

What's New?

Acoustic Signature Invictus Neo Turntable and TA-9000 Neo Tonearm

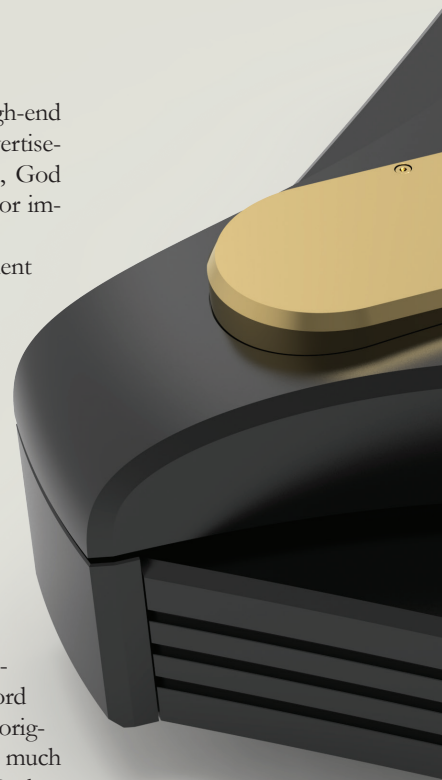
by Jonathan Valin

THERE'S THAT WORD AGAIN—"NEW." Probably the most overworked adjective in high-end audio and merchandizing in general, you see it everywhere and constantly—in advertisements, in manufacturer copy, in showroom banners (and salesmen's mouths), and, God knows, in equipment reviews (including this one). Everything is new and, explicitly or impliedly, improved. Even if it isn't.

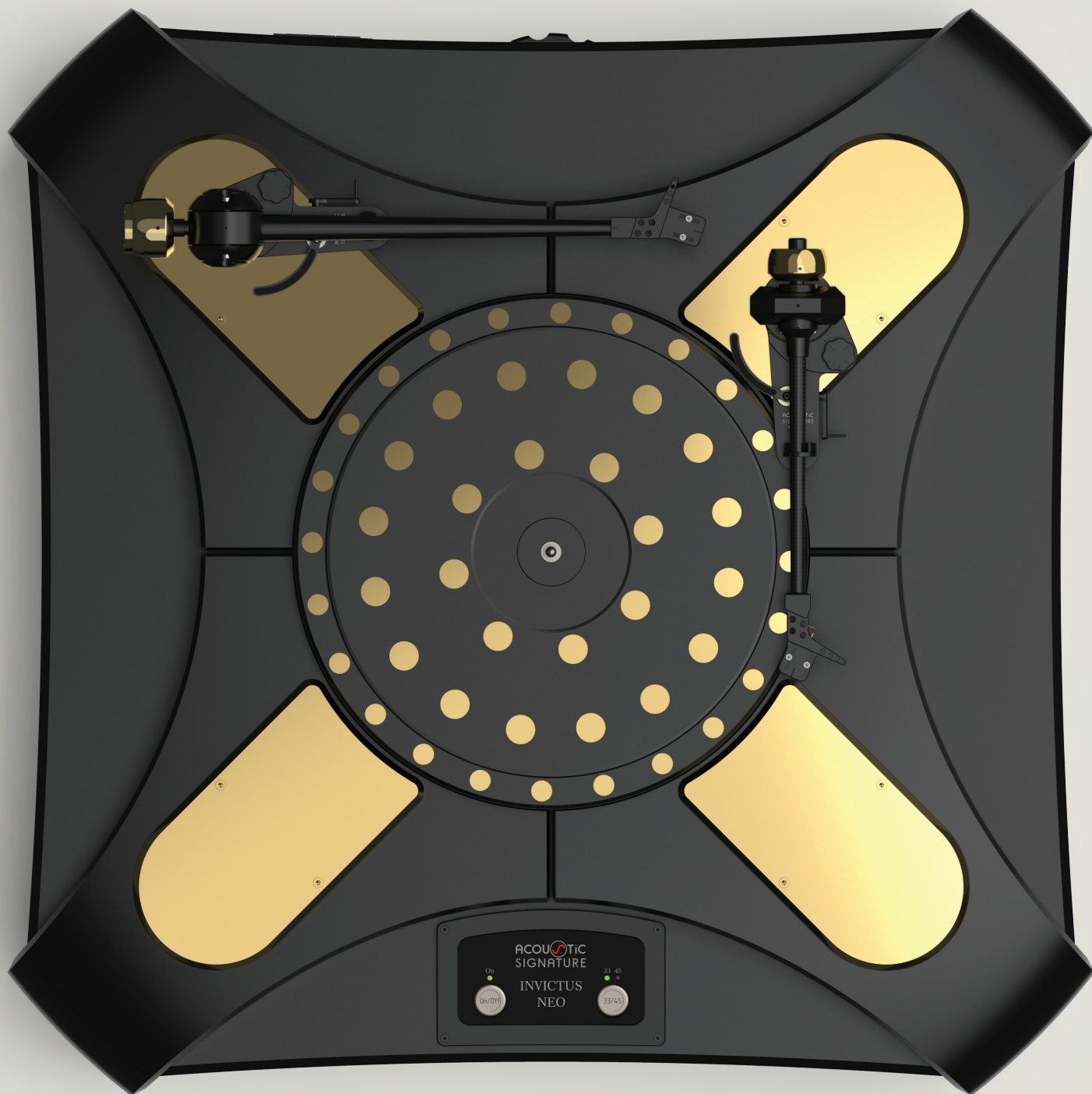
In this case, that word is also the name of the product itself. "Neo," after all, is Ancient Greek for "new." So, what's so new about the Invictus Neo turntable and its TA-9000 Neo tonearm—the successors to Acoustic Signature's highly praised original Invictus and TA-9000—that justifies a substantial rise in their already lofty prices? If you want a long form answer to this question, skip ahead to page 168 and peruse the sidebar, where AS' chief engineer and CEO Gunther Frohnhöfer gives you all the details. If you want a shorter explanation, then the words "virtually everything" spring to mind.

