



## A Tale of Three Tonearms – Part I: Artemis Labs TA-1 Tonearm

Richard Mak

November 2012

*This will be the first of a series of articles which I'll be writing on tonearms. Part II will be on the all new DaVinci Master Reference Virtu Tonearm, followed by Part III which will be on the Durand Telos Tonearm.*

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"Rick, you have an "Ebony Fetish." M friends are referring to the Diospyros kind of fetish. Diospyros Crassiflora is the botanical name for Gaboon Ebony which is a type of black wood endemic to Western Africa, named after the West African state of Gabon.

This ebony fetish story originated several years ago when I first saw the DaVinci Grandezza wooden tonearm. I vividly recall thinking it was the most beautiful tonearm I had ever seen - quite simply, love at first sight. I thought the Grandezza was at the same time, a beautiful amalgam of all that I treasure in a fine piece of craftsmanship -- exquisite, elegant, precise and simple. I told myself I must own one of these arms regardless of the price, so I immediately got in touch with Peter Brem and Jolanda Costa of DaVinci Labs of Switzerland, to place an order for a 12" Ebony version through Mehran Faramand of [SORAsound.com](http://SORAsound.com), who is the sole retailer for Da Vinci Lab's products in North America.



*The DaVinci Grandezza Tonearm, now out of production. (Photo used with Permission, courtesy of Soundscapehifi.com & DaVinci Audio Labs).*

Over the next few months, I found myself drawn again and again to the Grandezza in preference to all the other tonearms I had at the time, regardless of which cartridge was mounted. There seems to be an organic character and musicality to the sound which is distinctly different and absent on armwands made of other materials. The simplistic elegance of the design, and the musicality of the DaVinci Grandezza tonearm motivated me to replace other tonearms I owned, most of which were more complex and mechanistic in comparison, albeit well made and sonically pleasing. Aesthetically, I quietly know better, nothing came close to the Grandezza.

Over the course of two years, I sold off the Triplanar, the Graham 2.2, the Graham Phantom, the Moerch DP-6, the vintage Audiocraft and SME in favour of tonearms with wooden armwands: the Schröder Reference 12" Ebony, the Reed 2P 12" Ebony, the Rossner and Sohn Si 1.2 12" (with an optional Panzerholtz wooden wand), and the Durand Talea II 10.5. Currently, six out of my seven tonearms have wooden armwands, mostly ebony.

The downside to all these 12" wooden tonearms are their hefty price tags. The DaVinci Grandezza retails at \$11,000, the Schroder Reference at \$7,500, the Durand Talea II at \$8,500, the Reed 2P at \$6,500, and the Rossner and Sohn Si 1.2 at \$6,200. The new DaVinci Master Reference Virtu and the Durand Telos, which I will be reviewing in parts II and III of this article cost even more, at \$14,995 and \$16,500 respectively. And because these tonearms are mostly handmade, the wait time on some of them can be exceedingly long. I waited 9 months for my Grandezza, and a year and a half for the Schröder Reference.

When Ming Su, North American Distributor for Verdier and GOTO Horns, told me about the Artemis Labs TA-1 tonearm, he said “I have something which will tickle your fancy: Something designed by Frank Schröder, made by Artemis Labs in California, with a minimal wait time, 12” wooden armwand and with a price tag far cheaper than most of its competitors, at only \$4,800!” Now \$4,800 still isn’t exactly chump change, but in the rarefied world that top tonearms inhabit, positively affordable. A quick snoop around on Google on the Artemis Labs TA-1 tonearm landed me on [Jonathan Weiss’ Oswalds Mill Audio \(OMA\)](#) homepage rather than on Artemis Labs’ own website. Jonathan’s website houses some of the most beautiful photos of the Artemis Lab TA-1L tonearm taken by [Cynthia van Elk photography](#).

Within the week, Ming put me in touch with Sean Ta, CEO of Artemis Labs, and he quickly obliged my request for a review sample. Under most circumstances I have a preference for 12” arms over 9”; accordingly, I advised Sean that my only condition was that the armwand had to be 12” ebony.

“No Problem”, said Sean, “12” Ebony it shall be, the arm is on its way, it will get to you in two weeks”. For the first time, in a long time, there was minimal waiting time!



*(Photos and links used with permission, courtesy of Jonathan Weiss, Oswalds Mill Audio)*

