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The audio business is booming, but the hi-fi industry isn't. Although the total money spent on listening to music is now up 35% since the year 2000, the sums for high fidelity equipment are depressing - down 50% since 2002, according to GfK.

This is not a happy situation for audiophiles, but scratch the surface, and it's not quite so bad because the average amount of money spent on hi-fi separates is actually rising!

Audio products – often related to the marvel of modern consumerism that is Apple's iPod, such as the superb Harman Kardon Go & Play iPod sound system, (reviewed on p39) are all the rage. However, the select few who are buying 'real hi-fi' are purchasing ever more exotic products. In essence then, the market's moving from being a mass, commodity-based one to a smaller, more specialised domain.

We at *Hi-Fi World* have felt this for a while. We get a massive postbag – enough for twenty pages of letters most months – and we've seen the end of general, "I've got £350 to spend on a separates system that does everything" type queries. Now, sound quality is the key criterion for our correspondents, whether they've got £500 or £50,000.

That's why we cater for the weird and the wonderful, reviewing incredibly disparate products, all with the accent on sonics, performance and innovation. From the amazing Shanling MC30 (a £500 all-in-one with a single-ended Class A tube amp built in, reviewed on p10) to the oddball Almarro A318B integrated (with 6C33C Russian trawler triode valves - see p40), we're finding ever more esoteric bits of kit – and often they cost little more than the bland mass-market nineties designs we once witnessed.

The audiophile market is getting ever more eccentric and exotic, as people grow bored of products designed to please everyone and excite no one. Where it once serviced Mondeo man, hi-fi has moved into the audio equivalent of sports car territory – and the good news is that LPs and CDs don't rust and you won't get points on your licence for running yours to the ragged edge. Enjoy this month's issue!

David Price, editor



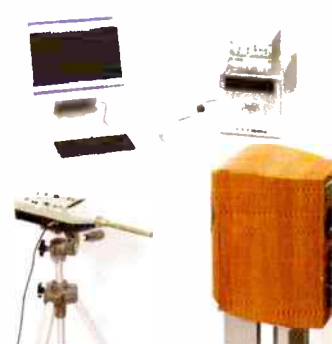
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verdicts

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seriously flawed
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testing

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Loudspeakers are measured using a calibrated Bruel & Kjaer microphone feeding a Clio-based computer

analyser, using pulsed and gated sinewaves, in a large room to eliminate the room's influence. Pickup arm vibration is measured with a Bruel & Kjaer accelerometer.

No other UK hi-fi magazine has in-house testing, and none has access to such advanced tests across all types of equipment. That's why you can depend on *Hi-Fi World* reviews.

ELECTRONIC MAGAZINE

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18 Arcam's brand new DV139 universal disc player goes for a spin...



92 A Technics SL1200 turntable like you've never heard before...



61 Will power be a stereo block? Double stereo system...
...playe...



64 Onkyo claim their T-4555 is the first future-proof DAB tuner



26 Marantz's mighty Legend system makes its UK debut!



88 Kuzma's stunning Stabi S/Stogi S turntable/arm combination

DIGITAL**ARCAM DVI39 18**

This superb new DVD universal player gets the treatment from Dominic Todd.

VINYL SECTION**VINYL NEWS 86**

Paul Rigby brings you the latest developments in vinyl...

LYRA DORIAN 87

David Price tries Lyra's stunning new entry-level moving coil cartridge.

KUZMA STABI S/STOGI S 88

This beautiful mid-price turntable/arm combination is reviewed by Adam Smith.

TECHNICS SL1200 RE-ARMED 92

David Price modifies a Technics DJ deck to the max, with surprising results!

AMPLIFICATION**PLINIUS 9200 32**

Adam Smith tries this massive Antipodean integrated amplifier.

ALMARRO A318B 40

This Russian trawler triode-based tube amp is reviewed by Noel Keywood.

AUDIA FLIGHT TWO 50

An interesting integrated amplifier gets a once-over from Adam Smith

LOUDSPEAKERS**ASCENDO MONITOR C5 16**

Channa Vithana samples this beautifully finished mini-monitor.

KEF HTB2 24

This striking looking subwoofer gets the treatment from Adam Smith.

ISOPHON GALILEO 46

Adam Smith is star-struck by this innovative loudspeaker.

NEAT MOMENTUM 4i 52

A charismatic performer, Adam Smith thinks these floorstanders are pretty neat...

SYSTEMS**SHANLING MC30 10**

David Allcock reviews Shanling's stunning £500 single-ended Class A amplifier/CD player/tuner...

MARANTZ LEGEND 26

An exclusive review of Marantz's flagship SA-7S1/SC-7S2/MA-9S2 system by David Price.

PURE LEGATO 35

Adam Smith auditions this do-it-all DAB-based mini system.

RADIO**FAMILY VALUES 42**

Steven Green rounds up three interesting new Roberts DAB-based radios...

ONKYO T-4555 64

The first truly future-proof DAB tuner? Steven Green decides.

FEATIHRES**AYRE STUDIO 36**

Channa Vithana assembles an elegant high end system from US-based Ayre and Danish System Audio...

AFTER CD 49

Noel Keywood looks at the relative merits of Blu-ray and HD-DVD.

BROADCAST NEWS 54

Stefano Pasini tells the classic EMT turntable story...

FINE TIME 61

Neville Roberts fits an AH! SuperTubeClock to his Njoe Tjoeb 4000 CD player.

OLDE WORLDE 66

Tony Bolton auditions the classic Rogers Cadet III valve amplifier.

DIY SECTION**DIY FEATURE PART 10 80**

Peter Comeau continues the WB18BR loudspeaker design.

**7 NEWS**

News of the hi-fi world...

15, 23, 39, 59 SOUNDBITES

Advanced Acoustics Sound Panels, Sennheiser OMX90 VC headphones, Sonic Freedom Equipment Supports, Harman Kardon Go & Play iPod dock and Vertex AQ Kinabalu Support system.

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69, 71, 73, 75, 77 OPINION

The team get to grips with matters music, hi-fi and life.

78 AUDIOPHILE VINYL

Paul Rigby rounds up the latest vinyl releases.

98 KIT & COMPONENTS

Suppliers of kit and components.

99 MAIL

Seven pages of your thoughts, views and queries.

118 DIAL-A-DEALER

A comprehensive guide to UK hi-fi retailers.

119 MEET YOUR MAKER

Who makes what and how to get in touch with them.

121 SPECIALIST HI-FI DEALERS

Purveyors of specialist hi-fi services.

123 FREE READERS CLASSIFIEDS

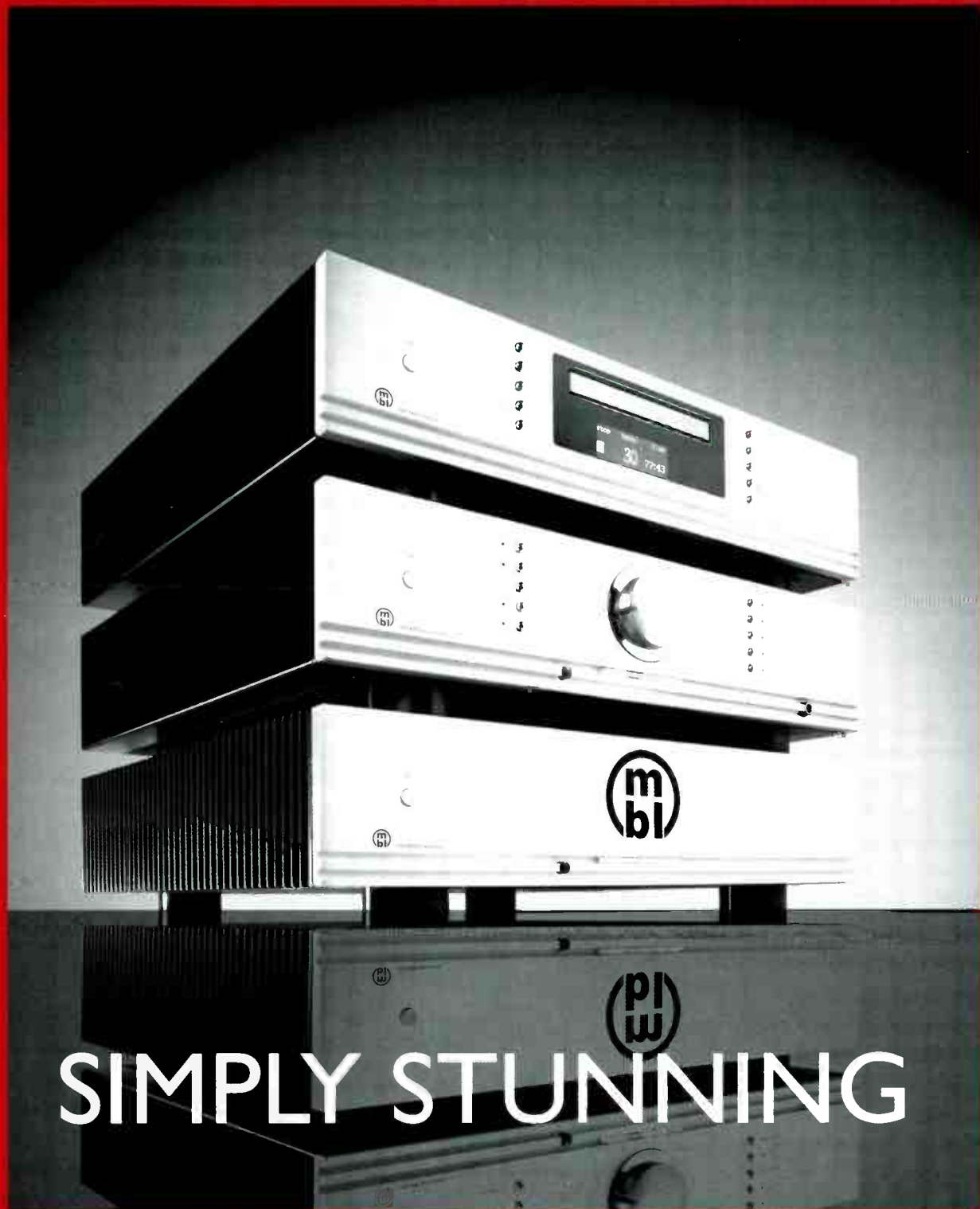
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128 NEXT MONTH

What we hope to bring you in the next great issue!

129 ADVERTISERS' INDEX**130 CLASSIC CUTS**

Paul Rigby looks at Bing Crosby's 'Good and Rare'.



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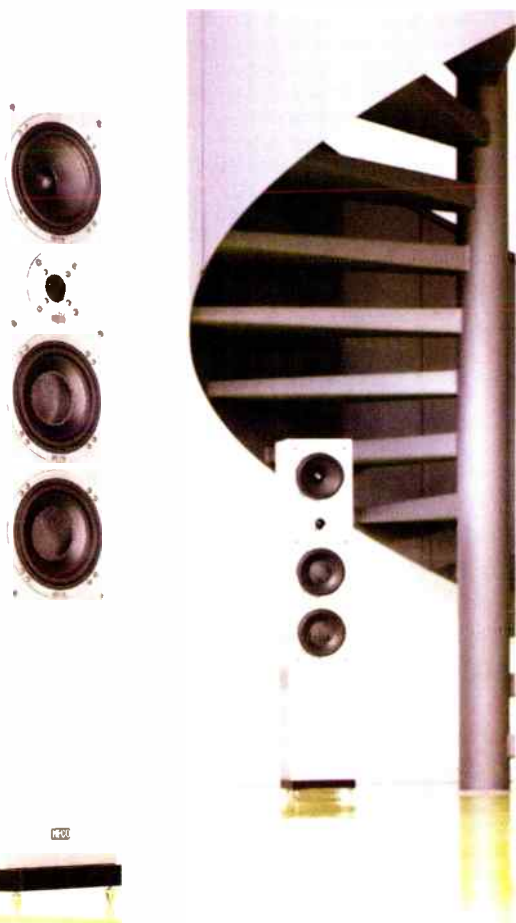
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BEING SERVED

Arcam's new MS250 music server is one of the most interesting products to emerge from the Cambridge company since the Solo. Essentially a hard disk drive-equipped CD player, it features 400GB of storage – sufficient for 640 uncompressed CDs or 4,800 compressed CDs, which equates to about 80,000 tunes or 260 days of continuous playback! It sports an Arcam-designed soundcard with four Crystal CS4398 24/192 DACs, providing independent analogue outputs to four separate zones, and Zone One also has 44.1kHz coaxial and optical digital outputs. There's a party mode for shuffling stored music, CD, line input or Internet radio content in all four zones simultaneously, and recording capability to burn compilations to CD-R or record analogue sources to its hard disk through its integral Wolfson analogue to digital converters. The unit is network compatible (wireless via an Ethernet network adaptor), and the MS250 will connect to the internet while ripping CDs to download track information and give access to internet radio stations. Where track information is not available, this can be input manually using the supplied remote control handset or a USB keyboard. The USB connection also allows users to copy files to a pen disk or MP3 player. Its network connectivity further allows the MS250 to communicate with the users' home network and play music stored on other devices such as the users' computer or another MS250. The server uses Arcam's own MusicFile software, and can also be controlled from a PC on the network.

The company also has a new, more affordable version of the AVR350 that *Hi-Fi World* rates so highly. The Arcam DiVA AVR280 costs £1,200 and is described as "the company's highest performing entry-level receiver to date, with many design and construction elements derived from development work on the £3,750 Arcam FMJ AV9". The unit is said to deliver a marked improvement in sound quality over its AVR250 and AVR300 predecessors, and over competing price class receivers. A huge toroidal transformer improves bass control, and there's two-way 1080p HDMI switching with auto selection of digital video source. For more information on either of these new products, click on www.arcam.co.uk or call +44(0)1223 203 200.



HECO WARRIORS

A new brand of loudspeakers is now being sold in the UK, imported by Pure Sound. Heco's Celan range of loudspeakers includes three floorstanding models, a standmounting design, a matching centre channel and two subwoofers featuring 12" or 15" drivers. They are available in a choice of three real wood veneers or a silver lacquered finish. Prices range from £569.95 for the Celan 300 standmounts, up to £1399.95 for the Celan 800 floorstanding speakers. For further information contact Pure Sound on 01822 612449 or click on www.puresound.info.

GEM UNEARTHED

Cambridge Audio has a new affordable audiophile AV separate in the shape of the Azur 540D v2 DVD player (£250). A new ground-up DVD player design, it boasts HDMI technology for outstanding picture quality and simplicity, while careful attention to audio circuitry ensures superb sound from music or video sources, Cambridge Audio says. The 540D uses a highly evolved DVD chipset and proprietary Phased Lock Loop (PLL) system for ultra low jitter, and the Crystal/Cirrus Logic CS4382 DAC and anti-aliasing filter circuits mean the 540D is also a true audiophile CD player. The HDMI output is capable of upscaling to 720p or 1080i. The 540D supports Dolby Digital 5.1, Pro Logic II, DTS 5.1 and has Composite video, S-video, RGB/SCART and component analogue video outputs, DivX and MP4 playback, a solid aluminium front panel plus an ultra rigid, acoustically dampened chassis. For more details, click on www.cambridgeaudio.co.uk.



TEAC iCANDY

Teac has a sleek looking new DAB audio-video mini component out. The CR-H257i combines a DAB/AM/FM stereo tuner, iPod dock and a CD player supporting CD, CD-R/RW and MP3 discs. The iPod Dock has video outputs (S-Video and Composite) and the unit charges an iPod while playing. iPod adapters, S-Video and Video cables are included and the Remote Control gives commands to iPod functions including menu operation. The CR-H257i comes in a lavish brushed aluminium front panel finish, available in either black or silver. Expected retail price is around £280. For more information, call 0845 130 2511 or click on www.teac.co.uk.

DIAMOND GEEZERS

Those hard-working chaps at Isophon in Germany have been busy designing two new loudspeakers for release in the UK in August 2007. First up is the Vescova; a two and a half way floorstander sitting below the Cassianos in Isophon's range and utilising separate Accuton ceramic bass and mid/bass drivers, and with a choice of ceramic or diamond tweeter. The same technology in crossover design and rolloff slope steepness of 50dB/octave as used in the Cassianos has been carried over by designer and owner Dr. Roland Gauder. Prices range from £5999 - £10,200 per pair depending on the tweeter and finish chosen.

The second model is a standmounter, designed to be used in the front, rear or center of a surround sound system and, naturally, called the FRC! This uses the same Accuton drivers and choice of tweeters and has been designed to turn any of the reference loudspeakers into a multi-channel set up. Prices for these items range from £2599-£4799 per single speaker

For more information, point your mouse at www.isophon.de or contact Sounds4Enjoyment on +44(0)23 9271 7628



BOOK-ER PRIZE

Creative's new Sound Blaster X-Fi Xtreme Audio Notebook is described as "the ExpressCard audio upgrade designed for the modern notebook". It is designed in the ExpressCard format, which ensures compatibility with the latest laptops, and sports the company's X-Fi Crystalizer technology, said to "restore the details and vibrance lost during audio compression, enhancing MP3/WMA, streaming audio and video, TV and radio, DivX and DVD movies", plus X-Fi CMSS-3D which "expands stereo music and movie sound tracks into amazing surround, even over headphones". The card is said to provide a new level of performance in notebook audio. In addition, it includes line level and digital optical inputs/outputs as well as microphone and headphone jacks, plus the option to connect 5.1 or 7.1 surround speakers via the optional docking module. For more details, click on www.creative.com.



FLOAT ON...

Heading up Onkyo's "flotilla" of new receivers is the £400 TX-SR605, the company's first AV product with HDMI v1.3a processing, HDMI-based system control, and



HD lossless audio decoding. Processing for the latest lossless multichannel audio formats and comprehensive video upconversion aren't the only features though, because it sports 7x140W output power and enhanced compatibility with the company's optional iPod control docks, plus a flexible suite of multi-source capabilities. It is the first receiver available in the UK to include decoding for Dolby Digital Plus, Dolby TrueHD, and DTS-HD Master multichannel audio formats from Blu-ray and HD-DVD players.

Meanwhile, Onkyo's new micro CD receiver [pictured] spins DVDs, CDs, SACDs and DVD-Audio discs in a very small space. The £275 DR-815 is a compact iPod-compatible two-channel desktop receiver designed to deliver high quality audio and video entertainment with minimal living room intrusion. It boasts a universal DVD transport and a sophisticated 32bit DSP engine capable of processing both stereo and multichannel DVD-Audio and SACD discs as well as conventional Dolby Digital and DTS-encoded DVDs. Owners also get Dolby ProLogic II processing, allowing the receiver to derive convincing 5.1-channel audio from stereo soundtracks. All channels features high quality 24/192 DACs converters, augmented with Onkyo's exclusive Vector Linear Shaping Circuitry, to deliver clear analogue outputs to the unit's internal WRAT-equipped (Onkyo's Wide Range Amplifier Technology) Class D amplifier modules. There's also a 30 preset AM/FM tuner. For more information, click on www.onkyo.co.uk or call +44(0)1494 681515.

PLUG IT IN



The full range of WBT's high quality connector products will shortly be available through selected dealers in the United Kingdom, as the German company have selected Anatek Acoustics to be their exclusive UK distributor. Among the products available are the highly reviewed and regarded 'Nextgen' range including the WBT-0110 phono

plugs, offering considerably improved sound quality and better connection security over standard items. The full range of WBT products will be on display at the forthcoming Sound & Vision show in Heathrow on September 21-23. For more information click on www.anatekacoustics.co.uk or call +44(0)1903 524 602.

WELL CONNECTED

Black Rhodium's new Coda interconnect is said to benefit from, "engineering excellence and high quality materials and construction". Its low impedance silver-plated copper conductors deliver superior mid and high frequency clarity, in a 2 core configuration, twisted to reduce RFI and low frequency mains induced hum. Insulation is of Silicone rubber, chosen for its low dielectric properties, post-cured to remove excess impurities. Coda is terminated with high quality Eichmann bullet plugs, and the cable pairs are twisted together, which is said to reduce interference for extra clarity of sound. Prices are £130 for 0.5m run, or £150 for 1m. Click on www.blackrhodium.co.uk.

WIRED FOR SOUND

Hi-Wi installs "the latest and best wireless music technology equipment in the home". With a Hi-Wi installation, clients are able to browse through their music on a handheld touch screen device and play whichever song, album or radio station they desire in any of their connected rooms. They can also have different music playing in different rooms. The same touchscreen device can be used as a wireless Internet tablet, for easy access to the Internet anywhere in the home. Unlike other similar systems, this is a complete solution which includes a Music Server to digitally store the client's music library, Hi-Wi says. Its systems can be connected to your existing hi-fi equipment or installed with their own speakers. Hi-Wi will install broadband wireless internet if a client does not already have it, and specialises in setting up wireless networks in large, complex homes. Customers range from septuagenarian peers to young families, says owner Rob Hall, and all have found their Hi-Wi systems easy to use. A typical installation with one room would be around £2,700, with each additional room about £230, but customer requirements vary, so prices will too. Visit www.hi-wi.co.uk for more information.

SHOWBIZ GOSSIP

It's not everyday that a hi-fi industry 'high up' writes and performs in his own musical, but that's precisely what Geoff

Meads, Brand Manager at Arcam, has done! 'Joined at the Heart', co-written by Geoff, is inspired by Mary Shelley's famous tale, 'Frankenstein'. It's an original stage show that has been exciting global interest since it achieved success as a finalist in the BBC's 2006 'World Wide Search for A Musical' competition. With Music and Lyrics by Geoff and close friend Graham Brown, it tells the story of Frankenstein's search for the secret of life. The two hour show features some 27 songs by the pair and a truly engaging stage play by playwright Frances Anne Bartram. "The show's been five years in the making" says Geoff, "and every minute has been challenging, but with the show now in rehearsals you can see all the hard work paying off. I've been writing pop songs since my teens but a musical represented a very different proposition. I'm working with a superb team though. It's certainly a departure from my day job, where there's more listening to music than writing it!". The show, with a cast of thirty, will receive its world premiere performance at The Junction, Cambridge, August 1st-4th, and then moves to the Edinburgh Fringe Festival running from the 12th-18th August at C Venue, Chambers Street, Edinburgh. For more information, click on www.joinedattheheartmusical.com or call +44 (0)1223 511511 for tickets.

JOINED AT THE HEART





One for All?

Can Shanling's pint-sized all-in-one MC-30 music system really compare to its full-size hi-fi separate big brothers? High end aficionado David Allcock finds out...

I can still remember the shock of seeing Shanling's CD-T300 'UFO' CD player, and thinking how some of the most radical audio engineering of late has come out of China. Well, the company isn't resting on its laurels, and seems hell-bent on producing ever weirder (and no less wonderful) new niche products... So, when I heard Shanling were bringing out their own compact audio system I was intrigued to say the least, and now that I've managed to get my hands on one, I can tell you the wait was worth it.

Despite the compact chassis, the MC-30 weighs just over 8kg and is beautifully finished. It is superbly built, the detailing is impeccable, the connectors are a match for anything

I've seen in the high end and panel fit is beyond reproach. Inside its 266x143x385mm chassis lies a top loading CD player with a dedicated Philips VAM-1202 laser transport and CD-7 II servo mechanism and Burr Brown PCM-1738 DAC, as used in many high end CD players. The tuner is an AM/FM analogue model with 20 presets. Behind the CD transport is the stand for an MP3 player; note I did not say iPod, as this does not use the multi-way output on the base of an iPod, but uses the 3.5mm headphone output, which allows any MP3 player to be used. Beneath the stand is a corresponding 3.5mm input socket for the cable from the player.

The amplifier is single ended using a pair of 6P1 triode valves and outputs a very modest 3 watts per

channel, demanding efficient speakers. On the back panel of the MC-30 are two pairs of RCA connectors; a preamp output allowing the MC-30 to be easily connected to an external power amplifier if more power is required, and a line input. Two pairs of five way binding posts allow easy connection of any speaker cable, along with an industry standard IEC power connector.

Mention must be made of the remote control, which is ergonomically and operationally excellent, having a very wide field of view across the front of the MC-30. The aluminium top with rubberised body and base fits comfortably into the hand and doesn't slide about on smooth table-tops. Manufacturers of far more expensive equipment would

"my advice is to buy one before they put the price up..."



do well to look at this and see what a truly high quality remote control should be like, and Shanling are to be applauded for their foresight in supplying such a high quality unit.

Whilst 3W may not sound like a lot of power, you would be surprised at the loudspeakers which are happy to work with this much power. If you consider my Bryston amps to be a Ferrari 360 Modena with a 3.6 litre V8 engine, then the MC-30 represents the 1998cc engine of the Ariel Atom, it may not sound much, but it can do remarkable things if used correctly. Whilst, obviously, dynamics are diminished, and you don't get earth-shaking bass, I used the PMC Wafer 1 on-wall speaker system, Onyx Rocket RS550 MK II floorstanding speakers and even the Martin Logan Vantage hybrid, where the bass driver has its own power amp, which worked remarkably well and went amazingly loud in a room seven metres long and three wide.

I was recommended to try the Tannoy Precision 6 by Real Hi-Fi as an excellent match for this unit,

and a couple of days later a pair arrived and, I must admit, I can see why they were so enthusiastic. Should you run out of power, then you can resort to the pre-outs. In my case I used my regular Bryston 3B-SST, but I also tried an Audiolab 8000P at around £400 which is an excellent partner for the MC-30, should more high quality power be required on a budget.

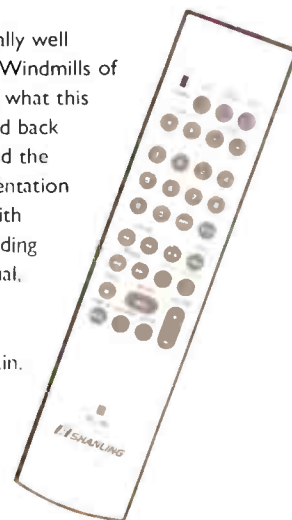
SOUND QUALITY

I connected the MC-30 to the PMC Wafer 1s and started listening to the CD player. Every Shanling CD player I've heard has been very musical, and this one was no different, the MC-30's CD section and amplifier being excellent. Whilst the bass was not as detailed and controlled as the standalone CD-T100 when mated with high quality amplification, it still communicated the energy of Sophie Ellis Bextor's 'New York City Lights' from 'Trip the Light Fantastic'. The bass line propels this track and the MC-30 did not let me down, with excellent timing and, whilst 3 watts and a pair of 140mm bass drivers aren't going to set a room this size shaking, you could clearly hear the MC-30's excellent transient attack

on bass guitar and kick drum, and the space and decay around each note.

Likewise, the midrange was superb with just a hint of extra warmth in the lower end, giving a slightly richer, fuller sound to vocals. This does not detract in any way, however, from just how musically communicative this player is. Kate Bush's 'Cloudbusting' is still utterly beguiling, her voice seductive and incredibly expressive. Even her subtle changes in phrasing were easily heard, and the separation on the soundstage between her performance and the instruments arrayed behind her is excellent at this price point.

Male vocals are equally well catered for, with Sting's 'Windmills of Your Mind' showing just what this little unit can do. This laid back recording perfectly suited the MC-30 making the presentation an effortless pleasure, with Sting's lower range sounding a shade heavier than usual, but still projecting the vocals into the room without any signs of strain. High frequencies were excellent, being focused and well rounded and not just emphasising the initial transients to give the illusion of





What's remarkable about the new series of LP12 SE upgrades is not that it's taken 35 years to develop them, or that they can be retro-fitted to any Sondek LP12 turntable, but the fact that they retrieve even more music from your vinyl collection than ever before.



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For more information and details of demonstration events in your area visit www.linn.co.uk, or call 08000 277 181.

SECOND THOUGHTS

All I can say is "Wow!". A CD player, FM/AM tuner, MP3 player dock and a valve amplifier for £500 is remarkable in itself, but one with the sound quality and sheer all-round loveliness of the Shanling MC-30 is simply staggering.

Built like a tank, with superb switchgear, courtesy of volume and function selector knobs atop the front 'pillars', and a natty and well-weighted joystick to the right of the CD player, mean that this unit is a tactile as well as sonic delight. As David says, even the remote is superb and, interestingly, bears more than a passing resemblance to a Bang & Olufsen Beo4 in its design and feel - definitely no bad thing.

I cannot think of anything that comes close to this unit at the price, even separates, and if they don't fly off the shelves as fast as Real Hi-Fi can import them, then I'll be amazed. AS

resolution. Instead, the MC-30 was able to present the entire envelope of the note and the textures of the individual instruments in a thoroughly convincing manner, with the differences in the air captured in different studios and recordings readily apparent.

For such a modestly powered unit, soundstaging was astonishing. The MC-30's stereo images expanded beyond the speakers' outer edges, and whilst not as tightly focused, spacious or deep as my main system, let's remember the interconnects in my reference system cost more than this entire unit!

With the MP3 player interface, I tried my PDA (a T-Mobile Ameo) which uses GSPlayer to playback FLAC (a lossless compression format) files, and a Sony Walkman W800i phone/MP3 player as well as an iPod. Personally, I would have liked to have seen a little more gain with the Ameo and W800i, as neither have the output levels of the iPod. It was also clear when you moved from MP3 files compressed at 256kbps to lossless FLAC and AAC files. The compressed, lossy files sounded just that, compressed in their dynamic range with soundstaging information badly damaged, whilst the lossless files sounded excellent, and whilst the bass was lacking in weight and slam, I am tempted to suggest I was hearing limitations in the sources rather than the MC-30.

The FM tuner is also worthy of mention and, whilst Magnum Dynalab owners might find the FM performance somewhat lacking, for the rest of us mere mortals who know DAB just doesn't sound like music, then the MC-30's FM tuner is like a breath of fresh air. Despite lacking the ultimate atmosphere of CD or vinyl, it was more than good enough, when fed with a roof aerial, to keep me listening for a few hours during the review with a diet of local radio, BBC Radio Lancashire and Radio 2.

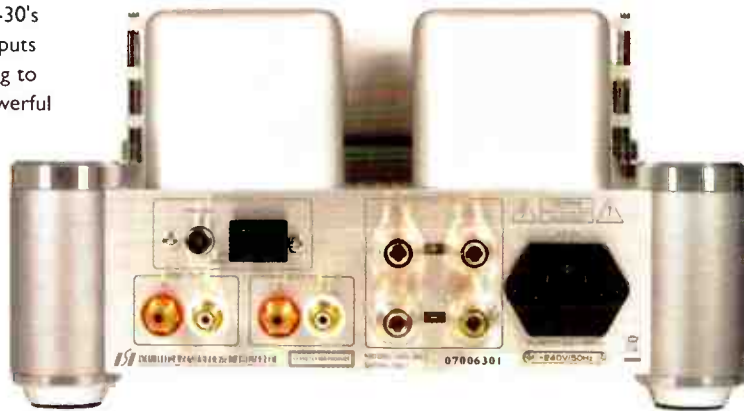
The MC-30's preamplifier outputs were just begging to have a more powerful amplifier connected, so I pulled out an Audiolab 8000P and also hooked the MC-30 to my powerhouse Bryston 3B-SST to see just how good its internals really were.

To say I was impressed would be the understatement of the year - not only was the bass warmth dramatically diminished, but the MC-30 was embodied with a much more forceful, dynamic sound. The MC-30 does not necessarily need an outboard power amplifier, but be prepared for a shock when you try one.

The electronics in the MC-30 are surprisingly transparent and fast, and I actually think the MC-30 could jeopardise sales of the CD-T80, it is that good as a CD player on its own! The soundstage was now much larger, regardless of the speakers used, with more space around musicians and performers; Jean Michel Jarre's 'Aero' positively expanded through the listening room walls. Whilst the lower registers are a little warmer and fuller than the CD-T300, the sound is still agile, and the warmth does not invade the lower midrange, meaning transparency and clarity is in no way compromised. Highs are crisp, clean and very open, and again I am struggling to find a sub £1,000 CD player which can significantly surpass the performance of the MC-30's CD playback.

CONCLUSION

As you can gather, the Shanling MC-30 proved a deeply impressive unit used on its own with sympathetic loudspeakers. Indeed I cannot find a combination of standalone components at anything like this price which can surpass the MC-30's performance. Whilst the MP3 docking



facility means losing some iPod functionality, it does mean the MC-30 will interface to any MP3 player, and deliver a sound which is very entertaining. Even the FM tuner is more than acceptable given the general standard of FM transmissions in the UK, and is light years ahead of any DAB tuner I've heard to date.

Best of all, when mated to a power amplifier or used as a source component for a larger system, then the MC-30 will shock you with focused, dynamic and visceral sound - plus of course that delightful control system and superb remote. Shanling have delivered a stunning unit, and at just £500 my advice would be to buy one now before Real Hi-Fi put the price up!

VERDICT

Charming all-in-one system with the sound associated with good full size separates, at a bargain price.

SHANLING MC-30 £500

Real Hi-Fi
+44(0)870 9096777
www.realhi-fi.com

FOR
- CD player quality
- size, build
- outstanding remote control

AGAINST
- nothing at the price

MEASURED PERFORMANCE

Just one 6P1 output tetrode valve per channel means each channel of the MC-30 is a single-ended amplifier running in pure Class A. It is totally free of crossover distortion and Shanling are, in effect, giving owners a whiff of top-end audio here, albeit at a tiny 3W output. Measurement showed acceptably low distortion of around 0.3%, primarily second harmonic, even up at 10kHz where results were identical to 1kHz. Frequency response was flat from 18Hz to 51kHz via the Aux input. A Pre output means the MC-30 can be coupled to a more powerful amplifier if desired, as 3W will not provide much volume through most loudspeakers. Nevertheless, it is a very high quality 3W which, knowing Shanling, is quite intentional. Single-Ended valve amps are top of the tree sonically, so any upgrade will have to be a good one.

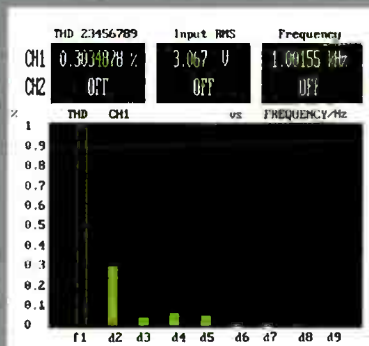
The CD player has a perfectly flat frequency response to 21kHz and relatively low distortion in itself, so it is a quality unit. The VHF tuner is similar, possessing a 19kHz mpX filter that rolls down treble a little, to ensure an easy sound free from sharpness. Nevertheless, it has an upper limit of 14kHz (-1dB), which is good. Distortion levels were restrained too, measuring just 0.15% at 50% modulation, for example. Sensitivity was good and noise very low at -71dB.

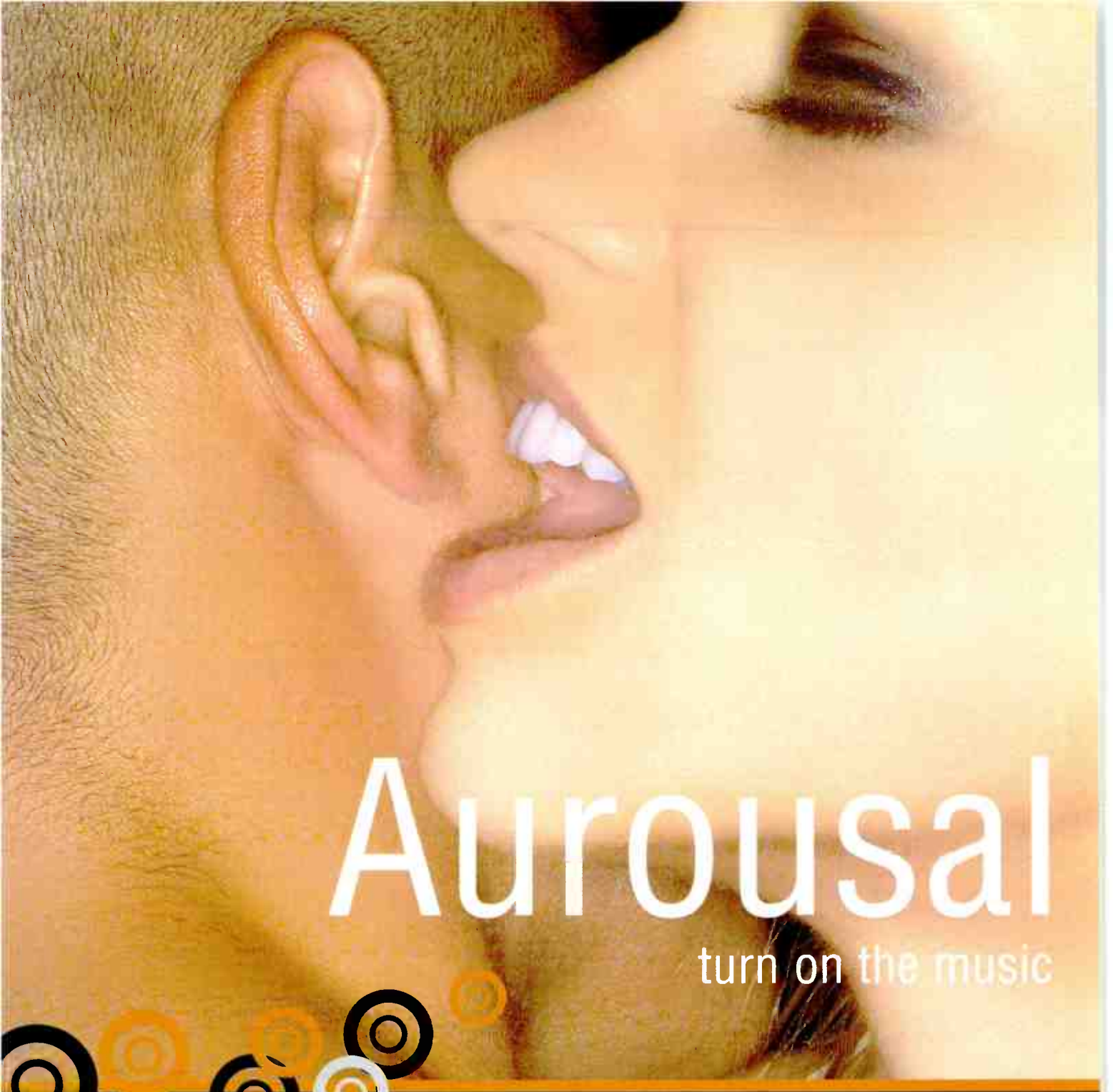
This is a fascinatingly engineered

"Music Center" that measures very well. Expect superb sound quality by any standard, but very sensitive loudspeakers are needed. NK

Power	3 watts
Aux. input	
Frequency response	18Hz-51kHz
Separation	72dB
Noise	-93dB
Distortion	0.02%
Sensitivity	240mV
CD	
Frequency response	20Hz-21kHz
Distortion (-30dB)	0.02%
VHF TUNER	
Frequency response	18Hz-14kHz
Distortion (50%)	0.16%
Sensitivity	60uV

DISTORTION





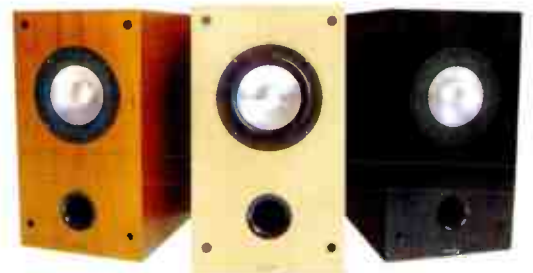
Aurousal

turn on the music

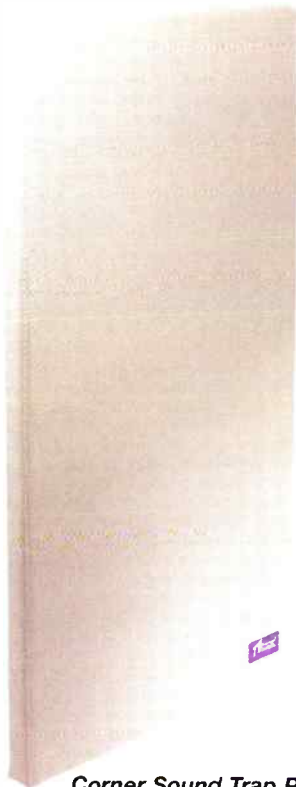


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diameter. frequencies are seamlessly integrated
from 45Hz to 22KHz, with no crossover
components to degrade the dynamics.



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www.aurousal.com
or email sales@aurousal.com



Corner Sound Trap Panel



Mini Corner Panel



Wall Trap Panel

ADVANCED ACOUSTICS SOUND PANELS £70 (UPWARDS)

As Peter Comeau discussed in his article in the October 2006 issue of *Hi-Fi World*, the art of treating your listening room to ensure that your loudspeakers can interface with it properly, and thus achieve their maximum potential, is something of a minefield. The fact that we rely a great deal on the non-direct information from our loudspeakers in order to create the stereo image that adds atmosphere to our music, means that the way in which we ensure that the 'off-axis' output from the loudspeakers reaches us can make or break a performance. Consequently, one of the best and simplest upgrades you can make to your system has nothing to do with stands, cables, alignment protractors or green pens, but involves optimising the way the system operates within the listening environment.

Unfortunately, there are only a few of us out there lucky enough to have a dedicated listening room, and it's an undeniable fact that suitable treatments are not very often visually acceptable. Although a good start can be made with the use of a judiciously-placed bookcase, pair of curtains or a suitable item of soft furnishing, the simple fact is that they rarely need to be situated in a location of which the lady of the house approves...

Even if you do happen to have a free hand to treat your room as required, another problem is that there has been something of a lack of suitable items for the purpose.

If you eat eggs by the dozen, then you should have a ready supply of egg boxes, or Studiospares carry a good range of 'Studiofoam Pyramid' panels and acoustic screens. However, it has taken the arrival of Advanced Acoustics to offer some acoustic screens aimed more at the home user.

Based in Mansfield, Advanced Acoustics have been manufacturing items for professional use for a number of years, but have recently branched out into solutions for home high fidelity. Their range encompasses small panels for wall mounting at £70 each, right up to the floorstanding 'Signature Acoustic Panel' for £360. A wide variety of finishes is available and Advanced Acoustics even sell a model called the 'Photophonic Panel' which is available in a variety of artistic finishes to suit your decor. If none are to your liking, you can submit your own digital photograph to them for screen printing onto a blank item!

Advanced Acoustics can take your room details and advise which items you need and where the best places to put them would be, so we duly drew up a sketch of the *Hi-Fi World* listening room and sent it off. The response was very prompt and Shaun from Advanced Acoustics provided us with a quantity of £180 Corner Sound Traps, £130 Mini Corner panels and £120 Wall Trap Panels, along with a detailed diagram and placement instructions.

Having made the placements as recommended, the difference was quite noticeable as soon as

the first bars of music started. The whole soundstage was tightened up considerably and seemed much more focused although initially the effect was to deaden the atmosphere somewhat. As a result I spent a couple of hours moving the panels around and experimenting and eventually found positions for them that really made things sing.

With the optimum locations settled, the effects were quite dramatic. Vocalists snapped out of a blur with surprising clarity and the bass performance in our room became much tighter. I had deliberately chosen to use the Audia Flight Two amplifier and our Spondor S8es for the test, due to the Audia's low damping factor combining with the Spondors' underdamped response to mean that the results can be a little boomy. With the panels in place however, this boom was lessened greatly. It could still be heard that the Audia was not quite gripping the Spondors' low end particularly well, but the room was no longer amplifying the effects, making the whole setup much more listenable and enjoyable.

The Advanced Acoustic Panels are a worthy addition to any self-respecting audiophile's listening room. They require some careful work to position for optimum results, but let you extract the very best from your system and the wide range of finishes available mean that domestic harmony should also be maintainable. [Contact Advanced Acoustics on +44(0)1623 400660 or visit www.advancedacoustics-uk.com]

SOUNDBITES

Up Sampling

Channa Vithana samples the beautifully finished Ascendo Monitor C5 loudspeaker...

Based in Germany, Ascendo was formed in 1999 as a research and development company with support from the Federal Ministry Of Education And Research, and their portfolio includes an extensive roster of room measuring software, measuring equipment and loudspeaker manufacturing.

Their principal philosophy of loudspeaker design is 'time alignment'. Ascendo point out that treble frequencies react much faster to impulses than the low and middle frequencies, meaning that the high-spectral content of the signal (i.e. the treble) arrives at the listener before the low-spectral contents (i.e. the mid and bass). So, when the tweeter is mechanically in alignment with the mid and bass units, Ascendo notes that the signals arrive at the listener without any time gap, "and this time-coherent technology is called time alignment".

With their upper high-end designs such as the £23,850 System M-S floorstanding model, time alignment is achieved by a beautifully crafted and engineered moving tweeter rig that is isolated from the main cabinet. This mechanism can be adjusted to create the desired time alignment for the listener. However, at the considerably lower price of

"they boast resolution, detail and an innate sense of timing..."

£1,495 for the Monitor C5 we have for review, a less elaborate solution is utilised, in the form of a coaxial driver made for Ascendo by Seas. The driver consists of a 170mm XP clear plastic cone that surrounds a 25mm neodymium fabric dome tweeter located within the cone's centre.

And it's this mechanical alignment of the tweeter and mid/bass driver, says Ascendo, which provides the time alignment for the Monitor C5.

