



Record Player Dereneville MKIII with Tone Arm DTT-03

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The design principle of a tangential tone arm is basically a genius idea. But not every execution meets the high demands. It is guaranteed, however, that the scanning of Dereneville DTT-03 is made in the middle of the record groove and is guided by a high-precision laser. But this is only one of the many detailed technical solutions which distinguish this actively controlled work of art from the mass of items on the market.

Energiser

A scanning with the smallest possible tracking angle error made at each place on a record. So presents itself the ideal of the tangential tone arm which each time guides the scanning stylus at the right angle along the groove. Well-known developers have gradually developed, among others, this benchmark with structures with air bearings. With this bearing system, the tone arm has to travel along with the stylus into the groove without any resistance, to the extent possible. Tangential tone arms from reputable manufacturers have proved that very good approximate values can be achieved in this way. However, it is also clear: the leading element in all these constructions is the stylus which has to "go along" with the tone arm together with its horizontal weight on its bearings – even if it is still so air resistance-free.

Rainer Horstmann and his partners took another route from the outset. Their goal was an "actively" controlled tangential tone arm. Therefore, it is not the stylus that should take on the main part of the guidance task. Rather, the tone arm itself should be controlled in such a way that it always adjusts the stylus within fractions of a second and, respectively, within thousandths of a millimeter to the groove centre, even with a "wavy" record. The technical means to achieve this is a precision laser which comes from Switzerland. This laser can detect changes in distance of less than $5\mu = 5 \text{ thousandths} = 0.005 \text{ mm}$. The fact that this component by itself is entered on the account books of the manufacturer at its purchase price of 1200 euro makes us suggest why the costs of DTT-03 from Lippstadt accrue to a handsome total sum.

"Thus we have designed a tangential tone arm with which the filigreed thin stylus carrier is not exposed to any lateral forces whatsoever," Horstmann explained. "The only working force is the recommended bearing force. The measuring laser continuously determines the 90-degree angle of the tone arm and passes on continuously this information to the controller. So the complex electronic drive detects the variable groove movement forward which is caused by the different dynamics in the music and controls the tone arm accordingly. Completely noiselessly and in real time." How it works, the developer elucidated with a pictorial comparison: someone steers a wheelbarrow with both



hands on its handles along a straight furrowed road. In doing so, the wheel follows the furrow. But since it is not exactly flat at its edges, it will touch the furrow with its respective side wall once on the left, once on the right.

This, on the other hand, triggers a force which can be immediately felt on both handles of the barrow. The driver thus detects at once to which side to lean the vehicle in order to bring it back exactly in the middle of the furrow. If s/he is duly careful and reacts swiftly, then the wheel finds itself in no time back in its ideal central position – like the stylus in DTT-03 is instantly brought back "into the line" from each deviation of 0.005 mm with the help of the precision laser.

A positive effect thereof is also that the LP (long-playing) records are maximally protected. "Even more than the best of today's radial tone arms," Rainer Horstmann said, "because in our tangential scanning, there are no more lateral forces and hence no more skating forces, either". The slide, which guides the tone arm, is moved by a drive spindle with a trapezoidal thread of 8 x 1.5 mm. It is made of high-grade steel, ground and polished. The two



The picture on the left shows the record player as it is delivered for testing: the Dereneville DTT-03 tangential tone arm and a Dynavector DV-507 MKII are mounted on the Dereneville MKIII record player, including the drive unit. The picture at the top shows the rotary sensor (dial) and the display to control the tangential tone arm. The Dereneville DAE-01 SP major version is installed as a drive unit. This motor as well as the smaller Dereneville DAE-01 CL can also be delivered as drives for third-party products

spindle nuts inside the slide are made of polymeric plastic with a long useful life and, in addition, they are mounted in a gel in order to ensure maximum running smoothness. Dereneville DTT-03 is elegantly controlled with a rotary encoder and a display with which you can guide the tone arm without any manual input exactly at the beginning of the record or at any other place. At the end of the lead-out

groove, it lifts up and returns to Home position. All this can be done by DTT-03 on each record player which provides sufficient space for the mounting of the mighty guidance housing with its approximate dimensions of 41 x 8 x 9 cm (L x W x H). My daughter aptly brought to the point the high functionality of the entire control with her question: "Is this now the ultimate computer record player?"

