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- SS15 DAT Improves quality of record / playback on DAT.

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If you’ve been holding your breath for the arrival of domestic DAB receivers, you would have gone blue in the face three or four years ago. Finally, though, the long wait is over as this month we clap ears on the first commercially-available DAB receiver, Arcam’s Alpha 10 DRT.

The question on everyone’s lips is, will Digital Audio Broadcasting be a sonically viable replacement for FM in the long term? Preliminary listening sessions have suggested that the system is off to a fair start in spite of DAB chopping out quite a lot of the audio data to squeeze it onto the airwaves and that it’s a digital technology still in its infancy.

As is the case with all new ideas, DAB doesn’t come cheap. Until manufacture is scaled up, the cost of the specialist receiver chip sets will remain high, with components such as the 10 DRT selling for around £800. Not helping is the fact that DAB is only going to be adopted in Europe, so there won’t be the usual extra impetus provided by the Japanese and American markets to speed the process up.

Whatever transpires with future radio broadcasting, there are going to be many non-digiphile tuner owners not looking forward to the day when analogue transmissions cease. If you’ve invested hundreds or even thousands of pounds in a top-class tuner, having it turned into a museum piece by a network designed to improve in-car reception in mountainous regions isn’t a happy prospect.

An older and more established source of music by numbers is, of course, Compact Disc. To assess the state of the art at £600-£800 we rounded up five top performers including Alchemist’s attractive Nexus and Denon’s battleship DCD-1650AR, which is built along similar lines to the excellent DVD-5000 DVD player reviewed in March this year. It also features the company’s 24-bit Alpha Processing which allowed the ‘5000 to achieve a superb sonic as well as measured performance.

One name welcomed back to the hi-fi fray in this issue is Nakamichi. After a long absence from the UK, this Japanese name, respected for its killer cassette decks, returns with fresh equipment including the RE-10 100watt receiver.

Last but by no means least, keeping up our commitment to that most aged of formats, the LP, we bring you a review of Pro-ject’s gorgeous Classic turntable. Aimed at those who want a player that’s not just another black box with an aluminium platter, this device combines a fetching Cherry veneer with bottle-green glass platter to great visual effect.

**HOW WE TEST THE PRODUCTS**

- Hi-Fi World has its own advanced test laboratory and acoustically treated listening room. No other hi-fi magazine has the benefit of such facilities.

- Hi-Fi World has a dedicated in-house team of experienced listeners, and uses selected freelance professionals. We review thoroughly by extensive auditioning, rather than by quick-fire group listening tests.

- Hi-Fi World’s engineering team designs a wide range of products in-house. No other hi-fi magazine is so expert and dedicated.

**WORLD VERDICT**

- OUTSTANDING - Superb sound, something we’d use ourselves.

- GOOD - Has strong merit. Well worth an audition.

- ADEQUATE - Mediocre in several areas. May be worth auditioning.

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Natural Beauty

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SIX OF THE BEST

Recoton UK have announced that they are to be the sole distributors for six brands of loudspeakers in the UK from May 1st. The names in question are Advent, Acoustic Research, Heco, Jensen, Magnat and NHT.

Whilst on the subject, in June’s Trade Winds we printed an article on the new Acoustic Research Phantom range, also handled by Recoton UK. Unfortunately, gremlins infiltrated the production system and we accompanied the piece with a picture of the new Magnat Needle loudspeakers. For those of you that want to see how the Phantoms really look, here they are!

Recoton UK
 Lester Road,
 Walkden,
 Manchester M38 0PT
 Tel: 0161 702 5000

ALBUMS ON THE INCREASE

1998’s figures from the International Federation of the Phonographic Industry show that the British public bought 17 million more CD albums in that year than 1997. This makes Britons the world’s third largest buyers of recorded music, constituting 7.4% of global sales after Japan’s 16.9% and the USA’s 34.1%.

In Europe as a whole, sales grew by 3% in value and 2% in number of discs sold, not the most impressive statistics compared to the USA, which experienced its largest surge in sales (11% and 7% respectively) for four years. Further East, things aren’t so rosy. Apart from a rise in Japanese and Indian sales, the overall Asian market fell by a hefty 30% in value and 10% in numbers due to the economic crisis.

When it comes to market division by formats, CD takes the lion’s share with 65% of all albums sold, a rise of 5% on 1997. Cassette is hanging doggedly in there with 34.7% while vinyl maintains its meagre foothold right at the bottom of the graph with 0.4%. Unfortunately for tape, sales dropped in every region, particularly in those such as Russia and South East Asia which buy the most pre-recorded.

When it comes to singles, 82% of which are on CD, the so-called ‘Candle In The Wind’ effect (where Elton John’s tribute to the Princess of Wales bumped up world-wide sales of singles) seems to have waned - there were decreases in all countries bar a few like Belgium and Sweden. Still, the UK bought 79.4million singles, not far off the whole of North America’s total of 88.6million. By far the biggest singles buyers, though, are the Japanese with 144million discs.

As much as some pundits predict the demise of the record industry as we know it, it’s worth remembering that its current trade is a not insubstantial US$38.7billion. It will be interesting to see in future statistics what sort of impact the anticipated rise in Internet music downloads has on the existing music market.

TECHNO BASS

Musical Technology have taken the plunge into the subwoofer market with two models, the PMS 45 and the Tercel.

The main differences between the two are in cabinet construction and drive units. The first has a 45 litre, reflex-tuned enclosure of 18mm MDF which hosts MT’s own 210mm aluminium cone. The second employs both 18mm and 25mm MDF panels in a 70 litre enclosure loading a driver with a poly-urethane and glass-fibre cone on a cast aluminium chassis.

The same 150watt amplifier/crossover (with adjustable low-pass filtering between 40Hz and 100Hz and switchable phase) is fitted to both subs. Connections come in balanced as well as unbalanced formats, and there’s a dedicated Dolby 5.1 input which bypasses the crossover.

Prices are £499.95 for the PMS 45 and £699.95 for the Tercel (which can be clad in a range of finishes. Yew or Rosewood costing £50 extra).

Musical Technology
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**FEATURED SYSTEMS**

<table>
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<tr>
<th>System Price</th>
<th>Minimum Deposit</th>
<th>Maximum Balance</th>
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<tr>
<td>Audio Analogue Paganinni CD</td>
<td>£750</td>
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<tr>
<td>Audio Analogue Puccini SE Amp</td>
<td>£635</td>
<td>£264</td>
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<td>Sonus Faber Signum Skrs</td>
<td>£1249</td>
<td>£2370</td>
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<td>Musical Fidelity X-Ray CD</td>
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<td>Wilson Benesch Orator Spkrs</td>
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<td>Maximum Balance</td>
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**World Radio History**
NAIM THE PRICE

Naim Audio have received the Fast 50 Award for the South West from Deloitte & Touche in recognition of the fact that they have one of the fastest growing turnovers in the UK. What makes Naim different from most of the other recipients is that they have been in their particular line of business for 30 years, whilst most are smaller, more recent firms with more room for expansion and financial growth. Apparently Naim’s success is mainly due to a strong record of international sales, which contribute to a third of its total income.

SACD HITS JAPAN

Sony has officially launched the first Super Audio CD player, the SCD-1, in Japan. The player will be on sale only in that country from May 21, but it starts the ball rolling in the competition to find the successor to CD. According to Sony, the initial target for SACD is die-hard audiophiles forever seeking higher standards of sound quality. Obviously the main aim of the £2500 SCD-1 is to play SACD discs, but the player is also compatible with ordinary CDs.

Along with the player, a pre/power combination, a five-unit ‘speaker and a Super Tweeter System were also launched at the same time. All have been specially designed to work with SACD and the extended frequency range it possesses.

Finally, as far as software is concerned, Polyhymnia International (formerly Philips’ Classics Recordings Centre) are using Sony’s Direct Stream Digital for albums with prominent Classical artists and orchestras. The emphasis on this genre implies that Sony and Philips are targeting the more ‘serious’ listener in their SACD promotional drive.

Sony have told us that they expect SACD to arrive in the UK towards the end of the year. At this stage, however, it hasn’t been decided if we’ll be getting the SCD-1 or a different model.

SONY

The Heights,
Brooklands,
Surrey KT13 0XW
Tel: 01932 816000

EVEN MORE RICHER!

Julian Richer’s audio empire recently expanded with the acquisition of the Mordant-Short brand, as mentioned in March’s edition. Audio Partnership Ltd., who have already taken Cambridge Audio, Gale and Ariston amongst others under their wing, will deal in all Mordant-Short sales from now on.

The previous owner of Mordant-Short, Tannoy Goodmans International Ltd, have appointed Lockwood Audio to deal with spares and servicing of all M-S models purchased before AP’s acquisition of the company.

Lockwood Audio
Imperial Studios,
Maxwell Road,
Borehamwood,
London WD6 1WE
Tel: 0181 207 4472

TRUE TRANSPARENCY

It would appear the development of NXT’s flat-panel loudspeaker technology knows no bounds - the company has announced that they now have 88 licensees ranging from Swiss display manufacturers to German hi-fi companies. Aiding the spread of NXT is the new SoundVu loudspeaker, which apparently had to be announced on the London Stock Exchange as it was deemed “price sensitive” by the powers that be.

NXT claim SoundVu is the world’s first see-through loudspeaker. Products incorporating the transparent transducer won’t be available for at least 18 months, but expect to see an emphasis on the development of television and computer screens that double up as loudspeakers. Other possible uses include cellular telephones and even windows.

New Transducers Ltd.,
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Home Entertainment, March 1998.

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Hi-Fi Choice, No.180, 1997.

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A RETURN TO FORM
The return of Nakamichi to the UK hi-fi scene (first revealed in our Bristol Show report, May 1999 issue) continues apace with their new DVD player, the DVD-10. Features include a Dolby Digital (AC-3) decoder and on-screen speaker configuration. The laser pick-up employed is a "high-precision", twin-focus device modestly said to offer "unbelievably high-fidelity". The DVD-10 is in shops now and could be yours for £799.99.

KILLER CURA
A new British hi-fi manufacturer has come out of the woodwork. Cura have designed their three loudspeakers specifically for "hi-fi enthusiasts" on the basis of comments from listening panels drawn from the music industry, technical experts and the general public. The result is two floor standing models, the CA-21 and CA-30, and one bookshelf, the CA-10. The numbers represent the relevant cabinet volumes in litres.

The company aims to combine the best elements of British design and engineering with "competitive pricing". The CA-10 is £699, the CA-21 £1199 and the CA-30 (pictured) £1799.

Cura
Unit 11, Arrow Industrial Estate,
Elmoo Road,
Farnborough

Hants. GU14 7QN
Tel: 01252 401401

MERAK-ULOUS CONCEPTION
Distributed by Absolute Analogue, these Rockport Technologies 'speakers are described as "the ultimate" two-ways. The cabinet is made from 54mm high-tensile, glass-reinforced resin to obliterate colouration. Although great looking, they may not be a favourite with the bank manager at £13995, or £21000 with the Sheritan bass module.

Rockport Technologies
PO Box 1532,
Fordingbridge,
Hants. SP6 1BU
Tel: 01425 654488

TEAC A-E2000 INTEGRATED AMP
This new £180 50watter from TEAC incorporates a radical Unifactor power supply which promises to change budget amplifiers as we know them. Hype or reality? See next month's issue for a full explanation, review and technical tests.

ACOUSTIC PRECISION FR1 LOUDSPEAKER
The cabinet is made from polystyrene and there's only one drive unit bolted onto the front. Sound unusual? It is. Acoustic Precision have produced a tiny stand mounter free from the problems created by crossovers.

STUDENT SYSTEMS
Looking forward to throwing parties with thumping tunes and warm cider? Need a good system to impress your fellow freshers? We highlight three set-ups from £250 to £500. Featured names include Technics, Tangent Acoustics, Cambridge Audio, Rotel and Pro-ject.

NEXT MONTH'S ISSUE
Here's a brief selection to whet your appetite:
Richard White and Simon Pope set off in search of the best CD player at £600-£800 with five favourites from Alchemist, Denon, Helios, Marantz and Musical Fidelity.

Why spend hundreds of pounds on a CD player when you can get one for under a ton (which is where some of them belong)? Answering this question is the principle reason for our group test this month; all of our selected players are priced between £600 and £800. Hardly pocket-money prices these, so what is it that this month’s quintet has which warrants the extra expenditure? Conversely, what do they have that would satisfy the well-heeled audiophile to whom money is no object? As always, it cuts both ways.

According to some, CD itself will soon be fighting a rear-guard action against Super Audio CD and DVD-Audio, while the whole concept of ‘buying a record’ might soon come under attack by the computer and Internet revolution.

Well, maybe, maybe not. There is a lot of very serious CD software out there. Because of the medium’s inherent cheapness, the back catalogues of famous labels are being re-issued on CD where they would never have been on vinyl. Arguably, there has never been a broader choice of what you want to hear. In any case, are music collectors everywhere willingly going to scrap their music collections, in some cases for the second time in 20 years?

Our five competitors this issue positively ooze confidence in CD as an ongoing format. In the absence of an entry from Aardvark Audio, first onto the rostrum is the attractive Nexus from Alchemist. Following swiftly behind is Japanese company Denon, with the gold DCD-1650AR.

Gallic brand Helios are aiming to spread a little sunshine with their Model 3. Also making its way to the blocks is Marantz’s tasty CD-17 in non-tweaked form. Musical Fidelity’s £800 X-Ray is our final contender. This aluminium lozenge has gathered many plaudits to its brushed-alloy bosom since its release a year ago. It’s included as a bench mark for the group after its original review in February 1999.
Hooray! Not a black box with knobs on! Alchemist have spared no brushed alloy to give their Nexus a distinctive look with an eye-catching geometrical front panel. Buttons are, to say the least, discreet - just little gold blobs set out in triangular configurations. Actually, there are more functions on the front panel than is usual nowadays, including skip-search, programming and so on.

Pressing the Open Sesame button called forth perhaps not the sturdiest tray arrangement you'll ever come across. Hi-Fi World readers are not in the habit of resting mugs of tea on disc trays, let's hope, but this particular example certainly won't stand up to careless handling.

Air seems to be the main ingredient inside the Nexus. The mechanism with its PCB is bolted directly to the casework in front of a small PSU board and two transformers, one EI (for the transport and control sections), one toroidal (for the audio stages, both digital and analogue). A 24-bit Burr-Brown DAC does the conversion work.

**SOUND QUALITY**

Searching for an all-round earful, I kicked off with a live recording of Benny Waters playing in quintet surroundings in Stockholm. This beautifully-recorded disc has, as I know from previous players, a very pleasing three-dimensionality and succeeds in capturing all the club ambience, even down to the 'Oh, the end of a solo, that means clap... tradition which has unhappily grown to epidemic proportions in the 20-odd years since these tracks were taped.

Waters' harmonically rich saxophone tone was reproduced with its full warmth by the Alchemist at the expense of a little attack. Old-time sax men were rightly proud of the layers of overtone with which they enlivened the saxophone's naturally rather boring tone. It says something for the smoothness of the Nexus' presentation that the ebullient Mr Waters came out sounding a little reticent. This may have a little to do with the slight roll-off we measured in the Alchemist's treble.

Determined to look a little closer at this, I dug out BMG's Rameau ballet music disc, which has a touch of the dazzling, not to say glaring, about it in a bright player. Cotton wool at the ready, I was pleased to find that the Alchemist made rather civilized sense of it. Baroque re-creations can sometimes lean too much on the crisp side with the violins in particular developing a cutting edge you could shave with. Through the Nexus, these audio nasties were properly woven into a more uniform texture.

Searching for something to stretch the bass end just a little further brought me to my store of organ records. It used to be the case that no hi-fi could call itself tested unless the 32ft. end of a cathedral organ had shaken the cabinets of old, fridge-size loudspeakers. We don't go in for such extravagant coal-bunker transducers any more but that doesn't mean that organ records are necessarily passé.

A restrained re-issue of Simon Preston at York Minster was sufficient to show that bass had by no means been left out of the Nexus equation. Indeed, without becoming mushy, the warmth and smoothness shown by this player generally were paying dividends in the nether regions.

Power alone is not enough, however - we need finesse as well. Although people's ideas on this subject may differ, I think I am pretty safe holding Haydn's 'Prussian' string quartets above the parapet. Once more the Alchemist proved itself a cultured and relaxed performer, although I was a little concerned that the sprightly enthusiasm of these performances had become a little staid.

Refinement is all very well in its way, but when it starts to flatten out sound staging and sapping vitality there's a clue that you're overdoing it.

I can see the Nexus being something like mana from heaven for those who have acquired a large collection of early CDs. Having shuffled through a few from a decade or more ago, it's possible that Alchemist's super-smooth approach will enable several distinctly un-golden-oldie pressings to rise from the dead. On the other hand, for more naturally-balanced modern offerings played through a neutral or warmish system, its top-end roll-off may be a step too far.
If you've been a World reader for a while, you're bound to have read of products described as having "battleship build". Well, by those standards the '1650 is the whole Pacific Fleet; for a £700 player it's massive at 12kgs' weight.

The Denon is equally convincing when it comes to the parts side. Under the lid are four Burr-Brown 1702 DACs working with Denon's proprietary Alpha Processing to produce a claimed 20-bit resolution and very low levels of distortion (which were confirmed by our measurements). Almost all of the electrolytic caps are expensive Silmic types, and there are separate potted transformers for digital and analogue sections. Icing on the cake (if you can call it that) is the "protein material" applied to the tray and its guides to reduce vibrational problems. Digital connections amount to optical and co-axial; analogue is carried via phono sockets on the fixed and variable line outs.

Returning to the fascia and remote, you'll discover all the traditional functions (including Random and Repeat) as well as Intro, a natty five-second fade-in/out that pauses the CD when the volume hits zero.

SOUND QUALITY

Bomb-proof construction and tasty looks are all very well, but what does the Denon sound like? Rather good is the answer. Denon's gold range of equipment typically has a refined presentation; sure enough, the '1650AR delivered just this. With Miles Davis, a weighty and very smooth sound is delivered this moody music is easy on the ear even if they don't always dig out 100% of the detail in a recording.

In terms of the Miles Davis album, what the above added up to sonically was a firm, precise drum kit (that propelled the tracks along with gusto), brushes on the snare skin in 'Blue On Green' very subtle yet clearly defined. So subtle were they, in fact, that I wondered if Mr. Davis was using an oxygen mask to get his breath back after a particularly gruelling solo. The DCD-1650AR handled this moody music more than commendably, with all the elegance and sophistication it requires.

Kleiber's Beethoven Ninth with the Vienna Philharmonic showed that the Denon was just as happy with Classical as it was with Jazz. The hammering triplets of the opening might have lacked some of their natural slam and power, but that's not to say the player lags in areas such as rhythm and dynamics. The energy the Denon would have used in banging out the opening notes was instead reserved for its handling of the rest of the instruments. Its rendition of a full orchestra was therefore more faithful than that you'd get from many other machines. The sound staging, for example wasn't stretched too wide but was deep and naturally proportioned.

Apart from its slight bias towards the warm side of neutral, the DCD-1650's tonal balance was near perfect. Strings were sumptuous - violins smooth as silk and double basses and cellos rich and vibrant. It was good to note that the Denon doesn't sacrifice precision for refinement, as bass runs were deft and lively.

This player prefers string-based orchestral music to more up-beat and percussion-based pieces, such as the Rite Of Spring, for example. The Denon finds it hard to make anything sound particularly aggressive, even when it's meant to be. Barbarism isn't in its musical vocabulary.

With Madonna's 'Frozen' the Denon showed it was just as comfortable with commercial CDs as it was with Jazz and Classical. If anything, its civilised character took the roughest edges off recordings and covered up some of their minor blemishes. Vocals were solidly-located ahead of the intricate electronic percussion. The Denon actually gave the best reading of this track that I've heard for quite a while, as most CDs at £600-plus have too hard or bright a presentation to make this highly-processed album sound decent.

Listening to the DCD-1650AR is like visiting your favourite restaurant - the atmosphere is tasteful and you know you're going to get a high standard on all three courses. The Denon does a great job with any music, but seems to be marginally more at home with lush Classical fare than in-yer-face Rock. Although some could find it a little too rich for their blood, it stokes a strong claim for itself and is a very fine performer.
This playe is without doubt one of the best looking and well built at its price. It has a 10mm black acrylic fascia with a row of small silver buttons below its electric-blue display (warning: more than five feet away and you turn into Mr. Magoo!) Add to this a natty remote and you have all the makings of a very stylish and cool Gallic customer.

To find out if beauty was more than skin deep, I took a peek inside. DAC-wise the Helios relies on a Crystal Semiconductors CS4328 “with a theoretical resolution of 36 bits.” Unfortunately for this machine, “theoretical” would appear to be the operative word as distortion at low levels was considerably higher than usual (over 60% at -90dB, where 20%-30% is more normal).

The transport is a Philips CDM 12.4, apparently modified to lighten the work load on the laser servo and reduce jitter levels. Outputs are a pair of RCAs and one coax for digital.

SOUND QUALITY
More than appropriately, Miles Davis’ seminal Kind Of Blue was duly loaded into the drawer. Unlike many remasters of classic recordings, the team on this one have done a fine job retaining the life and breath of the music and performers, and the Helios responded with aplomb.

Sophistication was the order of the day as the familiar modal strains of Bill Evans’ piano trickled in at the start of ‘So What’. He was soon joined by the bass, drums and Mr Davis himself, the assembled band offering the Helios a chance to demonstrate its bass extension and solidity as well, but on detailing this French machine began to falter. If you’re one for podium creaks and performers breathing asthmatically, then you might find the Model 3 a bit of a let-down. That’s not to say the sound was muddy - it was actually very enjoyable - but it’s neither neutral nor particularly transparent.

After the mellowness of Miles I gave myself a kick start with Carlos Kleiber and the Vienna Philharmonic opening Beethoven’s Fifth. This is a powerful and rhythmic reading and the Helios matched it blow for blow with a commendable weight and scale. However, it opted to devote centre stage to the horns and timpani banging out the familiar triplets rather than the strings (which seemed to follow shortly afterwards, as if attempting to keep up).

With this recording the Helios sometimes showed itself to be as rich and cool as a wet night on the Champs Elysee, Davis’ distinctive trumpet slipping smoothly in and out of the music without sounding raspy or harsh.

The entry of Coltrane’s tenor confirmed, however, that the Helios has a clear but forward midrange. Combine the textures of a Rioja Gran Reserva with a melted Belgian chocolate and you’re starting to get somewhere near the combination of these traits. In addition to all this fluidity I was pleased to notice that the Helios maintained a sensible rhythmic grip on things - the piano accompaniment and drum kit held the track tightly together. Imaging was precise as well, but on detailing this French machine began to falter. If you’re one for podium creaks and performers breathing asthmatically, then you might find the Model 3 a bit of a let-down. That’s not to say the sound was muddy - it was actually very enjoyable - but it’s neither neutral nor particularly transparent.

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Marantz have built a considerable following for their CD players over the years. This can be both an advantage and a handicap. The handicap is, of course, where do you go from here? On the other hand, the name is seen as a guarantee of a certain level of quality. At the budget end of the market, the succession of CD-63s and CD-67s, complete with SE and KI-Signature tags according to choice, has become something of a cult.

The CD-17 has had perhaps a less glamorous career but maintains an enviable reputation for solid virtue. As is customary for Marantz, this player is properly constructed with genuine weight and rigidity. Pressing the Open button brought forth a drawer every bit as thoroughly engineered as the rest.

This theme continues beneath the lid where a single, low-profile EI transformer feeds a large PCB. Elna audiophile capacitors dot the board along with Philips’ TDA1547 ‘DAC 7’ converter and a pair of copper-shielded Hyper-Dynamic Amp Modules built from surface-mount parts in the analogue output. The transport is, naturally, Philips’ CDM12.3.

For those who feel dimming the display can improve sound quality, a four-step dimmer allows you to find the optimum brightness. Rear-panel socketry includes a pair of gold-plated RCAs for analogue, a lone coax for hooking up an external converter and another two phono sockets for daisy-chaining together Marantz components so they can be controlled from a single remote.

**SOUND QUALITY**

First in to bat were the Eberle Quartet playing Bridge’s Novelletten. This Naim disc has some nice touches as regards recording balance. Arguably the microphones are a fraction close, but it makes a change to hear the bow really biting, especially on the ‘cello. The Marantz passed on these details almost without comment, unless it was contributing towards a warming richness on the QT.

Unlike many players, the CD-17 declined to make the top-end harsh in a bid to add any pseudo-sparkle. With the wealth of pizzicato passages, a ‘slow’ player would have been hard put to communicate the immediacy of the music, so the Marantz’s rather courteous reading was not lacking horsepower when appropriate.

Moving on to a different sort of chamber music, Diana Krall pulled out all the stops on ‘I Miss You So’. Miss Krall’s neat performer’s trick of singing directly to the listener is helped along by her invariably close mic placement. This picks up every little regretful nuance and, provided your CD player is broad-minded enough to pass it on, you are in a position to say that not only does love proverbially laugh at locksmiths, it also has something of a way with electronic recording media. Anyway, to cut a long story short, this record sounded fine through the Marantz!

‘Heartbreak Hotel’ established itself in my sitting room and, had it not been for the nimble work of the excellent bass player, I might have ended up a touch blue.

To cheer myself up a bit and incidentally get a cross-bearing on clarity, I plugged in a version of Elgar’s Chanson du Matin played, for a wonder, by a recorder quintet (well, it’s the unexpected which opens your ears...!) This extraordinary track was delicately handled like the exquisite little gem it is, treble sweet and clear beyond doubt. Oddly enough, the combination of wind instruments with 19-century floridity gave a most convincing Mississippi calliope sound - with the addition of a leadsman calling “Maaark Twain!” the illusion would have been complete!

At the risk of using two pieces too alike, I chose next a lengthy excerpt from Götterdämmerung. I was particularly impressed with the way in which it was possible to distinguish the quiet, reedy tones of the bass clarinet at a point where the double-basses were going at it hammer and tongs.

The CD-17 combines solid build with solid performance. Although not the most adrenal of machines, its unfussy ways and musical manners prove it’s well able to keep up with some of the newer kids on the block. What’s more, I can’t see it wearing out in a hurry!
In its relatively short life, the X series as a whole has already reached near-classic status thanks to its 'industrial chic' style. One of its higher profile members is the X-Ray 24-bit CD player, which we first reviewed in February of this year. Since then it's turned into one of our reviewing regulars as befits what is one of the benchmark machines at £800.

As for cosmetics, like the rest of the range the X-Ray plumps for the minimalist/functional approach. This gives the impression that the designers are saying four control buttons are all you require to play music. But while a first glance might have you wondering if the X-Ray comes with as many extras as a 1981 Lada, the inclusion of a large and fully-featured remote control puts paid to any such doubts.

Crammed inside the X-Ray (and there really is almost no space to spare) is a Sony mechanism bolted onto a steel plate which slides into the case. To the top rear of this is screwed a toroidal mains transformer and a small PCB sporting 5532 dual op amps and metal-film resistors. Ferrite rings on the analogue outputs (one pair), mains input and transformer secondary cables reduce RF. Out-board convertors can be connected via either coax or optical sockets.

**SOUND QUALITY**

When it comes to sound, the X-Ray is undoubtedly one of the most transparent players at its price. Miles Davis' Kind Of Blue found the X-Ray showing up the various musicians' 40-a-day breathing habits more clearly than many other machines. Confirmation came in the filing detailing on the drum kit - brushes on the snare hissed away realistically while cymbals shimmered brightly.

The MF continued its run of smooth, natural music-making on Coltrane's saxophone, whose breath-controlled vibrato was especially clear. The last track on the CD, 'Flamenco Sketches', allowed the X-Ray to play its trump card - simplicity.

**Bill Evans’ piano was uncoloured and unprocessed, the MF refusing to get in the way of recordings, instead giving them the chance to speak for themselves.**

On Classical pieces, this unaffected approach to reproduction worked particularly well with good, clean recordings like Kleiber's Beethoven Fifth. The rich and distinctive tone of the Vienna Philharmonic is usually attributed to the string section. However, the X-Ray proved that there were other strings (no pun intended) to the Vienna's bow.

Beethoven's delightful, airy, woodwind writing was brought to the fore in the second movement, the flutes floating above the orchestra and lacking nothing in melodic fluidity. The MF managed to combine the brightness of high woodwind notes with a natural sweetness that is sadly lacking in a lot of other digital equipment.

Smooth and sweet is but one half of the story after speed and impact. Happily for the X-Ray, the opening blows of the Beethoven symphony had plenty of slam and attack. Timpani and double-basses had body and substance and, in spite of there not being sufficient extension to worry my glazing, what there was had control and grip.

Another tough disc the MF took in its stride was Madonna's Ray Of Light. This CD suffers from a rather large dose of studio processing - it's in the nature of commercial recordings - but through the X-Ray it never sounded plastic or fake. The string opening to ‘Frozen’ was tight and focused, Madonna’s accompanying vocals well positioned without being too far forward in the mix. With the entrance of the percussion and bass, the player responded with a confidence that persuaded my toes to tap in time to the subtle break-beats that permeate the track.

When it comes to areas such as recreating a venue and the performers within it, the X-Ray’s middle name once again happened to be “natural”. There were none of the stretched left/right perspectives that normally go with two-dimensional sound staging - the bass and drums on ‘Frozen’ were well to the rear of the ‘speakers.

As we discovered after our initial encounter with the X-Ray, its greatest assets are its clarity and the way it lets music flow. The sole slight foible (and I do mean slight) is a touch of boost at the top-end common to the X series, but this is subtle and merely adds to the midrange and treble detail. The only time CDs sound bad when played on the X-Ray is when they're badly recorded, and you can't say fairer than that.
It was a close finish, with all our reviews scoring well, but the judges have made their decisions, which actually followed price quite closely. Of more than passing interest was the degree of smoothness favoured by most of the group. It seems that sonic 'courtesy' is held to be desirable in more up-market gear, so fair's fair; you pays more money, you generally takes a smoother choice.

Where we differed from the manufacturers was the degree to which the player's polish helps or hinders the music - there were times when we were aching for just a smidgen more bite and edge from some of our contestants.

FIDELITY FIRST

It's worth noting that the Musical Fidelity X-Ray, our favourite by half a head and the most expensive entrant, showed no sign of over-smoothing at all. Next to the other players some might call it bright, but honing in on this aspect of its performance, we found that any brightness was down to the CD not the player - the X-Ray was simply passing on what was on the disc. This worthy attribute allied to an indestructible case and stylish looks won the X-Ray top spot.

PHOTO FINISH

Picking the overall leader of the pack wasn't too tough; grading the rest was much harder as they all had their strengths. Second place was eventually awarded to Marantz's CD-17, like the MF an £800 player. Although this machine does have the smooth top-end which characterises the group, the overall sensation would be better described as velvety rather than muffled.

Another common denominator of the group is commendably solid build (a sensible investment of your extra pennies), and the Marantz is second only to the Denon in this respect. If you ever have the misfortune to mislay a CD-17, you can at least be sure it won't be blown away by the wind!

GOLDEN EAR

Denon's £700 DCD-1650AR is a keen match for the Marantz in practically every respect, especially weight! The in-built smoothness sometimes got in the way of absolute transparency. To its credit, the Denon has a refinement and enjoyability to it when relaying more mellow compositions that can become addictive.

SMOOTHER THAN SMOOTH

Alchemists products are well known for their warm and relaxed sound. With the £600 Nexus, the cheapest in this month's line-up, the listening was never less than sumptuous, but perception of the fine detail was a little more difficult. Many will find this approach very much to their taste, but Rockers and fans of headbanging may not be so enthusiastic.

BRING ME SUNSHINE

For all its merits, the fortes of Helios' £700 Model 3 were too style-specific for a general recommendation. That's not to say there isn't a public for its style of reproduction, which favours acoustic recordings. It is unusual to find a player with such definite loves and hates, but as mentioned in the review, when you load it with a suitable CD, the Helios can show many machines a thing or two.

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World Radio History
Simon Pope and Noel Keywood get to grips with Digital Audio Broadcasting as the first commercial tuner, Arcam's Alpha 10 DRT, hits the High Street.

**ABSOLETELY DABULOUS?**

We first mentioned DAB way back in January 1997's issue when Noel Keywood looked into what we could expect from next-generation radio, Digital Audio Broadcasting. Many of the points raised then are still very much relevant two years later, when we have a chipset from electronics company Roke Manor (to handle the digital processing) built into the world's first production DAB tuner from Arcam.

Initial information on DAB highlighted its freedom from RF interference (since it's digital, you either get reception or you don't!) and its ease of use. Couple this with the capability to squeeze more stations into the same bandwidth and simultaneous visual information, and apparently you have, in the words of the BBC, a way of taking radio "into a new age just as CD has transformed the music industry".

In January '97, the only DAB units being made were in-car models, including the Grundig DCR-1000 at £2700 (and this wasn't even on offer to the general public!) Things have changed with the arrival of the Arcam, and now 66% of the UK population is within the DAB coverage area.

**GOT IT COVERED?**

When it comes to radio stations, all the usual BBC services are available on DAB, with the promise of new digital-only versions such as Radio 6 (BBC recordings of classic bands and performers) to woo Joe Public. Although the BBC blow their trumpet louder than most, commercial stations are very much in on the act too. Whilst not all of them broadcast, many are running trials, as are local broadcasters.

As shown in the map on page 29, most of the coverage area is centred around towns and cities in the UK in addition to motorways and main roads. This gives an indication as to the future uses of DAB as hinted at by a BBC Research And Development document.

As is the case with the Radio Text with which most current FM tuners are equipped, DAB will allow text transmissions to receivers. For example, traffic information could be sent to in-car receivers and navigation systems in an attempt at traffic management on a
national scale. News flashes, weather warnings and football results can, in theory, all be ‘announced’ during normal listening and there’s even an option for warning the listener of a life-threatening situation (let’s hope Boris Yeltsin keeps off the vodka!)

With an in-car FM receiver, if you wish to listen to the same national station as you travel across the country, you or your radio will have to re-tune to a different frequency as you go from one transmitter zone to another. There is no such hassle with DAB.

In spite of this again hinting at predominantly car use, companies are still working on domestic devices. As well as the Arcam tuner, Meridian and Cymbol are both soon to release components, while names like Roberts are working on portable models. And computer hardware firms have come up with DAB cards for computers. It appears that after three years of product speculation, the ball is finally rolling.

**ALPHA ARRIVAL**
Arcam have beaten all the other digital hopefuls to the line with the launch of their Alpha 10 DRT domestic tuner. After all the hype and on-paper specs, when it comes down to it, radio is an audio medium, so it’s got to sound good. The proof of the pudding, as they say, is in the eating and, thanks to preliminary listeners courtesy of Graham’s Hi-Fi and a loan model from Arcam, we can now dispel all the rumours and reveal how DAB actually sounds.

First things first - to maximise sound quality you need optimum reception, which for most listeners will mean a Band 3 DAB outdoor aerial (the Alpha 10 DRT has a 50ohm input). If you’re located in a strong reception area (near a transmitter or in the London area), the dipole supplied for indoor use or even a 75ohm outdoor FM aerial will still give a satisfactory reading on the Arcam’s error counter.

**HANDS-ON DAB**
One of the main aims in the design of the Alpha 10 DRT was to make a tuner that could take a potentially very complex technology and turn it into something very easy to use. Switching the 10 DRT on and pressing the Search button will trigger the tuner into finding the different transmission blocks. The system is still settling down at the moment, but as a rule of thumb you’ll find the BBC in one of the seven transmission blocks, commercial stations in another and local outfits in either. It’s then simply a case of spinning the large rotary knob to the relevant station and pressing Store if you wish to preset it.

Two modes are available. One is the user mode which gives you the choice of displaying programme type, scrolling text, data rate (service data rate in k/bytes) and signal quality. The other is the engineering mode which when selected will show you transmitter details, error correction information and the raw RF signal strength.

If you need to raise the level a little for background listening, there are five levels of compression that can be adjusted via the Menu button. These are, however, very subtle and do not have much of a detrimental effect on the sound.

**SOUNDING OFF**
The first thing you will notice once you’re tuned in, all being well, is the inky black silence, especially on BBC Radio 3 or 4. These stations also add no studio compression to their digital signals, so realistic dynamics are more of a possibility (likewise, other BBC DAB stations have less compression than their VHF counterparts).

A lunchtime a cappella choral concert on Radio 3 was just the right stuff for judging DAB’s merits. There was no background noise (apart from passing cars outside the venue) and the voices were very clean and detailed. The clear reception highlighted the fact that the silences in this sort of music are just as important as the notes sung (in this instance by the Chamber Choir of Ireland as I discovered when I pressed Display once for text information).

A Mozart piano concerto performed by Kovacevich and the LSO was next, and it equalled the choral concert in terms of detail and dynamics. One small niggle was that, at high frequencies, violins could sound a bit thin, but the overall tonal balance was still good.

Radio 2 (MOR according to the Arcam) had quite a sweet treble and excellent separation. Sound stage depth was quite shallow, though. The human voice is always a good test with tuners, and so it was with the Arcam. An older female voice on Radio 4 was clear in so much as you could hear aching of lips and, I think, false teeth clacking! On the other hand, Terry Wogan’s Irish brogue had raised an octave or so since I last heard it on the airwaves. This highlighted
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THE MAIDSTONE
the Alpha 10 DRT's fast but rather lightweight bottom-end, which appeared to be playing a part in a lack of studio ambience as well.

GOING PRIVATE
While the Arcam did a good job with BBC broadcasts, it fared a little differently with commercial stations, especially those which had more studio compression. In contrast to all of the BBC stereo transmissions, which are at data rates of 192kbs (kilobits per second), some commercial alternatives such as Virgin measure in at 128kbs. Mind you, these are still early days and data-rate trials are ongoing. Mono signals like the digital-only Parliament broadcasts (not, I would imagine, a deciding factor in purchasing a digital receiver unless you're an insomniac) come in at a pretty ropey 48kbs.

Virgin was actually fairly enjoyable, with some of the beefiest bass we came across on any digital station. Strangely, Classic FM, although put out at 192kbs, sounded very 'digital' in a clinical and dynamically squashed sort of way. Playing around with the Alpha 10's compression can help a little here, but it won't turn a sow's ear into a silk purse.

We decided to pit the Alpha 10 DRT head-to-head with Marantz's ST-17, reviewed in May's issue. This very able tuner can receive the same sort of text information as the Alpha 10 and sells for a price of £600. Having hooked the ST-17 up to a large outdoor VHF aerial, we switched between the two tuners on the same stations.

The results on less commercial stations, especially Radios 3 and 4, were surprising - the differences were minimal. In Classical concerts of solo piano or string quartets there was precious little in it, with DAB losing out only when it came to sheer vitality in a broadcast. With female voices on the BBC you could hardly tell analogue and digital apart, but male presenters lost some of their bass depth and power through DAB, sounding instead chesty and rather nasal.

The main differences occurred on broadcasts from Virgin, Radio 1 and Classic FM. With the Marantz, all of these had greater bass extension and a richer tonal balance than DAB.

Arcam have succeeded in making DAB a piece of cake to get to grips with through the Alpha 10 DRT - it couldn't be simpler to use, and in this respect it actually has a slight edge over FM.

Gauged in isolation from a sonic viewpoint, the Arcam also allays fears that DAB was going to be another compressed digital disaster waiting to happen. It might err slightly to the cool and clinical side of accurate, but it steers well away from the nasties of early-days CD with its hard, two-dimensional and fatiguing presentation. The $64million question is how does it stack up against FM, though.
WIRING FOR SOUND

Broadcasters crave an audience and know that a lot of radio listeners use portables at home or listen whilst driving. So DAB is vertically polarised to suit vertical whip aerials to reach the largest possible audience.

Digital radio doesn’t get hissier as the radio signal gets weaker: it either works properly or not at all. Therefore, portables will always be free of hiss and crackles providing they can get enough signal. The aerial is important, because in poor reception areas there will be total silence from a DAB receiver - don’t expect to hear a weak signal surrounded by hiss and static. Field strength varies greatly with height, which means a portable may work fine upstairs but not at all downstairs, especially if it has a short stub aerial.

BBC DAB transmitters work at 225MHz (VHF, Band 3). Since a wavelength at 225MHz is 1.3 metres, a full-wave whip is about 95% of this length. In practice, most whips will be quarter-wave, or around 32cms (13in.). A shorter aerial will be less efficient, unless it is tuned by a coil, so beware short aerials on portables or car radio set-ups; they may not be very effective.

Proper Band 3 DAB aerials are now becoming available from companies like Triax. Unlike conventional VHF/FM there’s no need to discriminate between transmitters, so omni-directional, folded dipoles able to pick up signal from transmitters in any direction are used. At DAB frequencies they are compact and lightweight. Trouble is, dipoles have little gain, so they are not suited to poor reception areas. A larger, multi-element array is needed under these conditions and it must be pointed straight at a transmitter, just like any TV or VHF/FM aerial.

Although DAB is digital, this doesn’t influence aerial design. DAB aerials are much like VHF radio aerials but with shorter elements arranged vertically rather than horizontally. Their characteristic impedance is meant to be 75ohms, so connection from a roof aerial down to a receiver is via conventional 75ohm coaxial cable. Like any aerial they should be mounted as high as possible to get a strong signal.

We used a large outdoor VHF/FM array, a DAB wire dipole supplied with the tuner, and a Triax DAB outdoor aluminium dipole.

The VHF/FM aerial faces south-east to Wrotham, the wrong way for DAB transmitters sited south (Crystal Palace) and north (Alexandra Palace). It gave enough signal for BBC DAB stations but Virgin Radio and Sunrise occasionally dropped out for reasons unknown. Error-correction rates were low though (17-25).

The indoor wire seemed to suffer fading, with varying error-correction rates (20-500) and signal strength, but it worked most of the time.

The Triax rigid dipole was most effective, giving a very strong signal and negligible error rate (0-2) when used indoors. Mounted on a roof this simple aerial would be more than adequate.

Our tests confirm that DAB needs a simpler aerial than VHF/FM due to the evenness of coverage provided by a larger number of low-power transmitters, plus an RF signal requirement of around 100uV for optimum results. VHF/FM needs 10 times as much (1mV for full quieting).

