

# the absolute sound

THE JOURNAL OF HIGH-END AUDIO

JULY/AUGUST 2025

Global  
Edition



**Wilson Audio Specialties  
WATT/Puppy Loudspeaker  
50th Anniversary Edition**

15 Pages of Music Reviews



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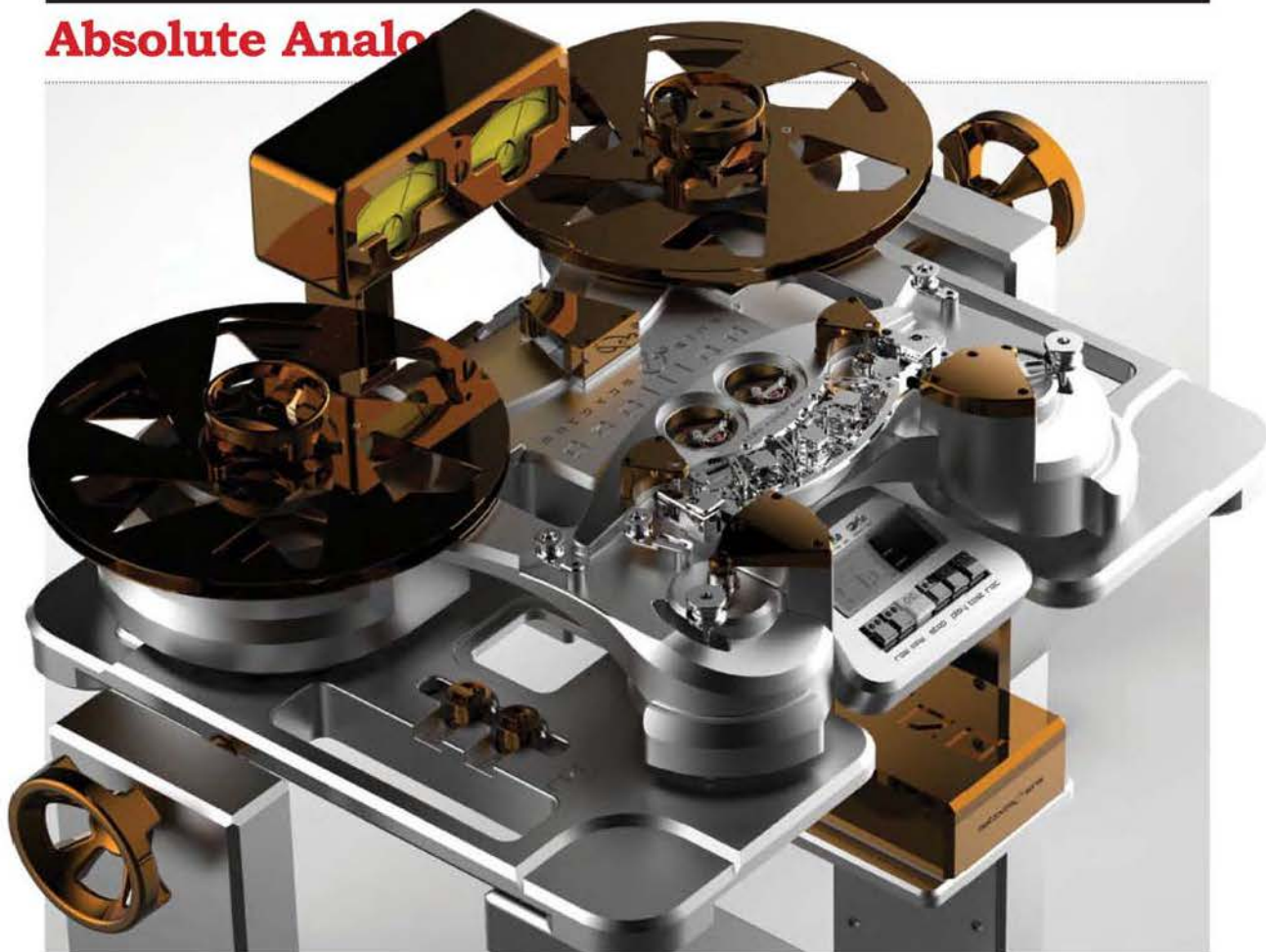
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## Absolute Analog



