resonances or rattles, and it seems to make the most of the *LP12*'s bass under any circumstances.

As for technical illumination of the *Sondek*'s sound, the felt mat gives a disc impulse result typical of the type, high in level but not coloured. Vibration breakthrough to the deck is quite poor, and is undoubtedly responsible for much of the deck's claimed punch in the bass - this punch certainly improves when the deck is moved from an isolation base to a light table, but true bass detail just as certainly worsens. Tapping the armboard or subchassis while the stylus rests in the groove shows up various resonances across the audio band, due to twisting in the subchassis, cantilever flexing of the armboard, ringing in the platter, and panel modes in the armboard, all of which are excited by the reaction on the record and cartridge when a record is played, and all of which to an extent colour the sound and mask fine details.

A simple test of speed stability showed that the *Lingo* certainly does its job, but I couldn't make my rumble measurements sensitive enough to show any reduction in motor breakthrough relative to the *Valhalla* (which is already pretty good in that respect). The *Ekos* arm behaves well, with a respectable resonance plot.

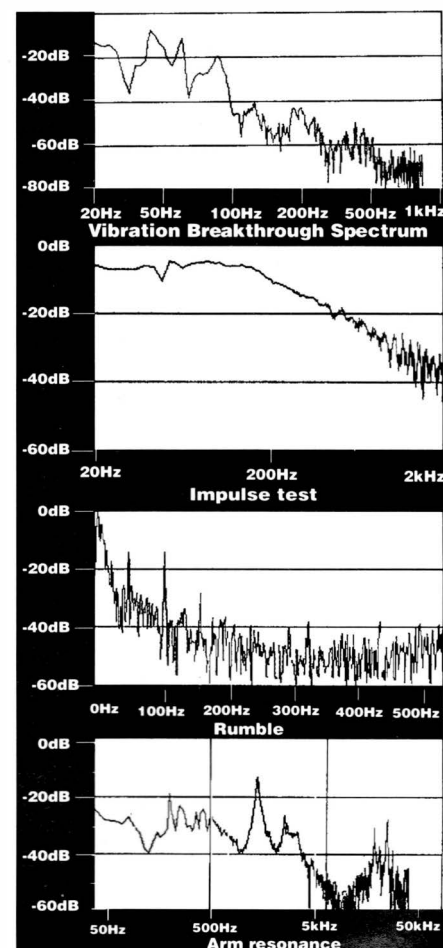
Conclusion

As with many hi-fi products, the *LP12* can sound highly convincing at best, but in the area of detail most noticeably, it fails to impress when compared with the most

neutral decks now available. It remains, by virtue of its fundamental construction, a strongly characterised reproducer, and one must take it or leave it as such. The *Ekos* arm, although expensive, is a fine performer in its own right and can be firmly Recommended.

TEST RESULTS

Sondek (incl. Lingo supply)	
Type	suspended subchassis, belt drive.
Platter type	two-piece zinc alloy, felt mat
Build and finish	good
Mains connection	captive lead to outboard power supply
Speeds	33/45 (electronic change)
Wow and flutter (DIN wtd)	<0.05%
Speed error	0.0%
Start-up time	4s
Rumble (DIN B wtd)	<-79dB
Ekos	
Approx. effective mass	9g
Type	Linn mount, fixed headshell
Adjustments provided	height, overhang
Build and finish	very good
Ease of set-up/use	good
Friction approx, lat/vert	<10mg/<10mg
Bias application method	calibrated dial
Bias force, rim/centre	140mg/180mg
Downforce calibration error (2g)	0
Cue rate up/down	0/3s
Arm resonances	good
Arm damping method	none
System as a whole	
Size (h x w x d/clearance for lid)	14 x 45 x 35/7cm
Ease of use	good
Acoustic breakthrough	Good
Vibration breakthrough	Fair
Shock resistance	Fair
Subjective sound quality of system	Good
Typical prices inc. VAT	
Sondek (black)	£688
Lingo	£496
Sondek/Lingo combination	£1,128
Ekos	£1,097
Upgrade kit to fit Lingo to existing Sondek	£56



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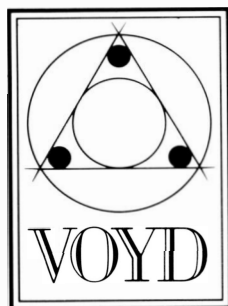
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The promotional literature from Marantz skilfully explains the apparent anomaly of a new turntable from one of the leading suppliers of CD players - but then, after all, why not?

But be that as it may, the first impression made by the *TT400* is not awe-inspiring. The deck is based on a plastic moulding, in a style rather more common (in separate decks, at least) in the late 1970s. On this moulding are mounted the arm, the main bearing, the on/off and speed selector switches, and four isolating feet. Taking these items in turn, the arm is a surprisingly heavy item, rather thin and decidedly floppy at the (plastic) headshell, made after the usual pattern with a conventional counterweight and a dial for setting bias. The arm bearings are concealed within a large (and unsightly) silver can, and the arm is mounted on a small bump which also bears the small and cheesy lift/lower lever. A detachable headshell is fitted, and an Ortofon *OMB10* cartridge is supplied as standard.

The main bearing is a standard budget deck type, supplied ready assembled and lubricated. All one has to do on setting up is to slide the platter over it, while fitting the drive belt, reaching through one of the holes provided in the platter. Said platter is made of quite light alloy, damped under the central area with damping pads. When prodded it rocks quite alarmingly, due more to the bearing and its mounting bending under load than to play in the bearing, which is reasonably precise.

Operation of the *TT400* is fully manual; one switch applies power to the motor, another selects speed. There is no auto-cutoff at the end of each side and the only isolation from the world is provided by the springy feet.

On Test

There's no point beating about the bush: sonically the *TT400* is, frankly, quite unlovely. As it happened, I had just got as far as setting it up before going record-shopping, so on my return I played a few of my new acquisitions. Specifically, I played a few records in less than perfect condition, with rather a lot of noise and rumble. Oh dear! By dint of colouring every sound it attempts to reproduce with the characteristic 'honk' of its plastic body, the *TT400* contrives to effect a subjective reduction of dynamic range to the point where rumble and surface noise almost submerge the music. Its very high levels of feedback sensitivity don't help in this either, and I found worn records almost intolerable (though listenable on most other decks).

New records of course sound rather better, but they still suffer badly from honky colorations, loss of detail and general unsubtlety bordering on the coarse. Bass sounds 'thuddy' and unclear, and anything with a bit of life and drive can easily be made to sound dull and lifeless.

Lab results confirm the sorry picture. Arm resonances occur at several discrete frequencies from the unusually low to quite high. Vibration isolation is really not good, and to add insult, the speed is way out of line. The bias arrangement on the arm seems to have been assembled wrongly, too.

Conclusion

This deck doesn't sound anything like as clear and detailed as the best one can find at this price; it looks no better than any other rock-bottom budget product, and it doesn't even have automatic operation or some such possible redeeming feature to

explain what I can only regard as its rather high price. Had it been nearer the £90 mark, the *TT400* might just have scraped a recommendation, but as it is . . .

TEST RESULTS

Marantz TT400 - motor section

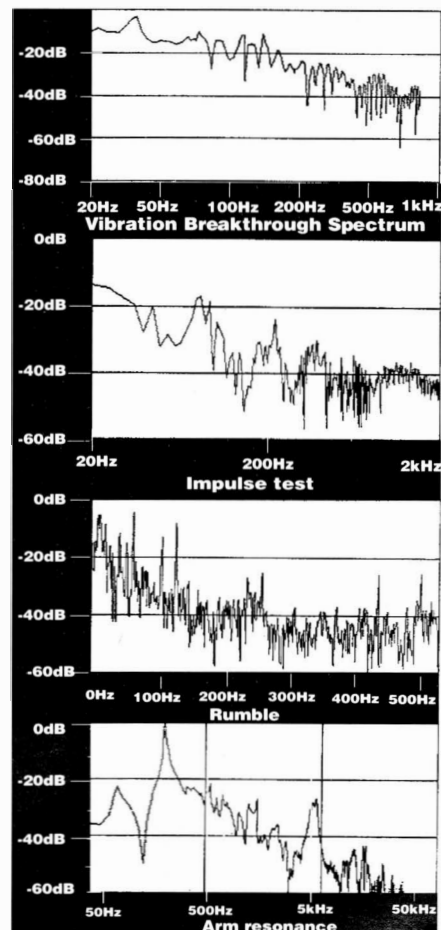
Type	integrated, belt drive
Platter type	one-piece aluminium, rubber mat
Build and finish	fair
Mains connection	captive lead
Speeds	33/45 (electronic change)
Wow and flutter (DIN wtd)	0.07%
Speed error	+3.0%
Start-up time	3s
Rumble (DIN B wtd)	-71dB

Arm section

Approx. effective mass	16g
Type	fixed, detachable headshell
Adjustments provided	overhang
Build and finish	fair
Ease of set-up/use	OK
Friction approx, lat/vert	<10mg/<10mg
Bias application method	calibrated dial
Bias force, rim/centre	0mg/150mg
Downforce calibration error (2g)	n/a
Cue rate up/down	1s/1.5s
Arm resonances	poor
Arm damping method	none

System as a whole

Size (h x w x d/clearance for lid)	11 x 42 x 34/5cm
Ease of use	good
Acoustic breakthrough	average
Vibration breakthrough	poor
Shock resistance	fair
Subjective sound quality of system	moderate
Typical price inc. VAT	£150



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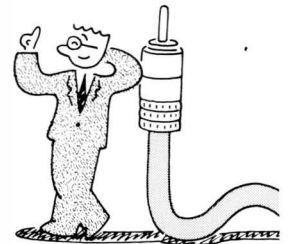
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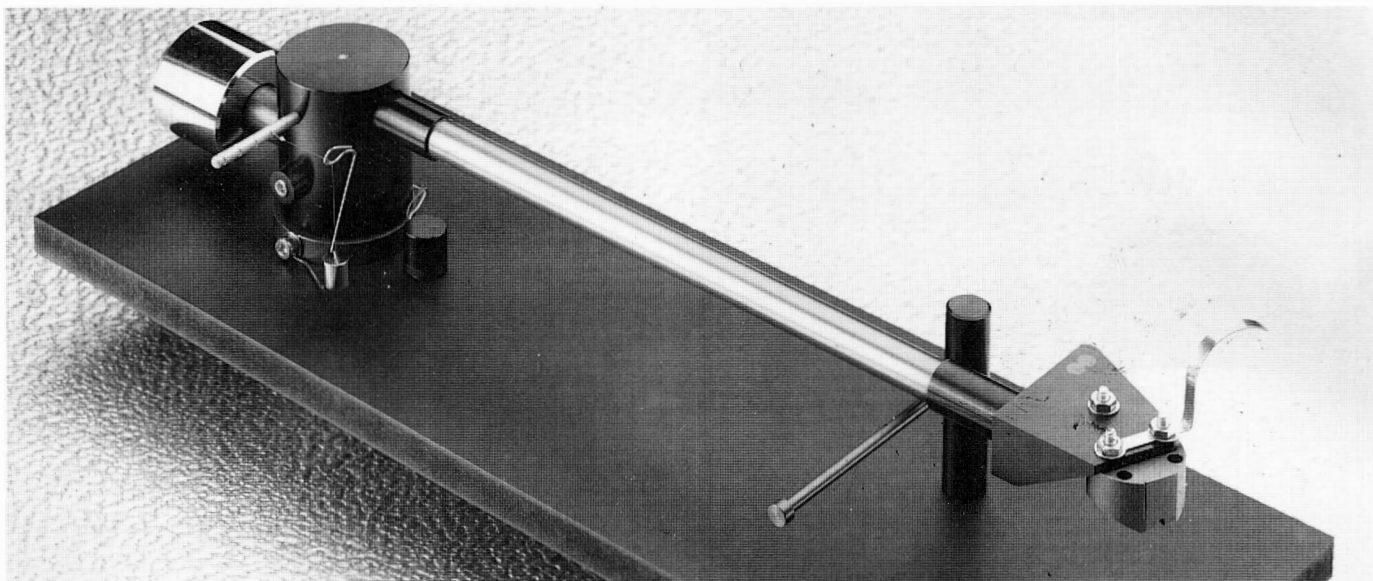
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Unipivot arms, in which the only bearing is a single point, have been around for a long time, but have always been contrary to the orthodox faith which prefers strong, slack-free ball bearings. The main argument centres on the ability of various configurations to transmit vibration from the arm tube to the turntable's subchassis, where it can be dissipated or otherwise dealt with. Other arguments include the desirability of doing this in the first place, and the stability of unipivot designs.

However, unipivots certainly have the advantage of negligible friction, and although they can frequently be a little twitchy to use, they have little scope for going wrong, beyond rough handling damage. In fact, a well-made unipivot arm is likely to be very good at transmitting vibration from arm tube to subchassis, and this Naim arm certainly qualifies for the term 'well made'. It has a beautifully finished arm tube and a simple matt black headshell, both in light alloy, with the bearing assembly also being matt black. The bearing itself is jewelled to ensure minimal contact friction and long life, and the (uncalibrated) counterweight fits on to a rear extension which is finished like the main tube. Because the arm is basically targeted at users of the Linn *Sondek*, and is likely to be used with the Linn *Troika*, it has a third hole in the headshell to suit that cartridge.

Unusually, the two main mounting holes are round holes rather than slots, and there is no provision on the arm for lateral tracking adjustent - fine as long as the arm is fitted very accurately to the deck and only ever used with accurately built cartridges.

The unipivot bearing is easily

dismantled, simply by lifting the arm off it, revealing a short stub sticking up from the arm board. It would not be practical to run the signal wires inside this stub, so instead they are brought out to a small 5-way connector which plugs into a socket just in front of the stub. Because of the ease with which the arm tube can be removed, Naim also markets replacement tubes so that the keen audiophile can keep two ready-mounted with different cartridges and swap them in seconds.

In order to adjust azimuth, which varies with the precise mass and shape of the fitted cartridge, a small counterweight is also provided at the side of the bearing housing. Sliding this in and out adjusts the centre of gravity of the arm and ensures that it hangs straight. Bias adjustment is by a simple weight and thread. There is no lift/lower device and the arm rest (fitted at the front of the arm board) has no clip, so much care is required in use!

On Test

Because the ARO loaned for review was mounted on a *Sondek*, and because in any case few will be used on any other deck, this is how it was reviewed, comparison being therefore essentially with Linn's own *Ittok* and *Ekos* arms. The ARO's basic character seems to be slightly bright and forward, slightly 'zingy' on sharp leading edges (piano for instance) and therefore a trifle congested in very complex passages. The congestion, however, is not very serious and the major effect is of a small presence lift, which tonally will suit some systems very much better than others.

Measurements confirm that friction is practically unmeasurable, and bias and effective mass have been chosen sensibly.

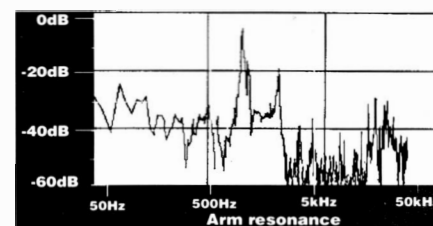
The arm resonance plot shows a very pronounced peak at about 1kHz and a few lower peaks, with some high frequency liveliness probably due to the arm board. The high-Q 1kHz resonance is probably partly to blame for the arm's sound, and the arm might benefit from some added internal damping. In use, the ARO can easily show pendulum modes of oscillation at a few Hz, but unless the system is strongly excited, these are unlikely to be a large problem.

Conclusion

This is certainly not the arm for everyone. Compatibility is likely to be a problem with many decks, but with the Linn *Sondek* it seems a good match, bearing in mind the tonal characteristics noted above. The price seems rather high for such a simple item, but it is very well made.

TEST RESULTS

Approx. effective mass	10.5g
Type	unipivot, special mounting
Adjustments provided	azimuth
Build and finish	very good
Ease of set-up/use	care required
Friction approx. lat/vert	<10mg/<10mg
Bias force, rim/centre	180mg/170mg
Downforce calibration error (2g)	n/a
Cue rate up/down	n/a
Arm resonances	moderate
Arm damping method	none
Typical price inc. VAT	£700



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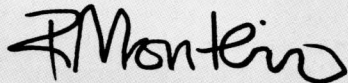
Having embarked on the daunting task of looking for the right music system I visited many Stores and purchased a lot of literature. I was attracted by your advertisement in What Hi-fi magazine. First class sound quality was my top priority and from another article in the same magazine I had made up my mind to purchase a system recommended therein.

A quick phone call to your Shop to find out whether you had them in stock and I was lectured on how a Music System should be purchased . . . "HAVE YOU LISTENED TO IT? HOW DO YOU KNOW YOU WILL LIKE IT'S SOUND? It isn't the same as buying a washing machine, when it has to be taken on faith that it will do the job as you want it. It is more like buying a musical instrument, where personal preference dictates. You do not need to be an expert, you only need to listen to it and decide for yourself . . ."

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

When I first read the letter from a satisfied customer in your advert I didn't think it genuine. But after my experience I know just what he meant. I echo him in commanding you and your staff and I will not hesitate to recommend you. I, once again, thank you for the help in choosing my system and the excellent service and attention I have received at and since it's installation.

Wishing your Company every success



Mrs. F. Monteiro

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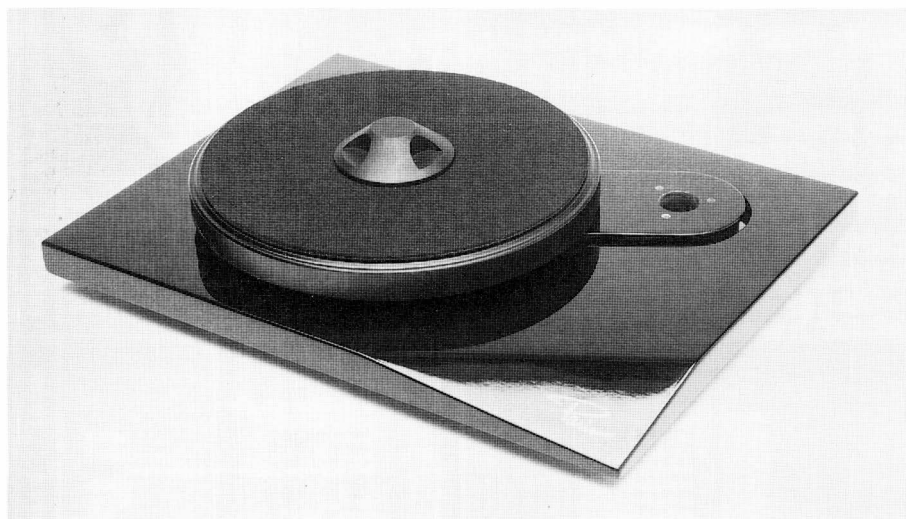
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Produced in Canada, Oracle turntables have established a reputation for distinctive styling and good sound, albeit at quite a price. The *Paris* is a relatively new design which brings the price of Oracle ownership down to half that of the next cheapest in the range.

I suppose it is inevitable in a cheaper product, but it is a pity that the *Paris* has lost some of the class that characterises the *Alexandria* and, especially, the *Delphi* decks from the same stable. Still, it is smart enough in its 'piano lacquer' high gloss black, and the sloping front corner emblazoned with the *Paris* logo is quite a nice distinctive touch.

Structurally, the *Paris* seems to fit in with current trends in turntable design. It is made of 25mm Medite, a single sheet of which forms the plinth. Out of this sheet is cut an oval section, and the subchassis/armboard, likewise made of 25mm Medite, is suspended in this hole by four horizontal tension members, made of a lossy polymer material. This suspension arrangement has a lot in common, functionally, with the anti-vibration mounts used by Roksan and Pink Triangle (in the *Little Pink Thing*), and results in a system which is moderately well isolated from the world, stable in use and easy to set up, requiring little user adjustment.

Beneath the plinth, three adjustable feet, plus one non-adjustable one directly under the motor, allow for accurate levelling of the deck. In a cutout within the plinth is a small circuit board containing a two-phase synthesiser to drive the low voltage synchronous motor. This synthesiser uses a simple RC oscillator and so is liable to be less accurate and stable than a quartz-controlled circuit, but it is adjustable (from underneath the deck, with a screwdriver). Power is

supplied to it from an outboard DC supply, contained within a plastic box in the lead. The motor drives the one-piece, composite platter through a flat belt. There is a felt mat, and a screw-down record clamp is supplied. The on/off and speed selector switch is at the left rear of the deck, unlabelled but nice to use.

On Test

The *Paris* did not make a very favourable impression, either in the short or the long term. It sounds distinctly veiled, lacking fine detail resolution and adding a type of coloration that varies from a 'grunge' to a shout to a screech, depending on the level and frequency of the music signal. In addition, unless some kind of isolation from floor-borne feedback is effected, the bass tends to be a little 'thuddy'. With any kind of music, the sound has a 'shampoo-in-the-ears' quality - you can hear something, but the harder you try to discern the details, the more infuriatingly unclear it all seems. This also has the effect of making, for example, a large orchestra sound rather two-dimensional and undynamic, while solo piano is surrounded by a coloration-induced haze.

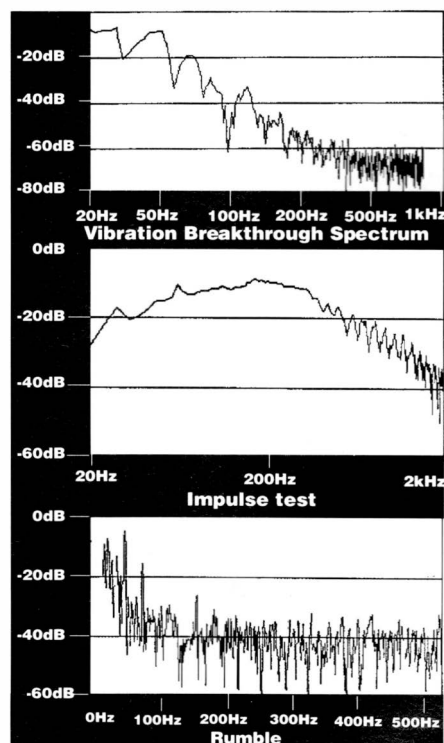
On the test bench, a rather high degree of vibration sensitivity is shown, which no doubt has a lot to do with the bass thud I mentioned above. The basics of the deck are right - rumble is pretty low, speed is very accurate and stable - but the construction does not seem to provide a very good basis for the arm. Tapping the subchassis shows it to be quite mechanically 'lively', and an arm resonance plot taken on the deck showed some very high frequency resonance. The disc impulse test result is as expected for a felt mat and not indicative of any particular nasties.

Conclusion

The Oracle *Paris* is a well made record player from a company with a fine reputation for first-rate reproducers. It seems a pity that the introduction of a significantly cheaper product in the range should tarnish that reputation, but sonically it is hard to find anything very much in the *Paris*' favour. If the looks appeal, great - but there are many competitors at this price or less with more to offer in true fidelity.

TEST RESULTS

Type	semi-suspended subchassis, belt drive.
Platter type	one-piece composite, felt mat, screw-down clamp
Build and finish	good/very good
Mains connection	socket for outboard power supply
Speeds	33/45 (electronic change)
Wow and flutter	(DIN wtd) 0.07%
Speed error	0.0%
Start-up time	1.5s
Rumble (DIN B wtd)	-76dB
Size (h x w x d/clearance for lid)	13 x 49 x 38/7cm
Ease of use	OK
Acoustic breakthrough	Moderate
Vibration breakthrough	Moderate
Shock resistance	Fair
Subjective sound quality of system	Fair
Typical price inc. VAT	£595



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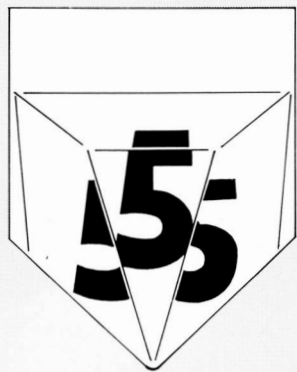
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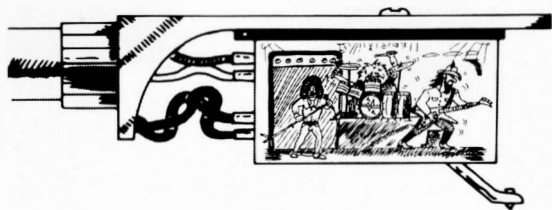
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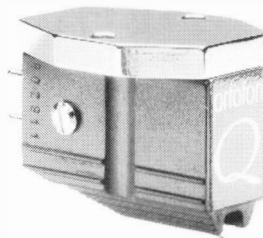
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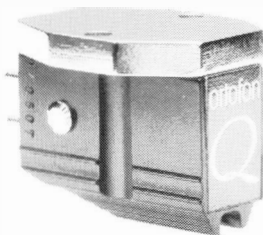
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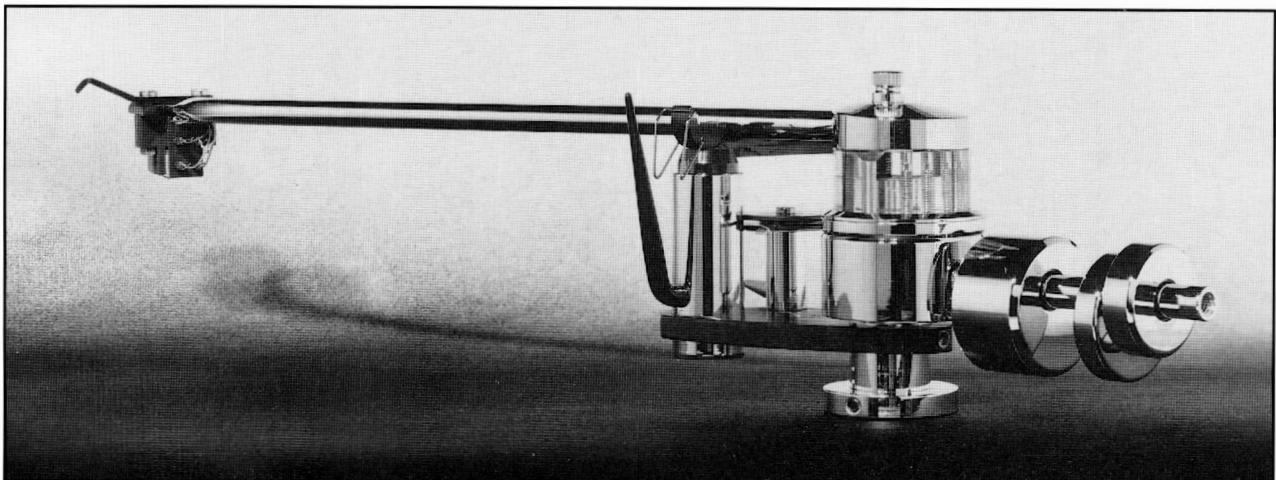
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Recommended



It seems a little odd that a deck called *Export* should be sold on the home market, but apparently all it signifies is that the new model incorporates changes suggested by the export market. Changes, that is, from the old *PT TOO*, which has been superseded by the *Export*.

Essentially, this deck is the same mechanical design as the *PT TOO*. However, Pink Triangle has altered the deck to make it more convenient (no outboard power supply) and cheaper. So a *PT TOO* subchassis, bearing, platter armboard and plinth are joined by an internal power supply based on the *Little Pink Thing* supply and a new top plate made of black acrylic.

The Pink Triangle design relies on the use of relatively non-resonant materials and constructions. To this end, the subchassis is made of 'Aerolam', a honeycomb-based material which is claimed to approximate to a very large surface area sheet, in which vibrations spread out and are dissipated before they can reach the boundary and reflect back; this means that standing waves should not be able to occur. At the same time, the Aerolam is very stiff, thus keeping the relative positions of bearing and arm accurately constant. To further reduce standing waves, the subchassis is shaped something like the profile of an egg, with no parallel edges, so that vibrations 'bounce' randomly around the structure rather than building up uniformly in one preferential direction.

The familiar Pink Triangle acrylic platter is retained, which is said to provide a good acoustic impedance match to the record and good attenuation of vibration, and the bearing is the same inverted, jewelled design used in the *PT TOO*. The motor and suspension are also the same,

the latter very free and requiring some slight adjustment of habits if one is used to a stiffer arrangement! Suspension adjustment is achieved from outside the deck, requiring only a 4mm Allen key.

Inside the deck, the circuit board carrying the power supply stretches from front to back at the left. The on/off/speed selector switch at the left of the plinth is illuminated by an internal bicolour LED, which is rather smart. Build and finish are generally very good.

On Test

After using a *PT TOO* extensively at home over the last few months, I was not surprised to find the *Export* also a very fine deck. Like the *TOO*, it has a remarkably open and detailed quality, lacking almost entirely the feeling of veiling, compression and lack of ambience that most record players exhibit. It shines especially in complex music, where one can easily distinguish details which are all too often blurred almost out of existence, but with simple sounds too there is a feeling of purity and lack of interference between the listener and the music. In heavily rhythmic music, the beat is easy to follow, without having recourse to the feedback-enhanced 'kick' of some decks which may sound impressive but soon become tiring. It is just possible to discern some coloration and a slight loss of ambience and imaging detail, but in this respect the *Export* scores better than almost any other deck (except of course, the *PT Anniversary*).

Measurements show two significant factors in the *Export's* performance: the disc impulse level is very low (although there is a distinct resonance peak around 150Hz), and the suspension does a very good job of excluding external vibration from the system, making the deck

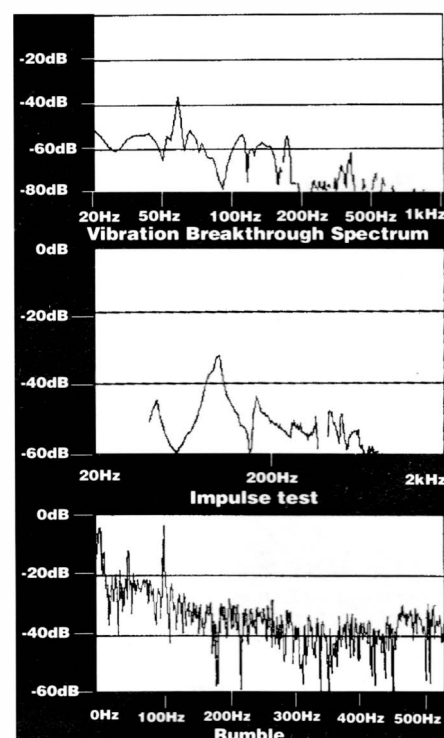
relatively unfussy about siting. Speed stability is fine; the only problem with the review sample was of rather high (just audible) motor breakthrough, suspected to be due to a rogue motor but which Pink Triangle was not able to cure before the review deadline.

Conclusion

The *Export* has the classic Pink Triangle virtues of exceptional clarity, neutrality and detail, and is altogether a most attractive package; something of a bargain, and Recommended.

TEST RESULTS

Type	suspended subchassis, belt drive
Platter type	solid acrylic
Build and finish	good/very good
Mains connection	mains (IEC) socket
Speeds	33/45 (electronic change)
Wow and flutter (DIN wtd)	0.05%
Speed error	0.05% slow
Start-up time	2s
Rumble (DIN B wtd)	-72dB
Size (h x w x d/clearance for lid)	16 x 45 x 39/7cm
Ease of use	good
Acoustic breakthrough	very good
Vibration breakthrough	very good
Shock resistance	fair
Subjective sound quality of system	excellent
Typical price inc. VAT	£620



Pink Triangle Anniversary

PINK TRIANGLE PROJECTS, 4 BRUNSWICK VILLAS, LONDON SE5 7RR. TEL: (071) 703 5498

Recommended



The *Pink Triangle* record player is ten years old, hence the name *Anniversary*. Ten years can be a long time in hi-fi, but the *Pink Triangle* has actually changed remarkably little in that time. The original deck became the *PT TOO*, but the fundamental design has remained constant. That design uses unconventional materials and construction to achieve the best possible approximation to a non-resonant mechanical system, which allows the stylus to follow the groove in a record faithfully and transcribe its information with minimal distortion.

Over the years, however, Pink has evidently accumulated experience and ideas, and the range of decks has now been completely revised. The 'budget' *Little Pink Thing* remains the baby, but the *PT TOO* has gone and is replaced by the *Export* and the *Anniversary*. The latter is not quite the no-holds-barred turntable that Pink may dream about (they tell me), but it incorporates features not found in the *PT TOO*, while retaining that stalwart's outward form. The most obvious change in the *Anniversary* is its top plate. In the *TOO* that was a painted metal sheet; now it is a (real glass) mirror. Wacky! Even better, the platter is translucent. The resulting spectacle when the deck is topped with a red vinyl record is something to behold. This plate is surrounded by a plinth in Pink's traditional style, and topped with the distinctive pink lid.

Inside the deck, the subchassis is made in the irregular oval shape which Pink developed for the original *PT*, which is designed to minimise standing waves (resonances) and damp out the vibrations arising in the deck from the action of playing a record. As before, the basic material for this subchassis is 'Aerolam', the lightweight, honeycomb material designed for the aerospace industry, which is very stiff and light, and has very high sound wave dissipation capabilities. However, in the *Anniversary*, Pink has elaborated further on Aerolam. A core of that material is used in a triple sandwich construction which also includes natural balsa wood to give even higher stiffness and better damping, the aim being to reduce even further the levels of resonance in the subchassis which could colour the sound and mask details.

The subchassis bears the main bearing, which is inverted so as to put the bearing point in the plane of the record (which ensures that any sideways play in the bearing appears only as inaudible vertical movement of the platter, rather than potentially audible horizontal movement due to precession). A separate armboard is mounted on the subchassis, and this is also made of the new Aerolam-based composite (except on the review sample, which had a Medite board as the new ones were not yet cut). The platter is Pink's usual acrylic item, made to high precision and a fine surface finish, which is intended

to provide good acoustic impedance matching to the record and thereby damp resonances in the record due to the reaction against the stylus.

Unlike almost every other deck on the market, the *PT Anniversary* carries an extra component on its subchassis - the motor. This is highly desirable on any deck, as it results in a complete record playing system (motor, platter, arm, cartridge) which can be properly isolated from the rest of the universe; if the motor is mounted on the plinth, the belt inevitably acts as a coupler of unwanted vibration through the system. However, a motor mounted in this way cannot easily be isolated from the record, and this places very stringent demands on the motor's vibration performance if its noise is not to intrude. The standard AC synchronous motor used in one form or another, in 99 per cent of decks, is intrinsically too noisy, even when driven from a very low noise supply, but Pink has always favoured DC servo motors, and one of these is fitted on the *Anniversary*.

Servo motors have a bad name where record players are concerned, and the general assumption is that they cannot run at the correct speed since the servo will always be 'hunting'. Pink, however, claims that this is not the case as long as the servo system is designed properly to take account of the spring/mass characteristics of the platter and drive belt, and indeed reference to textbooks on control theory convinced me that this is correct. After all, all sorts of electromechanical servos, from ship stabilisers to car steering, prove daily that it can be done. Indeed, the job of a servo in a record player is very easy, since the drag is essentially constant (dynamic wow has been shown effectively not to exist, and any decent bearing has low and uniform friction). This means that the servo only has to 'work' to overcome the effects of extraneous vibration at very low frequencies, which it will do much more linearly than a synchronous motor can.

With no drive belt to enter into the equation, Pink has provided the *Anniversary* with a very soft, undamped suspension, even to the extent of using very thin, flexible wires to the arm and the motor; signal connections are thus taken from two phono sockets on the plinth. A damped suspension would only serve to couple high frequency vibrations into the subchassis, but this one really is a little

twitchy in use. Pink tells me that it is contemplating providing some sort of system to absorb large shocks, and I would certainly endorse that. Great care in handling is de rigueur! - especially with the damped arm lift on the SME V that Pink supplied with the review sample.

To reduce plinth resonances, the plinth has been made as solid as possible, although total weight is very reasonable. The *Anniversary* is powered, and switched, from an outboard power supply with a two-way, bicolour illuminated rotary switch to select speed. Fine speed control is available, although a positive 'calibrated' position or bypass switch for this would be a help. Construction seems (on the strength of a prototype sample) to be very good, as is finish. Ease of setting up is quite good for a deck of this quality, with all suspension adjustments accessible from outside. The belt must be fitted along with the platter using a piece of wool.

On Test

Having been very much taken with the *PTTOO*, I was intrigued to see what Pink regarded as an improvement. In the event, I was not disappointed. The *Anniversary* is one of a very few hi-fi products I have encountered which impress me immediately as extraordinarily capable. The sound is exceptionally clear, detailed to a degree one simply isn't accustomed to expect from records, and as smoothly extended at both frequency extremes as one could wish.

Comparison with tape was interesting. At this point I should come clean and admit that when I say 'master tape', I actually mean a first-generation copy thereof. The master itself is a precious document which is kept in controlled conditions and played seldom, but my

copies are made on very high quality equipment and have been compared directly with the source. Normally, I am not aware of the shortcomings of the tape recorder when comparing tapes with records, but this time round it struck me rather forcefully that perhaps my tape machine is not after all perfect.

Various record players have tonal differences from the tape which are generally quite unimportant, but most have considerably less resolution of the finest details in the music than does the tape. The *Anniversary*, in certain areas, has more detail than the tape, and that is why I believe it may tonally also be more accurate. Recovery of ambience is quite astonishing, and the portrayal of the piano in one recording was so good that I would have doubted my ears but for one thing: I remember clearly the kind of difference I heard between the real master tape and my recorder, and the *Anniversary* sounds more like the original.

With all sorts of recordings, the *Anniversary* simply extracts more information than any other deck I have heard, except possibly the *Rock Reference*. A bass drum roll, for example, in Britten's *Piano Concerto*, for the first time in my experience was easily discernible from the rest of the orchestra above it, while even NWA benefited to the tune of a few little touches which I had never before noticed. And unlike some hi-fi products, which can sound detailed but have various headache-inducing vices, the *Anniversary* always remained perfectly clean-sounding and neutral, with never a shout, zing or thud in evidence. Even surface noise is lower than usual (most of what one hears as surface noise is due to deck resonances).

Lab results show very good platter

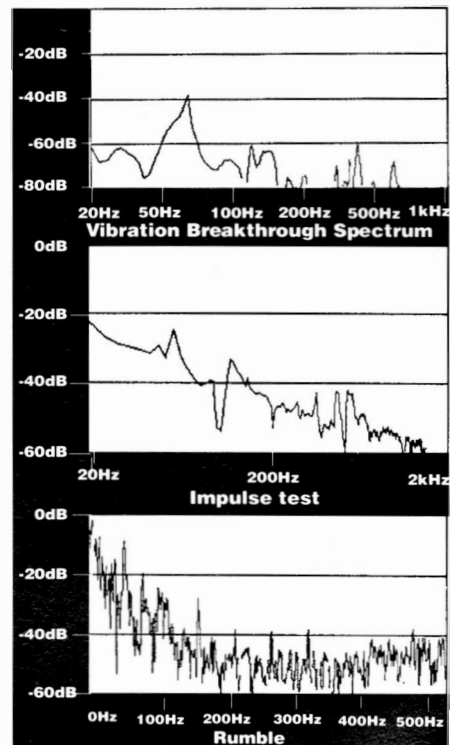
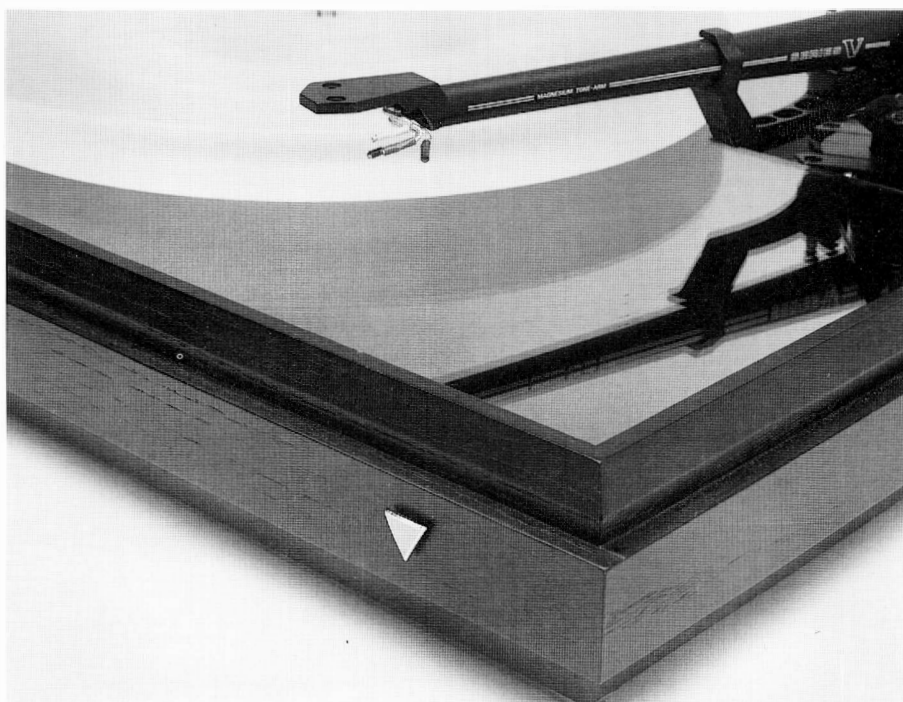
damping, outstanding vibration isolation and good speed stability, all essential to the deck's performance. An arm resonance plot showed no particular evidence of arm board character. Striking the subchassis shows it to be well behaved, with no distinguishable resonances other than one (not very high in amplitude) at about 60Hz. The suspension is obviously well designed, and records continue playing with no ill effects even when the deck is bounced quite hard.

Conclusion

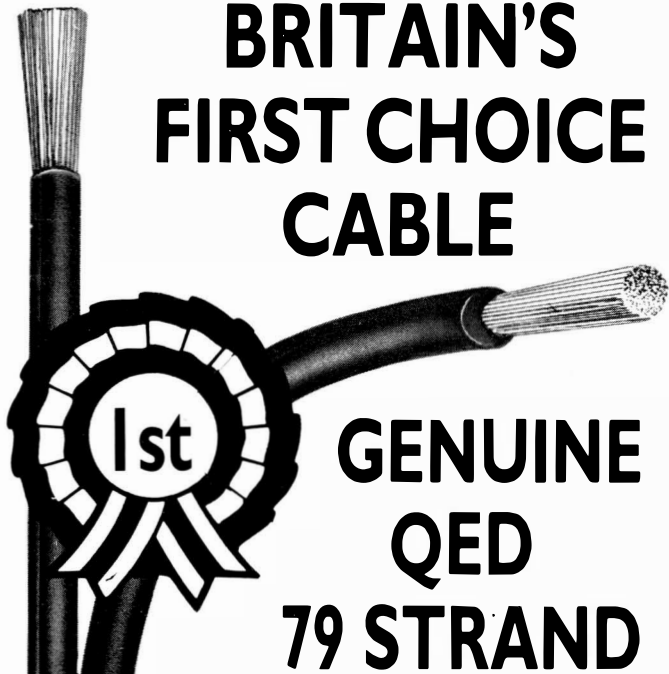
The Pink Triangle *Anniversary* is clearly a quite exceptional product. Designed with the aim of faithful music reproduction, it achieves that aim perhaps uniquely successfully, and is unhesitatingly Recommended.

TEST RESULTS

Type	suspended subchassis, belt drive
Platter type	solid acrylic, no mat
Build and finish	very good/very good
Mains connection	socket for outboard power supply
Speeds	33/45 (electronic change)
Wow and flutter (DIN wtd)	<0.05%
Speed error	n/a
Start-up time	4s
Rumble (DIN B wtd)	<-80dB
Size (h x w x d/clearance for lid)	16 x 45 x 39/7cm
Ease of use	care required with cueing
Acoustic breakthrough	Excellent
Vibration breakthrough	Excellent
Shock resistance	Fair
Subjective sound quality of system	Excellent
Typical price inc. VAT	£1,175



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pleasingly different bit of design, that it deserves Recommendation - but a cautious one, just the same!

TEST RESULTS

Motor Section

Type	belt drive
Platter type	solid acrylic on plastic subplatter
Build and finish	good
Mains connection	captive lead to matching amplifier (see text)
Speeds	33/45 (manual change)
Wow and flutter (DIN wtd)	0.1%
Speed error	0.5% slow
Start-up time	1s
Rumble (DIN B wtd)	-53dB

Arm

Approx. effective mass	22g lateral, 10g vertical
Type	fixed, lateral tracker
Adjustments provided	overhang (see text)
Build and finish	good
Ease of set-up/use	moderate/good
Friction approx, lat/vert	50mg/<10mg
Bias application method	n/a
Downforce calibration error (2g)	0
Cue rate up/down	instant/instant
Arm resonances	very good
Arm damping method	none

System as a whole

Size (h x w x d/clearance for lid)	13 x 35 x 31/3cm
Ease of use	very good
Acoustic breakthrough	good
Vibration breakthrough	poor
Shock resistance	fair
Subjective sound quality of system	very good in parts
Typical price inc. VAT	£175 plus £14 for power supply

Czechoslovakia may not be a world-leading supplier of hi-fi equipment, but the country has a long tradition of fine engineering, and with the demise of the arms race it seems at least one factory needed to find a product to replace its line in military radar gear; the result was the Rational Audio *Aura 01* turntable.

Actually, the *Aura 01* is really a combination of turntable and amplifier, but the amplifier does not concern us here. Suffice to say that it is a compact and simple 20W/channel integrated unit with an automatic loudness control.

The photograph is sufficient evidence of the *Aura's* unusual styling. Its basis is a U-section of sheet metal, on which are mounted the bearing, the motor (supported on springs) and the lid. The latter carries the arm mechanism, a simple lateral tracking device which runs on guide rails, arranged so that when the lid is raised the arm automatically returns to the start position, ready to be cued up at the start of the next LP. Instead of going for great rigidity, the *Aura* uses a short section of soft plastic tube as the 'arm', with a T-shaped piece of metal pushed into it on which the cartridge is mounted. Cartridge adjustment for lateral tracking and azimuth consists of pushing this T-piece in and out of the tube, an adjustment which is a nuisance and apt to drift.

Unusually at the price, the *Aura* has an acrylic platter, mounted on a true inverted bearing. However, the bearing shaft is rather long and thin, and like the rest of the system, rigidity is not amazing. Still, the styling is certainly different, and I see no reason why the deck should not be reliable. Decoupling from external vibrations is effected only by four rubber feet. The deck is supplied with a Linn K5 cartridge fitted.

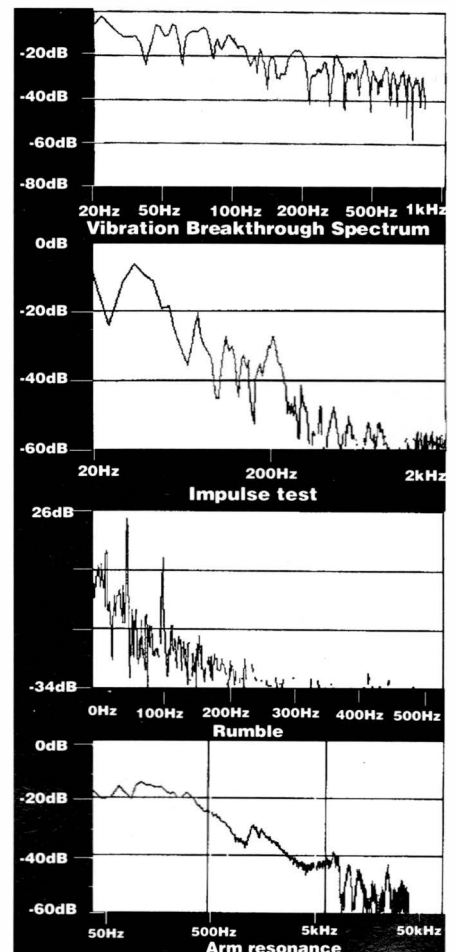
On Test

The most serious flaw of the *Aura 01* is its high rumble (hum) level, which should certainly be reduced (as we go to press Rational Audio has announced that it will be doing this). This proved an irritation on audition, especially as I was using loudspeakers with good bass response. Bass feedback is also a bit of a problem, and some additional decoupling is advisable. Nevertheless, the *Aura* has some very good points in its performance, including a startling degree of midrange transparency and detail which is normally only heard in decks costing four times the price and more. There is very little masking of low level information, and it is remarkably easy to hear differences between instrumental timbres in music for large ensembles. With the deck on an isolation platform, and making some allowance for the rumble, bass is quite punchy and informative too, though not outstanding. It is at higher frequencies that the deck really excels.

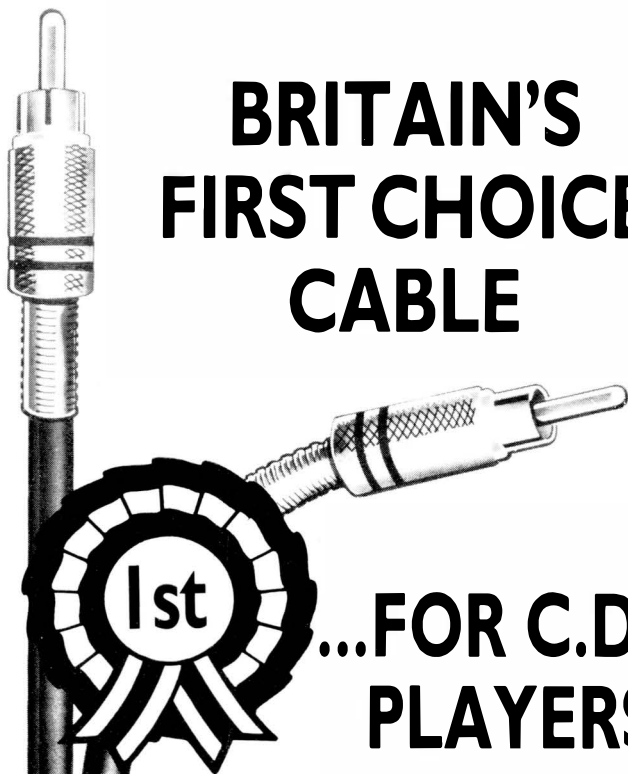
Tests confirm the very high motor breakthrough, but apart from this and the poor rejection of vibration, the deck performs quite well. Wow and flutter is moderate, the disc impulse shows good platter damping (as expected of acrylic), and the arm resonance plot shows that the arm hardly resonates, certainly not in the 1kHz-ish region where most conventional arms ring. The arm has the usual problem of lateral trackers in rather different vertical and horizontal effective mass, which gives arm/cartridge resonances at about 8Hz and 12Hz - not too bad - and lateral friction is a little high.

Conclusion

For all its weaknesses, this deck does some things so well, and is altogether such a



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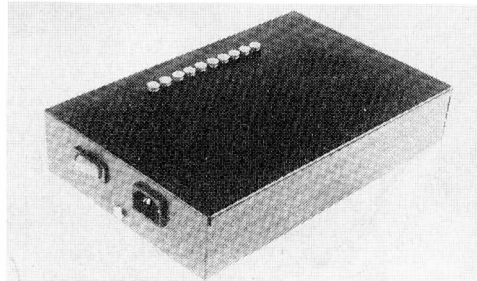
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Recommended



Reviewing the *Rebel* in *Choice* two years ago, Alvin Gold commented on poor speed stability. It seems ironic, therefore, that on unpacking the new review sample, I found that the motor pulley was clearly bent, visibly wobbling as it rotated. Indeed, some months ago I covered the deck for another publication and had the same problem. I obtained a replacement - but it seems poor if two out of three decks have the same problem. Is it transit damage? Whatever, it demands attention.

The *Rebel* is simple in concept and execution. It consists of two Medite sheets, the upper one comprising the subchassis and the lower the plinth. They are separated by compliant mounts to give the deck some suspension and hence isolation. The lid and motor are mounted on the plinth; the arm, bearing and power switch on the subchassis. Although the deck is simple, it has some impressive details, particularly the bearing, which is a very close fit and shows no tendency to rock. The platter is rather unconventional, consisting of a plastic moulding with concentric ribbing underneath. It is very light, but its resonant behaviour if struck is quite good, with no particular frequencies audible. It sports a mat made of thin felted card, called a 'Starmat', and it comes supplied with a 'Pig' record clamp. This ingenious gadget simply pushes down over the spindle to hold the record firmly on the mat.

Mounted right at the rear of the deck is a synchronous motor, a higher speed unit than that more commonly used, which drives the platter via a round-section belt around its periphery. S.E.E. claims that this configuration results in the belt damping resonances in the platter, which sounds reasonable. However, it is rather easy to knock the belt off while changing

records. Speed change is by selecting pulley diameter, easy enough when the motor is visible. The *Rebel's* arm is a fairly standard item with a fixed headshell. It is not amazingly rigid, but seems quite well made. An Audio Technica *AT95E* is fitted - an old favourite. Several finishes are available, including white (ugh!), black, and the black/blue marbled unit supplied for review, which is agreeably different.

On Test

It took little time to establish that the bent motor shaft was plenty audible, and the sample was rapidly banished to the lab. However, when working properly, the *Rebel* is rather a pleasing deck. It retains one problem, of audible motor breakthrough, but apart from that the sound is mostly good. There is a slight feeling of 'one-note' bass, due no doubt, to selective feedback (and variable, therefore, with siting), but that is kept at a reasonably low level and is not offensive.

Otherwise, the *Rebel* is a clear and neutral performer with a good 'punchy' sound which will certainly please some tastes in music, and sufficient resolution of complicated musical structures to appeal to most listeners. It is slightly short on subtlety and finesse at times, but it doesn't become overtly harsh or shouty.

Wow and flutter is adequate and speed is quite accurate, but the motor breakthrough is clearly reflected in the poor rumble figure. Some liveliness is shown on the arm resonance plot, but not sufficient to cause real concern. Vibration breakthrough is moderate.

Conclusion

The *Rebel's* qualities of detail recovery and overall life and energy make it an appealing deck, but it is compromised by

rumble to a degree which is audible. Recommendation is in order given the price - but check that pulley!

TEST RESULTS

Motor Section

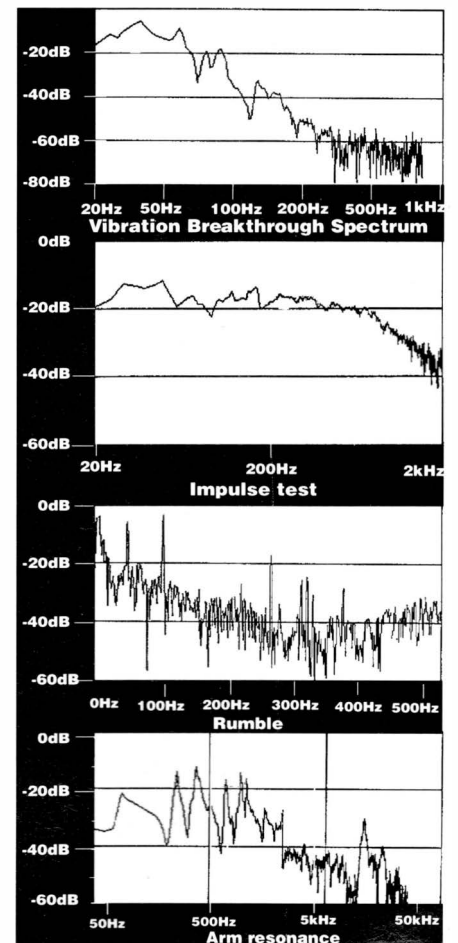
Type	semi-suspended subchassis, belt drive.
Platter type	one-piece plastic moulding, felt mat
Build and finish	good/very good
Mains connection	captive lead
Speeds	33/45 (manual)
Wow and flutter (DIN wtd)	0.06%
Speed error	-0.15%
Start-up time	1s
Rumble (DIN B wtd)	-68dB

Arm Section

Approx. effective mass	12g
Type	fixed, fixed headshell
Adjustments provided	overhang
Build and finish	good
Ease of set-up/use	OK
Friction approx, lat/vert	20mg/15mg
Bias application method	calibrated dial
Bias force, rim/centre	180mg/200mg
Downforce calibration error (2g)	-0.1g
Cue rate up/down	0/1s
Arm resonances	fair
Arm damping method	none

System as a whole

Size (h x w x d/clearance for lid)	13 x 42 x 37/7cm
Ease of use	good
Acoustic breakthrough	fair
Vibration breakthrough	fair
Shock resistance	good
Subjective sound quality of system	good
Typical price inc. VAT	£180



Roksan Xerxes/ Artemiz/Artaxerxes

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Launched some four years ago, the *Xerxes* has now settled down as an established product, setting up its manufacturer as one of the leading players in the high-end turntable arena. Roksan has slowly increased its range of products, and the system reviewed here comprises a complete record playing package of turntable, arm, cartridge and the new addition - a phono amplifier.

Stepping sensibly

The concept of putting a phono amplifier inside a record deck is not new, but it has never been common, and Roksan is to be complimented on what is, in many ways, a very sensible step. The *Artaxerxes* is a complete RIAA phono stage, designed to fit on to the back of the *Xerxes* deck. It is a very compact unit, housed in a neat aluminium case, which plugs directly into the arm base via leads only a couple of inches long, and provides a line-level output which can be plugged into any spare line input on an active or passive preamplifier. This approach has several advantages: it minimises the possibility of hum or radio interference, it eliminates at least one connector from the signal path, and it makes the record player a complete unit, in which performance is not dictated by the unknown variable of someone else's preamplifier.

The *Xerxes* consists of two main structural blocks, effectively plinth and subchassis, but it doesn't conform to the

usual notions of plinth, subchassis and suspension. The 'plinth' section is a Medite board, on which are mounted the motor and the suspension members. Eschewing springs, Roksan uses industrial anti-vibration mounts (AVMs), with some additional decoupling given by a composite washer on top, for isolation between the sections of the deck.

The upper section of the deck sits on these 'blobs', as Roksan calls them, with a degree of lateral adjustment provided for by the oversize locating holes on the upper section. This section is likewise made of Medite, 25mm thick, and is distinguished by a saw cut which runs in a specially shaped curve round the top and right of the arm mounting position, and down between the motor position and the main bearing. This cut is intended to decouple the all-important arm and bearing-mount area from the rest of the board, breaking up standing waves and giving a stable platform on which the stylus/arm/platter/armboard assembly can transcribe the groove.

Roksan uses a conventional bearing, in which, however, the spindle diameter is unusually small, the aim being to cut down on sliding velocities within the bearing and hence on bearing noise. The record spindle is a small cap which fits over the thin bearing rod to align the record, and can then be removed to prevent the record contacting the spindle while playing. A two-part, aluminium

platter is employed, each part being made of two interference-fitted sections; a felt mat tops the platter in use. The outside of both subplatter and outer platter are diamond turned to a near mirror-quality finish, and the motor pulley is turned likewise. Because the belt runs over such smooth surfaces, it needs to be squeaky clean and smooth itself, and part of the setting-up operation involves cleaning the belt with foam cleanser and lint-free rags for several minutes. Roksan thoughtfully provides cotton gloves for handling the belt and platter.

The motor in the *Xerxes* is a synchronous type, similar to that used in many turntables. It operates on a low voltage supply, and an outboard, twin-phase drive circuit is included as standard (the same box powers the *Artaxerxes* through a separate cable). A unique feature of the motor is that it is free to rotate a little on its mounting, restrained only by a spring; the function of this system is determined by the degree of dynamic wow in the record player, which in practice is not a problem.