These observations apply to north-west London, which is catered for by DAB. Large parts of the UK still lack coverage, as the map shows, and here reception is unlikely. To find out, it is best to speak to a local aerial installer. Triax do not supply direct and tell us the cost of an aerial will be included in a fitter’s installation charge. Phone them for details of suppliers/installers. You could also contact Antiference (tel: 01543 267160).

It is still very much early days for DAB. Although the system looks good for portables, the basic digital chip set is so expensive that they won’t be available for some years yet.

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Jon Marks discovers Cyrus' latest aPA7 power amplifiers have taken a leaf out of the valve designer's handbook.

Finding the words "zero negative feedback" on valve amplification is easy. Coming across this phrase on solid-state gear like Cyrus' aPA7 150watt monoblocs is much more of a rarity.

In measurement terms, most zero-feedback valve amps are what you might call anachronisms; they produce lots of distortion above milliwatt levels and have high output impedances, which means they're far more sensitive about their partnering loudspeakers than amps with feedback. However, not all distortion is immediately offensive to the ear, and as many who have sampled the sound of feedback-free amps can testify, there's something special about the presentation of a properly-engineered, single-ended or Class A push-pull rig built around extremely linear devices such as the 300B.

Which brings us back to the aPA7 monoblocs. Printed on the fascia of the traditional black Cyrus shoebox in small letters is "Zero feedback". However, as Cyrus' Design Brief document explains, when it comes to the internals of these amps, this actually means "Zero Global Feedback."

Feedback can be applied to a circuit in two different ways, global and local. The former indicates that feedback is taken from the output of an amplifier right back to its input, the latter that it is taken from the output of a given stage within an amplifier and returned to the input of that individual stage.

To find out what the above meant sonically, I partnered the Cyruses with a battery-powered DPA 50S as well as Mission's own aCA7 pre with its PSX-R power supply. The sources were a Pioneer DV-505 and a clocked Kenwood DP-X9010 transport with a Pink Triangle Cordial DAC and new 24-bit filter. Speakers were Magneplanar SMGAs.

I started out by approaching these monoblocs with music from the lo-fi end of the spectrum in The Fall's latest, The Marshall Suite. From a reviewing point of view, the good thing about this album is that it has a midrange and treble coarseness which highlight any problems in an amp's rendition of these areas. Well, it was Round 1 to the aPA7s as future classics such as 'Foldin' Money' and 'Early Life Of Crying Marshall' failed to winkle out any nasties on vocals or percussion. They also won Round 2 against 'Shake-Off' with its heavyweight synths and frenetic bassline punching meatily out of the Maggies thanks to the Cyruses' control and speed.

A slight change of course brought me to the Palladian Ensemble's Trios For Four. The aPA7s once more picked up plaudits for their way with this crisp but slightly bright recording. They pulled out all the hat a likeable tonal purity and naturalness which, together with their spacious portrayal of venues, made for a convincing version of events. Strong though they were here, hooked up to the DPA and the aCA7/PSX-R, they couldn't equal the total lack of grain and resultant harmonic purity of Lavardin's IT Reference integrated.

Red Snapper's Making Bones album offered the Cyruses another chance to show off their grip in the lower octaves as drum machines and bass guitars both enjoyed plenty of punch and impact. Due to their freedom from confusion, the aPA7s had commendable focus to their imaging too, which meant vocals were always securely located between the Magneplanars while the aural fireworks went off behind them.

Cyrus have succeeded in squeezing a quart into a pint pot from the power point of view with the aPA7s - a genuine 150watts from such a small box is an achievement in itself. When it comes to sound quality, these monoblocs demonstrate the customary low-feedback prowess with sound staging and imaging without running into difficulties at low frequencies. Impressive as they are, however, I can't help thinking that £2000 per pair is a bit on the steep side - they didn't possess the sort of performance superiority over Musical Fidelity's X-A200s that you'd expect given the extra outlay. If you already have an all-Cyrus system, the aPA7s are an obvious upgrade, but the competition is keen.

**Cyrus aPA7**

**Cyrus Electronics**

Stonehill, Huntingdon,
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Tel: 01480 451777

There's no shortage of clarity and control here, but the aPA7s don't come cheap.

Measured Performance see p135

World VERDICT
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July 1999 Hi-Fi World

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The Wilson album!

Cassandra Wilson put lyrics to Miles Davis’ epic ballads! Wilson’s brand new release, ‘Traveling Miles’ is now in stock as a 180g deluxe gatefold sleeve LP with special bonus track ‘Promising’ (Promosing) or as a CD packaged in a deluxe slip case. Cassandra Wilson shot to audiophile fame following the release of her second album, the critically acclaimed ‘New Moon Daughter’ which is also available on CD and double LP.
REL Acoustics have a new weapon in their subwoofer arsenal, the Strata III. Simon Pope bolts down the furniture and listens to those all-important low frequencies.

There is one word that causes argument and debate in the audio world like no other, the dreaded "b" word - "bass". Everyone wants it but few are satisfied with what they have. Should there be lots of it, even if it's a little loose at the seams? Or is it preferable to have quality not quantity? If you want that real floor-shaking, bone-crunching low-end which marries quality and quantity, the only thing to do is invest in a subwoofer like REL's Strata III.

Having built up a healthy respect for this company's subs in the wake of past models, I had high expectations of their new baby. The Strata III is (surprise, surprise) the 100watt replacement for the 60watt Strata II and so shares its dimensions. As far as connections are concerned, there's a single set of line-level inputs on a pair of phono's for use with pre-amps or integrateds with a Pre Out facility. Alternatively, you can use the two Neutrik Speakons, the first of which takes a high-level, unbalanced stereo signal from the main amp's speaker terminals. The second can accept a high-level, balanced single channel in a system where two subs would be operating to give stereo sub-bass.

Filling out the control section are two volume controls (for high and low inputs) and a new version of REL's 'ABC' filtering circuit. This is calibrated in 24 "musically correct" semitone increments on coarse and fine controls for tuning the frequency (between 22Hz and 96Hz) at which the subwoofer starts to kick in. Finally, a phase reversal switch is provided for optimal integration at the point where satellites meet sub. The bass was powerful, fast, controlled and very extended considering the cabinet size.

On Grace Jones' 'Slave To The Rhythm', the strange 'elephant-herd' rumblings between the drum beats accentuate the rhythm. The Strata III responded to frightening effect in a way that couldn't fail to bring a smile to the face of even the most hardened bass-freak.

As we've noted before, it's not just the bass that subs can improve - good ones are able to open out the midrange and sound staging too. For instance, on Stravinsky's The Rite Of Spring (performed by the Minnesota Orchestra under Eiji Oue) there was a superb, warehouse-like three-dimensionality to the presentation. In addition, every thump on the bass drum shook the listening seat with its power and accuracy, the Strata III never resorting to boom.

Hearing a competently-engineered subwoofer such as this can actually remind you of the first time you heard a decent system after years of mid-fi. The flexible filtering means you can alter the sound to taste, so it's a truly accommodating package. If you're considering investing in a subwoofer, you owe it to yourself to audition the Strata III.

REL Acoustics
North Road,
Bridgend Ind. Estate,
Bridgend,
Mid-Glamorgan
CF31 3TP
Tel: 01656 766093

WORLD VERDICT

A gifted 'little' sub with great power and grip.

Measured Performance
see p135
WIN A TEAC SYSTEM, ROTHWELL INDUS PRE AND TANNOY/MONSOON LOUDSPEAKERS WORTH £1400

Opportunity knocks yet again with a chance to win a Teac Reference system with Tannoy m1s, Rothwell's Indus passive pre and Monsoon MM-1000 panel loudspeakers and matching subwoofer.

Back in March 1999 we encountered a mini-separates system that took us all by surprise. The Teac Reference 300 series is a stylish, champagne-gold outfit that comprises an amplifier, CD player, tuner and cassette deck. After the sonic nasties produced by most Mini and Midi set-ups, sound-wise Teac have come up with a bit of a gem.

As Richard White mentioned in his review, Teac have paid a lot of attention to amplification in the '300. The treble and bass controls are subtle but effective in use and there's enough grunt on tap to ensure there's "no shortness of breath while playing demanding Dance music".

It's not just in the amp department that these little Teacs shine, either. Carefully designed to partner the amplifier, the CD player possesses a "comfortable amount of bass slam" and a fine tonal balance. The RDS tuner has good stereo separation and clarity whilst the cassette deck, with its impress-the-neighbours horizontal drawer, has a wealth of facilities and decent sound to boot.

To complement Teac's prize we are adding a pair of the classic Tannoy Mercury m1 stand mounters. These small two-ways have been firm favourites here at Hi-Fi World since we first heard them back in June '98, and they have also recently picked up the title of EISA 1999 Loudspeaker Of The Year.

Part of the secret to the Tannoy's sonic solidity is the fact that their cabinets are made entirely from particle-board rather than the usual plastic mouldings. Jon Marks found listening to the...
Competition

rn1 s an “uplifting and sobering” experience and was won over by their bass weight and transparency. He actually summed them up as being “the best at the price” and “capable of embarrassing many more expensive ‘speakers’.

Next we have the exotically-named Indus pre-amp from Rothwell Electronics, the brainchild of ex-Ariston engineer Andrew Rothwell. Dominic Todd gave it a listen in May’s issue along with the company’s Rubicon power amp.

For nigh-on eight years Mr. Rothwell has been producing passive pre-amps, all with stepped attenuators. To avoid the frequent problem of the ideal volume level being smack-bang between two settings, the Indus employs two 12-step attenuators, one for coarse adjustment and the other for fine. This combination yields a mammoth 132 settings that even the most finely-tuned ears couldn’t grumble about.

The Indus earns its status in the passive pre-amp hall of fame not only for the above but also for its external and internal build quality. Behind the Cherrywood fascia there lie solid-core, silver-plated copper wiring and silver-plated switch contacts.

As far as sound is concerned, the Indus will win friends for its clarity, tonal purity and separation. Dominic Todd found that, in complex music passages, the Indus kept its cool with ease. He also noticed that it had a refreshingly high sound stage, something often lacking in the competition. He closed the review by commenting that “the resolution of fine detail and texture is superb, and gives more than just a glimpse of the high-end”. Praise indeed.

In our quest to bring you something different in home audio, in May’s issue we uncovered an unusual multi-media three-boxer. The Monsoon MM-1000 incorporates an active subwoofer paired with two panel satellite ‘speakers. These small planar transducers measure just 4in. by 8in. and the sub has a volume of only 8.2 litres, but the sound they produce belies these dimensions. The MM-1000 can pump out window-rattling bass while the panels’ transparency is unequalled by most multi-media (and a lot of budget hi-fi) loudspeakers.

Although they have been built with computer use in mind, one of the joys of the MM-1000 system is its transferability to the world of pure audio - in our review we found that the sound rivalled that of many hi-fi alternatives at the price. With a recording of Die Walkure conducted by Solti, we were taken aback by the bass extension coupled with a deep sound stage and sharp imaging.

If you want the chance to bag one of these goodies, all you have to do is answer the questions below correctly and then complete the following verse in no more than 30 words. Stick the form, or a photocopy of it, on (not in) a sealed envelope or postcard and send it to the address below by July 6th. Don’t forget to indicate your prize preference!

July Competition
Hi-Fi World Magazine,
Suite 29, Imex House,
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COMPETITION ENTRY QUESTIONS
1) What type of drawer is used on the cassette deck of the Teac Reference 300 system?
   A. Mechanical horizontal   C. Mechanical vertical
   B. Clockwork diagonal      D. Clockwork orange

2) The Tannoy Mercury m1 was recently awarded Loudspeaker Of The Year by whom?
   A. BSA                          C. EISA
   B. MSA                          D. SAS

3) How many volume settings does the Indus pre-amplifier have in total?
   A. 24                                  C. 120
   B. 72                                  D. 132

4) What is the total volume of the Monsoon MM-1000 system’s subwoofer?
   A. 3.5 litres                      C. 10.7 litres
   B. 8.2 litres                      D. 5 pints and a curry

5) What sort of loudspeakers are the MM-1000’s satellites?
   A. Horn                           C. Panel
   B. Omni-directional               D. Dual-concentric

COMPETITION VERSE (obligatory)
Complete the following in less than 30 words

In the rainy Monsoon season there are many things to irk you
Re: Our Competition: how should you react?
Perhaps good luck will give your words the winged feet of Mercury
Or golden stacks of glory from Teac . . .

COMPETITION WINNERS
May’s lucky winners were J. Rockett, Doncaster; J. Burke, Sleaford; K. Horner, London. Congratulations!
Who says vinyl's dead?

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n electronic essence, Musical Fidelity's X-P100 is a re-working of the circuit used for their acclaimed Nu-Vista pre-amp. Since the supply of Nuvistor miniature valves is unfortunately limited to say the least, MF kept back a spare set for every Nu-Vista they made and - not to put too fine a point on it - that's that. This is a little hard on those who were unable to shell out the required £1200 at the time. In the interests of avoiding a mass march on Wembley, the company have re-jigged the Nu-Vista circuit to use JFETs with a view to preserving the sonic signature with less scarce components. In the process, the ‘Not Special Edition’ nature of the beast has brought the price down to a needs-thinking-about but scarcely exorbitant £800.

You won't get far with a pair of passive loudspeakers and a pre, so the matching X-AS100 dual-mono power amplifier was born. Dual-mono in this case boils down to a pair of 100watt amps built into one box and powered from separate secondaries on the same transformer in the out-board PSU. This makes bridging a piece of cake with a push-button toggle on the back switching between 100watts mono at 60amps instead of two channels of 100watts at 35amps each.

Setting up is straightforward - the power-packs for X-AS and X-P can be tucked away discreetly, although you'll need to maintain access to the On/Off switches. And immediately after switch-on, the pre-amp mutes for a few seconds, so don't turn the volume up high at the beginning!

Whilst in a volume-ish mood, I tried the digitally-recorded DGG Romeo and Juliet Overture. The famous duel sequence gave that crack in the ceiling something to think about with the dramatic bass drum bludgeoning its way through the soft furnishings. With the amount of headroom provided by 100watts into Klipsch Heresy horns, the MFs demonstrated admirable control with some of the potentially sharper ‘digital’ parts.

Having persuaded the divine Diana Krall to hop into my CD drawer, I was soon enjoying the refinements of ‘dinner Jazz’ par excellence. With the firm tone of the double-bass complementing the blooming midrange of the guitar splendidly, it needed but Miss Krall’s entrancing huskiness to run practically the whole audio bandwidth in one fell swoop, neither pre nor power amplifiers losing a single nuance along the way.

It was harpsichords to the fore with Trevor Pinnock’s excellent version of the Goldberg Variations. If the upper treble is rough, harpsichord makes you feel all about it. And it wasn’t! Let’s be honest, the instrument was in vogue for scores of years; if it sounded horrifying, why or indeed how could it have been so popular? With the Musical Fidelity’s internal MM phono stage, I was certain that ‘the rest of it’ was being provided with as clear a signal as could be desired.

Using the tuner input, I became keenly aware of the variations in recording quality on programmes like the ‘New Releases’ spot on In Tune. The game here was guessing which tracks would turn out to be full-price or budget; quality wasn’t invariably highest on the dearest.

If you missed the Nu-Vista or are just wondering to what extent your current pre-amp may be letting the side down, the £800 X-P100 on its own deserves very careful scrutiny. It is well-designed, well made and well-behaved, with the added bonus of an MM phono stage. Considering the pre and power as a working unit, the combination of oomph, control and the usual Musical Fidelity clarity sounds like a fine way to invest £1600.

Richard White wonders whether Musical Fidelity's X-P100 pre-amp is a suitable consolation prize for non-Nu-Vista types.
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Richard White (Hi-Fi World, April 1999)

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We would like to convince you with yards of meaningful techno twaddle but the literature is stark, to say the least. There is clever circuitry here but the designers clearly want you to listen, not read! We agree.

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RJL 225 874728


Tape Turnaround
Noel Keywood, Hi-Fi World’s cassette king, samples Denon’s latest budget contender, the DRM-555.

Here’s an inexpensive way to keep your car player or portable fed with recordings. And Denon’s budget DRM-555 is a tidy performer in the home too. At £150 it won’t break the bank, but at the same time Denon have endowed it with a wide range of features, including auto-reverse.

You can have too much of a good thing, though - the '555 hovers close to the edge of hi-fi at times because it has so much packed into it. The result is compromised transport and head performance.

A large chunk of the budget has gone into an auto-reverse head that rotates so it will play in both directions, and record in reverse too. Set the deck into auto-reverse record and you will end up with half a song missing as the deck trundles down one side of the blank leader tape at the end of a cassette, reverses and does the same along the other side.

There are plenty more features where that came from: timer start, zero stop, switchable MPX for use when recording from tuners, variable headphone volume, balance and bias fine tune. The latter is used to tune the deck to suit different tapes. For example, TDK AR ferric tape needs bias turned down a bit to prevent it sounding dull, whilst TDK AD, also a ferric, needs it turned up to avoid brightness. Measurement showed the system managed a small change with metal tapes, enough to correct minor tonal imbalances in standard types like TDK MA.

Denon fit an effective record level display to the '555, with long bars that read from -40dB up to +10dB, 0dB being set to Dolby flux as usual. However, the head isn’t really up to getting high levels onto metal tapes - it produces masses of low-frequency distortion at 0dB. Heavy basslines from Angelique Kidjo’s 'Wombo Lombo' sounded slurred and compressed on TDK MA metal tape; record levels are best kept low to avoid this. Vocals on the other hand were clear and percussion crisp.

With TDK AR I got the reverse. Basslines were taut and fast while treble sounded coarse and a little messy, with spitching on vocals. TDK AD high-coercivity ferric tape gave cleaner treble and was arguably the best compromise. Chrome tapes like TDK SA sounded a little blurred and soft all round. On all of these recordings I switched in Dolby B noise reduction because it suppresses hiss without causing too much sonic damage (the Denon has Dolby C in addition, but not Dolby S). The head rolls off fast below 50Hz, so there is no deep bass and subjectively the deck sounded a little light at times.

Pre-recorded tapes played well in both directions. There was no azimuth error, measurement showed. In use this meant the DRM-555 gave a clear, open sound without dullness, even with Dolby B switched in. Denon have been careful, as usual, to engineer in accurate replay equalisation and make sure head adjustment is spot on.

One area of concern was the transport’s speed stability. It was acceptable for most forms of music, adding flutter which dirtied the sound a tad, but no more than with any budget cassette deck. With more critical material like piano, though, the Denon started to show its weaknesses. Sustained notes sounded wavy and tonally impure. Just occasionally, sitting through Chopin’s Opus 48, No1 I heard the deck judge and struggle to maintain its composure.

As you might have guessed, the DRM-555 is no Nakamichi Dragon, that’s for sure. Still, for the money it does a neat enough job sonically and the provision of bias tuning means that, with a little experiment, the deck can be accurately matched to ferric tapes like TDK AD. To its credit, the Denon does a fine job of replaying most pre-recorded tapes, which also means it’s great for putting together in-car and portable compilations. If facilities are as high on your list as sound quality, the '555 is worth investigation.

Denon DRM-555
£149.95

Hayden Laboratories
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WORLD VERDICT

Its slant towards features prevents the Denon taking the audiophile honours at the price.

Measured Performance see p135
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These Mortal Coils

Jon Marks and Simon Pope wire their loudspeakers with quality cables from QED and Nordost.

**QED Genesis Silver Spiral** £30/m

These cables may resemble something you might hang up for party, but a load of crepe they most certainly aren’t. The cable consists of 72 OFC conductors plated with 40microns of silver. Each conductor is then covered by a Teflon ribbon flat enough to hide under a carpet.

Between Musical Fidelity’s X-50 monoblocs and a pair of Magneplanar SMGas, the Nordost produced clarity and space that would take a lot of beating. On powerful recordings such as Kleiber’s Beethoven Fifth with the Vienna Philharmonic, strings had a robust bite and a distinct, rich timbre. In addition, woodwind had a delightful lightness to it while the timpani hammered away at the rear of the sound stage in a gripping performance.

Spinning Massive Attack’s Mezzanine album, I discovered the Blue Heaven revelled in the massive low-end of this dark bass-fest. The pumping heart beat on the opening track, ‘Angel’, thudded through the Maggies with crystal clarity. With the entrance of the guitar, the sound stage blossomed left to right, the Nordost managing to keep the whole mix cohesive, with no ragged ends or loose bass.

The Blue Heaven is by no means budget cable, but you do get exactly what you pay for. If you seek a wonderfully lucid sound coupled with bags of involvement, there are few non-mortgage cables to rival this one.

**Nordost Blue Heaven** £58.95/m

If you’re after a ‘speaker cable to slip unobtrusively under the carpet, the Genesis is unlikely to hit the spot. However, there are very good reasons for its chunky construction. Inside the PVC outer jacket is a twisted pair of conductors, each wrapped in an aluminium/mylar tape, their spacing maintained by two circular polyethylene ‘fillers’. Making up the strands themselves are nine separate cores (each of 19 silver-plated OFC filaments) in a spiral arrangement around another central polyethylene filler.

Straight from fresh the Genesis proved to be something rather special. Dropping it in as a replacement for van den Hul’s original Revelation hybrid, I was surprised to hear a performance very much on the same level, differing mainly in tonal balance with a leaner, brighter presentation.

With Eric Bibb travelling along its conductors, the QED demonstrated a crisp clarity and fast, controlled bass which actually made the vdH appear a touch bloated in the bass and veiled in the treble.

The Genesis proved especially gifted when it came to retrieving low-level detail. One track which really gave the cable a chance to shine in this respect was Eric Bibb’s ‘Saucer And Cup’. EB’s vocals and guitar (both of which possessed attractive tonal colour) were set within a convincing sound stage where individual images had a real three-dimensionality to them.

The Silver Spiral is a grower of a cable, its strengths (fine transparency, grip and speed) improving as it burns in. At £30/m, it isn’t the world’s most affordable cable, nor is it the most subtle with that eye-catching hose-pipe look, but it gives the competition at two or three times the money a very tough time.

**QED**
Ridgeway House,
Ridgeway Close,
Lightwater,
Surrey GU18 5XU
Tel: 01276 451166

**Nordost**
First Floor, Unit 7,
Aber Park Ind. Estate,
Flint,
Flintshire CH6 5EX
Tel: 01352 730251
Audiophile Patois

I am new to the audiophile world but I have adopted my new interest with some gusto, much to the concern of my financially prudent wife, bless her. The “worst day of her life” came when I heard a familiar piece on a Japanese friend’s top(ish)-end system. I instantly realised that I had a new interest in my life.

My previous devouring interest was collecting wine, though I’ve now been retired on medical grounds - not enough collecting, I fear. Actually, it’s my cellar that will fund my eventual system.

In the wine world there is an important common language that allows us to articulate in precise detail a range of sensory perceptions (sight, smell, texture, taste) and emotional response to describe a wine. I believe that such a language has evolved in the audiophile community but I have no understanding of it yet. I feel hampered without this language as I can’t communicate accurately with others and, more importantly, I can’t articulate to myself.

Describing a component as “good”, “very good” or “very, very good” is rather limiting.

Another important aspect of language is that it tends to develop from the experts in the field - they are the ones who are pushing at the boundaries of perception. For the rest of us, therefore, understanding the language will improve our knowledge of the subject and, ultimately, our appreciation.

Could you answer the following questions for me? How developed is the audiophile’s language, do you think? How can I gain fluency in it reasonably quickly? And can you give me some examples describing ‘speakers, amplifiers and (say) an analogue tape deck?

I am now working my way up through hardware to an eventual system for which I’ve earmarked £15000. At the moment, I’ve got some Sixties KEF cabinets (70lbs. each) with Scan-speak and Coles drivers and Wilmslow passive crossovers bi-amped with Quad 303s and driven by an Arcam pre. Sources are a Marantz CD-63 mkII-5, an Aiwa ADS-930 and a Leak Troubline.

Jeremy Kidson
JeremyKidson@compuserve.com

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Every letter we print wins a superb prize! On offer are The Chord Co. interconnects, Audio Electronics books, Ringmat Statmats, DNM Licon contact enhancer, DNM Reson ‘speaker cable, and a FREE subscription to Hi-Fi World for the best letter of the month! Please write, fax or E-mail to Hi-Fi World Mail, Suite F29, Imex House, Kilburn Park Road, London NW6 5LF. Fax: 0171 328 1844 E-mail: edit@hi-fiworld.co.uk
Once you’ve become vaguely accustomed to it through reading magazines and visiting dealers, you’ll realise the vocabulary used to describe the performance of a hi-fi system is really very easy to get to grips with. And in spite of the fact that there aren’t actually that many terms, it’s possible to describe a component’s character in a manner which makes sense to other audiophiles.

Words often used to describe loudspeakers include “sound staging” (the width and depth of the recording venue reproduced by the loudspeakers) and “imaging” (the sharpness of focus to the individual performers portrayed within the sound stage). Then there are more everyday words such as “boomy” (bass which concentrates on one frequency at the expense of accuracy), “up-front” (where a rise in output across the midrange and treble appears to push vocals and percussion out towards the listener) and “coloured” (again, a lack of tonal accuracy due to poor design where instruments sound obviously artificial).

When it comes to amplification, you’ll find a well-engineered example is smooth, unfatiguing and convincingly natural. Bass should be “tight” (fast and detailed rather than sluggish and indistinct). Sound staging and imaging crop up again here.

As well as sharing some of the language above, cassette has developed its own idiom: a “papery” presentation is one which suffers from excessive “flutter” (high-rate fluctuations in the speed of the tape travelling over the head) while a piano which sounds as if it has been recorded under water is a victim of “wow” (low-rate speed instability).

With £15000 to spend, the world of hi-fi is your oyster. You’ve obviously been happy to buy second-hand thus far and this is a habit which you could continue even with that much money to invest. JM

QUAD TO DO NEXT?

I’ve been meaning to ask your advice on upgrading my turntable and, now that I have acquired some new (old) bits, I really need some help.

My system sources include a Michell Hydraulic Reference turntable with Focus arm and Goldring G900 IGC cartridge alongside a Quad 67 CD player. Amplification is Quad too (34 pre, 405 MkII power) driving TDL RTL2 loudspeakers.

Overall I have no complaints about the results but I would value your comments on any improvements. I was thinking about doing something with the Focus arm, either rewiring it or replacing it with a Rega RB300. Then again, I could pass on the turntable and go for a GyroDec (this I’m not sure of as I am quite attached to my piece of modern art). What do you think?

Just recently I bought a Quad FM3 and with it came a Quad 33 and a pair of 303s, so I could also swap my 405 with the two 303s. Is it alright to have each phono out of the pre-amp wired to the two channels of the 4-pin DIN input to the power amp, and is it straightforward to use bi-wire ‘speaker cable from the output of the 303s? With regard to the wiring, is it better to have long leads pre to power, or power amp to ‘speakers?

Hugh Watson
Aberdeenshire.
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A STATIC TECHNOLOGY

I am prompted to write having read Haden Boardman's article on the Quad Electrostatic 'speakers in your April issue.

I've always been interested in sound reproduction and, at around that time, I was busy constructing boxes of all shapes and sizes, using conventional cones, infinite baffles, ported cabinets, super-tweeters, etc in an attempt to simulate the 'electrostatic' sound. I decided long ago that the moving-coil cone wasn't the best choice of the timbre and the majority of the power will be in the harmonics. Unfortunately, although our brains are happy to take a missing bass 'as read', I believe that for all that our ears are not fooled.

A.R. Thompson
Warwickshire.

When it comes to loudspeakers, there is something of 'survival of the fittest' in the mix, and the moving-coil transducer has many things in its favour; frequency range, robustness and efficiency for a start. I suppose ideally we could rule cost out of the equation but factor that in as well and the case for electrostatic loudspeakers is not so strong.

You comment that bass is an accumulation of frequencies, but which ones? It is true that losing the fundamental frequency of a note is not necessarily terminal as much of the timbre and the majority of the power will be in the harmonics. Unfortunately, although our brains are happy to take a missing bass fundamental 'as read', I believe that for all that our ears are not fooled.

And too little bass is just as inaccurate as too much.

A well-designed horn does not "honk" any more than a well-designed electrostatic necessarily lacks bass. Admittedly, there have been some poor endeavours in the field of reflex enclosures (I don't much like 'em myself) but this need not always be so.

As regards no one having come up with anything better than the box or the cone, it certainly isn't for want of trying. There have been numerous solutions to loudspeaker problems over the years, from ribbon tweeters and ortho-phase panels to ionophones. Trouble has always fallen under one of these heads: cost; efficiency; reliability. Had this not been the case, perhaps we should now be bemoaning the lack of an alternative to electrostatics! RMW

For more information on cone technology, have a look at John Linsley Hood’s Audio Electronics.
REFLECTIONS ON HI-FI

We would be grateful for your advice on the following system: Meridian 508 CD player, Audiolab 8000A acting as pre-amp (and driving a pair of remote loudspeakers in another room), a pair of Audiolab 8000Ms and bi-wired KEF 103/4' speakers (sitting on ugly but effective paving slabs). Interconnects and loudspeaker cables are by Audioquest.

All the components were selected using our listening references of Pink Floyd, Joni Mitchell, Tom Waits and Simply Red, although our musical tastes are eclectic. Now for the problems:

1) The system achieves fine results on sparse recordings and excels on male and female vocals with light accompaniment, but on complex orchestral pieces and multi-layered Rock tracks there is a noticeable loss of detail and focus. Some albums have a tendency to sibilance as well.

2) The listening room is approx 11ft. by 25ft., has a wood floor (with rugs) and is sparsely furnished. The 'speakers fire down the long length of the room (with surprisingly good results for most locations). I have noticed that if the 'speakers are more than 8ft. apart the sound stage is very large and detailed, but this spacing places the KEFs about 8in. from the side walls, thereby exciting a resonant (middle) bass mode which destroys the sound balance.

We would like to upgrade to gain detail and focus for all of our music without losing the clear sound we currently obtain on vocals and small-scale compositions. Spending up to £1000 is not impossible but the improvement would have to be dramatic. We would rather not spend more than £500.

We suspect the 8000A is the prime subject for replacement, but would an upgrade to the CD player achieve equally good results? Any upgrade to the pre-amp would have to include a remote for volume control as well. As for the...
**EXCITEMENT SEEKER**

I have read your excellent magazine for several years and have relied upon your advice for upgrades and tweaks. However, I now find that I am unhappy with the sound obtained from my current set-up; Rega Planar 3 with Rega Elys cartridge, Rotel RB-965BX LE Discrete CD player, Rogers T2 FM tuner (20+ years old), Trio KA-3700 amp (20+ years old), serviced a couple of years ago and B&W 601 loudspeakers on Standesign twin-pillar stands (sand filled). Interconnects are from Monster, loudspeaker cable is Supra’s 6mm. The listening room is large at 4m. by 11m.

Overall, the system performs well with a wide range of music from vinyl, CD and radio. Still, my LPs sound a little too bland and CD and radio are fine but not great. The music does not appear to have the spread or depth to the sound stage that I have heard elsewhere. The bass from the 601s is good but the treble is a little shut-in. I have my suspicions that the amplifier is at fault but would welcome your comments and recomendations on how to recapture the excitement.

Fergus Taylor
fergus.taylor@mpmadams.co.uk

Yap, the finger of blame is definitely swinging in the direction of your amplification. Some of Trio’s older forays into this area have trundled past the ears of the World team and, while certain models have had their merits, the consensus was that they generally didn’t set our ears on fire.

You don’t mention what the budget for corrective purchasing is, but roughly £400 spent in the direction of either Audio Analogue’s non-SE Puccini or Pioneer’s A-300R Precision would be a wise decision. Both of these have fine phono stages too, especially the Puccini, so you wouldn’t have to bother sinking extra funds into an out-board device.

Future upgrades worth contemplating would be having your RB300 modified by Origin Live and replacing the Rotel. The first of these yields very major gains in solidity, transparency and dynamics, turning the humble Rega into a veritable giant-killer. The second should bring with it obvious all-round improvements if you were to go for something like Cambridge’s CD4SE at £200 or Marantz’s CD-63mkII.

**TALKING ITALIAN**

My system at present is an Audio Analogue Puccini SE amplifier with Midiman’s Flying Calf DAC and a Marantz CD-48 acting as transport. Other sources are a Yamaha KX-390 cassette deck and a Denon TU - 260L tuner. The loudspeakers are B&W’s DM601s on Atacama BD25 stands. Interconnects are from Monster, loudspeaker cable is Supra’s 6mm. The system is on an Alphason R17/17 component rack.

Because of the transparent, three-dimensional sound of the amplifier, the other equipment needs replacing to complement the sound of the Puccini. First to go will be the CD player. I have a budget of £500-£700. Do I go with Audio Analogue again or is there a better option?

The interconnects and ‘speaker cable need upgrading along with the ‘speakers, so where do I go from here? Budget is £200-300. Retailers around Hampshire seem only to stock one make each which complicates matters.

I have a vinyl collection but no turntable, arm or phono stage. I want to start small and build up but I’m not sure whether to go DIY or buy ready-made and upgrade. Do I need a phono stage with my amp? In this case I have £500-£600. Finally, the support section is going to get about £200+ lavished on it.

Danny Barber
Danny.Barber@oxdgb.sprint.com

You have a couple of choices when it comes to CD replay. The first is to go for the Paganini CD to match the Puccini SE - this is a pairing literally made for each other. The alternative is to keep your Flying Calf, trade in or sell on your Marantz and pick up Teac’s T-1 transport. It’s difficult to say which of the two choices would be best as the Teac/Midiman duo offers an upgrade path and the Paganini doesn’t.

I wouldn’t be in a hurry to change your vdH interconnects for the simple reason that they’re very good. In fact, you could probably do with another set to replace the Improved 2.

It’s a different matter when it comes to loudspeaker cable. The 3.1 is fine for the money, but it really is budget wire. At roughly double the price is Ortofon’s SPK200, and then for a little extra you could have DNM’s Reson.

The Atacamas are decent stands, although the SE24s would probably be a step in the right direction for only £10 more. To be honest, unless you’re going to
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Sound Style X 100 4 tier stand signal red £100
Sugden Optima CD player Trichord PSU/CLK 3 £375
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spend a lot more money on a new set of 'speakers soon, it's not worth going beyond this sort of level for stands. If you do splash out on 'speakers, try to audition Castle's Edens at £470 as these would work a treat with the Puccini SE. And for racks, have a look at Audiophile Furniture's Base system even if it might be a bit beyond your current price range.

Since the Puccini SE has an excellent MM/MC phono stage, you won't need to buy an outboard one. There are still plenty of budget turntable packages around too, like Pro-ject's 1.2 at £200 (reviewed in June 1997). JM

SEEKING DIRECTIONS
I recently acquired a Technics SP-10 Mk11 direct-drive turntable for what seems a bargain price compared to what you guys say they fetch over there. Surplus to a local TV station, it is in excellent condition and came mounted to a 30mm-thick plinth and fitted with a Denon DL-305 arm. I am currently using it with a Denon DL-103 cartridge mounted in an Audio Technica MG10 magnesium headshell.

I would like to keep the turntable and arm as they are for historical reasons. The trouble is, even though they seem to work well together, the lack of bias adjustment on the arm worries me a little. What do you think of this and can you tell me anything about the arm? I would appreciate your comments.

Ethan Buranyi
ethan_buranyi@yahoo.com

The 30mm plinth you mention is almost certainly the chunk of plywood most broadcast SP-10 MkI1Ps were bolted to so that they could then be screwed into a console. Using the deck in this sort of mounting is hardly going to reveal its full potential.

As with common valve amps (and the SP-10 MKI1P isn't that hard to come by), keeping something in original condition for "historical reasons" normally means sub-optimal sound unless the item in question is in genuinely mint condition. Your deck will be around 20 years old and quite a few of the electrolytic caps will be going wonky. As well as a wash and brush up, the SP-10 MkII really cries out to be mounted in a very solid plinth - think of 100mm-thick laminated MDF as a minimum. Anything less and you won't be enjoying the impact and transparency this excellent motor unit is capable of.

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SOURCY SHAKE-UP
My current system consists of a Marantz CD-67 CD player, Garrard DD75 direct-drive turntable with Ortofon 510 cartridge, Rogers Cadet III valve amplifier, Sony KC-600 cassette deck and Wharfedale Laser 100 'speakers.

I am fairly happy with the sound of the above equipment but it is time to replace a two-year-old stylus and I am thinking about upgrading at the same time. I am looking at spending about £100 on a replacement stylus or cartridge. Is the Ortofon 540 worth using on my turntable? I would also appreciate any suggestions as to future upgrades. Finally, is it normal to hear a slight hum during pauses between songs with the Rogers amplifier?

Nigel Feltham
nigel-f@realmail.co.uk

Hmmm, the Garrard is hardly a top-spec deck so £100 on a new stylus or cartridge seems somewhat ambitious. I would be sorely tempted to sell the Garrard and put the proceeds towards getting a new turntable. Rega Planar 2s and 3s aren't too expensive as used buys and it's very easy to upgrade either the arms or the decks themselves with a number of after-market mods. Once you've picked up the Garrard's successor, £100 on a cartridge would be fine.

The Rogers is a reasonable budget valve amp but it isn't in the same league as Leak or Radford's efforts. The humming is probably the electrolytics letting you know they're on their last legs - they should be replaced.

Whether you keep the Rogers or go for a Leak, a change of loudspeakers would also be in order. Tannoy's Mercury m1s at about £120 would out-perform your Wharfeds and not need vast amounts of power to go fairly loud.

You don't mention interconnects but if you're using the sort given away with new components you'd be well advised to invest in some Tandy Golds (reviewed last month) or SonicLink's Bonus. JM
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One of the reservations people in hi-fi have about Digital Audio Broadcasting, or DAB, is that it will offer no improvement in sound quality over analogue VHF/FM. In spite of this, the UK will be seeded with a whole new network of transmitters and, ultimately, we will all be forced to scrap our traditional radios and hi-fi tuners and buy new DAB equivalents. A lot of money will be hanging hands.

"People will not be happy!" an industry public relations man told me some time ago. Since he was involved in DAB during its early days, when it was being developed in mainland Europe, he was speaking from experience. "DAB will offer little benefit in Britain" I was told. "It was designed originally for the mountainous regions of Germany, Austria and Switzerland where there are some peculiar reception problems. Yet it is being marketed on the basis of sound quality."

Imaginatively described as possessing "CD sound quality", DAB looks suspicious even if you only glance at its specification. The audio is sampled at 48kHz and 24kHz, giving an upper response limit of 24kHz and 12kHz respectively, the former little different from CD's 22.05kHz. Data reduction is then applied to lower the bit-rate between six and twelve times compared to CD, which is a source of sonic degradation. DAB cannot therefore be described as having "CD sound quality" without stretching that description in a major way.

It's ironic that DAB's specification is little different to that of VHF/FM radio. Any half-decent analogue tuner nowadays has an audio response that reaches 15kHz, distortion levels of 0.1% or so and -72dB hiss level. But VHF/FM does not use data reduction, so arguably it has better sound quality than DAB on paper. This specification was laid down in the Fifties. We are now moving on to 24-bit audio sampled at 96kHz. DAB is being sold on a promise of better sound quality that can hardly be justified when you look at the facts.

DAB is with us for many reasons, not all of which benefit users. DAB transmitters work at one frequency and can overlap - lots of them can be deployed around the country so each can be of modest power. The biggest are rated at a modest 10kW, far lower than the 250kW of VHF/FM produced by masts like London's Wrotham or Sutton Coldfield, which must cover very large areas of the country.

DAB is being sold on a promise of better sound quality that can hardly be justified when you look at the facts. These big masts, usually located on remote, windswept hills, cost a lot in upkeep, and each one must be supported by hosts of low-power fill-ins to eliminate dead spots. Running and looking after this transmitter network is expensive. One of the attractions of DAB to broadcasters is its use of smaller, lower-powered transmitters that are more accessible and cost less to maintain. I guess this is the only way of providing radio coverage in mountainous areas.

A network of many low-powered transmitters gives a more even field strength and here it looks as if DAB will offer benefits. I live in North West London, far away from Wrotham which serves London yet lies 20 miles or so to the South East, in Kent. Although I am near to Central London, with millions of potential listeners, field strength on VHF/FM is weak and reception with a dipole noisy. I have just hooked up an Arcam DAB receiver and found a small wire dipole gave enough signal to provide decent reception with a low error-correction rate. In terms of hiss, DAB will give better results for millions of Londoners, especially those with portables.

I have to use a large, roof-mounted VHF/FM aerial pointing South East to Wrotham to get hiss-free reception. DAB eliminates the need for such an installation, but sound quality is no better than current technology (in fact, it's slightly worse). The benefits of DAB are more mundane than those advertised and will exist more for those in poor reception areas than good ones. If you live in South or South East London, for example, as more than a few people do, DAB is likely to offer little or no benefit whatsoever.

In the same way CD provided better sound quality to anyone struggling with a cheap record player, DAB will provide better results for those with cheap radios. It will also be a boon to flat dwellers who can't put up an aerial. And motorists need not re-tune on motorways. Anyone who has invested in a proper VHF/FM set-up needn't get too excited though. DAB offers nothing over decent analogue equipment in terms of sound quality. The truth is it was conceived for mountain goats.

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Domestic and professional audio equipment normally moves in two separate orbits. After all, the one is designed to optimise musical enjoyment whereas the other’s main aim in life is to dissect the recording coming through it in the search for any sonic gaffes. Every once in a while, however, along comes a component which crosses the border between living room and studio. Two such were Midiman’s Flying Cow ADC/DAC and Flying Calf convertor. Number three is Alesis’ M1 active monitors.

Intended for near-field monitoring, these American two-ways have a range of unusual features. The first is an active crossover with frighteningly steep 48dB, 8th-order roll-offs “which minimises the interaction between woofer and tweeter near the crossover point” (to quote the lucid and thorough manual). Electronic time alignment in the tweeter’s circuitry also reduces phase differences between drivers, a fact which our measurement confirmed; the M1’s response on and off-axis was pretty much identical, a very impressive result. And as the crossovers have been tailored to suit the silk-dome tweeter and 6.5in. non-woven carbon-fibre mid/bass, the Alesis’ response is astonishingly flat (+/- 1dB over most of their output).