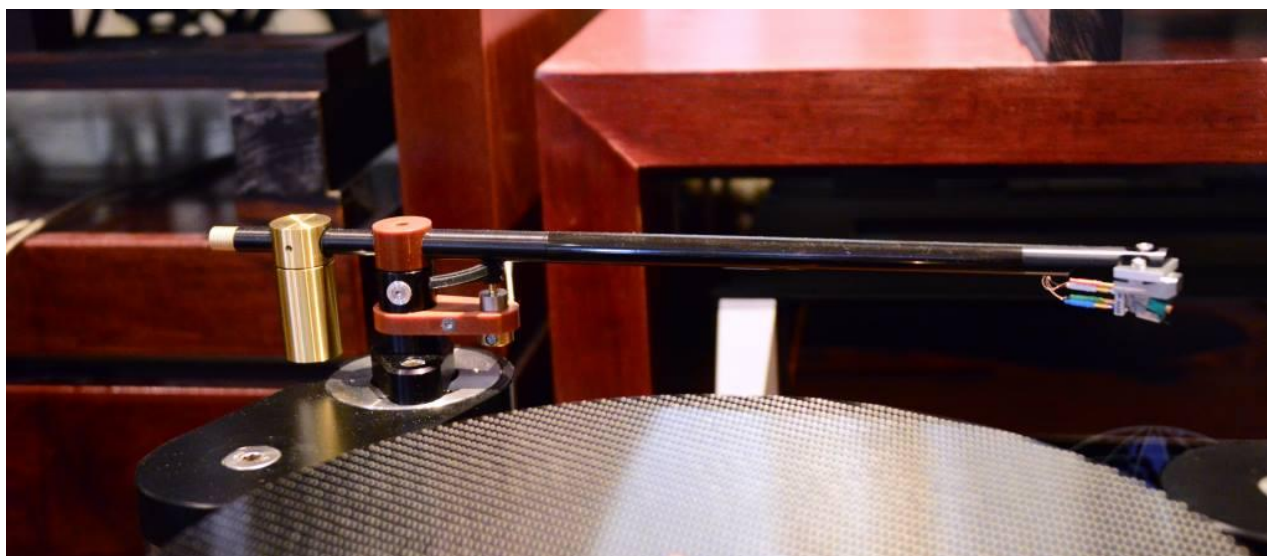
The idea behind the TA-1 tonearm came about when dealers and distributors alike were asking Artemis Labs to recommend a tonearm that would complement their famous [SA-1 turntable](#). Sean's objective was to pair the table with a great sounding tonearm without all the complicated parts but with all the necessary adjustment parameters. He asked Frank Schröder, who designed the SA-1 turntable, to create a tonearm which follows the same design concept. In the analog world, Schröder's name needs no introduction. His famous Reference tonearm is highly sought-after by analog lovers from around the world. The long wait time is perhaps the best indication of the tonearm’s demand and status.

Fortunately, there is now an alternative, the TA-1 carries a lead time of only 2-3 weeks, or so I’m told.



*(TA-1L in Kingwood finish)*

The Artemis Lab tonearm comes in two versions, the 9" TA-1 and the 12" TA-1L with a price tag of \$4,600 and \$4,800, respectively. The standard armwand material is made of Kingwood as shown in the above photo, but their ebony version can be custom ordered without an up charge. The wood has been treated to prevent warping or cracking, and to withstand humidity changes. The tonearm also comes standard with Eichman Bullet RCA plugs. XLR connectors can be custom ordered. My review sample came with Neutrick Silver XLR connectors, as the Burmester PH100 phono stage I used in this review accepts XLR inputs.



*(Artemis Labs TA-1L, 12" Ebony version, note the Blackish grainless color of the Ebony armwand vs the Kingwood)*

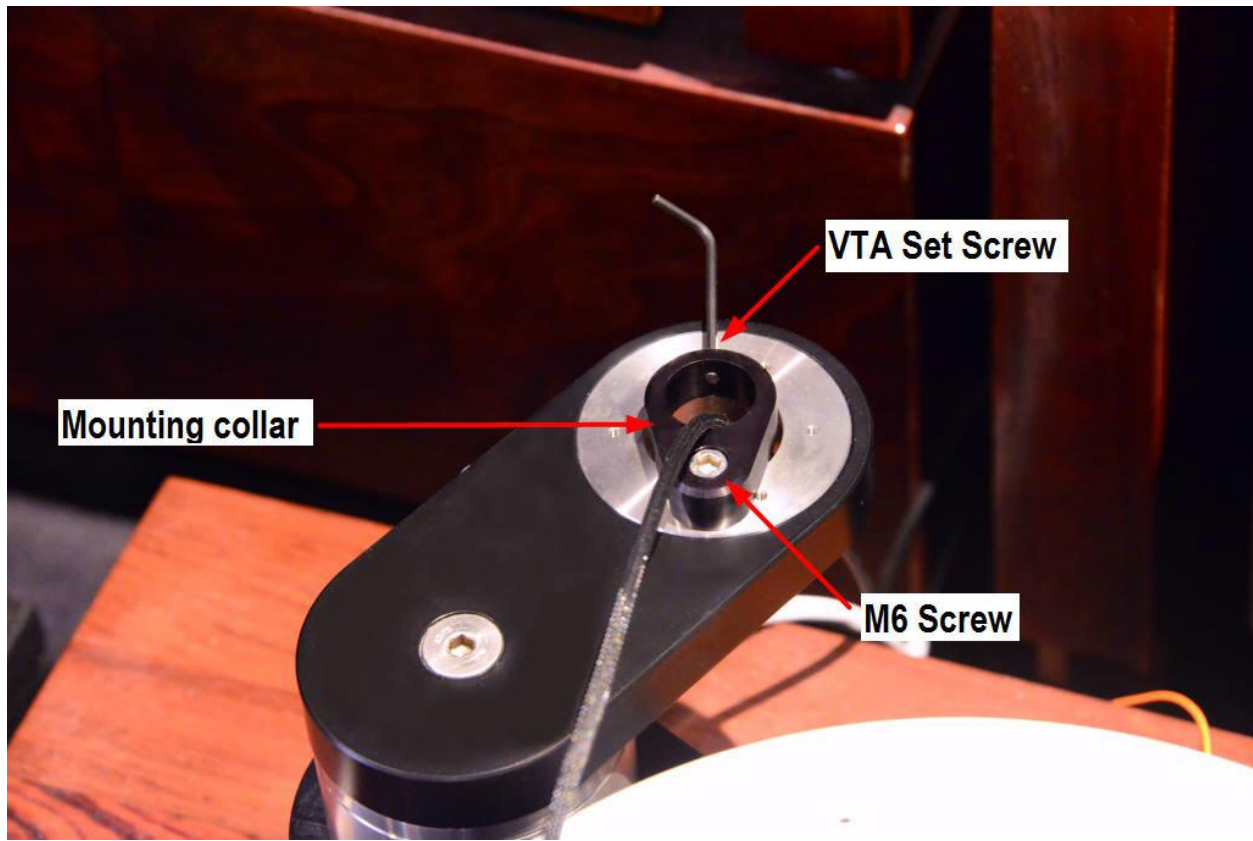
True to its design ethos, the TA-1 tonearm appears clean and simple, and reminds me of the look of the Thomas Schick tonearm. Despite that, all the setup parameters, like Azimuth, VTA, VTF, antiskating and even armtube resonance are adjustable and well hidden within the tonearm. Although the pivot column appears like a unipivot arm, the TA-1 is neither a unipivot arm nor a gimball pivoted arm.

