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Rega RP10/RB2000/Apheta 2

Heading the current range and usurping the old P9 flagship, Rega's RP10 now comes with the newly-updated Apheta 2 moving-coil. Is this another winning combination?
 Review: **Steve Harris** Lab: **Paul Miller**

To mark its 40th anniversary, back in 2013, Rega put out a colourful limited-edition turntable called the RP40. A more significant act of celebration, perhaps, was the unveiling of the Naiad, a final version of the no-holds-barred development test-bed in which Rega founder Roy Gandy's design philosophies had been pursued to new levels without budgetary constraints.

This development work had already borne fruit in a whole new range of turntables culminating in the RP8 [*HFN* May '14] and the RP10. In fact the £2998 RP10 itself first appeared in that anniversary year of 2013, but it now also comes, as reviewed here, factory-fitted with the revised Apheta 2 moving-coil cartridge [see boxout, p31]. Although the cartridge normally costs £998, the RP10/Apheta 2 package is yours for £3698.

EVOLVING TECHNOLOGIES

Most obvious of the Naiad innovations is Rega's Double Brace technology. Rega has always contended that the turntable plinth needs to be as light as possible but also as rigid as possible and that rigidity is really needed between the turntable spindle and the arm. In the Naiad, this is achieved in the extreme by a carbon-fibre chassis member sandwiched by ceramic brace pieces that connect the turntable's main bearing to the arm mount. This technique has been adapted, with less costly materials, on all current Rega turntables except the entry-level RP1.

Rega plinths, from the Planar 2 and Planar 3 on, had used a stressed-skin structure, made from two sheets of phenolic resin with a light particle-board or fibre-board sandwiched between them. Then in the mid-'90s, for the Planar 9 flagship, Rega came up with a special plinth that looked

little different from the outside, but which had as much as possible of the particle-board core cut away, leaving just the essential skeletal shape.

Rega's first production model to incorporate a Double Brace was the budget RP3 [*HFN* Oct '11]. Because the phenolic resin brace pieces provided rigidity in the crucial area, the plinth itself could now simply be made from a piece of low-cost furniture board, rather than using the sandwich construction. For the RP8 and RP10, Rega went much further in making the plinth lighter, with a completely new composite construction.

This again derived from work done on the Naiad prototype [see interview, p33]. Instead of a conventional plinth, there is a skeletal chassis fitted with a Double Brace and constructed with a core of hard but very light closed-cell nitrogen-expanded polyolefin foam between two skins of phenolic resin.

Surrounding the skeletal chassis, but not touching it, is an outer frame made from the same composite material. This frame does not contribute to the functioning of the turntable, which can be used

perfectly well without it, but it supports the usual Rega hinged dustcover.

TOP OF THE RANGE TONEARM

Although the RP10's chassis is the same as the RP8's, the RP10 comes with Rega's current top tonearm, the RB2000, replacing the RB1000 [*HFN* Jun '10], introduced in 2002. Rega's original RB300 was way ahead of its time when launched in 1983, with the now-famous one-piece silicon-aluminium die-cast armtube. Production of this long, thin-walled and complex part was a challenge, and it took a very special collaboration with a leading die-casting company to achieve it. But technology moved on, and modern 3D CAD/CAM techniques made it possible to further refine the design.

From the outside, you might not notice the difference unless you saw the old and new arm tubes side by side, but there's now a better blending of the curves in the



RIGHT: Based on the same skeletal chassis as the RP8, the RP10 turntable comes with Rega's top-of-the-line RB2000 arm and, optionally, the Apheta 2 cartridge



shape, internally and externally, improving the arm's resonant behaviour [see Lab Report, p35]. Although the overall mass has remained the same, there has been an 'intelligent redistribution of mass', which makes the back end slightly heavier and the headshell end slightly lighter, with the aim of further reducing stresses and resonances. The RB2000 arm tube casting is highly polished, with no paint or coating.

Having progressed towards an ultra-light chassis for the turntables, it was important also to reduce the mass of the arm. So a new low-mass assembly was introduced to house the vertical bearing. A high-quality, low-capacitance arm lead is used and the arm is wired in one continuous run from cartridge tags to phono plugs.

Ceramic platters have been a feature of Rega's flagship turntables since the introduction of the Planar 9 (1995). As Roy Gandy puts it, 'Adding engineering philosophy to listening experience, I find that the harder and stiffer the platter

material, the less character it puts into the music. This is a big step up from glass.'

