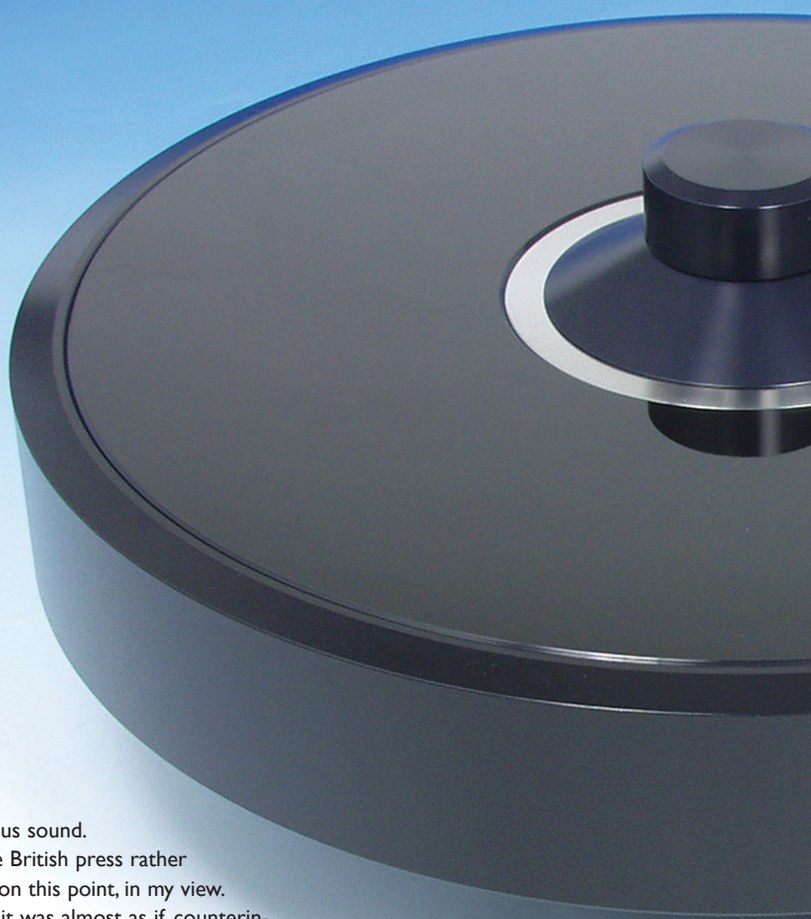
HI-FI WORLD

Source Direct

David Price tunes in to Brinkmann's new Bardo turntable, a bang up-to-date direct drive design...



Blame the Technics SL1200. Back in the early nineteen seventies, when this deck was first released, it might has well have been from an alien civilisation, such were its measurements. The difference between it and your average wobbly belt drive or noisy idler drive were like night and day, in terms of its wow and flutter and signal to noise ratio.

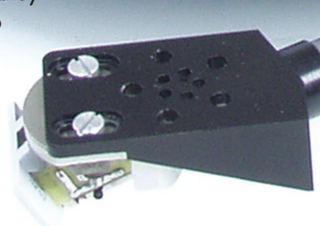
Unsurprisingly (and as I remark in my column), Matsushita decided to celebrate this (well, you would, wouldn't you) and began the trend adopted by Japanese manufacturers of the day to sell their hi-fi by its specification. Be it Watts per channel or damping factor, the big Nipponese names obsessed about their products' measured performance, and tried to get the British buying public to join in too. Well, a deck with 0.03% WRMS wow and flutter simply had to be better than a Brit belt drive with 0.07%, didn't it?

The answer of course was *no*. For whilst by the end of the nineteen seventies the Japanese were able to produce quartz-locked direct drives for their music centres that outperformed a Linn LP12 in terms of its absolute speed stability, this emphatically did not mean it had then to sound better. In the same way that jitter is a good thing to banish from your digital replay chain but isn't the beginning and the end of the subject of digital sound quality, so low turntable wow and flutter was desirable but not the final guarantor of serious sound.