Another important factor for the C5 is Ascendo's crossover which uses a 'Constant Voltage Filter Kernel.' Here Ascendo's Jurgen Scheuring explains that the crossover, designed by Norbert Heinz, is a complex one featuring about fifteen components which enable the control of inter-vibrations between the mid/bass and tweeter units as they are so close together (one of the drawbacks of coaxial drivers) as well as the frequency response of the loudspeaker. Additionally the Seas driver is stated as being mechanically one part of a four component design – the other three parts being the crossover workings.

The 22mm thick MDF cabinet is braced internally for stiffness with further 22mm MDF panels, and flawlessly finished externally in a beautifully consistent all-over lacquer - a genuine five-coat piano lacquer rather than standard automotive gloss types. The rear panel has a port, high-quality single-wire binding posts and a nicely weighted adjustable switch for the crossover to select near wall (bookshelf) or free space settings. The C5 is dimensioned at

220x340x327mm and weighs 9.1kg. The standard finish is in Black Piano Lacquer but other colours are available for £1,995.

SOUND QUALITY

It didn't take long to discern the Ascendo C-5's happy combination of smoothness and detail, along with its excellent innate sense of timing. Music from Palladian Ensemble's 'Bach Trio Sonatas' CD was clear and very finely phrased. The delicacy and cadences of the recorder, cello, violin and viola were easily revealed, with the tonalities of each instrument conveyed very well. The higher frequencies of the violin and recorder on this recording can be problematic, with a tendency to sound shrill, but with the Ascendos these demanding high-frequency parts were handled very well and never veered towards harshness. Instead, what I heard was a high resolution rendering of the music with fine timbre and timing, plus a deft and effortless interplay between all the musical elements.

With 'Enter Sandman' by Metallica, the bassline accompanying the opening drum track was outstanding for a speaker of this size, having powerful impact, great extension and fine control. In



absolute terms, the Ascendo's bass didn't have quite the tuneful low frequency ability of a high end three-way floorstanding loudspeaker like the £3,145 Spondor S9e for instance, but then nor would you expect them to at around half the price. Even so, bass on the

acoustic guitars were very persuasive. The Ascendos were obviously distinguished with musical timing, but there was something bothering me about the Palladian Ensemble, Metallica and Fleetwood Mac recordings - what seemed to be a slight 'coolness' across the upper midrange and lower treble frequencies. However, when I played Goldfrapp's

MUSIC

- Palladian Ensemble, 'Bach Trio Sonatas' (1995)
- Metallica, 'Metallica' DVD-A (1991/2001)
- Fleetwood Mac, 'Rumours' DVD-A (1977/2001)
- Goldfrapp, 'Supernature' SACD (2005)
- Bryan Ferry, 'Boys And Girls' SACD (1985/2002)
- Motley Crue, 'Generation Swine' (1997/2003)

REFERENCE SYSTEM

- Unison Research Unico CD player (£1,495)
- Ayre C-5xe universal stereo player (£4,495)
- Moon Audio i-3 integrated amplifier (£1,595 new)
- Ayre K-5xe preamplifier (£1,995)
- Ayre V-5xe power amplifier (£2,995)
- Ayre L-5xe AC power filter (£995)

than the £1,799 Harbeth 7ES-3 standmounters whilst retaining their great ability to get right into the recording quality of the music. The Ascendos also matched the superb musical timing ability of the £1,000 Leema Xen mini-monitor (see HFW December 2006), but with greater scale than the much smaller Leemas, so they will be more adaptable with small and medium sized spaces, like the 6x4m listening room I used.

I found them a fascinating loudspeaker to live with, and they proved happy within mid-price and high end systems alike. If you would like to strike a skillful balance between the musical timing of the diminutive Leema Xen mini-monitors and the big-sounding and revealing Harbeth 7ES-3s but with a more stylish, minimalist appearance, then the Ascendo Monitor C5 could be just the right standmount speaker for you.

'Supernature' SACD there were no such high-frequency anomalies, indeed I enjoyed the fine textural rendering of Alison Goldfrapp's crystalline vocals.



Metallica music was never less than enjoyable, controlled and dynamic.

Most impressively, the Ascendos could reveal the complex guitar patterns employed within Metallica's superb Bob Rock production without fuss. These guitar melodies and solos can be quite demanding and make some loudspeakers sound mechanical, while they struggle to be faithful to the frequencies and yet tunefully enjoyable. As such, the Ascendos were superior to the £1,799 Harbeth 7ES-3 standmounts (see HFW May 2007), which had a much bigger cabinet but struggled somewhat with guitar solos.

Listening to the Fleetwood Mac 'Rumours' DVD-A, the music was reproduced in a wonderfully animated, expressive way. Here the inherent instrumental and vocal separation of the Ascendos was evident, allowing all the different strands of the recording to be very clearly identified as they appeared and faded. Despite their couthness, instrumental timbre was very good indeed - Lindsey Buckingham's voice was convincing in its texture and vibrancy while the electric and

The music as a whole on 'Supernature' was revealed with greater sophistication than expected, making the Ascendos sound more like a high-end monitor costing well over twice its price. The same was true of the 'Boys And Girls' SACD by Bryan Ferry - this occasionally bright eighties recording was excellent via the Ascendos. So, what I realised in the end is simply that these loudspeakers are highly revealing of the source material's mastering quality.

CONCLUSION

The Ascendo Monitor C5 is an important addition to the mid-price standmounting loudspeaker arena, striking a more modern and stylish cabinet design

VERDICT ●●●●£

An enticing mix of fine build, formidable bass and innate musicality makes this an essential audition.

ASCENDO MONITOR C5 £1,495

Ascendo
 ☎ +44 (0)1435 867 438
www.ascendo.de

FOR

- superb bass
- scale, power
- style, build

AGAINST

- slightly power-hungry

MEASURED PERFORMANCE

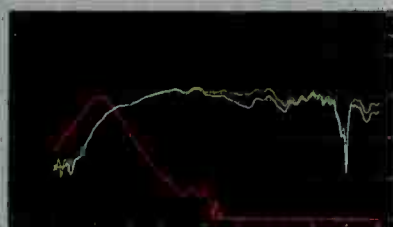
The Ascendo C5s have a falling response with increasing frequency and something of a level drop of 3dB or so at around 2.5kHz. This means that their overall character should be quite smooth and they are unlikely to be harsh. The most obvious aspect of their measurement is the large drop of around 18dB at 10kHz. The wavelength of this corresponds exactly with the diameter of the plastic 'horn' that surrounds the tweeter and I suspect is a result of this causing a cancellation at this spot frequency. The resultant 'hole' covers the range from 8-10kHz and so I suspect is unlikely to go unnoticed and may rob upper midrange detail with some instruments.

The free/wall switch on the rear acts in quite a subtle manner, boosting mid and high frequency output by around 2dB when in the 'free' position, to compensate for the lack of reinforcement in this area from a rear wall. Bass output is fine for a small enclosure, reaching down to around 70Hz and then augmented by the port at around 50Hz, the output of which is very clean.

Measured sensitivity is low at 83dB, meaning that an amplifier of 60W

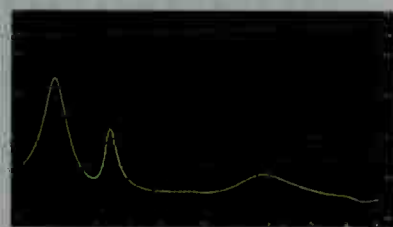
or greater would be a wise partner. Average impedance worked out at 7.7 Ohms, dipping to a minimum of around 4 Ohms, meaning that the C5s are not too difficult to drive, but do present a genuine 4 Ohm load. AS

FREQUENCY RESPONSE



Green - driver output, 'free field'
 Blue - driver output, 'wall'
 Red - port output

IMPEDANCE





Loaded!

Arcam have thrown everything they know about DVD at their new DV139 universal disc player. Dominic Todd sets out to find if it's enough to keep Blu-ray and HD-DVD at bay...

Since the year 2000, Arcam have been making some of the finest DVD players below £1,500. What has marked them out has been the attention paid to audio performance. They may not always have been as advanced as some Japanese rivals, yet when it came to sound quality, Arcam invariably prevailed...

Over the past year though, the competition has not so much come from other DVD players, but a whole new technology altogether - or make that two new technologies. HD-DVD and Blu-ray may not have made the best of starts, but they are now gaining ground and already threaten to make any DVD player over £300 look redundant. In this context, Arcam's £1,800 FMJ DV139 DVD player looks rather ambitious. Yet before cynics scoff, they should take a look at the technology and engineering excellence that has gone into this player.

Essentially, Arcam have used the finest technology available to them and gone all out to create the best sound and vision available for under two thousand pounds. At its heart are a raft of processors and chips that read like a 'Who's Who' of component suppliers. Processing the video is a Zoran 888 decoding engine. This is important, as a decent video processor benefits any video

output used. Next up we have Anchor Bay Technology ABT102D de-interlacer and ABT1010 scaling engines. These two circuits combined allow the DV139 to upscale to 1080p resolution, yet also supply the highest detail possible, whatever the screen's resolution happens to be.

As you'd expect, an HDMI interface is also standard. Arcam claim that with the DV139 connected via HDMI to a suitable Full HD TV (with 1080 lines of horizontal resolution) the picture quality should be as near as damn it equal to HD-DVD or Blu-ray - quite a claim, but there's no denying it has engineering quality on its side.

Where the FMJ DV139 especially excels is in its mechanical engineering. Like most FMJ (Full Metal Jacket) models, the DV139 features an especially sturdy steel chassis, employing SDS [Sound Dead Steel - of the Isoplatmat turntable mat fame, see p92 - Ed.], which should prove helpful in isolating the internal electronics from mechanical interference. Inside there are twin toroidal power supplies, Rubycon capacitors on the DVD processor, output and power supply boards and copious quantities of damping materials wherever you look. In true Arcam fashion, the understated DV139 may not be the heaviest or most stylish, but there can be no denying the thoroughness of

construction.

When it comes to playback formats, Arcam have left nothing out. The inclusion of both DVD-A and SACD makes this a truly universal DVD player. Most importantly in this download age, the DV139 will also replay the popular MPEG4 format, DivX. In terms of audio, MP2, MP3 and OGG decoding are all catered for. Perhaps of more interest to the audiophile is the inclusion of a CD direct circuit. As the name suggests, this turns off all video circuits, allowing for a quieter working environment for CD.

Arcam can't be faulted for the comprehensive range of connections on offer - the DV139 has everything one could wish for. In addition to the single HDMI you'll also find component, composite, S-video and even an RGB enabled SCART sockets (rare on high end players). Both optical and coaxial digital outputs are included. An onboard Dolby Digital/DTS/Pro Logic II decoder outputs its 5.1 channels via an RCA socket and finally, for those looking to use the DV139 as part of a multi-room installation, there's the industry standard RS232 socket.

SOUND QUALITY

Despite this being ostensibly a review of the Arcam's audio performance, any potential purchaser will be interested to see how it fares on



video, and the answer is very well indeed. Even when used through a 1080p Samsung TV, the visual results were simply stunning. Short of the Linn Unidisk, the DV139 produces some of the finest pictures I've ever seen from DVD.

What's most striking about the DV139 is the sharpness and detail of image. There's no obvious grain, almost undetectable blur and a delightful freedom from noisy digital artefacts. Clearly the Anchor Bay Technology de-interlacer and scaling engines have made a significant difference to the picture quality. Of course, the key question is, is it as good as HD-DVD or Blu-ray? Well, in all honesty it's very hard to say, because at the moment there are no rivalling HD players.

Against a Samsung BD-P1000 I felt the Arcam certainly had the edge, but then it is £800 more expensive. Perhaps HD has a touch more ultimate detail but, at least in this case, the Arcam countered with superior depth of image and a broader palette of colours. The only small annoyance with DVD was a slight pause as the laser changed layers. Seeing as there are much cheaper players that manage this seamlessly - thanks to large buffer memories - Arcam really could do better here.

Sonically the Arcam is just as impressive. With standard DVD the results are dynamic, well focused and exceptionally revealing. The only problem here is that the DV139 proved so revealing that poorly recorded sound tracks aren't shown in a positive light.

With the TV turned off, and a DVD-Audio disc placed in the drawer, the Arcam continued to impress, as an already impressive sound stage swelled still further. The DV139 managed to pull off the trick of sounding bold and dynamic

"there was always a sense of effortlessness about the way the DV139 went about its business".

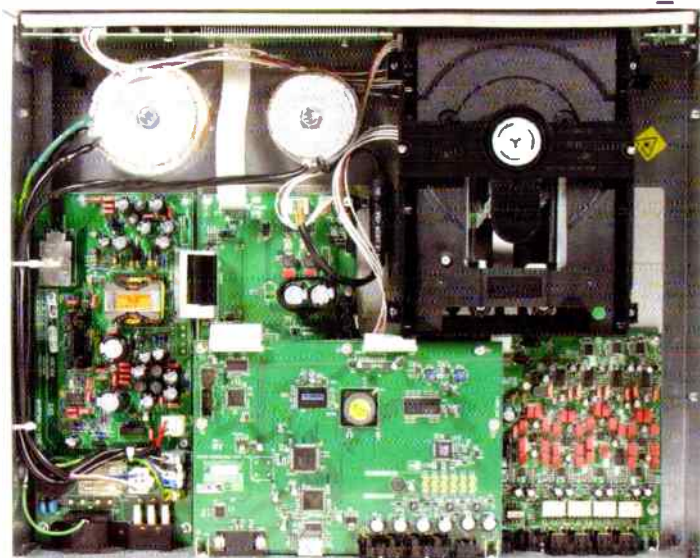
whilst never strained or aggressive. There was always a sense of effortlessness about the way the DV139 went about its business and it was this manner that made it such an involving listen.

Moving the DV139 to my usual system and switching on the CD Direct (which, incidentally, also includes SACD 2-channel) the DV139 once again proved a formidable performer. With Mendelssohn's Symphony No. 3 on SACD, the same sharply focused sound stage that had featured with DVD-A was just as prominent. Although broadly spread, the DV139 had little trouble in accurately placing instruments within the stage. The DV139 was also right on the pace in terms of timing; the piece bowled along at a lively clip, yet always remained focused and controlled whilst doing so.

Accurate instrumental timbre has always been an Arcam strength,

and the DV139 didn't disappoint here. The piano had a full-bodied texture that only the best thousand pound plus CD players can replicate. Brass was energetic without being aggressive. Strings sounded textured yet smooth. In short, the Arcam created an orchestra full of realism.

It was only when listening to Daft Punk's 'Aerodynamic' on CD that I realised the DV139's ultimate depth and extension of bass wasn't quite as good as the best standalone CD players of this price. That said it was still taut, punchy and dynamic enough to keep all but the serious bassheads happy. In other respects, the DV139 performed well, even by the standards of standalone £1,800 CD players. The initial bell had a fine resonance, and the charismatic electric guitar fizzed with an energy that brought it right into the room. If you think that Arcam products are dull and a little restrained sounding,



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the DV139 would soon prove you wrong.

Moving on to Nelly Furtado's 'On The Radio' and the DV139 showed further strength in the portrayal of tricky female vocals. The rather nasal qualities of Furtado were faithfully portrayed, but there wasn't any hint of excessive sibilance or compression that can occur with lesser machines. In terms of focus and realism of vocal the DV139 again proved its mettle against even the finest CD players at this price. Finally, even when the music became complex, the Arcam's excellent separation made it easy to follow individual strands of music – a quality made all the more appealing by the seamless integration and excellent timing.

CONCLUSION

Rarely will I categorically state that a particular product is the finest in

its class, but the Arcam FMJ DV139 is once such instance. I cannot think of another DVD player below £2,000 that gets close to matching it for sound or vision. Perhaps even more surprisingly, the DV139 will embarrass many more expensive DVD players and some £2,000 CD players to boot. Whatever the format, the DV139 sounds composed, detailed and has a knack of structuring the music just so. What's more, its effortless pace and accurate timbre makes for a rewarding listen.

Matched to this near flawless sonic performance is an equally enthralling picture. Again, you'd have to spend a good deal more to get an improvement here. As to whether it's as good as HD-DVD or Blu-ray remains to be seen. At the current time, it is

REFERENCE SYSTEM

- Samsung LE40N87 full HD screen
- Samsung BD-P1000 HD-DVD player
- Marantz SR7001 receiver
- Tannoy Arena loudspeakers

certainly a match for the cheaper players. When the technology filters through to audiophile models, though, I don't doubt that the resolution will be better still. Until then, you can confidently buy the FMJ DV139 knowing full well that there is no better way of playing your existing DVDs and CDs for under £2,000. What with this and the Solo one-box systems, Arcam can be very proud of themselves.

VERDICT

Class leading picture and sound quality makes this surely the finest sub-two thousand pound DVD player around.

ARCAM DV139 £1,800
 Arcam
 +44 (0) 1223 863384
 www.arcam.co.uk

- FOR**
- stunning picture quality
 - CD-rivalling sonics
 - comprehensive specification
- AGAINST**
- layer change glitching

MEASURED PERFORMANCE

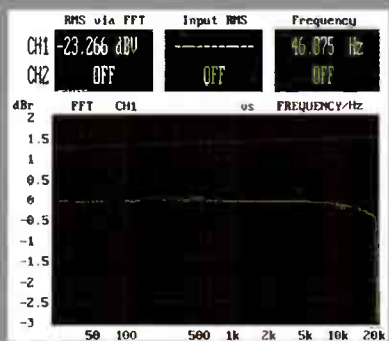
Frequency response with CD had the usual slight roll down at high frequencies of Arcam CD players, although less so than in the past. CD should sound balanced rather than warm, but there will be no sharpness. Distortion levels were very low with CD, hence a fine EIAJ dynamic range of 112dB.

SACD bandwidth extended from 2Hz to 35kHz, whilst DVD-A managed a trifle better at 40kHz (-1dB). Both rolled off smoothly, our analysis showing SACD frequency response. Distortion levels were low with both, and unlike CD there was no quantisation noise to be seen, which makes for a smoother, more composed sound. At 0.08% at -60dB SACD was linear, if not quite a match for the best players, which manage 0.02% here. DVD-A was similar, and both were also alike with -100dB tone, which they resolved successfully. So DVD-A and SACD measured well, if with slightly curtailed bandwidths, DVD-A being able to reach 100kHz for example. I doubt whether this will affect sound quality in any direct manner though.

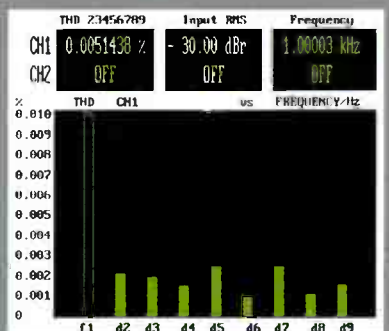
The DV139 measured well with CD, SACD and DVD-A, producing fine results with all three audio formats. NK

Separation (CD, 1kHz)	122dB
Noise (CD, IEC A)	-110dB
Dynamic range (CD)	112dB
Output	2.16V

CD FREQUENCY RESPONSE



CD DISTORTION



SACD FREQUENCY RESPONSE



Frequency response (-1dB)

CD	2Hz - 21kHz
DVD-A	2Hz - 40kHz
SACD	2Hz - 35kHz

Distortion (%)

	CD	DVD	SACD
-6dB	0.001	0.0002	0.007
-60dB	0.23	0.08	0.08
-80dB	3	1.1	1
-100dB	-	8.4	9.2

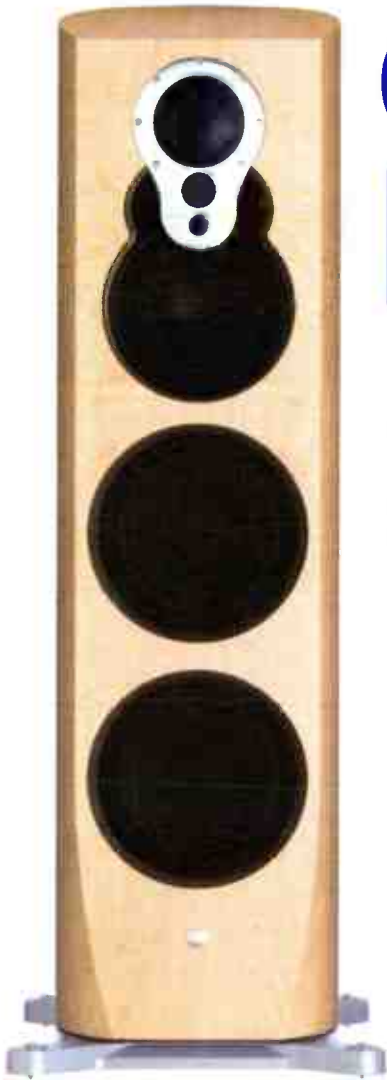
THE RIVALS

At £1,800 the DV139 has few direct competitors. Posh players from Linn, Meridian or Naim are all at least £700 more expensive. The all-encompassing brands, such as Denon, field players either side of this price, but fail to deliver targeted opposition. Still, before Arcam begins to feel too smug, it shouldn't ignore the Marantz DV9600. At £1,500 the DV9600 undercuts the Arcam yet still offers impressive sound, picture and build. Like the Arcam, upscaling to 1080p is possible and the DV9600's 216Mhz/14bit video DAC very nearly matches the Arcam's picture quality. Switch to music though, and there's no questioning the Arcam's superiority. Whilst the DV9600 is refined, expressive and expansive in sound, the DV139 offers more insight and precision. What was once the class best has now been bettered – comprehensively so in terms of audio.

Next up is the slightly more expensive Primare DVD30. This Scandinavian rival offers a cool, minimalist style that the Arcam can't match yet, in other respects, the £2,000 player is comprehensively beaten. The outmoded DVI output can only upscale to 1080i, meaning poorer picture resolution. The sound is smooth and controlled, but can't begin to match the Arcam elsewhere – especially once the DV139 is in CD Direct mode.

Having dismissed rival DVD players, the Arcam can't escape the fact that some may still prefer to buy an expensive CD and cheap DVD. With this in mind, there are some impressive CD players around that aren't quite so easy for the DV139 to pick off. The Meridian G06 might not play DVDs, but it does offer a superbly balanced sound quality that offers even tighter imaging and focus. It's also beautifully built, pleasing to look at and costs £100 less. If music is your first concern, then this and a £100 Denon DVD player could still make for a better choice. Perhaps this is being unfair, though. The difference between the two isn't as great as you might think and, as £1,800 DVD players go, you'll not find better than the DV139.

Come and Listen



to the gorgeous Linn Aktiv Artikulat Loudspeaker system. Each Loudspeaker benefits from dedicated power amplifiers integrated within the loudspeaker cabinet which not only achieves superior sound, but also means fewer components and cabling. The gorgeous sculpted Artikulat loudspeakers come in a range of satin or high gloss real wood finishes. To experience the sheer musical bliss contact Peter Tyson's or Newcastle Hifi for your own personal demonstration



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SENNHEISER OMX 90 VC £50

You'll find these clip-on earphones listed under the 'Style' section on the Sennheiser website, being top of the 'Streetwear Headphones' range. They have an impressive quoted frequency response of 19–22,000Hz, with a 64 Ohm impedance. Beautifully presented in an ingeniously designed package, they come with two sets of earpads and a rather nice carrying case, in addition to the built-in volume control and 3.5mm right-angled gold plated stereo minijack plug. The carrying case is easy to use, as the left and right earpieces fit into an inner hinged plastic holder with a moulding to wrap the wires around. The 'stick' volume control is neatly positioned along the wire so that it lines up nicely with its slot in the holder. The ear clips fit neatly over the ear, but unfortunately failed to hold the earpieces securely in our reviewer's lughole, meaning they fell

out of position easily.

Correctly sited, the Sennheisers did sound superb, and in a completely different league to those bundled with Apple iPods, for example. Unfortunately, they were less sensitive too, meaning the volume had to be set near maximum for realistic levels – taxing the latest generation of iPods with their weedy analogue output stages. They proved superbly clean and smooth across the midband, with a decently extended bass response. The Sennheisers also kept together in complex musical passages, with full orchestras for example. At the top end, the digital harshness so apparent on Apple-supplied earphones was well tamed by the Sennheisers - strings lost their rough edge, but without losing detail or clarity. Overall then, an excellent high end portable headphone, with the only downside being the fierce competition from Sennheiser's other

products – specifically the £29.95 PX-100 headphone and £19.95 MX-550 in-ear phones, both of which sound and fit better, but lack the OMX90VC's style. [Contact Sennheiser on +44 (0) 1494 551 551 or click on www.sennheiser.co.uk.]



soundbites

SONIC FREEDOM EQUIPMENT SUPPORTS £295

Hi-fi enthusiasts are finally becoming aware that the careful positioning of components can have quite noticeable effects on their performance, and attention paid to rigid support and isolation from surrounding vibrations invariably repays itself handsomely in the way that each item can give of its best. As a result, there are a number of support systems, isolating platforms and foot upgrades that all promise to deliver the sonic goods when judiciously placed under equipment.

New to this arena are Sonic Freedom, based in Cornwall, with their 'Spike System' supports, available in sets of 3 for £245 or 4 for £295. Whilst this may seem a lot, you know where your money has gone as soon as the box arrives, as each item is stunningly finished, and made from a solid metal block in two parts, with a spike that screws into the middle. The two parts can

be loosened and the spike adjusted to alter height by up to 10mm, and the top of the spike is the right size to fit into a Philips screw head. Each support has a rubber gasket on the base to protect the surface on which the equipment is sat, and weighs over 300g, adding stability and mass to the component with which they are used.

We're all too familiar with the effects that such supports can have - they're often very subtle - but placing the Sonic Freedoms beneath a Marantz CD94 proved surprising, as they quite clearly removed a layer of mush that had hitherto gone unnoticed. The soundstage opened up beautifully, allowing both instruments and vocalists to find their own space, whilst image stability improved markedly.

Leading edges of bass notes were better defined and the player seemed to have shifted up a gear in dynamic terms, allowing rhythms and basslines to flow much better. Spinning poorly



recorded discs also showed that the supports had the added benefit of helping to clean up the mess present, allowing instruments to gain much-needed clarity.

Overall, these are impressive items; although not cheap the improvements they bring go a good way to justifying their price. [Contact Sonic Freedom on +44(0)1726 66650 or click on www.sonicfreedom.co.uk.]

Good Egg

Adam Smith thinks KEF are back on the boil with their seriously stylish HTB2 subwoofer...

As far as subwoofers are concerned, only one or two manufacturers have had the courage and skill to break away from the tried and trusted 'big box' look and have injected a bit of style into their products. The first two that immediately spring to mind are the B&W PVI, which made form follow function with the use of its 'Pressure Vessel' design theory, and the Crane Audio Submariner which offers no sonic justification for its styling - it just looks funky! However KEF took the plunge when it came to releasing the third generation of their successful 'Egg' surround sound package, replacing the PSW2010 subwoofer with the HTB2.

Available in both high gloss black and silver finishes, the HTB2 is a small and slim device, being only 195mm in depth when positioned upright, and it can be reoriented horizontally if preferred. Either way, it's a stylish device and received a firm thumbs-up from Mrs. Smith upon its installation into our lounge. Connectivity and adjustment are rather limited as the HTB2 is designed to be used with an AV receiver and consequently has no volume control or frequency cutoff adjustment of its own. One input is provided at line level through a phono socket and the only switches are for power on/off, 0/180 degree phase adjustment, bass boost of 0, +3 or +6dB, plus a switch to activate an auto standby mode, whereby the unit powers up when it detects an input, and reverts to standby mode around five minutes after last receiving a signal. The status of the unit is shown by a rather cute illuminated bi-colour KEF logo on its top face - red for standby mode, blue for on.

The main action is provided by a ten inch (250mm) long throw drive unit, powered by a 250W Class D

amplifier, but the unit features a similar-looking ten inch passive radiator on the opposing face. The HTB2 is provided with the necessary hardware and feet that can be fitted to allow horizontal use, as well as European and UK mains leads.

As a result of its lack of controls, the HTB2 requires a little more care than usual in terms of positioning and adjustment. Ultimately I found it worked best in my room when oriented vertically and positioned around eighteen inches away from the wall, with the main driver firing outwards and the

"the HTB2 picks up the leading edges of notes very nicely"



bass boost left at 0dB. When set up in this way, it 'disappeared' very nicely from a sonic point of view.

SOUND QUALITY

Right then, let's get the easy stuff out of the way first, and consider the main reason why many people invest in a subwoofer - the KEF can indeed do bangs and explosions very nicely! Whilst true that it does not quite have the stomach-churning, ornament-rearranging abilities of the

shoulder, as you do...

Moving to music material, which, in my opinion, sorts the subwoofer wheat from the chaff, the HTB2 proved itself eminently capable. Spinning the track 'Help Me Through The Night' from the Eagles 'Hell Freezes Over' DVD, Timothy B. Schmidt's bass line was very well formed with good definition and a pleasingly tuneful flow. The HTB2 picks up the leading edges of notes very nicely and avoids falling into the depressingly common subwoofer scenario of blurring bass lines by being over-enthusiastic.

On two channel material the KEF again seemed quite happy with whatever I threw at it. It had enough pace and rhythm for dance music, pounding out the full force of Kruder and Dorfmeister at the

"the HTB2 is musically adept with good tunefulness..."

sort of levels that might at least disturb the neighbours, if not shake them completely out of their beds. It also cheerfully relayed the crashing crescendos of large-scale classical music with aplomb, giving tympani excellent scale and impact. As mentioned earlier, the HTB2 is musically adept with good tunefulness and solid leading edges to notes, but it does have something of an overhang and doesn't quite 'stop on a sixpence' like the best subs, meaning that bass notes started sharply but hung on a little longer than they should have done.

I suspect that the passive bass radiator is to blame here, as tapping on the cone of the main driver elicits little more than a dull thud, which is good, but the same treatment on

REFERENCE SYSTEM

- Bang & Olufsen Beovision Avant TV/DVD
- Bang & Olufsen Beosound 9000 CD player
- Bang & Olufsen Beolab 8000 loudspeakers
- Mordaunt Short Performance 9 subwoofer

the passive unit brings forth a rather resonant 'bong' with exactly the sort of note decay that the HTB2 has a tendency to exhibit when playing. This never manifested itself as boominess, but sometimes added a little 'echo' type effect to low frequencies - not distressing but still not quite perfect.

CONCLUSION

As subwoofers go, there is a great deal to like about the KEF HTB2. Obviously its styling will be a definite plus point for many people, but it is heartening to find that it has

sufficient sonic capabilities to ensure that it is equally content to play sweet music or put you right inside that exploding helicopter as well. Whilst true that there may be other subwoofers at the price that can bang a little louder or turn in a slightly more precise musical performance, the HTB2 offers an impressively even performance across the board.

It seems a shame that the connectivity options were not expanded further as the HTB2 would be a fine and stylish way to boost the low end of a small pair of stereo loudspeakers if it could be run independently from a speaker-level signal. However, as it stands, the HTB2 offers an impressive package of style and performance all the same.

MEASURED PERFORMANCE

The HTB2 is a simple subwoofer with only phase and bass boost controls on its underside, being designed with full surround sound systems in mind. The bass boost is switchable between 0, +3 and +6dB and it operates by lifting output between around 35 and 100Hz.

This will add useful low end weight and impact but may exacerbate room modes, causing boom, and so experimentation is very much the key here.

In any setting, the KEF offers useful bass augmentation down to below 40Hz but output drops off sharply below this. Upper frequency response is good to 200Hz, allowing it to work with very small satellite speakers and permitting experimentation of crossover point from the matching receiver for optimum performance.

The KEF HTB2 is not the ultimate in chest-thumping, neighbour-annoying firepower, but it makes good use of its sleek enclosure and should work well as part of a budget or style-conscious surround sound system. AS

FREQUENCY RESPONSE



Green - Bass boost +6dB
Red - Bass boost +3dB
Blue - Bass boost 0dB

Mordaunt Short Performance 9 that usually provides sub-bass duties in the Smith lounge, at one-fifth of the price and with a quarter of the power of the MS, it would be unreasonable to expect it to. That said, the HTB2 was quite able to rumble the sofa during the superb chase scenes from 'Terminator 2', or when 'The Thing' from the 'Fantastic Four' DVD stops a speeding truck with his

VERDICT ●●●●

A well designed subwoofer that brings style to the breed, whilst offering fine performance on both movies and music.

KEF HTB2 £499
KEF Audio (UK)
+44(0)1622 672261
www.kef.com

- FOR
- nicely musical
 - good impact for cabinet size
 - styling

- AGAINST
- limited connectivity
 - slight bass overhang



Seventh Heaven

Marantz's new £22,000 flagship system - comprising the SA-7S1 SACD player, SC-7S2 preamplifier and MA-9S2 monoblock power amplifier - is one of the things David Price's dreams are made of...

As you might expect, we see quite a lot of high end hi-fi at *Hi-Fi World* towers, but rarely do we come across a complete one-make 'superfi' system that looks, feels and sounds like this.

More so than perhaps almost any other marque, the Marantz story follows a long and winding road. From the company's beginnings as the brainchild of a New York-based graphic designer to its present day status as a respected international hi-fi specialist, it has experienced countless twists and turns in both its ownership and product portfolio.

Saul B. Marantz's first Model 1 mono preamplifier set the blueprint for the company back in 1949,

and the company soon garnered a reputation for exceptional tube amplification. By the late seventies it was Japanese-based, and making superb high end solid-state amps, as well as forging a name for itself with classic tuners such as the ST-7 and the great TT-1000 turntable. Fifteen years later, as a subsidiary of Dutch consumer electronics giant Philips, it was king of budget CD players, with a range of brilliant affordable machines such as the CD-63, which remains a second-hand favourite even today.

Ironically, in the UK at least, the company – now owned by Japanese D&M Holdings – has fallen victim to its own success. To many audiophiles of a certain age, Marantz has become synonymous for £250 hi-fi separates

and no more. Recently, it's pushed into two-channel SACD spinners and multichannel, but since 2000 and the arrival of the classic SA-1 (their first SACD player), we've not seen so much on the high end front...

Well, this system changes all that. Costing a cool £22,000 for an SA-7S1 SACD spinner, SC-7S2 preamplifier and two MA-9S2 monoblock power amplifiers, it's one of the most impressive one-make systems we've seen (or heard) in a long time. It may be a simple response to the requests of Marantz fans or a calculated focus-group driven project, but you could also call it a declaration of intent – to signpost the company's rightful presence in the high end market, which is just where it all began.



"I found myself in awe of its peerless build, styling and sonics..."

COMPONENT PARTS

The system begins with the £5,000 SA-7S1, which is about as archetypal a Japanese battleship silver disc player as you'll find in both form and function. Indeed, it is the newest Marantz flagship SACD since the SA-1, and feels like it. Measuring 459x425x136mm and tipping the scales at 22.3kg, you'll not find many more substantial units around, aside perhaps from Teac's high end Esoteric sub-brand. It is hard to describe the SA-7S1 without lapsing into cliché, as the finish is immaculate and impeccable, and looks superb in Marantz's trademark champagne gold.

All the boxes are ticked – an aluminium fascia as thick as a tree trunk, beautiful detailing at the back and sides, and a metal disc tray. The double-layer chassis is designed to reduce vibrations to nought, and the rear panel is constructed of a copper-plated steel. The bespoke Marantz SACDM-1 mechanism inside is constructed with diecast metals. The servo and decoder are mounted on a four-layer glass epoxy board. It uses one NPC SM5866AS DAC per channel, and Marantz has taken a great deal of trouble to isolate them from the analogue circuitry. A high-performance 24bit DSP offers direct 8x oversampling and newly refined digital filter characteristics, with three switchable positions giving a sound to suit the disc or the listening mood.

The analogue output stage is a fully balanced double differential type, using Marantz's proprietary HDAMs (Hyper Dynamic Amplifier Module), and the company says the circuit is fully balanced throughout all analogue stages. There's a newly developed toroidal transformer in a copper shielded case, said to be strong enough to be used in an amplifier. Finally, as per several high end Japanese machines, there's an external clock input fitted. Master clock generators such as Esoteric's G-25U (see www.teac.com/esoteric/G-25U.html) enable the CD transport and DACs to run off ultra high-precision clock signals.

Described as a 'state of the art' control amplifier, the new SC-7S2 preamplifier it is larger than most at 459x441x136mm and heavier too, at 21kg. This, the second version of the SC-7, has been completely reworked and now has "audiophile multichannel upgradeability", evidence of which can be found in the four, rather than two, Wolfson electronic volume controls. The company says the "highest achievable stereo performance can be accomplished with a system configuration of two sets of SC-7S2, and four sets of MA-9S1 connected in a bi-amping mode".

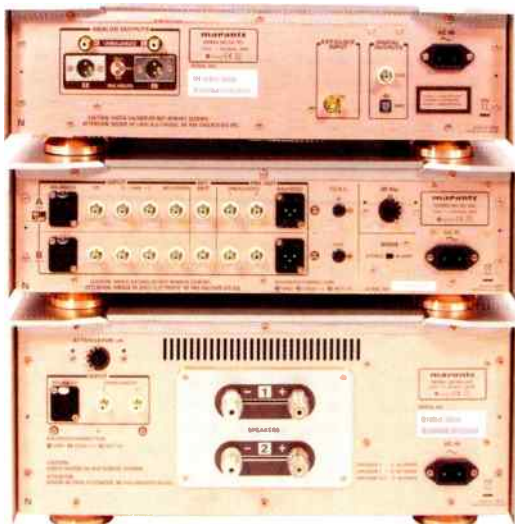
Fully balanced, it boasts an SA-7S1-style multi layer copper chassis onto which a 'Super Ring' power transformer is bolted. Choke input

topology was adopted for the power supply section, to drastically reduce rectifier harmonic noise, Marantz has developed its own discrete circuit boards using bespoke new HDAMs, consisting of discrete components with short mirror image signal paths. Construction is fully balanced from input to output. Lastly, the mighty £6,000 MA-9S2 monaural power amplifier measures 459x451x198mm and weighs 37kg. Two were used in our review system, each promising 300W into 8 Ohms and a current drive of up to 150 amps [see MEASURED PERFORMANCE].

Again, much of the thinking on physical construction from the SA-7S1 is found – from the massive multi-layered copper chassis to a vast Marantz Super Ring power transformer. Round the back, massive WBT speaker connectors are found. The fascia sports a single, defeatable power meter, with a blue LED that flashes to denote muting.

The system was generally a joy to use, making most other components at any price feel pretty shabby in both aesthetic and ergonomic terms. With a flawless finish, it certainly is visually arresting enough to stop any visitor dead in his or her tracks. However, it wasn't quite up there with the most expensive cost-no-object designs in a couple of respects...

The main disappointment was



the SA-7S1, whose pale blue fluorescent display seemed just a little too close in evolutionary (and cost) terms to Marantz's lesser products. Just as you wouldn't expect Toyota switches on a Lexus dashboard, so the display felt a little out of place. Second was disc drawer – despite being an all metal affair, it didn't have the delicious silkiness of Linn's (now defunct and admittedly twice as expensive) Sondek CD12, or Esoteric's contemporary and similarly priced X-03. It wasn't special-feeling enough, and it should be.

SOUND QUALITY

In the budget and mid-price sectors, one-make hi-fi systems try to be all things to all men – which is to say that, whilst they may still have an essence of what defines their brand, it's diluted to a fair degree so as not to put off potential purchasers. However, when you reach this sort of money, it's time to nail your colours to the mast as a designer/manufacturer/marque, and give the customer your own precise take on what the best is...

Where similarly priced superfi systems from Linn and Naim go for a very particular type of 'musical' sound, which is to say that the oft-quoted 'pace, rhythm and timing' approach comes to the fore, Marantz has ploughed a very different furrow that reflects both the tastes of lead designer Ken Ishiwata and indeed the brand's traditional 'tube meets transistor' sound.

To elucidate, the approaches of both Linn and Naim – which should be very familiar to British audiophiles – put the emphasis on the equipment's ability to capture both the attack and the accenting of musical notes, and dwell less on the actual tonal and timbral qualities of the notes being played. The result is a startlingly fast and engaging sound that, for some, is not quite as warm

or rich as it might be.

Arguably, the opposite approach could be that of Quad, EAR or AudioNote which, although providing very fast sounding systems at this price, lack the physicality and visceral power of the Linn and Naim approach. They're more about the 'flavour' of the music – capturing its natural, rich harmonics as best as can be. The result is a slightly softer, more organic sound that's a tad more laid back and less gripping to listen to, albeit certainly no less enjoyable.

The Marantz system fits into the equation slap-bang in the middle, attempting to straddle both camps. In a sense, this is the hardest position to be in, because it's trying to keep both sets of listeners happy when it's hard enough to satisfy just the one. In absolute terms then, it doesn't quite have the terrier-like, 'up and at them' quality of a similarly priced Linn system, and nor does it have the almost supernaturally organic feel of an AudioNote – but still seems able to bridge both extremes in a remarkably convincing way. It's best characterised as the meticulous application of solid-state technology to yield a most un-transistor-like sound, yet it seems quite unlike tubes too!

Ltj Bukem's 'Logical Progressions' is a case in point – a classic slice of mid-nineties drum and bass which gets fearfully complex and represents an audio assault course for anything that goes near it. The all-electronic track sets up a complex, 120 beats per minute percussive pattern on a drum machine, then adds keyboards and fearfully powerful basslines – all of which this Marantz system was able to convey in its entirety. As you'd expect from twin monoblock power amplifiers with an easy 300W under their respective belts, the low frequencies were disarmingly strong. Like a classic American V8 muscle car, the MA-9S2s seemed totally unmoved by the challenge of pushing out vast tracts of bass at the blink of an eye. It was deliciously deep and fruity with seemingly effortless reserves, yet was as fast as it could be. I've never heard our reference Spendor S8es sound so large or as commanding as when on the end of the mighty Marantz monoblocks.

Further up the frequency spectrum, the system was startlingly clean and open, with a vast chasm-like soundstage, into which the myriad elements of the mix were effortlessly inserted – everything in perfect proportion. I could hear layer after layer of sound, yet

each strand was playing seemingly completely independently of one another. Up at the top, the treble – which is particularly unpleasant on this recording – attained a hitherto-unheard smoothness, yet this wasn't at the expense of detail or atmosphere. Those Roland TR808 drum machine hi-hats were resolved with superlative finesse, and none of their normal hard 'zing'.

Staying on the electronic theme but moving to SACD in the shape of Propaganda's 'A Secret Wish', the dirge-like din of 'Dr. Mabuse' was transformed into a clean, open and powerful recording with mastertape-like smoothness and dimensionality. I've rarely heard this early eighties Trevor Horn production achieve any sort of depth perspective – even with my mint Japanese vinyl pressing – but it was magnificent through the Marantz. The SA-7S1 is a tremendously high resolution device, reminiscent of the SA-1 which I reviewed (and fell in love with) some six years back. It has a massively wide left-to-right image, into which vast amounts of information bristles through, but it's not 'hi-fi' in the sense that it gives you all this information at the expense of capturing the music on the disc – quite the reverse. This was surely the most rousing rendition of the song I'd ever heard.

With classic rock music, the story remained the same. Dire Straits' 'Lady Writer' from 'Communiqué' is a somewhat deep and dark recording that can sound lifeless and lack sparkle with all but the very best replay equipment, but the Marantz system transformed it into a bright, vivid and natural track that made Mark Knopfler's electric guitar artistry shimmer in the soundstage. His voice was as plaintive as ever, but it displayed not a hint of congestion or coarseness, the Marantz system letting his distinctive vocal strains ring out around the soundstage. Coupled with that delicious rock drum track, the song bounded with life and yet was as rich and warm as the recording studio had sounded back in 1979. Most impressive was the way the system carried the song's natural rhythmic accents – on lesser combinations of equipment, this track can sound quite plodding and workmanlike, but not here.

Moving to the joys of Donald Byrd's 'Streetlady', an early seventies BlueNote jazz-soul delight with that label's famously high production values, and the Marantz combination again delighted. This is something of a tricky track, as the bass guitar playing can – on overly warm systems

... sound imperfectly syncopated with the jazz drumming. The rhythms are very fluid – as you'd expect from those great BlueNote session men – and many sources and/or amplifiers can trip over their shoelaces trying to keep up. Again, the Marantz was a delight, the MA-9S2s delivering a bass line of sledgehammer proportions, but staying remarkably deft on their feet (so to speak). This song's flute playing can often intrude, sounding strident and overbearing, but the Marantz carried the instrument beautifully – imparting all its rich harmonics and rawness (it's unusually close-miked here), whilst adding a gossamer-thin layer of silk on top. This exceptionally natural acoustic recording came over with an uncannily live feel and was a sheer delight to listen to.

An eighties Philips disc of Debussy's 'Submerged Cathedral' prelude showed the system in its best light. The piano sound was startling – shimmering with harmonics, bright and engaging yet rich and fruity too. The track's

slow-burning, brooding menace builds to a crescendo as, story has it, the cathedral emerges from the sea, and the Marantz caught this with great skill. Its ability to capture subtle dynamic accenting from the pianist's right hand whilst his left was hammering out crashingly powerful cadences was exceptional. In a nutshell, it shows how the SA-7S1/SC-7S2 and MA-9S2 combo could be at once be devastatingly powerful yet gentle and finessed too.