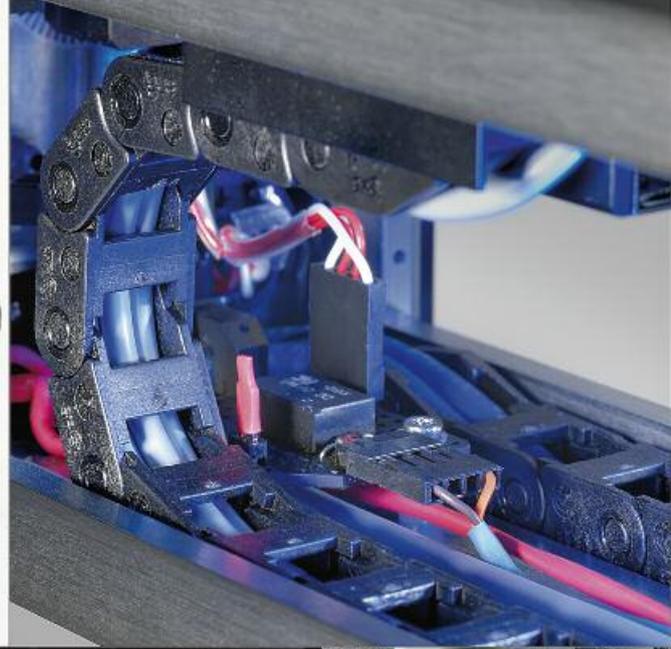
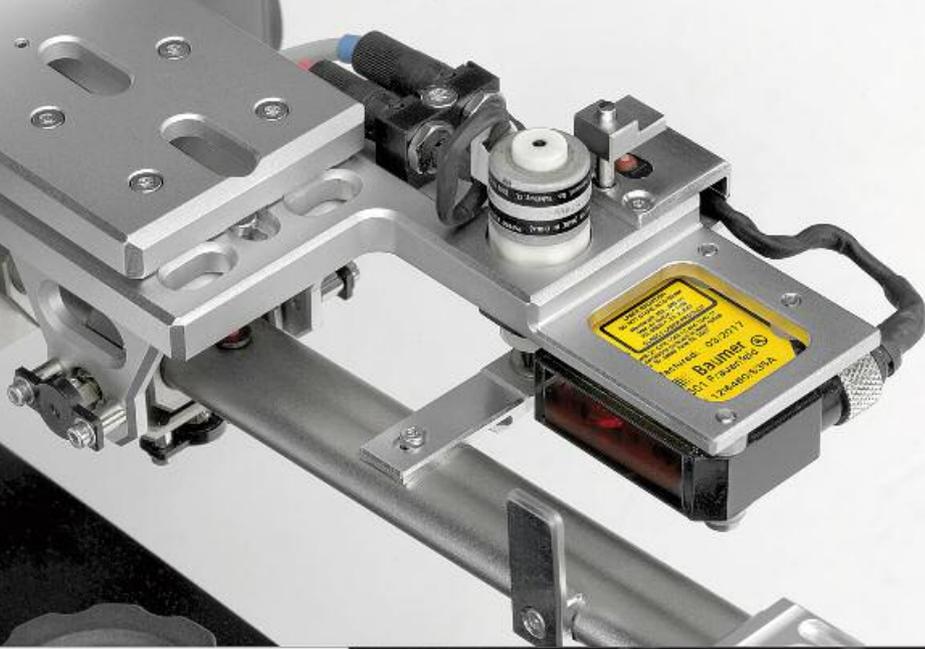
Logically, in test operation, the tangential tone arm is provided with its own turntable. Behind this belt-driven massive turntable called Dereneville MKIII hides also much technical know-how and handiwork skill as behind the tone arm. The core concept is

