

# papillon studio tape recorder



**moltaxos & sines**  
SINCE 1981

GREAT GEAR  
FOR ANY BUDGET!

THE AFFORDABLE AUDIO ISSUE!

the absolute sound

BOWERS  
& WILKINS  
801 D4

AN ICON  
REIMAGINED

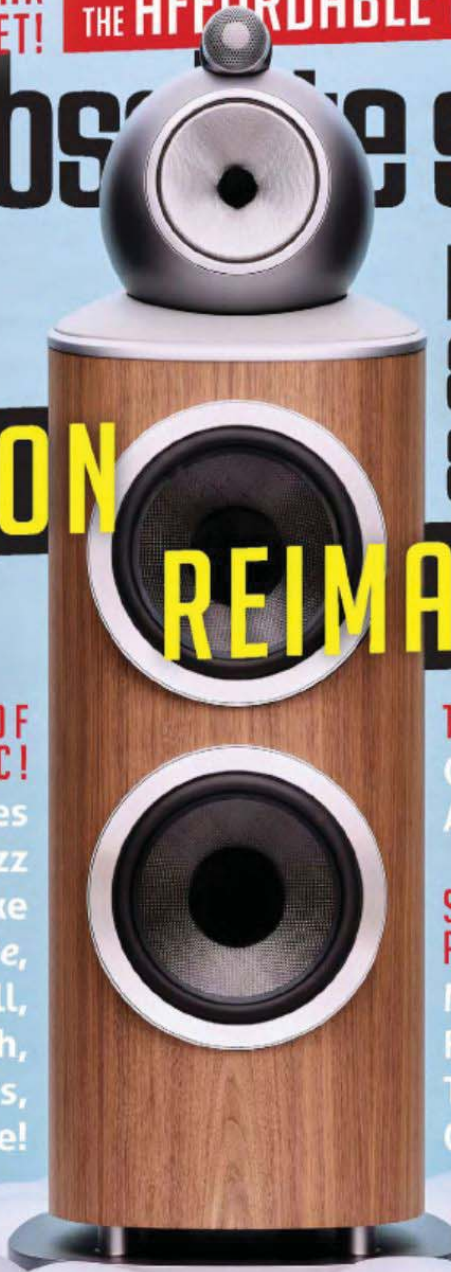
16 PAGES OF  
MUSIC!

13 new releases  
by female jazz  
vocalists, deluxe  
editions of *Let it Be*,  
Jason Isbell,  
Johnny Cash,  
Muddy Waters,  
and more!

TUBE PARAGON!  
Conrad-Johnson  
ART 150 Amp

SPECIAL  
REPORT

Metaxas & Sins'  
Fabulous Tourbillon  
Tape Deck +  
Open-Reel Primer



FEBRUARY 2022  
\$6.99 US / \$8.99 CAN



DISPLAY UNTIL FEBRUARY 20, 2022

## Special Feature



# The Birth of the Cool

Metaxas & Sins Tourbillon  
T-RX Tape Deck

Jonathan Valin

**I'**m not going to kid you: I am among the mechanically inept—high among them, I would say. If there were a merit (or demerit) badge for hastiness, clumsiness, and willful inattentiveness around machinery of any kind, I'd be wearing it (and would have royally earned it). And yet I very much doubt whether I would have gotten into this hobby when I did, which was as a teenager, or stuck with it as long as I have, which has been a lifetime, if it weren't for the spell that complex, finely crafted mechanical objects have cast on me from youth to old age.

Now, in the world of high-end audio, there is nothing as intricately or as spellbindingly crafted as a reel-to-reel tape deck. You can see this simply by looking at one. (Of course, if you're like me, you will look at one at your peril for, once seen, that spell will be wound up.) Here is the ultimate in high-end-audio mechanics—a concoction of motorized reels, motorized capstans, motorized retractable capstan bars, tension arms, metal rollers, and rubber pinch rollers, with an electromagnetic transducer (the record/playback head assembly) at its center—that when fed a spool of pre-recorded tape comes closer to recreating “the absolute sound” than any other playback medium extant. Indeed, if the words “absolute sound” are something more than a catch phrase, if they mean what they say, then highest-fidelity playback of 15/30ips, two-channel, reel-to-reel mastertapes is what they mean.

available in any aluminium anodised color,  
milgouss stainless steel and titanium







## Special Feature Metaxas & Sins Tourbillon T-RX Tape Deck

jobable. That assess can be summed up in a word: quality. The quality of the performance and the sound, the quality of the mix and tape deck used to record them, the quality of the engineering at the session and the mastering after the session, and the quality of the tape transfer itself. When the T-RX was so faithfully reproducing and what I was consequently hearing, were the warmth and body of the Neumann U87 mic that recording engineer Mike Ross used for Fernandez's vocals (and of the similar vintage mics he used on the instrumentals), the warmth and body of the tube electronics with which mastering engineer Bernie Goodman mastered these vocals and instrumentals, and something else... something that I couldn't put my finger on until Goodson Neos's propounder Ying Tan told me what I just called the quality of the tape transfer.

As is the case with LPs, where the generation and level of wear of the production master tape (and of the metal work pulled from it) make marked differences in the sound of vinyl pressings, R2R tapes will vary in sound quality with the generation and level of use worn by the master tape they are dubbed from. All other things being equal, dubs made from early production masters are likely to be better sounding than dubs made from later-gen ones, just as dubs made from tapes that have seen a lot of use (and/or rough handling and long storage in inadequate conditions) are likely to sound worse.

Thanks to Greg Beron, I've heard proof of this proposition. As an experiment, Greg kindly loaned me a pristine production master tape of the great Gerry Mulligan *Meet Me at the Five Spot* album from Norman Geatz and Verve Records. Note that I said a "production master tape," and not a dub of same. King, who is as connected in the world of reel-to-reel as a person could be, knows someone in Europe whose father worked at an LP pressing plant and who, when digital came along, rescued all the production master tapes that came to him to be turned into vinyl records. On direct comparison with a dub, the actual production tape sounded better, richer, fuller, more "complete"—very much like the difference I heard with Ying's master tape through the Tourbillon.

As it turns out, there are good reasons for this. To begin with, Goodson Neos tapes like ULM were made quite recently (his one just eight years ago); consequently, they haven't had occasion to be overused or poorly handled or badly stored. More importantly, Bernie Goodman, who also handles the mastering of Goodson Neos R2R tapes for the small market, doesn't dub from a second-generation 15ips production master but from the original 30ips master itself. Since no additional generation dubbing master is used, the Goodson Neos R2Rs are one audibly important step closer to the definitive sound magically preserved on that 30ips master tape's dual sides.

Even though I didn't know precisely how to interpret them at the time, the Tourbillon was telling me three things in the unassuming quality of its playback. In other words, this is one exceptionally neutral, faithful, and transparent source component, as I said earlier, the most neutral, faithful, and transparent I've ever heard (albeit the UHA SuperDeck).

Let's move from recording and mastering revelations to musical ones.

### You hear recorded music with a fidelity and completeness that are unrivaled in my experience.

The highly celebrated album *Thelma Houston with Job Casave* (Jazzland/Piglet Sound Studio) has an interesting backstory. Though famous for deconstructing a pivotal moment in jazz history when two young bebop and hard bop joined forces, *Thelma Houston with Job Casave* almost didn't come to be. Though it was released in 1961, it was assembled from outtakes recorded at three different studios in 1957, at the time when the Monk Quartet was enjoying its fabled residency at The Five Spot in NYC.

Casave wouldn't have been able to join Monk's group if he hadn't recently been fired by Miles Davis from Davis' first great quintet/sextet, ostensibly so that "Tina could shake his horns in hell." (He was rehired by Davis in '58.) Monk himself wouldn't have been able to form a quartet and play in a high-profile New York City club if he hadn't had his cabinet card renewed that very year, after it had been put aside in 1951 following a marijuana bust. But such is life. The stars aligned, and Monk, Tina, and the rest of this groundbreaking group (Willie Ware on bass and Shadow Wilson on drums) got that gig at The Five Spot, where their music-making proved to be so popular (particularly with the jazz cognoscenti) that they were held over for half a year.

It was around this time that Casave began experimenting with his so-called "sheets of sound" improvisational style.

Though I recognize what the T-RX can tell about one of the great classical recordings—Edvard Elgar's gorgeous, free-song rick for Piano (EMI/Horch House), with incomparable mezzo-soprano Dame Janet Baker singing and the great Sir John Barbirolli conducting the London Symphony Orchestra. People have sometimes complained about the initial "quality" of the piano Elgar set to music in this piece—as if contemporaneous composers like Mahler or Schoenberg were orchestrating sonnets from Shakespeare. But the fact, as someone once said, is that the quality of the verse is now inseparable from the quality of the music, and the quality of the music is sublime.

The performance on this 1965 recording has long been considered a benchmark (as is the Barbirolli/Jacqueline du Pré performance of the Elgar Cello Concerto on the flip side). Recorded by Christopher Parker at EMI's Abbey Road Studios 1 in St. John's Wood, *Job Casave* was mixed with a Brampton pair of Neumann KM50s (what EMI called its "two-headed monster"), and also with various Neumann outtakes scattered among the orchestra for added coverage, and a separate M49 or KM50 for Baker herself.

When listening to this famous recording on LP, you might think that it was made (as the Cello Concerto was) in Kingsway Hall. It has a warm, dark, also-like-soul balance that is very familiar and attractive. On tape, however, *Job Casave* sounds far more like what it actually is: a great recording made in a studio. The Kingsway hall ambience and timbral warmth are somewhat reduced, but the clarity of parts and articulation is increased—markedly. The harp glissandi, the scaled woodwinds, the divided strings, the Egyptian *awala* mimos of "Sabbath Morning at Sea," the slow, staid, lapping of the low-string arpeggios of "In Haven," in sum, everything about the orchestra, the score, and the performance is suddenly more fully available to the ear.

If you were worried on the LP this new clarity of orchestration, scoring, and inner detail will come as a bit of a shock. Oh, it's there on the LP, but you have to work (which is to say, deliberately concentrate on this or that individual chair of instruments) to find and hear it. Here, it comes to you unbidden, as it would in a concert hall. Such effortless transparency is one of the weaknesses of the slow, staid, lapping of the low-string arpeggios of "In Haven," in sum, everything about the orchestra, the score, and the performance is suddenly more fully available to the ear.

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It is a truly lovely bit of music-making that you won't hear it as I just described it, but

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at least, you won't hear it with the same paradigmatic clarity unless you hear it through a Tourbillon, whose neutrality and completeness, as I can only say once again, unparalleled in my experience of source components.

Let us finish this jaunty down Tourbillon lane with what the T-RX can tell about one of the great classical recordings—Edvard Elgar's gorgeous, free-song rick for Piano (EMI/Horch House), with incomparable mezzo-soprano Dame Janet Baker singing and the great Sir John Barbirolli conducting the London Symphony Orchestra. People have sometimes complained about the initial "quality" of the piano Elgar set to music in this piece—as if contemporaneous composers like Mahler or Schoenberg were orchestrating sonnets from Shakespeare. But the fact, as someone once said, is that the quality of the verse is now inseparable from the quality of the music, and the quality of the music is sublime.

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Functionally, the Metaxas & Sins Tourbillon T-RX is far a completely carefree device. You may need to adjust playback

### And yet the T-RX is considerably less money than other top-line tape decks.

balance via the front-panel volume knobs to compensate for any channel-to-channel imbalance in the output of the playback heads or in the tape recording itself. (But this will be true regardless of deck.) It can also be a chore to load a tape on the T-RX, as Kostas doesn't use the easily adjusted "ratchet" hub-spindle with built-in flanges that you find, for example, on Greg Beron's UHA model. Instead, he employs a large, removable device he calls the "Hubsie Hubbie," which has two parts (one counting washers and springs)—a flanged bottom section onto which the reel is fixed, and a screw-on top piece that tightens the reel down to the turntable. Like everything else Kostas makes, it looks very cool. The trouble is that the flanges on the bottom part of the Hubsie don't always fit smoothly into the corresponding slots on the reel.

Though it is intended to be a low-maintenance, care-free system, whereas you simply loosen the top clamp and lift the reel on and off the bottom part, the occasional tight fit of the flanges sometimes requires you to take the entire mechanism off the turntable and disassemble it—in order to tap the bottom part off of (or onto) a tight-fitting reel. It doesn't take a lot of time or force to do this, and it only happens occasionally—most reels slip on and off as designed. But it is less convenient and carefree than what

I'm used to with Greg's decks. There is this, as well. Though the online instruction manual warns you about it, you need to mute your preamp whenever you load the T-RX, or your preamp power supply on or off. If you don't, you'll hear a series of loud pops through your speakers—some of which are good for your ears, your preamp, or your drivers.

At \$36,000 (equipped with record and playback heads), the Metaxas & Sins Tourbillon T-RX tape deck is scarcely cheap. And yet it is considerably less money than other top-line tape decks (\$50,000 less than Greg's wonderful SuperDeck, for example). It is also a brand-new item—innovatively constructed from the best parts in the world and warranted for two years (parts and labor). And, oh yes, it is also (albeit the UHA SuperDeck) the most realistic-sounding, highest-fidelity tape deck I've ever heard, as well as one of the coolest-looking pieces of stereo gear I've ever seen. It will surely be my nominee for TAS's Overall Product of the Year Award in 2022.

You simply don't come across something that is this sonically flawless, functionally innovative and ingenious, and aesthetically breathtaking every day. In fact, I haven't even across anything like it in nearly 60 years of looking. That should tell you something. I'm going to finish by saying something I probably shouldn't say (and have never said in TAS before), but...if you've got the dough and access to R2R tapes—and you aren't wedded to the idea of owning a full-sized machine like the SuperDeck—then don't even think about it just buy the T-RX. I did.

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### JV Talks Tape With Kostas Metaxas

You are as much a visual artist as a hi-fi equipment designer and manufacturer. How have you balanced your two talents? And what led you to a career in hi-fi, rather than in the fine arts?

For me, art and design are "visual music." If something is organic, well-proportioned, and beautiful to look at, chances are that it is also literally lyrical and harmonious. My process for design or "art" is one of discovery rather than creation. I start on a path, and let it lead me to where it has to go. I remember seeing a well-known Michelin chef—Michel Roux—if creating a plate of food was "art." He answered that it was actually more than art, because it utilized all the senses. Composing a plate of food includes not only the visual for the eye, but texture for the tongue, perfume for the nose, and sounds for the ear. What does me to hi-fi and the artform of music reproduction is, similarly, the balance of sensibilities between technical, visual, and aural. For me, a great hi-fi system has to bring together very complex technologies to be able not just to communicate the very emotional character of the music, but also to itself be an object d'art that gives enormous pleasure to the owner.

I do work in the fine arts through my contributions to companies such as S.T. Dupont (making instruments) and Epelec clocks, amongst others. It's a welcome distraction.

How did you first become interested in tape recording (and tape recorders)? And what is the aesthetic that you follow when you make your recordings?

I had a passing interest in tape recorders when I was a teenager, but I could never afford them. Once I set up my company to produce hi-fi amplifiers, I realized that even the best turntables, somearms, cartridges, and LPs (i.e., sources of the time, such as the Goldmund Reference of the mid-1980s), weren't good enough. By pure chance, a colleague in Switzerland introduced me to Sotilavos records. I knew that the best LPs came from R2R masters, so I logically assumed that tapes would be an improvement to using LPs as my references. The improvement was, in fact, revelatory and looking further into the machines I owned, I realized I could improve them, which I did. Over 100 concerts later, I started to understand that as much as I enhanced a tape deck's electronics (such updates are common nowadays on most old machines from the 60/70/80s), I eventually hit a brick wall because I could not do the same with the mechanics. This led me to build my own machines, the Tourbillon and Pagillon, where the mechanics have been improved.

As for my recording work, I was particularly interested in capturing the entire "soundscape width and depth"—not just an intimate "close-miked" sound, but a real soundscape similar to those of the engineers I admired from the concert recordings of

the 1960s and 1970s (Bob Fin [Mercury], Lewis Lightson [RCA] and Ken Wilkinson [Decca]). As a teenager using Quad ESL57s, I could hear a huge and very realistic soundscape on their recordings. This recording style was my reference. Armed with my portable Sotilavos SDR, I initially used a pair of Blue Kaper V4 capsules 41335 to record with, then the much-faster V4-capacitor 41335, with very little of the subtle sound of my Neumann ULM50s and M1205 15-volt-tube-capacitor microphones. My initial idea was to start recording with tape, then graduate to an equivalently pure "digital" recording setup, which would be easier to haul in and out of concert halls. Sadly, absolutely none of the digital setups I tried could capture the scale, bloom, detail, density, and sheer naturality of analog tape.

In this digital age and age, what made you decide to build and market a brand-new tape recorder? And how do you see the future unfolding for reel-to-reel tape enthusiasts?

As I said, digital recording, sadly, simply doesn't have the sonic realism of tape. Also, I knew that if I was hitting a brick wall with my Sotilavos machines (and others were, too, with their "updated electronics" machines), then none of us had really heard the true potential of tape as a medium. In other words, I wanted to see how far I could push the realism of R2R in a serious high-end way. Doing some research into the well-known brands of the 1960-80s, I found out that the mechanical engineers and electrical engineers generally didn't work together. Since I'd already spent 30+ years improving the electronics of my Sotilavos SDR, if I was able to develop a tape transport that I could adjust and listen to for improvements (it's a way similar to adjusting a turntable setup), I should be able to hear much more information from my R2R. This has been the case with both the Tourbillon and Pagillon. The improvements with the transport parts, rollers, bearings, and tape heads has also led to further improvements to the electronics and power supplies. It's a constantly evolving process.