Keeping the drivers on the move are four power amplifiers, a pair in each cabinet. The tweeter gets a 25watter and the mid/bass a 75watter, which will clip at roughly the same level as a single 200watt amp driving passive loudspeakers. A cunning tweak here is the positioning of the twin, angled ports, which vent internally over the amplifiers’ heatsinks to aid cooling. And as a traditional transformer/capacitor PSU would not only consume valuable cabinet volume but also add mass, the M1s run from switch-mode supplies operating at 130kHz.

On paper at least, Alesis’ M1s are some of the most competent loudspeakers we’ve ever come across. To find out if they could fulfil this promise in use, I wired them up to Musical Fidelity’s X-P100 pre-amp and Teac’s P-30 transport in conjunction with Alchemist’s TS-D-1 DAC. Cabling came from Purist Audio Design and Rotson.

With the M1s fired up, I plied them with our favourite Eric Bibb CD, Good Stuff. The opening track which gives this album its name was bread and butter to these actives, as their precision imaging made telling apart the various instrumental lines easy. Sound staging might not have had as much depth as I’d hoped for after the Harbeth DPM1 Xpression! Actives (now HHB Circle 5s), but detail remained commendably high on the list of talents, the Alesis confirming their lack of a passive crossover by digging deep into recordings. More proof came in the plucked double-bass at the intro to ‘Don’t Ever Let Nobody Drag Your Spirit Down’, where the leading edges were faster, crisper and better defined than through passive ‘speaker/amp combos at a similar price.

So far, so good. Where the majority of the pro actives we’ve tested have tended to possess a rather hard, insistent presentation which is perfect for uncovering any problems in a mix, the Alesis were more mellow. Still, on cymbals in particular they could be a bit brasher than strictly domestic transducers, and they couldn’t equal the power and focus of a well-engineered ribbon. Putting things back in perspective, though, said ribbons normally appear on ‘speakers at nowhere near the M1s’ price (the ELAC Jets are the exception), and they certainly don’t come fitted with their own amplification.

Alesis M1s’ are extremely transparent loudspeakers which won’t take kindly to mismatched pre-amps. Unfortunately, while the best sonic match would be a valve amp, the 10kohm unbalanced input impedance on the XLR/0.25in. socket is too low for most thermionic gear. If you can match the M1s with a sweet transistor pre and warmish cabling, they’ll reward with a fast, open sound at an extremely reasonable price."

As is well known, all the team at World Towers dine off gold plates and sleep under quilts stuffed with fivers. This pampered existence has not, however, blinded us to seeking value for money where hi-fi components are concerned. Once the ruby-encrusted waistcoats are off, we're as keen on a bargain as the next man. Happily, there are manufacturers willing to plug the gaps in the market for the impecunious, curious or plain 'just getting into vinyl'.

Ortofon's 510 MkII might be thought of as the company's 'starter pack' for hi-fi. They do make cheaper cartridges but these are mainly for disco use. The keen £39.95 price is about right for the newcomer and won't put off the seasoned vinylite who feels the need to maintain a turntable for old times' sake.

Fitting the new 510 to a Rega arm was a breeze. A quick alignment check proved similarly breezy since there are, thank goodness, enough 90° angles to the cartridge to save on unnecessary eye strain. Using a Black Plastic-improved counterweight fitted to the Rega, I set the tracking force at the recommended 1.5gms and prepared to spin.

Elgar's Cockaigne Overture (digitally recorded) proved to be a very bright listen at times, to the extent that the undoubted power of the bass department could be a touch overwhelming by the decidedly crisp treble presentation. Considering this piece's ingrained chirpiness, there was no audible trace of mistracking despite some heavy modulation on the sforzandi in the middle section.

Overall woodwind fared best with this cartridge; strings stopped a long way short of comb-and-paper but lacked full body. On the other hand, there was a glorious moment of recognition when I realized that the organ had crept in and was growling away underneath, binding the orchestral parts into a noble whole. Now there's bass!

Following the clue given by the woodwind in the Elgar and wishing to play to the 510's strengths, I headed for the Shepherds' Pastorale from the Christmas Oratorio on Archiv. For a start, the wholly analogue recording put a lot of the gold-top back into the strings. For a next, the massed oboes of the Munich ensemble were in a fair way to charm the birds off the trees. Unable to tear myself away, I sat out the side to the 'Schlaf, Mein Leiben' lullaby, sung here by Christa Ludwig. The exquisite way in which the flute delicately shadows the vocal line proved a double-pointer to the 510's fortes.

In search of a triple-pointer, I tried the slow movement of the Fourth Brandenburg Concerto. A phenomenon noticeable with top-class diamonds, whereby the surface noise is 'played' separately and distinctly from the musical content, does not occur with lesser equipment like the 510. As a consequence, this rather worn record showed a tendency to stereo muddle and a hint of tracing distortion on the more forceful recorder notes. Mark you, this sort of performance would have cost somebody a week's wages not so many years ago.

It's scarcely fair to put a budget cartridge through a Shure obstacle course but the 'Mais Que Nada' track on Side 2 has more uses than sibilance testing. In addition to 's' sounds which most cartridges play like a box of matches all being struck at once, there is a very broad sound stage to be accommodated. With the piano apparently firmly ensconced in the sideboard and the percussion in the kitchen, I knew that the 510 was safe in terms of separation at any rate.

Ortofon's budget babe doesn't cut the ground from under their more expensive offerings. All things considered, the 510 MkII has a forward slant which can be unforgiving with trebly records. A warm amplifier is best, if things are not to get too glossy, not to say gritty. Be that as it may, it is certainly sure-footed and won't damage your records.

**World Verdict**

Excellent tracker at a good price.

Warm amplification is needed to tame this sure-footed budget entry.

**Measured Performance**

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This superb piece of equipment with its radical styling seeks to break the mould of conventional black-box hi-fi. Making up the package are a CD player and three-band RDS tuner accompanied by a pair of petite loudspeakers.
Q. What does the acronym RDS stand for?
A1. Really Dire Souffle
A2. Radio Data System
A3. Rather Darling Sweetie
To leave your answer dial: - 0906 7340291

Denon TU-260L MkII - £129.99
Received a four globe World verdict June '99 issue. With its smooth, inoffensive sound and abundance of facilities the MkII is a worthy addition to the tuner line-up.
Q. In radio what do the initials FM stand for?
A1. Ferrite matrix
A2. Frequency Modulation
A3. Frequently Modified
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Q. Loudspeakers and pick-up cartridges are examples of?
A1. Seducer
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Harmon Kardon TC1000 remote control - £300
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Q. Who is the founder of Microsoft?
A1. Bill Gates
A2. Bill Clinton
A3. Pearly Gates
To leave your answer dial:- 0906 7340292

Musical Fidelity X-24K DAC - £300
Another four-globe review for MF. This converter is crisp, detailed and dynamic and is a definite music maker!
Q. What does DAC stand for?
A1. Digital to Analogue Convertor
A2. Digital Analogue Clock
A3. Digital Audio Converts
To leave your answer dial:- 0906 7340296

Nordost Blue Heaven Cable - £149.95
This cable takes all the best attributes of the Super Flatline and manages to improve on them! Not a budget cable but definitely worth every penny.
Q. Which cables join hi-fi separates together?
A1. Internet
A2. Interconnect
A3. Integrate
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QED Qnect Silver Spiral (1m) speaker cable £90.00 & Genesis Silver Spiral (5m) speaker cable - £300.00
From the off-set the Genesis proved to be something special, especially when retrieving low-level detail; The Silver Spiral has fine transparency, grip and speed, and gives the competition at two or three times the money a very tough time.
Q. What is the name of QED's hit budget cable?
A1. Connect 3
A2. Queue net 5
A3. Qnect 2
To leave your answer dial:- 0906 7340294

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The Jet Set

Little bigger than a shoebox, ELAC’s Jet 310i speaker with its folded ribbon tweeter claims to have solved the perennial problem of small box, big sound.

When the Germans decide to pull out all the stops to make something look good, the results can be classic. ELAC’s Jet 310i has a Bauhausian air of top-grade industrial design to it which is a tonic after the totally unimaginative and tedious black boxes of most transducers. Equally refreshing is the technology which has gone into this tiny stand mounter.

Where common-or-garden loudspeakers are housed in MDF or chipboard enclosures, ELAC have gone the way of Celestion with their C series and Musical Fidelity with their X range of electronics) and plumped for an extruded aluminium enclosure 208mm by 123mm by 282mm with walls 6.5mm thick. Tap this with your knuckles and you’ll discover just how much more rigid it is than wood-based alternatives.

Bolted to the front of the extrusion (which ELAC are offering in black, white, silver and a limited-edition blue) are two unusual drivers. Uppermost is the JET ribbon tweeter constructed from a folded lamellar foil working against Neodymium magnets and hidden behind a slotted face plate.

Below this lies the TT115 KST long-throw woofer with its silver cone. Whilst this may look like most other metal-diaphragm units, it differs in having a paper pulp backing bonded to it to enhance its self-damping properties and lacking a dustcap.

To obtain a decent amount of bass from the cabinet, which is very deep front-to-back, a long port is fixed to the rear where you’ll find the bi-wire terminals as well. On our review samples, these weren’t linked in any way - ELAC obviously intend owners to bi-wire or bust.

To ensure that the innate ‘snaziness’ of the 310is isn’t compromised by welded scaffold eye-sores, matching stands are available. The loudspeakers actually bolt to these instead of perching on spikes for the closest coupling.

Suitably set up, the ELACs were run in over the course of a weekend before being scrutinised through a Trio L-07/DSEME V/Cartridge Man Music Maker and clocked Kenwood DP-X9010/Pink Triangle Cardinal connected to one of MVL’s A2+ integrated amplifiers. Loudspeaker cable was QED’s Profile Silver 12.

As you might expect from a be-ribboned loudspeaker with a small front baffle, the 310is had great clarity and detailing. Unfortunately, this talent for delving into recordings proved just how many of my charity-shop special LPs have suffered groove damage, particularly on sibilants. Where soft-domes and even the superb Magneplanar SMGas had given these tired discs the benefit of the doubt, the JETs approached them from a ‘warts and all’ angle, but without sounding clinical or compromising on musicality.

Swapping to CD with Moloko’s I Am Not A Doctor, I grilled that alloy/pulp driver. In keeping with its low mass, this packed plenty of genuine punch in the upper bass where dynamics and finesse were the watch words. Lower down, there was decent extension for the size of cone and box, even if it wouldn’t have subwoofer designers running for cover.

The JETs are extremely transparent devices capable of top-notch image focus and sound staging with minimal coloration (although, if you push them hard, they do start to ‘thicken’ in the bass). The midrange is every bit as open as the treble thanks to a happy marriage between tweeter and mid/bass, but the bottom-end doesn’t have quite the same lucidity. Still, they head the stand mounter pack at under £1000 in sound as well as style-

ELAC Jet 310i
£799.90

Sennheiser
3 Century Point,
Halifax Road,
High Wycombe,
Bucks. HP12 3SL
Tel: 01494 551551

WORLD VERDICT
Lovely fast, clear sound majors on musicality. 10-year guarantee too.

Measured
Performance
see p135

HI-FI WORLD JULY 1999
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Buying Guide

HI-FI WORLD

Our comprehensive new guide contains over 1000 hi-fi components, all tried and tested by HI-FI World’s listening team. Backing up each one is our performance verdict to help you select the perfect upgrade or first purchase. Happy reading!

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### Buying Guide

#### Loudspeakers £

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<th>Verdict</th>
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<td><strong>Under £300</strong></td>
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<tr>
<td>Acoustic Energy AB100</td>
<td>£200</td>
<td>Jan '96: Reasonably neutral but ultimately lacklustre. Control of treble and midrange poor.</td>
</tr>
<tr>
<td>Audio Analogue Opta</td>
<td>£225</td>
<td>Dec '95: Partner the Opta with warm anacoustic and you have a lively, room-filling sound. Avoid bright amas and sources.</td>
</tr>
<tr>
<td>Aura LSE-627M</td>
<td>£225</td>
<td>Aug '98: Energic, bold and highly detailed, the Aura is one to consider for the budget-conscious.</td>
</tr>
<tr>
<td>Aura LS-627</td>
<td>£230</td>
<td>Oct '98: Like Aura's matching stand mounters, the 627M has an open and controlled Treble is bright.</td>
</tr>
<tr>
<td>B&amp;W 601</td>
<td>£200</td>
<td>Jan '96: Unrestricted and clean sound with satisfying muscality. An engaging subtlety not common at the price.</td>
</tr>
<tr>
<td>B&amp;W DM302</td>
<td>£135</td>
<td>Apr '99: Clear and detailed sound but balance too forward and weak bass.</td>
</tr>
<tr>
<td>Boston CR6</td>
<td>£150</td>
<td>Sep '98: With simple music, the CR6s work well, but not quite as well as the best of the competition.</td>
</tr>
<tr>
<td>Castle Isla</td>
<td>£220</td>
<td>Jan '96: A livel y little animal, well worth the money.</td>
</tr>
<tr>
<td>Celeste Impact 15</td>
<td>£110</td>
<td>Feb '98: The 15S powerful, confident sound belies a rather poor measured performance.</td>
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<td>Celeste Impact 23</td>
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<td>Chario Hiper 1000</td>
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<td>Eltax Liberty 3a</td>
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<td>Gala 9</td>
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<td>Gallo Mini Monitor</td>
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<td>Rega RP1</td>
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<td>Witten Active Diamond</td>
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<td>Wharfedale Valide 300</td>
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#### Loudspeakers £ £300-£799

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<tr>
<th>Model</th>
<th>Year</th>
<th>Verdict</th>
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<tbody>
<tr>
<td>B&amp;W CDMA15E</td>
<td>£500</td>
<td>Apr '98: Tuneful and confident, these speakers are well suited to Pop and Dance music.</td>
</tr>
<tr>
<td>B&amp;W DM305</td>
<td>£500</td>
<td>Mar '97: All good-looking solid speakers with great spirit and tenacity but with a dry treble. Not fans of classical music.</td>
</tr>
<tr>
<td>B&amp;W DM305</td>
<td>£500</td>
<td>Mar '97: Good-looking solid speakers with great spirit and tenacity but with a dry treble. Not fans of classical music.</td>
</tr>
<tr>
<td>Blue Room Minipod</td>
<td>£500</td>
<td>Mar '97: Good-looking solid speakers with great spirit and tenacity but with a dry treble. Not fans of classical music.</td>
</tr>
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#### AUDIO ANALOGUE

In just a short while, Audio Analogue has won plenty of admirers. When Hi Fi World tested the PUCCINI Special Edition, they gave it their top star rating with the words **"Excellent sound quality ensures the Puccini S.E. outstrips the competition at up to £1,000."** And the influential USA magazine Stereophile (Dec '99) praised its "harmonic richness, stunning purity of tone and sheer musicality." To top that, the basic £475 PUCCINI won HiFi Choice's Best Buy for amplifiers in an up-to £1,000 group test (Feb '98). In their words: **"This is a first-rate budget amplifier that looks and sounds like an altogether more costly model. Check it out."**

The BELLINI preamp and the PARADOX XI power amp fused equally well. Ken Kramer of Hi-Fi News (Jan. '99) had this to say, "A new benchmark in the value for money stakes." Now, we're proud to introduce you to the latest member of the family: the PAGAMINI. It's a real music-lover's CD player. For more details contact:

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Castle Avon £699
JPW ML910 £300
Jamo 307 £300
Charlo Lynx £549
Hartech £799
Carlsson OA 50.2 £585
JPW Ruby £395
Dali 450 £700
Mission 734 £430
Opera Prima £495
Musical Technology PM15 £474
Mission 774 £500
Technics SB-M300 £350
Spendor 2030 £599
Neat Critique il £445
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Triangle Comete TZX £475
TDL T- line 2 £550
Systemdek 165 £400
Soundcratt Absolute £799
Sequence 400 £329
Rogers AB 1 £499
Chario Academy One

Celestion A2

Castle Howard S2

Event 20/20BAS

Diapason Karla

B&W CDM7

Loudspeakers £ Year Verdict

£300-£799

Carlsson OA 50.2 £385 Dec 98
Castle Avon £389
Harlech £379 Aug 98
Castle Kendal £450 Mar 98
Castle Severn II £379 Jul 94
Charlo Hiper 1 £399 May 95
Charlo Lynx £349 Apr 93
Dali 450 £769 Oct 97
Epos ES12 £419 Oct 95
Heybrook Hayleys £339 Mar 97
Heybrook Haylo £389 Oct 95
Jamo 307 £300
JPW ML910 £300
Kef LS3/5A £595 Jul 95
Kef LS55 £489 Aug 97
Kef 555 £489 Aug 97
Kef R51 £499 Oct 97
Linn Takan £389 Dec 95
Meridian 450 £755 May 95
Mission 733 £300 Apr 94
Mission 734 £430 Sep 93
Mission 751 Freedom £479 Jan 98
Mission 732 Fædescum £757 Jan 98
Mission 77 £430 Feb 91
Montant-Short MS2 £320 Nov 94
Musical Technology PM15 £479 Jan 97
Near 10M £300 Apr 95
Neat Critique II £449 Jan 95
NHT 1.3 £389 Aug 92
Opera Prima £469 Feb 95
Ortofon Concorde C £329 Oct 95
Polk PSW150 £500 Jul 97
Proac T latteria £500 Aug 98
Rel Q Bass £350 May 96
REL C15GE £499 Jan 98
Rogers AB 1 £499
Roksan FlexOne £499 Feb 97
Sequence 400 £392 Apr 96
Soundcraft Absolute 45 £799 Oct 97
Spendor 2030 £300
Systemdek 165 £400
Tannoy Precision P10 £360 May 98
Tannoy Profile 633 plus £469
TCL RTL 14 £506 Feb 95
TCL Tone 2 £550 Jan 97
Technics SB-M300 £380 Nov 93
Technics SB-M500 £450 May 96
Triangle Comete TZX £475 Jan 95
Wharfedale Valere 100 £499

Loudspeakers £ Year Verdict

£800-£1499

Audionice E £1450 Mar 95
Audionice M1 Stand 89
Audionice M12 £1140
B&W CDM7 £999 Feb 98
B&W CDM7 £999
Castle Howard S2 £1090 Mar 96
Cotta Acoustics A3 £1199 Dec 93
Charlo Academy One £1250 Mar 95
Dynaudio Karls £1185
Event 20/20 BAS £829
Harlech DPM1 Active £949

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Email: info@roksan.co.uk
www.roksan.co.uk

World Radio History
## Loudspeakers £ Year Verdict

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<td>AMC 3005</td>
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<td>Arcam Alpha 5 plus</td>
<td>£250</td>
<td>Oct 96</td>
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**Buying Guide**

**World Radio History**

**HI-FI WORLD**

**JULY 1999**

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<td>A big open sound sound sets the Mark apart at this price. Low powered, though. Distinctly amateurish looks.</td>
</tr>
<tr>
<td>Baxi Lyra</td>
<td>£995</td>
<td>May 95</td>
<td>Two bras don't form a pre and power in the X-41 but the result is nevertheless a winning combination.</td>
</tr>
<tr>
<td>Baxi Lyra</td>
<td>£995</td>
<td>May 95</td>
<td>Copies the Marley with a warm system and rounder. Possibly a little lightweight on the Reggae &amp; Rap side.</td>
</tr>
<tr>
<td>Baxi Lyra</td>
<td>£995</td>
<td>May 95</td>
<td>With 50 watts on tap, the Nad has power aplenty but is rather dynamically limited and ultimately uninvolving.</td>
</tr>
<tr>
<td>Baxi Lyra</td>
<td>£995</td>
<td>May 95</td>
<td>Rather monochromatic with midband emphasis and slightly dry bass. Good imaging but smallish soundstage.</td>
</tr>
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<td>Baxi Lyra</td>
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<td>May 95</td>
<td>Excels with sound staging but lacks subtlety and tonal colour.</td>
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</table>

## Integrated £ Year Verdict

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<tr>
<th>Name</th>
<th>Price</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Analogue Puccini</td>
<td>£300</td>
<td>Sep 95</td>
<td>Musically rewarding, deserves serious audition. Great British hi-fi on a budget.</td>
</tr>
<tr>
<td>Armstrong 4x</td>
<td>£329</td>
<td>Nov 99</td>
<td>Not the most musical amp ever but good value. The tone controls and balance adjustment will appeal to some.</td>
</tr>
<tr>
<td>Avanti Avant-6</td>
<td>£350</td>
<td>Jan 96</td>
<td>Full and smooth sound, unfortunately with loose bass.</td>
</tr>
<tr>
<td>Avera 497</td>
<td>£500</td>
<td>Dec 96</td>
<td>Excellent value. A detailed and open sound gives great atmosphere to all types of music.</td>
</tr>
<tr>
<td>Audio Analogue Puccini SE</td>
<td>£500</td>
<td>Feb 96</td>
<td>All the main ingredients like rhythm and dynamics present and correct. Natural smoothness and transparency.</td>
</tr>
<tr>
<td>Audio Analogue Puccini SE</td>
<td>£500</td>
<td>Sep 95</td>
<td>Excellent sound quality gives the competition under £600 a lot to worry about.</td>
</tr>
<tr>
<td>Audiophile 800S</td>
<td>£500</td>
<td>May 95</td>
<td>Manages the rare feat of sounding powerful and light at the same time. Bass loud but not the last word.</td>
</tr>
<tr>
<td>Auralic Lyra</td>
<td>£700</td>
<td>Apr 96</td>
<td>Powerful and well-focused sound which doesn't bleed where it shouldn't.</td>
</tr>
<tr>
<td>Baxi Lyra</td>
<td>£895</td>
<td>Aug 96</td>
<td>Too thin and crisp which makes prolonged listening fatiguing.</td>
</tr>
<tr>
<td>Baxi Lyra</td>
<td>£995</td>
<td>May 95</td>
<td>An extremely enjoyable, lucid little amplifier that really gets to the heart of the music.</td>
</tr>
<tr>
<td>Baxi Lyra</td>
<td>£995</td>
<td>May 95</td>
<td>An engaging musical performance; sweet overall sound. Doesn't cope with difficult loads so well.</td>
</tr>
<tr>
<td>Baxi Lyra</td>
<td>£995</td>
<td>May 95</td>
<td>A big open sound sound sets the Mark apart at this price. Low powered, though. Distinctly amateurish looks.</td>
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<th>Product</th>
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<th>Verdict</th>
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</thead>
<tbody>
<tr>
<td>Linn 3500</td>
<td>£3200</td>
<td>Apr 99</td>
<td>Has clarity in spades and an extremely rare tonal purity. Outclasses many transistor alternatives with ease.</td>
</tr>
<tr>
<td>McIntosh MA8800</td>
<td>£3735</td>
<td>Sep 98</td>
<td>A mighty confection of power, facilities and style, and it sounds good to boot.</td>
</tr>
<tr>
<td>Musical Fidelity A1001</td>
<td>£2495</td>
<td>Jun 99</td>
<td>Awesome power and seamless bass. A very good all-rounder with super-clean sound.</td>
</tr>
<tr>
<td>MVL-Integral A3</td>
<td>£850</td>
<td>May 99</td>
<td>An excellent performer with any music. Adept at handling subtle details. Difficult to beat at the price.</td>
</tr>
<tr>
<td>MVL AL2</td>
<td>£1250</td>
<td>Jan 99</td>
<td>Seamless, natural and very open, the AL2 sets the pace at the price.</td>
</tr>
<tr>
<td>Shalimar Phase 2</td>
<td>£800</td>
<td>Apr 97</td>
<td>Even-handed performer deals confidently with music regardless of genre. Not as smooth as the best.</td>
</tr>
<tr>
<td>Sonic Frontiers Ateliers</td>
<td>£1295</td>
<td>May 98</td>
<td>A characteristically competent and musical integrated. Preters lightly touching speakers through</td>
</tr>
<tr>
<td>Sommerset AudioTech</td>
<td>£999</td>
<td>Oct 97</td>
<td>Excellent high-end integrated with a real love of music and plenty of poise.</td>
</tr>
<tr>
<td>Totem AR 10</td>
<td>£1000</td>
<td>Sep 99</td>
<td>Very strong all round performer with excellent build and finish. Varying on the expensive though.</td>
</tr>
<tr>
<td>Unison Res. Simply 845</td>
<td>£2995</td>
<td>Mar 99</td>
<td>Allied to all the right 'speakers will handle all musical genres with smoothness and power.</td>
</tr>
</tbody>
</table>

### Pre-amps £ Year Verdict

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMI 1000</td>
<td>£150</td>
<td>Mar 99</td>
<td>Tone controls cannot be defeated and the sum total is a little metallic but value in spades.</td>
</tr>
<tr>
<td>Creek OBH-115E</td>
<td>£199</td>
<td>Apr 99</td>
<td>A very useful, natural headphone amp which scores as highly on acoustic and Classical as it does on Rock.</td>
</tr>
<tr>
<td>Creek OBH-112</td>
<td>£200</td>
<td>Jul 98</td>
<td>Only poor cosmetics mar the Creek. Sonically it's a gem.</td>
</tr>
<tr>
<td>MVL 30 Passive</td>
<td>£149</td>
<td>Mar 99</td>
<td>Won't win prizes for best build but a flexible effort for a passive. Somewhat dry presentation overall.</td>
</tr>
<tr>
<td>Musical Fidelity X-Pre</td>
<td>£200</td>
<td>Jun 94</td>
<td>If you haven't yet experienced the world of quality headphone listening, the X-Cams is the way to start.</td>
</tr>
<tr>
<td>Musical Fidelity X-Tone</td>
<td>£120</td>
<td>Mar 94</td>
<td>A smooth, sweet and musical performer.</td>
</tr>
<tr>
<td>Musical Fidelity X-Tone</td>
<td>£120</td>
<td>Mar 94</td>
<td>Easy-to-use stand-alone modern tone control with subtle effect. Rather a bargain.</td>
</tr>
<tr>
<td>RA-8M</td>
<td>£150</td>
<td>Mar 99</td>
<td>Five line-level inputs and tone controls make for a flexible unit. Partnered by the RA-971 power amp, very good value.</td>
</tr>
<tr>
<td>Tag McLaren PA10</td>
<td>£999</td>
<td>Apr 99</td>
<td>Needs slightly more fusty bass and a less grainy midrange to bring it up with the best.</td>
</tr>
</tbody>
</table>

### Under £300 £ Year Verdict

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aural Analogue Linear</td>
<td>£475</td>
<td>Apr 97</td>
<td>Organic and transparent. Free from transistor harshness.</td>
</tr>
<tr>
<td>Chord CPA-1800</td>
<td>£474</td>
<td>Mar 97</td>
<td>A smooth and sweet sound devoid of roughness.</td>
</tr>
<tr>
<td>Chord Enigma CSE12C</td>
<td>£440</td>
<td>Nov 98</td>
<td>The phono stage is the main area of weakness. Can sound a touch muddled at times.</td>
</tr>
<tr>
<td>Craft Apoth</td>
<td>£600</td>
<td>Jun 96</td>
<td>A fine sounding preamp, but the phono stage is weak in the bass.</td>
</tr>
<tr>
<td>Elips Pre</td>
<td>£500</td>
<td>Dec 98</td>
<td>Pre-amplifier has plenty of tackle, but sounds a little unexciting and 'conventional'.</td>
</tr>
<tr>
<td>Hygrotrump Signature II</td>
<td>£549</td>
<td>May 97</td>
<td>Impressive smoothness and tonal colour, transparent as well.</td>
</tr>
<tr>
<td>PS 104</td>
<td>£650</td>
<td>Dec 95</td>
<td>This valve pre-amplifier is very good value indeed.</td>
</tr>
<tr>
<td>Rothwell Indra</td>
<td>£499</td>
<td>May 99</td>
<td>Passive pre of box-of-switches, whichever way you look at it the Indra is stylishly finished and well conceived.</td>
</tr>
<tr>
<td>Sampo Audio 80</td>
<td>£767</td>
<td>May 99</td>
<td>More valve-like than transistor in sound; highly competent if not spectacular.</td>
</tr>
<tr>
<td>Tellus Symphony 2</td>
<td>£500</td>
<td>Jun 97</td>
<td>Good when mains powered, even better running on its batteries. One to consider at the price.</td>
</tr>
<tr>
<td>Technical CU-1000</td>
<td>£550</td>
<td>Jul 99</td>
<td>Poor sound quality and engineering let this pre-ampl down. Pricey too.</td>
</tr>
<tr>
<td>Thonnes TX255</td>
<td>£795</td>
<td>Aug 96</td>
<td>Warm but still exciting, it is only let down by a slightly recessed midrange.</td>
</tr>
<tr>
<td>Monarchy SM-70</td>
<td>£795</td>
<td>Aug 96</td>
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</tr>
</tbody>
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### £300-£799 £ Year Verdict

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<tr>
<th>Product</th>
<th>Price</th>
<th>Year</th>
<th>Verdict</th>
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<tbody>
<tr>
<td>Audion Architectura</td>
<td>£1475</td>
<td>Apr 96</td>
<td>A very useful, natural headphone amp which scores as highly on acoustic and Classical as it does on Rock.</td>
</tr>
<tr>
<td>Audion Architectura Linear</td>
<td>£1475</td>
<td>Apr 96</td>
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<td>£474</td>
<td>Mar 97</td>
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<tr>
<td>Chord Enigma CSE12C</td>
<td>£440</td>
<td>Nov 98</td>
<td>The phono stage is the main area of weakness. Can sound a touch muddled at times.</td>
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<tr>
<td>Craft Apoth</td>
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<tr>
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<td>£500</td>
<td>Dec 98</td>
<td>Pre-amplifier has plenty of tackle, but sounds a little unexciting and 'conventional'.</td>
</tr>
<tr>
<td>Hygrotrump Signature II</td>
<td>£549</td>
<td>May 97</td>
<td>Impressive smoothness and tonal colour, transparent as well.</td>
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<tr>
<td>Rothwell Indra</td>
<td>£499</td>
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<td>Jul 99</td>
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<tr>
<td>Thonnes TX255</td>
<td>£795</td>
<td>Aug 96</td>
<td>Warm but still exciting, it is only let down by a slightly recessed midrange.</td>
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### £800-£1499 £ Year Verdict

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<tr>
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<td>Chord CPA-1800</td>
<td>£474</td>
<td>Mar 97</td>
<td>A smooth and sweet sound devoid of roughness.</td>
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<tr>
<td>Chord Enigma CSE12C</td>
<td>£440</td>
<td>Nov 98</td>
<td>The phono stage is the main area of weakness. Can sound a touch muddled at times.</td>
</tr>
<tr>
<td>Craft Apoth</td>
<td>£600</td>
<td>Jun 96</td>
<td>A fine sounding preamp, but the phono stage is weak in the bass.</td>
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<tr>
<td>Elips Pre</td>
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<td>Dec 98</td>
<td>Pre-amplifier has plenty of tackle, but sounds a little unexciting and 'conventional'.</td>
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<tr>
<td>Hygrotrump Signature II</td>
<td>£549</td>
<td>May 97</td>
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<tr>
<td>PS 104</td>
<td>£650</td>
<td>Dec 95</td>
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<tr>
<td>Rothwell Indra</td>
<td>£499</td>
<td>May 99</td>
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<td>£500</td>
<td>Jun 97</td>
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<tr>
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<td>£550</td>
<td>Jul 99</td>
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<tr>
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</tr>
<tr>
<td>Craft Apoth</td>
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<td>Jun 96</td>
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</tr>
<tr>
<td>Elips Pre</td>
<td>£500</td>
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<td>May 97</td>
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<tr>
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</tr>
<tr>
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<td>£795</td>
<td>Aug 96</td>
<td>Warm but still exciting, it is only let down by a slightly recessed midrange.</td>
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</table>

### £1,000

**WORLD'S BEST AMPLIFIER UNDER £1,000?**

**WORLD VERDICT**

![Chord CPA-1800](image)

**HI-FI WORLD MAY 1999**

For more information ring 01953 850800 (See our main ad)
## Pre amps £ Year Verdict

<table>
<thead>
<tr>
<th>Pre amp</th>
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<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canary 601 MkII</td>
<td>£1600</td>
<td>Apr 99</td>
<td>Very musical, very revealing. A credit to the valve tradition with considerable kick in reserve.</td>
</tr>
<tr>
<td>Chord CPA 1400</td>
<td>£1774</td>
<td>Mar 98</td>
<td>Has it all - detail, transparency, slam and rhythm. In a word, excellent.</td>
</tr>
<tr>
<td>Pinot Music 5</td>
<td>£1590</td>
<td>Feb 99</td>
<td>Partner for the Final Music-6 power amp. Battery powered.</td>
</tr>
<tr>
<td>Futterste Ratt 4</td>
<td>£2345</td>
<td>Feb 96</td>
<td>Smooth and detailed sound. Not as clinical as some professional amps can be.</td>
</tr>
<tr>
<td>Gallo Audio Pre</td>
<td>£1630</td>
<td>Nov 95</td>
<td>Smooth, but dull balance makes it suitable for bright systems.</td>
</tr>
<tr>
<td>Meranet 7</td>
<td>£3500</td>
<td>Mar 97</td>
<td>Super, combines delicacy and power, especially with a vinyl source.</td>
</tr>
<tr>
<td>Michio Orca</td>
<td>£1630</td>
<td>Oct 98</td>
<td>With its Panasonic pot, the Orca reaches new standards of transparency and involvement.</td>
</tr>
<tr>
<td>Unison Res. Mystery 2</td>
<td>£1750</td>
<td>May 98</td>
<td>Offers finesse, control and clarity for a very reasonable outlay.</td>
</tr>
</tbody>
</table>

## Power amps £ Year Verdict

<table>
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<tr>
<th>Under £300</th>
<th>£</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMC 2200</td>
<td>£150</td>
<td>Mar 99</td>
<td>Super value separate with first-rate sound staging. Midrange subtleties sometimes suffer but at this price...</td>
</tr>
<tr>
<td>Atam 9P</td>
<td>£400</td>
<td>Dec 96</td>
<td>A detailed and open sound gives great atmosphere to all types of music.</td>
</tr>
<tr>
<td>Atamp Alpha 10P</td>
<td>£950</td>
<td>Jul 98</td>
<td>This power amp lags behind the best of the competition, and the build is flimsy.</td>
</tr>
<tr>
<td>Audio Analogue Donizetti</td>
<td>£755</td>
<td>Apr 98</td>
<td>As smart as an Amstrad suit, they sound powerful, yet calm and organic manner.</td>
</tr>
<tr>
<td>Aura PA 100</td>
<td>£749</td>
<td>Mar 97</td>
<td>A smooth, sweet powerful sound free from the rough brightness that afflicts many solid-states.</td>
</tr>
<tr>
<td>Creek 433</td>
<td>£399</td>
<td>Mar 99</td>
<td>Shows what a skilled designer can do, even when hooked up with a passive pre. A very realistic approach.</td>
</tr>
<tr>
<td>Cyrus Power</td>
<td>£449</td>
<td>Feb 96</td>
<td>The Cyrus Power is simply impressive in all respects.</td>
</tr>
<tr>
<td>Linn LK100</td>
<td>£650</td>
<td>Apr 98</td>
<td>Well built, but judged purely on a musical basis they fall short.</td>
</tr>
<tr>
<td>Linn LK3/21</td>
<td>£710</td>
<td>Aug 97</td>
<td>The LK240 plays lans exceptionally well, tonal colour and image precision are not its forte though.</td>
</tr>
<tr>
<td>Meridian 505</td>
<td>£795</td>
<td>Aug 97</td>
<td>Crisp, clear images are seen in a broad spread between the &quot;speakers&quot; but the 505 lacks stage depth andgrunt.</td>
</tr>
<tr>
<td>Monitor SM-70</td>
<td>£395</td>
<td>Jan 99</td>
<td>The Monarchy is a smooth, warm amp most at home with speakers that are easily driveable.</td>
</tr>
<tr>
<td>Mytec Power</td>
<td>£249</td>
<td>Mar 99</td>
<td>The Phase 3 possesses impressive clarity, detail and dynamics.</td>
</tr>
<tr>
<td>Myths Steel 60</td>
<td>£459</td>
<td>Dec 95</td>
<td>The 707/977 six channel helps give lucid presentation with deep sound staging. Perhaps on the bright side.</td>
</tr>
<tr>
<td>Musical Fidelity X-A50</td>
<td>£550</td>
<td>Jan 98</td>
<td>Very smooth, a sweet and musical performers, not over-analytical but very involving.</td>
</tr>
<tr>
<td>Quad 77077</td>
<td>£225</td>
<td>Mar 99</td>
<td>With good punch, speed and attack yet not bad at all but can be a little unimpressive.</td>
</tr>
<tr>
<td>Rotel RB-971</td>
<td>£175</td>
<td>Oct 98</td>
<td>70 Watts a channel helps give lucid presentation with deep sound staging. Perhaps on the bright side.</td>
</tr>
<tr>
<td>Shiware Phase 3</td>
<td>£651</td>
<td>Apr 97</td>
<td>The Phase 3 possess impressive clarity, detail and dynamics.</td>
</tr>
<tr>
<td>Talk Tone 7</td>
<td>£500</td>
<td>Jun 97</td>
<td>A flexible power amp with a strong, controlled sound, but won't suit all tastes.</td>
</tr>
<tr>
<td>Technics SE-A1000</td>
<td>£499</td>
<td>Sep 97</td>
<td>Smooth, warm sound has plenty of grunt when needed and is very enjoyable to listen to.</td>
</tr>
<tr>
<td>Thorens TTP 3000</td>
<td>£500</td>
<td>Jul 95</td>
<td>Its best feature is the key on/off switch, otherwise its a case of poor sound quality and engineering.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>£800-£1499</th>
<th>£</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Analogue Donizetti</td>
<td>£999</td>
<td>Jun 95</td>
<td>Highly recommended for its blend of operational sophistication, build and sound quality.</td>
</tr>
<tr>
<td>Chord CPA 1400</td>
<td>£995</td>
<td>Jan 96</td>
<td>Well specified and powerful, but dry and short of life. Suits Rock on bass-heavy speakers.</td>
</tr>
<tr>
<td>Chord CPA 400</td>
<td>£1238</td>
<td>Mar 98</td>
<td>A remarkable achievement for the money.</td>
</tr>
<tr>
<td>Cymatic CS83/86</td>
<td>£900</td>
<td>Nov 98</td>
<td>These monoblocks have a tonal richness and bass speed rare amongst powerful amps.</td>
</tr>
<tr>
<td>Croft Series V</td>
<td>£800</td>
<td>Jun 96</td>
<td>Fast, clear and detailed sound will win friends in both the transistor and valve camps.</td>
</tr>
<tr>
<td>Dalcy De Caires</td>
<td>£1499</td>
<td>May 95</td>
<td>Quality bass and a clear midband but the treble can be harsh at high volume.</td>
</tr>
<tr>
<td>1080S</td>
<td>£1245</td>
<td>Jul 93</td>
<td>Serious audiophile product at an affordable price. Well constructed, pleasant to use and fine sounding.</td>
</tr>
<tr>
<td>Linn LK3/21</td>
<td>£1250</td>
<td>Nov 95</td>
<td>Smooth sound but dull balance makes the Galactron suitable for bright systems.</td>
</tr>
<tr>
<td>Musical Fidelity X-A200</td>
<td>£2350</td>
<td>Dec 96</td>
<td>Not quite as transparent as it could be but impresses with its smoothness and tonal colour.</td>
</tr>
<tr>
<td>Myanad MA120</td>
<td>£1500</td>
<td>Apr 96</td>
<td>As smart as an Amstrad suit, they sound powerful, yet calm and organic manner.</td>
</tr>
<tr>
<td>Orpheus Audio One</td>
<td>£999</td>
<td>Jul 95</td>
<td>The 707 embodies a rare blend of grace and power in its sleek grey casework.</td>
</tr>
<tr>
<td>Quad 70777</td>
<td>£899</td>
<td>Jul 97</td>
<td>Low on power at 8 watts but lindy mighty for that. Good resolution of detail and texture.</td>
</tr>
<tr>
<td>Rehfeldt Rubicon</td>
<td>£499</td>
<td>May 99</td>
<td>More valve-like than transistor in sound; highly competent if not spectacular.</td>
</tr>
<tr>
<td>Stano Polaris III</td>
<td>£398</td>
<td>May 99</td>
<td>Truly excellent and now back with a bang.</td>
</tr>
<tr>
<td>TAG Valvecraft 60P</td>
<td>£390</td>
<td>Nov 98</td>
<td>Low on power at 8 watts but lindy mighty for that. Good resolution of detail and texture.</td>
</tr>
<tr>
<td>WRR Adair</td>
<td>£1495</td>
<td>Jun 95</td>
<td>Lights of low-light piano-basico fare and Baroque music will appreciate this amp’s delicacy.</td>
</tr>
</tbody>
</table>

## Power amps £ Year Verdict

<table>
<thead>
<tr>
<th>£800-£1499</th>
<th>£</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Analogue Donizetti</td>
<td>£1995</td>
<td>Mar 95</td>
<td>Escapes the traditional lavish tube sound for a brighter and leaner approach.</td>
</tr>
</tbody>
</table>

## Final Music-6

Fi-Rax offers a new dimension in audio visual racking - from a range of standard designs to the flexibility to custom create a unit to suit your particular sound system and lifestyle.