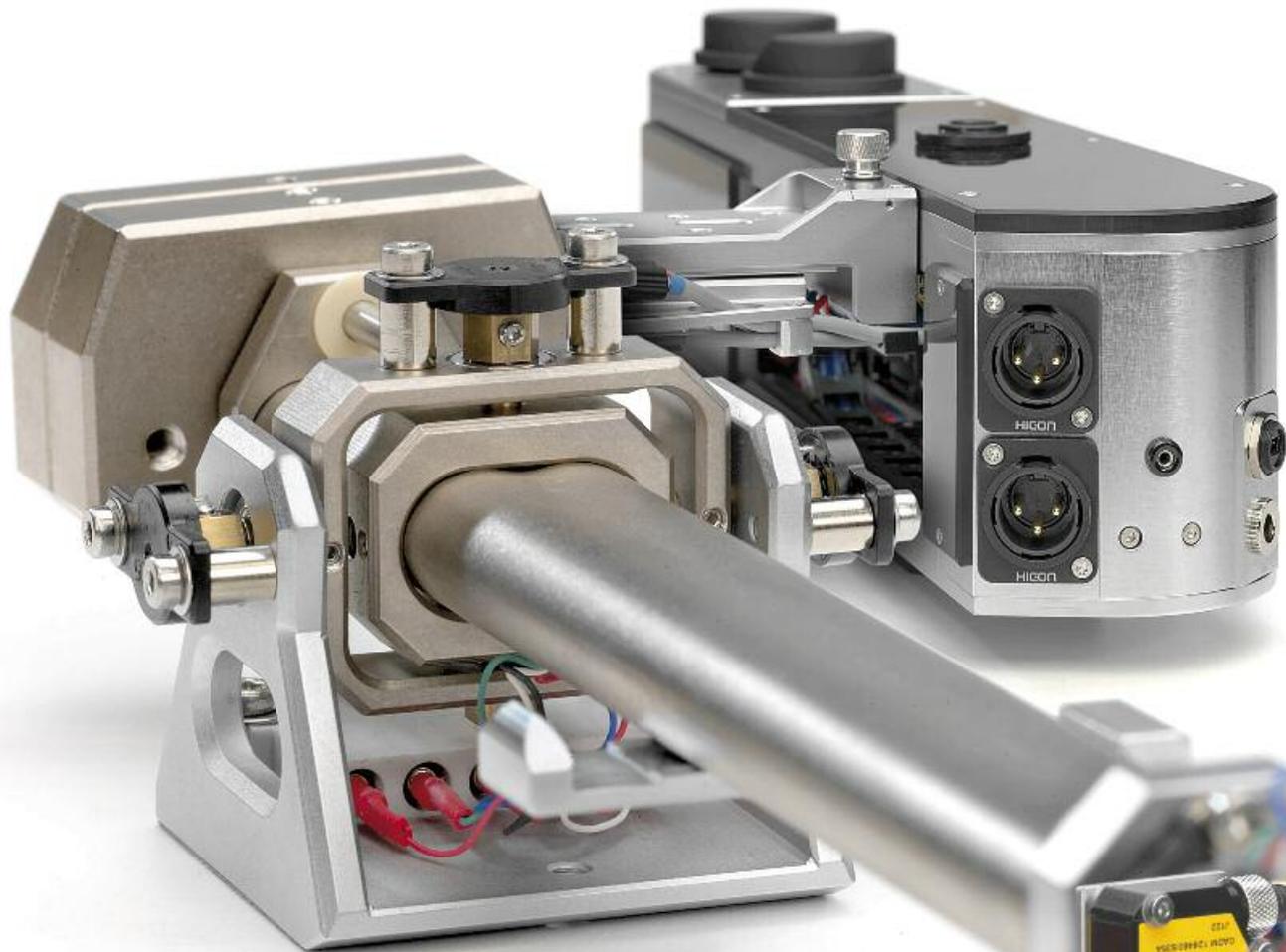
a magnetic bearing which works without any bearing ball. The disc with the bearings is not simply put on the bearing pin in the manner of a friction bearing. Since it is the friction, produced in such a bearing – even if it is still very small – that should be avoided. Therefore, with Dereneville MKIII, the bearings and the bearing pin do not touch along their full length but only at two minimal points of contact. More specifically, these are two small horizontally built-in ball bearings on which the disc rotates. "Thanks to that, no noises from the turntable can be measured up to the sixth place after the decimal point," the developer said. "In addition, thanks to a special grease, both of these ball bearings are maintenance-free throughout their useful life."

