

Arm-ageddon

Linear tracker or radial pick-up arm – which is best and how do they differ acoustically? The testers were looking for the ultimate battle of tonearm principles. However, the real winner is a revolutionary new phono pre-amp, which amplifies the music at source.

Author: Stefan Schickedanz

By the 1990s who would still have bet anything on vinyl? Especially on it one day being well on the way to outliving its successor. While the biodiversity of CD players is constantly on the wane, the vinyl biotope is thoroughly thriving. For example: Linn. The LP-12 deck launched 40 years ago is still going strong, while by contrast there is no longer any sight of a CD player in the Scots' product range. However, you don't even need to leave the European mainland to find a meaningful indicator of the state of the musical landscape. A look toward Franconia will suffice. If in addition to countless radial arms a manufacturer offers not one but no less than three different linear-tracking pick-up arms, the analogue technology, now over 100 years old, must be enjoying a boom.

And rarely have the advances in terms of vinyl playback been so greatly condensed together in a single device as in this Clearaudio Innovation, which oozes new technology from every pore. You can't even see the latest and most ingenious innovation. Yet this highly complex mechanical masterpiece has what it takes to command due respect from experts and laymen alike. After all, not one but two fundamentally different pick-up arms

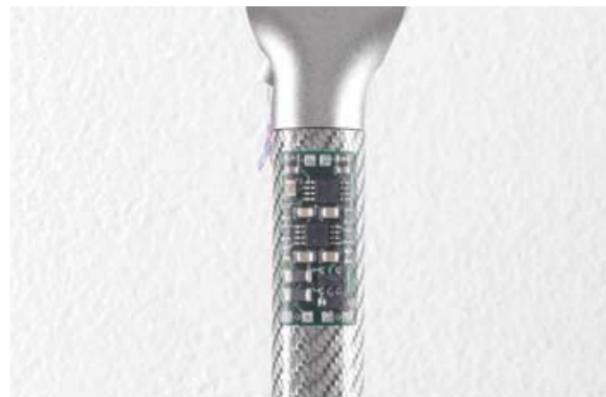
bear witness to the near limitless complexity involved in trying to obtain the maximum information from the groove. Based on the one principle is the Universal pick-up arm made of Kevlar. Fitted diagonally opposite is Clearaudio's TT2 tangential arm. Thus you are able to indulge your playful instinct and curiosity and compare whether radial or tangential tracking produces the best results. That's because the same cartridge is fitted in both arms: the moving coil system Da Vinci V2, also from the Franconian family business's product range.

There is no doubt that what you see is impressive and already has you expecting exquisite acoustic pleasures. However, the real show-stopper is concealed inside the pick-up arms: a radically new phono pre-amp, which for the first time ever sits, as it were, right on top of the source. Anyone who has ever had the opportunity to listen to Naim or Phonosophie's pre-amp solutions designed for in-frame installation will have a good sense of what Clearaudio's even more forceful step in this direction means: the extremely fragile MC signals now get further processed immediately downstream of the cartridge. Amplified to line level fresh from being hooked up of the groove. The microscopic little currents thus have no need to first struggle

through long wires, which for reasons of weight and flexibility also have to be extremely thin. Only then in the normal situation to end up via jacks and other cables at the phono pre-amp, which finally breathes some volume into them.

Naturally, stronger signals are better armed against interference and line loss. What arrives at the pre-amp is thus simply more. 10dB more signal-to-noise ratio, promise the proud inventors - in this context that's almost a different world. In order to achieve these ambitious targets, the Erlangen-based company pursued a dual-pronged strategy: because miniaturisation of the amplification circuits on its own was not able to solve the technical problems, they split up the work. The first step is handled by a tiny circuit board, which is fitted directly downstream of the pick-up inside the arm tube. It is less than one centimetre wide and only just over two centimetres long. Its task is to make the tiny signals from MC systems, which even at full modulation are only a few tenths of a millivolt, easier to relay. In other words, to amplify them. That happens through a direct coupled, i.e. capacitor-free, surface-mounted circuit using high end operational amplifiers. Voltage gain increases the volume level by around 50 decibels, putting it at a level with which

Where there's a groove, there's a way: the two different Clearaudio arms have one thing in common. They have an integrated phono amplifier - the Absolute Phono. It serves them at the very front as an outpost for the stately aluminium box, to which the task of RIAA equalisation falls.



Chip implant: the Absolute Phono's two-part pre-amp has an SMD circuit board, measuring just 9 x 21mm, on which the signal gets symmetrically nourished with OP amps immediately downstream of the pick-up. This to-date unique solution strengthens the defences against any influences of noise and hum very appreciably.

long paths of travel and plug connectors can be spanned with no problem. As a result of the current amplification topology the user can tick off the search for the ideal load resistance. That applies even if the on-board amp, which is only available from the factory in combination with popular Clearaudio arms but is otherwise universal, is being operated using a third-party MC cartridge.