CONCLUSION

It's one thing to do a class-leading CD player, but it's another thing entirely to do an entire source, preamplifier and power amplifier combination that not only is a perfect aesthetic and ergonomic match for each other, but gives sonics that leave no one wanting. Furthermore, doing ultra-focused electronics that go right out to appeal to a select bunch of 'brand disciples' is, I suspect easier than attempting something that combines the best of all worlds – and succeeds. For this reason, Marantz is to be congratulated

for such a mammoth achievement. I'd venture to suggest that any person of any audiophile persuasion could live with, and indeed love, this system – and not regard the fact that it is 'one make' as in any way a compromise.

Speaking personally, I found myself in awe of its (almost) peerless build, very elegant styling and truly wonderful sonics. I know there will be tube diehards that regard it as lacking that last few percent of dimensionality and insight across the midband, whilst dyed-in-the-grain Linn and Naim devotees might see it as a fraction too 'soft', but I'd say that the great majority of audiophiles will regard it as a jack of all trades and master of most. As such, even at £22,000 it is hard to fault this stunning system, and all to easy to praise. If you're fortunate enough to have this sort of sum burning a hole in your pocket, I can think of very few better places to spend it. And if not – speaking personally – then a mere £12,000 pointed at the MA-9S2s would surely solve your power amplifier problems forever!

VERDICT ●●●●●

Artfully conceived, peerlessly built high end system that attempts to give the best of both tube and transistor sounds - and succeeds.

MARANTZ SA-7S1	£5,000
MARANTZ SC-7S2	£5,000
MARANTZ MA-9S2	£6,000

Marantz Hi-Fi UK
 ☎ +44 (0) 1753 680868
 www.marantz.co.uk

- FOR**
- effortless musicality
 - insightful, detailed sound
 - superlative build
 - MA-9S2's power
 - SA-7S1's clock input
- AGAINST**
- SA-7S1's disc tray
 - SA-7S1's display
 - mediocre remote

MEASURED PERFORMANCE

MARANTZ SA-7S1

The CD player here departs from common design practice of maximum high frequency extension; whereas the anti-alias filters of today's players usually reach 21kHz or so, this player rolls off earlier at 19kHz (-1dB). This indicates Marantz have used deeper filtering to reduce aliasing effects. Frequency response also shows a small roll down, and Marantz don't usually adopt this characteristic unlike, say, Arcam. I would expect a cleaner, more balanced sound than is common, and CD treble with less tizz. Distortion levels were low as CD goes and EIAJ dynamic range high at 111dB.

SACD frequency response rolls away gently above 33kHz (-1dB), reaching -12dB at 100kHz - somewhat higher than usual. Distortion levels were low, measuring 0.08% at -60dB, roughly what is expected from SACD - and four times less than CD. The player resolved a -100dB signal with just 6% distortion, showing just how much range is available in the midband. The balanced output produced 4.3V, double that from unbalanced.

The SA-7S1 is carefully engineered in all areas to give a measured performance that should result in excellent sound quality. NK

SA-7S1 SACD FREQUENCY RESPONSE

SA-7S1 DISTORTION

maximum at high frequencies, comprising a little crossover. At normal powers though, the figure was around 0.005%, showing just how linear the amplifier is. Frequency response was wide at 4Hz-70kHz, -1dB. The only point to note is that 2V is needed from a preamp for full output, and the SC-7S2 preamplifier has limited gain of x4, unbalanced or balanced, making for an insensitive system needing 500mV for full output, assuming full output will be required. Although there's enough gain, volume may have to be advanced a lot with, say, a low gain external phono stage.

This Marantz combo offers massive power with top hi-fi specs. It will sound smooth, yet very punchy. NK

Frequency response (-1dB)	
CD	2Hz - 19kHz
SACD	2Hz - 33kHz

Distortion (%)	CD	SACD
-6dB	0.0004	0.0004
-60dB	0.22	0.08
-80dB	2.5	1.8
-100dB		6.5

Separation (CD, 1kHz)	132dB
Noise (CD, IEC A)	-122dB
Dynamic range (CD)	111dB
Output	2.04V

MARANTZ SC-7S2/MA-9S2

The performance figures for this giant monoblock amplifier are as big as the amplifier itself. It produces 325 watts per channel into 8 Ohms and a massive 576 watts into 4 Ohms, voltage sagging a little under heavy current draw, even with the massive internal power supplies. With an extremely high damping factor of 120, these monoblocks should have massive grip, as well as the ability to drive any loudspeaker. Distortion levels were extremely low in the mid-band, measuring just 0.0006% into any load, low or high, so Marantz have made the amplifier relatively insensitive to load. Distortion rose to a level of 0.01%

MA-9S2 DISTORTION

Power	325watts
CD/tuner/aux.	
Frequency response	4Hz-70kHz
Separation (pre)	93dB
Noise	-115dB
Distortion	0.005%
Sensitivity	2V
Damping factor	120

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 PLINIUS

Kiwi Beaut

Adam Smith auditions the handsome Plinius 9200 integrated amplifier from New Zealand...

There are one or two areas of the world that cause some people a certain element of surprise when they learn that hi-fi equipment is manufactured there. Of course, most can reel off names of British, American, Japanese, Italian and Chinese makers, but when I did a quick canvass, asking for manufacturers from New Zealand, the people I asked either did not know any or became stuck after Perreaux...

This would seem a rather unfair situation, especially to those fine folks at Plinius who, since Plinius Audio Systems was formed in 1980, have been steadily manufacturing amplifiers since then, and diversified in more recent years with the Jarrah and Koru phono stages and the CD101 CD player, the latter item introducing Plinius's latest "piece of bent aluminium" design ethos - their words not mine!

The 9200 under consideration here is the larger of two integrated amplifiers, building on the foundations of its smaller 9100 brother but adding both balanced connection options for the CD input and a phono input with internally adjustable gain. The 9200 also has processor in/out sockets to allow it to be used as part of a home cinema system and

has twin tape inputs/outputs for all your dubbing needs.

Power output also has a hefty hike from the 120W of the 9100 up to 200W and, as our measurement shows, this is built on nicely, rising to a very healthy 342W into four Ohms. As a result, there is unlikely to be any loudspeaker that the 9200 will balk at driving. Still, I suppose if you manage to find one then you could always use its preamp outputs to connect to a Plinius SB-301 power amplifier, which delivers no less than 310W per channel into 8 Ohms...

The aforementioned "piece of bent aluminium" styling is present on the 9200 and I personally think it looks rather good - it definitely helps the Plinius to stand out from the crowd (as does its unusual light blue rear panel!) and further adds a good impression of solidity to the 14kg unit. Measurements are quite reasonable at 120x450x400mm (HxWxD) but, whereas the Audia Flight Two amplifier reviewed on page 50 is deeper than most, the Plinius is a little wider. I have this issue with my own Marantz CD94, which is wider than most thanks to its wooden side-cheeks, and will not fit into some racks as a result. It would therefore be worth wielding the tape measure before you write your cheque to Plinius.

Finally, the 9200 comes with

one of the most fantastic remote controls I have seen since last months "Globie" winner that belongs to the NuForce P9. The Plinius 'Integrated Remote Control' is supplied with all the 9100 and 9200 integrated amplifiers and has just three buttons - volume up/down and mute, but the whole item is a solid aluminium chunk, engraved with the Plinius logo, and measures no less than 269x41x31mm, including a nice soft foam pad on the base to protect whatever you choose to sit it upon. Overkill maybe, but fantastic nonetheless [and it's also worth considering if you're thinking about the ideal murder weapon - Ed.]!

SOUND QUALITY

The first thing that drew my attention about the Plinius 9200 was nothing to do with its sound quality, strangely enough. Instead, I could not help but notice how hot the unit runs, and how quickly it heats up, even when not actually playing. The power amplifier design is Class AB but it runs easily as hot as the Class A Luxman L-550A and so you should make sure that your intended location for it has sufficient ventilation so as not to slowly roast any components sat above it.

With the Plinius suitably ventilated and a window open, I found that it more than lives up



VERDICT ●●●●●

A dynamic powerhouse of an amplifier, with pace, grace and prodigious load-driving abilities, if not the last word in emotion. Fantastic remote, too!

PLINIUS 9200 £2,899

Distributed by TSource

☎ +44(0)1803 226104

www.tsource.co.uk

FOR

- superb dynamics
- clarity and drive
- huge power
- styling and remote handset

AGAINST

- lacks emotion
- runs very hot

to what you might expect from a genuine two hundred watt that runs hot. The 9200 is a real dynamic powerhouse, and grips loudspeakers firmly round the scruff of their necks to keep them superbly controlled in the bass; our Spondors were as tight and punchy as I have ever heard them bass lines were rock solid, and the 9200 is never happier than when pounding out a rollicking bass line. 'American Dream' from Jakatta's 'Visions' album had the sort of low end welly that can move furniture at the right volume levels.

At the other end of the scale, the treble performance fitted in with the driving bass very well, being clean, clear and adding a nice metallic sparkle to cymbals and percussion. The Plinius has a traditionally transistor-like presentation, offering insight and glittering top end, but it never became harsh or unruly, even with less than forgiving material. The 9200 set up a quite deep soundstage, offering a pleasing sense of ambience to proceedings, but failed to extend this to the extreme left and right beyond the outer limits of the loudspeakers, so image width was somewhat curtailed laterally.

So far, so good, but the Plinius proved itself to be something of a mixed bag in the midrange. On the plus side it offers commendable levels of clarity and definition to instruments, presenting them solidly within the soundstage and picking up on their nuances well. Vocalists were also well represented, but on the whole performances tended to lack emotion. As an example,

Norah Jones's voice on 'Feeling the Same Way' was beautifully clear and centre-stage, but it could almost have been any female singer with a pleasant voice singing, the Plinius seeming to be unable to really reproduce the inflections in her voice that make it so distinctive.

In the same way, the violins from Pachelbel's 'Canon' were clear and with no hint of the unpleasant screechiness, that can sometimes afflict solid state amplifiers, but were missing the sense of warmth that separates a real wooden instrument from a rather sterile reproduction.

CONCLUSION

In a world where quite a few amplifiers can be hesitant and unsure of themselves, the 9200 is an item that knows exactly what it is doing, and, given the right source material, it cuts straight through to the heart of the music to really set your toes tapping. The way in which it can capture rhythms and beats is quite breath-taking at times and if you like to rock, you'll love it.

Where it is less assured is when things slow down as it lacks the emotive spark to really immerse you in

the subtleties of a soft performance in the way that a valve amplifier can, for example.

All things considered, however, it is hard to resist the addictive verve of the 9200 amplifier and, when you take into account its dynamics, loudspeaker drive ability and that superb remote, it gets a thumbs-up from me.

MEASURED PERFORMANCE

The 9200 is very powerful, producing 342 watts into 4 Ohms no less, and with a high damping factor of 84 this unit is really going to take 4 Ohm bass comes by the scruff of the neck; it should have real grip and punch. However, it ran very hot under test, even when lightly loaded, and the rear trip occasionally interrupted proceedings.

Distortion levels were low in the midband but classic crossover affected high frequencies, rising to 0.1% or a little more at high levels as the amplifier got hotter. The harmonic structure can be seen in our analysis and is largely higher order, so there may be some slight lack of finesse in the treble. Results did not improve via the balanced inputs.

At 0.75mV the phono stage has very high sensitivity, sufficient to match high output moving coil cartridges, although input impedance is 47k Ohms, so both MMs and MCs can be used through the same input. The penalty for this is a lowered overload ceiling of 25mV, but in spite of past speculation, the highest output cartridges manage 18mV or so on high frequency peaks, so the 9200 is okay here.

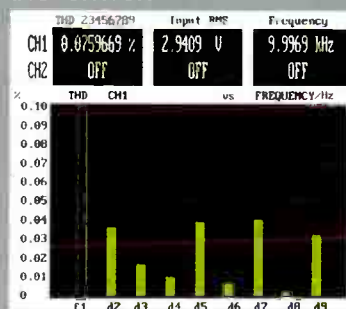
The Plinius 9200 measures well enough, but its distortion spectrum is

less well controlled than is common nowadays in commercial hi-fi amplifiers. NK

Power	200watts
CD/tuner/aux.	
Frequency response	6Hz-30kHz
Separation	78dB
Noise	-106dB
Distortion	0.04%
Sensitivity	400mV

Disc	
Frequency response	26Hz-29kHz
Separation	62dB
Noise (e.i.n., A wtd.)	0.24uV
Distortion	0.008%
Sensitivity	0.75mV
Overload	25mV

DISTORTION



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Pure and Simple

Adam Smith tries out Pure's crisply styled Legato II mini system...

Pure's Legato II is their top of the range micro system, retailing for £350 and offering a goodly range of features. As well as the obvious FM and DAB radio sections featuring Intellitext and Electronic Program Guide (EPG), the Legato II offers a CD player and also an SD memory card slot through which you can not only play your MP2 and MP3 music files, but directly record DAB radio as well. At the rear is a USB port allowing direct connection to a computer for SD card file organisation, and for uploading future software upgrades.

The unit itself is neat, measuring 150x210x240mm (HxVxD). Connections are provided for plugging in three external sources - one through a 3.5mm jack plug on the front panel and two through phono sockets on the rear. There is also a set of line level outputs that can be configured to either fixed level for plugging the unit into an external amplifier, or variable for driving a subwoofer.

The matching loudspeakers are equally neat at 250x160x240 (HxVxD). They are a two way, ported design with polypropylene mid/bass drivers and the traditional Audax-type budget tweeters. Both units are available in cherry, maple or piano black and the system is supplied with a remote handset.

SOUND QUALITY

With the Legato II on a Sound Organisation rack and the loudspeakers atop a pair of Atacama Nexus 6 stands, initial results were quite favourable. My house is in something of a DAB 'dead zone' but, using the supplied simple wire aerial, the Legato II managed to pull six stations out of the ether and gave me Planet Rock loud and clear. Running tuning on FM showed that the Legato II is very sensitive and, even with this supplied aerial, Radio 3 was pleasingly quiet, with only a very low level of background hiss.

DAB sound quality, unfortunately was not brilliant. The whole presentation was muffled and dynamics tended to blur somewhat. Things were better with FM however, and the Pure made a decent fist of things here. Announcers and newsreaders came across particularly well and were nicely centre-stage with good ambience. Loading Steely Dan's 'Two Against Nature' into the CD player revealed this clear midrange again, but it appeared that the ends of the frequency range were not as happy.

Bass was rather boxy and one-note and treble was again rather muffled, giving cymbals an almost plastic quality. Navigating through to the tone control menu and tweaking the treble up helped things along a bit but trying the same trick with the bass

control just made things worse.

Out of interest I connected up a pair of old Mordaunt Short MS20i loudspeakers and the transformation was quite revealing - suddenly those cymbals were metal again, and bass guitars reappeared from the depths of the soundstage. Even the DAB became almost listenable. Moving back to the unit's own loudspeakers, it seems that Pure have deliberately tuned the unit for midrange clarity. One interesting strength I did note from it was that you could walk away into a different room with the supplied loudspeakers playing and voices carried very well - this was especially true of spoken material.

CONCLUSION

The Pure Legato II is a nicely made unit with a good range of facilities and an impressively sensitive tuner, and it is fine as a second system or for background music. Its supplied loudspeakers are its main weakness and if the maximum performance of which it is capable is to be explored then these should be replaced, as this then allows more of its potential to shine through.

As it stands, the Pure Legato II has a lot going for it but, in sound quality terms, faces stiff competition from the likes of the Denon D-M35DAB, the Onkyo CS-515DAB and, my personal choice at the price, the Yamaha M-170.

VERDICT ●●●

Neat all-in one system with a good range of facilities and a very sensitive tuner. Needs better loudspeakers to fulfil its potential, however.

PURE LEGATO II £350
PURE Digital
 ☎ +44 (0)1923 260511
 www.pure.com

FOR

- excellent tuner sensitivity
- features, connectivity
- styling
- engaging midband

AGAINST

- supplied loudspeakers
- DAB sound quality
- stiff competition at the price

Ayre Studio



Channa Vithana assembles an elegant high end system from US electronics marque Ayre and Danish-based System Audio...

When I think of most American high-end hi-fi, the image of that country's beloved SUV car culture springs to mind – all show and no go, without much in the way of design subtlety. It's for this reason that I was interested in Ayre. Hailing from Boulder, Colorado, this US manufacturer displays a somewhat different approach. Outstanding build quality and a refreshingly clean lines make for an elegant appearance, and the aluminium fascias are beautifully detailed with discrete flush-mounted fixings.

Under the hood, so to speak, Ayre use no feedback in their hi-fi components, stating that, "conven-

"here's one US high end system that delivers results to match its hefty price tag..."

tional designs use negative feedback to compare the output signal to the input signal, which introduces time domain errors and other artefacts. In contrast, Ayre's exclusive zero-feedback circuits are designed for intrinsically pure linearity".

The £4,495 C-5xe Universal Stereo Player is a largish (440x330x120mm, 12kg) two-channel device, stripped of sound-degrading video circuitry. It offers easy navigation of functions via the circular arrangement of buttons located on front panel or aluminium-machined remote, and importantly, without the need for a screen, even with DVD-Audio. It plays two-channel SACD, CD, DVD-A (stereo and downmixed) or MP3 files, while DVD video soundtracks can also be accessed. SACD replay remains in its

DSD state (no conversion to PCM) enabled by a Burr-Brown DSD1792 DAC. The transport is a Pioneer Universal type, chosen for stability and reliability.

There are two filters at the back panel - 'Listen' for "greater accuracy in the time domain" and 'Measure' for "greater accuracy in the frequency domain". The switchable digital output is adjustable for sample rates. For the power supply there is one transformer for the transport and decoder using four separate windings with eight separate regulators. A second transformer is used for the DAC and audio stages which includes fourteen regulators! All the power supply regulators, say Ayre, are fully discrete and zero-

feedback; designed to lower jitter, isolate circuitry to prevent cross-contamination, and provide clean power for better sound quality.

The £1,995 K-5xe isn't a typically lightweight preamplifier, its vital statistics being 440x350x120mm and 11.5kg. It features a delightfully tactile and precise sixty-step Ayre proprietary metal-film resistor operated volume-control in 1dB increments. It has two balanced XLR and two phono socket inputs, with input ground switching for "source isolation."

Weighing in at 25kg and within a 460x410x200mm case, the £2,995 V-5xe power amplifier can output a claimed 150W into eight ohms and 300W into four ohms via its linear power supply and sixteen (per-channel) high-current output devices which Ayre assures "absolute stability with any loudspeaker load." Both the K-5xe and V-5xe use EI transformers in their power supplies as Ayre prefers the sound quality and lack of mains related RFI and hum that they say afflicts toroidal designs.

Founded in 1984 by Ole Witthøft, Danish manufacturer System Audio's Explorer loudspeaker utilises five drive units, including two mid/bass and two bass. The bass drivers incorporate two voice coils (instead of one) for deeper low-frequencies, says the company. A lightweight 0.9g membrane is used for the cone. The tweeter uses a near-transparent dome membrane weighing only 80 milligrams, while the crossover uses just five components. There is a five-litre compartment behind the removable 'SA' logo front-plate enabling sand-loading for better sonics. The two mid/bass drivers and tweeter are sealed within isolated enclosures while two bass-reflex ports are located at the rear for the woofers. The 180x1220x355mm Explorer has a claimed 30Hz to 35kHz frequency range, 4ohm impedance and 90dB sensitivity. It is beautifully built and is finished in



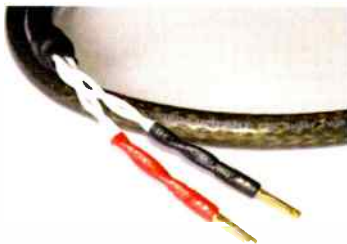
top: Ayre C-5XE universal player, above: Ayre K-5XE preamplifier.

Cherry and Maple real wood veneers or Satin White as standard.

TUNING

Needless to say, the system made a very nice noise when first plugged in. However, it's even more important for high end systems to be correctly fettled before being 'used in anger'. Fortunately the loudspeaker placement side of things was easy - the System Audio Explorers sounded right after trying just two locations - on the floor, toed in slightly! Moved just 250mm away from the back wall, neither did they dominate the listening room.

I started my tuning in earnest by replacing the Explorer's standard biwire links with £49 Chord Company Signature Links, which are shortened lengths of their high end Signature loudspeaker cable. At a stroke the music opened up, showing extra space around instruments and a more tuneful bass - not too bad a result for under £50! The Signature Links matched well with the £78/m Chord Epic Super Twin loudspeaker cable. I have used Chord's Odyssey 4 cable (£35/m) with great results - it employs silver-plated stranded wire inside Teflon and Silicone layers - but the Epic Super Twin uses the shielding system from the high-end Chord Signature cable, sleeved-over



Chord Epic Super Twin loudspeaker cable.



Ayre L-5XE power filter.

Odyssey 4. The resulting sound easily outperforms the '4 with a freer flowing and more spacious acoustic.

Then I replaced my miscellany of Chord and Moray James XLR interconnects and mains cables with Ayre Signature versions of the same. These are depressingly expensive at £695 a pop, but really paid dividends. The balanced XLR interconnects improved bass tunefulness and extension, while the mains cables provided superior timing and resolution. Interestingly, the Ayre Signature cables are manufactured

by Cardas to Ayre's specification. They use 'Ultra Pure Copper' where surface oxidation is removed, Litz coating to prevent oxidation of the purified copper and 'Golden Ratio' geometry for minimisation of resonances.

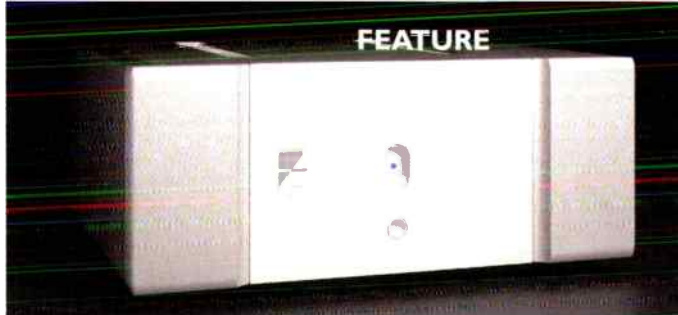
The best tuning tweak for this system proved to be the addition of a £995 Ayre L-5xe AC power filter, designed to dissipate high frequency interference typically emitted via switch-mode power supplies from computers, etc. as heat. The (438x350x60mm, 5.5kg) L-5xe has four isolated filtering outputs. In my home and with my mains, the difference was obvious - the ensuing sound from the Explorers was akin to the best active loudspeakers with a level of tonal purity that was dramatically superior to without the L-5xe.

SOUND QUALITY

After a good few hours setting the system up as best I can, and substituting the aforementioned tuning aids, my first proper listening session kicked off with the Nikolaus Harnoncourt 'Bach Matthaus-Passion' DVD-Audio disc. It sounded magnificent, the music proving clear and deeply expansive, as opposed to fat, slow and steamroller-like (which is what I hear from some US high end). This Bach is quite a complex piece, as the different choirs and grand orchestrations create a busy and challenging mix. The Ayre/SA system coped superbly by reproducing the effortless stately flow of the large scale orchestrations and the surging vocal energy of the choirs. Instrumental and vocal intelligibility was outstanding, and here I could pick out every detail, every nuance and inflection of the music and vocals without losing out on emotional impact.

'Man On The Moon' from the REM 'In Time: The Best Of...' DVD-A had a wonderfully three-dimensional sound, with guitars, percussion and vocals being enticingly animated. Purity, spaciousness and depth abounded, and I could thoroughly enjoy the convincing reality of Michael Stipe's vocals as well as the intricacies of the interplay between the acoustic and electric guitars.

The impact of electro-pop beats and rhythms was enveloping as I played 'Supernature' (2005) by Goldfrapp on SACD. Here the music was sublime in its mixture of shimmering electronic beauty and Alison Goldfrapp's crystal-clear vocals. Thus music was conveyed with a lot of feel as the deep, pulsating bass lines mixed with the soothing



Ayre V-5XE power amplifier.

yet slippery electronic melodies. The system was able to reveal the subtleties of Alison Goldfrapp's voice from the soaring choruses to the delicate, almost whispered parts with ease.

Moving to sensible shoes

standard-issue CD, I slotted 'Into The Great Wide Open' by Tom Petty and the Heartbreakers into the Ayre universal disc

player, and again that wldescreen Jeff Lynne production was allowed to breathe freely. Timing was excellent, and the interplay between guitars, guitar solos, drums and vocals was instantaneous. Timbre of guitars was particularly good, the instruments sounding engaging and tuneful, but without a hint of glare or ringing distortion.

CONCLUSION

One of my favourite things about this system was the ability of the Ayre C-5XE universal disc player. There's no doubt that so called 'high resolution' SACD and DVD-Audio discs sound head and shoulders above Compact Disc, but only if the player is good enough to fully exploit them, and the Ayre is. The other problem is that most 'universal players' aren't really much cop with CD, but again this doesn't apply here (partly thanks, I suspect, to the total absence of the video circuitry). Music across all sources had a huge dynamic range that encouraged higher volumes without fear of audible distortion. It proved highly enjoyable too - making it high-end hi-fi without the fuss, but with the tunes! All the Ayre components proved not just stylish but also simplicity itself operate with their clean, elegant ergonomics. Build was also exemplary across the board (including the cables), and the big, expansive and free-flowing qualities of the Ayre electronics really lit up the meticulously revealing System Audio Explorer loudspeakers. Here's one US high end system that delivers big results to match its hefty price tag.

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HARMAN KARDON GO & PLAY £249.95

Contrary to the prevailing evidence, we are currently experiencing summer and – assuming you can find a decent day – it's a jolly nice time to relax in the garden with a bottle of vino and a picnic. Indeed, the moment can be made even better with some appropriate music, but the trouble for us audiophiles is that anything that runs off batteries and claims to make music invariably seems more of a pain than a pleasure.

One possible reason for this is that the vast consumer electronics companies that make mobile music machines - or ghetto blasters as they were once called - know as much about sound quality as they do about preparing cucumber sandwiches. For this reason, we were interested to see Harman Kardon's Go & Play, which comes from a company with a fine name in audio electronics, going all the way back to the nineteen sixties.

Looking like a twenty first century boombox - with more than a tinge of Meridian F80 about it, it must be noted – it's a very stylish device and surprisingly well built too. Not for this sort of scratch-at first-sight iPod-style polycarbonate that deforms as soon as you touch it. Instead, the largish (229x241x508mm, 1.8kg) HK is made from sterner stuff – tough plastic with a strong central stainless steel grab handle.

Everywhere you look, it has interesting design touches. Firstly,

it's ostensibly a mains powered device, but underneath there's a compartment for eight C batteries which give a playing time of about twelve hours – easily long enough for an all-day, or all-night, barbecue. Secondly, although it sports a 3.5mm minijack line level input (nicely shielded under rubber socket plugs, to protect the unit from the British summer's propensity to release a deluge of rain just when you least expect it), on top there's a recess into which an iPod (or iPod Nano) fits very snugly – making it either a mobile amp-and-speakers or a self-contained iPod music machine depending on your choice of music source.

The fact that the iPod fits into its little recess so snugly betokens an unusual quality – even price rivals such as the Monitor Audio iDeck and Apple iPod Hi-Fi can't touch it. The supplied remote is also incredibly neat and – being an RF wireless design with a range of 15m - of better breeding than ninety nine percent of iPod dock remotes, which is all the more encouraging. Then there's the 'One Point' iPod connector which automatically synchronises your iPod if you connect it to your computer, should you wish it.

However, most interesting is what's under its tough, satin black skin. The Go & Play has four high quality loudspeakers (the woofers having a 25mm excursion) electronically bi-amped from Class D amplification using Digital Signal

Processing with 30W going into each individual driver. Harman Kardon claims a frequency response of 40Hz-20kHz, and the surprising thing is that, when you've heard it in action, that claim doesn't sound so far fetched...

This is simply the best sounding iPod speaker system we've heard. Indeed, it's the best sounding portable active speaker system for any source we've come across full stop. The Harman Kardon Go & Play simply does not have the distorted, anaemic and uncomfortable sound that comes with every other boombox of its type, instead it's far closer to the aforementioned Meridian F80 (at six times the price) in its ability to give clean, undistorted and musical sound even at quite high volumes. It's certainly no F80-beater, but it's not a world away in what it does with a high quality CD source, or even a 320kbps AAC iPod track.

Bass is strong and insistent, showing absolutely no signs of strain. The midband is clear and open, smooth on vocals and bristling with detail, and even the treble is decently communicative and most certainly not painful to listen to. The Go & Play goes surprisingly loud too – enough to fill your average British listening room or garden with smooth, pleasant sounds. A great bit of kit then, for iPodders and mobile music fans alike, and - unlike the weather – one of this season's unexpected surprises! [Contact Harman UK on +44(0)208 731 4670 or click on www.harmankardon.com]

SOUNDBITES

Warm Front

Almarro's A318B amplifier uses a pair of Russian trawler valves which certainly warmed Noel Keywood's listening room, but could they do the same to the cockles of his heart...?

Your eyes do not deceive you; this amplifier really does use the glorious 6C33C Russian trawler triode as its main amplifying device! Its sturdy shape and topside evacuation dimples look imposing enough even when cold. Switch on, though, and twin filaments inside light up with a deep orange glow, making a clear declaration that this device is of the thermionic variety - and very different from your everyday solid-state grot box. Its sound is very different too, for this amplifier is very distinctive in numerous ways, not just in appearance.

Let's look at those chunky valves first. Unlike popular valves such as the 300B and KT88, this one was not designed for audio use, and the drawback is that it produces more distortion. It was designed for transmitter work, cleverly combining two triodes in one envelope, which explains why it's so fat and why it has two glowing filaments inside instead of one. Other plus points are low price and low impedance, which means it can produce a lot of power from low voltages, which benefits audio amps. But is it acceptable for audio use?

Folklore has it that back in the 1960s, Russian trawler crews used to sell them in Hull for pocket money, but there were few takers. Nowadays, if you Google '6C33C' you'll find it widely available for around £20, a bargain for what it is. And you'll also read why it was found in a Russian MIG fighter that was forced to land in Japan. I can't think of any transistor that ever got as famous as the 6C33C! Our measurements showed why it isn't universally greeted as an audio device in the same way the KT88 is, for example...

In the Almarro A318B you can see just two 6C33Cs, two driver valves, a 6SL7 and a 6SN7 at centre and three chunky transformers behind, one for mains and two output transformers. The latter are

big because this is a single-ended amplifier, meaning it runs in pure Class A over its entire power output range, eliminating crossover distortion. As Class A gives little power, the Almarro uses what is known as 'fixed bias', which gives more power than the common auto-bias method. Somewhat confusingly it also means you must occasionally adjust the bias.

Single-endeds, often abbreviated to SE, are a specialist breed even as esoteric hi-fi goes. Limited in power output, they're known to sound clear even at low levels, and atmospheric too. Almarro quote 18 watts per channel; we measured just 12W, so the A318B is no power house waiting to blow you away. I always recommend sensitive floorstanding loudspeakers for amplifiers like this, such as those from B&W which hover around the 90dB from 1 watt mark.

For the Almarro, I used my Revolver R45 floorstanders, as they are sensitive and an easy enough load. An amplifier as specialised as this must be paired with speakers of high sensitivity in order to avoid running into overload and the muddle it generates. Running very loud I measured 5V on occasional peaks from the Almarro with a blast from The Darkness - or half full output. This shows just how little power is really needed with the right loudspeakers.

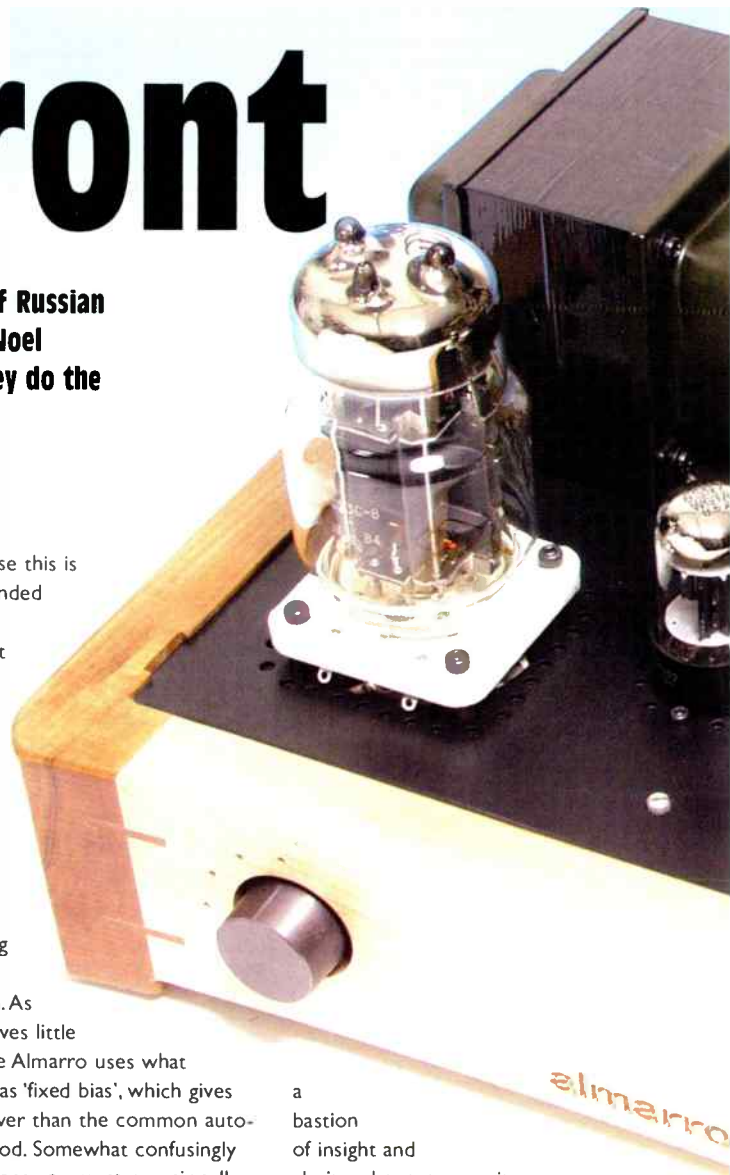
I used a Sugden A21a Class A solid-state amplifier for comparison, as it comfortably establishes itself as

a bastion of insight and clarity whenever we pit it against other amplifiers. With a power output similar to the Almarro, they are very similar in being totally dedicated to sound quality, at the expense of nearly all else, by employing simple, purist design philosophies rather than extreme complexity.

Although well built and finished, the Almarro has a few mechanical idiosyncrasies I should mention. It has a very long turn on delay of two minutes, twenty seconds. Each 6C33C valve needs a massive 6.6A of heater current; together they produce the heat of an 80W light bulb. Then up close, I noticed waves of heat and, after a few hours use, the chassis and - especially - volume control knob got hot. I suspect more venting is needed. A small buzz can be heard from the loudspeakers when up close, but I could not hear this from 12ft away.

SOUND QUALITY

Fed by a Marantz DV7001 spinning CD, SACD and DVD-A, and by my trusty Garrard 401 and SME312 with an Ortofon Kontrapunkt b cartridge running through an Eastern Electric phono stage, the Almarro had a wide





perfect classical recordings, where my own 300B amplifier gives a more laid back and romantic sweep to proceedings. The Almarro, for example, had Ashkenazy pounding the keyboard with breathtaking force and speed in Beethoven's 'Moonlight' Sonata, bringing new meaning to Presto Agitato.

I suddenly understood how this small amplifier can justify its existence against all comers: if you want to hear the means by which Ashkenazy breathes life into a performance then this amplifier is one of the best ways I have heard of finding out. It's perfect for Nigel Kennedy too, which makes the Almarro a very modern valve amplifier: fast, insightful, clean and clear beyond what is generally available, yet revealing of the richness that can be found in vocals and natural musical instruments that have been carefully miked up.

CONCLUSION

The Almarro A318B is Single-Ended for aficionados. If you really want to hear right into a musical performance, without being challenged by the blemishes that beset solid-state, then I can think of few better ways of achieving it than with the Almarro. It's a class product, if one that can only be appreciated with good, large loudspeakers and top quality sources. Then, I would suggest, it is difficult to challenge. Those Russian trawlers sure had some hot valves during the cold war.

tapestry of detail in instruments like Eleanor McEvoy's strummed guitar from her SACD 'Yola'. This is a classic SE attribute, because such amplifiers do not 'cross over' at low levels, commonly

resulting in an insightful manner that throws into relief the more barren delivery from push-pull amplifiers. With Angelique Kidjo's 'Agolo' the Almarro had fuller bass than the Sugden and was able to better resolve the many percussion instruments, bringing to each a strength of character and strongly established individual presence, seemingly vigorous, that the Sugden did not quite manage.

The Almarro was so revealing, though, that it could at times be a little forensic. Like the Sugden, it made me aware of less than

variety of music thrown at it. Like all good, modern valve amplifiers it has none of the soft and vague treble that was once common and gives valve amps their reputation for sounding 'warm'. The Sugden can deliver forceful transients and with Toy Matinee's 'Turn It On Salvador' both amplifiers kept a tight grip on the pace of the music which, from this 24bit/96kHz PCM recording, is aggressively delivered. The Almarro conveyed the track's vivid dynamics, fast edged transients and yet was able to tease out a rich pattern of detail within lead vocalist Kevin Gilbert's voice whilst keeping accompanying background vocals nicely separated.

This demonstrated the ability of the Almarro to do justice to modern sources by retaining their dynamic scale. However, over time I realised the amplifier's greatest strength lies in an ability to delve deep into a performance at low levels, revealing a

VERDICT ●●●●●

An unusually revealing pure Class A, single-ended amplifier that looks right into performances, finding a complexity that others miss. Purest hi-fidelity for aficionados.

ALMARRO A318B £1,690
Angelsound Audio
 ☎ +44(0)1923 352479
 www.almarro.com

- FOR**
- amazing sound quality
 - compact size
 - intriguing appearance
- AGAINST**
- runs hot; poor ventilation
 - slight buzz from speakers
 - very long turn on delay

MEASURED PERFORMANCE

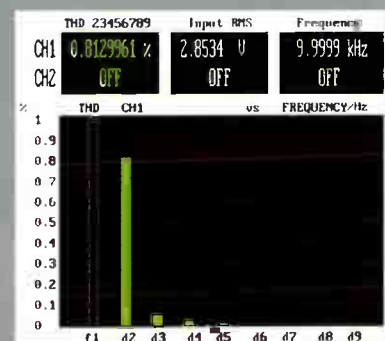
The visually impressive 6C33C is a Russian 'Trawler Triode' used in radios. It combines two electrode assemblies in one envelope, paralleled internally to give a low impedance valve able to swing current from a not excessive HT rail. It wasn't designed for audio and gives more distortion than, say, a KT88. However, measurement showed some very attractive characteristics in the Almarro. Distortion was second harmonic, even at high frequencies, and the distortion pattern was remarkably stable, likely helped by low or zero feedback. Overload clipping was very 'soft' and gentle, allowing each valve to deliver 12 watts from either 8 Ohm or 4 Ohm tap - good for Single-Ended, which possesses no crossover distortion. Frequency response reached 20.6kHz (-1dB), and down to 7Hz, if with severe low frequency distortion below 20Hz, but this is the case with most valve amps.

The Almarro has some interesting strengths. Expect a super-smooth sound and likely a sweetness and purity that's rare elsewhere. With sensitive

floorstanders this amplifier could offer fine results, measurement suggests. NK

Power	12watts
CD/tuner/aux.	
Frequency response	7Hz-20.6kHz
Separation	46dB
Noise	-90dB
Distortion	0.5%
Sensitivity	340mV
Damping factor	3.4

DISTORTION



Steven Green rounds up three interesting new Roberts DAB-based radios...

Family



ROBERTS MP-23 £230

The Roberts Sound MP-23 is 14" wide and it can play CDs, so it's more of a cross between a micro system and a DAB tabletop radio than being one or the other, but at £230 it isn't all that much more expensive than some of the higher end DAB portable radios available. The unit's piano black case and white text on blue background display makes it a stunner in the aesthetics department, and although it's too large for most kitchens, it would make a very stylish addition to other rooms.

As well as ordinary CDs, the MP-23 can play MP3 and WMA files from CD-R/RW discs, SD memory cards and USB memory devices, and it can receive FM and AM as well as DAB. Another major feature it boasts is "3D sound", more of which later. Other features include PausePlus that allows you to pause and rewind live radio, different preset equaliser settings and an alarm that wakes you to any of the radio or other audio sources available. There were no buttons at all on the unit itself other than the CD's eject button and the on/off switch, so operation was solely via the 'credit card'-style remote control, which although looking stylish was a bit too light and thin for my liking.

Operation was straightforward, with the only negative point being that MP3 and WMA files were displayed as 'Tr 1', 'Tr 2', and so on according to the order in which they were stored on the SD card or CD disc rather than by the actual file names, so locating specific tracks was difficult. The rear of the unit houses connections for S/PDIF digital output, line out, aux input and a headphone socket. Reception quality on both DAB and FM was disappointing, as a

significant amount of the dreaded 'bubbling mud' sound was evident on the weakest DAB multiplex I can receive, and hiss was present on all but the FM stations with the strongest signals.

The sound quality of the MP-23 was excellent, especially considering that its two 'long-throw' speakers are only 3.75" in diameter. The reason the sound was so good was due to the '3D sound' feature which surprisingly managed to add a considerable amount of width and depth to the sound, and it occasionally lived up to its name and delivered "true" 3D effects. When playing CDs and high bit rate MP3/WMA files, the sound was crisp and punchy, and combined with the 3D sound it was highly entertaining to listen to.

The sound quality was simply in a different league to what you find on DAB portable radios, but it was slightly lacking the finer detail and delicacy that you would expect from one of the better micro systems – although at this price it's probably unfair to make such a comparison. The unit's sonic capabilities made the most of the sound of DAB stations, with the best sounding stations sounding very good and the 3D effect seemed to give all of the stations a lift.

Unfortunately, due to the reception quality on FM being so poor, only the strongest FM stations sounded good, which was a great shame. Overall though, if you're in the market for a high-end DAB radio, I'd certainly recommend auditioning the Roberts MP-23.

ROBERTS MP-30 £160

Standing 10 inches tall and 7 inches wide, with a 5.5 inch diameter speaker consuming most of the space on the front of the unit, this is quite a large radio. It's still light enough to be portable, though, and it was comfortable to carry around. Apart from the features it supports, the best thing about it is how easy it is to use. The large display showed six station or file names at a time, and the rotary knob on the side and the 'select' button on the front combined well ergonomically to make navigating through lists and menus very easy.

Both the pause and rewind and the electronic programme guide (EPG) were easy to use, with the latter allowing recordings to be set up with a single press of a button. Some of the other features were rather counter-intuitive to set up, however, such as timed recordings and the alarm clock. The DAB radio station that's currently playing can be recorded to the SD card with a single press of a button, and the SD card also supports MP3 and WMA file playback.

A potentially useful feature is that



Values

the radio allows files to be loaded onto the SD card directly from a PC via a USB cable (and vice versa), but file transfer was painfully slow, so this method isn't recommended unless it's the only option available. Another issue I had with the SD card was that only five or six meaningful characters of the file names of MP3 and WMA tracks were displayed, and this made locating specific tracks difficult.

On the top of the radio are preset buttons that can store six preset stations each for both DAB and FM, and these buttons also double as controls for playing audio from the SD card. The side of the radio houses an S/PDIF digital audio output, a pair of phono connectors, a headphone socket and the USB socket, with the latter enabling future software upgrades to be uploaded to the radio. The radio could either be powered from the mains or by four D-type batteries. Reception quality on DAB was very good, with no problems on any of the multiplexes I can receive. FM reception was only average, but the radio was incorrectly defaulting to stereo reception even though it only has one speaker. Once I'd corrected this in the options, FM reception was very good.

The sound quality was very disappointing considering Roberts' pedigree for quality products and the cost of this model. Even when playing high bit rate MP3 files from the SD card, music sounded quite flat and muddy and the bass was loose. In particular, the radio coped badly with complex audio signals, such as when numerous instruments were playing simultaneously, and the sound tended to disintegrate into a homogeneous mess.

The same quality issues were apparent on both DAB and FM, with the only saving grace being that speech radio usually sounded good – but even here there was a problem, as the case tended to reverberate when female presenters were speaking. The MP-30 supports all the latest features and its DAB reception quality is very good, but unfortunately it is let down badly by its lacklustre sonics.

ROBERTS RD-78 £105

My first impression of this radio, with its use of wood on the top and sides and grey and silver on the front, was that the design was a near carbon copy of the Pure Evoke-1, which I thought was a trifle unimaginative. However, Roberts say that the cabinet has been 'acoustically tuned' - which the listening tests certainly confirmed - so its sound more than made up for any issues I have with its styling. The RD-78 is rather basic in terms of the features it supports compared to some of the more expensive DAB radios, with its main feature being its alarm clock that allows you to wake up to either DAB, FM or a buzzer – with the latter slowly increasing in volume rather than trying its best to give you a heart attack every morning!

Other features include FM reception with autotune, five presets each for DAB and FM, as well as a button set aside to store your favourite station. The rear of the unit has connections for aux in, line out, S/PDIF digital output and a headphone socket. Unusually for these days, the unit is mains-powered only. Reception quality on DAB was very good with no reception problems on any of the multiplexes I can receive. The radio was rather insensitive on FM though, and I had to change some stations to mono to eliminate the hiss on stations that I ordinarily receive without any problems (to change an FM station between stereo and mono you press the 'Select' button – this isn't mentioned in the manual).

