

Graham Engineering Phantom III Tonearm

Decidedly Effective

Equipment report by Andre Jennings Mar 12th, 2019

<http://www.theabsolutesound.com/articles/graham-engineering-phantom-iii-tonearm/>



Graham Engineering has been making tonearms since the mid-80s. Throughout that time, company founder and designer Bob Graham has been refining his designs for better performance. After starting with the original unipivots (the Excalibur and Graham 1.0 through 2.2 Deluxe), the company introduced its first “stable” unipivot around the year 2005 with the introduction of the Phantom B-44. The B-44 was stabilized by a patented MagneGlide magnetic-stabilization bearing interface, which continues to be a part of the Phantom series ’arms as they have advanced in design. The progression of the Phantom series after B-44 over the ensuing years has been Phantom II and Phantom II Supreme. The available ’arm models in the lineup today are the Phantom III (under evaluation here) and Phantom Elite (reviewed by Paul Seydor in TAS 254); Elite is the top ’arm in the Graham Phantom series.

The Phantom III tonearm has two mounting options: a custom Graham circular base or an SME-type mount that facilitates connection to armboards cut for slotted SME bases. Additionally, the Phantom III has removable armwands that are available in three sizes (9", 10", and 12") so the ’arm can be adapted to the length requirements of the turntable it will be mounted on. These combinations of

basic configuration choices provide a healthy number of arm-selection options when choosing a Phantom III to fit the user's 'table.

The Phantom III arrived in a box-within-a-box. The outer container was of standard double-walled construction to survive the rigors of transport. The inner box has printed-on names, logos, and product identification along with a reusable flap to facilitate opening and closing. Inside this box are foam cutouts for instructions/documents, armwand, main bearing housing, and a host of accessory items for 'arm assembly and installation. Those accessory items are: a cartridge alignment gauge (with adjustable height settings), an armwand alignment gauge, damping fluid for the main bearing, cartridge screws and protective nylon washers, several base mounting screw sets, tweezers, and multiple hex driver/Allen keys for assembly and adjustments—all supplied in conveniently labeled zip bags. Optional items (if ordered) include extra armwands, auxiliary counterweights, and tonearm output cable.

The Phantom III has a removable black-colored titanium armwand (as opposed to a removable headshell) that extends to the bearing housing. Inside the armwand is a 5-pin connector that secures itself to the mating connector on the bearing-housing end. A precision fit is made possible by a keyed mechanical interface that includes a threaded attachment mechanism. Inside the bearing housing is the business end of the 'arm, containing the bearing cup and pivot point on the bearing cap. The concave polished-tungsten bearing cup is pressed within a stainless-steel cylinder, designed to be filled with a measured amount of damping fluid. The bearing cap houses the tungsten-carbide bearing point that fits into the bearing cup once installed. The bearing cap is threaded for secure attachment to the bearing housing. The rear counterweight is attached to a precision threaded shaft that makes tracking-force adjustments easy and repeatable. There is an anti-skate assembly located on the opposite side of the armwand from the 'arm lift. On the same side of the 'arm as the anti-skate mechanism, attached to the bearing housing, is the Magneglide magnetic stabilization system. This system serves to stabilize the 'arm pivot and keep it from rocking unstably side-to-side, like many unipivot 'arms do. (Its function is easily visible when handling the 'arm.) Additionally, the Magneglide allows for precise azimuth adjustment and serves to isolate the anti-skate function from direct contact with the main bearing. On the opposite side of the bearing housing from the Magneglide is the VTA height adjustment tower. This precision adjustment lets the user set the proper height for optimal cartridge VTA/SRA. (There is a set screw on the mounting collar that is loosened to allow height adjustment up or down, then tightened to lock the 'arm in place. A bubble level on the bearing housing next to the VTA height adjustment tower will show when the 'arm is leveled.)

The Phantom III installation is pretty straightforward. On the TechDAS Air Force III 'table, the main bearing housing (with SME-type mount) is installed on the cantilevered armboard, damping fluid is added to the bearing cup, and the threaded bearing cap (with pivot point) is installed. (Be sure to remove the pivot-point protector from the bearing cap. Hint: If the pivot-point doesn't look/feel like metal, the rubbery-feel cap is still on.) In the next steps, the armwand is installed, the tonearm alignment gauge is placed over the 'table spindle, and the cantilevered armboard of the 'table is moved until the leveled armwand attaches properly to the tonearm alignment gauge over the 'table's spindle (see manual). Once completed, the cantilevered armboard of the 'table is secured in place (which sets proper pivot-to-spindle distance for the 'arm) and the tonearm alignment gauge can be removed. (On the Basis Debut Vacuum turntable, the armboard is precision-machined for proper distance to accept the second Phantom III model with Graham custom mount, which can be verified with the tonearm alignment gauge via a method similar to the one used on the 'table with the SME-type mount mentioned above.)