The second step towards the perfect phono signal falls to a neat box that has circuits under massive aluminium armoured plating, which have made it their task to perform the RIAA equalisation. By virtue of the associated filters, which in the case of this main amplifier fitted with two pairs of outputs (RCA and XLR) was also arranged in a particularly elaborate manner, this splitting in two is designed to deliver a maximum level in terms of signal-to-noise ratio and detailed resolution - to embody the absolute phono pre-amp.

That is also underlined by the name given to this systematic design: Absolute Phono - a pithy statement in keeping with the company's style.

Although the circuitry is far too big to fit inside the pick-up arm, it bears >

The Universal pick-up arm features highlights such as three-part telescopic construction in carbon fibre and non-contact magnetic anti-skating.



Right on the wire: eight solid core silver leads - two each per channel for symmetric signal transfer and power - connect the outpost, placed right at the front, with its base station.



witness to a certain purism. Due to the negative acoustic influences, the designers did both without coupling capacitors in the symmetrically arranged signal path at front and back and without any relays as well. In their place separate high-power output drivers for the RCA sockets and symmetric XLR connection ensure that any mutual influences are avoided. The mains adapter was, of course, moved outside so that the hard won dynamic range does not get lost again due to any electromagnetic interference. A multi-option button, illuminated in blue, selects On, Off and Mute - there is nothing more to operate.

With its SubD-9 plug the arm cable looks - externally only - a bit like a printer cable. On a total of eight fine solid core silver wires it transports supply voltages split into separate channels to the pre-amp at the front end of the tubular arm and the pre-amplified but not yet RIAA-corrected music signals from there back to the equaliser case. Apart from that on this super record player there are no common features between the good old analogue technology and the solutions based on PC know-how that now dominate the rest of the playback chain. Although brands like Revox and Mitsubishi already had tangential pick-up arms with clever electronic controllers in their product range back in the 1980s, the Suchys rely from front to back on precision engineering - apart from the lowering of the carrier arm, which is heavy, as it is made from one solid piece. While that is also done on a purely mechanical basis, it has something more coarse about it, like operating a professional sausage slicing machine.

The clumsy handling with the evolutionarily developed linear tracking in Clearaudio style when changing records is thus in stark contrast to the delicate endeavours when positioning and lowering the needle. And it should definitely not be handled too firmly, as it is, after all, a pricey Da Vinci 2V - an MC cartridge system with a mechanically, magnetically and electrically wholly symmetric design. In order to quickly dissipate any resonance the body, made of aluminium alloy, has been covered with a very hard cera-



Da Vinci Red: within its aluminium casing covered in a red ceramic coating the moving coil system houses lightweight, fine gold coils, plus eight magnets for a high degree of effectiveness and perfect symmetry.

mic coating with a thickness of 30 microns. Patented by Clearaudio, the layout of the Da Vinci is designed to hold moving masses in check. To do this the manufacturer makes use of its legendary micro gold coils, which compared to comparable coils made of copper wire can be configured in a thinner and thus especially lightweight manner.

In this way the developers want to take the idea behind the moving coil, namely to ideally move the coils rather than the heavy magnets with the spring-mounted needle carrier, to new extremes. Without watering down these endeavours, the secondary objective of the highest possible field line density could only be achieved through a whole battery of magnets: eight in number provide an increase in effectiveness to the benefit of the dynamic range of 30%. The total mass of the Da Vinci, which is fitted with a micro HD needle, is 7 grams.

Faced by the 'container crane' on the other side, the radial arm has a tough job to get any of the limelight. Yet the Universal, available in 9-inch and 12-inch versions, is a splendid specimen among

its like. Its telescopic tubular pick-up arm is made of visible carbon fibre and aluminium. It is produced over many hours of manual craftsmanship in the company's own factory in Erlangen. It is suitable for all pick-up cartridges that are not unduly high-compliance and facilitates fine adjustment of the azimuth and of the vertical tracking angle (VTA), the latter even while the record is playing. By virtue of its fine scale for counter-balance and the removable headshell it gives its user extreme flexibility when using different cartridges, which can be quickly changed.

The basis of these tracking endeavours has already passed its practical test: the Innovation forms the spine of the brand in the upper price segment. Between the Innovation Compact, the Innovation and the weighty Master Innovation there are admittedly several layers of metal and 'Panzerholz' as well as numerous platters and sub-platters, but the basis is still a smart three-legged unit with belt drive system integrated into one of its three pillars. Thanks to its precisely regulated DC motor and premium bearing qua- >

lity its extremely low speed fluctuations already scored top marks in our sister publication 'stereoplay' back in September 2009. The dynamically balanced platter is made of solid stainless steel and plastic - the two layers ensuring that any resonances in the 7cm-high construction mutually extinguish one another.