### Metaxas & Sins Papillon Tape Deck

#### A New Standard in Source Components

Jonathan Valin

**I**n online notes about his fabulous new creation, the Papillon studio tape deck, recording engineer and industrial artist Kostas Metaxas explains that in horology a “papillon” (French for “butterfly”) refers to the organically shaped bridge that supports the delicate gears, pinions, jewels, and mainspring of a watch’s mechanism. He goes on to say that the Metaxas & Sins Papillon analog tape reproducer is the first deck to use this same sturdy butterfly shape to support the tiny

rollers and mechanics of the tape path. “The Papillon is an entirely newly designed professional reel-to-reel studio tape recorder and playback machine aimed at challenging the notion that we’ve been able to extract all the information from magnetic tapes. As such, it meets and exceeds the highest standards of recording engineers and of the most serious audiophiles.”

To look at—and be careful if you do this, because for any reel-to-reel tape lover with a sizable budget one glimpse of this deck, even unheard, will trigger an instant irrepressible urge to purchase it (or for those on a budget, to steal it)—the Papillon is a thing of

staggering beauty. Everything that Kostas makes is. Like any studio deck, it is also a thing of staggering size. Assuming you don’t purchase its optional dedicated stand, you will need considerable space to house it—even more space if you buy, as I think you must, the optional, oversized, thick-walled, noise-killing, see-through, hinged acrylic cage in which it is intended to sit. (With some overlap at its edges, the top shelf of my large Critical Mass Maxxum stand barely holds the Papillon and its giant box.)

As was the case with the built-in electronics in Metaxas’ portable Tourbillon, the now externally housed and



## Absolute Analog Metaxas & Sins Papillon Tape Deck

### Specs & Pricing

**Recording/playback:** 19cm/s (7.5ips), 38cm/s (15ips), and 76cm/s (30ips)

**Frequency response [ $\pm 2$ dB]:** 30Hz–20,000Hz

**Distortion 1kHz/514nWbm:** <1%

**Crosstalk:** >55dB

**Signal-to-noise ratio (38cm/s ASA filter 514nWb/m):** –67dB

**Wow & flutter:** <0.25%

**Speed accuracy:** 0.001%

**Line-level inputs:** 10k ohms input impedance

**Outputs:** Line-level 560 ohms output impedance

**Price:** \$88,000 (15ips/30ips playback only)

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### JV's Reference System

**Loudspeakers:** MBL 101 X-Treme MKII, Magico S3 2023, Metaxas & Sins Czar, Magnepan LRS+, 1.7i, and 30.7

**Subwoofers:** JL Audio Gotham (pair), Magico S Sub (pair)

**Linestage preamps:** Soulution 727, MBL 6010 D, Siltech SAGA System C1, Vitus Audio SL-103, JMF Audio PRS 1.5

**Phonostage preamps:** Soulution 757, DS Audio Grand Master EQ

**Power amplifiers:** Vitus Audio SM-103 Mk.II, JMF Audio HQS 7001, Soulution 711, MBL 9008 A, Siltech SAGA System V1/P1, Odyssey Audio Stratos

**Analog source:** Clearaudio Master Innovation, Accousti Signature Invictus Neo/T-10000 Neo, TW Acoustic Black Knight/TW Raven 10.5

**Tape deck:** United Home Audio Ultima Apollo, Metaxas & Sins Tourbillon and Papillon, Analog Audio Design TP-1000

**Phono cartridges:** DS Audio Grand Master EX, DS Audio Grand Master, DS Audio DS-W3, Clearaudio Goldfinger Statement v2.1, Air Tight Opus 1, Ortofon MC Anna, Ortofon MC A90