The best sounding DAB portable radio I've heard to date (excluding the Roberts MP-23, because that is a system rather than a radio), the RD-78

is head and shoulders above all of the other DAB radios I've auditioned previously with the exception of the Dualit Kitchen DAB radio – and the Dualit costs almost twice as much as this Roberts...

The reason why the RD-78 stands out from the crowd in terms of its sonic performance is due to its separation of the higher and lower frequencies, with a 3" rear-facing woofer dedicated to handling the low frequencies and two smaller speakers on the front handling the midrange and high frequencies. The effect this had was that the midband and treble shone, producing a vibrant, detailed and open sound, which was a vast improvement over the rather closed-in and muffled sound that the vast majority of DAB radios produce.

Although the radio is quite insensitive on FM, the music stations with stronger signals sounded excellent. Audio quality on the better-sounding DAB stations was very good too and it made the most of the sound on all of the DAB stations. The radio is no slouch on speech either, with the energetic sound of the radio making speech engaging to listen to. Overall, if you're just after a mid-priced DAB radio that sounds good and you're not bothered about having a radio with all of the latest features, this is the one to go for.



VERDICT ●●●●●

ROBERTS MP-23 £230

A highly entertaining device to listen to, but let down slightly by its radio reception quality.

FOR

- sound quality
- entertaining
- aesthetics

AGAINST

- reception quality
- flimsy remote control

VERDICT ●●●●●

ROBERTS MP-30 £160

Disappointing sonics, especially given Roberts' pedigree for producing quality products.

FOR

- features
- ease-of-use
- DAB reception quality

AGAINST

- sound quality

VERDICT ●●●●●

ROBERTS RD-78 £105

The best sounding DAB portable we've heard so far, although the feature count is less comprehensive than some rivals.

FOR

- great sound quality

AGAINST

- FM reception quality
- derivative styling

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WIN A SUPERB OPERA AUDIO CONSONANCE CD120 LINEAR CD PLAYER WORTH £695 IN THIS MONTH'S GREAT GIVEAWAY!

Hi-Fi World gives you the chance to win a great new silver disc spinner from Consonance, in the shape of the CD120 Linear, in this month's competition! Here's what Adam Smith said about it in the August 2007 issue...

"Opera Audio hail from Beijing in China, and started out as manufacturers of valve amplifiers, but have also diversified into source components including the rather fabulous-looking Droplet CD player and turntable. They've covered all the bases with their CD120 Compact Disc player, as it is available as both a 24bit/192kHz upsampling version with balanced outputs (for £100 more), and as a 16bit/44.1kHz variant,

with no oversampling and no digital filter (although it can be switched to an 88.2kHz sample rate) - the 'CD120 Linear' reviewed here. It's a nicely finished item, with just the bare necessities of switches on the front panel. Completing the package is a dinky little solid metal remote handset that adds a few more features. Also available in silver, the black finish of our review sample was very classy, setting off the blue display in a very pleasing manner and I personally find the player stylish and neat, albeit in a minimalist kind of way. Finally, vital statistics for the unit are 85x430x320mm and 10kg.

The Consonance unit offers a realism and insight into music that you really don't hear all that often from the good old silver disc,

particularly at such a reasonable price point. It has a commensurate ability to bring singers right up close to the microphone and spread their backing instruments faithfully around them, generating a wide and deep soundstage. The CD120 Linear pulled everything out of a mix with the dexterity of a white-gloved magician - I have not heard many players do such a good job in this respect. Down at the bottom end, the CD120 Linear has a lovely, full, warm bass with good grip and detail, again sounding quite unlike most other CD players. Bass lines were articulate and fulsome, imparting tunes with a solid foundation on which to build. One of the most characterful and enjoyable CD players I have heard, as it has an innate musicality that makes it a joy to listen to, no matter what you are playing."

If you'd like the chance to win this superb bit of kit then all you have to do is answer the following four easy questions. Send your entries on a postcard by 31st August 2007 to: **September 2007 Competition, Hi-Fi World magazine, Unit G4, Argo House, The Park Business Centre, Kilburn Park Road, London NW6 5LF.**

RULES AND CONDITIONS OF ENTRY

- ONLY ONE ENTRY PER HOUSEHOLD
- MULTIPLE ENTRIES WILL BE AUTOMATICALLY DISQUALIFIED
- PURCHASE OF THE MAGAZINE IS NOT A PRE-CONDITION OF ENTRY
- NO CORRESPONDENCE WILL BE ENTERED INTO
- THE EDITOR'S DECISION IS FINAL
- NO EMPLOYEES OF AUDIO PUBLISHING LIMITED, OR OF ANY COMPANIES ASSOCIATED WITH THE PRODUCTION OR DISTRIBUTION OF THE PRIZES, MAY ENTER

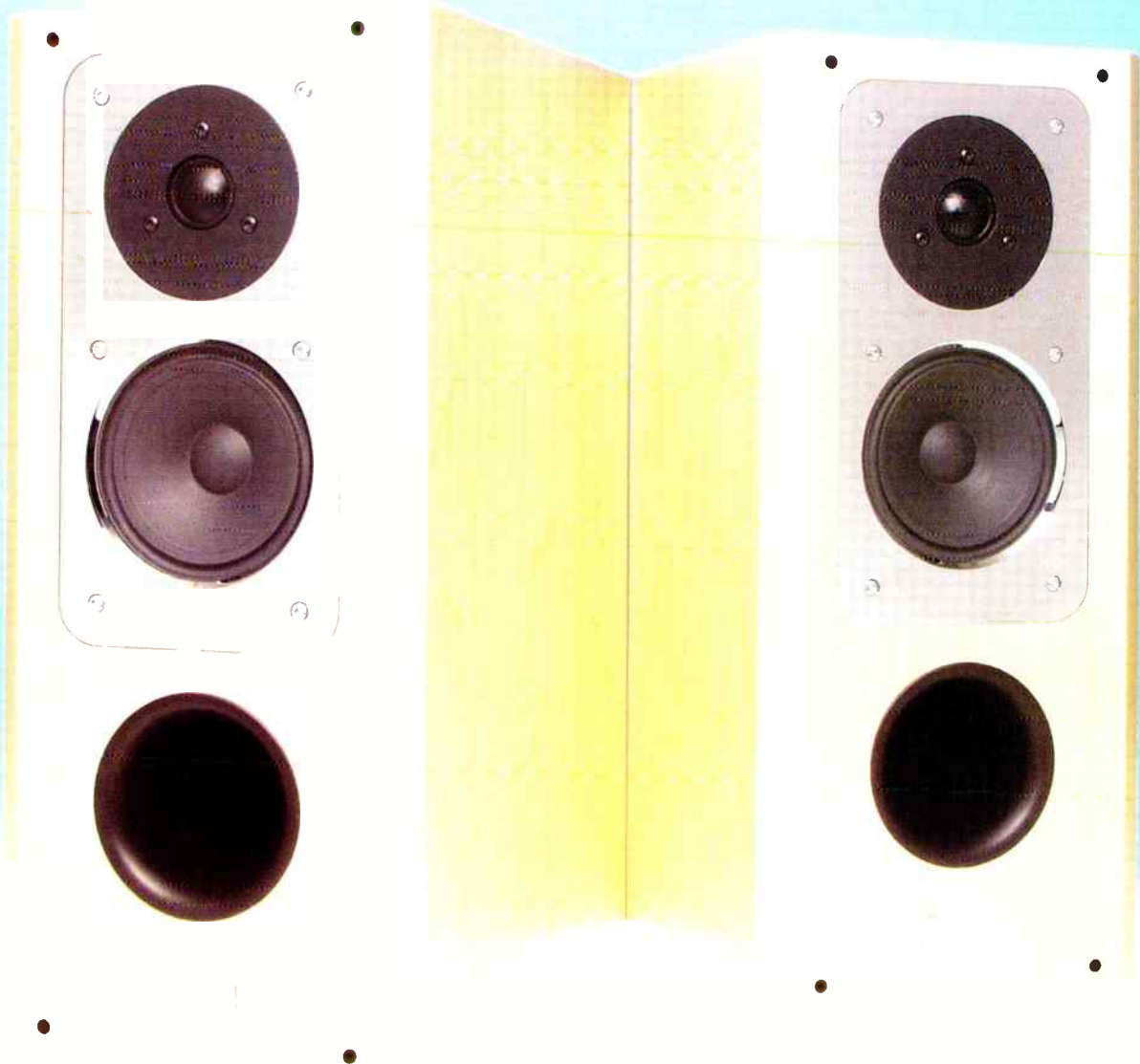
QUESTIONS

- [1] Opera Audio comes from where?
 [a] Beijing
 [b] Brighton
 [c] Bristol
 [d] Brisbane
- [2] What is their "fabulous looking" CD player called?
 [a] Droplet
 [b] Pipette
 [c] Letter drop
 [d] Pipe Cleaner
- [3] What is the remote control made from?
 [a] solid metal
 [b] plastic
 [c] Perspex
 [d] wood
- [4] Adam says the CD120 has the dexterity of what?
 [a] "a white gloved magician"
 [b] "a club footed elephant"
 [c] "a red bottomed baboon"
 [d] "a dainty toed ballerina"

September Competition
 Hi-Fi World Magazine
 Unit G4 Argo House
 The Park Business Centre
 Kilburn Park Rd.
 London NW6 5LF

entries will be accepted on a postcard only

**JUNE 2007 MOWGAN AUDIO ARTIO LOUDSPEAKERS WINNER:
 Mrs Fiona Smith of Market Harborough, Leicester**



Applied Physics

Adam Smith wonders if naming their loudspeakers after the 'father of physics' has influenced Isophon's Galileo standmounters?

The quest for good bass and a correspondingly 'big sound' from a relatively small enclosure is something that has occupied the great loudspeaker-designing minds for many years. The simple facts of the laws of physics mean that the amount of box present in a small loudspeaker, along with its necessarily small driver, means that there is a limit to how much air can physically be moved; a requirement for good bass.

In more recent years, this has been overcome to a certain extent by good quality materials making up highly specified drive units,

and implementing these units in a particular way. Different methods of bass loading have also been experimented with in order to reinforce driver output. Whilst the traditional sealed boxes and ported enclosures continue to be the most popular, mainly because of their relative simplicity of design and the familiarity that most designers have with them, there are a few other cunning tricks the loudspeaker designer can pull out from his or her sleeve...

One of these different approaches that can be taken is to use a bandpass enclosure. There are a few different types of these, but the two main ones are known as fourth

order and sixth order bandpass, as a result of their respective responses. In the case of the fourth order, the driver is located in a sealed enclosure but fires into another enclosure which is ported to the outside of the box. The advantage with this is that a lower cutoff frequency than would be gained from a simple sealed enclosure results, along with improved power handling and transient response. The disadvantage is that the box volume is obviously larger. The sixth order design takes this one step further by swapping the sealed back enclosure of the fourth order type for a ported, meaning that the driver is ported both front

and rear. This tends to have relatively poor transient performance however, and so is most generally used for P.A. duties.

It is the fourth order type that Dr. Roland Gauder has chosen to use for the Isophon Galileo loudspeakers here. Although the accompanying literature states they are sixth order, there is definitely only one port in the cabinet, so I assume this refers to a fourth order acoustic enclosure plus a second order electrical response from the crossover, as measurement shows there is a high pass filter fitted to the very bottom end; thus giving a total sixth order response. The bass driver loading this enclosure is a seven inch (175mm) unit, hidden away out of view, with the remaining drivers being present on the front panel and consisting of four inch (100mm) midrange unit and one inch (25mm) soft dome tweeter.

Measuring 470x210x340mm (HxWxD) the Galileos are quite large, as might be suspected from the technology they use, but will sit happily enough on pair of 50cm stands. Their 16kg weight means that, apart from the usual acoustics reasons, a bookshelf would be an inadvisable location! For auditioning, I used both Plinius 9200 and Audia Flight Two amplifiers, fed by our Eastern Electric MiniMax CD player, Anatek Acoustics MC1 phono stage and Pioneer PLC-590/SME M2-10/ Ortofon Rondo Bronze turntable.

SOUND QUALITY

Some loudspeakers take a while to acclimatise to, and for their innate character to come through, whereas others announce themselves immediately; the Galileos are very much in the latter camp. Straightaway I realised that these are loudspeakers for those who prize detail and clarity, much like the Cassianos. They have a startlingly large and stable soundstage with a wide and vivid window onto the music.

The most pleasant surprise the Isophons gave me was in their bass. I was a little concerned that, with all low frequency output coming through a port, they may have been a little boxy-sounding, or suffer from port noise, but this was not the case. In fact, the Galileos have some of the best bass of any loudspeaker I have heard at the price, standmounting or floorstanding. They dig impressively deep for their size, but really score in terms of detail and definition. Their rendition of the bass line from Simply Red's 'Sad old Red' is one of the best I have heard from any loudspeaker, and the way in which they imaged in bass terms was nothing short

of astonishing. All too often, loudspeakers can give a good image in the midrange and treble but let themselves down at low frequencies. The Galileos, however, 'disappeared' and left bass guitars, double basses and tympani smack in front of me with a stunning lightness of touch and fleetness of foot - very impressive.

Fortunately, the midband was more than able to keep up with the low end, and added layers of detail to both instruments and vocalists. Vanessa Rubin's voice had impeccable depth and feeling on the track 'With you I'm Born Again' from her 'New Horizons' album, the backing double bass adding a pleasing foundation and underlying solidity to the performance. Equally adept was the treble, which picked out top end

"they make many other loudspeakers sound limp by comparison..."

details very nicely, adding a good sparkle to the proceedings

The impression of Handel's 'Arrival of the Queen Of Sheba' in which the finger movements of the woodwind players were clearly audible - something I had not picked up on before when listening to this track and almost being something of a distraction! Throughout the piece, the Galileos layered the performance brilliantly but without ever glossing over anything, adding commendable atmosphere.

Moving the pace up somewhat, the Galileos proved that, like their larger brothers, the Cassianos (see *Hi-Fi World*, May 2007), they lap up volume and enjoy pounding out a good rhythm. Feargal Sharkey's 'A Good Heart' bounded along with magnificent pace and the Isophons cut through the slightly edgy recording of Arcade Fire's superb track 'Intervention' to dig every little nuance out.

This track did, however, also make them falter slightly in that they became rather hard across the midband. There was no treble harshness, but the combination of the Galileos with the rather forward Plinius 9200 amplifier could be come a little uncomfortable at times. A switch to the smoother Audia

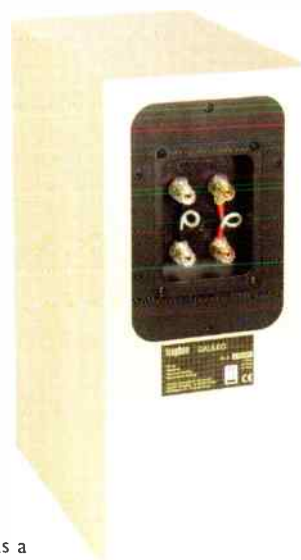
Flight Two helped things along greatly here but, at the same time, gave hints that the Galileos' 2 Ohm load was not quite being gripped so well, robbing some dynamics.

CONCLUSION

All in all, the Galileos turned in a superb performance, but I found that there was a caveat or two with regard to obtaining this successfully. As mentioned they will ruthlessly

reveal an amplifier with a less than forgiving nature and seem even more sensitive than the Cassianos in this respect. Also, again like the Cassianos, they are a very difficult load to drive and need a healthy power amplifier with good current delivery to really sing. Get this right, however, and they reward with an immensely vivid and well controlled performance that make many other similar loudspeakers sound limp by comparison.

Galileo himself once said, "Where the senses fail us, reason must step in", and as far as I'm concerned, his Isophon namesakes keep at least one of those senses well and truly stimulated.



VERDICT ●●●●●
 Properly driven, the Galileos offer detail, clarity and superb bass performance in a compact package.

ISOPHON GALILEO £2,100
Sounds4Enjoyment
 ☎ +44(0)23 9271 7628
www.isophon.de

FOR

- dynamics
- bass agility
- treble detail
- vivid soundstaging

AGAINST

- need careful partnering
- difficult load to drive

MEASURED PERFORMANCE

The Isophon Galileos look to be well engineered by virtue of their flat response across the audio bandwidth. The bass to midrange region is smooth and well integrated, meaning that the sound in this area should be good, with no unpleasant side effects. Treble rises up by 2dB or so at around 13kHz, and this should add good top end detail to the sound, although may add some upper midrange stridence.

Bass output is good for a standmounter and the bandpass enclosure confers good extension to the relatively compact cabinets. Rolloff commences at around 60Hz meaning that the Galileos should offer good weight and impact for their size.

Measured sensitivity is fine at 86dB, with average measured impedance being 4.8 Ohms. Not too bad, but this dips to a minimum of just over 2 Ohms at around 150Hz, meaning the Galileos will be a difficult load to drive and require an amplifier with a good current delivery and ability to drive low impedances. AS

FREQUENCY RESPONSE

IMPEDANCE



hiaudio

Accessing the Source, Unleashing the Performance

US
GH

NU FORCE
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Black Rhodium
GRAHAM SLEE

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INVIDE

Acoustic
Solid

*Acoustic Solid One,
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Tone Arm*



*"Superlative build and
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David Alcock Hi-Fi World August 2002

HI-FI WORLD VERDICT



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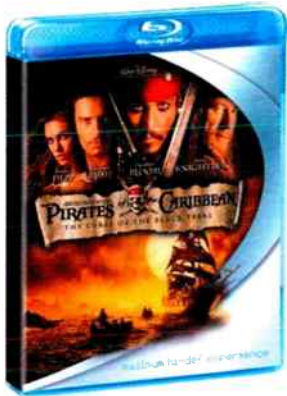
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After CD

Noel Keywood takes a look at the new High Definition formats appearing on the High Street.

Britain is going High Definition. High Definition TV sales in the UK were significantly higher last year than in any other European country, JFK sales figures show. So Britons are equipped to watch HD programme when it arrives, and now at last it is arriving on the High Street. Since audio on Blu-ray in particular can occupy more disc space than video, both Blu-ray and HD-DVD are also high definition audio discs and likely CD's successor.



Pirates of the Caribbean "Curse of the Black Pearl" - only on Blu-ray at the moment...

I took a short tour of Central London stores to see how the these new formats were being displayed in the High Street, as this will influence their future. In their Megastores on Oxford Street, HMV and Virgin have small dedicated High Definition racks at present. Virgin stocks both, Blu-ray having prominence, probably because the number and popularity of films on Blu-ray is greater in these venues. However, whilst I used Disney's Pirates of the Caribbean 'Curse of the Black Pearl' as a yardstick, available only on Blu-ray, equally popular is Harry Potter and the Goblet of Fire, available only on HD-DVD in the stores I visited, yet available on Blu-ray too (many films appear on both formats).

Pricing is chaotic at present in these stores. Whilst my local HMV in Bayswater wants £23 for Curse of the Black Pearl on Blu-ray, Virgin

at Piccadilly Circus, in the old Tower store, were asking £27. Prices in this store are perhaps aimed at tourists and casual visitors, although Virgin doubtless have to cover a big rent in Piccadilly Circus and prices may be set to ensure store profitability at this location alone, in which case you are best advised to buy in Grimthorpe. On-line, Amazon price Harry Potter's latest at £17.98 on HD-DVD, whilst Curse of the Black Pearl on Blu-ray is also £17.98.

Audio-only discs have yet to appear, but even with Curse of the Black Pearl, shot in 2003, we get a whiff of what to expect in future. Its top billing sound track is 24-bit/48kHz PCM (i.e. uncompressed) in 5.1 channel surround-sound. This is considerably higher resolution than CD on all channels and will give impressive sound through a good surround-sound system.

Both HD-DVD and Blu-ray can carry stereo or surround-sound. The former is specified to carry 24-bit/96kHz surround sound, which is comfortably above CD sound quality, or it can carry super high resolution 24-bit/192kHz in stereo only. Blu-ray trumps this by offering 24/192 surround-sound, which will be an awesome experience, if it ever arrives. Whilst Disney's film sound track is below these specs., it will be impressive enough all the same. Surround-sound audio in 24-bit/96kHz resolution is being recorded in music studios today and such recordings are likely to appear on both HD-DVD and Blu-ray formats in due course.

Player prices are plummeting as the format war sharpens up in its initial phase, as this could be make or break time for either format. Toshiba are the main protagonists behind HD-DVD, as DVD originated from them and is 'their' format. In the UK player prices at the time of writing were £249 for a Toshiba HD-E1, not a king's ransom by any means, and £470 for a Samsung BD-P1000 Blu-ray player. You can pay less, below £200 for 'refurbished' players, or just under £1000 for a top end Sony BDPS1E.

When wondering about what to buy don't forget that whilst HD is all fine and dandy, much of what you will be playing or viewing from a high definition player for the next year or so at least will be Standard Definition pictures converted (upsampled) to play on an HD screen. Watch out for: upsampling quality, as this is a complex process and can produce some peculiar effects, such as motion blurring noticeably in people's faces and hair as their heads move. Both Blu-ray and HD-DVD players will play standard DVD, as well as CD, so if you cannot get a film in HD format on your player, you can still see it in SD. Expect BBC HD TV next year, Spring 2008, from Freesat, by the way, without a Sky subscription being needed. You will need a satellite dish and receiver.



...just as Harry Potter's "The Goblet of Fire" is only available as an HD-DVD currently.

Not interested in surround sound? Most players will down mix to stereo, so this is not a problem. However, if you keep to simple 5.1 surround-sound it can be shoehorned into most living rooms without too much intrusion and it can provide great sound even from stereo CDs, using Dolby Pro Logic IIx, something nearly all today's receivers possess.



Samsung's BD-P1000 - the cheapest way into Blu-ray at the moment.

Next year looks like the year Britain will take to High Definition big time; right now we are on the run up, busy buying TVs and players able to cope, sales figures suggest. Hopefully, we will see these discs being used to carry high quality audio, because their audio data rates are actually higher than those for video. Super fidelity could come to us from a 'video' disc in future.



Take Flight

A recent arrival in the UK thanks to Henley Designs, Adam Smith takes a listen to Audia's new entry-level integrated amplifier, the Flight Two...

Despite still-strong memories of rusty Alfa Romeos, Lancias and Fiats, it is an undeniable fact that the Italians are extremely talented and imaginative engineers, with an eye for quality and a thoroughly deserved reputation for style and design. I still think one of the most stunning cars ever made was the Jensen Interceptor, with its British design, American V8 engine and Italian styling, courtesy of Carozzeria Touring. Indeed, I suspect the Meridian F80 would have looked slightly different and very possibly not quite as sleek had Meridian tied up with Morgan rather than Ferrari...

Audia were formed in 1996 by Massimiliano Marzi and Andrea Nardini, two men with a background in the professional electronics industry, and a shared aim to create new amplification products with a nice dose of Italian style. The company has its headquarters in Civitavecchia, about forty miles from Rome and near the Mediterranean.

Subsequent to the founding of the company, Massimiliano and Andrea began research and analysis on areas for improvement in existing amplifier design, based on the eminently sensible idea that "an electric network belonging to the amplification chain should strictly

not affect the input signal", and the theory that poor transient response means that, after a transient even in an audio signal, the output can only regain a steady state after several extra oscillations that result in a colouration to the signal.

From a two year research project that began in 1994, the duo designed a new circuit that utilises current feedback, rather than the usual voltage feedback. Audia state that, "the amplification is of the transimpedance kind (and, therefore, extremely linear) and the feedback is closed before the output stage. The final outcome consists of very fast, stable circuits with a strong ability to control even the wildest reactive load".

This new topology made its debut in 1997 in the form of the Audia Flight 100 power amplifier and was judged a success. As a result, a range of components has now built up, including preamplifiers, CD players such as the Flight CD Two we reviewed in our July 2007 issue, and integrated amplifiers.

The Flight Two is the cheaper brother of the Flight One integrated, retailing at £2,500, and finished in a stylish (naturally) and surprisingly deep package that measures 113x420x440mm (HxVxD) and tips the scales at an impressive 19kg.

The sleek front panel incorporates a two-line alphanumeric display for volume level and input selection, plus volume control and input/monitor selection buttons. Facilities are available to rename each input, change their polarity and tweak their sensitivity by ± 12 dB to ensure all play at the same level. Audia also supply a very stylish and solid metal remote control handset.

The heart of the amplifier is a dual mono construction power amplifier, incorporating the current feedback technology and rated at 100W per channel. Separate power supplies feed the preamplifier and power amplifier stages. Inputs number five, all at line level, with four through unbalanced phono sockets and number five through balanced XLRs. Input number one can also have the option of being turned into a phono input via an internally-fitted board. Fixed tape recording and variable preamplifier outputs complete the connectivity lineup.

In order to audition the Audia, it was inserted into our test system, feeding both Spondor S8e and Mowgan Audio Mabon loudspeakers and fed by both an Eastern Electric MiniMax CD player and Pioneer PLC-590/SME M2-10/Ortofon Rondo Bronze turntable through the Anatek Acoustics MCI phonostage. The

AUDIA
FLIGHT

FLIGHT TWO

Luxman L-550A was also on hand for comparison purposes.

SOUND QUALITY

Thanks no doubt to its innovative circuit design, the Audia Flight Two sounds quite unlike many transistor amplifiers in some respects. The first thing that grabbed my attention was that there was no solid state hardness or steeliness, meaning that the Flight Two is a very smooth operator. High frequencies did tend to lack a little top end focus and cymbals tended to have their metallic nature a little glossed over, but clarity was impeccable. The Flight Two's treble is very sweet as a result and almost has a valve-like sense of smoothness to it, giving the whole presentation a relaxed and unforced nature.

This impression continued into the midrange where the Audia excelled at vocal representation. Beth Hirsch's vocals on Jakatta's 'One Fine Day' were superbly well-defined and the Audia set up a very stable soundstage in which to place her. The good things continued with instrumental music, adding real body to Eric Clapton's acoustic guitar from his 'Unplugged' album. The instrument had a pleasing resonance to it, with well defined leading edges to strings, suggesting that Audia's design work to optimise transient response has worked.

Down in the basement, the Flight Two has a weighty and solid bass performance, with good detail, picking out the subtleties of bass instruments and following complex rhythms with

a keen sense of purpose. The output stage's low damping factor of 20 meant that some loudspeakers, such as our old friends, the Spondor S8es, were rather loose and could boom a little, but this will not be a problem with judicious choice of partnering items that are better damped.

So, all in all the Flight Two turned in a composed and pleasing performance, but this is also where it falls down slightly in that it can be a little lifeless. Moving to the more upbeat tracks on Jakatta's 'Visions' album left me feeling that the Audia was not really interested in partying and seemed to lack verve. This was also the case with classical material; Pachelbel's 'Canon' came across with the sort of emotion that can have grown men sniffing into their hankies, but 'Jupiter' from Holst's 'Planets' was rather flat, with the crescendos lacking their customary impact.

CONCLUSION

The Audia Flight Two is a very well designed and stylish unit that I can see providing a healthy dose of Italian style and sophistication. It has some useful facilities and a pleasing user interface, whilst making sounds that are very accomplished. Where it

stumbles slightly is in the fact that its more of a smooth, relaxed American V8 than a raspy, snorting quad-cam Italian V6! As a result it lacks some of the get-up-and-go to really dig into the heart of the rhythm of pacier material.

If subtlety and detail are what you are after, however, then the Flight Two is well worth an audition; just make sure that your 'speakers are a well damped design. Oh, and check that your equipment rack is deep enough to accommodate it!

VERDICT

Stylish, well designed amplifier that turns in a composed and gratifying performance.

AUDIA FLIGHT TWO £2,500

Distributed by Henley Designs

+44(0)1235 511166

www.audia.it

FOR

- sweet, beguiling midrange
- fine soundstaging
- styling, build

AGAINST

- upper treble a little soft
- dynamically constrained

MEASURED PERFORMANCE

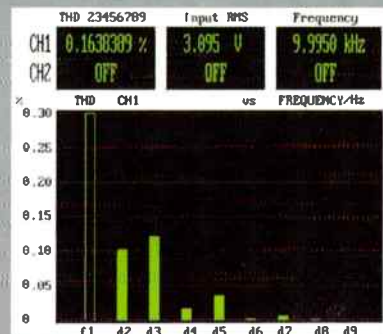
The Flight Two produces 112 watts into 8 Ohms and 196 watts into 4 Ohms, so it has plenty of punch. Good internal power supply regulation allows power to almost double into a low load and this usually ensures solid sounding bass. A low-ish damping factor of 20 will also allow the bass from most loudspeakers to sound 'obvious', rather than over-restrained as that from high damping factor designs.

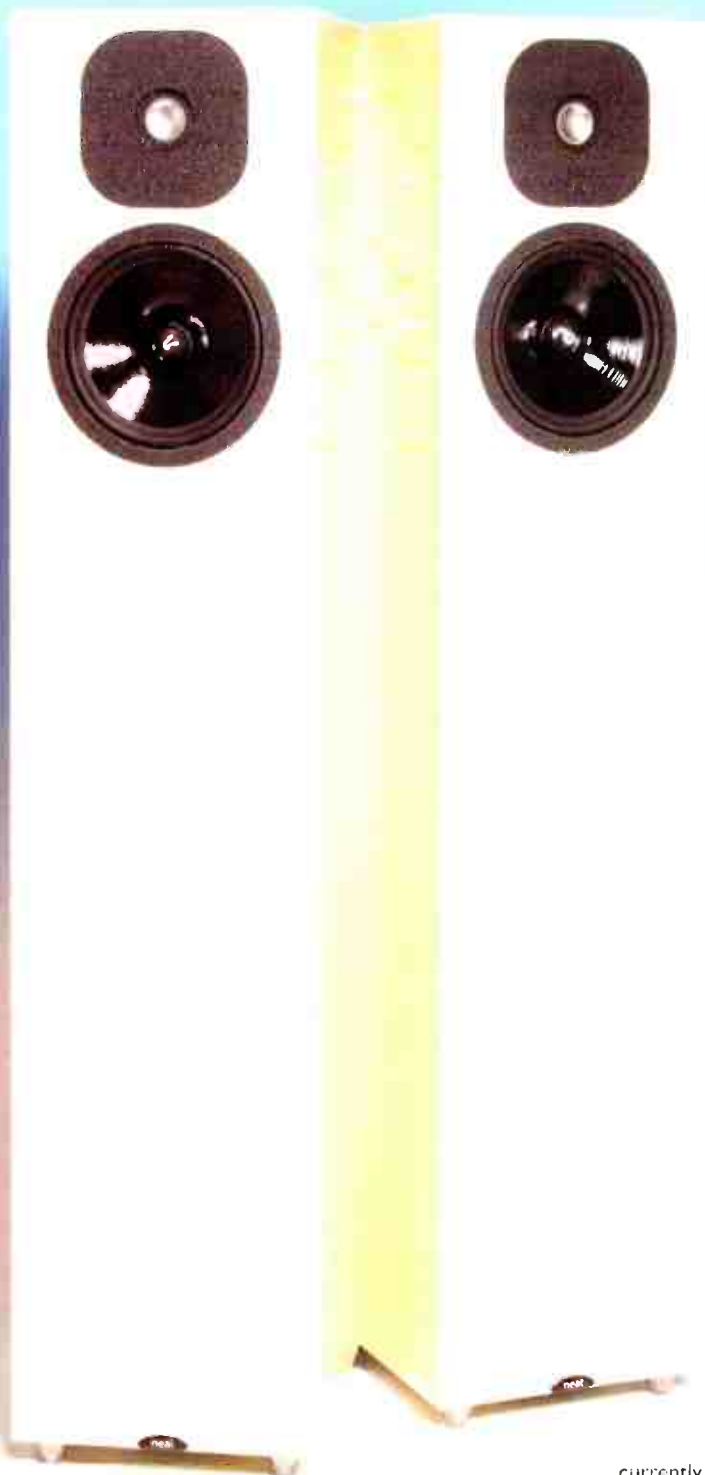
Distortion levels were on the high side for a modern solid-state amplifier, hovering around 0.1%. A little worrying was that level was highest at low levels of a few watts into a low load, a common listening situation. Mitigating this was dominance of second and third harmonics only, together with a consistent distortion pattern at all frequencies, shown in our spectrum analysis. As third dominated this is likely to sharpen the sound just a tad. Together with ultra wide bandwidth, frequency response stretching from 3Hz to 157kHz, the Flight Two is likely

to have a clean character with good definition. NK

Power	112watts
CD/tuner/aux.	
Frequency response	3Hz-157kHz
Separation	82dB
Noise	-95dB
Distortion	0.1%
Sensitivity	500mV
Damping factor	20

DISTORTION





Pretty Neat...

Adam Smith listens to Neat's handsome new Momentum 4i loudspeaker...

Teesdale and was formed by Bob Surgeoner, a producer and musician with a keen ear for music and a firm belief that loudspeakers should be designed by ear, utilising a wide variety of music to fine-tune the final design, "to the exclusion of almost all other criteria". As part of this dedication to fine-tuning, Neat also do not rely on off-the-shelf drive units or electronic components for the crossovers, instead having each item custom-made to their own specifications.

The company currently has four separate loudspeaker ranges on their portfolio, including the Classic series which features well-known models like the Petite and Mystique, up to the Ultimatum Series, used as a showcase for the company's design abilities. The new Momentum loudspeakers sit between the Motive and Ultimatum ranges and use several technologies from the more expensive items. The Momentum range currently consists of two models - the standmounting 3i and floorstanding 4i but, as mentioned, both are a little more complex than might first appear.

Starting with what is more obvious, the Momentum 4is are a two-and-a-half way design that use a 6.5inch (165mm) bass/midrange driver directly developed from that used on the Ultimatum series. Above

this sits a new version of Neat's proprietary 'NMT' tweeter, which uses an inverted one inch (25mm) titanium dome. These items both have foam gaskets around them to make them flush with the baffle. Not only is this aesthetically pleasing but also eminently sensible in terms of minimising steps in the frequency response due to diffraction of the sound waves from each driver by baffle cutouts, fixing screws, etc.

It is under the skin that things become more interesting however, as going back to the 'unusual technologies' I mentioned earlier, the Momentum 4is feature an additional two drivers - one that fires down from the base of the cabinet, and another one inside the cabinet behind it to provide Isobaric bass loading. The technology relies on the rear driver keeping the pressure behind the front driver constant, thus allowing it to mimic how it would operate in free space. This is a very neat (sorry!) solution to the problem of extracting good bass weight from compact enclosures, as two Isobaric drivers can achieve the same bass performance in an enclosure half the size of that required by a single driver.

The Momentum 4is are compact, measuring 1050x220x230mm (HxWxD) and Neat quote their weight as 25kg on their website and 30kg in their literature, however each box they arrived in was marked as 21kg by the courier and, to my (admittedly uncalibrated) arms this feels about right. Cabinet finish is absolutely immaculate and available in a choice of Maple, Oak, Cherry, Walnut or Rosenuat finishes.

SOUND QUALITY

The Momentums proved an interesting listening experience, but required more work than

It seems that this issue has been inadvertently chosen as one that represents less common loudspeaker technologies. The bandpass enclosures used by the Isophon Galileos on p46, the point-source design of the Ascendo Monitor CSs on p16 and the balanced passive radiator of the KEF HTB2 subwoofer on p49, all mark a departure from the standard 'drive units in a box with or without a port' recipe. The Neat Momentum 4is here are no exception. Whilst they look innocent enough, standing 1050mm high in their very stylish and superbly constructed cabinets, they have one or two tricks up their sleeves which are not immediately apparent...

Neat Acoustics is based in

usual in order to perform at their best. Initially, using the Melody SP9 amplifier, a new arrival into the office boasting KT88 output valves and 50W per channel, the Momentum 4is were not happy at all, being strident, jangly and not particularly pleasant. The Audia Flight Two amplifier softened the problem somewhat, but swapping back to the Plinius 9200 proved a much better, yet still emotive combination; an intriguing result as the Plinius is generally rather sterile across the midband. The Melody worked wonders on the midrange of the Isophon Galileos, something that is generally found with valve amplifiers, but the Neats became unruly with this unit, and seemed to 'gel' best of all with the Plinius - truly system matching in action!

So, with the Plinius in place, the Neats were able to reveal a few notable strengths. First up was their bass; that Isobaric loading system really does work and has been implemented very well, as the Momentum 4i's low end was solid, fast and clean, with much greater extension that might be expected from their compact dimensions if you did not know about their hidden trickery. Bass lines were confident, pacy and delivered with real gusto, the Neats picking out the subtle details of double basses and every note of electric bass guitars. Moving to pounding dance beats, I feel sure that the Momentums cannot fail to raise a grin from even the hardest of hearts as they recreate that dancefloor experience in your room. I did note, however, that some hybrid tracks that feature a pounding dance-type beat but with more low frequency detail tucked behind it had a tendency to be dominated by the beat, with the finer details a little lost.

Midrange through the Plinius amplifier was very detailed and open, with the Momentums imparting a good sense of scale to vocalists, and pleasing solidity to instruments. They picked up on the leading edges of notes from acoustic instruments such as guitars with surgical precision, and left them to decay beautifully across the soundstage, a soundstage which was deep and well defined. Where things could still become a little uncomfortable was with more forward material, where the Momentum 4is could still be too strident in the upper midrange at times. This was noticeable with the likes of my old adversary, Celine Dion, but also came out in Energy Orchard's 'Sailortown' - it did not stay on the platter for long.

At the top end, the Neat tweeter

adds excellent atmosphere and clarity to the sound. Cymbals rang out well and the keen high frequencies assisted further in adding a good sense of space and ambience to recordings. Michael Hedges' guitar on 'Aerial Boundaries' was placed well centre-stage by the Neats, and each note was well defined from the next.

Once again, however, some performances could tend towards a sense of spittiness, making vocalists sound more aggressive than expected. I have never before heard Natalie Merchant sound less than soft, but 'Happy Puppet' from 10,000 Maniacs' 'Blind Man's Zoo' album had a definite edge to it.

Where this slightly forward nature did work quite well, however, was on classical music of the large-scale kind. Instrumental crescendos came out of the soundstage with considerable impact, but without becoming uncomfortably harsh at the top end, something which can occur all too often with loudspeakers that have a more dynamic nature.

CONCLUSION

The Neat Momentum 4is turn in an accomplished performance. They incorporate some well thought-out and innovative technologies and the musical aptitude of their designer shines through in many aspects of their performance.

Prospective purchasers should be aware, however, that it is not too difficult to push them into an upper midrange forwardness that verges on the unpleasant, and they are more amplifier-sensitive than most loudspeakers I have encountered. That said, for anyone wanting a stylish, well designed and constructed floorstander with superb bass weight and an atmospheric nature, the Momentum 4is should definitely be on the audition list.

REFERENCE SYSTEM

- Pioneer PLC-590/SME M2-10/Ortofon Rondo Bronze turntable
- Anatek Acoustics MC1 phono stage
- Eastern Electric MiniMax CD player
- Plinius 9200 amplifier
- Spendor S8e loudspeakers



VERDICT

Attractive, well thought-out loudspeakers with super bass weight and a pleasingly atmospheric nature.

NEAT MOMENTUM 4i £2,695

Neat Acoustics
 +44(0)1833 631021
 www.neat.co.uk

FOR

- superb bass performance
- spacious sound
- styling, construction

AGAINST

- highly amplifier-sensitive
- upper midrange forwardness

MEASURED PERFORMANCE

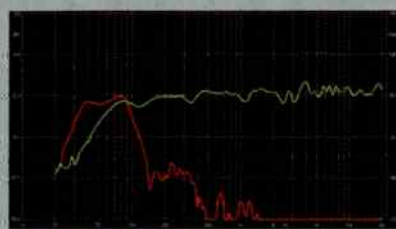
The Momentum 4is measure well, with a level output across the frequency range. Their overall trend is slightly upwards with frequency, meaning that their overall balance will err towards brightness rather than being dull. They should sound nicely detailed as a result, but may have a tendency towards stridency.

Bass output from the Isobaric bass loading system is very good, and should endow these compact and slim floorstanders with excellent low end weight. The rear-mounted port that loads the bass drivers has a broad range of effectiveness, from 30Hz up to around 70Hz, but its location on the rear of the loudspeaker means that it should not add any audible effects, something that can sometimes occur with ports that operate over a wide range.

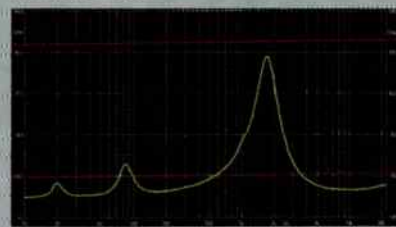
Sensitivity of the Neats is on the lowish side for a floorstander at 85dB, meaning that at least 50W would be a good idea to drive them well. Measured impedance shows an average value of 7.1 Ohms, dipping to a minimum of

around 5 Ohms. The large inductive peak at around 2kHz may not suit all amplifiers but generally the Momentum 4is will not be unduly difficult to drive. AS

FREQUENCY RESPONSE



Green - driver output
 Red - port output
IMPEDANCE



Broadcast News

Opinions differ about what constitutes the best turntable in the world, but in the pro audio world there's little argument over EMT. The company has been responsible for some of the most amazingly engineered record players ever made, says Stefano Pasini...

Hi-fi is one thing, 'professional audio' another. Whereas audiophiles use highly tuned but fragile kit, professional users such as recording and broadcast studios employ the opposite – massively over-engineered and robust equipment that goes on and on. Of course, this is what it's designed to do, but with supreme engineering generally comes stunning sound too...

Few if any 'pro' names are as respected as EMT. In the company's heyday, they were not a simple manufacturer of audio equipment, but the firm for professional, top-level broadcast and studio turntables. Much of the pro audio cognoscenti agree that it made supreme machines that were the best in terms of quality of reproduction, ease of use, flexibility, reliability and longevity. EMT delivered the qualities needed by professionals in spades, but at a price - when the final 950 was taken out of production, it was the same price as a Volkswagen Passat.

The EMT revival started with aficionados restoring idler-wheel 927s and 930s and continued later with the resurgence of the once-maligned direct-drive models, the formidable 950 above all. Despite being the best kept secret in hi-fi, many pro audiophiles regard them as being the best turntables money can buy.



Where it started - EMT 927 turntable and 997 arm.

START UP

It takes a special person to create a legend from scratch, and Wilhelm Franz, the founder of EMT, was such a man. Like Friedrich Siemens, Ferdinand Porsche or Walther Rathenau, Franz spent all his life in the pursuit of perfection in his field with a surprising foresight and a total dedication to his goal. Born in Bremen in 1913, Franz later moved to Berlin, working with some of the most important manufacturers of high-end electronic equipment of the time, like Lorenz, a leader in the design of aircraft and marine radars.

Having built up a considerable experience in the sector, Franz founded his own firm in 1940: 'EMT-Elektromesstechnik Wilhelm Franz KG' catered for the measuring needs of the electronic industry. Allied bombings forced Franz to move his small enterprise to a safer place in 1943. He chose the remote hilly region of the Schwarzwald, in the south-western part of Germany, setting quarter in the town of Lahr.

The war caused terrible devastation, but after its end radio broadcasts started immediately and improved rapidly. Broadcasting technology had benefited from the massive progress made during the conflict, and cheap receivers were already available, providing inexpensive entertainment in difficult times.

Unfortunately, programme sources were not as good. Microphones were excellent, but the turntables were very primitive (the tape recorder was in its early development stage). Record players in use at the time were crude affairs with heavy tonearms and huge (sometimes rough) motors driving metal platters sitting on cheap bearings. There wasn't any need for better players: the noise of a shellac 78rpm record was formidable anyway.

All this was to change in 1948, when Columbia Records introduced the microgroove 'Long-Play' 12" record and the following year RCA introduced the 45 rpm 7" record.

Those new records called for silent, vibration-free machines, capable of carrying the new sophisticated pickups and had to provide three different speeds, 78, 45 and 33 rpm. Professional users found that there were no new machines ready for the task and the first adaptations of earlier models were not satisfying. There was a vacuum to fill, and Franz jumped into the breach...

Franz did not have any example to follow, but he knew what the pros needed and in 1950 he introduced 'his' machine: the first EMT 'R80'. It's stunning to see that he got it right first time - a massive deck with three speeds, the provision for a very sophisticated MC head (developed in close co-operation with Danish Ortofon) and an enormous platter that could accept 16" records. (There was also a smaller brother built in few units, the 'R35'). The 'R80' was built for one year only, before Franz acknowledged that his own home made tonearm was not the best he could find, and things could be bettered if he looked up North once again. With the installation of the Ortofon 'RF-297' arm, an improved drive system and several detail modifications the 'Typ 927' was born, in 1951.

The 927 was not only a 41kg colossus, it was also colossally good and horrendously expensive. In 1952, its first real year on the market, a 927 cost 3,408 Deutsche Mark when a Porsche 356 cost 12,700 DM! For all this money, the professional user got a massive three-speed idler wheel-driven player with a 44cm platter sitting on 20mm thick shaft, equipped with a speed control and an illuminated strobe.

Moreover, the customer could order some very special accessories. The '927A' had a built-in graphic indicator for the stylus position on the record, something that nobody else dared try to reproduce for decades. The '927D' had a glass platter and a groove-centring system to make the deck fit for 'laboratory' use and the '927S' was designed



EMT 930 - first evolution of the marque.

to accommodate 2 tonearms for different cartridges.