This is, in fact, a genuinely new and magically improved turntable and tonearm. Why magically? Because after living for almost a decade with its predecessors, the Invictus and the Invictus, Jr., I wouldn't have thought such a major advancement in LP playback was possible. After all, the Invictus/TA-9000 and its young heir were the best turntable/pivoted-tonearm combos I'd heretofore had in-house.

They were massive, of course (and that hasn't changed). And they were ultra-expensive (and now, as noted, are considerably more so). But they were also the quietest record players I'd heard, and I've heard a lot of record players. As I said in my review of the original Invictus, perhaps you'd have to be a geezer (like me) to fully appreciate just how much more color, dynamics, detail, dimensionality, presence, sheer musical life current LP-playback gear is able to retrieve from those 50-or-60-year-old grooves—and consequently how much closer LP playback now comes to the sound absolute—than the very best of yesterday or, in some cases, yesterday. The lowering of noise (particularly the susceptibility to resonance and vibration) in 'tables and 'arms and the consequent better tracing and tracking of contemporary cartridges, which have themselves been greatly improved, have revolutionized LP playback. It is mind-boggling to discover how much you were previously missing on records you thought you knew by heart—on records you'd been playing for virtually an entire lifetime—and how far hearing more of what you hadn't heard goes toward creating a more credible illusion of the real thing. It kind of makes you wonder where it's all going to end—how much more music and performance is still hidden in those little canyons of vinyl.







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Well, here we are, eight years down the road, and Acoustic Signature's Neos have me scratching my head all over again. You not only hear considerably more of everything that matters through them; you also hear considerably less of everything that doesn't. Dressed out with a DS Audio Grand Master cartridge (expertly set up by my pal and TAS colleague Andre Jennings), the Invictus Neo 'table and TA-9000 Neo tonearm just don't sound as if they are "there" in the way that every other turntable/tonearm I'm familiar with does to some extent. The RFI, the EMI, the jittery mechanical noises of all those moving parts grinding against one another—which, among other things, tend to flatten body, smear tone color (particularly in the bass), blur detail (ditto), and, with their added emphases on starting transients, make dynamic changes sound sharp and "step-like" rather than smooth and ramp-like—simply aren't there anymore. You'd have to hear (or not hear) this to believe it. (And those of you with deep pockets and a large LP collection really *have* to hear it.) Even though the original Invictus strongly reminded me of 15ips tape playback, the Neos come so much closer to that paragon of smooth, solid, continuous, organic high fidelity that it's amazing. Though I still marginally prefer the best R2R tapes, the difference between their sound and the sound of a great pressing of the same music played back on the Invictus/TA-9000 Neos will, believe me, give you pause.