With the removed armwand, the cartridge can be installed using Graham's unique cartridge alignment gauge; the process is relatively quick and easy. The cartridge is mounted in the slotted head of the armwand so it is secure (using Graham's supplied screws/washers or the cartridge manufacturer's supplied screws/washers) but loose enough to be moved fore and aft as needed to set proper overhang and offset angle. Next, the cartridge alignment gauge is attached to the disconnected armwand; then it is positioned and adjusted to be level in height to the cartridge stylus. The cartridge is adjusted until it is properly lined up with the grid on the transparent window of the gauge. Once the cartridge is adjusted to its proper location, the screws securing the cartridge are tightened to keep it in place, completing proper alignment per Graham's method. The cartridge alignment gauge is removed and the armwand, with attached cartridge, is ready to be installed into the Phantom III's main bearing housing. Proper set-up adjustments and fine-tuning are then performed as normal: tracking force, VTA/SRA, anti-skate, azimuth, etc.

Some of the sound produced by the Phantom III (and cartridge) can be altered with the user's choice of tonearm cable and phonostage. Most of these variables were considered during the evaluation. While it not possible to eliminate every one of them (they all have to work in concert to produce sound), some effort was extended to lessen the effect of a single component in the analog chain on the Phantom III. This was done by using at least two phono cables (both supplied by Graham Engineering), seven cartridges (Lyra Atlas SL, Lyra Etna, Lyra Etna SL, Ortofon Windfeld Ti, TechDAS TDC01 Ti, Hana SL, and van den Hul Colibri XGP), three phonostages (a custom unit, Lamm LP2 Deluxe, and Zesto Audio Andros T  ssera), and two turntables (Basis Audio Debut Vacuum, and TechDAS Air Force III). Two versions of the Phantom III were also used: one of them had the SME-type base mount with a 10" armwand (used on the AFIII), and the other was configured with the Graham custom-mount circular base including the 9" armwand for use on the Basis Debut Vacuum 'table.

The more a product under evaluation gets out of the way, the more challenging it becomes to describe its characteristics. The Phantom III leans closer to this ideal (like a few other well-regarded tonearms) than to overlaying any consistent signature or coloration on the music. The baseline performance of the Phantom III is fundamentally sound. There is a proportionate blend of resolution, detail, bass response, soundstaging, and imaging—along with other traits—that creates a "wholeness" with musical reproduction. With such a tonearm, connected cartridges are more apt to show their individual character more overtly.

One example of the Phantom III's freedom from signature or coloration was Bach's Toccata & Fugue in D Minor performed by Michael Murray on a Telarc LP [DG-10088]. Using a new (I was told) and freshly installed TDC01 Ti cartridge, the sound was very good but it was also obvious that the leading edges of each organ note were being emphasized at the expense of complete harmonic development during and after the initial key/pedal press. As a result, the soundstage remained restricted, somewhat flat, and the music was less involving. Switching armwands to a Lyra Etna, which has more hours under its belt, opened up the soundstage and allowed the notes to fully express themselves, from the moment the valves of the organ opened through resonating pipes to close, so that that the music easily breathed the sound of the First Congressional Church (Los Angeles) into the listening space. The difference was clear and unmistakable. Seasoned cartridge owners know that a fresh cartridge needs time to burn-in. Therefore, some of this difference (the flat and musically less involving part) was based on that aspect and some of it could be attributed to the different character of the cartridge (favoring initial transients). What is worth knowing about the event is the Phantom III made these differences perfectly clear.

With Etna, Atlas SL, Colibri XGP, or Hana SL on the Phantom III, the 'arm traced the groove of Dire Straits' "So Far Away" and "Money for Nothing" like it was *nothing*. On this Mobile Fidelity reissue, the solid bass drum on "So Far Away" took on the character of the installed cartridge but never lost its grip, while the cartridges also tracked the guitars, keyboards, and vocals along the way. Likewise with the swell of sound as the song builds up to a crescendo during the start of "Money for Nothing," with less stable 'arms (or 'arm/cartridge combos) this intro can turn into a somewhat distorted and incoherent mess.

