Low output moving-coil pick-up cartridge
Made by: Ortofon A/S, Denmark
Supplied by: Henley Audio Ltd, UK
Telephone: 01235 511166
Web: www.ortofon.com; www.henleyaudio.co.uk
Price: £7349

AUDIO FILE

hi-fi news OUTSTANDING PRODUCT

Ortofon MC Diamond

As the 'Anna' is dropped from Ortofon's MC Diamond, its new flagship retains the sintered titanium body and diamond cantilever but adopts a Verismo-like suspension...
Review: **Adam Smith** Lab: **Paul Miller**

It's long been said that 'diamonds are a girl's best friend' but, according to Ortofon, they also have the potential to be the number one chum of any vinyl fan. While diamonds have been used for styli for decades, few manufacturers have the skill or, indeed, the budget to implement them elsewhere. Enter the Ortofon MC Diamond – the company's new £7349 flagship low-output moving-coil that features not only a diamond stylus, but also a diamond cantilever.

Now, if you're thinking that this cartridge and name seem familiar, then you wouldn't be wrong because the MC Diamond is the third generation of a design that first saw the light of day in 2012. This was the MC Anna [*HFN* Oct '12], dedicated to the famous Russian operatic soprano, Anna Netrebko. This original cartridge sported Ortofon's Replicant 100 stylus profile on a boron cantilever and remained in pole position until 2018 when the limited edition MC Century, developed to celebrate Ortofon's 100th birthday, knocked it off the top spot.

LEFT: While the design of the MC Diamond's generator is based on the MC Anna Diamond, including diamond cantilever and polished 'Nude Ortofon Replicant 100' stylus, the 'WRD' suspension takes its cues from the newer MC Verismo

JEWEL IN THE CROWN

Skip ahead to 2019 and the technology that made the MC Century so special was trickled into the MC Anna Diamond [*HFN* Oct '19]. This swapped the boron cantilever for a diamond rod and moved the company's game forward once more. In 2022, the association with Ms Netrebko ended but it's fair to say that Ortofon's new MC Diamond is far from just an MC Anna Diamond with a word crossed out...

ABOVE: Ortofon's presentation case includes a bag of mounting hardware and instructions. It recommends the moulded stylus guard be put in place whenever the MC Diamond is not in use

Retained from the previous model are the Replicant 100 stylus and diamond cantilever. As it's impossible to 'cut' a cantilever and stylus as a one-piece item, the two must be glued together – a feat achieved here with extreme delicacy [see magnified pic, p53]. Also, the MC Diamond's outer shell and generator are largely unchanged aside from putting on a little extra weight at 17.5g. The cartridge body is made from titanium, laid down in fine layers using Ortofon's Selective Laser Melting (SLM) process, analogous to 3D printing, but using metal. This allows the density of the material to be adjusted as it is laid down, optimising the damping properties of the body. Any resonances, within the shell or travelling in via the tonearm, are also combatted by the thermoplastic elastomer that forms the bottom third of the MC Diamond's body.

> 'Synth notes are blessed with a speed and immediacy'

SPECIAL RELATIONSHIP

The motor system is still based around a non-magnetic armature that extends beyond the coils, which are wound with ultra-pure OFC wire. The cartridge also still uses Ortofon's WRD (Wide Range Damping) system for the armature, where a platinum disc is sandwiched between two absorbent rubber pads with differing properties. However, in the MC Diamond, the rubber compound has been changed to that developed for the MC Verismo [*HFN* Mar '22] and is based on what's described as a 'Multi Wall Carbon Nano Tube' material. The manufacturer claims that this allows better control of the relationship between compliance and damping, improving stability of the cantilever and therefore tracking ability [see PM's Lab Report, p55].

Ortofon supplies the cartridge in a matt white wooden presentation box that gives plenty of space around it and a generous grip to lift it out of the mounting plate. Pricey cartridges in tiny boxes are the stuff of nightmares, but Ortofon has made the MC Diamond as user-friendly as possible here. Also included in the box are a screwdriver and fixing hardware, a set of headshell leads and a stylus brush, all in a swanky cloth bag.

RIGHT: The MC Diamond's titanium body and neodymium, iron and cobalt magnet system contribute to its significant 17.5g weight. The low-to-moderate compliance suspension means a low-to-medium effective mass arm is preferred

The MC Diamond's body has tapped mounting holes set into the upper surface and this, combined with the chunky shape, means that fitting it is less scary than you might expect. In addition, the stylus guard is large, solid and easy to fit and remove, which is a great relief. However, that weighty 17.5g body – plus a further 1g or so for the mounting hardware – will be at the very upper end of what most tonearms will accommodate. My trusty SME V only just balanced it and the 12in VPI Fatboy tonearm that I used for most of my listening with the MC Diamond required some extra ballast at the rear. In addition, those rounded sides do make cartridge alignment a little trickier than some.