The two magnetic rings on the chassis and on the bottom side of the platter, which carry the platter, are manufactured by a specialist firm in Spain in accordance with the requirements of AV-DesignHaus in Lippstadt. This makes it possible to magnetize the magnetic rings absolutely homogeneously round their circumference. The magnetic force corresponds to approximately 500 Newton and can bear disc weights of up to 45kg. With MKIII, this is a sandwich disc, 25 kilos in weight, which consists of three layers: the top is Corian like the chassis, the centre is black anodized aluminum with high strength, the bottom is black chromed brass for heavy weight. The skilled toolmaker and sound engineer Horstmann, who opened his first recording studio in 1980 and produced a dozen of records, has of course also thought what

Other components

Analogue turntable: Kuzma Reference **tone arm:** Kuzma Stabi Reference **Cartridge:** Benz Micro Ruby Open-Air, Benz LP, Benz L2 Wood, Ortofon Cadenza Red, Ortofon A95, Ortofon Rohmann, Dynavector XV-1S, Dynavector Te Kaitora Rua **CD player:** Theta Data Basic (Philips CDM-9 Pro) **D/A converter:** Theta DSPro Generation III **Hi-Res formats:** MacBook Pro with Amarra player software **Tuner:** Linn Kremlin **Phono Amplifier:** Jeff Rowland Cadence **preamplifier:** Jeff Rowland Synergy II **final amplifier:** Jeff Rowland Model 12 **Speakers:** Trenner & Friedl, Parker 95 (update with beryllium tweeters 2017) **Cable:** Cardas Golden Reference, Cardas Neutral Reference, Cardas Clear (Phono and Line), Brodmann Acoustics (speakers) **Accessories:** bFly-audio PowerBase, Clearaudio Vinyl Harmonicer, SID Analogue (sound improvement disc "A"), Millennium Carbon LP Mat, Clearlight Audio RDC Cone, SIC (sound improvement coupler), Audioplan Sicomin Antispikes SIAS, ART damper, AZE pucks, Einstein power strip and power cable





Top left: What can be achieved with a tone arm lift by hand, for DTT-03, is made by the actuator, a small motor which moves the tone arm up and down. Under the yellow shield is located the laser unit which controls continuously the position of the tone arm. The measuring laser detects distance changes of less than 0.005 mm and adjusts the tone arm within these unimaginably small ranges precisely to the groove centre

Top right: In this "energy chain", the symmetrical double-shielded tone arm cables run to the connection sockets (terminals) always in the same protecting large radius

Middle: The small vertical plate on the tone arm is a measurement point for the distance-measuring laser which keeps the tone arm precisely in the groove. In the head shell, the top-of-the-range model of Dynavector, DRT XV-1s, was mounted for the test

Below: a stepper motor drives the actively controlled tangential tone arm. Through the precise electronic activation of the motor, the "steps" turn into a continuous movement which can hardly be heard also when quickly travelling forwards or backwards. During the slow horizontal movement into the groove, the motor, of course, is working absolutely noiselessly

The picture on this page above shows the symmetrical connections for connecting the tone arm to the transformer or phono amplifier. The tone arm bearing system is gimbal mounted with play-free precision bearings from the medical equipment. On the very front, the connection sockets can be seen, which have 16 slots and fix really firmly the plug of the tone arm cable with a ring spring





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damage can be caused by a magnetic field close to a pickup. "It was absolutely the biggest challenge to tame this extremely strong magnetic field and shield it in such a way that no other relevant field outside the disc can be measured," he explained. The responsibility for this lies with two Mu-metal rings which are mounted on the chassis and make the two magnetic rings harmless towards the outside – again such a detailed solution in which you recognize the intensity of development in AVDesignHaus.

From this turntable, naturally, has also benefited Dynavector DV-507 MKII which the manufacturer has mounted on the chassis as a second tone arm for comparison with DTT-03. With this "experimental arrangement", Rainer Horstmann went to leading trade fairs such as the High End in Munich or the Analogue Forum in Krefeld. And also, a high-flying version is possible: the modular concept of Dereneville also allows to use two tangential tone arms plus a radial tone arm. As a rule, in this case the same system of Dynavector is attached to each tone arm. In the provided test version, the Dynavector DRT XV-1S leading-edge system was installed in the tangential arm and Te Kaitora Rua of the same manufacturer was installed in the Dynavector arm. However, in order to exclude any unjustified advantage of DTT-03 which might have resulted from the cartridge of a slightly higher quality, I have alternately mounted, for comparison, Ortofon A95 on the Dynavector arm.