Surrounding the whole deck is a frame which screws to the lower board. Finish of all Medite parts was black ash on our test sample; other attractive real wood finishes are available. Construction is generally good.

Unconventional

The *Artemiz* arm is, like the *Xerxes*, unconventional. It has a thin wall aluminium tube, formed into the headshell at the front. Its bearings use fixed balls rather than rotating races, which Roksan claims gives very low bearing noise. The counterweight, instead of being securely fixed on the rear of the arm, is suspended from it by a single point, allowing it to swing freely. This is claimed to give some decoupling between counterweight and arm, but in practice the system is probably irrelevant at best, disadvantageous at worst - although the disadvantages are mostly small. Tracking force varies as the arm track warps, being at a minimum at the top of a warp, which is surely the wrong direction to vary.

Decoupling is different in vertical and horizontal planes, but in any case the counterweight isn't a large contribution to an arm's effective mass and the effect of the swinging counterweight on arm/cartridge resonance is negligible. However, any transient input to the

system - from outside or within the record player - causes the counterweight to swing to and fro in two planes, modulating tracking force at the cartridge and possibly causing the cartridge to generate high intermodulation distortion as the generator assembly moves outside its normal operating region.

On Test

First impressions were made on lowering the stylus on to the record; the sound it made as it engaged with the run-in groove instantly gave away a certain degree of resonance in the system, and surface noise seemed unusually audible. However, the *Xerxes'* reproduction of music does not in general sound coloured. On the contrary, it seems very open and detailed, aspects which have already made friends for the deck. Bass is perhaps a little shy, but images are sharp and clear and there is no instant 'character' to complain of.

Against my reference master tape recordings, a rather different picture emerges. The seeming detail of the deck is clearly shown to be due to a considerable degree of over-brightness, and in fact genuine low-level detail - hall ambience, in particular - is not very well revealed. The performers are brought forward and highlighted, but they tend to become a bit two-dimensional in the process, and it is quite oppressive after a while. Bass is neither very strong nor very well defined, and using loudspeakers with very good bass extension, I gradually became aware that there was a constant level of low-frequency, feedback-induced drone which drowns true bass information.

Long-term auditioning only served to heighten the effect of brightness, which in complex passages can become a shout. Although the *Xerxes* does not have any

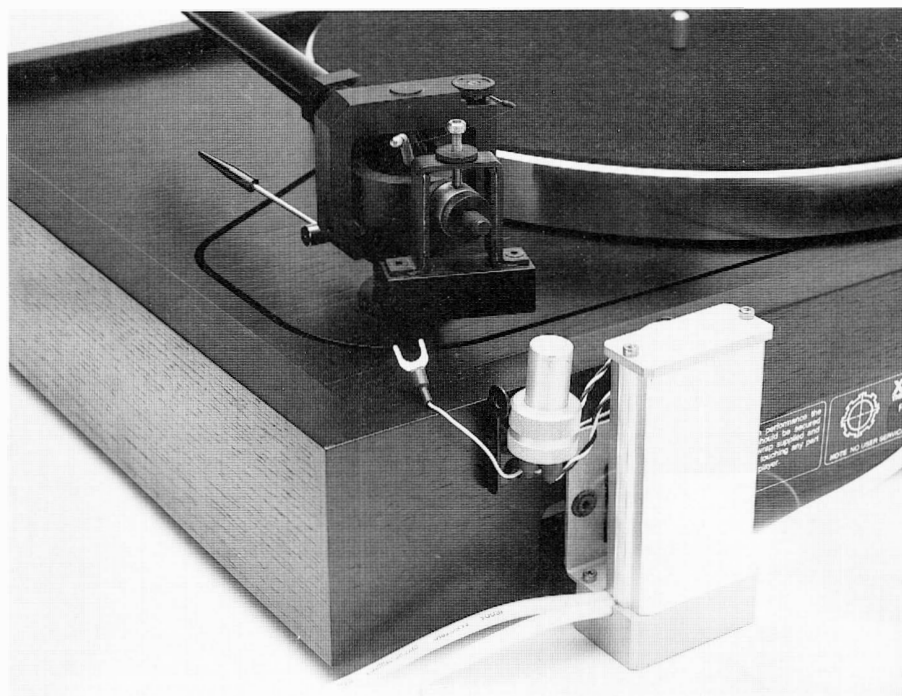
instantly obvious flaws, its imperfections are perhaps the more irritating because they are rather insidious; only after listening for some time does one become aware of them, but once noticed, they are not easily ignored.

On the test bench, some of the reasons for the Roksan equipment's character become clear. Two effects predominate: the deck has a pronounced resonance at 30Hz (presumably due to the 'decoupled' section of the top board, which is attached along one edge, acting as a leaf spring), and the arm is quite exceptionally lively on the board, colouring the sound with major resonances at frequencies up to 14kHz. Low frequency resonances are exacerbated by the limited compliance of the suspension, which makes the deck very prone to low frequency feedback through any structure on which it stands.

The *Artaxerxes* seems mostly well behaved and has low distortion, but it is very sensitive to loading - less than the recommended 47k and the bass thins out. Noise is adequate for Roksan's *Shiraz* MC cartridge, but not what it should be, and up to 14dB worse than its data sheet claims. Subjectively, taken in isolation, it is very neutral and well-extended, though clarity is a little marred by the high (and slightly 'tuned') noise level.

Conclusion

Although nicely presented, the Roksan combination is not one I would personally want to live with. It can seem quite impressive at best, but I found it strident and tiring in the long-term and its highly resonant construction prevents it ever being a very accurate deck. If its character appeals, well and good - but I would certainly recommend careful auditioning before purchase.



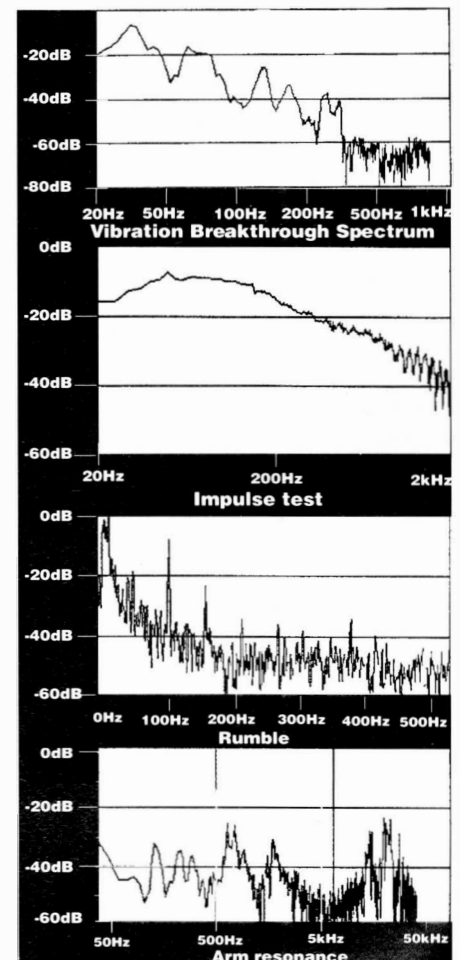
TEST RESULTS

Roksan Xerxes	
Type	semi-suspended subchassis, belt drive
Platter type	two-piece aluminium, felt mat
Build and finish	good/very good
Mains connection	socket for outboard power supply
Speeds	33/45 (electronic change)
Wow and flutter (DIN wtd)	0.06%
Speed error	0.0%
Start-up time	5s
Rumble (DIN B wtd)	-75dB

Roksan Artemiz	
Approx. effective mass	9g
Type	Rega-compatible, fixed headshell
Adjustments provided	height, overhang
Build and finish	good
Ease of set-up/use	OK
Friction approx, lat/vert	25mg/45mg
Bias application method	adjustable spring (uncal.) and thread
Bias force, rim/centre	160mg/200mg
Downforce calibration error (2g)	na
Cue rate up/down	0/3s
Arm resonances	poor
Arm damping method	none

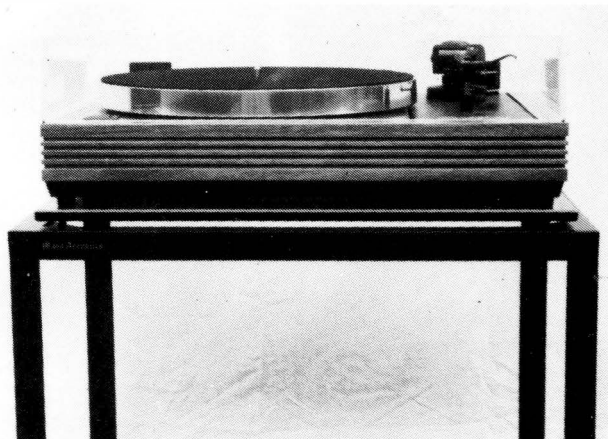
Roksan Artaxerxes	
Type	phono preamplifier integral to Xerxes deck, MC input
Gain	54dB
S/N ratio (A-wtd)	70dB
Distortion at 5mV in, 1kHz	0.02%
Frequency response (into 47k)	within 1dB of RIAA, 10Hz to 100kHz

System as a whole	
Size (h x w x d/clearance for lid)	13 x 49 x 39/7cm
Ease of use	OK
Acoustic breakthrough	Moderate
Vibration breakthrough	Moderate
Shock resistance	Fair
Subjective sound quality of system	Good
Typical price inc. VAT	
Xerxes	£695
Artemiz	£595
Artaxerxes	£495



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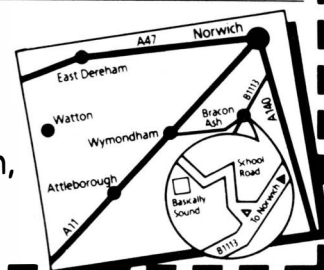
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When the Roksan *Xerxes* first appeared, it was most commonly seen fitted with the Rega *RB300* arm, and even when Roksan's own *Artemiz* arm came out, there was precious little alternative to the *RB300* available to fit the *Xerxes* at a budget price. Roksan doubtless saw this market gap for what it was, and has now introduced a low-priced arm, the *Tabriz*. In fact, the *Tabriz* comes in two versions, the *Tabriz zi* being distinguished by the 'intelligent counterweight' assembly used on the *Artemiz*. This review covers the basic *Tabriz*, with a normal counterweight.

Made to Roksan's specification in Japan, the *Tabriz* is essentially a conventional design. Its major distinguishing feature is the arm tube, which is the same large diameter, thin-wall tube used on the *Artemiz*. This tube is formed by a complex process into the headshell - I gather the process basically involves squashing the tube flat, but there is obviously a lot more to it than that. It is fitted to a normal-looking bearing assembly, although apparently the positioning of the bearings is different from common practice, again at Roksan's specific request.

Mounting of the arm is not quite the same as for a Rega, as the geometry is slightly different. The arm base is threaded, and, like the Rega, is secured by a single nut from below. Unlike Rega, however, Roksan provides a simple means of adjusting height, in the form of a knurled nut with sits on the top side of the arm board. Once height has been set, the arm can be slid a couple of millimetres side to side in the mounting hole, and when it is suitably positioned, the bottom nut is tightened hard. This nut has a thin

raised ring which is supposed to bite into the wood of the armboard (on a Roksan or other wood-based deck), thus marking out the correct position for future use.

Construction of the *Tabriz* seems generally good, and the bearings feel suitably secure. Finish is matt black on the tube, which looks good but marks easily.

On Test

I tested the *Tabriz* initially on my own Townshend *Rock*, a deck whose abilities and limitations are familiar to me. At first, I found the arm's presentation a little on the bright side, but although I certainly wouldn't call it dull, this feeling wore off slightly as I got used to it. The effect is mainly a small lift in the high treble, most noticeable on orchestral violins and massed female voices, where there are complex sounds with a strong high frequency content. Otherwise, the spectrum seems quite nicely balanced, with quite good detail evident and no distinct colorations. Bass is clear and smooth. Against tape, I felt that solo piano was made to sound a touch 'clangy', but I have noted this with other arms on the *Rock*'s simple metal armboard (I was not using the damping trough).

I also had the opportunity to test the *Tabriz* on a Roksan *Xerxes*. The obvious comparison here is Roksan's own *Artemiz*, and I have to say that if you like the deck, the *Tabriz* seems like a remarkably close competitor to its big brother in this context. I could hear a small difference between the arms, but I wasn't sure that I didn't prefer the *Tabriz*, which seemed to have slightly less 'glare' at times.

On test, the *Tabriz* turned up a nice surprise in its very low level of resonances.

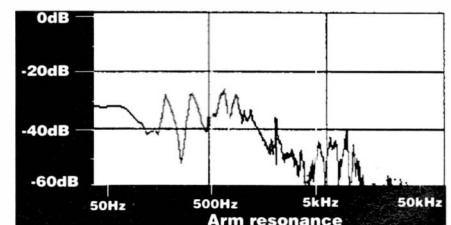
I can only suppose that the construction, with its very thin-walled tube, produces a main beam resonance of such low Q as to be almost non-existent. At higher frequencies there are a few resonant peaks visible on the plot, but these are probably as much to do with the deck as the arm. Friction is suitably low.

Conclusion

This is a bit of a surprise, in various ways - first, that Roksan should produce an arm looking this basic (in design, that is), and second, that so conventional-looking an arm should seem so well behaved. It certainly seems to do some things very well and I would like to hear it on a greater variety of decks. At its modest price it is a welcome addition to the market, and is clearly worth Recommendation.

TEST RESULTS

Approx. effective mass	9g
Type	Rega-compatible, fixed headshell
Adjustments provided	height, overhang
Build and finish	good
Ease of set-up/use	good
Friction approx, lat/vert	10mg/15mg
Bias application method	calibrated dial
Bias force, rim/centre	190mg/170mg
Downforce calibration error (2g)	n/a
Cue rate up/down	0/2s
Arm resonances	very good
Arm damping method	none
Typical price inc. VAT	£150



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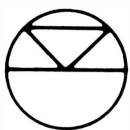
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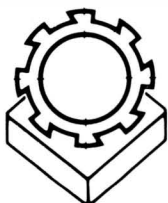


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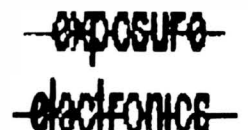


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Undaunted by the advance of CD, Thorens has launched a new attack on the high-end turntable market, after many years of contesting mainly the middle ground. The company has retained the user-friendly approach, designing a turntable which is simplicity itself to set up and use.

In fact, the TD2001 bears a strong resemblance to the TD300-series turntables. It is quite a heavy deck, made of Medite veneered with black ash, with the subchassis suspended on three leaf springs. The platter is Thorens' usual two-piece design, both parts in this case being made of metal. Drive is from a low voltage synchronous motor, which is powered by a two-phase synthesised supply contained within the plinth. This supply does not contain a quartz crystal for reference, but its absolute accuracy and temperature drift are probably more than adequate.

The arm fitted is a TP90, a high mass, detachable headshell arm which looks rather like yet another run-of-the-mill integrated arm, but is in fact quite well made; it has good bearings and is adjustable in every parameter. The headshell is detachable, fitting with a screw collar. Electrical connections to the arm are made via phono sockets and a grounding post on the back of the deck.

Operation is semi-automatic. The speed is selected by a three-way switch (33-Off-45), but the deck is started by a small push-button. This activates the motor and also energises a solenoid which allows the arm to be lowered on to the record. When the arm reaches the run-out groove, an optical sensor within the deck detects the arm's increased speed of traversing the record and shuts off the supply, stopping the motor and causing the arm to lift. If one wants to stop the deck manually, one must flick the speed

selector momentarily to Off, or raise the arm and wave it over the label, but apart from this, the deck is a delight to use.

On Test

It is a shame to have to report that this Thorens is way out of line with the company's usually fine value for money. The main sonic characteristic of the TD2001 is a serious lack of detail, with large doses of coloration veiling the sound, whatever the music. In orchestral music, massed violins became homogenised and developed a degree of 'shout', while a rock'n'roll track sounded shut in and lacking in ambience information, although individual instruments were fairly clear and easy to follow. The deck is mostly quite comfortable to listen to, but if that's all you want it isn't necessary to spend £630. A good basis in information retrieval should be a feature of any deck at this price, and the TD2001 is not what one might wish in that area.

Tests on the TD2001 show a typical disc impulse character for a rubber mat and a fairly good level of vibration isolation, suggesting that siting will not be unduly critical. As with all Thorens decks, basic specs on speed stability and rumble are fine, and the arm shows no immediate cause for concern. However, tapping the subchassis shows up various resonances, especially around 105Hz, and I suspect the deck's sound is largely due to characteristics of the subchassis.

Conclusion

The real question is: how much better is the TD2001 than the remarkably similar TD320 at £350, or indeed the TD316 at only £230? Unfortunately, not much. Those models, in context, sound quite acceptable and are good value. This one just doesn't

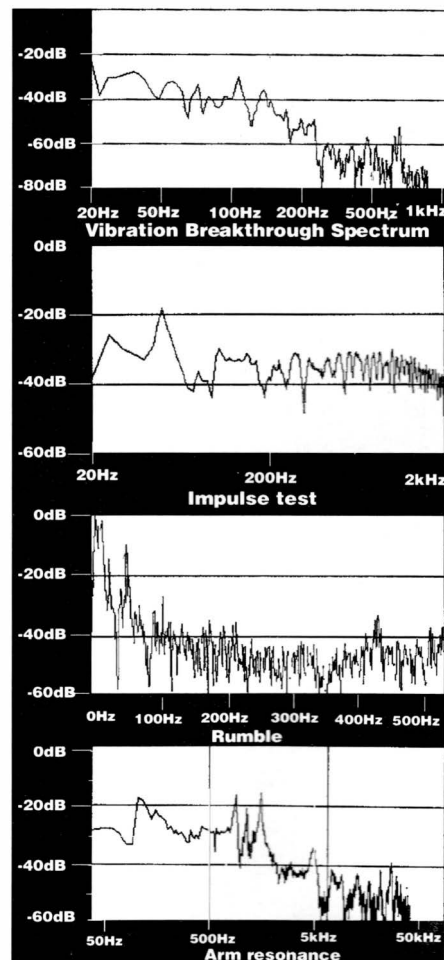
justify its much higher price tag. Of course, it's very well made, but its sound does not make a good showing against direct competitors, and overall it fails to impress.

TEST RESULTS

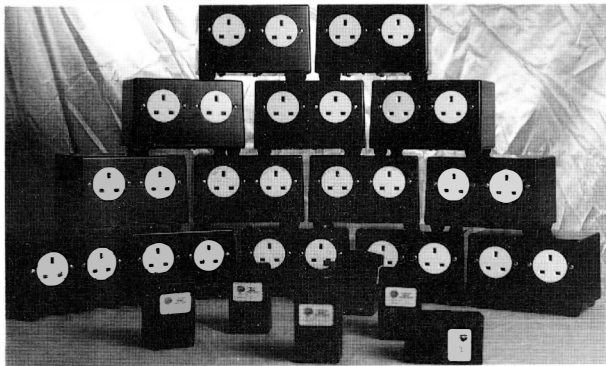
Motor Section	
Type	suspended subchassis, belt drive
Platter type	two-piece metal, rubber mat
Build and finish	very good
Mains connection	socket for external transformer
Speeds	33/45 (switched)
Wow and flutter (DIN wtd)	<0.05%
Speed error	0.2% slow
Start-up time	4s
Rumble (DIN B wtd)	-74dB

Arm	
Approx. effective mass	15g
Type	fixed, detachable headshell
Adjustments provided	height, overhang
Build and finish	good
Ease of set-up/use	very good
Friction approx, lat/vert	<10mg/<10mg
Bias application method	calibrated slider
Bias force, rim/centre	170/130mg
Downforce calibration error (2g)	-0.3g
Cue rate up/down	0.5s/3s
Arm resonances	good
Arm damping method	none

System as a whole	
Size (h x w x d/clearance for lid)	15 x 45 x 36/7cm
Ease of use	very good
Acoustic breakthrough	good
Vibration breakthrough	good
Shock resistance	good
Subjective sound quality of system	quite good
Typical price inc. VAT	£630



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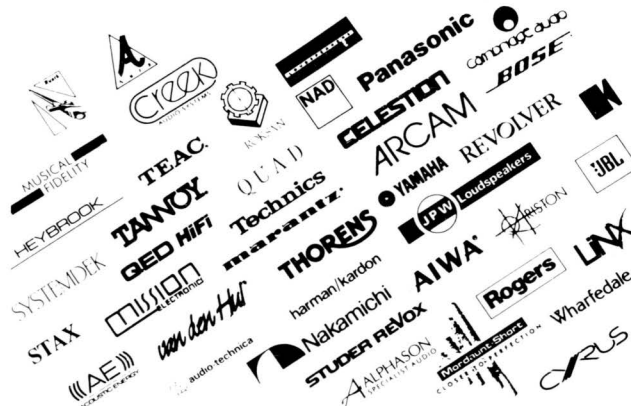


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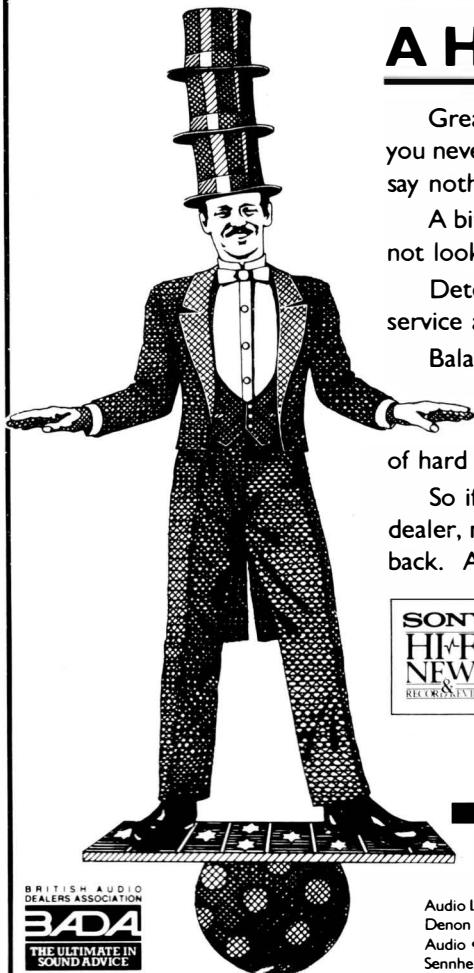
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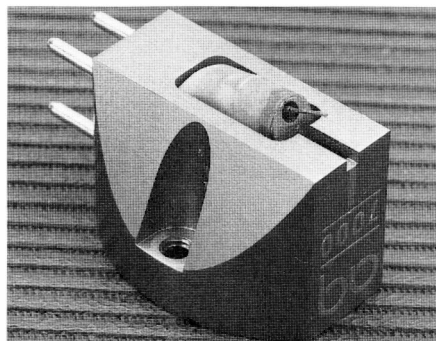


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Audioquest's top model, the AQ7000 had a reputation almost before it was launched. It is made by Scan Tech of Japan, originators of the Tsurugi and Spectral cartridges which have almost a cult following in the States. However, Audioquest had a considerable influence on the final design, and it differs in certain important respects from its stablemates.

The AQ7000 is quite distinctive in its unusually-shaped case, and this case has been designed to minimise parallel faces which may create opportunities for internal resonances. It is made from strong and relatively non-resonant alloy, and has tapped holes for mounting to the headshell, arranged so that it is held together even more firmly when mounted in an arm.

Within the body is a moving-coil generator wound with a single layer of wire, which Audioquest claims gives advantages over multi-layer windings more commonly employed. Despite this, output is only moderately low at a nominal 0.3mV, suitable for most MC compatible preamps. A solid boron cantilever is used, tipped with a line contact stylus.

On Test

In some areas, this is an exceptionally fine cartridge. Soundstaging is quite outstanding, and detail can be excellent too. However, the whole thing is let down by relatively poor tracking, which adds an edge to the sound and impairs the sweetness and purity of transients such as piano notes. Audioquest recommends a tracking force of 1.9g, but at this figure I was unable to achieve satisfactory results (no matter how I fiddled with VTA), and I ended up listening at 2.3g. Even then, there is a feeling that the cartridge is straining at very loud passages, and in

addition the extra excitation caused in the arm and record by the stiff suspension adds a slight veil of coloration which affects detail and results in a feeling of slight unease. (In this connection, it is interesting to note that the AQ7000 has about the highest level of 'needle talk' I have ever heard, indicating that it is pumping an unusually high amount of energy into the arm.)

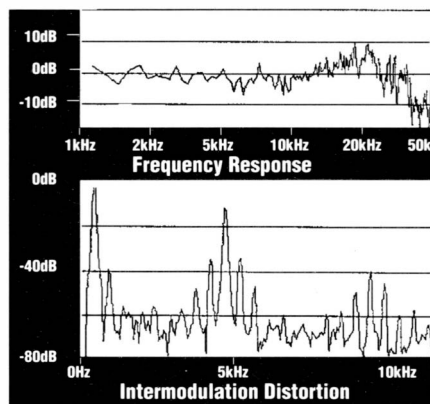
The frequency response shows that the AQ7000 has a very slight tendency to treble emphasis which probably adds to the problems caused by its poor tracking. Only at 2.4g would it pass the 80Em level on the test computer. Channel separation is good across the band, though channel balance is not brilliant for a cartridge at this price.

Conclusion

Some listeners will find the AQ7000's strengths unsurpassed, and its limitations bearable, but I have reservations about the value of a cartridge with a four-figure price tag which cannot stay reliably in contact with the groove.

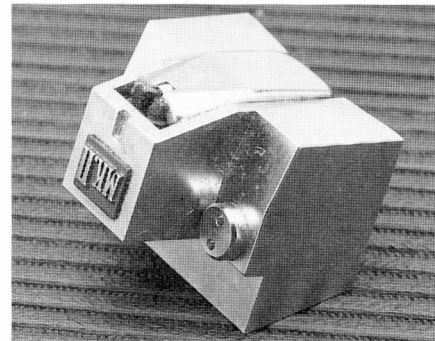
TEST RESULTS

Type, body mass	Moving-coil, 9.4g
Stylus type	Line contact
Compliance, vert/lat	11/13 mm/N
Tracking force recommended/test	1.9/2.3g (see text)
Tracking ability, L/R	>80/>80µm (see text)
LF res., vert/lat	11Hz @ 12dB/10Hz @ 13dB
Output at 5cm/s	0.27mV
Channel balance	0.9dB
Separation at 1kHz	27dB
Separation broadband	Better than 22dB
Impedance	2Ω + 2µH
Tip resonance, damping	50kHz, quite good
Typical retail price	£1,200



Dynavec 17D2

DYNAVECTOR SYSTEMS LTD., 32
READING ROAD, WOODLEY,
READING, BERKS RG5 3DB.
TEL: (0734) 699159



The 17D2 - a direct descendent of the original *Karat Diamond* - is a member of a rather select group of cartridges. It is a moving coil cartridge, with a diamond cantilever. Diamond, as the stiffest and hardest material known, has obvious attractions for use as a cantilever, but its very hardness, and the well-known high cost of even industrial stones, rather limits its application. A few other manufacturers (Audio Technica and Highphonic to my certain knowledge) have produced cartridges with a diamond cantilever, but the 17D2 is, I believe, the only example currently on sale in this country.

Dynavec's literature on the cartridge explains that diamond has several desirable properties, beyond the obvious one of stiffness, particularly its high speed of sound and very low dispersion (self-damping). This, says Dynavec, all means that a diamond cantilever is the best possible coupling between the stylus and the generator coils.

The 17D2's shape is unconventional, being designed around the cantilever - which at 1.7mm is exceptionally short and presents some problems of construction. The top face has two blind, tapped holes, which are a bit of a nuisance as they require bolts of just the right length to avoid stripping (all too easy) or bottoming. Output is low but not unmanageable, and mass is quite low.

On Test

Since first hearing this cartridge some year or more ago, I have been strongly impressed by its lifelike sound. It retrieves a great deal of information from records, without ever sounding coarse, spitty or over-bright - common cartridge faults all of them. It is admittedly a little fussy about arms, and will excite resonances in

certain arms quite mercilessly, but suitably matched (SME, for example, goes just fine), it is quite in the forefront for detailed, clear, natural sound.

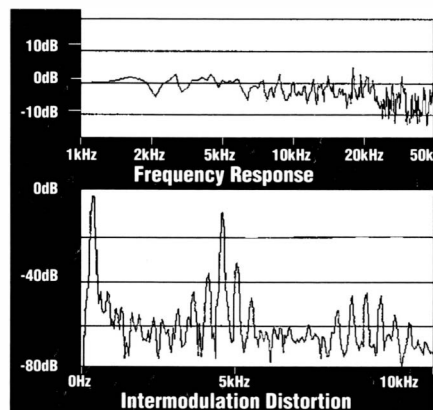
The 17D2's response shows a very small treble lift, which may 'enhance' detail slightly, but that's not a big problem unless your system is already a bit fierce. Otherwise, it is exemplary; very high tip resonance and good tracking bode well. Distortion is good but not quite state-of-the-art, probably due to the short cantilever.

Conclusion

This is clearly a top-flight cartridge which will not be embarrassed by the finest partnering decks and arms. Its price now seems something of a bargain, and it is certainly Recommended.

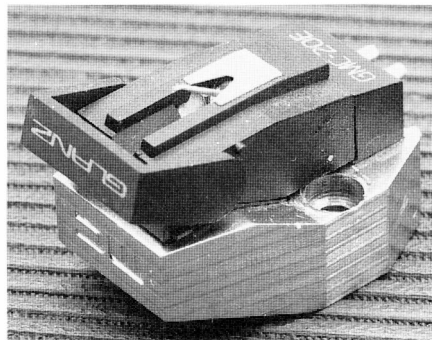
TEST RESULTS

Type, body mass	Moving-coil, 5.8g
Stylus type	Micro Ridge
Compliance, vert/lat	13/13 mm/N
Tracking force recommended/test	1.8-2.0/1.8g
Tracking ability, L/R	>80/>80µm
LF res., vert/lat	less than 8dB/11Hz @ 12dB
Output at 5cm/s	0.15mV
Channel balance	0.1dB
Separation at 1kHz	25dB
Separation broadband	Better than 20dB
Impedance	32Ω + 90µH
Tip resonance, damping	65kHz, moderate
Typical retail price	£280



Glanz GMC-20E

PRESENCE AUDIO LTD., THE OLD POST HOUSE, PLUMMERS PLAIN, HORSHAM, W. SUSSEX RH13 6NU. TEL: (0403) 891777



It has always been a drawback of moving-coil cartridges that the stylus assembly cannot be replaced when the diamond starts to wear out. This cartridge, however, avoids that problem; it is a replaceable-stylus moving coil design. Of course, because the very fine wires used to wind the coils are attached to the stylus assembly, it is necessary to remove a bit more than just that. For this reason, Glanz has come up with an arrangement where the stylus, cantilever and generator coils are all mounted on a small removable unit which carries electrical contacts on its end. This clips into place on the body, which carries the magnets and the output pins.

In fact, I'm not sure that this isn't a bit of a gimmick, since one should always re-check alignment on replacing a stylus, and the price of a new stylus assembly is hardly less than that of a new similar MC cartridge, with trade-in. Still, it avoids the need to remove the cartridge connections, which can be a fiddly exercise.

One unfortunate side effect of the removable stylus is that body rigidity is not great, and the GMC-20's construction is not all that sturdy. It has quite a lot of plastic in its construction, and I find it rather irritating that the stylus assembly must be removed before the cartridge can be fitted - one is as likely to damage the cantilever while removing the assembly as in fitting the cartridge in an arm.

On Test

The GMC-20 seems to share some traits with its cheaper relatives from the Glanz moving flux range. Its sound is smooth and detailed, without any noticeable hardness or glare even when the going gets tough. Also in common with the moving flux cartridges, it seems to bring

up surface noise just a little, which could well be a function of the plastic body, but that hardly detracts. It is very good at picking up subtle details, and is always very clean, without any hint of mistracking. Against my reference master tape recordings, I felt it lost a certain amount of definition on solo piano, but tonally it proved very accurate - perhaps ever so slightly bright.

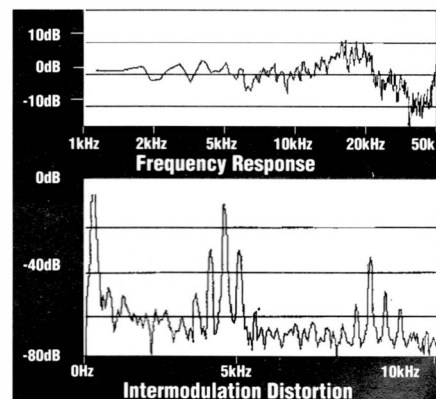
Frequency response of the GMC-20 shows a small lift around 18kHz, probably sufficient to account for the brightness noted. Tip resonance at 46kHz is not very well damped, but this is quite high in frequency and unlikely to be a problem. In fact, the only real criticism is of channel balance, which is rather poor and just about audible (certainly audible with mono records). Compliance is moderate vertically, quite high laterally, and compatible with most arms.

Conclusion

This is a sweet-sounding, good value cartridge which should prove most satisfying in the long term. Recommended.

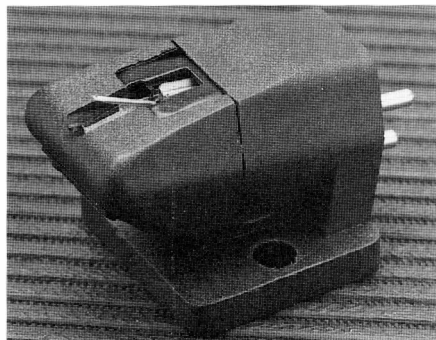
TEST RESULTS

Type, body mass	Moving-coil, 6.2g
Stylus type	Elliptical
Compliance, vert/lat	14/26 mm/N
Tracking force recommended/test	1.8-2.2/1.8g
Tracking ability, L/R	>80/>80µm
LF res., vert/lat	11Hz @ 9dB/8Hz @ 13dB
Output at 5cm/s	0.66mV
Channel balance	1.5dB
Separation at 1kHz	35dB
Separation broadband	Better than 20dB below 8kHz
Impedance	32Ω + 35µH
Tip resonance, damping	46kHz, not very good
Typical retail price	£129



Goldring 1042

GOLDRING PRODUCTS LTD., 8
GREYFRIARS RD, BURY ST.
EDMUNDS, SUFFOLK, IP32 7DX.
TEL: (0284) 701101



The top member of the 1000 series, the 1042 is graced with a Gyger S stylus at the business end of the cantilever. The Pocan body and generator are as for the 1012 and 1022, and externally the three cartridges are identified only by a type number on the stylus assembly. The 1000 series has been designed so that the stylus assembly engages very positively on the body, to ensure the best possible alignment and good rigidity, and the generator has laminated pole pieces to reduce high frequency eddy-current losses.

On Test

Continuing the trend shown by the '12 and '22, the 1042 has a rising treble response into 47k and a quite well damped tip resonance at 22.5kHz, which is perhaps slightly on the low side. Apart from this difference in resonant frequency, however, the '42 is practically indistinguishable from the other two. The review sample had the phase reversed on both channels, which was not corrected until some auditioning had already taken place - it certainly makes a difference, albeit quite a subtle one.

It is arguable quite how far it is worth improving one given parameter in a design without working on others. In this case, a considerable premium is charged for a different tip, but it must be said that structural resonance problems, and possibly cantilever/suspension problems too, appear to reduce the cost effectiveness of this cartridge against its family. The sound is clearer than the '22's, but not by much, and the feeling persists that there is a lack of some subtlety and fine detail. Again, high frequency coloration imparts a slight harshness and roughness to sounds, and transients sound compressed. Bass is certainly good and percussion has

good impact and clarity, but definition of high frequency sounds is not among the best at the price.

Conclusion

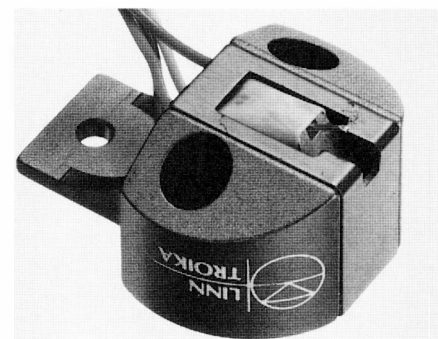
It is indeed better than the 1022, but the 1042 doesn't seem like the improvement it ought to be for the money. Try it - but try the 1022 and 1012, too.

TEST RESULTS

Type, body mass	Moving-magnet, 6.3g
Stylus type	Gyger S
Compliance, vert/lat	11/20 mm/N
Tracking force recommended/test	1.5-2.5/1.75g
Tracking ability, L/R	>80/>80µm
LF res., vert/lat	12Hz @ 10dB/9Hz @ 13dB
Output at 5cm/s	4.3mV
Channel balance	0.4dB
Separation at 1kHz	27dB
Separation broadband	Better than 16dB
Impedance	730Ω + 500µH
Load for flattest response	33kΩ in parallel with 300pF
Tip resonance, amplitude	22.5kHz, 11dB
Typical retail price	£85

Linn Troika

LINN PRODUCTS LTD., FLOORS
ROAD, WATERFOOT,
EAGLESHAM, GLASGOW G76
OEP. TEL: (041) 644 5111

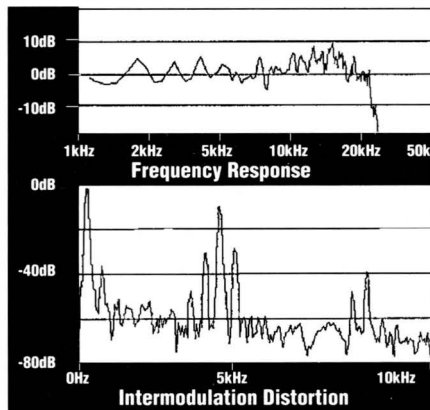


To complement its turntables, Linn offers a wide range of cartridges, from the budget K5 to the Troika, which at £800 is clearly for the dedicated vinyl collector. A low-output moving coil cartridge, it is no less applicable to many other high-end decks than Linn's own Sondek.

The Troika, sourced in Japan to Linn's specification, is a rather individual design. Apart from the more obviously unusual profile - sleekly rounded, and bright red - it has the extra feature of a third mounting hole at the back. This gives a triangular arrangement of support, aimed at achieving the most rigid bond possible with the headshell. The use of this extra hole requires a suitable headshell (though you can just leave the bolt out, of course), and not surprisingly Linn's top arms are drilled accordingly, as are a few others, notably the Naim Aro. Further attention to detail is shown in the use of flying leads for the output connections, eliminating a set of connectors in some headshells, in the strong, hard alloy body, and in the design of the stylus guard, which need not be removed to fit the cartridge in an arm.

On Test

Tested in two LP12 systems (one with an Ekos, one an Aro) and in a PT TOO/SME, the Troika made a favourable impression. I found it rather sensitive to VTA, not least because I increased the downforce to 2.2g (from a recommended 1.7g) in the interests of achieving the near-flawless tracking of which the cartridge is capable. The only occasion on which I doubted its tracking was on a heavily-modulated piano record, which became just a shade 'twangy' at very high levels. Otherwise, the sound is smooth, detailed and unfatiguing, with imaging and bass detail



Ortofon MC5000

both first class.

In general, lab results from the *Troika* are good, although I had some trouble with tracking as tested on the Ortofon computer (normally, cartridges sail through that and still sound rough - the reverse seemed true here). Tip resonance is not especially high but adequate.

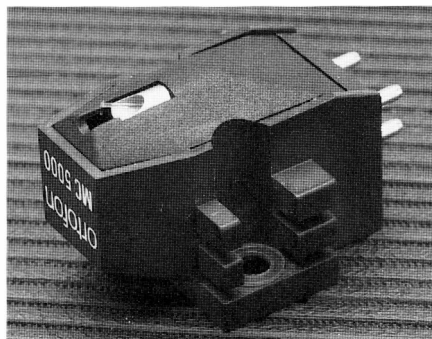
Conclusion

This is undoubtedly a very capable cartridge, though it fails quite to achieve the heights of performance of the very best at its rather exalted price. Where it is good - especially the bass - it is very good, but it lacks the all-round excellence required at this level for formal recommendation.

TEST RESULTS

Type, body mass	Moving-coil, 7.0g
Compliance, vert/lat	13/13 mm/N
Tracking force recommended/test	1.7/2.2g
Tracking ability, L/R	77/79µm
LF res., vert/lat	less than 8dB/11Hz @ 13dB
Output at 5cm/s	0.21mV
Channel balance	0.1dB
Separation at 1kHz	37dB
Separation broadband	Better than 22dB
Impedance	1.8Ω + 1.8µH
Tip resonance, damping	44kHz, moderate
Typical retail price	£798

ORTOFON UK, HAYDEN HOUSE,
CHILTERN HILL, CHALFONT ST.
PETER, BUCKS SL9 9EW.
TEL: (0753) 889949



Having broken its previous price records with the *MC3000 Mk II* at £850, Ortofon has now gone for the big one with the *MC5000* at a mere one-and-a-half thousand. One might expect that at that price a cartridge would sound better than perfect, generate solar electricity and turn into a beef sandwich at midnight; what you actually get in this case is a unit externally identical to the *MC3000* but sporting a sapphire cantilever and a generator wound with '7N' (99.99999% pure) copper - apparently the first use of this grade of copper in a cartridge. You also get a high quality set of mounting tools and accessories and the most ostentatious packaging in the business.

The *MC5000's* body is made of sintered aluminium oxide for hardness and rigidity, with the aim of locating the generator precisely and minimising resonances. Said generator uses neodymium magnets to obtain the highest possible output from the small coil. Although the stylus remains the same Ortofon Replicant 100 used on the *MC3000*, it is now bonded to a sapphire cantilever; sapphire (aluminium oxide) has very high stiffness and offers the possibility of reducing mechanical losses between the stylus and the generator.

On Test

An initial sample of the *MC5000* proved to be faulty (possibly not unrelated to its previous use at various hi-fi shows), and a replacement was supplied rather late in the day. Consequently, it had to be auditioned without the 50 hours of running in that Ortofon recommends. However, it must be said that after the experience of the *MC3000 Mk II* it was mildly disappointing. The latter cartridge has many excellent qualities, and although

the '5000 retains its terrific stereo imaging and some of the very fine detail resolution, the sound is not as clean overall. There is something about the *MC5000's* slightly insecure handling of transients that suggests it is only just tracking correctly, and the sound is also a little bright and forward.

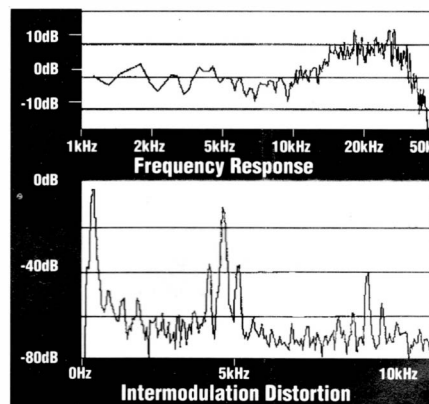
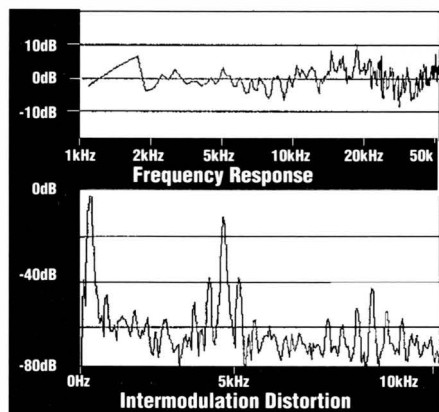
Ortofon recommends a tracking force of 2.5g for the *MC5000*, which implies low compliance. Indeed, the vertical compliance figure of 8mm/N is unusually low, and this could be related to the insecurity. If the cartridge is still not tracking 100 per cent perfectly at this downforce, one might reasonably question its effect on records. In addition, treble shows a clear rise above 12kHz, which ties in with the brightness. The data sheet with the cartridge claimed channel separation of 30dB, which I could not repeat; but performance in this area seems generally adequate. Tip resonance is as high as in any cartridge available, and distortion is excellent.

Conclusion

It may be that this sample required more running in than the few hours I was able to give it, or maybe it was another rogue sample, but as it stands it does not seem like the improvement over the *MC3000* that it should be. Recommendation withheld pending further investigation.

TEST RESULTS

Type, body mass	Moving-coil, 9.5g
Stylus type	Ortofon Replicant 100
Compliance, vert/lat	8/11 mm/N
Tracking force recommended/test	2.2-2.7/2.5g
Tracking ability, L/R	>80/>80µm
LF res., vert/lat	13Hz @ 10dB/11Hz @ 15dB
Output at 5cm/s	0.15mV
Channel balance	0.4dB
Separation at 1kHz	26dB
Separation broadband	Better than 20dB
Impedance	7Ω + 2.5µH
Tip resonance, damping	75kHz, moderate
Typical retail price	£1,500





GLOSSARY

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

AM: Amplitude modulated; see 'Medium Wave'.

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

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

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

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

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

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

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

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

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

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

BASS: Lower part of the frequency spectrum.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

FARAD: Measure of capacitance.

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

FARAD: Measure of capacitance.

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

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

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

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

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

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

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

HF: High frequency.

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

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

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

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

IEC: An international standards body.

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

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

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

KILO (k): prefix meaning one thousand.

LED: Light Emitting Diode; an indicator light.

LF: Low frequency.

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

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

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

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

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

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

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

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

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

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

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

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

magnetic coding on a tape.

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

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

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

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

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

NOISE: Random unwanted low level signals.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

THD: Total harmonic distortion.

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

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

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

TRANSIENT: Signal of very short duration.

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

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

ULTRASONIC: Frequencies above audibility, ie greater than 20kHz; also *supersonic*.

VERTICAL TRACKING ANGLE (VTA): The angle at which the plane of motivation of the stylus is set with respect to the vertical when viewed from a side elevation of the cartridge. Should match the 20° cutter standard.

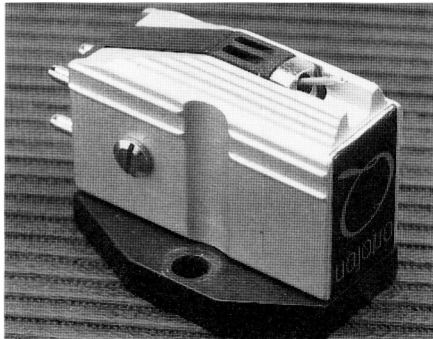
WEIGHTING: A factor or function that is applied to a measurement to increase its relevance and usefulness.

WOOFER: A drive unit that operates over the bass portion of the audio range.

WOW AND FLUTTER: Low and high frequency pitch variations (from poor tape transport of turntable platters with speed drift).

Ortofon Quartz

ORTOFON UK, HAYDEN HOUSE,
CHILTERN HILL, CHALFONT ST.
PETER, BUCKS SL9 9EW.
TEL: (0753) 889949



The *Quartz* is the cheapest in Ortofon's current 'Q' series of cartridges, the others being the *Quasar* and the *Quattro*. The three cartridges share a body design, although finish varies, and at the price of the *Quartz*, this body seems generously built indeed, made as it is from strong alloy. In contrast to its dearer relatives, the *Quartz* has a simple nude elliptical stylus, and it also has a different generator from the other two with a considerably higher output. Its internal resistance is higher too, but only slightly, and in power terms, its output is very high. Any moving coil input should be able to cope.

On Test

Having been impressed by the *Quasar*, I was even more taken with the *Quartz*; not that it is a better cartridge, but it is surprisingly close to its brother which is, after all, well over twice the price. To be sure, its assurance in tackling severe modulation is not as good as the best, and it can sound, if not actually ragged, then tending towards it, when the going gets tough. But that is the only drawback in what is essentially a very capable cartridge. At all but the very highest levels, it is clean and stable-sounding, perhaps a little bright but not annoyingly so, with very good detail and low distortion.

Measurements show that the *Quartz* is on the whole well behaved. The only exception is the frequency response, which has quite a severe lift centred around 20kHz. This matches the cartridge's slightly bright character, and suggests that it might not be an ideal match to bright arms and decks, where the tendency is likely to be much amplified. Channel balance is very good and separation excellent, while compliance is nicely symmetrical and a sensible value.

Recommended

Distortion seems pretty low.

Conclusion

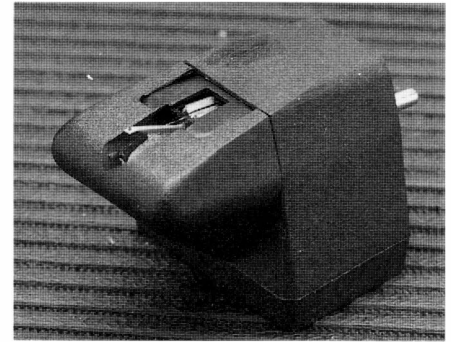
This is a very good cartridge for the price, capable of producing an impressively lifelike sound in a suitable arm/deck partnership. It is certainly worth considering alongside the established leaders at the price, and is Recommended.

TEST RESULTS

Type, body mass	Moving-coil, 10.2g
Stylus type	Nude Elliptical
Compliance, vert/lat	16/16 mm/N
Tracking force recommended/test	1.8-2.2/2.2g
Tracking ability, L/R	>80/>80µm
LF res., vert/lat	9Hz @ 10dB/9Hz @ 16dB
Output at 5cm/s	0.56mV
Channel balance	0.2dB
Separation at 1kHz	38dB
Separation broadband	Better than 21dB
Impedance	6Ω + 7µH
Tip resonance, damping	52kHz, moderate
Typical retail price	£120

Roksan Corus Blue

ROKSAN ENGINEERING LTD., 21
DDOLE ROAD, LLANDRINDOD
WELLS, POWYS LD1 6DF.
TEL: (0597) 4911



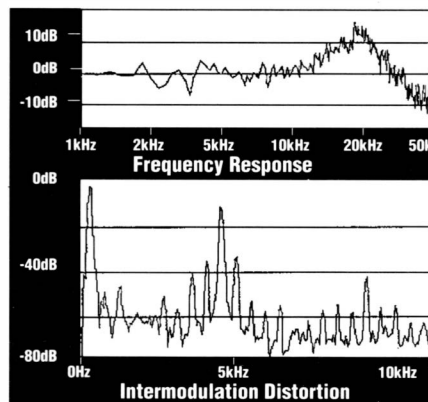
This is the cheaper of two moving magnet cartridges launched recently by Roksan. In an unusual move for the company - which has tended to plough its own furrow - the *Coruses* are based on the Goldring 1000-series cartridges, and are entirely built by Goldring to Roksan's specification.

External appearance makes the cartridge's origins obvious. It has the distinctive slanted sides and front of the Goldring 1012 (etc.), although the front bears Roksan's logo. The most obvious difference is in the upper half of the cartridge, which has been filled in where the Goldring original has a simple mounting plate, and has tapped inserts fitted so that the cartridge can be easily and securely fitted to the headshell. Another difference is that the tongue on the stylus assembly, which locates and stabilises the unit on the body, has been made much thicker (and therefore more rigid) to secure the stylus more positively on the body and reduce the level of vibration within it.

The generator is Goldring's normal moving magnet type, and the stylus is a Gyger III, as fitted to the Goldring 1012.

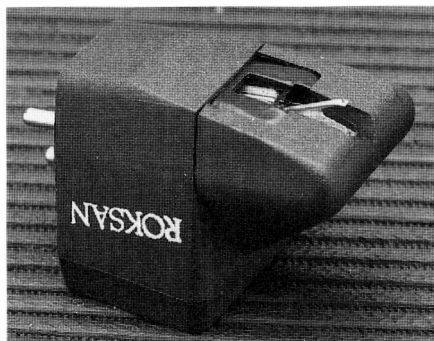
On Test

The obvious comparisons with this cartridge will be the Goldring versions and the *Corus Black*, and I found myself making similar comments about all five, in certain respects. There seems to be a family characteristic of quite lively and full-bodied sound, but with a degree of coarseness and upper-midrange/treble grain which varies a little between models. Detail is quite good but not outstanding,



Roksan Corus Black

ROKSAN ENGINEERING LTD., 21
DDOLE ROAD, LLANDRINDOD
WELLS, POWYS LD1 6DF.
TEL: (0597) 4911



and against tape the sound seemed rather bright and scratchy, and the musicians seemed a good deal further forward. However, the effect of this varies with the type of music, and in rock recordings it was less obtrusive; under these circumstances the strongest impression is of an energetic and punchy sound, though slightly lacking in subtlety.

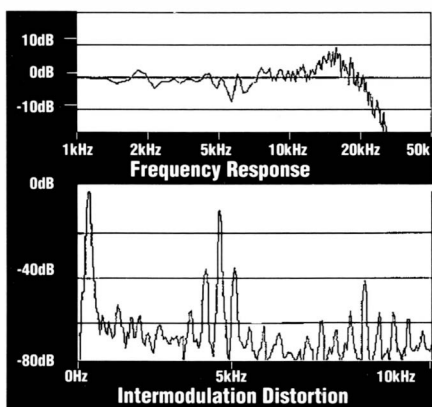
Measured parameters of this cartridge are not surprisingly very much like those of the Goldring. The basic resonance of the system is at about 24kHz, about average for a high quality moving-magnet cartridge but certainly low enough to make the cartridge audibly sensitive to loading (the standard 47k sounds OK, though 39k sounds fractionally smoother). Channel separation is rather weak, and compliance is unsymmetric, though it caused no audible problems.

Conclusion

The good qualities of this cartridge, especially its energy, can be found in the cheaper Goldring, while its lack of subtlety and fine detail grates slightly. It's not a bad cartridge, but not outstanding at the price.

TEST RESULTS

Type, body mass	Moving-magnet, 6.3g
Stylus type	Gyger III
Compliance, vert/lat	11/25 mm/N
Tracking force recommended/test	1.8-2.5/1.9g
Tracking ability, L/R	>80/>80µm
LF res., vert/lat	12Hz @ 10dB/8Hz @ 13dB
Output at 5cm/s	4.1mV
Channel balance	0.2dB
Separation at 1kHz	22dB
Separation broadband	Better than 20dB below 10kHz
Impedance	760Ω + 490µH
Load for flattest response	33kΩ + 300pF
Tip resonance, amplitude	24kHz, 11dB
Typical retail price	£60



Like its cheaper relative, the *Corus Blue*, this is a modified Goldring cartridge. It shares a body design with the *Blue*, including the tapped inserts. Roksan claims that the use of these, rather than Goldring's original flat mounting plate with bolts and nuts, gives a better bond to the headshell and less opportunity for the cartridge to flex - which makes sense.

Where the *Corus Blue* parallels the Goldring 1012 in having a Gyger III tip, the *Corus Black* has a Gyger II as in the 1022. In a technical note (written to accompany the *Shiraz* cartridge), Roksan points out that the basic elliptical stylus profile results in relatively low contact area on the record groove and therefore higher groove wall distortion. Given that any cartridge purchased today is likely to be playing an increasingly irreplaceable record collection, any measure that reduces the potential for record wear is to be welcomed!

As in the *Blue*, a standard Goldring generator is used. Both *Corus* cartridges are supplied in a neat wooden box with stainless steel cap bolts and an Allen key supplied.

On Test

This seemed to be all round the most satisfying member of the Goldring/Roksan family. It shares with the other members a capacity for lively and energetic reproduction, but adds a higher degree of detail recovery and subtlety than the others achieve. In loud passages, it can still become a little harsh and edgy, and it is not always absolutely precise on transients, but these effects are kept quite well under control. Bass weight is certainly

Recommended

very good, and in complex orchestral music it was always easy to identify individual instruments. Stereoseparation seemed very good.

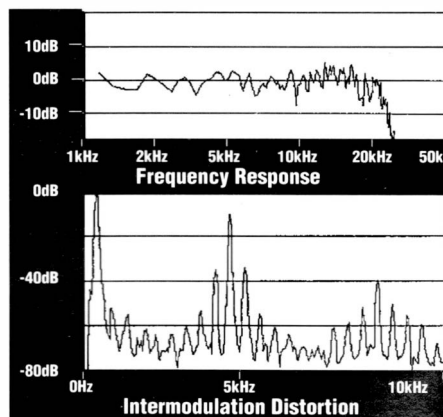
Measurements are very similar to those for the *Blue*, except for channel separation, which is considerably improved at lower frequencies (slightly worse above 5kHz). As with the *Blue*, compliance is considerably higher laterally than vertically, a fact which is also acknowledged by Roksan's data sheet. The frequency response into 47k lacks the *Blue*'s slight lift round 16kHz, which could tie in with the *Black*'s slightly cleaner sound.

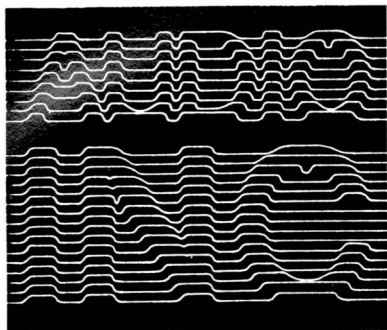
Conclusion

This seems to be considerably more successful than the *Blue*, trading on the strengths of the Goldring original while achieving a smoother sound overall than the *Blue*. Bearing in mind that moving coil cartridges at this price may require further expenditure on a step-up to work properly, this cartridge seems quite competitive and deserves Recommendation.

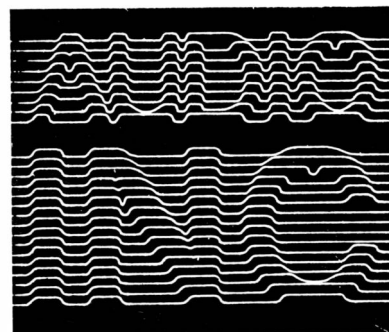
TEST RESULTS

Type, body mass	Moving-magnet, 6.2g
Stylus type	Gyger II
Compliance, vert/lat	10/25 mm/N
Tracking force recommended/test	1.8-2.5/1.9g
Tracking ability, L/R	>80/>80µm
LF res., vert/lat	13Hz @ 8dB/8Hz @ 13dB
Output at 5cm/s	4.2mV
Channel balance	0.4dB
Separation at 1kHz	31dB
Separation broadband	Better than 18dB to 10kHz
Impedance	770Ω + 490µH
Load for flattest response	47k + 270pF
Tip resonance, damping	23kHz, 9dB
Typical retail price	£100





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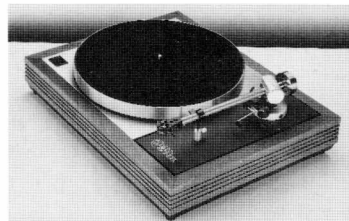
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Conclusions, Best Buys and Recommendations

Richard Black sums up the best of this month's batch of turntables, tonearms and cartridges.

Development of record players goes on unabated, and the variety of available models is as wide as ever. Value is also better than ever, with decent units starting around the £100 mark while 'entry-level high-end' decks can cost as little as £500 including a decent arm and cartridge. In fact, although no examples have been reviewed in this issue, record decks for sums as large as £10,000 have been positively proliferating recently. It still seems to be a good buyers' market. The same is by and large true of cartridges, especially as regards high-end examples, and while prices of many manufacturers' top models extend higher and higher into the thousands, quality continues to improve across the board.

