

MONO  STEREO

REVIEWING THE WORLD'S FINEST AUDIO PRODUCTS

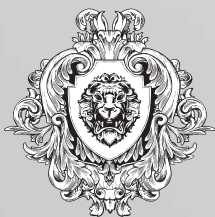
AQUILAR TONEARM

ACOUSTICAL SYSTEMS

BY RICHARD H. MAK

MONO AND STEREO SENIOR ANALOG CONTRIBUTING WRITER

REVIEW



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ACOUSTICAL SYSTEMS AQUILAR TONEARM REVIEW

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THE AQUILAR IS
THE LATEST TONEARM
CREATION BY
DIETRICH BRAKEMEIER
CHIEF DESIGNER OF
ACOUSTICAL SYSTEMS
OF GERMANY

Of all the components in the audio chain of a HI-FI system, the turntable's tonearm is the only component which does not generate any mechanical motion or electrical signal of its own. It is purely a passive mechanical device designed with the sole purpose of holding the cartridge and wires, transferring the electrical signal generated by the cartridge with as little hindrances to the cantilever's spring mass system as possible. Theoretically, a tonearm should not impose any sonic signatures of its own, but anyone with a bit of experience with different tonearms will know for a fact that this is a misnomer. Different tonearms do carry substantially different sonic characteristics.

Generally speaking, uni-pivot arms, such as the Graham Phantom, Moerch UP-4, Durand Talea or Telos, where the armwand is suspended by a single needle point bearing, have a tendency to exhibit a livelier sound and with better high frequency extensions. But on complex musical passages, the armwand tend to wobble from side to side

DIFFERENT
TONEARMS
CARRY
SUBSTANTIALLY
DIFFERENT
SONIC
CHARACTERISTICS



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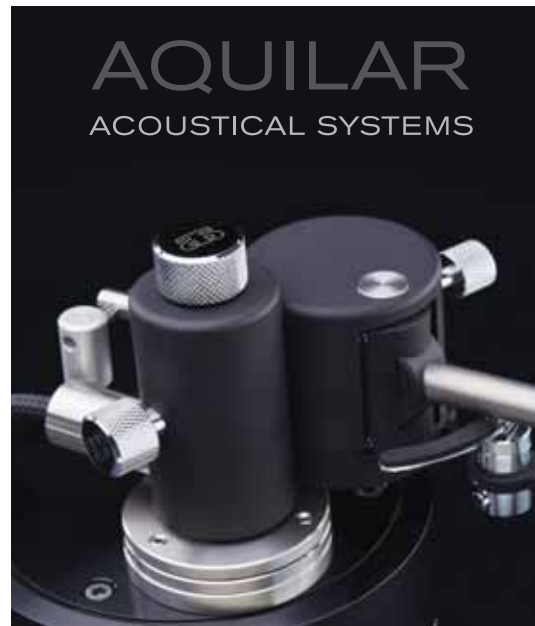
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VERY RARELY WILL
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SONIC
SACRIFICES



which causes the soundstage to appear disorganized, and bass frequencies to be less solid. Gimball pivot tonearms, such as the DaVinci Grandezza, DaVinci Virtu, Reed 2P, Breuer Dynamic or Triplanar, have an armwand which is held in place by two governing sets of bearings, one for the horizontal plane and one for the vertical. They are typically less lively sounding, but with a sound stage which is more stable and bass notes which are more solid. While I may be over generalizing on the description, the tradeoff between the two designs is quite noticeable sonically, and has been the subject of many debates amongst audiophiles. Very rarely will you find a tonearm which can combine the virtues of both a uni-pivot and a gimball pivot arm without making the associated sonic sacrifices — that is until I got my hands on the Acoustical System AQUILAR Tonearm — which the subject of our review today.

The AQUILAR is the latest tonearm creation by Dietrich Brakemeier, chief designer of Acoustical Systems of Germany. Brakemeier earned his fame with the Uni-Protractor (now evolved into the P.A.S Professional Phono Alignment Set & the SMARTractor), which I previously reviewed in issue 67 of TONE Audio Magazine where it was named the 2014 Accessory of the Year.



BRAKEMEIER
IS DETERMINED
TO COME UP WITH
DESIGNS WITH A
SINGLE PURPOSE:
TO RETRIEVE ANALOG
SIGNALS AS
ACCURATELY AS
POSSIBLE

The Uni-Protractor is an all in one, multiple geometry protractor which greatly improves the null point accuracy of cartridge alignment, without the parallax distortions associated with most cartridge alignment tools on the market. Brakemeier is also the inventor of the UNI-DIN cartridge alignment geometry, which is designed to improve



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upon the traditional Baerwald and Lofgren alignment geometry used for non-tangential tonearm alignments. That is to say, Brakemeier is determined to come up with designs with a single purpose in mind, that is to retrieve analog signals as accurately as possible.