### Sound Investment

- High quality aluminium construction.
- Finishes available to your choice.
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- Sound isolation on shelving/feet.
- Custom created to suit your system.
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Tel: 01924 277526 Fax: 01924 270759
**Power Amps**

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cary CD 8 bridge CD4SE</td>
<td>£1520</td>
<td>Nov 96</td>
<td>The Cary CD 8 bridge CD4SE traditional value for good use in a push-pull design that will drive most loudspeakers.</td>
</tr>
<tr>
<td>Cary 300SE</td>
<td>£1495</td>
<td>Feb 95</td>
<td>Cary have a winning amplifier that is a prime example of how a 300B can sound.</td>
</tr>
<tr>
<td>Eltax Amp 5</td>
<td>£1475</td>
<td>Feb 95</td>
<td>Very natural, substantial presentation with little power on tap.</td>
</tr>
<tr>
<td>First Music 5</td>
<td>£1505</td>
<td>Aug 96</td>
<td>Powerful, smooth and detailed sound. Not as clinical as some professional amplifiers can be.</td>
</tr>
<tr>
<td>Focasound Red 5</td>
<td>£2057</td>
<td>May 94</td>
<td>Sound quality of these monoblocs is impressive but marred by a rather obvious hum. Build could be better.</td>
</tr>
<tr>
<td>Gamma Aeonis</td>
<td>£4999</td>
<td>Apr 97</td>
<td>These monoblocs are superb, producing a beguiling performance of great control and verve.</td>
</tr>
<tr>
<td>Marantz 9</td>
<td>£1505</td>
<td>Sep 96</td>
<td>Best of the new Acolyte, cleaner and more controlled than earlier incarnations.</td>
</tr>
<tr>
<td>Microlab RC750</td>
<td>£1160</td>
<td>Aug 96</td>
<td>Good sound quality and an impressive tonal balance.</td>
</tr>
<tr>
<td>Omega Phase 1</td>
<td>£1800</td>
<td>Oct 96</td>
<td>The Symetra monoblocks impress with their grip. They run hot and sound warm and smooth.</td>
</tr>
<tr>
<td>Omega Technology Genesis</td>
<td>£1200</td>
<td>Oct 96</td>
<td>These monoblocs provide explosive bass, midrange is as clear as a bell and shimmering treble.</td>
</tr>
<tr>
<td>Unison Res. Smart 300B</td>
<td>£4250</td>
<td>May 98</td>
<td>Powerful, neutral-sounding amp thanks to their modified 300B valves, but a little expensive for the same range.</td>
</tr>
<tr>
<td>Voti S/5</td>
<td>£2000</td>
<td>Nov 96</td>
<td>This power amplifier is smooth and seductive, although a little pricey.</td>
</tr>
</tbody>
</table>

**CD Players**

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMC CD8</td>
<td>£150</td>
<td>Oct 97</td>
<td>The CD8 is free from grain but can sound too polished at times.</td>
</tr>
<tr>
<td>Camelot CD4SE</td>
<td>£260</td>
<td>Feb 98</td>
<td>Natural and very life-like, the CD4SE embarrasses many pricier players.</td>
</tr>
<tr>
<td>Denon DCD-225</td>
<td>£153</td>
<td>Apr 97</td>
<td>Very musical and articulate. It is inconsistent in its overall presentation.</td>
</tr>
<tr>
<td>Denon DCD-338</td>
<td>£180</td>
<td>Apr 98</td>
<td>Rhythmically slick and dynamic, the Denon 338 is a very cool piece of kit.</td>
</tr>
<tr>
<td>Denon DCD-425</td>
<td>£260</td>
<td>Nov 98</td>
<td>Warm and smooth, the 425 is laid-back rather than in-your-face.</td>
</tr>
<tr>
<td>Grenfell CD3</td>
<td>£240</td>
<td>Sep 94</td>
<td>Great for simple Jazz and Folk, but soft bass slows things down.</td>
</tr>
<tr>
<td>JVC XL-V230</td>
<td>£180</td>
<td>Jun 94</td>
<td>Slightly modified in the bass, the 230 isn't the most rhythmic of players.</td>
</tr>
<tr>
<td>Kenwood DP-300BR</td>
<td>£180</td>
<td>Aug 98</td>
<td>One of the best budget all-rounders there is. A shade treble-heavy.</td>
</tr>
<tr>
<td>Kenwood DP-5500</td>
<td>£250</td>
<td>Aug 93</td>
<td>Waffly bass and enthusiastic treble mean the Kenwood prefers Classical to Rock.</td>
</tr>
<tr>
<td>Kenwood DP-5000</td>
<td>£195</td>
<td>Sep 99</td>
<td>Powerful, smooth and detailed sound. Not as clinical as some professional amplifiers can be.</td>
</tr>
<tr>
<td>Marantz CD-63</td>
<td>£270</td>
<td>Nov 96</td>
<td>Fine vocal projection and treble. Bass is deep but not that tight.</td>
</tr>
<tr>
<td>Marantz CD-67</td>
<td>£270</td>
<td>Oct 95</td>
<td>Hard to criticise at the price, with a typically smooth, fluid NAD sound.</td>
</tr>
<tr>
<td>NAD 522</td>
<td>£170</td>
<td>Jan 99</td>
<td>Warm and smooth, this is a cultured player. Can be over-dressed at times.</td>
</tr>
<tr>
<td>Philips CD321</td>
<td>£130</td>
<td>Feb 96</td>
<td>Not the most accurate machine, but holds its own at the price.</td>
</tr>
<tr>
<td>Pioneer PD-103</td>
<td>£140</td>
<td>Feb 95</td>
<td>Rolled-off treble limits detail. Light bass retains foot-tapping ability.</td>
</tr>
<tr>
<td>Quad E1</td>
<td>£71</td>
<td>May 93</td>
<td>One of the top players at the price with great speed and grip.</td>
</tr>
<tr>
<td>Quad EquaCD-940BX</td>
<td>£230</td>
<td>Oct 94</td>
<td>Controlled and invigorating player awaits a touch of spice.</td>
</tr>
<tr>
<td>Telefunke CD-PA5050</td>
<td>£200</td>
<td>May 97</td>
<td>Refuses to become flustered. Can lack emotion as a result, though.</td>
</tr>
<tr>
<td>Telefunke CD-PA9050</td>
<td>£240</td>
<td>Nov 92</td>
<td>Like many of its contemporaries, the 9050 is too smooth to shine.</td>
</tr>
<tr>
<td>Telefunke SL-PSG49/A</td>
<td>£100</td>
<td>Jan 99</td>
<td>In spite of a bias towards bass and treble, this machine remains a bargain.</td>
</tr>
<tr>
<td>Technics SL-ST75</td>
<td>£200</td>
<td>Feb 98</td>
<td>Powerful, neutral-sounding amp thanks to their modified 300B valves, but a little expensive for the same range.</td>
</tr>
<tr>
<td>Yamaha CDX-590</td>
<td>£230</td>
<td>Feb 98</td>
<td>Detailed, refined but not particularly engaging or exciting.</td>
</tr>
<tr>
<td>Yamaha CDX-595</td>
<td>£180</td>
<td>Jan 99</td>
<td>Lean and up-front, the Yamaha is involving on Rock but can sound harsh.</td>
</tr>
</tbody>
</table>

**CD Players (£300-£799)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMC CD/7</td>
<td>£340</td>
<td>Jan 96</td>
<td>Very musical outfit which gains sweetness with optional valve output stage.</td>
</tr>
<tr>
<td>Arcam Alpha 7</td>
<td>£320</td>
<td>Jan 97</td>
<td>The £12,500 value for money.</td>
</tr>
<tr>
<td>Arcam Alpha 8</td>
<td>£390</td>
<td>Jan 97</td>
<td>Superbly-designed, instinctively musical player destined for success.</td>
</tr>
<tr>
<td>Arcam Alpha 9</td>
<td>£790</td>
<td>Dec 98</td>
<td>The £8,500 value for money.</td>
</tr>
<tr>
<td>Audio Analogue Pazzini</td>
<td>£798</td>
<td>Dec 98</td>
<td>The £9,000 value for money.</td>
</tr>
<tr>
<td>Audio Innovations Alto</td>
<td>£890</td>
<td>Dec 98</td>
<td>The £9,000 value for money.</td>
</tr>
<tr>
<td>Audio CD50</td>
<td>£798</td>
<td>Mar 97</td>
<td>High measured distortion mars the treble and bass is dry.</td>
</tr>
<tr>
<td>Creek CD45</td>
<td>£798</td>
<td>Apr 97</td>
<td>A competent player with a musicality that will seduce any music lover.</td>
</tr>
<tr>
<td>Cyrus CAD15</td>
<td>£388</td>
<td>May 98</td>
<td>Great detail and intimate music. Classical and Jazz still the 1.5 down to the ground but Rock can sound harsh.</td>
</tr>
<tr>
<td>Cyrus KD3</td>
<td>£388</td>
<td>May 98</td>
<td>Lacklustre with Classical, dramatic and lively on Dance and Rock.</td>
</tr>
<tr>
<td>Denon DCD-1550AR</td>
<td>£598</td>
<td>Dec 96</td>
<td>Clean and precise, the Denon logo still in the front and centre.</td>
</tr>
<tr>
<td>Harman/Kardon HD730</td>
<td>£300</td>
<td>Aug 96</td>
<td>Strong on dynamics and drive, but lifeless treble can dampen music.</td>
</tr>
</tbody>
</table>

**器材行Acoustics**

Avante Garde RX20 - a mere 36" tall and 12" x 12" at the base. Absolutely Sound review - "a true torture test with a bass line that's big, super fast and continuous - the Germaine handled it beautifully, servo driven Infinity RS1 towers have more power but are way too slow. The Magnepan MG3.5/S, can't match the low bass impact of the Avante Garde, only the Thiel 3.6 can handle this track with aplomb and even they don't sound that fast. The 3.6's plinth and clarity are impressive to hear for the money. Bass is not relaxed, but still loses its impact. |

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CD Players £ Year Verdict

£300-£799

Linn Klima £798 Apr 95
Marantz CD-63 £1099 Jul 94
Oreille CD10iv £1000 May 97
Pioneer PD-S904 £400 Sep 96
Rotel RCD-S65BX Discr. £375 Dec 94
Roksan CD10 £350 Sep 98
Rotel RCD-971 £350 Sep 98
Sanyo CDP-S3000X £350 Dec 94
Sony CDP-XE900 £300 Mar 97
Thorens CD100 £400 Oct 94
Trichord Genesis £350 May 97

£800-£1499

Audiolab 8000 £1000 Dec 96
Copland CDA 266 £650 Jun 97
Cymbol CDP12 £450 Mar 95
Crysus aAD-7 £899 Oct 97
DPA Renaissance £850 May 98
Harmattan CDX97 £1279 Dec 97
Hepodol Signature £899 Oct 97
Hifi X1 £895 Jun 98
LFD LS10 £650 May 97
Marantz CD-17 £1199 Feb 99
Marantz CD-17 Hi-Fi £1279 Dec 97
Musical Fidelity X-100 £1350 Sep 98
Musical Fidelity X-Ray £1300 Aug 97
Quad £7 £1099 Apr 98
Roksan Caspsion £850 Mar 93
Sugden SOT-1 £999 Nov 97
Teac CO- X1 £999 Oct 97
XTC COP-1 £1099 Apr 98

£1500+

Anthem CD1 £1600 Mar 98
Burmaud CD-2 £6460 Sep 98
Cyrus aAD-7 £6335 Dec 95
Dobly CDM-7009 £1195 Jul 98
Harmatans CDX97 £1330 Apr 98
Hepodol Signature £1919 Aug 97
Musical Fidelity X-Ray £2199 Apr 98
Pink Triangle Tarantella £2300 Jun 92
Pink Triangle Tarantella £2099 Feb 98

Turntables £ Year Verdict

Under £300

NAD 552 £200 Nov 94
Project 1.2 £200 Nov 94
Thorens TD 102 £200 Oct 94
Thorens TD 2000 M4 £199 Nov 95

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$300-$1499

Sweet treble and full midrange give the 8000CD a lucid sound. Perhaps lacks the last ounce of warmth on Rock, nonetheless has winning all-round ability.

£1279 Dec 97

Its warm, musical sound plus HDCD compatibility are a strong combination.

£895 Jun 98

£999 Oct 97

The Heybrook loses out because of its rough treble and lack of clarity.

£800 Mar 94

Construction is price- correct, but not the excessively relaxed sound.

£989 Oct 97

The Mistral is outclassed in areas like pace and bass depth.

£850 Nov 95

Competent, entertaining machine with neat styling and remote.

£899 Apr 98

Not so good with acoustic material.

£800 Dec 96

The CD-17 has a presentation which excels in musicality and lucidity.

£1199 Feb 99

Characteristically dry Meridian balance which could do with more emotion

£1099 Apr 98

This very natural one box fully justifies its £1000 price tag

£850 Mar 93

One-box player with sound capable of mixing it with the best

£850 Apr 96

You'll either love or hate this machine's great flair and confidence.

£2099 Apr 98

Superbly lucid and clear midrange, but lower reaches are a little lightweight.

£1999 Nov 97

Based on a Rega Planar 2. Both pristine to use and look at with a mature sound, all for £200.

£1999 Oct 94

A good, basic budget bargain

£200 Nov 94

Superbly lucid and clear midrange, but lower reaches are a little lightweight.

£200 Jun 97

A bargain at £210 with its substantial and involving sound.

£5460 Sep 94

A good, basic budget bargain

£6460 Sep 94

Based on a Rega Planar 2. Both pristine to use and look at with a mature sound, all for £200.

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£6460 Sep 94

A good, basic budget bargain

£6460 Sep 94
**Turntables**

<table>
<thead>
<tr>
<th>Price Range</th>
<th>£</th>
<th>Year</th>
<th>Verdict</th>
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<tbody>
<tr>
<td><strong>£300-£799</strong></td>
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<tr>
<td>Clearaudio Solution</td>
<td>£750</td>
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<td>Linn Basik</td>
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<td>Michel Guérin-SE</td>
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<td>Michel Wagner</td>
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<td>Pink Triangle Tarantella</td>
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<td>Project 6</td>
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<td>Project 6.1</td>
<td>£355</td>
<td>Sep 94</td>
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<td>Systemdek IX900</td>
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<td>Systemdek SME</td>
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<tr>
<td>Thorens TD166 M45</td>
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<tr>
<td>Virtual Reality Reson n1</td>
<td>£500</td>
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</table>

If you seek a powerful presentation where musically takes precedence over absolute finesse, this could be the answer. Definitely a turntable for devotees of attack and strong bass lines. Not strong on imaging. Great sound, superb build and excellent upgradability make the spider a wonder at the price. Silient and beautifully made, with transparent reproduction. Sold as a rock and almost as heavy, it’s a satisfying performer, but not quite the best. Simply the best at the money. Combines PT’s transparency genuinely with real authority. Immobilisation is inordinate. The 6.1 gives a very full, strong sound. A very exciting deck. Clear and precise sound through midrange and treble puts it up with more expensive rivals. Detailed sound stage and broad imaging with a good, even range of tonalities. Combined with an SME 309 it achieves great results, with a massive sound stage. Tonalily smooth with a warm midrange, but a little too laid back. With fine detail resolution, transparency and a neutral balance the Reson n1 represents super value.

**Turntables**

<table>
<thead>
<tr>
<th>Price Range</th>
<th>£</th>
<th>Year</th>
<th>Verdict</th>
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<td>Origin Live Oasis-A</td>
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<td>Project Perspective</td>
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<td>Technica SL-1200 LTD</td>
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Nici looks and a good sound, but can be bothered on price.

**Phono Stages**

<table>
<thead>
<tr>
<th>Price Range</th>
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<th>Year</th>
<th>Verdict</th>
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<tbody>
<tr>
<td><strong>£800-£1499</strong></td>
<td></td>
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</table>
| Aphexus Symphony | £1865 | Nov 92 | The Symphony has to be one of the best the British can offer. It’s expensive, but a true sophisticate. Fast and detailed with crisp sheet treble and clean, deep bass.
| Michell Orbe | £1950 | Apr 99 | |
| Origin Live Oasis-S | £2250 | Oct 98 | |
| PT Anniversary | £2390 | Oct 96 | |
| SME Modal 20 | £2500 | Oct 92 | |
| Wilson Benesch | £2775 | Jul 96 | |

The Oasis-S is a cool, lean but very transparent performer thanks to battery power. Up against strong competition. With its battery supply and ultra-quiet DC motor, the Pink displays great accuracy and neutrality. A top-flight deck. Thaas a deck for those with a substantial record collection who demand the best. Exemplary sound.

**Phono Stages**

<table>
<thead>
<tr>
<th>Price Range</th>
<th>£</th>
<th>Year</th>
<th>Verdict</th>
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<tbody>
<tr>
<td><strong>£130-£799</strong></td>
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</table>
| Audio Immanence P2 | £749 | Feb 95 | Fantastic bass and super insight make this one of the best MC phono stages around. A beautifully made, fine-sounding device that looks great too.
| Dacor DP Drive/DP-02 | £350 | Sep 97 | |
| DPA DSP 20/65 | £495 | Oct 94 | |
| EAR 845 | £340 | Oct 94 | |
| Kindermusik P Caucas | £325 | Oct 94 | |
| Lehmann Black Cube | £395 | Oct 98 | |
| Mofet laevense | £528 | Oct 98 | |
| Sonneteer Sedley MC/MM | £399 | May 98 | |
| Unison Simply Phono | £495 | Mar 95 | |

The Symphony has to be one of the best the British can offer. It’s expensive, but a true sophisticate.

At Arcam we believe that buying hi-fi is a serious business. Before splashing out, we believe that you should sit back and consider just what you expect for your money. Quality of sound, reliability, value for money, technical excellence...these are standards by which Arcam hi-fi is judged...and is found to excel. But don’t just take our word for it. A glance through any hi-fi magazine will reveal that our efforts are applauded more than almost any other manufacturer. To find out why, complete the coupon opposite and tell us which products you’re considering. We’ll send you independent reviews of suitable Arcam equipment. (We’ll give you our own views by including a colour brochure with details of our whole range).

But neither we nor the critics are the final judges. You are.

So we’ll also send you a list of dealers where you can sample the Arcam experience for yourself.
Phono Stages £ Year Verdict

<table>
<thead>
<tr>
<th>Model</th>
<th>Year</th>
<th>Price</th>
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<tbody>
<tr>
<td>Ortofon 540</td>
<td>May 93</td>
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<td>Grado Prestige Silver Goldring 1012GX</td>
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<td>Goldring 1042</td>
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<td>DNM Mica</td>
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<td>Ortofon MC15 Super II</td>
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<tr>
<td>SME 309</td>
<td>Apr 99</td>
<td>£3750</td>
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Despite a sizeable price tag the Anthem offers a smooth, lucid sound and superb build quality. Instruments can have a somewhat flat perspective, but excellent clarity. Despite a sizeable price tag the Anthem offers a smooth, lucid sound and superb build quality. Instruments can have a somewhat flat perspective, but excellent clarity.

Cartridges £ Year Verdict

<table>
<thead>
<tr>
<th>Model</th>
<th>Year</th>
<th>Price</th>
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<tbody>
<tr>
<td>Ortofon MC30 Supreme</td>
<td>May 94</td>
<td>£899</td>
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<tr>
<td>Ortofon MC20 Supreme</td>
<td>May 97</td>
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<td>Ortofon MC20 Extra</td>
<td>Mar 97</td>
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<td>SME 309</td>
<td>Jan 97</td>
<td>£689</td>
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<tr>
<td>SME 309</td>
<td>Mar 92</td>
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<tr>
<td>SME 309</td>
<td>Dec 98</td>
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<td>SME 309</td>
<td>Nov 97</td>
<td>£840</td>
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Sonic Frontiers Phono 1 is a superb all-round phono stage.

Cartridges £ Year Verdict

<table>
<thead>
<tr>
<th>Model</th>
<th>Year</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Ortofon MC30 Supreme</td>
<td>May 94</td>
<td>£899</td>
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<tr>
<td>Ortofon MC20 Extra</td>
<td>Mar 97</td>
<td>£185</td>
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<tr>
<td>SME 309</td>
<td>Jan 97</td>
<td>£689</td>
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<tr>
<td>SME 309</td>
<td>Mar 92</td>
<td>£828</td>
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Sonic Frontiers Phono 1.

Tone-arms £ Year Verdict

<table>
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<tr>
<th>Model</th>
<th>Year</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>SME 309</td>
<td>Jan 97</td>
<td>£689</td>
</tr>
<tr>
<td>SME 309</td>
<td>Mar 92</td>
<td>£828</td>
</tr>
</tbody>
</table>

Russ Andrews Accessories Ltd., Edge Bank House, Kendal, LA8 9AS

Hi-Fi World

"They've now taken up permanent residence in the system!"  Dec '97

Construction won’t worry SME but its sound quality will unsettle a lot of the competition. These modified arms are a considerable improvement on the originals. Tight, neutral sound with good tonality, but lacks the VAs pace and precision.

Russ Andrews

Hi-Fi World

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Buying Guide

Full potential of your system

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Hi-Fi World

World Radio History

JULY 1999 79
Zouch Audio Ltd

WORLD CLASS HIGH FIDELITY

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### Tuners £ Year Verdict

**Under £300**

<table>
<thead>
<tr>
<th>Tuner</th>
<th>Price</th>
<th>Year</th>
<th>Verdict</th>
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<tbody>
<tr>
<td>AMC T-7</td>
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<td>Jul 97</td>
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<tr>
<td>Cambridge T4080</td>
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<tr>
<td>Harman/Kardon TU-950</td>
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<tr>
<td>Mission Cyrus FM7</td>
<td>£125</td>
<td>Jan 95</td>
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<tr>
<td>Onkyo T401</td>
<td>£125</td>
<td>Jan 95</td>
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<tr>
<td>Regens Radio</td>
<td>£125</td>
<td>Jan 95</td>
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<tr>
<td>Sony ST-SA3ES</td>
<td>£125</td>
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<tr>
<td>Yamaha TX5800 ROS</td>
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<tr>
<td>Creek T43</td>
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<td>Marantz ST-17</td>
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<td>Magnum Dynalab FT10</td>
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<td>Kenwood KT-2080</td>
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<td>Denon TU-S10</td>
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<td>NAD 702</td>
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<td>Meridian 504</td>
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<td>Pioneer F-504RDS</td>
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<td>Naim NAT 03</td>
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<td>TAG McLaren T20</td>
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<td>Linn Kremlin</td>
<td>£125</td>
<td>Jan 95</td>
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<tr>
<td>Fanfare FT1</td>
<td>£125</td>
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<tr>
<td>Burmester</td>
<td>£125</td>
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<tr>
<td>Rotel RT-900AX</td>
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<td>Thorens TR 3000</td>
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**£300-£799**

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<td>JVC TD-V662</td>
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<td>Grundig CF4</td>
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<td>Denon ORM-650S</td>
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<td>Aims All-F5H</td>
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<td>Denon DAM</td>
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<td>Mar 93</td>
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<td>Teac V-610</td>
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<td>Sony TC-K490</td>
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<td>Rotel RD-960BX</td>
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<td>Yamaha KX-580 SE</td>
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**£800-£1000**

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<td>Panasonic FT 9</td>
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<td>Luxman M-9010</td>
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<tr>
<td>Aiwa MD-1600</td>
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<tr>
<td>Nakamichi DR1</td>
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**Over £1000**

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<td>Audio Technica AD-9500</td>
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<td>Apr 98</td>
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<td>JVC D-RM6000</td>
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<tr>
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### Cassette £ Year Verdict

**Under £300**

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<td>Aiwa AD-9500</td>
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<tr>
<td>Nakamichi DR1</td>
<td>£150</td>
<td>Apr 98</td>
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</tbody>
</table>

No Dolby S, but three heads and two capstans make the Aiwa a bargain. Good enough for the price and no worse than the competition.

### Tuners £ Year Verdict

- **Marantz ST-57**: £130. The T500 is one of the most gifted tuners under £100; a very accomplished all-rounder performer.
- **Onkyo T401**: £130. Smooth, even balance allows the RT-2080 to convince with whatever it's receiving. £130 well spent.
- **Kenwood KT-2080**: £130. The ST-SE700 is one of the best at this price. LW reception is a welcome bonus.
- **Regens Radio**: £130. One sole mark against the class-leading transparency is its slightly dry character.

### Cassette £ Year Verdict

- **Sony TC-K311**: £130. Not a bad buy at all and a very good fit for budget and mid-price systems.
- **Thorens TR-3000**: £130. If you want something for casual listening with superior aesthetics, this might be the one for you.

**VINYL**

- **TAG McLaren T20**: £125. This is the one in the price bracket.
- **Linn Kremlin**: £125. A remarkably musical and natural sounding tuner. Unbeatable at the price, or even twice the price for that matter.
- **Fanfare FT 1'**: £125. A competent machine, but time has taken its toll on the sound quality.
- **Burmester**: £125. One sole mark against the class-leading transparency is its slightly dry character.
- **Rotel RD-960BX**: £125. A competent machine, but time has taken its toll on the sound quality.

**Cassette £ Year Verdict**

- **Aiwa MD-1600**: £125. Extensively well built with a lucid if slightly dry sound. The only real drawback is the high price.
- **Rotel MI-90RHF10**: £125. This classy looking tuner can hold its head up high amongst the best tuners at the price.
- **Sanyo TC-3150**: £125. A competent machine, but time has taken its toll on the sound quality.
- **Teac V-610**: £125. A competent machine, but time has taken its toll on the sound quality.

**Cassette £ Year Verdict**

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- **Aiwa MD-1600**: £125. Extensively well built with a lucid if slightly dry sound. The only real drawback is the high price.
- **Sanyo TC-3150**: £125. A competent machine, but time has taken its toll on the sound quality.
- **Teac V-610**: £125. A competent machine, but time has taken its toll on the sound quality.
The SUPERCLOCK is a new concept in digital master clock design. Simply the Ultimate CD upgrade. The latest in CD master clock design, resulting in a new level of high fidelity and conformance. Features comprehensive circuit topology using digital and analog techniques, and the time-square meter utilizes a very high speed IC to provide a precision square wave clock signal.

- Greater improved resolution and detail
- Extended accurate bass with real weight, control and presence
- High frequencies have less glare and hardness at all listening levels

The SUPERCLOCK is available exclusively from AudioCom (UK) and can be fitted to any CD player transports using the following frequencies: 11.2594MHz, 16.934MHz or 22.3792MHz. Modifications are carried out at AudioCom UK. It is also available with instructions for the technically competent.

**Buying Guide**

### Cassette £ Year Verdict

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Year</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akai AD-S560</td>
<td>£350</td>
<td>Feb 96</td>
<td>Vice-free playback is mirrored by impressive recording.</td>
</tr>
<tr>
<td>Denon DRS-410</td>
<td>£300</td>
<td>Jan 92</td>
<td>On the right tapes, the Denon repays with delightful sound quality.</td>
</tr>
<tr>
<td>JVC FDV-1919R</td>
<td>£400</td>
<td>Sep 92</td>
<td>Disappointing on reply but recording is another matter.</td>
</tr>
<tr>
<td>Kenwood KX-7060S</td>
<td>£330</td>
<td>Dec 94</td>
<td>Convincing all-rounder except for heavy-handed noise reduction.</td>
</tr>
<tr>
<td>Nakamichi SN-8</td>
<td>£550</td>
<td>Jan 92</td>
<td>The Cassette Dock 1.5 has no news in its ability to recreate a realistic performance.</td>
</tr>
<tr>
<td>Nakamichi DR-1</td>
<td>£790</td>
<td>Jun 93</td>
<td>Not perfect but as close as one can get for the money.</td>
</tr>
<tr>
<td>Nakamichi DR-3</td>
<td>£300</td>
<td>Mar 93</td>
<td>Unfortunatly keeping the price down keep performance below Nak's norm.</td>
</tr>
<tr>
<td>Onkyo TA-290</td>
<td>£230</td>
<td>Oct 94</td>
<td>Top transport but the electronics aren't on a par.</td>
</tr>
<tr>
<td>Pioneer CT-F95</td>
<td>£1000</td>
<td>Mar 97</td>
<td>On chame and fercil, the '95 is smooth and natural. Not so good with metals</td>
</tr>
<tr>
<td>Pion'F CT-5560S Precision</td>
<td>£340</td>
<td>Feb 99</td>
<td>Three words, ease of use and high quality make the Dolly S equipped Precision a strong contender</td>
</tr>
<tr>
<td>Philex CT-5740iS</td>
<td>£430</td>
<td>Jun 96</td>
<td>Complex but superb in every important area.</td>
</tr>
<tr>
<td>Sony TC-K6115</td>
<td>£330</td>
<td>Feb 94</td>
<td>Muffled on pre-recorded but pulls out all the stops on recordings.</td>
</tr>
<tr>
<td>TocT V-6030S</td>
<td>£550</td>
<td>Nov 97</td>
<td>One of the highest quality Dolly S decks available.</td>
</tr>
<tr>
<td>Technics RS-A27</td>
<td>£300</td>
<td>Jul 96</td>
<td>Gogolo bass but not and treble lack dynamics. Auto-tunes properly on mass.</td>
</tr>
</tbody>
</table>

### DVD £ Year Verdict

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<th>Model</th>
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</tr>
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<tbody>
<tr>
<td>Denon DVD-5000</td>
<td>£700</td>
<td>Aug 98</td>
<td>The Denon is a fine performer with CD and barbied still with 24/96.</td>
</tr>
<tr>
<td>Denon DVD-5900</td>
<td>£1500</td>
<td>Mar 99</td>
<td>Build in second to none. Sound is very solid convincing, but not as musical as the 3000.</td>
</tr>
<tr>
<td>Panasonic DVD-A360</td>
<td>£700</td>
<td>Jul 98</td>
<td>The A350 wipes out the CD only competition at the price and threatens players up to £2000.</td>
</tr>
<tr>
<td>Panasonic DVD-L10</td>
<td>£1600</td>
<td>Nov 98</td>
<td>It isn't cheap, but it's an outstanding portable and a capable domestic device.</td>
</tr>
<tr>
<td>Sony DVP-5715</td>
<td>£700</td>
<td>Aug 98</td>
<td>The Sony is warm and smooth but lacks clarity and precision.</td>
</tr>
</tbody>
</table>

### Headphones £ Year Verdict

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<tr>
<th>Model</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Ergo Model 2</td>
<td>£140</td>
<td>Mar 99</td>
<td>Wonderfully lucid and transparent panel-like sound.</td>
</tr>
<tr>
<td>Jacton Pilot 2</td>
<td>£140</td>
<td>Mar 99</td>
<td>Clarity and openness are their traits, rather than slamming bass, but still good value.</td>
</tr>
<tr>
<td>Serengeti HD-580</td>
<td>£206</td>
<td>Nov 98</td>
<td>In the company of a smooth, warm system the 350s can shine.</td>
</tr>
<tr>
<td>Sennheiser HD-580</td>
<td>£1000</td>
<td>Feb 95</td>
<td>Electrostatic that set a class standard and can put a case for chucking out your power amp and speakers.</td>
</tr>
<tr>
<td>Vivanco FH-2700</td>
<td>£60</td>
<td>Mar 98</td>
<td>Have a lot of potential but basic operating problems have to be cleaned up first.</td>
</tr>
<tr>
<td>Vivaldi 3000</td>
<td>£50</td>
<td>Nov 95</td>
<td>Excitement that is rarely heard in headphones, but have a little trouble with heavy orchestral loads.</td>
</tr>
</tbody>
</table>

### CD Transports £ Year Verdict

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<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>DPA Enlightenment</td>
<td>£995</td>
<td>Mar 95</td>
<td>Solid and lifelike sound with Rock music and full bodied on Classical.</td>
</tr>
<tr>
<td>Kenwood DP-3901</td>
<td>£350</td>
<td>Feb 92</td>
<td>Superb build for the money and a very musical sound. Benefits greatly from clocking.</td>
</tr>
<tr>
<td>Rotel RX-644</td>
<td>£455</td>
<td>Jul 95</td>
<td>Good, clean dynamic sound with a neutral and pure midrange tone.</td>
</tr>
<tr>
<td>Sennheiser HE-60V7U</td>
<td>£1000</td>
<td>Feb 95</td>
<td>Electrostatic that set a class standard and can put a case for chucking out your power amp and speakers.</td>
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<td>Micromeuse Duo</td>
<td>£3455</td>
<td>Apr 93</td>
<td>Excellent build quality and a sound quality to match.</td>
</tr>
<tr>
<td>Monarchy DT-40A</td>
<td>£1555</td>
<td>Jun 94</td>
<td>Isn't cheap but has a solid dependable sound with a big, powerful presentation.</td>
</tr>
<tr>
<td>Parasound CB-2000</td>
<td>£1695</td>
<td>Jan 95</td>
<td>The belt drive is an interesting idea but the Parasound is bettered by cheaper transports.</td>
</tr>
<tr>
<td>PT Cardinal</td>
<td>£1400</td>
<td>Feb 95</td>
<td>Heart-stopping speed and impact contribute to what is an exceptionally good machine.</td>
</tr>
<tr>
<td>Sony Disc Master</td>
<td>£820</td>
<td>May 98</td>
<td>Top flight machine with an easy, musical and enjoyable sound, for those that can afford it.</td>
</tr>
<tr>
<td>Teac V-5500</td>
<td>£1600</td>
<td>Jul 94</td>
<td>A handsome machine both sonically and aesthetically. We love the camera aperture-style loading system.</td>
</tr>
<tr>
<td>Technics TC-2000</td>
<td>£1200</td>
<td>Apr 96</td>
<td>A soft and warm sound will please vinyl lovers, but it’s not the last word in detail.</td>
</tr>
</tbody>
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<td>Monarchy DT-40A</td>
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<tr>
<td>Parasound CB7000</td>
<td>£1695</td>
<td>Jan 95</td>
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<tr>
<td>Sennheiser HE-60V7U</td>
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**SuperClock...a new concept in digital master clock design**

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**World Radio History**
Ma Cherry Amour

Can Pro-ject's Classic Cherry turntable seduce Jon Marks's ears as well as his eyes?

Not everybody might agree, but to my eyes anyway turntables just seem naturally more attractive components than CD players. Amplifiers suffer from the same problem of what to do stylistically with a box full mainly of air - the purposeful black look is obviously the choice of many. Record decks offer more room for manoeuvre, and something as simple as a layer of veneer can work wonders for the aesthetics of vinyl replay.

Pro-ject have evidently cottoned on to this fact to judge from their Classic Cherry. A slab of MDF wrapped up in a fetching Cherry veneer, it's so much more appealing than bog-standard black Ash alternatives. The bottle green of the glass platter sets it off a treat too, although the felt mat hides it most of the time. Sitting under the platter is a plastic sub-platter on a bearing of decent tolerance. Drive comes from an AC synchronous motor mounted in a rubber-band cradle to minimise vibration transmission.

Included in the £450 asking price are an Ortofon 510 MkII MM cartridge (reviewed on p59 of this very issue), a record clamp and Pro-ject's own tone-arm, its chunky arm-tube supported on gimbal bearings. Bias is by the traditional weight-and-string method, and the 510's output reaches the rest of the system via a basic phono-to-phono cable that plugs into the sockets on the deck's rear, which at least enables easy experimentation. Finally, hopping between 33 and 45rpm is accomplished by moving the belt from the smaller pulley diameter to the larger.

Set-up should be a piece of cake - provide a level, low-vibration surface for the Classic to reside on, remove the motor's transit screws, put on the belt and away you go (assuming the arm and cartridge have been pre-aligned by your dealer). I use the word "should" because our review sample hadn't been correctly assembled when it left the factory - the arm's gimbal bearings had not been tightened at all, rendering it unusable. Sample No2 duly arrived and was set up alongside an MVL A2+ integrated and Quad 57 electrostatics.

Just out of curiosity I tried the Classic with its motor transit screws in place. The deck turned out to be a surprisingly classy performer, with a punchy, rhythmic presentation of the first disc on the platter, The Thompson Twins' Into The Gap (well, everyone's got the odd musical skeleton in their cupboard?) OK, there was some top-end emphasis attributable to the 510 MkII cartridge, but overall, the Classic showed promise.

After removing the motor screws and pressing the Twins in place with the supplied clamp, I set the needle down once more. Immediately noticeable were better detail and clarity, especially in the sound stage which had considerably greater depth than before. The midrange and treble were smoother too, which produced a more even tonal match between deck and cartridge.

Hanging finished with the Twins, I headed for some Bartok instead. The Pro-ject kept its cool in the face of a full orchestral onslaught, maintaining its transparency and precision imaging. Bass avoided the common pitfall of budget boom and displayed good articulation in spite of background noise being slightly more prominent than I had hoped.

The numbers of people wanting to get into vinyl at this late stage in the LP's life may be dwindling, but with turntables such as the Classic Cherry there are still good reasons to do so. With its tasty looks and solid build quality (including a main bearing free from play), it makes the black disc an attractive proposition. The only fly in the ointment is the somewhat doubtful consistency of the factory adjustment - check yours has a correctly assembled tone-arm before parting with your cash.

HI-FI WORLD JULY 1999
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G.A. Briggs

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RADIO DESIGNER'S HANDBOOK
4th Edition
Fritz Langford-Smith
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World Radio History
Shahinian

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Internet: www.epos-acoustics.com
The history of the Nakamichi name is as long and varied as any in the audio industry. Started in 1948 by Etsuro Nakamichi, the company produced its first tape recorder in 1950. However, it was almost 20 years later that their output started to gain audiophile popularity. 1973 saw the launch of the first cassette machine (the 1000) and the rest, as they say, is history, culminating in their classic three-head, auto-reverse Dragon. Basically, no self-respecting cassette user would have been found dead without one of their machines.

The Eighties saw Nakamichi branching out into other audio fields such as amplifiers, tuners, receivers and even the huge TTX-1000 direct-drive turntable with a built-in computer to auto-centre eccentric records. After the death of Etsuro Nakamichi in 1982, things foundered a little and they stopped producing components for the UK market. However, thanks to BBG Distribution, we now have a brace of fresh bits like the RE-10 receiver to look forward to.

Cosmetically, the RE-10 is a bit of a beast, its chunky dimensions and solidity hinting at the quality end of Japanese manufacturing. With a Nakamichi DVD player in the pipeline, it's no surprise that there's a dedicated input next to those for CD, Aux and Video. Oh, and don't forget the Tape and VCR loops, a subwoofer out and sufficient binding posts for two pairs of loudspeakers! On the fascia reside the defeatable Bass and Treble controls as well as Balance, Loudness, Mute and Volume.

As far as the amplification goes, the RE-10 certainly has plenty of clout - 100watts per channel, to be precise. When I first hooked it up to a Denon DCD-1650AR and Magneplanar SMGas, this much was obvious. Relaying a Chandos recording of Tchaikovsky's 4th Symphony, the Nakamichi showed its mettle from the very start. The opening brass calls were so pronounced you could probably have heard them in Kiev! Subtle, no, but very exciting. The following silky string phrases highlighted the hefty bass of this receiver - double-basses and 'cellos, although quite metallic tonally, were very strong and powerful, bringing real depth to the orchestra.

Orbitals new Middle Of Nowhere was next in line. As the album's momentum grew, so did the RE-10's involvement with the music. While the excitement and precision of this sort of presentation were bonuses, the sound was also very solid-state - warmth and smoothness weren't fortes; rhythmic attack and punch took that honour. One other disappointment was the lack of real depth in the sound stage; even through the Magneplanars, the sound was 'left to right' more than 'front to back'.

The tuner side of the operation performed in a manner similar to the amplification. With a Radio 4 broadcast, the result was clean and crisp, voices centred between the 'speakers. Again, depth perspectives were limited and there was some sibilance present which could make longer listening sessions tiring.

Receivers are invariably a compromise where compactness and cost are more important than outright sonic performance. For those who specifically require a combined tuner and amp with loads of power and an up-front way with music, the RE-10 has its merits - its radio section holds its ground well against tuners in the £120-£150 bracket. On the other hand, if it's purely high-grade sound you're after, Cambridge's T500 tuner and A1 MkIII integrated offer a more transparent and cohesive performance that's marginally lighter on the wallet.

HIFI WORLD
JULY 1999
HD83 VALVE HEADPHONE AMPLIFIER KIT

The HD83 is our new headphone amplifier, a beautifully simplistic design using Mullard E88CC valves, a triode and power pentode housed in the same envelope. It works directly from any source be it a CD, tape, tuner etc., or from an amplifier's tape out or pre-amp sockets. The circuit utilises high specification output E and I output transformers that will drive any headphone load from 16 ohms to over 300 ohms depending on how the secondaries are wired up. The HD83 is a single ended design with the power pentode wired up in triode configuration for that added purity and is a quiet as a mouse. For sound quality Jon Marks says, "The bass is punchy and controlled without becoming artificial, while treble has the crispness of the best solid-state, with the tonal purity, delicacy and speed associated with valves. External dimensions 18cm(w) x 30cm(d) x 8cm(h). Weight 4kg.

Please note that we are selling the full range of Sennheiser headphones at discounted prices when purchased in combination with our HD83. Please ring 0171 625 8032 for further details.

K5881 MkII VALVE AMPLIFIER KIT

A 20watt, Class A power amplifier that uses reliable Russian 5881 output valves, a military version of the American 6L6, designed for low distortion audio work. Now with a super shunt regulated push-pull (SRPP) input stage K5881 offers amazing sound quality. It can be used with a simple passive pre-amp or one of our own pre-amplifiers, and it matches modern loudspeakers well.

Weight 15kg external dimensions with valves 40cm(w) x 32.5cm(d) x 17cm(h).

K5881 MkII Upgrade kit

£33

K5881PSE VALVE AMPLIFIER KIT

An audiophile parallel-single-ended valve amplifier at an affordable price. K5881PSE uses the reliable Russian 5881 output valve. Its 17watts is enough to drive most loudspeakers, making high-end sound quality and design available to everyone. Can be easily monoblocked to give 32watts. Weight 17kg external dimensions with valves 40cm(w) x 32.5cm(d) x 17cm(h).

£650

300B VALVE AMPLIFIER KIT

This is a specialised 28watt amplifier based on the highly linear 300B triode valve. Our 300B runs in Class A, giving one of the most sweet, open and neutral sounds possible today. Matched with good loudspeakers, it is unsurpassed. All parts are included in the kit, except valves since different 300B makes are available. Weight 26kg, external dimensions with valves 44cm(w) x 35cm(d) x 20cm(h).