The CMM magnetic bearing patented by Clearaudio helps to counter transmission of any motor vibrations or any excitation from the base. This is thus intended to ensure that the two different arms find equally ideal working conditions on the Innovation. As both were fitted with the same pickup, we were able to sound out the idiosyncrasies of the different basic principles to our heart's content. The listening test was therefore not only entertaining, but also very informative. We were also intrigued above all to examine what normally gets chipped off on the transmission path from the delicate low-voltage signal. And it's a good deal. Or to put it better, much too much. The compromises that have endured across generations despite all the inspiring advances in vinyl playback are hard to believe. For no other reason than simply

All's well that ends well: the RIAA equalisation takes place inside the separate unit. Short signal paths, external mains adapter countering any stray pick-ups and self-made silver mica capacitors - the crowning finale of a completely symmetrical signal path.

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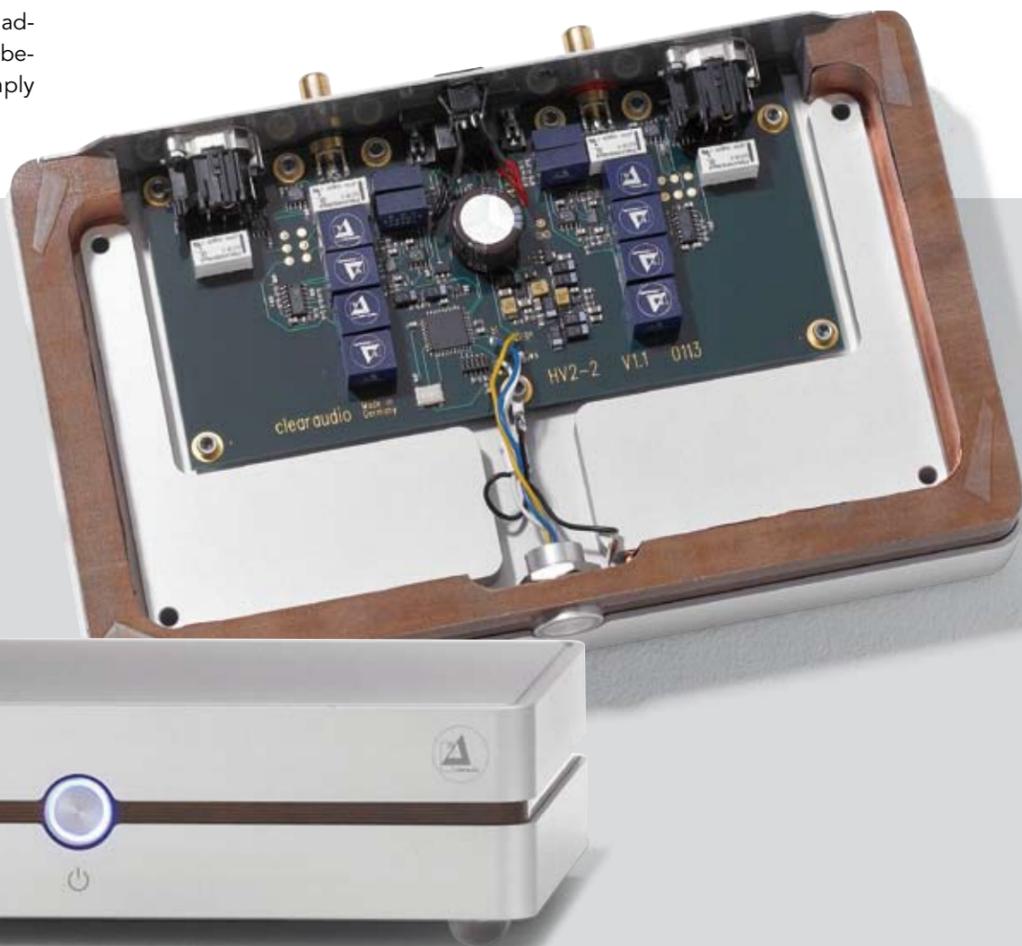
Stefan Schickedanz on the clemency of early amplification:

„Around pompous record players with a showy appearance there is generally a sense of being playful and an end in themselves. But here things are really happening with the sound.“

because all measures taken to date, regardless of the complexity, were not applied until the decisive nuances had already irrevocably perished on the long journey. We therefore felt a bit like cave explorers, who were discovering a new species for the first time. Or one that was believed to be extinct. So that's how the record sounds when its little secrets are not already 'dead on arrival' at the pre-amp stage.