As for the future of tape, I believe there will always be a market, not just from enthusiasts, but also from archivists. There are so many tapes that were hidden for decades, which are now starting to emerge.

Will there be more Metaxas & Sins tape-recording-and-playback products beyond the Tourbillon T-RX and the Pagillon decks? The Tourbillon and Pagillon are essentially a starting point. They have allowed me to investigate the absolute latest technology with motors, encoders, controllers, PID systems, and mechanics for the tape path. I'm hoping that this will give insights to producing an even better and more dedicated system for tape handling and operation in the future. The fun always in the journey. **JB**



"At \$36,000 (equipped with record and playback heads), the Metaxas & Sins Tourbillon T-RX tape deck is scarcely cheap. And yet it is considerably less money than other top-line tape decks (\$50,000 less, for instance, that Greg Beron's playback-only SuperDeck). It is also a brand-new item—innovatively constructed from the best parts in the world and warranted for two years (parts and labor). And, oh yes, it is also (and for one last time) the most realistic-sounding, highest-fidelity source component I've ever heard, as well as one of the coolest-looking pieces of stereo gear I've ever seen. It will surely be my nominee for TAS's Overall Product of the Year Award in 2022. You simply don't come across something that is this sonically flawless, functionally innovative and ingenious, and aesthetically breathtaking every day. In fact, I haven't come across anything like it in nearly sixty years of looking. That should tell you something.

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Thank you for your kind interest in my work.

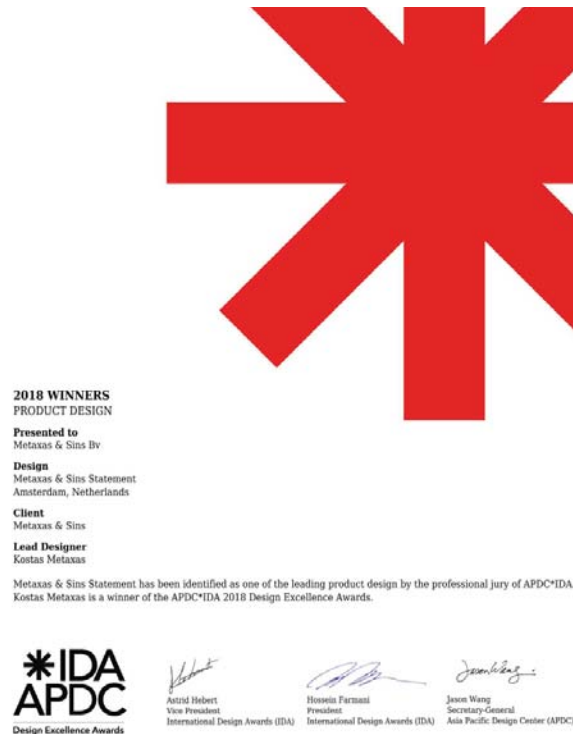
The Papillon a result of my almost 40 year fascination with the art of music reproduction from concert recording, electrical engineering and ultimately, artistic design to produce a recorder that allows you to playback and capture music exceeding the best recorders produced in the past.

Each Papillon is totally handcrafted like a horological instrument by either myself or one of my sons.

I consider them all objects of art.



kostas metaxas



In horology, a Papillon ( French: "butterfly") is a reference to a shapely organic object. It's normally referred to the bridge which supports the delicate watch gears, pinions, mainspring and jewels of the mechanism.

The Metaxas & Sins "Papillon" Analog Tape Reproducer is the first Tape Recorder to use the same concept to support the rollers and mechanics of the delicate tape path.

It is an entirely newly designed professional reel to reel tape studio recorder and playback machine which challenges the notion that we've been able to extract all the information from magnetic tapes and meets and exceeds the highest demands of recording engineers and the most serious audiophiles.

It accomplishes this by using an ARM-CORTEX "controller" which synchronises 4 of the latest high-torque-low-speed Maxon BLDC [Brushless DC] motors [2 reel motors and 2 capstan motors] with the 2 linear ACTUONIX motors which control the "Dual-Capstan" rollers on a fully retractable bar.

The audio "SOUL" of the Papillon's external electronics borrow from intensive recording work conducted over the past 35 years with Swiss Stellavox portable recorders which use single-ended transistor purist electronic paths developed in the 1960s.

The result is a machine that is capable of recording and playback with a level of realism that gives the listener the sense of being present at the live music performance in it's original venue. Combining 2020's technology with 1960's "soul"







1 2 3 4 5 6 7 8 9 10 11 12  
13 14 15 16 17 18 19 20 21 22 23 24

15 25 30 35 40



1200 1200 stop play test 1200

very important

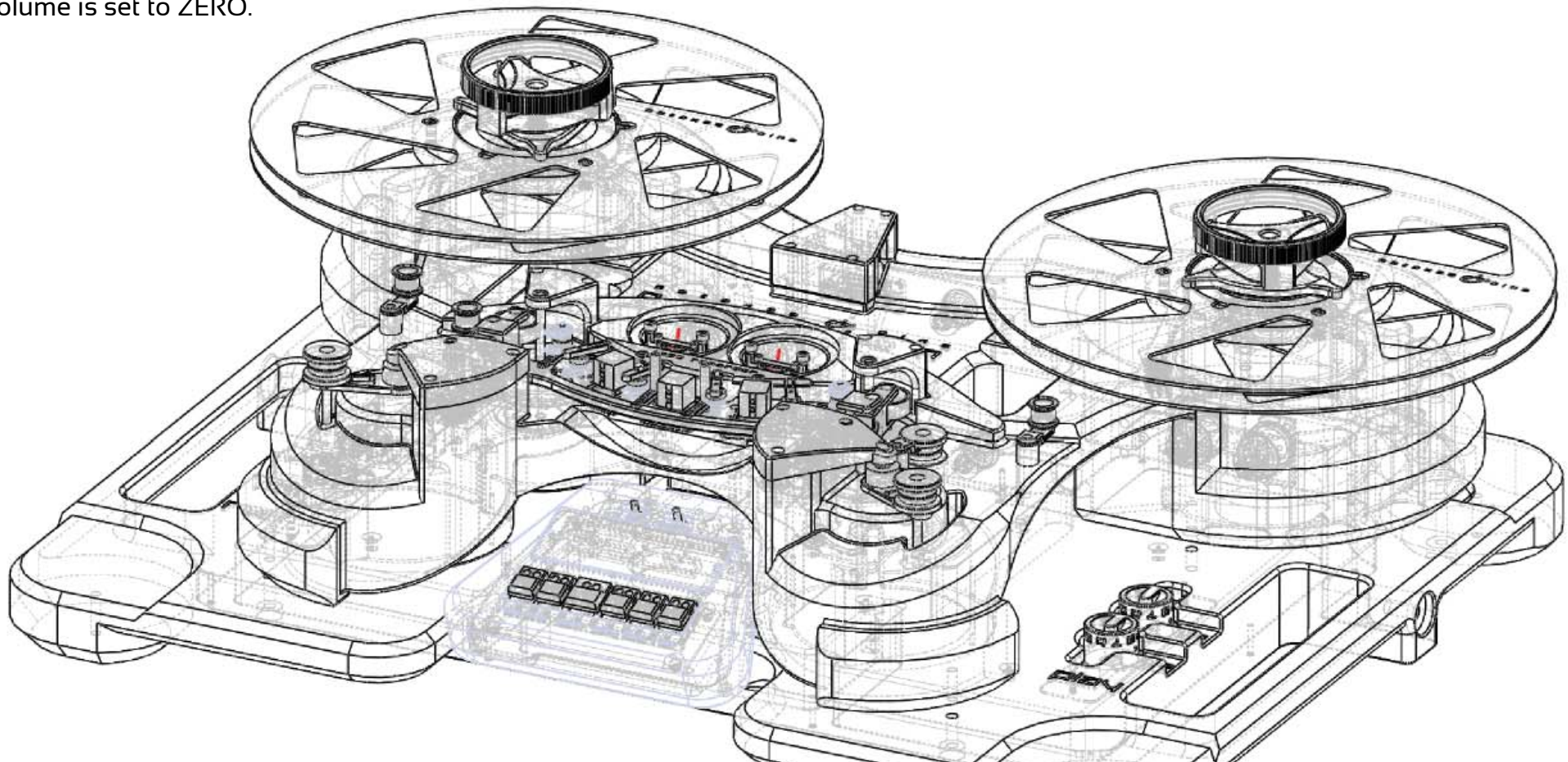
Visit [www.metaxas.com](http://www.metaxas.com) to view a QUICKSTART video to help you use the machine:

Before operating your machine, do a simple check to make sure that the two TENSIO METERS are able to move freely. Then, simply check that the rollers are spinning freely.

Also, make sure that the HUB Clamps are secure so the tape path tension is kept taught and tensiometers can function correctly.

Please be mindful that the Papillon is run by an "ARM CORTEX" computer so if it doesn't respond to the commands on the keyboard, simply turn it off, wait 20 seconds and turn it on again.

**VERY IMPORTANT:** There is no relay on the output, so the "Single-ended" amplifiers on the outputs will make a "pop" sound when turned on or off until they settle [-30seconds], so when you have your TRX connected to your system for PLAYBACK, Please make sure your amplifier volume is set to ZERO.





## getting started

Here is some simple information to help you "get started" with your Papillon.

The Papillon is supplied in 2 flight cases - one case houses the "transport" which handles the movement of the Tape and the second flight case houses the Audio Playback and Recording preamplifiers [electronics] , 2 separate power supplies, connecting cables, hubs and spare parts.

The Parts are as follows:

1. Two power supplies [3 pin for transport and 4 pin for preamplifiers] with connecting cables.
2. Artist Brush [to brush away tape shedding/dust]
3. Spare 2.5mm and 4mm high [9mm diameter with 4mm mounting holes] bearings.
4. A bag full of Alun keys - you should check that none of the bearings have become loose during transport - but NEVER overtighten.
5. A pair of NAB Hubba adapters [Aluminium] .
6. Set of Springs.
7. Carbon Fibre 10" blank take-up reel.

papillon transport in flight case no.1





papillon prozamps  
and power supplies  
in flight case no.2





metaxas & sons  
million

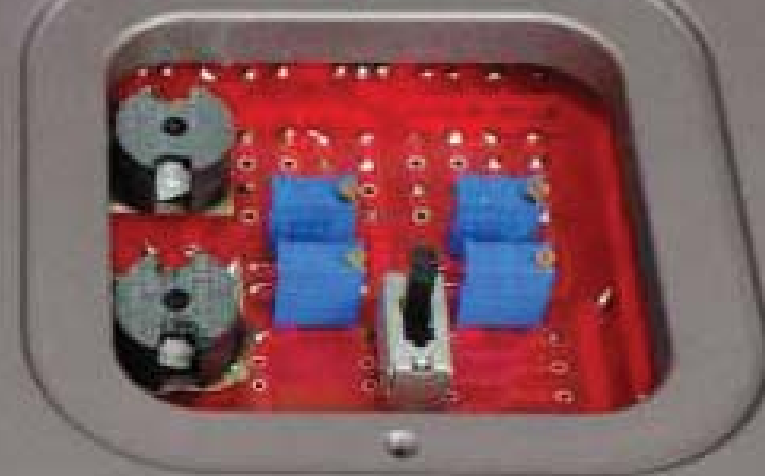


very important



papillon studio 15pin din "tape head connection"

You MUST connect the 15pin connector from the TRANSPORT HEADBLOCK to the lower PREAMPLIFIER case.



3 position SLIDER SWITCH:

Position 1 = 15 & 7.5 ips

Position 2 = 30ips

Position 3 = 15 & 7.5 ips



15 pin DIN Connection  
between transport  
and preamplifiers

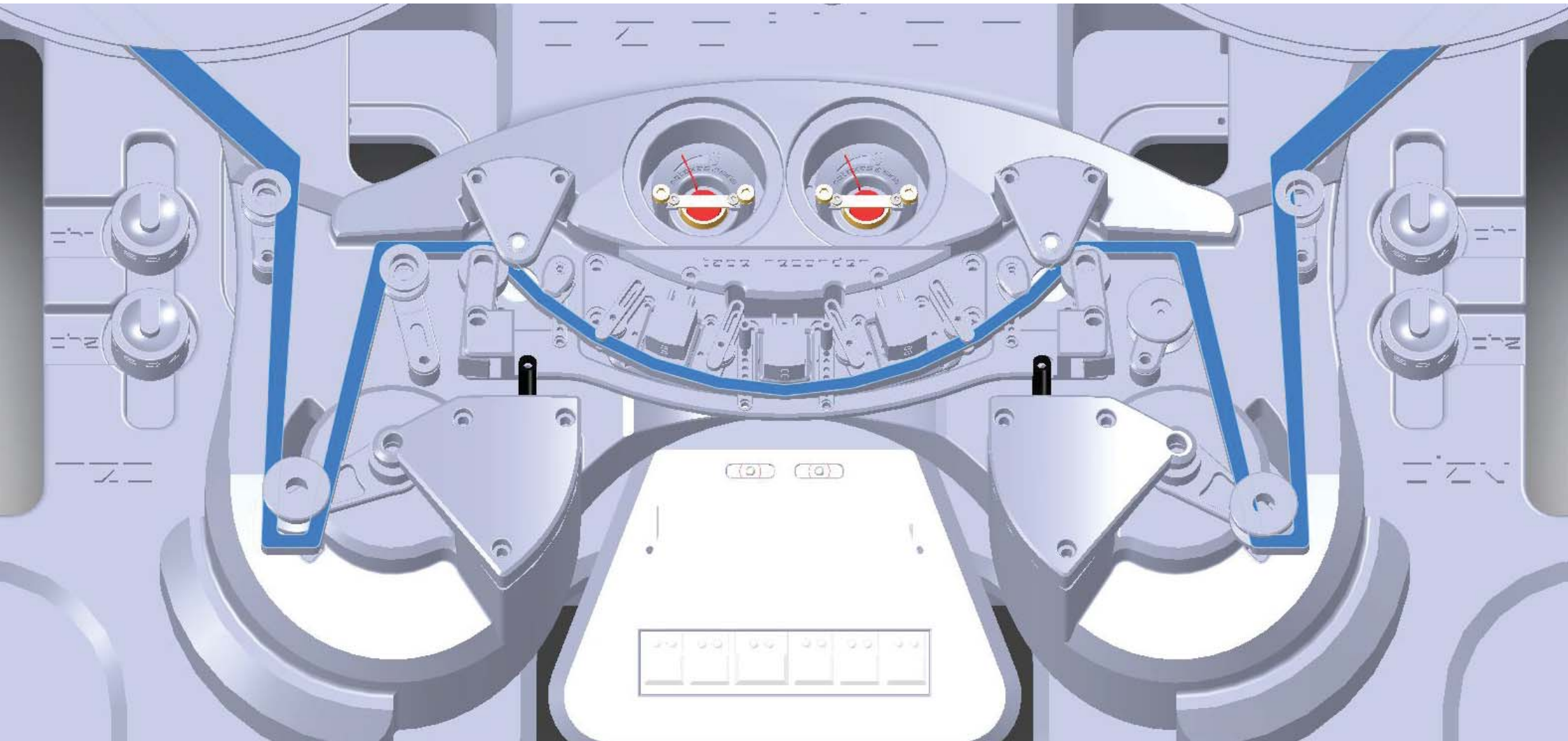


## papillon studio tape path

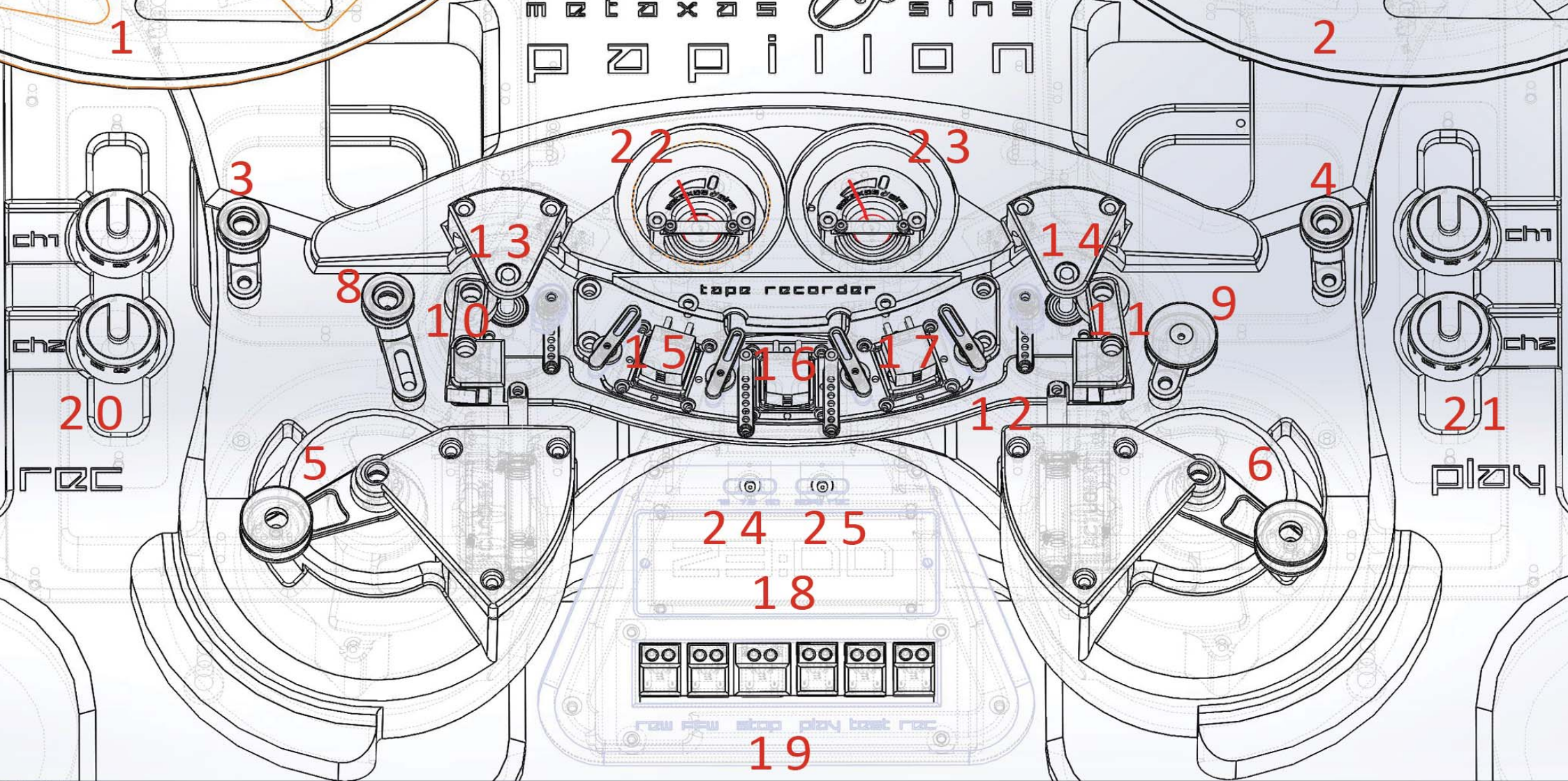
Please follow this diagram when threading the tape from the left to right reels. When turning on the Papillon, the machine is in a "LOAD TAPE" mode so you can thread the tape.