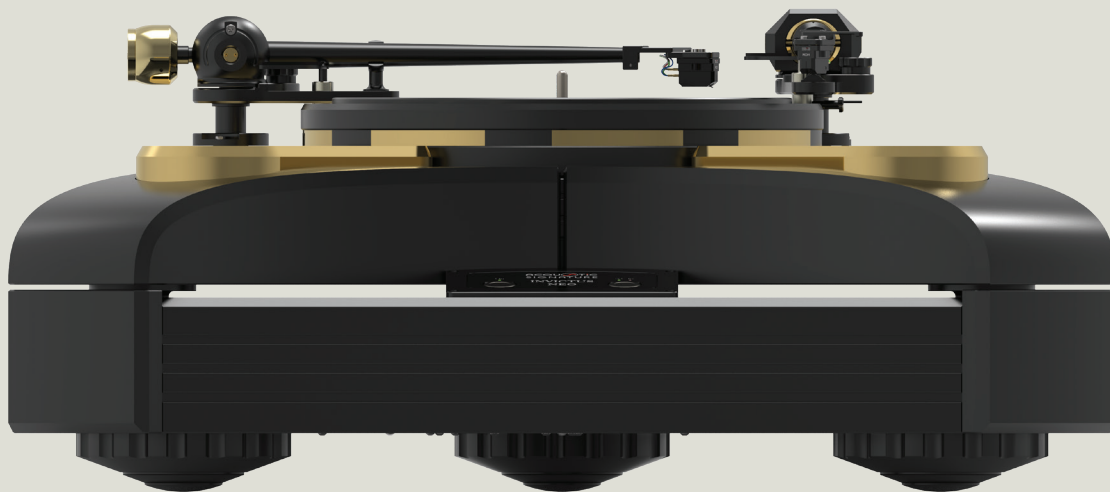
Since Gunther explains in detail what has been changed in the Neos, I'm not going to rehash what he says here, save to note that everything from the tonearm bearing to the platter bearing to the platter itself to the structure and materials of the 'arm and 'table to the motor controller is authentically new and measurably improved. The use of mass, constrained layer damping, selective laser melting (for the tonearm tube—see the illustration of its ingeniously damped multi-structure on p. 168) has been updated via the latest tools, materials, and technologies. Sonically, the result is a markedly more "complete" presentation.

Lest you forget, it was the Invictus that inspired my first use of that word, "complete." As I wrote in my review of the Junior version of Gunther's great 'table "perceiving a recorded copy as the real thing isn't merely a matter of superior parts but of what psychologists call the gestalt grouping of those parts, wherein the many variables that we reviewers (and you readers) ascribe to recorded sound (i.e., true-to-life timbre, pitch, dynamics, duration, soundstaging, imaging, bloom, dimensionality, etc.) are no longer heard as separable or even as outstandingly well-reproduced ingredients but as a collectively realistic representation of a whole. What triggers this switch between observing and evaluating exemplary parts and perceiving lifelike wholes remains a bit mysterious. This said, with recorded music I have noted that such a gestalt regrouping is invariably accompanied by the reproduction of markedly higher (across the board) amounts of information—not only about the tone color of a voice or an instrument (although this is essential), but also about the dynamically expressive way it is being used or played. Just as essentially, this higher amount of information must be delivered in a neutral way, without undue emphasis on any frequency band or any segment of the dynamic/harmonic envelope, and with a blurless clarity and 'completeness' that themselves make for near-visible presence."

At its best (with the best recordings), Invictus and Son were the most "complete" analog front end I'd auditioned—the most tape-like LP-playback components. But the Neos...well, they're just plain and simple better in every regard—and not by a little bit. Their depth of foreground and background silence (what some



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folks, including Gunther, call “blackness”) is nonpareil in my experience. As a result, you hear everything with peerless clarity, solidity, density of color, image focus and location, stage width and depth, and dynamic range. When equipment is this quiet, you not only effortlessly pick up previously fudged or unheard mastering details; you also hear tiny differences in intensity, timbre, and articulation that were heretofore masked by noise.

Listen, for example, to *Sun/Moon*—a two 45rpm LP set from J.M.I. Recordings, featuring *Village Voice*’s 1980s Musician of the Decade, Grammy Award-winning saxophonist and clarinetist David Murray. Recorded, mixed, and mastered all-analog on a Studer A-80, using true physical recording techniques and outstanding mics in Blumlein pairs, this is a sensationally realistic-sounding recording of solo tenor sax and solo bass clarinet. The LPs are so well made that both instruments will sound exceptionally good on any quality record player. But good isn’t the same as real. To reach that peak, you need the Invictus/TA-9000 Neos.