Casting an eye across the decks, arms and cartridges reviewed in this issue, there is a healthy mix of product types from large and small companies, from the Dual CS505 (surely one of the most popular hi-fi products ever sold in this country, now in Mk 4 form) and the weird and wonderful Rational Audio, to the much more exotic Pink Triangle *Anniversary* and complete LP playing systems from Linn and Roksan. The middle market, around £400, seems conspicuous by its absence, but don't forget that products included here are only some of those which have been recently introduced or modified.

Best Buys and Recommendations

Starting from the bottom, the Dual CS503-2 seems to lack that manufacturer's usual spark of genius, but gains Recommendation on the grounds that it is acceptable, it is very cheap, and the most cursory inspection reveals that it is very good value for

money in terms of what you get - good construction, smart appearance, nice operation. Dual's good reputation for reliability is worth bearing in mind, too.

At only £20 more, the Dual CS505-4 seems to offer a large sonic advantage over its junior sibling. Construction might be dated, but appearance is smart and build quality is high. It has become almost customary to award this deck Best Buy status, but that doesn't influence the decision this time, which is . . . Best Buy.

Yet another £20 buys an Ariston *Pro*, a minimalist deck with maximum attention to sound-influencing qualities. It is unusually neutral and clear for its price bracket, and although simply made, is as neat as any; quite an achievement at the price, it is Best Buy material. Its nearest competitor here, the S.E.E. Revolver *Rebel* (£180), has many of the *Pro*'s qualities but failed quite to equal the latter in areas of clarity and subtlety, and there is also a slight question mark over manufacturing consistency (two bent motor shafts on three samples). Nevertheless, it is a competent and agreeable deck, it looks very smart whether in marbled finish or any other, and is Recommended.

The Rational Audio *Aura 01* (£175, power supply £14) is in a class of its own; a highly idiosyncratic deck with some outstandingly fine qualities, a serious flaw (rumble; under investigation by the manufacturer, we gather), and unique appearance. In the midrange and treble, this is one of the best decks available, and with lower rumble and some better isolation, it could be a truly astonishing performer. As it stands, Recommendation is appropriate.

At £300, the Alphason

Super Nova comes between real budget decks and the bottom of the high end. Sonically, it tends more towards the high end area, with good neutrality and pleasingly open sound. A small degree of bass 'thud' does not detract significantly, and the only point of concern was the seemingly slightly rough and ready standard of construction in places. That aside, it is a Recommendable product.

Pink neutrality

Jumping up to £620, we find the Pink Triangle *Export* embodying the basic Pink principles of great neutrality and clarity at a price which by current high end standards is commendably low. One of the most accurate decks around, the review sample was slightly compromised by a degree of motor breakthrough, but assuming that to be the exception (as experience suggests) the deck is excellent value and certainly Recommended.

The Kuzma *Stabi* deck (£900) and partnering *Stogi Reference* arm (£700) make an impressive couple, sonically no less than visually. Construction of the deck is absolutely first rate, and material value for money is simply far better than any similar deck made in this country could ever offer. The arm, too, is very well made, and sound quality of the pair is clear, open, refined, and highly insensitive to siting - just as well, given the deck's size and weight. Confident Recommendation.

Finally on the deck front, the Pink Triangle *Anniversary* (£1,175) is a stunningly accurate and neutral record player, producing quite outstanding results in every way from any record, right across the frequency band. All the usual pitfalls of record

decks - poor soundstaging, bass waffle, shoutiness, loss of ambient information - are avoided, and the result is a degree of realism that is nothing short of dramatic. Recommended, vigorously.

The Roksan *Tabriz* arm at £150 appears to offer an excellent value alternative to the *Artemiz* for owners of Roksan's *Xerxes* turntable; more than that, it seems like a very capable arm altogether, and I see no reason why it shouldn't suit a wide variety of decks. Its Rega-compatible mounting makes it easy to fit, with matching arm boards available for many decks, and it is Recommended.

Although the Linn *LP12* no longer seems to lead the field, the *Ekos* arm appears to be an excellent piece of work which does its job well. As with the *Tabriz*, there is no reason why it should be used exclusively on its manufacturer's decks. Its perceived material value for money may not be high compared with a whole record player, but a good arm is a lot of work to make, and Recommendation is not out of place.

As for cartridges, at £100, the Roksan *Corus Black* is likely to prove better suited to some tastes and systems than others, but wins Recommendation for its lively and engaging sound. The £120 Ortofon *Quartz* has some of the same qualities, and is impressively detailed for its price. Also Recommended. Only just above this in price, the Glanz *GMC20E* (£129) is a smooth and sweet-sounding transducer with very good tracking, which offers fine value. Recommended.

Finally, the Dynavector *17D2* (£280) is a true high-end audiophile cartridge for a remarkably modest price. It is highly detailed, open and clear, and in a high quality arm is capable of superb results. Recommended.

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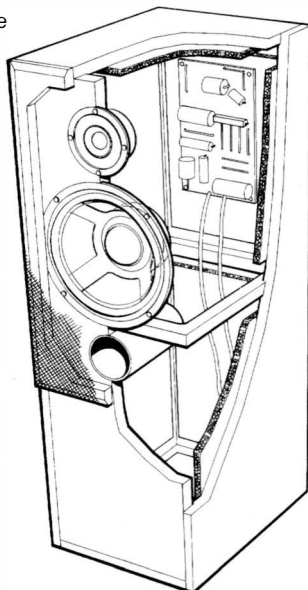
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TechTalk

Each Hi-Fi Choice review contains a test results table and graphs. On this page Richard Black explains the technical test procedures used in his reviews of turntables, tonearms and cartridges and outlines what the findings reveal about the products.

Measurements simply provide a kind of shorthand notation to describe a product, highlighting, one hopes, areas of strength or weakness and illustrating points of commonality between products. They can be useful to the reviewer, the manufacturer and the purchaser; the reviewer, because they enable him more readily to identify the precise nature and cause of certain flaws (or strengths) in a product; the manufacturer, because he may wish to take some action on the basis of a measurement, and to the purchaser, because he may come to associate certain measurements with certain sounds and thus be able to speed up the selection process by quickly homing in on products of which he is likely to approve. And, after all, measurements can be interesting from an intellectual point of view.

Trust your ears

But don't take measurements as gospel. They can never show everything, and in reviews such as these they can really only cover the very basics of the subject. Trust your ears first, and associate the measurements with what you hear rather than the other way round. One feature of measurements is that they require a lot of interpretation to be valid, and even simple things like a wow and flutter figure hide a lot of variables (what frequency components does the figure include? How does it vary with mains voltage and room temperature?).

The measurements here follow the same patterns as those in issues 79, 84 and 85, the only difference being that acoustic breakthrough graphs for turntables have been replaced by vibration breakthrough, which is in almost every installation a

greater problem. There is also one change in the presentation of the disc impulse test results, from a linear frequency axis last time to a logarithmic axis this time, which doesn't show the differences between decks quite so strikingly at first glance but gives more detail on low frequency behaviour.

The most important 'measurements' are those done with our ears, and as last year I have included these with lab measurements under a single 'On Test' heading. In order to give at least some continuity to the reviews, I used every product with the same amplifier/speaker chain, and with the same selection of records - not exclusively so, but as the core of more general listening. For reference, the system consisted of a Moth 30-series phono stage, Harman/Kardon HK6500 amplifier and Townshend Glastonbury loudspeakers, with Sumo, EAR and Ortofon amplifiers and ATC loudspeakers taking turns in addition. Decks supplied with a cartridge were auditioned with it left in place, while I also used a Glanz MFG310-LX on the cheaper decks and the excellent Shure VST V on pricier ones. All cartridges were tested using the SME 309 arm.

Again as last year, I also used comparison with second-generation master tapes as the critical arbiter of accuracy. The tapes (courtesy of Altarus Records Ltd) were of recordings which I helped make, and I can therefore vouch for their quality and also for the absence of any tampering at any stage of the process. The records were cut on the EAR-based cutting system at The Exchange, and the tape replay machine was an EAR-modified Revox G36.

Tape comparison is a useful way of eliminating



The SME 309 tonearm - a useful tool for assessing phono cartridges of all types.

some of the unknowns involved in record player reviewing, but it can't be all things to all people. There may be differences, but it is still a moot point how important those differences are to different people. At least it gives the reviewer something concrete to write! It also gives a fixed point of reference, which in its way is just as important, even if one doesn't assume that the reference is 'perfect'. Still, given that decks are imperfect, general 'listenability' is rather another matter, which is why tape comparison on its own would be almost useless, and why I used as many different records as possible overall.

Lab Tests

In the lab, the following tests were applied: Wow and flutter is a simple DIN-weighted figure; Speed was measured with a record playing; Rumble was measured using a Thorens rumble coupler (resolution about 80dB with my test set-up) - the figure quoted is DIN B-weighted while the graph is unweighted; Vibration breakthrough was measured by placing each deck on a standard Sound Organisation table, and applying a known impulse to the wooden top of the table, while the stylus rests on a stationary disc. This admittedly crude method is intended to give only an

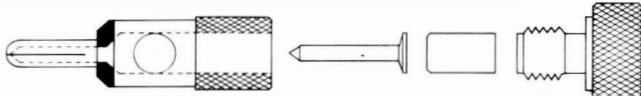
indication of vibration sensitivity, which is a difficult thing to define, let alone measure. Disc impulse measurement involved rolling a 3mm steel ball down a 45 degree incline on to a stationary record, landing 25mm from the stylus (the closest I could get it reliably). This is intended to simulate the effect of the stylus' reaction on the record, suitably magnified. Arm resonance plots use the same technique as disc impulse, but the ball strikes the headshell instead of the disc. As with all other graphs, this shows the spectrum of the signal which has been amplified by an RIAA phono amplifier.

For cartridges, the distortion (at +2dB) and frequency response plots were taken using a special test record. Frequency response is believed accurate to better than 1dB to 20kHz and 2dB to 50kHz. Output levels, tracking ability, channel balance and compliance were derived from measurements using the Ortofon Test Computer.

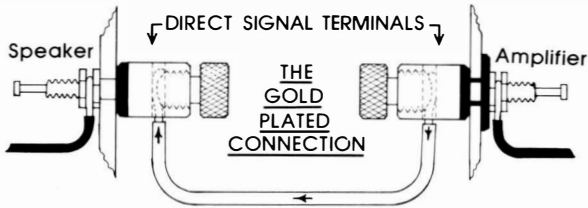
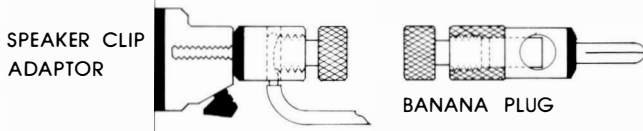
All the graphs for each parameter apply constant scales throughout the reviews, thus allowing quick comparison. Beware, however, of simply comparing levels; discrete resonance peaks on graphs may be more significant than a constant high level, e.g. in arm resonance plots.

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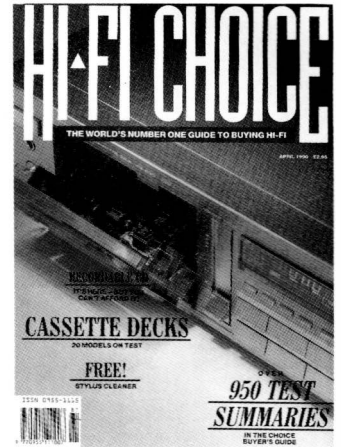
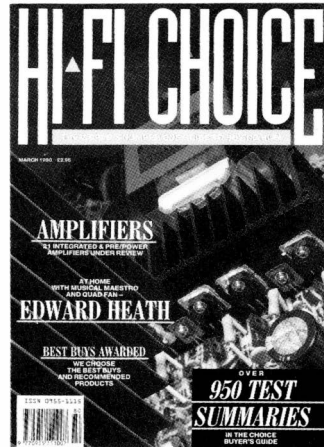
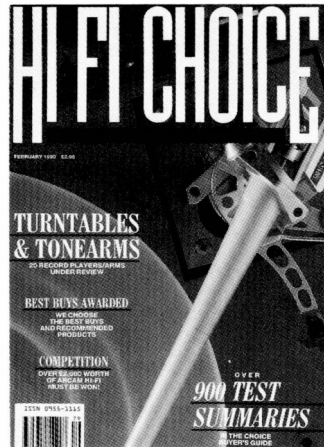
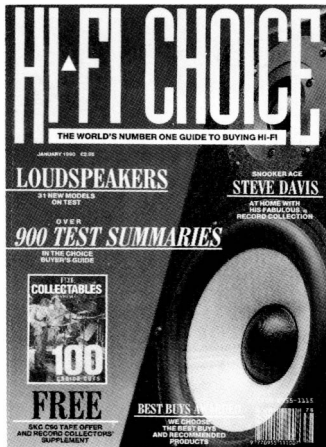
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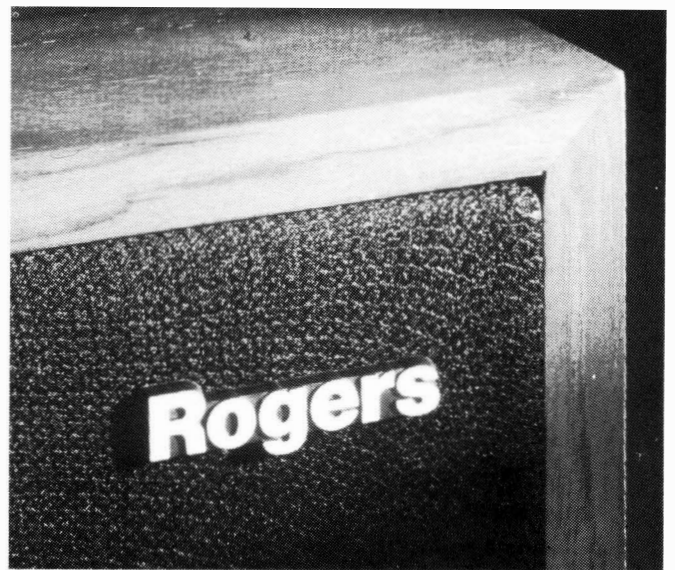
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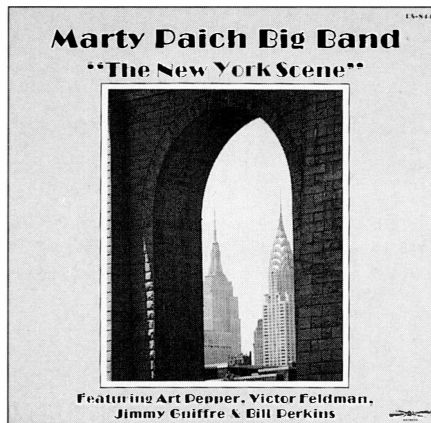
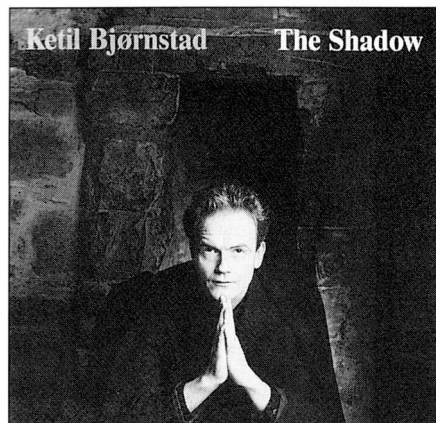
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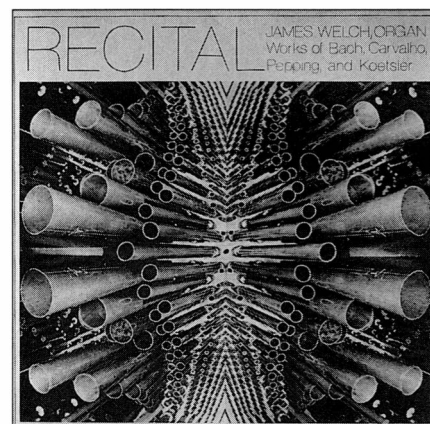
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AVON

PAUL GREEN HI-FI LTD, Kensington Showrooms, London Road, Bath. (0225) 316197. Linn, Musical Fidelity, Krell, A&R, Creek, Rogers, Quad. Cust. car park. Best selection in the West. **BADA**
RADFORD HI-FI, 52-54 Gloucester Rd, Bristol. (0272) 428247. Linn, Naim, Mission, Denon, NAD 3 demo rooms. Installation. Access, Visa credit. Service dept. **BADA**

BEDFORDSHIRE

HYPERTEC, 66-68 Saint Loyes St., Bedford. (0234) 325066. Pioneer Reference Point, Tannoy, Bang & Olufsen, Musical Fidelity, B&W, Rotel, Wharfedale, Dual, Marantz, Alphason. Demo facilities, Private demo room by appointment. Home trial facilities, Free installation, Service dept. Access, Visa, Hypertec, credit charge. 9.30-5.30 Mon-Sat, closed Thurs.

BERKSHIRE

B&B HI-FI, 11-12 Market Place, Reading, Berkshire, RG1 2EG. (0734) 583730. Aiwa, Denon, Kenwood, Mission, NAD, Panasonic, Pioneer, Rotel, Sony, Technics. Free installation, Service dept. Access, Visa, Credit facilities including interest free credit subject to status. 9.30-5.30, Sat 9-5.30. Also at:
Bracknell, Maiden Head, High Wycombe, Newbury.
NEWBURY AUDIO, 2 Weavers Walk, Northbrooke Street, Newbury, Berkshire RG13 1A1 (0635) 33929. 6 days 9.30-6.00. Linn, Naim, Roksan, Exposure, Creek, Epos, Royd, Denon, Nakamichi. Single speaker dem. room. Apts. necessary. Home trial facilities. Free installation. Service department. Late appointments. Access, Visa. Interest free credit subject to status. 6 days 9.30am-6.00pm
READING HI-FI CENTRE, 4 Queen's Walk, Reading RG1 7QF. (0734) 585463. 'The best equipment, advice and service from Berkshire's premier Hi-Fi emporium' **BADA**

BUCKINGHAMSHIRE

AUDIO INSIGHT LTD, 53 Wolverton Rd, Stony Stratford, Milton Keynes. (0908) 561551. Arcam, Audiolab, Heybrook, Ion, Linn, Meridian, Quad and more. Access, Visa. Finance. Dem. room etc. **BADA**

AYLESBURY HI FIDELITY, 98 Cambridge St, Aylesbury. (0296) 28790. Denon, Dual, Exposure, Heybrook, Marantz, Musical G-Fidelity, NAD, Roksan, Rotel, Systemdek. 2 Dem rooms, appointment reqd, Mon-Fri 10-6, Sat 9.30-5.30. Home trial, free installation, credit to £1,500. Access, Amex, Diner, Visa. Service dept.

TECHNOSOUND, 7 Graville Square, Willen Centre, G-Milton Keynes. (0908) 604949. Bang & Olufsen, Denon, Rotel, Technics, Yamaha and enthusiast hi-fi. Also at Luton and Dunstable.

CAMBRIDGESHIRE

AUDIO FILE, 2 Foundry Walk, Market Hill, St Ives, Cambridgeshire, (0480) 66123. Linn, Naim, Rega, Quad, Cyrus, Arcam, Musical Fidelity. 9.30am-6pm 6 days. 0% Credit.
CAM AUDIO, 110 Mill Road, Cambridge, CB1 2BD. (0223) 60442. Linn, Naim, Rega, Arcam, Micromega, Denon, Marantz, Nakamichi, Creek, JPW. 2 single speaker demo rooms, appointments preferred. Free installation. Access & Visa. Interest Free Credit. 9.30-6.00 Mon-Sat, closed Thurs.

CAMBRIDGE HI-FI, 1-3 Hawthorn Way, Chesterton, Cambs, CB4 1AT (0223) 67773. Mission-Cyrus, Rotel, Kenwood, Pioneer, Manticore, Revolver, Ariston, ITL, KEF, Meridian, Technics, Ruark. Monitor Audio. Single speaker dem room. Tues-Sat 9.30-5.30 closed Mon. Free installation. Service Dept. Visa. Access Credit facilities.

HYPERTEC, 86 Bridge St, Rivergate, Peterborough. (0733) 890533. Nakamichi, B&W, Denon, Marantz, Musical Fidelity, Rotel, Tannoy, Wharfedale, Linn, Alphason. Demo facilities including private demo room by appointment. Home trials, Free installation, Service dept. Access, Visa, Hypertec, Credit charge. 9.30-5.30 6 days, Thurs 9.30-8.00.

STEVE BOXSHALL AUDIO, 41 Victoria Rd, Cambridge CB4 3BW. (0223) 68305. 10-6 - 6 days. 3 dem rooms, home trial, apts. preferred. Free installation and service dept. Access, Visa & credit. **BADA**

STILTON AUDIO, 489 Lincoln Road, Peterborough PE1 2PE. (0733) 558838 897152. Linn, Mission, Arcam, Rotel, Teac, Meridian, TDL, Cambridge Audio, Musical Fidelity, Creek/Mordaunt Short. Home trial, free installation. G-Credit facilities. Access, Visa, Amex, Avco Finance. 10.00-18.00 Mon-Sat.

UNIVERSITY AUDIO, 1-2 Peas Hill, Cambridge. (0223) 354237. Quad,

Spendor, Arcam, Yamaha, Rotel, ATC, Marantz, Aragon, Rowland, Pioneer, Oracle. 2 dems, 1 single speaker. Home trial, free install, Service Dept. Visa, Access, Amex, Credit. 9-5.30.

CHESHIRE

ASTON AUDIO, 4 West St., Alderley Edge. (0625) 582704. Mission, Samsui, Deltac, Aura. Wide range of specialist audio, interest free credit. Visa, Access. Home trial. **BADA**

DOUG BRADY HI-FI, Kingsway Studios, Kingsway North, Warrington. (Padgate 0925) 828009. 'Largest choice of specialist Hi-Fi in N.W.' All credit cards. 3 Dem rooms. Open 6 days. **BADA**

CHRIS BROOKS HI-FI, 29 Gaskell St, Stockton Heath, Warrington. 0925 61212/3. Tues-Sat 10-6. 2 dem rooms. Credit facilities. All credit cards. Total absence of bull****. **BADA**

NEW DAWN HI-FI, 1-3 Castle St, Lower Bridge St, G-Chester. (0244) 24179. Linn, Quad, Technics, National Panasonic, Denon, Rotel, Dual, Meridian, Aiwa, Philips

SOUNDSTAGE, 21 Nantwich Road, Crewe, Cheshire CW2 6AF. (0270) 255488. Linn, Alphason, Creek, Onix, Royd, Epos, NAD, Denon, Mission, Rotel. Two dem rooms. Home trial. Free installation. All major credit cards. Credit facilities. 9.30-6, 6 days. Evening dems by appt. Part exchange welcome.

SWIFT OF WILMSLOW, 4-8 St Annes Parade, Wilmslow. (0625) 526213. Arcam, Denon, Kenwood, Musical Fidelity, Marantz, NAD, Cambridge. 2 dem rooms. Tues-Sat 9.15-6pm. No pressure! **BADA**

CLEVELAND

GILSON AUDIO, 172 Borough Road, Middlesbrough, Cleveland TS1 2EJ. (0642) 248793. Linn, Exposure, Quad, Mission, NAD, Rotel, Marantz, Denon, Audio Lab, Tannoy. Dem Room, apts. preferred. Home trial, free install. Service Dept. Access, Visa £1000 credit subject to status. 10-5 Mon-Sat.

CORNWALL

DEFINITIVE AUDIO, Treaskel Vogue, Saintday, Redroof, Cornwall, TR16 5NH. (0726) 844039. Voyd, Audio Innovations, Snell, Helius, Audio Note, System Dek, JPW, Deltac, Goldring, etc. Free Home Demo and Installations throughout Cornwall. Credit facilities. Open 7 days.

CUMBRIA

PETER TYSON, 6 Abbey St., Carlisle, Cumbria, CA3 8TX. "Cumbria's premiere hi-fi centre". Part exchange welcome. (0228) 46756. Linn, Musical Fidelity, Cyrus, Marantz, Denon, Philips, Nakamichi, Technics, Pioneer, Creek & more. Dem room. Dems without obligation. Home trial. Free Install. In-house service dept. Visa, Access, HP. 9-5.30. Closed Thursday.

DERBYSHIRE

ACTIVE AUDIO LTD., 12 Osmaston Rd, The Spot, Derby. (0332) 380385/385185. Arcam, Ariston, Celestion, Denon, Kef, Kef Reference, Cyrus, Marantz, Revox, Rotel, Rogers, etc, etc. Meridian, Musical Fidelity. Account and credit cards. Ring for opening times and free 'Fact Pack' The only BADA MEMBER in Derbyshire. **BADA**

DEVONSHIRE

CHELSTON HI-FI, 38 Walnut Road, Chelston, Torquay, Devon TQ2 6HS. Tel: (0803) 606863. Denon, Marantz, Rotel, Musical Fidelity, Acoustic Energy, NAD, Castle, Heybrook, Celestion, JPW etc. 2 dem rooms. Home trial. Free installation. Access, Visa, Amex, Diners, Hi-Fi Markets Chargecard. Credit facilities. 9.30-7.30 Mon-Fri, 9.30-6 Sat.

UPTON ELECTRONICS, 31 Torquay Road, Paignton, Devon. (0803) 551329. Pioneer, Denon, NVA, Musical Fidelity, Tannoy, Ruark, Arcam, Cambridge, Linn, Revolver etc. Single speaker dem room. Home dems. Apts. nec. for dems. Free install. Own service dept. Access, Visa, inst. cred. up to £1000. 9-5.30 Mon-Sat. 9-1 Weds.

ESSEX

1ST AND FOREMOST HI-FI CENTRE, 49-55 North Station Road, Colchester, Essex CO1 1RQ. Tel: (0206) 549842. Fax: (0206) 762900. Tlx: 987873 SAIDG. Trio Kenwood, JVC, Akai, Aiwa, Sony, Pioneer, Technics, Nakamichi, Panasonic, Revox, etc. Home trial, free installation G-Service dept. Instant credit available + all credit cards accepted Monday to Saturday 9am-6pm.

A.T. LABS, 442/4 Cranbrook Rd, Gants Hill, Ilford. (01) 518 0915. Mon-Sat, 10-6. Two dem rooms. Access, Visa. Sony Hi-Fi News Best Dealer '86 & '88 (National). **BADA**

BRENTWOOD MUSIC & HI-FI CENTRE, 2 Ingrave Rd, Brentwood. (0277) 221210. Alphason, Denon, Marantz, Quad, DNM, Rock/Glastonbury, E.A.R., Exposure, Kelvin Labs, Rotel, plus many more. Dem facilities, home trial, evening apts. (high end). Home installations. System problem diagnosis. Mon-Sat 9.30-5.30 (Thurs from 10am, Sat from 9am). Credit facilities. Access, Visa, Hi-Fi Markets Chargecard. Service facilities.

LYON AUDIO, 16 Peartree Business Centre, Peartree Road, Stanway, Colchester, Essex CO3 5JN. (0206) 560259. Quad, Rogers, Mission, Denon, Cyrus, Marantz, Audiolab, Rotel, NAD, Wharfedale, TDL. Dem facilities. Mon-Sat 9-6. Installations. Access, Visa, Instant credit. Service dept available.

RAYLEIGH HI-FI, 44a High Street, Rayleigh, Essex. (0268) 779762/747571. 216 Moulsham St, On-the-Parkway, Chelmsford. (0245) 265245

132-134 London Road, Southend-on-sea. (0702) 435255. A&R, Creek, Cyrus, Denon, Epos, Ion, Linn, Mission, Naim, Quad, Rega, Roksan, Rotel, Royd, 0% finance. **BADA**

THOMSONS, 2 High Street, Great Baddow, Chelmsford, Essex. Tel (0245) 71465. JVC, Kenwood, Mitsubishi, Toshiba, Tannoy, Mordaunt-Short, Acoustic Research, Wharfedale, Philips, Audio-Visual dealer. Home trial. Free installation. Service dept. Access, Visa, HP. Open 9-1, 2-5.30 Mon-Sat. Open 9-1 Wed.

GLOUCESTERSHIRE

AUDIO EXCELLENCE, 58 Bristol Road, Gloucester. (0452) 300046. Audio Research, Arcam, Mission, Quad, Linn, Naim, NAD, Yamaha and lots more. Closed Mon. **BADA**

ROBBS OF GLOUCESTER, 13/15 Worcester Street, Gloucester GL1 3AJ. (0452) 419777. Sony, Technics, Aiwa, Pioneer, Denon, Bose, Celestion, Dual, Kenwood, JVC. Largest selection in Gloucestershire. Dem facilities. Home trial. In house service dept. Access, Visa. 9-5.30 6 days.

HAMPSHIRE

HAMPSHIRE AUDIO Ltd, 2-12 Hursley Rd, Chandlers Ford. (0703) 252827/265232. Quality CD and analogue agencies. 5 dem studios Large free car park. **BADA**

HOPKINS HI-FI, 38/40 Fratton Rd, Portsmouth PO1 5BX. (0705) 822155. Technics, Quad, Monitor Audio, Tannoy, Denon, Nad, Heybrook, Onkyo, Dual, Marantz plus others. Dem facilities, appointments necessary. Access, Visa. 9-5.30. Open to 6 Thurs. Closed Wed. Service dept.

JEFFRIES HI-FI (PORTSMOUTH), 29 London Road, Portsmouth PO2 0BH. (0705) 663604. 2 dem rooms. Closed Mon. Late night Wed. Parking. Bus Route. Credit fac. **BADA**

MARTON MUSIC, 5 Ventnor Way, Fareham, Hants. (0329) 231773. AV International, Marantz, Kelvin Labs, Townshend Audio, TDL, Spendor, Grant Amplifiers, Audio Technica, Dynavec, Origin Live. Demos, by appointment. Home Trial Facilities, Free installation. Phone Anytime.

TRU-FI SOUND & VISION, 10-12 Grosvenor Road, Aldershot, Hants. Tel/Fax: (0252) 26390/332424. Aiwa, Audio Technica, B&W, Nakamichi, Mission, Mordaunt-Short, Nagaoka, Sony, Technics. Dem fac. Free install. Service dept. 0% finance. Access, Visa. Mon-Sat 9.30-6.

HEREFORDSHIRE

ENGLISH AUDIO, 95 Whitecross Road, Hereford HR4 0DG. (0432) 355081. Musical Fidelity, Arcam, Pink Triangle, Denon, Marantz, Rogers, Audio Innovations, Rotel, Nakamichi, Heybrook and others. Dem room. Home trial. Free install. Service dept. Access, Visa. Credit arranged. Open Mon-Sat 10am-6pm

HERTFORDSHIRE

ACOUSTIC ARTS LTD, 101 St Albans Rd, Watford, Herts. (0923) 245250. A&R, Audiolab, Audio Research, Apogee, Denon, Krell, Magnephaner, Meridian, Quad, Rogers, TLD. Mon-Sat 9.30-5.30. **BADA**

DARBYS OF ST. ALBANS, 6 Market Place, near the clock tower, St. Albans, Herts. (0727) 50961. Alphason, A&R Cambridge, B&W & Olufsen, Denon, JBL, Harman Kardon, Musical Fidelity, Quad, Ruark, Sony. Home demonstrations, free delivery and installation. Sales rental service. In house credit. Lombard, Tricity. Mon-Sat 9-6.

HYPERTEC, 6 Bancroft Road, Hitchin, Herts. (0462) 452248. B&W, Denon, Marantz, Musical Fidelity, Pioneer/Reference Point, Rotel, Tannoy, Wharfedale, Bang & Olufsen, Linn, Alphason. 2 dem rooms without appoint. Private dem room + evening dem by appt. Home trial. Free install. Service dept. Access, Visa, Hypertec credit charge. 9.30-5.30 6 days per week.

STUDIO 99, 82 High Street, Harpenden. (05827) 64246. Linn, Naim, Meridian, Rega, Nakamichi, Mission/Cyrus, Quad, Creek, KEF, Bang & Olufsen, Yamaha etc. Quiet single speaker dem room. Apts nec. Home

The Choice Dealer Directory

BRITISH AUDIO DEALERS ASSOCIATION

BADA
THE ULTIMATE IN
SOUND ADVICE

trial, free install. Service Dept. Visa/c, Access/c & finance terms. 9-5.30pm (Mon-Sat). Closed Weds. **BADA**
THE AUDIO FILE, 27 Hockerill St, Bishops Stortford, Herts CM23 2DW. (0279) 506576. 9.30-5.30 6 days. Dealer Of The Year 1988/89. Linn, Naim, Rega, Quad, Cyrus, Arcam, Musical Fidelity. 0% credit. **BADA**

KENT

HI-FI CENTRE LTD., 65 King Street, Ramsgate, 0843 590321. A.R., Aiwa, Ariston, Celestion, Goodmans, Kenwood, Marantz, NAD, Radford, Tannoy, etc. etc. + guaranteed recon. equip. Dem room + home dems. Hi-Fi repairs & servicing. Trade in & Cred facts. Mon-Sat (9.30-5.30)
JOHN MARLEY HI-FI CENTRES, 2 Station Rd, West Canterbury. (0227) 769329. Also at Dover - (0304) 207562. B&W, Heybrook, Magnum, M.Y.S.T., Nakamichi, Pink Triangle, Rotel, Sansui, Technics, Quad. Dem and home trial fac. Mon-Sat 9-5.30 closed Thurs. Free install. Credit to £1,000. Access, Visa, Creditcharge. Service Dept. **BADA**
PHOTOCRAFT HI-FI, 40 High St, Ashford. (0233) 624441. No. 1 in Kent for Linn, Naim, Rega, Roksan, Exposure, Onix, Epos, Royd, Creek. But before you choose equipment choose where to buy it. Dem room, appts. necessary. Home trial and free installation. Visa, Access, Bada Chargecard. 9-5.30 Mon-Fri (Wed & Sat to 5 only). Service Dept. **BADA**
PROGRESSIVE AUDIO, Rainham, Kent. (0634) 389004. Alphason, Audio Innovation, Conrad Johnson, Proac, Raymond Lumley, Rock Reference, Snell, TDL, Voyd and others. Dem by appt., please phone. Home trial. Free installation. Access, Visa. **BADA**
STANDENS, 92a High Street, Tonbridge, Kent, TN9 1AP. (0732) 353540 Pink Triangle, Kelvin Labs, TDL, Ruark, Marantz, Quad, Musical Fidelity, Micromega, NAD, Arcam. 2 Demo rooms. Home trials. Free installation and Service Dept. Access & Visa. HP terms, and Bada credit charge. 9.00-5.30 Mon-Sat except Wed 9.00-11.00. **BADA**
TONBRIDGE HI-FI, 96 Woodlands Road, Gillingham, Kent. (0634) 52858 Linn, Naim, Rega, Pink Triangle, Exposure, Creek, JRT, Sony, Ruark, KEF, Arcam etc. If your interest is music pay us a visit + find out what we do. **BADA**

TONBRIDGE HI-FI, 31 High Street, Tunbridge Wells, Kent, (0892) 24677. Linn, Naim, Rega, Pink Triangle, Exposure, Creek, JRT, Sony, Ruark, KEF, Arcam etc. If your interest is music pay us a visit + find out what we do. **BADA**

V J HI-FI, 29 Guildhall St., Folkestone. (0303) 56860. Mon-Sat 9-6. NAD, Yamaha, Marantz, Cambridge Audio, Denon, Kenwood, Rogers, Dual, Musical Fidelity, Quad, Dem and home trial facilities, free install, credit to £1000. Amex, Diners, Visa, Access. Service Dept. **BADA**
VJ HI-FI, 29 Guildhall St, Folkestone. (0303) 56860. Mon-Sat 9-6. NAD, Yamaha, Marantz, Cambridge Audio, Denon, Kenwood, Rogers, Dual, Musical Fidelity, Quad. Dem and home trial facilities, free installation, credit to £1000. Amex, Diners, Visa, Access. Service Dept. **BADA**
VJ HI-FI, 119 High Street, Margate. (0843) 226977. Mon-Sat 9-6. NAD, Yamaha, Marantz, Cambridge Audio, Denon, Kenwood, Rogers, Dual, Musical Fidelity, Pioneer. Dem and home trial facilities, free installation, credit to £1000. Amex, Diners, Visa, Access. Service Dept. **BADA**

LANCASHIRE

MONITOR SOUND, 54 Chapel St, Chorley, (02572) 71935. A&R, Dual, Mission, Quad, Rogers, Rotel, Spondor, Thorens, Nakamichi, Yamaha, etc. 2 dem rooms. Open Mon-Sat, closed Weds. Free installation. Credit to £1,000. Access, Visa. Service Dept. **BADA**
NORMAN AUDIO, 131 Friargate, Preston PR1 2EE. (0772) 53057. Fax 562731. Sony Hi-Fi News Area Winner. Aiwa, B&W Loudspeakers, Denon, Marantz, Mission Cyrus, Monitor Audio, Nakamichi, Quad, Roksan, Rotel & many others! 2 lux. dem. Inge. Home trial by arrangement. Free install. Service dept. Inst. cred. facts. with several companies. Most credit cards accepted, 6 days 9-5.30.

LEICESTERSHIRE

ALPHA AUDIO 1-3 Guildhall Lane, Leicester, LE1 5FQ. (0533) 530 330. Allison, AR, Denon, Luxman, Proton, Revox, Teac, Thorens, plus lots more. 3 demo rooms. Jovial, friendly, crazy staff. Relaxed atmosphere. Home trial facilities, free installation, service dept on premises. Credit facilities (sort of interest free). 10-5, closed Thurs afternoons (sometimes). MJS HI-FI, 80 Stapleton Lane, Barwell, Leicester LE9 8HE. (0455) 469777 The Rock, Audio Innovations, Kelvin Labs, Snell, Helius, Sugden, Ruark, Concordant, Valdi, JPW. Dem and home trial facilities. Mon-Sat 9.30-7.00. Free installation and service dept. Visa, Access **BADA**
THE LEICESTER HI-FI CO, 6 Silver Walk, St. Martins Square, Leicester LE1 5EW. (0533) 539753. Arcam, Creek, Marantz, Mission/Cyrus, Musical Fidelity, Nakamichi, QED HI-FI, Quad, Rogers, Roksan, "and oodles more", 2 dem rooms, home trial arranged, free installation service department, credit facilities, Hi-Fi Markets, Access, Visa, Diners, Amex 6 days 9.30-5.30. Leicestershire's only Bada member. **BADA**
SOUND ADVICE, Duke Street, Loughborough LE11 1ED. (0509) 218254 Arcam, Creek, Linn, Epos, Mission, Cyrus, Linn, Rega, Rotel, Yamaha etc. Dem facilities. Appts required. Free installation. Service dept. Credit facilities, Access, Visa, Amex. Mon-Sat 9.30-6.

LINCOLNSHIRE

BOSTON HI FI CENTRE, 65a Wide Bargate, John Adams Way, Boston, Lincs PE21 6SG. (0205) 365477. Quad, Nakamichi, Creek, Ariston, NAD, Denon, Marantz, Castle, Rotel, JPW, Rogers. Separate demo studio. Home trial, free installation, service department. Access, Visa, Hi-Fi

Markets Chargecard. Tues-Sat 9-5.30 pm.

LONDON

A.T.LABS, 190 West End Lane, London NW6. (071) 794 7848. Mon-Sat 10-6. 2 dem rooms. Access/Visa. Sony Hi-Fi News Best Dealer '86 & '88 (National). **BADA**
ANALOG AUDIO, 849 High Road, London N12. (081) 445 3267. Denon, Dual, JBL, NAD, Marantz, Rotel, Wharfedale, Cerwin Vega Teac, Mordaunt Short. Free install. Service dept. Instant credit up to £1000. Visa & Access. 9.30-6 6 days **BADA**
AUDIO CHOICES, 66 High Road, Leytonstone, Stratford E15. 081 534 6987. Marantz, A&R, Musical Fidelity, SD Acoustics, Rotel, Audio Technica, Ruark, Roksan, Moth, Nakamichi, B&W, Van den Hul, Dual, Pink Triangle, Alison Acoustics. Dem room, home dems within M25 area. 10.30-7.30. **BADA**
AUDIO VENUE, 24 Church Road, Crystal Palace, London SE19 2ET. (081) 771 7787. Linn, Naim, Nakamichi, Marantz, Dual. Credit available, 2 yr warranty, 2 Demo Rooms. Closed Weds. **BADA**
BILLY VEE SOUND SYSTEMS, 248 Lee High Road, London SE13. (081) 3185755. Linn, Rega, Naim, Nakamichi, Quad etc. 2 dem rooms. Int. free credit. Access, Visa. Closed Thurs. **BADA**
CORNFLAKE SHOP, 37 Windmill Street (just off Tottenham Court Road), London W1. (071) 631 0472. Mon-Sat 10-7. Rega, Roksan, Naim, Monitor Audio, Koetsu, Marantz, Yamaha, SME, DNM, Epos. Three dem rooms. Delivery and installation service. Credit facilities. Access, Visa. DOUG BRADY HI-FI, 14-18 Monmouth St, London WC2H 9HB. (071) 379 4010. Wide range of top specialist hi-fi from Britain, America and Japan. 3 Dem rooms. **BADA**
GRAHAM'S HI-FI, Canonbury Yard, 190a New North Rd, London N1 7BS. (071) 226 5500. Winner Sony/HFN Greater London Dealer Award 1986-1989. Linn, Naim, Rega etc. £300-£3,000-£13,000. **BADA**
JUST MUSIC, 52 Upper Tooting Road, London SW17 7PB. (081) 767 1233. Aiwa, Dual, Denon, Marantz, Quad, Rogers, Thorens, Musical Fidelity, Sugden, Heybrook and many more. Dem facilities. Appts can be arranged. Home trial. Free installation available. Access, Visa, Amex, Hi-Fi Markets, Chargecard, Creditcharge, finance arranged. 10am-7pm Mon-Thurs, 10-6 Fri & Sat **BADA**
KAMLA ELECTRONICS, 251 Tottenham Court Road, London W1. (071) 323 2747. Amadens, Ariston, BLQ, Gale, Incatech, JPW, Linn, Mordaunt Short, SME, Systemdek, Thorens, Townshend, Ruark, Wharfedale. **BADA**
KJ WEST ONE, 26 New Cavendish St, London W1M 7LH. (071) 486 8262/63. Fax (071) 487 3452. Arcam, Audio Research, Acoustic Research, Apogee, Arcam, Audiolab, Creek, Epos, Linn, Meridian, Musical Fidelity, Pink Triangle. Appts. nec. Home trial. Free installation. Service dept. major credit cards. Mon-Sat 10-6pm. (Late night Thursday til 7pm). **BADA**
SOUND ORGANISATION LONDON, 1 Cathedral Street, London SE1 9DE. 071 403 2255/3088. Linn, Rega, Roksan, Micromega, Radford, Rotel, Nakamichi, Onix, Creek, Naim, Exposure, Royd, Heybrook, Epos. Interesting new equipment always under evaluation. Single speaker listening room. Credit facilities. Appts. preferred, free install., Service Dept. Open Tues - Sat 10-6. Late dem. by appt. **BADA**
SOUND SENSE, 350 Edgware Road, London, W2 1DX. (071) 402 2100. Alpha, B&W, Nakamichi, Celestion, Cambridge Audio, Dual, Denon, Monitor Audio, Marantz NVA, Sony ES. Appointments preferred, Installations available. Access, Visa, Standard credit facilities. Mon-Sat 9.30-6.30. **BADA**
SOUTH LONDON HI-FI & VIDEO, 210 Brixton Hill, Steatham, SW2. (081) 674 4433/2033. Denon, Rotel, Yamaha, Kenwood, Tannoy, B&W, Nakamichi, Dual, Thorens, Technics, Monitor Audio. Single speaker demo room, Appts. not nec. Installation available, Service Dept. Access, Visa, Amex, Interest Free & Standard credit. 9-6, 6 days. **BADA**
STUDIO 99, 79-81 Fairfax Road, London NW6. (071) 624 8855. Linn, Naim, Meridian, Rega, Quad, Nakamichi, Mission/Cyrus, KEF, Bang & Olufsen, Yamaha, Creek etc. 2 single speaker dem rooms. Appts. nec. Home trials, free install. Service Dept. Visa/c, Access/c & finance terms. 10-7 (Mon-Fri), 10-6 (Sat). **BADA**
TIME AND TUNE, 218/220 Whitechape Road, London, E11BJ. (071) 247 0567/89. Akai, Aiwa, Bose, Hitachi, Kenwood, Mitsubishi, Panasonic, Philips, Pioneer, Sony, Technics. Home Trial Facilities, Free Installation, Service Dept., Instant High Purchase. 9.30am-6pm Mon-Fri, 9.30am-2pm Sun, Sat Closed. **BADA**

GREATER MANCHESTER

THE AUDIO COUNSEL, 12 Shaw Road, Oldham, Manchester OL1 3LQ. (061) 633 2602. Linn Naim Rega, Rotel, Arcam, Micromega, EPOS, Creek, Nakamichi, Denon. 2 dem. rooms. Free install. Visa, Access. Licensed credit brokers up to £1000 instant credit. 10.00-5.30 Tues, Weds, Sat; 10.00-7.30 Thurs, Fri. Closed Mon. **BADA**
CHRIS BROOKS AUDIO, 10-12 Oak Street, Hazel Grove, Stockport SK7 4EJ. (061) 419 9050. Tues-Sat 10-6, 2 dem rooms, credit facilities, All credit cards. Just like the Warrington Ship - total absence of bull. **BADA**
MURRAY HI-FI, 19 Middle Hillgate, Stockport. (061) 429 7666. Linn, Naim, Rega, Arcam, Yamaha, Royd, Epos, Creek, Nakamichi, Rotel. Full demo facilities, free installation & delivery, service dept., full 2yr guarantee on all products. Access, Visa, Lombard Tricity, Licensed credit broker. 10-6 Tue-Sat. **BADA**
SWIFT FIDELITY LTD, 12 Chapel Street, Cheadle. (061) 428 7222. Arcam, Denon, Kenwood, -arantz, Nad, Cyrus, Rotel, Pioneer, Mission, Tannoy. Demo Room. 9.30-6, Closed Wed.

MIDDLESEX

A.T.LABS, 159 Chase Side, Enfield, Middx. (01) 367 3132. Mon-Sat 10-6. Two dem rooms. Car Park. Access/Visa. Sony/Hi-Fi News Best Dealer '86 & '88 **BADA**
A.T. LABS, 173-175 Station Rd, Edgware, Middx. (01) 952 5535. Mon-Sat 10-6. 2 dem rooms. Access, Visa. Sony/Hi-Fi News Best Dealer '86 & '88 (National) **BADA**
HARROW AUDIO, 27 Springfield Rd, Harrow. (01) 863 0938. Mon-Sat 9.30-5.30. A&R, Audiolab, Cyrus, Denon, Dual, Heybrook, Linn, Monitor Audio, Musical Fidelity, Quad, Rotel, Tannoy etc. **BADA**
NORTHWOOD AUDIO, 126 Pinner Road, Northwood, Middlesex HA6 1BP. (0927) 420877. Exposure, Musical Fidelity, Pink Triangle, Manticore, Audio Innovations, Rotel, Ruad, Ruark, SD Acoustics, Moth. Dem. room. Home trial. Free Install. Access, Visa. 9-6 Mon-Sat. **BADA**
UXBRIDGE AUDIO LTD, 278 High St, Uxbridge, Middx UB8 1LZ. (0895) 30404 (Multi-line). A&R, AR, Ariston, Creek, Cyrus, Denon, Dual, JPW, KEF, Manticore, Meridian, NAD, Nakamichi, Quad, Rotel, Wharfedale, Yamaha, etc. 2 dem rooms. Mon-Sat 10-6. **BADA**

MERSEYSIDE

BETTER HI-FI, 16 Cook St, Liverpool L2 9RF. (051) 227 5007. Linn, Naim, Quad, Arcam, Audio Innovations, Threshold, Creek, Denon, Yamaha, Mordaunt Short. 3 dem rooms. Home trial. Free install. Service Dept. Access, Visa. Instant credit up to £1000, 0% on certain items. 9-5 Mon-Sat. **BADA**
W.A. BRADY & SON, 401 Smithdown Rd, Liverpool L15 3JJ. (051) 733 6859. Largest choice of specialist Hi-Fi in N.W. £100-£20K. All credit cards. 3 dem rooms. Closed Monday. **BADA**
IN CONCERT HI-FI, 144 Seaview Road, Wallasey, Wirral, Merseyside. (051) 630 5055. Denon, Kenwood, QED, G-Alexander, Spica, Shan Acoustics, Systemdek, Musical Fidelity, Audio Dimensions, Voyd, Single speaker dem room. Home trial free installation. 10-6 - closed Mon. Access Visa. **BADA**

NORFOLK

BASICALLY SOUND, The Old School, School Rd, Bracon Ash, Norwich NR14 8HE. (0508) 70829. Arcam, Linn, Naim, Denon, Spondor, Exposure, Audio Technica, Creek, Rega, Epos, etc. 2 comprehensive dem rooms. Home trial. Free installation. Visa, Access. HP facilities. Tues-Sat 9.30-1, 2-5.30. **BADA**
MARTINS HI-FI, 5 High Street, Kings Lynn. (0553) 761683. Established 1968. **BADA**
MARTINS HI-FI, 85/91 Ber Street, Norwich. (0603) 627010. Established 1968. **BADA**
SOUND APPROACH, 161 Unithank Road, Norwich. (0603) 622833. Kuzma, Ariston, Castle, Denon, Exposure, Ion, Royd, NVA, Roksan, Ruark, etc. etc. Dem and home trial facilities. Mon-Sat 9-6.30. Free installation. Credit to £1,500. Visa, Access, Diners Club. Service Dept. **BADA**

NORTHAMPTONSHIRE

CLASSIC HI-FI + VIDEO, School Lane, Kettering, Northants. (0536) 515766. Rotel Musical Fidelity, Wharfedale, Monitor Audio, Yamaha, JBL, Dual, Marantz, Kenwood, Kef, Celestion, and many more. Home trial, free instal, service dept. Access, Visa, credit facts. 9.30-5.30pm. **BADA**
THE AUDIO SHOP, Coffee Tavern Court, High St, Rushden. (0933) 56651. Audio Technica, Denon, Goodmans, Rotel, Tannoy, Ion Systems, Thorens, Gale, BLQ, Royd. Dem room. Home trial and free installation. Mon-Sat 9.30-5.30 (Thurs 9.30-2). Service dept. **BADA**

NOTTINGHAMSHIRE

CHANTRY AUDIO, Chantry Walk, 18a Eldon Street, Tuxford, Newark, Notts NG22 0LH. (0777) 870372. Pink Triangle, Royd, JPW, Rotel, S.D. Acoustics, NVA, Michell, Art Audio (valve), Kelvin Labs, Sumo, + much more. 2 Dem. Rooms. Appts preferred. Home trial, free installation. Access, Visa + credit facilities and mail order. Mon-Fri 10am-4.30pm. Sat 9.30-5.30. Sun home dem by appt. Closed Weds. **BADA**
DEFINITIVE AUDIO. (0602) 813562. Voyd, Audio Innovations, Snell, Helius, Systemdek, Revox, Deltac, JPW, Pirate, Loewe Audio Visual plus more. Home dems throughout Notts and E. Mids. Free install. 10-7, 7 days. Tel: (0602) 813562 for further info appt

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ALTERNATIVE AUDIO Ltd, 93-95 Hobs Moat Rd, Solihull. (021) 742 0254 (sales), 0248 (service). The widest range of quality hi-fi and CD in the West Midlands. Tues-Sat 10-6. **BADA**
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BRIDGE HI-FI, 3 Tudor House, Bridge St, Walsall. (0922) 640456. NAD, Dual, Yamaha, Kenwood, Technics, Pioneer, Mission, Celestion, Denon, Mordaunt Short. Appts required. Home trial & free install. Access, Visa, Diners, Amex. Credit to £1,000. 9.15-5.30 Mon-Sat. Service Dept. **BADA**
FIVEWAYS HI-FIDELITY LTD, 12 Islington Row, Edgbaston, Birmingham. (021) 4550667. Alpha, Arcam, Denon, Meridian, Musical Fidelity, **BADA**

Quad, Revex, Spondor, TDL, Thorens, etc. Dem facilities. Tues-Sat 9.30-6. Free installation. Access, Visa. Service Dept
FRANK HARVEY HI-FI EXCELLENCE, 163 Medieval Spon Street, Coventry. (0203) 525200. All major agencies. Free inst. Service dept. Part ex. 3 dem rooms. Mon-sat 9.30-5.30. Wed 'til 8pm

BADA
GRIFIN AUDIO LTD, 94 Bristol Street, Birmingham. (021) 692 1359/
(021) 622 2230. Castle, Creek, Cyrus, Denon, Linn, Marantz, Naim, Quad, Rega, Rotel. Tues-Sat 10-6.

BADA
HORNTON ELECTRONICS (1987) LTD, 8-9 Lower Temple St, Birmingham B2 4JD. (021) 643 0972. Aiwa, Acoustic Research, Denon, Marantz, Mordaunt Short, JVC, Mission, Sony, Technics, Wharfedale. Credit to £1000. Access, Visa. 9-5.30 Mon-Sat. Service dept.

MUSICAL APPROACH, 37 High Street, Aldridge, Walsall, W. Mids. (0922) 57926. Linn products, Arcam, Creek, NVA, Revolver, Onix, Epos, Marantz, Rotel, Quad & more. Dem facts. Home trial. Service dept. Credit facts available. Access, Visa. 9.30-5.30 Mon-Sat. 9.30-1 on Thurs.

NAAM HI FI VISION, 122-123 New Street, Birmingham, 021 633 4944. Pioneer, Akai, Aiwa, Panasonic, Toshiba, Hitachi, Bose, Wharfedale, Sony. Demo facilities available, appointments preferred. Access, Visa, 10 month interest, free credit, Amex, Lombard Tricity Creditcharge. Mon-Sat 9-6.00.

OXFORDSHIRE

ASTLEY AUDIO LTD, 3 Marketplace, Wallingford. (0491) 39305/34349 Technics, Panasonic, Pioneer, Kenwood, Sony, Yamaha, Denon, Dual, Mission, Tannoy. Home trial, free installation. Service dept. Access, Visa, Amex, Diners. Instant credit. Tue-Fri 9-5.30, Sat 9-5. Records & CDs stocked.

HORNS OF OXFORD LTD, 6 South Parade, Summertown, Oxford. (0865) 511241. Alphason, Ariston, B&W, Celestion, Marantz, Nakamichi, Pink Triangle, Quad, Sony, Technics. Free installation. Service dept. Access, Visa. 9-5.30. Closed Thurs.

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OXFORD AUDIO CONSULTANTS LTD, Cantay Hse, Park End Place, Oxford OX1 1JE. (0865) 790879. Oxford Acoustics, Audio Research, Krell, Magnephanar, Apogee, Aragon, Stax, Marantz, Wharfedale, Cambridge Audio. Home trial and free installation. Instant Credit. Access, Amex, Visa. 10-6 Tues-Sat. Service dept.

WITNEY AUDIO VISUAL, 28 High St, Witney, Oxford. (0993) 702414. Aiwa, Akai, AR, Bose, B&W, Cambridge, Dual, Mordaunt-Short, NAD, Onkyo, Pioneer, Roberts, Sony & Sony ES, Tannoy, Wharfedale, Yamaha, Reference Point Dealer. Dem facilities. Mon-Sat 9-5.30. Free installation, credit to £1,000. Access, Visa. Service dept.

SHROPSHIRE

AVON HI-FI, 12 Barker Street, Shrewsbury, Shropshire SY1 1QJ. (0743) 55166. NAD, Quad, B&W, Arcam, Kenwood, Aiwa, Bose, Nakamichi, Revolver, Onkyo. Dem. room. Home trial. Free Install. Service dept. Access, Visa. £1000 instant credit. Mon, Tues, Wed, Fri, Sat. 9-5.30.

CREATIVE AUDIO, 9 Dogpole, Shrewsbury. (0743) 241924. Linn, Naim, Roksan, Mission, Arcam, Rogers, Denon, Marantz, Rotel, Celestion, etc. Dem room. Home trial and free installation. Credit to £1000. Access, Visa. Tues-Sat 9.30-5.30. Service dept.

SOMERSET

WATTS RADIO – the engineers, Jim Badman, 1 West Street, Somerton. (0458) 72440. Castle, Dual, Denon, KEF, Mordaunt-Short, Ortofon, Quad, Rogers, Thorens, Yamaha. Dem and home trial facilities. Mon-Sat 9-1, 2-5.30, Wed 9-1. Free installation. Credit to £1,000. Access, Visa. Service dept.

STAFFORDSHIRE

ACTIVE AUDIO, 29 Market Street, Tamworth, Staffordshire. (0827) 53355 Arcam, Ariston, Celestion, Denon, Heybrook, Kef, Cyrus, Musical Fidelity, Marantz, Revox, Rotel, Rogers, etc. etc. The only BADA Member in Staffordshire. Full dem. & home trial facts. Account and credit cards. Ring for opening times and free 'Fact Pack'.

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INTERSOUNDS, 62 Bennett Precinct, Longton, Stoke on Trent. (0782) 336233. Arcam, Denon, Dual, Mission, Musical Fidelity, NAD, Nakamichi, Revolver, Rotel, Systemdek etc. G.000 8 different speaker manufacturers. 2 dem rooms. Free install. In-house Service Dept. Access, Visa. £1000 credit subject to status. 9.30-5.30 Mon-Sat, Closed Thurs.

MUSICAL APPROACH, 137A Newport Road, Stafford (above Royal London Insurance). (0785) 55154. Linn Products, Arcam, Creek, NVA, Revolver, Audiotec, Onix, Epos, Marantz, Rotel and more. Home trial. Free installation. Service dept. Credit facilities available. Access, Visa. 9.30-5.30 Mon-Sat.

SUFFOLK

EASTERN AUDIO 41 Bramford Rd Ipswich. (0473) 217217. Quad Audio Lab Denon Dual Marantz Mission NAD Nakamichi Technics Arcam. Mon-Sat 9.30-6

THE STEREO SHOP, 94 Norwich Road, Ipswich, Suffolk. (0743) 233832. Linn, Exposure, Musicality Fidelity, Creek, Epos, Monitor Audio, Mordaunt Short, Marantz, Rotel, Philips, NAD. 2 Single speaker listening rooms. Multi rooms specialities. Free installations. Service dept. Plus 3 year guarantee. Access & Visa. Licensed credit broker. 10.00-6.00 Tue-Sat, Thurs 10.00-8.00 (by appointment)

SURREY

AUDIO INC, 44 Walton Road, East Molesey, Surrey, KT8 0DQ. (081) 941 4234. Acoustic Energy, Conrad, Johnson, JA Michell, Proac, Croft, VPI, Thorens, Pink Triangle, Rotel, Luxman. Single speaker demo room. Home trial facilities. Free installation. Access, Visa. Interest Free Credit on some items. Standard credit terms. 10-6 Mon-Sat, 10-8 Thurs, 10-4 Sun.