The '927' was so superior to any other player that it gave Franz a comfortable monopoly in his field – precisely what Studer, Kudelski or Neumann were doing in theirs. The success of the 927 was such that EMT was able to enjoy a substantial increase in cashflow, and had to expand its production. To this end, Franz built in Lahr, in 1956, the 'Gerätewerk'. This building, destined to become famous as a temple of high-end construction quality, hosted the production of the turntables and other EMT equipment.

Still, the 927 was somewhat over the top for most potential broadcast customers so Franz decided to produce a more compact brother, minus the capability to play 16" records (already useless anyway in the '50s), adopting a smaller platter and a shorter arm. This was the recipe for another superb top-level broadcast turntable with the sonic qualities, reliability and versatility of a 927 in a smaller, more affordable package. Thus was born, in 1958, the 'Typ 930'.

Although significantly less huge than the 927, the 930 was an instant success, its sonic secret its rigid, comparatively light and 'dead' Bakelite chassis, supporting the main bearing, motor and idler-wheel supports, and the tonearm. As per the larger brother, its bearing is stunning – the 16mm thick main shaft rotates in a massive sleeve and sits on a steel ball submerged in a tank holding 25cc of special low-viscosity EMT oil. This bearing/shaft combination was designed to turn millions of times without a glitch, but periodical retopping and an eventual change of oil was recommended: EMT also provided a special gauge to check the level of the bearing oil.

Until 1958, both the 927 and the 930 were monophonic machines: there was no other way to reproduce music. Then, that year, 'stereophonic' records based on the Westrex system were introduced and it was clear that this was the future, and that it was necessary to provide upgrades as soon as possible. Keeping strictly in line with the established

tradition of making improvements to the existing and very successful machines while avoiding costly and risky changes, 930s and 927s were quickly converted at owners' requests with a stereo cartridge, stereo

tonearm (RMA-229 and RMA-297) and preamplifier (I39st).

At the same time, EMT began the production of 927st and 930st stereo machines. It's interesting to note that Franz steadfastly refused to adapt his machines to the 'Quadraphonic'

systems that appeared briefly at the beginning of the seventies...

THORENS REVOLUTION

Thorens had cooperated with EMT since the beginning of the nineteen fifties, and at the beginning of the following decade Franz struck a deal with the Swiss firm to build the TD-150 and then the early TD-125 decks in his 'Gerätewerk'. When Thorens fell on hard times in 1966, Franz bought it to create a group that could build a turntable for practically every user and pocket. He had cornered the market...

It was a wise decision. The home hi-fi market was booming at the time and, in 1969, the Franz-built Thorens TD125 created quite a sensation. It was a product that Thorens could be proud of: sleek, solid, well built and superb sounding, it could still be sold at a realistic price. Modular construction allowed the fitting of different arms, from the stock 9" long TP-14s or SME 3009 up to the long 12" items like the SME 3012 or the Grace 565. Franz liked it, and when he bought the Swiss company he thought that he could offer a cheaper, more modern professional-grade turntable building a 'custom' version of the 125. Thus was born, in 1971, the '928'.

The 928 was a first in many ways. It was the smallest turntable ever produced by EMT, the least expensive, the first with an electronically controlled, belt driven motor and the first turntable to be equipped with the new EMT tonearm. This was the 'Typ 929', a shrewd adaptation of the design of the very effective Thorens TP14/BTP125, etc. (The '929' is actually a 10" arm, and its 12" derivative, the '997' for the EMT '927',

was introduced in 1974.)

Although compact, attractive and fine sounding, the 928 was hampered by the lack of space inside the chassis, forcing EMT to fit a complex and often ineffective external start/stop system. Costs skyrocketed, the performance of the 125 worsened and it was also quite unreliable – another 'first' for EMT, and this time not a pleasant one!

In the late sixties, the low prices, good performance and attractive styling of many Japanese newcomers made some EMT users think it was time to get something 'more modern'. Some began to look with contempt at the old-fashioned look of the 927/930 with their idler-

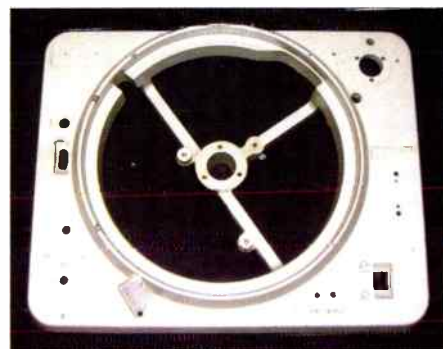
"the new series of EMT direct drives was formidable, but came at the wrong time..."

wheel drive that seemed positively prehistoric. Franz ignored those comments, as he had done for almost twenty years: his decks were good enough for the best in the world, the audio pros from the BBC, Italy's RAI, Austria's ORF or the studios of the recording industry, so he didn't have to yield to mass-market pressure.

ALL CHANGE

Catastrophe for EMT came with the sudden death of Franz on 10th April 1971. It was unexpected, and therefore even more disastrous in a firm where he had been not only the owner, but also the main strategist and designer. His family showed little interest in running EMT after his death and former directors took Franz's place. Strategic decisions had to be made quickly, as the Japanese were now launching superb equipment that encroached upon EMT's territory, such as the Technics SP-10, the first high-quality direct-drive motor unit aimed at the pro turntable user. Programmes already initiated by Franz before his untimely death were brought forward, albeit slowly, and thus in 1976 EMT showed the heir of the 927: the 'Typ 950'.

This was a truly innovative professional tool. The massive deck was conceived from the beginning as an integrated self-standing machine with sturdy metal legs, adjustable feet and a built-in seismic base. Weighing



The EMT 930's impressive chassis.

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STEREO TIMES on the Aurora gold turntable & illustrious tonearm

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a stunning 74kg, the 'motor' part is a massive iron deck supporting a 2kg DD motor controlled by a complex electronic system arranged on several cards neatly stacked in the front part of the enclosure. The circuitry had been designed to include every professional need, from the fine adjustment of the speed to the rate of descent of the tonearm lift!

Of course the 950 offered rock-steady stability and the problems of speed adjusting were cancelled by the electronic system, so no strobe was fitted (a decision not universally liked). The platter was a light plastic affair, as no weight was required to stabilise its rotation, and this lighter platter meant less mass to start up and stop: a 950 goes from standstill to 33rpm in 0.2 seconds and brakes to a full stop in the same time!

Of course the 950 was fitted with the highly praised EMT 929 tonearm, installed since 1972 on the 930 and its construction was fully modular allowing complete access to any part of it for easy and quick

back to a previously selected section of the groove for instant cueing, etc.

The success of the 950 was immediate, and professional users appreciated its very high performance and the idea of a self-contained top-level machine that didn't need to be encased in a custom-built console. Its price however was very high: once again you could buy a Volkswagen Polo for the 9,699 DMs required to purchase a 950 in 1983 (a 930, still in production that year, cost 6,727 DM). EMT's answer was to introduce a smaller brother, exactly as they had done in 1956 with the '930', and this was, in 1980, the '948'.

This was a different machine from the 950 for many reasons. It was not meant from the beginning to be a self-standing item: it was born as a deck that had to be fitted in a console. Its DD layout was similar to the one of the 950 but not as massive and the chassis was lighter. The 948 came with a sturdy Perspex cover that could hold record covers whilst the disc played and had a massive neon light in the back, under

the cover's hinges, to illuminate the record. It was aimed at the broadcast professionals of the new stations and smaller studios, a self-contained record player with all the facilities of a 950 but with a

lower prices (6,047 DM in 1983) and more compact dimensions.

The facilities provided on the 948 were excellent for the broadcast pros, but there was another segment of potential customers who could do without those fancy illuminators and the discrete cards stacked in front of the deck: private music listeners who desired the legendary EMT quality but would appreciate a lower price. The '938' was introduced in 1982 for them, and it was a kind of joint venture with Thorens, that, using the same motor/chassis combination as the 'TD524', was intended mainly for DJ use. Sadly, it never caught on.

The new series of EMT direct drives was formidable, but came at the wrong time. The Compact Disc, introduced in 1982, caused the earthquake we all know and turntables were instantly junked to make space for the new medium, so easy to use and so easily adaptable to radio use.

This was the moment where the absence of Mr Franz was to be felt more painfully. The shrewd innovator who had invented the broadcast turntable and was working on digital HD recording at the time of his death, would have surely understood immediately the importance of the CD and what it meant for the analogue turntable, at least in the broadcast field; whilst the administrators who had took his place didn't understand and played down the relevance of the CD, saying that it 'would never catch on'.

Pressed by the requests of their customers however, they finally yielded and produced a CD machine in 1986 (the 'Typ 980', list price 7,950 DMs), followed later by the much better '981' and then by the excellent '982', but by then customers had been forced to buy equipment by other manufacturers.

This was the beginning of the end for EMT. As sales of their formidable analogue machines dwindled, money became scarce; and true to form the directors closed the Geratewerk and threw away spares, archives and everything that told the history of this marque, finally selling the remains of the firm to Barco who used the Kippenheim plant to manufacture monitors and TV sets.

It proved a truly sad end to one of analogue audio's most important players, but nowadays EMT turntables have achieved cult status around the world, and have become highly collectable with domestic vinyl fans for precisely the same reasons they were so popular with broadcasters - timeless quality and superlative performance.

[For more information, click on www.stefanopasini.it]



EMT 948 - complete with lid-mounted album cover holder!



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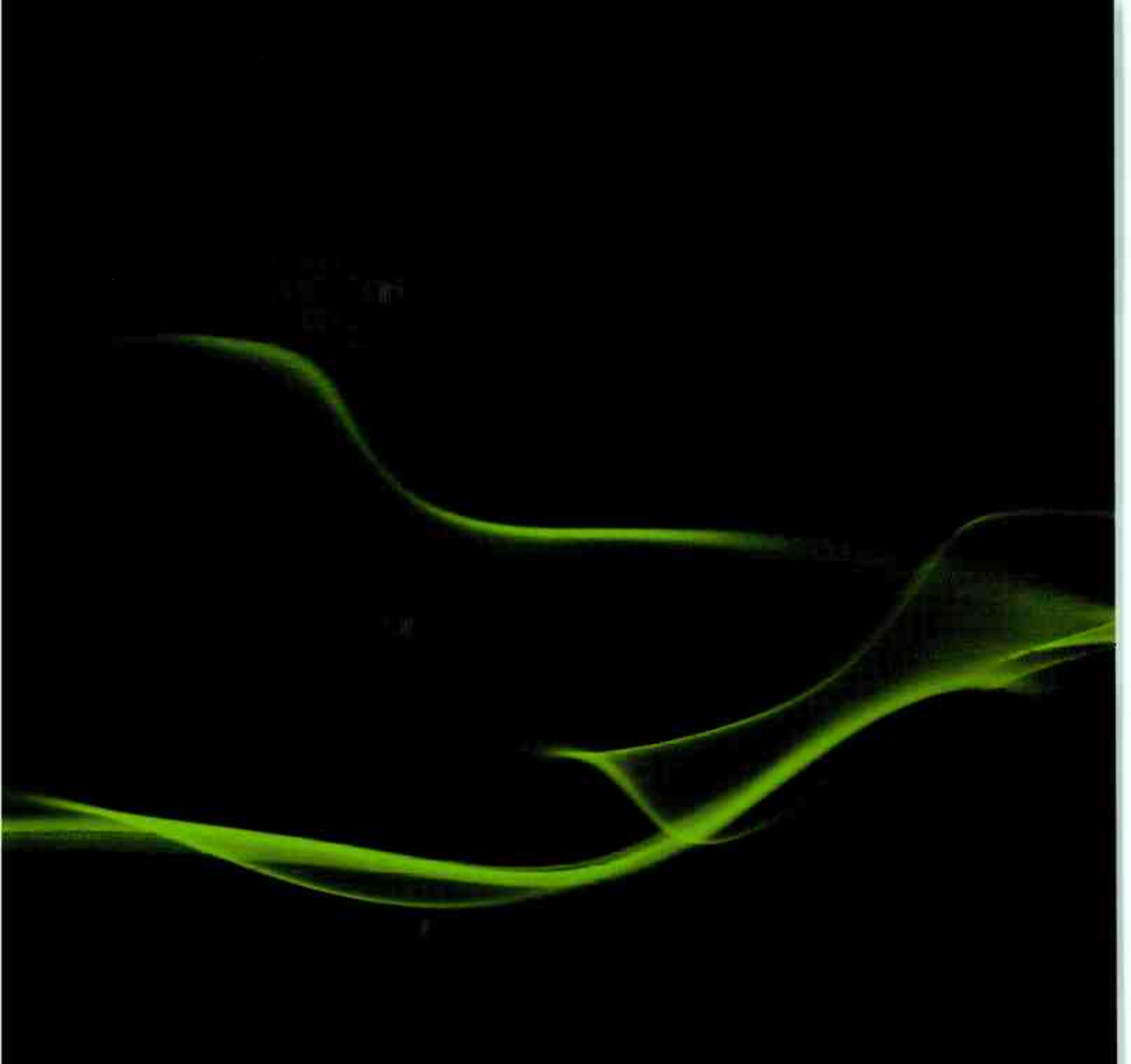
repair. No maintenance was required: the machine could be placed in its position by the EMT guys and then used twenty four hours a day without a glitch.

As always, the customers could order the 950 in any version they liked, provided, of course, they had very deep pockets, as EMT built several different versions of the base machine which, by 1977 was available in standard ('Typ 9 950 110' - 693mm) or narrow ('Typ 9 950 210' 512mm) widths.

One could order mono versions, or special models like the '9 950 310' for the Sueddeutscher Rundfunk, the '9 950 322' for Italian RAI, '9 950 341' for the RTBFI Belgium Broadcast, '9 950 342' for the Denmark Radio with a switchable equalization curve and, of course, the '9 950 347' - tailor-made to BBC specifications with a groove indicator, digital chronometer linked to the reverse selector to make the record go automatically



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VERTEX AQ KINABALU SUPPORT SYSTEM £395 (SEE TEXT)

Unlike most support platforms, Vertex AQ's Kinabalu is not so much a single platform as a range of support products which are mated together. Each platform is actually three separate components, the main support platform, a pair of decoupling support cones and a coupling tripod.

The Kinabalu is available in several versions, the Standard, Super and HiRez platforms, with either standard or HiRez coupling tripods. In order to keep the options manageable, we were supplied with the Standard and Super platforms, along with Standard and HiRez coupling tripods. All tripods and feet were supplied in their larger 35mm high versions, though smaller 19mm versions are available. The two platforms are similar in that both use honed granite platforms, and measure 480x400mm, the Standard platform standing 45mm high and the Super 60mm high, with the platforms supported on Sorbothane feet.

The Super granite model is set into a steel surround, the underside of which houses an acoustic labyrinth to help channel energy away from the top surface of the platform. The two coupling tripods are both manufactured from steel which is heat treated and has its carbon content carefully controlled,

the HiRez model has a brass ring around the base of the tripod, sealed into this ring is another labyrinth structure to channel energy away from the component sitting on it. The two platforms supplied were both designed to hold no more than 15kg, but the HiRez platform can take up to 80kg for large power amplifiers.

Compared to Clearlight RDC platforms and stands, we were surprised by the improvements heard when the Standard platform/tripod was used with valve equipment. There was an immediate drop in background noise giving rise to a wider dynamic range and more low-level information. The major improvements were in the areas of solidity, space and focus, where stereo images became more tightly defined and precisely located on the soundstage. Bass transients sounded faster whilst the midrange offered more transparency and high frequencies were more detailed yet smoother. Tonally, the sound was slightly cooler, with upper bass subtly receding in the mix, possibly a consequence of the lower level of vibration making it through.

Such obvious performance gains were magnified when switching to the Super Kinabalu platform, where things took a substantial step forward. Dynamic range was improved and the soundstage expanded in both depth and lateral

planes, whilst images were very well defined and focused. Bass notes were faster, and transients had greater impact with more slam. Midrange transparency was further heightened, with details in recordings which would be on the edge of perception and audibility under normal circumstances now becoming easy to hear. Finally, the HiRez coupler came into play, and whilst it was a simple change to do, the difference in performance was again easily discernable. Whilst imaging was slightly enhanced, with the stage a little larger in both planes, it was in the lower registers that the substantive improvements took place. The whole system sounded both louder and more informative at very low levels, and the usable dynamic range had expanded considerably.

With the Kinabalu platform, a pair of 35mm decouplers and a 35mm coupling tripod costing £395, the Super upgrade adding another £250, and the HiRez coupling tripod £50 more, the system is costly at £695. As such, it's not cost-effective with budget systems, but the performance in a high end environment cannot be questioned, and should be seriously considered by anyone interested in getting the very best out of their system. [Contact: Vertex AQ on +44(0)1597 825993 or click on www.vertexaq.com.]

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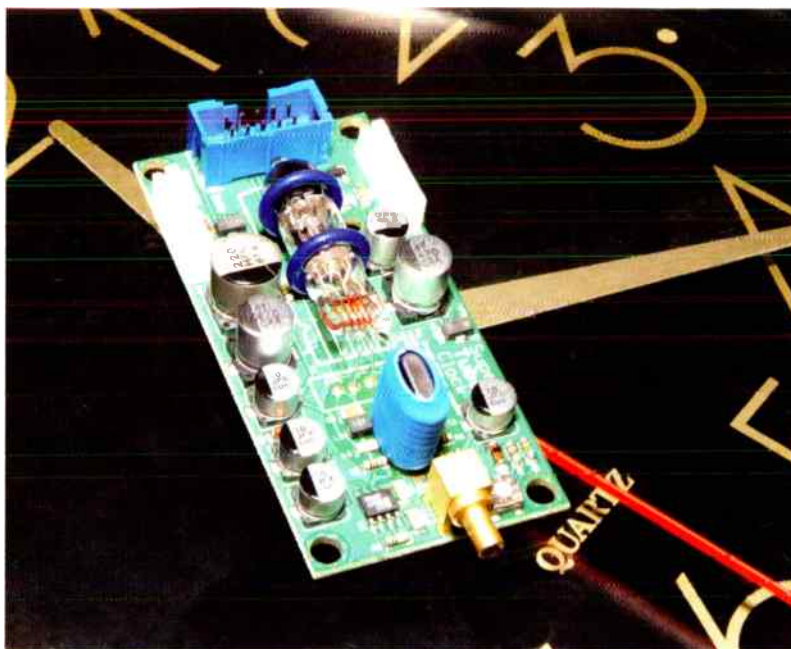
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Fine Time

Dutch digital specialists AH! have launched an aftermarket clock upgrade kit with a difference – it's valve powered! Neville Roberts warms his soldering iron up to the SuperTubeClock...



Herman van den Dungen is the man behind the cult AH! Njoe Tjoeb (i.e. 'new tube') 4000 CD player, which is basically a heavily modified Marantz CD4000 OSE with upgraded power supplies and a tube output stage. It's acquired something of a reputation amongst soldering iron wielding tweekers, for being a very analogue sounding machine. Now though, Herman's gone one better with his latest offering – a tube clock upgrade - to my knowledge, it is the only one that has a valve at its heart!

The 300 Euro (£200 approx.) SuperTubeClock should work with most CD players, but for the purposes of this review it was fitted to an NT4000. Interestingly, it's possible to fit two additional clocks to replace the DAC chip oscillator and the sample rate converter in a Njoe Tjoeb 4000 that has been fitted with a 24/192 DAC/upsampler unit (the TjoUpsampler).

Right now, valves seem to be popping up everywhere as a universal upgrade, and everyone seems to be madly espousing the benefits of clocking, so isn't putting the two simply a marketing gimmick? Well, van den Dungen's technical whizzkid Marcel Croese says it can transform the sound of any CD player by the replacement of the player's drive mechanism system clock oscillator. As with all aftermarket clock upgrades, the SuperTubeClock generates a more stable clock for the drive mechanism than the built-in clock. So why a valve-based oscillator?

Croese says the problem is that

the undesirable switching transients, which are inherent in solid state clocks and particularly bad in CMOS materials, will inevitably cause jitter in the clock output. Unfortunately, a part of this jitter is located in audio frequencies, thus hampering efforts to get rid of jitter in the audio signal. The trick is to end up with a very fast square wave, enabling the clock to provide extremely accurate timing,

involves replacing the 8.4672MHz clock on the drive mechanism. Comprehensive instructions are given on how to do this, although it is quite a fiddly process and I would only recommend this to be carried out by someone with the necessary experience. For the less experienced, Herman has written a manual with full instructions on what to do and how to send parts of their CD player

"although the notion of a tube clock might sound silly in theory, in practice it's a serious upgrade..."

but without noise or jitter in the clock itself.

Valves are well known for their very linear operation and low noise and distortion products. The SuperTubeClock incorporates a sturdy and stable long-life mini-triode which is used to produce an ultra-clean sine wave. This is then shaped into a square wave with excellent speed, accuracy and jitter properties. Specifically, the parasitic noise in the 10Hz to 100kHz region is claimed to be much lower than of any of the comparative designs and this noise is considered to be the determining factor for the audibility of jitter. The absence of this jitter should result in a reduced sense of the 'digital' sound of a CD.

UPGRADING THE CLOCK

The first part of the upgrade can be carried out on any CD player, and

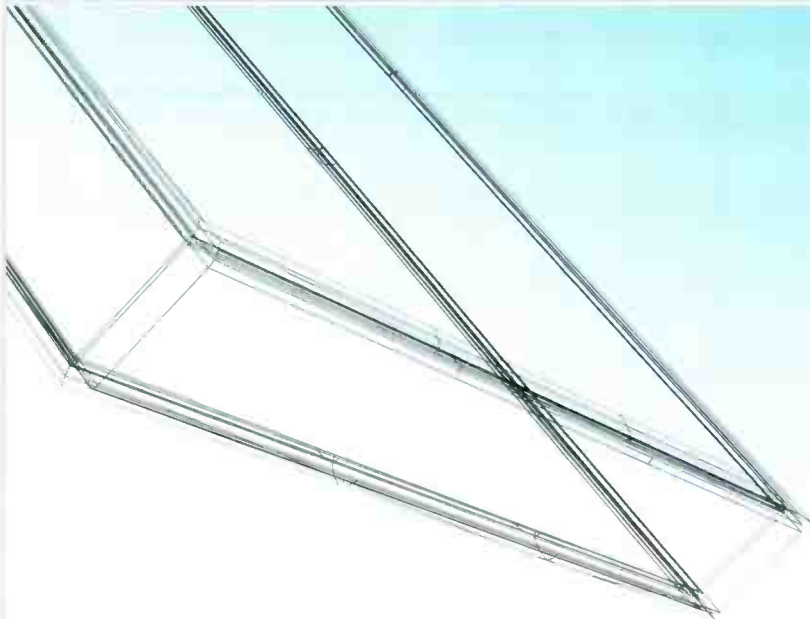
safely to Holland to have the upgrade carried out professionally.

Using the Njoe Tjoeb 4000 as an example, the first task is to remove the drive mechanism from the player. This involves unclipping the front of the drive to free up the CD tray, unscrewing the mechanism from inside, unplugging the connections and withdrawing the unit. Once the



AH! Njoe Tjoeb CD player about to be opened up

VERTEX AQ KINABALU PLATFORMS



“ Upgrades like this are amongst the most cost effective you can make, simply because they maximize the performance of the system you already own, as well as embracing any future upgrades. Also available with black surrounds, the Vertex platforms should be top of any serious audiophile's setup wish list. ”

Roy Gregory, Kinabalu Review, Hi-Fi+



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drive has been removed, the circuit board is unscrewed from the base of the mechanism and tilted downwards.

Next, the crystal and two capacitors are removed from the circuit board and a thin coaxial cable is soldered in place of the crystal. This is where the signal from the clock is injected into the existing circuitry. The copper of the printed circuit board is quite fragile and therefore some solder pins were fitted into the holes where the crystal was connected and the cable was soldered to these pins, rather than being directly wired to the copper printed circuit board. Also, a tie-wrap was used at the edge of the board to take the strain of any movement of the cable away from the circuit board connections.

The drive mechanism is then reassembled and refitted back into the CD player. Fitting the clock is simply a case of pushing four plastic feet into the clock circuit board, removing the self-adhesive pads from their bases and pressing the feet firmly into place next to the mains transformer. The clock includes two power connectors to allow it to be inserted between the transformer and the valve output stage of the player using the supplied cable in a 'daisy chain' fashion. Finally, the coaxial cable from the drive mechanism is plugged into the clock and the unit is ready for testing.

The clock is designed to be powered on all the time and takes about fifteen seconds to warm up when the CD player is first plugged in. Until then, the unit will not respond to operation commands, either from the front panel or from the remote control. A slight click can be heard from within the player when the SuperTubeClock is ready, and the player is functional after this fifteen second warm-up time. The player is in standby mode and the display will remain dark until either the power on/standby button, the open/close button or the play button is pressed.

Of course, for the listening tests, I used some well known CDs spanning a whole range of music. First to spin was an old favourite - Vivaldi Violin Concertos, Op.6, on Decca 455 653-2 – and it was obvious from the outset that there was a lot more going on than I had heard previously. The music was definitely clearer, but without being too bright. There were numerous adjectives that could be used at this point to describe the improvement in sound, like 'transparent', 'detailed' and 'open', but the best way I can describe the effect is to simply say it

sounded more like vinyl! Essentially then, the CD player had taken a step towards realistic music reproduction.

MORE CLOCKING

Having been blown away by the improvement that a replacement drive clock could make to my NT4000, I wasted no time in turning my attention to the upsampler clocks. This is an upgrade specific to this particular player, but I was intrigued to see what it would do. Two additional clocks are needed for this upgrade: a 24.576MHz to re-clock the DAC chip and a 30MHz clock for the sample rate converter. It is a relatively easy task to remove the upsampler as it simply plugs into the main board. Again, this required the removal of the two crystals and associated capacitors and the fitting of two coaxial cables to inject the new signals into the circuit at the appropriate points.

The upsampler was now reinstalled. Plastic feet are fitted to the two clocks, which can then be fixed to the base of the player. To power these clocks, a separate mains transformer is provided. This requires drilling two small holes in the base to allow the transformer to be bolted securely in position. The two coaxial cables from the upsampler are connected to their respective clocks and, once again, the player is ready for testing...

This proved to be an upgrade for the image-conscious, because firing up the Vivaldi disc revealing superlative location of the orchestra's instruments within the sound stage. Solo instruments snapped into focus and the bowing of individual violins could be discerned within the string section.

For a complete change of mood, I turned to 'The Day the TV Stood Still' from Winchester Hospital Radio (WHRC701). The strident brass on 'Brass Bugaloo' was sharp and crisp with fantastic attack. In contrast, the breathing of the flautist on 'Flute Allegro' was clear without being obtrusive, and the flute was in perfect balance to the harp and drums in the background. The familiar lilting sound of 'Sun-Ride' came over crystal-clear with the instruments of the ensemble located with pin-point accuracy. Turning to full orchestras and the individual instruments were never swamped by the richness and grandeur of the crescendos in the piece.

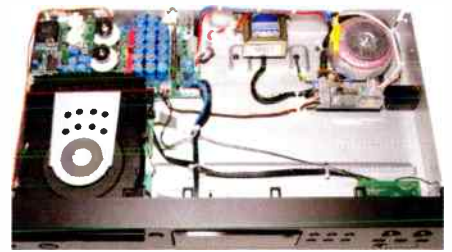
CONCLUSION

At around £200, the basic SuperTubeClock mod is an excellent value upgrade for any CD player.

It sucks the 'noise' out of the player, making it sound instantly smoother, more transparent, more detailed and yet also more natural too – all without altering its basic frequency balance. I found my silver discs sounded far more organic and 'vinyl-like', whilst retaining (and indeed improving upon) the good qualities of digital.

As such, it is a superb modification, and do-able by capable DIY'ers, although I'd advise beginners to think twice before undertaking the work.

There was no doubt in my mind that the first drive clock provided a fabulous improvement in clarity, transparency and detail, but for those of us fortunate enough to have a Njoe Tjoeb 4000 fitted with a TjoUpsampler, the addition of two further valve clocks added yet another dimension to the sound in terms of imaging and accuracy – making instruments in the mix appear with hitherto untold levels of precision and grip. Together, it's a formidable combination, and never before have my CDs sounded so analogue-like. Although the notion of a tube CD clock might sound silly in theory, in practice it's a very serious upgrade and as such comes heartily recommended.



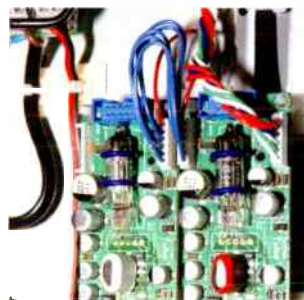
Standard player before the mods...



Drive crystal and capacitors removed.



Close-up of the drive clock.



Close up of both upsampler clocks.



Completed upgrade with 3 clocks fitted.

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Future Proof

All existing DAB radio tuners will be unable to receive the forthcoming DAB+ transmissions, except this one – the Onkyo T-4555. Steve Green goes back to the future...

At first sight, the Onkyo T-4555 is just another mid-priced DAB/FM/MW tuner, its main competitors being the Marantz ST7001 and NAD C445. What makes it stand out from the crowd however, is that it is the first tuner on the market capable of being upgraded to the forthcoming DAB+ standard. The way Onkyo has gone about achieving this is that it has placed all of the radio-specific circuitry on a separate tuner board that can be removed from the unit and replaced by a new one that supports DAB+. The modular design of the tuner also means that other new digital radio formats could be supported in future as well as DAB+, such as Digital Radio Mondiale (DRM), or more interestingly from a hi-fi point of view, Wi-Fi Internet radio.

The idea is that no matter what formats appear in future, owners of this tuner would only have to buy a new board rather than a brand new tuner. The drawback is that the cost of a new board that supports DAB+ is likely to be in the region of £80 to £100, which must be factored into any buying decision. However, installation of a new board only requires the old one to be unscrewed from the back of the unit and the new board inserted in its place (the procedure is almost identical to installing a card in a PC), so the tuner wouldn't need to be sent off

anywhere for the card to be installed.

Another factor that prospective buyers should take into consideration is that we should see tuners that support DAB+ released in the coming months, but these are unlikely to support DRM or DRM+, and it is unclear at the moment whether tuners will support Wi-Fi Internet radio or not. The advantage of this tuner therefore is that it gives owners the peace of mind that they won't be buying something that will need to be replaced a couple of years down the line. They can postpone having to buy the new DAB+ tuner board until DAB+ transmissions actually start, which is unlikely to happen for at least two years, by which time Onkyo may well offer a tuner board for this unit that supports all of the new formats that are likely to be used over the next decade or so.

Moving on to the here and now, the current tuner module uses the Frontier-Silicon Chorus I DAB receiver chip, which is the most common DAB chip used in tuners, and the FM section is implemented by traditional analogue circuitry as opposed to being implemented using software-defined radio like a few of the other DAB tuners have done – but not with much success, I should add.

The Onkyo has good aesthetics, with the size and placement of the buttons combining well with the

amber text on black background display. The best thing from a looks point of view though, is that the large rotary tuning knob that most tuners sport has been replaced by up and down tuning buttons, and I dare say that most people use the remote control when operating tuners, so large tuning knobs would seem to be an unnecessary eyesore today.

The tuner was easy to set up, as the procedure to enter stations into the presets was very straightforward. The forty presets available are shared between DAB, FM and MW, and each preset can store a station from any of the bands, which I find to be more logical than the situation on some tuners where there are separate preset lists for DAB and FM.

IN USE

Operating the T-4555 was very easy via the remote control, as the tuner responded quickly to button presses on the remote, and it was quick to locate and tune into stations via scrolling through the list of presets or the list of DAB stations. Switching between the DAB and FM bands was also fast, which compares well with many DAB/FM tuners that can take a couple of seconds to switch bands, in particular when switching to DAB. Another good feature was that an FM station's frequency can be entered directly via the remote control, although as scrolling through the list of preset stations was so



quick I didn't actually use this feature much. RDS was also supported, which allows station names to be displayed on FM, and the usual DAB scrolling text and other information was available.

The supplied remote control was excellent, as it was solidly built, well balanced and the buttons were well laid out. The 'ID' of the remote control could also be changed in case it interferes with the operation of other equipment you own, which is rarely a problem, but when it occurs it can be very annoying. On the back panel, as well as the usual phono outputs and antenna sockets, there are connectors to allow the unit to be controlled in conjunction with other equipment, and an infra-red port to allow the unit to be controlled from another room.

Radio reception quality on FM was good, but not spectacular. Reception on DAB was also good, with little of the bubbling mud sound that accompanies poor DAB reception on the multiplex that I can receive with the weakest signal, and no problems on any of the other multiplexes. AM reception and sound quality was significantly better than on most tuners, although with virtually all AM stations also being available on DAB there seems to be little reason to tune into AM on a DAB tuner.

SOUND QUALITY

Beginning with the performance on FM, the classical music stations sounded excellent on the Onkyo, with a refined and authoritative, yet vibrant, delivery. The audio was consistently accurate, well defined and sharp, but without sounding bright, which is something lower-priced tuners can suffer from. Performance was very good on both Radio 3 and Classic FM, but Radio 3 sounded exceptional on occasions when the audio had been particularly well engineered.

Equally impressive was the

Onkyo's performance with the 'middle-of-the-road' stations, in particular Radio 2. The tuner delivered a big, upfront and dynamic sound, and the added energy brought the easy-going styles of music to life. In addition to this, the tuner displayed an impressive stereo soundstage, producing a highly engaging experience overall.

I was also surprised by the way the Onkyo handled rock and indie music, which some of the lower-priced tuners can find problematic, in particular when the audio hasn't been very well engineered. In comparison, the Onkyo was far more composed, squeezing plenty of detail from the signal and separating instruments rather than allowing them to coalesce, while still managing to deliver the weight that this kind of music needs in order to impress. The dynamic sound of the Onkyo was also well suited to stations that play pop, dance, and R'n'B, thanks to its superior bass response to that of the lower-priced tuners. Speech on Radio 4 and presenters' voices in general sounded precise and vivid.

Although the above descriptions of the Onkyo's sound quality were based primarily on its performance on FM, the genre-specific comments are also applicable to DAB, where the Onkyo's energetic sound helped to liven up and improve the levels of detail on some of the DAB stations whose audio is a little on the flat side, and the performance on the better-sounding DAB music stations was good. The sound quality on

most speech stations was also good on DAB, so if you're still listening to Radio 5 or TalkSport on AM, or if you listen to any stations on AM for that matter, I would seriously considering switching to DAB.

CONCLUSION

Overall, the audio quality provided by the new Onkyo T-4555 was excellent, and there is a significant performance gap between it and the DAB/FM tuners in the £200 price range. In its own price range, the Onkyo's main competitor is the Marantz ST7001, which actually provides a very similar sound to the Onkyo. However, the fact that the Onkyo can be upgraded to DAB+ and other new digital radio formats whereas the Marantz cannot makes it an obvious recommendation.

VERDICT

Excellent sonics across all formats allied to unique upgradeability makes this the class of the mid-price tuner field.

ONKYO T-4555 £350
 Onkyo
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 www.eu.onkyo.com

FOR

- future-proof
- excellent sound
- ease of use

AGAINST

- overall price with DAB+

MEASURED PERFORMANCE

The T-4555 has a gently rising high frequency response, likely imposed by the mpX filter used, as this usually arises from filter (mis)termination. It's a small error of +0.9dB above 10kHz our analysis shows, just enough to bring detail and insight up without making the sound over-bright. It does mean, however, that the T-4555 will not provide a warm, relaxing presentation so much as a clear, insightful one. Distortion was low all round and channel separation on stereo high. With the 19kHz mpX filter providing good pilot tone rejection the tuner offers a clean output from VHF/FM.

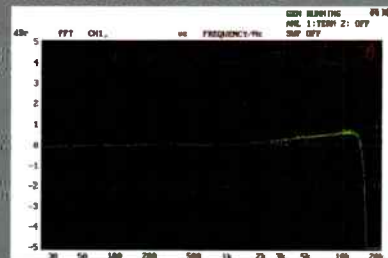
Sensitivity was good, as just 755uV is needed from the aerial to get the tuner into full quieting (minimum noise), and with hiss down at -70dB it should rarely be detectable, even behind Radio 3 silences. At 0.7V output is sufficiently high to match all amplifiers.

The T-4555 VHF/FM section, which will provide best sound quality until DAB+ arrives, measures well and will do the medium justice. NK

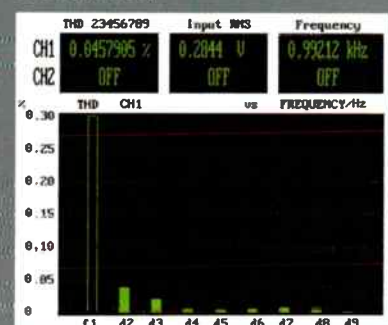
Frequency response	5Hz-15.3kHz
Stereo separation	43dB
Distortion (50% mod.)	0.05%

Hiss (CCIR)	-70dB
Signal for minimum hiss	755uV
Sensitivity	
Mono	5µV
Stereo	48µV
Signal strength meter:	none

FREQUENCY RESPONSE



DISTORTION



Over And Out

In the great pantheon of classic British tube amplifiers, Rogers' Cadet III has been inexplicably excluded, says Tony Bolton...



Although much has been penned about Quad's II and Leak's Stereo 20 in recent years - with justification - the Rogers Cadet has gone curiously overlooked. The fact is however that in some ways it's better than the Leak, and certainly a worthy rival, and yet prices are far lower, making this classic amplifier a far superior purchasing proposition.

The Cadet III is unusual in being described as an integrated amplifier, when it actually consists of a separate preamplifier and power amplifier, connected by a captive lead from the control unit. When launched in 1964 it cost £29/10/00 in uncased form, or £32/10/00 in a walnut Formica finished case, as an integrated unit.

Specification is fairly typical of the better products of the period. Geoffrey Horn reviewed it in 'The Gramophone' in March 1965, and quoted the power output as 10 watts per channel (sine wave) and 12.5 watts per channel (IHF). Harmonic distortion was 0.25% at 5 watts, and 0.8% at 10 watts. Frequency response was ± 0.5 dB from 20–20,000Hz. There are two separate speaker taps on the output transformers, one for

3–5 Ohm, and the other for 12–15 Ohm.

Up to three components can be connected. The onboard phono stage had plug in modules for either Ceramic (78mV sensitivity), or Moving Magnet types (4.2mV sensitivity). There is also a tape loop, accessible either from the five-pin DIN socket on the front of the control unit, or via the phono sockets at the back. The Tuner input is via phono sockets, again at the back of the unit.

The front panel contains knobs for balance, treble (+12 dB to -17dB @ 10KHz) and bass (+12 to -15 dB at 50Hz) giving more than enough latitude for correction of the signal for non-RIAA equalised recordings. (Although the RIAA curve was allegedly standardised for microgroove recording by the early nineteen sixties, in practice there were still a wide variety of settings used. For example, most early Atlantic and sixties Motown recordings were cut on the NAB (North American Broadcast) setting which has a drop of 2.5dB in the treble compared to RIAA. The bass control works in the conventional way, turning the knob clockwise

increases the bass output. The treble control is the opposite – an increase in treble output requires the knob being turned anti clockwise!

A rumble filter (-3dB at 70Hz, -6dB at 50Hz, -9 dB at 45Hz) and low pass filter (-3dB at 6.5 KHz, -6dB at 9 KHz, -9dB at 12 kHz) are fitted, which, given the abilities of most modern turntables and cartridges are redundant today. Below these is the combined Volume/on/off control knob.

The fascia of the control unit was a departure for Rogers from their traditional maroon and gold finish, with the black and silver look being very contemporary at the time. Forty years on, this means the Cadet sits quite nicely in amongst modern equipment, only the size of the knobs, and the extra switchgear for the filters really showing the true vintage of the styling.

Circuit design of the power amp was similar to the Cadet II, with four ECL 86 valves (triode/pentodes) arranged in push/pull configuration. Improvements over the previous model were silicon rectifiers in the voltage doubling circuit in the power supply which, with improved transformers, increased the power

"as an introduction to quality valve reproduction, it's difficult to beat..."

output from approximately 6 watts per channel for the Mk II to the 10 watts quoted above. But the real innovation was in the control unit. A further double triode valve was added to the two already in place to provide gain for the new Moving Magnet pick-up input. These were ECC 807 valves, new on the market and the first time that 'The Gramophone' had seen them in use. (ECC 807s are now very difficult to obtain, however, I am given to understand that it is possible to modify the circuit to take an ECC 88, which is easily available).

Installation of the unit was very simple. Power from the mains goes into the power amp, and is fed to the pre by a captive lead terminated in an octal plug. In common with most older equipment the phono sockets at the back are set very close together, which makes using a lot of modern interconnects impossible. Cables from the Chord Company had small enough plugs that fitted without problem, my usual Atlas Elektra only just fitted, with virtually no clearance between the casings of the plugs.

Speaker terminals are of the screw type, and completely useless for anything other than thin bare wires. Since most speaker cable comes terminated with 4mm banana plugs nowadays the solution is to either use adapters (available from most good hi-fi shops) or to modify the unit to accept modern binding posts. The supplier of the review sample, Paul Greenfield of Classique Sounds, advised me that either option could be catered for when buying from him.

SOUND QUALITY

The Cadet replaced the Leak Stereo 20 in my system, driving a set of Kelly KT3 loudspeakers. These are unusual for a modern box design in being rated at 95dB efficiency, and therefore provide suitable partners for relatively low powered amps such as the Leak or the Rogers. Sources were a Njoe Tjobe Reference 4000 CD player and an Origin Live-powered Linn Sondek LP12 fitted with a Hadcock 242 Cryo tonearm and MusicMaker III cartridge.

I partner my Stereo 20 with Icon Audio's Passive Preamp, and it was the difference in preamplification that was the first thing I noticed. Compared to the Leak preamp, the Rogers is a very good, open sounding design. Compared to modern units, however, the sound is a little boxed in, and serves as a good example of just how far preamplifier design has improved.

Having listened to the Cadet for a few days I found it a very musical device, with a good sense of timing and reasonable imaging. The sound stage stayed within the speaker boundaries, but had fine depth, so that an orchestra was presented in the classic horseshoe shape, rather than a two dimensional row of musicians. The centre image was not quite as defined as the Leak's, but this is more due to the capabilities of the preamp and its captive lead than any reflection upon the power amp. Bass output was good, with a realistic timbre to double basses and drums. Treble was slightly curtailed by modern standards - it extended up quite high and then seemed to stop dead, rather than gently rolling

off into oblivion in the manner of the Leak.

I felt that its weak point was that captive lead linking the pre and power units. The concept of carrying the mains supply and the signal along cables that are bunched together under one casing is an anathema in the modern audio world. Contacting your favourite cable manufacturer to see if they will make a replacement lead would go a long way to liberating the sonic capabilities of this amp, I feel. Another option would be to use a more modern preamp, and Classique Sounds will fit phono inputs to the power amp to allow this.

I generally found the Rogers Cadet provided a very enjoyable and involving sound - especially considering that this mint review sample retails for just £250. I tried music ranging from Classical through to Psychedelic Trance, and found it unfazed by anything I played through it. It's an impressive all-rounder that, unlike some valve amps (usually triode powered), won't turn its nose up at rock music, but can still provide the delicate touch needed for solo vocal and instrument recordings.

CONCLUSION

Far cheaper to buy than its Leak or Quad rivals, the Rogers Cadet III has similar power and a considerably better preamplifier than the Leak. So, as an introduction to quality valve reproduction at a reasonable price, it is very difficult to better.

[Thanks to Paul Greenfield of Classique Sounds (tel: +44(0)116 2835821) for supplying this mint example.]

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"the Internet is the scourge of high street sales..."



adam smith

A couple of news items reached us in the office here recently, ones that will be particularly saddening for fans of the old 'black stuff'; namely that both Fopp music stores and Reckless Records have finally closed their doors. Following in the footsteps of shops like MVC, who were bought out by Music Zone a year or so back, there seems to be a trend for the smaller, independent music shops in the UK to be faltering somewhat.

I suppose this was inevitable really, as stiff competition is coming at them from all fronts. Obviously there are the big high street sellers such as Virgin and HMV - Virgin did attempt to bale out Fopp but this came to nothing, unfortunately. These big names have the advantages of huge numbers of stores in virtually every town or city in the UK, along with the power of bulk buying and, in theory at least, cheaper prices (although this did not hold true for Tower Records, being another name that has disappeared from the British high street in the past few years).

The second rival to independent music stores is, of course, the good old supermarkets who appear to be taking over the world. I remember a few years back that various naysayers were sniffily suggesting that Microsoft were aiming for world domination but, whether this is true or not, I have a feeling Tesco will give them some healthy competition! I do not wish to open the entire debate about whether supermarket conglomerates are an evil who are destroying small retailers generally, or a superb answer to the problem of helping us all to gain precious spare time in our increasingly busy lives, but I think even the toughest cynic would be hard pressed to argue against the

convenience of being able to enter one of these stores and buy not only all your shopping requirements, but even a few luxury items while you're at it.

Of course, this is where the most obvious signs of the bulk-buying advantages are true - whilst a chart CD is in the region of £10-£12 in the likes of HMV, the top 40 items are closer to £8 or £9 in a supermarket and there is a great deal to be said for being able to chuck one of these into your trolley along with the bread, milk and cat food. In fact, some of the prices in such places are quite astounding. Those of you who, like me, are excitedly awaiting the final instalment of the Harry Potter heptalogy will undoubtedly be interested to know that not only are two of our main supermarket chains selling 'Harry Potter and the Deathly Hallows' at less than half the price of bookstores, but this price is actually less than the wholesale price they buy it for! Naturally, there is good reasoning behind this - when you pop in for your copy there is a good chance you'll think of a few little essentials you need and grab them while you're there, and this is where the money is made.

