



Clearaudio Performance DC

TURNTABLE

Clearaudio now makes the world's third most expensive turntable, its mighty 'Statement', which will set you back around \$237,190 here in Australia. I was once offered one for free, by none other than Clearaudio's Robert Suchy. There was a catch though... I had to remove the assembled turntable from the demonstration room at the Consumer Electronics Show in Las Vegas by myself. And, since Clearaudio's Statement turntable weighs a touch over 350kg, I didn't even try.

Having now experienced the performance of the Clearaudio Performance DC, I am rather hoping Suchy makes me a similar offer when next I turn up in one of Clearaudio's demo rooms at an upcoming show in the US, or Europe, or Australia... though, since the Performance DC weighs only 13.5kg, I know that he won't!

Luckily, whereas I have never been in a position where I could actually afford to buy a Statement, that certainly isn't the case with the Clearaudio Performance DC, which is not only a fantastic turntable, but also fabulous value for money, especially in the only form

that it's available here in Australia, which is 'packaged' with Clearaudio's new Clarity tonearm (also available separately for \$2,095) and the Mark 2 version of Clearaudio's Virtuoso MM phono cartridge (also available separately for \$1,195). This means that in effect, the Performance DC turntable itself has an RRP of only \$2,705!

THE EQUIPMENT

At first glance, the Clearaudio Performance DC looks like an ordinary turntable, but don't be deceived, because it's anything but. Underneath that POM platter (so there's some high-tech right from the start, because 'POM' is the abbreviation for a pretty cool synthetic thermoplastic known as polyoxymethalene) you will find that there is no turntable pressure bearing. Instead the platter floats on a magnetic field and is prevented from wandering away from its 33.33rpm orbit by a lubricated ceramic shaft. Indeed the only thing that's conventional about the platter is that it's driven by a rubber belt that is in turn motivated by a pulley fixed to the shaft of a d.c. motor, rather than the synchronous a.c. motors that are used in many turntables.

Although you can fit any arm you like to the Performance DC, it seems the most usual choice by hi-fi dealers and audiophiles alike is Clearaudio's own Clarity tonearm, which is why it's now pre-fitted to Australian models. This arm, too, is a 'high-tech' mechanism because it sports a carbon-fibre arm-tube and is suspended via magnets, rather than the more usual gimbal bearings. According to Clearaudio, using magnetic bearings eliminates bearing chatter, which enables the Clarity to, in the company's words, '*function much like a unipivot design but with superior stability.*'

And although you can fit any phono cartridge you like to the Clarity, most audiophiles opted for Clearaudio's own Virtuoso MM phono cartridge, now in its 'Version 2' guise, which sees improvements including an ebony housing for less colouration and more natural sound, even-more powerful magnets and a higher output voltage (3.6mV at 1kHz re 5cm/s)... which is why it's now fitted as standard to Australian models of the Performance DC. The Virtuoso MM's cantilever is aluminium and the diamond stylus is a double-polished elliptical design.

IN USE AND PERFORMANCE

In common with most high-end turntables, the Clearaudio Performance DC requires some assembly (actually, make that 'a lot of assembly') before you can begin using it, though if you buy the standard package, the Clarify tonearm will be installed in the plinth, the Virtuoso V2 cartridge installed and correctly aligned in the tonearm, and both the tracking weight and the anti-skating force will have been correctly adjusted.

Indeed depending on the dedication of your dealer, you may even find that the three rotational speeds have been calibrated as well!

But if your Clearaudio Performance DC arrives in a box, the first thing you'll have to do is locate and identify all the parts in the packaging. Then you'll have to remove the protective sleeve from the ceramic bearing, and put precisely two drops of the supplied synthetic bearing oil on the bearing. Once you have done this, you should wash your hands thoroughly to make sure there's not a trace of oil remaining, after which you should then slide the main magnetic bearing down over the ceramic bearing. After having done that, you'll then need to slide the sub-platter down over the magnetic bearing. Finally, after you've done this, you will need to don the pair of white cotton gloves provided and carefully wrap the rubber belt around the sub-platter, after which you can place the main POM platter over the sub-platter.