Thanks to the Neos, both the sax and the bass clarinet effortlessly accomplish the gestalt shift from collections of lovely sounds to near-visible physical presences. The synesthetic effect is astonishing and persistent—not a momentary illusion of the real things but an ongoing one. You can almost see Murray tapping the upper and lower joints of his bass clarinet to add a droll percussive effect to its dark velvet tone, almost see his lips, teeth, and tongue make that single reed vibrate, and picture the “shh-shh-shh” of his breath through the mouthpiece as the notes die away. In my experience, this ability to nearly visualize the artist and his instrument is part and parcel of “completeness.” And the Neos have it in spades, hearts, diamonds, and clubs.

I’ve never heard an analog source hold its grip and preserve a note’s shape and timing in the bass and treble as faithfully.

Though it is silly to point to particular sonic strengths in the Neos’ repertoire, since those strengths are so fully and evenly distributed on any and all instruments and any and all music, it is a fact that the lower register of the bass clarinet (the *chalumeau* register, ranging from B-flat₁ [58Hz] to E-flat₃ [155Hz]) is particularly impressively preserved, as is the bass range of every instrument. These tones—and those in the upper midrange—are

the ones that are typically smeared or sharpened a bit by turntables, tonearms, cartridges, and loudspeakers, losing their note shape (their natural harmonic/dynamic duration) and turning into slightly amorphous sounds, a bit closer to noises than to music. Not through the Neos (and the fabulous Stenheim Alumine 5 SEs). Indeed, outside of a first-rate tape deck, I’ve never heard an analog source hold its grip and preserve a note’s shape and timing in the bass and treble as faithfully as this record player.

Though the Murray album is a sonic masterpiece, coming as close to the absolute sound as you’re going to get on an LP, it is a relatively simple recording—just a single saxophone or bass clarinet. So, let’s move on to something more challenging and complex—and considerably older—Leon Kirchner’s *Concerto for Violin, Cello, Ten Winds, and Percussion* on a 1962 Epic “Stereorama” LP (lent to me by TAS’ Music Editor *emeritus*, Mark Lehman).

Mark has a habit of pinning stickers to the albums he shares, and this one said: “Sound is *superb*. The Kirchner piece is intriguing and engaging...but relentlessly chromatic.” He was right on all points, of course, though through the Neos the sound went beyond superb to that same exalted level of synesthetic presence that only the very best recordings (and the very best record players) are capable of delivering. And it did this magic trick with *every* instrument in the ensemble.

Though generally superior to later Columbia re-pressings, Epics are not often this son-

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ically outstanding. The recording and mastering here are at least as good as you'll find on celebrated RCAs or EMIs or Deccas of the same era. Indeed, like the Murray album this is a sonic showpiece of the highest order, and the only reason it hasn't been touted in TAS' pages is the "relentless chromaticism" that Mark correctly identified in his note.

Kirchner was a pupil of Ernst Toch and Arnold Schoenberg, the latter the inventor of atonal (a word he despised, preferring twelve-tone, dodecaphonic, or serial) music. Though Schoenberg's influence on twentieth-century composers, pro and con, was as profound as Beethoven's on those of the nineteenth, it was not always as felicitous. Indeed, Schoenberg and his school are often partially blamed for the decline in the popularity of classical music. Whether that is the case or not, his compositions and those of his many acolytes are often remarkable, as in Kirchner's two-movement work for strings (violin and cello), winds (flute/piccolo, oboe, clarinet, bassoon, and contrabassoon), brass (horn, two trumpets, two trombones), and a wild variety of percussion (bongos, wood block, tam-tam, celesta, xylophone, glockenspiel, antique cymbals, triangle, tubular bells, suspended cymbal, tom-tom, maracas, tambourine, timbales, snare drum, tenor drum, bass drum, temple block).

In his program notes to the 1961 debut at the Grace Rainey Rogers Auditorium of the Metropolitan Museum of Art, Kirchner wrote: "Instruments are being isolated in space and timbre, in which each of two antiphonal groups have their own repertory of melodic and harmonic intervals...associated with certain metronomic speeds." Clearly, the senses of space, timbre, and timing are at the heart of the piece, and a faithful recording should make