A comparison which eventually made absolutely certain that: DTT-03 possesses the certain Thing. A harder touchstone instead turned out to be a record which had found itself under the Christmas tree: Arvo Pärt, *Tabula Rasa* (ECM New Series, 817 764-1, Europe 1984). Gidon Kremer on the violin and Keith Jarrett on the piano demonstrate in this recording how artistic and high-quality and how persistently meditative the music of the Estonian composer is; and how absolutely challenging for the equipment. Depending on the tone arm and the system, the playback distinguished itself, above all, as to how powerfully the bow stroke of Gidon Kremer af-

ected the violin, or how corporeally a bell has started to be felt, or how clearly the theme-guiding cellos have stood out from the basso continuo. And above all: how the space became perceptible. The space, the space and again the space evidently belongs to the specialties of the DTT-03 tangential tone arm. From the first stroke of the bow, the violin of Gidon Kremer sounded not only as being increasingly present, but also it had more private space at its disposal in which it was able to play freely – whereby both of them were naturally interrelated. Because the increased presence, which one could also excellently describe as crystal clear acoustic visibility, obviously resulted from the fact that the violin could use more "untouched" air for itself.

Also, the space of Carnegie Hall further opened up – "definitely", as it is explicitly stated in the Notes – as I have known this so far. Then on the disc of Dereneville was turning the test pressing of Harry Belafonte *Returns to Carnegie Hall* (LSO 6007, RTI Record Technology Test Pressing, USA, 1996). Not only that anything more was "coughed", then you could still tell, after all, that you didn't have to listen to this necessarily. No, the clapping in the tiers also went further up so that you could create a better impression of the steeply ascending rows of seats in the famous New York concert hall. And it was even more important how conspicuously the murmur, which went through the rows, became noticeable during the duet *One More Dance* of Belafonte with the young Miriam Makeba. It had no effect of the type: "great that this is still to be heard, too" but this was a relevant piece of information about the intensive atmosphere that prevailed at this concert due to the sparks which have flown over to the listeners from Belafonte and Makeba.

Thus, also a second essential characteristic of the DTT-03 miracle of technology became clear: the immense energy flow which seemed to be constantly pouring out of the speakers. As to the combination of Dynavector XV-1S and the tangential tone arm, I have always had the feeling that I could confidently turn a little bit more quietly, without even losing the

slightest nuances of the music due to this. This energy was always perceptible even in the quietest passages of music and it never showed any sign of weakness and, in itself, would never ever collapse. But here we could never speak of any somehow brutally affecting force swank. Rather, it was an artistic "flow". The music floated as if on a cloud or on silk gloves brought to the ear of the listener. It was simply "there", without any agitation, so that at some point I noted rather asking than knowing: How can you describe this absolute Nothingness in terms of nervousness?

Perhaps in this way: the music, which could put this turntable and its tangential tone arm off their stroke, should be first invented. Or in the way in which I have noted this about Clara Haskil and her interpretation of the two Beethoven's sonatas *The Tempest* and *The Hunt* (Philips 6527 123, Phonogram international, Europe 1998): "If it's all piano, then a few quiet tones can be heard and absolutely nothing else." Or in the way in which I have heard it in the second movement of the *Piano Concerto* by Edvard Grieg in the interpretation of Artur Schnabel (Living Stereo, RCA Victor Red Seal, LSC-2566, USA 1962): "Dereneville savors every tone in this slow movement but it can switch all of a sudden when the tempo is stepped up again." You don't have

to listen deliberately to the trills at the end of this movement, either. They are there with great clarity because they emerge quite naturally – as you could say a little bit paradoxically – from a "distinct" rest. In the way in which the third movement contains a few blasts of a trumpet. Or the timpani where you can sense the separate strokes on the skin, including the subsequent vibration of the same. Here you don't want to stop at all – which led to the fact that at this Rubinstein recording, I also listened for the first time to the romance in F major by Schumann which I have missed so far because I tucked the record into the record sleeve after the third movement of the Grieg's concert.