Groove tracing is undeniably tied to how well a cartridge and tonearm combine to form a stable pair. Given an optimal setup, the sound at the beginning as well as the end of an LP can be excellent throughout. Most talk about the disadvantages of vinyl playback (usually with pivoted 'arms) inevitably includes end-of-the-record inner-groove distortion, where the wavelengths cut in the grooves get progressively shorter and the stylus tracing of said groove more demanding. It has been reported that the Eva Cassidy *Songbird* [S&P-501] LP's inner grooves have been difficult for certain playback systems to trace cleanly, most sounding a bit strident musically and on vocal crescendos. A good tonearm (like the Phantom III) and careful setup of a good cartridge should eliminate any audible identification of this issue. On the Phantom III a cartridge like the \$750 Hana SL has been just as stable at tracing the inner grooves as the more costly cartridges mounted on the same 'arm. Using the Hana SL (or any of the other cartridges mounted on the Phantom III), the last tracks are just as clear-sounding as the first ones; Eva's vocals retain dynamics and the music maintains separation and coherence. The same ability to maintain steadiness, coherence, and clean tracing of the grooves during classical music crescendos, which in many cases occur at the end of the performance closest to the inner grooves (such as Shostakovich's 5th symphony), is just as apparent as it is in the beginning tracks. Granted, one can choose an alignment profile (like a Stevenson alignment) that caters to lowering tracking distortion towards the end of the record. However, in most cases, a thorough setup, a very good 'arm, and a capable cartridge give a significant advantage over the former alone. The Phantom III is securely in the camp of "a very good 'arm" to use for this purpose.

Moving to comparative music listening, the Phantom III's ability to pass through distinguishing differences of vinyl pressings are exposed with Jacqueline Du Pré's performance of Elgar's Cello Concerto on the EMI label [ASD 655] supported by the London Symphony Orchestra under Sir John Barbirolli. The reissued heavy vinyl pressing (dead wax: ASD 655 A-01-01-1) produced a warm tone throughout the performance. Du Pré's cello took on the tone of the instrument's body with limited harmonic structure, while the sound of the bowing of the strings was significantly reduced: less resin/string and less delicacy. The cello tended to sound blurred as did the rest of the orchestra. Switching to an earlier, although not original, pressing (dead wax: ASD 655 2YEA 1143-20C-1—1), Du Pré's cello regained its balance. One heard the resin of the bow gliding across the strings, wonderfully controlled vibrato, and a lovely tone. It's as if the sound of Du Pré's bow jumping on and off the strings via skillfully executed contact gave a feeling that the cello and bow were locked in a highly coordinated dance. Engaging, indeed. The sound of Kingsway Hall was cast in clear relief within the performance, adding to the increased portrayal of dynamic swells during crescendos. The entire presentation was more captivating with enhanced pianissimo-to-forte musical drama. The Phantom III contained enough transparency to the signal that it conveyed the audible contrasts of this same performance (presumably produced via different processes at different times) without making those differences less obvious to the listener.

Ultimately, a properly implemented tonearm needs to perform its job of accepting a mounted cartridge and allowing proper alignment by having options for fine-tuning tracking force, azimuth, overhang, zenith angle, VTA/SRA, etc. Adjustments should be done with stability and repeatability, and allow ease of use in daily operation. Finally, the tonearm should be able to portray the differences between mounted cartridges and allow those transducers to perform optimally at or near

their potential. The Graham Phantom III met these requirements, was flawless in daily operation, and sounded pretty darn good. Give it a listen and see/hear what you think.

ASSOCIATED EQUIPMENT

Analog vinyl: Basis Audio Debut Vacuum, Basis Audio 2800 Vacuum tables; Basis Audio SuperArm 9, Basis Audio Vector IV (x2), Graham Phantom III, Lyra Atlas, Lyra Atlas SL, Lyra Etna, Lyra Etna SL, Lyra Titan-i, van den Hul Colibri XGP, Hana SL

Analog tape: Otari MTR-10 Studio Mastering tape deck (¼" 2-track) with custom Flux Magnetic Mastering Series repro head and secondary custom tube output stage

Phonostage: The Raptor (Custom), Lamm LP2 Deluxe, Ayre P-5xe, Musical Surroundings Phomena II+, Zesto Audio Andros Téssera

Preamplifiers: Dual Placette Audio Active Linstage, Lamm L1.1 Signature, Lamm L2 Reference

Amplifiers: Custom/modified solid-state monoblocks

Speakers: Vandersteen Model 3a Signature with dual 2Wq subwoofers using M5-HPB high-pass filter

Cables: Assortment of AudioQuest, Shunyata Research, Tara Labs, Acoustic Research, and some custom cables

Racks/Accessories: Minus-K BM-1, Neuanze shelf, Maple wood shelf, Symposium Ultra, Aurios Pro, Walker Audio, Klaudio RCM, VPI RCM

Listening Room: 18' x 8' x 43'