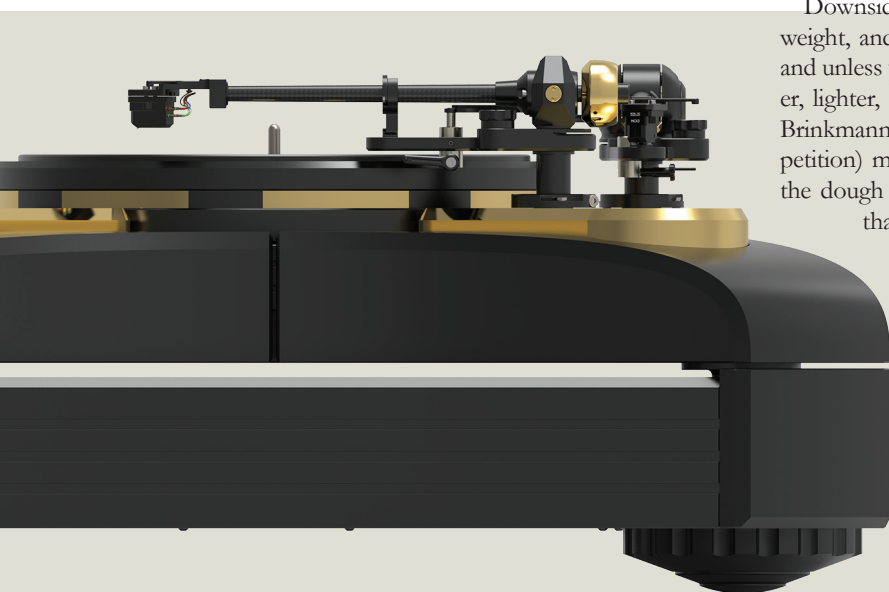
these qualities clear. Which is precisely what this Epic LP does. But the music's order, the sense it wants to make, wouldn't be as transparent if the Invictus/TA-

9000 Neos weren't projecting an astonishingly three-dimensional stage, in which the voices of each of the antiphonal groups of instruments occupy their own distinct places. From the accented woodblock and one-note violin and cello pizzicatos, doubled by low-register contrabassoon, with which the *Allegro ma non troppo* begins to the octave-jumping woodwind section, which introduces the main motive, to the brass section, which adds harmonic color and dynamic power to the mix, the Neos' superb reproduction of timbre, duration, and intensity is equaled by their remarkable reproduction of sonic space—between, behind, around, in front of the instruments—which is made as audible as the music itself. You not only hear that soundstage and the distribution of the ensemble within it; the three-dimensionality of the recording and of the Neos' playback also allows you to *see* stage and instruments and, thereby, better understand the antiphonal structure of the music. *That's* a record player, folks!

I should note, again, the Neos' dense, lifelike reproduction of low-end and upper-midrange colors and dynamics. This is a piece filled with powerful sforzandos (just look at that army of percussion instruments) and, as Mark noted, relentless, often ferocious chromaticism, and the Neos handle them with rich, smooth, tape-like ease, even when bass drum and tam-tam are loud enough to shake floors and walls (as they often do) and upper-octave transients to rattle windows.

I could go on with musical examples—and, indeed, have in earlier reviews, where some of the glory attributed to other products was also owed to the Neos (e.g., the distinctive tonality of Ornette Coleman's plastic saxophone and Don Cherry's pocket cornet)—but the point would remain the same: This is the most complete, most neutral, most lifelike, most musical turntable/tonearm I have heard in my system.

Downsides to the Neos? None, save for the obvious: size, weight, and price. This is a big, heavy, expensive record player, and unless you're already fully invested in vinyl, something smaller, lighter, and less costly from Acoustic Signature, Clearaudio, Brinkmann, or TW-Acoustic (to limit myself to the German competition) makes better sense. On the other hand, if you've got the dough and an extensive LP collection, you can't do better than this, IMO. The Invictus Neo and TA-9000 Neo are not only new and improved; they are, in my experience, unmatched. Without question, they will be my new references for LP playback and will also be my nominees for TAS' 2023 Analog Product of the Year awards.



Gunther Frohnhöfer Explains What's New in the Invictus Neo Turntable/TA-9000 Neo Tonearm

TA-9000 Neo

Let's start with the changes to the tonearm. When rethinking the TA 9000, we decided to stick with the current external design, to which we've made only minimal changes. The main differences are internal. The armtube got a newly calculated internal 3D structure. The TA 9000 was first designed in 2014, and currently available calculation software allowed for major improvements. The new structure is 50% more rigid with the same weight and damps vibrations 30% better and, more importantly, faster.



To keep pace with this change, we revised the bearings and the spindle, switching materials from brass to stainless steel. We also increased the thickness of the bearing walls and its diameter. In the picture below, you see the dramatic increased dimensions of the old and Neo bearing.