Please follow the path otherwise the machine will not operate if you place the tape on the wrong side of the rollers/guide.

**PLEASE VISIT [WWW.METAXAS.COM](http://WWW.METAXAS.COM) FOR A QUICKSTART GUIDE.**







- |                                    |                                  |                                |                            |
|------------------------------------|----------------------------------|--------------------------------|----------------------------|
| 1. Left Reel                       | 8. Left Capstan Roller           | 15. Erase Head                 | 22. Left VU Meter          |
| 2. Right Reel                      | 9. Right Capstan Roller          | 16. Record Head                | 23. Right VU Meter         |
| 3. Left Reel Roller                | 10. Left Capstan Rubber          | 17. Playback Head [Repro]      | 24. 30/15/7.5 speed switch |
| 4. Right Reel Roller               | 11. Right Capstan Rubber         | 18. Noritake LCD Screen        | 25. REC safety switch      |
| 5. Left Tensiometer Assembly       | 12. Retractable Capstan Assembly | 19. Functions Keyboard         |                            |
| 6. Right Tensiometer Assembly      | 13. Left Capstan Motor           | 20. Record Input Level Pots    |                            |
| 7. 4 pin external VU Meter/Hphones | 14. Right Capstan Motor          | 21. Playback Output Level Pots |                            |

**top layout**



3032  
PHOTON  
SERIAL 010101

ACTUONIX  
P012-30-12-P  
9

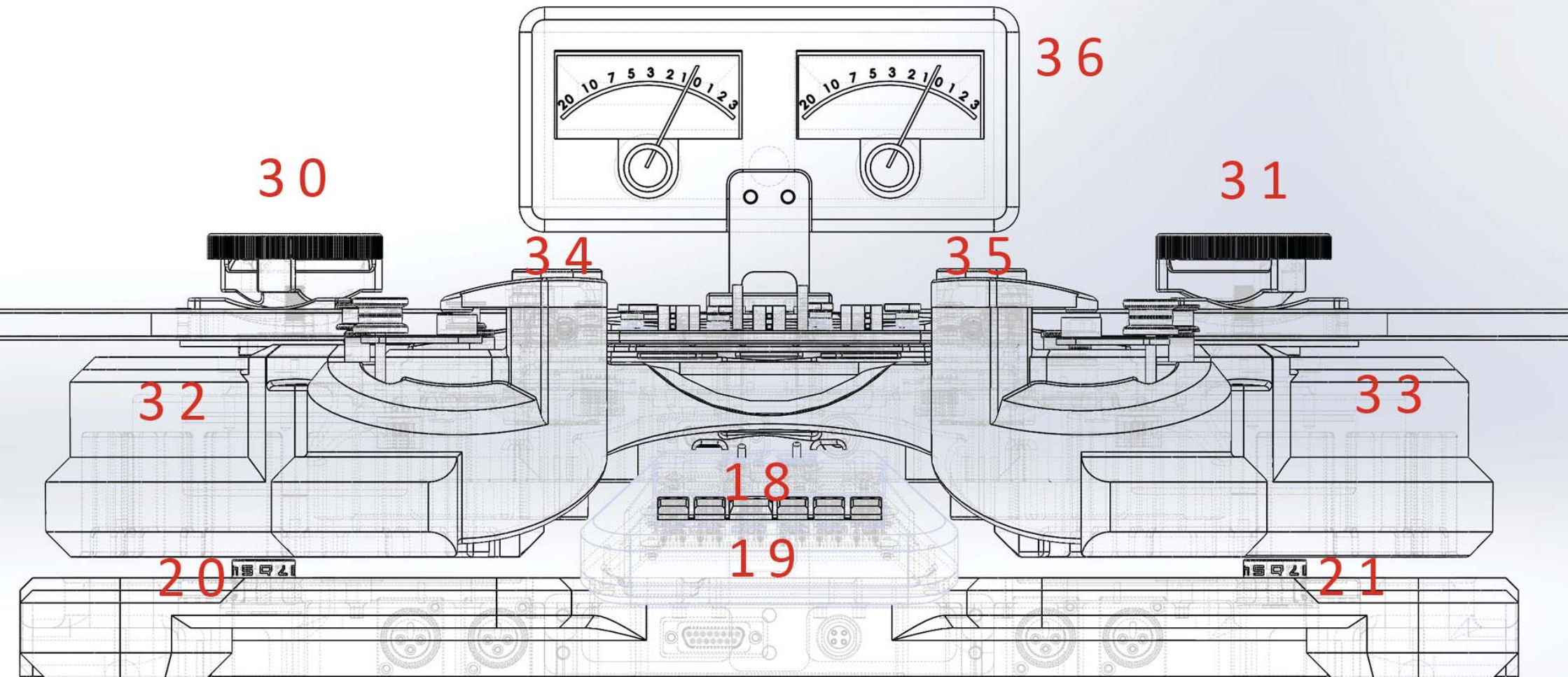
ACTUONIX

15 7.5 30 50Hz



row RAM stop play trst rcc

## FRONT layout



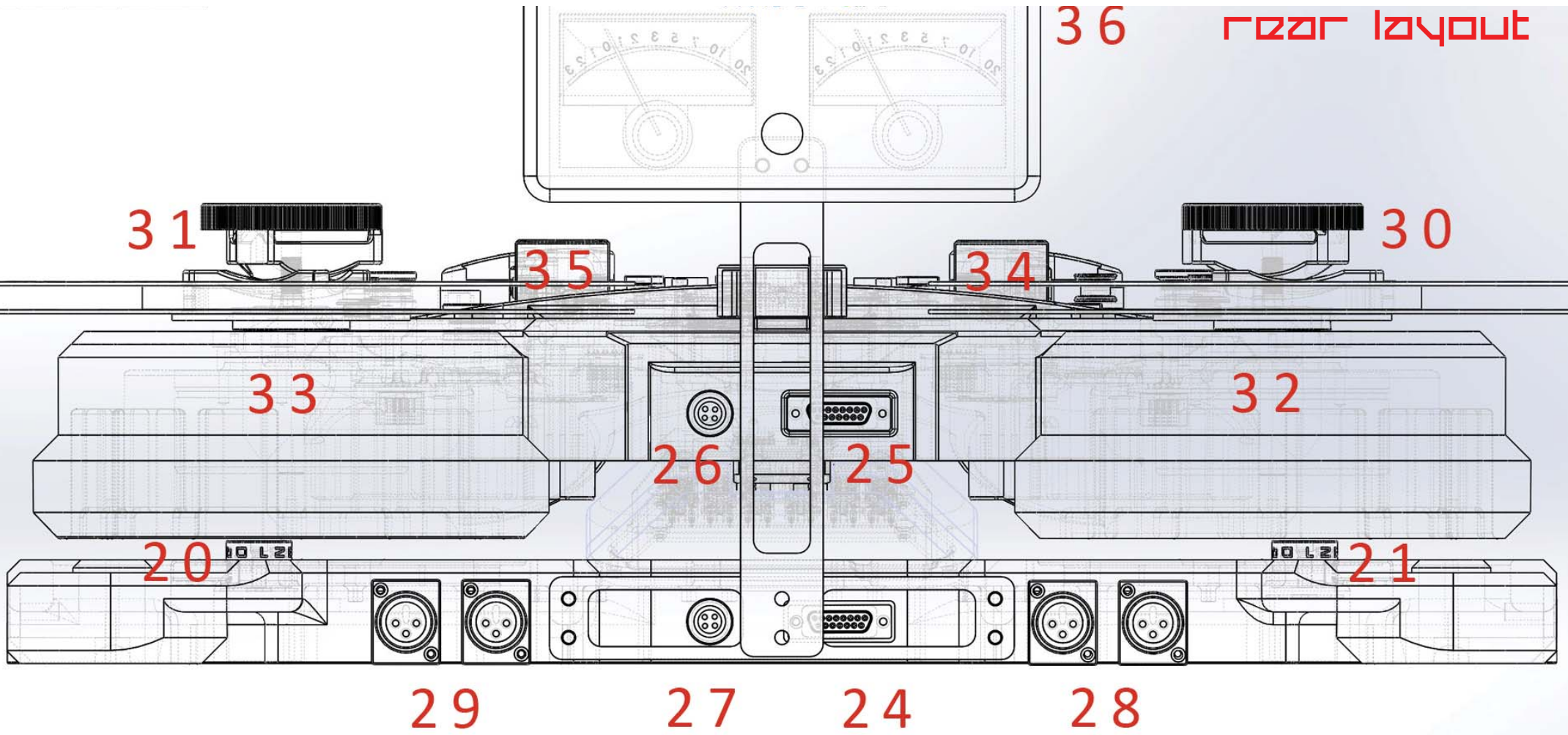
- 18. Noritake LCD Screen
- 19. Functions Keyboard
- 20. Record Input Level Pots
- 21. Playback Output Level Pots
- 30. Left NAB Reel Hub Adapter
- 31. Right NAB Reel Hub Adapter

- 32. Left Reel Motor Cover
- 33. Right Reel Motor Cover
- 34. Left Capstan Motor Cover
- 35. Right Capstan Motor Cover
- 36. VU meter bridge



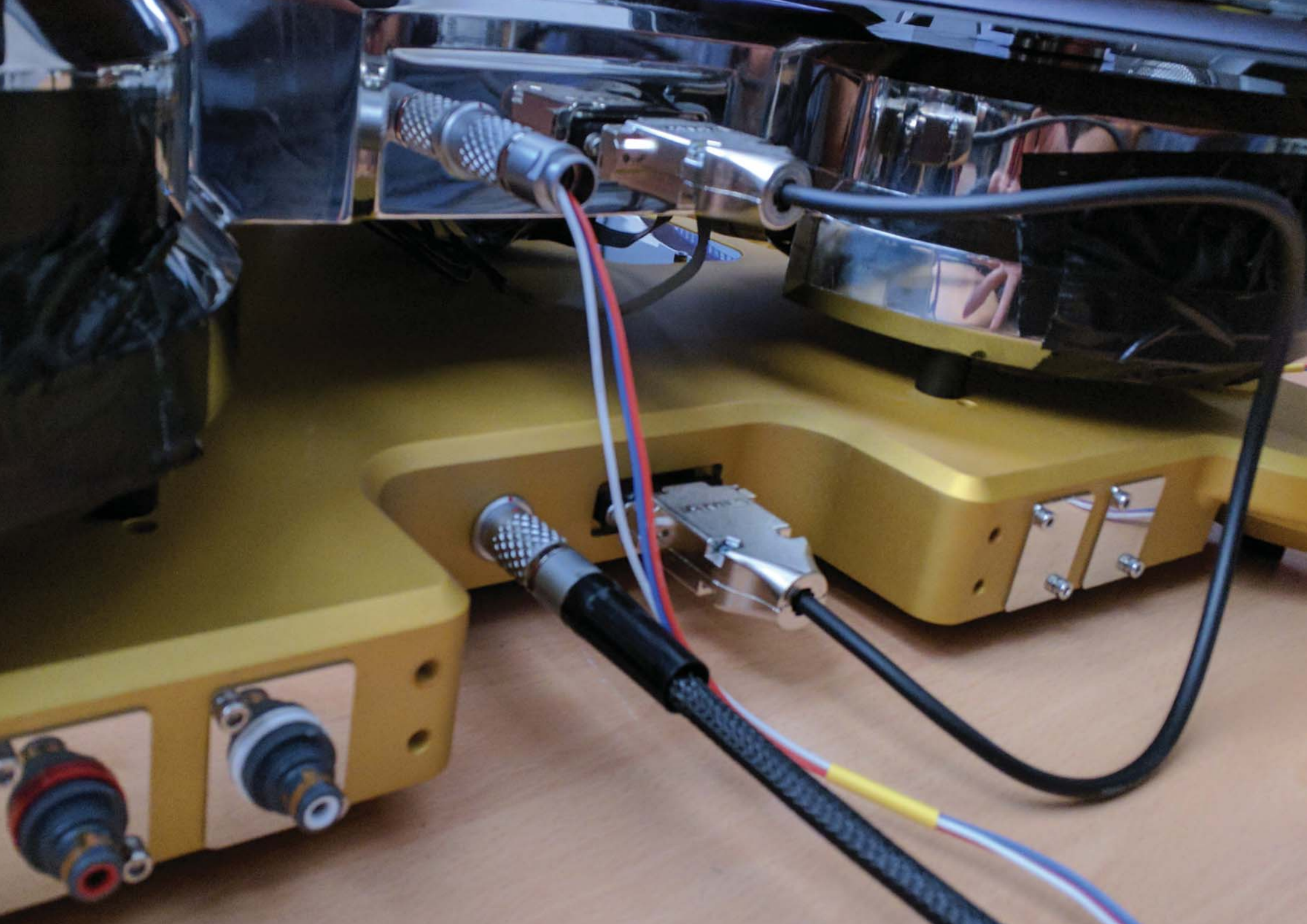
PL IV 15 IPS

06:54



- 24. Preamp OUT
- 25. Preamp IN
- 26. 3 pin DC Power Connector
- 27. 4 pin DC Power Connector
- 28. Record Inputs
- 29. Playback Outputs

- 30. Left NAB Reel Hub Adapter
- 31. Right NAB Reel Hub Adapter
- 32. Left Reel Motor Cover
- 33. Right Reel Motor Cover
- 34. Left Capstan Motor Cover
- 35. Right Capstan Motor Cover
- 36. VU Meter Bridge

