Kronos Discovery turntable

REVIEW **Alan Sircom** Apr 27, 2022

https://hifiplus.com/articles/kronos-discovery-turntable/

The original Kronos turntable (a limited run of 250, that proved so popular it joined the Kronos line full time as the Kronos Pro) was one of the most lauded and distinctive high-end decks of the early 21st Century. Its distinctive second platter rotating in the opposite direction to the main platter drew a lot of attention from those seeking the best in vinyl reproduction… and some industrial-grade scoffing from those who didn't need to bother with listening to a turntable to stop them from mansplaining why it was wrong. Usually through a subtle combination of misunderstanding the concepts behind the twin platters, pointing to counter-rotating propeller engines and the 'Caps Lock' button on their keyboards.

And for those people, we have the Kronos Discovery; the already large Kronos Pro writ a lot larger.

That's already one of those absolutely wrong statements that have a touch of 'truthiness' to it; meaning it's wrong but sounds right. The Discovery isn't the Pro for the huskier record collection, as it shares no components whatsoever with the Discovery. Louis Desjardins, founder and Big Brain behind Kronos went right back to first principles for the Discovery, learning a whole lot more about how and why a turntable works along the way. So, no… despite the pithy sentence, the Discovery is not the Pro writ large. It's not even 'inspired' by the Pro. It's closer to say the two run along common evolutionary design channels. Which will doubtless be misread, throwing in 'missing links' and 'throwbacks'.

A quick recap of how we got to Kronos Audio in the first place. Louis Desjardins' Kronos Audio first appeared in Montreal in the mid-2000s. Prior to his work in the audio field and spending two decades as a commercial photographer, Louis studied science at Concordia University in Montreal, studying the physics of waves as applied to both light and sound, particularly how those waves and vibrations were transmitted, reflected, and shifted when passing through different materials.

Louis took those practical physics smarts and applied them at first to other people's turntables; rebuilding them, setting them up, and modifying them. This gave him a good base to develop his own turntable, combining the physics he learned in college with the practical applications gained in the intervening 20 years.

Here's the really clever bit. Louis didn't just copy a prior design; he hit the books. He happened across an article describing how torque forces generated by a rotating platter impact the plinth of a suspended turntable. It wasn't too great a stretch to realise that all existing turntable solutions at the time abjectly failed to deal with the problems described in this paper (and, when you find something that does address those problems, clearly audible), and set to eliminating those torque forces by effectively mirroring the drive, bearing and platter mechanism of a turntable, with the second platter counter-rotating at precisely the same speed as the first.

Using the journalistic equivalent of a Rocky-esque montage, the result was the original Kronos. OK, the result was years of experimentation and development before the Kronos even hit the drawing board, but you get the picture.

Kronos Pro (née Kronos) was the first turntable to address these parasitic vibrations head-on. Sure there have been counter-rotating platters before, but many used a single drive motor or some other 'commoned' part in the chain. But with Kronos, the first step in reducing parasitic vibrations was to design a suspension system that would minimise vibration transfers from the turntable drive system and motors and from the environment. If the motors are mounted on the non-suspended turntable base, then the plinth supporting the rotating platter and tonearm can be largely distanced from both motor-borne and environment vibrations. Further isolation from motor noise comes by using tuned damping elastomer drive belts, rather than direct motor coupling, or idler wheels. Using non-cogging low vibration DC motors also helps rid the system of potential vibrational elements.

Meanwhile, horizontal level stability is increased by hanging the plinth from posts rather than supporting the plinth from below. In this sort of over-hung design, the gravitational force acting on the plinth adds horizontal stability by avoiding the tendency of the plinth to topple over as happens in underhung designs. It also provides the benefit of using mass-loaded damped suspension materials, which help diminish vertical oscillations. Finally, constrained layer construction and choice of materials help dissipate vibrations within the non-suspended base of the turntable, reducing vibration transfer.

This is the backbone of the Kronos concept, and while everything about the engineering and application of the Discovery changes, these core rules remained constant. And by everything, I mean everything. Louis started with a clean sheet with Discovery. It's a very big clean sheet, reflecting the sheer size and scale of the Discovery; Kronos was a big turntable in its own right, and its necessary physical height made it a very physical presence on the equipment table. Discovery makes it look compact. It's taller and a lot wider. A lot heavier too. Fortunately, Kronos is making a table for the turntable, which can also hold its power supplies.