Don't be tempted to skimp here, though: if you pay proper attention to every aspect of its alignment and setup, then the results are nothing short of astonishing. Mounted on this long 12in version of VPI's Fatboy arm on the VPI Avenger Direct turntable [see p46], and after a good hour or so of experimentation, I found its sweet spot to be at 2.7g tracking force with the arm ever so slightly down below horizontal at the rear.

HAIR-RAISING HI-FI

Set up like this, I was in for a big surprise. I'm used to occasional cartridges with big, deep low ends, and others with lithe upper bass offering glorious levels of detail. I can name cartridges that create walk-in soundstages and have the sort of midrange insight that has the hairs on your neck standing on end. I can also recall favourite transducers that offer breathtaking clarity, and the promise they could securely track pretty much anything short of a mangled vinyl disaster. And the Ortofon MC Diamond? Put simply, it does all of the above, and to a level of accomplishment that is quite astonishing.

I don't think I've heard another pick-up so effortlessly gifted across the board. Admittedly, if you prefer a sonic signature that errs towards a more romantic, warm and soft sound, then Ortofon's latest might not be your cup of tea. Then again, if you really want to hear what's in your precious vinyl grooves, you should make sure you audition the MC Diamond.

Even better, this flagship cartridge does its work unperturbed by record dust and surface noise. I cannot begin to guess what witchcraft Ortofon has worked on its Replicant 100 stylus, but it shrugs pops and clicks aside with disdainful ease. This means that, at the top end, there's exceptional detail retrieval.

All too often, cartridges can fool you into thinking they're unearthing plenty of musical information through a major rise in top-end output that soon becomes wearing; not so the MC Diamond. Yes, this has a gentle lift in output at very high frequencies, but this just serves to open up its sound. On 'Raising Venus' from Malia and Boris Blank's album *Convergence* [Universal 3740593-2], vocal sibilants were impeccably clean, percussion completely free of 'splash', and the 'tinkling' background synthesiser effects came out of the depths immaculately.

POLISHING THE DIAMOND

In the quest for the ideal cantilever – one that's both infinitely stiff and has vanishingly low mass – only those cartridge brands with both the budget and micro-engineering resources can contemplate the most extreme of options. Diamond fits the bill in terms of stiffness versus density but the stylus – a 5/100µm Ortofon Replicant in this instance – can only be glued in place rather than mounted through a hole [see inset picture]. Achieving this with precision, and without significantly adding to the tip mass, represents yet another challenge but one met with confidence and success by Ortofon's engineers. Of course, every cantilever 'rod' brings a series of bending and twisting modes that interfere, or at least modulate, the motion of the coils relative to the stylus in the groove. Diamond moves any such resonances to very high frequency but Ortofon's latest MWCNT (Multi Wall Carbon Nano Tube)-infused polymer aims to optimise the coupling between stylus and coils by 'tuning' its behaviour at the fulcrum – the pivot point – that lies inbetween. Has it worked? See our Lab Report, p55... PM

SHINE ON...

Then there was Malia's voice to savour, which oozed emotion and subtlety of inflection. If you want to be in absolutely no doubt as to what a particular singer or an instrument sounds like, then look no further; the MC Diamond has the gift of generating a wide but incredibly focused soundstage that sets up a huge 3D sonic picture. To call this performance 'immersive' would be something of an understatement.

A part of this is down to the sheer dynamic range the cartridge seems capable of unearthing. Helped by its low ⇨

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RIGHT: The MC Diamond's pins are clearly marked and separated while the exposed cantilever aids cueing accuracy despite the rotund body shape

levels of surface and groove noise, the MC Diamond faithfully captures everything from a whisper to a roar – you don't need wild and bombastic material to hear it strut its stuff, nor do you need to be listening at high levels. On the other hand, when you do decide to crank something noisy right up, the composure exhibited by the MC Diamond is remarkable, all while it throws you squarely into the mosh pit.

TAKING CHARGE

Also remarkable is the way the MC Diamond treats less than favourable recordings. The 1979 set *Time Passages* [RCA PL25173] has always been one of my favourite Al Stewart albums, but I perhaps don't play it as often as I should thanks to the rather weedy and lightweight sound of my original copy. However, with Ortofon's cartridge in charge, while it left no doubt that this wasn't Emmy-grade mastering I was hearing, it pulled plenty out of the mix. Stewart's lead vocals on the title track stood clear of the rich backing instrumentation and, for the first time, the alto saxophone solo didn't have me wincing ever so slightly at its stridency.

To clarify further, the MC Diamond might not be able to quite turn a leaden recording into gold, but I'll wager not many cartridges have come this close to sonic alchemy so far. And the bass? Oh my goodness, the bass. The sheer power and weight that this pick-up offers up had me grinning from ear to ear. The synth notes in the Malia and Boris Blank track were truly eyeball-rattling, but blessed with a speed and immediacy that made it clear this wasn't just a big low-end output blundering along.