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

Kalista DreamPlay XC

**Cable and interconnect:** Synergistic Research Galileo SRX (2023), Crystal Cable Art Series da Vinci, Crystal Cable Ultimate Dream

**Power cords:** Crystal Cable Art Series da Vinci, Crystal Cable Ultimate Dream, Synergistic Research Galileo SRX 2023

**Power conditioner:** AudioQuest Niagara 5000 (two), Synergistic Research Galileo SX

**Support systems:** Critical Mass Systems MAXXUM and QXK equipment racks and amp stands

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

**Accessories:** Audio Realignment Technologies (A.R.T.) electro-magnetic treatments, DS Audio ES-001, DS Audio ION-001, Stein Music Pi Carbon Signature record mat, Symposium Isis and Ultra equipment platforms, Symposium Rollerblocks and Fat Padz, Clearaudio Double Matrix Professional Sonic record cleaner

results in a machine that is said to be capable of recording and playback at a “level of realism that gives the listener the sense of being present at the live music performance in its original venue.”

This is a big claim to live up to and, to spill the beans at the start, that the Papillon does live up to it with a neutrality and completeness I’ve not experienced to this extent in the past from *any* source component is the reason why its stunning good looks are the least important things about it. This is not a “trophy” product. It is an all-new studio-sized tape machine (the first in a long, long while) that can accommodate any combination of heads, reel sizes, and tape speeds you choose (for more detail, see my interview with Kostas below) and, in any version, not only comes with the superb-sounding, separately housed and powered, highly modified Stellavox eq/pre-amp electronics I just mentioned but also offers direct tape-head output that lets you use your own head amp (of which there are quite a number on the market, including the wonderful Soulution 757 that I listened with after my pal Andre Jennings calibrated it for the Papillon via a standard calibration tape).

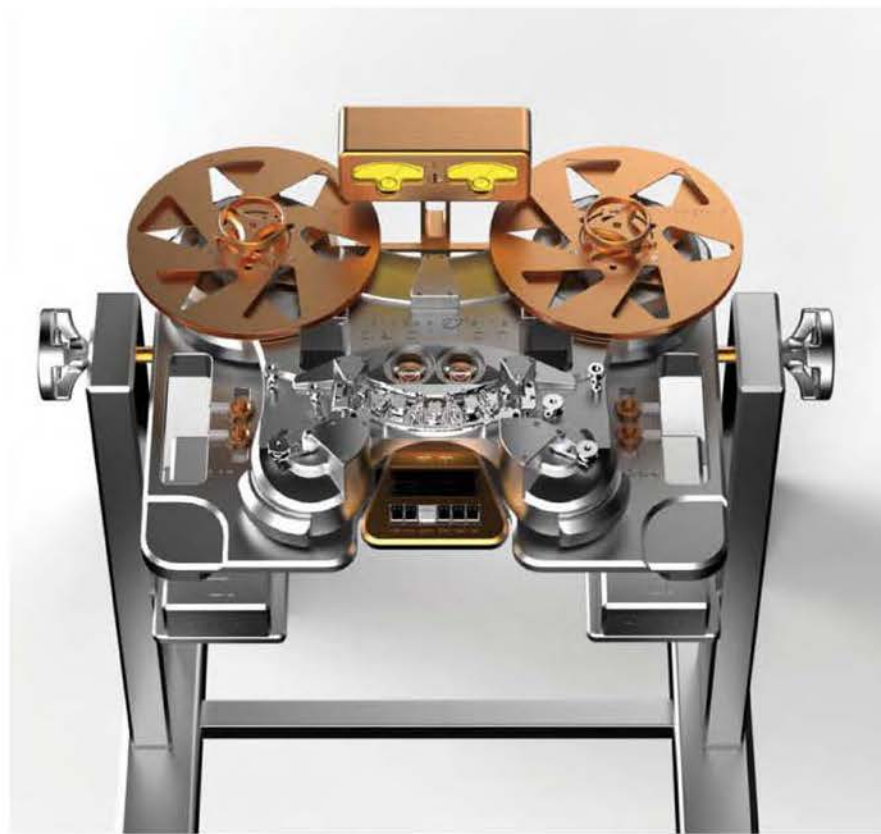
At least initially, operating the Papillon is a bit more challenging than, say, operating Greg Beron’s outstanding Ultima Apollo deck. Its tape path is more complex, though watching one of Kostas’ You-Tube videos makes threading it easy to master. (Once you acquire the knack, loading and unloading tapes become second nature.) It is also not as ergonomically convenient as