I realise that in the previous paragraph I blithely said that you only have to 'slide' the various parts down, when in fact you will actually need to wait a considerable length of time for each 'slide' to complete, because all the parts are so well-machined, and with such fine tolerances, that the parts don't just 'drop' down as with almost all other turntables. On the other hand, these super-fine tolerances also mean you have to be very careful to align things perfectly before each 'slide', and under no circumstances should you ever try to 'speed things up' by forcing one component down over another.

One of the first things that struck me when assembling the turntable was that because the bearing is 'upside down' (as it were), it seemed to me that the oil you place on the ceramic shaft to lubricate it will, in the fullness of time, migrate downwards to the opening at the bottom, meaning that the oil will need to be 'topped up' at regular intervals. I suspect that this time period will be quite long, because the space between the magnetic bearing and the ceramic shaft is so small that surface tension should ensure the bearing remains lubricated. However, because my interest was piqued, I decided to pose the

question of lubrication intervals to Clearaudio's Australian distributor, Advance Audio. Its Marketing Operations Technologist, Nigel Ng, told me: '*Clearaudio recommends once a year for inverted spindles or if speed variations are observed.*' So that won't become too onerous a task then!

The second thing that struck me was that the tonearm did not appear to have an anti-skating device fitted. This necessitated a trip to the manual, which informed me that the Clarify did indeed have anti-skating, and that I had to adjust it by looking underneath the turntable, at the base of the arm post. The manual also helpfully informed me that the anti-skating was preset at 2.4 grams, and that if I wished to change it, I should do so in conjunction with Clearaudio's own test record (LPT43039), available at www.analogshop.de

Unfortunately, when I accessed the 'Test Record' section of this site, it didn't tell me which of the six LPs available was the one I should use to calibrate my anti-skating... though I guessed it most likely was not the 'Didgeridoo Percussion Mystic' test record! It possibly could have been the 'Trackability' test record, but since the only advice the supposedly 'English-language' version of the analogshop website could give me was (and I quote): '*Je höher der erreichte Wert, desto besser ist die jeweilige Tonarm-/Tonabnehmerkombination*', I really wasn't prepared to spend 50 Euros just on the off-chance. So, in the end, I did what I probably should have done in the first place and again contacted the ever-helpful Nigel Ng, who informed me that the test LP I needed was available from Advance Audio for \$125. In the end, however, I used my own Shure ERA IV record, which confirmed that Clearaudio's factory setting was right on the money.

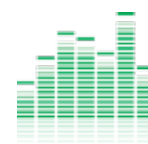
Because I am a bit pedantic about such things (editors are paid to be pedantic), I also decided to check the speed accuracy of the Clearaudio Performance DC. I could not check the accuracy of the 78 rpm speed, because I don't have a 78 rpm test record, but I was able to check the accuracy at 45 rpm and 33.33 rpm. At 78 rpm, the rotational speed was exact, but at 33.33 rpm the speed was just a smidgeon fast... not so fast that I noticed when playing ordinary music LPs, but fast enough to get an almost imperceptible movement on a strobe card. Around the back of the turntable I found speed adjustment screws for the 78rpm and 45rpm speeds, but nothing for 33.33rpm, so it was back once more to consult the manual, which informed me what I'd never have guessed, which is that although the 78 and 45 adjustment screws are

really easy to get to and adjust, the 33.33 rpm speed adjustment screw is *underneath* the turntable! (Who was it who said Germans don't have a sense of humour?)

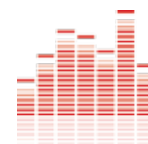
Because I really couldn't work out a way of adjusting the screw while the turntable was operating, I decided that the difference in speed was so small that I'd live with it. After all, I have reviewed plenty of turntables whose platters have revolved faster at 33.33rpm than the Performance DC's platter... and those turntables didn't have any speed adjustment. (If you don't have a strobe card, there's a free one available here: [www.avhub.com.au/images/stories/pdf/strobe.pdf] that you can run off on your printer. If you'd prefer a nicer one, you can buy an inexpen-