DATASOUND, 23 South Street, Dorking, Surrey RH4 2JZ. (0306) 882897. Arcam, Celestion, Denon, Dual, Marantz, Mission, Musical Fidelity, NAD, Rotel, Tannoy. Dedicated listening room. Free Install. Service dept. Up to £1000 instant credit subject to status. 9.30-5.30 6 days.

PJ HI-FI – the Hi-Fi Shop, 3 Bridge Street, Guildford, Surrey GU1 4RY. Tel: (0483) 504801. 9-6 Mon-Sat. Linn, Meridian, Creek, Arcam, Quad, Revox, Musical Fidelity, Rotel, NAD, Nakamichi, Marantz.

BADA
ROGERS HI-FI, 13 Bridge Street, Guildford (0483) 61049. Aiwa, Denon, Dual, JPW, Marantz, Monitor Audio, Philips, Pioneer, Tannoy, Trio-Kenwood. Mon-Sat 9.30-6. Dem. facilities. Instant Credit. Access, Visa. Service dept

SOUNDS EXCLUSIVE, 1 Kent House, High Street, Cranleigh, Surrey GU6 8AU. (0483) 268185. Marantz, Sumo, QED, Michell, Alphason, SME, Ortofon, Finestra, Proac, Bose. Home trial. Dem. a pleasure. Appts. preferred. Service Dept. Free install. Access, Barclaycard.

SPALDINGS HI-FI, 352-4 Lower Addiscombe Rd, Croydon, Surrey. (01) 654 1231. 3 dem rooms + home dem. Free installation, credit. Mon-Sat 9-6, Tues to 8. Closed Wed. Service dept.

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SURBITON PARK RADIO, 48 Surbiton Rd, Kingston-Upon-Thames, Surrey. (01) 546 5549. Quad, Dual, Denon, Kenwood, Nakamichi, Rotel, Pioneer, QED, B&W, Tannoy. Dem and home trial facilities. Access, Visa. 9.30-5.00 Tues-Sat. Service dept.

TRU-FI SOUND AND VISION, 2 Central Parade, Redhill, Surrey. (0737) 767404/766128. Aiwa, Audio Technica, B&W, Nakamichi, Mission, Mordaunt-Short, Nakoaka, Sony, Technics. Dem. facilities. Free installation. Service dept. 0% finance. Access, Visa. Mon-Sat 9.30-6.

TRU-FI SOUND & VISION, 10 Church St, Leatherhead, Surrey. (0372) 378780. Sony, Technics, Panasonic, Mitsubishi, Ferguson, Aiwa, Pioneer, Sanyo, B&W, Mission. Free installation. Credit facilities. Access, Visa. 9.15-5.30 Mon-Sat. Closed Wed. Service dept.

UNILET HI-FI, 35 High St, New Malden, Surrey KT3 4BY. (01) 942 9567. Kef, Mission, Musical Fidelity, NAD, Nakamichi, Quad, Rotel, Tannoy. Dem. Amex, Access, Visa, etc.

SUSSEX (EAST)

DEFINITIVE AUDIO BRIGHTON, 8 Dyke Road Mews, 74-76 Dyke Road, Brighton BN1 3JD. (0273) 208649. Voyd, Systemdek, Audio Innovations, Heliuss, Audionote, JPW, Snell, Pirate Stands, Goldring etc. Home dems throughout Sussex. Credit facilities. Visa

HASTINGS HI-FI, 33-35 Western Road, St. Leonards, E. Sussex TN37 6DJ. (0424) 442975. Linn, Musical Fidelity, Quad, Nakamichi, Arcam, Celestion, NAD, Denon, Yamaha, Tannoy. 2 listening rooms. Home trial. Free installation. Service dept. All credit cards welcome. Instant credit up to £1,000, written details on request. 9-6pm Mon-Sat.

JEFFRIES HI-FI, 69 London Rd, Brighton, East Sussex. (0273) 609 431. 2 dem rooms, closed Mon, late night Wed. Parking, bus route. Credit facilities.

BADA
JEFFRIES HI-FI, 4 Albert Parade, Green St, Eastbourne, East Sussex. (0323) 31336. 2 dem rooms, closed Mon. Late night Wed. Parking, bus route. Credit facts.

BADA
LASER SOUND & VISION, 72 Terminus Road, Eastbourne, East Sussex BN21 3LX. (0323) 640911. Marantz, Cambridge, Kenwood, Denon, Rotel, Infinity, Tannoy, Michell, KEF, Heco etc. Dem room. Home trial. Free installation. Service dept. Visa, Access. 9am-6pm Mon-Sat.

SUSSEX (WEST)

BOWERS AND WILKINS Ltd, 1 Becket Buildings, Littlehampton Rd, Worthing. (0903) 64141. B&W, Nakamichi, Castle, Denon, Dual, JVC, Mordaunt-Short, Philips, Quad, Sony, Technics. 3 dem rooms. Mon-Sat 9-5.30, Weds 9-1. Home trial facilities, free installation, credit to £1,000. Access, Visa. Service dept.

CHICHESTER HI-FI, 7 St Pancras, Chichester, W. Sussex PO19 1SJ. Tel: (0243) 776402. Linn, Naim, Rega, Creek, Nakamichi, A&R, Denon, Roksan etc. Tues-Sat, 10-1, 2-5.15 (closed Mon)

BADA
MALCOLM AUDIO 12 South Street, Chichester, W. Sussex. (0243) 787562. Sony, Technics, Denon, Yamaha, Sherwood, Mordaunt Short, Wharfedale, Allison, Dual, NAD. Appointments necessary. Home Trial Facilities, Free Installation, Service Dept. Access, Visa. 9.15-5. Mon-Sat.

TYNE & WEAR

BILL HUTCHINSON LTD., 87A Clayton Street, Newcastle-Upon-Tyne. Tel: 091 230 3600. A.R., Aiwa, Denon, Dual, JVC, Mission, Mordaunt-Short, Omar, Technics, Yamaha, etc. Demonstration facilities, free installation, service department. Instant credit. Access, Visa. Mon-Sat 10-6. RED RADIO SHOP AND HI-FI CENTRE, 11 Olive St, (Off Park Lane) Sunderland. (091 567) 2087. Castle, Denon, Bose, JVC, Kenwood, Mordaunt-Short, Michell, Teac, Tannoy, Shure. Dem room, large with comparator facility. Free install. Service dept. Interest free credit and nodeposit interest free credit. 9am-5.30pm daily.

WARWICKSHIRE

NAAM HI-FI VISION, 78 Lower Precinct, Coventry, CV1 1DX. (0203) 632086. Technics, Pioneer, Kenwood, AR, Akai, Aiwa, Panasonic, Toshiba, Waledale, KEF. Demo Facilities. Access, Visa. Amex, Lombard Tricity credit charge. 9.0-6.00 Mon-Sat.

WORCESTERSHIRE

WEST MIDLANDS AUDIO, 158 Ombersley Road, Worcester, WR3 7HA. (0905) 58046. Linn, Naim, Rega, Absolute Sounds, Meridian, Mission, Arcam, Ion Systems, Roksan. 3 dem. rms. for budget. High end & Audio Visual. Appt. nec. Home trials, Free Install. Service Dept. Access, Visa, Amex, Diners, Lombard/Hitachi. Mon-Fri 9.30-8.30 by appt. Sat 9-5.30.

YORKSHIRE (NORTH)

ELITE HI-FI, 178 Kings Road, Harrogate HG1 5JG (0423) 521 831. Voyd, Valdi, Avalon, Systemdek, Heliuss, Audionote, Goldring, Audio Innovations, Sugden, Marantz. Mon-Sat 9-5.30. Free installation. Service dept.

SCARBOROUGH HI-FI CENTRE, 53 Dean Road, Scarborough YO12 7SN. (0723) 374547. Cambridge Audio, Rotel, QED, Denon, Nad (incl. Monitor series), Thorens, Onkyo, Tannoy, Marantz, Ruark. Dem Room. Appts preferred. Home trial facilities. Mail order and part exchange. Visa, Access, Diners. Hi-Fi Markets Chargecard facilities. Open 10-6 Mon-Sat.

SOUND ORGANISATION YORK, 16 Gillygate, York YO3 7EQ. Tel: (0904) 627108. Linn, Naim, Rega, Roksan, Sony, Arcam, Mission, Denon, Ion, Rotel. 2 single speaker dem rooms. Appts. preferred. Home trial. Free installation. Service dept. Access, Visa. Instant free credit available. 10am-6pm Tues-Sat. Sony dealer. Award nominated 86, 87, 88

YORKSHIRE (SOUTH)

MOORGATE ACOUSTICS, 184 Fitzwilliam St., Sheffield. 0742 756048. Roksan, Linn, Musical Fidelity, Denon, Meridian, Krell, Quad, Audio Research, Exposure, Nakamichi. 2 Demo. Rooms. Free installation. Service Dept. Access, Visa, Credit. 9.30-5.30 Closed Mon.

BADA
MOORGATE ACOUSTICS, 8 Westgate Chambers, Rotherham. 0709 370666. Roksan, Linn, Musical Fidelity, Denon, Meridian, Krell, Quad, Audio Research, Exposure, Nakamichi. A multitude of demo rooms. Free installation, Service Dept. Access, Visa credit facilities. 9.30-5.15 Closed Thurs.

YORKSHIRE (WEST)

AUDIO PROJECTS, 45 Headingly Lane, Leeds. (0532) 304565. A&R, Audiolab, Creek, Heybrook, Linn, Musical Fidelity, Naim, Quad, Rega, etc. Tues-Fri 9.30-6, Sat 2.30-5.30.

BADA
AUDIOVISION (BRIGHOUSE) LTD, 5 Bethel Street, Brighouse, W.Yorks. HD6 1JR. 0484 713996. Largest range of Technics hi-fi in Yorkshire, Aiwa separates, Mordaunt-Short and Castle Acoustics Speakers. Panasonic, Finlux & Mitsubishi. Nicaam TVs & Hi-Fi VCR's. Excellent CD dems. using comparator facts & over 1000 CD titles. Appts, pref. please phone. Free expert install. In-store Service dept. Visa, Access, Credit charge. Licensed credit broker. Open Mon-Fri 9-6, Sat 9-5.30.

ERRICKS, Hi-Fi Experience, Fotonoson House, Rawson Square, Bradford (0274) 309266. Dem facilities. Sales/service agents for A&R, Linn, Quad, Exposure, Nakamichi, Mission etc.

BADA
HUDDERSFIELD HI-FI CENTRE, 4 Cross Church St, Huddersfield. (0484) 544668. B&W, Kenwood, Denon, Dual, Arcam, Musical Fidelity, Quad, NVA, Audio Lab, Philips, Mission, etc. Dem facilities – appointment reqd. Mon-Sat 9-5.30, Thurs 9-8. Closed Wed. Free installation, credit facilities. Access, Visa

IMAGE HI-FI Ltd, 8-10 St Annes Rd, Headingly, Leeds. (0532) 789374. AR, Audio Lab, Denon, Linn, Marantz, Meridian, Mission, Monitor Audio, NAD, Quad.

BADA
IMAGE HI-FI, 17 The Springs, Wakefield, WF1 1QE. (0924) 200272. AR, Audio Lab, Denon, Linn, Marantz, Meridian, Mission, Monitor Audio, NAD, Quad.

SELECTIVE AUDIO, The Forge Cottage, 19 Crossgate, Otley. (0943) 467689. Exclusively handles Alphason, Roksan, NVA, ProAc, TDL, JDI, in the area and other minimalist British designer products for the discerning listener. Dem facility. Member of the Cognoscenti. Mon-Sat 10-6.

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BRITISH AUDIO DEALERS ASSOCIATION

BADA

THE ULTIMATE IN
SOUND ADVICE

NORTHERN IRELAND

LYRIC HI-FI, 163 Stranmills Road, Belfast. (0232) 381 296. Linn, Naim, Rega, Arcam, Denon, Rotel, Musical Fidelity, Revox, Mission etc. Mon-Sat 10-6, Late night Thurs. **BADA**

LYRIC HI-FI, 84 Bridge Street, Portadown, Armagh, N. Ireland. (0762) 358059. Linn, Naim, Rega, Arcam, Denon, Rotel, Musical Fidelity, Revox, Mission, Akai, Panasonic, etc. Mon-Sat 10am-6pm. **BADA**

ZEUS AUDIO, 6 Hope Street, Belfast. (0232) 332522. Audio Innovations, Pink Triangle, Roksan, Marantz, Celestion, Linn, Meridian, Mission Cyrus, Ortofon, etc. Mon-Sat 10.00-5.30, Late night Thurs. **BADA**

EIRE

CEOL PRODUCTS, 185 Lower Rathmines Road, Dublin 6. Tel: 0001 975984 961358. Alphason, Audio Innovation, Exposure, Linn, Marantz, Monitor Audio, Mordaunt Short, Musical Fidelity, Rega, Roksan. Single Speaker listening rooms. Free installation. All major cards. Mon-Sat 9.30-6.00. **BADA**

SCOTLAND

CENTRAL

HI-FI CORNER, 44 Cow Wynd, Falkirk. (0324) 29011. Nakamichi, Denon, TDL, Ruark, Technics, Luxman, Thorens. 9.30-5.30 Mon - Sat Closed Weds. Demo. room available. **BADA**

EDINBURGH

BILL HUTCHINSON Ltd, 43 Clarke St, Edinburgh. (031) 667 2877. AR, Aiwa, Denon, Dual, JVC, Mission, Mordaunt-Short, Omar, Technics, Yamaha etc. Dem facilities. Mon-Sat 10-6. Free installation, instant credit. Access, Visa. Service dept. **BADA**

HI-FI CORNER, 121b Rose Street, 1 Precinct, 1 Precinct, Edinburgh EH2 3DD. 031 220 1535. Large range of products such as Nakamichi, Arcam, Audio Lan, Quad, Cyrus, Mission, Allison, Proton, NAD, Technics. Mon-Sat, 10-5.30pm, Thurs 10-7.00pm

STEREO STEREO, 278 St. Vincent St, Glasgow G2 5RL. (041) 248 4079. Linn, Naim, Rega, Arcam, Creek, Epos, Exposure, Revox, PT, etc. Mon-Sat 10-6. Interest free credit. **BADA**

GLASGOW

BILL HUTCHINSON Ltd, 43 Hope Street, Glasgow. (041) 248 2857. A.R., Aiwa, Denon, Dual, JVC, Mission, Mordaunt-Short, Omar, Technics, Yamaha etc. Dem facilities. Mon-Sat 10-6. Free installation, instant credit. Access, Visa. Service dept. **BADA**

HI-FI CORNER, 52 Gordon Street, Glasgow (041) 248 2840. The best in unbiased sound advice. Open 10-5.30 Tues - Sat. Demo room etc. **BADA**

HI-FI EXPERIENCE 145 Bath St, Glasgow. (041) 226 4268. Linn, Meridian, DNM, Celestion, Quad, Mission-Cyrus, Denon, Wharfedale, Ruark. 2 Demo Rooms. Tue-Sat 9.30-5.30. Contact James or Gordon STEREO STEREO, 278 St. Vincent St, Glasgow G2 5RL. (041) 248 4079. Linn, Naim, Rega, Arcam, Creek, Epos, Exposure, Revox, PT, etc. Mon-Sat 10-6. Interest free credit. **BADA**

GRAMPIAN

HOLBURN HI FI Ltd, 441 Holburn St, Aberdeen (0224) 585713. Linn, Rega, Quad, Audiolab, Mission Cyrus, Rotel, QED, NAD, Krell, Nakamichi, Denon, Sony, KEF, Wharfedale, Monitor Audio, Kenwood, etc. 9.30-5.30 Mon-Sat. **BADA**

TAYSIDE

W.M. COUPAR, 33 Reform Street, Dundee, Tayside. (0382) 29588. Bang & Olufsen, NAD, Technics, Denon, Kenwood, Dual, Nakamichi, B&W, Acoustic Research, JBL. No appointment necessary, free installation, service department. All demonstration systems wired through a demonstration comparator. Licensed credit broker, Access, Visa. Monday-Saturday 9.00 am-5.30. **BADA**

WALES

CLWYD

THE HI-FI ROOM, Apple Sound, Unit 3, Cambrian Business Park, Queens Lane, Mold, CH7 1NJ. (0352) 700433. AR, Aura, Denon (including DAT), DCM, Dual, Harman Kardon, JPW, Ruark, Thorens and more. Singlsystem demos. Appointments necc., Home trial facilities, Free **BADA**

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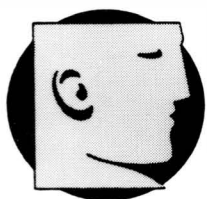
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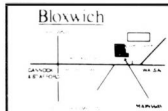
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THE DIRECTORY

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 retail price is placed in its respective category in alphabetical order. For instance the Acoustic Research *EB101* is presently at the beginning of the Turntables and Tonearms section; however, the Ariston *Superior* heads the Motor Units section as it is sold and was reviewed as a separate component – requiring a separate arm. Where there are several products with the same name but different model numbers these are in price ascending order.

Then come the ratings for the standard achieved in laboratory and listening tests, with the exception of certain product groups where lab tests

were not carried out. One important point to remember is that they cannot be used to compare products from different categories – ie a cassette deck rated 'excellent' in sound quality will not usually offer the same standard of fidelity as a similarly rated turntable or CD player (unless you can get hold of first generation copies of the master tape!).

The Comments column contains a potted summary based on the original review, emphasising the salient points of a product's character and sonic performance. The space available doesn't allow for great detail but in the 20 or so words we have attempted to put across the essence of the review, in some cases using quotes from the review itself. Obviously, important information on compatibility or auxiliary equipment used in the test cannot be included, and it is best to refer to the original review for this, of which more later.

The next column(s) varies from category to category but is usually either features or specifications, the former being facilities available on a cassette deck or amplifier or the type of drive

system on a turntable.

Specifications vary with product type but usually relate to suitability or capability, for instance arm matching figures are given with the cartridges which tie in with the mass figures for the tonearms themselves, making it easier to avoid compliance/ mass mismatches.

Perhaps the most influential letters in the Directory are those found in the Value column, the *Rs* and *BBs* denoting the Recommended and Best Buy ratings that are appended to products we consider meritorious. The Best Buy tag means that a product not only offers good sound quality but is reasonably priced as well. With source components a price limit of approximately £300 is usually used as a guide. Recommended means that either the performance of a product is particularly good irrespective of price or, alternatively that a good value standard is achieved but overall attainment falls short of Best Buy classification. An ideal situation would be to choose suitably priced Best Buy or Recommended products from relevant categories and create a Best Buy system, but, due to

the variety in tonal balance that exists in much audio equipment (especially the electromechanical elements – ie cartridge and speaker) system building is not quite that simple. These ratings make a useful guideline for shortlisting components, but only experiencing the actual combination will tell you whether it works for you.

The final column contains a reference to the issue of *Hi-Fi Choice* which featured the complete review. If you wish to get a better idea of a product by reading the complete review it is possible to order a copy (if still in print) through our back issues department. Every *Choice* issue contains a Back Issues page for this purpose.

The Directory is constantly updated with the latest reviews and price changes as well as having discontinued products removed. If a listed product is updated to a 'mark two' form and the alterations are purely cosmetic or not too extensive we sometimes leave the product in with its current model number and an asterisk to denote that it has changed since our original review was published.

SYSTEM BUILDING

Pre-packaged one-make systems have been commercially very successful, with advantages like cosmetic consistency, competitive pricing, and (assumed) technical compatibility. However, despite the mass market clout of the consumer electronics giants, the hi-fi tradition of specialised separate components seems as strong as ever, and certainly represents the route taken by those who place sound quality first.

Yet those who choose the separates route still have lingering doubts – usually completely unjustified – over the compatibility of components from different manufacturers. Gross incompatibilities are very rare nowadays, only likely to rear their heads amongst the most exotic components. Here the delicate art of 'supercompatibility' really takes over the major role and might be regarded as the key to 'real' hi-fi.

There are now three different pre-recorded music media competing for the attention of the hi-fi user, and to go for all three will either cost a lot of money or involve substantial compromises in the sound quality of each. For this reason many separates purchasers may start with just one source, adding others or a tuner when funds permit.

There will always be controversy over the relative qualities of LP, CD and cassette. LP is still the choice for ultimate sound quality – particularly for those prepared to spend a substantial sum on a good quality turntable system.

Cassette has never really challenged vinyl's superior quality, but it is a multiple role format, offering 'go anywhere' flexibility, a uniquely useful recording capability, plus a broad catalogue of pre-

recorded music cassette material. As a hi-fi medium cassette suffers from pre-recorded material which has been improving but is still patchy in quality, and can usually be bettered by a home recording. There is also the worry that a tape made on a specific machine usually replays best on that machine, which may cause aggravation when upgrading a few years hence.

CD is the latest challenger to these two established media, using a digital instead of analogue storage format. The sound quality remains controversial, hailed as near perfect by its fans but derided by vinyl freaks, so it is probably fairest to say that CD is fine for most listeners, but may not suit everyone; certainly the lack of background noise, defects and deterioration over time are major strengths.

While there will always be arguments about the different music storage and transmission formats available to the hi-fi listener, there is also controversy over the relative importance of the different components which make up the system chain – by which is meant the source, the amplification, and the loudspeakers (and for the pedantic the room itself, though there's often little that can be done here).

For many years the 'weakest link' theory proposed that the loudspeakers needed the most attention, that amplifiers merely had to have sufficient power, and that turntables were pretty well perfect. However, this perspective has become steadily discredited by an alternative 'theory of precedence', which stresses that no subsequent component can make up for the inadequacies of its

predecessors – all it can do is supply its own additional degradations. In such a context it is not uncommon to find more than half the system budget allocated to the record player, with scrimping and saving made on amplifiers and loudspeakers.

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

Siting of components within a room can play a significant role, as can the room itself. Some people may prefer an acoustically more 'live' room than others, but most will agree that the larger it is the better, because this tends to provide smoother and better extended bass reproduction. All rooms create reflections and standing waves, and the effects of these are more severe if all opposing walls are parallel, similar distances apart, and with hard reflective surfaces.

Provided that the loudspeakers can be placed fairly symmetrically, slight asymmetry elsewhere in the room is usually helpful.

The loudspeakers are most critical of placement, because it is their job to create the stereo image, and it will be impossible to do this if the sound from each is not roughly similar at the listening position. Each loudspeaker should operate in a similar immediate acoustic environment, unencumbered by other furnishings and structure, and a similar distance from listener, nearby walls, and

corners. Some loudspeakers are designed to operate close to a rear wall, others a metre or so out into the room, but all loudspeakers benefit from being closely mechanically coupled via proper stands to the floor.

Mixing and matching the components of a record player to get optimum results can be something of a black art, over and beyond the fairly simple business of choosing a cartridge of roughly the right compliance to suit the arm effective mass. Certainly the combining of turntables and tonearms is not a simple matter, and this is where a good specialist dealer will come into his own, both in terms of recommending good combinations from the models he holds in stock, and then in correctly carrying out the sometimes tricky set up procedures which are often required to get the best results.

The key to getting the best results from a separates system lies in finding an experienced and skilled dealer in the first place, one who takes the trouble to find out what you really want and then demonstrate some likely alternatives.

The Directory has been compiled so that it can be used by *Choice* readers as a buying guide. A guide in the sense that you should use the information in it to make a shortlist of equipment suited to your needs and budget, and then audition it at a dealer's before taking the plunge. Because tastes inevitably differ it would be unwise to buy purely on the basis of our recommendation and dealers are the most experienced people around when it comes to making systems work as a whole.

THE DIRECTORY

TURNTABLES & TONEARMS

The schizophrenic split between consumer electronics and 'real hi-fi' is most obvious amongst turntables. The former are supplied simply as a means of playing vinyl in a system context. Cheaply manufactured in the Far East, these are complete players with a variety of automatic facilities, sometimes tied into system remote control. But engineering compromises severely limit sound quality, cartridge choice may be P-mount restricted, and such machines are rarely stocked by specialist hi-fi dealers these days.

Specialist turntables offer big sound quality

improvements, but lack so-called convenience features (that practised users often find irksome). Such turntables at the cheaper end of the market (sub-£350) tend to be supplied with matching tonearm, and often include a 'starter' cartridge. Still better quality is found at higher prices amongst the separate motor units and tonearms. Careful partnering and set-up is essential for these individual components, but 'naturally sympathetic' combinations do exist, and the good dealer can help.

Listed separately as integrated players and as turntable motor units and tonearms, our **sound**

quality rating is based on results achieved using a high quality system – but in point of fact the turntable is usually the limiting factor soundwise in any system. **Lab performance** summarises the speed stability, vibration generation and environmental isolation of turntables, along with the friction, alignment and adjustment of tonearms. The tonearm's physical characteristics also define a range of mechanically compatible cartridges (see cartridge listings).

INTEGRATED TURNTABLES

NAME PRICE	LAB SOUND	COMMENTS	FEATURES ARM EFF. MASS	VALUE	BACK ISSUE FULL REVIEW
Acoustic Research EB101 £230	Good Good	This genuine high fidelity product offers an impressive package at a competitive price	Subchassis, manual, 13.5g	BB	48
Alphason Solo/Xenon MCS £420/£300	Average+ Good	The deck is warm and euphonious with high levels of clarity. Wow artefacts occasionally just audible.	3 point suspended motor unit, optional quartz PSU/speed change 13g		67
Alphason Sonata/HR-100S MCS atlas £720/£480/£340	Very Good Very Good	Good sound in all areas – bass, clarity and neutrality all in the top class and bettered by very few decks. Atlas PSU expensive but worthwhile	Belt drive, suspended, optional PSU, 13g	R	79
Ariston Q-Deck £165	Good Average+	Well engineered and good sounding low cost package which is both easy to set up and to use	Semi-auto, belt drive, solid	BB*	67
Ariston Icon £215	Good Good	A thoughtful and efficient design that offers good sound, excellent value and semi-automatic operation too! Good vibration isolation eases siting	Belt drive, suspended, semi-automatic, 10g	BB	79
Ariston Forte £350	Average— Average	Heavy on engineering, short of soul? The Forte almost makes it, losing out only because of some residual pitch variations and a lack of bass power. The arm is modestly good	Manual 2-speed belt drive player and detachable arm, 10g		67
Dual CS430 £100	Average Average—	Ragged, sometimes unpleasant cartridge mixes with a modest pleasing player in a very sharply priced package.	Belt drive, with cartridge, auto return, 5g	R	67
Dual CS505-3 £160	Very Good Good	Continuous steady improvements have kept this model at the forefront of the budget market. Practicality is excellent and the deck has excellent timing bass/mid and stereo imaging	Semi-auto belt drive, 8g	BB	67
Dual CS5000 £230	Average Average+	The rare 78 facility may give grandma's collection a new lease of life but the player did not merit recommendation on price vs sound	Electronic, belt drive, subchassis, 10g		48
Goldmund ST4 £4,589	Very Good Excellent	The Studio turntable takes on a cheaper tonearm than the T3F, yet provides a similar reference standard objective and subjective performance at £2,000 less, in a neatly integrated though bulky package.	Solid subchassis, direct drive, parallel arm, detachable headshell	R	60
Heybrook TT2 turntable & arm £424/£269	Average Good+	A gradual process of informed evolution and a sensibly designed arm combine to make this a good sounding middle of the road package. Well supported by dealers	Manual subchassis motor with arm, belt drive, 14g	R	67
JVC AL-FQ555 £170	Below Average Poor	Clear midband sound but woolly bass and crude treble. Ease of use however ranks highly, and there's little to go out of adjustment	Auto, direct drive, 5.5g		67
Kenwood DP-990 £400	Average Average	Smart, slick and massive player suitable for low compliance cartridges only. A good but not inspired performer.	Semi-auto 2 speed direct drive, 16g		67
Kuzma Stabi/Stogi £699/£399	Average+ Stabi: Good; Stogi: Excellent	Stabi is powerful, spacious but not sufficiently subtle. Stogi is an excellent all rounder with even spread of abilities	Manual, belt drive, subchassis, 12.5g	Stogi: R	60
Linn Axis/Akito £399	Good— Average+	A neat, attractive and well-made package which delivers a rather harsh sound with a 'one-note' effect in the bass, but it's well suited to mid market systems	Belt drive, semi-suspended, electronic PSU, 10g		79
Linn Sondek/Ittok/Troika* £549/£483/£669	Excellent Very Good	Superb sound – the best LP12 combination yet. The Troika gives the system real solidity and strength, stretching the deck and arm qualities to the full. Arm has since been upgraded	Manual subchassis player, belt drive, 14g	R	60
Manticore Mantra/Musician £340/£170	Good+ Good+	Well engineered deck with satisfying sound. The arm is particularly fine and very good value	Belt drive, suspended, 15g	R	79
NAD 5120 £90	Average Average	A number of running improvements have given this player a range and tautness denied its lazier sounding antecedents.	Semi-auto belt drive, detachable arm/tube/weight, 9g	BB	67
Omega Point Silver/Black £895/£295	Good Good+	An avowedly stripped down turntable that lacks even an on/off switch, the Omega Point Silver offers fine midrange clarity and good stereo, but some HF compression and a lack of 'wellie'	Manual, solid, belt drive, unipivot, 11g		55
Opus 3 Continuo/Decca London International (Revised)* £599/£99	Poor Good	Heavyweight motor unit with many fine properties, but which needs further development. The idiosyncratic arm is a suitable (though not ideal) platform for the Decca cartridge. For all its faults though, the whole transcends the sum of the parts	Belt-drive manual, damped unipivot arm, 12g		67
Rega Planar 2 £155	Average+ Good	A remarkable product at the price, surprisingly articulate and confident	Manual, 11.5g	BB	48
Rega Planar 3 £207	Good Good	A long time leader in its price category, the '3 (with its excellent RB300 arm) sounded nicely 'musical' in a balanced and coherent manner	Manual, 11.5g	BB	48
Revolver Rebel £169	Average— Average—	Fat, assured and forward presentation, but ragged and subjective speed stability problems. With a little further development, it will be a winner	Manual, 2-speed belt drive inc cartridge, 13g		67
Revox B291* £892	Average— Average—	Sound quality ranks as below average. Subjective bandwidth is narrow and the music lacks grace and energy. Ease of use however is unrivalled	Automatic, remote controllable, direct drive parallel arm, prefitted cartridge		55
Roksan Xerxes/Artemiz/Shiraz £695, £595, £655	n/a Very Good	Imaginatively designed, sophisticated front-end system, a little drier than some perhaps, with superior stereo, resolution and presence	2-speed manual, MC cartridge, 9g	R	72
Rotel RP-855 £189	Good Good	Great sound for the money – detailed and clear with good bass and no irritating nasties	Belt drive, solid, speed adjust, 9g	BB	79
Systemdek IIX £248	Good Average+	Poised, clean sounding deck, forward and explicit in character. A good value deck under £250, and a relatively cheap and satisfactory suspended model	2 speed belt drive manual turntable and arm, 11g	R	67
Technics SLBD-22 £90	Average— Average—	Not bad for the price and a great improvement on the L20. It performs reasonably when not stretched	Semi automatic, solid plinth, electronic, 6g P-mount	R	48
Technics SL-DD33 £110	Average Average	As with the QD33 though better value	Automatic, direct drive, solid plinth, 7.5g, P-mount	BB	48

TO ORDER BACK ISSUES OF HI-FI CHOICE SEE PAGE 130

THE DIRECTORY

INTEGRATED TURNTABLES

NAME PRICE	LAB SOUND	COMMENTS	FEATURES ARM EFF. MASS	VALUE	BACK ISSUE FULL REVIEW
Technics SL-L20 £115	Poor Average-	A rather lightweight parallel tracker achieving a poor overall rating, with little to recommend it unless you dig facilities	Electronic, solid plinth, 5g, P-mount		48
Technics SL-QD33 £140	Average Average	The quartz speed controlled version of the DD is short on sound quality but not features. But it did have fair focus and some depth	Automatic, Quartz, direct drive, solid plinth, 7.5g, P-mount	R	48
Thorens TD 280 Mk II £180	Good- Good-	Legendary Thorens build quality on the cheap - slightly unsuitable sound but eminently liveable-with and very good value	Belt drive, solid, electronic PSU, 12g	BB	79
Thorens TD 166 Mk V £200	Good Good	Classic suspended-subchassis deck with clear, stable sound of no particular character. Unlikely to make enemies	Belt drive, suspended, 12g	BB	79
Thorens TD 316 Mk II £220	Good Good-	Very solid deck with neat split-chassis construction. Sound is a bit insecure in the bass, but it could suit classic/analogue lovers well	Belt drive, suspended, electronic PSU, 12g	R	79
Thorens TD320 Mk II £350	Good Good	Good, consistent sounding deck with much improved (but not ideal) arm. A little expensive for performance offered	Semi-auto two speed belt drive, 14g		67
Townshend Rock Reference/ Excalibur £1,800/£650	Excellent Excellent	Overall, the closest reproduction to master tape we've yet heard, with stunning real bass and excellent neutrality. Front-end damping trough improves LF detail significantly	Belt drive, suspended, electronic PSU, front-end damping, 12g	R	79
Well Tempered WTAT £1690	Average Very Good	Intriguing and challenging design. Musically it is not ideal, but it has a limpid quality and a lack of artificiality that sets standards as well as turning the ear, though it's not completely uncoloured. A charmer yet mainstream enough in its virtues to be viable	Manual 2-speed, damped, suspended arm, 7.5g	R	67
Zarathustra S4/Pluto 5A Prestige/PSU £1500/£2500/£500	n/a Excellent	The very well made and finished heavy platter S4 with the superb Pluto arm make a devastating combination ranking up there with the very best	Subchassis, manual, available without PSU	R	72

MOTOR UNITS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Ariston Superior £598	Good+ Good	Good but slightly damped sound quality, with powerful and stable bass. The pro quo is a certain lack of pace, energy and resolution	Belt drive, subchassis, electronic		55
CEC ST930 £599	Good Good++	A rarity - a serious hi-fi product that loses nothing to budget rivals in finish or convenience. Good clean sound, very stable and assured	Belt drive, external PSU, 78 speed inc.	R	79
CS Audio Resan kit for Rega £80	Good- Good	After-market kit to convert Rega 2 or 3 to semi-suspended subchassis style. Looks good and sounds tidier than original. Feedback is much reduced	Conversion kit, all work reversible	R	79
Michell Syncro £265	Good Good	A particularly happy blend of qualities endows the Syncro with a blend of subtlety and force - the mailed fist in the velvet glove. Easy on the ear in the best sense	Manual, belt drive, suspended motor unit	R	67
Michell Gyrodec £595	Good Good	Sweet and natural sounding player, well exploited by the Rega RB300 arm. Aesthetics, and the acres of acrylic, are unique	Manual, belt drive, suspended motor unit		55
NVA Senior £450	Good- Average	Very high sensitivity to low-frequency vibration, especially on NVA stand, gives strange subjective bass response and confused sound. Looks are unusual but pleasing	Belt drive, electronic PSU, two-part plinth		79
Oracle Alexandria Mk III £995 - £1095	Very Good Very Good	One of the most beautifully presented players made, and fully supported by superb separation, dynamics and a euphonious style of delivery.	Manual 2-speed belt drive	R	67
Origin Live Oasis B £199	Average Average+	Aesthetics are not its strong point, but its lively and articulate - if idiosyncratic - sound will please some tastes. Highly resonant construction is very sensitive to feedback	Belt drive, 33 $\frac{1}{3}$ rpm only, solid plinth/subchassis		79
Origin Live Oasis A £495	Good- Average	Rather coarse sound with lack of detail resolution - but lively presentation may appeal. Appearance is industrial	Belt drive, external mains filter, 33 $\frac{1}{3}$ rpm only, suspended subchassis		79
Oxford Acoustics Crystal Reference £2395	Very Good Excellent	This big, open and powerful sounding turntable works beautifully with Airtangent arm to give superb 3-D imagery	Manual, belt drive, subchassis, stand	R*	60
Pink Triangle Little Pink Thing £345	Good+ Very Good	Leads the field for clarity and neutrality at this price or a good bit more. It also looks very smart! Excellent value. Arm cut-out suits Rega or Linn style	Belt drive, semi-suspended, electronic PSU	R	79
Pink Triangle PT 100 £650	Very Good Excellent	Uniquely clear sound, uncoloured, free from ringing and with good bass. Very close to master tape, given a good arm and cartridge	Belt drive, external PSU, suspended subchassis	R	79
Revolver £150	Average Average	Nicely balanced, but unimpressive timing and lightweight bass made this deck rather average for the price. Manufacturer has since made several changes, but not re-submitted for review	Manual, belt drive, solid plinth		48
Roksan Xerxes £695	Excellent Very Good	This unique design cuts a swathe through the conventions of turntable design, providing superb resolution and stereo. Power supply has since been upgraded - see issue 78 for our latest report	Manual, belt drive, solid/decoupled	R	67
Systemdek IIXE £248	Good Very Good	Fine, honestly specified and well built player which easily betters its closest stablemate, the IIX. Frankly, at the price it's a sonic bargain	Manual 2-speed, external PSU	R	67
Systemdek IV £495	Good Very Good	The level of wow is a theoretical concern at least, but elsewhere this player shines, combining euphony, information and imaging in a polished, untemperamental package	Two-speed manual belt drive	R	67
VPI HW-19 £1,317	Very Good Very Good	Built to accommodate parallel tracking arms, this large but elegant deck produced clean, smooth sound when fitted with an SME arm. Good bass	Belt drive, suspended subchassis	R	79
Voyd Valdi £680	Good- Good+	Slight 'one-note bass' effect and lack of pitch stability compromise the performance of this well-made deck	Belt drive, suspended subchassis, electronic PSU		79
Voyd 'The Voyd Plus' £2,777	n/a Excellent	Based on the standard 3-motor Voyd but with upgrade options (better bearing, platter, etc) which take it half way to a Voyd Reference, so we've dubbed it The Voyd Plus. Superb build and finish; colourful, dramatic performance. A thoroughbred	Belt drive, 3 motors, subchassis, outboard PSU	R	72

TONEARMS

NAME PRICE	LAB SOUND	COMMENTS	ARM EFF. MAS	VALUE	BACK ISSUE FULL REVIEW
Airtangent 1B £1990	n/a Excellent	A complex but superbly built arm for high quality systems, giving excellent stereo and resolution	7.5g (vertical)	R	60
Alphason Opal £130	Good Average	This is a straightforward adequate sounding low cost arm, priced just above where it rightly belongs	10g		55
Alphason Delta £190	Good Average+	A highly competent design from Alphason gives good sound quality but with slight blurring and treble fizz	16g	R	48
Alphason Xenon £240	Good Good+	A trimmed down HR100S, the Xenon has inferior bearings and a simpler finish, but sounds crisp and coherent. Fits any Linn cutout	12.75g	R	55
Alphason HR100S £420	Good++ Very Good	This S-shaped arm sounds smooth, but nevertheless reproduces transients with fine attack	10g	R	48/Coil

THE WORLD'S NO 1 GUIDE TO BUYING HI-FI

TONEARMS MOTOR UNITS INTEGRATED TURNTABLES

HI-FI CHOICE

THE DIRECTORY

TONEARMS

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Airtangent 1B £1990	n/a Excellent	A complex but superbly built arm for high quality systems, giving excellent stereo and resolution	7.5g (vertical)	R	60
Alphason Opal £130	Good Average	This is a straightforward adequate sounding low cost arm, priced just above where it rightly belongs	10g		55
Alphason Delta £190	Good Average +	A highly competent design from Alphason gives good sound quality but with slight blurring and treble fizz	16g	R	48
Alphason Xenon £240	Good Good +	A trimmed down HR100S, the Xenon has inferior bearings and a simpler finish, but sounds crisp and coherent. Fits any Linn cutout	12.75g	R	55
Alphason HR100S £420	Good + + Very Good	This S-shaped arm sounds smooth, but nevertheless reproduces transients with fine attack	10g	R	48/Coll
Ariston Enigma £99	Average Average +	Good but not the best in its class: mid-band sounds a little uneven; treble a trifle "brash"	11.5g		48
Audio Technica AT1130 £186	Good Good	Well suited to most cartridges including high compliance ones, the AT is smooth and tonally neutral, if slightly lacking in 'balls'	8.5g	R	67
Decca London International £49	Average + Average +	This uni-pivot design gives a rather rich tonal balance and some bass muddling. Could be good with Decca cartridges, but not well built	12g		48Summary
Eminent Technology £1000	Good + Good + +	One of the best sounding tonearms around, the linear tracking Eminent delivers impressive stereo imagery, focus and transparent sound	9g (vertical)	R	48/Coll
Goldmund T3F arm £4400	Excellent Excellent	This complex parallel tracker created an "ear-opening" experience when tested with a (since updated) Goldmund Studio turntable	16.5g	R	Coll 2
Helius Orion 2 £490	Very Good Very Good	Excellent engineering with rigid bearings, free from slack. It remains expensive but the level of performance deserves Recommendation	12g	R	48
Kuzma Stogi Reference £699	Very Good Very Good	A large, solid and well-made arm that holds the cartridge firmly, giving exceptionally clear sound with just a hint of brightness	12g	R	79
Linn Ekos £895	Very Good Very Good	Superb, state of the art design which builds significantly on Ittok's strengths	9g	R	67
Mission Mechanic £900	Good Good +	Nearly right, but inconsistency with level and vague imagery spoil what is otherwise a firm, powerful advocate for black vinyl	11g		55
Moth Arm £78	Good Good +	The ultimate budget arm? Refined, detailed, sweet and natural – performance improves in line with the rest of the system	12g	BB	60
Rega RB300 £115	Good + + Good + +	Despite its modest price this sets exceptional performance standards and could be used on a number of high-quality turntables	10-11g	BB	60
Roksan Artemiz £595	Average Good	Interesting design which works a treat on the Xerxes deck. Fits Rega cut-out. See issue 72 for up to date assessment	8g		67
SME 3009 Series IIIS £182	Good Average +	A simplified less flexible (as regards adjustment) Series III with a similarly 'soft' sonic character	5g		48
SME 3009 Series III £253	Good Average +	Comprehensively adjustable and very well made, suited to MM and high compliance MC cartridges	5g		48
SME 3009R £335	Average + Average +	A higher mass version of the Series III designed for low compliance MC cartridges	12g		48
SME 309 £495	Very Good Very Good	Beautifully made, finished and presented, this arm is fully and easily adjustable and a highly neutral performer	10g	R	79
SME Series IV £810	Excellent Very Good	Superb engineering and finish with a finely balanced sound giving impressive stereo focus and low coloration	10.5g	R	60
SME Series V £1247	Excellent Very Good	Excellent in terms of design engineering and sound quality, this arm arguably sets a new reference standard regardless of price	10.5g	R	60

* rating refers to original tested model

CARTRIDGES

Very much the "slave" of turntable and tonearm and to some extent undermined by the supply of free 'starter' cartridges on many turntable systems, the cartridge is still worth taking seriously. The quality of both the stylus itself and the cartridge's tracking performance are important in preserving that most important part of the hi-fi system – the record collection – and the cartridge also plays a significant role in determining the overall balance of a system.

Cartridges fall into two groups: high output models, capable of working directly into any amplifier, and more expensive low output models. Stereotypically, low output cartridges use the moving coil principle of operation, have better mechanical integrity and tighter tolerances, and give better performance but at much higher cost. Most under-£150 amplifiers and many valve designs need either an extra head amp or transformer to cope with the low output. **Cartridge/amplifier**

interfacing can be very subtle, but even basic high output moving magnet designs benefit in overall balance from optimised amplifier capacitance loading. Still more important, the mechanical cartridge characteristic of cantilever compliance ('springiness') needs to be considered in the light of the effective mass of the tonearm which will be used (see Turntable & Tonearm entries)

NAME PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/type	VALUE	BACK ISSUE FULL REVIEW
Arcam C77 £22	Average + Average +	A sensible moving magnet package with good bounce at a competitive price	6-16g Normal, MM	BB	48
Arcam C77Mg £30	Average – Average	Punchy sound quality with plenty of extra energy to liven things up. The solid body seems well worth the extra £10	4-8g Normal, MM	BB	67
Arcam E77Mg £50	Average Average	Our sample had a disappointing stylus, but gave a coherent, rich and laid back sound, with good 'scale'	3-8g Normal, MM	R	48
Arcam P77Mg £60	Average + Average +	Cautiously recommended, the P77Mg was preferred to its cheaper partner by virtue of a better tip. Channel balance could have been better	4-9g Normal, MM	R	48
Arcam PMX10 £100	Good + Good + +	Not the very clearest in complex high-frequency sounds, but lively and exciting, good transients.	5-11g Low, MC	R	85
Audionote I02VDH £895	Good Very Good	One of the best, giving 'an extraordinarily relaxing midrange clarity', needs a transformer	8-18g Very low, MC	R	43
Audioquest MC5 £220	Average Average	Offers high-output benefits but the drooping frequency response and severe VTA error preclude recommendation	10-20g Normal, MC		54
Audioquest AQ 404i-L £400	Good + + Good +	Slight harshness detracted from the performance of this otherwise clear-sounding and detailed cartridge	8-16g Low, MC		84
Audio Technica AT95E £18	Average – Average	Clear, dynamic if richly balanced, the magnetic '95E is a definite Best Buy	8-14g Normal, MM	BB	48

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NAME PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/type	VALUE	BACK ISSUE FULL REVIEW
Audio Technica AT-420E OCC £31.50	Average Average	Better suited to pop recordings this MM bears some of the sonic hallmarks of the Linn K5	7-14g (damp) Normal, MM	R	67
Audio Technica AT-430E OCC £44.50	Average + Average	A rising high frequency response yields something of a treble sting, not a good all-rounder	3-7g Normal, MM		67
Audio Technica AT-F3/OCC LE £74	Average + Good	Though the 'limited edition' badge is a trifle tongue-in-cheek the 'F3 still offers excellent value	8-15g Low, MC	BB	67
Audio Technica AT-F5/OCC LE £106	Average Good +	This latest sample demonstrated some technical weaknesses but its spacious, fluid sound quality still represents a benchmark at this price	4-10g Low, MC	BB	67
Audio Technica ATOC7 £265	Good + Good +	The OC9 is better if you can afford the extra. But OC7 is at least a taste of the high-end at a sensible price	6-13g Low, MC	R	54
Audio Technica ATOC9 £400	Average + Very Good	Tonal colours are reproduced faithfully and it rarely puts a foot wrong. Slightly less transparent than more costly MCs but it has got real welly. Good value (really!)	6-14g Low, MC	R	60
Audio Technica ART1 £800	Good + Very Good	This is a delicate and very fluid-sounding MC that tracks well, offers very low distortion and exceptionally good stereo separation	9-18g Low, MC	R	72
Cello Chorale £750	Average + Good	Now available through a new distributor at a saving of some £300, the Chorale is still blessed with a delicate but highly detailed treble. Arm matching is a problem	3-9g Low, MC		72
Denon DL110 £69	Good Good	Firmly recommended as a fine all-rounder, this high-output moving coil model is likely to perform well in nearly all circumstances	6-16g Normal, MC	BB	48
Denon DL160 £89	Average + Good	Although listeners just preferred the 110 its brother here proved a twin in lab tests and is still "thoroughly competent"	6-16g Normal, MC		43
Denon DL 103 £99	Average Good	This classic spherical stylus model gives a lively sound with powerful bass, and is popular in broadcast studios	6-16g Low, MC	R	48
Dynavector DV-50X £99	Good Average	A high-output MC model with impressive lab performance, but whose tip and sound quality both disappointed	6-14g Normal, MC		48
Dynavector DV10X IV £125	Average Average +	Fine sounding and realistically priced, damping is recommended to ensure successful tracking ability	8-18g Normal, MC	R	48
Dynavector DV23RS £230	Average + Good	Sound quality was described as "shut-in", lacking energy and sparkle but with some "edginess" in high frequencies	10-22g Low, MC		28
Dynavector XX-1 £680	Good + + Good +	Good, but not immensely competitive at the price, and not helped by comparison with the low output version	7-15g Normal, MC		84
Dynavector XX-1L £680	Good + + Very Good	Very clear, very detailed, no troubles with tracking; response lift around 20kHz seems to do no harm	7-13g Low, MC	R	84
Empire 800 Mk II £33	Good Average	This very high output MM appears to be based on the classic Ortofon VMS series. A trifle uninspiring overall	7-17g Normal, MM		67
Empire MC-5M £110	Average + Good	A very low compliance renders this MC best suited to heavy tonearms while its sweet, non-aggressive sound quality earns it a recommendation	13-20g Low, MC	R	67
Empire Benz Micro MC-2 £600	Average Good +	Similar to both the Empire MC1000 and vdH MC2 in design, the Benz offers a warmer and very transparent account of the music. Its tracking prowess is slightly limited	5-12g Low, MC	R	72
Glanz MFG 110EX £25	Average Average	A little bright but giving detailed bass and clear treble this was competitive at the price	6-16g Normal, MM	R	Systems
Glanz MFG310-LX £50	Good + Good + +	Detail and treble outstanding for sub-£100 cartridge. Slight coloration may be due to body resonance	6-10g Normal, MF	BB	85
Glanz MFG610-LX £90	Good + Good +	Similar to cheaper '310 but slightly clearer transients and bass. Benefits from lowish impedance loading	3-10g Normal, MF	R	85
Glanz GMC-10EH £50	Good Good	The rising HF trend of this high o/p MC may cause problems in certain systems but with a favourable wind its seductive qualities will win out	8-14g Normal, MC	R	67
Glanz GMC-10LX £80	Average + Average +	Bearing some of the hallmarks of the '10EH, the '10LX is still less competitive in the sonic stakes	7-15g Low, MC		67
Glanz GMC20E £129	Average Average	You could try hagging but we thought the makers of this number were demanding too much lucre for their product	3-6g Low, MC		48
Goldmund Clearaudio £1500	Average + Very Good	Something of a mixed bag overall, its sonic character bears a strong resemblance to the Pradikat though it shares some of the hallmarks of the more expensive Accurate	5-12g Low, MC		60
Goldring 1012 £40	Good + Good	Slightly harsh sound but plenty of life and quite good detail. Some very high frequency coloration apparent.	6-12g Normal, MM	R	85
Goldring 1022 £60	Good + Good	As with 1012, a touch harsh; detail and transient purity improved, though, and it goes well with electric guitar!	5-11g Normal, MM	R	85
Goldring Elan £16	Average + Average	A lightweight and frisky-sounding MM that appears to be based upon the same body as the Nagaoka mm4	7-15g Normal, MM	R	67
Goldring Epic II £26	Average Average +	An excellent budget choice though the limitations of the stylus are rather obvious at higher frequencies	5-12g Normal, MM	R	67
Goldring Eroica £100	Good Good -	More confused and coloured than its low-output sibling - high output less of an issue in these days of cheap MC-compatible amplifiers	8-15g Normal, MC		84
Goldring Eroica LX £115	Good + Good	Not the most subtle cartridge in the world, can sound edgy at times, but lively and informative	8-14g Low, MC	R	84
Goldring Excel £500	Average + Good	Goldring's most expensive cartridge to date errs on the warm and heavy side of neutral. Strong bass lines are its forte though its ability to resolve subtle treble details is weaker	6-13g Low, MC		72
Grado ZTE + 1 £26.50	Average - Average	Bass and treble are a trifle coloured but the midband proved highly enjoyable. Ideal for budget systems	6-13g (damping) Normal, MM	R*	54
Grado ZF3E + £47.50	Average - Average	Downtilting balance disguises the brightness of this cartridge; bit of a mixed bag at this price	9-20g (damping) Normal, MM	*	54
Kiseki Blue Goldspot £450	Good + + Good +	Good bass and imaging, but hints of spit and coloration let the side down slightly	8-15g Low, MC		84
Kiseki Purpleheart Sapphire £799	Good + Good +	Rare, beautiful to look at and sweet to listen to, our review of this high-flyer conjured up images of Japanese art	5-14g Low, MC		Collection
Kiseki Blackheart £1795	Good Good	This cartridge demonstrated refined poise and a delicate but at once potent security, however, the price did seem a little on the high side compared to other Kisekis	6-16g Low, MC		60
Kiseki Lapis Lazuli £4000	Good Very Good	Combining very sensible design concepts at a silly price, the Lapis Lazuli is best thought of as combining the detail of the MC3000 and the fluidity of the Clearaudios	4-12g Low, MC		60
Koetsu Black S £612	Average Good +	The S is an OEM design built to Koetsu's blueprint. It features a sturdier fixing plate and offers a brighter, faster and more tactile sound than the earlier K	8-15g Low, MC	R	72
Linn K5 £32.50	Average Average +	Not as crisply focused as the costlier Linn magnetics, the K5 offers a smoother presentation	7-16g Normal, MM	R	67

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NAME PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/type	VALUE	BACK ISSUE FULL REVIEW
Linn K9 £81	Average Good	Linn threw this model into the leading pack by beefing up the Basik's bodywork, adding a super stylus, and keeping the price fair	6-15g Normal, MM	BB	48/Coll
Linn Asaka £299	Good + Good +	Disciples of Linn who are trying to realise their true "Karma" may find that saving money is not a short cut to heaven	9-18g Low, MC	R	48/Coll
Linn Karma £465	Very Good Very Good	A specialist which is strongly recommended for Linn-based systems; results may be less predictable in more general application	9-18g Low, MC	R	48/Coll
Linn Troika £669	N/a Very Good	Ex-Karma users have been seen with glazed expressions indicating smug self-indulgence the morning after fitting a Troika	8-18g Low, MC		Coll
London Maroon £149	Average Average +	Now manufactured under the London brandname this Decca cartridge is as iconoclastic as ever	9-20g (damp) Normal, MM		67
London Super Gold £300	Poor Average -	Immediate and (in the midrange at least) detailed, but very coloured, very nonlinear and questionable effect on records. Devotees swear by it	9-15g, damp Normal, fixed stylus MM		84
Milltek Aurora £249	Good + Good +	An overall feeling of relaxed ease characterised this clear and atmospheric Kiseki-built cartridge	8-16g Normal, MC	R	48/Coll
Milltek Olympia £349	Average + Good +	Warm and detailed sound - packs the punch of the best MCs with high output as a bonus	12-20g (damping) Normal, MC	R	54
Nagaoka MM4 £9	Average - Average -	Clear punchy sound that delivers the rudiments of a good performance	6-16g Normal, MM	R	54
Nagaoka MP10 £18	Average Average	High frequencies sounded "shut-in" with this spherical-stylus model, but mid and mass were energetic, bouncy and punchy	5-13g Normal, MM	R	48
Nagaoka MP11 Boron £40	Average Average +	Responding well overall in PM's equipment and listening room, this model was mildly criticised for low level and dynamic limitations	5-13g Normal, MM	BB	48
Nagaoka MP11 Gold £47	Average - Average +	There were mild criticisms directed at most areas, but in general the sound was clear, open and even	3-8g Normal, MM	R	48
Nagaoka Stilton TS10 £50	Good - Good	Stilton-designed solid body (with three-point mounting) certainly gives remarkably resonance-free sound, but tip and generator are less good - a little rough at times	5-10g Normal, MM	R	85
Nagaoka Stilton TS11 £70	Good - Good	Differs from TS10 in having Vital stylus with better tracing but still some high frequency harshness.	5-10g Normal, MM		85
Ortofon OM5E £15	Average - Average -	The OM10 is a hi-fi cartridge - the OM5E is not	5-16g Normal, MM		43
Ortofon OM10 £20	Average Average	One of the leading "cheapes", this gives a fine level of sound quality for the price, with good matching compatibility	5-15g Normal, MM	BB	48
Ortofon OM20 £45	Average Average +	This turned out to be the listening panel's favourite among Ortofon's moving magnet models	5-16g Normal, MM	R	48
Ortofon 510 £30	Good Good +	For the price, a good blend of virtues - weight, clarity and neutrality.	3-11g Normal, MM	BB	85
Ortofon 520 £50	Average Average +	Very sensitive to load capacitance this new Ortofon maintains the company tradition for a lively, effervescent SQ	7-16g Normal, MM	R	67
Ortofon 530 £80	Good + Good +	Very clean and assured sound; transients not quite perfectly pure but plenty of detail.	4-11g Normal, MM	R	85
Ortofon X1 £50	Average Average	The cheaper X1 scored higher marks with our listening panel than the X3, but both were a disappointment	6-15g Normal, MC		48
Ortofon MC10 Super £70	Average Good	"What a delightfully sweet-sounding cartridge this is..." we said	5-15g Low, MC	BB	48
Ortofon X3 £70	Average Average	A lack of bass power, definition and a "zitty" top end makes this competent but uninvolving	5-15g Normal, MC		48
Ortofon OM40 £90	Average Average +	Highly competent engineering, secure tracking and decent sound quality are major strengths. But it's a little cold, a little polite	3-8g Normal, MM		48
Ortofon 540 £100	Average - Average	Graced with an advanced FGII stylus our sample possessed too high a compliance for broad arm matching. It could also sound a little unforgiving	3-8g Normal, MM		67
Ortofon MC20 Super £200	Average + Good +	An "inviting" sound quality: polite rather than exciting it approaches much more expensive models, but does not better them	6-15g Low, MC	R	48/Coll
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
Ortofon Quasar £300	Good + + Very Good	Many of the qualities of the MC3000, although a touch bright. Good detail and delicacy	8-15g Low, MC	R	84
Ortofon MC3000 MkII £850	Very Good Excellent	Low levels of body resonance are a real ear-opener. Nothing to criticise elsewhere: one of the very best	9-16g Low, MC	R	84
RATA RP20 £22	Average - Average	Good integration, a clear dynamic midrange and the beginnings of fine stereo imagery merits clear recommendation	6-14g Normal, MM	R	48
RATA RP40 £44	Average Average +	The '40 did a good job of sorting out the layers and complexity of the mix, with good focus, excellent stereo spread and fine scale	6-15g Normal, MM	R	48
RATA RP70 £77	Average Average +	Clearer and sweeter than the '40 this also seemed heavier and less lively. For £99 you can have a van den Hul stylus	6-14g Normal, MM		43
RATA RP70vdH £99	Average + Good	Able to retrieve bags of musical detail (thanks to the vdH stylus), RATA's top cartridge ranks as one of the most articulate MM's available	11-18g Normal, MM	R	67
Rega Bias £34	Average Average +	Difficult to mount in some arms due to its shallow build, the bias offers a gentle, refined SQ that certainly makes it worthy of audition	4-10g Normal, MM		67
Rega Elys £74	Good Good	Clearly superior to the Bias, despite their common heritage, the Elys is both more detailed, accurate and musically convincing	8-15g Normal, MM	R	67
Revolver £20	Average + Average	This modified AT-95E enjoys a very lively mid and treble even if the bass is somewhat "slower" in protection. A firm budget buy	8-16g Normal, MM	BB	67
Shure M92E £17	Average - Average	Though lacking depth, the overall sound quality was competent, but treble was not its forte	10-15g Normal, MM		43
Shure M99E £29	Average - Average -	Sister to the 92E this is a solid but not particularly exciting cartridge	5-10g Normal, MM		38 (Summary)
Shure ME75E0 £26.50	Average Average -	Rather bright and splashy in the high frequencies but nevertheless a competent model	5-10g Normal, MM		38
Shure M104E £36	Average - Average	Capable in many ways, but giving no substantial improvement over the 92E in our view	5-15g Normal, MM		38

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NAME PRICE	LAB SOUND	COMMENTS	ARM OUTPUT/type	VALUE	BACK ISSUE FULL REVIEW
Shure ME97HE £49	Average Average +	It won't turn a sow's ear of a turntable into a silk purse, but will at least keep going and produce an acceptable result	8-20g Normal, MM	R	48
Shure M105E £49	Average Average -	A slightly 'spitty' sound lacking deep bass and dynamic contrast, but can be used in virtually every system where it will perform "unobtrusively"	5-12g Normal, MM		38 (Summary)
Shure M110HE £60	Average Average	Sound quality was thought eminently presentable, but not exciting; smooth clear high frequencies, but a loss of bass definition	5-10g Normal, MM		38 (Summary)
Shure M111HE £72	Average Average	Early reviews of this cartridge complained principally of the price - which has since come down	5-10g Normal, MM		38 (Summary)
Shure ML120HE £95	Average + Average +	Quite decent sound quality and a generally fine balanced performance	6-18g Normal, MM		48
Shure ML140HE £120	Average + Good	Qualitatively the treble of this well-balanced moving magnet model was a match for many moving coil cartridges	6-16g Normal, MM		43
Shure V15 VMR £215	Good Average +	Initial listening gave promising results, but extended familiarity gave the feeling of a lack of energy and a "shut-in" sound	5-12g Normal, MM		38
Shure VST V £158	Good + + Very Good	Quite exceptional assurance with difficult material: very stable and clear sound. One of the best. Dynamic Stabilizer actually works!	4-11g Normal, MM	R	85
Shure Ultra 500 £499	Good Good	There was no doubting the accomplishments of what could well be the finest moving magnet cartridge around	6-14g Normal, MM		48
Stilton/AT-F3 £110	Good + Good +	At a premium of some £40 this modified AT-F3 offers a startlingly refined performance and is strongly recommended	8-18g Low, MC	R	67
van den Hul MC10 £499	Good Good +	A neutral balanced performer giving transparent midrange, fine depth and focus with firm extended bass. Gosh!	5-10g Low, MC	R	60
van den Hul MC One £699	Good Very Good	This extended all the positive qualities of the '10 but added greater authority and scale - worth it for the extra money	6-12g Low, MC	R	60
van den Hul MC1 Super £800	Good + + Very Good	Slight softening effect on transients was the only real flaw, but it didn't quite seem to have that special touch one expects for the money	8-15g Low, MC		84
van den Hul MC Two £899	Good Very Good	Connected directly to any standard MM input the vdH MC Two rewards with a highly detailed yet fluid and musically convincing portrayal	6-13g Normal, MC	R	72

* rating refers to original tested model

AMPLIFIERS

The amplifier sits at the heart of the system, processing the outputs from all the various music sources as necessary and then driving the loudspeakers. These two (quite separate) functions are integrated into a single box at the low-to-middle price points: separated pre- and power amplifiers become increasingly common as one moves upmarket. At the upper end of the specialist market, valve amplifiers provide a popular alternative to the transistor types amongst enthusiasts.