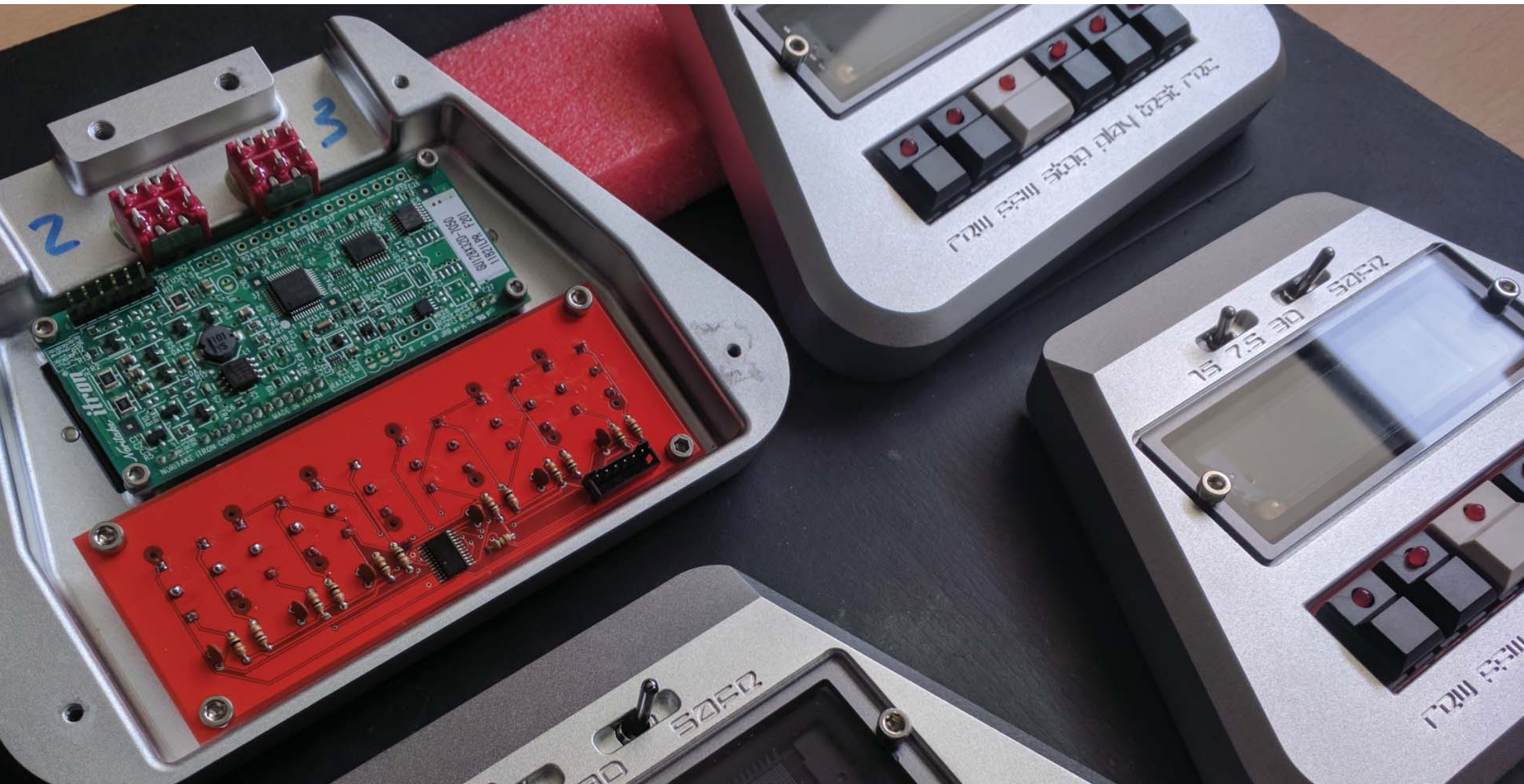




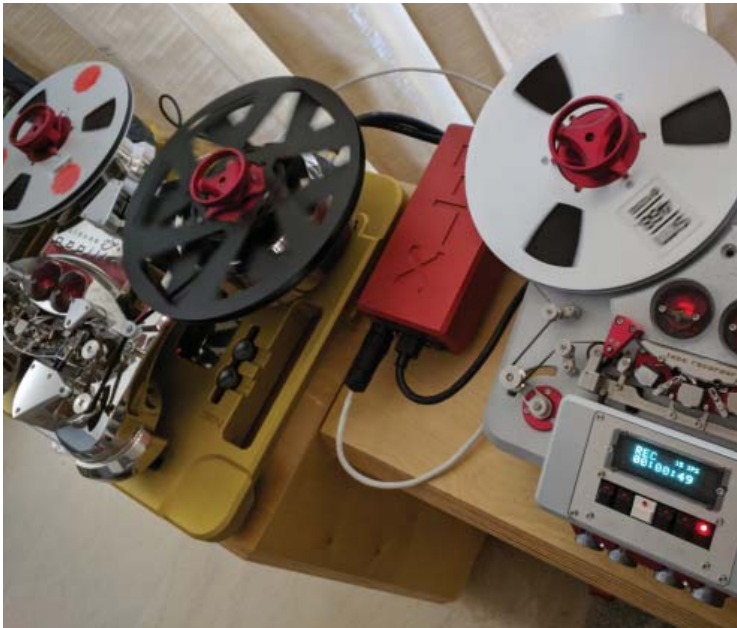
# papillon studio keyboard

The Papillon is operated very simply from its 6 key keyboard. From left to right, the basic functions are: REWIND, FAST FORWARD, STOP, PLAY, TEST and RECORD.

NOTE: There is a RECORD SAFETY switch to prevent accidental recording over your precious recordings next to the SPEED SWITCH. Once you switch the power on at the external power supply, a welcome screen will appear on the NORITAKE LCD display. After the screen has settled [10 seconds], you can engage the individual keypad functions.



## why reel to reel?



There is no doubt that the absolute best “source” for reproduced music is analogue tape recorded at 15ips. The same analogue tape reel-to-reel recorders are also the absolute best way to record and capture music [concert recording].

This is a fact not open for discussion and is responsible for the incredible resurgence in interest in Open Reel Analogue Tape Recorders. The High End Audio industry has embraced and acknowledged this over the past 20 years.

Artist and Recording Engineer Kostas Metaxas has not only been aware of this since the mid 1980s, but in fact been using two portable heavily modified Swiss “Stellavox” portable tape recorders, manufactured in the mid 1980s to record over 300 concerts on analogue tape [[www.metaxas.com/recordings.html](http://www.metaxas.com/recordings.html)]. He is probably the most prolific recording engineer using analogue tape of the past 30 years.

“When I purchased my Stellavox SM8 and TD9 in 1985, they cost ~ \$50K - the price of a suburban house in Melbourne, Australia. The same house today is ~ \$1million.”

Kostas’ work with Stellavox including some of his recordings on a DVD have been featured in a book on Stellavox by German writer Roland Schellin.

Fueled by this recent interest, Kostas has decided to produce an entirely new tape machine based heavily on the portable Stellavox SM8 recorder which has even received the blessing of Stellavox founder Georges Quellet.



## playback only or recording machine?

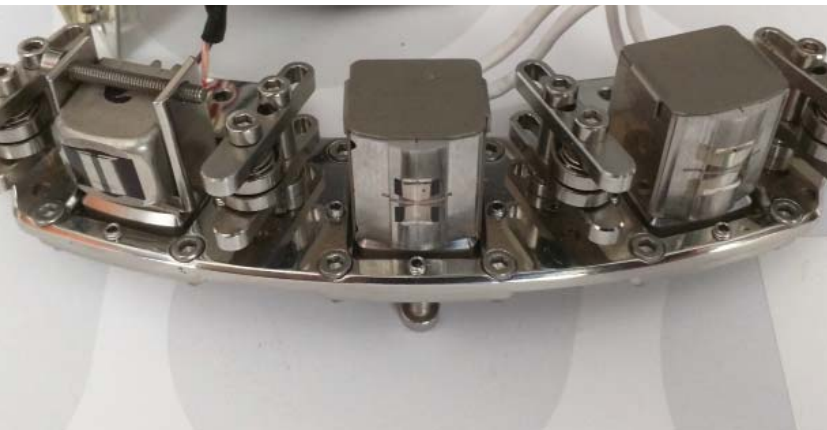
Are you a serious listener or a recording engineer?

If you are a serious listener, you should purchase a PLAYBACK ONLY machine. This is because the Playback is optimised for the best possible listening performance. It has a much simpler audio path since it doesn't require bias traps and extra electronics and the head alignment is dedicated to one playback head. A Playback-only machine is the ultimate machine to make tape copies from.

If you are a recording engineer, then clearly your priority is the RECORD HEAD which is in the middle optimal position in the tape path, and Playback is secondary in importance to you since it is for monitoring the recording. Also, to align three heads is a compromise for playback listening.

A RECORDING machine has the following extra components:

1. Extra heads - An Erase, Record and Playback head
2. Extra electronics: Two Line input stages, Bias Frequency Oscillator, Relay switches.