UNIQUE FEATURES

Priced at \$9,445 USD, the AQUILAR is a 10" tonearm based on the design of its more expensive predecessor, the 12" AXIOM which is priced at \$18,945 USD. They both feature a true symmetrical gimball pivot, where the horizontal and vertical axis are situated in the center of four nano-gimball bearings, manufactured by GRW in Germany. While most ball bearing designs are focused on reducing friction during high velocity revolution, Brakemeier believes this is non-essential for tonearm application because an

armwand never makes more than a 45° horizontal

movement and a 15° vertical movement. What's essential, is a low starting friction or starting torque of the bearings because the free movement of the armwand will reduce the force which hinders the free movement of the cantilever of the cartridge. The starting friction on the Aquilar is only 15 μNm (15/1000000Nm!), a lower number than a lot

of uni-pivot tonearms. The bearings used in the AXIOM is even higher quality, costing 12x as much as the ones found in the AQUILAR, their installation also requires a complex heating process which can only be performed at the GRW factory, the added time and cost ultimately explains the substantial price difference the two arms.



FEATURING
A TRUELY
SYMMETRICAL
GIMBALL PIVOT



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BEARING DESIGNS

The bearing assembly houses bearings of 3 different sizes, with the vertical & horizontal axis being made from two completely different materials which have however almost identical energy transfer characteristics. The size and material difference employed in the two axis is said to prevent the buildup of any unwanted resonance within the bearing itself. The armwand is made of a non-resonant hybrid titanium/carbon graphite material. The tonearm wire runs from the headshell to the output connector with a single continuous run of high purity, aged 5N silver litz wire of very high gauge, not much thicker than the wires used in cartridge coils. This will ensure the lowest impedance difference between in wiring prior to the first signal amplification stage. The rest of the components, such as the headshell, and bearing assembly are almost identical in quality and dimensions between the two tonearms, which allows the Aquilar to shine at a much lower price.

ARCHÉ HEADSHELL SYSTEM

ADJUSTING
THE VTA AT THE
SHELL LEVEL
ELIMINATES THE NEED
TO RAISE THE HEIGHT
OF THE BACK OF THE
TONEARM
– IT WILL ALSO
ELIMINATE
VARIATIONS
TO THE VTF



Also worth mentioning, is the AQUILAR comes with Acoustical System's Arché headshell system. The Arché allows you to adjust VTA (vertical tracking angle) and Azimuth (Horizontal balance) of the cartridge right at the headshell level. According to Brakemeier, this has two distinct advantages. Adjusting the VTA at the shell level eliminates the need to raise the height of the back of the tonearm, this allows the armwand to remain perfectly horizontal and parallel to the platter, a position which



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allows for the lowest starting friction. It will also eliminate variations to the VTF (Vertical Tracking Force) caused by moving the bearing point up or down.



SETTING UP THE AQUILAR

Even though my review sample of The AQUILAR is the first to land in North America, by the time it arrived at my door, it has already won the much coveted 2015 Stereo Sound Grand Prix award from Japan.

The Aquilar arrived in a shoe box sized double box, with the tonearm housed inside a rigid aluminum case. It is embed in high impact foam cutouts with laser cut precision. Inside the box you will find an accessories tool kit which includes everything you need to mount and adjust the tonearm. It even comes with its own pivot to spindle tool and a mounting template with grid lines and a null point based on the UNI-DIN geometry, saving you the need to buy additional alignment tools.



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THE AQUILAR
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WITHOUT ANY PLAY
OR WOBBLING

The tonearm is mounted onto the armboard with a single M5 screw. Given I am too frugal to buy another armboard insert from TW Raven for my Raven AC turntable, I basically reused an old armboard by drilling out another hole. If you follow the comprehensive Owner's Manual, even a novice can achieve a pretty accurate setup. The height of bearing assembly is adjustable which does allow for adjusting VTA on the fly, but it does not provide as much travel as other tonearms because it is designed to provide just enough vertical movement so that the armwand is parallel with the platter, VTA is designed to be adjusted at the headshell level.