Frank Schröder actually came up with a completely new technology called the “Raised Hyper Ceramic Bearing.” The armwand is connected to the pivot column via two separate ceramic ball bearings, one controlling the horizontal movement and the other the vertical. The two bearings permit vertical and horizontal movement of the armwand, but not multi-direction or diagonal movements. According to Sean, the bearings have an unprecedented low level of friction (< 2mg). The tonearm bearing comes completely assembled and requires no user maintenance or assembly.

### Installation and Set Up

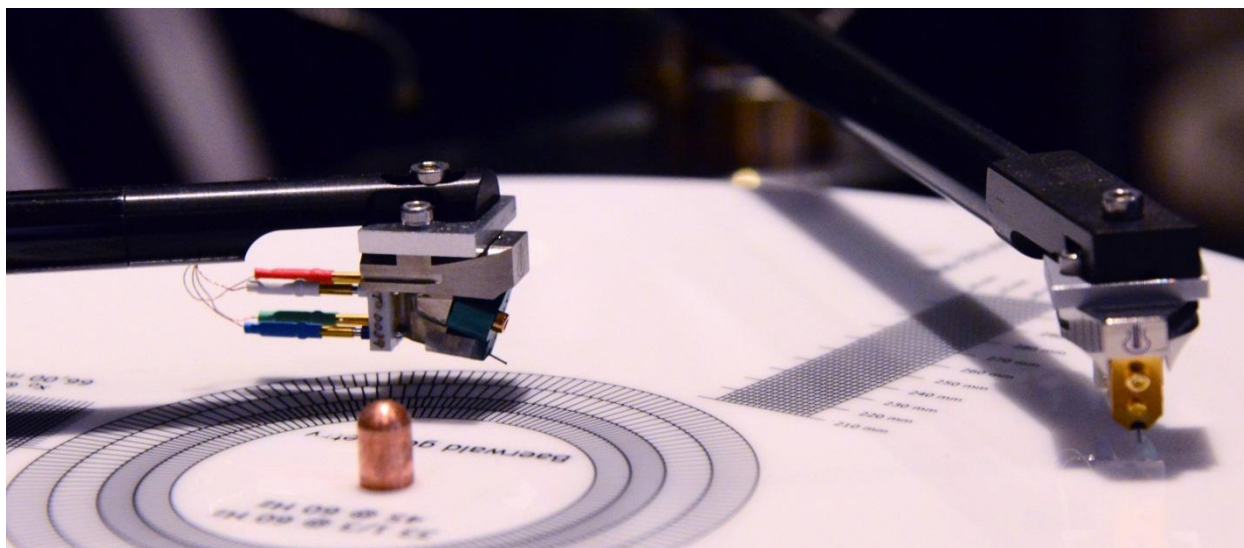
From a setup perspective, I believe what separates a good tonearm from a bad one is the adjustability of the setup parameters, and the ability of the tonearm to deliver on a precise setup so that the cartridge will be able to retrieve signals from the LP as accurately as possible. This is often easier said than done as a majority of tonearms on the market are actually incapable of delivering an accurate setup on one or more critical parameters, resulting in a less than perfect setup. Fortunately, this is not the case with the Artemis Labs TA-1.

The setup process begins with installing the mounting collar onto the armboard of my Raven AC turntable. The collar is relative easy to install and requires the drilling of two holes. The first hole has to be approximately 24mm in diameter to accommodate the pivot column which extends into the armboard, or the plinth of your turntable. The second hole should be drilled exactly 23mm from the center of the first hole and should be tapped with an M6 thread in order to accommodate the screw which holds the mounting collar in place. I could have easily ordered a custom armboard predrilled for the TA-1 arm from TW Raven (\$500), but because I had an old armboard kicking around, custom-made for the for the Durand Talea II tonearm, I decided to modify the aluminum armboard myself rather than spending any more money. The armboard already has a hole predrilled in the center slightly bigger than the size specified, so all I did was drill and tap a hole to install the mounting collar with the M6 screw. Because the Raven armboard can be rotated horizontally around a pivot point, the pivot to spindle distance can be adjusted later. The mounting collar was therefore installed without the use of a ruler to obtain exact measurements.