To understand this, says Roy, imagine what would happen if the platter were made of some extremely soft material. While the drive system tried to keep the outside of the platter running at constant speed, the centre would tend to get left behind, then catch up, then get left behind again. With the Planar 9, and the

P9 that succeeded it, the ceramic platter was shaped to give a flywheel effect, being relatively thin at the centre and with a thicker rim. Underneath, the P9 platter had a flat surface from the centre

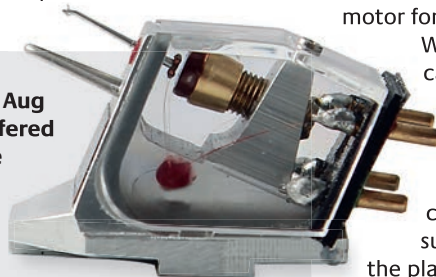
to the inner side of the rim, where there was a fairly sharp angle.

This sharp transition has now been blended out with a parabolic curve, so that the thickness of the platter varies constantly from the point where it sits on the sub-platter right out to the inner edge of the flywheel-effect rim. This avoids creating a nodal point about which a

“The harder the material, the less character it puts into the music”

APHETA REFRESH

Introduced back in 2005, Rega's original Apheta [*HFN* Aug '08 and Oct '14] embodied a design approach that differed fundamentally from every other moving-coil cartridge on the market. For the Apheta 2, the operating principle, and the tried-and-tested Namiki Vital stylus, remains the same, but the generator system has been completely revised, with the iron cross-shaped former on which the coils are wound being reduced in size by 50%. The significant reduction in moving mass is said to allow 'even more detail' to be extracted from the vinyl. The Apheta's one-piece anodised aluminium body has also been redesigned and is now completed by a clear moulded cover, replacing the flat plastic pieces used before. Looking in through the side, you can see that the magnet assembly, which is threaded into the chassis to give optimum rigidity while allowing for very precise adjustment during assembly, is now much smaller and neater than before.



ABOVE: A subtly revised ceramic platter is topped with an all-wool white mat, while the decoupled outer plinth frame also provides a base for Rega's hinged dustcover

resonance could be set up. Matching the ceramic in white, the platter mat is 100% wool and, as usual with Rega, there is no provision for record clamping.

SOPHISTICATED NEW PSU

In the Rega turntable range, power supply options are a logical feature. The lower-cost models come with a simple plug-top mains adapter, but you can upgrade later by adding the more sophisticated TTPSU. This offers electronic speed switching for 33.3 and 45rpm, and comes as standard with the RP6 and RP8. With the RP10, though, you get the most sophisticated Rega power supply yet.

The RP10's custom power supply is built around a high-stability crystal oscillator and a new DSP control system which can generate a 'near perfect' sinusoidal waveform to drive the motor. Factory-set vibration and speed adjustments are then made to the power supply to tune the motor for optimum performance.

With little assembly to do, and the cartridge ready fitted, installation is easy. The turntable itself arrives essentially complete and with its two belts in place, so you just have to remove the cardboard spacer that supports the sub-platter in transit, then unpack the platter and put it on. Setting up the arm is straightforward, as you merely have to screw on the counterweight, and balance the arm with the tracking force dial set to zero before dialling in a downforce of 1.8g to 2g, and checking that the pull-out anti-skate device is set appropriately. There is no provision for height adjustment. But you could raise the arm to accommodate deeper-bodied ☺

TURNTABLE



ABOVE: Along with many other design refinements, the all-metal RB2000 includes a new, stronger and lighter housing for the vertical bearing and comes with a tungsten counterweight

cartridges by adding Rega arm height spacers to the mounting. These come in the form of stackable 2mm-thick three-point stainless steel shims.

MAGICAL TIMING

To describe the sound of the RP10 combination, I could start by trying to characterise the bass, midrange and treble. But actually, it's impossible not to begin by mentioning the sheer vitality that this player brings to the music. Given a well-crafted modern studio recording, the RP10/Apheta 2 combination could demonstrate an almost magical combination of inner detail and timing.

Pure Pleasure's excellent audiophile vinyl reissue of Eric Bibb's 2003 album *Natural Light* [PPANO18] was a great example. On a track like 'Guru Man Blues' Bibb's fine rhythm section seemed to have got things cranked up to a new level of precision and urgency, with a truly solid and stable bass matched by natural-sounding snare and cymbals. With the more straightforwardly acoustic track 'Champagne Habits' there was great natural ambience around Bibb's vocal while the acoustic guitar with its ringing high notes was tangible and totally convincing within the soundstage. Here the tonal balance was sweet and natural, and never over-bright.

Then, of course, I had to play Rega's own Christine Collister album, *Love* [Rega ENS 002], which was recorded ten years ago by Roy Gandy and Gary Bennett on a

Studer 80 analogue tape machine that fed a custom mixing console built by Rega's electronics design wizard Terry Bateman. Here I felt that the textures and timbres of Collister's voice were presented so effortlessly that you could imagine yourself present at the recording session itself.