separately powered eq/preamp stage of the Papillon is derived from the great Swiss firm Stellavox’s 1960s output circuit, highly modified by Metaxas, who has spent 40 years recording music on his Stellavox SM8 and knows its foibles inside and out. Like the Tourbillon, the Papillon uses a purist single-ended-transistor electronics path deemed state of the art at the time of its design and still highly prized by professionals. Its tape path, on the other hand, is very up to date, using an ARM Cortex controller to synchronize four of the latest high-torque/low-speed Maxon BLDC

(Brushless DC) motors—two for driving the reels and two for the capstans—with the two Actuonix linear motors that control the retractable bar of the dual-capstan assembly. This combination of highly musical 1960s voicing and 2020s high technology



## Absolute Analog Metaxas & Sins Papillon Tape Deck



Christophe Martinez's remarkable touchscreen-equipped Analog Audio Design TP-1000, though the Papillon *is* equipped with a largish Noritake LCD panel that reads out the selection you've made on the functions keyboard (reverse, fast forward, stop, play, etc.), as well as the tape speed in inches per second and your position on the tape in hours, minutes, and seconds. This is a *big* professional studio deck, built not for user convenience but for the best possible sound. Speaking of which, unless you run a recording studio, Metaxas recommends the playback-only version of the Papillon since its audio electronics path is much simpler than that of the record/playback deck and its single (playback) head can be centered and optimally aligned, making for superior performance.

I don't want to leave you with the impression that the Papillon is a pain to deal with. It is not. But it neither looks nor functions in quite the same way as a consumer machine—nor does it sound like any consumer deck I've used or reviewed.

There is a good bit more about the Papillon's design, build, and functionality that I could go into—its unique tensiometers, its new and improved hub clamps, its easy-to-set rotary playback-level pots, its Photovox tape heads (also used in Stellavox's classic TD9), its Swiss anti-magnetic 316-steel rollers, its

custom-designed-and-fitted chassis-support springs, etc. Instead, I'll refer you to my interview with Kostas (and the Specs box below) and move on to what you and I are really interested in: How the Papillon sounds. And for that, I'll focus on the recording that first sold me on R2R tape, the recording that Kenneth Tynan once called "a decisive moment in the history of Western civilization" (it was certainly a decisive moment in my civilization—or headlong abandonment of it): *Sgt. Pepper's Lonely Hearts Club Band*.

It's been a minute, but I believe I first mentioned listening to a 15ips R2R dub of

a *Sgt. P* production master—and the profound effect it had on me—in my earliest TAS review of a tape deck (one of Greg Beron's initial offerings). Putting aside the way the original album changed the course of my life (I went from MacDougal Street to the corner of Haight and Ashbury almost as soon as I heard it) and the charm, wit, and irresistibly seductive spirit of its songs, I was never wowed by its sound. On the stereo Capitol pressing that I bought in 1967, you could barely hear Paul's bass or Ringo's drums. The LP's sonics were thin unto emaciation—and the album's incredible bag of sonic studio tricks and treats, while audible, were poorly differentiated. This was close to apostasy, considering that The Beatles had given up live concerts the year before *Sgt. P* and were now, in Paul's words, viewing in-studio productions as "their performances." Of course, a good deal of what got laid down on The Beatles' tapes could never be played live (a thing they were sometimes criticized for), but the recording studio also allowed them leeway to create novel arrangements and fresh musical effects.