£850

KEL34 E&I VALVE INTEGRATED AMPLIFIER KIT

The KEL34 E&I version is our second generation budget stereo integrated valve amplifier, utilising E&I output transformers, providing a massive 40 watts of pure valve sound. With 4 line level inputs and one tape output, fully controllable from the front panel, the KEL34 E&I is a simple and elegant circuit design using a 6AU6 pentode input valve, an ECC82 double-triode phase splitter and a push-pull pair of Tesla, 1J branded EL34s. The result is a typically sweet, open valve sound with atypical bass control and power. The KEL34 E&I will work its magic into 'speakers of average sensitivity too. Jon Marks says, "tonally the KEL34 E&I is a bit of a smoothie compared with the original toroidal version, a major upgrade in every area of performance. It has a fast, dynamic sound, plucked guitar strings and bass drum enjoy crisp leading edges and great impact. Clear imaging and spacious sound staging meant voices and instruments really jumped out of the loudspeaker boxes. Overall the KEL34 E&I is a beautiful power amp!" At the price, this kit is second to none and will open up the benefits of valve amplification to a whole new class of audio nuts! Weight 12kg. External dimensions with valves: 33cm(w) x 27.5cm(d) x 18cm(h).

£315

KLPP1 VALVE PHONO PREAMPLIFIER

KLPP1 has five line inputs, a tape input with monitor, and a unique low noise valve MM/MC phono stage. There is a switchable subsonic filter to prevent output transformers of valve amplifiers saturating. The line stage has gain, so it will drive any power amplifier. Audio grade components are used and many parts are custom made for highest quality. KLPP1 has a super clear sound, sweet and detailed through line and phono inputs. Weight 6.5kg external dimensions 28.5cm(w) x 23cm(d) x 8cm(h).

£495

KL1 VALVE LINE PREAMP

The KL1 line level preamp uses one elegant cathode follower line drive circuit to give a sound of remarkable clarity and detail. The components are all high quality and include Alpex volume control, Sovtek valves, silver plated wire etc. With a gain of x1, it matches our sensitive power amplifiers. Beautifully built, with solid machined alloy fascia and gold anodised knobs, it looks compact and elegant in the home. Weight 5kg external dimensions 28.5cm(w) x 23cm(d) x 8cm(h).

£345

K5881PSE & KLPP1 use the same chassis

NEW!

KITS HAVE NEVER BEEN MORE!
**KLS10 HIGH TECHNOLOGY COMPACT MONITOR**

Want high technology loudspeakers, without a high cabinet high price? You couldn’t do better than build KLS10, our latest mini-marvel. Using an Audax carbon fibre bass/midrange unit, married to the world’s most advanced tweeter, the piezo-electric gold dome HD3P from Audax, KLS10 offers high performance from a small package. The main ‘speakers are designed to work alone, or with a dedicated subwoofer to extend their bass. Alone, they are suited to near-wall mounting and can be tuned by port adjustment to suit personal taste and location. They are easy to drive and need just 30-60-watts. Those who want the bass of a big loudspeaker can build our inexpensive dedicated subwoofer at a little extra cost or intrusion into the room, this custom designed addition offers big loudspeaker performance. KLS10 is unique. Technically advanced, yet compact and relatively inexpensive. There is little to match it. Sensitivity 89dB 1W/1m, 15mm MDF, internal volume 9Ltrs, external dimensions 19cm(w) x 31cm(h) x 23cm(d).

**DRIVE UNITS & CROSSOVER KIT**
£394.00

**DRIVE UNITS ONLY**
£358.00

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**KLS9 TWO WAY FLOORSTANDER**

Here’s a storm for you - KLS9, with its BB4 alignment bass cabinet and Audax High Definition Aerogel 8in bass/midrange unit. Designed by Noel Keywood to possess optimal bass damping and a clean step response. Aided by a teesy bit of bass lift, KLS9 really thunders; it will re-arrange your furniture. But it does not waffle, falling silent when there’s no bass in the music. Aided by a high power 1in fabric dome tweeter, KLS9 is detailed, evenly balanced and images superbly. It is an easy 12ohm load and is 86dB sensitive. For amps up to 60V. Easy to build and great for beginners. Internal volume 70Ltrs, external dimensions 25cm(w) x 93cm(h) x 40cm(d).

**DRIVE UNIT PACK**
£175.00

**DRIVE UNIT & CROSSOVER KIT**
£260.00

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**KLS3 3 WAY CARBON-FIBRE DRIVER LOUDSPEAKER**

KLS3 uses extremely light and stiff carbon-fibre cone drive units for a fast, accurate sound. A dedicated 4inch carbon-fibre midrange drive unit provides the clean, smooth and detailed midrange characterised by superb projection. Its high 90dB sensitivity and near flat 8ohm impedance make it one of the easiest loudspeakers to drive. An ideal loudspeaker for high-end valve amplifiers.

25mm MDF, internal volume 60Ltrs, external dimensions 26cm(w) x 100cm(h) x 35cm(d).

**DRIVE UNIT & CROSSOVER KIT**
£350.00

**DRIVE UNIT PACK**
£230.00

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**KLS4 2 WAY CARBON-FIBRE DRIVER LOUDSPEAKER**

A two way standmounter using stagger-tuned reflex loading for good bass, plus light and fast carbon-fibre drivers. Sensitivity 86dB at 1W/1m, 18mm MDF, internal volume 13.5 Ltrs, external dimensions 21-6cm(w) x 42cm(h) x 25.8cm (d).

**DRIVE UNIT & CROSSOVER KIT**
£230.00

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**KLS7 2 WAY CARBON-FIBRE DRIVER FLOORSTANDER**

Compact and affordable two way reflex loudspeaker. KLS7’s slim dimensions make it easy to accommodate, but it uses top quality carbon-fibre drivers, so performance isn’t compromised. An audiophile bargain. Sensitivity 86dB at 1W/1m 12mm MDF, internal volume 18Ltrs, external dimensions 15cm(w) x 80cm(h) x 22cm(d).

**DRIVE UNIT & CROSSOVER KIT**
£195.00

---

**KLS10 GOLD SUBWOOFER**

Our new KLS10 Gold subwoofer was designed to complement KLS10 Gold stand mounters by providing a deep and open bass. The subwoofer is inexpensive, easy to build, comprising a simple crossover network to a high quality 8 inch Aerogel, dual voice coil bass unit. A must for all KLS10 Gold customers. Sensitivity 89dB, volume 25 litres, external dimensions 28cm(w) x 43cm(h) x 34cm(d).

**DRIVE UNITS & CROSSOVER KIT**
£149.95

---

**KLS8 TWO WAY HIGH SENSITIVITY**

With a sensitivity of 94dB, KLS8 needs very little power. Its 10in. professional bass driver and horn loaded tweeter give it a big sound. Ideal for low power amplifiers. Internal volume 50.5Ltrs, external dimensions 29cm(w) x 65cm(h) x 36cm(d).

**DRIVE UNIT & CROSSOVER KIT**
£260.00

---

**KLS11 3 WAY DESIGN**

Our newest design is a wonderful three way bass reflex enclosure stand mounter. Another star performer, featuring the superb gold dome tweeter, the HD3P. This, married perfectly to a HV100ZO midrange unit and utilising the deep full sound of the 10 inch PK340ZO bass unit. All units are from Audax. As both these units use high definition Aerogel cones they have similar sonic signatures, providing a deliciously gelled sound. Our KLS11 is a quality three way, with powerful bass and midrange driver that work to a high quality 8 ohm impedance. Both units are easy to drive. KLS11 is detailed, evenly balanced and images superbly. It is an easy 12ohm load and is 88dB sensitive. For amps up to 60V.

**DRIVE UNITS & CROSSOVER KIT**
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**DRIVE UNIT**
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By Haden Boardman

Three issues back, Vintage Virtues covered the Decca-Kelly ribbon tweeter story, and as a kind of part two, this month, we are looking at the Decca pick-up cartridges and arms.

As mentioned before in this column, Decca introduced the world’s first high-fidelity system, Full Frequency Range Recording (FFRR), back in 1946. The ‘flagship’ audio set-up was the Decola, an extremely heavy radiogram with a record player. We have to remember that in 1946 raw materials, especially woods, were heavily rationed - a wood license was needed even to buy the stuff. The Decola must have been considered pretty much state of the art to be allowed to use so much of it! With a retail price of 200 guineas, this was as expensive as a small car.

Loudspeakers in the Decola ranged from full-range Goodmans to dual-concentric Tannoys (three of them, all 12in., in an efficient horizontal array). The amplifier was an all-triode, Class A design working in push-pull from input to output and producing five watts from a pair of PX25s, with less than 0.5% distortion. These valves run with 500V across them and 55mA of current each; I feel Decca may be a little conservative in their output figures.

Some commentators have called the Decola’s amplifier “unsophisticated”; nothing is further from the truth. Yes, the PX25 was an established valve, but to quote from the Osram Valve Company’s literature for a moment: “Where power supplies are not restricted, triodes are preferable because their lower impedance is conducive to high fidelity... An amplifier for sound reproduction of the highest possible fidelity should centre around a push-pull triode stage” (Osram TP1, Jan. 1949).

The amp was clearly designed at the end of the 1930s and then ‘put on hold’ for the duration of the war. With its balanced topology from input to output, it is something a lot of modern valve engineers could do with studying in closer detail.

The turntable was based around a Garrard RC series autochanger or a single-play mechanism. However, the jewel in the crown was the cartridge with its sapphire tip.

The creation of Arthur Haddy, in its construction Decca’s FFRR pick-up was hardly different from the majority of the pre-war, moving-iron devices which could be found on just about every electric gramophone of the period. It was the attention to detail that set the FFRR apart. As it was made to much tighter tolerances and fitted with a lower-mass, replaceable stylus assembly, the Decca was less suited to playing normal, abrasive 10in. 78rpm recordings than Decca’s own soft-compound discs.

In some ways, it could be argued that Decca merely gathered together several existing new ideas and refinements to make the FFRR system. Whatever the basis for it, it was undeniably the world’s first complete high-fidelity system.

By the mid-Fifties, massive progress was being made in record technology in the home, the studio and disc cutting. In 1958, Decca demonstrated their variation on stereophonic sound, introducing the Full Frequency Stereophonic Sound system (FFSS).

FFSS was the result of an exclusive technique which offered the highest “definition” of sound achieved thus far.
MANTRA AUDIO

**CARTRIDGE SELECTION**

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**SOFTWARES**

- **Motu:**
  - Audio Rec 5.2.8
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in recording. In addition to reproducing each musical instrument in its Full Frequency Range, FFSS recreated them so that where the string section, say, was located to the left side of the orchestra, in your room it would also appear to be on the left. The overall effect was to recreate in your room a "live" orchestra with all its sections in the proper place.

"FFSS brings you the highest definition in recorded sound, whether it be orchestral, chamber, instrumental or vocal music, opera, drama... in fact, any sound." This text is taken from the sleeve notes of Decca's first commercially-available stereo recording, a Journey Into Stereo Sound, Decca number SKL 4001.

In line with the hyperbole, this is one of the most hilarious records ever produced, one which single-handedly introduced the notion of 'ping-pong stereo'. There are steam trains crashing through front rooms, racing cars from Goodwood, the Ceremony Of The Keys at the Tower of London and, of course, the sampler's delight otherwise known as Geoffrey Sumner intoning: "This is a journey into sound, stereophonic sound." The musical interludes never stood a chance.

Find a copy of SKL 4001 and it should still be like new - once the novelty had worn off, I can't imagine anyone sitting down and listening to this nonsense. In defence of Decca, the cost of going stereo has to be considered; two large loudspeakers, twin power amplifiers and a complex stereo pick-up didn't come cheap. The public needed some convincing, which is what all the above was about, novelty or not.

Decca's FFSS pick-up was developed by a BBC engineer called R.W. Bayliff and then presented to Arthur Haddy some time in the mid-Fifties. Even today they are sought after for their unique, up-front sound; with their high output, these beasts can really belt out a tune. The problem with them is that they have a habit of ploughing up the record groove, destroying it slowly over the course of a number of playings.

In this respect, the later London cartridge can be seen as a refinement of the FFSS principle. Along with SKL 4001, Decca launched a new Stereo Decola. In contrast to the rather plain Mark I, the Stereo version was a heavily-ornamented, Regency-style effort with pre-amplifier and tuner hidden behind false drawers, a Garrard turntable under the lid (301 or AP series autochanger with Decca FFSS) and power amps (triode-connected EL34s) and power supplies in the back. 12 EMI tweeters and two 9in. by 13in. bass units occupied the cabinets ends, and a record cabinet lived in its belly. The result was huge, and incredibly heavy - two people can just about pick it up!

Complete, and in good condition, stereo Decolas still command a premium price; despite the drop in overseas demand, a pristine example can fetch £500-£1000. From an audio perspective, unless the cabinet tickles your fancy, this is a very large curiosity.

The most important part of the Decca Stereophonic story is the development of the company's own stereo recording system, referred to by studio engineers as the Decca Tree. In this arrangement, Decca engineers located three Neumann M49c condenser microphones above the conductor's head. One pointed straight forward while the other two pointed to the left and right so that the three had an inverted 'T' profile. Anyone who has heard a classic Sixties Decca recording can vouch for the incredible sound staging and detail this provided.

When it comes to the rest of the line-up, good as the pick-ups are, I cannot recommend anything that actually damages your records as you play them. On the other hand, a Decola (usually to be found in antique shops) would make a great talking point if you have the right room (ie, large Regency hall). The Decca Stereo records are awesome, though, as most Classical music fans will already know. The rarer box sets did fetch high prices, if in mint condition, but prices have fallen recently and copies can be had for as little as a fiver. And did I tell you the one about the early-morning bargain hunter who picked up eight Decca box sets from a car boot sale for £4? These things turn up everywhere...
Column

“...They don’t make ‘em like they used to”: a hackneyed phrase and yet, in the case of much hi-fi on sale today, one which rings very true. Even the most passive of hi-fi consumers can hardly have failed to notice a more lightweight build quality to contemporary hi-fi. With electronics, this process began in the Eighties, whereas it’s been this decade that’s seen the ‘speaker market economized.

In the hi-fi market as a whole, it’s been the price-sensitive budget market that’s suffered most – hardly surprising when you consider that price points simply aren’t shifting. Hence there are still £100 amps and ‘speakers just as there were 15 years ago. Taking inflation into account, the real cost of budget hi-fi has plummeted.

Whether this is a good thing or not depends upon the final product. Certainly when it comes to the budget amp and ‘speaker market I’m not so sure. It’s not hard to see where corners have been cut these days, and I’m not convinced that any sonic advances have been made in the budget ‘speaker or amplifier market over the last 10 years. Without a doubt, budget ‘speakers from Tannoy, Mission, Celestion, Wharfedale and the like would have been far more solidly built then than they are now. In strong contrast, the progress made on £200 CD players is indisputable. The best easily rival players of £1000 from 10 years ago, even if they aren’t built like the proverbial battleship.

Perhaps the reason they don’t make hi-fi like they used to is because they don’t make it where they used to.

snobbery or damage to their image as a UK manufacturer, ‘Made In The EU’ becomes their cover. Of course, 99% of the time this means the former Eastern bloc, but why not just say so?

In the electronics market, NAD are widely seen as having changed the way (and place) hi-fi is manufactured. Although designed and engineered in the UK, New Acoustic Dimension choose to build in Taiwan (not that this harmed sales of the NAD 3020, or failed to give the budget amp market a shot in the arm all those years ago). In the Nineties you’ll find Cambridge and Ariston built in China. Breaking that mould are Arcam and Musical Fidelity, who both still build in the UK despite manufacturing (comparatively) mass-volume products. In the future, however, it wouldn’t be surprising to see either company move production from their home base. After all, Sony build their budget CD players in Hungary, Yamaha in Malaysia and Technics in Germany. Philips chose the former Dutch colony of Indonesia.

It’s in this instance we also see the most excruciating product labelling. Marantz, Philips’ hi-fi specialist subsidiary, seems fit to print the following on the rear of their CD-67 OSE: “Produced under the supervision of Marantz Japan in Indonesia”. How reassuring that the work-force is being supervised!

There is always an exception, and here it’s when a hi-fi manufacturer produces a new format. Then the work will definitely not be farmed out but built at home, by hand if need be. Witness the Dutch-built DCC machines, or the fact that Sony still build MiniDisc players in Japan, despite the fact that the format is now five years old. Likewise, Panasonic and Pioneer DVD players are Japanese built. This makes perfect sense. When getting behind a new product, everything must perform perfectly first time, so the most skilled labour force is needed. And with constant running changes, it helps if they’re near the R & D dept.

Without the public even really being aware of the change, hi-fi has become a truly global product. Let’s hope that it’s enjoyed world-wide. But to all you manufacturers out there, could you please be a little more precise with your labelling? Nobody’s being fooled and there’s already far too much PC-speak in this world as it is.
**Music Reviews**

**SKUNK ANANSIE**

**POST ORGASMIC CHILL**

The feminist mantle and cloak of Heavy Metal might not be one of the world’s natural pairings, but Skunk Anansie’s controversial vocalist Skin doesn’t let that bother her. If anything, her band’s third album following on from Stoosh and Paranoid And Sunburnt merely confirms her unwavering ability to keep her mind focused; there’s no sell-out here.

*Post Orgasmic Chill* kicks off in typically outrageous Skunk-style with a banging little track entitled Charlie Big Potato, a hard-edged Drum ‘n’ Bass number which brilliantly complements Skin’s strong vocals. Many of the subsequent songs then revert to type; in-yer-face, guitar-based numbers, which alternate between mellow verses and angry refrains. At its best there’s the politically-inspired *We Don’t Need Who You Think You Are*; at its worst there’s the shrill and bad-tempered *The Skank Heads*. “Calm down, calm down,” as Harry Enfield’s scousers would say.

With nothing in the league of, for instance, Yes It’s *F***ing Political*, the ‘issues’ which Skin tends to tout somehow get lost in the noise here. On the plus side, there is no doubt that a tremendous amount of effort has gone into the recording, particularly in moulding the band’s newer soft side - the ballads Tracy’s *Flow* and *Lately* are among perhaps the best things they’ve ever done.

*Post Orgasmic Chill*, despite the anti-climactic name, incorporates just about everything from raw Soul and agit-Rock to chilled out grooves and ballads and is a big plus for fans of Skin’s particular blend of Rock revolt.

**ECHO & THE BUNNYMEN**

**WHAT ARE YOU GOING TO DO WITH YOUR LIFE?**

Much to everyone’s surprise, The Bunnymen ended a decade in the wilderness two years ago with the release of their album *Evergreen*. Following its three-part *SourceLab* series, which brought us - for the first time - the likes of France’s very excellent Daft Punk, La Funk Mob and Air, the label marks a new addition to the ‘I can’t believe the French can make cool music’ school.

**VARIOUS SOURCE ROCKS**

Viva La Revolution! Painfully hip Parisian record label *Source* has done it again. Following its three-part *SourceLab* series, which brought us - for the first time - the likes of France’s very excellent Daft Punk, La Funk Mob and Air, the label marks a new addition to the ‘I can’t believe the French can make cool music’ school.

There’s no denying it. Not
BLUR

13

Forget Notting Hill: The Movie; it's been more Notting Hill: The Soap Opera for Damon Albarn over the last two years. The poor, misunderstood Essex lad has been living his life under the microscope, with every cough and spit of his hip West London existence pictured, debated and analysed for the masses. In particular, his long-term relationship with Rock chick par excellence, the academically esteemed but sadly wasted Justine Frischmann (of Elastica) came to a painfully drawn-out end amid lurid, and largely unprintable, rumours.

The wild party house the couple had shared in the heart of the capital’s trendy Notting Hill became the greyest, dullest and, amazingly, the quietest on the street. Damon decamped to a flat nearby, but spent most of his time in Iceland or on tour. Justine milled about, supposedly attempting to finish her band’s Stone Roses-esque second album (it’s still not out after five years).

Throughout this mess, Damon and friends’ Dave and Alex recorded the album 13. A jumble as mixed and patchy as any album can be, experimental, scary and sometimes unlistenable; 13 is nonetheless a major achievement. Following on from the heavier and commercially successful Blur of 1997, and the suspect and considerably Poppier Great Escape of the previous year, this is a great return even if it takes a while to get going.

The album’s opener, Tender (now a worthy hit single with its slow-build-up, inspired guitar playing and full choir, the album goes from the subtle to the epic,DIGME and Swamp Song - to name the two main offenders - are loud and should have been omitted from the album, which at 66 minutes is already too long. Both are loud, lazy and unaccomplished, suggestive only of a confused and angry band. Coffee & TV, sandwiched between them, is welcome to stay, though I’m not so sure about the bizarre but highly original Battle.

1992, the year Damon apparently started dating Justine, is the first of the ‘split’ songs and really quite upsetting. Building up repetitively, with swirling, gnarly guitar screeches, it has a nasty feel that’s not a good sign. It’s over: the word bed/You een se speak volume. Later, in the brilliant Trailerpark, he laments how he lost his girl to the Rolling Stones - a clever pun probably. Then the mood changes to, “Got to get over, got to get better” on Catholic.

13 is best is saved til last. No Distance Left To Run, with the sad but believable words “It’s over”, is a gem of a tune still slow and moving. Actually, there’s nothing even vaguely up-beat on the whole album. While there’s nothing here as depressing as Tricky, God forbid, it’s about as moody as it gets, and for a band who, after three hit albums, could easily be going for the Poppy commercial giant, that’s great news. And in spite of the fact that they’re apparently not as close as they once were, the four members still seem to gel as a musical unit.

A good deal of 13 is hit and miss, but there is much to suggest that Blur will yet, like Radiohead, carry on producing important music well into the millennium. And who knows, there might be a happy ending: the tabloids are already reporting a baby on the way for Damon and his new flame.

Phoenix and Sebastian Tellier, Source Rocks has a slightly more electronic feel to it; think of it as a sort of modern day take on Kraftwerk.

Experimental, highly addictive and incredibly stylish, these tunes are going to be tying up the airwaves throughout the long, hot summer. OK, some of it sounds like porn film material, but all in all it’s as tasty as the ripest Golden Delicious. Me, I’m emigrating to Paris before Petit and Viera lift another cup for Arsenal.

only have they won the World Cup and stuffed us at Wembley, now the French are teaching us about Dance music as well. Featuring 13 as-yet-unreleased demos from a range of unknown French Dance and Hip-Hop acts, including
Gerontius. Unfortunately, just short of originality. In after bar, the composer falls the court. Time after time, bar truth to say that I was expecting a lot from Parry’s end of the court. Time after time, bar after bar, the composer falls just short of originality. In places, especially the moody bits, there are phrases which seem to pre-empt Elgar’s Gerontius. Unfortunately, whereas Elgar mastered the art of sequencing endless unresolved cadences into an intricate musical knot, begging to be untied, Parry opts for tidy ing up as he goes along. The effect is at times, incongruous as those heavy-handed Messiahs we’ve all heard, where the delicate recitative ‘resolves’ are treated as epoch- endingly final ‘Boom! Booms!’ This is all a greater pity because the Royal Philharmonic plays throughout with considerable strength. The soloists (with the exception of the Shepherd Boy who appears to be sight-singing) give good value, particularly Toby Spence as Satan; then again, the devil gets all the best tunes . . .

We should not be in England if singers did not mispronounce ‘the’ as ‘thaar’ at the drop of a hat, possibly as a reminder of our nautical heritage. Mercifully, this isn’t a New Testament oratorio or doubtless we’d have references to the elusive character G. Zarse as well.

Let’s hope that the convention whereby ‘good choral society standard’ implies ‘too poor to issue on record’ isn’t a purely English phenomenon too. I’d love to be more charitable to Guildford Choral Society, but as things wore on I found the catalogue of poor diction, hesitant entries (why not retake?), imbalance between the parts and the standard amateur soprano sotto on uncertain high notes impossible to overlook.

As a reference recording of this work, there is little truly against it even though the overall performance is hardly sparkling. If there happens to come along a recording with professional-standard chorus, it might be worth waiting for. After all, if a Job’s worth doing . . .

Francesco Guerrero
Missa de la Batalla
Escoutez (Battle Mass)
Westminster Cathedral Choir/His Majesty’s Sagbutts and Cornets
James O’Donnell, The Master of Music
HYPERION CDA67075

The choir of Westminster Cathedral have long been champions of Spanish 16th and 17th-century sacred music. This is their second recording dedicated solely to the music of Guerrero. Born in 1528, he spent most of his musical career at Seville Cathedral and was as revered as both Morales and Victoria. During the mid-16th-century, the cathedrals of both Toledo and Seville employed wind bands (so-called ministriles) on a permanent basis. The instruments on this disc, playing throughout the Mass and most of the six remaining pieces, consist of cornets, recorders, shawms (double-reed, oboe-like instruments), sackbuts, dulcian and a chamber organ.

Whilst still using words of the Latin Mass, the thematic origin of Battle Mass itself (one of 19 composed by Guerrero) has, in essence, a secular theme (based on Jannequin’s chanson La Guerre after the battle at Martignano of 1515). However, the setting of the Mass isn’t especially battle-like. Instead of musical spectacles and fireworks, we have a detailed and dignified piece with a fair spattering of ethereal grandness.

The instruments ‘augment’ the vocal lines and add richness and body to an already substantial sound. While this particular approach can result in a veiling of detail, All Hallows, Gospel Oak copes admirably with the intricate polyphony of the Gloria, for example. Of the other pieces on the disc, In Exitu Israel stands out as an interesting oddity, with the mix of instrumental and choral passages curiously bringing to mind the choral anthems of Bruckner, in which trombones accompany the voices.

The Westminster choristers have always had a very distinctive sound. The treble voices possess an exciting edge and the gentlemen are well-supported and powerful - all refreshingly different to the Anglican choral tradition. Combine this with the organic drift of the accompanying musicians and you have what adds up to a wonderful presentation.
 BRAFORD MARSALIS QUARTET REQUIEM COLUMBIA 069655

For 10 years, Branford Marsalis has steered well clear of the definitive in Jazz. He's played sax with Sting, Tina Turner and Gangstarr; led Jay Leno's Tonight Show band; made movies with Danny De Vito; even dep'd for David Murray in the World Saxophone Quartet. What he has steadfastly refused to do is go back and revisit the piano-and saxophone led quartet that formed his first solo outfit after leaving brother Wynton's band in the mid-Eighties. Now, after re-uniting with pianist Kenneth D. Kirkland, we have a glimpse into a future that might have been.

Kirkland's untimely death earlier this year came just weeks after these sessions were recorded (at the very end of 1998), and before the mixing process could begin. As a result, there's an audible directness and unity of purpose in their co-leadership of the Quartet that leaves me yearning for more. They are Kirkland's last recorded dates, and they do him proud.

Kenny always played like a fountain - throwing music up into the wind, defying gravity or melancholy - and from the very first rhythm statement on Requiem his spirit swaggers across the sound stage. Written by Marsalis to elaborate one of Kirkland's signature sounds, his swinging comping behind singers and soloists from Pop to Classical, Doctone also sets out the Quartet's stall: liquid, effortless technique set free over charts that encompass Bop, post-Bop, Fusion, Pop and Swing.

From this seductive beginning, the warm tone Kirkland and Marsalis adopt leaves room for bassist Eric Revis to double-time his way into the limelight without ever sounding forced or frantic. As the instrumentalists slide into the post-Jarrett interpretation of Paul Motian's Trieste, their undoctored versatility shines through. The call to prayer, the call to arms and the call of love-for-sale are all in here. Kirkland's sizzling technique in an extended solo tempts drummer Jeff Watts into one of his kitchen-sink, bravura work-outs as Branford slips smoothly in alongside. Then a lyrical, complex and spacious reworking of A Thousand Autumns carries enough mood changes to soundtrack a short film.

British ears will then be delighted by the astonishing Lykief, a sly Abdullah Ibrahim-style fusion of Township and Modern Jazz that lets the band's voices chase an irresistible melody around three or four distinct rhythms based on the same tempo.

This is where Marsalis says he most wants his music to stand - a living, growing fusion that builds empathy with the audience while challenging re-inventing forms at the same time. Take his rock-steady approach on Bullworth: from a distance, listen out for the Joe Sample simple infectiousness of the melody, and the lick or tow of high-style technique over a four-square Fusion groove.

Three more originals from Marsalis flesh out a Spring must-buy. Branford has stepped back to go three forward, and brother Delfeayo's practised, supportive production has pulled together a fitting last statement from Kirkland. There is no early warning of his death on these tracks, just the sound of a hot, creative musician flourishing in a hot, creative environment, captured largely live on analogue 24-track.

GLENN MILLER MILLER PLAYS MERCER RCA VICTOR 68717

This release finds the Miller band at the height of their powers playing 16 lyrical gems from Porter's equal, Johnny Mercer, recorded when both were flying. And although Mercer's albums with Benny Goodman are better celebrated, Miller's respect for the man he called "The Best" matches Mercer's baritone for baritone.

Miller's band's witty, stylish charts, cushioned by the insouciant confidence of a nation not at war, wink and slide like cats' tails through the singers' legs to mimic Mercer's phrasing. Yet because this is a movie-show tunes compilation, Kumbas, Standards, Dialogue songs, Vamps and Mercer's own inimitable brand of Sunny Side Of The Street optimism supply plenty of bells and whistles over his immaculate songwriting.

There's no end to the hokey harmonies plundered by generations of jingle writers ever since. Which is why it matters that it's Mercer. You get sympathetic and musically remastered definitive performances of Skylark, Fools Rush In, And The Angels Sing, a whole pocket-book full of sure-fire, hold-your-hand pitches and never a phrase that isn't original, inventive and plain, old classy. Leaves, really, when it comes to the words business, and not forgetting Miller and Mercer's Broadway-sequinned but never-the-one you-hear-on-the-radio, Barbershop-to-Gospel version of Black Magic.

If you haven't got these tunes, this era, this sound on a digital carrier already, Miller Plays Mercer is a bargain and a better.
SEB FONTAINE
PROTOTYPE
GLOBAL UNDERGROUND
PR001 CD15P

SEB Fontaine is still one of the leading figures in International club music, after eight years of creating beats and an unmatchable sense of dancefloor House. With over 10 compilation albums under his belt, this Global Underground release is next in a long line of full Fontaine mixes which should not be missed.

Producers Boxed Records have signed Seb to three albums for 1999 and given him full artistic licence. The result is a double CD of deep, hard and funky House with a pioneering flavour. Prototype will appeal to anyone with an ear for a choice as it's one of those mix CDs that will last me 10 years of artrock, zoojazz, postrock and indie and in clubs too.

Stalwart fans will hear favourites such as Club Killer from X-Press, Push from Universal Nation and anthemic crowd-pleasers like Woody McCride's Basketball Heroes. With an unrelenting, solid pace and long, meaty riffs, Prototype delivers hard and fast House like only Seb Fontaine can. The classiness of this pair of discs comes from one man's passion for real House and an understanding of how to build a set properly - the mark of a master at work.

INCREDIBLE
INCREDIBLE SOUND OF DRUM 'n' BASS, MIXED BY GOLDIE

This is the second in a series with a difference. The first of the INCredibles (Trevor Nelson's The INCredible Sound Of R'n'B) was a platform for one man's definition of a genre. To follow are Giles Peterson and Jo Wiley, who will be taking the label into the unfamiliar realm of Indie music. But who better to compile the Drum 'n' Bass collection than Goldie? Not only has he always pushed the barriers of his music to the limit (and sometimes gone too far), but his production, DJ-ing and marketing talents mean he's the perfect choice to design the definitive desert island disc of Drum 'n' Bass.

So what's Goldie's pick? In there are old classics such as Alex Reece's groove-ridden smooth Pulp Fiction for one - not exactly a new cut but one which still sounds good. Then there are darker cases like the dusty The Warning via Code Name John and Doc Scott's Unofficial Guest.

Dipping illogically into hard-core beats of the Ram Trilogy variety as well as Jazzed-up rhythms like Grooverider's, it's certainly a diverse collection, even if it lacks direction. The number of tracks taken from Goldie's own Metalheadz label may explain the choice of music better than anything else, and you can't help but notice a track of his own squeezed on at the end.

Unmixed and running to 70 minutes, this is a good introduction to a range of quality Drum 'n' Bass, but bear Goldie's influences in mind before drawing conclusions on the genre as a whole - the man's about to become the new Bond villain, which says it all really.

PETE TONG
ESSENTIAL COLLECTION - HUMAN TRAFFIC
FFRR/LONDON

Despite the hype, it remains to be seen whether Human Traffic can set the precedent for club film culture. The word on the street is that here, at last, is an accurate portrait of clubbing on celluloid. It's a crafty compilation of current classics like System F's Out Of The Blue and CJ Bolland's It Ain't Gonna Be Me alongside anthems such as Age Of Love.

Human Traffic isn't all hands in the air - the more chilled-out side of club culture gets a mention too. Tracks such as Orbital's Belfast will appeal to anyone who has spent the early hours coming down with a bunch of mates.

As for the movie, it's set over a lost weekend in Cardiff and charts the ups and inevitable downs of a posse of mates out to get over the drudgery of their McJobs. It features a cast of up-and-coming talent accompanied by the altogether more established Carl Cox. Kids the world over will be further attracted by the promise of Howard Marks in a cameo role - respect. Pete Tong is a house hold name and rather nifty when it comes to spotting talent; as a representative slice of club culture his line-up can't be faulted. In short, Essential Selection is just that.
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Back in the mid-Eighties, French audiophile Guy Lamotte found himself increasingly frustrated with the sound of his Linn/Naim 'six pack' system. The collective talents of his Naim NAC32 pre and six NAP135 power amps driving Linn Isobarik PM5 loudspeakers through Naim's active NAXO crossover just weren't enough. Yearning for the lucidity of Quad's classic ELS loudspeakers, Guy nevertheless found that when he switched over to the Quads, he started wanting the 'Bars back. In short, he desired the best of both worlds - something with tremendous clarity and imaging plus some serious welly to get the earth moving in his listening room.

Sadly, in Guy's opinion, there was nothing around that could pull off this trick. Being au fait with the theory and practice of audio engineering - he was after all a Naim R&D engineer at the time - he decided to have a go and lash something up on his kitchen table.

As Linn and Naim were still officially best friends at the time - Linn would recommend Naim amplification and Naim insisted on Linn turntables and 'speakers - the time to launch a Naim loudspeaker wasn't quite right. So Guy duly persevered by him-
self, with no plans to put his new baby into production. But then came the famous ‘falling out’ between the two companies, a product of which was Linn launching the LK1/LK2 pre/power amplifier combination.

Guy’s new loudspeaker duly went official. In March 1986 the project was transferred to Naim’s Southampton Road headquarters and Guy was given the brief to design “a loudspeaker with as few compromises as possible”. Like the Isobarik, this was to be a cost-no-object design. Legend has it that Naim told him, “build it and we’ll work out the price when you’re finished”. And so the Naim FL1 was born.

THE BARE ESSENTIALS

Unlike the Quads, the FL1 was a three-way electrostatic/ribbon hybrid. The bass and midrange electrostatic panels were Guy’s own design, and these were mated to a ribbon tweeter. Two large bass panels worked from around 22Hz up to 325Hz, between which a single panel handled the midrange up to 5.6kHz. From then on the ribbon took over. Below the drivers was an integral stand, inside which the passive crossovers and electrostatic transformers and electronics were housed.

The electrostatic panels themselves were a particularly interesting design. They comprised three 5-micron Mylar panels and two alloy electrodes housed in a rigid aluminium frame. The central panel between the electrodes used a semi-conductive coating to carry the high voltages. In front of and behind this were Mylar panels which moved in and out in sympathy with the central charged panel, thanks to the driver’s air-right construction.

By giving the central diaphragm panel as much room to move in and out as possible, and carefully insulating it from the outer panels, these electrostatic ‘cells’ had several advantages over other ‘statics. Guy made great claims for the robustness of his design. Whereas Quad electrostatics could let go in a spectacular way at high volumes if clamp boards weren’t fitted, Guy’s design was said to be able to tolerate being driven flat out for half a day with no adverse effects!

Another boon was the FL1’s claimed insensitivity to room placement. By damping and acoustically loading the bass and midrange panels, Guy was able to optimise the loudspeakers’ response characteristics to work in real-world conditions better than other electrostats.

The FL1s were a pain to drive, thanks in part to some of their internals carrying around 4000volts and the fact that electrostats generally are a reactive load (meaning that as the frequency of the music varies their impedance characteristics change quite dramatically). Indeed, with a load that ranged from 1.2ohms to 35ohms, even some Naim amos (famous for their muscular power delivery) struggled. The 40 watt NAP110 was the minimum you could get away with, but six 75watt NAP135s and a NAXO active crossover were preferable. Assuming you already had a NAXO, going active was simply a matter of snipping the wires in the loudspeakers’ internal crossovers.

By 1987 the FL1s were in advanced pre-production form and Naim even let a couple of journalists in to have a listen. Guy was on hand to explain things and gave no hints about what was then to ensue. Indeed, Naim seemed about to invest in the clean room necessary to assemble the electrostatic panels.

Unfortunately, the FL1s were not to be. According to Naim’s Paul Stephenson, making one or two units wasn’t a problem but gearing up for volume production was. Difficulties centred around machining the central aluminium electrodes in the electrostatic panels. British Aerospace were sub-contracted to do the work but couldn’t produce absolutely flat panels with the required holes in. This, plus problems with glue, sample variability, durability, reliability and domestic safety finally sealed the Flat Loudspeaker’s fate. “We were 100% behind Guy. We put a lot of money and time into the project. We had to assess whether it could go into production and finally had to say enough is enough,” Paul confessed.

Guy wasn’t so sanguine and, disappointed that the project had been shelved, decided to leave Naim. This is undoubtedly a great shame as Guy was a talented engineer - anyone wanting concrete proof need only look at another of his creations, the Naim ARO tone-arm. To their credit Naim invested vast sums of money and three years of R&D into the project.

To this day, people who’ve heard FL1 prototypes wax lyrical about how great they sounded. Hi-Fi Review editor Chris Frankland described them as “bloody amazing” and “frighteningly real and vivid” when he heard them. Naim’s Paul Stephenson desperately wanted a pair for himself, telling me of their “fantastic bass and transients”. Indeed, Naim demo’d them at several hi-fi shows and were overwhelmed by their public reception.

By all accounts the FL1 really did come close to the best of both worlds. It’s a shame that Naim’s production engineering problems were so severe that they didn’t even get to pricing them, although Paul’s guess is that they’d have sold for about £10000 in today’s money. Meanwhile Guy Lamotte has returned to his native France and, sad about what could have been but never was, declined to comment. No fairy-tale ending then, but all credit to both Guy and Naim for investing so much time, money and effort in trying. If they’d succeeded, they could well have changed the face of high-end hi-fi for good."
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| ECF82 | 5.00 | E84L/1788A | 6.50 |
| ECL82 | 5.20 | KT66 | 9.50 |
| ECL86 | 5.20 | KT66R | 22.00 |
| EF86 | 5.60 | KT77 | 12.00 |
| E80F Gold Pin | 10.00 | KT88 (Standard) | 12.50 |
| E81CC Gold Pin | 6.80 | KT88 (Gold Special) | 21.00 |
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| 6SL7GT | 8.50 | 300B | 50.00 |
| 6SN7GT | 4.60 | 6C33C-B | 27.00 |
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| 6B4GT | 5.00 | 6V6GT | 5.00 |
| 6K6 | 11.50 | 6146B | 10.50 |

(continued)

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| 45 | 30.00 |
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| 9 Pin (For EL, PL509, Ch. or PCB) | 5.00 |
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| Anode Connector (For 807 etc.) | 1.50 |
| Anode Connector (For EL509 etc.) | 1.00 |
| Retainer (For 6L6WGC etc.) | 2.00 |

and a few "Other Brands" (inc. Scarce types).

| POWER TUBES |
| 6B4G / SYLVANIA | 27.00 |
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| 6CG7/6FQ7/SYLVANIA | 7.50 |
| 6CL6 RCA or GE | 5.00 |
| 6C6W4 RCA | 11.00 |
| 6SL7GT STC | 8.50 |

| 6S7GT BRIMAR | 10.00 |
| 12AT7/7WA MULLARD | 5.00 |
| 12AT7 GE SYLVANIA | 7.75 |
| 12A7Z GE | 7.50 |
| 12B7A GE or RCA | 13.00 |
| 12B7YA GE | 9.00 |
| 12E1 STC | 12.50 |

| 13E1 STC | 110.00 |
| 805 CETRON | 50.00 |
| 5842A GEC | 15.00 |
| 6080W TUNGSTOL | 12.50 |
| 6550A GE | 23.00 |
| 6146B GE | 17.00 |

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Valve Amplifiers sound better still fitted with CVC PREMIUM Valves!

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TO ARMS! TO ARMS!

This world being imperfect, nobody has yet come up with tone-arm wires you can swing an elephant from. If you've ever tried persuading a loose connection to resolder itself to the tag, you'll be aware of the problems. Ultimately, once you've melted all the insulation, the troublesome wire becomes too short (I see you're all wearing the tee-shirts).

Recognizing this problem, GFC Hadcock (of unipivot tone-arm fame) are offering handy hanks of replacement colour-coded, copper-cored cable. Prices for these are £14.69 inc VAT for four colours and £16.21 inc VAT for five colours, the extra colour being for arm earthing, etc. Each piece is 18ins. long, sufficient for the most extravagant arm length.

To finish the job, gold-plated cartridge tags are available at £1.47 inc VAT for a set of four.

HUNTSVILLE'S CLASSIC

Valve manufacturers Svetlana have announced a 'classic' version of the 300B triode. Starting from scratch, their designers sought to recreate the original specification but with the advantages of up-to-date vacuum processing plus a more robust glass envelope.

Among other features, the Svetlana SV300B's grid is gold-plated to minimize grid emission and the finished valve is 'aged' to optimize stability when finally plugged in at home.

TO CAP IT ALL

Specialist parts suppliers AudioCom UK have just been appointed the sole European distributor of Reliable Capacitors, manufacturers of MultiCap, AudioCap and Exotica film capacitors.

The MultiCap PPMFX, PPFXS and RTX stocked by AudioCom benefit from a patented construction where a number of small caps are wound co-axially on each other and then connected in parallel to form a single component with minimal inductance and an Equivalent Series Resistance five to 10 times lower than normal. In addition, slow winding techniques and dielectrics such as polypropylene and polystyrene reduce the Multicap's dissipation factor and dielectric absorption.

Next up is the AudioCap RT. With its gold-plated OFHC leads and poly styrene dielectric, this series is available in values from .01uF up to .68uF and voltages from 100VDC to 600VDC.