W  
X  
Y  
Z

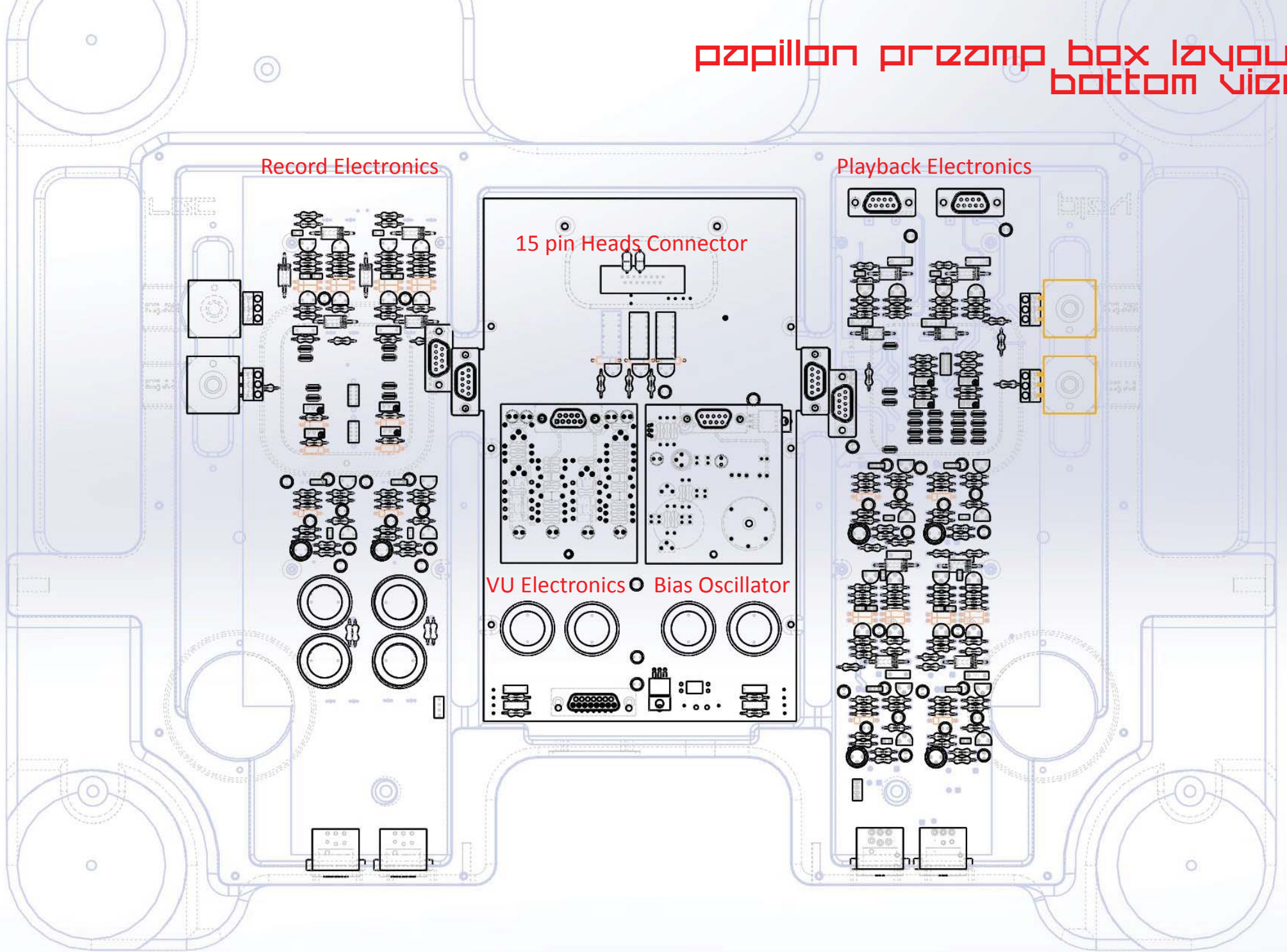
3000  
SWISS MADE  
PPDA

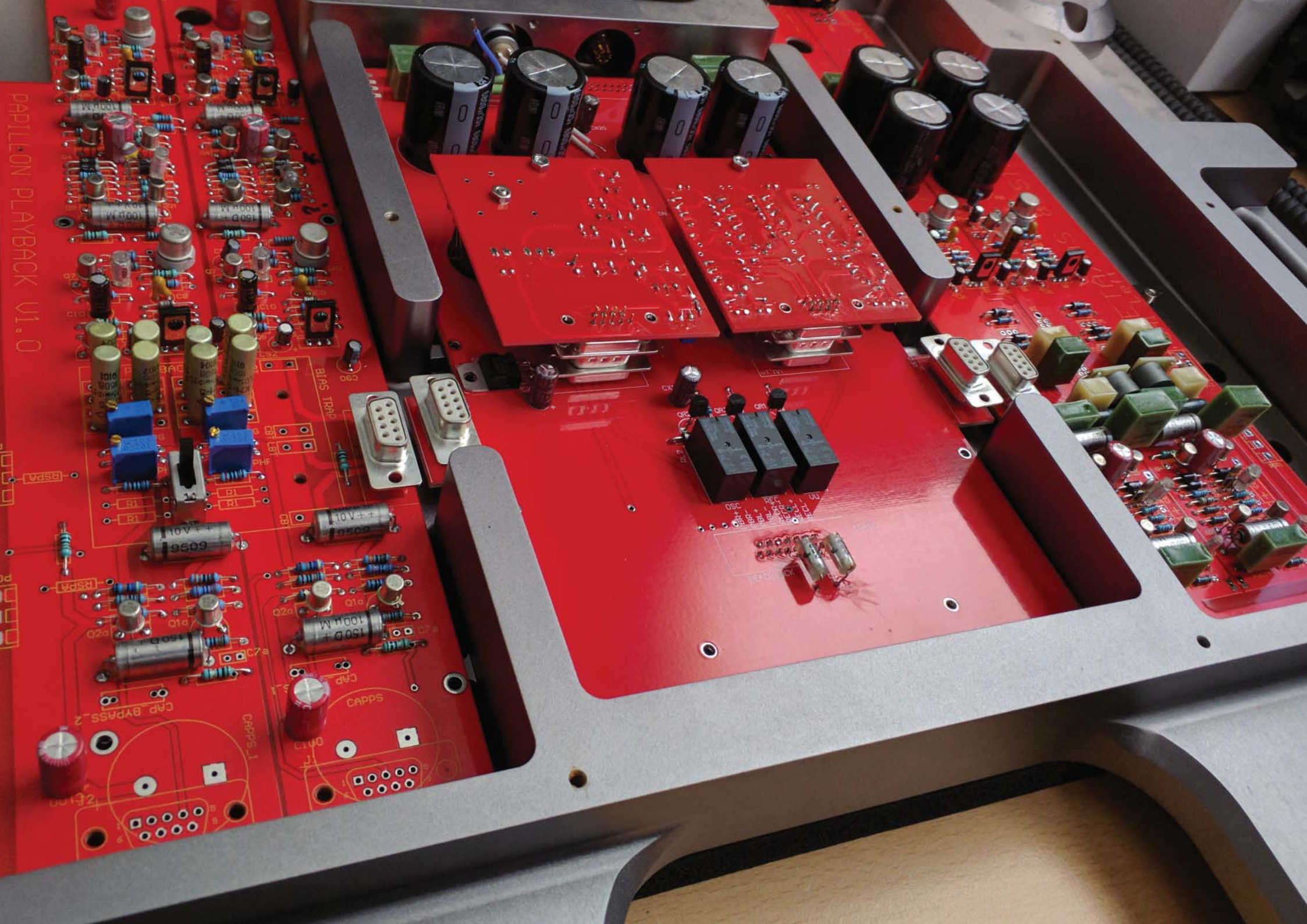
STOP PLAY TEST TIME

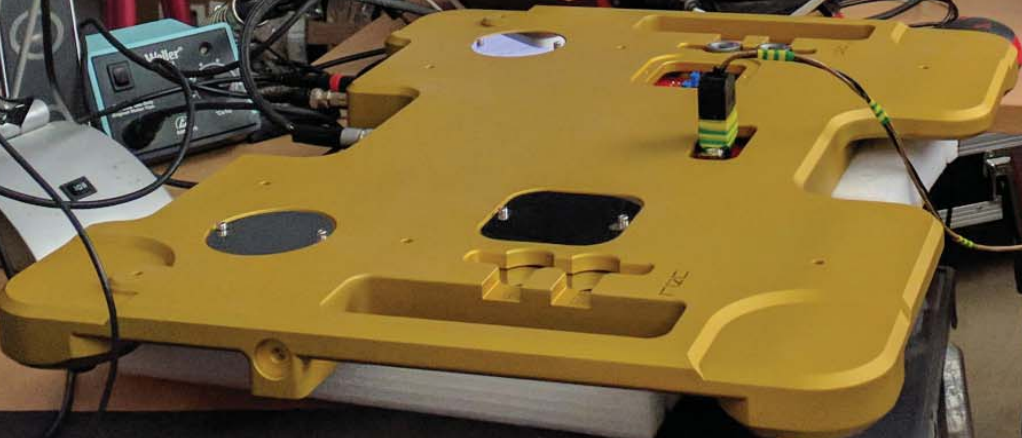
## calibrating the equalization



# papillon preamp box layout bottom view

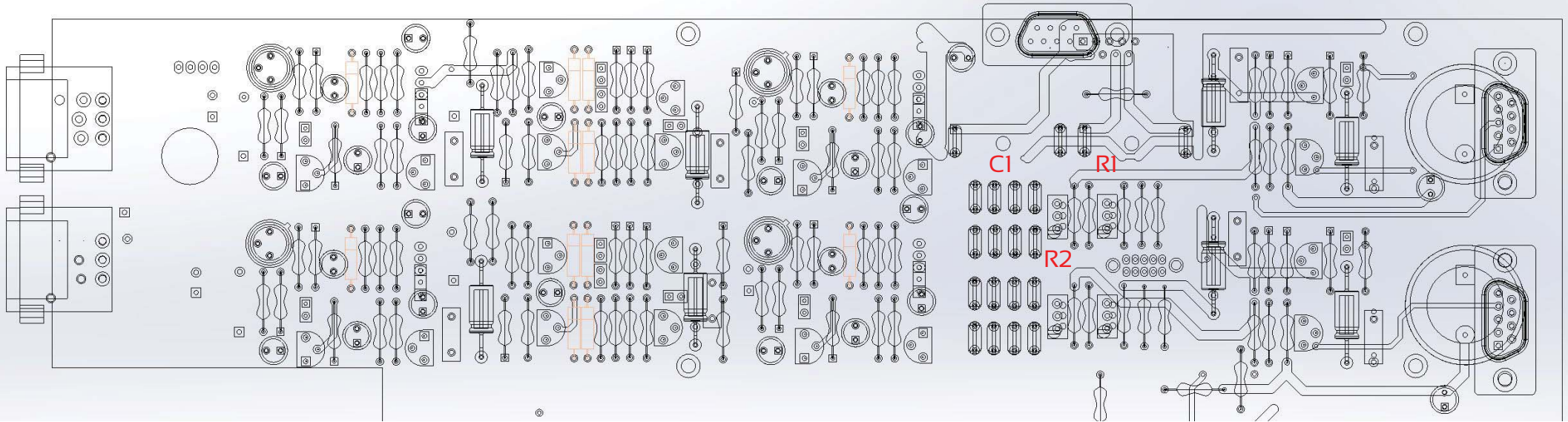








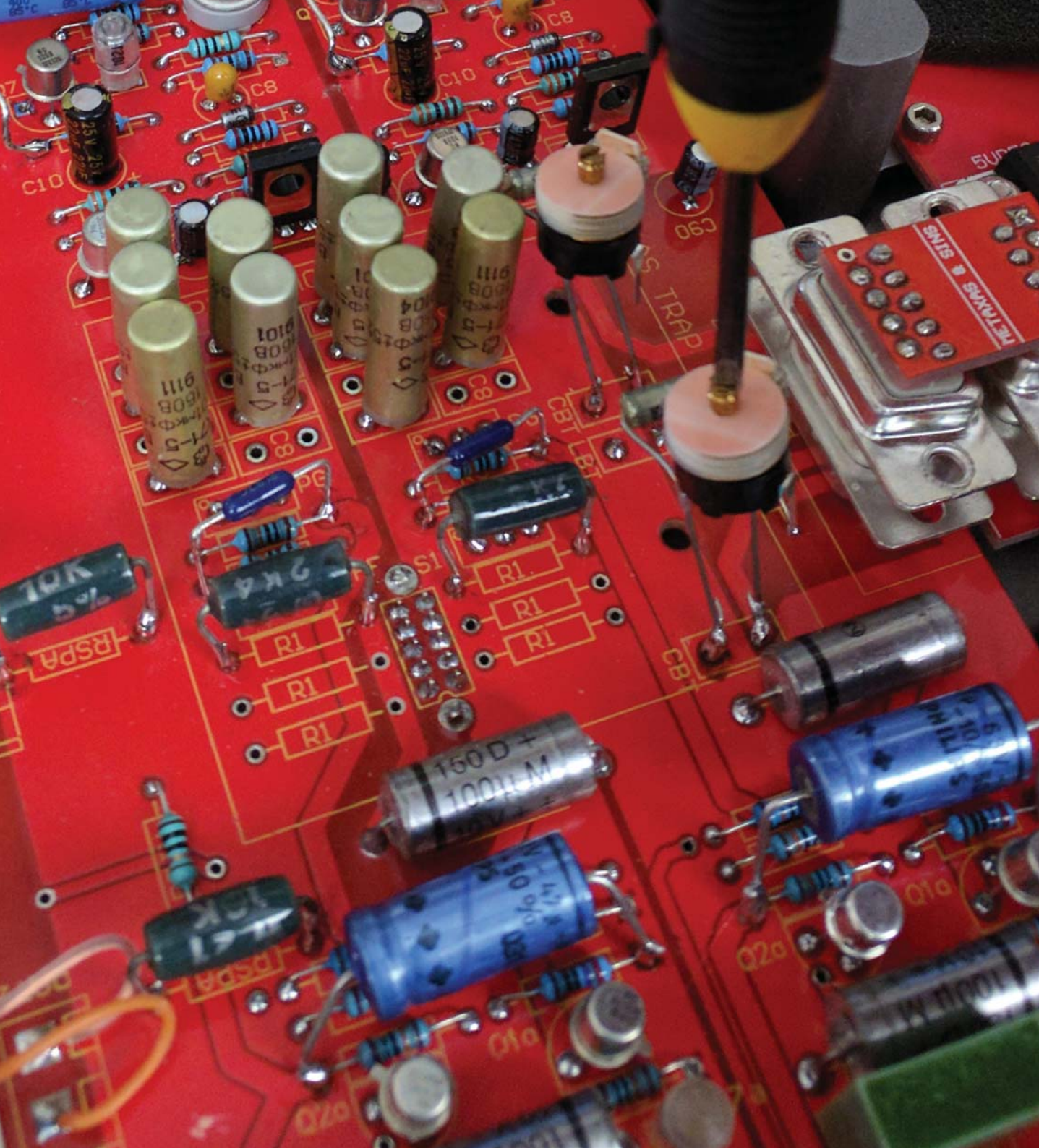
# playback electronics layout



1. R1 - High Frequency adjustment 5K
2. R2 - Low Frequency adjustment 100K
3. C1 - 1kHz level adjustment

The Papillon is adjusted as “standard” for 15ips speed using 468/911 formulation tape. To adjust the EQ, you will require an MRL [or other] calibration tape with test tones from 32Hz to 20kHz. The procedure is very simple. You trim R1 for level gain at ~ 8-10kHz, R2 for best linear gain at ~250Hz. C1 is adjusted depending on the inductance of the Playback head.

For playback at 15ips [and 7.5ips], there is no need to adjust the EQ when using any other tape formulations. The only time you will need to make adjustments would be if you wanted to playback at 30ips. If you playback 30ips tapes on the machine, it will have too much HF energy. You will need to use an MRL calibration tape and adjust rotary trimmer pots R1.

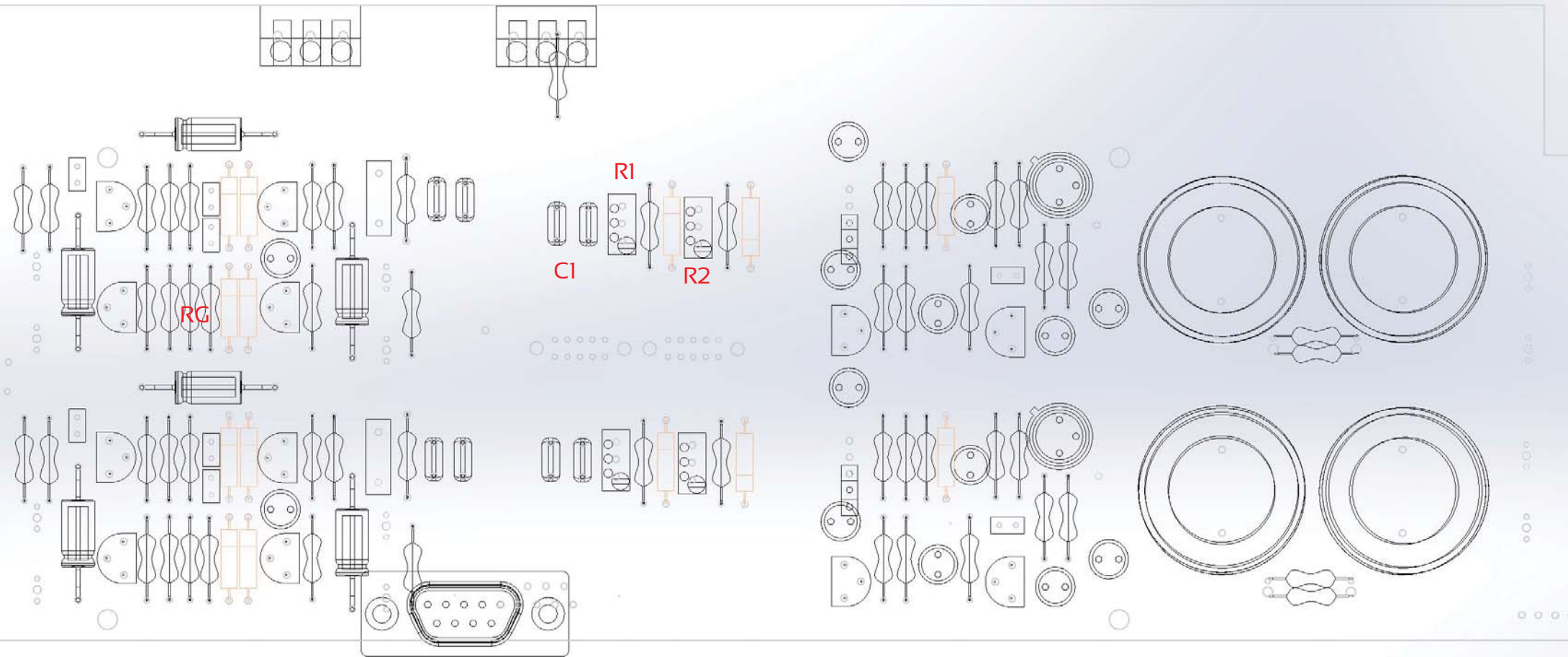


## bias traps adjustment

In simple terms, a “Bias Trap” is a notch filter which is necessary in a 3-head Tape Recorder to remove the 150-200kHz Bias Frequency Signal [at ~100V pp] from overloading the playback electronics and following amplification.

In the Papillon, we wind our own inductors which use a special trimmer ferrite screw to adjust the inductance by 0.5 to 1.0mH.

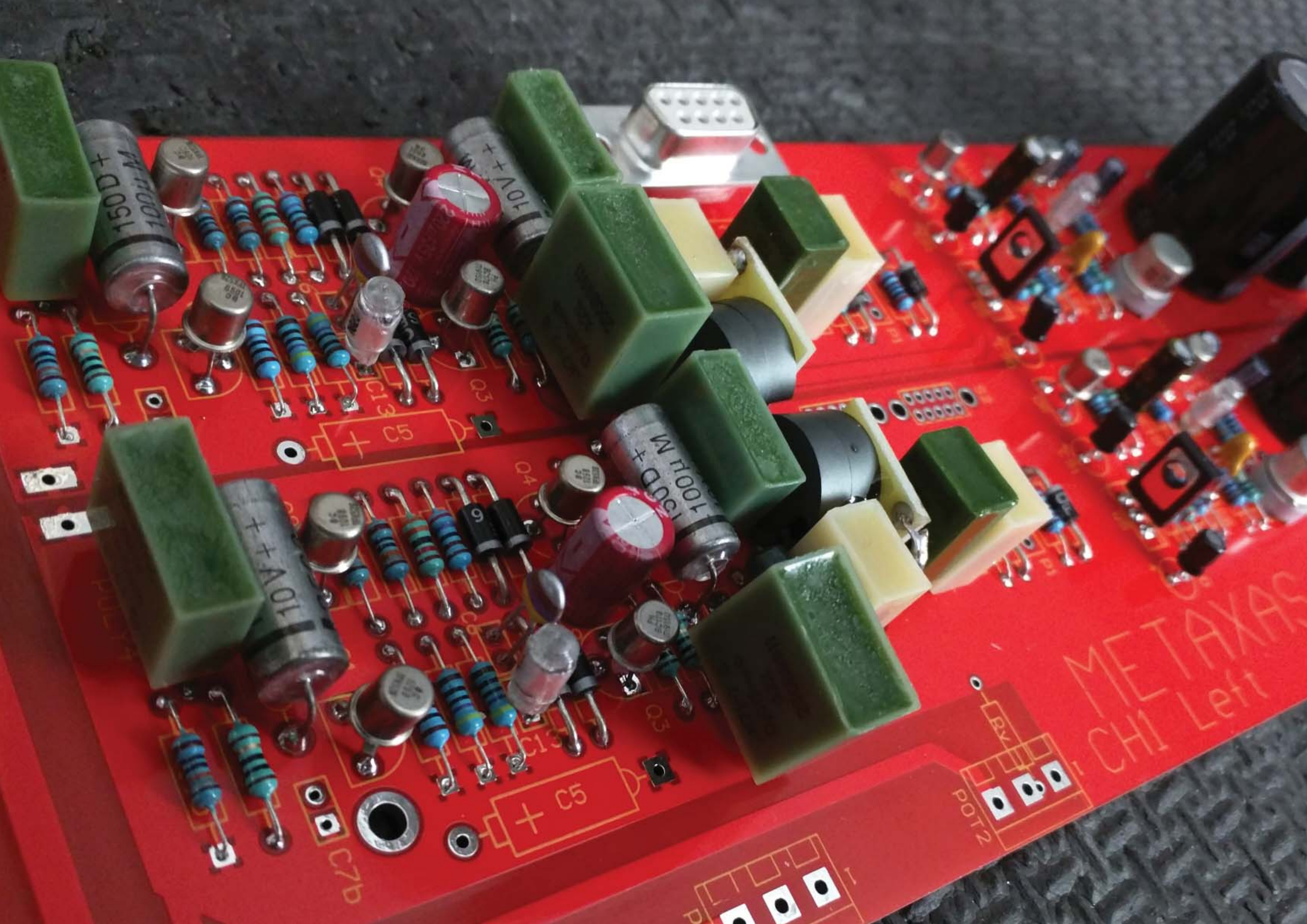
To refine the notch filter even further, we also trim the capacitors to allow the inductor more notch precision.



1. R1 - REC Tape EQ adjustment
2. R2 - Bias Frequency level adjustment
3. C1 - REC Tape EQ adjustment
4. RG - gain

## record electronics layout

The Papillon comes adjusted as “standard” for 15ips speed using 468 formulation tape. Our experience with using other tapes [such as SM900 or SM911] is that you can also use them to record with with little difference in EQ .



46. Bias Oscillator RELAY

This relay connects the GND to allow the oscillator to work only when TEST or REC is selected on the keyboard.

47. REC Relay

This relay shorts the REC output unless TEST or REC is selected on the keyboard.

48. VU selector Relay [REC or PB]

This relay switches between the Playback output and before EQ of the REC output amplifier. This allows you to monitor the record input or tape output.

49. Playback 9in DIN connection

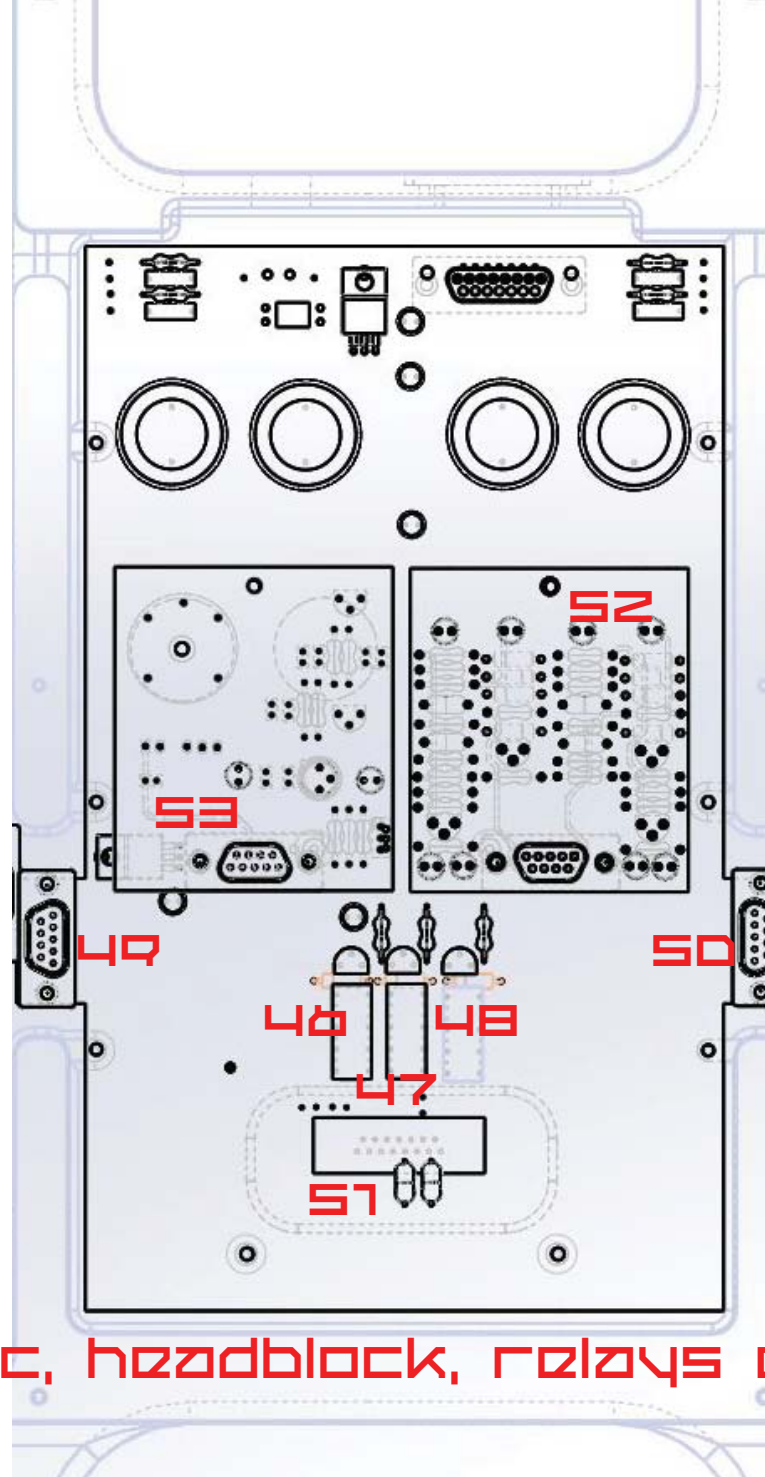
This connects the PLAYBACK HEAD to the playback electronics.