Never is anything here drowned out by the tumult of an orchestra. No triangle, no bell, no plucking of a harp string. In the overall design of the Dereneville record player, I ascribe this absolute rest, to a great extent, to the turntable and its exclusive magnetic bearing. A95 on the Dynavector arm has documented this unambiguously. The wonderful clarity of this system is well ringing in my ears and I know from several tests to what form it can sprout. With its extreme smooth running, Dereneville MKIII offered the very best basis for this. So good that I occasionally tore my hair out at the thought: if I can afford only one of the two things, the Dereneville



MKIII massive turntable or the DTT-03 tangential tone arm, what would I eventually prefer?

(Apart from the all-inclusive solution which, given the price class of this handmade miracle, was of course just a joke for me.)

A special part which drives this turntable to its maximum performance is the drive unit offered in two versions also for third-party products: as Dereneville DAE-01 SP, installed in the record player, and as a somewhat smaller Dereneville DAE-01 CL. The DAE-01 SP drive unit provides three speeds: $33 \frac{1}{3}$, 45 and 78 revolutions per minute and a "hidden" speed of $16 \frac{2}{3}$ revolutions. This allows you to play old records which were cut with $16 \frac{2}{3}$ or to turn surely a record in continuous operation. All speeds can be calibrated up to the smallest steps in percent levels of 1.0, 0.1, 0.01 and 0.001. As soon as the $33 \frac{1}{3}$ revolutions per minute are finely tuned, the electronics calculates all other speeds automatically. With the aid of Set 1, Set 2 and Set 3, the three virtual memory segments, the owner could operate up to three different turntables. The more important feature for the practice is, however, that the operating hours are stored separately in each of the three sets. Each set can be assigned to its own cartridge so that you are always informed on the playing time of a stylus. The software for this and for the tone arm control comes from the two electronics partners of Horstmann: the communication engineer Johannes Gremme, Director of the Research and Development Department at Behr-Hella-Thermocontrol, and the natural scientist

The picture on the right shows the entire motor control which is integrated into the turntable base. It offers a wide range of programming options via a PC or with the six buttons on the motor unit. The chassis of the turntable stands on double-damped feet

The centre of the picture depicts the chassis with the two holders for the tangential tone arm and the additional base for the Dynavector arm. In the middle of the chassis as well as on the bottom side of the platter, the two ring magnets can be seen, on which the disc is floating. Two Mu-metal sheets shield the magnets from the outside world so that they have absolutely no influence on the cartridge

Picture down: a manufacturer in Spain has managed to magnetize the magnetic rings on the chassis and on the bottom side of the disc absolutely homogeneously at 360 degrees round their circumference. The magnetic force is approximately 500 Newton and can bear disc weights of up to 45 kg



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Hans-Bernhard Bröker, who worked for the European high-performance accelerator Cern for many years. The power supply both for the Papst motor and for the tone arm will be provided by a common power supply unit in the future which will provide two outputs for 12 and 24 volts DC.

Of course, the crew of AVDesignHaus had haunting thoughts on the material of the chassis and on the feet, on which it stood. Granite, marble or slate were discarded. Finally, the chassis, 25 kilos in weight, consisted of three 12-millimeter-thick plates made of Corian® which were milled and then bonded to each other on the CNC (computer numerical control) machine at a workshop for disabled persons. The material reacts to every knock test with stoic tranquility; it is available, at the customer's request, in multifarious shades of colors. The height of the feet can be adjusted with an M8 threaded bolt. As a counterbalance, a round aluminum plate with an appropriate thread is inserted into the chassis. As a first damping measure, this plate is mounted on bearings floating on a silicone cushion. As a second damping measure, an element made of special caoutchouc is built in the foot itself. Finally, another thick felt plate is stuck under the foot, which, additionally, prevents any scratching of the rack bottom or the furniture. The whole foot in itself is mounted, oscillating, on bearings.

And indeed, the massive turntable and its drive with a Papst synchronous motor are so undoubtedly good – but in the end, it was again the tangential scanning which added the icing on the cake. Besides, the actual tone arm is

within the weight category ranging from moderately heavy to heavy and is therefore suitable for many MC systems with low compliance. By means of four high-precision miniature ball bearings from dentistry, the arm is gimbal-mounted and is freely movable in horizontal as well as in vertical direction. The balance weight is made of copper. The inside contains polymer guide bushings and a thread for fine adjustment of the bearing force using a knurled nut. The wiring is guided fully symmetrically starting from the cartridge. "Because I learned to appreciate this in my time as a sound engineer in studio technology," Rainer Horstmann said.