And finally, the Exotica TFT is one of Reliable's flagship caps. With its Teflon dielectric and tin foil construction, these .01uF to 1uF devices are said to offer outstanding sound quality.

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Pembs. SA70 7JY
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GFC Hadcock
Langley House,
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Uttoxeter,
Staffs. ST14 8BQ
Tel: 01889 569166

Svetlana Electron Devices
8200 S. Memorial Parkway,
Huntsville,
AL 35802
USA
Tel: (001) 205 882 1344

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Audio Note Kit Amplifiers

Power-Amp Kit

The Audio Note Kit One [Illustrated]

Based around the justly famous 308 directly heated triode, we see this kit as the introduction to real Audio Amplification, as it covers all the important aspects of design necessary, Single Ended, No-Feedback, Class A, Directly Heated Triode, to become a member of this exclusive club of amplifiers.

Kit One has one 308 per channel running at 420 volts with 75mA current giving 8-9 watts of the cleanest power you will ever hear, the input stage consists of a 6SN7GT with a 567P double triode driver stage running in SRPP, the power supply is capacitor-choker-capacitor configuration with a 5U4G HT rectifier, the 308’s have a DC filament supply for hum-free operation whilst the other valves are AC heated. Component quality is amazing on our 308's finished products. Audio Note paper in oil signal capacitors, 44uf/150V 5% metglas, 1 watt 1% metal film resistors, good quality electronics (sanyo NO Black Gates) and a simple, attractive stereo chassis in black powdercoat. We have several component and cosmetic upgrades available for Kit One, please ask for details.

The Kit One has recently been awarded the title "The Greatest Audio Bargain of the Twentieth Century" by Dick Osher [ex-Stereophile] in a review on the internet - this is just one of many rave reviews, copies of which can be purchased on request.

Price: £799 incl. VAT, which includes ALL parts & valves (yes, also the 2 x 308's needed) but not postage/packing which to UK customers is £12.00.

KIT ONE ORDER CODE: AN-KIT-001

Audio Note is happy to provide a wide range of complete kits, output and mains transformers, chokes, paper in oil, aluminium, tin, copper or silver foil signal capacitors, Black Gate, Cerarline or standard electrolytic capacitors, tantalum, carbon and metal film resistors, silver wires, interstage and driver transformers, switches, balance controls, potentiometers, attenuators, corners and fittings for the quality oriented DIY'er, whether you are a beginner or hardened experimenter, male or female, we have the best (and not always most expensive) parts for most projects.

Audio Note Loudspeaker Drivers & Kits

We shall be offering the speaker drivers that we use in our own loudspeakers for general sale from now on. You can by the drivers individually or together with matched and tested cross-overs, cabinet drawings and reflex pots.

Audio Note Circuits, Valvedata & Basic Technical Information

If you would like some suggestions which to base a future project around, then we shall be happy to provide you with a circuit pack containing good circuits like Ongaku, Kegenonassan, Nero, Gain-on, plus several other power amplifier circuits and the M7Tube & M10 pre-amplifiers, which are the best sounding pre-amplifier circuits we have come across.

Audio Note Quality Output Transformers

We are in the process of building up four separate ranges of Audio Note output transformers, in order to offer the best possible outputs at different price points, they will fall into four categories:

- Economy range: Selected to ensure quality audio in a price efficient package.
- Mid-price range: Top quality with specially selected components.
- High Quality range: Double C-core outputs for single-ended circuits exclusively.
- Super High Quality range: All-silver wired outputs of the highest possible quality.

Audio Note offer a design, prototyping and production service, where we can supply for almost any requirement. Please telephone for details.

Audio Note Mains Transformers

Available for most popular designs. We shall continue to expand the range as opportunities become available.

The Audio Note Kit Two

Kit Two features a single 6550 triode running in Single-Ended mode, yielding some 12 watts of pure Class A. With a valve rectified HT for the output stage, stereo chassis, and 6SN7GT input and 12AX7/ECC83 SRPP driver stage, componentry and chassis as Kit One.

Kit Two costs £599 incl. VAT. Includes valves, but not postage/packing.

KIT TWO ORDER CODE: AN-KIT-002

The Audio Note Kit Three

Kit Three features 2 x 308's per channel running in single-ended parallel yielding 16/17 watts in pure Class A. This kit is on two mono chassis with valve rectified HT supplies, no signal feedback. It uses a 6SN7GT double triode as input valve and a pair of 5687 double triode drivers. The Kit Three is essentially a mono version of the Kit One with double the power, the same component choices and on two chassis instead of one.

The Kit Three costs £1,550 incl. VAT but excluding delivery.

KIT THREE ORDER CODE: AN-KIT-003

The Audio Note Kit Four

The Kit Four is ideally our introduction to valve amplifier kit building, the circuit and power supply being mounted on a single printed circuit board. The high-quality push-pull output and mains transformers are all mounted in a small aluminium chassis covering everything so nobody will be able to see that you have succumbed to the lure of the valve amplifier which is sweeping the world. The circuit consists of two 6V6GT triodes running in Push-Pull class A, yielding about 10 watts, driven by a 6SN7GT and a 12AX7/ECC83 input stage. Easy to build, even for the beginner. Visually Kit Four matches the Audio Note Pre-ampifier shown here but with a single chrome-plated volume control. As with all Audio Note kits everything (except solder) is included. The Kit Four costs: £299 incl. VAT but not delivery.

KIT FOUR ORDER CODE: AN-KIT-004

Audio Note Paper In Oil Signal Capacitors

These handmade signal capacitors are sonically superior to any of the plastic or paper types we have come across. If you have never experienced the difference that a really good paper / oil capacitor can make in a valve amplifier, then you really should try.

Audio Note Paper In Oil Tin Foil Signal Capacitors

The tin foil is better than aluminium foil for most applications, we recommend you try them.

Audio Note Paper In Oil Copper & Silver Foil Signal Capacitors

These copper foil / signal paper capacitors are considerably better than both the standard offerings and tin foil. To start with there will be a few values / voltages of each available and we shall expand as fast as we can to cover all the popular values.

Audio Note Acid & Chloride Free Silver Solder

The best solder available, used in all our amplifiers from CTO to the mighty GAUDIO-CN.

Audio Note Cables & Wires

Audio Note manufacture a range of high quality copper and silver co-ax, speaker and interconnect cables, which, depending on the overall price of the project, will do justice to any hifi system, regardless of price. Please call for prices and details.

Audio Note High Quality Stepped Attenuators & Switches

These handmade attenuators and switches are manufactured by a friend of Mr Kondo of Audio Note. They are the best you can buy.

Audio Note High Quality Valve Bases

All of our valve bases are of the highest possible quality materials. Ceramic, Teflon and gold and silver plated. If you want the best look no further - they are the ultimate.

Audio Note Resistors

Audio Note endeavours to stock the entire E12 range of all the different makes of resistor, since most are not used in our products stock is generally available within four weeks.

REVSCHLAG - HCCS - SHINOH Tantalum Film Resistors

AUDIO NOTE 1/2 Watt Tantalum Resistors

AUDIO NOTE 1 Watt Tantalum Resistors

AUDIO NOTE 2 Watt 1% Tantalum Resistors

AUDIO NOTE Precision Carbon Film Resistors

ALLEN BRADLEY 1 Watt 5% Carbon Film Resistors
A complete kit loosely based on the Audio Note M7 Tube pre-amplifier circuit is now available. The moving magnet compatible phono stage consists of a cascode compatible phono stage available. The moving magnet M7 Tube pre-amplifier circuit is now giving the very best sound quality. Various component upgrades are employed. All circuitry is housed in a non-magnetic aluminium chassis giving the very best sound quality.

Both phono and line stages are built on 'trackless' pcb's allowing easy construction but with the sonic benefits of hard-wiring.

The standard-quality version of the pre-amp kit includes Röderstein polyester film capacitors, Besciglisch 1 watt 1% metal film resistors, Noble open-home style potentiometers and all pcb's, valves, wire etc. Various component upgrades are available, details upon request.

Cost of The Pre-Amplifier Kit is £349 incl. VAT but not delivery.

Audio Note Black Gate Electron Transfer, High Performance, Graphite Foil Capacitors

Audio Note is currently the sole source in Europe that holds any significant range of values in stock, we use literally 1000's in production, as we were the first company to realise the tremendous benefits that Black Gate capacitors offer, and we are to date the only high-end audio company in the world to incorporate Black Gate capacitors consistently in our finished products.

There are very few audio parts that promise a guaranteed improvement when replacing practically any other part, but this is what the Black Gate capacitors actually do. Replacing any electrolytic capacitor anywhere in the circuit of an amplifier or in the crossover of a speaker will greatly improve sound quality. We are working on some guidelines as to where, how and which types of Black Gates to use in different circuits, the first such technical guideline is available now and is called "improving your CD PLAYER" and can be obtained by sending a stamped addressed envelope to us requesting this leaflet. At AUDIO NOTE Level 2 Signature products use Black Gate Electrolytic capacitors in critical signal / power supply junctions.

Audio Note Cerafine Powdered Ceramic Electrolytic Capacitors

We have at long last secured a reliable source for these fine power supply filter capacitors, a must in any single-ended project. The Cerafines really cover many of the Black Gates values and where the prices for the BC's are prohibitive. The Cerafines are a fine sounding alternative. We have increased the range of Cerafines we stock quite recently, and strongly recommend all the Cerafines as a superior replacement or substitute for ordinary electrolytics, and at the prices offered that should be within most budgets. All power supply Cerafines are supplied with a capacitor clamp and are upright mounting.

Audio Note Potentiometers

The best available from a sound quality / price viewpoint, made by Noble in Japan, utilizing high quality conductive plastic film. However a better alternative is the KON 'ON volume controls which are used in pre-amplifiers like the M7 Tube M/11.ines and in a mono version on the input in the NEBO, KASSAI, KEGON and GAKU-ON, these are very good sounding pots by any standard.

Audio Note also carry large quantities of STANDARc TYPE SWITCHES, STANDArd ELECTROLYTIC CAPACIToRS (good quality included types), RCA, BNC, BANANA, PLUGS, RCA SOCKETS, SPEAKER & GROUND TERMINALS & LOUDSPEAKER SPACERS.

Audio Note Moving Coil, CD Line & Input Matching Transformers

Audio Note now offer moving coil, CD and input matching transformers for general use. Common to all of these small signal transformers is that they come in a milled metal screening can with a threaded spine with a nut for mounting.

Stock Clearance Sale

In anticipation of the arrival of the new in-house made Audio Note copper foil paper in oil signal capacitors, we are pleased to offer a 60% discount on current list price on all Tobias Jensen made paper in oil aluminiun, tin and copper foil signal capacitors.

Offer strictly limited to availability, while stocks last.

Minimum Order

4 pcs single or mixed values or £20.00.

Audio Note Selected Audio Valves

Our valves are selected from the best available sources and are tested to the same stringent standards that we apply in the production of our own amplifiers. They fall into two categories, standard production items and rare, mostly NOS (New Old Stock) valves which are no longer in production. We have compiled a special list of the NOS items, which is available against a stamped self addressed envelope, if you live outside the UK, send us $2. You should be aware that the valves on this list are NOT cheap, but we have stock of original GE, RCA and United Electarics 211, 20 standard versions and reinforced anode type for the US airforce, A45 Westinghouse, 6V25/1010V, 12AY7 801A, WE300B, S54300A, Mullard G234CV1377, Tungol SU4G (best sounding SU4G we have ever heard), Chatham, BRAVSGY and many others.

Audio Note Recommended Magazines

Listener

Review based music & Hi-Fi magazine that contains some of the best written articles in print. A very good publication £4 per copy.

The Audio Adventure

Glossy, well produced publication that provides a good alternative to the established magazines. Not afraid to be controversial, for under £4 per copy.

A full list of available issues on request.

CALL US TODAY FOR MORE INFORMATION.

Ask for a full components catalogue or see our web page.

Audio Note now has a dedicated division to keep pace with the growing demand for amplifier kits and specialist components. Music's Finest Conductor Limited will now be able to provide a specialist service to DIY enthusiasts and record collectors.

Please direct all enquiries to the contact numbers below.

World Radio History

Music's Finest Conductor Limited
25 Montefiore Road, Hove, East Sussex BN3 1RD
Tel: +44 (0)1273 770778
Web: www.audionote.co.uk
Noel Keywood pulls the wraps off our new sub-£200 kit loudspeaker, KLS12, with fibreglass driver.

Our inexpensive kits, like the KEL34 valve integrated amp, are very popular. Designing a good budget product like KEL34 is a judicious balancing act that's definitely worthwhile if it can be pulled off. We decided to have a go with KLS12, featured here, looking for a budget loudspeaker able to deliver fine sound quality, but at a low price.

I'll be honest: the “we” I use above is royal. In the past I have preferred to do all design work in-house, so I know what Hi-Fi World DIYers are getting. We measure to industry standards and know what UK manufacturers are doing, which is important. Amateur designers tend to go off at tangents, coming up with idiosyncratic designs that might perform well in one area, but are hopeless in others. I'm not too keen on this sort of thing. Professionals must get every parameter right and move at least one ahead at a time to gain an advance, which has been our approach. This way you get a balanced design which has no weaknesses and at least one special strength.

Gary Hollands is a professional who designs for UK manufacturers and he designed KLS12, hence the royal “we”. I did nothing this time around, other than measure the design he conceived.

I came across Gary's designs some time ago. “This guy knows what he is doing,” I thought to myself. Experience, knowledge and test equipment give him an edge over cloistered in-house designers, less exposed to the outside world. So the performance of KLS12 is no accident. It's quite a specification for a loudspeaker costing £175 as a kit, not including the cabinet.

IN THE DRIVING SEAT

KLS12 uses a 210mm (8in.) Audax HT210FO woven-fibreglass cone mid/bass unit. It has high sensitivity and needs only limited box volume for good downward extension. In a cabinet volume of 34 litres, forward radiation from the cone reaches down to 50Hz, rolling off fast below this frequency as the port kicks in. The port tunes radiation from the rear of the cone, which is 180 degrees out of phase. It extends output from 50Hz down to 20Hz. That's good going for a cabinet of this size.

Fibreglass is very light but its response does not run up as high as carbon fibre or High Definition Aerogel, due to lower internal cone damping. Gary has used a larger 34mm dome tweeter, an Audax TV034X0, to accommodate this, crossing over at 2kHz.

To attain a flat response and good electrical load characteristics, the crossover is more complex than usual, with damped notch filters in each section, plus Zobel impedance-equalling networks. This raises the component count, but because electronic components are inexpensive, there's no great rise in cost. At a practical level, there's a few more items to solder, but this is not difficult.

It is the judicious selection of components and the way they have been integrated into a final design that marks out KLS12. It isn't possible to do this unless you design loudspeakers for a living, know what drive units are available, know their properties and know how to exploit them whilst at the same time
ensuring any problems are controlled. This is natty work!

TIMBER!

Regular readers will know that the key parameter determining bass behaviour is box volume. So in theory, the box surrounding the HT210F0 could take on any set of dimensions providing it has an internal volume of 34 litres. However, I strongly advise using the dimensions we propose, because it is easy to run into problems otherwise.

A narrow baffle with rounded edges is used for best stereo imaging. Box dimensional ratios have been chosen to avoid additive resonances that induce boom. The material used for the box is 18mm MDF (Medium Density Fibreboard). This is common, inexpensive and easy to glue and work. It is also fairly “dead” acoustically as it’s a composite material.

There are fears that MDF dust is carcinogenic, so be careful not to breathe it in. Ideally, you should use a dust extractor whilst sawing, plus a face mask.

BOXING CLEVER

It is possible to use woods other than MDF. Plywood is lighter but more expensive. There’s nothing wrong with light weight per se; mass is a reactive element that stores energy, so low mass equals
The minimum order requirement is £400.00 for all prices in this advertisement.

Orders under £400.00 are welcomed, please enquire for prices.

To qualify for the ’100 pieces’ price, please ensure your order is both over £400.00 and for 100 pieces.

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1 million valves in stock, please enquire for retail or wholesale prices including Billington Gold, Mullard, GEC and many others.

Major Credit Cards, Switch and Delta accepted.

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low energy storage and is, in fact, desirable. However, resistive damping must be present to dissipate energy and usually there isn't much of this in light panels. Plywood has glue layers between different woods, though, which is just about ideal. Additional bracing might be needed to stiffen large side panels, and it should be placed asymmetrically to distribute modes. Note that we use a bracing panel between the bass unit and tweeter.

Do not be tempted to use a lot of cabinet damping material - it will compromise reflex behaviour, sucking the life out of bass. The best place to apply it is on the rear panel, directly behind the HT210F0 bass/midrange unit, to prevent rear-wall reflections returning back through the cone - modern, lightweight cones are more transparent to reflections than old, heavily-damped quackers.

You can opt for absorption, in the form of a roll of natural carpet felt, or dispersion to scatter high-frequency rear waves (with irregular blocks of wood or similar). BAF wadding isn't absorptive enough, by the way.

**CONSTRUCTION**

A timber merchant is usually able to cut panels, if you want to avoid having to do this yourself. They may be more accurately sawn than your own, if a good industrial circular saw with measuring bench is used. The drivers sit in rebates 2mm deep for the tweeter and 8mm for the woofer. These have to be routed as well. Then there's the port, which is also routed in.

Mounting the drivers flush and rounding the front panel edges contributes greatly toward obtaining clean stereo images. It is worth the effort and makes the final loudspeaker look professional.

It is usual to build the box first, gluing panels with Evode Resin W. When the glue is dry, the front and back can be stuck in place. The crossover is installed through the bass cut-out, or it can be boxed in a plastic case with terminals and located externally to avoid vibration. This can sit on the floor or be attached to the outside of the rear panel. It is common for DIYers to hard wire all crossover components to tags on a thin board.

**SOUND QUALITY**

KLS12 gives vocalists a clean outline and pushes them forward from the loudspeaker. Its slightly raised midrange is responsible for this strong sense of projection. At the start of Jackie Leven's 'Farm Boy' the "ooh, aah" of the chorus jumped out, with plenty of atmosphere around it. On vocal clarity, the KLS12's score highly.

The 'speakers also have rich detailing, highlighting the hand drums at the start of Angelique Kidjo's The Sound Of Drums. When the deep, walking bassline on this track kicks in, KLS12 shows it is tight and firm right across the bass spectrum. There's no waffle, so it can be placed close to a rear wall without sounding bloated or lumpy, ideally on short stands about one foot high.

At the other end of the range, the tweeter works well with violins. It kept individual instruments nicely separated but vivid and clear in Rimsky-Korsakov's Scheherazade. By handling more of the treble than normal, this 34mm tweeter manages to sound cohesive and resolve instrumental timbre effectively; the fruity rasp of a cello was quite different from the thinner tones of a violin, for instance.

In a nutshell, KLS12 is a transparent, vividly detailed transducer with fine projection. It has tight, well-defined bass which means it is best positioned close to a rear wall. On top of that, high sensitivity means it can be used with low-power amplifiers of around 20watts to 60watts.
The TubePreamp Cookbook

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As it suggests, DIY super cables—analogue & digital interconnects, speaker and AC cables, theory and practice. Super sonic at some very un-super price.

Transcendence in interconnects

I tried the AC cord and the result was really good. I used it on my pre-amp. The music has more energy and is more lively.
MEASURED PERFORMANCE

The World Audio Design KLS12 was designed to deliver high quality at low cost from a compact cabinet.

It might not seem logical but big loudspeakers are the most sensitive. The smaller a loudspeaker gets, the less sensitive it becomes. Small bookshelf monitors deliver around 85dB nowadays, if they are good; stand mounters produce around 87dB, and floor standers typically 90dB. Providing sensitivity is not gained by dropping impedance, this is good: the speaker is innately more efficient, which means a driver with a lightweight cone, powerful magnet and small voice-coil gaps. The crossover must be low-loss too.

KLS12 offers 89dB from a stand mount cabinet, making it sensitive for its size. This means it needs little more than 40watts to go very loud.

The impedance curve lies almost exactly on 8ohms from DC up to 20kHz except where it rises to the characteristic twin bass peaks that come from reflex loading. This gives KLS12 an overall measured impedance of 8.75ohms. A flat impedance trace means low reactance and energy storage, which in turn minimises unwanted signals entering an amplifier’s feedback loop. A loudspeaker like this is very easy to drive, gets the best from all amplifiers and minimises amplifier differences. It’s also optimal for valve amplifiers which need a precise 8ohms for best power transfer.

Frequency response measured flat from 50Hz up to 20kHz, as our analysis shows. Absence of a crossover dip around 2kHz - the crossover frequency - ensures good detailing. The large tweeter runs smoothly up to 20kHz, so treble should sound even and free of brightness.

There’s no bass lift, this level of damping tending to suit near-wall mounting. A damped response gives a slower roll-off, allowing KLS12 to reach 50Hz before the port takes over. This is quite low for the cabinet size. The port is tuned to 33Hz and takes output down to 25Hz.

KLS12 is a sensitive and accurate loudspeaker that should give fine sound quality at a low price. NK

KLS12 PARTS LIST

<table>
<thead>
<tr>
<th>Drivers</th>
<th>Crossover</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass Audax HT210F0 210mm woven-fibreglass cone, stamped chassis, large 550gm magnet</td>
<td>Li 0.75mH, 0.18ohm, ferrite cored, 1mm wire</td>
<td>Inputs 2 off - bi-wire terminal panel</td>
</tr>
<tr>
<td>Treble Audax IVV034X0 34mm high-efficiency tweeter</td>
<td>L2 0.75mH, 0.18ohm, ferrite cored, 1mm wire</td>
<td>Damping a long-haired wool (0.5lb)</td>
</tr>
<tr>
<td>Crossover Li 0.75mH, 0.18ohm, ferrite cored, 1mm wire</td>
<td>L3 0.5mH, 0.12ohm, ferrite cored, 1mm wire</td>
<td>PORT 65mm int. D, 100mm Variport</td>
</tr>
<tr>
<td>L1 0.3mH, 0.1ohm, ferrite cored, 1mm wire</td>
<td>L4 0.3mH, 0.1ohm, ferrite cored, 1mm wire</td>
<td>Wire OFC multi-strand</td>
</tr>
<tr>
<td>C1 12uF, ALCAPS</td>
<td>L5 1.5mH, 0.36ohm, ferrite cored, 1mm wire</td>
<td></td>
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<tr>
<td></td>
<td>C2 12uF, ALCAPS</td>
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<td>C3 6uF, ALCAPS</td>
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<td>C4 6uF, ALCAPS</td>
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<td>C5 10uF, ALCAPS</td>
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<td></td>
<td>C6 10uF, ALCAPS</td>
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<tr>
<td></td>
<td>C7 12uF, bass off 2uf</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(in series) ALCAPS</td>
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<tr>
<td></td>
<td>R1 1.5ohm resistor, 9W</td>
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<td></td>
<td>R2 1.5ohm resistor, 9W</td>
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<td>R3 6.8ohm resistor, 9W</td>
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<td>R4 2.4ohm resistor, 9W</td>
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<td>R5 6.8ohm resistor, 9W</td>
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<tr>
<td></td>
<td>R6 6.8ohm resistor, 9W</td>
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</tbody>
</table>

KLS12 is available as a kit from Hi-Fi WORLD

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Taking The Tube
Part 2

Jon Marks samples another pair of 300B valves from the originators Western Electric themselves.

Of all the many bottles in the thermionic bottle bank, Western Electric’s 300B is probably the greatest classic of all. Particularly dear to American and Japanese valveheads (the latter group paying some frightening prices for originals), this power triode has been produced by many manufacturers. In the last Supplement, we examined the wares of two brands, Chinese Valve Art and Tesla from the Slovak Republic; this month we return to the source with Western Electric’s very own 300B.

The test bed this time round was one of AudioNote’s single-ended Meishu integrateds rather than our own push-pull power amp.

GO WEST
Our Western Electric 300Bs were supplied by Audio Connoisseurs (tel: 0151 343 0007) and came packed in individual boxes within a wooden case. Full marks for presentation then, but you’d expect this much given that the WEs sell for £600 per pair! In addition to the above, you get a full set of specs for each valve, and a manual (!)

Going a long way towards justifying the cost of these 300Bs is the five-year guarantee which covers any faults due to defects in their production (but not, unfortunately, dropping them accidentally on a concrete floor). If a WE goes phut, you can return it to Audio Connoisseurs who will ship it out to the factory in Kansas City for checking prior to a new WEs home into the Meishu’s sockets and flicked the On switch.

After an hour to settle down and become acquainted with their new surroundings, the WEs were making some very sweet sounds indeed. On acoustic recordings, plucked strings were very fast but extremely smooth, their complex harmonic character undisturbed. The Meishu has a weighty, solid sound which these 300Bs enhanced with a highly controlled but fluid bottom-end that worked a treat on electric bass as well as double-bass.

The velvet glove covering the iron fist turned out to be superb resolution of low-level detail, a talent for vividly recreating a sense of the recording venue and precision imaging. Overall, the WEs had an easy, mellow presentation which allowed music to ebb and flow without strain.

Swapping back to Valve Art’s 300Bs (which come in at about a quarter of the WEs’ cost), I heard an immediate change in the sound as music slowed down and lost a lot of its subtlety and musicality.

Bass was less well defined and controlled, the midrange lacked projection and the treble had a rather hard, one-note quality to it.

Western Electric’s 300B is not one of those low-cost purchases you can make without prior pondering. Counting against it is the high price, but in its favour are excellent sound and that five-year guarantee.

When you consider that in the same period you’d probably get through two or three sets of less esoteric 300Bs, the WE doesn’t look quite so expensive.

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Reviewed by Richard White.

Newnes Dictionary Of Electronics is, as the back says, "intended primarily to be of benefit to engineers and technicians... students... or amateurs who are interested in it". As I should judge that the vast majority of HFW readers come into the last category, my beady gaze has kept an amateur slant to it.

Let's face it, it's unlikely in 363 printed pages that anybody from any one electronic discipline will find all he or she wants to know. As a dictionary, the Newnes is chiefly concerned with what the words mean, rather than what the fullest explanation of the concepts implies.

This seems reasonable; the sketchiest encyclopaedia of electronics these days would have to be a pretty substantial volume to hope to cover aspects of the mushrooming subject thoroughly.

Naturally, this can mean that Newnes' Dictionary can seem sketchy - "is that all they have to say?" is a remark which the approach invites. Nevertheless, where Messrs. Amos have scored rather highly is in breadth of coverage, and perhaps even more importantly, clarity of language.

To select a few instances at random, the Amoses succinctly define "information superhighway" as "a vague term" - and so it is! - "denoting any network over which information in a variety of formats is available to a wide public." Quite. And yet the way the term is used, particularly by media types, you'd think the superhighway was a Thing, not merely a phrase. Well, now we know.

This is all an indication of the de-mystification which a good dictionary should foster. Even in private life, there is a vocabulary in which insult cannot be distinguished from praise - unless you happen to know. Still more in an increasingly acronym-ridden branch of science, the unintitated are cut off from knowledge simply by not knowing the terms in the first place. "Transistor" we all know; that the term valve "has been replaced by electron tube". Oh really?

Actually, valve-based electronics is very well served by this book. Having grumbled about the lack of unit definitions, I am forced to admit that valve types are covered with a thoroughness which would not disgrace a far more specialized publication. It's not that often that a casual enquirer wants to know what a nonode is (a failed limerick, maybe?); nevertheless, there it is, with a handy diagram and explanations of its function and typical uses.

Common circuit symbols are shown throughout the text, a useful feature in days when, as ever, the derivation of some of these is far from obvious. Unhappily, there is not a general chart of some of the more fundamental examples, nor is the from-time-immemorial symbol for a resistor given, the 'empty oblong' being favoured throughout. In similar carping vein, anyone whose eyes have been out on stalks trying to read a five or six-band resistor code (as commonly supplied by Maplin) will regret the lack of a guide beyond four-band and body-tip-dot types.

When all's said and done this Newnes Dictionary is a distinctly well-paced guide. As with any work of this sort, there are places where it ambles when you want to run, but for a hard-backed basic reference written in crystal-clear English and, what's more, plainly illustrated, it represents fine value.

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JULY 1999 HI-FI WORLD
BRIDGING THE GAP

I recently had a brainwave while listening to my hi-fi. I was wondering how to improve my set-up, which consists of a Meridian 500 transport, 201 pre-amp (soon to be 501), 203 DAC and Pioneer A-400 GTE amps (pair thereof) bi-amping Origin Live OL2 'speakers.

I am very happy with the sound but I think I could get an improvement if the amps had more control over the 'speakers. I do not want to change the A-400 GTE as I have found nothing under £3000 that has the magical qualities of this amp.

This led me to think about bridging. In non-bridged operation one side of the 'speaker is grounded and the signal applied to the other. In bridged operation, one amplifier applies the signal to each side of the 'speaker but the two signals are out of phase.

If two stereo amps are used in conjunction with a balanced pre-amp then you can construct a cable which splits the balanced output into two phono plugs, one carrying the positive signal and the other the negative. These can then be plugged into the left and right inputs on the amp and the speaker connected between the two positive output terminals. Will this work? I can not try this as I do not have a balanced pre-amp at present.

This arrangement could easily be achieved in a digital-only hi-fi using a Dacmagic as this has balanced outputs, and a passive pre could be built easily.

Is there a circuit to turn an unbalanced input into a balanced one without upsetting the sound quality? This could be incorporated into an active crossover (valve of course), so how about a DIY article on it?

George Bullimore
Grog@BTinternet.com

We asked Tom Evans, the designer of the GTE modifications, to comment: I agree the A-400GTE does have some interesting attributes and in its day was an entry into real hi-fi. However, in my opinion you should sell the GTEs and upgrade to A-300R Precisions bi-amping your loudspeakers. The same remote operates both volume pots together, making life easy.

The A-300R Precision has so much more resolution and low-end control than the GTE. There is also a further upgrade for the Precision which turns the amp into a high-end contender with real grunt. Pioneer may at a later date incorporate these mods into the next batch of amps. Until that time, I am able to offer them separately (tel: 01443 816856). TE
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A CLASSY ACT

I am, as most of us who write to you are, an avid reader of your magazine. Being an enthusiastic tweeker, I look forward to your DIY Supplements and letters. I have unfortunately not been able to obtain the Oct 1997 edition of your mag where you describe mods to the DAC-2. I am very interested in this as I have modded my CD players (a Marantz CD-52MkII and an Arcam Alpha) substantially.

Would it be at all possible to provide me with succinct details of the mod? I am more interested in the general details: ie, what is the ratio between the value of the power supply caps and the polypropylene bypass caps? Where specifically did you use the Os-Cons? Does one have to use SG-grade Os-Cons or will any do? Did you replace the output op amps?

By the way, here’s one tweak that blew my socks off. It is possible to bias the output op amps into Class A operation by connecting a (say) 4kohm resistor between the output of the op amp and the -15V supply. I found this one on the Net and believe me, it works! The greatest impact in my case was in the midrange, which stood out more from the mix. A friend found that everything appeared more clearly imaged.

Ryan Hill
ryan.hill@hsbcib.com

One of the main mods for any gear is replacing the cheap electrolytics fitted to most components with higher quality alternatives.

CIRCUIT SORTING

I have read your magazine for many years with great pleasure, especially the Supplement. Your article describing KEL34 appeared at the same time as I was putting together a push-pull valve amplifier myself. I find design goals and considerations interesting as it is essential to consider the circuit as a whole, avoiding the eternal discussions as to which valves, transformers, etc are the best.

In my studies I ran across an article by Jean Hiraga on the design of the Lectron JH50 from 1988. This amplifier is very similar in circuit design to the KEL34 (and Mullard 5-20). The driver is a 6SJ7 while a 6SN7 provides the differential phase splitter. There are no screen taps on the output transformer either.

The design goal in the Lectron was to let even-order harmonics dominate in the basic design since they are cancelled out by push-pull whereas odd-order harmonics are not. This article and other experiences raise some questions and ideas concerning KEL34:

1) The combination of auto-biasing with fixed bias is not recommended. In terms of distortion I thought that fixed bias produced more third-order than auto-biasing.

However, the more caps I try out, the less I like electrolytics.

The idea of an amplifier (as an example) virtually free of electrolytics has been put into practice already by designers like Rob Watts and Tom Evans to name but two. The only area where electrolytics are pretty much unavoidable is in the main PSU, where values between 1000uF and 6800uF are almost impossible to obtain economically (in terms of money and space) in any other form of cap.

The problem with about 95% of electrolytics is that, compared to a good (and I do mean good, as there are some stinkers out there) tantalum or multi-layer ceramic, for instance, they have a horribly thick, sludgy, lifeless sound that squashes all the pace and power out of music. Os-Cons are far better than most, but wherever I’ve soldered them in, they’ve always robbed the music of its musicality, regardless of how long they’ve been burning in (about 400 hours and counting in one case).

Farnell (tel: 0113 363 6311, 24hours a day) do some very nice multi-layer ceramics (part number 578-400 is 10uF at 25V and costs about £6 a hit - not cheap but worth it!) and I’ve had excellent results from tubular, metal-cased tantalums. Because these caps have superior characteristics at high frequencies they work extremely well in digital gear (like Pioneer’s DV-505 DVD player), although analogue benefits considerably too (in my case a DPA 505. In Michell’s case, it’s the HR series pre-amplification).

As to where to use these goodies, it’s rarely wise to use a single brand of part throughout a component - mixing and matching is better. In my experience, the tantalums can be a bit dry across the midrange and treble while the multi-layers are sweeter and more natural in that area.

From what I’ve heard, there’s a bit of a following for re-biasing output stages. I haven’t tried it myself but I hope to soon.

Ryan Hill
ryan.hill@hsbcib.com

One component that responds well to modification is DPA’s 505 pre-amp.

DIY Letters

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anode voltage can be used, which can result in lower distortion of predominantly second order. This is due to an enlargement of the anode characteristics. I myself use a 6SL7GT SRPP connected.

3) Using 12AU7, 6SN7GT or other low-mu triodes results in a low output impedance to drive the output tubes. However, this usually leads to different values of Ra (anode resistance), as in KEL34. This in turn leads to different phase shifts on each anode in combination with Ca (anode capacitance). Normally, this requires some sort of compensation, if the amplifier uses overall feedback. Does KEL34 not need this compensation?

4) The description of KEL34 does not specify the primary impedance of the transformer. An off-quouted value is 5kohms. However, this seems to generate more odd-order distortion than a lower value like 3kohms, where even-order harmonics dominate.

5) You have chosen to use a fairly low value of screen voltage in order to ensure safe operation of the output valves. The arrangement of the supply provides additional stabilization. However, an increase in the screen voltage would again enhance the characteristics of the output valves. This improves linearity and favours even harmonics over odd ones. Hiraga chooses Vg2=410V at Va=435V.

My design goals are to obtain the midrange of an SE amplifier combined with the force of a push-pull.

As I mentioned above, my driver is a 6SL7GT in Shunt-Regulated Push-Pull mode. A 6SN7GTA is the phase-splitter. The output consists of KT66 (Golden Dragon Teonex brand) with surplus Quad II transformers. I use no, or extremely little, overall feedback taken from the output winding rather than the 'speaker. This requires that the 'speakers are an easy load - I use Castle Avons.

The transformers have cathode feedback. This seems to linearize the already very linear KT66. Careful design of the phase splitters is needed to ensure a high enough output swing, since the gain in the output valves is lower than normal in this configuration. In this topology, the sound seems to be strongly influenced by the driver, which is single-ended. I changed from JAN Philips to GE, which gave a highly-defined and vibrant sound. The bass depth also improved vastly, going almost an octave deeper. It might be worthwhile to try another brand of 6AU6 in KEL34. Since you use PCBs, your valves can't be exchanged for their octal counterparts, which is a pity.

To summarize, I think that I very closely achieved what I was aiming for. As comparison I rely on a 300B SE amplifier and a couple of other SE amps.

David Rapp
David.C.Rapp@telia.se

Your query is very involved so I will try to answer you questions one by one. In general, however, I would like to emphasize a point which seems to be totally missed by a lot of people, including engineers: even harmonics are generated by asymmetries about the x axis (zero-crossing axis). This means that the positive half of the wave has a different amplitude to the negative half due to gain modulation. A perfectly-balanced push-pull amplifier generates ZERO even-order harmonics. If there were any present, it would not be perfectly balanced. It doesn't matter whether it's valve or transistor; if there are even-order components, there is asymmetry about the x axis. Also, if there is an unbalanced (for example, single-ended) stage before the push-pull stage, the push-pull part does not cancel the even harmonics generated there.

1) As with everything, there are advantages and disadvantages with auto and fixed bias schemes. With fixed bias, the instant benefit is that there is no need for set-up - the inherent DC feedback mechanism keeps the idle current about right. The disadvantage is that the even-order distortion produced by the valve (which becomes extreme when the valve is being cut off for part of a cycle in Class B and AB) results in the DC bias being modulated.

The distorted signal current causes the voltage across the cathode resistor to rise and the valve comes out of Class A or goes further into Class B, giving rise to far greater crossover distortion - your bias point varies with the music. On top of that, the two cathode bypass caps form a resonant circuit with the output transformer, which can destabilise the amplifier at LF and, in general, produce a much more sloppy bass than fixed bias.

With fixed bias the above disadvantages are avoided. For a given set of operating conditions (HT voltage, anode dissipation, etc), you will get more power and lower distortion. The disadvantage with fixed bias is that, when the amplifier is driven into clipping, the grid of the output valve rectifies the drive signal, thereby producing a negative voltage at the grid. This rapidly cuts the valve off, causing a lot of distortion. Worse, the distortion continues for some time after the overloaded condition has passed, the grid resistor and coupling cap forming a time constant which must discharge before everything returns to normal. The same thing happens with auto bias but the feedback mechanism of the cathode resistor combats it to a certain degree.

If simple RC coupling is used, auto bias produces a softer, less drastic clip. If the fixed-bias valves are driven with a DC-coupled driver such as a cathode-follower or a transformer, the rectification does not take place and everything's hunky-dory again. The mixed bias scheme shares the greater power/lower distortion of fixed bias (due to the smaller cathode resistor) and a large portion of auto-bias's softer clipping.

2) All of the LF time constants in a feedback amplifier contribute, more or less, to the LF stability of an amp. I have heard and measured so many amplifiers which are only marginally stable at very low frequencies. This shows itself most readily as the usual 'valve bass', which is bloated and has poor timing. Another sign is, when playing percussive music on reflex 'speakers, the cones flap on snare drums. This
can be measured on a storage oscilloscope, too; if a large-amplitude 10kHz toneburst is applied, a decaying LF waveform is displayed after the burst has stopped.

Dogma has it that the ear is not sensitive at low frequencies, but that's just not true - phase and, more importantly, time effects are very audible. If the amplifier has a garbled phase and transient response at 'sub-sonic' frequencies, then the bass quality will suffer. This problem can even spread up into the low midrange.

Quite a few people claim that, if you roll off the bass higher up, it 'speeds up'. This is actually caused by the first-order dominant phase shift of the much higher roll-off. Transistor amplifiers generally have very dry, controlled bass not because of their damping factor, or their current delivery, but due to their low, first-order, LF phase shift.

In KEL34, the LF stability, transient response and phase response is tidied up by the input-valve cathode cap - its effect is to increase feedback with lowering frequency. If you've built your own amplifier, why not try it to see how it sounds?

3) There are many debates amongst amp builders: the pentode driver versus the triode driver, second-harmonic versus third-harmonic distortion - on and on it goes.

Pentodes can be set up to produce very little distortion at all. Using a higher screen voltage generally opens up the characteristic, as you say, but it also moves the characteristic's 'knee' further up in voltage and makes it more rounded, which can result in higher, not lower, odd-order products. If you check the curves, you will see that, at a given anode current and voltage, varying the screen voltage does not have much of an impact apart from requiring a larger negative grid bias to get that current.

SRPP can be good - the feedback in the partial cathode-follower in the top portion gives a low output impedance at small signals, plus there is some cancellation of even harmonics. The lowered output impedance can help with HF stability, moving the phase shift to a higher frequency, but it can, for the same reason, make the amp unstable.

A word of advice on this topic. SRPP stages can become very microphonic and noisy due to the heater cathode insulation of the upper valve degrading. For some reason the ECC82 always goes this way whereas the ECC83 and 6SL7 seem to be OK.

With the cathode-coupled phase splitter à la Mullard 5-20, the output impedance is very much higher than you might first assume. This is due to the influence of the cathodes of the valves on each other, the very mechanism on which the circuit relies for operation.

Each valve has the quite high impedance of its partner in its cathode, causing current feedback, which raises the output impedance many times. Even output pentodes have a highly capacitive input impedance, which naturally puts another phase shift into the stability equation. The differing output impedances show themselves as an increase in even-order distortion at high frequencies over and above that caused by the reducing feedback.

KEL34's mixed bias seeks to offer the best of both worlds.

4) The optimum output transformer impedance depends on the valve operating conditions. So often I have heard it said, "A 300B requires a 2K5 transformer" or "EL34s require an XYZ impedance". I think this comes from merely looking at the example operating conditions given in the manufacturer's short-form data or 'at a glance' selection book and taking it as gospel.

Regarding the odd-order versus even-order trade-off; if the valves are driven with a well-balanced signal, the majority of the even-order products created by the output valves will disappear. Most of the distortion measured in valve amps of this sort is created by the input and driver stages (I have built amps with 0.1% THD with only 15dB of feedback. This was achieved with a special drive circuit, which maintains extremely good balance and low distortion).

With a lower anode impedance there is a greater current swing, resulting in greater even-order distortion. With a pentode, you start to approach the characteristic knee, which increases odd-order distortion as well. Even-order may dominate but, if impedance A produces 5% second and 1% third harmonic distortion while condition B had...
15% and 2% respectively, which is better? The primary impedance of KEL34's output transformer is 8kohms, by the way.

5) To increase the screen-grid voltage of the EL34s a bit (maybe going to 350V) would be an improvement, but that would have required another supply, increasing cost without a commensurate increase in performance. Connecting EL34 screens to 500V is not recommended due to reliability problems.