For this review, I used three cartridges (Dynavector XV-1T, Haniwa HCRT01 Mark II, and the SoundSmith Hyperion), and interchanging between cartridges does require complete realignments. The AQUILAR provides very precise adjustments without any play or wobbling, which makes performing the re-alignment a



rather easy task. In fact, the Aquilar is one of the easiest tonearms to setup with very little guess work in the equation. Using my proprietary computer based distortion analyzer, I was able to dial in Azimuth, VTA, VTF and Anti-skating with ultra high precision. The AQUILAR is fitted with an anti-skating mechanism which places counter-magnets corresponding with the tangential curve, applying the right amount of the force where anti-skating is needed the most. Although on all three of

the cartridges I used, very little anti-skating force was needed. Halfway into my review, Brakemeier redesigned and improved upon the counter-weight mechanism to provide for a more precise and repeatable VTF adjustment. All previous owners of the AQUILAR were provided with this upgrade free of charge, and installation took less than a minute.

THE AQUILAR
DISPLAYED LIVELY
CHARACTERISTICS
FOR A GIMBALL
PIVOT TONEARM,
WITH A SOUND
WHICH IS
CLOSER TO A
UNI-PIVOT ARM



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THE SOUND

Right from the get go, the AQUILAR displayed rather lively characteristics for a gimball pivot tonearm, with a sound which is closer to a uni-pivot arm. One of the best album to demonstrates agility and liveliness of a tonearm is Ruggiero Ricci's Solo Recital on the music Prokofiev, Bartok, and Hindemith (DECCA SXL 2240 ED1), a treasure difficult to find but well worth its expensive price tag on EBAY. The AQUILAR did not restrict any of Ricci's vigorousness and vibrancy with every twist and turn of the violin bow. It delivered more top end extension and ambience than both the Reed 2P and the DaVinci Master Reference Virtu when played with the same cartridges, and quite a bit more than the Triplanar arm.

YOU CAN ALMOST
SENSE THE
MOVEMENT OF
THE ULTRA SMOOTH
BEARING KEEPING
PACE WITH THE
MOVEMENT OF
THE CANTILEVER,
PROPERLY
PORTRAYING
OISTRAKH'S
EMOTIONALLY
CHARGED
PERFORMANCE

THE TRUE FEEL

The same liveliness carried forward onto David Oistrakh's legendary performance of Bruch's Scottish Fantasy (DECCA SXL 2035 ED1). The infamous near solo segment is almost a torture test for a tonearm's agility and nimbleness. Tonearms such as the Ortofon RD-309S with SPU or an 12" SME 3012, often renders the performance less than lively, and are not my tonearm of choice to demonstrate the veracity of Oistrakh's ability. Not so the AQUILAR, you can almost sense the movement of the ultra smooth bearing keeping pace with the movement of the cantilever, properly portraying Oistrakh's emotionally charged performance, projecting a holographic violin in the acoustic space with remarkable details and focus. Perhaps not as lively sounding as the Schroder Reference 12" arm (a torsional suspended design), but it is comparable to the Graham Phantom 2 Supreme B52, and better than the Moerch UP-4, which is quite a remarkable achievement for a gimball pivot arm!





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THE EXPLOSIVE
DYNAMISM OF
THE ROMEO & JULIET
BALLET RECORDING
WAS RENDERED
WITH ALL THE LIFE LIKE
REALISM WHICH YOU
WOULD EXPECT FROM A
UNI-PIVOT TONEARM,
BUT AT THE SAME TIME
THE LOWER BASS
FREQUENCIES WERE
PROJECTED WITH
UNWAVERING SOLIDITY



MUSICALITY

Prokofiev's Romeo and Juliet ballet with Lorin Maazel directing the Cleveland Orchestra (DECCA SXL 6620 ED4), is one of the most dynamic recordings you can buy, if you do not own a copy, please run to get a copy! But what gave the uni-pivot arm its liveliness, is also its Achilles heel. This is one recording where most uni-pivot arms will fall short when it comes to complex passages with multiple instru-

ments delivering explosive dynamics. On bass drums, they may sound less than solid, or they may have unnecessarily long harmonic decays; the holographic images of various instruments may become less composed, and somewhat disorganized; or the size of instruments may become larger than life; the weaknesses will manifest itself in varying degrees and in different ways with different design. Tonearm designers have

come up with different mechanisms to stabilize tonearms' unwanted movements, very often by placing attracting magnets in various position, such as the Graham Phantom 2, or the Durand Talea, with the single purpose of remedying the side effects associated with instability. To their credit, many of these attempts do result in significant sonic improvements.





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DYNAMIC REALISM

With the AQUILAR, however, you will encounter none of the aforementioned problems. The explosive dynamism of the Romeo and Juliet ballet recording was rendered with all the life like realism which you would expect from a uni-pivot tonearm, but at the same time the lower bass frequencies were projected with unwavering solidity. The soundstage was well defined, and the location of every instrument can be clearly identified in the acoustic space, with weighty 3D holographic image suspended in mid air, transforming my sound room into a small scale replica of the Cleveland Orchestra. It is a sonic image which one would expect from a tonearm with well made gimball pivot bearing design.