There is a substantial difference between specialist (sound quality oriented) amplifiers and the consumer electronics style models. The former

are bleakly simple, avoiding all unnecessary features to provide the most direct signal path in the interests of best sound quality. The latter range from models with just basic tone controls and tape recorder switching, to those with elaborate facilities such as graphic equalisers, remote control (including volume), surround sound options etc. etc.

Lab measurement provides some useful data, particularly in regard to an amplifier's ability to drive a wide range of different types of loudspeakers, but this is only obliquely related to sound quality. We also include our measured power output (RMS, 8ohm load, 1 channel driven) - but

again, paradoxically, this doesn't necessarily correspond to the loudness capability of the amplifier, which has as much to do with the elegance of the overload characteristics within a given system (valve amplifiers invariably sound more powerful than their rating would suggest). The listing of features provides some indication to the complexity of an amplifier: many users prefer to retain the option of tone controls to 'shape' the overall sound according to taste; many others have found living without tone controls surprisingly easy, with additional benefits in terms of transparency.

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Acoustic Research A03 £160	Average + Average	New slimmed down version of the A04 with less power and facilities but also a slightly 'fuzzy' sound	38W, MM disc, CD direct and 3 aux inputs		74
Acoustic Research A07 £299	Very Good Average +	Relatively smooth but ineffectual sound quality that lacks some weight and impetus at very low frequencies	75W, 4 line, 2AV and MM/mc inputs		68
Aiwa XA-005 £130	Good + Average -	A technically competent amp with big, friendly but not overly engrossing sound quality	61W, MM 5 line inputs, source-direct		80
Akai AM-52 £230	Average + Average -	Basically equipped, this amplifier offers a comfortable but hardly over-detailed sound	95W, MM/mc disc, 5 line inputs, loudness		74
Akai AM-65B £299	Good Average	On-board 18-Bit DAC's actually give better sound than standard CD inputs! Punchy via MM disc	101W, MM, 6 line, digital inputs		80
Akai AM-93 £550	Average Average -	Unfortunately Akai's on-board D/a converters were less successful than its conventional analogue CD input.	112W, coax and optical dig inputs, MM/mc		68
Amadeus Silver £270	Average - Good	Limited headroom via disc but still offers a sweet, lush sound. Limited current delivery	37W, MM/mc, 3 line inputs	R	80
Amadeus Gold £360	Average - Good	There is some indication of instability but otherwise sounds very rich, warm and musical. High-ish IMD.	56W, MM/mc plug-in cards, 3 line inputs	R	74
Aragon 4004 £1795	Good Good	Despite its imposing bulk the Aragon is something of a softy at heart. It can deliver oodles of power but its musical presentation is more laid-back	231W power amp		72
Arcam Alpha II £180	Good Good +	Very confident, convincingly musical and punchy sound that sets the standard for other budget amps	41W, 4 line and MM inputs	BB	68
Arcam Delta 60 £280	Good Good +	Very refined and highly detailed sound via MM and CD without any of the hardness noted via the MC stage	59W, 4 line, MM/mc inputs, no tone controls	R	68
Arcam Delta 90.2 £400	Average + Average +	Dark but slightly dead or conservative sounding version of the original Delta 90. Improved disc stage	73W, MM/mc, 4 line inputs, tone bypass, bi-wire	R	74
Ariston Amp £219	Average Average +	Slightly veiled and thin sound but proved suitably attractive in the listening tests	32W, full logic control, MM and 4 line inputs	R	68
Audio Innovations Series 200 £429	Poor Good + +	Like most Innovations valve power amps, compatibility with other brands is unpredictable. Hardly a powerhouse, but nicely 'open', transparent and dynamic sound in small(ish) systems	12W	R	77
Audio Innovations Series 300 £479	Poor Good + +	Something of an anomaly the 300 is an integrated valve amp that looks awful in the lab but sounds remarkable in a system	10W, MM, 6 inputs	BB	63
Audio Innovations Series 400 £625	Poor Good + +	Superior styling and better build quality than the Series 300 make for a very attractive integrated valve amp. Capable of fine results in the right system, but can sound too 'thin' and lacking in welly	12W, MM and 4 line inputs	R	77

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AMPLIFIERS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Audio Innovations Series 1000/2nd Audio Amplifier £1379/2579	Poor Excellent	This valve combination offered awesome dynamic range with superb transparency and power to match. Compatibility with other brands is unpredictable	15W, MM, 6 inputs, monobloks	R	63
Audiolab 8000C £325	Excellent Good	A well established preamp with a highly controlled sound, though it could do with more life and depth	MM/mc, 5 inputs, hdph, tone controls	R	62
Audiolab 8000A £350	Very Good Good+	Exceptionally detailed, tactile and transparent via CD but slightly more clouded via disc. A stalwart design	72W, MM/mc, 4 line and full record out selection	R	74
Audiolab 8000P £495	Excellent Good+	A dynamic powerhouse, load tolerant and sonically reliable	100W	R	62
Audion CD-1 £399	Average+ Good+	Nicely presented valve (line-only) preamplifier with fine bandwidth and enjoyable, musical sound. Great – if you can justify the cost. Well worth hearing	5 line inputs		77
Aura VA-40 £189	Average Average+	Based on ITL's earlier MA80, this amp sounded slightly withdrawn or 'dead' if inoffensive	55W, MM 4 line inputs, MOSFET output		80
Beard Audio CA35/P35mkII £695/£895	Fair+ Very Good	Good build quality and a very smart finish combine with a characteristic valve sound to make a first class amplifier capable of giving hours of musical enjoyment	35W, MM/mc, 4 inputs	R	63
Beard 506 £1195	Good+ Good+	A versatile valve preamp – the bass sounded lively if a touch softened while the treble was detailed but lacked a little sparkle and air.	4 inputs MM/mc	*	50
Beard M70 £1995 pair	Good Good+	A substantial British monoblok power amplifier, but not a great deal more impressive than the P35 at half the price	70W	*	50
Bryston 0.5B/2B £695/£695	Very Good Good	Very rugged Canadian pre/power combo that sounds cool confident and punchy. Headamp available to suit MC cartridges	65W, MM and 4 line sources, overload LEDs on power amp	R	74
Bryston 12B/4B £1295/£1395	Good+ Good	Bryston's massive 4B power amp stood out as the backbone of this combo, the preamp sounding a trifle unbalanced between MM and MC inputs	272W, bridgeable to 800W, 6 line, 2 disc inputs, subsonic filter		68
Cambridge P50 £200	Good Average+	A pleasant enough sound with full bass yet with a slightly mechanical quality that reduced its sense of 'naturalness'	56W, 4 line inputs + MM/MC + tone		85
Cello Audio Suite £1200	Excellent V Good/Excellent	Cello's preamp represents a whole new ball game in flexibility and sound quality (or war of attrition on your wallet)	Optional inputs MC etc	R	50
Chord SPM-900 £1725	Average+ Good+	Technically very interesting, this mini-powerhouse uses a switched-mode supply to deliver a crisp and refined sound	236W with protection into lower loads	R	85
Concordant Excelsior £856	Good+ Excellent	Cottage industry styling might not inspire confidence, but sonically this preamp is tremendously vivid and detailed. Real high-end performance. We loved it!	MM plus 3 line inputs. External power supply	R	77
Conrad Johnson PV10 £1,395	Excellent Excellent	Pricey, yes, but a fabulous preamplifier which confirms C-J's high reputation in the States. Beautiful imaging, superb detail, plenty of gain on the phono stage – classy build quality too	MM plus 4 line inputs	R	78
Conrad Johnson MV50 £1995	Good+ Good+	Coupled with the PV5, this CJ power amp performed well on audition	50W		Collection
Conrad Johnson Motif MC-8 £1995	Very Good Very Good	A cheaper alternative to the '7, this preamp is an undoubted success in maintaining the Motif sound but does not compare on sound quality	MM/mc	R	50
Conrad-Johnson Premier Seven £8995	n/a Excellent	Price has increased since we tested it – but at this price who cares? The 'Seven is designed without compromise, and it's clearly one of the finest (valve) preamplifiers money can buy. Absolutely gorgeous!	MM, 4 line inputs, sep. Rec Out, versatile cartridge matching	R	72
Creek CAS 4040 S2 £179	Good Good	More neutral than its predecessor tonally, substantial improvements in transparency were also noted, while the lively punchy, character is retained	30W, MM, 4 inputs, tone controls	BB	62
Creek CAS 4140S2 £219	Average Good	Disc headroom still poor but the open and detailed, if slightly bright, sound wins through	40W, MM/mc, 3 line inputs, mono and mute	R	80
Creek CAS-5050 £399	Average Good	Strong RF IMD compromises the sound of the CD input which contrasts with the delightful performance via MM/mc	72W, MM/mc, aux CD and video + pre/power mode	R	74
Croft Super Micro A £549	Average+ Very Good	The looks are somewhat improved, while this 'hot rod' version with tuned components performed very well indeed. There is still no gain on the line inputs	4 inputs, MM, straight line	R	57
Croft Series IV(S) £850	Good Good	The original IV is still available now supplemented by the higher price and power (S); both are fine performers	40(60)W channel	R	57
Croft Series IVSA £1000	Good Very Good	Featuring tuned components chosen for their sound quality, the 'A' variant is an impressive example of Croft's technique in valve design	60W special supply regulation	R	57
Cyclone Catalyst £1995	Good+ Very Good	Exceptionally load tolerant and very refined in delivery. Extra options available in future	74W, external MM or MC stages, 3 line inputs	R	80
Deltec DSP-50S DPA-50S Pre/Power £725/£925	Excellent Very Good+	Remarkable pre/power combo based around the highly linear DH-0A32 hybrid op-amp. Unmatched detail resolution, control and transparency	63W, external feedback wiring, 3 line, MM/mc no tone controls	R	68
Deltec DPA 100S £2200	Very Good Very Good	A top-quality transistor power amp, sounding fast, articulate and well controlled, though maybe a touch clinical for some tastes	80W	R	50
Denon PMA-250II £140	Good Good+	Spacious yet tactile and gutsy sound via all inputs. Worthwhile upgrade over original PMA-250	53W, MM 3 line inputs, source-direct	R	80
Denon DAP-2500 POA-4400A Pre/Power £549/£599 pr.	Very Good Good	Denon's fully-fledged preamp also incorporates D/a converters that did not improve the sound of our £299 CD player. The power amps are brilliant!	172W, monobloks Opt/Coax dig + 2 tape, 4 line and MM/mc inputs		68
Denon POA-6600 £1,000/pair	Excellent Very Good	Delivers abundant high quality sound, solid engineering expertise and content clearly compensating for any compromising of purist audiophile principles	250W monoblok, remote power	R	60
DNM 3A From £1000	Good+ Very Good	The DNM3 in its acrylic case is a remarkably revealing and neutral state of the art preamp	5 inputs MM/mc twin vol controls	R*	44
E.A.R. 802/509mkII £1098/£1868	Average Very Good	Extremely well made and combining the sonic strengths of both transistors and valves this EAR combo warrants attention	100W, MM, 6 inputs, monobloks	R	63
E.A.R. 549 £3,628/pair	Very Good Very Good	A valve monoblok that measures like a solid state amp is itself an achievement, but exceptional power delivery and bass 'slam' is not fully matched by delicacy and transparency elsewhere	200W monoblok, bias setting		60
Exposure VII/VIII £430/£470	Very Good Good	Supplied as a combination without the separate preamp power supply, this pre power combination performed satisfactorily especially on the moving coil input	50W, MM/mc, 3 inputs, straight line		62
Exposure VI/VII*/VIII Pre/Power £320/£500	Good Very Good	An established company like Exposure could do more to improve the 'look' of these amps which, nevertheless, sounded confident, dry and musical. Dual version no longer available	63W, Super mod, 4 line and 2 disc inputs with full rec-out switching	R*	68
Exposure XI/XII/VIII Super £1600	Good Very Good	New preamp and improved power amp led to a smooth and refined sound, MM/mc less transparent than CD	61W, MM/mc, 5 line inputs	R	80
Grant G60AMS £948 pr.	Good Very Good	This neat and compact 60W valve monoblok gave good sound on the 8ohm tap, better still on 4ohms. The midrange was particularly natural	60W monobloks 8ohms	R	57
Haffer DH120 kit form £295	n/a Fair	We didn't build one, see below	60W		44

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AMPLIFIERS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Haffer XL-600 £1,145	Very Good Very Good	Sounds remarkably open, transparent and inherently 'musical'. XL-600 is tremendously powerful and very compatible	426W in stereo mode, 1.5kW in bridge	R	74
Haffer DH120 assembled £360	Very Good Fair	Sound quality results were decent enough, but this power amp won't set the world on fire at this price	60W		44
Harman Kardon HK6100 £159	Good Good	Re-packaged version of the popular PM635. Still offers very up-beat and exciting sound	47W, MM, 5 line inputs, tone controls	R	80
Harman Kardon HK6800 £600	Good + Good	Smoother and more evenly paced than previous H/K superamps, this model sounded both confident and nimble. A fine result	115W, 4 line + 2 tape i/p's + MM/MC	R	85
Harman Kardon Citation 25/22 £649/£899	Good Average +	Not as outrageous as previous Citation amplifiers but neither as punchy nor exciting in the sonic stakes. A good all-rounder but lacks sparkle	138W, MM/mc full range of input and record out		74
Heybrook C3/P3 £400/£500	Average + Average -	There's a chance our power amp was a dud for the combo sounded very disappointing on the whole — glassy and uncouth	138W with plenty of current. Passive line inputs		85
Jadis JP30/AJ30 £4,145/£4,200	Fair Excellent	Two-box preamp plus monoblok power amps, classic valve design gives stereotype valve sound. Beautiful build, nostalgic styling and delightful sounding midrange transcend limitations at frequency extremes, in lab, and re cartridge matching	30W 2-box pre-, monoblok power, MM-only, 4 line inputs	R*	60
Jeff Rowland Coherence One/Model 7 £3950/£9900	Very Good Very Good	The technical design of these amps is very elaborate but ensures they achieve an extraordinarily transparent and potent sound. However, the CD i/p is clearly superior to the disc inputs	448W monoblok MM/mc with variable loading options. Balanced topology	R	72
Kelvin Labs Absolute Zero/M30 £395 + £295/£595pr.	Good + Average +	Latest versions of the M30 offers a true 30W Class A and a slightly muddled but very comfortable sound. MC preamp is a very linear design	33W monoblok MC only + 4 line inputs. Separate L/R balance	R	74
Kelvin Digital Integrated £550	Good + Very Good	Not so Class A as before but now fitted with a PDM DAC which offers a smooth, detailed and naturally 'musical' sound	34W, digital, line and MM i/p's only	R	85
Kelvin Integrated £395	Good + Very Good	A true 20W Class A amp with lush, detailed and very musical sound to match. Watch out for re-style	18W, MM/mc, 4 line inputs	R	80
Kenwood KA-550D £130	Very Good Fair	Having dropped its moving coil input, this latest version has British style dynamics and rhythm but is not first grade yet	35W, MM, 4 inputs, hdph, tone controls	R	62
Kenwood KA-4010 £170	Good Average +	A flexible design at moderate cost. Smooth and cultured sound if slightly lean in balance	81W, MM/mc, 4 line inputs, source-direct	R	80
Kenwood KA-5010 £210	Good Good	Offers a slightly bass-light but very smooth, fresh and alive sound. Well built and sensibly equipped	101W, MM/mc, cd 3 tape, tuner, aux + direct	R	74
Kenwood KA-7010 £300	Average + Average +	More powerful version of the 5010 but less successful in the listening tests. RF IMD is the likely cause.	123W, as above plus —20dB mute facility		74
Klyne SK5a £2590	Very Good Very Good	Beautifully made and presented this American thoroughbred has a good lab performance, but although versatile, is rather expensive for the quality of sound offered	Balanced output, versatile cartridge loading		72
Lectron JH50 £2,300	Average Very Good	Sexily presented valve power amplifier from France. Lovely valve sound too, with delicate and airy top end. Not especially powerful and rather expensive — but very desirable!	50W		78
Linn LK1/LK280 Pre/Power £545/£695	Good Good -	A very modern, logic-controlled amp with distinctive and inoffensive sound quality. Its restrained sound could do with extra insight and zip.	84W, compact amp CMOS sw. for 2 tape, 2 line and MM/mc. xlr sockets.		68
Linx Nebula £500	Average + Average +	Ambitious both in style and design this amp was less impressive in the sonic arena — positive but two-dimensional	88W, logic-controlled i/p switching		85
Magnum MP150/MF150 £320/£320	Average + Good	This is no technical masterpiece but the strain-free, fluid sound augers well for CD-based systems. Excellent value	89W, 3 line + MM/MC i/p's. No tone cont.	R	85
Marantz PM-50 £230	Good + Average +	One of Marantz's new breed, the PM-50 has a big and beefy sound yet one that lacks refinement	92W, MM/mc, 4 line inputs, source-direct		80
Marantz PM-75 £500	Good Average	More successful than most amps with on-board DACs but still not as balanced as other Marantz products	136W, opt/coax dig inputs, 6 line + MM/mc		68
Marantz PM80 £400	Very Good Good +	Technically robust with an equally beefy and tactile sound. Great sense of power and control but spatially a little flat	133W, 3 tape, 4 line + MM/MC. Class A option	R	85
Marantz PM94 £1,200	Very Good Good	At 23kg the PM94 is no lightweight in either physical or sonic respects. A very powerful and comprehensively equipped amplifier	140W MM/mc tone controls (switchable)		60
Marantz PM-95 £1,800	Very Good Average +	Beautifully constructed, this amp was less convincing via its digital i/p than via line. Class A option best suited to sensitive speakers. Costly	151W with 30W available in Class A. Opt + coax inputs		74
Meridian 201/205 £599/£425 each	Very Good Good +	A fine preamp with additional luxury option of full system remote, plus competent and attractive monoblok power amplifiers with generally good performance	100W MM/mc 6 line inputs remote capable straight line	R/—	62
Mission Cyrus One II £200	Very Good Very Good	Crisp, meaty and exquisitely detailed, this latest Cyrus amp had us enthralled via CD. MM/MC enjoyed a lesser clarity	34W, 4 line + MM/MC i/p's with dual-conc vol.	R	85
Mission Cyrus PSX £230	Very Good Very Good	The PSX does make the Cyrus Two sound better, and also improves the PCM II CD player giving more wallop and clarity	Auxiliary power supply	R*	62
Mission Cyrus Two £330	Very Good Very Good	Also a top performer in its group with fine moving coil and compact disc sound. Since our review Mission has omitted the headphone socket on the Cyrus Two	50W, MM/mc, 5 inputs, straight line	R*	62
Musical Fidelity B1 £200	Average + Good +	The subject of much controversy, this 50W wonder offers a very deep, solid and powerful sound	50W, MM/mc, 5 line inputs, tape monitor	R	80
Musical Fidelity A1 £269	Average + Average +	Just scraping a recommendation, this current A1 sounded lush but sleepy — lacking the bite and sparkle of old	26W with 9W of Class A, 4 line + MM/MC inputs	R	85
Musical Fidelity B200* £349	Very Good Good +	Running cooler than other MFs, the B200 delivered fine musical and dynamic sounds with plenty of power	80W MM/mc 4 line inputs straight line	BB	62
Musical Fidelity A100 £459	Good + Very Good	This is another one recommended for fine sound with which you could keep your Chinese carry-outs warm	50W MM/mc 5 inputs straight line	R	62
Musical Fidelity MA-50 £875 pair	Good Excellent	An audiophile bargain. One of the best sounding power amplifiers made	50W, monoblok	R	62
Musical Fidelity P270 £1,399	Very Good Very Good	If the hot-box aspect is not a deterrent, this is something of a bargain. A big amplifier scale of sound which is just a little rough-edged	135W	R*	50
Musical Fidelity MVX/A370 £2399/£2399	n/a Excellent	In its latest guise, the A370 confirms its status alongside the MVX as amongst the best indigenous components for both sound and presentation	MM — mm/mc/4 line/phase invert. A370 — 150W	R*	72
NAD 3020i £140	Very Good Good +	The most balanced and communicative of NAD's 3020 series. Great at revealing subtle musical clues without aggression	31W with tone controls, 3 line + MM inputs	R	85
NAD 3225PE £160	Average + Average +	Light and detailed if not as rich or weighty sounding as others. MM input sounds warmer than CD	42W + 70W dyn. headroom; soft-clipping, MM only	R	68
Naim NAIT 2 £339	Average + Fair	Well built with good load tolerance the NAIT delivered a fully competitive sound in spite of its modest measured power output. Recent modifications as yet unchecked	15W pc MM 3 inputs	R*	50

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NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Naim Separates £560-£8,000	Very Good Good	A consistent and coherent series of 'building blocks' for conventional passive or active operation. Sound quality ignores conventional audiophile standards of presentation, but achieves fine musical communication	40-70W, MM/mc etc	R*	60
Nikko Beta 400/Alpha 800 £225-£800	Very Good Good	Big, bold and gutsy these are indestructible amps with a sound quality to satisfy all but the most demanding users	358W(!) with every feature necessary	R	85
NVA P70MC/a60 £830	Fair Average+	NVA's speaker cables are a must, the amp offering well-integrated but not particularly crisp sound	68W, MC, 3 passive line inputs		80
Oakley S £499	Good Very Good	Much improved version of the original Image preamp from Yugoslavia. This one won't disgrace itself even in top-notch systems. Image Six model (£150 more) is really fabulous	MM plus 3 line inputs	R	78
Onkyo A-8000 £140	Good+ Good+	A rare combination of style, features and very acceptable sound quality. Free of compression and 'grain' — undemanding	64W, 5 line + MM disc i/p's + full tone cont	R	85
Orell SA-040 £359	Good Good+	This promising newcomer from a brand new company sounded pretty good and should improve as production settles	45W MM/mc, 4 line inputs, straight line	R	56
Orell SA-040SE £400	Average Average+	Very natural, relaxing if not overly exciting via CD, the sound closed-in to become 'pinched' or fettered via disc	64W, 5 line + MM/MC i/p's. Tweaky compts		71
Philips FA-880 £200	Good Average	A new & cheaper design from Philips that sounds best via MM disc. Can appear soft and unbalanced via CD	108W, MM/mc source-direct tone		74
Philips FA960 MkII £300	Good+ Average	The MkII '960 still failed to grasp our listeners' attention but it remains a competent amp nonetheless	122W, 6 line & 2 disc inputs + tone controls		68
Philips DFA-888 £300	Good Average	As above but including a modified disc input and onboard DAC. Sounds tight but also slightly thin	107W, as above + opt and coax digital inputs		74
Pink Triangle PIP £2670	Excellent Excellent	This state-of-the-art preamp is one of the few truly high end products to come out of this country this year. It will most certainly worry the competition	MM/mc, 4 inputs, battery supply	R	62
Proton 520 £115	Average Average	Very well equipped budget amp with a slightly flat and undynamic sound — acceptable at the price though	31W, MM/mc with variable MC gain, 4 line inputs	R	74
Proton AP-1000/AA-1150 £250/£395	Good+ Average+	Bags of headroom available from this pre/power combo, but can seem bloated or unrefined via MM	67W, MM/mc, adjustable MC gain, 5 line inputs		80
QED A240 CD II £199	Good+ Good	Latest 240CD is fine value for CD and has competent MM disc input as well	45W MM 5 line inputs straight line	BB	62
QED A240 SA II £259	Good+ + Good+	Redesigned 240SA represents a significant allround improvement over its predecessor, and provides a good moving-coil disc input in a competitive price	45W MM/mc 5 line inputs straight line	BB	62
QED A270 £299	Good— Good+	Building on the strengths of the '240, the '270 sounds weighty, fast and dynamic. A bit 'lumpy' via MC	51W, 5 line and 2 disc inputs, pre-out	R	68
QED C300/P300 £300/£300	Good Good	A cost-effective combo, limited in its resolution but no less beguiling as a result. Disc stage is sweeter but samey	58W, 2 tape, 3 line, MM/MC + mono/biamp opt	R	85
Quad 34 £299	Very Good Fair	This well-built durable preamp has useful filtering and above average tone controls but was found lacking in sound quality (viz: detail/dynamics)	4 inputs MM/mc tone controls		44
Quad 405 £389	Very Good Fair	Not an impressive power amp but easy on the ear if not pushed and very reliable	100W		44
Ray Lumley Model 75 £1,995 pr	Average Good+	Monstrous valve 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 £1,047	Very Good Average+	Beautifully constructed but hampered by Revox's convoluted logic control. Open and smooth sound. Still costly.	117W, CMOS sw. for 3 line, 2 tape and MM		68
Revox B250 £1,467	Very Good Good	With much improved sound over its predecessors plus amazing remote control facilities, this could form the heart of a round-the-dream-house system	150W MM/mc system/house remote tone controls		56
Rose RV-23 £395	Good, Very Good	Beautifully built classy British 'hybrid' preamplifier. You can spend more to get a more transparent sound — but it's hard to criticise the Rose given the competitive price	MM plus 3 line inputs	R	77
Rotel RA810A £120	Very Good Fair	As a cut price RA820AII this is a very successful little amp that loses little in sound quality to its predecessor. Excellent value	20W, MM, 5 inputs, hdph, tone controls	BB	62
Rotel RA-820AX £150	Very Good Very Good	The spacious, detailed and very musical performance of this budget amp is almost too good!	47W, MM, 4 line inputs	BB	80
Rotel RA-840BX4 £190	Good+ Good+	Very authoritative but creamy-smooth and delightfully musical. Spatially convincing too, yet not as open as RA-820AX	39W, 4 line + MM/MC, dual-conc. volume, No tone	R	85
Rotel RA870BX £330	Very Good Good+	A powerful blockbuster with solid and well focused sound, good versatility and fine load tolerance	85W MM/mc 7 line inputs tone controls	R	56
Rotel RB/RC850 £160/£140	Good+ + Good+	Quality separate pre and power amplifiers at near budget integrated amplifier prices. A notable achievement	60W MM/mc 4 line inputs tone controls	BB	62
Rotel RC-870BX/RB-870BX Pre/Power £219/£230	Excellent Good+	Reduced price makes the 870 combo better value but, despite mods to the preamp, it is the power amp that must take the lion's share of credit	128W or 208W in bridged mode. CD direct, 4 line, 2 tape and MM mc	R	68
SAE P102/A202 £499/£599	Average+ Average+	Microprocessor-controlled pre and power amp that sounds much better at low rather than high volume levels. Pro-oriented aesthetics	151W, MM/mc + CD tuner and 2 tape tone memory, spk switching		74
Sansui AU-X911 DG £480	Very Good Good+	At its best when used with the on-board MASH/PWM DAC where it sounds technically neutral but still emotionally charged	112W, 4 dig, 3 line and MM/MC i/p's Rec-out	R	85
Sony TA-F410R £170	Average+ Average+	Over-zealous protection circuitry limits continuous power but sound is still agreeably focused despite being tonally lean	84W, 2 tape, 3 line + MM i/ps, Tone + Rec-out		85
Sony TA-F630ESD £350	Good Average	Based on the '530 but equipped with PDM D/a convertor. Amp is competent but DAC sounds truly magnificent!	130W, as above + opt. and coax digital inputs	R	74
Sony TA-F730ES £450	Very Good Good	A very stable and coherent amp but one that lacks a crucial sense of involvement	133W, MM/mc, 3 tape, 2 line, full rec-out		80
Sumo Athena/Polaris £695/£695	Very Good Very Good	Very good value US pre/power combo with transparent, detailed and gutsy sound via all inputs	128W, MM/mc, 2 tape and 3 line inputs	R	80
Teac A-X400 £115	Average Average	Sibilance and a lack of crisp vitality hamper the performance of this amp, as does the stringent protection circuitry	59W, 4 line + MM + tone + mic i/p level control		85
Technics SU810 £130	Average+ Average	Our sample started off sounding fast, taut and well-integrated yet eventually failed on the MM disc input	66W, 2 tape + 3 line + MM. Tone + loudness cntrl		85
Technics SU-V660 £250	Good Fair	Chunky build but integrated output stage infers a weak, insubstantial and rather monophonic sound	107W, MM/mc, cd aux, tape + tuner + power amp-direct		74
Technics SE-M100 £550	Very Good Good+	An unusual disc-less poweramp with volume control. Standard line input sounds very open and clean. Digital input is harsher and less convincing	123W, coax and opt digital inputs, var and direct CD no MM or MC disc	R	74
Yamaha AX-330e £130	Average+ Average+	An improvement on earlier efforts but still a little bland or lack-lustre. Very compatible though	48W, MM, 3 line inputs, source-direct option		80

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NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
YBA Model 3 pre/power £995/£995	Good Good	Suited to highish sens. loudspeakers this duo produced see-through, ethereal stereo images that were more convincing towards the centre of the soundstage than at the edges	56W stereo amp MM only with 3 line i/p's. Separate L/r volume controls		72
YBA 2 pre & pwr £1395/£1695	Good+ + V Good/Excellent	Superbly finished French audiophile separates, with very good space and transparency, slightly softened bass. Needs extra transformer (£300) for MC cartridges	70W MM (MC extra) straight line	R	56
YBA 1 preamp £2895	Very Good Excellent	A front line French audiophile product. Great stereo and a fine Krell style finish	MM/mc, 3 inputs, straight line	R	62
YBA 1 power amp £2995	Good Excellent	This equally well finished power amp offers front rank stereo staging and transparency, and is capable of driving the most difficult loads	85W	R	62

* rating refers to original, tested model

LOUDSPEAKERS

Last item in the hi-fi chain, to some extent the loudspeaker is merely the slave of what has gone before, capable only of reproducing a signal as good as it is fed. Nevertheless the distortions (colorations and stereo effects) introduced by loudspeakers (and rooms) tend to be more immediately obvious than those anywhere else in the chain, so careful choosing according to taste is very important.

The average loudspeaker consists of a smallish enclosure, much of which may have begun life as

part of a tree, plus a couple of drive units hidden behind a removable grille. Inside the box lurks a simple electrical circuit known as a crossover, which divides the incoming (full range) signal into the right bits for the drivers to handle. Variations on the above formula are specifically identified in the entries. The designer's primary task is to balance the sensitivity of the loudspeaker (how loud it goes for a given electrical input) against the bass extension (how low does it go) for the given box size. After that such subtleties as coloration and

dispersion come into the equation.

Careful placement of the loudspeakers within the room is as important as the initial choice of model. For good stereo they need to be more or less the same distance from nearby walls, and preferably on similar rigid stands. The listener should be about the same distance from and listening angle to each loudspeaker. The ideal placement depends on the way a particular model has been balanced (not to mention a number of other factors), and our recommendation is given in the entries.

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	BACK ISSUE FULL REVIEW
Acoustic Energy AE1 £696	Good Very Good	To the author's knowledge, the most awesomely dynamic and articulate miniature ever made	29.5 x 18 x 25cm semi-open space	88dB/w 60Hz	R	59
Acoustic Energy AE2 £1138	Good Very Good	Dynamic, solid and lively, a great allrounder if a bit small considering the price. AE proves that metal cone/dome drivers really work	39 x 23.5 x 29.5cm heavy stands in free space	88.5dB/w 45Hz	R	66
Acoustic Energy AE3 £1650	Very Good Very Good	Solid, authoritative and impressively accurate – if a shade ponderous and slow – AE's latest 'big one' is a much better bet than the earlier '4, combining traditional monitoring virtues with the latest metal diaphragm technology.	63 x 26.5 x 37cm low stands in free space	85dB/w 23Hz (in room)	R	86
Acoustic Energy AE4 £1800 (stands £552)	Good Good	Magnificent but also seriously flawed, the AE4 possesses tremendous dynamic realism but a very mid-dominant balance. Large rooms and wallets only need apply.	54 x 32.5 x 44cm own stands in free space	90dB/w 40Hz		71
Acoustic Research Red Box £100	Average Average	Lively and balanced if a bit crude and uneven, this under-£100 econobox succeeds partly because of its simplicity, and works well with some rear wall assistance.	32 x 19.5 x 17cm close to rear wall	87dB/w 85Hz	R	74
Acoustic Research AR112 £125	Average Average—	Nicely presented and engineered, but sounds a bit small and boxy without true coherence.	36 x 19 x 18.5cm stands near rear wall	87dB/w 75Hz		66
Acoustic Research AR122 £150	Average Average	Despite a promising enough list of ingredients, the 122 failed to excite real enthusiasm amongst the listening panel	38.5 x 19 x 22cm stands near rear wall	87dB/w 68Hz		68
Acoustic Research AR132 £200	Average+ Average—	Good presentation and detail engineering was not sufficient to counter bass heavy balance problems on auditioning	44.5 x 23 x 25.5cm stands 1ft from rear wall	87dB/w 50Hz		66
Alexander SE5 £199	Average Average	Particularly well suited to surround sound A/v applications, the SE5 can give any miniature a run for its money on bass performance; hardness and coloration mar good detail and clarity, and price is a little high	40.5 x 12 x 15cm ALS stands near wall	82dB/w 50Hz (in room)		78
Alexander SE11 £299 (stands £69)	Good Good	Clearly better than its cheaper stablemates, the metal jacket delivers a different – and in some respects superior – sound than the wood-based competition	52 x 14 x 17.5cm stands close to wall	86dB/w 25Hz (in room)	R	82
Allison AL105 £150	Average Average—	Pretty enough in appearance, sonically the AL105 doesn't really make the grade at the £150 asking price	37 x 24 x 21cm high stands against wall	87dB/w 45Hz (in room)		78
Allison CD6 £290	Average Good—	An unusual cube-shaped model designed for wall mounting gives exceptional bass extension from a small box, though it's also a bit heavy, coloured and slow	28.5 x 28.5 x 28.5cm stands against rear wall	88dB/w 45Hz	R	71
Alphason Amphion £680	Good Good	This fine-sounding, nicely finished compact wall-mount is just a little too expensive for formal Recommendation, but is a good performer for all that	44 x 23 x 27.5cm high stands against wall	88dB/w 47Hz (in room)		78
Alphason Orpheus £1000	Good Good+	Large hi-tech two-way features unusual, sweet-sounding isodynamic tweeter; well engineered and balanced if a shade odd in appearance	65.5 x 28 x 34cm stands near rear wall	87dB/w 43Hz	R	71
Apogee Caliper Signature £3350	Good+ Very Good	Pretty but power hungry full range panels have remarkable transparency and delicacy, though loudness and bass 'grunt' both a bit lacking; need very costly amplification	122 x 59-70 x 6.5-28cm floor, free space	81dB/w 30Hz (in room)	R	81
Arcam Three +* £150	Average+ Average—	Arcam's baby speaker did not delight our listeners, but it might do better in less expensive systems	34 x 18 x 23cm close to wall at head height	88.5dB/w 95Hz		53
Arcam Alpha £199	Good Good	It has its own colorations to be sure, but delivers a fine room balance with unusually good dynamics, timing and 'life', and is fine material value for money as well	46 x 26.5 x 26cm stands close to wall	89dB/w 30Hz (in room)	BB	82
Arcam Two +* £280	Good Average	Most things to most men this compact is unlikely to disappoint with its lively "balsy" character though lacking weight... a bit	38 x 23 x 28cm near wall shelf or 40cm stands	88dB/w 55Hz		59
Arcam One + £380	Good Average	Provides a solid, weighty and rich sound, but is a little raw in the treble and indefinite in the midband	22.3 x 28.1 x 37.8cm open space, on stands	88.5dB/w 60Hz		59
Ariston Image £180	Average— Average—	Despite a sweet treble character, the Image fails to impress with a 'lumpy' over-rich balance that has room integration problems	42 x 22 x 27.5cm stands in free space	89dB/w 28Hz (in room)		82
Ariston Q £395	Average+ Average	The prettily shaped Q delivers a good impression of scale from a small box, but the rather laid back, ponderous and over-rich overall sound engendered little enthusiasm amongst the listening panel	35 x 16.5-25 x 20-27cm high stands in free space	85dB/w 30Hz (in room)		86
ATC SCM20 £1320	Very Good Good+	Massively built to no-compromise Pro monitoring standards, the SCM20 is invariably informative but the rather forward presentation is a mite uncomfortable too. Needs a big amplifier and sadly lacks a bi-amp option	44 x 24 x 31cm stands close to rear wall	82dB/w 28Hz (in room)		86
Audio Electronics TC10 II £599	Good— Good+	Oddball appearance is rescued by a respectable technical performance, interesting and impressive engineering and fine sound quality at a realistic price	70 x 33.5 x 33.5cm low stands in free space	87.5dB/w 40Hz	R	68
Audioplan Kontrapunkt £799	Good Good+	Cute little German miniature sounds as sweet as it looks, dressed expensively in real wood with matching stands. Not for bass or loudness freaks	31 x 24 x 13cm matching stands in free space	83dB/w 48Hz (in room)	R	86
B&W Vision DS1 £99	Average Average—	Although significantly hampered by upper bass cabinet coloration, the DS1 cleverly combines high sensitivity with a rich and generous soundstage	36 x 21 x 19cm stands quite close to wall	91dB/w 40Hz (in room)	R	82



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LOUDSPEAKERS

MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	BACK ISSUE FULL REVIEW
B&W Vision DS2 £150	Average Average—	Although the box is generous for the price, the DS2 is a rather uneven performer, both on measurement and listening. Careful stand selection and placement is needed to control the enthusiastic mid bass.	50 x 24 x 25cm stands in free space	89dB/w 43Hz (in room)		86
B&W DM550 £149	Good + Average—	Beautifully presented, well engineered near-miniature with precise sound but a distinct lack of 'wellie'. Ideal for considerate flat dwellers	35 x 20.5 x 22.5cm stands in free space	86dB/w 70Hz		71
B&W DM560 £200	Average + Average—	Fine cosmetic presentation and good engineering for the price; overload protection may be handy but listening panel was underwhelmed	49 x 23.5 x 30cm stands in free space	88dB/w 55Hz		66
B&W CM1 £345	Good Average	Cleverly thought out luxury design package is also fundamentally well engineered, if a shade pricey on 'sound for pound' basis	24.5 x 16 x 22cm close to rear wall	84dB/w 90Hz		74
B&W Matrix 801 £2500	Good + Good +	Lacks the transparency of the best panels, and the drama of the best dynamics, but is something of an acoustic tour de force, with low coloration and fine stereo imaging	77/99 x 56 x 43cm floor or stands, free space	86dB/w below 20Hz (in room)	R	81
Bose Interaudio 3000XL £150	Average Average—	Lots of perceived value and well enough balanced, but low cost cabinet and driver engineering results in a crude and unsuitable sound	46.5 x 29 x 23cm stands in free space	89dB/w 45Hz		71
Bose 305 £350	Average Good—	A bit of an oddball, fine dynamic liveliness and a good room match more than make up for the strange stereo imaging and treble	28 x 45 x 23cm high stands near wall	88dB/w 40Hz (in room)	R	78
Bose 901 MK6 £1600	Good Average	Still controversial after all these years, the pre-equalised multi-driver 901 is cleverly engineered to deliver exceptional loudness with a modest amplifier, but mid bass tends to dominate the sound and transparency is notably lacking.	33 x 54 x 32cm rigid stands in free space	(92dB/w midband) 28Hz (in room)		86
Boston A120 £349	Average + Good—	Ugly but cleverly engineered, the 120 combines a tiny main driver with much larger ABR to give a generous, highbeated and lively sound despite little genuine bass extension and a few rough edges.	62.5 x 31.5 x 25cm stands in free space	89dB/w 48Hz (in room)	R	86
Boston A4011 £120	Average Average—	Competent performance for size and price but below average relative to the UK competition	34 x 21 x 20cm on stands near wall	88.5dB/w 63Hz		41
Boston Acoustics T830 £399	Good Good	A lot of speaker for the money, the T830 is a smooth and accomplished performer with a big and easy – or alternatively a lazy and laid back – sound	82.5 x 25.5 x 24cm floor, away from walls	91dB/w 28Hz (in room)	R	82
Castle Clyde £159	Average + Average	A tidy little performer packing punch, but beginning to show its age in the light of new competition	37 x 21.5 x 22cm open space on stands	89.5dB/w 64Hz	R	46
Castle Warwick £179	Good Average—	Excellent presentation and fine engineering with overload protection, but a sonic disappointment in bass and dynamic qualities	46.5 x 25 x 23cm stands 1ft from rear wall	88dB/w 50Hz		66
Castle Durham £209	Average + Average	Listening results were encouraging, well engineered and finished, but lean on treble and a bit weak on bass; still recommended	41 x 21.5 x 25cm near rear wall	89dB/w 67Hz	R	46
Castle Pembroke £229	Good Average +	Comfortably recommended, a sweet smooth sound with good overall balance of engineering-based performance	55 x 37.5 x 30.5cm open space on stands	88dB/w 46Hz	R	31
Celef Cirrus £180	Average Good	It's nice to see Celef back in the UK, with this decent sounding small reflex box that seems unusually tolerant of siting	39 x 20.5 x 23cm stands in free space	84dB/w 60Hz	R	66
Celef CF2 Nimbus £230	Good— Good—	Nicely balanced overall but a little uneven with it, this lively and dynamic large bookshelf model came close to Recommendation	46 x 25.2 x 24cm stands in free space	88dB/w 55Hz		71
Celestion 3 £109	Average + Average	This attractive little wall-mount gives good balance and stereo imagery, with a character which leans more towards inoffensiveness than excitement	31 x 18.5 x 21cm high stands against wall	86dB/w 55Hz (in room)	R	78
Celestion DL6 Series Two £159	Good Average	Good tonal colouring and plenty of bass for the enclosure size; the metal dome tweeter is excellent, but bass and mid lack clarity and 'bite'	45.4 x 24.5 x 26.2cm near wall, on stands	87dB/w 65Hz		59
Celestion DL8 Series Two £199	Very Good Good	A refined middle market speaker has a smooth but slightly dull quality, with good definition and deep, if slightly boxy bass	50 x 27.5 x 27.8cm open, stands	87.5dB/w 60Hz	R	59
Celestion SL12Si £579	Average Average	Careful setting up does reveal elements of fine sound quality, but this 'grown up' SL6 variation has a lumpy response alongside its improved power handling	53 x 20 x 27cm matching stands clear of walls	85dB/w 50Hz		66
Celestion SL600Si £799	Good + Good	This Aerolam high tech miniature has certain remarkable qualities that some will find irresistible, but needs careful system and room matching.	27 x 20 x 23cm matching stands in free space	82dB/w 52Hz		68
Celestion SL700 £1349 inc stands	Good Good	Very sophisticated, mostly smooth and accurate transducer, with fast but not very deep bass and a rather bright treble	37.5 x 20 x 23.5cm free air on tall stands	83dB/w 45Hz		60
Celestion 6000 £1470	Very Good Very Good	A genuine fullrange audiophile quality speaker system – with Star Wars styling to suit a high tech environment	Complex, on floor in free space	82.5dB/w	R	60
Cyrus 781 £250	Average + Good	Properly run in, the pretty little 781 delivers a fast, dynamic and informative sound which more than justifies its price. Take care to adjust placement to suit room and system.	43 x 22.5 x 28cm matching stands 1ft from wall	88dB/w 28Hz (in room)	R	86
Doxa 5 – 2 £900	Average Good	The high sensitivity and seductive midband makes an obvious partner for valve amplifiers, though obtaining a good room match may prove a little tricky	98 x 21 x 28cm floor well away from walls	91dB/w 30Hz (in room)	R	82
Duntech PCL500 Marquis £3998	n/a Very Good	Better value for money than the Crown Prince – and arguably more dynamic, with real bass 'slam' – but a little less refined in the higher registers	147.5 x 27 x 40 free standing away from walls	92dB/w 48Hz	R	65
Duntech PCL1000 Crown Prince £6120	n/a Very Good +	Immensely 'listenable', refined sounding speaker capable of creating lifesize musical images. Not overly transparent to source, but very civilised nonetheless	180 x 30.5 x 43.5 free standing away from walls	90dB/w 42Hz	R	72
Goodmans Maxim Two £90	Average + Average	More wham-bam-thankyou-mam sound that imitates much bigger speakers when you let these babies yell. (A well-controlled yell)	26 x 17 x 19cm near wall on shelf or stand	86dB/w 85Hz	BB	59
Goodmans B-Max/Maxim Two £90 + £90	Poor Average—	Stick with the Maxims on their own until you can afford some real grown up loudspeakers	60 x 21 x 26 + see above, suck and see	89dB/w 55Hz (in room)		78
Goodmans M100 £79	Average + Average—	Effectively a Maxim on the cheap, the M100 measures more smoothly but sounds somehow less involving than its more famous stablemate.	20 x 17 x 26cm close to rear wall	85dB/w 50Hz (in room)	R	86
Goodmans M300 £99	Average Average—	Conveying much of the charm and life which has made the Maxim 2 so popular, the M300 is sensitive, but also significantly hampered by upper bass cabinet coloration	38.5 x 21.5 x 17cm stands close to rear wall	89dB/w 50Hz (in room)	R	82
Harbeth LS3/5A £343	Good Average	Still a classic miniature, though not to every taste, and none the better for the recent update under our listening conditions. Limited dynamic range	30.5 x 19 x 16cm stands in free space	81dB/w 60Hz		66
Harbeth HL Compact From £539	Very Good Average	The clean and neutral sound lacks resolution and gives rather unsuitable though well differentiated stereo. Can be bi-wired to advantage	52 x 27.2 x 28.1cm open space, on high stands	87.5dB/w 65Hz		59
Heco Interior 90S £159	Good Average—	Neatly finished and engineered miniature, but the disappointingly 'lifeless' sound left the listening panel decidedly underwhelmed	27 x 18 x 16cm on high stands	87.5dB/w 90Hz		74
Heco Interior 120 £169	Good Average	Drab appearance belies a lively enough character, though the balance is altogether a bit bright for UK tastes	32 x 23 x 23cm high stands against wall	88dB/w 50Hz (in room)		78
Heco Interior 430S £429	Good Good—	This tall floorstanding enclosure delivers an impressively even sound balance with good bass extension, if not the lively dynamics to satisfy enthusiasts	85 x 24 x 27.5cm free space	88dB/w 43Hz	R	71

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THE DIRECTORY

LOUDSPEAKERS

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ SIZE ■ PLACEMENT	■ SENSITIVITY ■ BASS FROM	■ VALUE	■ BACK ISSUE FULL REVIEW
Heco Superior 740 £599	Good Good—	A similar sonic package to the cheaper Interior 530, these Superior clothes are very pretty indeed, though spikes are still awaited	84.5 x 22 x 25cm on floor in free space	88dB/w 30Hz (in room)		78
Heco Superior 940 £1000	Good Good	This large and beautifully finished floorstander has an impressively smooth and attractively transparent midband. Bass is well extended but follows rather than drives the music along.	110 x 26 x 31.5cm free space	88dB/w 20Hz		86
Heybrook Point 5 £139	Average Average	"Uncouth yet still satisfying". The Point 5 gives good dynamics and bass for a compact wall-mount, but is burdened by a somewhat unhappy treble	37.5 x 23 x 24cm high stands against wall	85dB/w 32Hz (in room)		78
Heybrook Point 7 £185	Average Average	Physically an attractive package, but not entirely convincing in lab or listening panel test; interesting for all that	40.5 x 23 x 23cm stands against rear wall	85dB/w 60Hz		68
Heybrook HB1 £199	Good Average+	No longer an over-bright character, a strikingly clear sound and fine transient performance now merits recommendation	47 x 29 x 23cm on stands near wall	88dB/w 61Hz	R	46
Heybrook HB100 £255	Average+ Good	Well matched for wall siting, the HB100 is a lively and informative performer in the tradition of the popular HB1	47 x 26 x 28cm stands near rear wall	86dB/w 50Hz	BB	66
Heybrook HB150 £319	Average Good	Convincingly communicative but a bit colored and congested, this lively compact wall-mount is nicely finished but a little costly for the content	40.5 x 23 x 22cm stands close to rear wall	89dB/w 42Hz (in room)		82
Heybrook HB200 £399	Average Average	This luxury successor to the HB2 is lively and informative, but sounded insufficiently balanced to convince our listening panel	46 x 23 x 26cm stands against rear wall	87dB/w 55Hz		66
Infinity RS2001 £180	Average Average+	A little coloured and unruly in the treble, the 2001 nevertheless retains the lively dynamic bounce of its predecessor; pity the price has gone up	36.5 x 22.5 x 20cm lightweight stands	87dB/w 50Hz (in room)	R	78
Infinity Kappa 6 £795	Good Good	Interestingly styled US loudspeaker has unusual high tech drivers and good neutrality, but the sound seriously lacks excitement	63 x 38 x 24cm stands, free space	85dB/w 35Hz		66
Infinity Kappa 8 £1850	n/a Good++	Very nicely made and unobtrusive but large four-way speakers which have a tendency to sound bass heavy unless used with solid core cables	118 x 51.5 x 17.5cm floor standing, open space	89dB/w 33Hz		72
Infinity Modulus £695	Good Average+	Luxury high-tech miniature is carefully conceived and beautifully executed. Undeniably attractive in the midrange and treble, the Modulus failed to handle the bass end of the spectrum as successfully.	30 x 18 x 26cm high stands 1ft from wall	84dB/w 45Hz (in room)		86
Jamo Concert 2 £230	Good Average—	A thoroughly respectable 'bookshelf' performer that needs free space siting but includes attractive cabinetwork and a neat grille	41 x 24 x 25cm stands in free space	85dB/w 48Hz		66
JBL TLX12 £149	Good— Average	This smart near-miniature has a 'boppy', lively bottom end, but beware of the fizz in its top	37 x 23 x 23cm stands 0.5m from rear wall	87dB/w 55Hz	R	71
JBL LX33 £259	Average+ Good	A bit of a cheat, but a lot of speaker for the money, which manages a better room balance than many 'large bookshelf' rivals, and delivers a fine acoustic performance	80 x 25 x 21cm floor, 1ft from wall	89dB/w 48Hz	R	82
JBL LX44 £340	Good— Average	This generously built model offers good power handling, bass extension and dynamic range, but suffers from the 'three-way syndrome', with middle muddle	58.5 x 30 x 29cm stands in free space	89dB/w 40Hz		71
JBL XPL 90 £699	Good Average+	Though undoubtedly pretty and very expensively engineered, this elaborate near-miniature didn't really convince our listeners that it could deliver a sound quality to match its elevated price	39.5 x 24 x 24cm stands in free space	85dB/w 45Hz (in room)		86
JPW Minim £79	Average+ Average—	Very civilised but dynamically limited, the Minim is well suited to the smaller room and where limited loudness is acceptable	27.5 x 18 x 19.5cm stands against wall	85dB/w 28Hz (in room)	R	82
JPW Sonata £99	Good Average+	Well balanced and integrated, this near-miniature offers fine sound if limited bass and dynamic range, plus real tree wood at a nearly silly price	32 x 23 x 20cm stands near rear wall	86dB/w 55Hz	BB	71
JPW P1 £139	Good Average+	Honest and basically articulate if not very sophisticated, resolution is good but it can sound a little wearing in bright systems or with rough sounding material	44 x 25.9 x 26.1cm free space on stands	89dB/w 60Hz	R	59
JPW AP2 £165	Good Good	Few grounds for criticism but purchasers should check out the treble qualities to avoid hammering the ear anvils	46 x 26 x 25cm 40cm from wall on 45cm stands	89dB/w 65Hz	R	53
JPW AP3 £219	Good Average+	Pretty good stereo and well balanced overall it had its own character which is well suited to vinyl replay	52 x 25 x 29.5cm near wall on stands	90dB/w 57Hz	R	46
JRT AD1 £500 (stands £100)	Average+ Good+	A most auspicious Choice debut for relative newcomers JRT. A fair share of cosmetic deficiencies do little to spoil the impressive coherence and timing that makes this beautifully finished and generously proportioned model so enjoyable.	59.5 x 28 x 36cm own stands close to rear wall	86dB/w 28Hz (in room)	R	86
KEF C15 £99	Good Average	One of the tiniest around delivers a surprisingly 'big' and well balanced sound, with excellent stereo from free space siting	26.5 x 18 x 14cm stands in free space	85dB/w 60Hz	R	71
KEF C25 £139	Average+ Average—	Very safe and competent, but rather short on inspiration, the '25 lacks the brio and flair of its smaller C15 brother	34 x 20.5 x 17cm high stands near wall	87dB/w 60Hz (in room)		78
KEF C45 £199	Good Average—	Conventional and competitively priced, C45 delivers an impressively consistent and competent sound. As one listener commented: "Offensively inoffensive... whether it be love or loathing, give me some emotion"	47.5 x 28 x 24cm uncritical	87dB/w 30Hz (in room)		86
KEF C55 £219	Good Average+	Similar to but less good value than C75, the '55 provides Uni-Q stereo stability but not real wood veneer or good low frequency room match	48 x 24.5 x 25cm stands, free space	91dB/w 30Hz (in room)		82
KEF C75 £349	Good Good	Compact floorstanding model's Uni-Q driver provides fine crossover integration, giving stable stereo and fine dynamic range within a slightly 'rich' balance	72 x 24.5 x 25.5cm floor in free space	90dB/w 45Hz	R	71
KEF R102 £365	Very Good Very Good	High class near-miniature with expressive, articulate midband and clean, accurate bass and top. The sound quality of the Kube circuitry, however, is suspect	33 x 20.7 x 26.3cm near wall or open on stands	89.5dB/w 60Hz	R	59
KEF C95 £599	Good Good	Rich and lazy, but nonetheless very endearing in a cosy sort of a way, the '95 is a lot of speaker for the money, and delivers a big sound with grace and subtlety	88.5 x 24.5 x 31cm floor in free space	90dB/w 28Hz (in room)	R	78
KEF 103/3 £680 inc. stand	Good+ Good	Technically impressive, excellent bass/power handling for size, but not for the audiophile system. Better among cheaper components, and good in a large room	56 x 27 x 30cm supplied stands free space	90-95dB/w 35Hz		53
KEF 104/2 (inc KUBE equaliser) £895 (£994)	Very Good Good++	A reference point for dynamics, preferred without KUBE, suited to many rooms. Good stereo, high sound levels	90 x 28 x 41.5cm floor standing in free space	92dB/w 50Hz	R	60
KEF 107 £2025	Very Good Good+	A welcome sense of ease and lack of strain at most normal levels. Minor criticisms included a dulling in the extreme treble. Excellent bass extension	116.5 x 33 x 45cm on floor in free space	87.5dB/w 20Hz	R	60
Linn Helix £279	Average+ Good	Attractive presentation is coupled with an attractively lively sound which is more neutral if less committed than earlier Linn loudspeakers	51 x 25.5 x 28cm stands 1ft from rear wall	88dB/w 53Hz	R	66
Linn Kan 2 £339	Average+ Average+	A niche product for those prepared to tolerate its strong character for the sake of its fine bass performance and near invisibility	30.5 x 18.5 x 16.5cm Kan stands against wall	82dB/w 35Hz (in room)		78
Linn Nexus £379	Good Average	Good features include a solid, meaty bass plus good imagery and tonal balance. The catch is that Nexus lacks resolution and timing	49 x 23.5 x 30.4cm near rear wall supplied stands	89dB/w 60Hz		59