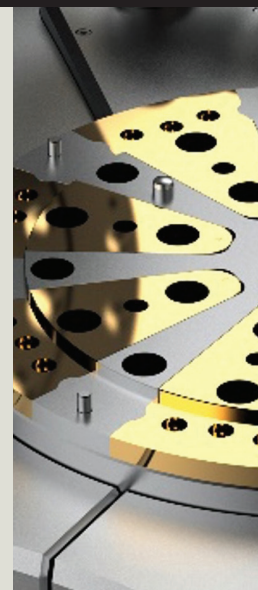
The result is a more rigid construction, matching the increased strength of the new armtube. We also did some fine refinements to the headshell and to the counterweight mount.



New tonearm bearing (left) and old tonearm bearing (right).

Invictus Neo

Why Neo? The pre-2020 Invictus was a fantastic-sounding and great-selling turntable. That 'table was released in 2014 and its development begun in 2012. We used all the top software and hardware tools that were available at that time. With COVID, starting in January 2020, business slowed, and from day to day we had engineering and production capacity available. Consequently, we decided to put all the new ideas we had to the test, using the latest software to calculate vibration behavior and designs. We had also improved our machine park, so we had much more sophisticated machines available.



Electronics

First we developed the new DMC-20 digital motor controller. New electronic parts and the new vibration control software AVC (Automatic Vibration Control) were also implemented.

What is AVC? The high-quality AC motors that drive Acoustic Signature turntables are constructed with two coils and 24 poles. To make the coils rotate, they are fed with a sine wave and a 90° phase-shifted signal. Unfortunately all AC synchronous motors show production-related tolerances that prevent the poles and coils from being positioned one hundred percent correctly—a key reason for unwanted vibrations. To effectively minimize or even eliminate these vibrations, all production tolerances must be compensated by other means.

This is where our AVC technology comes in: It can measure the resulting distortions in real time. Based on those measurements, AVC adjusts the phase shifts to the motor signals—also in real time and fully automatically. These digitally monitored corrective measures ensure a drastic reduction of the vibrations—an extra effective benefit for turntables driven by a multi-motor concept.

The sonic gain was so dramatic that we decided to equip all NEO series turntables with that technology. Depending on the drive system and the number of motors used, our Automatic Vibration Control is implemented in three configuration stages, each with a different intensity: AVC Level 1, AVC Level 2, and AVC Level 3. The Invictus Neo uses AVC Level 3.

Platter

We then worked on the new platter. We changed the solid brass inlays into cakelike-looking dampers. Calculated with Finite Element



X-Cross
Metal feet
Elastomere-Damper



software, this new design enhances sound quality by lowering vibration and ringing of the platter. The use of Silencers and their number have been kept the same, as there was no improvement possible. But we did change the material of the Silencers from brass to pure copper, which resulted in a little more speed and energy.

DTD Bearing

Acoustic Signature's Tidorfolon® Bearing has been a reliable, great-working mechanism in all our turntables. But

as is always the case, the passage of time brings new materials and technologies. Such is the case with our turntable bearing.

The bearing is the heart of every turntable. Although the bearing design is of paramount importance, its development—from the view of physics—is often characterized by imprecise approaches. Any conventional bearing that is confronted with a heavier platter is extremely sensitive in terms of handling. It also faces a mechanical challenge that is mainly to be found in the contact area of the thrust plate and bearing ball. In other words: the combination of the high platter weight and the very small ball surface causes an enormous pressure in the very small contact area, which simply pushes the lubricating oil away. The result: too much friction, too much noise, too much vibration, and rapid wear.

Analog lovers seeking salvation in an "inverted bearing" have been misguided by a marketing trick: The main source of noise within a conventional bearing design is located at the pivot point of the platter axis and the thrust plate, about four inches away from the record. By inverting the bearing, this noise source is moved closer to the platter, directly below the vinyl surface and thus into the activity area of the cartridge—definitely not a good idea. Moreover, this "reversal" causes a lubrication problem. Thanks to gravity, the oil floats away at the contact surface.

We introduced our Tidorfolon® Bearing

in 1997. Made of an innovative combination of materials, the Tidorfolon® Bearing was hard enough not to be affected by the high mass of the platter and soft enough to withstand even a "dropped" platter without any damage. Another highlight: The material mix was able to absorb oil like a sponge and release it when needed. In other words, the oil could not be pushed away; lubrication is always there when needed. Refill oil? Not necessary! Replenishment? Not necessary! Maintenance? Not necessary!