This was naturally also the perfect guideline for my symmetrical Cadence Phono Pre-Stage of Jeff Rowland. So, for the Beethoven recording of Clara Haskil, familiar to me very well, I got the feeling "that this record player with its tangential tone arm lent to each stroke on the piano exactly that impulse which brought it to the ears of the listener in the right intensity". Of course, the pedal could be heard and you did not have to listen more carefully. Luckily, my "Parker 95" of Trenner & Friedl, thanks to the update with beryllium tweeters, was also able to "serve" all this fineness. Yes, I did have the impression that, for the first time, the massive turntable and the tangential tone arm from Lippstadt have demanded so rightly these excellent tweeters, including the new overall tuning of the speakers. For instance, in the vibrato in the voice of Ella Fitzgerald in Ella and Louis (MG -V- 4003, verve, USA 1956). The title of Number 10 in this charming record, The Nearness of You, fits perfectly as a description of Dereneville. Its greatest wish is to bring the music as close as possible to the listeners. The trumpet of Louis Armstrong sounded light and floating but at the same time – powerful and energetic; and in each phrasing – completely relaxed.

Rainer Horstmann laid gladly his Dereneville Magic Mat on the platter which is made of 0.4 millimeters of silicone around a glass fiber core. The experiment to put the vinyl record directly on the disc has, however, laid quite attractive accents. You could pretty well describe it as simply as: directly sounded even more directly. The other way round, the magic mat had underlined the air-floating nature of the playback. Nuances, all in all, are exciting, however, precisely for the reason that the Dynavector system in DTT-03 raises no doubt about the slight but fine differences. For some vinyl fan, it may be a small consolation that at least this magic mat, which is certainly worth a try, fits into the usual price categories. Since for the turntable and tone arm, it looks different in view of the high costs of the many precision components and

long-standing development work: the Dereneville Modulaire MKIII record player is entered on the account books at 34 867 euro, including VAT, and the Dereneville DTT-03 C tangential tone arm – at 39 746 euro gross.

What do you get for this? A high-tech work of art which is, in any case, a handiwork perfect individual product "Made in Germany". The total package of the Dereneville record player is brimming over with detailed technical solutions, none of which leads to any external effect. Rather, absolutely every element, from the motor through the magnetic bearing to the active tone arm control, exclusively serves the true-to-life musical reproduction. If you could once listen more carefully to the belt-driven Dereneville MKIII massive record player and the actively controlled Dereneville DTT-03 tangential tone arm, you cannot deprive yourselves of the fascination of this air-floating and lucidly present performance. The record player from Lippstadt is a musical energy donor of a special class!

Dereneville MKIII Analogue turntable

Principle of operation: speeds of the belt-driven massive turntable: 16.66/ 33.33/ 45.00/ 78.00 rpm **Drive:** Dereneville DAE-01 SP (with a Papst BLDC synchronous motor) **Tone arm base:** for Dereneville DTT-01 – up to 03, on request: additionally, a second tone arm base for DTT-03 or two tone arm bases for 7" - to 14" tone arms (i. a., for SME or Dynavector), other tone arm bases, if requested **Construction:** Chassis colour design **Individual dimensions (W/H/D):** 55/38/19 cm **Weight:** 52 kg **Guarantee:** 3 years / for the disc bearing: lifetime (maintenance-free) **Price:** 34867 euro (including the drive unit).

Dereneville DTT-03 Tangential tone arm

Principle of operation: actively controlled tangential tone arm, one-hand operation with a rotary encoder **Bearings:** gimbal positioned precision bearings (from the medical equipment). **Length:** 230mm in series production (other lengths available on request) **Effective length:** 170mm **Effective mass:** moderate heavy to heavy (ideal for MCs with low compliance such as 10x10-6 cm/dyn) **Permitted cartridge weight:** 8.0 to 17.0 g **Connection:** gilded XLR connector (in conformity with the studio norms) **Internal wiring:** symmetrically floating **Warranty:** 3 years **Price:** 39746 euro

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