The British press rather fixated on this point, in my view. Indeed, it was almost as if, counterintuitively, it was good for a turntable to be belt drive because "they sound better", despite invariably measuring worse. Such was the climate of the day that they made direct drive out to be the province of cheap, mass produced Japanese turntables, unlike their beloved belt drive Linns, Aristons, Dunlops and Regas. In Britain, thanks to its press's proselytising, belt drive was good and direct drive was bad.

It's taken a long time for us to get over this conceit. Visit Japan of course and there was never such a view; high end Japanese direct drives were as routine in broadcast studios or audiophiles homes as Toyota Century limousines were at the Imperial Palace. Things are changing in the UK now however, and I think people are beginning to see that in many ways direct drive is the intellectually correct way of spinning a turntable platter - providing (and this is a *big* 'if') it's done properly.

The traditional objection about direct drive, where the platter is driven from a motor mounted right at its centre, was that you could here it 'cogging'. This was the issue arising from the fact that the fields of a direct drive motor's permanent magnet are not uniform (they'll always be strongest on the two ends and weakest in its centre), which causes the motor torque to fluctuate slightly. This makes for 'hunting',



where the servo is constantly summoning up little bursts of extra power, or little drops in power, to correct the platter speed. The contention then asserted that belt drive is immune from this.

Well, as I've argued in the past, this is to an extent true. Direct drives can never be at exactly the right speed, however good ones are always *very* close to it. And depending on the quality of the motor, electronics and speed sensing, they can be very, very close. Conversely, belt drives can never be at the right speed either; the trouble is that whilst the motor speed is at (or very close to) the right speed, the platter itself is decoupled by the rubber belt, which effectively acts as a clutch. Given that playing a record presents a continually varying load, thanks to the inertia that the stylus creates in the groove as its modulation varies, a belt drive is always being slowed down fractionally by the drag of the stylus, and what gives is the belt (or the coupling of the belt to the spindle), effectively producing a slight slurring on transients, rounding off the leading edges of notes.

Now, opponents of this theory

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validly point out that the drag the stylus creates is a fraction of what's needed to slow a motor down. But the fact remains that I can still hear, with my own ears, how different belt drives and direct drives sound. And judging by the direct drive revival, I'm not the only one...

You too can hear for yourself; go to your local nightclub and listen to an SL1200 play. You'll be amazed by things such as rimshots and bass drums which sound completely different to those played on a belt drive. Now, I'm not saying it's all better from an SL1200 (it isn't), but in respect of speed stability at least it gets things very right. That's why some manufacturers have begun a move back to direct drive, with Brinkmann being one its champions.

Helmut Brinkmann's first Oasis sported magnetic direct drive, and now the Bardo uses this too, in a more affordable and versatile package. Inspired by the design of their top-of-the-line models Balance and LaGrange, this is a very flexible way of getting into Brinkmann ownership, with a range of options. The system is such that there's only one bearing for the motor and the platter; a circular magnet is mounted into the bearing of the platter and is concentrically driven into rotation via coils on the circuit board under the magnet. An electronic circuit drives the coils via two magnetic sensitive resistors that react to the magnetic fields into a highly constant and slow circular movement. Brinkmann say their motor control system transfers just enough energy to the motor for it to remain at a constant speed. Interesting that this is where the thinking from some leading lights in the Technics mod community is going too; the set-up of the servo on the SL1200 is designed for fast start up and gives an overly 'tight' sound which many like to 'relax' a little. As such, the Bardo has a start up time of twelve seconds on 33.333RPM, and four more on 45RPM, compared to under a second on an SL1200!

The Bardo motor's stator consists of four specially designed field coils, which are mounted concentrically with high precision around the platter bearing. Based on listening sessions Brinkmann decided to forgo the typical 90-degree mounting angle in favour of a non-standard 22.5-degree roster, which, due to the magnetic fields overlapping, further reduced cogging. The motor's rotor also acts as the subplatter and carries a magnetic ring with eight poles on its underside. Inside the motor, the rpm of a speedometer disc is measured and turned into variable voltage that is fed into a control circuit where the RPM is compared to the reference voltage that is adjustable via the trim pots. Speeds are selectable by a switch, and there's a speed LED (green for 33, red for 45).