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THE DIRECTORY

LOUDSPEAKERS

■ MODEL ■ PRICE	■ LAB ■ SOUND	■ COMMENTS	■ SIZE ■ PLACEMENT	■ SENSITIVITY ■ BASS FROM	■ VALUE	■ BACK ISSUE FULL REVIEW
Linn Kaber £989	Average Good+	Discreet wall-mount package trades sensitivity for fine bass extension and midbass performance; can be a little relentless but has prodigious dynamic capabilities	93 x 19 x 28cm floor against rear wall	86dB/w 28Hz (in room)	R	82
Magneplanar SMGa £675	Average— Average	Tonally 'rich', in the right room it proved a satisfactory musical experience	122 x 48 x 4.5cm on floor clear of wall	85dB/w 56Hz		46
Magneplanar MG1.4 £1190	Good+ Good+	Replaces the stalwart MG1c with a revised panel layout. Offers a very crisp and articulate sound, particularly revealing of upper mid vocal details	155 x 8 x 57cm open space	88dB 40Hz	R	72
Magneplanar MG2.5R £1998	Good Good	Offers the low coloration and profound musical insight of better electrostatic loudspeakers but without loss of low frequency extension	183 x 56 x 4.5cm Open space	83-85dB/w 35Hz	R	60
Magneplanar MG11a £2700	Good Very Good	Another excellent true-audiophile loudspeaker this American panel speaker helps to convey much of the original character of the music	180 x 62 x 38cm well clear of walls	84-86dB/w 35Hz	R	46
Marantz LD20 DMS £170	Average Average	Recommended more for CD users than vinyl keepers. soundly engineered and built but should be heard before bought	36 x 23 x 24cm free space on 45cm stands	86.5dB/w 55Hz		53
Marantz LD50DMS £200	Very Good Good—	Well behaved larger two-way has fine balance, stereo and integration with good bass extension, albeit with mild 'boxy', 'chesty' and 'fizzy' effects	42.5 x 27 x 28cm stands in free space	87dB/w 50Hz	R	71
Martin Logan CLS II £3998	n/a Very Good	Much improved high resolution design, fussy about system set-up and demanding of ancillaries and software alike. It rewards the efforts though	60 x 28 x 7.5cm open space	86dB/w 45Hz	R	72
MB Quart 220 £270	Average— Average	The elaborate and pretty enclosure in a wide range of finishes works better than the drivers and crossover, which impose a lumpy balance	30 x 22.5 x 21cm stands in free space	87.5dB/w 80Hz		74
MB Quart 280 £340	Average— Average	Despite redoubtable build quality and good dynamics, the 280 has a rather 'obvious' mid bass and a balance that adds rather too much of its own character	44 x 27 x 29cm	88dB/w 40Hz (in room)		78
MB Quart 390 £469	Below Average Poor	An aggressive, messy sounding design whose uncouthness undermines the positive level of detail	52 x 31 x 30.5cm open space, on stands	89.5dB/w 60Hz		59
Meridian M30 £775	Average+ Average	Priced but easy on the ears and worth considering especially where space is at a premium	38.5 x 18 x 32cm free space on stands	Active 40Hz		46
Mission 761 £130	Average Good	One helluva speaker for the price, if a shade small and short of subtlety and refinement – should prove a worthy successor to the 70 and 700	38 x 21 x 21cm stands near rear wall	87dB/w 60Hz	BB	66
Mission 762 £200	Average Average—	Mission's 'bookshelf middleweight' offers high sensitivity and loudness capability, but at the expense of a somewhat untidy and rather 'heavy' sound	50 x 25 x 27cm stand, experiment advised	91dB/w 55Hz		66
Mission Cyrus 781 £250	Average+ Average+	Superb build, finish, presentation and engineering for the price, this romantic sounding Cyrus needs careful system matching to achieve good results	43 x 22.5 x 28cm medium stands near wall	88dB/w 40Hz (in room)		78
Mission 763 £300	Average+ Average+	A very artful combination of generous volume and good bass extension at a modest price. Works well in the listening room despite a few rough edges	77 x 25 x 32cm near rear wall	86dB 40Hz	BB	68
Mission Cyrus 782 £350 (stands £80)	Good— Good—	Lively, articulate and beautifully finished, this compact wall-mount model with twin main drivers has good integration but a rather rich, 'Loudness' balance	50 x 25 x 32.5cm Cyrus stands near wall	90dB/w 50Hz		71
Mission 764 £450	Good Good—	Large floorstander has fine bass extension but limited dynamic range, and sounds 'lazier' than Best Buy 763	86 x 25 x 32cm 0.5+m from rear wall	86dB/w 43Hz		71
Mission 767 from £2500	Very Good Very Good	Magnificent and massive part-active monoliths have fine acoustic subtlety and impressive loudness capability, ultimately limited by partnering (Cyrus) electronics	138 x 29 x 43cm floor, flexible	91dB/w below 20Hz (in room)	R	81
Monitor Audio Monitor 7 £150	Average— Average	This lively and punchy near-miniature looks pretty enough and is good value but is let down by an unruly and indifferently integrated tweeter	34 x 16.5 x 17cm stands 1ft from wall	84dB/w 70Hz		74
Monitor Audio Monitor 9 £190	Good Average	Despite a much better treble balance than the 7, the Monitor 9 is less engaging and lively at low frequencies than its smaller sibling	37 x 20 x 21cm high stands near wall	84dB/w 40Hz (in room)		78
Monitor Audio R300/MD £250	Average Average—	An attractive 'large bookshelf' model that's handicapped by poor crossover and integration between paper cone bass and metal dome tweeter	47.5 x 25 x 30.5cm stands in free space	88dB/w 50Hz		71
Monitor Audio R352/MD £299	Average+ Good	A good value large box that sounds more engaging than subtle, providing a good compromise between bandwidth and sensitivity	64 x 25 x 32cm stands in free space	89dB/w 45Hz	R	66
Monitor Audio MA700/Gold £349	Good Average+	Lacks bass authority and timing, but could suit the smaller room, at the end of a CD-based system used primarily for classical music at modest levels	35 x 21.5 x 25cm stands, free space	87dB/w 48Hz (in room)		82
Monitor Audio R852/Gold MD £449	Good Good	Luxury build and 'high tech' tweeter or not, this compact model offers good refinement and detail on an open soundstage	45 x 25 x 26cm stands in free space	86dB/w 50Hz	R	66
Monitor Audio 1200 Gold MD £799	Average Average+	This smooth and civilised slimline floorstanding loudspeaker is well built and nicely presented. But it is also expensive	94 x 20 x 26cm in free space	85dB/w 48Hz		68
Monitor Audio MA1800/Gold £1299	Good Average+	Attractive and beautifully finished, even when ballasted with lead shot the 1800 inclines towards upper bass richness and lacks genuine extension	106 x 22 x 32cm floor, free space	88dB/w 30Hz (in room)		81
Mordaunt-Short 3.10 £100	Average Average+	Probably the liveliest and most communicative miniature around, this beautifully presented design is probably better suited to budget 'real hi-fi' than the blandness of the midi system	28.5 x 17.5 x 20cm high stands near wall	84dB/w 50Hz (in room)	BB	78
Mordaunt-Short MS 3.20 £130	Average Average+	All the charm of its BB-rated £99 baby 3.10 brother, plus a smidgeon more bass for those in a suggestible frame of mind	35.5 x 18 x 20cm open stands against wall	85dB/w 50Hz (in room)	R	82
Mordaunt-Short 3.30 £180	Average Average+	A little too mid-forward for neutrality or formal recommendation, this attractive, good-sized model nevertheless has more than enough appealing qualities to merit serious consideration	46 x 23.5 x 27cm high stands 1-2ft from wall	87dB/w 38Hz (in room)		78
Mordaunt-Short MS3.40 £230	Average+ Average	It looks pretty and sounds civilised, but the 3.40 failed to ignite any degree of enthusiasm amongst our listeners. Low frequency stand and room matching is a bit tricky.	57 x 23.5 x 27.5cm stands in free space	87dB/w 30Hz (in room)		86
Mordaunt-Short 442 £1150	Good+ Good+ +	A resounding success with the listening panels. Make sure your room can accommodate the bass	95 x 26 x 38cm floor standing in free space	87.5dB/w 40Hz	R*	60
Musical Fidelity Reference 2 £199	Good— Good—	This compact wall-mount design with advanced drivers has good dynamics, balance and stereo, plus flashy styling and some midband 'boxy' coloration	38 x 25 x 20cm stands near rear wall	88dB/w 50Hz		71
Musical Fidelity MC-2 £299	Very Good Good+ +	This exceptionally clean and clear design offers real subtlety and finesse. Bass quality is light but exceptionally clear; the treble is smooth if slightly shallow	48.5 x 25.5 x 16.5cm open space and stands	87.5dB/w 65Hz	BB*	66
Musical Fidelity MC-4 £499	Very Good+ Good+ +	Achieving a very high standard, the MC-4 sounds detailed and coherent like the MC-2, but with more bass depth and solidity, and large image scale	56.5 x 26.9 x 29cm open space on stands	87.5dB/w 60Hz	R*	59
NAD 8225 £150	Good Average+	Notwithstanding lacklustre styling and an unprepossessing appearance, this NAD miniature has a smooth and even midband plus an appealing overall jauntiness. The whole turns out to be worth more than the sum of its parts.	34 x 20 x 18cm stands close to wall	87dB/w 45Hz (in room)	R	86
NVA Cube 2 £380	Average Good	A rude but exciting miniature, with unusually accomplished bass capabilities for its size	28.5 x 27 x 28.5cm NVA stands against wall	85dB/w 48Hz (in room)	R	82
NVA Cube 1 £600 (stands £200)	Good— Good+	Attractive, cube-shaped semi-omni is very sturdily built, and gives an idiosyncratic but unusually open, spacious and informative sound	33 x 32 x 32cm own stands c0.5m from wall	85dB/w 52Hz	R	71

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MODEL PRICE	LAB SOUND	COMMENTS	SIZE PLACEMENT	SENSITIVITY BASS FROM	VALUE	BACK ISSUE FULL REVIEW
NVA Cubix £1,100	Average Good	Too idiosyncratic for formal recommendation, the Cubix possesses remarkable bass extension for its size, but is tricky to optimise and has some aggressive tendencies	60 x 32.5 x 32.5cm low stands against wall	88dB/w 20Hz (in room)		78
Opus 3 Credo £399	Average Average	Credo's odd-shaped silicate-based cabinet confers good box and bass performance, but the sound could be more neutral for the price	32 x 28 x 32cm stands in free space	88dB/w 65Hz		74
Opus 3 Capella £599	Good Good	The sound of this Scandinavian curiosity certainly benefits from the crushed marble enclosure, though presentation is strictly DIY	32 x 40.5 x 26(ave)cm amongst books in bookcase	86.5dB/w 45Hz		66
Pearl & Oakley Victoria 200 £1099	Average— Average—	Extraordinary – and to many very attractive – ‘ginger jar’ presentation in Staffordshire ceramics, but let down by need for further acoustic and mechanical development	93 x 33 x 33cm on floor in free space	87dB/w 30Hz (in room)		78
Philips FB815 £230	Average Average	An impressively – indeed imposing – physical package for the price, clever engineering gives a very competent if slightly hard and brittle sound quality that somehow lacks genuine authority.	63 x 27 x 27cm low stands in free space	85dB/w 30Hz		86
QLN Model One £700	Good Average	Similar to Signature at two thirds the price, Model One exaggerates the latter's rich and heavy midbass and lacks its velvet smoothness	35 x (16-25) x (21- 27)cm pillar stands, free space	85dB/w 28Hz (in room)		82
QLN Signature £1,100	Good Good	Beautiful but expensive luxury compact has a rather laid back and ‘heavy’ sound, but coloration is low and stereo imaging very good	37 x 18 x 36cm heavy stands in free space	83dB/w 30Hz (in room)		78
Quad ESL-63 £1690	Good+ Good++	With its unusual but subtle characteristics this classic electrostatic may not be punchy in the bass, but has strengths that some cannot live without	92 x 66 x 27cm open stand well clear of wall	84dB/w 34Hz	R	60
Richard Allan CD5 £184	Average— Average—	This neatly presented small reflex design can sound engagingly communicative, but is flawed sonically and technically and quite expensive too	38 x 19 x 23cm on rigid stands	88dB/w 80Hz		68
Rogers LS2a £180	Average Average	Provides very good engineering and stereo performance for the price, alongside some ‘boxiness’ and certain dynamic constraints	36 x 23 x 21cm low stands 1ft from wall	88dB/w 50Hz (in room)		82
Rogers LS4a £219	Good Good—	This artfully voiced and well balanced compact gives a fair flavour of the classical ‘BBC sound’ at a very reasonable price	43 x 25.5 x 24.5cm stands 1ft+ from wall	87dB/w 32Hz (in room)	R	78
Rogers LS6a £285	Good Good	Stereotypically a Rogers model with impressively even balance, prospective purchasers will have to weigh the fine midband naturalness against slightly lazy dynamics and timing.	51 x 27.5 x 28cm stands in free space	86dB/w 25Hz (in room)	R	86
Rogers LS7t £399	Good+ Good+	A fine combination of classic qualities at reasonable price produces the “R” tag, but try to get a pair home on approval to check for bass ‘heaviness’	56 x 27 x 28cm free space on 40cm stands	88.5dB/w 48Hz	R	59
Rogers Studio 1a £579	Very Good Good—	The classic BBC monitor style sound sensitively updated – transparent and natural with fine stereo, but a touch ‘heavy’ in balance	63.5 x 30.5 x 30.5cm stands in free space	87dB/w 36Hz	R	66
Roksan Darius £1395 (+£345 integral stand)	Good Very Good	New totally realigned, the current Darius provides an exceptionally impressive combination of transparency and delicacy with fine information retrieval and speed. The problem is affording the amplification to do it justice.	47 x 27 x 40cm own stands angled in space	82dB/w 20Hz (in room)	R	86
Rotel RL850 II £140	Average+ Average+	Strongly recommended. Well-balanced, clear, with decent focus and fine stereo, but tendency to ‘heaviness’ needs decent stands and space	44 x 25 x 24cm free space on 40cm stands	86.5dB/w 50Hz	BB	59
Royd A7 Series 11 £115	Average+ Average	Lively clear sound: good upper bass and dynamics, but treble ‘ramp’ made vocals sound shut in. Try before you buy	31 x 20 x 17cm shelf or 50cm stands near wall	86dB/w 75Hz	R	53
Royd Eden £235	Average Average+	Delightful mid/treble speed and transparency but determinedly bass light, this oddball miniature threatens cult status but could use a sweeter tweeter	31 x 20.5 x 18.5cm stands close to rear wall	87dB/w 85Hz	R	66
Royd Apex £485	Average+ Good	Not the smoothest sound around, it more than compensates with an impressively communicative and informative musical presentation	85.5 x 20 x 30cm on floor close to wall	87dB/w 33Hz (in room)	R	78
Ruark Swordsman £219	Good Average	Very attractively styled and finished, the Swordsman is a well built ‘small bookshelf’ model that delivered better test than listening results	38.5 x 20 x 27.5cm stands 0.5m from wall	84dB/w 50Hz		71
SD Acoustics OBS £695	Average Good	Recent changes have added some refinement to a seductive midrange, good timing and fine sensitivity, though bass extension is limited and coloration obvious	102 x 35 x 25cm floor, angled, away from walls	92dB/w 30Hz (in room)	R	82
SD Acoustics SD1 £1150	Average Very Good	A large scale, airy and unusually detailed system with excellent dynamics. Current model has more civilised top-end and warmer balance than original model	123.5 x 38.2 x 31.9cm free space	90dB/w 50Hz	R	60
SD Acoustics SD3 £500	Average Good	Neither cheap nor perfect, this near miniature (using OBS’ mid driver down into the bass) sounds unusually lively and dynamic within inevitable physical constraints, and is ultimately both engaging and entertaining.	38 x 19 x 29cm stands 10cm from wall	83dB/w 30Hz (in room)	R	86
SD Acoustics Ribbon £2000	Average Good+	Entertaining but a little underdeveloped and rather amplifier sensitive, the Ribbon is a lively and loud hybrid marred by some colorations; some like it, others don't	152 x 30 x (15-30)cm floor, angled, away from walls	91dB/w 30Hz (in room)		81
Seventh Veil System IV £1290 (+£340 integral stand)	Average Good+	Lacks welly and loudness but delivers astonishing results with female vocals in particular. Antithesis of the ‘good allrounder’, this oddball design has considerable charm that the committed enthusiast might find irresistible.	72 x 44 x 21 x 29cm own-stands close to wall	84dB/w 28Hz (in room)	R	86
Shan Shimna £280 (stands £75)	Average+ Good—	Pretty little miniature in cast mineral/plastics has limited dynamic range and could sound smoother, but integration is good and box effects slight	31 x 16 x 17cm stands near rear wall	84dB/w 65Hz	R	71
Snell Type C £2350	n/a Very Good	Pricy, yes, but an extremely capable loudspeaker. Musical and transparent; excellent bass extension	112 x 38 x 33 free standing away from walls	90dB 35Hz	R	65
Sony APM-101ES £100	Good Average	Big hearted sound from small bookshelf successor to BB ‘10ES, sounds a little untidy at frequency extremes, so suits CD better than vinyl	39.5 x 22.5 x 23.5 stands in open space	86dB/w 52Hz	R	71
Sony 121ES £150	Average Average—	Good perceived high tech value, but the balance has an artificial ‘loudness’ character, too rich in the bass, making room matching difficult, and too strong in the treble as well.	43 x 25 x 28cm stands in free space	86dB/w 25Hz (in room)		86
Sony APM-141ES £200	Average Average	A great deal of loudspeaker for the money, the rich-sounding ‘141 needs a big room and still shows significant ‘loudness’ (boom’n’tizz) tendencies	61.5 x 26 x 32cm large room, free space	88dB/w 30Hz (in room)	R	78
Sony APM-181ES £300	Very Good Average	Big and beefy but also somewhat fat and bass heavy, this well engineered three-way has notable strengths but lacks transparency and sounds better at lower levels	57.5 x 29 x 36cm stands in open space	87dB/w 40Hz		71
Sony APM 66ES £700	Average+ Average+	Powerful heavyweight sound with a brilliant midband – clear articulate and transparent. But the bass is on the boomy side and the treble can sound grainy	66 x 38 x 36.5cm open space, low stands	89dB/w 60Hz		59
Spendor SP2/2* £500	Very Good Good+	Conceding little to the SP1, this 30 litre model displayed good tonal balance with a highly articulate midrange, only slightly marred at frequency extremes	50 x 25 x 30cm free space, stands	87dB/w 45Hz	R*	59
Spendor SP1 £800	Very Good Good	A very subtle and musical performer that works particularly well with digital material. An exceptional allrounder	63.5 x 29.5 x 30.5cm stands in open space	87dB/w 41Hz	R	60
Spica TC50 £599	Good— Good	This triangular-profile ‘grown up’ miniature is a shade boxy and laid back but has good rhythmic and musical integrity	40.5 x 33 x 29cm stands in open space	88dB/w 55Hz		71
Spica TC50SE £799	Good— Good	A heavily UK-modified TC50, the SE sounds less boxy and more spacious, but lacks some of the urgency of the standard model	40.5 x 33 x 29cm stands in open space	88dB/w 55Hz		71

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Spica Angelus £1295	Good Average	A little bass shy and soft in the bass and lower mid, the free standing Angelus is otherwise tidy, extremely lively and fluid, if uneven overall	116.8 x 53.3 x 26cm away from walls	86.5dB/w 50Hz		60
Studio Power DMS100 £249	Average+ Average+	Close to a BB rating, and in many respects remarkable value for money. Delivers an impressively smooth and large sound, but sheer ugliness will limit its appeal	51 x 26 x 32cm open stands 1ft from wall	86dB/w 25Hz (in room)	R	82
Sugden CL £275	Average+ Good—	A thoroughly impressive and likeable near-miniature, the CL is prettily and properly built, and needs a good driving amplifier	35.5 x 18 x 26.5cm high stands in free space	86dB/w 35Hz	R	78
Tannoy E11 £129	Average Average—	Fundamentally turgid and slow, thanks to leaden upper bass and 'shut in' treble, though stereo images are convincing, as are the reasonably uncoloured vocals	39 x 21 x 22cm stands, free space	87dB/w 45Hz (in room)		82
Tannoy M15 £170	Good Average+	Somehow lacking the magic of its predecessors, the M15 remains a fine value compact that needs careful set-up to give optimum results	50 x 25 x 21cm Blu-tack to stands 1-2ft from wall	88dB/w 40Hz (in room)	R	78
Tannoy DC1000 £200	Average Average—	The smaller of two DC models with dual concentric drivers, the '1000 is much less well balanced than the larger, floorstanding '2000	50 x 24 x 25cm	91dB/w 53Hz		71
Tannoy M20 £250	Good Good	Alongside fine build and presentation, the M20 provides an unusually clever combination of the 'traditional' virtues of transparency and low coloration with more trendy strengths of speed and pace.	50 x 25 x 22cm stands in free space	87dB/w 25Hz (in room)	R	86
Tannoy DC2000 £300	Good Good	Remarkably high sensitivity from unique dual concentric driver that has an involving but characteristic sound. Bass could be better	68.5 x 26 x 27cm floor in free space	93dB/w 55Hz	R	66
Tannoy DC3000 £600	Good Good	Giving new meaning to terms like dynamic range and headroom, the magnificent '3000 is a must for those who enjoy high-level monitoring. But spare a thought for the neighbours	94 x 26 x 31cm floor 1ft+ from wall	94dB/w 30Hz (in room)	R	78
Tannoy Westminster £3600	n/a Good+	These awesome horn loaded speakers are remarkably controlled and impressive, if only suited to a few pockets and rooms	Huge, flat against rear wall, away from corners	96dB/w (manuf.)	R	Coll
TDL Studio 1 £549	Average+ Good	Delivering genuinely extended bass from a compact floorstanding enclosure, the Studio is very detailed but a shade clinical and detached in presentation	76 x 23 x 33cm low stands in free space	84dB/w 25Hz (in room)	R	78
TDL Monitor £1799	Very Good Very Good	Fine solidity and good accuracy, with enough bass extension to satisfy even organ freaks. Needs a big room and can sound a bit lazy and a shade tinkly	118.5 x 30 x 47cm 0.5m from walls	85dB/w 28Hz	R	66
Technics SBC 250 £140	Average+ Average—	Despite a fairly even tonal balance, the 250EK sounded muddled in the midrange and dull in character	36.5 x 23.5 x 20.5cm free space, stands	86dB/w 60Hz		46
Technics SB-CS5 £70	Average Average	Clearly fine material value for money, the CS5 nevertheless betrays its midi system heritage, the quest for size for its own sake compromising the performance of both enclosure and main driver.	42.5 x 25 x 24cm stands in free space	86dB/w 48Hz (in room)	R	86
Technics SB-RX50 £500	Very Good Average+	With its unique coaxial drive unit the RX50 proved a smooth and well balanced loudspeaker, its minor weakness being a mildly excessive low bass	48 x 30 x 26cm free space on 40cm stands	86dB/w 40Hz	R	46
Toshiba SS33-M £100	Average Average	Providing a benchmark for budget loudspeakers, this Toshiba-inspired but UK designed and manufactured model is a lot of loudspeaker for the money, if a shade on the cheap	40 x 26 x 21.5cm stands in free space	86dB/w 55Hz	BB	68
Townshend Glastonbury IIS* £1700	n/a Very Good	What? No bass? Actually, like the KEF 107, Glastonbury II goes down so low you might not notice how good it is. A truly remarkable performer. Superb soundstaging	91.5 x 28 x 46 free standing in room corners	88dB 27Hz	R*	65
Vandersteen Model One £1000	Average+ Average+	This compact American floorstander's elegant staggered baffle arrangement contributes to a refreshing freedom from boxiness, but the price is quite high in view of the additional mid forwardness and bass imprecision	100 x 30.7 x 25.6cm floor clear of walls	87dB/w 23Hz (in room)		86
Videotone Mimimax 2 £80	Poor Average—	Cheap in build and QC as well as price, but cheerful (if coarse) with it - if a little too cheerful after extended listening . . .	27.5 x 17 x 20cm near rear wall	84dB/w 90Hz	R	74
Visonik David 6001 £173	Average— Poor	Sharp styling a classy looking miniature makes, but the complex grillework worsens a sound which starts off with too much top and not enough bottom	20 x 12 x 13cm against rear wall	87dB/w 130Hz		74
Wharfedale Delta 30 £80	Good Average	Very clear and surprisingly neutral for the price, with good dynamics and stereo within limited volume ceiling	37.9 x 20 x 16.9cm near wall on high stands	88.5dB/w 80Hz	BB	59
Wharfedale Delta 50 £100	Average+ Average—	"There's nothing obviously wrong, but it seems a bit mundane," is what we said when the Delta 50 was £129. But since then the price has dropped by 30 per cent, making it great value	48 x 27 x 19cm near wall on 40cm stands	88dB/w 55Hz		53
Wharfedale Diamond III £100	Below Average Average—	This latest version of the long running Diamond sports a better tweeter, but bass, though deep, is soft, and the midband is indistinct and uneven	24 x 18.5 x 20.5cm near wall, stands	86.5dB/w 75Hz		59
Wharfedale Super Diamond £140	Average Average—	Although there are improvements on the basic "legendary" model, listening panelists did not get airborne about this upgrade	24 x 19 x 19cm close to wall at head height	88dB/w 57Hz		53
Wharfedale 504/2 £150	Average Average	Not strictly accurate, this musically involving miniature sounds unusually coherent and well integrated, if a shade dull in balance	29 x 18.5 x 19cm stands against rear wall	84dB/w 60Hz	R	68
Wharfedale 505/2 £180	Average Good	This lively Wharfedale provides plenty of speaker with unusual refinement for the money, and should be fairly tolerant of room siting	44 x 25.5 x 24cm stands 1ft from wall	86dB/w 55Hz	BB	66
Wharfedale 507 £220	Average+ Average—	Generous in size but unimproving sonically, the 507 doesn't seem to gel in the way the smaller 505.2 does, finding a good in-room balance difficult to achieve	49 x 25.5 x 29.5cm high stands 1ft+ from wall	86dB/w 35Hz (in room)		78
Wharfedale Coleridge £499	Average Good	Compact, beautifully finished and extravagantly engineered box sacrifices bass extension in the cause of high midband sensitivity; communicative, but can be a little unforgiving	48 x 26 x 26.5cm stands 1ft from wall	91dB/w 48Hz (in room)	R	82
Yamaha NS 1000M £900	Good Good+	Living up to its monitor label, and tonally well suited to digital material, the NS 1000M is superbly crafted and capable of high levels	67.5 x 37.5 x 32.5cm 30cm from wall, stands	90dB/w 40Hz	R	46

* rating refers to original, tested model.

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CASSETTE DECKS

The bad odour of copyright theft hangs around the compact cassette, but there is no doubt it is the world's most versatile and ubiquitous music storage medium. Hi-fi buffs may wrinkle their noses pointedly, but are still happy to use cassette decks to make up tapes for the car or personal – at the same time complaining loudly about the quality of pre-recorded material. (In fact the very best decks can do a surprisingly good job with musicassettes.)

There is no problem in connecting a cassette deck to any normal amplifier, but some care needs

to be taken in choosing the best tapes for a specific machine. (Trial and error is one effective technique, but many decks have manual bias adjustment and some match up to the tape automatically.) Lab performance and sound quality often go hand in hand, and are frequently somewhat dependent upon factory alignment. The mechanical integrity of the mechanism itself is another crucial factor, that is often reflected in the asking price.

All modern hi-fi decks have Dolby B and the majority have Dolby C besides; the very worthwhile

HX Pro system is becoming steadily more widespread. Remote control remains rare, though sometimes it is available as a system option. Three-head recorders allow simultaneous checking of the recording being made. Auto-reverse is a useful convenience feature, but usually with some mechanical compromise, while double-mechanism "dubbing" decks of dubious quality are fashionable at the bottom end of the market. The welter of different "music search" systems available is some indication of their frequent ineffectiveness.

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Acoustic Research RD-06 £280	Average Average+	Acceptable middle market player with very simple facilities and cramped control section, but unusually good looks	Dolby B/C/HX Pro, fine bias, counter memory, repeat	BB	69
Aiwa AD-F270 £90	Average Average+	An excellent budget machine, adequately equipped and satisfactorily built. Sound quality is in severe danger of transcending the price category	Dolby B/C, fine bias adjust	BB	75
Aiwa AD-F370 £130	Average Average	Adequate but uninspiring recorder with detail shortcomings but good control layout and successful sounding with recorded musicassettes	Dolby B, C, HX Pro, bias adjust		63
Aiwa AD-R470 £150	Average Good	For once, an auto-reverse deck with the performance of a decent unidirectional one at a similar price. The Aiwa is modern in concept and execution, and has good, transparent electronics	Dolby B/C/HX Pro, auto reverse, cue & review, bias adjust	BB	69
Aiwa AD-WX777 £179	Very Good Very Good	Excellent, middle price dual deck with quick side change and a living, breathing sound – though prerecorded tapes sound bright	Twin auto-reverse, one records. Dolby B/C, fine bias	BB	75
Aiwa AD-F700 £199	Good Average—	Somewhat less than the sum of the (most fine) individual parts, this deck has an artificial quality which spoiled the efforts of a fine transport	Dolby B/C/HX Pro, fine bias, CD Direct input		75
Aiwa AD-F800 £249	Good Very Good	Close to first class performance – and superb value. The Aiwa is purposeful and finely engineered. It provides a near irresistible blend of good mechanics and electronics	3 head, dual capstan, Dolby B/C/HX Pro, tape calibration	BB	75
Aiwa AD-WX888 £249	Good Good	Inaccurate set-up spoils metal tape operation, but with other tapes the deck works well. This deck offers fine engineering, facilities and sound	Dual auto-reverse twin deck, Dolby B, C and HX Pro	R	75
Aiwa XK-007 Excelia £400	Good Good	Downmarket version of XK-009 with simplified bias/equalisation adjustment section and more forgiving but less informative sound. Still good, but less exciting than XK-009	Dolby B, C, dbx, HX Pro, 3 Head, tape alignment		63
Aiwa AD-WX909 £400	Good Good	Convenience meets sound quality, and both win. An essentially clean, positive recorder which works alongside an auto-reverse player of lower standard – a sensible compromise	Dual deck, auto-reverse, track search, Dolby B/C/HX Pro, bias adjust, 3 Head	R	57
Aiwa XK-009 Excelia £550	Very Good Very Good	Excellent detail, stable articulate midband and slightly obvious treble. The most interesting Aiwa for yonks	Dolby B, C, dbx, HX Pro, 3 Head, tape alignment, CD direct	R	63
Akai GX-32 £170	Average Poor	Constrained and smeared sum this deck well. It has poor bass and treble definition alike, though it proved well aligned for prerecorded cassettes	Dolby B/C, variable bias, headphone out, track search		69
Akai GX-52 £250	Very Good Very Good	Well finished and a pleasure to use this well specified deck sounds clean and defined with all tape groups, with or without Dolby	Dolby B, C, HX Pro, track locate features	BB	57
Akai GX-65 £300	Average Average+	Fine ungimmicky middle ranking deck with simple, purposeful controls. works best with metal tapes. Performance standards fair to good	3-head, dual capstan, Dolby C/HX Pro		87
Akai GX-95 £400	Good Very Good	Well designed and finished cassette deck with features well judged to please the audiophile – especially switchable Dolby HX Pro and switchable panel display. The calibration system is simple and effective, and the deck sounds great	Dolby B/C/HX Pro, 3 head, manual tape set-up	R	69
Denon DRM-400 £140	Poor Poor	Messy, confused sound terminally lacking in detail and space under all conditions of use due to high mechanical flutter levels	Dolby B/C, memory stop, track search		81
Denon DRM-500 £180	Good Very Good	Powerful, refined and detailed sound, and an excellent transport are keys to the success of this cleanly styled addition to the range – but why no timer standby?	Dolby B/C/HX Pro, variable bias	BB	75
Denon DRW-750 £250	Good Good	Polished and articulate, the only significant shortcoming is poor performance with prerecorded material	Dolby B/C/HX Pro, twin unidirectional, one records	R	69
Denon DRM-700 £250	Good Very Good	Sloppily executed (though attractive) user interface contrasts with a high standard of music making belying its modest price	3 head, Dolby B/C/HX Pro, record return	R	81
Denon DRM-800 £330	Good Very Good	There are some niggling faults and limitations (no timer standby is particularly annoying), but as a means of recording music it sets a very high standard	Dolby B/C/HX Pro, off tape monitoring, dual capstan	R	75
Dual 5850RC £269	Poor+ Average—	Average-to-middling deck which does most things well and skates over the more subtle things. Control system is uninspired but easy to master. Overpriced	Dolby C/HX Pro, bias adjust		87
Goodmans GSW-5200 £90	Poor Poor	Musically unimpressive but at least it's cheap!	Dolby B, twin, one records		69
Grundig Fine Arts CCT-903 n/a (system component)	Good Good—	[Competent part of complete Grundig system] Solid and well engineered deck with small but significant problems preventing it scoring highly. Basic design generally – and transport specifically – are excellent	Dolby B/C, twin auto reverse, one records		69
Harman Kardon CD491 £695	Good Good+	Excellent audio engineering and tremendous flexibility make this an audiophile cassette deck 'par excellence'	Real-time counter, auto reverse, track search, Dolby B, C, HX Pro, bias adjust	R	52
Kenwood KX-440HX £130	Average+ Poor	Uneven, unstable sounding player with limited resolving power, but good control layout and finish	Dolby B, C, HX Pro, intro scan		63
Kenwood KX-3010 £170	Average+ Average	Minor ergonomic shortcomings notwithstanding, this is a workmanlike deck that only misses recommendation due to an azimuth problem leading to very dull sound with prerecorded tapes	Dolby B, C, HX Pro, auto bias		75
Kenwood KX-4520 £260	Good+ Very Good	Some high frequency Dolby misalignment and obscure minor functions aside, this is a vital and engaging performer	Dolby B/C/HX Pro, 3 heads, various search functions	R	81
Kenwood KX-5010 £270	Very Good Excellent	This important new middle price deck is a well thought through and thoroughly developed design which eschews gimmicks for the sake of musical excellence	Dolby B/C/HX Pro, auto tape calibration, track/intro search	BB	69
Kenwood KX-9010 £400	Very Good Average+	Clean, detailed but flat and overtly hi-fi-ish sound quality makes the 9010 a little less than the sum of its parts.	3-head, auto tape calibration, Dolby B/C/HX Pro, remote control		75
Marantz SD-40 £170	Average Average—	Transitory sounding electronics mar a basically good recording machine. Prerecorded material suffers from effects of Dolby pumping	Dolby B/C/HX Pro, bias adjust		81
Marantz SD-50 £220	Good Very Good	Fine, exacting all-rounder offering good stereo, precision and focus. Good with prerecorded tapes too.	Dolby B/C/HX Pro, track & intro search, variable bias etc	R	81
Marantz CP230 £300	Average Average	This is a competitively priced portable recorder though not suited to replay of musicassettes	Dolby B, bias adjust	R	52

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THE DIRECTORY

CASSETTE DECKS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Marantz SD585 £300	Average Average—	Sound quality is a little sat upon, and control ergonomics are somewhat opaque, though the twin auto-reverse/recording capability makes this a powerful machine	Dolby B/C, twin auto-reverse & record, parallel recording etc		69
Marantz SD-60 £350	Good Very Good	A first rate, highly capable deck offering energetic yet refined sound largely due to good electronic design	3-head, Dolby B/C/HX Pro, variable bias & sensitivity	R	81
Marantz CP430 £399	Average Average	Uniquely flexible and compact package for outside work which at a pinch can double as a domestic cassette deck. dbx is useful for location work; results with Dolby B are acceptable	Portable 3 head, dbx, fine bias, ever-ready case and charger/adaptor	R	87
Memorex SCT-5 £150	Bad Poor	Poor example of a twin cassette deck where everything has been sacrificed on the altar of flexibility	1 rec/play. 1 play only transport, Dolby B/C		87
Memorex SCT-84 £200	Average+ Average+	The playback only transport is a little disappointing, but the record one is a quality item and the deck works well. Ergonomics are good, but styling and control feel are decidedly tacky.	Dolby B/C, fine bias, twin with auto-reverse record, unidirectional play	R	69
NAD 6300 £550	Very Good Very Good	Solid and homogeneous sound quality and very good replay compatibility thanks to 'play trim' Distinctive, musical – and costly	Dolby B, C, HX Pro, 3 Head, bias adjust	R	63
Nakamichi CR-1E £345	Very Good Good	Modestly equipped by any standards, the CR-1E stands or falls by its build quality, which is high, and sound which is highly competent	Dolby B & C		57
Nakamichi CR-2E £395	Very Good Good+	Ordinary to look at, in some respects rather awkward to use (tape switching especially), the CR-2E sounds very slightly better than the CR-1E, and therefore ranks well. But it doesn't come cheap	Dolby B & C, bias adjust, remote control	R	57
Nakamichi RX-202E £545	Good Very Good+	Fine, clear and articulate sounding player. Excellent with prerecorded material, but idiosyncratic and sometimes obstructive control system	Auto reverse, Dolby B, C, 2 Head	R	63
Nakamichi RX-505E £895	Very Good+ Very Good+	First class recorder with near state of the art performance. Auto reverse tape system raises a few smiles, but provides auto-reverse without the usual compromises	Unidirectional auto-reverse, 3 heads, dual capstans	R	87
Nakamichi CR-3E £595	Very Good Very Good	The user interface is a little clumsy, though conceptually straightforward. Sound quality approaches the CR-4E, and is amongst the best at the price.	Dolby B & C, bias adjust, remote control	R	57
Nakamichi CR-4E £745	Very Good+ Very Good+	High class deck with a reasonably full range of features and superb sound at a slightly unlikely price	Dolby B & C, bias adjust, remote control, 3 Head	R	57
Nakamichi CR-5E £995	Excellent Excellent	A slightly simplified version of the all-conquering CR-7, the CR-5 has a very similar standard of audio performance – the best	Dolby B/C, fine bias, 3-head	R	69
Nakamichi CR-7E £1500	Excellent Excellent	Remarkably this deck is not only ergonomically but also sonically superior to the Dragon, particularly on record/replay	Real-time counter, track search, Dolby B & C, tape alignment adjust, bias adjust, remote control, 3 Head	R	60
Nakamichi Dragon £1750	Excellent Excellent	Previous to the birth of the CR-7E, this machine stood head and shoulders above the rest. It is still the ultimate for music cassette replay	Auto reverse, Dolby B & C, tape alignment adjust, bias adjust, remote		60
Onkyo TA-2120 £130	Average+ Good	Clear, vivid sound with good timing and resolution when using Type II tapes without Dolby The controls are less inspiring – the meters in particular are plainly inadequate	Dolby B/C, auto tape sensing, block/side repeat	R	63
Onkyo TA-2200 £190	Poor Poor+	Mediocre, dynamically rather squashed sound quality, partly due to iffy transport. Messily equipped too	Dolby C/HX Pro, variable bias		87
Philips FC566 £179	Average+ Average+	Mostly well equipped, though some tape search facilities fail to exploit the auto-reverse capability. Sounds clean and stable – with prerecorded tapes too	Auto reverse, track search, Dolby B & C		57
Philips FC870 £250	Average Average	Disappointing at the price, this is a well equipped deck with off-tape monitoring, but a somewhat listless, smeared musical style	Dolby B/C/HX Pro, 3-heads, track/intro search etc		81
Philips FC567 £279	Average Poor	Well equipped but ergonomically substandard: sound quality is messy and lacking in clarity and dynamics	Dual deck, auto reverse, track search, Dolby B & C		57
Pioneer CT-337 £130	Average Average+	Simple but well made machine with a slightly soft but consistent standard of reproduction	Dolby C/HX Pro, CD synchro, mic inputs	R	87
Pioneer CT-447 £170	Good Good	An excellent and affordable package, decidedly OTT in the display area but capable of genuinely fine musical reproduction	Dolby C/HX Pro, auto tape alignment, track search	BB	87
Pioneer CT-656 £250	Good Good	Well conceived and executed low cost 3-head recorder. It benefits from and makes good use of metal tapes, but is never less than couth and stable sounding – even with ferric tapes	3 heads, off tape monitoring, fine bias, Dolby B/C/HX Pro	R	75
Pioneer CT-737 Mk II £350	Good Average+	Easy to use and sensibly equipped, the CT-737 is much improved, but sound quality is still a tad lacklustre	3-head, Dolby B/C/HX Pro, manual record bias/sensitivity		75
Pioneer CT-959 £450	Very Good Very Good	Near state of the art for £450. Engineering is of a high order which reflects in an open window sound quality, but playback response is very bright (being corrected by manufacturer)	3-head, var bias & eq, multi-mode meters. Dolby HX Pro	R	87
Pioneer CT-91a £500	Very Good+ Very Good+	Superb, near state of the art recorder with an excellent dual capstan transport and very capable electronics. At the price, this one is a mould breaker	3-head, tape calibration, Dolby B/C/HX Pro	R	75
Revox B215 £1,727	Very Good Very Good	Fine, consistent and solid sound quality, with excellent under the skin engineering and many useful features — but you're also paying for the same	Dolby C/HX Pro, 3 heads, dual capstans, auto tape align	R	87
Revox B215-S £1,826	Very Good Very Good+	This is a superbly engineered deck with a classically fine performance that almost transcends the stereotypes. Ergonomics are flawed but the user interface is both powerful and flexible	3-head, dual capstan, Dolby B/C/HX Pro, auto calibration	R	75
Rotel RD-845 £130	Below Average Good/Poor*	Extremely fine transport and clean sounding electronics for the price. Bass lacks weight, but deck works remarkably effectively with chrome tapes. *See text	Dolby B/C, manual tape selector	R	81
Rotel RD-855 £180	Average Good	The transport is OK and the various frequency responses are erratic, but good basic electronics help the Rotel deliver. Coherent, enjoyable and informative	Dolby C memory stop & repeat, track search	R	87
Rotel RD-865 £200	Good Very Good	Fine, architecturally solid sound quality in a package with a low gimmick count and strong audiophile appeal	Dolby B/C/HX Pro, fine bias	BB	75
SAE C102 £549	Average+ Good	Looking most unlike a cassette deck designed in the States and proving competitive in its price group. Not sonically that outstanding, however	Real-time counter, track search, Dolby B & C		52
Sansui D-X301i £180	Average+ Good	Lively, informative and well equipped basic deck, if rather obscure operationally	Dolby B/C/HX Pro, variable bias, track search	R	69
Sansui D-X501 £230	Poor Poor	Unhappy mixture of good looks, excellent ergonomics and mediocre, sometimes poor sound	Dolby B/c, random track search		81
Sansui D-X701 £340	Average Average	A little flat and smeared under some conditions, this design is at its best with metal and prerecorded tapes	Dolby B/C, 3-head, variable bias & output, track search		81
Sherwood DS-1135C £100	Average+ Average	Excellent value. There is a low level constant background drone, and Dolby C recordings sound flat and coloured. Elsewhere sound quality exceeds expectations	Dolby B/C/HX Pro	R	87
Sherwood DS-7000R £230	Average— Poor	Rough and ready cassette deck in which sound engineering has been sacrificed on the altar of extra selling features, namely three heads for real time off-tape monitoring	3-head Dolby B/C/HX Pro		87
Sony TC-RX110B £90	Poor+ Poor+	Woolly bass and scrappy treble combine to make a meal of many music types, despite accurate response shapes with most types of tape. Prerecorded material sounds dull	Dolby B/C		75
Sony TC-TX55 £150	Average Average+	The sound quality ranking is a good one for an auto reverse machine at this price level. Clean, sharp sound, only slightly let down in the deep bass.	Auto reverse, Dolby B, C & HX Pro	R	75

THE WORLD'S NO 1 GUIDE TO BUYING HI-FI

THE DIRECTORY

CASSETTE DECKS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Sony TC-K520 £170	Average + Good	Fine, assured and detailed performer with a very well designed and straightforward user interface	Dolby C/HX Pro, variable bias, display on/off	BB	87
Sony (WMD6C) ProWalkman £249	Good + Very Good	"One of the finest sounding cassette decks on the market today. A mandatory Best Buy, which also fits in your pocket"	Dolby B, & C	BB	60
Sony TC-K850ES £400	Very Good Very Good +	Near state of the art recorder with excellent recording quality, and even better playback performance. Sounds — and looks — best with the display turned off	3-head, Dolby HX Pro, bias/level adjust, dual capstans	R	87
Sony TC-K730ES £500	Very Good Very Good +	First rate cassette deck that scarcely betrays it is a cassette deck on audition. Features and control wise, it feels a little dated	Dolby B, C, bias and equalisation adjust	R	81
Teac V-270C £89	Average — Average —	Not quite cheap enough to compete solely on price, the V-270C is a rather messy and unstable sounding deck	Dolby B & C, bias adjust		63
Teac V-480 £129	Average Average +	A rather utilitarian model, the V-480 just makes it on to our recommended list by virtue of a clean, open sound that to an extent transcends the measurements	Dolby B/C/HX Pro, fine bias	R	75
Teac W-470 £129	Average — Average	A low grade transport is allied to respectable electronics to give sound quality ranging between acceptable and good. Prerecorded tapes sound bright	Twin deck, one records, Dolby B/C, intro-search		75
Teac V-870 £349	Good + Good	Cut-down V-970X for the proletariat. Expensive and carefully engineered with mostly very good but slightly cold sound quality	Dolby B, C, HX Pro, 3 Head, manual tape calibration	R	63
Teac V-970X £449	Very Good Very Good	An excellent sounding deck with useful features (tape calibration etc) that fully justifies the price	Real-time counter, track search, Dolby B/C/dbx & Dolby HX Pro, bias adjust, remote control, 3 Head	R	57
Teac W-990RX £445	Good Good	A mess with dbx, but taut and articulate otherwise. The 990, though expensive, has a powerful range of features, making it one of the few really ambitious decks to successfully straddle both sets of requirements	Dolby B/C 9 dbx, dual auto-reverse/record, parallel & sequential recording, remote	R	69
Teac R-919X £489	Very Good Average	Superbly equipped, yet usable — and well built too. But sound quality is something of a disappointment at this price level, being appropriate for a model about half the price	3-head auto-reverse, tape calibration, Dolby B/C/HX Pro/dbx		75
Technics RS-B555 £160	Good + Good +	Very good value. Resolution, stability and quality of set-up are strong points, a slightly strained, synthetic quality is sometimes apparent	Dolby B/C/HX Pro, bias adjust, track search	BB	81
Technics RS-B665 £199	Average — Poor	Disappointing deck, below par by Technics standards. Lacks detail and neutrality due to electronics and transport limitations	Dolby C/HX Pro, track search, fine bias, mic inputs		87
Technics RS-TR255 £160	Average Average	Neat, sensibly designed middle of the road dual transport recorder, suitable where the ability to dub tapes is a particular priority	Twin transports, one records and auto-reverse, Dolby B/C	R	75
Technics RS-TR265 £170	Average + Average —	Flexibility and build quality are strong suits, and the control system is a gem, but performance is unduly compromised by the range of features and sharp pricing	Dual auto-reverse, one records, Dolby HX Pro		87
Technics RS-B655 £200	Good Very Good	Excellent middle price deck, well equipped with a not over-refined but highly articulate and crisply defined style of musical presentation	Dolby B/C/HX Pro, bias adjust, track search	BB	81
Technics RS-TR355 £200	Average Average	Serviceable middle market dual deck without serious fault but with some annoying inadequacies, notably an inability to play side A and B and then stop	Twin auto-reverse, one records, Dolby B/C/HX Pro		75
Technics RS-TR555 £300	Average + Average	Sound quality varies with mode of use, but is rarely less than competent, and is often highly enjoyable. dbx is best avoided	Dual auto-reverse/dual record/Dolby B/C/HX Pro & dbx	R	81
Technics RS-B905 £350	Good Good	Good, well set up cassette deck with a clean, accurate sound but some compression, dbx circuit sounds poor	Dolby B, C, HX Pro, dbx, bias adjust, 3 Head		57
Yamaha KX-230 £140	Average + Average +	A strong near-budget performer, the strengths include good overall sound, excellent search aids. Weaknesses: ergonomics, soggy bass with prerecorded material	Dolby B/C/HX Pro, variable bias	R	75
Yamaha KX-330 £170	Average Good	Cramped control panel but a strong, dynamic and comparatively stable performance distinguish this strong middle-price deck	Dolby C/HX Pro, optional remote control	R	87
Yamaha KX-530 £230	Good Good	Excellent all-rounder that does most things at least competently and many things well. One of the best middle price decks	Dolby C/HX Pro, 3 motors, optional remote control	BB	87
Yamaha KX-630 £300	Good Very Good	Well equipped and immaculately presented, offers fine, articulate music making with a bias towards high bias tapes, especially metals	3 head, Dolby B/C/HX Pro, optional remote	R	81
Yamaha KX-800 £330	Good Average	The present Yamaha range seems oddly inconsistent. This sophisticated model sounds fine (almost) but came a clear second best to the KX-500	Real-time counter, track search, Dolby B, C, HX Pro with play trim, bias adjust, 3 Head		57
Yamaha KX-930 £400	Good Average	Worthy but ultimately slightly disappointing mixture of fussy ergonomics and tidy but cluttered sonics	3 heads, dual capstans, Dolby C/HX Pro, remote control		87
Yamaha KX-1200 £500	Excellent Average +	A veritable rats' nest of buttons and dials, albeit well laid-out. This is nearly a great recorder, but lacks simplicity of sound	Real-time counter, track search, Dolby B, C, dbx, HX Pro, bias adjust, remote control		52

DAT RECORDERS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa Excelia XD-001 £1300	Very Good Very Good	Clear and very listenable recorder roughly comparable to but slightly sweeter sounding than the Sony DCT-1000ES — but with an inferior front panel design	Track ID and search, remote	R	63
Grundig Fine Arts DAT-9000 n/a (system component)	Good Good	Conventional DAT recorder offering standard facilities. The deck is well made and equipped, and is engineered to a satisfactory quality standard. It performs to an acceptable standard, though it is not state of the art	2/4 hour recording, mic inputs, digital in/out		69
Luxman KD-117 £1499	Good Good	Slightly soggy, earth-bound sound quality, this model trails the other DAT decks tested so far	Two analogue inputs, remote twin address		63
Sony DTC-M100 £799	Very Good Very Good	Clean, clear sounding 2nd generation model with most of the features and sound of the DTC-1000ES	Midi-width, alpha-numeric display, remote, optical interfaces	R	63
Sony DTC-1000ES £1299	Very Good Very Good	Fine, consistent performer with accomplished tape handling and good build quality	Standard track ID and search, remote	R	63

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CD PLAYERS

CD PLAYERS

This all-digital music source is well established, despite still high disc prices and the opposition of many hi-fi enthusiasts. Compact Disc's strengths over conventional vinyl are complete freedom from surface noise with automatic and programmable play, plus track skip and fast music scan – frequently under full remote control. However, many vinyl enthusiasts find CDs sound less involving than

top quality vinyl replay.

Introduced five years ago at around £500, CD players now average less than half that price, and for the main offer improved performance besides. Even cheaper players may have the latest decoding chips and the most useful play features; extra money can buy remote control, remote volume control, audio 'tweaks', plus improved build and component


quality control.

Compared with many hi-fi components, CD players give impressive lab performance, though there are differences between players nonetheless. **Sound quality** variations are even more marked, particularly in a good quality system. As it behaves very like a preamp, there are no problems connecting a player to a normal amplifier.

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa XC-007 £499	Very Good Good	Creditable sound despite inverted output. high tech engineering with very good lab performance. A worthy contender but not cheap	Remote, keypad, timer, digital output. pseudo 20 bit, dual DAC		64
Akai CD-55 £230	Good Average—	Budget model which fails to compare with the CD52	Remote, hdph, Good programming		83
Akai CD-52 £249	Good Good	A nice surprise from Akai, genuinely good sound from this mid-priced model. Better linearity will help further	Remote, digital output, headphone socket	BB	64
Akai CD-62 £330	Fair Very Good	Looks, build quality and the technical specification are right up to date. As it stands it sounds very good but if the indifferent lab performance could be improved, it would probably sound even better.	Remote, programme, hdph, comprehensive display etc	BB	70
Akai CD-73 £450	Good Average	A little uneven musically, the Akai tends to smother fine detail, but has first class dynamics and stereo imagery. Worth auditioning	Track entry keypad remote, menu display (switchable)		62
Akai CD-93 £700	Good Very Good	Undoubtedly a CD player of real class in build, presentation, lab performance and sound quality, but also a shade expensive for formal Recommendation – though that's not to dissuade lovers of black lacquer wood finish	Track entry remote, menu display etc.		58
Arcam Delta Black Box £260	n/a Very Good	This rich, powerful and articulate sounding DAC transforms the majority of medium price CD players	Needs D-out CD players	R	60
Arcam Black Box II £300	Very Good Very Good	An addition to the BB I, it also offers improved sound and more inputs	Optical and wired input digital decoder	BB	76
Arcam Alpha £375	Very Good Very Good	Arcam's new star, its best CD player yet and great value	Remote, hdph, etc, coax dig. out	BB	83
Arcam Delta 70 II £600	Very Good Good	Now in MK II form a further improvement is seen in features, performance and sound quality. Solidly built and British	Now adds simple remote vol + std features; also display off	R	76
Arcam Delta 170 Transport £600	Very Good Very Good	While no bargain, this is a well made metal boxed transport providing clean digital data for outboard decoder/processors	Transport only, display off, usual programming	R	76
Ariston CD1 £345	Good Good	Easy on the ear compact disc for those who like their music Radio 2 flavoured. And it looks good	digital output, remote control	R	87
Cambridge Audio CD3 £649	Poor Good+	Unique internal configuration gives the CD3 a fluid and detailed sound falling off at the frequency extremes. The controls and displays are primitive	Optical/electrical digital out, remote control		87
Carver TL 3100 £340	Average Average—	The sound quality did not live up to the excellent fascia. Carver's DTL did not aid the indifferent sound	DTL sound shaping, usual facilities, remote, memory		76
Carver TL-3300 £700	Good+ Poor	Carver needs to listen critically to CD sounds; in our opinion, DTL does not improve the recipe	DTL, remote, programming, digital output		83
conrad johnson DFI £1,995	Average— Good+	Setting a decent standard and including an FET line preamplifier, the unusual DFI is worth investigating	Line preamp built-in, simple remote facilities		76
Deltec PDM-One £500	Average Very Good	A no frills audiophile bitstream converter at an affordable price	Coax-in, special cable and mains filter options	R	83
Denon DCD 620 £180	Average+ Average—	Not competitive on performance though feature pack is good	Hdph + vol, edit, remote		83
Denon DCD820 £270	Average+ Average—	A powerful combination of features and build for the money ensures recommendation. The sound is just good enough	Well equipped, power vol, edit etc. digital out	R	76
Denon DCD 920 £320	Good Average+	Highly featured and well presented but unexceptional performance	Everything! inc remote volume		83
Denon DCD1420 £400	Very Good Average	Superbly equipped with a fine lab performance, this modern player needs a touch more sonic spice to get recommended	20-bit, very comprehensive, remote, power volume etc		76
Denon DCD-1520 £550	Very Good Very Good	High tech, high profile, high gadget content, good sounding player at an almost affordable price	Programme, hdph socket, remote, track entry, optical digital output	R	70
Denon DCD 3520 £1000	Very Good Good+	Built like a battleship this new model takes its place at the top of the Denon range with a smooth and powerful sound, quite free of graininess	Composite 20-bit DACs, full programming features	R	72

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CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Ferguson CD007 £130	Good Fair	The cheapest recommendation in the test group: don't expect the earth but the value is good	Manual, digital output, headphone socket	R	64
Ferguson CD008 £150	Fair Fair	Not as strong as its relatives, sample fault perhaps? Though performance is fair enough overall	Remote, midi digital output, 2x 0/s, timeshare 16 bit		64
Grundig CD9000 £1000	Good Good	Aimed at a market which puts external styling above sound quality. Although this player is of slightly above average competence in most departments it is expensive	Remote, programme, hdph socket, calendar display etc		70
Harmon Kardon HK7300 £199	Average Average—	Budget low bit technology, does not deliver enough for a recommendation	No remote, no digital out, basic control features		83
Harmon Kardon HK7500 £299	Average+ Average	Decided improvement over 7300 in all respects. Still fairly unimpressive sound	Remote, hdph + vol, remote vol, good programming, A-B repeat etc.		83
JVC XL-21010 £499	Good Average—	Despite some high tech design and a good lab result this model did not deliver good sound quality	32 track prog., disp off, auto fade, 2 digital op		76
Kenwood DP-8020 £500	Excellent Very Good	Fine build and finish, a fine performer in the lab, and in sound quality	Comprehensive remote inc volume, display off, opt & coax digital output, versatile	R	83
Marantz CD50SE £330	Very Good Very Good	Souped up CD50 delivers reference performance in its class. Worthy successor to the '65SE legend	Full remote, power (7 step) volume Hdph. (fixed), FTS disc memory. Good programming	BB	83
Marantz CD60SE £380	Very Good Very Good	Luxury '50SE with superior remote volume and variable headphone socket: a fine performance all round	Optical digital output, full remote, power vol, FTS, hdph	BB	83
Marantz CD12LE £2800	Very Good Excellent	This top of the range two-box player may be very expensive but it is very well made. Technical performance is very good and the sound is the best from Marantz yet	Two box, digital processor, FTS, optical connection, hdph socket, comprehensive display, balanced output etc	R	70
Meridian 203 £495	Very Good Very Good+	Exceptionally lucid, transparent and solid sound 'bitstream' converter. Always tidy and easy on the ear, but doesn't bulldoze the craggy bits	Stand alone converter, 32-48kHz, optical/electrical i/p	BB	87
Meridian CD206 £800	Very Good Very Good	Fine build, finish and styling, very good sound, classy	Good programming, remote, coax digital output	R	83
Meridian CD208 £1490	Excellent Excellent	State of the art CD sound combined with a decent preamp and full remote control	Opt & coax dig. output, fixed and variable output, Hdph + remote level, Programming, phase invert	R	83
Micromega CDF1 Classic £1400	n/a Very Good	A very well made and stylish player from France, the CDF1 is a CD player for analogue lovers or as close as we've come across	Basic remote, digital output, suspended chassis	R	72
Micro Seiki CDM100 £3850	Very Good Good	One of the hernia inducing bricks of hi-fi, the Micro is extravagantly styled, finished and built. The good lab performance led to an 'only good' sonic display when the price demanded excellent	Balanced output, remote, display blanking		72
Mission Cyrus PCM II £400	Very Good Good+	Improvements in price and performance keep this classic remote player in the running	Remote vol, phase inv, display of, dig op, PSX option	R	83
NAD 5320 £169	Average— Average—	A low cost player devoid of features but at this low price it should still offer better sound	Budget facilities, 20 track program		76
Nakamichi OMS-1E £395	Good Good	This neat enough player doesn't really follow the Nakamichi tradition of providing exceptional sound quality while at the same time perpetuates that of selling at an above average price	Simple remote etc.		58
Nakamichi CDP-2E £495	Very Good Good	It's ergonomically superior and has above average sound, but it isn't cheap. The standard of build quality and finish is first class which isn't quite matched by the sound quality	Programming, hdph, remote track entry, digital output		70
Nakamichi OMS-5EII £1500	Good+ Very Good	... delivers near state of the art performance and build quality in a deliberately starkly functional package, but at a very high price. ...	Skip and scan, simple track programming, manual control		51
Nakamichi OMS-7EII £2000	Good+ Good	The only serious criticism here is of the price. And in our not always humble opinion you can get better sound quality for less elsewhere in Nakamichi's range	10 digit track entry keypad programming, headphones		51
Onkyo DX-1500 £170	Average Fair	Ruled out on the grounds of its poor DAC filter, but it's not so bad really given the price	Manual, 2x 0/s, timeshared 16 bit		64
Onkyo DX-7500 £490	Good Very Good	This comes close to the state of the art performance in many areas. It has lots of facilities and is well made too.	Key pad remote, memory, hdph, comprehensive display, optical output etc	R	70
Philips CD610 £160	Average+ Average	Built down to the price the sound is OK while the package performance and features constitute fine value	Remote, hdph, programming etc	BB	76
Philips CD630 £250	Very Good Good	Large clear display with an international flavour. Strong Philips style, high value CD player	FTS, digital op, versatile programming, remote, remote vol (7 steps) hdph (fixed)	R	83
Philips CDC875 £300	Average+ Average—	The changer works well and this machine is very well equipped. The sound quality is below par but may not matter too much in its likely 'muzak' application	6 disc changer/dig op remote, hdph, memory, shuffle		76
Philips CD840 £350	Good+ Very Good	Philips best yet and bitstream too! Very versatile programming and easy to Recommend. Fine stereo imaging for price	FTS, hdph + vol, full remote programming	BB	83
Philips CDV185 £350	Average+ Average	Hard to value with the video singles facility but it all works well enough for a recommendation	Video singles + CD scart + digital out etc	R	76
Pioneer PD9300 £499	Excellent Average	A mid price flagship of excellent build and lab performance but only average sound – interesting though	Remote, 24 track programming, 2 digital op		76
Pioneer PD-91 £899	Excellent Very Good+	Close to state of the art in nearly all areas – soundstaging, clarity and simple lack of artificiality. A well made and sophisticated player	Track entry remote, calendar display, index search, etc.	R	64
Proton AC-120 £180	Average Average—	Fine styling, low price but barely average performance	15 track memory, simple design, remote, hdph		76
Radford DAC1 £895	Good Good	Fine but slightly dated and costly package in performance terms — but flexible, musical and well built	DAC with 2 electrical + optical i/p, tape out		87
Radford WS1 £1095	Good Good	This player fails only in subtle ways. It is not the most engaging of players, but it is strong, forceful and dynamic, and it remains one of the better Philips 16-bit clones	Programming, intro scan etc	R	87
Revox B126 £649	Very Good Good	Made in Switzerland so the build quality and technical performance is high but then so is the price and the sound quality is only good	Programming, Revox remote system compatible		70
Revox B226S £840	Good Average	Top quality build and finish for the Revox system enthusiast. For high value sound look elsewhere	Remote vol, hdph, 19 track memory, digital op		76
Rotel RCD-855 £250	Good Good+	Stripped for action this well built Philips technology player delivers fine performance and sound. First rate value	Remote, 20 track prog, 1 audio op, 1 digital op	BB	76

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CD PLAYERS

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Rotel RCD-865 £300	Average Good	Curious mixture of bold musical presentation and foreshortened imagery. Grows on you though. One to audition with care	'bitstream', remote control	R	87
SAE D102 £700	Good Good	Considering the high price of this player, most of the innards seem fairly prosaic. Sound quality and lab performance are both respectable enough, but hardly justify the price premium involved, though styling is unusual.	Remote (inc volume), skip, scan etc.		58
Sansui CD-X711 £550	Excellent Very Good	Luxury features, finish and sound from this classy Sansui: no excuses required here	Balanced and normal op. Digital-opt & coax: hdph + vol, remote full programming	R	83
Sharp DX150 £129	Fair Fair	This is a none oversampled player which is rather outclassed for technical and sonic merit by the vast majority of the competition. Pretty enough but would you want to put discs in it?	Programmable, skip, search, repeat		70
Sharp DX750 £179	Fair Fair	It has a remote control but it's too like the 150 which is rather outclassed for technical and sonic merit by the vast majority of the competition	Remote, programmable, skip, search, repeat		70
Sonographe SD1 (by CJ) £799	Good Very Good	Distinctive with oak end-cheeks, using Philips based 14 bit x 4 oversampling. Conrad Johnson electronics make this a musically rewarding player	Full search programme and timing	R	51/Coil
Sony CDP-228ESD £400	Very Good Average+	Good value, this is Sony's best mid price design and comes superbly equipped	hdph, remote, rem vol, custom file	R	76
Sony CDP-338ESD £600	Excellent Good	Only a bit better than the 228 the 338 is a good machine, but not quite good enough for formal recommendation at the price	Custom file, remote, rem vol, hdph, shuffle etc, 2 digital op		76
Sony CDP-X7ESD £1300	Good+ Average	A Sony flagship, build and finish is exemplary, styling is unusual but the sound is just average	Custom file, remote, 2 digital op, balanced audio + phonos		76
Sony CDP-R1/DAS-R1 £5000	Very Good Excellent	Sony has aimed high with the R1 and in some ways has created the reference player. Build quality is amazing and it offers a high level of facilities. One or two faults were revealed in both the lab and the listening, but it's generally excellent	Two box, dual optical connection, digital processor, FTS, remote		72
Stax Quattro £2995	Very Good Very Good	Now in mkII guise this substantial player recreated exceptionally strong and convincing bass lines together with a beguilingly musical midband	18-bit DACs, 20-track memory, full IR remote, variable o/p	R	72
Teac PD470LE £279	Average Average	With the LE upgrade the 470 has improved to a just average position	Remote, hdph, 20 track prog		76
Teac ZD880 £450	Good Fair	Decent enough in most respects with a very good build and finish. Its sound isn't competitive enough to inspire any real enthusiasm	Remote, track key access, auto space, comprehensive display, hdph socket etc		70
Technics SL-P277A £160	Very Good Average+	High value, budget priced, yet well equipped and finished, a strong example in its group	Remote, programming, hdph + level, No BB digital op.		83
Technics SL-P550 £220	Very Good Average	Superb, slick presentation, well equipped, average sound, fine build	Remote vol (6 steps) hdph + var, remote programming, edit/fade, digital optical only		83

CD MIDI SYSTEMS

So you want a hi-fi, but you don't want to make a fuss about it. A pre-packaged system with everything matching up and no aggravation may not rank with carefully chosen separates on **sound quality**, but there's no denying the attractiveness or popularity of this approach – the market for pre-packaged component hi-fi systems is at least as big as that for separate items, even ignoring the vast numbers of low-cost single unit stacker systems.