50. Record 9pin DIN connection  
This connects the REC head to the record electronics

51. Headblock [15pin Din] Connector

52. VU meter circuits [2 channels]  
These are calibrated for standard VU.

53. Bias Oscillator Circuit.



VU, osc, headblock, relays electronics layout



calibrating the vU meters



wow and flutter testing



RMS via FFT

CH1 - 91.10 dB

CH2 OFF

GEN RUNNING  
ANL 1:CONT 2: OFF  
SWP OFF  
Jan 21 2021  
Thu 15:50:53

FILE

LOAD INSTRUMENT STATE -  
- Applicat ANLG - ANLG  
- Measuring FFT\_AA.SAC

STORE INSTRUMENT STATE  
- Mode ACTUAL  
- Attrib READ/WRITE  
- Info Text FFT analysi  
- Filename FFT\_AA.SAC

STORE TRACE/LIST  
- Store OFF

UTILS  
- Delete TO\_DELETE  
- Work Dir C:\UPL\SET  
- Copy SOURCE

Press SELECT to open window!

dBr FFT CH1, vs FREQUENCY/kHz

0  
-20  
-40  
-60  
-80  
-100  
-120  
-140

0 2 4 6 8 10 12 14 16 18 20

F5 F6 F7 F8 F9 F10 F11 F12

CONTROL

START SINGLE STOP CONT

H COPY SYSTEM OFF REM LOCAL

DATA / PANEL EDIT

GEN ANLR FILTER SELECT

7 8 9

STATUS FILE BACKSP

4 5 6

DISPLAY GRAPH CANCEL

1 2 3

OPTIONS SHOW I/O ENTER

0 +/

CURSOR / VARIATION

HELP

PgUp PgDn

ANALOG

GENERATOR ANALYZER

1 2 1 2

GEN OVLD

110 V RMS / 160 V PK CAT I

1510A TAPE RECORDER/AUDIO TEST SYSTEM  
SOUND TECHNOLOGY

UP DOWN

EXPAND SPLIT

INPUT REF DISPLAY

VERT REF

AC VOLTS

INPUT REF SET/RECALL

BALANCED OUTPUTS

1 dB VERNIER UP DOWN

LEFT RIGHT

NOISE FLUTTER

SPEED DROPOUT

AZIMUTH DISTORTION

FR & CS

2ND 3RD FREQ RESP

SPOT FREQ

CHAN SEP

FR - FAST NORM

SPEED FLUTTER NOISE

FR & CS -20 dB -10 dB 0 dB +10 dB

DB & DS

WEIGHTED FLAT

RESET LOCAL

SELF CHECK

SPEAKER

BALANCED INPUTS

DATA STORAGE REVERSE

LEFT RIGHT

OUTPUT MONITOR SWEEP MODE

MANUAL SINGLE REPEAT

START STOP OUTPUTS BOTH INPUTS

POWER

REMOTE

CURSOR POSITION

LOW SWEEP LIMIT SET



DISPLAY



JUDGMENT

DRIFT  NG  
 FLUTTER  GO  
 NG

SEQUENCE NUMBER



POWER

MODE

DISPLAY SET

FUNCTION DATA

ON OFF

FLUTTER ON

DRIFT LIMIT

DRIFT

C.FREQ.

FLUTTER LIMIT

CENTER FREQ.

FREQ.

F.LPF

FLUTTER LPF

TRANS PULSE

REVOL.

M.TIME

MEASURE TIME

(KEY LOCK)

INDICATION

CCIR/DIN

7

RMS

8

PEAK

9

STEP

kHz/+%

FLUTTER BW

WTD

4

LPF

5

EXT

6

Hz/-%

MEMORY

P-HOLD

1

REPEAT

2

START

3

Sec/PULSE

GP-IB

LOCAL

0

RETURN

.

(REMOTE)