CLEARAUDIO PERFORMANCE DC TURNTABLE

Brand: Clearaudio
Model: Performance DC
Category: Turntable
RRP: \$5,995
Warranty: Five Years (Two Years Cartridge)
Distributor: Kedcorp Pty Ltd
Address: Unit 8, 509-529 Parramatta Rd
 Leichhardt NSW 2040
 ☎ (02) 9561 0799
 ✉ info@kedcorp.com.au
 🌐 www.kedcorp.com.au



- Magnetic bearing technology
- Superb cartridge
- Speed stability



- Antiskate location
- Speed adjust location
- No dustcover

LAB REPORT

Readers interested in a full technical appraisal of the performance of the Clearaudio Performance DC Turntable should continue on and read the LABORATORY REPORT published on page 91. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.



Lab Report on page 91

sive (\$40) strobe here (<http://www.decibelhifi.com.au/project-strobe-it/>) or an expensive (\$150) one here (<http://www.decibelhifi.com.au/kab-speed-strobe/>).

My final act of pedantry was to check that Clearaudio had aligned the cartridge correctly, which I did with my Denon Soundtraktor, (though you could use the functionally equivalent tools made by either Clearaudio itself [\$385] or Pro-Ject [the Align-It, at \$199] or Dr Feickert [\$253] if you wish). My use of the Soundtraktor was facilitated by the fact that Clearaudio cleverly puts an alignment dot on top of the tonearm pivot to show where you should put the 'needle' of the alignment tool. I found that the Clearaudio Virtuoso V2 cartridge was aligned perfectly in the arm, so unless you plan on changing cartridges, you could probably save money by not buying your own alignment tool. (Though when you do change cartridges, you will certainly need to invest in one, and because of the alignment mark on the Clarify, I'd certainly recommend you purchase either the Clearaudio, the Align-It or the Dr Feickert, because these three tools have the 'needle drop' design that facilitates perfect alignment. The other useful mirrored cartridge alignment tool (from Turntable Basics, and for just \$30) is also excellent, but will be difficult to use with the Clarify because it needs line-of-sight—at platter level—to the tonearm's pivot point.)

My first attempt to play an LP on the Clearaudio Performance DC was frustrated by the fact that the central spindle was a little too big for the hole in the record! Admittedly the LP in question was a limited-edition Japanese pressing made directly from PCM by Denon, but it was still a surprise that it wouldn't fit. Eventually, I was able to coax the LP down over the spindle, but it was a tight—very tight!—fit. It was worth it though, because once I had the record on, and the stylus in the groove, the sound that resulted was absolutely amazing! It was full, rich, extraordinarily dynamic, and with a sonic presentation that had me right there in the recording studio. Perhaps most amazing was the silence... and not just the silence between the notes being played, but the silence between the tracks as well. Even the lead-in and run-out grooves were silent... well, there was some 'groove noise' from the surface of the disc, but not even the slightest trace of low-frequency rumble.

Removing this disc proved to be even more difficult than fitting it in the first place because when I lifted at the circumference of the LP in an attempt to remove it, I squeezed the centre hole around the spindle, in turn



very effectively preventing me from removing it at all. After much struggling and twisting, I eventually gave up trying and made myself a 'Y'-shaped paddle so that once I'd got the LP up a little, I could slip the paddle in underneath the LP and pry it upwards using the label. The good news is that this disc, as luck would have it, was the tightest of all the discs I played, and most of my other LPs slipped over the spindle quite easily. However, quite a few were tight enough that I had to use my Y-paddle to remove them.

I then played several LPs containing slow piano music, piano being the instrument that most easily identifies slow variations in playback speed (wow) and small, higher-frequency variations (flutter). Listen though I might, I could not detect even the slightest trace of either wow or flutter from the Clearaudio Performance DC. Its pitch stability was absolutely outstanding.

Even more amazing was the performance of the Clearaudio Virtuoso V2 cartridge. I'd never before heard this cartridge, and to say I was stunned by its performance would be an understatement: it sounds absolutely fabulous. Firstly, its tracking ability was outstanding, such that I could not find a single LP of mine that could unsettle it, from my favourite two discs for testing tracking ability (Emerson Lake and Palmer and Tarkus) right up to my least favourite disc for testing tracking ability: Tchaikovsky's 1812 Overture, as captured in vinyl by Sheffield. (This LP is great for testing the tracking ability of phono cartridges, particularly when the cannons are fired... I am just not a huge fan of the 1812 Overture!)