It also somehow filled me with renewed admiration for Gary Bennett's guitar work, from his crisp and perfect chord accompaniments to the restrained little electric obbligato he plays behind the singer on 'I've Got You Under My Skin'. On the same track the bowed double-bass of Rory McFarlane was simply excellent, woody and full-bodied with a kind of rock-like stability that made it very realistic.

The RP10/Apheta 2 seemed well equipped to deal with classical orchestral music too. To start with, I pulled out an old faithful, Barenboim's 1967 recording of the Mozart Piano Concerto K467, with the English Chamber Orchestra [EMI

ASD 2465]. In my review of the Rega P9 turntable fitted with the original Apheta cartridge [*HFN* Aug '08], I'd suggested that this recording, with its sometimes too-piercing string sound, could benefit from the treble cut provided by the notch filter on the Rega los phono stage.

But this didn't apply in the case of the RP10 and Apheta 2 as, this time, the strings were vivid-sounding but not too edgy or overbright, and the recording sounded fundamentally well balanced. At the start I could have easily believed too that the music was being played faster than the ↻

'The tonal balance was sweet and natural, but never over-bright'

PHIL FREEMAN

With Rega now for 35 years, engineer and company co-ordinator Phil Freeman worked closely with founder Roy Gandy to develop the no-holds-barred prototype turntable that became the Naiad. He explains how this work fed into the RP8 / RP10 plinth system:

'We'd been using carbon/foam composites but they were Rohacell-type foams and true carbon-fibre plates, and the manufacturing processes were just too expensive. Then we achieved a prototype using PU foam/phenolic resin laminates, really quite quickly. It just walked over an old P9.

'But the PU foam was not suitable to sell to consumers because it wasn't UV-stable. It took the thick end of a year to source a special foam, and then it needed a specific adhesive process to bond the resin sheet to the foam. Then, we were producing nearly 100 plinths a month. But the demand was 400!'

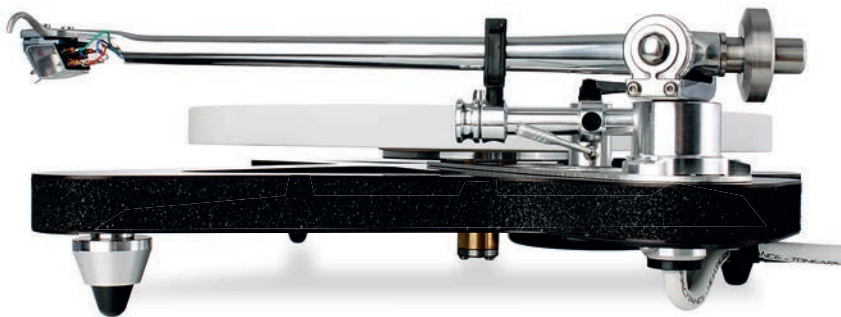
So at that point you were ready to launch the RP10, but were still trying to meet demand for the RP8?

'Yes, and to some degree we're still in that position today, for though we've finished the range that became RP1, RP3, RP6, 8 and 10, we have a whole new range that we want to get to production. We're having to constantly develop the factory, and our workforce and our suppliers, to cope with current demand, and that is slowing the release of further new turntables.

'We can't say what they are or when it will be, but we certainly don't want to rest on our laurels. We feel we've got more to give!'



TURNTABLE



ABOVE: Side view with outer frame removed reveals the foam/phenolic construction of the chassis, and shows the arm lead, directly exiting below the arm itself

last time I'd heard it, although this was clearly not the case, because the turntable was rotating at the correct speed. A rudimentary check with a strobe disc showed virtually no speed error [see Lab Report].

I think that this momentary subjective effect was due to the level of detail being recovered as well as the outstanding rhythmic quality of the deck. The bass parts which give a foundation to the music were revealed distinctly and unambiguously, with a real presence and conviction.

INKY-BLACK BACKGROUND

It was also fascinating to hear the detail in the piano sound. Even on a quick descending run, you felt you could still hear clearly the dampers operating on each note.

With Livia Rev's late '70s *Debussy Piano Music Volume III* [Saga 5463] the RP10 did a great job of resolving the reverberant sound so that the power and subtlety of the music could emerge. Even in the almost overwhelming climax of 'L'Isle Joyeux' the Rega combination remained fully in control.

Turning to a long-standing audiophile favourite, *Muddy Waters: Folk Singer* [Discovery HDR 1001], I remembered how I'd been impressed by the RP8's rendition. But the superiority here was obvious, with an absolutely tangible Muddy really hitting home with his songs. It was almost as if the turntable was making you listen afresh to those familiar words, the meaning seeming to emerge with a new clarity.