More alarmingly, the pipe organ on 'Julsång' from Bertil Alving's 1976 masterpiece *Cantate Domino* [Torsten Nilsson *et al*; Proprius PROP07762] had the hairs on my arms moving in sympathy when played at somewhat un-neighbourly levels. Fortunately, all this power was accompanied once again by the sort of detail and low-end clarity that one rarely finds together. The bass guitar that backs Jenny Jones on 'Brighton Pier', from her *Blessed Northern Daughter* EP [Go! Discs GODX 103], was supple and tuneful to the point that one or two 'extra' notes I often miss were brought into easy focus. And when the jangling electric guitars ramped up towards the end of the piece, Ortofon's MC Diamond kept that bassline clean and distinct, which is something of a rarity on this recording.

LAYING A FOUNDATION

As a vinyl-lover who has always maintained that, if you get the bass wrong, it's difficult to get everything else right, the MC Diamond lays just about the best sonic foundation I have encountered. I am going to sorely miss this sparkling cartridge when it goes back!

HI-FI NEWS VERDICT

With the MC Diamond, Ortofon has advanced the cartridge game once more. Improving on the already sublime MC Anna Diamond was a big ask, but the company has done it, coming up with a transducer that is nothing short of exceptional in every respect. Its price will sadly put it out of reach for most, including yours truly, but I can safely say that, in sonic terms, this Diamond is definitely my new best friend.

Sound Quality: 90%

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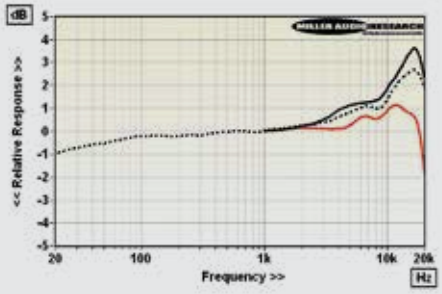
LAB REPORT

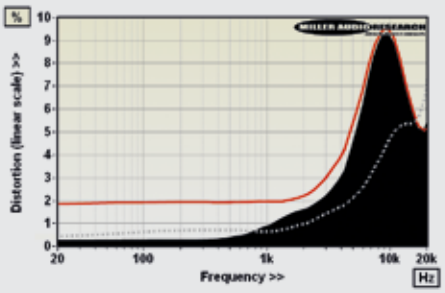
ORTOFON MC DIAMOND

On the face of it, every performance difference between the MC Anna Diamond [*HFN* Oct '19] and this latest flagship boils down to the mechanical (compliance and damping) properties of the latter's suspension polymer [see boxout, p53]. That and the increase in bodyweight of the sintered titanium shell from a high 16g to an even higher 17.5g. All else being equal, reducing the suspension compliance would keep the tonearm/cartridge resonance 'on track' but Ortofon has actually relaxed lateral compliance from 10cu to 13cu in the MC Diamond while simultaneously recommending a *higher* 2.6g downforce, up from the Anna Diamond's 2.4g. Arm matching is subsequently a little trickier – lower effective mass types being preferred – while tracking is fractionally less secure, the MC Diamond holding on to the 70-75µm test tracks before letting go on the +18dB groove modulation (315Hz lateral cut, re. 11.2µm) where THD increased to ~6%. It is, however, still a very fine tracker!

The low 168µV (re. 1kHz/5cm/sec) output is closer to that of the original MC Anna [*HFN* Oct '12] than the Anna Diamond's 207µV but the uniformity of the generator's magnetic field, and symmetry of the cantilever/coil suspension, maintains a superb balance between lateral (L+R), vertical (L-R) and stereo responses [Graph 1, below] and lateral, vertical and stereo distortion profiles [Graph 2]. It's here that we see the benefits of the new suspension with reduced distortion, down from a peak of 11% to 7% at 20kHz (re. –8dB re. 5cm/sec), and a more extended response, now +1.9dB/20kHz up from –0.7dB/20kHz. In the MC Diamond, Ortofon is squeezing every last drop of performance from a proven moving-coil generator. **PM**



ABOVE: Freq. resp. curves (–8dB re. 5cm/sec) lateral (L+R, black) vs. vertical (L–R, red) vs. stereo (dashed)



ABOVE: Lateral (L+R, black), vertical (L–R, red), stereo (dashed) tracing and generator distortion (2nd-4th harms) vs. freq. from 20Hz-20kHz (–8dB re. 5cm/sec)

HI-FI NEWS SPECIFICATIONS

Generator type/weight	Moving-coil / 17.5g
Recommended tracking force	25-28mN (26mN)
Sensitivity/balance (re. 5cm/sec)	168µV / 0.38dB
Compliance (vertical/lateral)	10cu / 13cu
Vertical tracking angle	26 degrees
L/R Tracking ability	75µm / 70µm
L/R Distortion (–8dB, 20Hz-20kHz)	0.9-8.2% / 0.7-7.3%
L/R Frequency resp. (20Hz-20kHz)	–0.9 to +2.7dB / –0.7 to +3.2dB
Stereo separation (1kHz / 20kHz)	33dB / 26dB