Hearing the sudden vast improvements that the 15ips tape made in the tone, presence, and resolution of performance detail on Paul's Rickenbacker 4001 bass guitar and Ringo's Ludwig Oyster Black Pearl "Super Classic" drumkit (22" bass, 13" rack tom, 16" floor tom, and 14" snare, with 18" and 20" ride/crash cymbals and 15" hi-hats) was, to use a phrase popular back when, mind-blowing. Suddenly, *Sgt. P* had the power and "floor" it had always lacked on LP. It



## Absolute Analog Metaxas & Sins Papillon Tape Deck

was a genuine sonic sea change—and a far more faithful representation of what was recorded in the studio and intended to be heard in your home.

How do I know this? Well, for just one of a myriad other engineering decisions, consider that Paul's bass was "direct injected" into EMI's vacuum-tube-based REDD.51 mixing console (REDD was an acronym for EMI's Recording Engineer Development Department), bypassing microphones and bass amplifiers via an impedance-matching DI box that allowed the guitar to be plugged directly into the REDD.51 and recorded on a separate track. With direct injection, Paul's sensationally inventive bass lines and the mellow timbre of his instrument should have been far more audible than they were on the Capitol stereo mix. On the dub of the production master, they were just that.

It was this experience that cemented my thinking about "the absolute sound"—and fueled my passion for 15ips R2R tapes and gourmet decks. When an instrument that was virtually inaudible on LP suddenly becomes as present, vibrantly colored, and songful as it was engineered to be, something was clearly very very right about the tape medium, even though we're talking about the sound of an electric guitar played in a studio.

Lately, there has been some talk in TAS about the primacy of acoustic instrumentals recorded in a "real" hall or recital room—a return to HP's bedrock formulation of what a recording (and the equipment that reproduces it) should aspire to sound like. For me, this mantra is admirably idealistic but fundamentally unrealistic. As Robert Harley pointed out some issues ago, acoustic or electric, who knows what a soloist or an ensemble actually sound-

ed like at a recording session? Having passed through a plethora of different microphones often suspended at considerable distances from (or, contrarily, jammed down the throats of) instruments, miles of cables, compressors, limiters, pitch-shifters, echo chambers, mixing consoles, and various other electronica on their way to a tape (or digital file), it seems to me (and to Robert) that the only thing that the quality of playback equipment can reasonably be judged by isn't the sound of acoustic instruments in a real space but its faithfulness to the sound that was recorded on the mastertape. Listening to *Sgt. Pepper* on that 15ips dub sealed the deal for me. The mastertape is the ur-document—the best proof we have of what the artists, engineers, and producers intended the performance to sound like—and the closer our systems come to revealing all that is on that tape (and the emotion and reasoning behind it), the higher it is in fidelity.

In an exceedingly complex four-track mix like *Sgt. P* (actually, recording engineer Geoff Emerick used a second four-track Studer J37 to create four more tracks), where all the studio effects (some pioneered on *Revolver*) have essential musical importance, one ought to be able to gauge how these effects have been integrated (or not) into the presentation. For example, on the delightfully Victorian-music-hall-like "Being for the Benefit of Mr. Kite," one wants to hear the hodgepodge of pre-recorded harmoniums and calliopes that producer George Martin and engineer Emerick added to

create the circus atmosphere that John Lennon (the author of the song) insisted on. For "A Day in the Life," George Martin is quoted as saying that Lennon requested "a tremendous build-up at the finish, from nothing to something absolutely like the end of the world." Thus, the use of an orchestra playing a glissando that ran from the ensemble's lowest notes to its highest and the thunderous piano chord that concludes the track and the album, which was produced by recording Lennon, Starr, McCartney, and road manager Mal Evans (unusually, George Harrison was not at the session) simultaneously sounding an E major on separate pianos, with Emerick sustaining the recorded chord's decay by a clever use of faders and compression.