There's a lot of technical ground to cover here in terms of just what Discovery brings to the (pun intended) table. So buckle up… it's about to get nerdy.

Discovery began as a going back to the basics research project. Kronos had already delivered world-class levels of chassis resonance reduction, vibration reduction and keeping residual energy transfer under control… the task was to see if it was possible to go further, and whether going further delivered improved performance as a result.

In going back to basics, Kronos designed the Discovery with a completely new chassis technology, which resulted in twice the number of parts going into the top turntable. Kronos developed a wholly new way to attach the chassis to the suspension system, using completely different soft clamping methods. This treats the chassis more like the soundbox of a guitar or a violin because in that case how it's held dictates to some degree how it sounds. Of course, the requirements for a turntable chassis and a violin are very different and the methods of soft clamping differ too (if nothing else, it's bloody hard to get the Discovery under your chin).

Instead, by adjusting the contact pressure between two surfaces and adding compression gaskets, a degree of movement can be dialled-in within assemblies. This permits the conversion of vibrational energy into heat and therefore helps dissipate vibration. Discovery's surfaces are joined by fasteners, which are then torqued to allow optimal dissipation.

That new chassis technology alluded to above is, in fact, an exoskeleton. These are not a new technology (they form the core of many a sci-fi final battle since Aliens first dropped, for example), but are wholly new to audio. The closest we got was arguably the construction of the original

Roksan Darius loudspeaker, and that was more of a speaker stand encircling its loudspeaker (with drivers on springs for good measure).

This exoskeleton structure helps improve energy dissipation because the sheer number of transitional points is ideal for disrupting vibrational waves. The choice of materials in every aspect of the Discovery has been re-evaluated and changed where relevant (which is, in essence, almost everywhere).

The basic Discovery power supply is radically improved over its older brother. The new model comes equipped with a massive custom hand-wound power transformer and uses a bank of super-capacitors on its output. This provides a huge power reserve and low output impedance, in the process of optimising damping (towards back EMF), improving the microdynamic motor control and increasing drive stability.

There is also an upgrade to the power supply upgrade! The Kronos could be improved by the use of the optional SCPS-D power supply. For the Kronos, that is boosted by its own dedicated super-capacitor power supply, meaning the Discovery is fed by two super-capacitor banks operating in series. This means any ripple or noise on the power line stands no chance of polluting the Discovery's motor system.

I've concentrated on the turntable, but the Discovery I used also sported the new Kronoscope arm. Once again using the journalistic power of trying to cram a lot of concepts into a tiny amount of column inches, this is what happens when you get the very highly rated Black Beauty unipivot arm and give it the same. Kronoscope and Discovery are a bit of an item, they are designed in harmony, use the same materials science benefits, and raise the game over existing arms to the same degree. Its clever, low-slung intelligent counterweight system makes it do the same state of the art disappearing act as the turntable, to the point where it's basically like invisible support for a cartridge.

Basically, Discovery was an 'I wonder…" project, a philosophical exercise in discovering just how far the mechanical aspects of the original Kronos concept can go. And ultimately, what Discovery

showed was there was a lot of improvement to be had even in a turntable with the performance of the original Kronos.

Enough tech geeking… how does it sound? I liked the original Kronos Pro (and Sparta) for its ability to sound like someone got all the best turntables, pulled out what made them so good individually, then mixed it all together and produced a sound so free from noise and the sort of distortions we normally associate with vinyl. It's like a 'Greatest Hits' of all the best things in turntable replay.

Then you hear the Discovery and realise… none of that gets close and that conclusion is totally wrong. Discovery is perhaps the simplest turntable to review as it just does 'it' better; 'it' being pretty much everything related to vinyl replay.