During the listening sessions I discovered that even when the cartridge was working hard at keeping that diamond stylus in the groove, the quality of the bass was superb: sweet, deep and tight, with not a rough edge to be heard even when replaying the most severe musical (and non-musical) transients. With more modest bass fare (that is, deep bass, but not at high volume levels) the bass was perhaps even more impressive, with a rich tone and a smooth way of delivering even the most complex bass lines.

Using vocals to trial the midrange had me captivated by the sheer presence of the vocal-


ists in the mix. They weren't pushed out to the forefront, but stood out nonetheless, as if there were some type of 'third channel' reserved exclusively for their performance. The channel balance was very good and the stereo imaging was as close to perfection as I've heard from a phono cartridge. And, as I have noted on previous occasions, the imaging you hear from vinyl is in a different ballpark to what

you hear from CD. Vinyl imaging is truly organic imaging, whereas CD imaging is more hydroponic...or maybe 'clinical'.

It's the upper octave of the audio band that I personally find sorts out different phono cartridges (when all other factors are equal), because almost all of them have a 'signature' that allows you to easily tell one model from another, with that signature also contributing to the overall 'flavour' of the sound. So you may be surprised when I tell you that I couldn't hear a 'signature' at high frequencies when listening to the Virtuoso V2. All I heard were clean, crisp highs, beautifully reproduced and beautifully extended.

Aside from the few tiny operational niggles I've mentioned so far, I can't finish up this review without adding two more teeny-weeny ones. Firstly, the clip that's been fixed to the end of the tonearm ground wire wasn't big enough to go around the ground post of my amplifier, so I just clamped it under the post and made do. Second, the control buttons on the turntable made a slight 'pop' sound whenever I pressed them and, since there are huge blue LEDs that show whether or not a button has been pressed, that sound seemed somehow unnecessary.

CONCLUSION

How good is the Clearaudio Performance DC? It's so mind-bogglingly good that I seriously thought about concluding this review by writing something along the lines of: 'If you're thinking about buying the Clearaudio Statement, why not save yourself \$183,000 and buy the Performance DC instead.' OK, so that may have been a bridge that was a little too far—especially considering the considerable advantages of the Statement's tangential tracking tonearm—but this synergistic package comprising the Performance DC, Clarify tonearm and Virtuoso V2 cartridge is so good that if you are thinking of buying any turntable with a pivoted arm, at any price up to around ten times what Clearaudio is asking, I would strongly suggest you compare that turntable to this new Performance DC before bending your plastic, because in my opinion, this Clearaudio combo is a true giant-killer. 

greg borrowman

LABORATORY TEST REPORT

The frequency response of Clearaudio's Virtuoso MM Mk2 phono cartridge as fitted to the Performance DC was excellent, as you can see from Graph 1, which shows both frequency response (black trace) and channel separation (red trace). You can see that the Virtuoso's response overall extends from 20Hz to 20kHz ± 4 dB, with the +4dB peak occurring at 53Hz, so it could have been affected by some mains hum in the test set-up, and the -4dB minima was the end result (at 20kHz) of a small roll-off that starts at around 12kHz. Between 100Hz and around 14kHz the frequency response was within just 1dB of reference: very flat indeed. Channel separation was better than 25dB from around 140Hz up to 14kHz, exactly 30dB at 1kHz and returned its best result of 31dB at 4.5kHz. Again, the apparent loss of separation around 50Hz




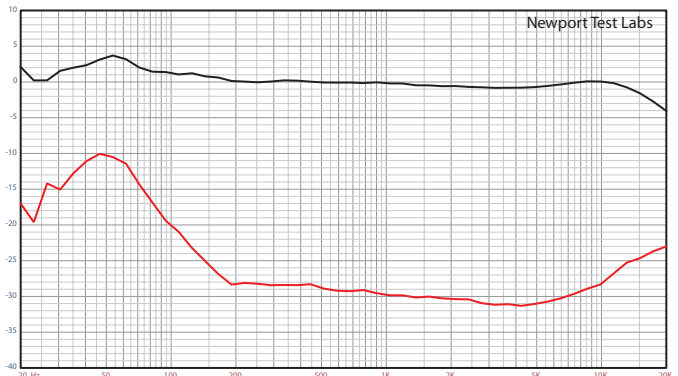
could have been the result of some hum creeping into the test set-up, but it would certainly have been less than 20dB below 100Hz in any case.