However, it is the Internet that is the scourge of high street sales. The multitude of online stores and distributors is quite extensive and, again, pays dividends in terms of the sellers not having any physical shops, and therefore overheads and costs are lower. Savings can be passed directly on to the buyer and, when one factors in the convenience of being able to peruse their extensive music libraries whilst in the comfort of your own home, slippers on, cuppa at hand and cat on your lap, then it is not difficult to see why many people take this option.

The need to do battle with car parking, traffic congestion and the delights of the current British summer - that is more likely to drown you than tan you - suddenly is no longer an issue. Even better, you don't even need to wait for the post to bring your new CD to you. Go for one of those new-fangled digital download thingies and you can be enjoying stunning crystal clear quality within a matter of minutes. Well, you can be enjoying an MP3 anyway...

So this is all well and good, but the trouble is, it does leave a few of us rather saddened, and I'm sure it's not just me. The beauty of a proper record shop is that, whilst flicking through a physical pile of albums, be they CD or vinyl, not only has a certain tactile pleasure, but offers the benefits of suddenly spotting something that will send you off at a tangent and help you to remember something you wanted that you had long forgotten. As a contrast, certainly if my own experience is anything to go by, when buying on the internet it is more of a case of just logging on, finding what you need, buying it, then logging off and heading for the pub.

The demise of stores like Fopp and Reckless Records is another signpost marking the slow decline of an era, and even the big retailers like HMV admit to having their profits hit hard by downloads and internet shops. This can be seen in their stores where the stocks of minority interests like vinyl are shrinking, despite the fact that it is the only 'hard' software format that has increased in sales recently. I personally think this is a shame - if nothing else, remember that if they all disappear we gents will have nowhere to sneak off to on a Saturday morning whilst our other halves are busy buying up half of Next and Monsoon...●

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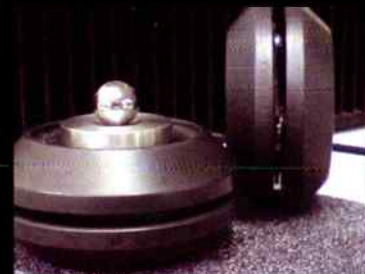
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"the fashion for minimalism may have waned,
but decent sound is still very much in vogue..."



dominic todd

As we all know, fashions come and go. To some extent, the world of hi-fi follows this. Certainly in terms of cosmetic appearance there is a strong and certain link. When wood is good you'll find wooden accents adorning electronics and timber veneers wrapped around loudspeakers. Then, when black comes back, this is dropped for the tech look and the sharper lines that accompany it.

Yet it's not just the aesthetics that can vary. As trends change, so do the physical aspects of hi-fi. You may well have noticed that, for example, when minimalism is all the rage with interior design, so typical hi-fi becomes simpler and more focused too. This was certainly apparent in the late eighties when even budget amplifiers were stripped down to a volume control and source selector.

These days it's different. Take a look at the majority of sub-£1,000 amplifiers and you'll notice how most now have a comprehensive range of features, even when some of their ancestors didn't. That doyen of minimalism, the Cyrus 2, has now spawned descendants with headphone sockets, remote controls and input sensitivity adjustment. Never one of the most extreme minimalists, the Audiolab 8000, is now back - only this time with remote control. Then there's Rotel...

Throughout most of the eighties and well into the nineties, the various incarnations of the RA-820BX ruled the 'no frills' budget audiophile market. None came with tone controls, remotes or - God forbid - an iPod docking connector. What they did offer behind their satin black front panels though was quality electronics: electronics that offered exceptionally

good sound. Compared with the likes of similarly priced Philips, JVC, Aiwa, Proton (yes, they used to make hi-fi!) and Onkyo amps, the sonics were a revelation.

Of course, Rotel weren't alone here. The aforementioned Cyrus, Musical Fidelity, Naim and QED all offered similarly minimalist designs. Yet, where a modern Naim Nait or Musical Fidelity amplifier is still functionally basic, current day Rotels tend not to be. I can't really think of a modern Rotel equivalent to the RA-820BX but, if you take price inflation into account, then it's most likely to be the RA-05. Unlike the RA-820BX, this is an amplifier that's got the lot. System remote control, speaker switching, headphone socket, phono stage and a front mounted media player input are all included. To give Rotel credit, the quality of the electronics is still excellent and, in its own way, minimalist - short signal paths, symmetrical board layouts and so on.

Although I personally miss the aesthetics of amplifiers like the RA-820BX, which seemed to suggest sonic prowess merely through looking sleek and uncluttered, I can fully understand Rotel's commercial decision. I remember working in the hi-fi retail business during the early and mid-nineties and it was products like the Rotel that sometimes met with resistance. If it possesses class-leading sound quality, then a typical audiophile will buy any style of amplifier: they don't buy it merely for minimalism. The typical music lover, though, would actually be quite happy to sacrifice a little quality, so long as they can have some useful facilities, like a headphone socket, remote control and perhaps even some tone controls.

From my own subjective point of view, it seemed that integrations such as the Rotel, Pioneer A300/A400 and Musical Fidelity B1 were losing around ten percent of possible sales because they didn't include a headphone socket, tone controls, remote, speaker switching or indeed any of the above.

Come the turn of the century, and the likes of Rotel and Cambridge realised they needed to appeal to a wider market, especially as sales of separates were gently falling. So the new generation of Cambridge integrations, the Azur range, came equipped with all the features that had otherwise put people off the A5 and A500 - namely remote control and a headphone socket. Rotel did the same with the transition to RA-Zero series. It has to be said, that although less pure than their predecessors, both Azur and RA-Zero amplifier ranges are excellent products and regularly top group comparisons.

As the rise of iPod/MP3 integration has shown, fashions and trends are hard to ignore within the hi-fi business. Some can get by without having to adopt, but they usually do so by offering the very best and, crucially, by looking after their customer base - think SME, for example. For the more mainstream companies, not offering a feature that customers and retailers regularly ask for, such as remote control, will simply lead to fewer sales and less market share. As the above examples show, although the purist may object on aesthetic grounds, these days good hi-fi amplifiers aren't as reliant on having to be as feature-free as possible in order to provide excellent sound quality. The fashion for minimalism may have waned, but decent sound is still very much in vogue. Long may this be the case. ●

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"Bing Crosby is the man we should thank, because hi-fi and music would be a lot worse without him..."



paul rigby

You may not believe this, but every piece of your hi-fi, and in fact your entire record collection, owes its very existence to one man - Bing Crosby. Yes, the same guy whose 'White Christmas' song is pumped around the country every festive season...

In the early part of the twentieth century, Crosby was a multimedia king. "People cannot believe today the degree that which, between 1934 and 1954, Crosby utterly dominated American entertainment," said Gary Giddins, critic and Crosby biographer. "Nobody had the kind of impact on radio and television that Crosby had and nobody had as many hit records - Sinatra and Elvis don't come close." Or The Beatles, for that matter. Also, Crosby ultimately forged the title of, as the professor of media history at the University of San Diego, Dr. Steven Schoenheer says, "the greatest influence on the mass media in the twentieth century".

In 1946 Crosby reinvented the entire media industry. Live radio dominated the stars of the day and, more importantly, dominated their daily diaries. In Bing's case that was with NBC and the Kraft Music Show, a top radio show of the time packed with Hollywood stars. When the show was on, you had to be there in person. Network rules said that you couldn't prerecord a radio show. Unhappy with that arrangement, Bing decided to find a new sponsor and a new network. That was Philco Radio Time and ABC which, once Bing arrived there and started to prerecord his show, made every other top star in Hollywood take notice. They ran to join Bing and the media map was changed forever.

At that time, Bing's radio shows were recorded onto shellac. However, the quality of the shellac

discs was poor and Bing was looking for something better. Bing looked to Germany, which had invented the tape recorder in the 1930s. An American service man, Jack Mullin, of the US Signal Corp, brought two examples of what were then called Magnetophones, back with him at the end of the war. It was an impressive piece of kit with a constant speed, eliminating wow and flutter. The accompanying tape used a plastic band with an iron oxide covering - the first to move away from the paper-based and metal ribbon types.

Mullin transported the tape machines home, broken down into small components, along with fifty reels of this new type of tape (made by an outfit called BASF), inserted into small packages, to get around army regulations that said that larger objects could not be sent to the USA. Amazingly, every one of the thirty five small packets arrived safe and sound. Mullin rebuilt the tape machine, rewiring it and duplicating circuitry using American parts.

Bing heard about them and was the first to sign up Mullin, who went to work for Crosby, recording his radio show. The BASF tape formula was then, with a little luck, duplicated by the Minnesota Mining And Manufacturing Company - known as 3M - from a material found in common red paint used to cover barns. This meant that those limited fifty reels of tape could be expanded with what was to be called Type III tape. To create a commercial machine, Mullin teamed up with six dedicated men who had a company previously known for their small electric motors used within aircraft and headed by A.M. Pontiatoff.

No one else was interested in funding this technology. No one else cared about its commercial possibilities. No one except Crosby.

Bing set up a company called Crosby Enterprises and invested \$50,000 into the technology. That directly resulted in the first ever American tape recorder produced by Ampex (A.M. Pontiatoff plus EXcellence). The Ampex Model 200, produced in April 1948 was, "the most beautiful tape recorder ever made," according to Mullins. You can actually see an example of that early Ampex tape recorder in Crosby's feature film 'Mr. Music' - which can today be occasionally seen on TCM or Sky Classics on TV.

This tape recorder was not only immediately adopted by all of the radio networks but also all of the major recording studios. This was also the first time that a recorded piece of information could be edited and could record one thing on top of another - dubbing or over-dubbing. But that wasn't all...

"Bing came over to the backyard and said 'Hey, I've got something for ya!'", recalled guitar legend Les Paul, "and he gave me one of the first tape machines so I could play with it. He said, 'I think you're gonna like this'. I had it for two hours before I called Mary Ford, my wife, and said, 'I've found a way to take the tape machine and make multitrack recordings.'" The genie was now, well and truly, out of the lamp.

"Bing was the technological man," said Giddins, "the man who, more than anyone else, represented the ultimate control of technology over popular entertainment throughout the world." Crosby is also the man we should all thank because music - and hi-fi - would have been a lot worse without him. ●

Many thanks to Michael Crampton from the International Club Crosby (michael@club-crosby.org) for his help in writing this article.

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"we in Britain are now stuck with five million non-DAB+ legacy receivers..."



steven green

Ofcom has awarded the licence to operate the new national DAB multiplex to a consortium led by Channel 4, which has both positive and negative implications for DAB listeners.

One of the positives is that it will lead to a faster transition to DAB+ than would have otherwise been the case, because Channel 4 has been very bullish about the switch to DAB+, and it is planning to launch a podcast service using the DAB+ format when the multiplex goes on-air next July.

I also think it is excellent news that Channel 4 will be able to launch three stations on the new national multiplex, whereas if the other applicant had won the licence it would only have been two. The three stations it is planning to launch will be called E4 Radio, Pure4 and Channel 4 Radio, and Channel 4 has said that these stations will target the audiences of Radios 1, 2 and 4 respectively. Channel 4 taking on the BBC can only be a good thing for radio, in my opinion, because I think competition from Channel 4 will make the BBC up its game, and as Channel 4 has a long track record for innovation in TV, I'm sure it will be able to transfer this to radio as well.

The bad news though is that all of the stereo stations on the new national multiplex will be using a bit rate of 112kbps, so these will be the first stereo stations on DAB to use a bit rate below 128kbps. The reason why this is being allowed now when it hadn't been previously is that newer MP2 audio encoders have

been designed that provide the same level of audio quality at 112kbps as encoders that date back to around 1998 provide at 128kbps. So Ofcom's view is that reducing the bit rate to 112kbps won't reduce the audio quality, so it should be acceptable.

The reality, however, is that these newer encoders are already being used by a lot of DAB stations today, and the sound quality at 128kbps is very poor, so the audio quality provided by 112kbps doesn't really bear thinking about. It was also after the BBC had installed these newer encoders last year that it reduced the bit rate of Radio 3 from 192kbps to 160kbps, but it then received so many complaints from listeners that it was forced to revert back to 192kbps – and these stereo stations on the new national multiplex will be using a bit rate level well below 160kbps...

The reality is that this is yet another erosion of the audio quality on DAB in order to squeeze more stations onto a multiplex, which is a practice that began when the BBC reduced the bit rates of Radios 1, 2 and 4 from 192kbps to 128kbps in December 2001, then over the last two to three years we've seen Ofcom allow a lot of music stations to downgrade to mono, and now this.

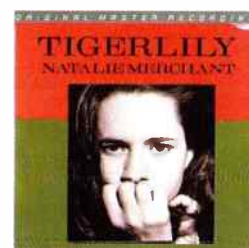
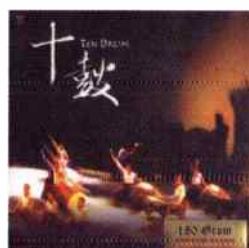
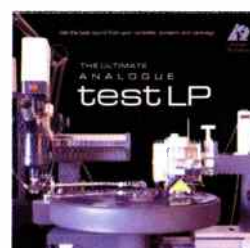
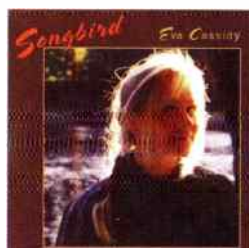
In my opinion, the fact that they've had to reduce the bit rates and the quality in the way that they have shows what an incompetent decision it was to adopt DAB in the first place. "Incompetent" may be an emotive word, but in this case I think it is perfectly justified, because to replace a system like FM – for

which there are around 150 million receivers in the UK – requires that every aspect must be carefully planned so that the transition goes smoothly. But the fact that DAB can't even match the audio quality on FM sums up how ill thought out adopting DAB was, not to mention the fact that DAB has been rejected by the rest of the world. The WorldDAB Forum was forced to design DAB+ just three and a half years after the BBC launched the first of its new digital stations on DAB, and we in Britain are now stuck with five million non-DAB+ legacy receivers.

It would be nice to think that those responsible for allowing DAB to get into the mess that it's in would be trying to improve matters, but clearly the people in charge of regulating radio at Ofcom – who were among the main decision-makers for DAB in the 1990s – are only intent on trying to see how low they can push the quality. I have to wonder whether, in their quest to add more stations which, to their minds improves DAB, they are actually doing a lot of long-term damage to it due to the number of people who will be put off buying it due to the low audio quality.

Wouldn't it make a refreshing change, though, if some of those responsible for the DAB mess from the BBC and Ofcom could bring themselves to hold their hands up and admit that mistakes have been made, and then say how they're going to go about righting them? Unfortunately I think there's more chance of winning the lottery than seeing that happen. ●

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"the Yorkies were a visceral trip, a loudspeaker that shook me like no other..."



noel keywood

It isn't common for me to fall in love with a product for the sheer excitement it can instill into music, but Tannoy's Yorkminster loudspeaker was something special and, as always with a really good product, also an education. I wrestled with buying them and came very close, as they're worth every penny of their £9,000 price tag, but in the end I decided to part with them, go back to the herd and see if I could care. Care? I could cry!

Ordinary floorstanders just aren't the same, and I'm already missing the vast scale and thunderous ease with which those loudspeakers could deliver anything, from The London Symphony Orchestra to the chiming guitars, Southern drawl and cross faded drums of Steve Earle. Whereas Quads are an analytical tool and a cerebral experience, the Yorkies were a visceral trip, a loudspeaker that shook me like no other. I hope I can get them back someday in the not-too-distant future, but only when I can install them in a suitable room - one reason I decided to say goodbye.

Tannoy are not joking when they show their Prestige range models situated in baronial settings. Whilst my home may be my castle metaphorically, literally it is a London terraced house in Maida Vale, built in 1910 before amplified sound had reached the home. The walls are none too solid and do little to attenuate a pair of Yorkminsters even when they are cantering. Happily I have tolerant neighbours, but all the same it seems a waste to have a loudspeaker capable of vast dynamics, held back to maintain good neighbourly relations.

Then there's the interesting matter of sound quality, or really - bass quality. The Yorkminsters were originally reviewed in our 28ft square

office and it suited them nicely. These dimensions give two modes at 20Hz. Humans feel 20Hz rather than hear it, so any bass lift at resonance will help things move and, indeed, when heavy bass existed in a recording the settee cushions would vibrate: an awesome experience! Interestingly, the bass cones were hardly moving. That's because the Yorkminster is a giant reflex design with two rear ports, each the size of a drainpipe, and it is a characteristic of a reflex that when the ports come into play the bass cone almost stops. It's eerie all the same.

The ports work at a very low 27Hz. This was above the lower limit of the office, so the room was tuned neatly below the loudspeaker and their resonances didn't interfere. The room was just right for the loudspeaker in that it supported its output without attenuation, yet wasn't so large as to 'lose' the speaker. Result: great sounding bass, deep and tight like no other!

Moving the Yorkminster to my smaller lounge wasn't so successful. Happily, most of the loudspeaker's attributes were sustained. The centre horns have tremendous projection, throwing images right out into the room, which gave me a fantastic stereo sound stage. This was appreciated, as I was sitting 15ft away. However, subjectively the room just wasn't big enough to support the physical bass I heard at our office.

Worse, it was obvious that the Yorkminsters were over-exciting the room's lowest modes at 34Hz and 39Hz, producing boom. If I hadn't already heard the loudspeakers elsewhere and measured them, then I might assume it was the loudspeakers sounding boomy, but it was the room. Wheeling bookcases stuffed with books into corners helped out, but

I never got the subjective results I heard at our office and realised the Yorkminsters just weren't suited to my 16ft x 14ft lounge, no matter what I did with it. So, the moral of the tale is: big loudspeakers need big rooms.

Returning to the standard issue floorstander has served to remind me of all the things it does wrong, in particular the not uncommon complaint of ill-defined bass. A lot of readers ask us to recommend loudspeakers with tight, powerful bass, but after my experiences with the Tannoys I doubt whether this is easily achievable. From what I have said so far you can see that small or medium sized rooms will not support good bass. However there seem to be quite a lot of 18x12fts around, which should not sound so bad. To keep length and width modes out of the way really demands a room with 18ft as a minimum dimension, I would suggest. Then the room's resonant peak will be below audibility, and room volume will be so large that it will be well damped, but this is a big room by any standards.

The other factor to consider in the quest for the best bottom end is sheer loudspeaker size. To go low whilst sounding clean a loudspeaker must be large, generally larger than most people are prepared to accept in their homes, even if they do have big rooms. The Yorkminsters are an example of how large - and it is difficult to pass off an elephant as a poodle. Loudspeakers this large just aren't going to make into a Conran catalogue, nor into most homes if the missus has anything to do with it.

Mine have moved out forever from a home too small to do them justice. But hope springs eternal: yesterday I visited the Queen's State Rooms in Buckingham Palace and had a great idea... ●

Designing Speakers

Part 10 – WD18BR – Crossover Development



Measuring loudspeaker drivers is the only way to develop a crossover. Peter Comeau shows you how.

first prototype I lined the internal walls with a layer of SONIQS CDF making sure that the route from bass unit to port is kept clear of obstructions.

As is the fashion when I design bass reflex enclosures I have put the port on the rear of the cabinet, and this is more than just a cosmetic fad! An extra hole in the front baffle just weakens its rigidity, as well as looking, to my eyes, unsightly, so the rear baffle is a better place for it. In addition, hiding the port on the rear also hides

it acoustically. There is a fair amount of midrange output and mid bass harmonic distortion produced by a port and I'm quite happy to 'lose' this by letting the speaker box 'hide' it from the direct output of the speaker.

Offsetting this is a possible lack of integration between the port output and the bass unit. You may see this mentioned in some treatises on bass reflex design – that the port should be positioned close to the bass unit for good mutual coupling. Actually I've only found this to be true where the system is ported at a relatively high frequency, say 80Hz or more (e.g. a really small box). At the 36Hz frequency that WD18BR is tuned to, the path length difference between the port and bass unit is short compared to the wavelength, and the port area is too small to enjoy mutual coupling from the bass unit, so it really doesn't have an audible effect.

If you want to 'show off' your

port then by all means put it on the front baffle – there is room under the bass unit. Again, for ultimate efficiency it is often advocated that you put the port at an antinode where the air excitation inside the enclosure is the highest. However as this also amplifies the standing wave in the enclosure I would advocate placing the port away from the antinode, say at 25% of the cabinet height. You should certainly avoid putting the port near the cabinet walls where energy levels are low and 'muffled' by the internal damping material.

At this point I won't be fitting the final port as I want to tune the exact length by ear. LspCAD will certainly give me an 'optimum' value, but I may find that detuning the system resonance a little may enhance the subjective performance – more on that later. So I have cut a 40mm diameter hole in the rear baffle that is just the right size to accept the 1.5" dia PVC drain pipe readily available from home DIY centres. I can then try out different lengths of pipe quite easily and cheaply.

Positioning the drive units is partly common sense and partly an art. The common sense bit is not to put the bass unit half way up the cabinet, where it will reinforce the primary vertical internal standing wave, and not to position the treble unit equidistant from the top and sides of the cabinet. Reflections from each cabinet edge will cause an interference ripple on the treble unit output so having an equal distance from each edge is just asking for trouble.

If you are making your own cabinet you can even decide to offset the treble units, and thus produce left and right 'handed' cabinets, to reduce

Last month we looked at the options available when designing a bass reflex speaker and this resulted in our first project, the WD18BR. Having investigated, with the help of LspCAD6 lite, the 'virtual' performance of enclosure concepts and suitable bass units, it is now time to do some 'real' measurements.

Again we will be using LspCAD6 Lite (you can download a free trial version from www.world-designs.co.uk) but you can use your own measurement software and still follow along.

We have planned and built a prototype cabinet to give us the 18 litres net volume that LspCAD6 predicted would work well with the SEAS H1215 or H1217 drivers. (SEAS drive units are available from www.seas.co.uk). Typically bass reflex enclosures give optimum performance with just an internal lining of cabinet damping. So for our

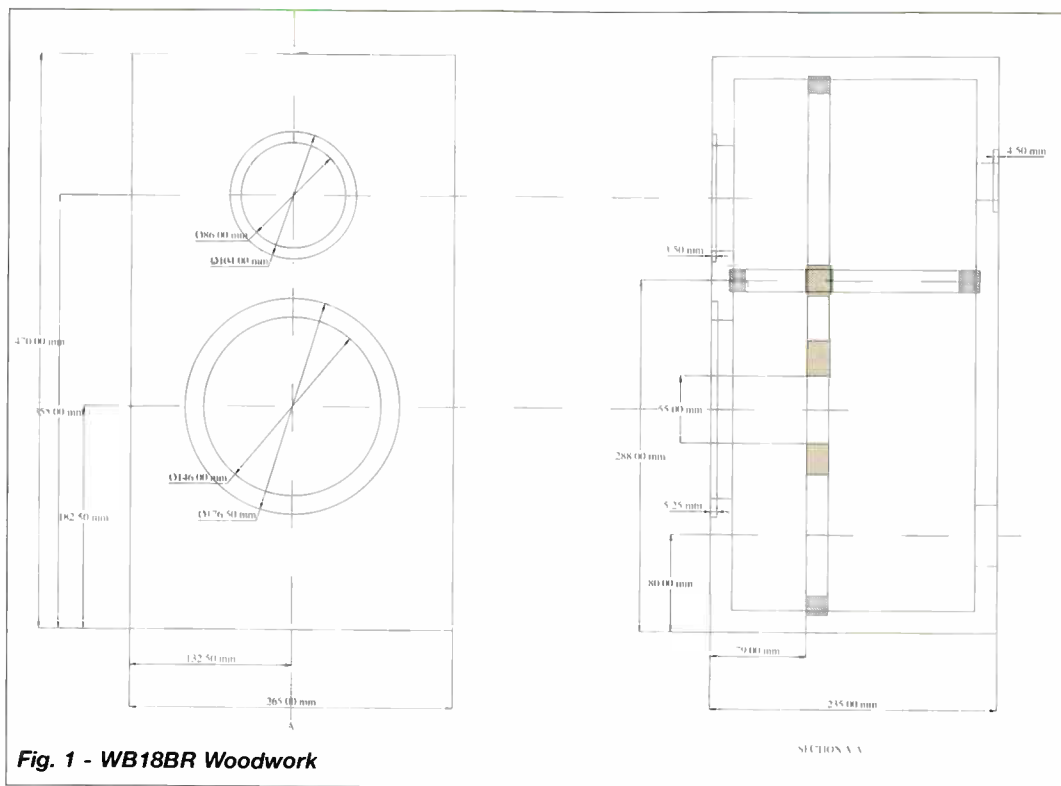


Fig. 1 - WB18BR Woodwork

this edge reflection effect even further.

ART AND DESIGN

The 'art' part comes in how you position the treble and bass units relative to each other. Now the common conclusion is that you should put them as close as possible so that they 'integrate' better at the crossover frequency and so that the path length difference between them is minimised. However, if you do this, the treble unit 'sees' a shelf, which is the hollow of the cone of the bass unit, immediately below it. This degrades the treble output significantly and may be audible.

As this design uses a relatively small bass unit of 18cm, I feel I can provide a substantial baffle area between the two drive units. Where the bass unit is much larger, such as in the WD25A design, moving the treble unit away that extra distance does become problematic. We'll see the effects of the increased baffle area around the treble unit when we measure its response.

So let's get to it. If you missed my earlier article on speaker measurement I'll repeat again that you can easily measure a speaker in your living room by using an MLS 'gated' measurement system and positioning lots of soft furnishing between

the speaker and microphone to help absorb the floor reflection.

On that basis I'm using a sofa with cushions and a duvet on top of it between my microphone and speaker. LspCAD6 Lite includes 'justMLS' – a neat program, found on the Tools menu, which allows you to make gated measurements using MLS quite easily and export the data into LspCAD's crossover design section.

JUSTMLS

The MLS signal is a pulse that contains all the frequencies we want to measure and, because it is a short pulse, we can select just the output of the speaker and avoid room reflections.

You can see the results in Figs.2 – 5. The smoothness of the treble unit response is as much due to the baffle area around the driver as it is to this unit's exemplary performance. Similarly the smooth output of the bass driver is enhanced by the wider than usual (compared to modern commercial slimline speakers) baffle. All this is going to make our job easier for good acoustic and crossover design.

Now we can check out the prediction for the port tuning. We could do this by putting the microphone close to the port and measuring the output. But it is easier, and

more accurate, to check the tuning using the impedance measurement of the bass unit. This is because the bass unit motion reaches a minimum at the point at which the enclosure and port are doing all the work. So we can easily see this minimum motion point as the bottom of a 'valley' that intersects the rise in impedance of the bass unit as it approaches the system

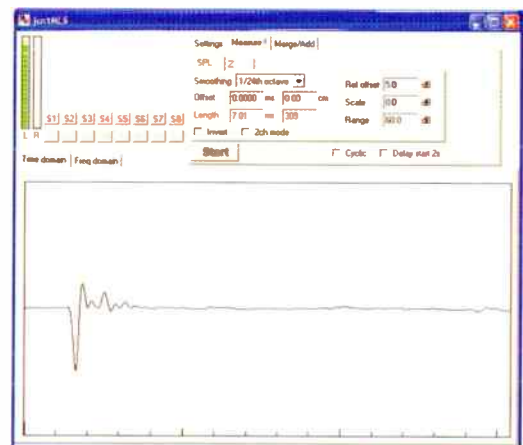


Fig. 2 - You can see the pulse in the Time domain window. I have selected the window to a width of just 7ms to 'gate out' the major room reflections (you can just see a minor reflection appearing at the right of the window).

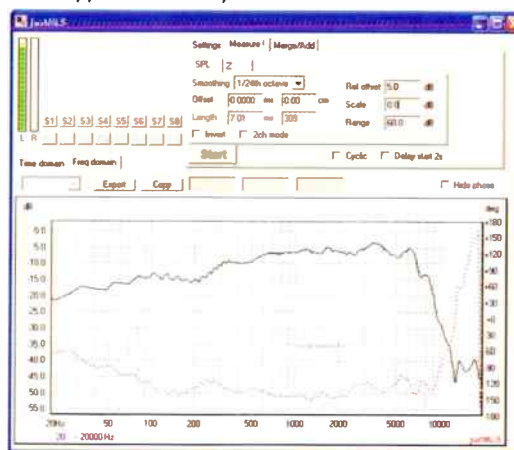


Fig. 3 - When we switch to Frequency domain you can see the result for the H1217 bass unit. I have applied 1/24th octave smoothing to get rid of the 'noise' and we can quite clearly see the overall response together with the baffle shelf effects due to width (575Hz) and height (300Hz).

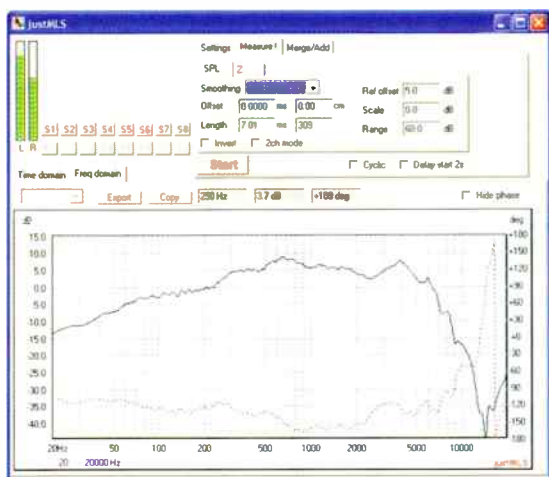


Fig. 4 - Putting drive units in a cabinet usually results in quite a change to the manufacturer's measured response (which is taken on a very wide baffle). If we look at the trace for H1215 we can see that it is much less smooth than H1217, particularly with the peak at 800Hz and the dip at 2.5kHz, both of which will give us problems with crossover design.

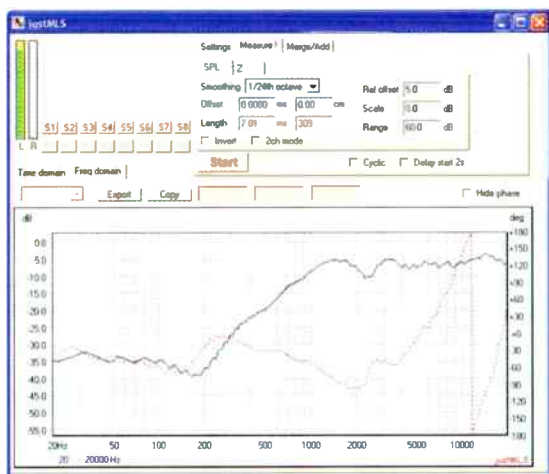


Fig. 5 - Switching to the treble unit indicates that surrounding the treble unit with a smooth baffle area produces a smooth response right down to 3kHz. This is probably going to be our optimum crossover frequency.

resonance.

Turning to the impedance graph measured in LspCAD6 Lite (Fig. 7) we can place the cursor over the bottom of the 'valley' and, yes, it shows 36.8Hz with the port length we calculated – nearly bang on the target 36Hz that LspCAD calculated in our theoretical design exercise.

CROSSOVER

Having taken our measurements in justMLS we can hit the Export button to turn the graphs into text files that we can use in LspCAD's virtual crossover designer. I'm going to start off with a standard 2nd order crossover and progress, if need be, from there.

It's up to you whether you want to use first order, 2nd order or 3rd order as a starting point. It is just

that I find 2nd order more rewarding, sonically, to work with and I can easily introduce variations on the 2nd order theme without too much complexity.

As soon as you've added the circuit components and imported the measurement files for each drive unit (see panel) you will have to start juggling component values. LspCAD6 lite shows you the changes you make on the SPL graph instantaneously. Initially things will look disappointingly non-linear, with peaks and dips where the drive units overlap that may look insurmountable. My advice is not to be too concerned when you start. The graph always looks terrible in the beginning but it is surprising how easy things are to align with a bit of analysis.

To start with go into the Settings menu and adjust the Component Snap to E12 (Fig. 6). This means that LspCAD will only allow you to use component values that fit the E12 convention, for example 2.2, 3.3, 4.7, 5.6, 6.8 uF and so forth. When you are fine tuning you may like to devise intermediate values but initially it is useful to have these jumps in value.

Now you can select any component and use the up and down arrow buttons on your keyboard to increase and decrease the value. Begin with the series capacitor to the treble unit and parallel coil; 6.8uF and 0.3mH are sensible starting values. Ignore the combined graph at this stage and just look at the treble crossover.

Adjust the values until the crossover looks smooth and not 'peaky' at the point at which it begins to roll-off. Don't be disappointed that it doesn't look anything like those nice smooth graphs shown in the theory text books. Real speakers don't behave anything like that, at least not in the initial stages of design!

The reason we don't want a 'peak' or sharp corner at the roll-off point is because this generally indicates a 'ringing' filter which will sound bright and edgy. If you find the upper treble output is too high increase the resistor directly before the treble unit to level it out.

Having achieved a treble unit response that looks something like a respectable roll-off you can turn your attention to the bass crossover. You should start with the series coil value, increasing it until the midrange starts to level out. Then you need to juggle the value of the capacitor and resistor in parallel with the bass unit to achieve a smooth roll-off, again without being peaky in nature.

At this point you will probably find that you have a dip in the output between the units. Don't worry about it. Now is not the time to try and hurry towards 'perfection'. Just console yourself with the fact that you can do all this juggling of component values in the comfort of your own armchair and not be stuck in an anechoic chamber fiddling with a soldering iron and a bucket full of components!

OPTIMISER

One way of achieving a 'flat' response is to use LspCAD6 lite's Optimiser from the Tools menu. Here you can set the Target level you want to reach, the Range of frequencies you want to optimise and the components to include in the optimisation process.

Set the Range to encompass the crossover region and a couple of octaves either side of it. Don't try to incorporate the upper treble and bass regions as well or the excessive peaks and dips that exist in these regions will give the Optimiser (Fig. 8) an impossible task. Adjusting the crossover to marry with the bass region is best done by ear rather than relying on inaccurate measurement, as accuracy at LF is only possible in very large anechoic chambers, whilst treble above 10kHz is reaching the limit of audibility and is best left to its own devices.

If using the Optimiser leads you to a completely different component value solution than the one you had come up with manually then that will give you an alternative to listen to. But don't discard the one you arrived at yourself – there is more than one way to design a crossover!

Another way to use the Optimiser is my favourite and that is to use it to align to Target crossover slopes. The Flat Target method can yield crossovers which are quite peaky in their response, pushing the drivers to their limits in order to generate a 'flat' response. Far better, in my opinion, to align the crossover slopes to a precise target. I have found that this gives me the best starting point when beginning to fine tune the crossovers through listening tests.

LspCAD6 lite can handle this happily, allowing you to choose classic alignments like Butterworth or Linkwitz and decide on the slope 'order' e.g. 1st, 2nd, 3rd up to 7th. These are the final acoustic slopes and do not have to align to the electrical 'order' as devised in your circuit schematic.

For example I find it useful to add the natural roll-off of the

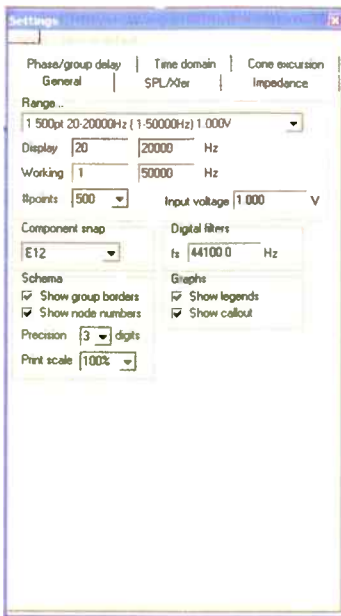


Fig. 6 - Settings

midrange response of the bass unit to a 2nd order electrical crossover to give an overall 3rd order acoustic slope. This might sound a bit odd but go ahead and try it out for yourself – you will see what I mean if you experiment with using the Optimiser

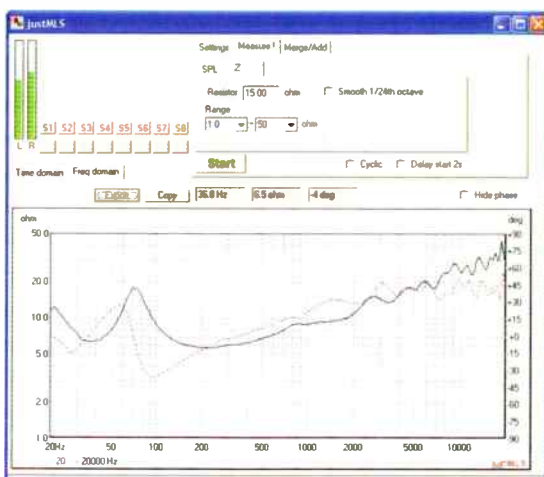


Fig. 7 - When we run the impedance measurements we get another view of the drive unit's performance in the cabinet, particularly the bass unit. The two humps at the left of the window shows the system resonance as a 'valley' in between. Centre the cursor at the bottom of this 'valley' and you'll see the port tuning is 36.8Hz, very close to the 36Hz LspCAD predicted in our theoretical design!

to target 2nd order and 3rd order acoustic crossovers.

Note that the Optimiser will be troubled by peaks and dips in the drive unit response close to the crossover point. If this is the case it is simple enough to fine tune the crossover component values manually using the Target roll-off as a visual guide.

FINE TUNING

Now it is time to fine tune the

crossover by switching off the Component Snap to No Snap. This allows you to select intermediate values which will help iron out any remaining wrinkles in the response. You should be able to select or unwind coils to any value you come up with, while capacitor values can be achieved by paralleling standard value caps, e.g. $2.2 + 1.5 = 3.7\mu\text{F}$.

Don't be too finicky about exact values. It is quite difficult to hear the difference between, say, 4.7 μF and 5 μF and note that these values are close to 5% tolerance anyway (the tolerance that most good quality crossover components are manufactured within).

As you get closer to your ideal 'virtual' crossover it is worth checking both the impedance and phase response. Impedance is obviously important as there is absolutely no point in designing a speaker with a ruler flat frequency response that dips to 2 Ohms. And while there is no concrete evidence that a 'linear phase' speaker sounds 'better' than one which has a shift in phase over the majority of its bandwidth, abrupt changes in both electrical and acoustic phase are to be avoided.

Sharp peaks and dips in the electrical phase response, which you can see overlaid on the impedance graph, are likely to give amplifiers a hard time. It is usually quite difficult to aim for a flat impedance as the natural rise through the crossover region contributed by each drive unit is partly inevitable. I have found that including multiple elements in the crossover to try and flatten impedance generally just robs the amplifier and drive units of dynamic power rather than helping the performance, so don't worry about a 'rolling hills and vales' look to your impedance trace.

But more exciting is the ability to check drive unit integration by looking at the response with the drive units out of phase. Common sense tells us that phase integration between the drive units will be 'perfect' if the output at crossover is

nulled when one of the drive units is inverted in phase.

You can do this easily in LspCAD6 lite. Click on the driver in the schematic to bring up the Driver Edit window, then tick the invert box on the General tab (Fig. 11). If you have good phase integration then you will see a deep notch at the crossover frequency. If you have used the Optimiser Target Linkwitz slopes then you will probably find this works first time. Otherwise a bit of manual massaging of component values should get you there.

Again the proof of the pudding is in the eating. Aiming for 'perfect' phase integration is a nicety and does not necessarily mean that the speaker will sound wonderful as soon as you plug your crossover into the real thing. But at least try and get a semblance of a notch occurring.

So here is the crossover I came up with after some 'virtual' fine tuning (Fig. 12). At this stage it isn't ruler flat but it does obey the basics namely:

- The crossover region is slightly depressed, not elevated, from the average level. This helps 'hide' it from the ear.
- There are no big peaks and dips in the overall response.
- The overall trend is fairly level (and therefore neutral in tonal balance).
- Phase integration is good.

Now, at this stage, I could go on to add further 'control' elements to my crossover to even out the lumps. For example I could add a further capacitor to the treble to turn it into an electrical 3rd order to smooth out the little hump at 3kHz.

But you could spend all your time working in LspCAD's 'virtual' environment and never get your speaker built. I find it is better to build the first crossover and find out what's wrong with it (and what's right with it) and then go back and refine it in LspCAD after the initial listening test.

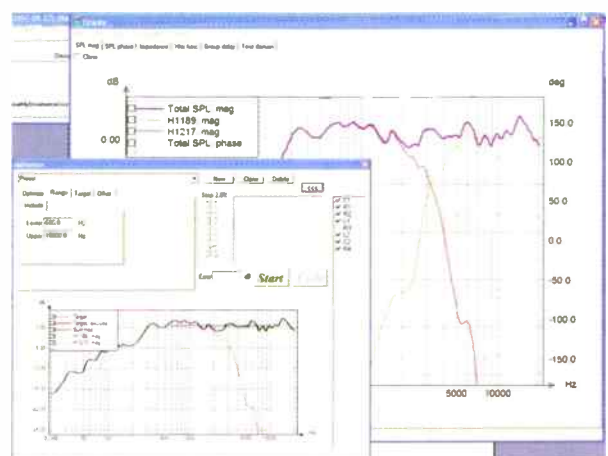


Fig. 8 - The Optimiser window

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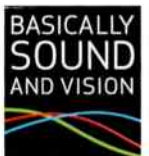
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CROSSOVER SCHEMATIC

When we have finished the measurements it is time to import them into LspCAD's crossover simulator. But first we have to build a basic crossover circuit.

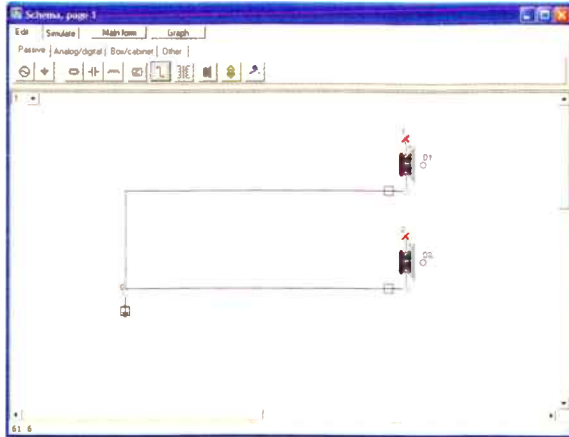


Fig. 9 - Adding components to the circuit (Schema window) is simply a matter of clicking on the component button and clicking in the Schema window. Right click on a component and choose Rotate to rotate it 90 degrees. Start by adding the two drive units and connecting their negative terminals to the source ground.

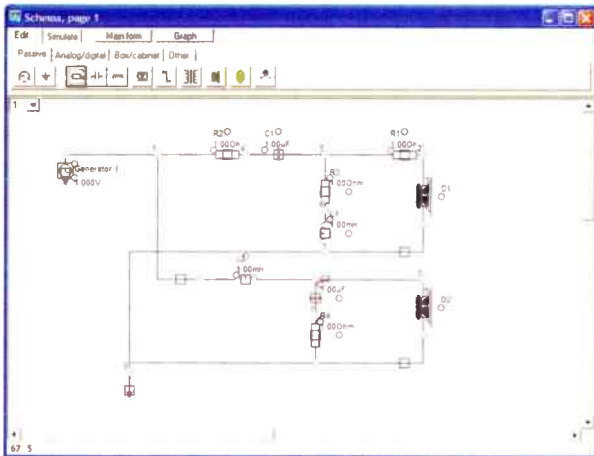


Fig. 10 - We'll need some power for the circuit so add a Generator then link in the components of a basic crossover circuit. Here I have added the components for a simple 2nd order circuit. Note that each coil will need a series resistance equivalent to its DCR. For ferrite coils you could leave this out as it is relatively small, but air core coils should definitely have it included. Components are always inserted with a value of '1.0' - you can adjust the values when you click the Simulate tab.

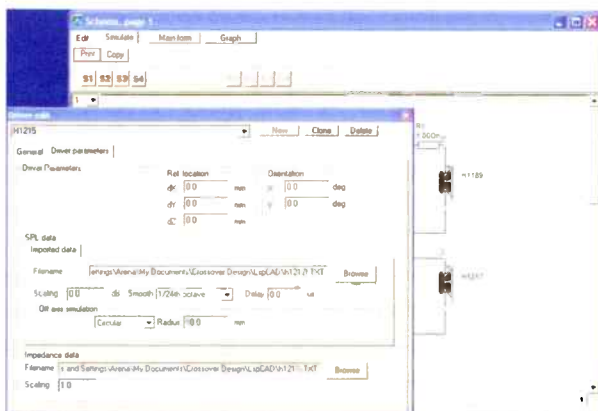


Fig. 11 - Click on a driver to bring up the Driver Edit window. Here you can type in a name for the drive unit and import the SPL data you exported from justMLS.

This process of iteration is critical to fine tuning the crossover. You don't have to get it right at your first attempt. Spend some time living with the suggested crossover and trying out a variety of music. When you pick up on something that sounds 'wrong' try and identify whether the problem lies with the bass unit or treble unit (if you have biwired the crossovers then it is easy to disconnect treble or bass to find this out). Then make some changes in LspCAD to 'see' the effect and reflect those in your real crossover to 'hear' the difference.