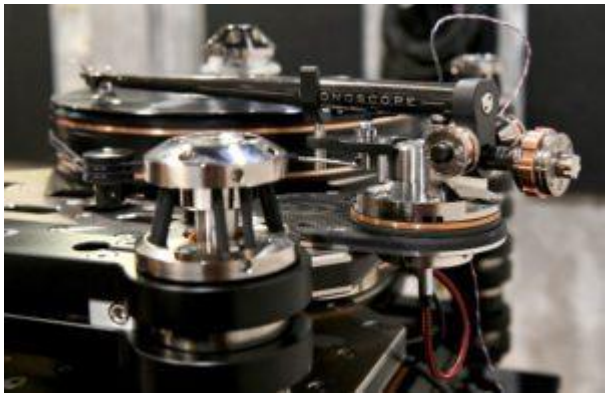
So, why was the conclusion about Kronos, Sparta and the other turntables wrong; it's because each one of those turntables was like applying a photographic filter to the front of a camera lens. The Kronos sounded like it collated the sound of all the other decks because it applied a less intense filter in front of the sound. If the Discovery has a filter applied, it's completely transparent enough to be functionally invisible. Or inaudible… help me out here, these metaphors won't mix themselves!

Every recording I played on the Discovery was like listening to it the first time. I was playing pieces of music I've been listening to for decades and they sounded as fresh and new as if I'd just slit the plastic wrapping. This is as much down to the Discovery's uncanny ability to just step through surface noise (it doesn't make surface noise go away, it just makes it seem irrelevant next to the music being played). Play something light and fast ['Venus di Milo' from Television's iconic Marquee Moon album, Elektra] and that fast and snappy sound comes through. But here's the kicker; I've been playing that album since the mid-80s and I always thought of them as a tight art-punk band from the 1980s, but essentially little more than a vehicle for frontman Tom Verlaine. What I didn't realise is just how good a band they were. The drummer (Billy Ficca) in particular.

And, staying in the same era with good musicians, playing Ian Dury's New Boots and Panties!! [Stiff] was another one of those records that have been in the collection for decades, one that I know so damn well and one that left me wondering what pale impression of Ian Dury I'd been listening to all these years. This same 'your records… anew' applied throughout, from folky guitar to smoky jazz club. From row three of the classical concert hall to head-in-the-bass-bin dub. No foot was ever put wrong, nothing sounded out of place. The Discovery was contributing so little to the sound of vinyl that swapping a cartridge had a bigger net contribution to changes in performance.

With this much musical information on show, the Discovery comes with a little in-head readjustment time. Your first listen to the turntable is spent leaning into the loudspeakers, as you savour all that information. Slowly, you start to lean back and enjoy the music, unattenuated by contributions from the deck and arm for what is probably the first time ever.

There isn't much to dislike with Discovery, save for its size and Captain Nemo physicality. The speed controllers on the front panel are not marked, so conceivably you'll spend some time turning the Discovery on and off when you think you are simply stopping the platter for a record change. You'll also tend to forget whether twisting the left-hand knob 'up' gets you to 33.3rpm or 45rpm. There were more than a few 'oh… bollocks!' moments when on returning to the listening chair I was met with a fast, high-pitched voice, but you quickly learn. It's also an intricate and complex piece of equipment to install, so unless you can field-strip a Sparta blindfolded in 20 seconds flat, it's best left to the experts, and if you live on the fifth floor and in a room accessed by rickety, narrow stairs… those experts better include a few piano movers. In great fairness to the Discovery, though, once installed it's pretty much fit and forget, and the tonearm is easy to use and even easier to swap cartridges.



Discovery is perhaps the aptest name for this turntable in two ways. From the position of the turntable maker, finding out what it does and why it does what it does is like the Rosetta Stone of top turntables. While a lot of what goes into Discovery remains a Kronos-kept secret, there will be engineers and designers pawing over the website, this review and – when shows finally happen in number – the actual Discovery turntable itself, in order to find just what can be reverse-engineered and applied to their own equipment. I don't think Louis has to worry too much

about this; the key component is pretty damn obvious and what is in essence a second turntable running in counter-rotation is a little hard to hide.

For the end-user, however, the Kronos Discovery's name is just as apt. You are about to discover what's on your records for the first time. That at first is a revelation, but once you get over that first listening bump and get used to its ear-opening performance, you will just want to tear through your record collection, in a voyage of, you guessed it, Discovery.