The Quad II transformer has 10% cathode taps, which not only add cathode-injected feedback but also modulate the screen voltage to give some ultra-linear operation as well, a very elegant solution. Tango Transformers in Japan produce some transformers with similar taps. The ultimate is perhaps a transformer manufactured by Pearl in the US. The problem, as you say, is that the swing required to drive the output valve is increased. This usually results in the driver stage's distortion being higher than the output valves', and rather more complex circuitry is required. The Quad II was spec'd at 0.1% distortion at 15W, but they actually come out at more like 0.05% when properly tuned and there's only one amplification stage in there - two pentodes! Taking the feedback from a tertiary winding is a nice idea too as it isolates the feedback from the loudspeaker load to a greater or lesser degree. There needs to be good coupling from the tertiary to the primary and from the primary to the load for it to work without causing an HF roll-off, though.

Owners of the KEL34 can try replacing the valves in their amps with ones from different manufacturers. The 6AU6 is a very common and cheap valve because usually everybody goes for the regular 'audio' types (ECC82, ECC83, 6SN7 and 6SL7), in the process inflating the price of NOS units.

If the KT66s you are using are the little ones with a straight-sided bottle, bin them. I built a guitar amp which used original KT66s (at the time they weren't that valuable). I tried some of those little Teoxex suckers in there and the anodes glowed red!

As alternatives you could try the new Golden Dragon KT66R, which is quite expensive and, since it's new, it may show up problems down the line. Then again, there are the US 7581s, which offer really superb quality for not much money. Even the common-or-garden, US-manufactured 6L6GC (and it must be the 'GC' suffix) would be a good choice if you want NOS valves. For the 6SN7, you could try the STC ones, or a Sylvania "Red Base".

Gary Devon

RIGHTING RECTIFIERS

Can you please advise me on how I might incorporate a valve rectifier (EZ80 or EZ81) into your KLP1 pre-amplifier. I suspect it's only a matter of higher voltage secondary transformer windings and additional resistors, but I am unsure as to how to calculate all of this.

Chris Seymour
Melbourne, Australia.

The EZ80 and EZ81 are very good valves but are seriously overrated for use in the KLP1. The best bet would be a 6X4, which should fit in the box if you make a bracket for it. You would have to get another mains transformer wound with a centre-tapped HT secondary. If you don't know a friendly transformer manufacturer, this could be your greatest hurdle.

Valve rectifiers don't like to be connected to too great a reservoir capacitor, but as the current drawn by KLP1 is so small you could use 100uF without running into problems. Valve rectifiers give a far more relaxed presentation when compared to solid-state diodes. However, there are some better sounding diodes on the market than the regular ones used in KLP1. You might like to try some of those first.

One I often use is the BY96E. All you would have to do is directly replace the ones you have now. Have you already upgraded the component quality? You could try changing to a better grade of electrolytic capacitor such as Black.
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<tr>
<td><strong>VNA A90 Power - As New</strong></td>
<td>£210 £150</td>
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<tr>
<td><strong>VNA old style A029</strong></td>
<td>£460 £275</td>
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<td><strong>VNA A90 pre-amplifier</strong></td>
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<td><strong>VNA A95 pre-amplifier</strong></td>
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<td><strong>VNA A95 power amp</strong></td>
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<td><strong>VNA AMB5 mono amp</strong></td>
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<td><strong>VNA AMB5 mono amp (new)</strong></td>
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**AMPLIFIERS - SOLID STATE**

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<tr>
<th>Technics SL-15</th>
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<tr>
<td>Adcom GTP506M2+ + GFA545M2 Pre/Pwr</td>
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<td>Cyrus Pre-amp</td>
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<td><strong>Amico Andromeda III (balanced pre)</strong></td>
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<td><strong>Sonic Polaris III power amp</strong></td>
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<td>Chameleon 900S 2 x 300w pwr</td>
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<td>Copland CT1031 Pre (Ex-demon)</td>
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<td>Copland CT1041 Integrated (Ex-dem)</td>
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<td>Copland CT1054 Power - Ex-dem</td>
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<td><strong>Cyrus Straight Line (Integrated)</strong></td>
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<td><strong>DPA DSP5200 Line Pre (Ex Dem)</strong></td>
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<td><strong>DPA Renaissance (Ex-dem)</strong></td>
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<tr>
<td><strong>Pioneer A400X (integrated)</strong></td>
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<td>** Exposure X (int)**</td>
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<tr>
<td><strong>Exposure XXI RC (Pre)</strong></td>
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<td><strong>FM Acoustics A800 (2.500 watt)</strong></td>
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<td><strong>Goldmund 68 (Ex-dem)</strong></td>
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<td><strong>Harman Kardon AVP 1AV Processor</strong></td>
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<td><strong>Cyrus PXS-R (PSU)</strong></td>
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<td><strong>Cambridge Audio C75 Pre</strong></td>
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<td><strong>Herbert Signature Pre-power + PSU</strong></td>
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<td><strong>Meridian 60 mono amps 150 wpc - bal</strong></td>
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<tr>
<td><strong>Quad 306 power amp</strong></td>
<td>£750 £425</td>
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<tr>
<td><strong>Lexicon 30</strong> + PSU</td>
<td>£1350 £799</td>
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<tr>
<td>LF LSB + PA2 (Pre/Pwr)</td>
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**EX-FATORY SPECIAL PURCHASE**

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<tr>
<th>TDS Second State Mono</th>
<th>£6400 £3200</th>
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<tr>
<td><strong>Probably the most beautiful solid state amplifiers we have ever seen!</strong></td>
<td>£6400 £3200</td>
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<tr>
<td><strong>TSS Second State Stereo PWR</strong></td>
<td>£700 £1800</td>
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<td><strong>TSS Second State Stereo Pre Amp</strong></td>
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<td><strong>TSS Integrated State Int-amp</strong></td>
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<tr>
<td><strong>EMOTIONAL STATEMENT</strong></td>
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<td><strong>VNA A60 Power - As New</strong></td>
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</tbody>
</table>

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A & R Cambridge Alpha Tuner | £75
Arcam Alpha Tuner | £75
Avantec BM611 Valve Tuner | £148
Leak Delta FM Tuner | £65
Leak Delta AM/FM Tuner | £75
Magnat Dynalab FII | £350 £250
Myrrad T40 (ex dem) | £399 £294
Nakamichi 630 Tuner/Pre-amp | £300 £290
Pioneer KTU11/6 + vtrack 10” 10” R to R | £95
Quad FM | £95
Revox A77 IV / T4 | £EPOA
Revox B77 IV + / T400 (Call for details) | £EPOA
Sony TCK 411S | £320 £220
Tandberg 3034 (silver) | £278 £175
Technics RS-BX404 (cassette) | £90
Tietta Lyx Tuner | £500 £324
Yamaha 800 AM/FM Tuner | £175

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### TESTING, TESTING

Simon Pope and Richard White reveal two more of their favourite recordings for grilling hi-fi components.

#### Edward Elgar

**Violin Concerto**

*Pinchas Zukerman, London Philharmonic*

Pinchas Zukerman has recently turned 50, not quite an elder statesman but a senior in all the same. One of my more up-to-date music dictionaries gives him as “Int'l rep as soloist esp. Elgar” and this 1976 CBS recording is probably the one which gave rise to the “esp. Elgar”!

Zukerman is in no mood to fool about here. From the first entry, the soloist stamps his mark, his approach more gypsy-ish than the earlier Sammons/Menhuin school. Whereas the earlier “exciting chunks are the moments of delighted heartbreak, where it seems that nothing in the world is sad enough to give such joy.” This recording was made on the all-time great proms - the critics with these performers, in the Royal Albert Hall. It turned out to be one of the London Philharmonic under Barbirolli's classic recording with the Berlin Philharmonic under Barenboim occasionally seem a little hard-pressed to keep up; small wonder they had 'the composer's intentions' in their minds, Zukerman has the Concerto to mould anew.

You can almost see the clouds of emotion as the violent exoticism of the first rhapsodic phrases get under way. The London Philharmonic under Mahler (whose music was banned under the Nazis) back in the 1960s. He simply lived and breathed this music.

#### Gustav Mahler

**Symphony No.5**

*Vienna Philharmonic*

Of my eight or so desert-island choices, this is the one I genuinely couldn't change your mind! RMW
MEASURED PERFORMANCE

AMPLIFIERS

MUSICAL FIDELITY X-P100 AND X-AS100
The X-AS100 power amplifier delivered ample power, producing 128 watts into an 8 ohm load and a massive 225 watts into 4 ohms. That’s more than enough to handle any loudspeaker and there was little voltage loss as current draw increased, so bass transients will be solidly delivered. The power amplifier will have no trouble driving any loudspeaker loud.

Frequency response was flat from 8 Hz right up to 63 kHz, from CD through to output. That is wide enough to reproduce CD properly and means the MF is able to deliver deep low frequencies.

Distortion was low, measuring 0.004% at 1 kHz and little more at 10 kHz. The amp was very linear at all output levels and frequencies so it is likely to offer a clean, open sound. With good sensitivity, low noise in spite of high gain and wide channel separation, the Musical Fidelity combination measured very well. NK

NAKAMICHI RE-10 RECEIVER
Nakamichi’s RE-10 is very powerful, producing 153 watts into 8 ohms and 240 watts into 4 ohms. It has a beefy power supply which holds up well under load and should deliver solid bass.

Bass response reached down to 26 Hz, which is a little curtailed. These days 5 Hz-10 Hz is more common. Treble distortion was on the high side too, but since it was primarily second harmonic it will probably be inaudible.

Unfortunately, the receiver has buffered inputs and the one for CD overloaded at 2 V. Since many players these days produce more than 2 V and CDs are often compressed up to the top, distortion is likely. This is not clever.

The tuner had +2 dB treble lift at 8 kHz in its audio response, which will give it a bright sound. Channel separation was adequate at 29 dB but not up to modern standards set by budget separates. Hiss was adequately low at -70 dB but sensitivity poor at 80 uV for 50 dB hiss on stereo.

The signal strength meter appears to have many segments but in fact has just two: one which will always be lit as it needs just 6 uV, and one which will almost never light because it requires 1250 uV. Although this is sensible, because the tuner needs a lot of signal (1600 uV) to reach full limiting, only those with a large aerial will get the upper two thirds of the display to light.

The RE-10 is powerful, but the tuner section is mediocre in quality and some CD players may well cause input overload distortion. It isn’t very well engineered in truth. NK

AMPLIFIER

Power 153 watts
CD/tuner/aux.
Frequency response 26 Hz-48 kHz
Separation 58 dB
Noise -97 dB
Distortion 0.04%
Sensitivity 180 mV
DC off-set 39 mV/32 mV
TUNER
Frequency response 50 kHz-13 kHz
Stereo separation 29 dB
Distortion (50% mod.) 0.7%
Hiss (CCIR) -70 dB
Signal for minimum hiss 1.6 mV
Selectivity (at 0.4 kHz) 74 dB
Sensitivity
mono 6 uV
stereo 1250 uV
signal strength meter: 6 uV, 1250 uV

Noise -83 dB
Distortion 0.004%
Sensitivity 200 mV
DC off-set -33 mV/1.9 mV
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<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
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<tr>
<td>AVI 52000 Pre amp/phono stage E/D</td>
<td>£1999.00</td>
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<tr>
<td>AVI 52000 Mono power amps E/D</td>
<td>£1999.00</td>
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<td>B&amp;O Avant 28&quot; inc Video Ex-Display</td>
<td>£3700.00</td>
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<td>B&amp;O AVS TV/HI-FI/CD Ex-Display</td>
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<td>B&amp;O MX4002 21&quot; T.V. Ex-Display</td>
<td>£1600.00</td>
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<tr>
<td>B&amp;W P4 Speakers - Black E/D</td>
<td>£495.00</td>
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<tr>
<td>Linn KL1/280 Pre-Power Amp S/H</td>
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<td>Linn Kudos (Neesy) Module Tuner</td>
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<td>Linn Wakonda Phono Preamp S/H</td>
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<td>Linn Kan2 Speakers S/H</td>
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<td>Linn Majik phono amplifier S/H</td>
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<td>Linn Kand2/CD Player S/H</td>
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<td>Linn Numerik DAC S/H</td>
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<td>Linn Kaim Preamp - Line E/D</td>
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<td>Pioneer PWR555 Re-Writable (NEW)</td>
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<td>Rega XEL Monitor Speakers (blk) E/D</td>
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<td>Yamaha CDX890 CD Player E/D</td>
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Call (0181) 318 5755 or 852 1321
248 Lee High Road, Lewisham London SE13 5PL 10am-6.30pm, Monday-Saturday (closed Thursday)
**CYRUS aPA7 MONOBLOCS**

The Cyrus aPA7 amp produces 162watts into 8ohms and 240watts into 4ohms. A cooling fan and protection circuits ensure the unit can cope.

Even though global negative feedback is not used, the unit was linear, producing little distortion across the audio band at all outputs. The worst figure was produced with the amp at full power at high frequencies, measuring a low 0.04%. Our analysis shows the distortion was odd-order only, which can have a minor sharpening effect but it does not result in roughness or coarseness. The Cyrus does not suffer in measurement terms as a result of abandoning global feedback. However, transistors are so inherently non-linear and variable in gain they must be linearised through feedback one way or another, so the aPA7 uses local feedback.

With adequate sensitivity and very low noise, the Cyrus measured well. NK

**Power** 162watts

**CD/tuner/aux.**

**Frequency response** 10Hz-45kHz

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<tr>
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<td>-60dB</td>
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<td>20kHz</td>
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**Noise** with emphasis -82dB

**Dynamic range**

**Output** 2.3V

**Marantz CD-17**

The CD-17 produces very little distortion. Our analysis at -30dB shows a smooth noise floor free from quantisation spikes and distortion harmonics. Although it cannot match Denon’s Alpha Processing players below -60dB, this is otherwise the best possible result from CD.

Frequency response measured ruler flat, a characteristic likely to give the sound a hard edge at times.

Channel separation was high, noise very low and output normal at 2.3V. The Marantz measured well in all areas. NK

**Power**

**Frequency response**

<table>
<thead>
<tr>
<th>Frequency response</th>
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<tr>
<td>Distortion (%)</td>
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<td>-6dB</td>
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<td>-30dB</td>
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<tr>
<td>-60dB</td>
<td>0.54</td>
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<tr>
<td>-90dB</td>
<td>29</td>
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<table>
<thead>
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<th>Separation (dB)</th>
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<tr>
<td>1kHz</td>
<td>122</td>
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<tr>
<td>20kHz</td>
<td>92</td>
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</tbody>
</table>

**Noise** with emphasis -107dB

**Dynamic range**

**Output** 2.3V
Off board valve rectified, choke input filter power supply for Valve Amplifiers. This upgrade reduces distortion, increases resolution and strengthens bass performance and dynamics. If you like the sound of your valve amplifier but would like to tighten the bass and strengthen the overall dynamics this is what you need. Versions available to suit everything from vintage Leaks to modern Audio Innovations. Audio Note and Art Audio designs. If you are unsure about the suitability for your amp please telephone us.

Valve Amplifier Power Supply Upgrade £595.00

In every instance the Border Patrol effect was nothing short of a transformation. Bass solidified, imaging became significantly more three-dimensional and substantial, and the power supplied amp made the regular version sound, quite literally, a mess.

With the border patrol back on the music regained its composure and coherence. In many respects it was like taking the good things from vintage Leaks to modern Audio Innovations. Audio Note and Art Audio designs. If you are unsure about the suitability for your amp please telephone us.

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Rothwell

Valve Amps of Distinction

This pre/power combo has been winning admiration and praise from satisfied customers throughout Britain and abroad for over five years. Many are so impressed with the performance that they have invested in a second Rubicon, running the two as monoblocks. To find out for yourself why these music lovers are so dedicated to Rothwell contact your nearest dealer for a demo.

The Rubicon is a stereo valve power amp using triode configured EL34s to give a remarkably delicate sound, guaranteed to captivate. Bridgeable for monoblock operation.

£999

The Indus is the ultimate passive pre-amp, based on Rothwell's unique stepped attenuator. This precision device has fine and coarse volume controls to give 135 volume settings and unbeatble sonic accuracy. £499

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Sounds Perfection
Shadwell Hi-Fi Studios
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CTI Audio Attenuator / Volume Control

Improve the sound quality of your amplifiers by changing to the CTI volume control.

CTI offers you a more effortless sound, more details, better dynamics, lower distortion and improved bandwidth. CTI has the ability to “disappear” and not influence the enjoyment of the music. The tracking between stereo channels and the attenuation is within the range of professional equipment. Besides, CTI is very compact for easy build-in.

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• Oil ones and conductors are gold plated.
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CTI Specifications
Specifications
Bridgeable: 8 Ohm 8Wx2
Preamp accuracy: ±0.015dB
Slewing between channels: ±0.012dB
• Input: 5V
• Output: 2V

Dani> Audio Connect (Thailand) Ltd. 60-101/5 Bar Cong Guai Moo 1, - Nongkran Road-Suk 2, Bangkok 10220 Thailanf Tel: 82-2-254 9472 Fax: 82-2-254 9478 E-Mail: mtase@btcm.com

UK distributor: Audio-Century (UK) Ltd 6 Tynor Street, Centre Warrn Street, Manchester M15 4DR Tel: 061 568 2505 Fax: 061 568 2506 E-Mail: Audio-Century@cyberis.co.uk

5 miles from either J6/BA M40

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Mobile: 0973 233380 E-mail: HICAM@GLOBALNET.CO.UK
DENON DCD-1650AR
Denon’s Alpha processor has some distinctive characteristics that affect measured performance. We measure frequency response by convolving a pulse test signal in an FFT signal analyser. It’s interesting to see that Alpha processing curtails treble energy with a pulsive signal: the upper limit measured just 8kHz instead of a normal 21kHz. This lies in fairly well with an innate warmth displayed by Alpha processing players. However, they aren’t dull sounding either and, not unsurprisingly, normal steady test tones are fully reproduced right up to 20kHz. So Alpha processing effectively slides bandwidth, according to the nature of the signal being processed, and I would guess that some ‘warmth’ will result. In practice it usually does.

The other feature of Alpha processing is superb linearity at low signal levels. Fewer and fewer digital bits become available to describe a signal as its level decreases, so distortion goes up. A -90dB signal on CD typically suffers 30% distortion. The Denon DCD-1650AR produces just 6% at this level - a large improvement. In fact, the player is very linear right down the audio range, producing little distortion at all levels. This will help keep the sound smooth and free from hardness.

In all other areas, such as noise, channel separation and dynamic range, the Denon measured very well, right up with the best of them. Denon know what they are doing. This player’s performance is a little unconventional but it has been carefully engineered, is typical of Alpha processing and, although arguably a little contrived, this usually results in fine sound quality. NK

HELIOS MODEL 3
The Helios has a ruler-flat frequency response - so flat it may have been a prime design goal. Unfortunately, in my experience this offers no particular subjective benefits. It is an entirely theoretical design goal that with CD more often than not gives a slightly bright and hard edge to the sound.

Linearity was not up to current standards, distortion at -30dB measuring 0.04% against 0.02% for better converters. Further down the range, distortion was even higher than normal, hitting 2.4% at -60dB against around 0.5% for a good modern player. This reduced the EIAJ dynamic range figure to 95dB.

Output was unusually high at 5.1V. Philips specify 2V as the reference output level for CD. At +6dB above this, the Helios will be unusually loud against others in any shop demo and may even overload some active input stages. Noise was low without de-emphasis, but jumped to a poor -82dB with emphasis switched in. Although emphasis is rarely used and hiss will not be a problem at -82dB, this is still unusual. Players usually measure much the same at infinity zero, emphasis or no emphasis.

The Helios was a little peculiar in many areas and not overly impressive in measured terms. NK

---

**Frequency response**

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<th>4Hz-21.5kHz</th>
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<tr>
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<td>right</td>
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<tr>
<td>-6dB</td>
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<td>-60dB</td>
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**Distortion (%)**

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**Separation (dB)**

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<th>20kHz</th>
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<td>112</td>
<td>91</td>
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<tr>
<td>109</td>
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**Noise**

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<th>with emphasis</th>
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<tbody>
<tr>
<td>-104dB</td>
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<tr>
<td>-82dB</td>
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</tbody>
</table>

**Dynamic range**

| 94dB |
| 5.1V |
SLATE AUDIO GARRARD 301 and 401
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THE REVIEWERS

"The design defines what real instrument solidity should be, it's in a class of its own." Alan Sircum, Hi-Fi Choice. "The build and performance of the Slate Audio 401 are the audio equivalent of the E type Jaguar." Audiophile. "I have never used a system like this one, it gets everything right. Peter Soper insists Garrards are best mounted on Marble or stone, and from my experience with this plinth I wouldn't disagree." Noel Keywood, Hi-Fi World. "The Garrards main problems are dealt with most effectively by three cures; correct set up, heavy plinth and appropriate mat. Peter Soper has mastered them all, the results are close to miraculous." Ken Kessler, Hi-Fi News & Review. "I have been using the fantastic Slate plinthed Garrard, the sound was nothing short of breathtaking. The basic Garrard without the Slate plinth is well engineered and pleasant sounding, but they only give exceptional results with the right kind of treatment." Dominic Baker, Hi-Fi World.

"I have tested your 301, the sound quality as you know is excellent." G. Pyne, Sircom, Hi-Fi Choice. "The build and performance of the Slate Audio 401 are the audio equivalent of the E type Jaguar." Audiophile. "I have never used a system like this one, it gets everything right. Peter Soper insists Garrards are best mounted on Marble or stone, and from my experience with this plinth I wouldn't disagree." Noel Keywood, Hi-Fi World. "The Garrards main problems are dealt with most effectively by three cures; correct set up, heavy plinth and appropriate mat. Peter Soper has mastered them all, the results are close to miraculous." Ken Kessler, Hi-Fi News & Review. "I have been using the fantastic Slate plinthed Garrard, the sound was nothing short of breathtaking. The basic Garrard without the Slate plinth is well engineered and pleasant sounding, but they only give exceptional results with the right kind of treatment." Dominic Baker, Hi-Fi World.

OUR CLIENTS

"I have tested your 301, the sound quality as you know is excellent!" G. Pyne. "The results I get are really unbelievable and I have tried some of the best turntable around. (Linn LP12 Roksan Xerxes)." "Thanks again for a marvellous piece of art." "Mr Teilingen. I am delighted with my Slate Audio Garrard 301, it sounds fantastic. Well worth all the detailed work that went into the design." R. Newham. "When I first put up the Slate Audio 301 I must admit to having quite a shock, forever converted." K. Van Green, Electric Eel Studios.

SLATE AUDIO

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DENON DRM-555

Denon adhere closely to the replay standards laid down for cassette. As a result, a recording made on their decks will transfer to a personal stereo, car player or any other player and work properly, providing the other player meets the standards too. The DRM-555 was no exception in terms of replay frequency response, meaning head azimuth and replay equalisation were both correct. Replay speed was +1.5% fast, but this is no disaster - most people will barely notice the error. Noise from the head and in the replay amps was low too.

Recording performance was adequate, if not wonderful. The head is a budget design and overloaded severely with metal tape and strong bass. Although decks like this work with metal tape, record levels must be kept to 0dB absolute maximum on the level indicator (set at Dolby flux). Trouble is, even then bass distortion hits 16%, measurement showed. Most users will probably find good ferric tapes like TDK AR best value, especially when there is a lot of bass, because the lower bias flux allows +4dB more signal level to be used.

However, bass response was uneven due to head contour effects so the DRM-555 will never excel in this region. Variable bias allowed flat frequency response to 18kHz or so, although there was little variation (2dB at 20kHz) with metals.

Similarly, the transport suffered erratic cyclic drift (low-rate wow) as the width of the peak in our speed stability analysis shows. This will make sustained piano notes seem unsteady and also dirty the sound with the paperiness of flutter.

The DRM-555 is a budget deck well designed and adjusted for its purpose. It does the best possible at the price.

REPLAY (pre-recorded tapes)
Frequency response (-2dB) 50Hz-18kHz
Speed accuracy 1.5% fast
Hiss (70uS, Dolby out) -61dB

RECORDING (blank tapes)
Frequency response (IEC Primary Refs.)
ferric (IECI) 55Hz-17kHz
chrome (IECII) 55Hz-18.6kHz
metal (IECIV) 55Hz-20kHz
Separation (1kHz) 51dB
Distortion (315Hz) 2.3%
Hiss (70uS, Dolby out) -55dB
Speed variations (DIN total) 0.14%

Flutter energy (3-3.13kHz) -17dB
MOL/SAT (IEC Refs) 315Hz/10kHz
ferric (IECI) 3.5dB/-4dB
chrome (IECII) 0dB/-2dB
metal (IECIV) 0dB/+2dB

ORTOFON 510 MKII

The original 510 had a rising response and a coarse-ish sound. The new MkII still has a treble rise of +5dB at 20kHz when tracking outside grooves and will sound bright. On inner grooves tracing losses, dependent upon stylus dimensions, measured -3dB at 20kHz. So the stylus is quite lossy and the 510 will change as it tracks in, sounding bright most of the time but slowly sounding more even toward inner grooves.

The cartridge is light at 5gms, meaning arm effective mass will be low and warp riding good. Tracking performance was exceptional at all frequencies; in this area the 510 was very impressive. It had correct vertical tracking angle too, and low overall distortion as a result. Channel separation was low at 22dB, as it always is with Ortofons, but this is still adequate. Another strong point was the enormous output of 6mV at 5cms/sec rms. This will ensure hiss is inaudible and help toward a clean, punchy sound.

The 510 MkII measured very well in most areas. It will still sound bright, except on inner grooves, and the stylus is likely to miss fine detail, but it will give sharply-defined images and preserve valuable records thanks to its superb tracking performance. As always, a nice piece of engineering from Ortofon.

Tracking ability (300Hz)
lateral 90um
vertical 45um
lateral (1kHz) 25cms/sec.
Distortion (45um)
lateral 1%
vertical 1.5%
Output (5cms/sec rms) 6mV
We now have on permanent demonstration the following new products: PROAC Response 3.8 loudspeakers, the whole range of AUDIOPHILE SYNTHESYS products, the NEW ARCADA CD player, DUGUTHY "Vista" power amplifiers, the FIDELITY NU-VISTA pre amp, the CADENCEARCADIA and latest CADENCE ES loudspeakers, BAPASON loudspeakers, GOERTZ cables and TICE MILLENIUM loudspeakers, the amazing INNESSOUND hybrids, PA THUS twin tower amp (striking), PROAC Tablette 2000 and Audio 150 loudspeakers. AUDIONOTE Zero system and TECHNOLOGY CD players DNM pre and power amplifiers, Sudger MASTERCLASS A amplifiers and of course all our usual equipment. For any more information please call.

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● Audio-note SN 3 (Silver) MC transformer. Mint.
● Pioneer Exclusive M600 Watt Class A monoblock. Very black.
● Tube Technology Pre-amp Type A and Genus 100 Watt mono blocks.Boxed. Mint.
● Passio Digital Lens. Mint.
● SD Acoustics SD 1E Loudspeakers
● Naim 72/Hicap/150 New
● Proac Response 3.5 Loudspeakers. (Burnt Oak) Boxed. Mint.
● Audio-note CD 2 CD Player (One Year Old).
● Audio Innovations Series 1000 M/C Transformer.
● Audio-note Level 5 E's. Ebony. Cost new £6,600.
● Naim 72/Hicap/150 New
● Proac Response 3.5 Loudspeakers. (Burnt Oak) Boxed. Mint.
SPEAKERS

ELAC 310i JET
Ribbon tweeters, when properly engineered, produce a ruler-flat frequency response. The JET’s ribbon was properly engineered: apart from one small, narrow peak, it measured flat within 1dB to 20kHz - an exceptional result. It will almost certainly give smooth, clear treble free from artificialities or unpleasantness. It should also possess a sonority uncommon amongst conventional loudspeakers.

The mid/bass unit also measured flat and blends seamlessly into the tweeter without phasing problems. It has just a little bit of bass boost to add speed and oomph. Just as well, because downward extension was poor, the -6dB point being a high 80Hz, so this loudspeaker does not produce low bass, even if it does look effective in this respect. It should be used close to a rear wall to raise bass output.

Sensitivity measured a reasonable 86dB sound pressure level from 2.8V input, but since impedance was low at 5ohms overall the ELAC was not especially efficient, drawing current to go

REL STRATA III
The Strata can be adjusted to suit virtually any satellite loudspeaker and room. We used it with Diapason Karis loudspeakers. Measurement showed it extended response down to 10Hz (+6dB), as our analysis shows. In practice we could get a flatter response through monitoring adjustments with our spectrum analyser, but we decided to publish instead the response dialled up subjectively. Not unsurprisingly, a little bass lift was chosen, which compensates for the ear’s falling sensitivity at very low frequencies, but all the same this is a very flat in-room averaged result.

Frequency response of the system ran flat (+/-3dB or so) down to 16Hz, so this combo would properly reproduce church organ and other ultra-low frequency effects. Conventional passive loudspeakers of any acceptable size cannot manage this. Since the subwoofer is not large and could easily be hidden, this is impressive. The REL offers true sub-bass. NK

ALESIS M1
The M1 actives measured unusually well. Frequency response was academically flat, as our analysis shows, reaching 16kHz within 1dB, except at bass frequencies. There was no midrange crossover suck-out, nor any sign of one across a range of forward listening angles. This was a result of excellent driver integration from the active crossover.

The M1 was considerably better than a conventional passive loudspeaker in this area and, subjectively, the tight phase match adds weight and solidity to high-frequency transients like cymbals. Lack of a suck-out ensures good detail without the artificiality of treble lift, another good feature. Flat treble to 16kHz can result in treble hardness I have found, but this depends upon room acoustics and tweeter quality. Such a speaker will sound bright in a lightly-furnished, reflective room, but normal in a heavily-furnished room with heavy curtains. If the tweeter is of high quality, as it seems to be in the Alesis (ie, not a peaky metal dome!) then bright treble is survivable.

Small-ish loudspeakers must have some bass lift for body and warmth; Alesis have used just the right amount, lifting output by +2dB down to 63Hz. Below this, bass output rolls off rapidly, measuring -6dB at 40Hz. Below this the ports take over, so the M1s go low from driver forward radiation, probably relying on a little active bass EQ to do so. So the M1s are unusually phase coherent, from low bass fundamentals up to high treble.

Sensitivity was high enough at full volume to deliver 110dB SPL at 1m from the peak output of a CD player. This is very loud, but below driver damage level and strikes me as very judiciously chosen.

Since the volume control would go to zero, the M1s can work direct from a CD player, but would need a pre-amp with a little gain (x7 for 300mV) for other sources.

With a silk-dome tweeter and carbon-fibre woofer, the M1s look very serious in every respect. Their measured performance was exceptional. NK
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STANDS
Alphason (5 shelf, black)
- Was £470
- Now £250

SPEAKERS
Ruark Epilogues (cherry)
- Was £280
- Now £235

Lumley Monitor LM 2.5 (L. Oak)
- Was £1750
- Now £1500

Lumley Monitor LM 3.5 (Walnut)
- Was £1050
- Now £900

Totem mite 'T' (Mahogany)
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WORLDWIDE MAIL ORDER + 44 181 878 0066
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**A selection of our ever-changing items for sale (all fully guaranteed):**

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**Hi END CLEARANCE SALE**

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**COMPACT DISC PLAYERS TRANSPORTS/ACCESSORIES**

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<td>Audio Lease 250 transport/matchbox £159.00</td>
<td>£159.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
</tr>
<tr>
<td>Cambridge C650 £250 (black)</td>
<td>£159.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
</tr>
<tr>
<td>Denon CD 710 £99.00</td>
<td>£99.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
</tr>
<tr>
<td>EPM Edridge £99.00 (grey)</td>
<td>£99.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
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<tr>
<td>Marant £125 (black)</td>
<td>£99.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
</tr>
<tr>
<td>Yamaha DSP 0490 £129.95</td>
<td>£129.95</td>
<td>Turntables/arms/hifi-stage/etc</td>
</tr>
<tr>
<td>Musical Fidelity X 2500 piccolo</td>
<td>£129.95</td>
<td>Turntables/arms/hifi-stage/etc</td>
</tr>
<tr>
<td>Musical Fidelity X 500 piccolo</td>
<td>£129.95</td>
<td>Turntables/arms/hifi-stage/etc</td>
</tr>
<tr>
<td>Musical Fidelity X 1500 piccolo</td>
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**OTHER ITEMS OF INTEREST**

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<tr>
<th>Product</th>
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<th>Description</th>
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<tr>
<td>Technics ST-P 700 remote</td>
<td>£499.95</td>
<td>Turntables/arms/hifi-stage/etc</td>
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<tr>
<td>Technics ST-P 700 remote</td>
<td>£499.95</td>
<td>Turntables/arms/hifi-stage/etc</td>
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<td>Musical Fidelity X 2500 piccolo</td>
<td>£499.95</td>
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**SALES TESTERS/DEMO MODELS**

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<tr>
<th>Product</th>
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<tr>
<td>Audio Lease 150s Q custom built</td>
<td>£350.00</td>
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<td>Denon DM C505</td>
<td>£1,045.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
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<tr>
<td>Denon DM C5060 custom built / 5.1 system / hifi-rec (rgc)</td>
<td>£1,045.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
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<tr>
<td>Technics ST-P 2000 full remote</td>
<td>£599.95</td>
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<tr>
<td>Technics ST-P 550 remote</td>
<td>£599.95</td>
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<tr>
<td>Sony CDP 350</td>
<td>£599.95</td>
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**HI-END SPEAKERS**

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<thead>
<tr>
<th>Product</th>
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<tr>
<td>Nam 10/64</td>
<td>£159.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
</tr>
<tr>
<td>Nam 10/64</td>
<td>£159.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
</tr>
<tr>
<td>Nam 10/64</td>
<td>£159.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
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**LOW PRICE SPEAKERS**

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<td>Nam 10/64</td>
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</tr>
<tr>
<td>Nam 10/64</td>
<td>£159.00</td>
<td>Turntables/arms/hifi-stage/etc</td>
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### Cassette

<table>
<thead>
<tr>
<th>Model</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yamaha TC-800GL</td>
<td>Early classic in serious cassette. It's ski-slope looks got it a cult following once it had ceased to be simply ugly.</td>
</tr>
</tbody>
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### CD Players

<table>
<thead>
<tr>
<th>Model</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meridian 207</td>
<td>Built-to-last player with easy upgrade routes for the modifier. Not knock-out as it stands but get one cheap and have a go!</td>
</tr>
<tr>
<td>Pioneer PD-91</td>
<td>Built-to-last player with easy upgrade routes for the modifier. Not knock-out as it stands but get one cheap and have a go!</td>
</tr>
</tbody>
</table>

### Amplifiers

<table>
<thead>
<tr>
<th>Model</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leak Point One TL12 &amp; TL10</td>
<td>Ancestors of Hi-Fi, consequently expansive nowadays. As with all vintage stuff, overhauling is de rigueur before use.</td>
</tr>
<tr>
<td>Leak Stereo 20</td>
<td>Ancestors of Hi-Fi, consequently expansive nowadays. As with all vintage stuff, overhauling is de rigueur before use.</td>
</tr>
<tr>
<td>Leak TL12+</td>
<td>Ancestors of Hi-Fi, consequently expansive nowadays. As with all vintage stuff, overhauling is de rigueur before use.</td>
</tr>
<tr>
<td>NAD 3020</td>
<td>Ancestors of Hi-Fi, consequently expansive nowadays. As with all vintage stuff, overhauling is de rigueur before use.</td>
</tr>
<tr>
<td>Quad 33</td>
<td>Ancestors of Hi-Fi, consequently expansive nowadays. As with all vintage stuff, overhauling is de rigueur before use.</td>
</tr>
<tr>
<td>Quad II</td>
<td>Ancestors of Hi-Fi, consequently expansive nowadays. As with all vintage stuff, overhauling is de rigueur before use.</td>
</tr>
<tr>
<td>Supergen A21</td>
<td>Ancestors of Hi-Fi, consequently expansive nowadays. As with all vintage stuff, overhauling is de rigueur before use.</td>
</tr>
<tr>
<td>PA Technics SE-A5 Mk2</td>
<td>Ancestors of Hi-Fi, consequently expansive nowadays. As with all vintage stuff, overhauling is de rigueur before use.</td>
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### Loudspeakers

<table>
<thead>
<tr>
<th>Model</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klipschorn</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
<tr>
<td>Leak Sandwich</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
<tr>
<td>Lawrie PM8A</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
<tr>
<td>Magnepan SPGMA</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
<tr>
<td>Mission 770</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
<tr>
<td>Quad ESL57</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
<tr>
<td>Tannoy GRF &amp; Autograph</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
<tr>
<td>Wharfedale Super 8 RS DD</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
<tr>
<td>Yamaha NS1000M</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
<tr>
<td>Tannoy York, Lancasters</td>
<td>Not exactly plentiful or cheap but a splendid beast. For efficiency they have seldom been equalled. Space hungry!</td>
</tr>
</tbody>
</table>

### Vinyl

<table>
<thead>
<tr>
<th>Model</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acos Lustre</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Aphasius HR1005</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Ariston RD11</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Garrard 301 &amp; 401</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Goldring Lenco 88 &amp; 99</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Hadcock 228</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Lindon Axis</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Michell Focus One</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Shure M75</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>SME 3009 RS</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Thorens TD124</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Thorens TD150</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
<tr>
<td>Trio L-07D</td>
<td>Very honest piece of kit, well made and easily adjusted. Vinyl beginners could do very much worse.</td>
</tr>
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### Tuners

<table>
<thead>
<tr>
<th>Model</th>
<th>Verdict</th>
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</thead>
<tbody>
<tr>
<td>Leak Troughline (original)</td>
<td>Interesting ornament but no longer hi-fi. Bandwidth limited to 56MHz to 100MHz only. Excellent tuner with indifferent stereo decoding circuit. Best when adapted to use modern outboard decoder. Possibly the ultimate Terada console, including an oscilloscope for checking the strength of signal.</td>
</tr>
<tr>
<td>Leak Troughline II &amp; III mono</td>
<td>Interesting ornament but no longer hi-fi. Bandwidth limited to 56MHz to 100MHz only. Excellent tuner with indifferent stereo decoding circuit. Best when adapted to use modern outboard decoder. Possibly the ultimate Terada console, including an oscilloscope for checking the strength of signal.</td>
</tr>
<tr>
<td>Marantz ST-6</td>
<td>Interesting ornament but no longer hi-fi. Bandwidth limited to 56MHz to 100MHz only. Excellent tuner with indifferent stereo decoding circuit. Best when adapted to use modern outboard decoder. Possibly the ultimate Terada console, including an oscilloscope for checking the strength of signal.</td>
</tr>
</tbody>
</table>

---

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SME series IV pick-up arm £POA
SME series V pick-up arm £POA
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HI-FI WORLD, FEB 1999

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Tel: 01703 578877 / 442183 Fax: 01703 398905
Email: origin.live@virgin.net
website: http://www.originlive.com
Audio Designs of East Grinstead
Mail Order and Export Service

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<td>Arcam Av6</td>
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<td>ArcamAV6</td>
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<td>Castle Eden</td>
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<td>Cyrus DA01</td>
<td>New 358.90 299.90</td>
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<td>Epos E51</td>
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<td>XD 1000.00 499.00</td>
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<td>New 1792.00 999.00</td>
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<td>Yamaha DSP-A1</td>
<td>XD 1959.00 1999.00</td>
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<td>Linz Kudos</td>
<td>SH 2400.00 1259.00</td>
<td>Yamaha DSP-A2</td>
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<td>Linz Kudos</td>
<td>XD 775.00 219.00</td>
<td>Constantly changing stocks</td>
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<td>Linz Kudos</td>
<td>XD 775.00 415.00</td>
<td>please call with your requirements</td>
<td>XD 999.00 745.00</td>
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  - Mint Ex. Demo £400.00
- M-490 2-Way Tinted Vent Magnetically Shielded
  - Floorstander (Pinot #)
  - Mint Ex. Demo £350.00
- REGA Planar CD Player with Remote Control
  - Unused £800.00
- TDE 1000 10 CD Player
  - Mint £75.00

**HOME CINEMA**

- **CLASSÉ**
  - CAB-150 Multi Channel Switcheable Power Amplifier,
    3.4, 5 or 6 Channels (6150w - 3X30w) Balanced &
    5.1SE Inputs (Silver)
    - Mint Ex. Demo £3,600.00
- EAD Theater Master (Enforce AC-3 & DTS Processors)
  - Prerelease (Silver)
  - Mint Ex. Demo £3,600.00
- EAD Theater Vision Ultimate NTSC Laserdisc Player, AC-3
  - Output Finished in 24K Gold. "No 1 of only 5 ever
    made in Gold - Unique!"
    - Mint Ex. Demo £8,000.00
- HCP 390 CRT Projector
  - Mint Ex. Demo £4,000.00

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**PRODUCTS**

- LINN, KEF, Musical Fidelity, PRIMARE, Roksan, J A Michell, Pro-ject.
- AVI, TEAC, Onkyo, NAD, Boston, REL, Ortofon, Dynavector, Nordost.
- XOS, Straight Wire, Stands Unique, Aavik Furniture, Projekki Furniture,
  Quadraspire, Target Audio, Tannoy, LOEWE!

For a full Demonstration of any of these products
please contact Steve at our showroom!

The products listed below are all Ex-Demonstration.
A small charge will be incurred for Mail Order.