One thing you will learn by doing this is that small changes to the treble circuit can apparently affect the bass performance, and vice versa. This might seem like 'magic' and part of the 'black art' of speaker design, but it isn't really. This is a psychoacoustic effect caused by the change in balance when you shift the crossover. For example tilting the treble upwards by 0.5dB will make the bass sound leaner and tauter. Similarly reducing the midrange level by 0.5dB can make the treble sound more explicit and detailed.

Clearly there is a lot of experimenting to do here. Give a thought to what it was like before we had tools like LspCAD. My first pair of speakers took 18 months to design by trial and error with occasional visits to an anechoic chamber! With LspCAD6 lite I can now do the same job in a matter of weeks. This is just one of the wonders that the advanced calculating performance of the modern PC brings us. Now you can have that advantage to help you with your speaker design too.

Next month: The floorstanding version and our next project begins

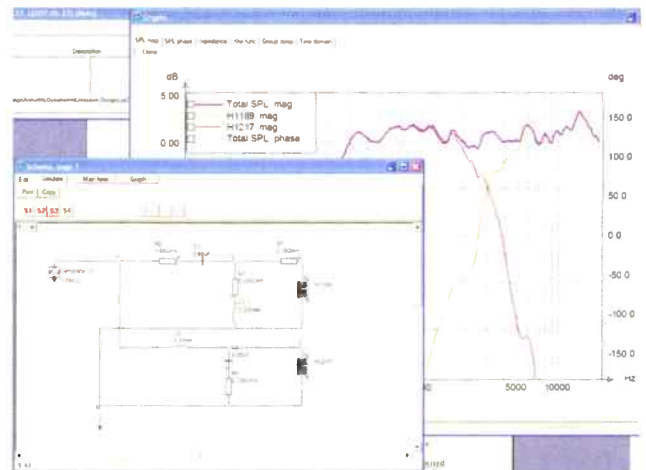


Fig. 12 - Now we can start adjusting the values in our virtual crossover and see the effects on the SPL graph. To make adjustment easier change the Settings menu Component Snap to E12 so you can use the up and down buttons on your keypad to change values in standard steps.

vinyl section

vinyl news

Contents

SEPTEMBER 2007

www.hi-fiworld.co.uk

LYRA DORIAN MC CARTRIDGE 87

David Price takes a listen to Lyra's entry level Moving Coil cartridge, the Dorian

KUZMA STABI S TURNTABLE 88

Realising his budget won't stretch to the magnificent Stabi XL, Adam Smith checks out the more affordable Stabi S to see if it gives a taste of the high life

TECHNICS SL1200 TURNTABLE PROJECT 92

The wait is finally over and our much-anticipated Technics SL1200 upgrade project is finally ready to play. DJ David Price spins some phat tunes...



GREEN MUSIC

Peter Green and his German record label Speakers Corner is about to release the band's debut effort, 'The Pious Bird Of Good Omen', on 180gm vinyl, which was originally issued on the Blue Horizon label. The album dived headlong into black blues including the cover version of Little Willie John's 'Need Your Love So Bad' plus the now legendary numbers such as the weightless, gliding 'Albatross' and 'Black Magic Woman' with its Latin and blues elements. The album itself is basically a twelve track compilation with songs taken from the earlier albums 'Fleetwood Mac' and 'Mr. Wonderful'. It was released by Blue Horizon after the group's contract with them had expired, making it one of the best routes in which to explore their mingling of Chicago and British blues.

AND GOD CREATED WOMAN...

This was the film which set Brigitte Bardot to international stardom and triggered weak knees throughout the Western world. It also opened the gates to foreign films in English speaking territories. Made especially for Bardot by the 'frisky' director Roger Vadim, who had umpteen affairs with beautiful women (and eventually married Bardot), the film scandalised the moralistic

faction of much of Europe. Bikinis (Bardot appears in one in the film) were still risqué at the time - possibly justifying the film's subtitle '...but the devil invented Brigitte Bardot'. Originally released by Decca in 1957, this re-release via Dagored on 180gm vinyl is a largely instrumental soundtrack, jazz related and created by composer Paul Misrack, which does include some speaking Bardot vocals, for the very first time.



THE CINEMATIC ORCHESTRA

The band's latest album, 'Ma Fleur', via Ninja Tunes, is a soulful, beats/jazz suite that reflects the Cinematic Orchestra's increasing maturity as creative artists. The double album featured here arrives in a beautifully packaged hard slipcase. Within the package are a total of eleven glossy 12" square colour photographs. A twelfth, black glossy card states that the photographs have been included to accompany each and every song to act as a sort of inspiration to, "aid the listener in reconstructing or creating the narrative contained at the heart of this suite of music". In fact, the photographs are genuine works of photographic art in their own right and could easily be framed and hung on your wall.



HEAVYWEIGHT KENT

Stacey Kent has one of the most erotic contemporary voices in popular song - her interpretive abilities are such that she could encourage goose bumps by singing the words off the back of a sauce bottle. This reissue of 'Dreamsville', from 2001, features classics such 'I've Got A Crush On You', 'Polka Dots And Moonbeams' and 'Violets For Your Furs'. The 180gm issue has been released by the ever reliable Pure Pleasure.



BLACK WIDOW

Formerly Pesky Gee!, heavy rock outfit Black Widow had an angle - demons, sacrifice and the devil himself. Concerts were lively affairs. The band would simulate the sacrifice of a naked virgin on stage, there would be priests, real ones not roadies in a dog-collar, who would stand outside the gig venue, urging the potential audience to turn away from the evil within! There were hysterical tabloid press stories, plus many police raids... Black Widow went the whole nine yards with this, their fourth release. The predictably named 'Black Widow IV' was their best yet. Self produced, the album was not released because the band was subsequently dropped by CBS. However, Mystic Records later released the album in full. This new reissue, via Italy's Black Widow label is out now...



Picture This



Lyra's new Dorian moving coil cartridge paints striking portraits, says David Price...

Selling for just £495 in the UK, Lyra's new Dorian is the company's cheapest pickup to date, and whilst benefiting from designer Jonathan Carr's tremendous experience, is not entirely hand built by Lyra's legendary artisan Yoshinori Mishima - instead, the initial build is subcontracted out. It's also the first to use a Namiki MicroRidge line-contact stylus, but is wound with the customary '6 nines' OFC copper wire. The suspension has been tuned for high traceability, and the Dorian has no pole pieces - the magnetic field being created by two symmetrical disc magnets which allow the coils and cantilever to move more freely. The skeletal body is machined from a single piece of aluminium alloy then hard-anodised, and signal output pins are rhodium plated.

SOUND QUALITY

Sitting just south of five hundred pounds, the Dorian's most obvious European rival is the Ortofon Rondo Bronze, but they're very different beasts. The first thing that you notice about the Dorian is its ultra explicit sound, even at the maximum recommended 2.2g tracking force. It is both lightning-fast - in a way that makes the already excellent Rondo Bronze sound positively soporific - and also rather bright. This is when piped through my nicely mellifluous Note Products PhoNote tube phonostage, so I suspect it's fiercer still through the more matter-of-fact Lehmann Audio Black Cube Decade, for example. Measurements confirmed a strongly rising high treble response, and you can never ignore this, but given the right ancillaries you can work around it, and enjoy the Dorian's giant-killing abilities.

Isaac Hayes's 'Café Regios'

displayed dizzying amounts of detail, and a deliciously finely etched - if a tad sharp - hi-hat sound. I've never heard any £500 MC deliver such a fast, gripping presentation, with razor transients and superb dynamics. By comparison the Rondo Bronze sounds ponderous and rather uncommitted. Bass, if not exactly prodigious, was full and dynamic, starting and stopping as fast as almost anything I'd heard. Running it against a van den Hul Frog and Koetsu Red K Signature confirmed the Lyra's brilliantly incisive, detailed and dynamic sound (the other two sounded woolly and out-of-focus by comparison) - but also its toppy treble...

Electronic music such as Kraftwerk's 'Computerwelt' was also a joy through the Dorian, sounding massively energetic and musically engaging, whilst the classic eighties rock strains of REM's 'Maps and Legends' had it unearthing massive amounts of detail across an impressively wide and deep soundstage, hanging it all together in a wonderfully musical way. It lacks the romance of the pricier Koetsu, or the smoothness of the similarly priced Ortofon, but boy can it eke out information from the groove! In this respect, it's remarkable at the price.

It is certainly 'brightly lit', which becomes overly apparent when playing LPs with poor surfaces (it shouts out snap, crackles and

pops from the rooftops), but with a smooth system and/or turntable (I suspect Linn Sondeks will love it) it's a revelation for £500.

CONCLUSION

A giant killer then - but with reservations. The Lyra's skeletal body makes mounting it a scary business, and that bright treble precludes it from many forward sounding systems. But properly fettled and tamed (the treble isn't harsh because the stylus profile is excellent, and gives a finely etched sound - it's just strongly lit), it blows the Ortofon Rondo Bronze into the weeds. The sad thing is that it isn't a cartridge for all seasons unlike the aforementioned Ortofon, so make sure you try before you buy.

VERDICT

Startlingly fast, detailed and incisive sound, but rising treble makes careful matching essential.

LYRA DORIAN £495
Symmetry
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www.symmetry-systems.co.uk

FOR

- superlative transients
- ultra revealing yet musical
- outstanding build

AGAINST

- upper treble forwardness
- difficult set-up

MEASURED PERFORMANCE

The Dorian is characterised by a strong lift in treble output above 6kHz, reaching +8dB at 20kHz. A rise of this magnitude will be audible with recordings that possess strong treble energy, bringing a hiss to treble. Against competitors, which commonly have lift, but not of such magnitude, the Dorian will sound bright, possibly tinselly at times. This sort of thing does enhance dull recordings, though.

On inner grooves tracing loss reduced the lift to +4dB, and this may emphasise inner groove distortion. A good stylus will minimise this problem, but it may well be audible at times all the same due to this lift.

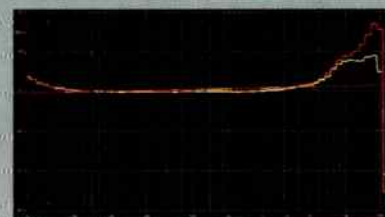
Tracking was good, if not quite a match for the best. The vertical tracking angle was set accurately to 23 degrees, minimising distortion on vertical modulation (left and right images). Lateral distortion was low too, so this is a low distortion design. Output measured a healthy 0.73mV at 5cms/sec rms so hiss should not be apparent with a majority of MC stages.

The Dorian measures well in all areas, ignoring its somewhat extreme

response characteristic which will make itself known. NK

Tracking force	2.2gms
Weight	6.4gms
Vertical tracking angle	23degrees
Frequency response	24Hz - 6kHz
Channel separation	33dB
Tracking ability (300Hz)	
lateral	63µm
vertical	45µm
lateral (1kHz)	20cms/sec.
Distortion (45µm)	
lateral	0.6%
vertical	2.2%
Output (5cms/sec rms)	0.73mV

FREQUENCY RESPONSE



Red - outer grooves
White - inner grooves

Top Brass

Adam Smith takes Kuzma's Stabi S/Stogi S entry-level turntable and arm combo for a spin...



If one settles back with a nice cool beer and reminisces about the vinyl situation in the good old 1980s, a number of names will immediately spring to mind. Of course, right at the forefront was a little company that some of you may have heard of by the name of Linn, but they faced stiff competition from the likes of Pink Triangle, Michell, Roksan and Alphason amongst others. However, these British names were joined by a newcomer from a little further afield in 1982.

It was in Slovenia that Franc Kuzma decided to add his experience of analogue transducers to his background in mechanical engineering and come up with the design of a first rate record playing system. Thus the original Stabi was born, appropriately named after the stability with which Franc had suitably endowed it. This was duly followed by the Stogi arm ("Stogi" being short for rigidity in Slovenian) and these

made quite an impression on the UK vinyl-buying public and gaining a very well-deserved reputation. The Stogi Reference arm followed later, instantly recognisable thanks to its (very!) tapered arm tube, being joined by the Stabi Reference turntable in 1990 - a high end reference design incorporating two motors and a silicon-damped suspension system.

With a suitable reference item in place, Kuzma then took a look at the other end of the range, and began work on a high quality design, stripped of all fripperies with which to use as a suitable entry-level into the world of Kuzma ownership. The result was the Stabi S turntable and Stogi S tonearm, however both of these items appear far from entry-level when first encountered.

Starting with the turntable, the Stabi S is formed of a T-shaped solid brass rod, 50mm in diameter and very heavy. This has three rubber O-rings around it at each extremity and the turntable sits on these,

supporting the platter's bearing near the junction of the 'T' and the arm at the end of the longer bar. The Stogi S arm can fit straight into the height-adjustable brass mounting collar or mounting plates are available for other arms if you prefer to fit something else.

The deck is available in two finishes, with the central 'T' rod and accessories in natural brass, or finished in black to match the turntable and arm. A second version can also be bought, the Stabi SD, which has an extended upper left 'T' arm and allows for the fitment of a second arm on its own mounting plate, increasing the price by around £400.

Belt drive to the Stabi S is provided by a freestanding AC motor with a single pulley for 33rpm, although an adaptor ring is provided to slip over this to provide the necessary diameter change for 45rpm - it works well enough and is a snug fit, but is a little archaic for 2007, I



"this deck really will get your feet tapping..."

feel. An optional high density plywood base is available and was supplied for this review and the deck also comes with a rather stylish Perspex lid which locates on the spindle and covers the arm as well.

The Stogi S arm is a unipivot design, featuring a fixed and sturdy headshell machined from a single block of aluminium, and one single length of Cardas wiring from cartridge tags to phono plugs. The unipivot itself takes the less conventional route of having the point on the arm and the hollow in which it sits on the arm base. There is also the facility to apply silicon damping as the arm support is in the centre of a 'cup', which can be filled with the supplied silicon fluid, thus damping the entire bearing housing.

Tracking force is applied by a pair of weights which can also be rotated to laterally balance the arm

and ensure that the cartridge's azimuth with respect to the record's surface is correct. These are uncalibrated and can be rather fiddly, with a good deal of fine adjustment required to successfully set the playing weight; a stylus pressure gauge is also necessary. Anti-skating is applied via a thread which fits over a small hook on the arm base and operates a pivoting bar and weight - a very nicely designed system but, again, no calibration is provided for positioning the weight, other than a rough guide so, as with tracking force, adjustment requires an element of trial and error.

The Kuzma combo is extremely well made and finished and, for auditioning, was inserted into our test system comprising Anatek Acoustics MCI phono stage, Plinius 9200 amplifier and Spendor S8e loudspeakers.

SOUND QUALITY

For measurement of any turntable and arm here at *Hi-Fi World*, we always use the same cartridge for consistency - a Goldring 1012GX, and the first listen I take to any deck usually uses this item. With the Kuzma, this was a little disappointing, robbing some of the Goldring's life and verve, however, changing to an Ortofon Rondo Bronze brought about a major difference, so it would seem that to get the best from this deck, an MC is an essential investment.

With the Rondo Bronze, the Stabi S took on a whole new dimension and, as suspected from its measurements [see MEASURED PERFORMANCE] turned in an exciting and dynamic performance - this really is a deck that will get your feet tapping! In a direct comparison

Disarming

After many months of experimentation, David Price has finally turbocharged his Technics SL1200 turntable to within an inch of its life...

Thanks to the fact that it has been the staple deck for DJs since the nineteen seventies, the Technics SL1200 has been the object of much derision in UK hi-fi circles for many years. Anyone who's dared to say it sounds good has been mocked by golden eared hi-fi types who simply can't accept that it could even be a rival for their stripped down, minimalist belt drives, let alone better...

I too was of this view for a good long while, but coming into closer contact with the deck several years back, when I had the chance to review the gold-plated anniversary edition, got me curious. Actually, it didn't sound very good at all, but it was the way it didn't sound good that intrigued me. Put simply, it didn't sound good in a totally different manner to how other 'cheap' turntables don't sound good!

Most impressive was the deck's bass and dynamics, the SL1200 seeming to do something with kick drums that I'd never heard before on a deck at anywhere near its price. It also seemed very tight, lively and dynamic up to a point, whereupon it would go to pieces on heavily modulated music. By comparison, similarly priced belt drives would sound far looser and softer and more imprecise, but have a nicer, smoother tone. This got me thinking.

The next moment in the story was a phone call from Stewart Wennen, some five years ago, who mooted the idea of scrapping the SL1200's factory fitted tonearm. Would I be interested if he tried it, he asked? You bet I would be, and soon after I was at this house listening to the result. He had fabricated a bespoke armboard for the venerable Technics turntable, enabling a Rega arm to be fitted.

As a long term user of the SL1200 (thanks to his DJ activities), SW very accurately diagnosed the reason for the deck's mediocre sound to be its very mediocre tonearm – as he pointed out, it's effectively a cheap-as-chips Japanese OEM design, very probably costing pence rather

than pounds. S-shaped tonearms certainly look good, but in my experience, only Alphason ever did a decent sounding one. (The venerable Acos Lustre, now mysteriously selling for quite substantial sums on online auction sites, may be nicely made, but it doesn't sound much cop.)

Basically, what Stewart's armboard had done was to restore the option of buying the long, lost Technics SL120. Lest we forget, the original nineteen seventies Technics SL series nomenclature was such that decks with bundled tonearms got an extra '0' on the end of their model number (to wit, the SL1200 is actually an SL120 with an arm fitted). The SL120 was a popular mid-seventies deck, and found itself partnered with the inevitable SME 3009S2 and Shure M75ED cartridge – it would have sounded nice, but again wouldn't have exactly realised the motor unit's full potential.

So, fitting an Origin Live SL1200 armboard to the Technics is basically restoring the SL1200 to its humble beginnings, and fitting a decent Rega-based arm shows just how good the deck can sound – and boy, does it sound good! This feature is basically a follow up to SW's original, although we've not only done an arm transplant, but also addressed what I perceive to be the SL1200's other weaknesses...

THE MODS

When you disassemble the SL1200, you find yourself marvelling at how it can retail in the UK for £400 (and in Japan it's nearer half that). Compared to your average British deck at twice the price, it seems amazingly thoroughly built. Essentially, it has an upper section and a lower section – the latter base is made of dense rubber with a cast resin damping block. The upper section is beautifully cast aluminium alloy, and there's a lot of circuitry inside, for what is surely one of the most successful drive systems ever - Matsushita's quartz referenced direct drive motor. This is a more impressive sight than the inevitable Impex motor and rubber band used by most audiophile

turntables from Europe...

This core is what (as we shall see) makes the deck so great. However, everything goes downhill from then on. As previously mentioned, the tonearm is simply not of the same quality to the motor unit, costing a fraction of the price to make and not worthy of fitment as far as serious users are concerned. Then there's the platter, which is a light and bell-like affair; this is understandable as the *raison d'être* of the SL1200 (in its later incarnations, at least) has been DJ work which requires ultra fast start-up. Then there are the feet, which are cheap off-the-shelf designs that frankly should be better considering that the SL1200 is not independently sprung. Technics should have paid more attention here, as they're relying on its heavy internal construction to damp vibrations.

Well, the answers are easy. The SoundDeadSteel Isoplatmat was designed with Japanese DD platters in mind, the idea being to make a polymer sandwich from two steel discs (one of which is 1.6 times thicker than the other). It isn't too heavy (it was found that this impaired sound on the Pioneer PL-L1000 development mule), but adding a modest amount of mass really did help speed stability. The performance of the SDS Isoplatmat is very much on a 'case by case' basis, but generally it seems to very effectively take the 'zing' out of bell-like alloy platters – making for a smoother and more finessed sound – as well as add that





little bit extra flywheel effect which gives a more stable feel. It is most effective on light, poorly designed platters, but surprisingly also improves good ones too – I use one permanently on my Michell GyroDec, and couldn't go back.

Next, the feet. Several years back, I tried a set of Isonoe isolating feet on an old Sansui quartz lock direct drive motor unit, and was very impressed at what they did. Given that Japanese direct drives generally didn't use independently sprung subchassis – with the notable exception of Pioneer's 1979-1980 output – isolation from vibration is essential, and the Isonoes give a helping hand. They screw directly into the deck's standard thread recesses, so installation is a matter of minutes, and sit upon glass topped polymer feet (which are optional, and add an extra layer of insulation). I found they really clean up a deck's sound, removing general blurring and 'mush' from the system, so using them on 'project SL1200' was a no-brainer...

Then there was the small matter of a subtable. For an even higher degree of isolation, I had originally hoped to get a separate 'outer plinth' fabricated for the deck from Perspex,

but circumstances conspired against me (anyone who fabricates Perspex please contact me at the office!), so it was a case of going for my old favourite – the Audiophile Furniture Base SP-01. I use two of these, stacked, under my GyroDec and again I wouldn't be without them, so good are they at removing vibration from the system.

So, with a quieter and slightly more massy platter, plus a veritable obstacle course for any ground-borne vibration wishing to intrude into the Technics, courtesy of the Isonoes and the Base SP-01, the SL1200 was ready for its major upgrade, the tonearm...

RE-ARMAMENT

Given that we've covered the excellent Origin Live and Michell versions of the ubiquitous Rega tonearm extensively, and that the stock version is a decent but not first rate performer, the next part of the project was to fit a specially souped up RB250 courtesy of arch turntable tweekers Audio Origami [see box, P97]. The main consideration was

to not damage the deck, old arm or new arm. It proved tricky, but this is simply because you have to be patient and methodical – the actual work itself is child's play.

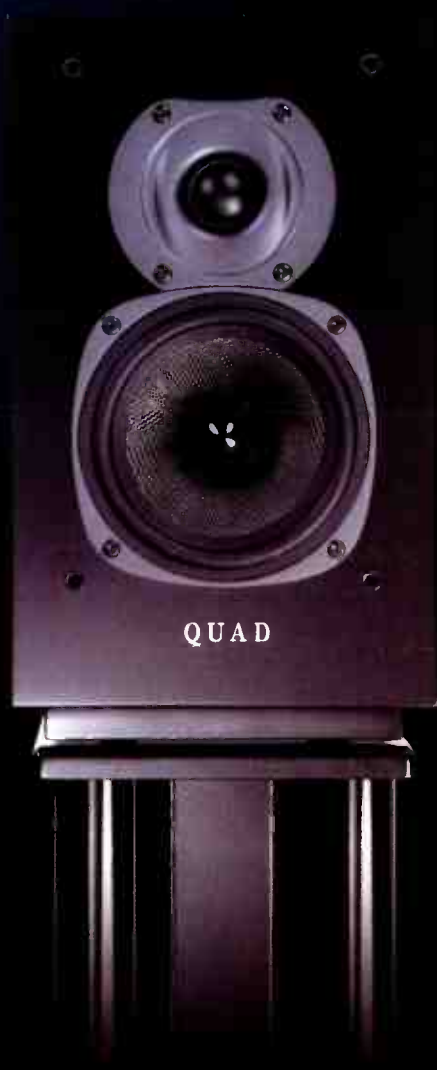
Given that we wanted to remove the old arm without destroying it (i.e. so that it may be refitted later – although Lord knows why!), the counterbalance weight and detachable headshell were removed, having clamped the arm to the stand. The deck was then lifted and leaned against a wall to expose the underside, and the four feet were unscrewed from the base to expose

THE MODS

Origin Live Technics armboard	£39
SoundDeadSteel Isoplatmat	£79
Audiophile Furniture Base SP01	£POA
Isonoe Isolation System	£175
Audio Origami RB250	£349
Michell TecnoWeight	£69

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THE TONEARM

Glasgow-based Audio Origami (www.audioorigami.co.uk) is run by the enigmatically named Johnnie7, a one-time associate of the legendary Syrinx Precision Instruments. Currently the company is in the final stages of developing a superb new tonearm (*Hi-Fi World* will carry the exclusive first review in a month or two), but they also undertake contracting work for audiophiles – including Rega arm rebuilds which are so thorough that they're akin to 'blueprinting' a car engine. The AO RB250 fitted to the Technics had the full 'works' treatment, and the result was breathtaking...

Johnnie says, "the arm's strengths are the tight bearings and a very rigid arm tube and yoke assembly, which is exceptional at the price Rega charge for this little baby". The Audio Origami work simply involves disassembling the arm, foam filling it and then rebuilding it with the utmost precision. The beautifully polished aluminium finish is also an option, but Johnnie admits this is purely for cosmetic reasons!

The work begins with removing the cable from the base, desoldering the base plug, cutting off the external lead to the plug and then drilling three small holes for the new wiring loom. The arm tube is removed using a special screwdriver, with care taken to support the tube and to not bend the brass bearing shaft. The arm bearings are then chapped out, using a plastic rod which doesn't damage the bearings or cages.

The headshell grommet is then removed, and the original Rega wire can be pulled out. "There is a kink in the wire at the rear end," says Johnnie, "this helps to add less friction to the arm movement. There are also two wee rubber guides that line the arm bearing housing. We will dispose of them to get more frictionless arm movement in the arm yoke." The bearings are removed, and stripped down until the cage is visible, then a flushing oil is used to clean the ball bearing and clean it before it's coated in a specially formulated Audio Origami fully synthetic 'Booster Oil', and then reassembled.

At this point, the arm tube is polished. Although the paint is taken off with chemical paint remover, a lot of paint and casting marks remain, so "much work is required to get the finish perfect". This involves judicious use of very fine, 1200-grade sand paper, then the application of 1600-grade paper, then finally a polishing wheel for the beautiful finish you see before you.

At this point, the arm's geometry is checked. In the case of the OEM RB250 supplied to Audio Origami, the headshell proved fractionally out of true across the yoke and two bearing screw housings of the arm tube, meaning the azimuth was not square at the headshell, so the yoke was stripped out and the shaft face re-machined to fit square.

Before the bearing was fitted for final assembly, a small 0.65mm hole was drilled for a new earth point, and a 0.7mm brass pin chapped into it. This forms the earth point for the upper arm tube – Johnnie says, "this is a much better connection than the standard copper strip, and will now last a lifetime". The new Cardas 33 ga OFC copper wire was simply pushed through. The arm was then foam-filled to reduce resonance using a special compound, and then the soldering iron was switched on.

"I use power flux for all the silver solder connections in the arm - all the new wires are coated in power flux and pre silver soldered tinned, this makes sure the connections will be perfect", adds Johnnie. The base plug is modified and replaced, with new Super OFC copper balance and shielded external cable silver soldered on, and Cardas gold cartridge tags are fitted after the rubber headshell bung has been put back.

All done, and the arm was tested and packed with an Audio Origami-supplied 3gm brass weight, which is useful with high compliance cartridges like the Denon DL103 - the standard Rega 11gm effective mass can be tailored to suit any cartridge.

loud and complex passages.

Bass was also very special, the Technics throwing more low frequencies into the system than either Michell or SME, and it was oh-so controlled. There was no wobbly euphonic bass bloom here, just seemingly endless reserves of commanding, powerful low frequencies that started and stopped on a sixpence. Bass guitar sounded dry and taut, but had tremendous visceral thwack when needed. Again, it was mightily impressive the way the bass guitar kept coming at you in equal proportions regardless of how loud the rest of the mix got, the Technics seemingly impervious to how heavily the groove was modulated.

Another surprise was the treble, with was tremendously crisp. Electric

Light Orchestra's 'Out of the Blue' is packed with classic rock cymbal work, and again both belt drives seemed to blur it ever so slightly in comparison. The Technics, on the other hand, remained crystal-clear, capturing the leading edges of the hi-hat with remarkable adroitness. The result was a startlingly clear sound from bottom to top, the whole essence of the deck being its remarkable bite, clarity and incision which neither of the two reference belt drives could deliver.

However, this was almost the deck's downfall, because a number of industry people who heard it say it sounds quite 'digital'. An interesting comment, inasmuch as it has all the crispness and speed of the best 24/192 DVD-Audio machines, along with a starkly transparent nature that

certainly cannot be described as romantic or euphonic. This became a recurring theme with me – playing Isaac Hayes's 'Cafe Reggios' showed vast amounts of detail being excavated from the groove in a very 'hi-fi' way, whereas a spin on either the SME or Michell made for

a more emotionally engaging sound, albeit slightly more out of focus. In a nutshell, the SL1200 does sound a tad clinical, but in a stunning way.

The other criticism of the sound, and again this is up against £5,000 of SME reference don't forget, is the SL1200's soundstaging. It lacks the cavernous front to back stage-depth of the SME, or the expansive left-to-right width of the Michell. Instead, it sounds a little too two-dimensional for my tastes, and a tad hemmed in on the stereo imaging front. Still, inside its slightly smaller confines, the Technics is unfailingly accurate – images seem virtually nailed in place, which is surely a function of its superb speed stability?

That the SL1200 motor unit can even be directly compared to a £1,000 Michell GyroDec or £2,500 SME Model 10 beggars belief, but the fact that it made both look a tad woolly, slow and diffuse in some respects is almost unbelievable. But it really did – and I have witnesses who'll testify! It shows that, properly isolated and damped and when fitted with an excellent tonearm, it is a giant killer. Most interestingly for me was that it didn't just equal the big belt drives, but in some respects it vastly bettered them. Don't go thinking it's a universal panacea though – because in its current state of tune it is just a tad two dimensional in soundstaging terms.

What most impressed me though was the fact that the SL1200 sans arm is about £350 – and I've never heard anything anywhere near the price that comes close.



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Removing the old arm base is fiddly, but well worth it!



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Letter of the Month

CAUGHT SHORT!

I was in the loft the other day and found my long-lost pair of Mordaunt Short MS100s that I have not listened to for fifteen years or more. I unpacked them out of curiosity and set them up in my modest Naim system, which consists of a CDX2 CD player, NAC112 preamplifier and NAP150 power amplifier. They were sat on some old Target 24 inch open frame stands using Chord Odyssey cable. The result was a rather cuppy sound with no bass and a treble that made everything sound the same. I left them to run in for a week and took another listen, the result being more bass, a little more open sounding and a treble that made everything sound the same. I realise I am probably being a little unfair as I am used to a pair of nicely run-in JM Lab Focal 816s but I thought it might be a bit of fun to try and improve things, so I stripped one down, hence the large pile of photos I have sent you!

I have to admit I am something of a soldering virgin but having established which end of a soldering iron is which (and with the burns to prove it), I'm willing to give it a go. I also have a friend who knows a bit about this sort of thing and he will guide my shaking hand. He's on about a replacement tweeter, the original being an Audax that he says wasn't very good. The bass mid driver goes quite high, with the tweeter just adding a bit of sparkle, although it sounds like more of a clang to me. Now, I understand that bit but he's now on about capacitors, resistors and hard wiring. Hard? Flippin' impossible as far as I can see, and it all passed over my head by about a foot. As far as I can make out the crossover is populated by a big blue thing, two small blue things, two white oblong things and a grey thing with a hole in it, along with some wires. I wonder why my friend has now taken to sitting on the floor in the corner of my room, drinking my whisky and mumbling "What have I done?"...

Rumour has it that we could also leave the crossover outside the loudspeakers - I have some spare

Odyssey cable that I can use to connect directly to the drivers for this purpose so that "we" can experiment at some point in the future, although the last time I tried experimenting, the wife refused to speak to me for a week.

I have been an avid reader of Hi-Fi World and virtually everything that Mr. Keywood has contributed to since the year dot, in fact I think he may well have reviewed the MS100s back when we both had hair, so I would really appreciate it if your team could bring any knowledge to bear, tell us what we could try replacing and if it's worth doing at all. I intend to use this as a starting point to practice soldering and eventually hope to be good enough to build one of World Designs' less adventurous valve amplifiers for use in a second system in a bedroom.

Incidentally, I also have a Cardas-rewired Rega RB300 in a Planar 3 with a high output Dynavector 20X cartridge and a Creek OBH-8 phono stage. Noel mentioned a valve phono stage for the 20X a few issues ago. When my soldering is up to scratch would the WDPhono3 be okay? The Rega came out of the loft at the same time as the loudspeakers and it is probably as old. I cleaned out the bearing (did you know Isopropyl alcohol can no longer be bought from a chemist?), added new oil, new belt and a Funk Achromat. The 20X is still not run in yet, but is sounding great. So, here I sit with soldering iron poised in one hand, silver solder in the other, eagerly awaiting your response...
Ray Fardham.

Last question first - yes, the WDPhono3 is a very fine phono stage and would be a good upgrade from the already-capable Creek. Now then, the good old MS100s are dinky little fellas that seem to have become a little forgotten alongside their more common stablemates, the MS10s, and other designs of the time like the Wharfedale Diamond and Goodmans Maxim. I must admit to always finding them something of an oddity as they, and their bigger brothers the MS300s

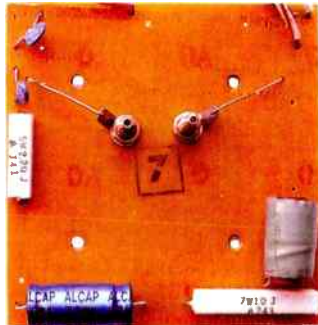


Mordaunt Short MS100s – rewired them and be amazed

which had an extra bass driver, were marketed alongside the MS10, 20, etc. series. They were dearer and offered rather nicer finishes than the standard black vinyl wrap of the MS10s and made use of a specially-designed bass driver but, as you say, they took a backward step in their use of the competent enough but rather unspectacular Audax jack-of-all-trades budget tweeter. You could look to upgrade this item, but it will require test equipment for measurement and crossover tuning - probably a step too far I would say.

If you were looking to try and turn the MS100s into a rival for the Acoustic Energy AEI MkIII, then I would say forget it. Buff them up a bit, stick them on eBay and keep your fingers crossed that they make it into double figures, but if you fancy a bit of fiddling for practice, then they are a good place to start. The crossover itself with all those funny blue and white bits is quite simple and is eminently tweakable. A good first step would be to dig out your copies of Hi-Fi World for August and September 2006, as they featured articles by Peter Comeau on precisely this subject, namely getting the best from your speakers. The first instalment covered the cabinet and the second the crossover.

However, specific to your MS100s, I'd proceed as follows. First up, zoom in on the two "small blue things" on the crossover and get rid of them. They are the 'Positec' protection system that MS used in an attempt to protect tweeters



Mordaunt Short MS100 crossover - a nice simple circuit to practise your soldering on.

from damage due to over-driving. A nice idea, but they do colour the sound and can also become over-zealous with age - I had a friend with some MS20s a year or two ago and the left speaker would shut down with a half decent drum strike at normal listening level. Consequently, you're best off desoldering them and replacing them with a piece of link wire. The piece of wire is very important otherwise the signal won't get to the units at all!

The second step I would take is to upgrade the crossover components. As mentioned, there aren't many and so this won't break the bank. The "white oblong things" are resistors, the larger item is a 1 Ohm, 7 Watt type and the smaller a 2.2 Ohm, 5 Watt type. When replacing these, the Ohm rating must be kept the same and the Watt rating must be the same or higher. A glance at World Designs' online catalogue reveals that they sell 7W wirewound resistors in both 1 Ohm and 2.2 Ohm values for £1.47 each, so these would do very nicely. The "big blue thing" is the capacitor for the tweeter and is a 3.3 microfarad unit rated at 50 Volts. Again, the microfarad rating of the new item must be the same and the voltage rating the same or higher; World Designs' 'Soniqs' capacitors

would be an excellent substitution, at either £1.70 or £4.19 depending on whether you choose the PXX or higher performance SAX range.

The final item, namely the "grey thing with a hole in it" is an inductor and could also usefully be replaced. Now, usually these are used in series on bass drivers to cut the high frequencies but they can also be used in parallel on tweeters. Something lurking at the back of my brain recalls that one of the unique things about the MS100 was that it ran its bass driver full range, so I suspect this inductor is used on the tweeter (unfortunately the gasket in your otherwise excellent photos is obscuring the PCB tracks, so I was unable to sketch out the circuit). The way to check is to disconnect it and run some music into the loudspeaker - if the bass driver still works then it is indeed used on the tweeter.

The reason this is important is that, for bass drivers, a nice hefty ferrite cored inductor works best, but on midranges and tweeters, better results come from an air-cored unit (or "one with a hole in"!). Either way, the final problem is that inductors rarely have their values stamped on them, so you would need to remove this from the circuit and find some way of measuring it; World Designs can then supply you with some new items, either ferrite or air-cored.

Finally, rewire everything with your spare Chord cable, soldering all the joints but taking care to use a heat shunt when soldering the wires onto the tweeter - tweeter wire is very fine and will not take to being overheated. By all means remove the crossover and stick it in a separate box if the mood takes you and finally try playing with the amount of wadding in the cabinet to see what you prefer. Peter Comeau's articles are very detailed in respect of both these issues.

That's it, so give it a listen and see what you think! By the way, welcome to the "fiddling" club and congratulations on having passed your first initiation ceremony, namely a soldering iron burn. The second level involves a 'belt' from the high voltage d.c. supply inside a valve amp, so you still have that one to look forward to. **AS**

Wow - what a blast from the past! I couldn't possibly add anything more to Adam's super-comprehensive reply, other than to say that I ran both MS10s and MS100s back in the late eighties, and was actually very impressed by them - particularly the MS10s, considering they cost me £60 from Super-Fi, if I remember rightly.

I eventually replaced the internal wiring with silver plated copper cabling and they duly made amazingly nice noises on the end of my LP12/LVII/Super SD900V and NVA AP30 - I can still recall the sound now. Good luck, your efforts won't be in vain. And if all his sage advice goes well, then do let us know and I'll drop my NS1000s round at Adam's place with a plea for him to "hard wire" their ageing crossovers into the twenty first century... **DP**

MICRO, MEGA?

I have recently started reading your magazines again and I would just like to say what a fantastic read it is. It's refreshing to read articles about products where the passion for quality shines through. It's such a welcome change from the mass market branding culture of today.

Last year, after approximately ten



Teac P500 transport - well worth hanging on to.

years of living in cheap digs and putting my hi-fi away in storage, I was finally able to set it all up again. My system comprises ATC SCM20 loudspeakers, van den Hul CS122 cables, a Rotel RH-B10 power and RH-C10 preamp, and an Esoteric P500 transport, with a Micromega Duo BS DAC. I also had to get my father's Micromega T-DAC and T-Drive repaired recently, which meant that I listened to it for several months before handing it back (my parents live in France). When I returned my P500 and Duo BS to my system, it seemed like a film of grease had found its way onto the laser. It simply didn't have the clarity or detail of the T-DAC/T-Drive combo. Consequently I am finding it difficult to make a decision as far as upgrading the CD is concerned. I have seen a second hand T-Drive and T-DAC for £700, but of course this is about ten years old now. When I was getting it repaired the engineer told me that the T-DAC is still very much up there, but that there were improvements on the transport side. Should I buy one of these, and upgrade the transport later on, or should I simply buy a new machine? (There is also the possibility that I may be able to trade with my father, as he does not listen to his system like he used to).

I bought a cheap £60 Sony DVD

player about 18 months ago. I plugged it in to my Duo BS, and found that the atmospheric quality was improved compared to my P500 transport, but the clarity of the instruments was 'edgy' and rough by comparison. Although lacking in atmospheric quality, I find the P500 gives a purer, more detailed sound, so I returned the DVD/CD player back to the TV station, but it was an interesting comparison, all the same. I also made my own interconnects before the equipment went into storage, having been inspired by Noel Keywood. I used the VdH CSI22 speaker cable as the main source, but could only find a cheap bell-type wire to earth the leads. I also have a pair of Arcam Ruby interconnects, and have noticed that only a single strand of wire is used to earth these leads. Is it possible to buy a single strand of wire, to make my home-made effort closer to how the interconnects should be?

Like everyone, my budget dictates the quality of the products. And with so many products on the market, with most of them claiming to be great, it is very difficult for me to decide how I should upgrade wisely. I am also curious as to the abilities of replacing my mains/interconnects. But am unnerved by the cost. I don't mind spending the money, but I think that if I were to spend £600 on new cables, surely my CD should come first? I am also keen to develop my soldering skills further, thus saving on the cost of ready-made cables. Do you have any suggestions?

Justin Brown

taken seriously as data transmission pathways, structure, materials and terminations have all become an advanced technology; HDMI cables are good example of this.

Soldering large, copper loudspeaker cables demands a high power iron, which produces waves of heat - and both wire and connector must be clamped as they become too hot to hold. Quality signal cables have drains, braids, PTFE dielectrics and heaven knows what else and are a different sort of challenge. I use a large magnifier, intense lighting and temperature controlled soldering station, yet my work doesn't match that of commercial manufacturers, so I am careful to use dedicated cables in a review context. Do, by all means, make up your own cables using the best wire and interconnects, but be aware that the short cable lengths you can buy cheaply from Maplin are fine value, but not the most advanced cable available.

RS Components offer better, but you must buy reels of the stuff, and even then, their cable is still rather basic against that from the commercial audio cable manufacturers. I'd recommend you get made-up budget audio cables that don't break the bank, as these can be better than home-builds, unless you particularly enjoy the cursing, swearing and burnt fingers of DIY. I have my doubts about expensive mains cables, unless you already have a well wired home. Have fun. NK

health. It should also respond to clocking well too - see Audiocom International for details of this (tel +44 (0)1646 685601; www.audiocom-uk.com). This, alone, as Noel suggests, the Russ Andrews' DAC-1 USB is pretty much the class leader of the field right now (at least until you go up in price towards the Benchmark DAC) - it makes a very nice noise indeed at £600 thanks to its excellent upsampling functionality and superb analogue output stage. **DP**

DESIGN TOOLS...

I was very interested to read Paul Rigby's page on the new Warner Brothers vinyl efforts. Just tried to order the new Wilcox album- pity they won't ship to Great Britain!

I've also enjoyed reading Peter Comeau's articles on loudspeaker development, but couldn't help thinking the first few were a tad shallow in detail, but the last two are really starting to get interesting. Can't wait for the actual development process for a real world speaker. He hasn't yet mentioned the FRD consortium tools available free at <http://www.pvconsultants.com/audio/frdgroup.htm>. These guys have published some extremely useful excel spreadsheets that cover a host of speaker development uses including UNIBOX for LF alignment and PCD for crossover design and FRC for combining frequency data.

Roger Smith

Thanks for the information, Roger. We're always pleased to hear of new design tools on the good old internet that help the budding amateur out. None of us here at Hi-Fi World have experienced the FRD Consortium tools, but this may well be a good excuse for a bit of 'fiddling' methinks!

AS

GARRARD GRUMBLE

I was wondering if you can help solve a problem. I have a Garrard 301 with a Rega RB300 tonearm and Goldring 1012 cartridge mounted on an Aphelion oak plinth. I have recently upgraded to PMC OB1s speakers and REL Storm 5 subwoofer, powered by a Musical Fidelity Nu Vista M3 amp. The problem I have is a low frequency record noise like a rumble, which only appears when I play some records, usually the not so good pressings. Bass content is not a factor but the tonearm which appears to be vibrating in the groove picks up the noise. The problem seems worst on 12" records.

Jonathan Woodford

Hmm, interesting one this. My first thought was the good old Garrard rumble but if you say the problem is



Russ Andrews DAC-1 USB - class of the sub £1,000 DAC field right now...

Hi Justin. I was very impressed recently by Russ Andrews DAC-1 USB, priced at £599, and suggest you consider it. It is more capable and less idiosyncratic than a lot of what is available under £1,000. I have to make up cables within my constantly changing home environment and for the test bench. As technology progresses here I find a gap is opening up between what the typical amateur, including myself, can achieve and commercial product. Since cables and connectors started being

I'd recommend that you get the Teac P500 transport serviced by NSS Ltd. (tel +44(0)20 8893 5835, email: nssmail@btconnect.com). They are an authorised Teac service centre, and can rebuild Teac's VRDS mechanisms comprehensively, thanks to Teac's continuing commitment to provide spares for all its products, unlike many other mechanism manufacturers such as Philips. Your P500 is an excellent high end design, and should be well able to outperform the Micromega transport if in rude



Garrard 301 - rumble in the audio jungle?

only on certain records it is will not be this, as if you have rumble it never goes away! What it sounds like is that subsonics from the poorly pressed records you say are causing the problem are coming through your loudspeakers which, between the main units and the sub, should have prodigious bass output. If my memory serves me correctly, the Storm V is a sealed design, but the PMCs are transmission lines and so could suffer from cone flap as a result of subsonics from the dodgy records if they are being run full range.

What is most likely to be happening is that these low frequency events are being picked up by the arm and cartridge and transmitted back to the loudspeakers. You do not specify if your floor is a solid or wooden type, but the latter will cause this problem more as it is free to move and resonate. It is worth checking that the cartridge is set up properly and tracking at the correct weight, as if it is too light this will make it more sensitive to outside influences.

If this is fine, then to remove the problem you need to isolate the turntable better from its surroundings. If the deck is placed on a rack or table, then it would definitely be worth considering placing it on a wall shelf to isolate it from the floor and any vibrations coming through it, or experimenting with an isolation platform of some description, whether bought or home made.