Low-frequency noise of the Clearaudio Performance DC itself was so low that at the particular time of day the test was made in the laboratory, it was difficult to discern the rumble of the turntable itself from the background environmental rumble. Graph 2 shows the turntable's rumble spectrum using two different measurement techniques, so you'll see two traces. The upper of the two traces was measured using a blank acetate disc, so the stylus is tracing an unmodulated groove. The lower of the two traces was measured using a special 'rumpel-messkoppler', a device that sits on the spindle and allows the stylus to measure the noise created by the turntable itself, without the inherent surface noise from a test disc. You can see that above 600Hz, the two traces are very similar, and that both are more than 80dB down: an excellent result. Below 600Hz, the increased noise is primarily caused by surface noise on the disc, plus rumble actually recorded on the disc, with the rumpel-messkoppler trace (which rolls off at low frequencies) showing

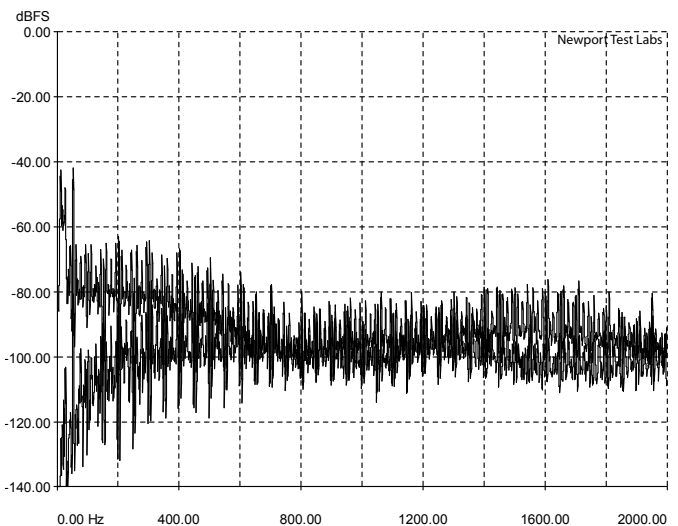
the inherent rumble of the turntable itself.

(The 'spike' visible on both traces at around 50Hz is some mains hum in the test set-up, while the one a little lower on the upper trace is the resonant frequency of the phono cartridge.) Speed accuracy was exceptionally good at both tested speeds, with Newport Test Labs measuring the frequency of a 45rpm test LP playing back a 3000Hz tone at 2999Hz, close enough to perfect that it really doesn't matter. At 33.33rpm the turntable initially played a 3000Hz recorded tone back at a frequency of 3010Hz, just 0.3% fast, and such a small difference that even someone with perfect pitch could not detect it with music. However, the speed at 33.33rpm is adjustable, and after adjustment, the Clearaudio Performance DC henceforth maintained a perfect rotational speed at 33.33rpm, playing back the 3000Hz tone at exactly 3000Hz. Overall wow and flutter was very low, with Newport Test Labs measuring it at 0.09% unweighted RMS, and 0.09% weighted CCIR. The individual unweighted contributions to these overall figures were 0.15% (wow) and 0.04% (flutter) measured using the CCIR standard.

So, overall, the lab's tests revealed exceptional measured performance on the part of both the Virtuoso MkII phono cartridge and the Performance DC turntable. In fact I can't recall seeing better performance from any turntable/cartridge combination.  **Chris Holding**



Graph 1. Clearaudio Virtuoso MM phono cartridge frequency response and channel separation.



Graph 2: Rumble Spectrum. Blank acetate vs Rumpel-messkoppler. ClearAudio Perf. DC.

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