The arrival of compact disc led to a new fashion for shelf-standing compact systems, or 'midis' as

they are known in the trade, as a replacement for earlier floor-standing rack systems (themselves the upmarket development from music centres). Only some 330mm wide, midis can more or less match full-size (430mm) rack components for performance, and are certainly cheaper to make, ship, sell and buy.

Whereas specialist hi-fi is moving steadily towards ultra-simple 'no frills' components, midi systems tend to be sold on a feature count at a price point, usually with little opportunity for

demonstration and comparison. Our test programme includes extensive auditioning and lab testing, while making allowance for the different aspirations of designers and expectations of users. Key features valued highly by customers include system remote control, automatic switching, double 'dubbing' cassette decks, and elaborate equaliser tone controls. And the top end of the market is developing with surround sound audio/video-ready packages.

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa NSX-800 £550	Average Poor	Undetailed, undynamic and largely unmusical system which throws it all away for an excessive range of tape related features	One box miniature plus remote control & speakers with dual auto reverse cassette mechanisms, mic mixing etc		89
Aiwa X-D80K £550	Poor Poor	Congested and harsh sound quality, the cassette deck, amp and loudspeakers being well below par. The built-in timer adds some operational flexibility	Auto-reverse, CD synchro record, remote, timer		77
Aiwa X-D100 £1000	Average— Fair	Very fully equipped with wide ranging in and outputs but poor upgradeability. Sound quality is reasonable on the whole	Digital & optical in/outputs, dual auto reverse, disc file CD etc		77
Akai FX-800CD £700	Very Good Very Good	Well thought through as a functioning system. Lacks the usual surfeit of controls, and sound quality is of an unusually high order. An excellent buy even at this price	Twin record & auto reverse cassette etc with 'intelligent' remote	BB	89
Ferguson HFD28 £300	Poor Poor	Similar to Goodmans 5000 system but with greater power and marginally superior sound	One-piece, semi-remote		77
Grundig Studio Line 1 £330	Poor Average+/ Poor	Intriguing package with warm, woolly but attractive sound let down by poor attention to detail and suspect cassette deck. Amplifier appears to be inadequately protected	CD/cassette tuner plus preset equaliser		77
Hinari DK200 Disc Deck £300	Poor— Poor—	Confused user interface is matched to inadequate electronics. Poor – and poor value	Single unit, two cassettes, CD, tuner, remote		77
JVC Midi-W53 £500	Average Average	A potentially excellent middle price system spoilt by the loudspeakers and – to a lesser extent – the record player	Midi system with SEA equaliser		89
JVC Midi-W900CD £1111	Good Good+	A competent allrounder, with important convenience related features, and powerful linked recording facilities. Less strident speakers would be appreciated	Separates system, equaliser, auto-reverse cassette	R	65
JVC Midi-W91CDM £1111	Good— Average	Very well equipped (viz: multi-disc player, powerful tape related features) with acceptable but rather nondescript sound	Multi-disc player, twin auto-reverse cassette, equaliser		77
Kenwood M-54CD/CDS £600	Average+ Average+	The M-54CD is the version without speakers and is the one to buy. The control system is A1 and the range of facilities offered is dazzling, but the amp and CD player are crude	Dual auto-reverse cassette, tuner/timer, CD, turntable with or without speakers	R	89
Memorex System-550 £500	Average Average+	Above average electronics let down by very poor loudspeakers. Worth considering if the latter are replaced	Dual auto reverse cassette deck, tuner/timer, dual CD player, semi-auto turntable & speakers		89

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CD MIDI SYSTEMS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Pioneer P500 £400	Good Very Good	Inexpensive yet but high grade compact with excellent consistency between sources and plenty of presence	Compact system, remote control, dual auto-reverse cassette	BB	89
Pioneer S-11 £510	Average— Average—	Fine lower middle market system, with one useful extra – the built in timer. Only the record deck is disappointing	Twin auto reverse cassette, built in timers, one piece amp/cassette		77
Pioneer S-555 £800	Good Good	Confusingly well equipped, in some respects rather gimmicky system, weak on record performance (surprise!) but quite or very good elsewhere	Full feature midi system with graphic equaliser, dual disc CD player	R	89
Pioneer S-330D £1080	Very Good Very Good	High standard of reproduction on all sources, though mistracking with Dolby C was a limitation. There are few gimmicks and plenty of fine engineering	Dolby C/hx pro, multi-disc, amp with DAC etc	R	77
Proton AI-3000II £650 w/o spkrs	Average Very Good	Simple facilities and good, no-nonsense engineering combine to produce a system with genuine class. It's as easy to listen to as it is on the eye	Single box amp/tuner/CD/cassette with remote control; no loudspeakers	R	89
Sanyo 39CD £260	Poor Average—	Acceptably compromised basic low end system, offers broadly respectable if unambitious music making for those on a tight budget	One piece + CD, non-remote, manual tuner		77
Sanyo 49CD £300	Poor Average—	Similar to 39CD, but with Dolby B, preset tuning, remote control and more power. Audio wise, it's more of the same, but there's greater stature when loud and cassettes are helped by Dolby B	One piece + CD, partial remote control, digital tuner	R	77
Sanyo SYS-801CD £360	Poor Poor	Typical low end midi system: simple controls, adequate CD and tuner, poor turntable and cassette, awful loudspeakers	Remote control midi system		89
Sanyo 59CD £380	Average— Average—	Adequate performance overall, though endemic lack of pitch integrity takes edge from tape and records. Some inconsistencies in control system too	As 49CD. + full remote, auto source select, separate turntable		77
Sharp CD-X17E £500	Average Average+	Highly specified miniature with detachable speakers, AC mains power only. Good sound let down by crude upper midband and treble. Expensive for what it is	CD luggable with dual cassette & tuner, detachable speakers		77
Sharp 320E £500	Poor Poor	Poor quality system featuring tacky styling, a lack of sophistication – and overpriced	One box midi & turntable with surround matrix		89
Sony Compact 302D £400	Average Average+	Fine low to middle price system whose only significant weaknesses are the poor tuner behaviour with weak signals and the turntable	Auto-reverse record, unidirectional play cassette, graphic equaliser etc.	R	89
Sony LBT-V702D £700	Average+ Good	Creditable up-market system with reasonable speakers and excellent cassette deck, amplifier, and a relative absence of superfluous gadgetry	Twin auto-reverse cassette deck, tuner/timer, video in/out circuitry	R	89
Technics CDC30 £600	Good Good	A fine record player-less system whose electronics are well made and of moderately good performance, it's rescued from anonymity by excellent loudspeakers	5 disc multipley top loading CD player, twin auto-reverse cassette, tuner	R	89
Technics CDX50 £750	Very Good Very Good	Conventional, well built but button bound sound system with a nearly adequate turntable and excellent loudspeakers etc.	Dual auto-reverse cassette system (tested with optional equaliser)	R	89
Yamaha AST-C10 £530	Average+ Very Good	Brilliant if flawed luggable with weighty, powerful bass, and a rare combination of expressiveness and clarity unprecedented from such a small package. Good features.	Mains portable twin cassette/CD/radio system detachable speakers, remote	R	77
Yamaha YST-C11 £600	Average+ Good	The cassette deck is a little wobbly in tone, but CD and FM are excellent, and bass depth is unusually prodigious from such small loudspeakers, though paid by with some loss of subtlety	'Astarte', dual auto reverse cassette, luggable, with remote control		89

TUNERS

The radio medium operates at a much lower profile than TV, but in areas outside pop music the BBC service is the envy of the world. Live Prom concerts can rival all other sources from a hi-fi perspective. Only the FM (VHF) bands give stereo hi-fi sound, though AM (MW & LW) are useful for receiving certain transmissions in the UK.

Something of a hi-fi afterthought, tuners are often selected merely to match a chosen amplifier

cosmetically. However, the task they carry out is far from simple (or cheap), combining the skills of RF (reception) and audio (signal processing) engineering. The importance of the former will depend on local reception conditions, but money invested in a high quality outside aerial system is well spent.

Tuners come in two basic types. Analogue models tune gradually (and usually manually) across

the bands, and can have analogue or digital displays; they are often preferred for sound quality, and are certainly best for AM bands. Digital tuners offer convenient automatic tune facilities and hold many station positions in pre-set memories.

(The Lab and Sound results for models tested in issue No. 65 refer to FM only. For AM results see under Comments.)

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Akai AT-52L £150	Very Good Very Good	Holds its own on FM against many much more expensive tuners, but AM is very poor	All bands	BB	65
Akai AT-93L £250	Good+ Good+	By AM standards presentable (good) while FM delivers the goods	All bands, aerial switch	R	65
Arcam Alpha £120	Good Average++	Attractively classic British analogue tuner with sound quality comfortably better than most	FM/am analogue	BB*	50
Arcam Delta 80 £300	Very Good Very Good	Hi-fi sound on FM, good on AM, a dependable British all-rounder	6AM, 6FM presets. FM/mw. lw display manual tune	BB*	55
Harman Kardon TU920 £299	Good Average	Rather weak sound quality for the price despite good lab test results	16 presets, AM/fm, digital auto scan, active tracking		55
Harman Kardon Citation 23 £559	Good Very Good	Fine performance, interesting features and ease of use are this tuner's forte, and the sound quality is top notch	FM/am seek/manual adjustment muting 16 presets remote control	R	60
Linx Theta £475	Good Very Good	A Magnum Dynalab on the cheap with the hallmark styling of this small British newcomer. Some of the best midrange from any tuner	Manual analogue tuning, no presets, signal strength meter	R	72
Magnum Dynalab FT101 £599	Good Very Good	Although expensive for its fairly minimum set of facilities its excellent sound makes up for what it lacks elsewhere	Analogue manual tuning, no presets, signal strength meter	R	72
Marantz ST35L £125	Good+ Average—	It works well enough but the sound could be better for the money	16 presets, AM/fm, digital auto scan, active tracking		55
Meridian 204 £525	Good+ Good	Pleasant sounding with a fine finish but does not make the grade at this price	FM only, auto scan, digital, remote, clock timer		55
Musical Fidelity TI £300	Good+ Very Good	Top class FM stereo sound on good signal strengths from this audiophile model. Watch out for local CB!	FM only, analogue box dial, manual tune, signal meter	R	55
Naim NAT 01 £1294	Very Good Very Good	There may be better sounding tuners in the world, but we have yet to hear one	No presets. Two box, flywheel tuning FM only, Analogue	R	50
Nakamichi ST-7E £750	Good+ + Good+	Exceptionally good for weak-signal areas, and good all round	16 AM/fm presets, Schotz enhanced sensitivity, auto time digital		55
Onkyo T9090 II £590	Very Good Very Good	It has most of the facilities you could possibly want and more beside. Lab performance and sound quality are both good enough to ensure recommendation even at this price	FM only, digital, 20 presets, auto scan etc.	R	72
Pioneer F91 £350	Excellent Good+ +	Easy to use, this model has excellent RF performance and scored very high ratings on the listening tests	FM/am 24 presets	R	60

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TUNERS

NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Proton AT-300 £199	Good Good	The AT-300 is pretty on the outside, orthodox on the inside and rather dear. AM – poor	FM/mw only	R	65
Quad FM4 £329	Very Good Good+	Fine sound, excellent ease of use, good build and finish and a more than satisfactory technical performance	7 presets. Digital	R	50
Revox B260 £1120	Excellent Very Good	Sophisticated and expensive, the B260 is ideally suited to the rest of the Revox range and should also work well in other systems	FM – virtually everything	R	60
Rotel RT-830AL £110	Good+ Good	Fine sounding budget audiophile material, no frills, no fuss	Manual dial analogue, FM, MW, LW	BB	55
Rotel RT-850AL £160	Good+ Good+	Scoring well on listening tests and one of the best sounding tuners at its price level, it was a bit let down on AM but RF performance was good	FM/am, digital	BB	50
SAE T-102 £449	Good+ Good+	Expensive for all the radio you get, but sounds interesting, AM – poor	FM/mw only	R	65

Rating refers to original, tested model

HEADPHONES

There are a variety of different approaches to headphone design, and examples of each turn up in this group. Amongst the more expensive esoteric models, electrostatic drivers are used in square open-backed phones such as the Jeklin and Stax models. The majority of these come with some form of transformer which takes the signal initially from the speaker terminals on the amplifier. The actual speaker cables then travel from this unit *via* a

bypass switch to the loudspeakers

The more down to earth models feature dynamic drivers in circular open-backed designs. The advantage of open backs seems to be a correspondingly open sound and a less claustrophobic feel to the music. One can also of course hear external noises and irritate people on public transport.

The third category are closed-back designs,

which are useful in situations where it is necessary to block out background noise.

Another means of distinguishing different types is the way they sit on your head or ears. There are three styles: circumaural models enclose the ear and rest on the side of the head; supra-aural designs press on the outer ear (pinna); and intra-aural types rest inside the ear and are popular amongst users of personal stereos

NAME PRICE	COMFORT SOUND	COMMENTS	TYPE	VALUE	BACK ISSUE FULL REVIEW
Aiwa HP-X30 £30	Good Good-	A flashy personal stereo phone which alternatively could be used at home. A slight LF tonal preference slightly colours the response, but it ain't a bad can	Supra-aural, closed-back, dynamic		75
Aiwa HP-V99 £50	Good- Average+	Horn loaded in-ear miniatures with plenty of guts but not enough transparency or bass to compete with the headbanded competition	Intra-aural, closed-back, dynamic		75
Aiwa HP-X80 £50	Good Good	A headphone that's highly suited to non acoustic music and portable sources, nicely made and slickly finished. Sound quality doesn't quite match the price	Supra-aural, closed-back, dynamic		75
Aiwa HPEX-200 £90	Good Good	Modern looking and well finished the Excelsas, as they are dubbed, had meaty bass and sounded reasonably open for the type	Circumaural, closed-back, dynamic		63
AKG K135 £35	Poor Fair	Despite a very appealing design the K135s don't live up to the usual AKG standards, though they do have the ability to reproduce rhythm well	Supra-aural, semi-open, dynamic		63
AKG K145/S £58	Good+ Good+	Electrostatic tweeters combine with a dynamic mid/bass unit to create very confident sounds in a comfortable headphone. Balance is on the bright side	Supra-aural, semi-open, electrostatic/ dynamic	R	75
AKG K240 Monitor £60	Very Good Good	Something of a classic these AKGs are very user friendly in all respects; sonically on the warm side of neutral	Circumaural, semi-open, dynamic	R	63
AKG K280 Parabolic £110	Good Very Good	A very revealing and unusual twin driver design that uses the same principle as a satellite dish to beam sound into the ear	Circumaural, open-backed, dynamic	R	63
AKG K340 £136	Good Excellent	Heavyweight cans in most respects, the K340 with its electrostatic tweeter is a very revealing headphone. Gives the total electrostatics a good run for their money	Circumaural, closed-back, electrostatic/dynamic	R	75
Audio Technica ATH 909 £55	Average Average	Quite impressive in the treble though a bit bass shy, the 909s worked well at highish levels	Circumaural, semi-open, dynamic		55
Audio Technica ATH 910 £65	Average Good	The closed-back 910s are an improvement on the 909s with a nice rhythmic quality rarely found with headphones	Circumaural, closed-back, dynamic	R	55
Audio Technica ATH-911 £75	Very Good Very Good	Nicely finished dynamic headphones with all the trimmings, plus a very clean and subtle sound	Circumaural, open-backed, dynamic	R	63
Beyer DT 325 £30	Very Good Fair	Lightweight in more ways than one, the 325s may be a little bright for some systems and tastes but will suit duller sources	Supra-aural, open-back, dynamic	R	63
Beyer DT330 Mk II £45	Good Poor	Not the most revealing 'phones encountered, the 330s were nevertheless enjoyable and rarely offended	Circumaural, semi-open, dynamic		55
Beyer DT550 £69	Good Good	On their own the 550s sound articulate with a slightly 'gritty' treble and 'keen' midrange: not suitable for headbangers!	Circumaural, semi-open, dynamic		55
Beyer DT880 £90	Good Good	Well made cans with a warmish sound but fairly solid midrange, though they're not that informative for the price	Circumaural, semi-open, dynamic		63
Beyer DT990 £119	Very Good Very Good	The 990s are definitely a significant pair of dynamic headphones: they have a smooth and yet revealing, neutral sound that is hard to criticise.	Circumaural, open-back, dynamic	R	55
Beyer IRS690 £200	Good+ Very Good	High quality infra-red headphones with soft comfy earpads and mellow but informative sound quality which is hard to dislike	Circumaural, open-back, dynamic	R	75
Jeklin 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
Jeklin 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
Jeklin Float Electrostatic £399	Good Excellent	One version of the state-of-the-art, these electrostatics have an openness of sound rarely found in the breed, with good dynamic range to boot	Circumaural-ish, open-back, electrostatic	R	55
JVC HA-D990 £65	Good+ Good+	Good looking well made cans that offer good sound quality for the money. Sonic nature is of the easy-going, laid-back variety	Supra-aural, closed-back, dynamic	R	75
Koss TD/60 £20	Good Average	Although they're devoid of channel identification and have a decidedly Stateside approach to sound, these are very listenable phones for the price	Supra-aural, closed-back, dynamic		75
Koss K/6X Plus £30	Fair Poor	'Sixties-style' phones from the good ole US of A, their sonic style is unique and can make a system sound quite different	Supra-aural, closed-backed, dynamic		63
Pioneer SE-72 £30	Good+ Average-	Neat, nicely made personal stereo oriented phones along the lines of Sony V3s. Sound is on the veiled side, good for aggressive sources	Supra-aural, closed-back, dynamic		75
Quart Phone 30 £40	Good Fair	Whilst not as seductive as their PMB25 predecessor the 30s are reasonably neutral and do improve on some of the competition – though not stunning	Circumaural, semi-open, dynamic		63

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HEADPHONES

NAME PRICE	COMFORT SOUND	COMMENTS	TYPE	VALUE	BACK ISSUE FULL REVIEW
Quart PMB 2511 £40	Good Good	Despite a somewhat unconventional suspension system the 25s put in a convincing and enjoyable performance with warm yet lively balance	Circumaural, open-back, dynamic	BB	55
Quart Phone 70 £70	Good Good	Competent performers that were hard to criticise but lacked the life and sparkle of which some of the competition are capable	Circumaural, closed-back, dynamic		63
Quart PMB 65 £70	Good Good	Quite revealing and neutral albeit with the usual closed back sound, this competes well with more established models	Circumaural, closed-back, dynamic	R	55
Quart PMB 85 £90	Fair Very Good	These more expensive Quarts bear a striking resemblance to the Jecklin Float models and use two drivers per ear. Sound is a bit bass heavy but not bad overall	Circumaural, open-backed, dynamic		63
Realistic Pro-X £25	Poor Average-	Robust, unanimously uncomfortable and heavily veiled in sonic terms - not a great success	Supra-aural, closed-back, dynamic		75
Ross RE2530 CD £20	Average Average	Rather an 'average' £20 phone that some found uncomfortable due to high pressure on the ears. Sonic balance is on the bright side	Supra-aural, closed-back, dynamic		75
Ross RE2560 CD £25	Good Average+	If you're not too fussy about quality of finish and don't have an elfin head then these British phones warrant attention. Sound could be smoother	Supra-aural, semi-open, dynamic		75
Ross RE-2760 £35	Poor Fair	Stylish white cans from the only British firm in the business. Unfortunately sound quality is not up to par in this price range	Supra-aural, closed-back, dynamic		63
Sennheiser HD40 £20	Very Good Good-	Very light and comfortable headphones with an even sonic balance that will suit most sources, but jack is 6.3mm and not suited to personals	Supra-aural, semi-open, dynamic	BB	75
Sennheiser HD450 £35	Good Fair	Modern, simple and lightweight phones that are remarkably robust and which turned in a relaxed if weighty performance that was at worst pleasant	Supra-aural, semi-open, dynamic	R	63
Sennheiser HD480 £45	Good Fair	Using the same shell as the 450s, the 480s were a little softened and unrevealing by comparison with their competitors	Supra-aural, semi-open, dynamic		63
Sennheiser HD520 £65	Good+ Good+	A very comfortable and musically capable headphone. If you've got this sort of bread to blow on cans, give 'em a blast	Circumaural, semi-open, dynamic	R	75
Sennheiser HD530 £75	Very Good Good+	One of the better dynamics in its group, the 530s create a sense of space that eludes most sub £100 cans, and they're dead com to boot	Circumaural, semi-open, dynamic	R	75
Sennheiser HD540 Ref Gold £160	Good Very Good	The 540 Golds prove that dynamic headphones can be subtle, informative and capable of creating a remarkable sense of space	Circumaural, open-back, dynamic	R	55
Sony A21L £20	Good- Good-	Forward facing in-ear drivers on a folding plastic band provide exceptional clarity for such an inexpensive phone. However, no bass, and fit isn't to everyone's taste.	Intra-aural, semi-open, dynamic	BB	75
Sony MDR V3 £30	Fair Good	Portable stereo oriented phones that are very nicely made and combine clarity with a pleasant lack of distortion	Supra-aural, closed-back, dynamic	BB	63
Sony MDR V7 £70	Very Good Very Good	Classy sounding cans that are very slick and work well with all types of music, setting the standard in their price range	Circumaural, closed-back, dynamic	R	63
Sony MDR-CD999 £120	Good+ Very Good	A very nice headphone in all respects, the 999s are worthy of the best headphone outputs and high quality sources	Supra-aural, semi-open, dynamic	R	75
Sony MDR-R10 £2500	Excellent Very Good+	Costly state of the art sealed moving coil design built to the highest standards using the finest materials. Sound quality reflects this care, being big, clear, sweet and refined	Circumaural, closed-back, dynamic	R	72
Stax SR34 £140	Fair Very Good	The least expensive Stax headphones around, the SR34s are lively and rhythmic with good tight bass and a sweet midrange	Supra-aural, open-back, electret		55
Stax SR84 £210	Very Good Very Good	The stepping stone between dynamics and full electrostatics, these electret phones are revealing, open and highly enjoyable	Supra-aural, open-backed, electret	R	63
Stax Gamma pro/SRD-X pro £296/£230	Very Good Excellent	The Gamma pros are like a stethoscope for your hi-fi, revealing subtleties that many loudspeakers fail to resolve	Circumaural, open-backed, electrostatic	R	63
Stax SR Gamma £299 (inc. SRD-6 Adaptor at £100)	Very Good Very Good	The next model down the Stax range from the Lambda, the Gamma is an excellent headphone with little to criticise but the price	Circumaural, open-back, electrostatic	R	55
Stax SR Lambda Pro £545 (inc. SRD-7SB Mk 2 Adaptor at £185)	Very Good Very Good	A bit of an industry reference the Pros are frighteningly revealing, bringing across more information than loudspeakers costing twice as much	Circumaural, open-back, electrostatic	R	55
Stax SR Lambda Pro £360/ SRM-1 energiser £635	Very Good Excellent	This combination extracts layers of information that other headphones only hint at. The SRM-1 has more edge than the SRM-T1, but it's good	Circumaural, open-back, electrostatic	R	75
Stax Lambda Signature/SRM-T1 £470/£895	Very Good Excellent	The Signature when combined with the SRM-T1 valve driver must be the most transparent headphone available	Circumaural, open-backed, electrostatic	R	72
Yamaha YHL-006 £30	Average Average	Unusual personal stereo oriented phones that curl up when not in use. Earphones are like golf balls and balance is well suited to Walkmans	Supra-aural, open-back, dynamic		75

PERSONAL STEREOS

Whilst not exactly hi-fi components, personal stereos probably play more music to more ears than all manner of domestic systems and as such demand some attention. Now that personal CD players have joined the ubiquitous Walkman in the market, the variety and standard of sound quality is huge, with obscurely named cassette players practically falling out of your cornflakes packet and Discmen going for £300.

Despite their diminutive size personals attempt to incorporate as many gimmicks and features as

possible, cassette players often incorporating tuners, graphic equalisers and Dolby noise reduction. CD players are still relatively expensive and don't tend to vary that much on the features front, rather the amount and quality of accessories differs. Most models come with a mains adaptor and some include remote control.

Sound quality on the cassette front seems to have a proportional relationship to price and integrity of construction - wow and flutter being quite obvious on the cheaper models. CD players

become less noisy as they get dearer and also reduce in size; one drawback of the latter seems to be that immunity to shock suffers as a consequence. Cassette players do, on the whole, seem better suited to the outdoor life than their digital counterparts, as does the software. Bear in mind that the sound and lab ratings given below cannot realistically be compared to those in other categories or between cassette and CD personals

PERSONAL CASSETTES

MODEL NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa HS-PL300 £110	N/a Average	Good looking, simply laid out player with a sensible selection of features and reasonable sound quality for a small player of this price	Dolby NR, chrome/metal eq, remote		78
Aiwa HS-PX303 £150	N/a Good	Chunky and macho styling combines with comprehensive features and a half decent transport to make a powerful personal	Dolby B & C, chrome/metal eq, remote	R	78

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PERSONAL CASSETTES

MODEL NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Panasonic RQ-P505 £100	N/a Poor	Very attractive and neat little player with nicely designed controls and XBS bass boost, but sonically it's limited by distinct wow and flutter	Dolby, chrome/metal eq, remote		78
Panasonic RQ-P525 £120	N/a Average+	Fitted with what is effectively a bass only tone control and harbouring all the necessary features the 525 also has a knack with tape replay	Dolby B & C, chrome/metal eq, remote	R	78
Philips D6658 £30	Very Poor Poor	The low price limits sound quality, and this is not a spectacular machine, but it does a reasonable job nonetheless	Graphic EQ, AM/fm		56
Saisho PS90R £40	Poor Poor	A bit of a jumble of features and gadgets, the PS90R has on-board speakers, an extending aerial and even records, but sound quality is dubious	Graphic EQ, types I, II & IV, AM/fm, recorder		56
Sharp JC-270E £130	N/a Average-	Slightly old fashioned design combines with a basic feature count and mediocre sound quality to make an apparently uncompetitive player	Dolby, chrome/metal eq, remote		78
Sony WM-BF65 £90	N/a Average+	Regular size radio/clock/cassette player with a bright even open balance and Sony's forward facing phones. Not as glamorous as slightly more expensive models but sonically not bad	Dolby, chrome/metal eq, radio, alarm clock	R	78
Sony WM-701C £200	N/a Good-	Beautiful little machine with all the necessary buttons'n'switches and a fundamentally exceptional sound quality, marred unfortunately by wow and flutter	Dolby B & C, chrome/metal eq, remote, folding phones		78
Sony Walkman Pro £249	Good+ Very Good	One of the finest sounding cassette decks on the market today. A mandatory Best Buy, it takes other personals to the cleaners (except on weight and power consumption)	Dolby B, C, types I, II & IV, record, line in/out, varispeed	BB	52/56
Toshiba KT-4549 £80	N/a Poor	Fully equipped with 10 preset radio and alarm clock the KT-4549 is a bit aggressive on the sonic side and the bass boost system lacks balls	Dolby, chrome/metal eq, radio, alarm clock		78

PERSONAL CDS

MODEL NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Goodmans GCD-10 £120	Average- Poor	Cheap, flashy and not short on accessories the GCD-10 is a rather noisy player that left a lot to be desired on the sound quality front	13.5 x 3.7 x 18cm, 478g, mains adaptor		66
Kenwood OPC-77 £270	Good+ Very Good	Very chunky and well made, the OPC-77 is the only player to include a digital output and sounds very good through its analogue output - a suitable domestic alternative	12.8 x 3.5 x 14.5cm, 750g, digital output, mains & in-car adaptors	R	66
Philips D6800 £130	Average Average-	A competitively priced and reasonably attractive looking player whose sonic performance is somewhat marred by a rather grainy top end	13 x 4 x 17.5cm, 516g, 3" ready, twin hdph sockets		66
Sanyo CP-12 £260	Fair Good+	Sonically amongst the more enjoyable personal CD players and capable of revealing the musical aspects of a disc in an interesting and entertaining fashion	12.5 x 2 x 12.7cm, 380g, wired remote, mains adaptor	R	66

CD PORTABLES

CD Portables or Yuppie Blasters as we classified them are basically portable stereos gone digital, ie a compact disc player is included alongside the usual AM/fm radio and single or double cassette deck. Compact disc is a novelty that seems to add a fairly hefty premium onto the price of the standard ghetto blaster, but the improved sound quality over standard cassettes may justify this for some. In virtually every case a CD output socket is

fitted which means that it's possible to play silver discs through a domestic amplifier and loudspeakers, thus they are some sort of substitute for standalone mains machines (as are the personal CD players). One drawback with having a CD player on board is that batteries are gobbled up even quicker than usual, up to ten batteries being required in some cases. Neither are the units particularly light, the heaviest weighing eight kilos!

However they do all run off the mains too, and come with an appropriate lead for this purpose. Other useful features common to most are spare input sockets to record from an external line source such as a preamplified vinyl disc signal, and microphone sockets for recording live events (although the usual lack of record level adjustment is a nuisance).

MODEL PRICE	SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Aiwa CSD-XL25 £150	Poor	It's cheap, cheerful and not too low on features but sound quality from disc is frankly uninspiring	Twin headphone sockets		73
Bose Acoustic Wave £750	Very Good	Not exactly a CD portable as it doesn't play discs, but a highly versatile and stylish radio cassette player that has bass	Input sockets, Dolby NR, PA capable etc	R	73
Grundig RR9000CD £300	Average	Relatively slick machine with full CD function and volume remote control, low on features for price and unspectacular sounding	Remote, motorised volume pot, condenser mic		73
Philips AZ8394 £200	Average-	Stylish in a wasp like fashion, unfortunately the disc playing lets it down somewhat but otherwise it's OK	Twin decks, graphic eq., bass boost, condenser mic		73
Sharp QT-CD43 £280	Average	Quite a beefy box that comes complete with remote control for volume and CD functions. It even has a surround sound option which enhances imaging	Clock, speaker outputs, powered volume pot		73
Sony CF0-D73 £280	Good	The model we received was intended for the Japanese market and thus may not be entirely representative but it made reasonable sounds and has novel features	UHF bandwidth, input sockets, graphic eq., Megabass	R	73
Sony CF0-DW83 £300	Average	A macho looking beast capable of highish levels, but unimpressive sound for the price. Nice styling and good for scratching	Clock, timer, balance, input sockets, graphic eq.		73
Toshiba RT-8089 £200	Poor+	Square and long but rather drab on the sound quality front, as well equipped as most but rather tinny in many respects	Clock, twin decks		73

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STANDS AND SUPPORTS

It's becoming more and more apparent that all the components in a hi-fi system benefit from being placed on the right kind of support. It is already acknowledged that performance of electro-mechanical transducers, such as turntables and loudspeakers, can be greatly improved by using highly rigid supports. This notion has been expanded to include electronics such as amplifiers and compact disc players, and inevitably a broad range of stands and supports have been produced to cater for this requirement.

With loudspeaker stands there seems to be two

broad schools of design. The most common is the open frame type which uses square section steel tubing (usually less than an inch square) made up to form a tripod or quadropod stand usually fitted with spikes top and bottom to ensure good coupling to both floor and cabinet. However, for reasons of domestic harmony this latter option is often not pursued as eagerly as perhaps it should be. The alternative approach is to use mass. Larger section (approximately 3 inch x 2 inch) tubing is welded between square top and bottom plates and filled with sand and/or lead shot. Again, this type uses

spikes at the base but Blu-tack or the like for coupling with the speaker cabinet.

Equipment supports generally place isolation quite high on the list of priorities and usually use a lightweight steel frame to support an MDF platform. Once again spikes are used to minimise contact with the platform and ensure good coupling to the floor. Minimising weight without compromising rigidity seems to be the aim with turntable supports but those designed for electronics often employ some form of damping to kill vibration, sometimes in the form of mass.

LOUDSPEAKER STANDS

MODEL PRICE	TYPE FINISH	COMMENTS	TOP PLATE SIZE HEIGHT	VALUE	BACK ISSUE FULL REVIEW
Appolo A820 £44	4 leg Fair	A light open-framed budget design slightly lacking in rigidity and subjectively superceded by other stands costing £10 more.	19 x 19cm 53cm		58
Appolo A10 £52.50	4 leg Fair	A robust and lightweight model, it would make an ideal upgrade for those still happy with the big boxes of old.	19 x 19cm 44cm	R	58
Audio Dimensions Classic 2 £110	4 leg Average	Built in the heavyweight tradition and damped with chalk. Solid, stable, tactile sound.	20.3 x 20.3 x 52cm	R	83 supp
Foundation Fred £70	2 leg Average	With sand filling the Freds made speakers sound tight and coherent with a more even balance.	19 x 19cm 36/43/59cm		58
Foundation Sir Fred £80	2 leg Good	Upgraded 'Fred' with special in-fills. Sweet sound but one that also lacks bite and edge.	19 x 19 x 46.5cm		83 supp
Foundation Maggi £159 to order	Pair Very Good	Made for Magneplanar and other similar panel speakers they seem to have a healthy effect on the sound quality thereof.	50 x 2cm 2cm	R	58
Foundation Pi £269 to order	2 leg Very Good	Overpriced in material terms the Pi nevertheless has a very positive effect on the low frequency performance of conventional speakers.	20 x 20cm 25/38/46/53cm	R	58
Goldring Black Satin £65	1 leg Very Good	Screw together stand tastefully hewn from medite. Some loss of bass but still pleasantly rhythmic.	18 x 20 x 46cm	R	83 supp
Heybrook Point 5 £55	3 leg Very Good	An unusual triangulated open frame stand that can help certain speakers sound more transparent and fluent – a good value stand.	23 x 21.5cm 47cm	BB	58
Heybrook HBS1 £99	4 leg Very Good	With its new aluminium base frame the HBS1 fared very well in the listening tests. It allowed much of the speakers own 'sound' to remain intact.	23 x 21cm 47cm	R	58
Linn Kan II £79	4 leg Very Good	Built to support Linn's Kan speaker this stand is well suited to the task, but is less successful with other loudspeakers.	19 x 16cm 59cm		58
Linn Sara £85	4 leg Very Good	The Sara exhibits some odd properties so its use other than with the Sara loudspeaker should be viewed with caution.	25 x 21cm 53cm		58
Monotrak Engineering M1 £58	1 leg Good	The M1 gave the mid and treble a commendably smooth and detailed presentation but bass sounded rather lacklustre and muddy.	19 x 18.5cm 48cm		58
Monotrak Engineering M4 £58	4 leg Very Good	Begging comparison with Heybrook's HBS1 the M4 maintained much of the openness and forthright detail of that model.	23 x 21.5cm 53cm	R	58
Monotrak Engineering M4S £58	4 leg Very Good	Its stature and stability would seem to mark it out as most suitable for smaller, lighter cabinets. The M4S possessed an open midband and clear treble.	20 x 17.5cm 53cm		58
Origin Live Three Leg £89	3 leg Good	An unusual tripod stand devoid of top plate and taking up more floor space than normal, subjective and technical performance was exemplary.	(support area) 22 x 17.5cm 52cm	R*	58
Origin Live Advanced £145	3 leg Good	One of three related tripod-like stands. Stable sound with good sense of depth and power.	22 x 20.6 x 44cm		83 supp.
Partington PP4 £60	1 leg Good	The PP4 offers a rather mixed performance, though when damped with sand infill it was less ready to embellish the overall sound and low frequencies became tauter and quicker.	18 x 16.5cm 48cm		58
QED TS22 Tristand £60	3 leg Very Good	Most tracks sounded uplifted or buoyant, never thick nor coloured. It worked well with most of the speakers tried and encouraged a fluid and revealing midband.	19 x 17cm 45/50/58cm	BB	58
Stand Design Z20 £70	1 leg Excellent	Well built and finished with optional sand in-fill. Ideally suited to Wharfedale 505.2's	16.5 x 19 x 50cm	R	83 supp
Target T-40 £48	2 leg Very Good	Not very stable, tends to infer a slightly forward, ragged sound with diluted pitch.	19 x 19 x 40cm		83 supp.
Target HS20 £60	1 leg Excellent	This monopod stand can be used either filled or unfilled and encourages different characteristics in the sound accordingly.	19 x 16.5cm 53cm		58
Target HJ15/3 £100	3 leg Very Good	Sound quality was basically very good though without the sand infill some loudspeakers may sound a little unbalanced as both bass and treble regions are subjectively exaggerated.	28 x 28cm 40cm	R	58

EQUIPMENT SUPPORTS

MODEL PRICE	TYPE FINISH	COMMENTS	SIZE (H x W x D)	VALUE	BACK ISSUE FULL REVIEW
Alphason R444 £120	Rack Good	A heavyweight structure with stressed MDF shelves, ideally suited to the Sonata turntable.	82 x 60 x 39.5cm	R	83
Audioquest Sorbothane Feet £40 for four	Feet Good	These large gumdrops are very useful for damping vibrations in amplifiers and especially CD players.	6.5 x 2.5cm (circular)	R	57
Cornflake TCS6 £60	Shelf Good	A squat and rigid frame supports a Medite top board with four adjustable spikes, better suited to suspended sub-chassis turntables.	43 x 23 x 33cm		57
Foundation Stable Table £100 (with Super Board)	Table Good	Similar to Stand Design's table though less well finished and certainly less stable.	64 x 46.5 x 36cm		83
Origin Live Skyline Super £100	Table Good	An asymmetric table that helps provide a quick, lucid and solid sound with most decks.	41 x 50 x 40cm	R	83
Roksan Equipment Table £169	Rack Good	An upgradable/expandable system suited to Roksan's Xerxes if not other competing turntables.	65 x 52 x 38cm		83
Sound Organisation Table £55	Table Very Good	A deceptively simple structure that just happens to be engineered in a thoughtful, and ultimately successful manner.	37 x 45 x 35cm	BB	57

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EQUIPMENT SUPPORTS

■ MODEL ■ PRICE	■ TYPE ■ FINISH	■ COMMENTS	■ SIZE (H x W x D)	■ VALUE	■ BACK ISSUE FULL REVIEW
Sound Organisation Wall Stand £40	Shelf Very Good	The first of its ilk and still amongst the best, this simple framework represents a vast improvement over standard furniture shelves.	27.5 x 43 x 35cm	BB	57
Sound Organisation Z022 £97	Table Excellent	A small but costly table made from thin steel tubing. Sourced to the LP12 but not other decks.	49 x 45.5 x 36cm		83
Stand Design Duplex £75	Table Very Good	Well made and nicely finished, this table is broadly compatible with most heavy turntables.	63.5 x 46.5 x 36cm	R	83
Target TT1 £46	Shelf Excellent	This rigidly braced shelf offers both good sound quality and material value for money.	26 x 46.5 x 35.5cm	BB	57
Target TT2 £55	Table Very Good	Standing up to the best in most areas, the TT2's only real foible concerns a slight loss of bass 'slam'.	52 x 46.5 x 35.5cm	BB	57

* rating refers to original tested model

CABLES AND CONNECTIONS

Although cables and connections are sometimes thought to be the least important items in an audio system there has been a growing awareness in recent years that they have a significant effect on sound quality. To this end there is now a vast array of exotic cables and interconnects available to those interested in experimentation. The key observation on cables is that they are much more than mere accessories. Carrying the audio signal, just as any amplifier does, it's really not too surprising that they can influence sound quality.

The characteristics of any cable are determined by the materials and topologies utilised in its construction. The purity of the conductor, nature of the insulator dielectric, mechanical construction, physical geometry, RF characteristics, efficiency of screening and finally the connectors themselves, all play vital roles in the sonic character. These factors tend to vary more with interconnect cables which are used to carry the signal between active components like pre and power amplifiers. The interconnects summarised here were tested in 1m

terminated lengths and therefore the results and prices relate to that length – some cables may well perform differently when used in longer lengths. What's more most cables are significantly cheaper if you are prepared to fit plugs yourself.

The features column contains information on the material make-up of the different cables with the following abbreviations: OFC – oxygen free copper, OFHC – oxygen free high conductivity (Audionote define the HC as high crystal), PC-OCC – pure copper by ohno continuous casting, LC-OFC – linear crystal oxygen free copper.

INTERCONNECT CABLES

■ MODEL ■ PRICE (per metre)	■ LAB ■ SOUND	■ COMMENTS	■ FEATURES	■ VALUE	■ BACK ISSUE FULL REVIEW
Audiquest Livewire Topaz £35	Good Fair	Sounding 'bigger' and faintly richer than Reference 2. Topaz was also slightly grainy at the top end.	Gold-plated plugs, OFHC copper		59
Audiquest Livewire Ruby £49	Fair Good	Smoother sounding than the Topaz, the extended crystal Ruby is less grainy and coarse, better able to resolve complex passages.	FCL copper twin axial	R	59
Audio Technica AT6115 £40	Very Good Fair	This cable sounds somewhat 'quieter' than the original LC-OFC interconnect, but is also less transparent and three dimensional.	PC-OCC copper coaxial		59
Audionote Copper ANC £44	Fair Good	ANC sounded punchy with a faintly lean but tightly-focused bass character. This crystalline precision waned slightly at higher frequencies.	OFHC copper twin-axial	R	59
Audionote Flexible Silver ANS £99	Fair Very Good	ANS scored a hit with its transparent midband and revealing but quite unforced treble quality. Bass transients were slightly softened.	Silver signal & Copper screen	R	59
Audionote Silver ANV £154	Poor Excellent	Far weightier-sounding than the flexible ANS. ANV interconnect also possesses a fair degree of treble clarity and sparkle.	21 strand silver Litz		59
Budget Patch Cords see text	Fair Poor	As thrown in gratis with cassette decks and the like – frequency extremes were restricted and performances were veiled.	Thin coaxial		59
Budget OFC circa £7	Fair Fair	Subjectively, this cable did lift much of the aural fog experienced with scrawny standard hook-up leads.	OFC		59
Chord Mono-t £27/1.2m	Average + Average +	Offers a slightly rolled-off treble but its rich sound is an upgrade from patch-cords.	Unsymmetrical 4-conductor cable		83 supp
Deltec Slink £32	Good Very Good	Ideally used in lengths of under 4 metres, it errs on the lean side of neutral but has an uncommon transparency in the midrange.	4 silver plated OFC strands PTFE dielectric	BB	59
Deltec Black Slink £152	Excellent Excellent	Inherently neutral the cable faithfully reproduced broad and deep stereo soundstages with precise focus and a sense of facility.	8 silver plated OFC strands PTFE dielectric	R	59
Deltec Gortex Black Slink £152	Very Good Excellent	A true reference quality cable providing an exceptionally detailed and transparent sound.	Symmetrical, 8-conductors. Gore-tex ins.	R	83 supp
Denon LC-OFC N/a separately	Very Good Fair	Supplied with Denon's dearer CD players this cable introduced a peculiar 'twangy' coloration at high frequencies, and a slightly soft bass.	LC-OFC, non-magnetic gold plated plugs		59
DNM Solid-core £23	Fair Good	Transparent in the midband and full of sparkling detail in the treble, low bass was slightly curtailed (unterminated price £2.30 per m.)	Single strand nickel-plated copper. Unshielded	R	59
Isoda Electric HC-05-PSR £54	Good Good	A pleasantly lively and fluid sounding cable though softens some subtle, midband detail.	Aluminium + brass multistrand cable	R	83 supp
Kimber Kable PSB £41.40	Very Good Very Good	An exceedingly transparent midband but slightly 'clanky' treble. It always managed to sound remarkably uncluttered and open.	OFC, PTFE dielectric	BB	59
Kimber Kable KC-1 £65.55	Very Good Fair	Tonally faintly leaner and brighter than the more open-weave PSB, KC-1's treble detail was just too sharp and grainy.	Multi-gauge PTFE dielectric		59
Kimber Kable KC-AG £390	Good Very Good	Treble detail resolution was perceived in a slightly abrupt if wholly controlled fashion. Depth re-creation and lateral separation were excellent.	Multi-gauge silver, PTFE dielectric	R	59
Monster Interlink 300 £24	Average + Average	A big, larger-than-life sound but with some emphasis of midband detail and loss of bass.	Screened, symmetrical cable		83 supp.
Monster Interlink 400 £34	Good Good	Bass is solid and punchy, counterpointed by a slightly overblown midband which tends to make vocalists sound larger-than-life.	Multi-gauge	R	59
Origin Live Soli-Core Super £60	Good Fair	Improves over previous Soli-core samples in stereo depth and bass weight, but a 'loud' treble presentation remains.	Soli-core gold-plated AT plugs		59
QED Incon P1-Gold £15.95	Good Good	A lively open presentation that just borders on the lean side of neutral, the quick and lucid delivery affording considerable musical insight.	OFHC, gold plated Deltron plugs	BB	59
QED Incon Graphite GP1 Gold £18.95	Fair Fair	A shielded version of Incon P1, it sounded thicker at the frequency extremes, the top end being coarser and more out of focus. Good for long runs though.	OFHC Graphite shielding	R	59
Sterling £250	Fair Good	Possessing a neutral if faintly rich overall balance it supplies a pleasantly open and transparent perspective. (Reviewed in pre-production form.)	2 silver strands per conductor		59
Supra EFF-1 £60/0.75m	Average Average	A new, costly and mildly disappointing addition to the range. Edgy, smeared sound.	Screened, symmetrical dir. cable		83 supp

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INTERCONNECT CABLES

MODEL PRICE (per metre)	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Thorens SAC 100 £50	Good Fair	Performance is undermined by a slightly coarse and splashy treble, not necessarily bright, simply rather confused – and fine detail lacks resolution.	Silver-plated OFC, coaxial		59
van den Hul MC-D300II £45	Poor Good	It tended to highlight some upper mid detail, but a generally open and spacious acoustic proved its saving grace. Slightly soft at LF.	Silver-plated single strand VdH plugs	R	59
van den Hul MCD-1021II £69	Good Good	Possessing the same endearing qualities as the D300 it presented open and transparent soundstages and improved timbral resolution	Twin axial silver plated copper	R*	59
van den Hul Thunderline £150	Good Fair	Thunderline essentially parallels the sonic performance of the cheaper D102. HF is occasionally tainted by a 'tizzy' 'coarseness', bass is tight and dry.	Silver plated 'matched copper'		59
van den Hul MC-Gold £250	Fair Good	It possesses a rich and beguiling treble balance that matches a weighty, slightly warm bass character. Seductive balance may prove worthwhile in some circumstances.	Silver & gold plated copper		59
van den Hul MC-Silver £750	Good Good	Although remarkably transparent for an asymmetric design this costly cable was not considered to be of 'state-of-the-art' standard, and is bettered by cheaper models.	19 silver plated copper strands		59
Vecteur 8045 £49	Very Good Good	Sounding solid and forthright it might seem slightly cold in some systems but the treble 'edge' is mercifully clean. Very low frequencies were a little lacking in 'slam'.	LC-OFC signal & screen	R	59
Ytere LC-OFC Quad £85	Very Good Very Good	New cable with a very refined sound. Very transparent with good sense of focus and space	Symmetrical, star-quad with screening	R	83 supp

LOUDSPEAKER CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Absolute Wire Force 4 £4.75 per metre	Good Fair+	By current standards there was a loss of fine, sharp detail at the frequency extremes, but it has a big and friendly sound	744 OFC strands, PVC dielectric		64
Audio Innovations OR-200 £16 per metre	Fair+ Fair+	Open and detailed throughout the midband but a grainy coloration tended to corrupt subtle timbral information at very high frequencies	200 LC strands, polyurethane and cotton dielectric		64
Audionote AN-SP £100 per metre	Average— Excellent	A clean and open sounding cable that offered a deep and pleasantly detailed perspective. Bass was slightly restricted, but seemed tight and coherent nonetheless	15 silver strands, polyethylene dielectric		64
Audioquest Livewire Black £15 per metre	Good Good	It proved clear and punchy but with some grain across the treble. Nevertheless Black remains an interesting concept and proved better than Livewire Green	OFHC, surface only – foam core construction	R	64
Audiospec Latitude L4 £3 per metre	Average+ Average+	Warm, ruddy but also mildly muddy sound with some slight emphasis of bass notes	Figure-of-eight multi-strand, PVC dielectric	R	83 supp
Audio Technica AT6120 £10 per metre	Fair+ Fair	Compared to earlier LC-OFC cables this PC-OCC derivative sounded smoother and less aggressive	PC-OCC, PVC dielectric		64
Bellwire 12p per metre	Poor Average—	Broadly speaking it delivered a bright and tizzy sounding treble with a fairly open and detailed mid with little or no bass resolution	0.5mm single strand, PVC dielectric		64
Deltec 8S £144 – 5m pair	Good Good+	The unerring transparency and detail resolution of 8S throughout the midband makes it a far cleaner and more spacious sounding cable than others at the price	4 silver plated OF copper strands, PTFE	R	64
Deltec Gortex Black 16 £528 – 4.5m pair	Very Good Excellent	Improvements in bass resolution, transparency and treble poise maintains status of this cable	Silver-plated OF copper with Gore-tex ins.	R	83 supp
DNM Solid core £3 per metre	Average Fair	A good general-purpose solid-core, though too bandwidth limited for high-end applications. Sounds great in some systems	0.65mm single strand, webbed PVC dielectric	R	64
Exposure £2.50 per metre	Good Good	It could sound a trifle matter of fact but this emotive flattening was also somewhat dependent on the music program. It is also highly suited to long runs	56 OFC strands, webbed PVC dielectric	R	64
Furukawa FS-2F09 £6 per metre	Good Average+	Some loss of bass weight but otherwise offers a fresh and open sound. Good value	Multi PC-OCC stranding, PVC dielectric	R	83 supp
Furukawa FS-2T15S £50 per metre	Good+ Very Good	An advanced solid-core cable with a highly fluid, detailed and inherently musical sound	Single 1.5mm Super PC-OCC strands	R	83 supp
Kimber 4VS £7.15 per metre	Average+ Average	Similar construction to 4TC but dissimilar materials infer a slightly tizzy sound	Open-weave, multi-strand with PVC ins.		83 supp
Kimber Kable 4PR £54 – 5m pair	Fair Fair+	This directionally marked cable benefitted from an open and airy treble quality but seemed notably leaner than 4TC. Bass was well round and satisfyingly taut	4 x 7 copper strands per conductor, PVC dielectric		64
Kimber Kable 4TC £17.65 per metre	Good Good+	4TC made a great impression in the listening tests with an open midband, a smooth and un-fatiguing treble with slightly rich but suitably weighty bass	OF copper, PTFE dielectric	R	64
Linn K20 £2.20 per metre	Good Fair	Subjectively it erred on the forward and bright side of neutral but enjoyed an essentially clear and punchy delivery	56 OFC strands, webbed PVC dielectric		64
Marantz ML-55S £30 – 10m	Fair Fair	Subjectively this cable offered a loose and splashy treble which, though not overtly bright, did compromise both tonal and timbral accuracy	30 OFC strands, 3 conductors PVC dielectric		64
Mission Cyrus £2.50 per metre	Average+ Good	Because of its impedance characteristic this cable will deliver a smooth and un-fatiguing treble balance with loudspeakers offering an easy load	0.8mm single strand, PVC dielectric	BB	64
Monitor PC Silverline PC4 £5.75 per metre	Good Average	Sonically it laboured under a heavy and claustrophobic balance, lacking the see through transparency and lucidity of the better solid core cables	2072 x 0.07mm silver plated copper strands		64
Monster SCI 16-4 £3 per metre	Average Average	Not as thick-sounding as early Monster cables but still slightly unbalanced. Versatile construction	4 x 16-gauge conductors, OF copper strands		83 supp
Monster Original £4.50 per metre	Good Fair+	Original sounded relatively congested and murky at higher frequencies but possessed weight and conviction in the bass	Multistrand		64
NVA LSI £6 per metre	Average+ Good	A light and breezy sounding cable best suited to short lengths. NVA benefitted from a clear and transparent outlook	7 x 0.25mm silver alloy strands, PTFE	R	64
Origin Live Soli-Core Ordinary £1.80 per metre	Good Fair+	Subjectively it bettered the performance of the costlier Super version, affording a pleasantly detailed and spacious soundstage with firm bass but slightly coarse treble	1.8mm and 0.5mm single strands		64
QED 79-Strand £1 per metre	Good Fair	For much of the last decade QED 79-Strand has been the first port of call for enthusiasts on the upgrading ladder, a tradition that should still hold true today	79 strand, PVC dielectric	R	64
QED Incon Graphite £2 per metre	Fair+ Fair+	This graphite version of Incon sounded cruder and generally more heavy handed than the cheaper unshielded type. Overall presentation was mildly restricted and cloaked in a faint aural fog	OFHC, polymeric screen		64
QED Flat 200 £2.20 per metre	Good Good	I detected a degree of confusion at low frequencies but this did not stifle the acoustic atmosphere which remained open and positive	200 strands, flat webbed PVC dielectric	R	64

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HI-FI CHOICE SEE PAGE 130**

THE DIRECTORY

LOUDSPEAKER CABLES

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Rotel Supra 4 £2.57 per metre	Good+ Good	Ideal for both long and short runs, it furnishes a big sound that benefits further from a smooth, unfatiguing treble	1,036 OFC strands, webbed PVC dielectric	R*	64
Rotel Supra 10 £6.91 per metre	Good+ Good	Supra 10 provided a very free and open sound that was unhindered by any excess at low frequencies. Worth its weight in scrap copper!	2,562 OFC strands, webbed PVC dielectric	R*	64
Solid core mains cable 36p per metre	Fair+ Good	It enjoys much of the smooth treble and articulate midrange usually associated with the better solid core derivatives. Lean but taut and rhythmically coherent	1.5mm square, 3 cores, PVC dielectric	BB	64
Sterling £99 per metre	Fair Fair	This pre-production sample possessed a strangely muddled and reserved sound quality. It suffered from a progressive instrument modulation	Pure Silver, PTFE dielectric		64
Townshend Isolda £400 – 5m pair	Fair+ Good	Isolda possessed a truly dark background out of which rose a very solid and extended bass together with an excellent sense of transparency through the upper octaves	8 coax cables per conductor – very thick	R	64
van den Hul CS-122 £5.95 per metre	Fair+ Good-	Characterised by a driving and powerful bass, CS-122 proved to be a heavy sounding cable. Mid treble detail was refreshingly clear but there was a slightly muted air about the extreme treble	19 x 0.45mm silver plated strands, webbed rubberised dielectric	R	64
van den Hul CS-352 £12.95 per metre	Good Fair+	Subjectively it sounded like CS-122 only more so, the deep rumbling bass tending to overwhelm subtle musical details. It also appeared a trifle peaky in the treble	7 x 0.76mm + 168 x 0.125mm silver plated strands, rubberised dielectric		64
van den Hul SCS-12 £29.95 per linear metre	Good+ Good+	SCS-12 set a high standard with a tight and well focused soundstage populated with tactile stereo images. Bass wasn't as extended or resolved as some other cables	19 silver plated strands of 12 different gauges, PTFE dielectric	R	64
van den Hul SCS-2 £99.95 per linear metre	Good+ Good+	Overall it was commendably neutral and transparent but nothing less would be acceptable bearing in mind the tremendous cost of a stereo pair	665 silver plated matched crystal copper strands, PTFE dielectric	R	64
Vecteur R-CV30 £4.99 per metre	Fair Good	Subjectively the better of Vecteur's three-strong cable line-up offering a neutral overall perspective but with a slight loss of detail resolution at both frequency extremes	4 x 0.8mm LC-OFC PTFE insulated strands	BB	64
Vecteur S-CV90 £69 per metre	Fair+ Fair+	It seemed both less transparent and integrated throughout the midband than R-CV30, though both frequency extremes were spruced up with a tighter sharper delivery	6 x 0.7mm LC-OFC strands		64

IN-CAR ENTERTAINMENT

In-car entertainment is an area not usually associated with the esoteric world of domestic hi-fi. However, it represents a source of musical entertainment that many of us are exposed to every day. The majority of new cars are fitted with some form of radio before they leave the showroom and in many cases this usually very basic player is taken for granted and accepted as representative of in-car audio standards.