The Bardo's main bearing itself is a lubricated precision (hydrodynamic) journal affair, said to be quiet and maintenance-free. It's kept permanently warm due to the quiescent current of the motor control electronics. It supports the 9.8kg platter which is hewn from a special 'resonance-optimised' aluminium alloy, with a black acrylic platter mat. The chassis is 15mm Duralumin, measures 420x320x100mm, and the whole deck weighs 14.8kg (chassis 5kg,

platter 9.8 kg). Cleverly, the Bardo's tonearm base can be rotated and fixed without play to allow simple and precise tonearm adjustment for all tonearms between 9" and 10.5", without the need to fiddle with the arm. Brinkmann drill the base to the customer's choice. The rear of the deck has a choice of RCA phono or XLR output sockets, and Brinkmann says it's also possible to install tonearms with DIN connectors or fixed cables. Our review sample came fitted with the Brinkmann 10.5 tonearm (£3,895) and an EMT ti MC cartridge (£2,595).

As its name suggests (in Tibetan 'bardo' means 'transitional state', and I'm guessing that's the allusion?), the basic Bardo is an entry level Brinkmann deck that can be upgraded to an altogether higher form. The stock £4,495 package comprises the acrylic platter mat and small plastic housed power supply. Upgrade stage 1 (£695) features the metal cased power supply that is used for the Balance and LaGrange turntables instead of the standard power supply.

Stage 2 (£695) features a glass platter mat and a record clamp instead of the black acrylic platter mat. Upgrade stage 3 combines stages 1 and 2, and is said to give the Bardo "nearly the bandwidth and dynamic resolution of Brinkmann's bigger turntables". There's also the option of a matching granite platform (440x310x30mm), claimed to further improve sonics.

As high end turntables go, the Bardo is blissfully simple. The chassis is effectively just an armboard, a bearing housing and a link between the two. On to this sits the very heavy platter, and the whole shebang can then sit on the optional granite base. This is an important point because the Brinkmann of course has no isolation from the outside world apart from its mass. As such, correct siting is essential. I found the base worked well, but Avid's isolation platform worked better still. In fact, I used two of them, atop a Quadraspire Sunoko vent rack, whereupon the Bardo really began to sing. If it's not properly sited, the deck just sounds like a dirge, so experimentation is well worthwhile.

SOUND QUALITY

Given that, these days, about 99.9% of all serious hi-fi turntables are belt driven, perhaps it's helpful to first describe what direct drive turntables actually sound like! After all, most audiophiles will simply never have heard one before. There is a real difference. Of course, whether or not you think it's better or worse than a belt drive is a matter of opinion, but there's definitely a different feel.

Even the biggest direct drive fan would have to admit they're more 'matter of fact' sounding, kind of like a great Class A transistor amplifier compared to the single ended triode that is a classic belt drive. They sort of 'dump' the sound on you; there it is, right in front of you, masses of detail pushing out with seemingly bottomless reserves of self-confidence. At the same time, there's layer upon layer of stuff going on behind, all seemingly independent of the lead instruments. And all sorts of little rhythmic flourishes from rhythm guitars, percussion and keyboard lines, bursting out for your attention.

Contrast this to a good belt drive, and the latter sounds more beguiling, perhaps a tad more romantic, a bit more 'all of a piece', arguably rhythmically a little less urgent but often just as propulsive, perhaps due to the way belt drives tend to slur or soften the very extreme leading edges of bass notes a bit. All those little production effects that direct drives punch out at you appear slightly more subdued, locked into the general mass of the mix. The effect is often more relaxed, less challenging and more beguiling (or boring, depending on your point of view).

Listening to the Bardo, and from the first bars of 10cc's ' 'I'm Mandy, Fly Me', you're left in *no* doubt that this is a direct drive turntable. The strummed steel string guitars have so much more bite; it's as if you can hear the space between every plectrum strike on the string almost in slow motion, whereas belt drives simply blur it. Ditto, for example, the lead steel string guitar work on Tears For Fears' 'Pale Shelter', or the opening guitar arpeggios on Kate Bush's 'Babooshka'. There's more; instruments seem to jump out of a 'sea of black'. Compared to a Michell Orbe for example, a brilliant belt drive (in my opinion) and the Michell seems to tie everything together more, so there's never a sense that bass guitar notes have ever stopped; one seems to run into the next. The Bardo does not do this; rather it's as if percussive elements almost blink on and off like light emitting diodes in the dark. I am of course overstating this slightly; the subjective differences are more subtle but still have a profound effect on the sound.