So, does the Papillon improve our appreciation of the mix? The answer is a resounding "Yes!" and in virtually every way I can think of.

To begin with, through the Papillon, backgrounds—the EMI Studio 2 silences against which all the instruments and engineering effects are plotted—have the uniformity of flat-white seamless. This depth of silence is not unique to the Papillon—on well-engineered studio albums, one hears this smooth backdrop through virtually all high-end R2R tape machines. What is different here is its audibly greater depth, grainlessness, and neutrality. This is not the "jet-black" silence that digital fans love to tout—the deathly silence of outer space (or the grave). It is the living silence of a large damped room designed for recording, against which even the smallest accidental noises (more on this



## Absolute Analog Metaxas & Sins Papillon Tape Deck

shortly) pop like firecrackers. Technically, I'm inclined to think that this depth of silence is owed to the Papillon's superior tape path (which seems to reduce wow, flutter, and even tape hiss to a minim), its precisely centered and aligned playback head, and the low noise and high resolution of its output electronics (which grow even lower and higher through the head amp built into the Soulution 757 deemphasis unit).

The greater continuousness and neutrality of the studio silences are carried through in the vocals and instrumentals. This is one of the chief virtues of R2R tape—the richer, rounder, more densely colored, more effortlessly dynamic, more fully three-dimensional sense they give us of musicians playing together in a shared space. Of course, on *Sgt. P* these things are complicated by the almost cinematic way that our attention is made to re-focus on overdubbed harmonies and instrumental breaks, which (in this pioneering multitrack recording) tend to pop up like heads through a curtain, distributed for maximal effect from stage right to stage left, stage front to stage rear. It's as if we are listening not just to a performance but to a sonic world. Solo vocals or instrumentals (such as Paul's famous guitar riffs on the album's opener) are, of course, centered, and orchestral parts (like the French horn quartet on the opener's bridge) tend to be spotlight-

ed on one side of the stage or the other. While any decent tape deck will clearly reveal the spatial distribution of these overdubs, the Papillon (and Soulution 757) make their mosaic-like artifice and the musical reasoning behind it even clearer. Indeed, I don't think I've ever before been made more aware of the often artful (and sometimes rudimentary) way that *Sgt. Pepper's* sonic stage was assembled and constructed, without any losses in the power and flow of the music itself.

Through its own output electronics or the Soulution 757, the Papillon is audibly more neutral in timbre than any other deck I've listened

to (though Andre's gigantic refurbished Studer studio deck comes close, as does Greg Beron's terrific Ultima Apollo). There isn't a tinge of bottom-up darkness or top-down brightness in its presentation. Hence, vocals and instrumentals are reproduced with astonishingly lifelike naturalness. While dynamics were deliberately limited by Emerick, that doesn't seem to affect the wonderful glow and bloom of spotlight solos, such as Paul's wailing Epiphone Casino on the opener. No, as thrilling as it is, this is not an audiophile-grade recorded guitar sound. But then it wasn't intended to be. The focus in *Sgt. Pepper* is rarely

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## Metaxas & Sins Papillon Tape Deck **Absolute Analog**

on parts *per se*; it is on the way those parts are being fashioned into a narrative whole that could not be constructed outside the studio.