Finally, and I feel I'm putting my head into the lion's mouth by even suggesting it, especially after my discourse with Trevor Jones of Aphelion Audio in last month's letters pages, but a good, solid Garrard plinth that absorbs any vibrations from the motor itself should also do a fairly good job of isolating any external influences, so there may be

a possibility that yours is not doing so. A new and more solid unit with better isolation properties might be worth investigating as a very last resort. **AS**

DIRECT SPEECH

I have always read with interest your reviews and thought I might drop you a line about a forthcoming review I saw on the Hi-Fi world website. I am a fan of the Technics SL1200 and take constant derision from my 'belt drive is best' friends for it - I am due to purchase a KAB modified example shortly. I was very interested to see that you are going to review the SL1200 with the modified Rega 250 from Audio Origami (AO have quite a reputation and I am pleased you have chosen AO rather than the usual OL mods - something different...). However, given the price point of the SL1200, I think it would be really interesting if you were to conduct the review using a KAB (www.kabusa.com)

modified SL1200 with the upgraded separate PSU. Properly Isolated and used together with the SDS Isoplatmat (which you already recommend for the SL1200) and a Herbie Way Excellent II Mat on top, I am told the separate PSU/Isoplatmat/Herbie Way mat combo lifts this DJ (-:-) deck into significantly high end territory for only a modest increase in overall cost.

It would be really interesting to not use a standard SL1200 to do the review (aside from the tonearm). The review has probably already been conducted but perhaps you might want to consider trying some of the above tweaks.

Cristian

Following the theory of "always leave your public wanting more", I have recently decided to hang up my lights and fog machine and return my collection of dodgy 1980s singles to the cupboard in order to retire from the cheesy wedding DJ lark. This has now left me with a spare pair of turntables, namely a Vestax PDX-A1 MKII and a Technics SL1210. I do not wish to part with either and so have been recently eyeing them both up with modifications in mind, if only to quash any "You don't need them any more, do you dear?" type comments from the good lady wife. At the moment, along with many other projects, I am awaiting some metalwork for the Vestax and am proceeding painfully slowly with the rebuild and rewire of a Helius Aureus Gold arm (with the invaluable assistance of the brilliant Johnnie at Audio Origami) which would seem an obvious candidate to install upon it.

However, inspired by David's



David's modified Technics SL1200 - see P92. Finally ready, sounding superb and causing Adam to cast a critical eye over his own SL1210...



Michell GyroDec – a great turntable, but what would it sound like with direct drive?

rather spectacular results from his SL1200, I have been considering some of the KAB items for the Technics, amongst other things, at a later date. It's a long way down the Smith project list at the moment but, rest assured I will report back when it finally receives the attention it deserves. **AS**

Hi Cristian – I approached KAB some six months ago for an SL1200 power supply, but to date they haven't been able to supply me with one – I'll keep trying on this score. My instinct is – and I'm bound to be proved wrong now I've committed this to print – that this will make an appreciable difference, but not a dramatic one. What most worries me is the SL1200's mechanical isolation, as Technics seem to have got the electrical/electronic side of the motor control very right already! I'm sure I can speak for Noel and Adam too when I say we've been very excited about the Technics project – it sounds so unlike any belt drive on the market (which is just as you'd expect), and points out in no uncertain terms what the rubber band boys are doing wrong.

The fact that one of the most technically sophisticated turntables on the market today (i.e. a well implemented quartz locked direct drive) is also one of the cheapest further beggars belief – you can easily pick one up for £350 (with free arm, which you should throw away!). If you look at the amount of engineering gone into an SL1200 motor unit against a Rega P3, then – well, I rest my case...

This doesn't mean the Technics is automatically brilliant and everything else isn't, it's simply that it is stunning in some respects where belt drives are barely also-rans. Subjective three way listening tests between

the Technics, my Michell GyroDec and SME Model 10 show that these high end belt drives better the Technics in many ways, but can't compete in terms of bass power, grip and transient attack. I personally hope that this gives inspiration to some imaginative UK turntable manufacturer to do a high quality direct drive, or indeed an idler. I'd love to hear a direct driven Gyro, for example, but am not holding my breath! **DP**

NEW MILLENNIUM

Regarding your information in the March 2007 issue of Hi-Fi World about replacing the Audax Gold Dome in KLS10111 with a SEAS Millennium, is this the 6 ohm tweeter or is there an 8 ohm version? Could you suggest crossover designs for the KLS3 and KLS6 (I am not too sure about adjusting values as suggested) using the Seas unit? Great mag which I have subscribed to since the earliest issues. Glad to see speaker projects re-emerging.

Edwin Codd

The SEAS Millennium is a standard 6 Ohm Nominal Impedance.

Unfortunately we have not yet converted a KLS3 or KLS6 yet and so do not have a definitive crossover design for these at present. **PC**

GOOD VIBRATIONS

Just a very simple question regarding the use of Bright Star IsoNodes under the Lehmann Black Cube Decade phono stage that David mentioned in his June 2007 review. Did you place them under the four feet or under the body of the Decade? I have had my Decade for one week but would like to try the IsoNodes. Your help would be appreciated.

John Towers

Hi John – under the body itself. Frankly, I doubt if it would make a difference whether it was under the feet or the body, because the point is simply that [a] most hi-fi manufacturers choose to supply products in thin pressed steel boxes (albeit sometimes fronted by a chunk of alloy) and [b] this simply rings and 'pollutes' the sound. It's no criticism of the Lehmann in particular – this goes for everything. One of the cheapest ways to dramatically upgrade your system sound is, assuming you've already cleaned all your contacts to within an inch of their lives with Kontak, to isolate each individual component from its support (i.e. equipment stand) by means of a spongy bit of rubber. This simply takes the mechanical noise out of the system, meaning the microphonic components inside those pressed steel boxes stop ringing like a bell, and the sound becomes purer and more natural. This is more and more noticeable as you ramp up the listening level. You can isolate them with whatever you want (Max Townshend's idea



Bright Star IsoNodes – invaluable weapons in the war against resonance!

of a bicycle inner tube – i.e. air suspension - was pure genius if a little impractical), but IsoNodes are very effective 'quick fixes', and inexpensive too. Furthermore, don't forget that the cables going into your boxes are energy transmitters, especially if the dielectrics are stiff, low compliance types, so these also should be isolated from the equipment support. Yes, I'm afraid this means, if you're really sad, placing IsoNodes (or similar) under all your cables too. Interestingly, the only people who seem to have thought of this to date are Naim Audio, with their Hi-Line interconnect, which is designed to decouple the wire from the plug body mechanically. So the message is – for the best possible sound, isolate your ringing steel boxes from ground and airborne vibrations as best you can. **DP**

ROCKING NO MORE

I have a Townshend Rock Turntable with the Merlin Power Supply. The transistor in the power supply is no longer working. Does anybody know where I can get a replacement?

Julian Barakat

If you know the part number of the transistor that has failed, then RS Components have a very large range of transistors and semiconductors, and so are highly likely to sell a suitable item. See <http://rswww.com/>. If you need further help, however, your best bet would be to contact Townshend Audio directly on www.townshendaudio.net or by phone on +44(0)208 979 2155. **AS**

SENSE OF SCALE

I enjoyed the review of the Podium 1, but the graphs (of frequency response and impedance) were printed so small that I could not read the axes. Even with a magnifying glass, the numbers

were illegible as they fell below the magazine's print resolution! So, I still don't know what the crucial vertical scale was on the frequency response graph. Likewise the other scales. Please print them big enough to be legible! And keep up the otherwise good work.

Peter A Bamber

Sorry about that, Peter. Obviously we don't wish to take up too much space that could be filled by our wonderful ramblings, however we'll bear in mind what you say and see if we can improve the resolution or size a bit. For your future reference, however, all our loudspeaker measurements use units of 10 on the major increments on the vertical axes, i.e. 10dB per large division on the frequency response and 10 Ohms per large division on the impedance. **AS**

DECODING THE TUNES

Please could you help me to find a contact which would allow me to get hold of a stereo decoder for a Leak



The new 'Drop' from Scandyna's Podspeakers range - that isn't an antenna on top!

Troughline tuner made by Tim de Paravicini as described in your article?
Graham Rawlands

Sadly, you cannot get this unique decoder anymore. It used valves in the mono (sum) channel and a solid-state decoder to handle the stereo signal. They came from Tim de Para and he doesn't make them now, but you may possibly get one on eBay or from our classifieds – best of luck.

NK

WIRELESS WORLD

I am looking to go wireless for my home cinema, and am keen on the Blueroom Mini Micropod speakers and Cinepod for centre. I have just a couple of questions I need answering. Firstly, are the speakers power driven or can they be run from batteries? Secondly, can I use my old amplifier and use some sort of sender from it, or do I have to buy a special amp to match the loudspeakers? Sorry if this is basic stuff but cannot find any info on the web, so if you can offer any help I would be very grateful.

M. Dudley

Winging its way into my Inbox this morning was news from KEF of their new wireless hi-fi transmission system for surround sound loudspeakers. They say it offers Full bandwidth CD quality audio via 2.4GHz radio frequency communications for real time audio delivery with no mutes or dropouts. HFADPCM (hi-fidelity adaptive differential pulse code modulation) with advanced forward error correction assures interference-free audio reproduction, unaffected by devices such as wireless LAN routers, digital cordless telephones or microwave ovens. It has simple, convenient setup: position the speakers, receivers and transmitter. Connect speaker cables from the AV receiver to the KEF

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Michell Orbe – even this works better with an Isoplatmat

Wireless transmitter. When power is connected, the transmitter and receiver automatically locate each other, indicated by a flashing blue light that turns to a solid blue light. The price quoted is £399.99. Sounds as if this is exactly the item you are looking for. We hope to be reviewing it soon. **NK**

Speaking to Richard Wheeler, the UK distributor for Blueroom products which, incidentally are now marketed under the "Podspeakers by Scandyna" moniker, there is no wireless loudspeaker in the range at present. The only reference I could find to a wireless Minipod on the internet was a "Wouldn't this be a good idea?" comment on a review.

Richard did also say that other customers have mentioned such a device to him after seeing the company's new 'Drop' loudspeaker, which has an upward protruberance that looks a bit like an antenna. It isn't, however - it is actually a support rod so that the loudspeakers can be hung from the ceiling! However, he did mention that this might possibly make a good antenna for a wireless system in the future...

As things stand, however, I feel that Noel's KEF suggestion is probably your best bet at the moment. **AS**

SOUNDS DEAD GOOD

You have recommended the Sound Dead Steel turntable mat a couple of times now, and I was wondering whether it would work on a Michell Orbe, which has a Michell TecnoArm A and Ortofon Jubilee cartridge fitted? If so, would that mean jettisoning the 'spindle nut' and its surrounding ring leaving the platter unfixed? Finally, would you still use the clamp?

Huw Maddock

Hi Huw – yes, with reservations. I have been using the SDS Isoplatmat with my Michell GyroDec now for six months, and it takes it surprisingly close to the performance of an Orbe. With the Orbe's superior platter, it has a less dramatic benefit, but still deepens and smooths the sound, and makes it sound even more stable and 'mastertape-like' in my opinion. The downside is that it raises the playing height by 4mm or so, so you'd have to adjust the arm height, which isn't so easy with a TecnoArm. If your arm is already a tad too high, of course it will have a positive benefit on this too! It will fit over the spindle nut and ring, and you should always use the clamp. Because there is no recess for the protruding record label, the mat won't support warped vinyl well, unless you use the excellent Orbe clamp or similar. **DP**

STANDS TO REASON

You have previously mentioned a stand for the NS 1000 M speaker in your review that is not sold in South Africa. Any idea where one can enquire about purchase in the UK? Also, can you please assist me in finding the website or email address of a UK Hafler dealer or distributor?

Chris Reddy

Hi Chris - my Yam stands were made to my own dimensions and design by Custom Design (www.customdesign.co.uk). Basically, they're frame-type stands, very similar to the old Linn Sara designs. The quality is excellent, and they certainly do the job sonically. I am sure Custom Design can do some for you too, at a very reasonable price. **DP**

Regarding Hafler, the UK point of contact appears to be Sable Marketing (www.sablemarketing.co.uk; +44(0)208 540 9460). **AS**

THERMIONIC DIGITS

Just a small query: do you know of any hard disk players with tube outputs, or failing this, is there another way to get the valve sound with digital music? I quite like the sound I heard many years ago from a CD player with Burr Brown chips plus valve amplification and entry level MartinLogans - I know this because I could have afforded to buy them!

Now, however, I prefer the simplicity of hard disk playback as compared to the ritual of vinyl. Although the resulting sound is vastly superior to my CD player at home, my home music system is now dead so I need a replacement and welcome the convenience and editing possibilities offered by a hard disk as there may only be parts of a CD I enjoy. As an example, I have removed all of the Recitative from Mozart's *The Marriage of Figaro* - sacrilege to many I'm sure!

So I guess I need a HD player that I can use to edit the songs like my Macintosh with iTunes? I had started looking at the Eastern Electric Minimax and Shanling CD T80 but am a little lost now and would welcome some advice. **Stephen**

Hello Stephen - I do not know of any hard drive based source with an internal valve output stage, but you could use an outboard valve buffer, alternatively you could use either a computer with an outboard DAC or a portable player with docking station. If you're looking for a static source, you have the choice of an all in one unit, such as the Escient Fireball SE160 or SE500, then pick up a Musical Fidelity X-10D tube buffer stage to give you the valve sound you're looking for.

If you're prepared to use a PC or a Mac then something like a Mac Mini with an M-Audio Transit, which give you a standard S/PDIF output, then feed this to a valve output DAC. If Microsoft is your preferred software provider, then a Mini ITX based system, or the likes of a Dell Dimension C521 with a similar arrangement of M-Audio Transit and DAC would be ideal, though I still prefer XP Pro to Vista for audio applications.

If a portable unit is preferred, then the ubiquitous iPod would be recommended, though be sure to use the new 5th Gen Video iPod with lossless compression only to install music on it with iTunes. If you then use a Fatman iTube docking station and amplifier, then you have a docking station and 13W/ch valve amplifier for under £300. Hopefully this should give you a few ideas to start with.

DA

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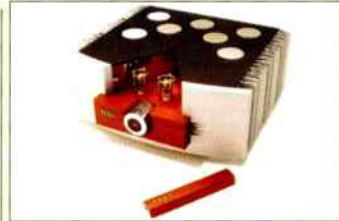
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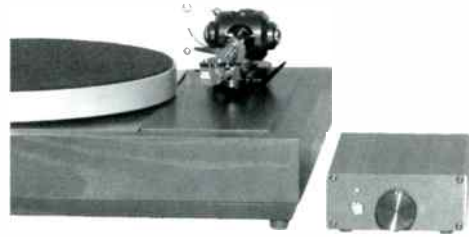
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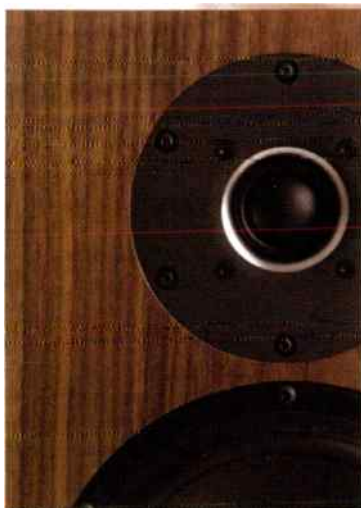
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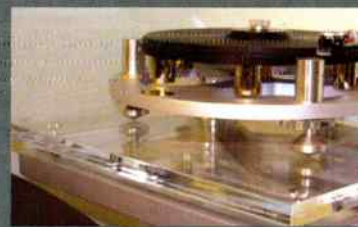
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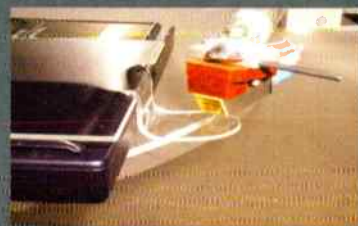
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SPENDOR S20 black speakers, stands, £225, Marantz CD63SE, no remote, £35, Linn Kans 3, damage one corner, £65. Audionote Rega arm, yellow cable, £90. Rogers LS7, £90. Sussex. E-mail: brance.williams@virgin.net

LINN SONDECK LP12 turntable with Ekos arm and Arkiv Boron cartridge and Trampolin baseboard. Plus Linn Lingo power supply. Original receipts. One owner from new excellent condition. £2000. Tel: 01462 711108

WORLD DESIGN WD25A XL speakers, latest X-Overs, silver laquered, plus 16" Atacama stands, £475. Usher S-520 piano black bookshelf speakers. Shielded. 3 months old (see World Audio Feb 07 issue) £240. Tel: 0115 975 4070

NOTTINGHAM ANALOGUE Hyperspace. Latest version, carbon platter, oil-pumping bearing. £1800. Wave Mechanic power supply, Zapper and disc. £450. All in as-new condition. Reasonable offers considered. Tel: 07963 803682 stone.roller@ntlworld.com

750 CLASSICAL LP's for sale all in excellent condition @ £1.00 each. Collection from Lancashire. Tel: 0161 633 5553 or Email: den1@talktalk.net

SUGDEN A21a Pure Class A amplifier. Purchased new in May 2006 but only used for 3 months. Immaculate condition with box, receipt and instructions. £650. Tel. 020 8992 1761.

MISSION 780 Britex black boxed mint £60+pp. Tannoy 605ii Britex black mint £60+pp. Atacama 50cm speaker stands excellent £40. Tel: 07747664742 or Email: scotchb@fsmail.net

ENERGY TAKE 5.2 Satellite speakers including stands (1 pair) front or rear use, & Energy centre speaker, ideal for home cinema. Black. Excellent condition. £100. Sony DVP-S735D multi-region superior quality (£250 new) DVD/CD player. £40. Tel: 01689 608 925 or 0794 1107 141 (Orpington, Kent)

FOCAL JM LAB Chorus 716S loudspeakers. Boxed never used. 'Style' finish. £399.00. Telephone Paul on 01527 877376.

VINYL LP's Wanted. Jazz Rock Folk Blues Reggae Soul Classical. Must be in excellent condition. See website for more information. Phone: 0845 094 1997. Lists: tantrel@bigfoot.com Website: <http://www.tantrel.com/>

WANTED : EARLY Naim 2 or 3-way active crossover. Must be 1970's bolt-together casing, not later extruded variety. Will pay good price for clean example. Contact: Adrian on 07872160126

LINN LP12, Black plinth, clear cover, silver Ittok tonearm, Cirkus upgrade, Trampolin base, phonos hardwired to alloy box with Naim K boards, and PSU (Naim prefix/hipac style) £1495. Tel: 01273325901

ACCUPHASE DP85 CD/SACD player. Superb sound, little use, immaculate quality box, manual etc. £6500 ono (rpr £12000) UK purchased. Can demonstrate. Pictures on request. Call Neil 01925-656990 or Email: Nemall@aol.com

WANTED: MARANTZ CD 94 and MARANTZ 94 DAC unit but any good CD and DAC considered. Phone Bath 01225 837217 or 07802426862 or Email: casccranmore@btinternet.com

RUSS ANDREWS 2 box integrated amp all Kimber cabled enormous power supply vast array of capacitors fast clean sweet and natural sound. 900 or nearest offer. Tel: 07967182599

ATLAS QUESTOR interconnect cable 1m. £30. Boxed as new. Hifi choice best buy. Speakers. Wharfedale Diamond 8.1. £50. 18 months old, in pristine condition with original box & packaging. Lee. West Midlands. 01384 412234 or Email: lee-t@lycos.co.uk

BANG AND OLUFSEN Beosound 4 and Beolab speakers. For sale brand new unwanted first prize. Glasgow area. Amazing style and excellent sound £1500 Tel: 07901685577 stewart.niblock@bt.com

REVOX G36 £60 collect only. Sony WM-D6C mint, boxed with Sony power supply £175. Kenwood KT5020L FM/MW/LW tuner mint £50.00. Tel (Malvern) 01684 572547.

KRELL KAV 300CD CD player (HDCD). Mint condition - just been serviced by Absolute Sounds. Supplied with original double box, accessories and papers. A superb high-end machine. £1,500 ono. Tel: (023) 9261 0465 - Email: Sheila.barrowclough@ntlworld.com

JM FOCAL Labs 937 Be Electra Anniversary was £4500, only £2750, serious floorstander, 4 drive units each, 92 db, perfect, 20 hours use only. phfh@philiphill.com, 0208 340 9941

SUGDEN BIJOU CDMaster CD player, Headmaster pre, Musicmaster Class A power, careful use and excellent condition, half cost price at £1,600 for the complete system. Stunning sound and looks. 09794 099635

LUXMAN SQ 505 solid state intergrated amplifier, mint condition, two owners, highly rated at time of production, (1972) £150.00, or will swap for good preamp, contact Alan on 01782853634.

DYNAUDIO FINALE large four-way speakers, plus passive radiator. Drivers are Esotec 260 tweeter, D76 midrange, 15W75 lower midrange and 30W100 woofer. They sound superb! £800. London area 07940593366.

AUDIO PHYSIC Luna 2 sub woofer, cherrywood veneer, mint condition with boxes. Designed for real music. £895 (£1675) Tel: 07776 143 890 (Southampton)



WDKEL84 Valve Amplifier Kit

"The quality that can be gleaned from this amp is a fine introduction to the joys of the valve sound"

The WDKEL84 features a pair of EL84 valves in Push Pull configuration per channel, providing two channels each 18 Watts into an 8 Ohm load. Available as a 5 input integrated amplifier with ALPS volume control.

WDKEL84 kit £369

WDKEL84 built & tested £544



WD88VA Valve Amplifier Kit

"It proved itself to be an engaging valve amplifier that measured well and sounded superb. Quite simply it plays music, and plays it extremely well."

Adam Smith, Hi-Fi World Dec 06

Often described as a 'sweet sounding' valve, our implementation of the KT88 makes sure that it is driven to its ultimate performance. Available as a 35W stereo power amplifier with single input volume control, or as a relay switched integrated with five inputs.

WD88VA Integrated Amp kit £549

WD88VA built & tested £1099



Headphone II Valve Amplifier Kit

"Headphone II is a single-ended design with the power pentode wired up in triode configuration for added purity and is as quiet as a mouse"

A beautifully simple stereo headphone amplifier design using Mullard ECL83 valves. It works directly from any source. The circuit uses twin high specification E/1 output transformers that can be wired to drive any headphones between 16 to 300 Ohms.

Headphone II kit £275

Headphone II built & tested £404



WDPre3 Modular Preamplifier System

"So there we have it, a pre-amplifier capable of driving any load and maintaining its linearity no matter what cables or partnering equipment you prefer to use."

This 5 input line level preamp is essentially an SE triode power amplifier in concept. WDPre3 uses an ECC82 double triode arranged as input voltage amplifier and power output amplifier stages, the latter driving large 20:1 output transformers.

WDPre3 kit £299

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"...only a few designs meet the requirements of tonal accuracy and maximum retrieval of musical detail."

Twin input preamp with MM and MC relay switched inputs, passive RIAA equalisation and wide bandwidth MC step-up transformers.

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Can be used to power either WDPre3 or WDPhono3 units individually or together.

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All our kits are complete with pictorial easy-to-follow instructions.
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QUAD 57's rebuilt by "Onething", Black finish, new stands £875.00. Croft Epoch Elite preamp plus Series V poweramp £850.00. Kef 30B subwoofer £140.00. Telephone 01622-750732.

PIONEER A400x amp as you know sounds great, a real gem of a amp £115. Tel: 01554 771116

PROJECT RM4 turntable with Ortofon 510 MK 11 cartridge as new hardly used Hi-Fi News best buy £150 No offers 01268 415017 (Essex)

REVOLVER RW16, dark cherry, 1 year old, excellent condition, boxed, £200. Merlin Chopin 1 metre interconnect £45. Tel: 07771 592 030 after 6pm. Email: rhcs99@yahoo.co.uk

MUSICAL FIDELITY A308 high-end integrated amplifier (£2000). MM/MC, remote, two years old. Excellent, boxed, £875. Q Acoustics 1050 floorstanders, boxed, as new, £225. Grado Prestige Gold cartridge, £75. Tel: 01243 863 371

NAKAMICHI DRAGON, slight marks, works perfectly, £650 ono. Yamaha HD1300 120 HD, £220 ono. Tel: 07772 804 347. Items previously advertised with incorrect telephone number.

SONUS FABER single wired Concerto loudspeakers, piano black. Re-advertised due to time-waster. £500 ono. Meridian 502 pre-amplifier, balanced/unbalanced inputs/outputs. Variable input sensitivity. £500 ono. Tel: 0121 744 5068

NUFORCE REFERENCE 9 monoblocks, 160 watts, £1300. Densen B300 power amp, £550. Densen B100 integrated, £350. Atlas Elektra interconnects, Nordost & Hovland speaker cables. Tel: 07973 189 538 (London)

KAILIN KN-7 valve pre-amp. Rotel RB-03 power amp. Both items boxed, mint condition. Less than one year old. £430 pair. Tel: 01252 659 058 (Surrey)

VERTEX AQ components, 3 mths use, immaculate condition: Silver Jaya mains filter £390 (new £545); Roirama 1.5m mains lead £195, (new £345). Call 01543 258617 (or 07967 695790).

LUXMAN L-85V integrated amplifier, 80 watts, lovely amplifier, very good condition, owners manual, £125. Nakamichi BX2 cassette, £50. Leak 2060 speakers, 12inch bass, excellent sound, very good condition, £50 pair. Tel: 01273 541 462 (Sussex)

TANNOY LANCASTER pair HPD loudspeakers in rectangular non Tannoy looking cabinets, one in dodgy condition. Reasonable offers please. Other items available. Tel: 020 8960 7690 (West London)

HARMAN KARDON HK 3370 receiver. 80 watts, twin speaker outputs, phono input, AM/FM, RDS, presets, manual, very good condition. £50 ono. Tel: 020 8979 1484 (Surrey)

CLASSIC AMPS: Pioneer A88X, £220. Mordaunt Short A5000, £170. Rogers Ravensbourne, £80. Unused speakers: Tannoy P10's (cherry) £185. Wharfedale 708's (black) £170. Goodmans Imagio IC100's £105. Mint. Boxed. 07837 188 670 (Ilford)

OAK BELT Drive turntable Linn Basik arm, Linn K9 cartridge, reasonable condition £80. Crimson Electric pre/power amps, £80. Excellent sound. Makes good first system. Tel: Ian 01372 750 940. Leave message.

ATC SCM20 (Passive) Standmount, Target R Stands, Immaculate condition, Demo welcome, £1000.00 Contact Jeremy 07977254160 jeremyf@datasharp.uk.com

MINT QUAD 34/405 Mk11/ FM4 set up. Pink Triangle deck/Syrink PU3 arm/Celestion Si600 speakers plus stands all for sale. Owned from new. Call 01932 560338 or e-mail peter.ibbett@sky.com

NAIM 82 MC 'S' phono. NAPSC £900. Hi-Cap £375. 250 £800. Naim CDi, £475, boxed. All serviced 15 months ago. Pristine condition. Pioneer F676 tuner, £45. MusicWorks 6 way mains block, three leads, £250. Tel: 01722 334 694

VINTAGE G.E.C metal cone speaker. Original oak octagonal cabinet. First reasonable offer accepted. Buyer collects. Tel: 01298 814 556 (Buxton, Derbs)

VOYD VALDI T/T in rose-wood. External power supply. Excellent. £450 ono. Also Audio Innovations PI phono stage (valve) £125. Quad FM3, offers please. Tel: 07747 753 007

SUGDEN MUSIC Master power amp 16 watts pc. Excellent sound and condition with original box and instruction booklet. Cost £1200 new £650 ono. Sale due to upgrade again. Phone 01566 782822.

NORDOST SPM speaker cables 2x2 metres bi-wire. £500 ono. Leak Troughline 3 tuner one thing decoder. £200. Trichord Dino phono stage, £150. 0161 2266125/ 07877451585 or Email: b.nicol@ntlworld.com

APOGEE CENTAUR Minor speakers, excellent, £580 ono. Bohlender Model 420 ribbon hybrid, excellent, boxed, £1250 ono. Tel: 01942 707 751 or Mobile 07979 300 421

LINN LPI2 with Valhalla PSU, Ittok arm, Audio Technica ATF5 cartridge. Afrosomia plinth, clear cover, 1984, lovely condition, photos available. £475 collect only or may deliver. Tel Southampton 02380 584534

2 SOUND Organisation equipment stands. Black gloss. 4 tier glass shelves. Excellent condition. £50 each. Contact Gary 01529 410 145 after 6pm

WHARFEDALE EVO 30. The original and best. Look and sound gorgeous. Perfect condition. £350. Cost £650 new. Tel: 01225 706 783 (after 6pm) (Melksham, Wiltshire)

ACOUSTIC RESEARCH model number 142s. Very good condition except scruffy grilles. No charge (free). Tel: 01843 843 145

MONITOR AUDIO floor standing speakers Bronze B4, ash finish, excellent condition. Demo available. £130. Tel: 01905 456 061 (Worcester area)

CABBASE 100 watt mono power amplifiers, Naim 03 FM tuner, Rotel AM + FM tuner, new Project RPM Five turntable, Shahinian Hawk Load speakers as new. Please phone for prices. Tel: 020 8524 2181

TWO AUDIO Alchemy Vac-In-The-Box disc stages £50 each. Russ Andrews I2S cable suitable for Audio Alchemy or Perpetual Technologies DACs and Resolution Enhancers, £50. Tel: 01642 559 078

REVOX B261 tuner and A78 amplifier. Instruction booklets. Offers please. Tel: 01932 856 434

JEFF ROWLAND Coherence One preamplifier plus two Model 3 mono power amplifiers with manuals. £3250. Tel: 01255 421 589



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DIY Valve Amplifier Parts - Valves, PCBs, Connectors, Hardware



We stock a full range of valves (tubes) from famous manufacturers. The list below is a selection of favourites. If you don't see what you want - please ring or e-mail. We are happy to match valves on request.

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EL84 JJ (to Tesla Specification)	£9.75
JJ 300B (popular and reliable)	£83.50
EH300B Gold Grid	£69.00
Svetlana KT88 (outstanding)	£36.50
Sovtek 6S50 WE	£19.49
Sovtek 5881	£12.49
EL34 ElectroHarmonix	£11.85
EL34 JJ (balanced and precise)	£15.49
5U4G Sovtek	£9.94
GZ34 JJ	£16.99
5687 WB Philips NOS (gutsy)	£12.49
Svetlana 6N1P	£6.50
6SN7GT EH (to RCA spec)	£10.25
ECF80 EI	£7.30



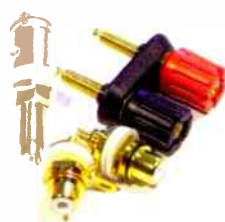
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B7A Chassis Mount	£4.70
B9A Chassis Mount	£4.70
B9A PCB Mount	£4.70
Octal Chassis Mount	£4.70
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Valve & Transistor Audio Amps by John Linsley Hood	£24.50
Self on Audio by Douglas Self	£26.50
Valve Radio & Audio Repair Handbook by Chas E. Miller	£22.50

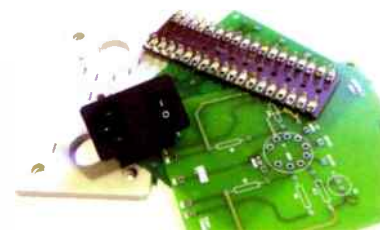
Valve Amplifiers by Morgan Jones	£29.50
Building Valve Amplifiers by Morgan Jones	£19.50
Life & Works of A.D. Blumlein by R.C. Alexander	£18.00
Understand Amplifiers by Owen Bishop	£19.50
Audio & Hi-Fi Handbook edited by Ian Sinclair	£34.50



Eichmann Bullet Plug phono plugs - pack of 4	£25.00
Neutrik Professional Gold Plated phono plugs - pack of 2 - Red/W	£1.69
Gold plated, teflon insulated phono sockets - pack of 2	£4.75
Silver plated speaker terminals pack of 2	£9.40
Twin speaker Terminal Set chassis insulated - Red/Bk	£2.94
Chassis mount earth post nickel plated	£1.23



ALPS Blue Beauty 50k dual log pot.	£13.69
ALPS Blue Beauty 100k dual log pot.	£23.00
Stereo carbon track 100k dual log pot.	£2.95
Cermet 'Humbucker' 2W at 70 C 22R or 100R linear pot.	£8.99
6 way Selector Switch 2 pole 6 way rotary wafer	£1.88
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Hardwire Tag Board twin rows of 18 tags	£2.33
Switched IEC AC 'mains' inlet chassis mount with fuse	£2.88
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UK IEC AC 'mains' cable fitted with fused plug, 2m length	£5.36

PRINTED CIRCUIT BOARDS

HD83 Headphone II	£16.25
Phono II phono stage	£16.25
PSU II power supply	£16.25
Pre II preamplifier	£16.25
KEL84 Power amp	£24.98



POWER SUPPLY PARTS

UF5408 700V 3A rectifier diode ultra-fast recovery	£1.25
Cree CSD4060A rectifier diode Schottky 600V 4A	£6.75
Jensen 4700uF 16v DC 4 terminal electrolytic	£25.85
RIFA 47uF 100V DC PEG Axial Al Electrolytic	£2.99
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Polyester 0.47uF 630v DC WIMA Metalised film	£1.29
Panasonic FC 220uF 500V DC Low ESR Al electrolytic	£8.95
Bridge Rectifier 25A 700V 28.5mm x 7.5mm	£3.25

We stock a wide range of parts to facilitate the build of valve amplifiers. Please ring or e-mail for details. See our on-line catalogue at World Designs, 59 Main Street, Great Gidding, Huntingdon, Cambs, PE28 5NU

www.world-designs.co.uk

Tel: 01832 293320

CLASSÉ CP-500 preamplifier £1795. (£2950). Matching Classé CDP-102 CD/DVD player £1795. (£2950). Absolutely mint, boxed, current models with silver remotes and blue touch screens. Images & reviews on www.classeaudio.com
Tel: 020 8295 2715

WANTED: COPLAND CSA 28 amplifier. For Sale: Audiolab 8000A £70. Teac VRDS 10 £300. Triangle Celius 20Z £550. Pioneer A300R Precision £150. Audio Alchemy Dac-In-The-Box £95. Tel: 01260 295 804

PRIMARE CD110 CD/FM/DAB all-in-one unit, Hi-Fi Choice Gold Award, very smart and sounds as good as it looks, £775. Unison Research Unico hybrid valve integrated amplifier, £650. Both mint. Tel: 023 8073 8935

ELECTRONICS HOBBYIST requires for spares faulty or non-working Quad 34 abd 44 preamps. FM3 and FM4 tuners. 405 amplifiers. Also boards etc. For above contact Mike 01758 613 790 for price.

AUDIO NOTE valve pre/power CD system. Superb sound, large soundstage. Less than years use, mint condition. £1600 (£3000) Atacama Equinox 5 shelf isolation rack, mint condition. £100. Tel: 01992 300713

NAIM NAC 112X preamp and NAP 150X power amp. 6 months old. Mint condition and boxed. £849 ono 01794 513 003

QUAD ESL 63's £1200. Meridian DVD596 5 stars upgraded £1000. EAR 8L6 £1495. Sony DVP NS33 DVD £50, STSB920 QS tuner £70. Rotel RT950BX £60. NAD 3020 + 4020A £100. Tel: Jim 01206 510 392 or 07880 983 630

MUSICAL FIDELITY Tri-Vista 21 DAC £350. Sony XA3000ES SACD player £250. NAD C422 tuner £60. Parts Connection Assemblage valve LI preamp £75. Tel: 020 8668 2409

BRAND NEW product hand crafted acrylic decks complete with arm - cartridge. Great looks, great sound. For details, photo telephone 07914 696 538

LINN KUDOS tuner and Cambridge DAB500 digital tuner, both mint and boxed, £175 for both, will not split. Remotes and manuals. Call Jonathan on 01279 718072 (Herts/Essex)

SONY MINIDISC deck, MDS JE780. Works fine. Also Sony QS cassette deck TCK 8920S. Little used but needs adjustment. Any offers? Tel: 0121 476 8507 after 6pm. (Birmingham)

FOR SALE: Pair Quad ESL 63's. Immaculate condition £1000 ono with stands. EAR 859 integrated valve amp. One owner £975 ono. Tel: Graham 01482 641 261 after 6pm.

NIGHTINGALE NM3 transmission line speakers 31 kg each 3 way design, sound detailed and crisp, stands 15 kg each, really nice Teac cabs, rare to find, £295 Tel 01554 771116

ARCAM ALPHA 6 plus amplifier excellent con £25, Denon cassette tape deck DRW-585 unused £45, Sony CD recorder unused £25, Mission 782 speakers vgc £25. Tel: 01372 724056

MARANTZ CD65IIE CD player, immaculate, £60, Dunlop Systemdek Transcription turntable, original model, Rega RB200 tonearm, gc, £150. Onix OA21 amplifier, SOAP power supply, mc phono board, 1990, mint, £220. Tel: 020 8366-2647

NAKAMICHI CASSETTE 2, very good condition £65. Target 20" loudspeaker stands £20. All prices plus postage. Tel: 01306 887 554

SPENDOR S20 black speakers, stands, £225, Marantz CD63SE, no remote, £35, Linn Kans 3, damage one corner, £65. Audionote Rega arm, yellow cable, £90. Rogers LS7, £90. Sussex. E-mail: brance.williams@virgin.net

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750 CLASSICAL LP's for sale all in excellent condition @ £1.00 each. Collection from Lancashire. Tel: 0161 633 5553 or Email: den1@talktalk.net

PIONEER A400x amp as you know sounds great, a real gem of a amp £115. Tel: 01554 771116

PROJECT RM4 turntable with Ortofon 510 MK II cartridge as new hardly used Hi-Fi News best buy £150 No offers 01268 415017 (Essex)

GUIDELINES FOR BUYING AND SELLING SECOND-HAND EQUIPMENT

FOR THE BUYER

1. Not everyone is honest - Buyer Beware!
2. Don't send cash!
3. Accept no verbal guarantees.
4. Have you heard the item or something similar? If not, why do you want it?
5. Don't pretend to have knowledge - it's your fingers that will get burnt!
6. Is it working? If not, why not?
7. Has it been modified and, if so, have notes been kept?
8. Was it any good in the first place?
9. Don't send cash!
10. If you are in the slightest doubt, arrange an audition (see point 5) If it's too far, wait for another time.
11. Either buy it or don't: vendors are excusably impatient with 'consultation' exercises.
12. Don't send cash!

FOR THE SELLER

1. Not everyone is honest - Seller Beware!
2. Make no verbal guarantees.
3. Even 'nearly new' is still second-hand. If the manufacturer's guarantee is no longer in force, your price should reflect this.
4. There is very little intrinsic value in second-hand hi-fi; it's only worth what someone will pay for it.
5. The best guide to pricing is last month's Classifieds: that a 'classic' was worth £xxx a year or two ago is no guide. Values fall as well as rise.
6. Amateur second-hand dealing is not a big money game: you win some, you lose some.
7. Be prompt with despatch. If in doubt about buyer's bona-fides, either wash out the deal or send C.O.D.
8. There will always be time-wasters; be tolerant within reason!

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NEXT MONTH

Get some respite from the never-ending, baking-hot summer of 2007 with October's Hi-Fi World! (Okay, we can dream, can't we...?) What better way to enjoy the high season than with next month's bumper issue, packed with riveting reviews and perfect for perusing as you wring out your socks and fold up your brolley once again...

We kick off with a look at four audiophile AV receivers, including the superb new Arcam AVR280 and Cambridge Audio 640R. We hear the latest One Thing Audio modded Quad ESL57s - one of the best loudspeakers we've ever encountered no less - and audition the stunning Connoisseur 4.2, which is truly worthy of the equivalent accolade in phonostages. We also have the gorgeous Melody SP9 tube integrated [pictured], and the natty new Leema Xero mini-monitors - LS3/5a fans must read this! Factor in a super LP12 upgrade feature and Classique Sounds' new retro-styled passive preamplifier, and our October issue will have you forgetting the inclement weather. Here's just some of what we hope to bring you:



ONE THING AUDIO QUAD ESL-57 LOUDSPEAKER
ACCUSTIC ARTS CD PLAYER-1 Mk2 CD PLAYE
RED WINE AUDIO SIGNATURE 70 AMPLIFIE
SHANLING STP-80 INTEGRATED AMPLIFIE
TRANSFIGURATION AXIA MC CARTRIDG
MELODY SP-9 INTEGRATED AMPLIFIE
CLASSIQUE SOUNDS SILVER PREAM
LINN SONDEK UPGRADE FEATUR
MF AUDIO PHONO TRANSFORME
CONNOISSEUR 4.2 PHONOSTAG
LEEMA XERO LOUDSPEAKER
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ADVERTISERS INDEX

2nd Hand Hifi	113
Anatek	114
Angel Sound	122
Arousal	14
Audio Components	56
Audio Craft	109
Audio Destination	60
AudioXpress	108
Audusa	106
B&W	BC
Basically Sound	84
Big Ears	108
Billy Vee	104
Choice Hifi	123,125
Classic Contacts	122
Classique Sounds	111
Decent Audio	115
Densen	38
Diverse Vinyl	78
ECS	70
English Valve Audio	112
Exposure	IFC
Flying Mole	62
Heathcote Audio	110
Heatherdale	115
Henley Designs	90,94
Hi-End Cable	111
HiAudio	48
Hifi Sound	113
Horn Audio	111
I Cubes	60
Ian Edwards	115
Ian Harrison	114
Icon Audio	107
Kit & Components	98
Kudos	115
Leema Acoustics	34
Linn	12
Mantra Audio	109
Matrix	107
MBL	6
Michell Engineering	68
Midland Audio Exchange	117
MIT Cables	44
Musonic	122
Naim	58
Neat Acoustics	84
Newcastle Hifi	22
Origin Live	56,114
Podium	44
Quad	96
Retro Reproduction	109
Rochester Hifi	112
Russ Andrews	60
Shadow Audio Cons.	72
Shantidale	107
Sounds Of Music	116
Stamford Audio	76
Sugden	84
Tangent	56
The Right Note	68
Tube Shop	108
Turntable World	113
Usher	IBC
Vertex	62
Walrus	74
World Designs	120,124,126

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GOOD & RARE VOLUME 1 AND 2

BING CROSBY 2006/2007

"the most dedicated and important Crosby retrospective there has ever been..."

The statistics are staggering and could easily fill this page and more, but here's a select few. He forged thirty eight No.1 hits (The Beatles only managed twenty four), 396 of his songs reached the charts (Frank Sinatra managed 209, Elvis Presley 149 and The Beatles sixty eight). Between 1915 and 1980 he was the only motion picture star to rank as the number one box office attraction five times (1944-48). Between 1934 and 1954 he scored in the top ten fifteen times. He also made more studio recordings than any other singer in history.

For Bing Crosby, that's the rub. Take those other artists. If you want to pick up the entire oeuvre of The Beatles, Elvis or Sinatra, you can order the lot in a nice neat package from the High Street or the Internet. No such luck for Crosby. For one, there's just so much of his work out there and, secondly, it's scattered to the four winds. Finally, when releasing CDs featuring the great man, too many record labels focus on a small selection of hits to the detriment of the rest of his work.

Reissue specialists Sepia Records has done music fans a service by producing two separate CDs chock full of rarities. Richard Tay, Sepia boss, explained how the original content was decided upon for Volume 1, "I must give 99% of the credit to Malcolm Macfarlane. He's the editor of Bing (a fan magazine). He advised me of the potential for '50s Crosby tracks that had never been on an official CD before. With Malcolm's

help we completed Volume 1, which was well received."

This year, Sepia decided to do a sequel, Volume 2, which has just been released. Macfarlane supplied Sepia with a list of tracks which, again, had never been on an official CD before. That list was whittled down to around thirty songs. Then contact was made with Geoff Milne – a big Crosby fan with a large collection of Crosby 78s in excellent condition, "Geoff was very generous with his help," said Tay, "We looked at the tracks and I played them all but there was no way we could fit in all thirty tracks. I wanted to create a balance of tempo so I decided to break up the ballads with Latin American numbers. I then sent the final list of 78s off to Robin Cherry for mastering whilst Malcolm has supplied the liner notes."

Cherry is a respected BBC Studio Manager who is currently working for BBC Radio 3. For this project, "I used a Technics SP10, which includes a 78 option – it's rumble-free and rigidly locked to the selected speed," explained Cherry. "With the SP10 I used an early long-armed, 12", SME arm with a Shure SE35 cartridge. The long arm is useful if I ever process 16" records.

"I like to keep an eye on the speed of the recording to correct possible errors – I've noticed that some Bing recordings, issued on a 78, will have a different pitch to the same recording issued on a vinyl LP. So which is the right one? I check

the pitch and timbre against my own tone records and also my piano, which is permanently tuned to the correct modern pitch. I also note where Crosby is at in his career because his voice changed over time. If you play Bing a semi-tone out it's terribly obvious."

The resultant CD is an excellent release packing twenty six tracks onto a single CD. Dating from 1949-1955, the tracks derive from a range of composers: Arlen and Weill to Loesser and Berlin and include songs from two Crosby films: 'Mr. Music' and 'Here Comes The Groom' plus duets including his son, Gary and Donald O'Conner.

If you want more Bing Crosby rarities, take a look at Jonzo Records which has undertaken the colossal task of issuing all of Crosby's work in chronological format, as a limited edition (many of which have also been mastered by Robin Cherry). Starting from Bing's early works, the label has reached volume 47, which only takes Crosby to the end of 1947! It comes complete with alternate takes and very detailed liner notes.

This is a work of love - the most dedicated and certainly the most important body of retrospective Crosby work there has ever been – and probably ever will be. **PR**

[For more information, contact Michael Crampton on michael@club-crosby.org or call 0113 268 9556.]

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