Direct drives also tend to pick out studio effects more than belt drives, thanks to their glassy clarity, and here the Bardo did its stuff. Going back to the 10cc track, an apparently simple song suddenly became a highly complex production, the deck showcasing the countless little effects; whistles, tape loops, glockenspiels, overdriven guitars through fuzz boxes, vocal echo, and so on. The Brinkmann proved a forensic interrogator of mixes, in the way of the Avid Acutus, but in a way cleaner still. Another aspect of this is the focus across the treble; angrily struck hi hats had an incredible speed; the envelope of the note was quite different to that via even a high end belt; it simply sounded faster and more 'metallic'. The conjunction of the drummer's simultaneously struck hi hat and bass drum in 'The Things We Do for Love' was a joy to behold, sounding so crisp yet powerful. Then, into the middle eight and ride cymbals shimmered from far behind the morass of the lead instruments like bells in the night; many rival belt drives at this price simply fuzz over them.

Moving to Steely Dan's 'Rickie Don't Lose That Number' and the Bardo provided what's best described as a mastertape-like rendition. It's a cliche in a hi-fi magazine I admit, but it summed up the Brinkmann in a nutshell. Tight, taut, incisive and super-detailed, yet at the same time authoritative and effortless. That last adjective is key, as you can get

almost all of this from a £500 Technics SL1200, but one thing the so-called 'DJ deck' doesn't do so well is to provide an easy calm to the proceedings; the Technics is to rhythms what a pogo-ing punk is to ballet, which is fun to behold but not strictly accurate. The Bardo however is on another level in this respect; it doesn't push the song along as if it's just come out of the bathroom sneezing with a runny nose (if you get my drift). Rather, it lets the song be subtle, carrying the beautiful interplay between Walker Becker's guitar work and the languid drum parts in all its finery.

Tonally, it's also a fair way away from the Technics, as one might expect. Here we have - surprisingly - a slightly less powerful bass, but one that can express itself more naturally. (Going back to an SL1200 is rather like pressing a loudness button; there's suddenly a lot more bass energy going through but if anything it's less convincing.) There's still just as much low end as, say, an SME Model 10, but it sounds *far* better articulated. Across the midband, the Bardo has a neutrality that you can't help but love; there's little of the creamy warmth of your average belt drive superdeck, but neither is there the chill of classic high end Technics designs, for example, and absolutely no sense of a clangy, chromium plated upper mid. Rather, it's a akin to a gently sunny summer's day where nothing blinds you but all's still there in sharp relief. This fine balance is topped off by a sparkling treble that's in no way as sharp as any of the last generation of Japanese direct drives, but still has their vivid presence. A fine balance, to be sure.

Feed this turntable with some classic electro and it's breathtaking. Heaven 17's 'Fascist Groove Thang', with all its complex sequenced synthetic sounds and high energy percussion was rendered with blistering speed and insight, the Bardo setting up a very large and precise soundstage inside which everything was explicitly located. Glenn Gregory's voice was carried with startling immediacy, the recording sounding incredibly fresh despite both its age and the humble recording studio the track was laid down in. Although deconstructive, throwing all the elements into sharp relief, the deck nevertheless managed to push the song out very much as a cohesive whole. This made for an enjoyable rendition, and one facet of this was the effortless way it could 'get louder' when called upon so to do; it is a great conveyor of dynamics, making many rival belt drive decks at the price sound positively disinterested in what they're supposed to be playing.

This combination of powerful dynamics, serious grip and glassy clarity also proved a delight with classical music. The gorgeous Linn boxset of Handel's 'Messiah' (Dunedin Consort and Players, John Butt) showed the Bardo to be a star; although not a romantic performer it is utterly musically convincing with its wide, deep and precisely structured recorded acoustic, delicious timbre to instruments and a sense of effortless and easy rhythmic flow. Alongside all of this, what I so loved about the Bardo was the way it held together so nonchalantly in complex, heavily modulated passages, where so many turntables just slightly lower their levels of grip. In this respect it is superlative and surely the equal of almost anything under £10,000.