One of the many other things that the Papillon does superlatively well is resolve previously unheard or unnoticed detail. As with its deep background silences, this is directly related to the stability of its tape path, the superior acuity of its playback head, and the outstandingly high resolution and low noise of its output electronics. The Papillon is nothing like a sonic vacuum cleaner—no tape recorder is. As with its closest rivals, performance and instrumental details are always

woven into the fabric of the music rather than standing outside it and apart. That said, there are some unintended noises (balloons popping at the festive gathering at which members of the LSO played that glissando for the close of "A Day in the Life") that Geoff Emerick tells us (in his wonderful memoir *Here, There and Everywhere: My Life Recording the Music of The Beatles*) are audible in the finished mix. Although it was very audio-ophile of me, I went back and listened for the balloon pops and, sure enough, they were there through the Papillon, though unforwarned I very much doubt if I would've noticed them. What I did notice,

however, was how clearly the Papillon revealed Paul's mastery of electric bass, which he played with astonishing melodic inventiveness (spurred on, he himself said, by Brian Wilson's bass playing and mixing on *Pet Sounds*).

Bottom line? It's big; it's complex; and it's expensive. But the Metaxas & Sins Papillon is the best source component I've heard—the truest to the mastertape and the intentions of the engineers, producers, and artists who created it, which, as I've noted, is as close as we can come to "the absolute sound." It does, indeed, challenge the notion that we've heard all there is to hear on old familiar albums (or new unfamiliar ones). If you've got the resources, a large equipment stand, and a library of 15ips R2R tapes, you would be foolish not to audition it. And if, like me, you don't have the resources, at least give it a listen at a trade show. It will hook you on tape playback, I guarantee. And while not its equal, there are plenty of great-sounding and far more affordable tape decks out there (UHA's Ultima Apollo chief among them).

It may go without saying, but the Papillon gets my highest recommendation and will certainly be one of my nominees for a TAS Product of the Year Award in 2026. It is one of those components that doesn't just change the game; it changes the playing field.

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## Absolute Analog Metaxas & Sins Papillon Tape Deck

### JV Talks About the Papillon with Designer Kostas Metaxas

**After my rave review of your portable Tourbillon in TAS three years ago, I'm sure readers will want to know what is different (and presumably better) in the much larger and more expensive Papillon. Please detail how these two tape decks differ, the reasoning behind the changes, and the sonic results of same.**

The Papillon is different in many ways to the Tourbillon. The Tourbillon was specifically designed as a "location recorder" (like my Stellavox SM8) that could accommodate ¼" tape on a 10.5" reel and could be run on a battery power supply for up to 8 hours. To make it essentially as small as possible while avoiding the use of belts, I chose Maxon DC motors with the most advanced low-noise ceramic gearbox for the reel motors. The internal playback and record electronics were my extensively modified single-ended-transistor Stellavox circuits, which I've gradually improved over the course of 40 years of recording.

The Papillon, on the other hand, is a "studio recorder," so it can accommodate ¼" tape on up to 15" reels and 2" tape on up to 10.5" reels. It does this without a gearbox, so the motor needs to be considerably bigger and more powerful than that of the Tourbillon (15" reels and 2" tapes can weigh up to 4–5 times more than standard 10.5"/¼" tapes and need to be accelerated/decelerated at high speeds with incredible control.) Also, to handle these reel weights/speeds, the deck chassis needed to be much more substantial in weight. The motors used in the Papillon face the conflicting requirements of needing to be able to turn at very low and high speeds with incredible torque, so I decided to use BLDC motors (also used in EVs) because they have enormous torque and power density for their size. This then required different (and much more expensive) controllers with MOSFET drivers and speed-feedback sensors.

The controllers used for the Papillon reels are the sinusoidal-type rather than the burst-type used in the Tourbillon. To accommodate all this extra current, I needed to make a substantially bigger power supply that would run at much higher voltages than the Tourbillon's 24VDC supply.

The Papillon is also divided into two sections—the transport and the preamp, each with a separate power

supply. This allows the transport to be very easily configured for direct playback-head output for use with other desired preamps. This flexibility also allows it to be optimized for better sound quality, since there are no space-limiting issues for circuits and tape path.