With the DTD® (Dura Turn Diamond®) Bearing, we succeeded in reducing the already imperceptible noise level caused by mechanical movement even further, thus making the background when listening to music even blacker. We achieved this by using newly developed sinter-bushes that can store three times the amount of lubricating oil. The design of the spindle was also changed. Our aim was to minimize its surface contact and the resulting noise. So, a vacuum-hardened stainless-steel spindle is ground precisely and then given an elaborate plasma coating. The result is a spindle with a diamond-like surface-coating that competes with the hardest material on earth and reduces the friction coefficient by 60 percent!

Friction is noise, and noise is what you want to avoid under all circumstances. The new DTD® (Dura Turn Diamond®) bearing has all the reliability of the old bearing with less noise.

Plinth

The Invictus Neo plinth is also a total new design. Its X-cross construction comprises four pieces that are bolted onto the motor and bearing chassis (see the illustration above). This heavy X sits on a main plinth that has a honeycomb structure on the underside. The honeycombs are filled with elastic material for increased damping. In effect, the X-cross sits in an elastomer cage, which isolates the turntable from its surroundings.



DTD® Bearing

Setting Up the Invictus Neo and TA-9000 Neo

OBVIOUSLY, you're going to need professional help setting up a near-300-pound turntable. Your dealer and his crew can do the heavy lifting, setting the large chassis—which houses the on/off and speed-selection controls, the six motors, the DTD bearing, and the subplatter—on a suitably stout stand. Once the dual turntable belts are threaded around the motors' capstans and the outboard DMC-20 motor controller is plugged into the twin RJ45 sockets at the rear of the chassis, the massive X-shaped upper plinth can be set atop the chassis and the 36-pound platter and up to four tonearms carefully installed on it.

The TA-9000 Neo comes with its own tonearm-adjustment template for overhang, Atlas 5-pin phono cable with RCA or XLR terminations, counterweight (and additional weight), base mount (for the pre-drilled, adjustable arm base on the plinth), mounting screws, a generous toolset, and an excellent instruction manual. (There are also YouTube videos online to guide you in setup.) Naturally, you will want your cartridge mounted and aligned with care. The tonearm has adjustable azimuth, VTA, tracking force, and anti-skate—all of which must be set precisely by measurement and by ear.

Once correctly aligned and set up with an excellent cartridge—I used a DS Audio Grand Master—the TA-9000 Neo allows for astonishingly good tracking. In the course of the review, I played several warped records, and there was absolutely no skipping or jumping. Indeed, I wouldn't have known that these records were warped had I not seen the warpage when I placed the LPs on the platter. (And this on a turntable without vacuum hold-down with a cartridge not celebrated for its trackability!)

The final steps in setup will be the leveling of the 'table with tonearm via the Invictus Neo's three, adjustable, 3-D printed, magnetic, double-damping feet, and dialing in precise rotational speed via a strobe and test disc through the adjustable speed controls on the rear of the DMC20 controller.



DS Audio ES-001 Eccentricity Detection Stabilizer

Three Notable Accessories

WHILE THE EXTRAS I'm about to recommend enhance the sound of any good turntable, they are unusually felicitous with this great one, audibly improving timbral fidelity, transient speed and clarity, image focus and depth, and sound-stage dimensionality.

First is the DS Audio ES-001 Eccentricity Detection Stabilizer—Aki Aoyagi's ingenious solution to the age-old problem of miscentered records. Though it requires an extra step prior to playback (and has a hefty \$6000 price tag), it is a step well worth taking. As I said in my review, the sonic improvements that the ES-001 makes are consistent and consistently positive. They are almost exactly like the differences you see in a photo that was taken with a camera on a tripod and one that was taken handheld. Blur disappears, focus becomes tack-sharp, colors are more distinct and natural, depth of field and of image are clarified, the ambient space between and around instruments is greatly expanded, and performance/orchestration/recording details that were slightly fudged aren't anymore.

Second, also from DS Audio, is the \$1800 ION-001 Anti-Static Vinyl Ionizer, which is kind of like a continuously operating Zerostat that constantly floods the surfaces of records in-play with a stream of anions and cations. Aside from neutralizing static-electric charges, which allows dust to be more easily washed or wiped away, the ION-001 also has a literal neutralizing effect on the sound itself, making timbres truer to life (less excessively dark or bright) and improving see-through transparency.