On Isao Suzuki Trio's infamous Three Blind Mice's BlowUp album, the sonic effects of this unusually close mic'd recording is an apt example of what audiophiles call "Hi Fi Sounding". If you fall in love with the album, you're likely in love with the effects of the sound more than the music, but the album suits our review endeavor perfectly. The sound of the bowed stringed acoustic instrument of the opening track Aquamarine, is larger than real live and the grooves are embedded with plenty of texture and vibration which when rendered properly, will send sonic vibrations

across the entire listening room. The AQUILAR delivered a solid performance which rivals the best of the gimball pivot arms such as the DaVinci Virtu, or the four point pivot Kuzma 4 Point arm. Yet with the Virtu and the 4 Point, the embedded abrasive sound of bow as it glides across the double bass strings, sounded somewhat rounded and with less definition. With the AQUILAR, I hear a top end which is more akin to the Graham Phantom or the Schroder Reference, with a higher spatial definition, rendering more of the recording's original metallicky characters with all its imperfections in unmitigated realism.

Have I heard the original live performance of Isao Suzuki ? No. Do I know what the instruments sounded like when it was recorded ? The answer is also No. I guess what I am saying is, with the Aquilar I am able to hear things which I would have been never able to hear if I only had a gimball pivot arm or a uni-pivot arm. With the AQUILAR, I hear the best of both worlds.

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VOICE COMPARISONS

What about human voices ? On Eva Cassidy's Nightbird 4 LP gatefold set recording at the Blues Alley jazz club in Georgetown, I must have played the song "Fields of Gold"

over 100 times with different tonearm and cartridge combinations during this review, that the particular track is probably worn out. My favorite cartridge out of the three I tried with the AQUILAR is the Haniwa super low impedance cartridge. This tonearm/cartridge combination rendered Cassidy's voice with unmitigated realism. The emotional response rivaled the Kondo IOM cartridge mounted on a DaVinci Grandezza, yet the AQUILAR/Haniwa combo delivered a clarity and ambience which matches that of Olympus cartridge mounted on a Schroder Reference tonearm. In other words, if the AQUILAR was my only tonearm, with the right cartridge it will deliver a performance which can rival the best tonearm/cartridge combinations which I favored for human voices.

WITH THE RIGHT
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Finally, no other instrument can demonstrate the tonal balance and frequency extension of a piece of equipment better than a full scale concert sized piano. I pulled out Michele



Campanella's performance of Saint-Saëns Piano Concerto No. 4, and Liszt's Totentanz and Hungarian Fantasy with the Monte Carlo Opera Orchestra (Philips 6500 095). This is one of the best \$10 LP you can buy

on EBAY, because the thunderous full scale dynamics of Campanella's exhilarating performance fully captures the entire frequency spectrum, it is a album which will allure music lovers and audiophiles alike. How did the AQUILAR perform? Almost as if it was transparent, there was plenty of detail, decay and harmonics on every piano note from the top to the bottom of the frequency spectrum. The AQUILAR was never the bottle neck, it allowed each of the three different cartridges I mounted on it to freely exhibit their own sonic signatures, rendering the concert piano in all its grandiosity.

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IF SOMEONE
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CLOSING REMARKS

Including this article, this will be the third publication I have written about Dietrich Brakemeier's products. Having spent hundreds of hours on his products, and also having the privilege of interviewing him in person, I am confident to say that Acoustical System's products designs are based upon solid scientific research. They are not product based upon his subjective sonic preferences. They are not products which are "talked up" on internet forums, based on the consensus reached by some cult following or media guru. These are products which are the direct result of solid hard work, and a meticulous attitude of perfection. The AQUILAR tonearm is a fine example of such a product.

Brakemeier never asked me to write this review. I was the one who sought him out asking for a review sample. I experimented with the AQUILAR, fell in love with it, and purchased it long before even I started writing this review. In other words, I acted as the guinea pig so that you do not have to. After spending thousands of hours on countless tonearm and cartridge combo, I reiterate once more that the AQUILAR is a unique tonearm which has the ability to bring out the virtues of both a uni-pivot and a gimball pivot tonearm, and at the same time without the weakness associated with either designs. If someone was to force me to keep only one tonearm in this world, the AQUILAR may just be my choice. But of course, I will have to try the AXIOM before I can make that final decision.

REVIEW BY RICHARD H. MAK
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