If your turntable comes predrilled with a Rega style mount, you will not even need to use the provided mounting collar because the pivot column of the TA-1 arm is exactly the same size as the Rega arm. You can simply fasten the tonearm onto it by tightening the standard Rega mount.

The tonearm is then inserted into the mounting collar, or the Rega mount of your table, and locked into place with the VTA set screw which also controls the height of the tonearm. Note that the tonearm wire has to be inserted into the mounting collar because the tonearm wire for the TA-1 comes out from the bottom of the tonearm column, similar to Graham Phantom, which means buyers should be aware of the potential additional length required when determining tonearm cable length. The cable that comes with the tonearm is a continuous wire from headshell to RCA/XLR output with no breaks in between; it does not require any additional DIN to RCA phono cables. This is advantageous because experience tells me it is better to have as few connections as possible because the analog signals generated by MC cartridges are exceptionally tiny in voltage. Additional connections would only serve to degrade sound quality.



(Left: TA-1L Headshell, Right: Schroder Reference Headshell)

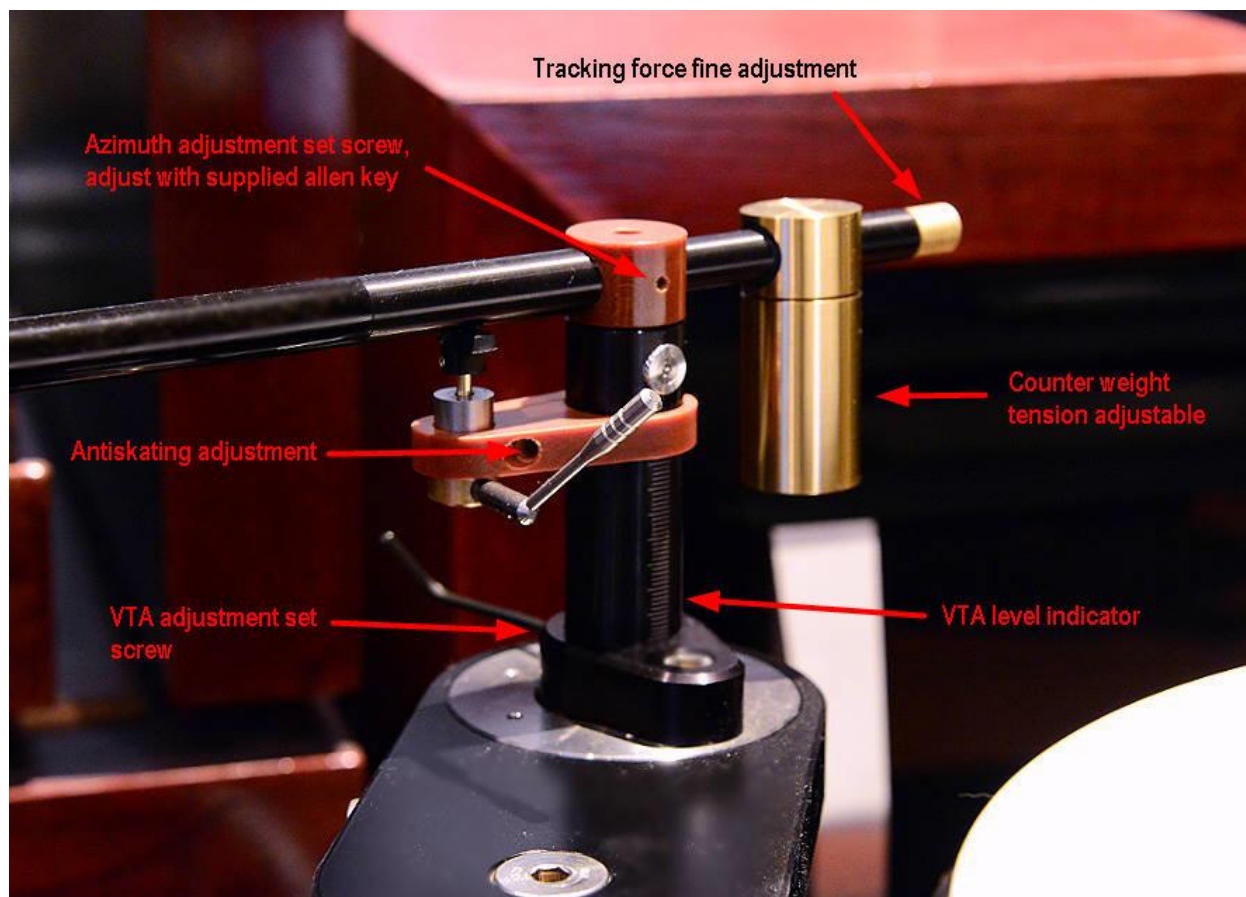
The headshell of the TA-1 arm follows the same design as that of the Schroder Reference tonearm, in which the cartridge is initially mounted onto a mounting plate, which is in turn fastened onto the armwand with a M2.5 sized screw. Unlike the Schroder Reference, the TA-1 has a slot incorporated into the armwand which allows for a bit of forward and backward movement of the mounting plate, making cartridge alignment easier.