Third is the \$650 TAS Accessory of the Year Award-winning Pi Carbon Signature Turntable Mat from Stein Audio. Made from cloth-like tapa paper mixed with carbon fiber, this add-on has a remarkably salubrious effect on the entire stage. Think of the sound of a recording on which musicians were taped in sound booths via individual mics; then think of the sound of a recording on which the musicians were taped ensemble in an actual hall, studio, or club via a Blumlein pair or a trio of omnis. The instruments in the separately miked sound-booth setup may seem more individuated and distinct, but the sense of organicism—of ensemble music-making in a large, shared acoustic space, (highlighted in the Blumlein or spaced-omni setups)—will be greatly reduced or nonexistent. It is this realistic and sonically attractive "organicism" that the Pi Carbon Signature adds to each and every LP, no matter how it was recorded.



DS Audio ION-001



Stein Music Pi Carbon Signature LP Mat

Acoustic Signature Invictus Neo Turntable and TA-9000 Neo Tonearm

Specs & Pricing

AC-motors: 6 (completely insulated)

Drive system: RPM-regulated double-belt drive with fine speed adjustment for the subplatter

AVC: Level3

Speed range: 33 $\frac{1}{3}$ rpm, 45rpm, 78rpm (upgrade option)

Power adapter: External digital motor controller DMC-20 with super stable power supply

Control panel: Integrated

Bearing: High-precision Dura Turn Diamond® bearing

Tonearm base: Adjustable arm base, exchangeable custom-made armboards for various tonearms

Tone arm compatibility: 9" to 12"

Maximum number of tonearms: 4

Platter: 50mm anodized aluminum sandwich platter base with brass layer and Silencer modules (37 lbs.)

Silencers: 56

Chassis: Massive aluminum alloy

Feet: 3-point setup with 3D-printed, magnetic, double-damping feet

Dimensions: 710 x 270mm x 710mm

Weight: ca. 287 lbs.

Price: \$199,995 (turntable), \$27,995 (tonearm)

AS-DISTRIBUTION GMBH

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JV's Reference System

Loudspeakers: MBL 101 X-treme MkII, Stenheim Alumine Five SE, Estelon X Diamond Mk II, Magico M3, Avantgarde Zero 1, Magnepan LRS+, MG 1.7, and MG 30.7

Subwoofers: JL Audio Gotham (pair)

Linestage preamps: Soulution 725, MBL 6010 D, Siltech SAGA System C1

Phonostage preamps: Soulution 755, Constellation Audio Perseus, DS Audio Grand Master

Power amplifiers: Soulution 711, MBL 9008 A, Aavik P-580, Air Tight 3211, Air Tight ATM-2001, Zanden Audio Systems Model 9600, Siltech SAGA System V1/P1, Odyssey Audio Stratos, Voxativ Integrated 805

Analog source: Clearaudio Master Innovation, Acoustic Signature Invictus Jr./T-9000, Walker Audio Proscenium Black Diamond Mk



V, TW Acoustic Black Knight/TW Raven 10.5, AMG Viella 12

Tape decks: Metaxas & Sins Tourbillon T-RX, United Home Audio Ultimata5 OPS-DC

Phono cartridges: DS Audio Grandmaster, DS Audio Master1, DS Audio DS-003 Clearaudio Goldfinger Statement II, Air Tight Opus 1, Ortofon MC Anna, Ortofon MC A90

Digital source: MSB Reference DAC, Soulution 760, Berkeley Alpha DAC 2

Cable and interconnect: Crystal Cable Art Series Da Vinci, Crystal Cable Ultimate Dream, Synergistic Research SRX, Ansuz Acoustics Diamond

Power cords: CrystalConnect Art Series Da Vinci, Crystal Cable Ultimate Dream, Synergistic Research SRX, Ansuz Acoustics Diamond

Power conditioner: AudioQuest Niagara 5000 (two), Synergistic Research Galileo UEF, Ansuz Acoustics DTC, Technical Brain

Support systems: Critical Mass Systems MAXXUM and QXK equipment racks and amp stands and CenterStage™ footers

Room Treatments: Stein Music H2 Harmonizer system, Synergistic Research UEF Acoustic Panels/Atmosphere XL4/UEF Acoustic Dot system, Synergistic Research ART system, Shakti Hallographs (6), Zanden Acoustic panels, A/V Room Services Metu acoustic panels and traps, ASC Tube Traps

Accessories: DS Audio ION-001, SteinMusic Pi Carbon Signature record mat, Symposium Isis and Ultra equipment platforms, Symposium Rollerblocks and Fat Padz, Walker Prologue Reference equipment and amp stands, Walker Valid Points and Resonance Control discs, Clearaudio Double Matrix Professional Sonic record cleaner, Synergistic Research RED Quantum fuses, HiFi-Tuning silver/gold fuses **tas**