On a classic track like 'Long Distance' the spell of the performance would last until it closed magnificently with a guitar coda and the final flourish on the drums. Then, on tracks where the rhythm section lays out, I would be

utterly captivated by the percussive sounds as Muddy tapped on the body of his guitar.

Returning to orchestral music, I indulged in the rather nostalgic attractions of Sir Charles Mackerras's arrangements of Sir Arthur Sullivan's music in his *Pineapple Poll* ballet, with the RPO conducted by Mackerras himself (EMI, 1962): one of the first of Hi-Q's series of audiophile classical reissues [HIQLP001]. Here the RP10 gave a well set-out stereo image behind and around the speakers with a fine quality of lightness and space, and with a quickness that really brought life to the instruments.

Both the basses and timpani had great authority and attack, so that even though they are judiciously set fairly far back in the stereo stage, they really drove the music along joyfully in the Finale of Scene 1. By contrast, 'Poll's solo' had woodwinds, strings and brass all emerging beautifully from an inky-black background that once again seemed to pay tribute to the sheer stability and resolving ability of this turntable and cartridge. ☺

HI-FI NEWS VERDICT

Predictable as it may be, the conclusion is that Rega has yet again offered an advance on what went before, with a combination that excels in Rega's traditional strong suits of pace and vitality, and in other aspects too. The Apheta 2 cartridge has improved on its predecessor, and you save nearly a third of its cost if you go for the complete player. This could cost a lot more and still be an enticing package.

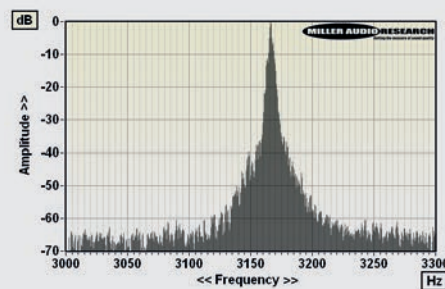
Sound Quality: 86%



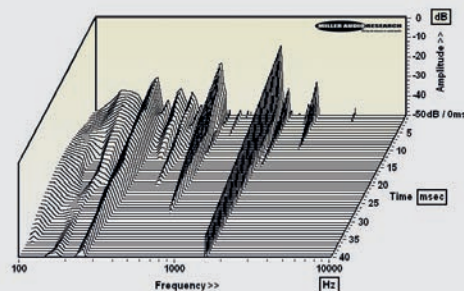
REGA RP10/RB2000

There's insufficient room for a report on Rega's Apheta 2 pick-up, so I'll focus on the RP10 and RB2000 here. Frankly, the RP10 is not only the best Rega deck I've tested but one of the best bar none, irrespective of price. Through-groove rumble is a little better than the RP8 [*HFN* May '14], but at -69.9dB is already at the limit for vinyl noise anyway. The through-bearing rumble tells its own story, however, as the hand-tuned 24V twin-phase synchronous motor, dual-belt drive and precision-cut ceramic platter clearly place little undue loading on this part – a figure of just -73.7dB is 3dB ahead of the RP8 and right up there with the big beasts of the high-end jungle. Wow and flutter is similarly low, the 0.05% peak-weighted total a feature of the platter's concentricity and freedom from cogging/vibration via the motor [see Graph 1]. The (slightly fast) +0.4% absolute speed accuracy is typical of all Rega decks fresh from the box.

The RB2000 tonearm, with its redistributed mass and varying tapers, represents another leap forward. Effective mass is slightly reduced at 10g (from 11g) and friction minimal at <10mg in both planes, but instead of one principal beam mode, its resonant behaviour shows a remarkable reduction in stored LF energy [see cumulative modal decay plot, Graph 2]. The main beam mode is at a high 250Hz together with a harmonic at 650Hz, as seen with the RB1000 [see *HFN* Jun '10] but is far better damped here. The high-Q (but mercifully very narrow bandwidth) mode at 1.6kHz is more obvious only by comparison. Readers may view full QC Suite reports for Rega's RP10 turntable and RB2000 tonearm by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Wow and flutter re. 3150Hz tone at 5cm/sec (plotted ±150Hz, 5Hz per minor division). Low W&F but absolute speed is slightly high (fast)



ABOVE: Cumulative tonearm resonant decay spectrum, illustrating various bearing, pillar and 'tube' vibration modes spanning 100Hz-10kHz over 40msec

HI-FI NEWS SPECIFICATIONS

Turntable speed error at 33.33rpm	33.46rpm (+0.37%)
Time to audible stabilisation	4sec
Peak Wow/Flutter	0.03% / 0.03%
Rumble (silent groove, DIN B wtd)	-69.9dB
Rumble (through bearing, DIN B wtd)	-73.7dB
Hum & Noise (unwtd, rel. to 5cm/sec)	-63.3dB
Power Consumption	6W
Dimensions (WHD)	450x120x365mm