The cardboard mounting template which came with the arm is somewhat flimsy and does not allow you to determine the pivot-to-spindle distance accurately. You will need additional tools in order to determine the correct pivot-to-spindle distance, so potential buyers of the TA-1 tonearm are strongly advised to obtain a proper cartridge alignment tool, such as the Feickert Protractor (\$250) or the highly accurate Uni-Protractor (\$1,200, [shepherd.a@t-online.de](mailto:shepherd.a@t-online.de)).

Using the data on the TA-1L manual, with an effective length of 282 mm and the pivot-to-spindle distance of 267.48mm for the 12" version, I was unable to land the stylus of the Clearaudio Goldfinger cartridge onto the null points of the Baerwald geometry on any of the protractors, namely the Feickert, the Uni-Protractor as well as the provided cardboard alignment template. I repeated the exercise with a Lyra Atlas cartridge as well as a Benz Micro LP, the results were the same. The cartridge styli were 3-5mm away from the null points on all three cartridges even with the screw on the mounting plate extended to the far end of the slot. Because there is no universal standard when it comes to cartridge shape and cantilever lever length, the provided figures for effective length are therefore only an approximation.

I remeasured the effective length of the tonearm (distance between the pivot to the cartridge stylus tip) and discovered it was closer to 286mm than 282mm; this latter figure yielded a pivot-to-spindle distance of approximately 272mm using Baerwald geometry calculations. I readjusted the Feickert tool to reflect this distance, and voila! The stylus was able to land on the null points on all three cartridges. I repeated the exercise with the Uni-Protractor to verify the setup and the results were again spot on. Therefore, I believe the correct pivot-to-spindle distance for 12" TA-1L version is 272mm instead of 267.48mm.

Next, we will look at each of the adjustment parameters in detail: Azimuth, VTA, VTF and Anti-skating.



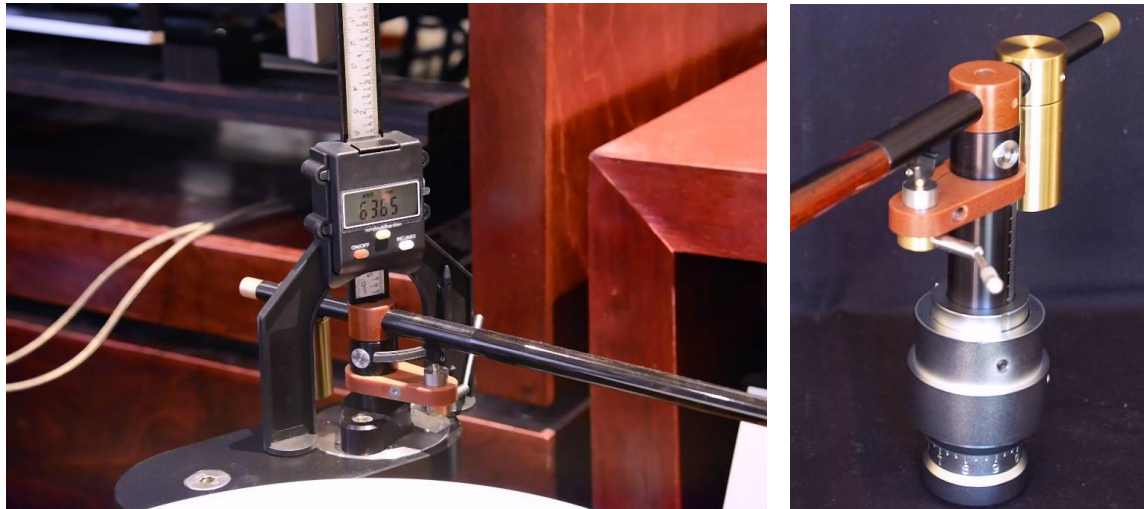
The elongated shape of the TA-1's counterweight gives the impression that the azimuth is adjusted by swinging it off to one side, causing azimuth to change by weight redistribution. This is true in the case of unpivoted arms such as the VPI JMW, or the Moerch UP-4. In the TA-1 however, the "Raised Hyper Ceramic Bearing" movement behaves very much like a Gimball Pivoted Arm, permitting only vertical and horizontal movement but not multidirectional or diagonal movement, so the tonearm does not wobble from side to side horizontally; swinging the counterweight will therefore have no effect on the azimuth.

Azimuth is adjusted by loosening the set screw on the pivot column as indicated on the diagram, and rotating the entire arm tube clockwise or counter clockwise, reminiscent of the manner in which the Kuzma 4 Point arm adjusts azimuth. But because there are no markings or indicators on the arm tube, the adjustable azimuth is therefore neither replicable nor repeatable in the sense that it will be difficult to know how far you have rotated or whether you are returning to the same spot. With my distortion analyzer and the Analog Productions Test LP, I adjust azimuth by measuring crosstalk between channels, and the optimal point is achieved when this number is equal between both channels. In reality, if you can achieve a difference of less than -0.25dB to -0.5 dB between channels, the accuracy is already of a very high order, one that is however, unachievable with visual methods, or even with electronic tools like the Fozgometer. With the non-repeatable azimuth adjustment of TA-1, small rotations of the armtube can lead to large changes in azimuth, so the exercise can be both frustrating and time consuming. It took me more than two 2 hours of fine tuning before I was able to achieve an optimum azimuth reading.