CONCLUSION

I'll make no secret of the fact that I'm a direct drive fan, and if you ever doubt my reasoning then I suggest you take a listen to the Brinkmann Bardo; it will soon show you why. First, as a user experience it's fiendishly simple; so many other high end turntables are more like assembling a kit of parts, and can take ages to set up. But this deck might as well be a Rega P2; it's all together in a jiffy. This done, it is lovely to use; silent, uncomplaining, non-wobbly and small in size, it's a turntable for those who believe a deck should be heard and not seen. Finally, sonically it is almost unique. Aside from the placement issues (it's got to be well isolated from the outside world), I found it hard to fault.

Delivering a big, powerful, effortless punch into your system, you'll be shocked at the level of detail and insight it's got, and the eerie 'spaces between the notes' that you simply don't hear via belts. Fantastic dynamics, a shimmering high treble and bucketloads of air and space complete a prime package. Yet there's a *caveat*; just as many simply didn't 'like' the sound of direct drive (such as it is, or is not!) back in the seventies when it was briefly all the rage, so many may crave the slightly warmer, more charming and cosseting sound of a belt drive deck now. So do audition carefully, not all hi-fi is for everyone. For me though, this is an important new entry to the high end turntable market; superbly and subtly engineered, it deserves to succeed.

REFERENCE SYSTEM:
Marantz TT1000/0L Enterprise turntable
Emille Allure phono stage
Musical Fidelity AMS35i integrated amplifier
Yamaha NS1000M loudspeakers

PRICES

Brinkmann Bardo	£4,495
upgraded power supply	£695
glass mat and clamp	£695
10.5 tonearm	£3,895
EMT ti MC cartridge	£2,595

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VERDICT
With startling clarity and dizzying speed, this is an exceptional performer at the price and thus an essential audition.

BRINKMANN BARDO (REVIEWED) £5,845
Symmetry Systems
+44(0)1727 865488.
www.symmetry-systems.co.uk

FOR
- power, precision, grip
- pinpoint soundstaging
- easy authority
- ease of set up and use
- engineering

AGAINST
- demands careful placement

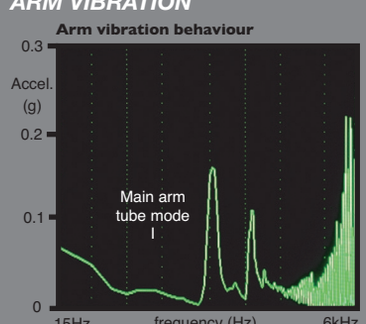
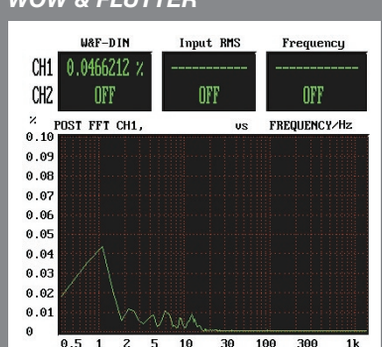
MEASURED PERFORMANCE

Our measurement of tonearm vibration with a Bruel & Kjaer accelerometer shows harmonically related peaks at 175 Hz, 525Hz, 1125Hz. The first main bending mode at 175Hz is quite low but well damped and, as is common, the third order bending mode, as a vibrating system, is most prominent in its influence. The peak it produces is not especially severe however, reaching just 0.15g at 525Hz, not enough to significantly affect sound. Better is possible, from Rega and SME for example, but this is still a good result so the Bardo arm is structurally well designed and constructed.

The turntable had a very low DIN weighted Wow and Flutter figure of just 0.046%, analysis on our Rohde & Schwarz UPL shows. The main peak visible is due to DIN test disc eccentricity, even though it was carefully centred with the aid of a locked outside groove. In practice it is difficult to measure reliably lower than this with a test disc, but at least we can confirm the Bardo is very speed stable.

The Brinkmann Bardo arm and turntable measure well. The arm is good, if not the best. NK

ARM VIBRATION



WOW & FLUTTER