RANGE

FLUTTER % 10 3 1 3 .1 .03 .01

F/V Hz 100k 10k 1k 100

FLUTTER

F/V

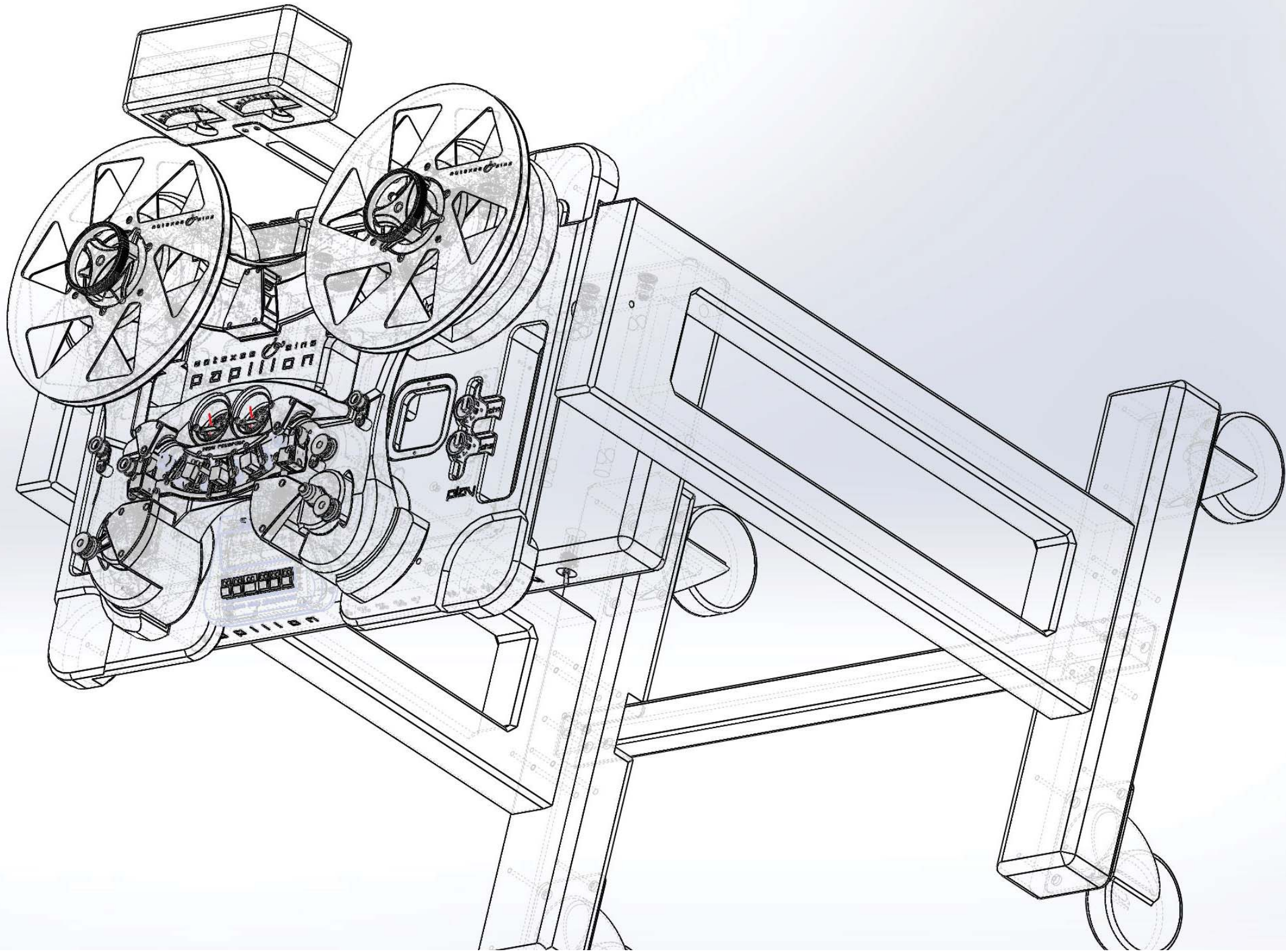
TO SCOPE

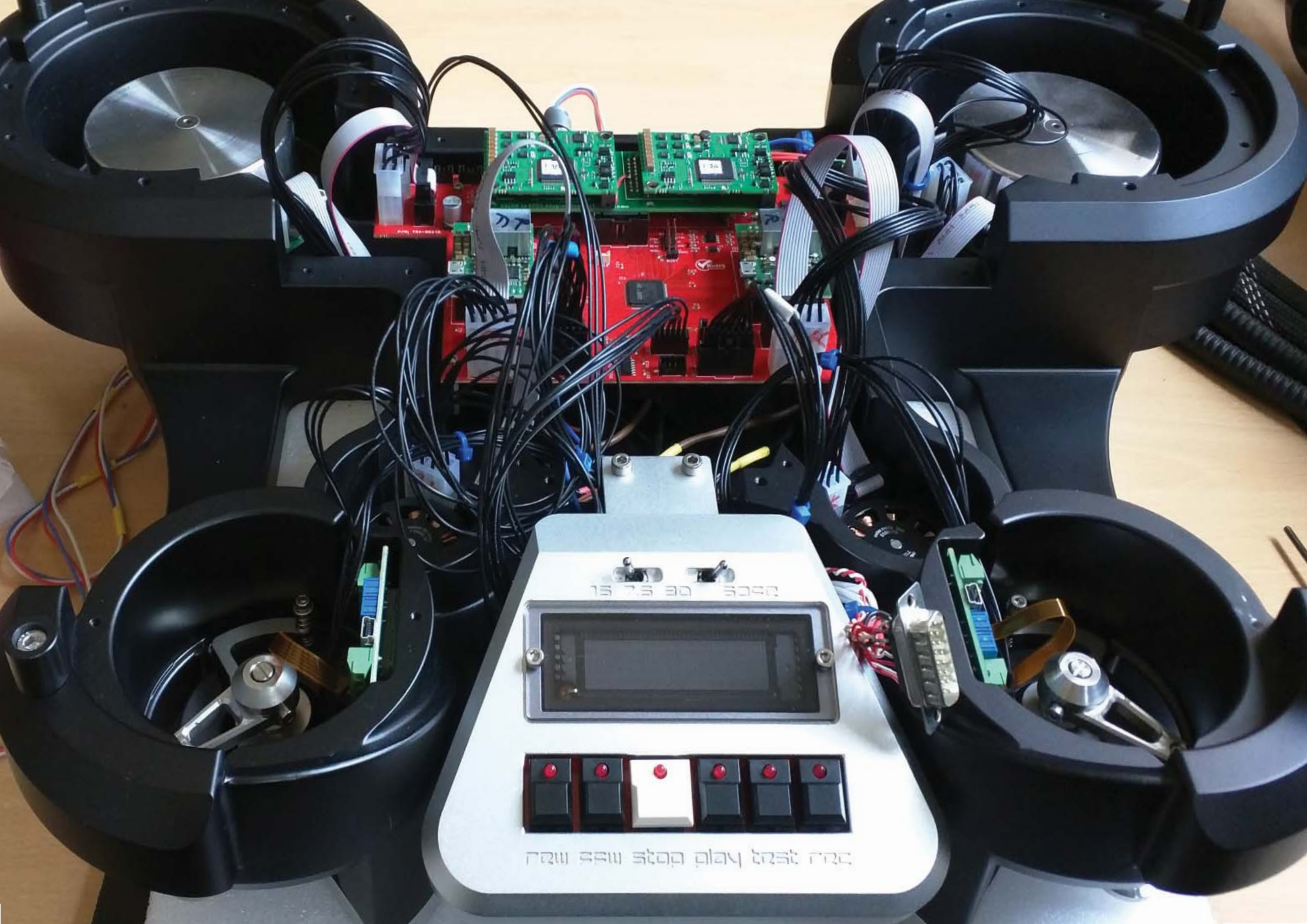
1kΩ

MODEL 6110A FLUTTER ANALYZER

ACT ELECTRONICS

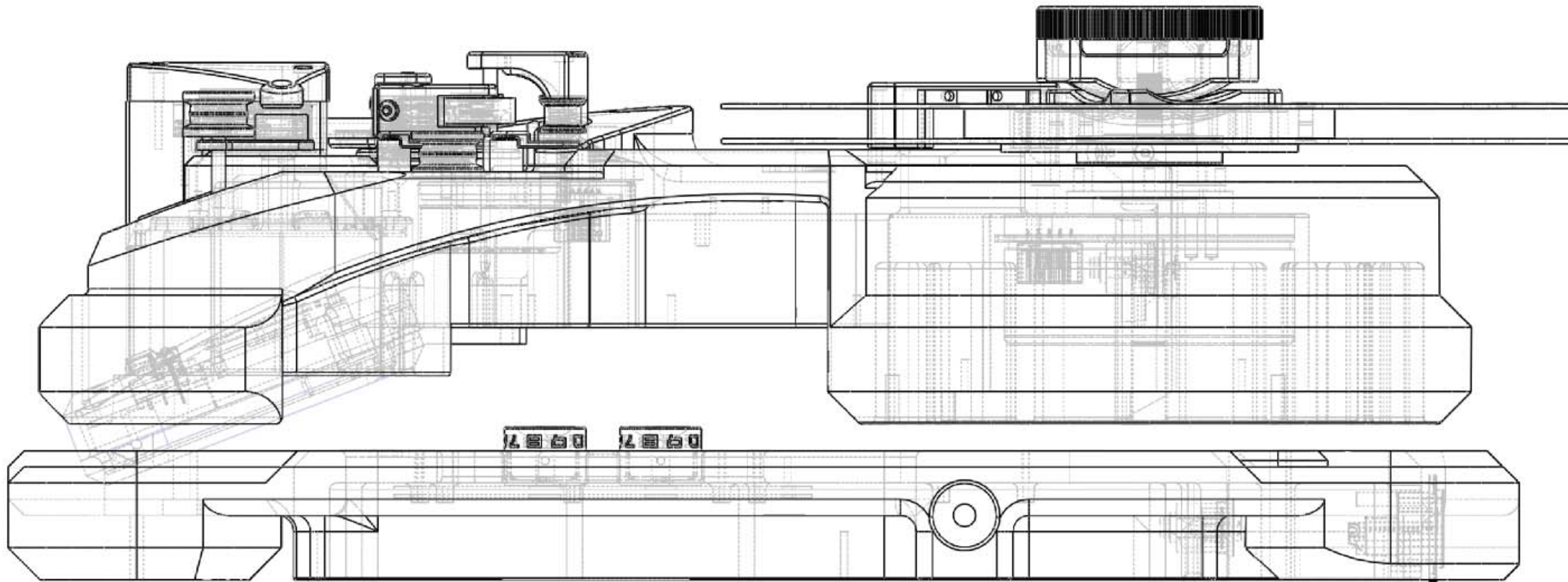


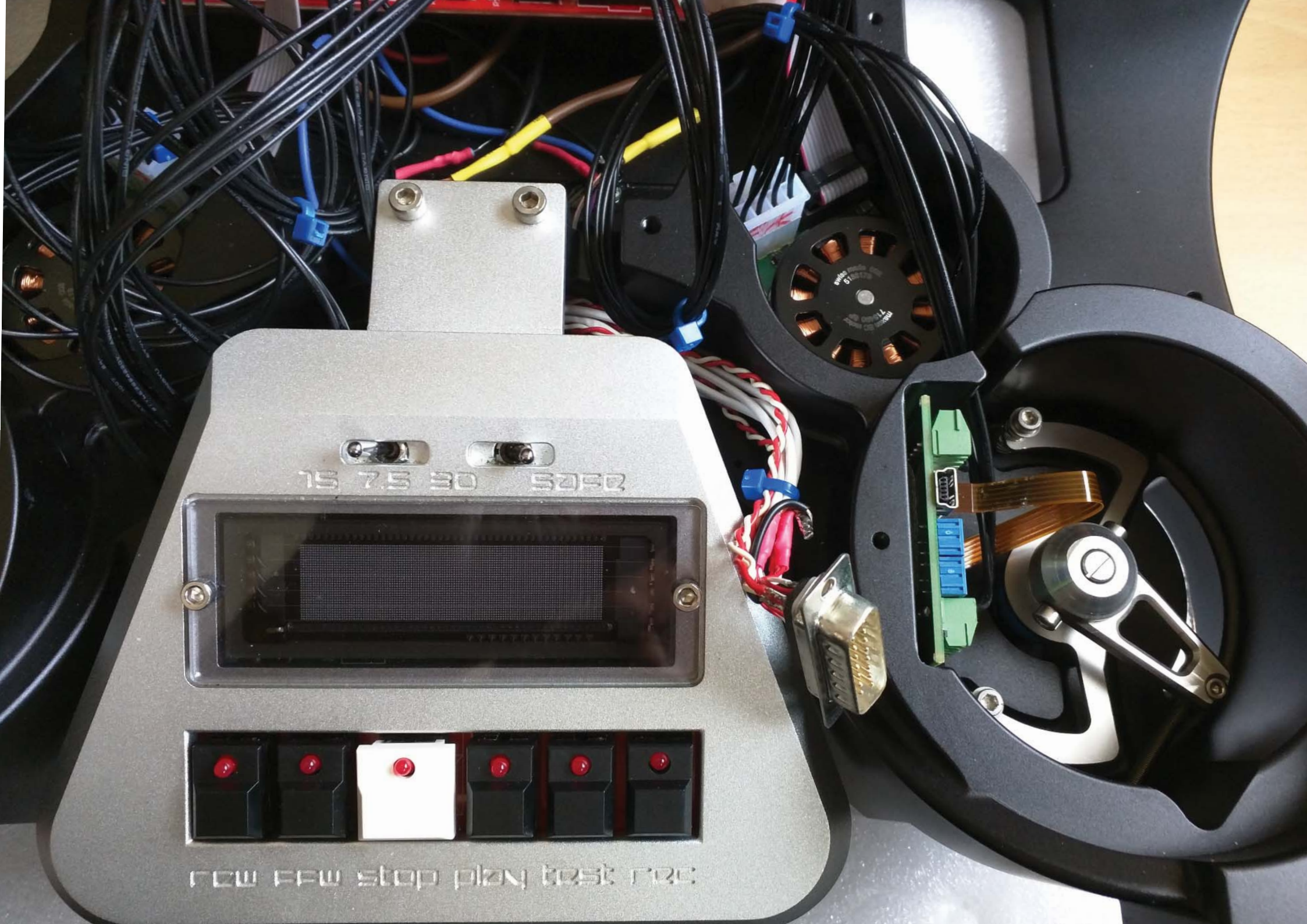




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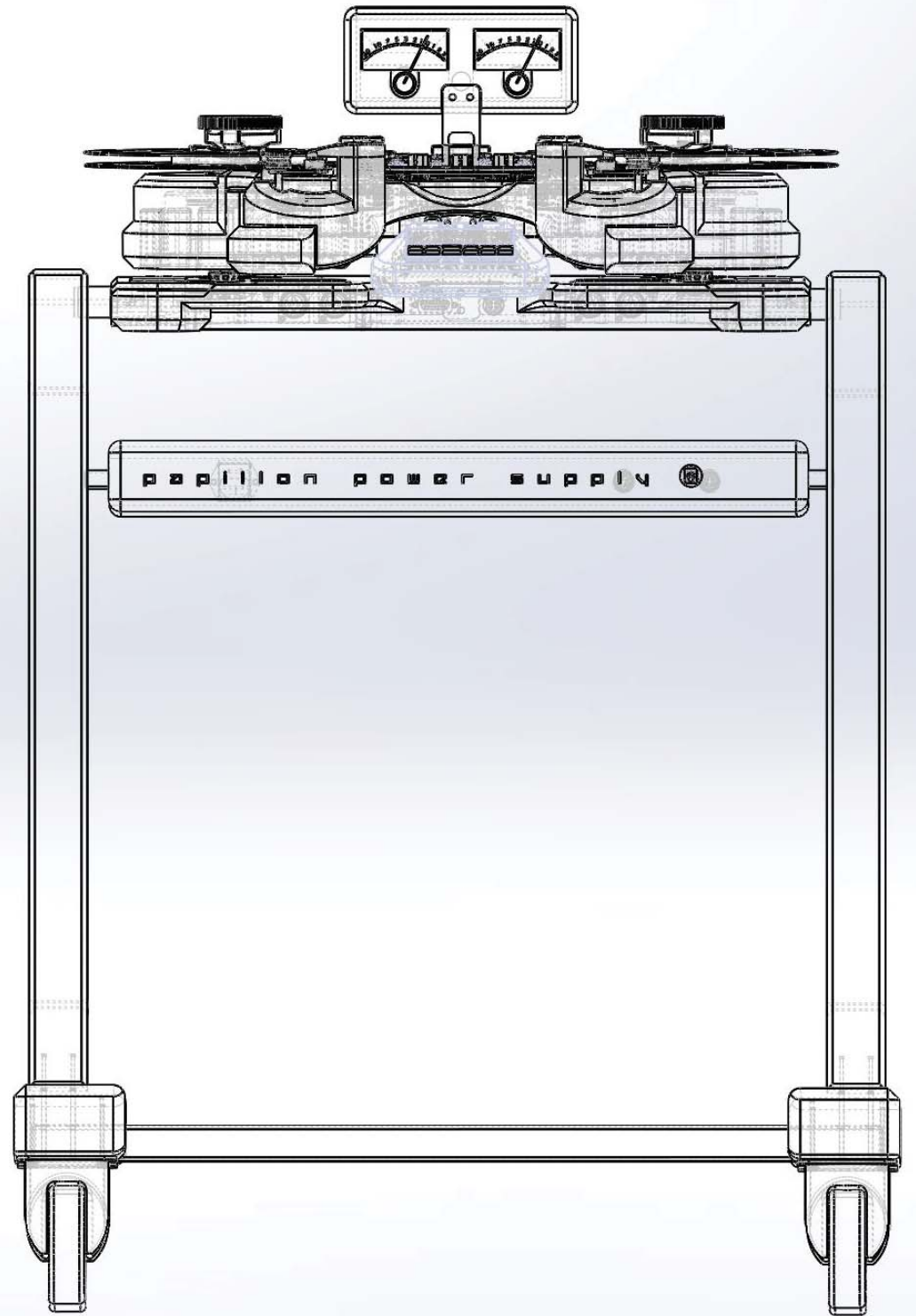
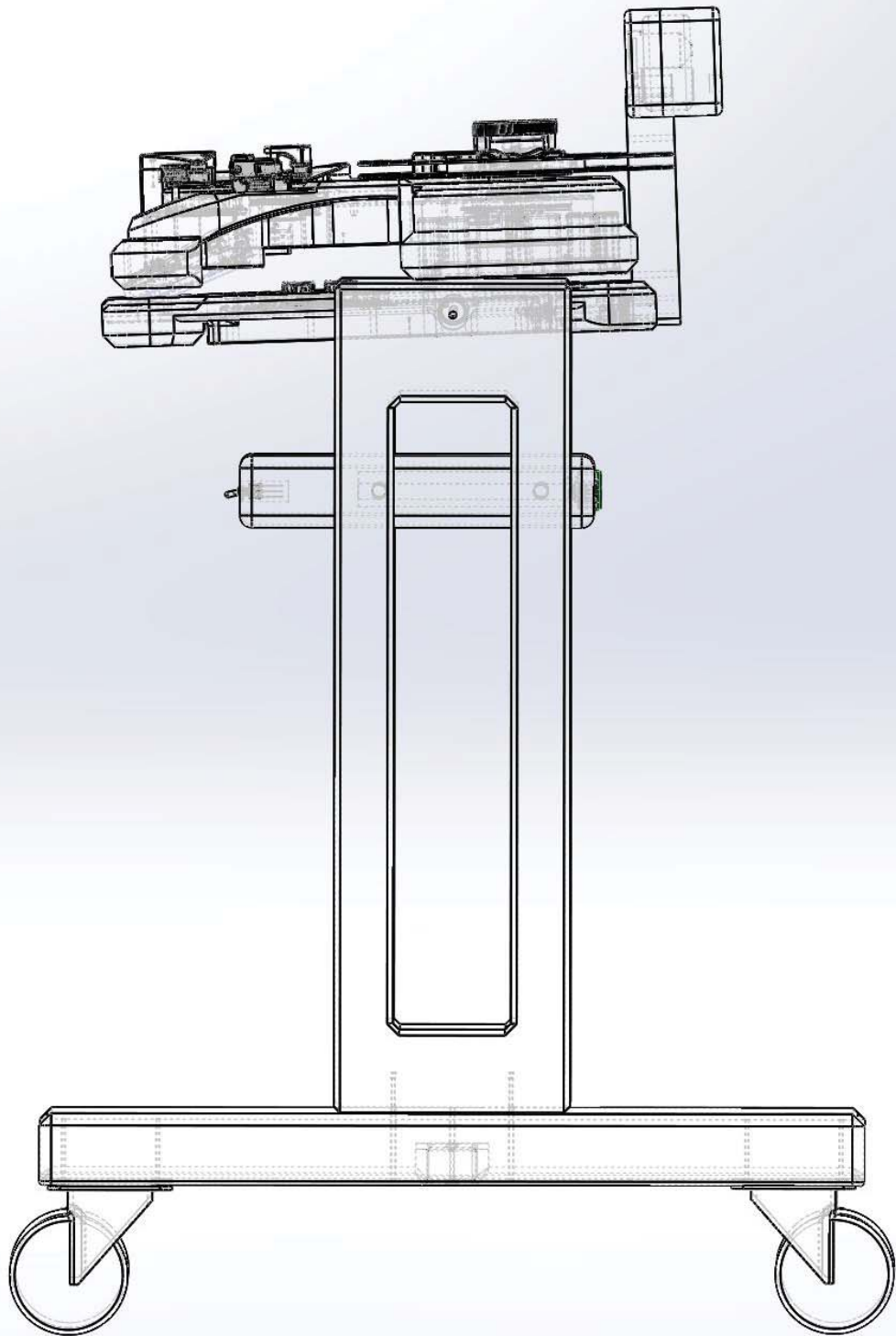
הצד הראשון של המשחק  
הצד השני של המשחק  
הצד השלישי של המשחק  
הצד הרביעי של המשחק  
הצד החמישי של המשחק  
הצד השישי של המשחק





15 7.5 30 5050

row ffw stop play test rbc



Kostas Metaxas is an articulate and forceful champion of audio without compromise. He is a connoisseur of fine music, a man for whom second best isn't good enough. In September of 1981, Kostas formed the company which bears his name. Known all over the world today simply by its initials, M&S, Metaxas & Sins was founded for several reasons.

The most immediate of these was to begin producing, his first product, the CP-1 preamplifier in commercial quantities. Whilst studying in Heidelberg, West Germany having transferred from the University of Melbourne, Kostas showed several of his prototype amplifiers to an important German Hi Fi Dealer. He was sufficiently impressed with what he heard to give him a little capital in the form of deposits to reserve the finished products. Thus M&S was born. And the rest as the saying goes, is audiophile history.

Back in Australia, new designs flowed from Kostas' workshop. The PP-1, a moving coil preamplifier appeared early in 1982. Reviewed by Klaus Renner in Das Ohr, the German audiophile publication, it was praised as the finest preamplifier available at the time. Accordingly, a flood of orders from the German audiophile who are known to purchase only the number 1 product in its class, firmly established M&S as a manufacturer of only the highest quality audio equipment.

In February 1988, the GERMAN 'Stereoplay' magazine rated the OPULLENCE [Opus] PREAMPLIFIER its absolute reference against amplifiers from the US, Japan and Europe.

The OPUS preamplifier is a unique audio product. Apart from its outstanding musicality it combines the state-of-the-art in high-technology with an incredible array of options which would excite a Recording Engineer.

Kostas is also a familiar sight at local jazz and classical concerts with his prized Stellavox tape recorders in tow. Built with the exacting precision of a PATEK watch, these state-of-the-art models are indeed rarities and are normally the exclusive province of the professional recording studio. The recordings Kostas makes using Stellavox serve as reference for the design of future M&S systems.

M&S products embody not simply audio excellence but a stylistic design sense that would not be out of place in the Museum of Modern Art. M&S products are not meant to be hidden away like traditional sound systems. They are meant to be appreciated both stylistically as well as musically. Science approaches art for the sheer love of music and for that M&S make no apology.

Similarly, Kostas is unapologetic about the market he serves. He aims, quite simply, to provide the "finest objects money can buy." And what sort of people are M & S customers? Generally they view audio as a well-deserved indulgence. But no matter what their occupation, their preoccupation is to know and appreciate the difference between better and best, to listen with their heart and ears and blissfully "get lost in the music" ..

Each amplifier is entirely handmade by the Master and his sons [sins] in a similar manner to the meticulous assembly of historic Bugatti automobiles.

To put it mildly, Metaxas & Sins is unlike any other audio business.

"Flagwaving? Why Not?" wrote Ralph Neill reviewing the MAS PPI in Australian Hi-Fi in the early eighties. "Australia II proved in a big way that Australian technology can take on the world and win. M&S is doing just the same – on a smaller scale, to be sure, but it's doing it!"



## papillon warranty

METAXAS & SINS certifies that this instrument was thoroughly inspected and tested prior to leaving our factory and is in accordance with its specifications.

We guarantee the products of our own manufacture against any defect arising from faulty manufacture for a period of two years from the date of delivery. This guarantee covers the repair of confirmed defects or, if necessary, the replacement of the faulty parts, excluding all other indemnities. All freight costs, as well as customs duty and other possible charges, are at the customer's expense.

Our guarantee remains valid in the event of emergency repairs or modifications being made by the user. However we reserve the right to invoice the customer for any damage caused by an unqualified person or a false maneuver by the operator.

We decline any responsibility for any and all damages resulting, directly or indirectly, from the use of our products.

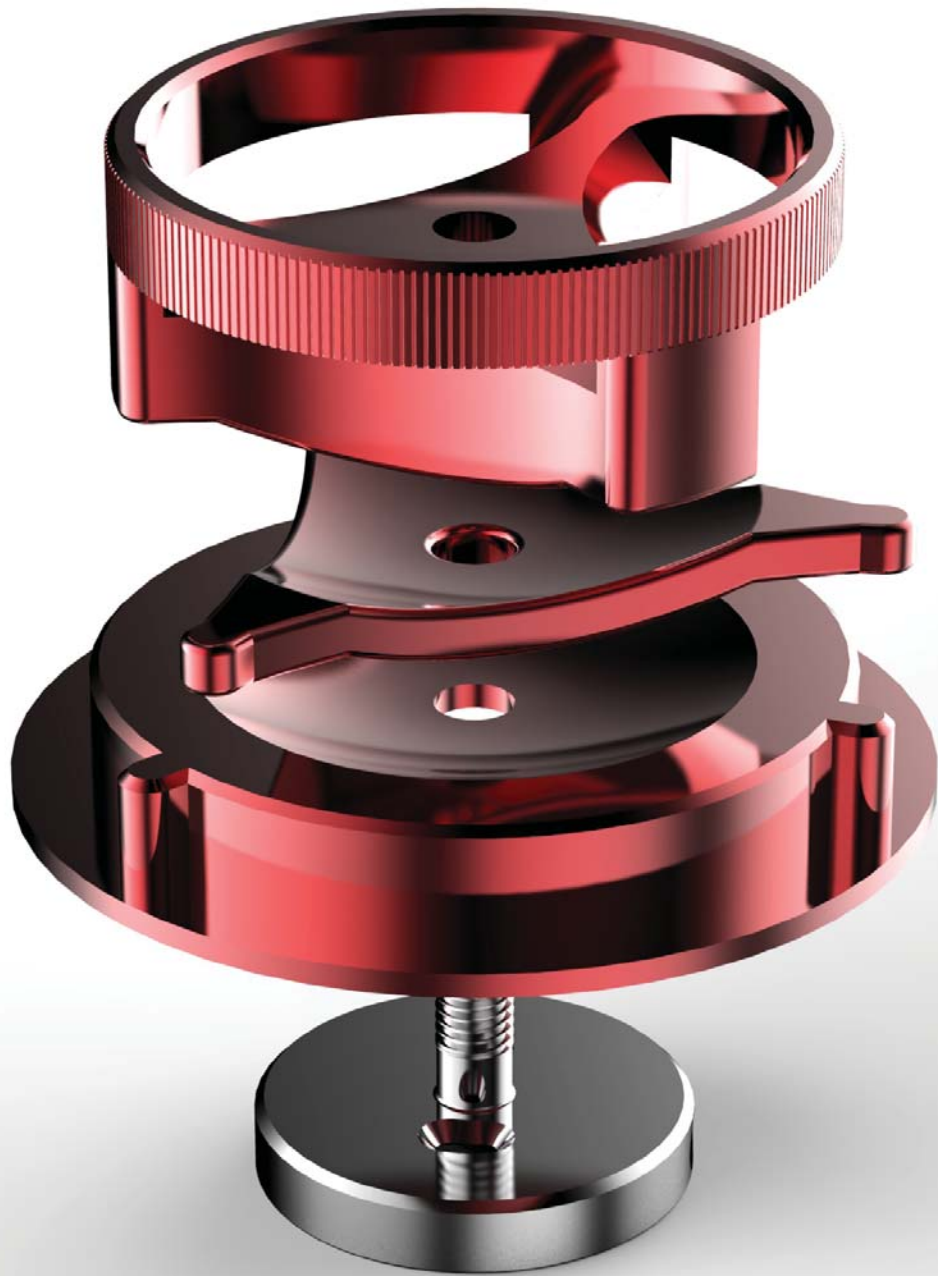
We reserve the right to modify the product, and / or the specifications without notice.

There are no user serviceable parts inside the machine. It should therefore only be opened by qualified service personnel.

The Papillon is configured in the factory for use with a single AC line voltage. Check the voltage rating on the separate power supply panel to ensure it is configured for the correct AC line voltage.

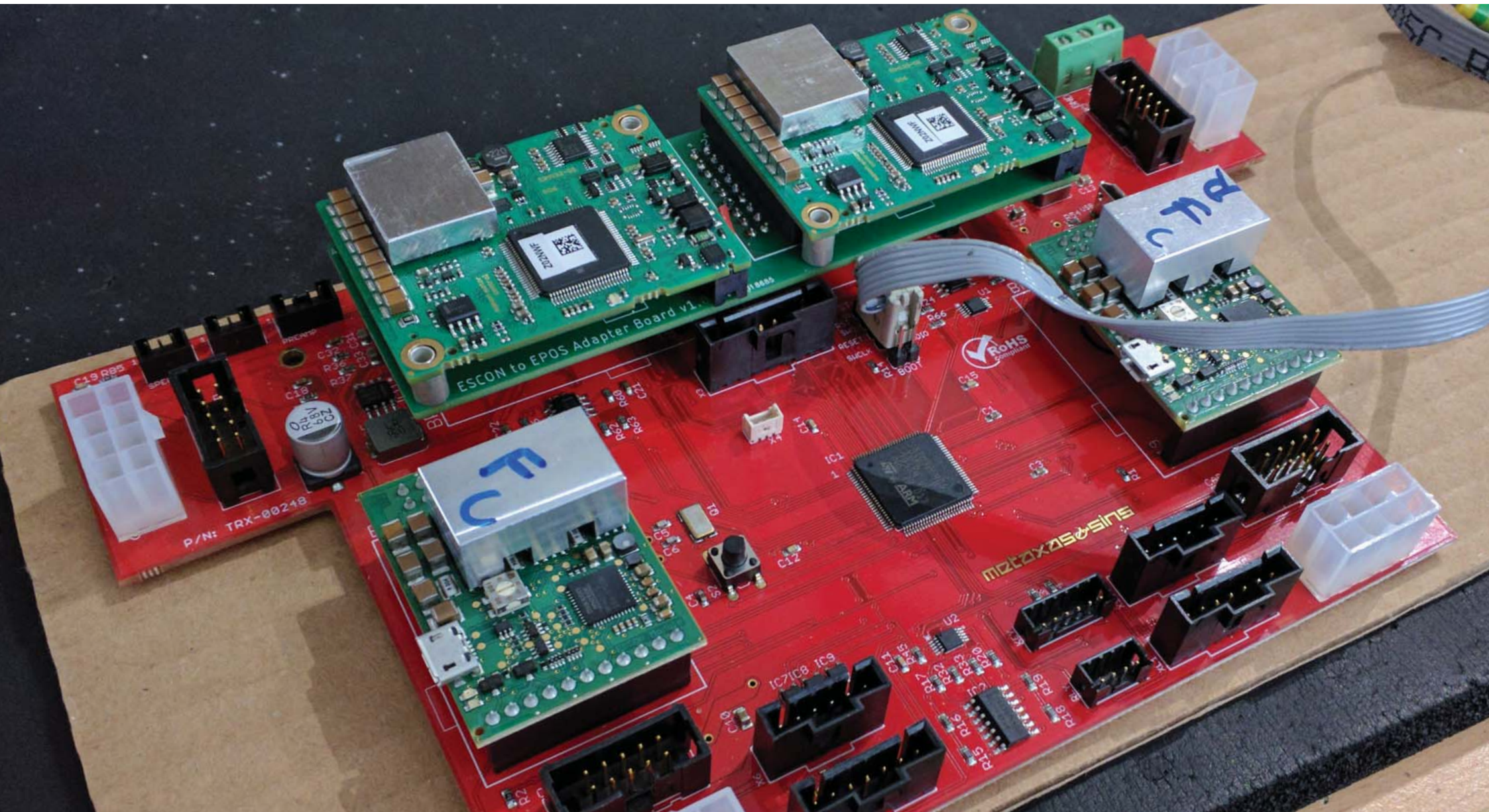
Applying the wrong AC line voltage increases the risk of fire and can cause permanent damage.