Interesting! So that's been kept from us all this time! Finally, it's possible to

fully comprehend what went on in the studio. You close your eyes and imagine you're behind the mixing desk and you can feel which fader is at that moment being moved up or down for which track. It really heightens your awareness. Next to me, Bernhard Rietschel spontaneously began to philosophise. He felt that thanks to Clearaudio's elucidation he no longer had to stop at mundane comparison of voices or acoustic tones. They were so realistic and naturally clear, that the discussion could effortlessly dig down



many levels deeper - into the fascinatingly individual noise signatures of different vinyl compounds for example, in effect of the dark matter of the vinyl universe: unquestionably existent, but without the monster telescope from Erlangen impossible to observe. No doubt about it: Absolute Phono is effective – effective at the very roots, rather than running around trying to treat the symptoms.

The enormous advance in connection with the TT2 manifested itself in particularly extreme fashion. With its remarkable channel separation, this tangential effectiveness amplifier seemed, in comparison to the radial arm, to push each of the two loudspeakers out by a further metre. Imposing: now not only was there no mist that normally hangs over the room and over the fine decay of sound, but the stage also seemed wider and more three-dimensional. With the Innovation and the highly articulate Da Vinci V2, the combination of TT2 and Absolute Phono produced a quality of reproduction that in the best sense of the word deserves the rating 'analytical'. However, this time this ambiguous verdict is no poison chalice: the analytical quality was

bought neither through coldness, hardness nor by any lack of musicality. The fact that it can nevertheless get somewhat more forceful with even more aplomb in the lower octaves was demonstrated by the same components when the TT2 was replaced by the Universal. The unanimous opinion of all the editorial staff who attended the spectacle was that you actually have to have both arms: the linear pick-up arm for total transparency and the radial solution for parties and pop.

Yet here too it needs making clear: the latter certainly does master delicate tones. Seldom has a phono combination sounded so round, so gentle and so silky, yet without sacrificing even the slightest bit of detail resolution. Retaining Clearaudio's generally familiar high-frequency resolution and subtlety, the Universal painted pictures in comparatively delicate colours. Thus we come full circle. After countless innovations in all areas of vinyl playback, inclusive of sound recording media, patents and marketing, everything is fulfilling expectations: the courage to develop new solutions is peaking in perfection. <



LP listening test

Steve Harley & Cockney Rebel, Face to Face

To the writer's ears one of the best, most atmospheric live recordings. Harley tries above all not to sound at all sterile, like in a studio, but instead has the audience enthusiastically sing along.



The Author

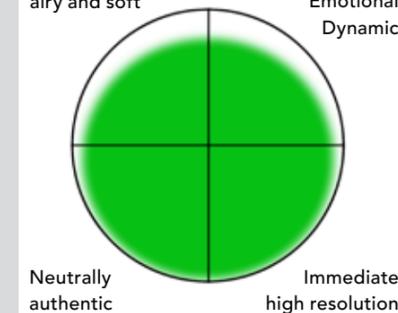
Stefan Schickedanz

As the owner of a Phonosophie P3, I actually like record players - with just one or two exceptions - to be angular, wooden and plain. However, I do like this design, with its technical and sophisticated feel. Not least because I know what a musical breakthrough is concealed within the arms.

AUDIophile character

Effortlessly airy and soft

Gripping Emotional Dynamic



AUDIophile potential



AUDIophile recommendation

You can use Absolute Phono & Co. with any cartridge. Combining it with Clearaudio systems is one option. But also more than that, it's a very compelling one.

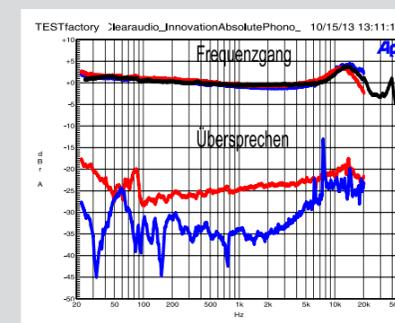
Clearaudio Innovation, Universal, TT2, Da Vinci V2, Absolute Phono

List price: €33,400 (set)
 Guarantee period: 5 years (2 for the MC)
 Weight: c. 35 kg (set)
 Size (W x H x D): 47.9 x 48.5 x 22.5cm (deck)
 Surfaces: Black or plain stainless steel with Panzerholz inlays

Sales:
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Frequency response



The frequency response takes a very straight path in the bass and mid-range area. At the very top there is the slight rise typical of MCs. However, at around 5dB at 20kHz, it is very modest. With a platter rumble is at 73dB and with a coupler at 83, while the fluctuations in even speed of $\pm 0.068\%$ are also excellent.