Vertical Tracking Angle (VTA) on the TA-1 is adjustable by loosening the set screw as shown on the above diagrams. Changes in VTA height are indicated by horizontal lines marked onto the pivot column. An Intermodulation Distortion Analyzer, a method about which I will not go into great details here, can measure the effects of changes

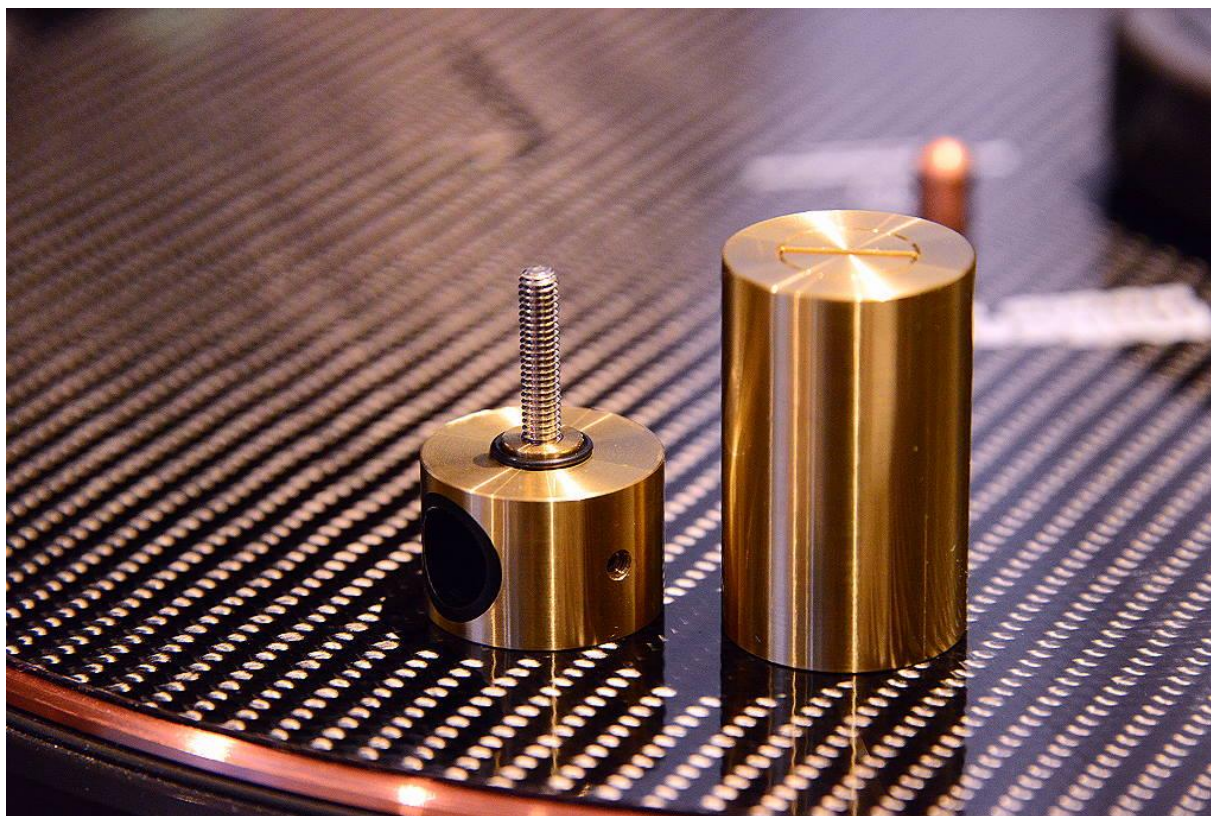
in height of the pivot column of less than 0.5mm; this method of setting VTA requires a high level of accuracy. Therefore, any method which relies on eyeballing rough markings on the column will simply not be accurate enough to achieve an optimal level of precision. Instead, I came up with two alternative solutions.

The first solution is to employ the use of a “[Digital Height Setting Gauge](#)” which can be found on eBay for approximately \$15. I bought mine at Lee Valley Tools for \$12.50. This useful little tool will allow you to perform repeatable adjustments to the VTA by accurately measuring changes in the height of the pivot column, accurate to within 0.05 mm (see picture below). Considering the alternative is to use a stack of cards or to read rough markings on the column, I much prefer spending \$12.50 on a measuring gauge.



A more expensive but perhaps permanent solution will be to order the VTA Adjuster from Chris Brady of Teres Audio for \$250, and assuming he is willing to make one for you. The VTA Adjuster will replace the mounting collar, and will allow you to perform repeatable VTA changes through the turn dial accurate to 1/1000 of a millimetre. With the VTA adjuster, you can adjust VTA on-the-fly even with the record playing. Unfortunately, the adapter will only work for turntables with separate armboards such as the Verdie, TW Raven AC, or the Clearaudio Innovation. If you have a table in which the armboard is not separated from the plinth, such as the Artemis Lab's own SA-1, you will not be able to install this adapter.