All these changes—more powerful motors, larger heavier chassis, even more precise speed control (4096 versus 1032 encoder samples), as well as more space and separate power supplies to add more discrete individual interstage voltage regulation circuits—contribute to the Papillon's bigger, deeper, and more effortless sound.

**Speaking of the latter, you claim in your advertising that the Papillon is capable of higher resolution—of resolving more faithful (to the source) detail, color, dynamics, pitches, durations, and ambient/soundstage information—than any previous decks of yours (or, I assume, of other manufacturers from the past and present). Though I agree with this assertion, how did you go about achieving this higher fidelity to sources?**

By extensive listening. Ironically, in the past large companies producing tape recorders had divided teams, one looking after the preamp electronics (the audio path) and the other the mechanicals (the motors and drive circuits). It was only by designing both elements at the same time and lots of listening that I was able to truly "hear" what needed to be done mechanically and then electronically to continually improve the sound. One of my biggest discoveries was the significant importance of the way tensiometers affect sound quality. That's why my tensiometers are incredibly overdesigned compared to others. The simple changing of the suspended weight and stiffness of the feedback potentiometer—





## Absolute Analog Metaxas & Sins Papillon Tape Deck

and hence, its resonance—was a revelation. I made a Papillon with a photographic tensiometer encoder for comparison—which, in theory, is much more precise (similar to the tensiometer used in my Stellavox TD9)—but I was disappointed with the sound quality. There is a gut feeling that guides you when navigating the engineering choices that lead you to the best sound.

**In the Papillon you're offering the ability to pipe output directly from the tape heads to an outboard equalizer/preamplifier, such as the wonderful Soulution 757 (which is designed to be finely calibrated, via a calibration tape, to any tape head). You're also offering a very large, optional acrylic enclosure that completely muffles mechanical noise coming from the deck (like the Tourbillon, the Papillon does make more audible mechanical noise than other decks I'm familiar with). What was the reasoning behind these additions, particularly the option of using an outboard preamp?**

The Papillon preamp, housed in a separate box, is already an output eq/preamp. The direct output from the heads (also possible with the Tourbillon) was originally a customer request, which I thought could be useful since tape EQ is very similar to RIAA

phono EQ and simpler to implement. Direct output from the tape heads gives my customers a choice. It's no different than using different phono pickup cartridges. At customer requests, I've also made Papillon transports with three different playback heads for direct output, which is similar to having a turntable with three different tonearm/cartridges. The acrylic dustcovers absolutely eliminate any noises in the listening room (in a recording studio, the professional tape recorders are in external rooms—for a reason). The dustcover also protects the Papillon from dust, which is the enemy of all lubricated mechanicals.

**The deck I've got does not have a record head or 30ips playback. We agreed upon these omissions mutually. As such, the price of "my" Papillon is lower than that of a fully decked out unit. Are you going to offer such "customization" to potential buyers? If so, is there an "upgrade" path?**

The Papillon can be had in any configuration the customer requires. It is also designed to be very easily upgradeable in the future, which is why the preamps are in another box, as are the power supplies. I'm continually working on improvements, but I also want to protect my customers' initial investment. Unless the customer is

a recording studio, for ultimate playback I don't recommend audiophiles should buy a three-head deck. Instead, they should think about adding another playback head (or 2) if they want to have a choice. There are also accessories that can be purchased—a large VU meter box as well as a dedicated stand, with or without the Perspex cover.

**Although it is equipped with pseudo-balanced outputs, the Papillon could use a grounding post or, at least, a recommended grounding scheme to kill RFI/EMI noise. As the deck currently does not include a grounding post, do you have suggestions about a grounding path for the Papillon?**

I agree about the grounding post... this will be added on future machines. The post is essential to ground to external preamps. The Papillon preamp outputs are actually single-ended—the Stellavox circuits are all single-ended. Stellavox used output transformers if the I/Os needed to be balanced. We can also offer some excellent Lundahl or Jensen transformers if this is necessary. **tas**



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