For the price of a budget amplifier or more, there is a wide variety of in-car machines to choose from,

including cassette, CD and even DAT players. The majority of sub £300 players are integrated units featuring a cassette player, AM/fm tuner and amplifier, all in one remarkably compact standard sized box. At this price level the cassette players tend to be fairly basic affairs, although autoreverse and noise reduction systems are both fairly common. Tuners are usually of the digital variety with varying degrees of sophistication in signal tuning and presetting, with some machines featuring as many as 18 FM presets. The emphasis is on the frequency

modulated band and AM often suffers as a consequence, but fortunately for radio enthusiasts there are some exceptions.

The amplifier is usually designed to drive two pairs of speakers mounted fore and aft of the vehicle, and a fader is fitted to adjust the balance between the two. The dearer machines feature separate bass and treble controls which can be quite handy given the unusual acoustic of the car environment and the variety in balance and presentation to be had from car speakers

MODEL PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Alpine 7282L £250	Good Very Good	A very attractive and seductive sounding player. The matt surfaced transparent preset keys are especially sexy	Bass/treble controls, 12 FM 6 AM presets, chrome eq., clock, 8W	R	61
Alpine 7905M/3539 £650/£350	Excellent Excellent	An easy to use and attractive CD/tuner, partnered with a powerful and flexible amplifier to give an effortless source of in-car entertainment	Bass/treble controls, 12 FM, 12 AM presets, slide-out, 150W	R	68
Clarion 916HP £160	Good Average	With its rubbery buttons and touches of white this is a modest looking player let down by a weak cassette	Bass/treble controls, 5 FM, 5 AM presets, 9W		61
Clarion 946HP £250	Very Good Very Good	A good FM side let down slightly by AM performance. This Clarion is particularly nice to use with its nifty SAM tuning system	Bass/treble controls, 12 FM/6 AM presets, Slot-in, 15.1W	R	61
Clarion CDC7000/10028HA £650/£250	Very Good Excellent	Despite a slightly off-beat cartridge system the Clarion combo put in a performance that had the sonic edge over other CD/tuners in its test group	Bass/treble controls, 12 FM, 12 AM presets, security code, 80W	R	68
Goodmans GCE229 £150	Fair Average	If knobs, switches and legends are your bag then the GCE229 is the one for you – a lot of gizmos for the price and it even sounds OK	Bass/treble controls, 6 FM/6 AM presets, Chrome eq., clock, MSS, 10.1W	BB	61
Nakamichi TD-400E/PA-300 II £495/£329	Very Good Very Good	If you want your in-car entertainment to compete on sound quality grounds with your domestic system, this combo offers a very strong challenge	Bass/treble controls, 5 FM, 10 AM presets, uni-directional, chrome eq., Dolby B, C, 75W	R	62
Nakamichi TD-700E/PA-300II £874/£329	Very Good Excellent	For those who appreciate the wonders of analogue there are few in-car players to really compete with this superb cassette/radio. You can even adjust azimuth	Bass/treble controls, 6 FM, 6 AM presets, music search, Dolby, 75W	R	68
Panasonic CQ-497 £117	Fair Poor	The CQ-497 has a traditional style analogue tuning system making it easy to use. AM reception was good but the other sources are less encouraging	Bass/treble controls, chrome, NR, 7W		62
Philips DC680 £180	Average Good	A colourful and musically competent player that despite a gammy volume knob is well worth checking out.	8 FM, 4 AM presets 3.5W	R	61
Pioneer DEX-M300/CDX-M100/GM-3000 £300/£450/£280	n/a Very Good	Separate control unit and boot mounted multi play autochanger make this a bit of a hefty installation but it uses the same magazines as their domestic players and sounds fine	Bass/treble controls, 18 FM, 6 AM presets, 80W, removable fascia		68
Proton 214CD/D275 £300/£175	Very Good Very Good	This Proton cassette/tuner offers good power and a level of fidelity appropriate to its price. Musically it has a Decca-like charm that is very appealing, plus a sensitive radio	Bass/treble controls, 8 FM, 8 AM presets, Dolby B/c nr, chrome eq., 85W	R	68
Sharp RG-F816E £200	Poor Average	Nothing if not novel the 816, with its unusual anti-theft system is custom built for the furry dice brigade, but is sonically a bit lacklustre	Four band graphic, 8 FM, 16 AM presets, ASP, Dolby, MSS, 10.9W		62

THE WORLD'S NO 1 GUIDE TO BUYING HI-FI

THE DIRECTORY

RECEIVERS

Purists will look down their noses at the very idea of combining two functions into one box, and indeed they always have done. But unless we're talking about the exotic elite, the creme de la creme of amplifier and tunerdom, intrinsic technical shortcomings simply aren't an issue.

One obvious reason why you should buy a receiver if you were otherwise considering an amplifier and a tuner is that there are savings, ie of

size. Generally you end up with one box in place of two similarly sized boxes, which has got to be a good idea. Receivers are also simpler to operate, in principle anyway. At the very least you save on one power switch, and typically you are presented with an integrated control system that is bound to oil the wheels of ergonomics.

But there is one important point to watch. Because receivers don't sell in vast quantities in

this country, and because this is one of the very few countries to use Long Wave for public service broadcasting, many – no, most – receivers on sale in this country cover FM and MW only. Remember that LW is the home of Radio 4, where it can be heard on the all too frequent occasions it is not on FM.

MODEL NAME PRICE	LAB SOUND	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Harman Kardon HK330Vi £1782	Average Average—	No LW, and FM section best suited to strong, local transmissions. The amplifier is quite powerful but favours the treble. Bass is tuneful but lacks weight	5 inputs (inc 2 tape), FM/MW tuner		70
Harman Kardon HK440Vxi £299	Good	Clear, dynamic, slightly bright sounding design, a little grainy in extremis. Mono switching and LW missing from tuner, which otherwise performs well	5 inputs (including 2 tape) with FM/MW tuner	R	70
JVC RX-777VL £500	Good Good	Sharp, lively but euphonious sound quality from line and phono source is matched to a high grade tuner. However, many half-baked facilities blunt value for money	A/V capable with 6 inputs, equaliser, digital ambience, FM, MW/LW		70
JVC RX-1001V £770	Average Poor	Power output is well below spec, and sound quality is cluttered and messy on all inputs	Digital ambience processing, Dolby Surround, 2/4 speaker, 40 FM/MW presets		70
Revox B285 £1782	Average Average—	Sophisticated and capable tuner is married to a muddled, compressed sounding amplifier, which also has low sensitivity preventing the amplifier being driven fully in many situations	70 watts/ch, 4 inputs (inc 2 tape), 29 FM/MW/LW presets		70
Rotel RX-850AL £230	Good Good	Well built and sensibly equipped receiver with outstanding sound quality for the price via the tuner, phono and line sources alike. It majors on subtlety however, and may not impress the heavy metal brigade	4 inputs (inc 1 tape), FM/MW/LW tuner	BB	70
SAE R102 £599	Average— Average	This is an uneven but mostly good performer. It sounds constrained but musical, but the tuner is weak on both wavebands.	4 inputs (inc 2 tape), FM/MW tuner		70

VIDEO RECORDERS

For some time there's been a move to improve both the video and the audio quality of video recorders and TV sets alike as a necessary prelude to a proper integration between the two. Hi-fi video is obviously an important element in the story, and so is Dolby Stereo, the ambient 'surround sound'

system. The weak link of course is on the broadcast side. Although TV sound is well up to normal hi-fi standards, it has always been in mono and unjustly or otherwise has rarely attracted much audiophile interest. But TV sound is – or shortly will be – freed of the shackles of mono by the introduction of NICAM

stereo. NICAM – an acronym for Near Instantaneous Companding and Modulating – is the missing link that will help facilitate the much feted integration of video with audio. And then we have S-VHS, a system which does for picture quality what the other developments promise to do for the sound...

NAME PRICE	LAB SOUND & PICTURE	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Akai VS-75EK £550	Average Good	Excellent performance and a slick set of controls make this recorder a pleasure to use. Good price is a bonus	Hi-fi, NICAM, programmable remote	BB	71
Akai VS-77EK £700	Average Good	Another fine and carefully designed model from the impressive Akai video stable. The Dolby installation, whilst flawed, is certain to increase interest in the system	Hi-fi, NICAM, Dolby Surround decoder & stereo amp	R	71
Ferguson FV33H £500	Very Good Below Average	Beer budget NICAM has excellent tape search facilities and an intelligent remote control. Neither picture nor sound quality however are state of the art, and ergonomics are poor	Hi-fi, NICAM, transmitter LCD remote control		71
JVC HR-D750EK £500	Good Average+	Well sorted and relatively affordable NICAM recorder with LP sound only. It is pleasing to use and helpfully equipped, especially when trying to find individual recordings buried in long tapes. Performance is good in relation to price	Hi-fi, NICAM, transmitter LCD remote control	BB	71
JVC HR-S5000EK £1000	Good Very Good	This is the first domestic S-VHS recorder on the market, and it's an unusually well designed one with a wide range of well sorted features and controls. Sound and picture quality are close to state of the art, and miles ahead of any non-S-VHS recorder	S-VHS, Hi-fi, NICAM, LCD remote	R	71
Mitsubishi HS-B70 £1000	Very Good Very Good+	Superb model, and true state of the art picture quality, though you'll need a high grade S-VHS compatible monitor to reap full advantage. The facilities are also wide ranging and generally helpful	S-VHS, Hi-fi, NICAM, LP & SP, programmable remote	R	71
Nordmende V4405K £799	Good Good	Fine basic sound and picture quality, but the RF convertor introduced significant losses. An excellent model, but configured for German home market. VPS compatibility is of no practical use here, and the recorder lacks NICAM	Hi-fi, transmitter handset, digital FX		71
Panasonic NV-FS1 £1000	Poor Good	The control system is poorly organised, with cramped legends and some strange machine logic. Bar code programming is hardly a great achievement either. Picture and sound quality are good, but not state of the art	S-VHS, Hi-fi, NICAM, bar code programming		71
Sanyo VHR-D4710E £900	Very Good Good	Fine colour and moderate detail make for a basically good video section to match a fine sound section. Some of the facilities are a little disappointing however and the deck looks expensive	Hi-fi, NICAM, infra-red headphone remote, digital FX		71

**THE WORLD'S NO 1
GUIDE TO BUYING HI-FI**

THE DIRECTORY

COLOUR TELEVISIONS

The standalone television set is rapidly evolving into a key component in integrated home entertainment systems. NICAM digital stereo sound is now being broadcast for several hours a week from London and Yorkshire transmitters, so stereo CTVs are now becoming available equipped with NICAM decoding and with rather more attention paid to the built-in amplifier and speakers.

NICAM is also available on Hi-Fi stereo

videorecorders (see above), and this is usually the more practical route for hi-fi system integration, as well as allowing favourite musical events to be saved on tape. To both watch and record with stereo sound will require NICAM on each of course, but the decision to update one or the other first will probably have as much to do with the age of the respective components than the convenience of the interconnections.

The ten CTVs tested so far are all luxury stereo models with 'flatter squarer' 59cms tubes of various kinds. Best suited to a viewing distance of about 7ft, these are one size up from the most popular 51cms size sets and take about 23 per cent of the top 30 per cent of the market. All have remote control, Fastext (enhanced teletext), and many have on-screen graphics and flexible in/out socketry.

NAME PRICE	SOUND PICTURE	COMMENTS	FEATURES	VALUE	BACK ISSUE FULL REVIEW
Ferguson 59K5Q £599	Average— Good	Attractive and compact design highlights unusual (and rather nice) matt finish Super Planar tube. Picture and ergonomics are pretty good but on-board audio is a bit of an afterthought, lacking sufficient welly for music programming; socketry adequate	59cm SP FST, NICAM, Fastext, o/s graphics	R	76
Grundig ST-63-460TT £649	Average— Average+	Bulky set's shape resembles a square-rigged sail; screen tilts back slightly, so might suit floor mounting, though beware room reflections. Picture quality is good, if a touch bland, but ergonomics are fairly impenetrable—no on-screen graphics either. Halfway respectable sound quality is over-enriched by cabinet drone.	59cm FST, NICAM, Fastext		76
Hitachi C25-P759 £699	Average— Average—	Visually very compact and neat, with excellent handset ergonomics and good on-screen graphics and features. Picture quality 'hyped' and compromised by 'peaked' luma response; on-board sound has muscle but not subtlety, and NICAM (SCART) output lacks muting.	59cm FST, NICAM, Fastext, o/s graphics		76
ITT Nokia £629	Average+ Average—	Bulky square-rigged shape helps deliver a respectable standalone sound quality at a modest enough price. A versatile set with good handset but no on-screen graphics, the picture quality of our sample lacked fine detail resolution, lending a 'soft focus' effect	59cm FST, NICAM, Fastext		76
JVC AVS250 £550	Average+ Average—	This compact and delightfully versatile non-NICAM set has respectable on-board stereo sound and lovely screen graphics, along with an infernal handset. Our sample suffered a tuner problem which marred a picture quality which was pretty good when monitoring baseband signals off tape.	59cm FST, Fastext, o/s graphics		76
Mitsubishi CT-2553 STX £649	Average Good	Arguably the best all-rounder in the group, this compact monitor-style set suffers from exasperating ergonomics but the picture is detailed if a shade untidy, the sound lusty if crude. NICAM (SCART) output lacks muting, and colour rendition a shade individual	59cm FST, NICAM, Fastext, o/s graphics	R	76
Panasonic Prism TK-24 W1 £699	Average+ Average—	Handsome but bulky set delivers serious standalone sound quality. Lovely ergonomics but off-air picture quality marred by tuner section noise on our sample (works fine as picture monitor). Good NICAM (SCART) output.	59cm FST, NICAM, Fastext, o/s graphics		76
Philips 5574 £599	Average Average+	Neat and compact for a front-speaker set, this competitively priced allrounder lacks on screen graphics and remote white level (contrast) but is otherwise well equipped, if a shade undistinguished and conservative	59cm FST, NICAM, Fastext	R	76
Sanyo CBP2559 £579	Poor Good+	Lovely subtle and detailed picture quality totally justifies strong recommendation, though handset is obtuse (lacking white level) and on-board sound is dire. NICAM £50 update due early 1990	59cm FST, Fastext, o/s graphics, picture-in-picture	R	76
Sony D2512U £699	Average+ Average	Beautifully styled around the unique Trinitron tube, the sound benefits substantially from the odd looking detachable loudspeakers. Nice ergonomics with good on-screen graphics, the otherwise detailed picture is a little 'hyped'.	59cm Trinitron, NICAM, Fastext, o/s graphics	R	76

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Personal Messages

Paul Messenger relates another month's wrestling with a recalcitrant hi-fi system.

Twas only last month that I railed against the conceit of those that regarded acoustics as an exact science, and ended up providing us with listening environments substantially inferior to those created a century or more ago. Acousticians reading this will therefore appreciate the irony that this month's column is devoted to describing my own recent stupidity.

To an extent this retreads familiar ground, and also parallels but adds a new twist to the sort of experiences I went through with Kontak contact cleaner a couple of months ago. The odyssey emphasises yet again how vital it is for every element to be properly adjusted if the ultimate performance capabilities of a system are to be realised.

My own gear is a source of great delight and joy - providing everything is working as it should. It is also the source of considerable frustration when the performance loses its edge. Instead of basking in the magic of the music, attention becomes focused on the sound itself, which is always a bad sign.

Gone off

I always know when it has 'gone off', but tracking down the cause and correcting it is not necessarily an easy matter. The sheer complexity of a package which uses three power amplifiers, three preamplifier stages and four outboard power supplies just for vinyl disc replay certainly doesn't make things easy, while my own situation is further compromised by the constant changes necessitated by reviewing other products.

Chuck in the fact that the turntable was recently *Lingoesd* and (not too successfully) completely rebuilt, and it's hardly surprising that the last few months have involved rather more than their fair share of angst. I was aware that all

was not quite *a point*; the rapier-like precision was somewhat blunted. I checked speakers, stands, spikes, contacts, support tables and so on, yet I couldn't seem to track down the problem.

Then, quite by chance, my friends down at Exposure Electronics asked me to help them out by checking the grammar of some copy that had been written for a new amplifier instruction manual. This happened to contain some very sensible advice about making sure that mains cables were tightly screwed down within their 13amp plugs, and I suddenly realised I couldn't even recall how long it had been since I had checked mine.

Since mains electricity is not an obvious part of the signal chain, it's all too easily overlooked, though in my experience it plays a crucial role in extracting the ultimate performance from any top quality hi-fi system.

I've been running my system on its own separate spur from the EB's consumer unit for years, feeding eight star-earthed unswitched Crabtree sockets, and recently changed the feed from a 30amp fusebox to an industrial circuit breaker, all of which makes sound engineering sense. I'd even *Kontaked* the pins of the mains plugs during my recent clean-up.

But the necessity to check the tightness of the contacts within the plugs themselves

had somehow eluded me. Multi-strand wire will always deform and compact, and the whole thing will be subject to heat expansion/contraction in and out of use. Some were tight, but others were well able to take an extra turn, while the tightening procedure itself automatically helps to cut through any oxide build-up.

After five minutes work with a screwdriver I switched on the system again. All was sweetness and light. Bounce, timing, transparency and poise were back with a vengeance, and the utter musical incompetence of the compact disc medium was once again thrust into sharp relief. Were it still the middle of summer, I might have been tempted to sit up 'til dawn (see *Letters*, page 39).

Mains contacts

Whilst pondering the implications, I'm sure it's no coincidence that the mains lead supplied with Linn's *Lingo* is fitted with moulded plugs (IEC and 13amp) at *both* ends. Though by no means unique, it's the first such cable to find its way here, and this hardwired construction should avoid the gradual deterioration that had affected my other mains contacts (though you'll still have to clean the other end, the fuse and the fuseholder from time to time).

I also realised that during my earlier *Kontak* sessions, I

had neglected to clean the (externally accessible) fuses and fuse-holders fitted to my power amplifiers. Out came the magic bottles again, and - almost predictably by this stage - I was duly rewarded with further gains in transparency, coherence and information retrieval.

By the time I'd *Kontaked* the fuses, fuseholders and contacts inside my mains plugs, and changed one or two anonymous looking examples for the highly regarded MK types, my system was delivering a level of performance significantly better than its previous peak (when I went fully *Mana* supported and *NAC5* cabled last summer).

Although I suspect there's still more to be had in the set-up department, my lingering doubts over *Lingo* (sorry) are now largely dispelled. Articulation is stunning, and my worries about the power, the drive and some residual harshness were clearly not *Lingo's* responsibility. My apologies to Linn for my failure to appreciate from the first the full subtlety of this fine piece of kit.

Besides greater mid focus, detail and clarity, the bottom end wallop has now turned my suspended floor into a giant subwoofer of still greater efficiency than before - a probable limiting factor that I propose to attend to in due course.

My immediate next course of action will be to take the turntable down to Jay at RPM in South London - a genuine fanatic and ardent *ARO* fan who's bound to do a better set-up job than I or the Linn rep. And I've ordered up a batch of Graham Nalty's Sonic Link mains cable for further experiments in that area. I think I may ditch the 13amp plugs and sockets entirely and revert to the old, massive and unfused 15amp round-pin standard, getting myself a heavy duty soldering iron at the same time. It looks like being a fascinating Winter . . .



*The mains cable - a Sonic Link not to be overlooked?
Paul's having a Winter clean . . .*

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Audiophile's Choice

Welcome to another in our occasional series of Choice Cuts record collecting supplements. The reviews begin on page five - but first, as usual, we begin with our Audiophile's Choice, a selection of 'classic' recordings which this month have been chosen by Richard Black.

BUSONI: PIANO CONCERTO

John Ogdon, RPO, John Alldis Choir, Daniel Revenaugh. EMI SLS 776. Over an hour long, with five movements and a part for male-voice choir, Busoni's *Piano Concerto* is not a light work. It is, however, immensely profound and beautiful, and immaculately constructed and balanced. This performance does the work full justice, with good orchestral playing, sensitive

conducting and Ogdon at his magnificent best, playing as only he could. The first three movements are not as well recorded as the fourth and fifth, but all are good going on excellent, with impressive dynamic range and good detail in Busoni's huge and sonorous harmonies.

(Now available on compact disc.)

STEVENSON: PASSACAGLIA ON DSCH

Ronald Stevenson (piano). Altarus AIR-2-9090.

I helped record this one, so I may just be biased when I say that the sound quality of the recording is stun-

ningly accurate; but I didn't write the music, which is tremendous in every sense. Written in 1962, the *Passacaglia* has a sense of scale and a directness of impact unusual in late 20th-century music, and a cohesion which holds the listener spellbound for a full ninety minutes. The composer is also a remarkable pianist, and gives a magnificent performance of his work, which stretches the piano and the pianist to



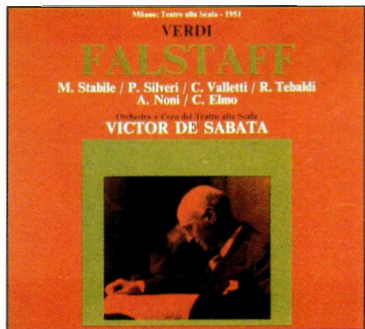
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This supplement is free with *Hi-Fi Choice* February 1991 issue and must not be sold separately.



every extreme. Surely this is one of the most powerful musical experiences ever recorded.

VERDI: FALSTAFF
Stabile et al, La Scala,
Victor de Sabata. Cetra
LO 14.3.

This is one of the worst recordings I've ever heard. It's a 'pirate' made live in 1950. Even the speed isn't constant. But it only goes to remind us that perfect sound isn't everything, and down the telephone this would still be a marvellous performance of Verdi's heart-warming last opera. Stabile, who sang the title role at La Scala over 30 years, is in peak form and plays the coarse old drunkard and lecher with real relish. The rest of the cast is hardly less fine, and the orchestra is quite incredibly nimble and agile at de Sabata's hair-raising speeds. The perfect antidote to worrying about hi-fi.

BRUCKNER: SYMPHONY
No. 8

Philharmonia Orch, Otto Klemperer. EMI SLS 872. Producer Walter Legge described Klemperer as a 'grim Teuton', and in this performance the last

movement is as grim in its opening as any music. But that's only half the story, for throughout the symphony Klemperer never loses sight of the beauty of

Bruckner's writing, and although many have jibbed at Klemperer's slow tempi, I feel they only add to the music's other-worldliness. The Philharmonia responds readily to the conductor's demands, and the recording captures well the wide range of expression, from whispering strings to the full angelic glory of the climaxes.

MARTINU: SYMPHONY
No. 4

Prague Symphony Orch,
Jiri Belohlavek. Panton
81100023.

I find this the most immediately appealing of Martinu's symphonies (all very fine). It is a delightful, sparkling work, in which the orchestration often favours woodwind to great effect. I defy anyone not to tap along to the second movement! The slow movement rivals Shostakovich for dramatic intensity, and the work makes the most of a cunningly planned ebb and flow of tension, which leaves one exhilarated at the end. This performance, under the baton of the excellent Belohlavek, captures

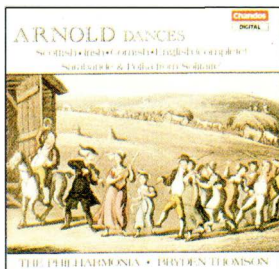
well the life and spirit of the work, and the recording is generally very open and lifelike.

MOZART: PIANO CON-
CERTOS IN D MINOR
(No. 20) AND C MINOR
(No. 24)

Clara Haskil, Lamoureux
Orch., Igor Markevitch.
Philips SABL 212 (and
many reissues).

This is in many ways most unusual Mozart playing. Above all, it is sensitive to the works' lyricism, and also to the grave sweetness of the minor-key writing. Haskil, who at the time of recording these was ill and frail, proves that accuracy, and strength and beauty of tone, can go together on a piano, and Markevitch ensures with customary skill that the orchestra matches her in every respect. Altogether inspired and inspiring music-making, well captured by Philips' engineers (and best served in 1960's UK pressings, if you can find them).





ARNOLD: ENGLISH, SCOTTISH, CORNISH and IRISH DANCES; SOLITAIRE: 2 DANCES
Philharmonia Orchestra – Bryden Thomson.
Chandos CHAN 8867 (47m56s)

A marvellous idea to assemble these five sets (England boasts two) on one CD, bringing it up to date with the *Irish Dances* of 1986. Wales next, Dr Arnold?

The chronological presentation shows deeper meanings and more thought in later works, with perhaps a hint of the Irish tragedy, but Arnold's love of brass endures to the end.

A concert-hall ambience offers plenty of weight and admirable clarity in loud sections, but more definition is needed on lighter instruments: the deliciously-played Scottish drunken promenade deserves greater prominence.

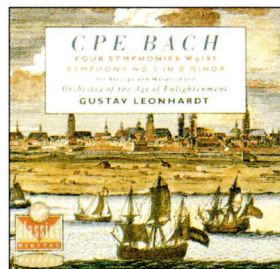
Arnold's skill and humour, plus Thomson's adept conducting, make this disc an absolute joy.



BACH: ST. JOHN PASSION
Soloists, Choir and Orchestra of La Petite Bande – Sigiswald Kuijken.
Harmonia Mundi GD 77041 (2CDs82m 19s)

If you prefer the dry sherry style, then you'll revel in this performance. It is cool, calm, collected, austere and emotionally contained. Even in the great confrontations between Pilate and Jesus, nothing is allowed to disturb the even course. La Petite Bande supplies beautiful obbligati; but the string forces seem weak.

The choir sings the chorales with great emotional detachment. Christoph Prégardian's Evangelist is impeccable in diction, but tonal variety is small. The soprano of Barbara Schlick is gentle but persuasive, and the alto solos are more commanding than Nico van der Meel's unimpassioned tenor. The best solo singing comes from the experienced Max van Egmond, who communicates the tragic marvel of events. Van der Kamp's Jesus lacks spiritual force. Only van Egmond stamps a note of true authority on this work, which should communicate awareness of mighty happenings. No such disturbance arises here.



CPE BACH: SYMPHONIES, Wq183 Nos.1-4; Wq182 No.5
OAE – Gustav Leonhardt.
Virgin VC 7 90806-2 (54m 15s)

An initial impression that these, by turns furious and pleading works, need more weight is confirmed by the booklet. The notes tell of a 1776 performance with 40 players; the personnel list here gives only 28 in the Orchestra of the Age of Enlightenment.

More impulsiveness from Leonhardt would have been welcome (they are, after all, the 18th century's wildest symphonic creations), and instead of filling up with the much-recorded *Wq182/5*, why not one (or both – there's room, and they're published) of CPE Bach's never-recorded symphonies?

What we have is neat and straight (better than Koopman's overphrased versions on *Erato*) with clear harpsichord continuo, but the ultimate fire in these scores is not to be heard even in this recording.



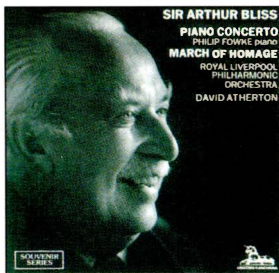
BARTOK: CONTRASTS
IVES: LARGO; SONGS
STRAVINSKY: SOLDIER'S
TALE – SUITE

Richard Stoltzman (clt),
Richard Goode (pno), Lucy
Chapman Stoltzman (vl).
RCARD60170
(56m 35s)

The *Soldier's Tale* deprived of cornet, drum, and the *Devil's Triumphant Dance*, seems wrong somehow even in Stravinsky's own reduction, but much of it survives: the *Tango* is effectively sleazy, and the Devil's hand on the Soldier's shoulder from behind is a real shock.

More questionable is the arranging of nine Ives songs for clarinet and piano, but surprisingly they are successful, due largely to Stoltzman's apparent deep sympathy for the originals. He participates vocally in two songs, and in others he almost draws words from his clarinet. Rather too many slow songs, though.

This is an unusual and finely-played disc, rounded out with a scintillating reading of *Contrasts*.

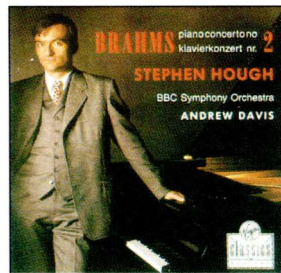


BLISS: PIANO
CONCERTO; MARCH OF
HOMAGE

Philip Fowke (pno), Royal
Liverpool Philharmonic
Orch – David Atherton.
Ukorn-Kanchana
UKCD2029
(44m 20s)

This big concerto is in the line of Romantic succession from Tchaikovsky and Rachmaninov, its more advanced language updating their grand gestures without becoming offensively modern. Fowke launches into it with enthusiasm and bold bravura, successfully bridging the link between *Things to Come* warlike writing (the *Concerto* followed Bliss' music for that HG Wells/Korda film by four years), and the sometimes uncomfortable mix of pastoral charm and pianistic display.

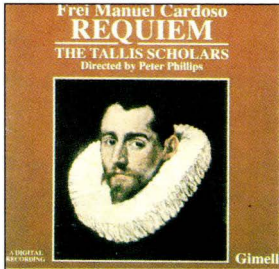
Balance between soloist and orchestra is just right: they are equal partners and deserve equal prominence. The wide dynamic range tends to add aggression to fortissimos while veiling pianissimo passages, but the disc, with its menacing Berlioz-like *March of Homage* (for Churchill's funeral), is a fine and important issue.



BRAHMS: PIANO
CONCERTO No. 2
Stephen Hough (pno), BBC
Sym Orch – Andrew Davis.
Virgin VC 7 91138-2
(50m 50s)

Hough is broad and firm from the outset. Within a slow tempo, the confident emphases are never allowed to seem like self-indulgent whims of phrasing. Davis is so firm in his accompaniment that the whole huge design unfolds with admirable confidence. Even the *Scherzo* is bluff and solid. Brahms has his own humour – kindly rather than skittish. One may miss the sparkle of a Gilels but Hough's solidity convinces more and more as the music progresses. The *Andante* flows with immense warmth and the finale lightens the touch just a little. The matching of phrasing between soloist and orchestra is immaculate.

Greenwich Borough Hall gives a rich acoustic, the engineering enhances the strings, makes the brass rounded and puts the drums into soft focus – Brahms gives them little to do but even their few moments of glory are here rather muted. Nevertheless, this grand, Germanic interpretation deserves attention. We should hear more of this young pianist.



CARDOSO: REQUIEM; MOTETS – NON MORTUI, SITIVIT ANIMA MEA, MULIER QUAE ERAT, NOS AUTEM GLORIARI; MAGNIFICAT
The Tallis Scholars – Peter Phillips. Gimell CDGIM 021 (70m 19s)

Frei Manuel Cardoso was one of Portugal's leading composers in the late Renaissance. Born in 1566, he died in 1650 – a prodigious span in those days, and one which enabled him to mature his style to a degree of sophistication undreamed of when he began his career. In the *Requiem* we find rich vocal scoring – two soprano and two alto parts in addition to tenor and bass, though the final *Libera me* reverts to four parts.

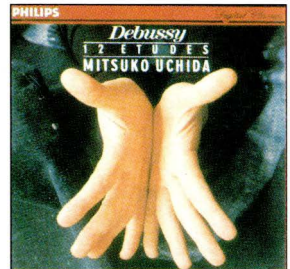
The motets – four of them – are fraught with raw emotionalism. *Mulier quae erat* is particularly interesting on account of its tonal ambiguity. The *Magnificat* shows Cardoso at his most daring – augmented intervals being used to enhance harmonic richness with exultant mastery. One gets used to praising the Tallis Scholars and their gifted director, but on this occasion there is no doubt that superlatives are in order – the recording glows with compelling immediacy.



CLÉRAMBAULT: ORPHÉE; SONATA – LA MAGNIFIQUE; ZEPHIRE ET FLORE; LÉANDRE ET HERO
Julianne Baird (sop), Music's Re-Creation. Meridian CDE 84182 (62m 13s)

Louis-Nicolas Clérambault is best known nowadays for his organ music. He was also a fine composer of vocal music – famed throughout France for his cantatas. Here we have three cantatas on classical themes. They are for soprano and instrumental ensembles – the latter used with plenty of regard for colouristic detail. The form of each work calls for alternation between aria and recitative. Into this simple scheme Clérambault pours a wealth of poetic feeling.

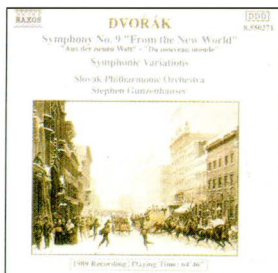
There is ample opportunity for delicate vocal nuance, and Julianne Baird takes full advantage of melodic lines which dip and soar with beguiling grace. Her diction is a joy, and the instrumental support from the group called Music's Re-Creation is delectable. The instrumental *Sonata* blends Italian and French styles. Again the performance is admirable, and the quality of Meridian's recording is startlingly good: everything in balance, not a bar without character.



DEBUSSY: ETUDES
Mitsuko Uchida (pno). Philips 422 412-2 (47m 12s)

It is good to find Uchida exploring other composers after her prolonged Mozartian love-affair. Debussy's 12 *Etudes* show the composer at his greatest. A late masterpiece, the set has long been regarded as a vital clue to the central mystery of this composer: in spite of all the poetic conjurings, was Debussy classically disposed at heart? The final group of compositions points to an affirmative answer, and the *Etudes* figure prominently in this respect. Uchida knows the Viennese classical world as thoroughly as most. Here she is clearly concerned to reveal the formal discipline of these works. They conjure no external images: like all abstract music they speak for themselves.

Here Debussy uses technical devices – thirds, fourths, sixths and so on – for excursions into pure musical thought. Uchida journeys with him, deploying fabulous technique and strong architectural responses to one end – the revelation of one of the 20th century's greatest artistic imaginations. The recording is quite brilliant, and the disc is in every way a treasure.



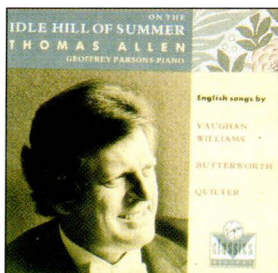
DVORAK: SYMPHONY No.9, 'FROM THE NEW WORLD'; SYMPHONIC VARIATIONS
Slovak Philharmonic Orch – Stephen Gunzenhauser.
Naxos 8.550271
(65m 07s)

Bargain Price

One wonders how Naxos can produce such discs for £4 when products of similar quality can cost three times as much. Not all Naxos discs would be my first choice in their respective repertoires, but they offer a way of building up a good, often excellent, collection without incurring mortgage difficulties.

Gunzenhauser's *New World* yields to Macal (CFP) and Maazel (DG) in the bargain area in being less exciting overall (the *Trio* and *Finale* are earthbound), and the recording is rather distant and inconsistent: timpani, for instance, gripping at times, often fail to tell.

Like Macal, Gunzenhauser fills up with the Symphonic Variations, an underrated charmer. Gunzenhauser is recording all Dvorak's symphonies for Naxos: if he maintains this quality and continues to observe exposition repeats, it could be a notable series.

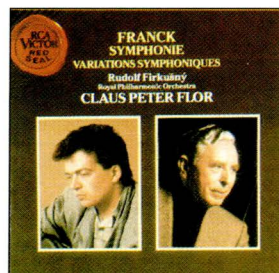


ENGLISH SONGS
Thomas Allen (ba),
Geoffrey Parsons (pno).
Virgin VC 7 91105-2
(72m 29s)

Thomas Allen here provides a lengthy and well-chosen anthology from such composers as Vaughan Williams, Roger Quilter, Graham Peel and George Butterworth. Had the latter not been struck down on the Somme he might have outdone them all as a songwriter. Here he is represented by seven fine songs, all of them settings of Housman. *On The Idle Hills Of Summer* supplies the disc's title, and is a rarity of high quality. Then we have Vaughan Williams' *Linden Lea* and *The House of Life*, six Rossetti settings given complete.

Silent Noon is deservedly well-known, but *Death In Love* is more subtle. Graham Peel's Housman offering is the glorious setting of *In Summertime On Bredon*, Roger Quilter has a vivid response to words in *Now Sleeps The Crimson Petal* plus his *Seven Elizabethan Lyrics*.

Thomas Allen sings with gloriously free tone, lucid enunciation and obvious relish for the music. The recording, presentation and booklet are a credit to this enterprising company.

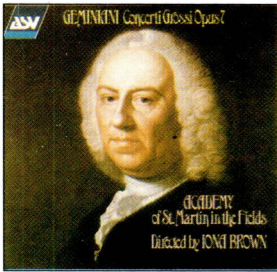


FRANCK: SYMPHONY; SYMPHONIC VARIATIONS
Rudolf Firkusny (pno), RPO
Claus Peter Flor.

RCA RD87916 (54m 30s)

A more natural recording of the Symphony than ASV gave to d'Avalos recently (*Choice Cuts* August 1990), but not everyone will warm to the lingering romanticism of Claus Peter Flor. This conductor is immensely sensitive and he obtains committed playing from the Royal Philharmonic – a lovely open sound, full of detail with climaxes built excitingly. The tendency to over expressiveness however, somewhat diminishes the forward pulse. In the *Symphonic Variations*, Rudolf Firkusny is masterly. Here the generous expressiveness is well suited to the music.

There are some gorgeously thoughtful moments; clearly pianist and conductor are very much at one. Though nearing 80, Firkusny's musical temperament is as vivid as ever. As in the symphony, Flor understates some forte passages, but on the whole this is a thoroughly professional presentation. The use of two venues (Henry Wood Hall and EMI Abbey Road) is not detectable.



GEMINIANI: CONCERTI GROSSI Op. 7
Academy of St Martin-in-the-Fields – Iona Brown.
ASV CD DCA 724 (62m 54s)
 This is a modern orchestra playing modern instruments, but in the event, there is not really a fierce controversy between standard groups and period instrument ensembles. Iona Brown is everywhere stylish, pitting the solo string group against orchestra stylishly, assisted by excellent balance.

These six varied concerti are played with boldness and enthusiasm. The editor, on excellent grounds, has interpreted use of winds in terms of sonic suitability in the absence of explicit directions from the composer (he asks for them only in *Concerti* 3, 4 and 5). The recording is immediate and bright. The bassoon might perhaps have been given more prominence, although it is only required to act as continuo. In *No. 4* its solidity is an especially strengthening element to the bass.

All-in-all, a carefully thought-out programme, skilfully played. Incidentally, *No. 6* is the longest concerto (18 mins) and it is placed first on the disc.



GERMAN CONSORT MUSIC, 1660-1710
Parley of Instruments – Roy Goodman and Peter Holman.
Hyperion CDA 66074 (45m 32s)
 German music contemporary with, or somewhat before Bach, can sound impossibly stodgy with its six-part string band and heavy continuo, but the dual partnership of Goodman and Holman here secures light and transparent textures from this group of viol-tuned period strings.

These sonatas and overtures are all suites (Schmelzer's little *Sonata* of 1662 is the earliest, Telemann's *Overture C1* the latest – about 1710) and the string emphasis is relieved by Fischer's *Overture* with its two oboes and bassoon, together with evocative period tones from Clare Shanks, the late David Reichenberg, and Alastair Mitchell.

A slight annoyance is the non-indexing of movements, but otherwise presentation could hardly be bettered. Recording is both intimate and faithful.



GRAINGER: BALET – THE WARRIORS;
HILL SONGS Nos 1 & 2;
DANISH FOLK-MUSIC SUITE; ORCHESTRAL WORKS
Melbourne Sym Orch – Geoffrey Simon.
Koch 3-7003-2 (66m 41s)

An adventurous programme: the Ballet never had a scenario ("an Imaginary Ballet" Grainger called it). It is full of lively rhythms and bright orchestration (including piano) representing warriors of various countries. The two *Hill Songs* are given their première recordings, the first was inspired by a visit to Argylshire, the scoring is extravagant and includes saxophones, euphonium, piano and harmonium.

The second *Hill Song* is brief but beautiful and the more extensive *Danish Folk-Song Suite* is full of wit in a manner reminiscent of Ives. *Colleen Dhas* is also a first recording and like the Chinese inspired *Beautiful Fresh Flower*, is a brief pastoral gem. The inevitable *Irish Tune from County Derry* really wears very thin, but there are some who love it. We shouldn't complain since the programme is so original and the recording superbly clear, full-blooded and immaculately balanced.

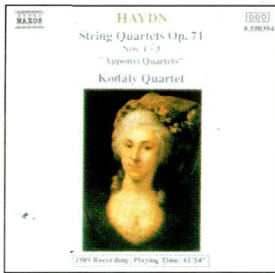


HAYDN: SYMPHONIES
No. 6; No. 7; No. 8
**Austro-Hungarian
Haydn Orch – Adam
Fischer. Nimbus**
NI5240 (70m 1s)

Fischer brings far more insight to this early *Morning, Noon and Evening* set of symphonies than to his admirable but solid view of Haydn's last twelve. The many solo parts are well played and clearly recorded (even those for double-bass) although some may not care for the very slow slow movements.

The minuets are a little slack in rhythm too, and there is one extraordinary oddity, which concerns the minuet of *No. 7*. Whilst the conductor sensibly obeys most of Haydn's repeat marks, an aberration comes over him here. It is totally illogical to observe all repeats except the first one in the trio when the double-bass announces its solo spot.

Either Fischer has no concern for musical form, or (and we think this more likely) it is a case of shoddy editing. Either way it does a disservice to the composer and we must blame either the producer for permitting such a disturbing musical oversight or the engineer for allowing a blatant technical error to pass unnoticed.

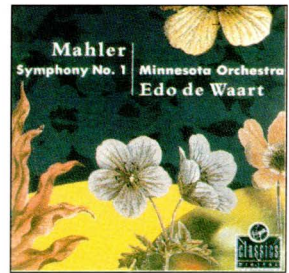


**HAYDN: STRING
QUARTETS Op.71**
No. 1; No. 2; No. 3
Kodály Quartet.
Naxos
8.550394 (61m 54s)

These three *Quartets*, subtitled *Apponyi* after the nobleman to whom they were dedicated, are works of Haydn's maturity (1793) written amid the London Symphonies. Recorded with admirable clarity (occasionally including the inward breaths of the leader) in a neutral acoustic, there is little to distract from the purposeful interpretations. The Kodály Quartet gives a sense of strength and purpose, and a very strong cello line underpins warm, full-blooded playing.

One has the impression of fully-thought out interpretations, the tempi are natural and unforced. Even the tricky *Allegretto* of *No. 2* is spot-on in judgement (3m 43s not 7m as on the sleeve).

There is the occasional imperfection in the upper violin reaches, but nothing at all disturbing, and the chording in fast movements (notably *No. 3* movt.(ii)) is sharply precise. At a bargain basement price, we recommend these highly skilled, well-recorded performances. We should still do so at normal CD price.



MAHLER: SYMPHONY
No.1
**Minnesota Orch – Edo de
Waart. Virgin**
VC 791096-2 (55m 43s)

On venturing into a work as popular as this, the listener should expect something special. The magical slow introduction certainly grips the attention, and its distant trumpets are marvellously atmospheric.

De Waart takes the main body of the movement broadly and graciously, observes the important repeat and generally understands Mahler's vast symphonic design. But the grand climaxes do seem somewhat understated, and the music begins to wake up only towards the end of the movement. The *Scherzo* is not especially rugged and the tempo contrast for the trio is rather marked – the return of the *Scherzo* seems hurried. The *Funeral March* however, comes off beautifully at a flowing tempo and the huge finale is never allowed to sprawl.

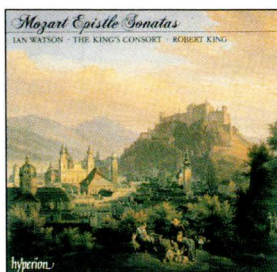
With generally convincing balancing, it is surprising that the climaxes do not blaze more strikingly. Lucid, rather than gripping, is the impression. More ferocity and more tension would have turned a good version into an excellent one.



MENDELSSOHN: DIE ERSTE WALPURGISNACHT; CANTATA
Soloists Gulbenkian Choir and Orchestra – Michel Corboz; Kyrie Lausanne Vocal and Instrumental Ensemble – Michel Corboz.
Erato 2292-45462-2 (56m 30s)

Mendelssohn's youthful and wonderfully tuneful *Die Erste Walpurgisnacht* is given a calm, broad performance, all three light-toned soloists are ideally expressive and the choral singing is beautifully controlled. The extensive overture is a superbly dramatic piece, well played but somehow reticent. Was this recorded at a separate session perhaps? The brass are less present, the timpani rather more hollow than elsewhere.

The notes give no account of its naive story about Druids and Christians nor are the words provided. The other pieces are not mentioned. The cantata is entitled *O Haupt voll Blut und Wunden*, and has three movements – the central one for bass solo – it uses the chorale of the same name by Hans Leo Hassler (1564-1612) extensively. The Kyrie – a strange composition for a convinced protestant – is calm and beautiful.

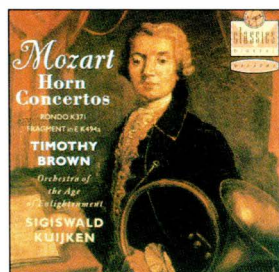


MOZART: EPISTLE SONATAS Nos. 1-17
King's Consort Orchestra – Robert King; Ian Watson (organ).
Hyperion CDA 66377 (59m 37s)

These short movements, all but one marked Allegro, were written to follow the Epistle before the Gospel reading during the mass. Sometimes called 'Organ Sonatas', only a few feature the organ in anything other than a continuo role.

They are generally lightly scored and in divertimento style, but three in C are scored with trumpets, two of them with oboes and timpani, and one with horns. Timpani should have been added to K263 and the horns in K329 should be C alto.

Delightful performances though, with pointed playing on attractively-toned and well tuned period instruments. The oboes especially are fetching.

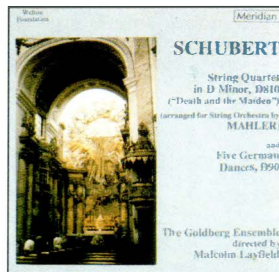


MOZART: HORN CONCERTOS: Nos. 1-4;
RONDEAU K371;
FRAGMENT K494a
Timothy Brown (horn),
OAE – Sigiswald Kuijken.
Virgin VC 790845-2 (64m 20s)

A warm, natural acoustic, as of a small concert hall with the soloist placed within, rather than before, the orchestra, tends to obscure detail, but is pleasing in itself. It is certainly better than having an unnatural aural spotlight on the horn. Brown plays a natural instrument; the frequent hand-stopped notes give nasal contrast to melodic lines, and he interposes small cadenzas at appropriate points.

His playing is not showy: on the contrary, he approaches the music gently, sometimes 'easing in' a phrase by slowing, while the orchestra displays more fibre and fire. A harpsichord continuo adds to that impression.

Chronological order is followed (Nos. 2, 3, 4, 1) and Süßmayr's completion of *No. 1* is used. The tantalising fragment, *K494a*, is of a promise to make one grieve that Mozart abandoned the work. It would surely have been great.



MOZART SYMPHONIES
Nos. 25, 29, 33

London Mozart Players
– Jane Glover.
ASV CD DCA 717
(61m 2s)

Forthright Mozart with beautifully judged tempi. Many details of style are carefully thought out – notably the suitable use of ornamentation and grace-notes. Repeats are logical and the clear, warm recording (made at Fairfield Halls, Croydon) shows how well this orchestra plays nowadays. The dramatic No. 25 is played with urgency and the elaborate parts for four horns are performed with admirable accuracy.

It is odd that the bassoons only play where marked solo (the *Andante* and part of the minuet) 18th century practice implies they should play the cello line elsewhere. In this work too, the trio is unnecessarily treated as a separate episode and slightly slackens tempo.

This apart, Glover is very stylish and although her view of *Andante* is slower than expected, the slow movements still move purposefully forward. High horns ring through the textures excitingly and the finale of No. 33 is full of the spirit of the dance: polished performances in every way.

MOZART: VIOLIN
CONCERTO

No. 4 K218; SINFONIA
CONCERTANTE K364
Takako Nishizaki (vln),
Ladislav Kyselak (vla),
Capella Istropolitana
– Stephen Gunzenhauser.
Naxos 8.550332 (56m 55s)

The excellent musical notes tell us about Takako Nishizaki and her career, describe Capella Istropolitana – formed as a chamber orchestra from the Slovak Philharmonic Orchestra and outline the career of Stephen Gunzenhauser. It is a pity that no mention is made of Ladislav Kyselak since he contributes so much to a very sensitive performance of the *Sinfonia Concertante* for violin, viola and orchestra. Even the nature of the vibrato used by the two soloists matches beautifully. As performances, both works are played within the German tradition.

Nishizaki has a delightfully light tone – especially in her elegant rendering of the slow movement of the *Violin Concerto*. Gunzenhauser does not always move the music forward: the slow movements are rather slow and opening of the *Violin Concerto* seems four-square. The recording is warm and sparkling – an excellent bargain.

SCHUBERT arr. MAHLER:
STRING QUARTET IN D
MINOR 'DEATH AND
THE MAIDEN'; FIVE
GERMAN DANCES
The Goldberg Ensemble
Malcolm Layfield.
Meridian CDE 84178
(53m 57s)

It was a good idea to present Schubert's *Death And The Maiden Quartet* in Mahler's arrangement for string orchestra. Whether the added glow to the violins and the interesting strength of the double-bass line (which sometimes separates from the cello part) is enough to merit this departure, is a matter for debate. It would have been better if the ensemble had played the music as per the score. We do not know if Mahler approved the omission of every other second repeat in the *Andante con moto*, but it certainly spoils the musical shape. The slowing for the trio of the *Scherzo* does likewise.

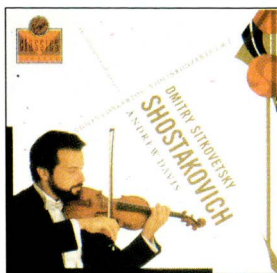
Apart from these moments of wilfulness, the playing is immaculate and the *Dances* are a delight. The recording is colourful and very spacious, the contributions to the quieter moments by a distant bird are rather charming and do not distract.



SCHUBERT:
STRING QUINTET IN C
Kocian Quartet with Daniel
Veis (cello).
Supraphon 11 0365-2
(49m 11s)

A superb performance, full of life and intense feeling, recorded with brilliance and immediacy. This challenges the marvellous Alberni Quartet version for CRD. The huge first movement finds both ensembles employing similar tempi – we regret the Kocian’s decision to omit its repeat because, despite the size of the piece, it makes structural sense. Elsewhere, every musical decision is convincing: the superb bouncing rhythm in the not-too-fast finale is captivating. The very slow approach to the Andante sostenuto central section of the *Scherzo* works because the pulse is so very firm and the *Scherzo* itself has thrilling drive.

The high-point of the performance is the *Adagio*: pizzicato accompaniments perfectly balanced, leading violin touchingly light and pure in sound – a deeply sensitive and moving interpretation. This is a most auspicious return to the catalogues by Supraphon, we look forward to assessing more from the repertoire planned by this label.



SHOSTAKOVICH:
VIOLIN CONCERTOS
Nos. 1 and 2
Dmitry Sitkovetsky (vln),
BBC Symphony Orch –
Andrew Davis.
Virgin VC 7 91143-2
(67m 23s)

An immediate recording, apparently with a cleverly arranged battery of microphones, allows everything to be heard with great clarity, yet Sitkovetsky is still far too prominently placed, thereby sometimes detracting from important orchestral events.

His playing, by turns pure, ethereal, gritty and dramatic, lacks nothing in virtuosity, but the ultimate involvement (not easy to attain) in the *Nocturne of No. 1* seems to be absent, though the third movement cadenza is gripping. The challenging *Second Concerto* finds Sitkovetsky in introspective mood in a better-balanced recording. His tone glows in the *Adagio*.

On the whole, these are admirable performances, satisfyingly supported by Andrew Davis.



STANFORD: SYMPHONY
No. 7; IRISH RHAPSODY
No. 3; CONCERT PIECE
Raphael Wallfisch (cello)
Gillian Weir (organ)
Ulster Orch – Vernon
Handley. Chandos
CHAN8861 (64m 12s)

A further milestone in Chandos’ admirable championship of that grand figure of the British Musical establishment in Victorian times, Sir Charles Villiers Stanford. The Dublin-born composer is promoted here by the excellent Ulster Orchestra. The resonant recording is rather distant but glows beautifully.

There is fine playing in the symphony, but a lack of impact. Brass are strong but the timpani and lower strings seem to play very mildly. This warm generality suits the lyrical *Irish Rhapsody No. 3 for Cello and Orchestra* far better, and Wallfisch has a fine positive approach. The recording of the *Concert Piece* – a four-movement symphony for organ and orchestra – seems more sharply in focus, with intriguing sonorities emerging from this unusual combination. The wide lateral spread of the solo instrument assists in this.

A recording for those who like big sound to wash around them.



STRAVINSKY:
WORKS FOR STRING
ORCHESTRA
Guildhall String Ensemble
– Robert Salter.
RCA RD60156
(51m 38s)

The master of orchestral colour shows what he can do with string sonorities. Dating from 1914, the somewhat Bartókian *Three Pieces* and the spiky *String Concerto* of 1946 seem designed to display the precise, needle-sharp ensemble of these players, while the tiny *Double Canon* (1959) is concerned with colour and harmony.

Apollon Musagète, originally from 1928 but played here in its 1947 revision, is a ballet about as different as could be from the great ballets of 1910-13. Its gentle mood and strings-only scoring conceals tremendous skill in the handling of the smallish group, and this 11-strong band, assisted by a clear, punchy and immediate recording, plays with an acute ear for its subtle nuances.

Gutty basses and a highly polished sheen on upper strings mark this as a recording of distinction.



SULLIVAN: OVERTURES
RPO. New Symphony Orch
– Malcolm Sargent
– James Walker
– Isidore Godfrey
– Anthony Collins.
Pickwick IMPX 9014
(51m 7s)

All the popular pieces are here. James Walker's *HMS Pinafore* is lively to the point of violence. Sir Isidore Godfrey, for years the accepted epitome of authentic Gilbert and Sullivan, gives bright readings of *Pirates of Penzance*, *Iolanthe* and *The Gondoliers* (marvellous sudden rhythmic smashes in the reference to "with catlike tread" from *Pirates of Penzance*). Anthony Collins, once very much Decca's house conductor, gives a noble version of *Di Ballo* cleanly recorded – a good sound (originally issued in mono) and stereo echo has been added.

The result is only very slightly 'stereo' but, like all the pieces, the refurbishment is immaculate. The remainder seem to be taken from complete operas including Sargent's outstanding *Yeomen of the Guard*. No item is less than thirty years old but the sound is exciting and immediate throughout. A delightful disc.



WEBER
CONCERTOS
CONCERTINO
POUR CLARINETTE
WALTER BOEYKENS
ROTTERDAMS
PHILHARMONISCH ORKEST
JAMES CONLON
Erato 2292-45459-2
(49m 59s)

The contrast is extremely marked between the dark Cherubini-like mood of *Concerto No. 2* and the sunny humour of the other works, a contrast not realised here to best advantage because tempi are on the fast side of ideal. This robs *No. 1* of power and the others of poise.

That said, Boeykens plays with fluency and accurate fingerwork, producing seductive and poetic tone in slow movements and apparently enjoying the challenge of pace in the finales.

All three works were written for Heinrich Baermann in 1811, who was contemporary with Abu Hassan, but nine years before *Der Freischütz*. However, Weber's orchestral handling, particularly of horns, foreshadows his later practice, making these works wear an early-Romantic cloak rather than a classical post-Mozart one. Recording is good, though the clarinet's 'escaping steam' is audible.

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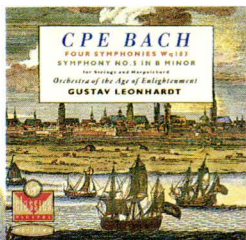
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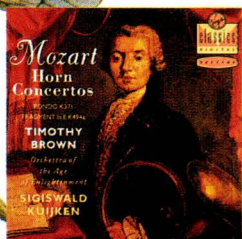
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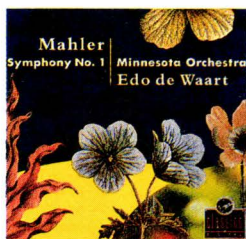
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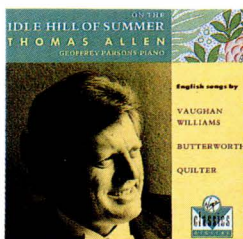
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