Vertical Tracking Force for the TA-1 is adjustable by sliding the counterweight forward and backward to an approximate range. The fine adjustment knob located at the very end of the armwand will allow you to narrow down the VTF to within fractions of a gram. It should be mentioned that an ingenious design has been incorporated into the counterweight of this tonearm. The counterweight has a bottom element that can be screwed onto its upper part which is polymer damped, allowing the tightness to be fine tuned. According to Sean, altering the tightness of this bottom element may have an effect on the resonance frequency of the armwand, which may come in handy should there be a compliance mismatch. Notably, my own experimentation tells me that changing the tightness of the bottom element does seem to have an effect on the low frequency presentation. The bottom element also has an inset (screwed in from the bottom) that can be exchanged for a lighter or a heavier cylinder, allowing for an increase or decrease of total counterweight mass without altering the overall mass distribution of the arm.



Last but not least, the TA-1 allows users to adjust anti-skating by turning the set screw as indicated on the diagram. The adjustment screw increases or decreases the anti-skating which operates through a magnetic mechanism, exerting a force of up to 2.3 gr. of anti-skating compensation. On all three of the cartridges (Clearaudio Goldfinger, Lyra Atlas, and Benz Micro LP) I mounted on the tonearm, the optimal point required almost no anti-skating force as determined by a method which measures L/R Channel distortion difference with a distortion analyzer, which I will not go into great detail about here.

Enough already, how does it sound ?

Here comes the difficult part of the review where writers are often accused of playing verbal gymnastics with words, and in many instances deservedly so. As with all the reviews I have done in the past, my goal will not be to tell you this is “yet another best sounding” tonearm I have ever heard, which in my opinion, is meaningless information. My goal will be to provide a sonic description of the tonearm versus other tonearms I have on hand, so that you can determine for yourself whether the Artemis Lab TA-1 will be suitable for your own setup.

Let's begin with one of my desert island LP favourites, which is none other than Dvorak's New World Symphony performed by the Vienna Philharmonic Orchestra, and conducted by Istvan Kertesz (SXL 2289 ED1). Since sonic quality is the subject at hand, rather than a critique on classical interpretation, I shall focus on the former and leave the latter to the music critics. If you do not own a copy of this LP, I would highly recommend getting your hands on one because this is one of the finest recordings ever produced by Decca, both interpretatively and sonically. The wide band early pressing (ED1/ED2) or the Esoteric reissue is preferred to Speaker's Corner reissue, because I find the former to be sonically superior in terms of dynamic contrast and tonality. Unfortunately, used

copies are now fetching stupid money on eBay, upwards of \$500 dollars for an early pressing. The frequency extension of this recording will test your analog equipment to the fullest, and the sheer dynamic range will squeeze every ounce of energy from your system; sonically only very best of Mercury Living Stereo recordings can keep up with this LP. On a lesser system, the performance will sound abrasive and in-your-face while the instruments will be woefully disorganized on the sound stage. In other words, this is one tough LP to play successfully, a true torture test.

Compared with the Schroder Reference which sits beside the Artemis Lab TA-1 and the Durand Talea II which previously occupied the same spot, the most notable sonic difference which sets the TA-1 apart from the others, appears to lie with the mid to low frequency performance. The performance is decidedly more solid and weighty, and this holds true with both the Clearaudio Goldfinger and the Lyra Atlas cartridge. The bass drum on this Decca recording in the first and final movements is one of the most prominent and lively bass drum passages you will find on any recording. Played through the Artemis Lab tonearm, they had more slam and carried a holographic image which was better defined and sharper focused. The superior bass performance does not end with simply having a better impact, the entire mid to low frequency presentation is more full bodied, deeper and better defined. The Artemis Lab is sonically closer to the DaVinci Grandezza in this regard, albeit not as solid the Kuzma 4 Point which I consider to be the most stable and solid tonearm on the market, both sonically and mechanically.



The positive aspects of the TA-1 does not end there, as the sound stage and 3D imagery rendered are of an equally high order. Running through a series of large scale orchestral performances such as the New World Symphony mentioned above, the Power of the Orchestra (Leibowitz conducting the Royal Philharmonic Orchestra on RCA Living Stereo, VCS 2659), Pictures at an Exhibition (Ansermet conducting L'Orchestre de la Suisse Romande, Decca SXL 2195), or the Beethoven Violin Concerto in D (Haitink conducting the Concertgebouw Orchestra, Philips 6500 513), the soundstage and 3D imagery were always solid, realistic, stable and never once disorganized. The same cannot be said of some Unipivoted tonearms which can run into trouble when complex passages are played, especially when they are fitted with heavy cartridges such as the Clearaudio Goldfinger, where complex passages can become fragmented and disorganized.

Moving onto something more delicate such as the violins on the same Beethoven Violin concerto in D mentioned above, or Lalo's *Symphonie Espagnole* (Ricci, Ansermet conducting L'Orchestra de la Suisse Romande on Decca SXL 2155, ED1), the Durand Talea II and the Schroder Reference seemed to render a presentation both one notch livelier and faster than both the TA-1 and the Grandezza. Though the upper frequency extension is by no means handicapped, the Schroder Reference and Talea II delivered more palpable ambience and transparency. The TA-1 rendered a violin performance which was more conservative and less nimble. It was, however compensated by a bottomless pool of lush, richly textured, smooth warm tonality which suits my taste.