---

**NEW EX-DEM & PART EXCHANGE EQUIPMENT FOR SALE**

- **ALCHEMIST**
  - CD Player + power
  - £1,500.00
- **ALCHEMIST**
  - KRAKEN Power Amp
  - £500.00
- **DNA**
  - Receiver
  - £1,400.00
- **ROKSAK ROK ONE SPEAKERS**
  - £250.00
- **BLUEPRINT POINT ONE SPEAKERS**
  - £100.00
- **RMS WALL SUPPORT**
  - £50.00
- **NORDST RED DAWN SPEAKER CAB **4M PAIR**
  - £995.00
- **SYSTMP AUDIO 1150 SPEAKERS**
  - £750.00

---

**AUDIO MATTERS**

**NEW RANGE OF AURAL AMPs ON DEM - THE BLACK SHADOWS 45 TO THE GOLDEN DREAMS - WITH CADENCE ES MK H'S**

- **NEW SOUND**
  - Alchemist Forsetti pre + power
  - £2,398
- **NEW**
  - Alchemist Kraken Anniversary Mk11
  - £4,599
- **NEW**
  - Alchemist Audio (HiFi)
  - £2,490
- **NEW**
  - Audio Research SP1-4 pre (boxed)
  - £3,820
- **NEW**
  - Audioworks 250W valve monoblocks
  - £4,000
- **NEW**
  - Audion Black Shadows $5 5 valve monoblocks
  - £4,000
- **NEW**
  - Audion Silverheight 300B monoblocks
  - £4,750
- **NEW**
  - Chario Academy 1 solid walnut (ex/d)
  - £1,299
- **NEW**
  - Chario Academy 2 solid walnut (ex/d)
  - £1,164
- **NEW**
  - Chario Academy 3 (ex/d) floor standing solid walnut speakers
  - £1,399
- **NEW**
  - Conrad Johnson MV55 valve amp
  - £1,995
- **NEW**
  - Ead 859 pwr
  - £1,700
- **NEW**
  - Ead 949.4L pre
  - £499
- **NEW**
  - Genesis Gen 500, 500 spks in built active bass (ex/d)
  - £1,000
- **NEW**
  - Genesis Amp1 spk (ex/d)
  - £900
- **NEW**
  - Kreil Kaw 300B
  - £2,949
- **NEW**
  - Kreil Kaw 300B
  - £3,194
- **NEW**
  - Macintosh 2100 (looks like 275)
  - £450
- **NEW**
  - Macintosh C26 pre
  - £450
- **NEW**
  - Macintosh X25 pre
  - £450
- **NEW**
  - Macintosh Quad 77 in. Carbon
  - £700
- **NEW**
  - Respek 6ch pwr amp
  - £600
- **NEW**
  - Respek H1 cassette
  - £1,150

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QUAD ESL 63 £950, CD67, £450. 33 pre & 303 amps conv. Academy Sound 3000, Garrard 401 & Decca Millik arm & two heads, £250. Two Leak Troughline tuners & one decoder (Tim de Paravicini) £400. Tel: 01274 667 347 (Jul(I))

AURAL 10T speakers plus stands, plus Audio-Point 'footters', plus hoods, plus piano-lacquer black finish. Stereophile 'product of the year'. F1 4-star rated. £3000 ono (over £7000 new). Tel: Dave Burton 01895 274 001 (daytime or evening) (Jul(I))

CASTLE CHESTER loudspeakers, mahogany, £285. Denon DCI D700 CD player, heavyweight build, would make good transport (£650 when new) £200. Monarchy Audio DAC £300. CD and DAC together £450. All excellent condition. boxes, manuals. Tel: 0171 473 3818 weekday evenings, 01844 216 706 weekends (Jul(I))

LEAK POINT One stereo amplifier (bronzes), matching pre amplifier Varislope Stereo Plus. Troughline II tuner (mono) all refurbished to the highest standard (including transformer) £300. Gumstix 680 mint (yes, mint!) hardly used with owners manual £360. Technics ST5000 classic tuner £40 mint. Hi-Fi magazines 600+, late 1960s to 1999 vgc. Weight 240kg bulk 10cft. Offers please. Tel: 01392 860 182 evenings (Jul(I))

MUSICAL FIDELITY MVX pre-amp. Musical Fidelity A370 power amp £1200 combination only. Apogee Cenaur Minor speakers with matching stands £650. Tel: Graham 0181 423 0900 (Mid(I))

STAX NOVA Basic electrostatic phones with SRM-XH energiser/amp (latest excellently reviewed models) as new and boxed £225 (ie 1/2 original price). Tel: 01923 821 204 (Mid(Middx)) or email: c@2reefreeserve.co.uk (Jul(I))

QUAD ELECTROSTATIC ESL 57 speakers. Bronze mid 70s. Light domestic use only. Hardly marked £300. Tel: 01654 781 246 (mid-wales) (Jul(I))

SD1 ('really successful, big speaker performance' HFA) 3 way floorstanding speakers £375 (£1200); Early AR turntable £50, part-exchange Snell J, top pre amp, Stad S, Edison 12. £309! Tel: 01273 773 546 (Jul(I))

WANTED: VAN Den Hul The First and/or The Second interconnects. Tel: Paul 01603 410 828 (Jul(I))

AUDIO TECHNICA AT0C9, brand new and unused. Bought for new house, sounds fab, £2300. Tel: 01922 402 320 (Jul(I))

MARK LEVINSON ML-3 power amplifier (matched pair) for bi-amping. £2700. Audio Research SP9 MkII, Meridian poweramp 555 £400. MERIDIAN 551 preamp £450. Tel: daytime 0171 281 410 828 (Jul(I))

MUSICAL FIDELITY MX5 pre-amp. Musical Fidelity A370 power amp £1200 combination only. Apogee Cenaur Minor speakers with matching stands £650. Tel: Graham 0181 423 0900 (Mid(I))

STAX NOVA Basic electrostatic phones with SRM-XH energiser/amp (latest excellently reviewed models) as new and boxed £225 (ie 1/2 original price). Tel: 01923 821 204 (Mid(Middx)) or email: c@2reefreeserve.co.uk (Jul(I))

QUAD ELECTROSTATIC ESL 57 speakers. Bronze mid 70s. Light domestic use only. Hardly marked £300. Tel: 01654 781 246 (mid-wales) (Jul(I))

**SMALL CAN BE THE BEST**

As a small independent dealer we are able to give a more personal, honest approach to customers. But equally we mainly search for those pieces of equipment which are out of the ordinary and offer something that the more mass produced products that shops sell can't match. Invariably this means the smaller British firms such as AVI, whose range of electronics including integrated amp, Pre-amp, Monoblocks, CD Players and Tuners have recently been supplemented by an exciting range of speakers - The 'Trons', starting with the diminutive Nu-Neutron to the Bigatron, Postiron and Gravitron. Can any new range of speaker's have received such a rave reviews in so many magazines in such a short time? All the AVI products are realistically priced and make superb complete systems, so do call if you would like a demonstration. Another British amp that has also recently impressed us is the new Michell Orca/Alecto plus the replacement for the ISO, namely the Delphini, which includes an outboard power supply plus ability to switch gain, impedance and capacitance. While the Alecto Monoblocks are excellent, they do cost £1989, while the stereo amp at only £1150, produces less power but never seems short of real impact, and makes an excellent buy.

**SALE ITEMS - SEE MAY ISSUE - SOME ITEMS STILL AVAILABLE**

Selco SPD350 Video Projector (Ex-Demo) £3300 (inc. fitting)  
Selco SVT105 Video Projector (SH) £2000 (inc. fitting)  
Mission 767's (Out Board X-over) New £2600, (S/H) £1400  
Selco SVT195 Video Projector (SH) £2699.00  
Selco SVT210 Video Projector (SH) £2599.00  
ATC SCM 10  
ATC 2050L Tower Active £4249.00  
ATC 505L Active £5875.00  
ATC Stands £350.00  
Cyrus AV Master £698.00  
Cyrus Disc/DAC Master £1790.00  
Linn Kairn Line £1400.00  
Linn Kairn Phono £1700.00  
Linn Majik Phono £800.00  
Mission Active Sub £299.00  
Monitor Audio Act Sub £499.00  
Monitor Audio CC900 £499.00  
Yamaha DSP E1000 £699.00  
Yamaha DSPA 592 £330.00

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AVI S2000 DAC 449.00 299.00  
AVI S2000 Pre/Phono 1199.00 599.00  
Arcam Xeta 2 499.00 299.00  
Arcam Xeta 1 499.00 299.00  
ATC SCA 2 Pre 2599.00 1999.00  
ATC SPA-150 POW 2699.00 1999.00  
ATC SC1A2/150 1984.00 1595.00  
ATC SCM 10 999.00 799.00  
ATC 20SL Tower Active 4249.00 3799.00  
ATC 50SL Active 5875.00 4499.00  
ATC Stands 350.00 249.00  
Cyrus AV Master 698.00 299.00  
Cyrus Disc/DAC Master 1790.00 950.00  
Linn Kairn Line 1400.00 799.00  
Linn Kairn Phono 1700.00 999.00  
Linn Majik Phono 800.00 499.00  
Mission Active Sub 299.00 249.00  
Monitor Audio Act Sub 499.00 299.00  
Monitor Audio CC900 499.00 249.00  
Yamaha DSP E1000 699.00 349.00  
Yamaha DSPA 592 330.00 249.00

**USED AND EX-DEMONSTRATION EQUIPMENT**

**New**  
**Old**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Description</th>
<th>New</th>
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<tr>
<td>Micromega Stage 1</td>
<td>Integrated CD Player</td>
<td>Used £550</td>
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<tr>
<td>Micromega Drive3</td>
<td>CD Transport</td>
<td>Used £1000</td>
<td>£500</td>
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<td>Micromega DAC 2</td>
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<td>Martin Logan Questi2</td>
<td>Loudspeakers</td>
<td>Used £5500</td>
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<tr>
<td>Linn LK100</td>
<td>Power Amplifier</td>
<td>Ex-D £650</td>
<td>£450</td>
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<tr>
<td>Linn Kairn</td>
<td>CD Player</td>
<td>Ex-D £1650</td>
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<td>Linn Majik</td>
<td>CD Player</td>
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<td>Integrated Amplifier</td>
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<td>Cyrus Pre</td>
<td>Pre Amplifier</td>
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<td>£350</td>
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<td>Epos ES22</td>
<td>Loudspeakers</td>
<td>Ex-D £1310</td>
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<td>Epos ES30</td>
<td>Loudspeakers</td>
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<td>£1950</td>
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<td>Pre Amplifier</td>
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<td>£995</td>
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<td>Project 6MC15</td>
<td>Turntable inc MC15</td>
<td>Ex-D £500</td>
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<td>Kreil Pam3</td>
<td>Pre Amplifier</td>
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<td>Power Amplifier</td>
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<td>£1200</td>
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<td>Nakamichi Dragon</td>
<td>Cassette Player</td>
<td>Used £1200</td>
<td>£600</td>
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<tr>
<td>Roksan Radius/Taloz</td>
<td>Turntable</td>
<td>Used £500</td>
<td>£250</td>
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</tbody>
</table>

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**JULY 1999**

AUDIO INNOVATIONS 300 amp - great phono stage - boxed. excellent condition. Hi-Fi Choice/Answers rave. Original & new valves - matched CVC. Price £850. Tel: 0113 252 2820 (Jul)(l)

WANTED: CELESTION SL6000 subwoofer system. With or without SL6005. Tel: 01782 535 652 (Jul)(l)

GARRAD 401 turntable, Slate Audio plinth, RB300, Goldring 1042, Grassmat £475 no offers. Pair of Quad II amplifiers professionally renovated with audiophile components including new set of KT66 £620. Tel: 01834 860 681 (Jul)(l)

TURNTABLES: ORACLE Premier with new suspension and power supply plus Oracle/SMC 345 arm £2000. Koetsu 80th Anniversary, low hours £1300. Well Tempered Signature with arm. One of 29 made, beautifully engineered £2800. Clearaudio Insider £1400. Tel: 01483 407 624 (work) (Jul)(l)

AUDIONOTE OTO SE phono amp, excellent condition and superb amp £800. Dali 104MS speakers, very efficient £100. (Jul)(l)

EXPOSURE 21RC remote preamp & Exposure/Neutrik XLR i/c (1m) £375. Exposure 1B super regulated monoblocks & 46m terminated Exposure speaker cable (wired) £175. Fabulous open window presentation. Gramaphone magazine 'class' status. All mintras new condition (2 yrs), boxed, demonstration a pleasure. DPA Enlightenment (marked @ rear) £275. Tel: 0131 538 9073 (eves) (Jul)(l)

QUAD ESL 63s black with stands, mint £125. Acoustic Precision Ekos CD player £950. Cyrus power PSU/SSR £525. Avondale 3 channel power supply/Naism 32.5 preamp, stunning £395. Tel: 0118 281 5681 (Jul)(l)

MUSICAL FIDELITY X100 £65. X-PSU £75. A: Final Edition. 40wpc Class A amplifier with external psu £185. Tel: 02129 786 435 (various/weekends) (Jul)(l)

LEXICON CP2 American digital surround processor, Dolby ProLogic (£750) £290. Sugden AU4 pre & power amplifiers £100-Hi-Fi World Favourite (£1000) £650. Linn LP12, Isotrack LVII, Linn K9 £420. Quad iis, QC1i pre's, FM1 & AM1 tuners, boxes, manuals & spare valves £400. Rege ELAS black floorstanders £500) £140. Tel: 0161 764 8888 (day). 0161 762 9884 (eves) (Jul)(l)

PROAC STUDIO 100s, Magogany £375 (£599). HNE Granite Cabelay speaker stands for above or similar, stunning £275 (£460) £600 for pair. FID LS1 preamplifier £275 (£1000). Croft moving coil stage £100. Technics TD16060CII/Maywayre IV AT OCS £200. All items mint/boxed. Tel: 01780 764 149 (Jul)(l)

EXPOSURE 21RC remote preamp & Exposure/Neutrik XLR i/c (1m) £375. Exposure 1B super regulated monoblocks & 46m terminated Exposure speaker cable (wired) £175. Fabulous open window presentation. Gramaphone magazine 'class' status. All mintras new condition (2 yrs), boxed, demonstration a pleasure. DPA Enlightenment (marked @ rear) £275. Tel: 0131 538 9073 (eves) (Jul)(l)


HEIYBROOK SEXTET speaker system, £3999. For any phono lovers. Bypass switch and sensitivity control. Black and measures 67x15x22 centimetres. Connections supplied for phono and DIN. £60. Tel: 0161 445 8366 between 2-6pm (Jul)(l)

HEIYBROOK SEXTETS, Walnut £2895. £950, Custom M7 line, looks, sounds amazing, Musical Fidelity B200, bi. Phone. Leave Message Tel/Fax: 01642 694 702 (Jul)(l)

NAIM 153s £699. Best sounding, looking Quad £650, rebuilt, restrayed £595. Beard P505 valve preamp £295, Custom P17 line, looks, sounds amazing, Musical Fidelity B200, bi. Leave Message Tel: 01624 694 702 (Jul)(l)

TEAC P30 CD transport. Boxed, immaculate, registration papers. HF/Vers reference. £1300 ono £2500. Audio Synthesis DAX, balanced version. Boxed, mint £950 ono £2800. Tel: 0131 535 4307 (day); 0131 556 7545 (eves); Email: s.hussain@ed.sac.ac.uk (Jul)(l)

LNN P12 Cirkus, Valthala, ItokvLV2 new Sumiko Blue Point Special, absolutely mint £2500 ono. £3050 turntable; flagship model - Mayware Mk4 arm ex cond. £200. Tel: Brian 0181 952 2044 (Jul)(l)

R. Burton 01403 250 5681 (Scot) (Jul)(l)

PIONEER A400X amplifier, boxed. £95. Pioneer SA7800 battlehip integrated amplifier (£300 in 1980), £125. Sony ST-J60 high end digital FM tuner, £55. Sony SS86e mini monitors, boxed. £30. WANTED: Naim NAIT1, Meridian MCD. Tel: 07899 816 120 (Brighton) (Jul)(l)

TEAC P30 CD transport. Boxed, immaculate, registration papers. HF/Vers reference. £1300 ono £2500. Audio Synthesis DAX, balanced version. Boxed, mint £950 ono £2800. Tel: 0131 535 4307 (day); 0131 556 7545 (eves); Email: s.hussain@ed.sac.ac.uk (Jul)(l)

KLIEPSCH CHORUS Mk4 speakers high and mid horns. £595. Medium oak great sound. £650 - no time wasters. Tel: 0171 790 3404 (Jul)(l)

LEAK 1041 amp, one year old, perfect, £800. Tel: 01293 8366 between 2-6pm (Jul)(l)

PORTOPHON M1120 turntable £450. Teleflex £400. S. Commendatore £500, looks, sounds amazing, Musical Fidelity B200, bi. Leave Message Tel/Fax: 01642 694 702 (Jul)(l)

NAIM 571, Meridian MCD. Tel: 07899 816 120 (Brighton) (Jul)(l)

WANTED: Naim NAIT1, Meridian MCD. Tel: 07899 816 120 (Brighton) (Jul)(l)

NAIM 135s just returned from Naim, fitted with new latest issue amplifier and regulator boards. New PSU capacitors, new XLRs, new sleeves, absolute bargain £1995. Leave message Tel/Fax: 01624 694 702 (Jul)(l)

BEST SOUNDING, looking Quad £595. Restored, rebuilt, restrayed £595. Beard P505 valve preamp £295, Custom P17 line, looks, sounds amazing, Musical Fidelity B200, bi. Leave Message Tel: 01624 694 702 (Jul)(l)

NAKAMICHI 410 preamp £220, Nakamichi 420 power amp £220, Nakamichi 480 tape deck £220, Sony JT 4X44 tuner £60. Tel: 01243 830 443 (evenings) (Jun)(l)

AUDIONOTE OTO SE with Harmonic Bor 808 dual mono preamp. £95. Pioneer SA7800 battlehip integrated amplifier (£300 in 1980), £125. Sony ST-J60 high end digital FM tuner, £55. Sony SS86e mini monitors, boxed. £30. WANTED: Naim NAIT1, Meridian MCD. Tel: 07899 816 120 (Brighton) (Jul)(l)

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LNN P12 Cirkus, Valthala, ItokvLV2 new Sumiko Blue Point Special, absolutely mint £2500 ono. £3050 turntable; flagship model - Mayware Mk4 arm ex cond. £200. Tel: Brian 0181 952 2044 (Jul)(l)
ROGERS- GS5 black speakers
XTC POW 2 power amp
TUBE TECHNOLOGY- SEER phono pre amp
TUBE TECHNOLOGY- PROPHET pre amp
SOUNDLAB-PRIST1NE electrostatics speaker
ROKSAN ROK1 black/r/wood speakers
ROKSAN-S1.5 silver power amp
ROGERS- GS6 black speakers
PROAC-STUDI0150 cherry/walnut speakers
PINK TRIANGLE TARATELLA (no arm) TTTable
MUSICAL FIDELITY A1001 amp
MUSICAL FIDELITY-38 pre amp
MONITOR AUDIO STUDI050 r/wood speakers EX/DEMO £ 3.300 £ 2,600
MISSION 754 rwood speakers EX/DEMO £ 1,500
MICROMEGA TEMPO P pre amp EX/DEMO £ 1.250
MICHEL BRONZ GYRODEC EX/DEMO £ 960
MERIDIAN- 501V
MARANTZ MM 500THX (pair) mono power amp SM £ 500
LINN CLASSIK
LINN NK100
Linn NAI M 3R
PINK TRIANGLE TARATELLA (no arm) TTTable
PROAC-STUDIO150 cherry/walnut speakers
ROGERS- GS5 black speakers
ROGERS- GS6 black speakers
ROKSAN-S1.5 silver power amp
ROKSAN ROK1 black/wood speakers
SOUNDLAB-PRISTINE electrostatics speaker
TUBE TECHNOLOGY-PROPHET pre amp
TUBE TECHNOLOGY-SEER phono pre amp
XTC POW 2 power amp EX/DEMO £ 1,450 £ 1,200

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NAIM 62k old style, good condition £150. Linn Sara IX speakers (black) with stands £375. NAD 2020i amplifier £60. Yamaha DSR-770PRO Dolby Prologic Surround Decoder £70. Arcam Black Box 3 £125. Tel: 01489 891 925 (Jul)

SPENDOR BCI loudspeakers, teak & stands £175. Yamaha CT610 tuner £30, Sugden A48l £50, all boxed. Tel: 01704 531 526 (evenings) (Pierseside) (Jul)

MINT CONDITION Audio Analogue Bellini preamp £350. Financial reasons for sale. Tel: 0116 267 5113, Email: pandes@netet.co.uk (Jul)

MISSION 772 speakers, unwanted gift. Mint £227, sell £185. Boxed. Pioneer PDP06 champagne, mint, boxed. £550 sell £399. NAD 24 CD 1 month old, mint, boxed. £250, sell £185. Tel: Steve 01865 559 737 anytime (Jul)

QUAD 44/405-2 pre/power amp £350, Millenium 25w mono block valve amplifiers £200 pair. Mail. active crossover £25. B&W DM2 loudspeakers £75. Philips 104B CD £60. Tel: Steve 0181 391 0229 (am-10.30pm mon-sat) (Jul)

QUAD IIS & 22 control unit & mono tuner £395. Garrard 401 chassis £125. SME 9" fixed headshell arm £75. Leak Troughline III mono tuner £75. Tel: 0161 973 9229 (Jul)

LINN SONDEK, Ekos, K9, Mantecon MB51 PSU £850. Arcam Alpha 3 amp £85. Mission 761 speakers £85. Technics SL-PG200 CD player £65. All mint, boxed etc. Tel: 01444 410 445 (Suxess) (Jul)

LINN KABERS, black ash wired 9 years old vgc £500 onvo. also 6m run Linn DK20 cable wired - needs reterminating £60. Tel: 0181 995 4312 (Jul)

CARY 305c amps. Mint condition, 18 months old, with granite plinths, spare 845s and all boxes £4950 onvo. Tel: Philip 01960 396 607 after 6pm (Jul)

CABASSE (FARELLA 400) 93dB floorstanding loudspeaker, 1997 £420 onvo. Nordost (Silver Shadow) 1.5m digital interconnect (£385) £195. Audio Innovations (Series 1000 monoblocks Mk3) £275 onvo. Audio Innovations (Series 200 preamp mc/mmc) £175 onvo. Tel: 01662 48623 (Jul)

NAIM NAC 52 & PS. immaculate condition, boxed. £2400 onvo. Tel: Colin 01293 416 022 (Jul)

SD ACOUSTIC SDI speakers 3-way tri-wirable, very efficient. 90dB+ vgc £450. Cyrus 2 tuner mint boxed remote £150 onvo. Leak Troughline Stereo teak speaker vgc £95. Tel: Mike 01246 209 578 day/280 755 evses (Jul)

TEAC REF 500 amp, CD, tuner, RC vgc £349. Michell banana plugs, 3 sets £21. Linn K20 biwired 2x3.5m £15. WANTED: Sony Discman-D-905. Tel: 01483 851 296 (Great Yarmouth) (Jul)


EPO ESS22 speakers (new) £700, Myrrad T40 amp £190, Rogers Avanti 625 speakers (new) £225. Rogers home cinema receiver £175, Audio Synthesis DSM DAC with power module £400. Tel: 01344 872 568 (Jul)

REVOX B77 Mkll, variable speed, half track, 7.5 and 15 ips. As new £475. Spendor SP2 Mkll, boxed as new £490. Sax Lambdas SR84 pro headphones, boxed as new £315. Studer A725 CD player, as new £375. Tel: 0191 281 260 (Jul)

MERIDIAN M2 active speakers & stands £375, M101 MC preamp £95, M104 tuner £85. Dissea power amp inc passive volume £125. All vgc. Little Bit DAC repair/spares £25. Tel: 0181 948 0899 (Jul)

LEAK 12.1 open transformer, mint condition, sensible offers, Audiolab 800A £200, NVA P50 pre amp & P60 power amp £200. Tel: 01424 439 723 after 6pm (Jul)

SONY 228 ESD CD player. Good as transport £150. DPA Little Bit digital converter £100. Will sell as pair at £200. Happy to demonstrate. Tel: 01746 710 356 (Jul)

MUSICAL FIDELITY X-A50s, X-Pre, X-PSU £600. Linn Keilidhs, black with granite stands £500. Atacama 24 in stands £40. ElectroRadiator 20/20 speaker cables £180. All mint. Tel: 01977 620 558 (Jul)

B&W DM23 monitor loudspeakers, teak cabinets, excellent condition, well looked after, boxed £85. Buyer collects. Tel: 01962 885 714 (Jul)

NAIM CREDO speakers, cherry veneer, new x-overs, excellent condition, boxed with receipts £650 onvo. Naim CDI CD player with CDM4 transport recently upgraded, excellent condition, boxed, Naim's finest one box player, £850 onvo. Tel: 07970 163 314 (Jul)

LEAK 12.1 open transformer, mint condition, sensible offers, Audiolab 800A £200, NVA P50 pre amp & P60 power amp £200. Tel: 01424 439 723 after 6pm (Jul)

ROKSAN DARIUS speakers, black, Mk1 with box stands & separate crossover & cables. Use good source and material, they sound superb. £450. Tel: 01395 275 698 (eves or anaphone) (Devon) (Jul)

PAIR DECCA DK30 ribbons, Opal BTM 250.1 bassilmid. Decavolt crossovers £120. Morel MDM SS mid and Maplin 3 way electronic crossover £50. Tel/Fax: 01207 545 006 (Jul)

HELIOS ONE, new £1000, Denso Beat £1000, new £450. Saxa Lambda Nova classical system £450. Snell Jlls, pirate stands, 92dB £500, Roksan Xeres/RB300/ATOC5/XP53/DS U £450. Tel: 01902 892 613 (Jul)

KEF 105.3 black ash £895, KEF 104 2 speaker £325, KEF 105 4 speaker £325, Marantz CD 65 £75, Quad 44 preamp £175. Tel: 01580 291 668 (Jul)

AVI 2000MM 150-watt monoblock power amps. Excellent condition, only a few months old, still under warranty £850. DPA PDM 1 DAC good condition £225. Tel: 01450 860 676 delivery can be arranged (Jul)

MUSICAL FIDELITY B1 integrated amplifier, as new £85. Sugden A21 series 2, class A integrated amplifier, excellent condition £85. Tel: 01209 212 270 (Jul)

MISSION 770 horn loaded tweeter grey facia, excellent £195. Rare Jordan Watts speakers £195. Sony CD 101 £25 (needs work), Pickering cartridge 7500S £140, Audio Technica arm, Linn board £35. Tel: 01273 727 476 (Jul)
## Suppliers and installers of High Quality Audio Systems

Audio Note • Basis • BAT • Densen • Dpa • Electrocompaniet • Mark Levinson • Michell • Nagra • Pass • Primare • ProAc • Rega • Revel • Roksan • SPM • Sugden • UKD • Unison Research • Wadia

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### S/hand and ex-demo clearance items - June '99

<table>
<thead>
<tr>
<th>Product/Model</th>
<th>Was</th>
<th>Now</th>
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<tbody>
<tr>
<td>Arcam Alpha 8 CD Player</td>
<td>450</td>
<td>325</td>
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<tr>
<td>Audio Alchemy DDE 1.0V</td>
<td>399</td>
<td>149</td>
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<tr>
<td>Audio Innovations 1000 Passive Controller</td>
<td>199</td>
<td>59</td>
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<tr>
<td>Audio Innovations 200 Power Amplifier</td>
<td>N/A</td>
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<tr>
<td>Audio Innovations 400 Integrated Valve Amplifier</td>
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<tr>
<td>Audio Innovations 800 Series III Power Amplifier</td>
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<tr>
<td>Audio Note ANC02 Valve CD Player (new boxed)</td>
<td>1000</td>
<td>695</td>
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<tr>
<td>Audio Note AN-V1.7 1M Silver Interconnect</td>
<td>1520</td>
<td>750</td>
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<tr>
<td>Audio Note 1041 Low Pass Filter</td>
<td>1295</td>
<td>650</td>
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<td>Audio Note M3RIAA Phono Stage</td>
<td>3950</td>
<td>1750</td>
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<td>Audio Note TTL/200/1QI</td>
<td>750</td>
<td>495</td>
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<tr>
<td>Audio Research LS3b (volume remote / black)</td>
<td>2750</td>
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<tr>
<td>Audion Premier 2.0 2 Box Pre-amp inc. Phono stage</td>
<td>1700</td>
<td>995</td>
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<td>Basis 2000 series Turntable /Air tangent 1B Toetam</td>
<td>4000</td>
<td>2500</td>
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<td>Celestion SL65 Walnut</td>
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<tr>
<td>Cogan Hall Intermezzo REF 0.5M</td>
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<td>Conrad Johnson PV10 AL SE</td>
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<tr>
<td>Decca London cartridge Re built</td>
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<tr>
<td>DPA Little Bit III 4 months old</td>
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<tr>
<td>Elemental Audio SCZ Custom Loudspeaker Stands</td>
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<td>Epos ES 11 Loudspeakers Black</td>
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<td>GM Audio Heavy Speaker Stands 24&quot;</td>
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<td>Harbeth HL-K6 Cherry</td>
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<td>Heybrook TT2 Turntable Black</td>
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<td>Heybrook TT2 Turntable Walnut/SME 309S/V15</td>
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<td>Impulse Lali Cherry Loudspeaker</td>
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<td>Impulse Mayfair Loudspeaker</td>
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<tr>
<td>Impulse Moskitoo/RB300 Turntable (new &amp; boxed)</td>
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<td>Krell KPS 20/30 CD/Pre</td>
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<td>Krell KRC HR Remote Preamp</td>
<td>6950</td>
<td>3999</td>
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<tr>
<td>Linn Ekos MK1 (boxed immaculate)</td>
<td>1500</td>
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<td>Magico HPC Digital 0.5M RCA/RCA</td>
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<td>Meridian 200 Transport</td>
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<td>Meridian 201 Preamplifier</td>
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<td>Meridian 203 DAC 7</td>
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<td>Meridian 205 Mono block Amplifiers</td>
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<td>Meridian 263 DAC Converter</td>
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<tr>
<td>Meridian System Remote</td>
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<tr>
<td>Michaelson Audio Chronos 2 Box Valve Preamplifier</td>
<td>4700</td>
<td>1250</td>
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### Nagra

Nagra PLX Valve Preamplifier uses a battery & fully rechargeable power supply thus making it one of the quietest phono stages around in the vinyl domain. The price is £8995.00

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### ProAc Loudspeakers

Two new models are now available for your listening pleasure. A worthy successor to the Tablette 50 is the new Tablette 2000 built to take us into the new millennium, a two way design with over 50% greater volumetric capacity than the 50, made of high quality MDF then coated with bitumous damping to absorb any internal sound. An impedance of 8 ohms and a sensitivity of 87db this speaker can grace any of today's hi-end systems. Available in a range of finishes at £649.00.

The Studio 125 is a welcome addition to the range, a very attractive and sleek finish at £649.00.

---

### Analogue Lives

The growth of Analogue source material has seen a massive increase at Midland Audio X-change, over the last 12 months we have seen huge amounts of Hi-Fi enthusiasts wanting to buy high quality vinyl playing systems, upgrading their existing record playing system.

**Our Top Ten Analogue Best Buys**

1. Roksan Xerxes X Package £1200
2. Lehmann Audio Black Qube Phono Stage £1395
3. Rega Planar 25 turntable £650
4. Michell Gyrodeck £75
5. Rega RB 600 Toetam £75
6. Densen DP02 Drive Phono stage £899
7. Lyra Lydian Beta £59
8. Ortofon MC 30 Supreme £449
9. Ringmat Developments Support System £160
10. Electrocompaniet ECP 1 Phono Stage £699

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### Data Conversion Systems (Dcs)

At last the arrival of the most innovative digital product of all time, The Dcs Purcell Upsampler allows the user to take a 44.1 kHz signal and upsample to 24bit at 96 kHz or even 24bit at 192 kHz. Then, depending on the digital to analogue converter, it will reveal digital sound, like you have never heard before.

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**Fax:** 0121 663 0222
ACOUSTIC ENERGY 109 speakers month old £195, Arcam Alpha Plus CD player £135, Denon remote control stereo receiver £135, Project 7 amplifier £130, Marantz CD 52 Mk2 £130, Armstrong 52i amplifier £35, Rogers LS4A speakers £100 vgc. Tel: 0181 680 1341 (Croydon) Jul(1)

PROAC STUDIO Three speakers, immaculate, black with stands cost £1250, one of the finest loudspeakers, three way ATC drive units, 300watts. No obligation demonstration £525. Tel: 0161 445 8366 between 2-6pm (Jul)

MONITOR AUDIO Silver 3, cherrywood finish, 3 months old, perfect condition. Cost £300, will sell for £150. Tel: 0171 713 6874 (EC1) Jul(1)

ARCAM DELTA 290 amp. Fitted phono board with full remote control. Boxed with instructions. For sale due to upgrading. £250 or near offers. Tel: 01482 881 561 (East Yorks) Jul(1)

CONCORDANT EXHILARANT Line level preamp, Groove Tubed, wooden case £775. Audiolab 8000C preamp £250. Rotel RT 850AL tuner £275. Yamaha DSP300 Dolby surround sound processor £1100. All boxed, excellent condition. Tel: 01502 724 835 (Aug) Jul(1)

TDL NUCLEUS 4, floor standing speakers, Rosewood finish, latest model, brand new, unused, still sealed and boxed. Unwanted prize. List £300, accept £225. Tel: 0151 342 8463 (Jul)

HI-FI WORLD mags 1993-1998 inc. £12 per year. Other mags £5's on. Hi-Fi, Answers, Practical Wireless, Radio Constructor etc. Buyer collects. Manchester area. Tel: 0161 790 9059 (Jul)

GOERTZ SUPERB M12 loudspeakers cable, 8ft terminated £120. MIT MH 750, 8ft terminated £150. Goertz Silver Sapphire interconnect, balanced 0.5m £100. Tel: 0171 937 7935 (Jul)

QUAD 34 (brown) £95, Quad 306 (grey) £120, both vgc. WANTED: Rogers A100 amp or A75, working or spares. Tel: 01938 533 559 (Jul)

SOURCE ODYSSEY RPI-XG tonarm, excellent condition, some parts gold plated. ‘VDH’ silver wired with new spare wire. Fits any SME armboard. Looks fantastic, sounds the same (£700) £275 Tel: 0121 476 7608 (Jul)

SHAHINIAN OBELISK speakers £1550. Shahinian Super Elf speakers £400. Shahinian Hawk mono subwoofers £1380. All mint and boxed in walnut. Tel: 01626 352 682 (Jul)

PINK TRIANGLE DaCapo DAC with 1307 filter, cost £1650, accept £495. Musical Fidelity P270 2 poweramp, boxed, as new, cost £1500, accept £959. F16 poweramp (£2500) accept £995. Tel: 01346 268 660 (Jul)

CYRUS DAD 3Q CD player plus PSX power supply. Brand new, unused £750 (originally £1200) Tel: Tom 0181 838 2432 (Jul)

LINN MIMIK £450. Linn Majik uno phono £450. Linn Axis/Acoustic K9 £295. Arcam Delta 280 tuner £150. All perfect. Tel: 01628 782 040 (Berkshire) (Jul)

SONDEK LINGO Ekos MC500 £1000. Naim SBLs £650 (or both £871) £250. Arcam Delta 280 tuner £150. Micromega Leader CD player £200. NAD 533 turntable & NAD PP phono stage £160. All pristine condition & boxed. Tel: 01923 829 140 (Jul)


KEF Q35 floorstanding speakers. Absolutely mint condition. Black finish. Complete with 2x2.5m biwires £200. Tel: 01932 671 984 (Jul)

LUXMAN PD300 Vacuum turntable belt £25. Tel: Steve 0181 850 0585 (Jul)

ARCAM 290 Integrated and 290P poweramps. £400 spent on modifications, now stunning sound. £500 ono for both. Pair Silver & Teflon 0.5 interconnects £50 ono. Nordost Flatline Biwire 2x3m £500. 4x5m Teflon ‘Delron’ OFC terminated speaker cable £60 ono. Trio KD2055 turntable and Arcam P77 cartridge £80 ono. Tel: 01325 320 988 (Jul)


CYRUS SL amp £200. XPA poweramp £150. Micromega Leader CD player £200. NAD 533 turntable & NAD PP phono stage £160. All pristine condition & boxed. Tel: 01923 829 140 (Jul)

HART ELECTRONICS, John Lindsay Hood designed, pre, power and phono amplifiers with DC power supply (all built) £500. IPI S4TL loudspeakers with mahogany veneers £250. Tel: 01249 444 946 (Jul)

AUDIOZONE MEISHU Amplifier, upgraded valves worth £375. AN V Silverwire upgrade plus latest front panel. Excellent sound quality (£275 plus upgrades) £1950 ono. Tel: Terry 01384 359 273, mobile 0370 641 056 (after 6pm) (Jul)

CASTLE HARLECH floorstanding speakers. Natural oak, boxed, still under warranty. £500 (£600). Can demonstrate. Replaced them for Concert 8 jubilees. QED 4 x 4’ speaker cable 2x 3.5m £50. Tel: Lee 0181 361 8823 (Jul)

NAIM NATO2 tuner, Naim interconnect, boxed + manuals, perfect condition £700. Linn Axis turntable, K9 cartridge, Basik Plus arm, boxed + manuals, perfect condition £275. Tel: 07775 515 189 (Jul)

SUDELIN 51 pre-amp and 51 power amp £1300. ATC 20 ‘speakers with stands £900. AVI stereo power amp £425. Rotel 6 channel Pro-Logic pre/power £315. B & W CC6 centre channel ‘speaker £140. Tel: 01977 643 629 (Jul)

DELTEC 50s pre power phono inc all cables £1500 ono. Deltec Little Bit £50. NAD 402 tuner £50. All mint condition. Tel: 0151 339 0268 (Jul)


HIVI WORLD JULY 1999

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Make  Model  Description  Code Stock  R.R.P.  Now

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BANG & OLUFSEN BEOLEAD 3000 ACTIVE LOUDSPEAKER
CASTLE AVON LOUDSPEAKERS - BRAD
CASTLE HOMARO LOUDSPEAKERS - WALNUT
CASTLE KIRKALDY LOUDSPEAKERS - WALNUT, OAK
CELESTION E 1 LOUDSPEAKERS - MAHOGANY
CELESTION 16, 55 LOUDSPEAKERS - WALNUT
CELESTION 26, 38 LOUDSPEAKERS - MAHOGANY
COADA 9 AMPLIFIER
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MENTON 571 4 L-AUDIO DIGITAL PROCESSOR
MENTON 596 POWER AMP
MENTON 57 6 AUDIO POWER AMP
QUAD 77 CD CD PLAYER, MARKS + BUS powered
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REGA STRAND 2 SUBWOOFER
REGA PUMPER 3 SUBWOOFER
ROTEL RX 990 SUBWOOFER, MONOPHONIC
ROTEL RX 990 SUBWOOFER, PHONO CHANNEL POWERAM
SPENDOR SN300 SUBWOOFER, PHONO CHANNEL POWERAM
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VANILLA DSP 200 AV AMPLIFIER
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MERCERIAN 901 PRE 695.00 499.00 D
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MARANTZ CD57 SE 349.00 269.00 D
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LEAK STEREO 20 and pre-amp, recent new valves, bargain at £185. Goldring 012 unused and boxed £25 may swap PX. Tel: 01228 674 537 (Jul(I))

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EXCHANGE IMMACULATE Proac Response 2.5 SA for quality monitors plus £1000. Want Dynaudio Contour 1.3s, Totem Model 1 or Proac I SC with good stands. Need space and cash. Tel: 0114 235 2095 evenings. (Jul(I))

VINTAGE Hi-Fi separates: Yamaha CA 600 amplifier: 2 x superb Celestion 44 'speakers, Yamaha PS750 direct-drive turntable. All in good condition, sensible offers only. Tel: 01494 765 226 (Jul(I))

EPOS I: loudspeakers with stands. Perfect £250. Pioneer A400X amplifier and Aiwa AD 850 cassette deck. Both only 18 months old. Boxed, as new £120 and £110. (Huddersfield) Tel: 01484 862 487 (Jul(I))

PM COMPONENTS MPL-L15 Mk 2 pre-amp with MP21A monoblocks single-ended valve amplifiers, cost £5000, asking £1750 boxed. Will Plex for Albarry AP4 M1008i grey finish plus cash difference. Tel: 01904 763 157 (Jul(I))

LINN LP12 (Affenro), Trampoline, Cirkus, Ietok, OC9, excellent condition £595 ono. Sony Walkman Pro WM OC6 without headphones hence £75. Tel: 0113 266 3749 (Leeds) eves. (Jul(I))

SONIC FRONTIERS SD1 DAC (balanced option) HODC compatible, boxed as new with two year warranty £1000 - no offers at this price. Thea Data Basic also available. Tel: 01623 871 930 (Jul(I))

LINN KARIK (brillianted) £650. Numeric £495. Kairn £595. LP12 Valhalla, Eks, Klyde, would possibly split £995. AT OC9 cartridge boxed unused £195. Tel: 01582 456 137 (Jul(I))

PAIR OF ACOUSTAT electrostatic 'speakers better than Quad 57, asking £500. Altec Lansing Dual Concentrics horn units 604/664GQ extremely rare asking £150 each. Luxman turntable T1 mint asking £100. Yamaha TC- 800GGL rare cassette deck asking £100. Tel: 01342 850 652 (Jul(I))

REL STENTOR Mk 2 one year old, rosewood finish exc cond £875 (£1900 new). Tel: 01604 645 590 (Aug(I))

PAPER IN Oil reservoir capacitor clear out. NOS Dibullier 0.5uf at 2500V £3 each. Ferrograh51 monitors with stands, immaculate, £200. John Bowers Active One loudspeakers. 3-way active floorstanders, cost £1500 in 1985, will accept £500 ono. Aurex System vgc, pre/amp/tuner/tape £125. Small Sony amp 30watts/ch £25. WANTED: Trio L Series separates, working or not. Tel: Jon 0181 904 8023 (Jul(I))

WILSON BENSCH WB Turntable, PSU, Act Two arm, Cardas arm cable, Triopoly stand £2000. Marantz CD 12 DAC £400. Tannoy Mayfair 10° Dual Concentric & 10° ABR units £100. Tel: 0181 672 4319 (Jul(I))

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WANTED: TECHNICS EPS-P205 ED3 stereo style + Technics P205 CMK3 cartridge. Tel: 01752 266 753 anytime (Jul(I))

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IMF PROFESSIONAL monitors, Tannoy Berkeleys, Technics SP10, SL 110, SL 1510, RS 905 cassette, Revox B77, Sony TC 399a, TC 458, Pioneer PL 12D's Lenco L55/GL75, Teac SS405, Rotel RX-1203. Tel: Bay Electronics (Sales and Servicing) Leeds 0113 270 1954 (Jul)

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