When it comes to vocal presentations, I find myself having a much stronger preference towards the Lyra Atlas versus the Clearaudio Goldfinger. But regardless of which cartridge I mounted onto the Artemis Lab TA-1 tonearm, it has the ability to deliver human voices which are more organic and with it deeper emotions relative to the other tonearms I have on hand. One of my favourite tracks to use for demonstrating human voices is Ian and Sylvia's *Four Strong Winds* (Vanguard VSD-2149, Cisco Reissue). You can get a feel of the song on [YouTube here](#). Because this is a vintage closed-mike recording, the voices emanate directly from the speakers with very little sound stage or holographic imagery to speak of. When the song is played through the TA-1 and Lyra Atlas cartridge, there is an organic musicality to the sound which makes it very realistic and life like. Vocal presentation is one area in which tonearms with wooden armwands excel, but the Artemis Lab TA-1 and the Schroder Reference have the ability to deliver musicality and realism to a higher level. The key words to be used here are again, lushness, richness, lots of body and weight. Regardless of whether I am listening to folk songs such as Joan Baez's "Famous Blue Raincoat" from *Diamond & Rust in the Bullring*, or pop oldies such as Prince's "When Doves Cry" from *Prince and the Revolution* (soundtrack to *Purple Rain*), I felt like I was listening to real organic voices coming from the live presence of the singer, and not sitting in front of a music system. This is especially true when I paired the tonearm with the Lyra Atlas cartridge.

No audiophile review is ever complete without the mention of a full scale grand piano performance. When piano keys across the entire frequency spectrum are struck, there is literally no place for any piece of equipment to hide. From tonal accuracy, frequency extension, coherence, and holographic imagery, every single component of the music is put to the test. The sonic quality of Michele Campanella performance on Franz Liszt's "Fantasia on Hungarian Folks Tunes" (Philips 6500 095) is a recording worthy of this task. Make no mistake about it, the stability of the Artemis Lab TA-1 tonearm combined with its musicality and solid performance passed the grand piano test of this LP with flying colors. When the felt-covered hammers struck the steel strings during intense passages, the impact was felt across the room with weight and solidity, while maintaining a natural harmonic decay. The upper notes were crisp and with complete forte. With four tonearms sitting side by side, I'll have to conclude that Artemis Lab TA-1 more than held its own against the DaVinci Grandezza when it came to piano performance, with the Artemis Lab being more musical, the Grandezza more accurate and analytical. The bottom end performance was more robust than either the Schroder Reference and the Durand Talea II could manage. With the Schroder Reference and the Durand Talea II, the sound of the piano resembled a Yamaha. With the Grandezza, a NY Steinway and the Artemis Lab TA-1L, a Concert Grand Bosendorfer. The TA-1L was the richest, darkest, and the most full bodied.

## Conclusion

Reviewing the Artemis Lab TA-1 has been a laborious task. If it wasn't because I enjoyed what I was doing, you could not pay me enough to repeat this exercise. Unlike an amplifier or a cable where you can simply swap them in out and, comparing tonearm and cartridges require you to realign the cartridge all over again which is not an easy task. This is why this review took much longer to write than I had hoped, to the point where I felt embarrassed to

inform Sean Ta that it would be delayed yet again and again. But in terms of delivering a thorough review, I believe I have satisfied my desire to deliver a thorough critique.

If price is an accurate indicator of performance, then the Artemis Lab TA-1 is clearly handicapped versus the three tonearms which I have mentioned because it is the cheapest out of the four. Yet, this is clearly not the case. While I would not go so far to say that any one of these arms are “better” or “worse” than the other, because that has never been my goal from the start, I will tell you that I have decided to purchase the review sample from Artemis Labs. Each of the arm and cartridge combinations I own excel in their own way with a particular type of music, and for my setup I have decided to pair the TA-1 with the Lyra Atlas cartridge and the Burmster PH100 phono stage. When it comes to large scale orchestral and piano presentations, the TA-1/Lyra Atlas combo would be my first choice. My conclusion is that it is a full bodied and tonally rich tonearm. It may not be the fastest, the most delicate or the most nimble, but its solid mid to low frequency performance gives it a distinctively rich sonic flavour and warm character to the sound.

While the Artemis Lab TA-1 does not offer repeatable adjustments with any one of the setup parameters, all the parameters are at least adjustable. And if offered a choice between having a mechanically more complex arm with repeatable adjustments versus a less complex arm but with repeatable adjustments such as the Artemis Lab TA-1, I'd always choose the latter over the former. The reason is simple: I would rather spend more time fine tuning the arm at the beginning than to live with complex clunky mechanisms. Experience tells me that simpler is always better, both sonically and aesthetically.

So if you are looking for a tonearm that can hold its head high when placed side by side with the big boys in terms of performance and adjustability, but do not want to endure the long wait time nor to break the bank, the Artemis Lab TA-1 may just be the ticket. It is a fine example of a tonearm which is simple, elegant and sonically exemplary at the same time.