North America: 120VAC  
Europe: 230VAC  
Japan: 100VAC

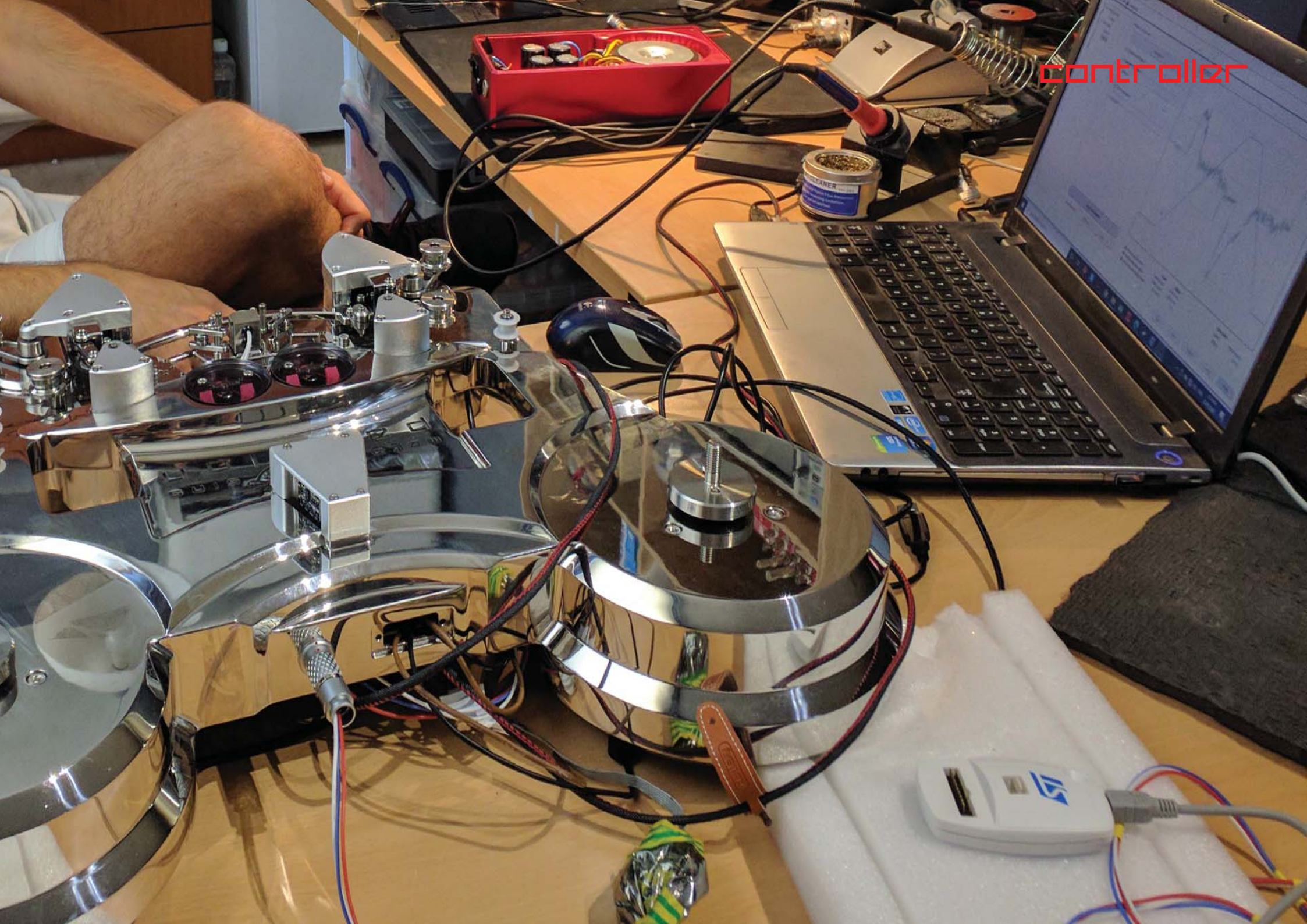


"hubba-hubba"  
nab hub adapter

The heart of the Papillon is a an ARM-CORTEX computer [similar to a mobile phone].  
This takes full control of the 6 motors to control tape tension and ultimately the effortless passage of tape across the tape "heads".



controller

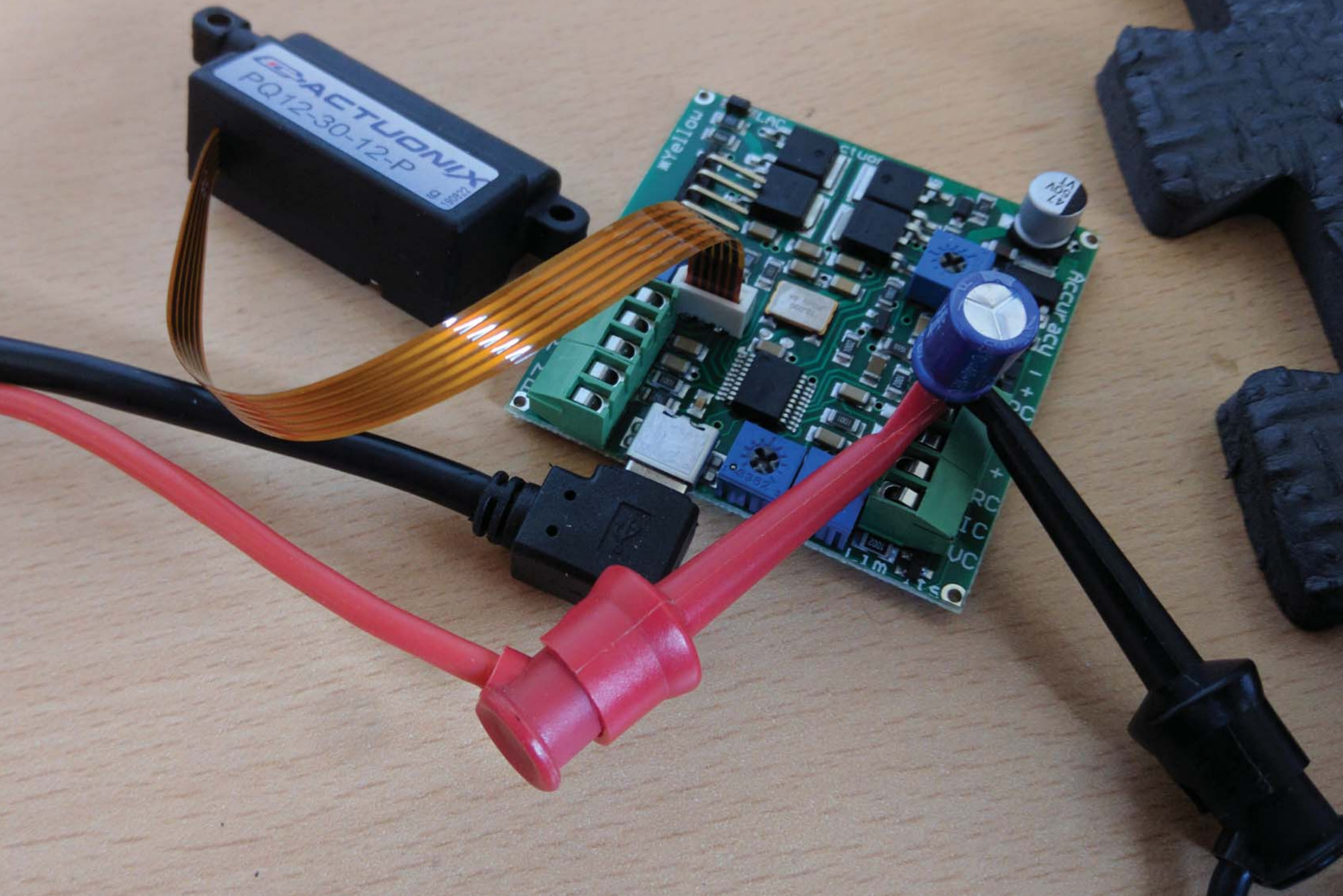




## actuonix linear motor controller

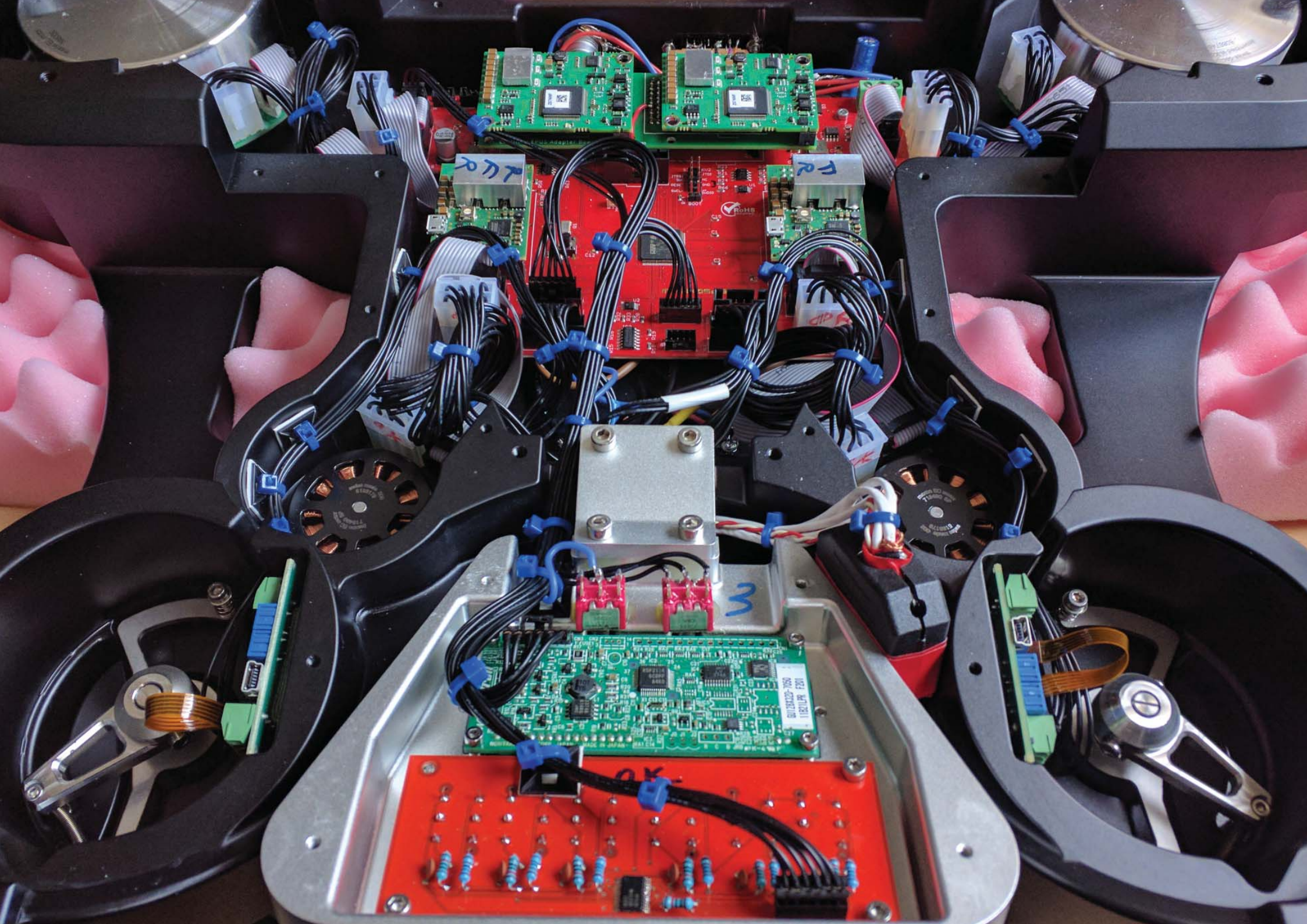
The DUAL-CAPSTANS retractable bar is controlled by 2 Actuonix linear motors [from Canada]. These powerful and precise motors position the rubber CAPSTAN rollers carefully on the Capstan Motor Shaft to ensure absolutely perfect speed.

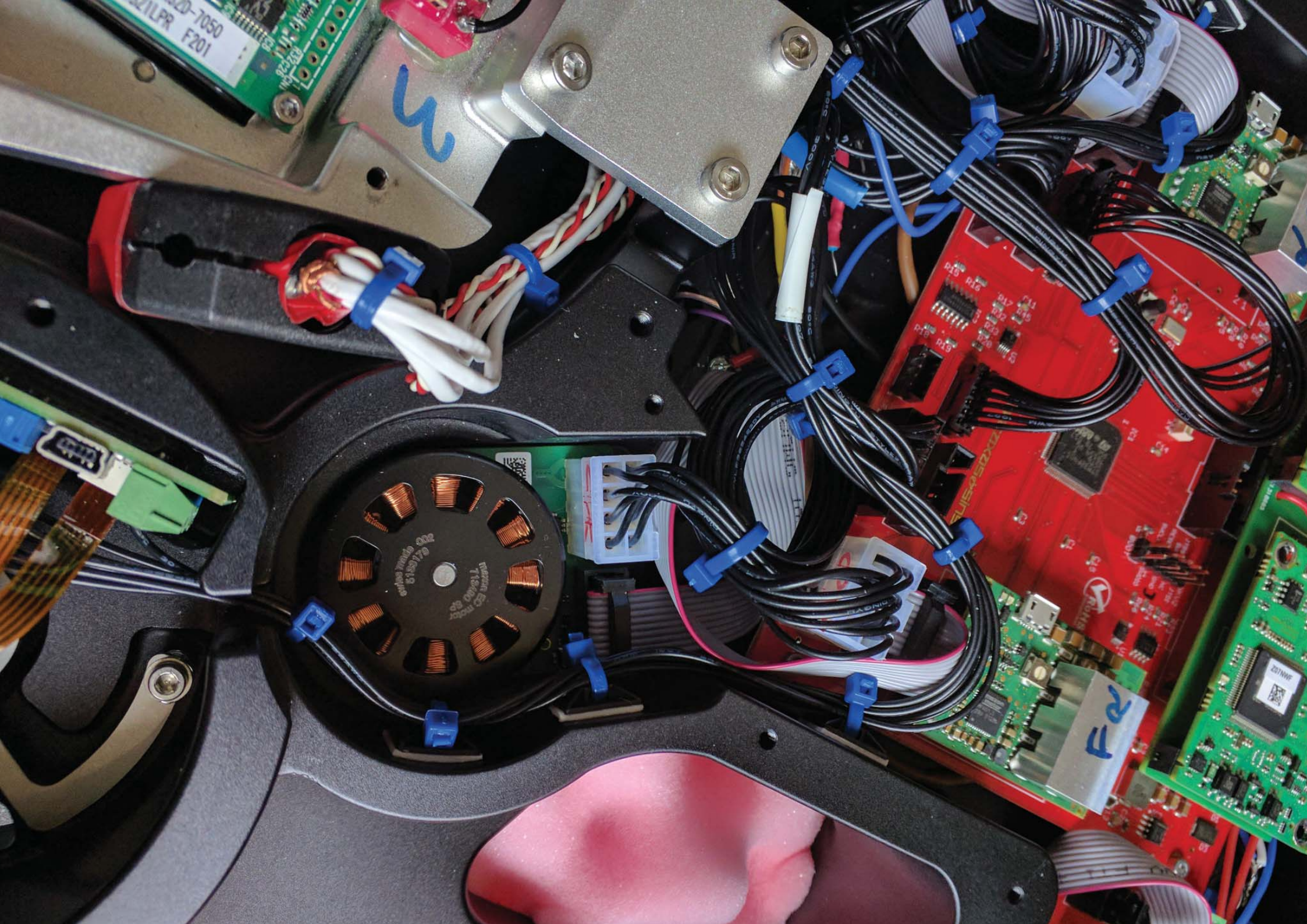














## maxon bldc motors

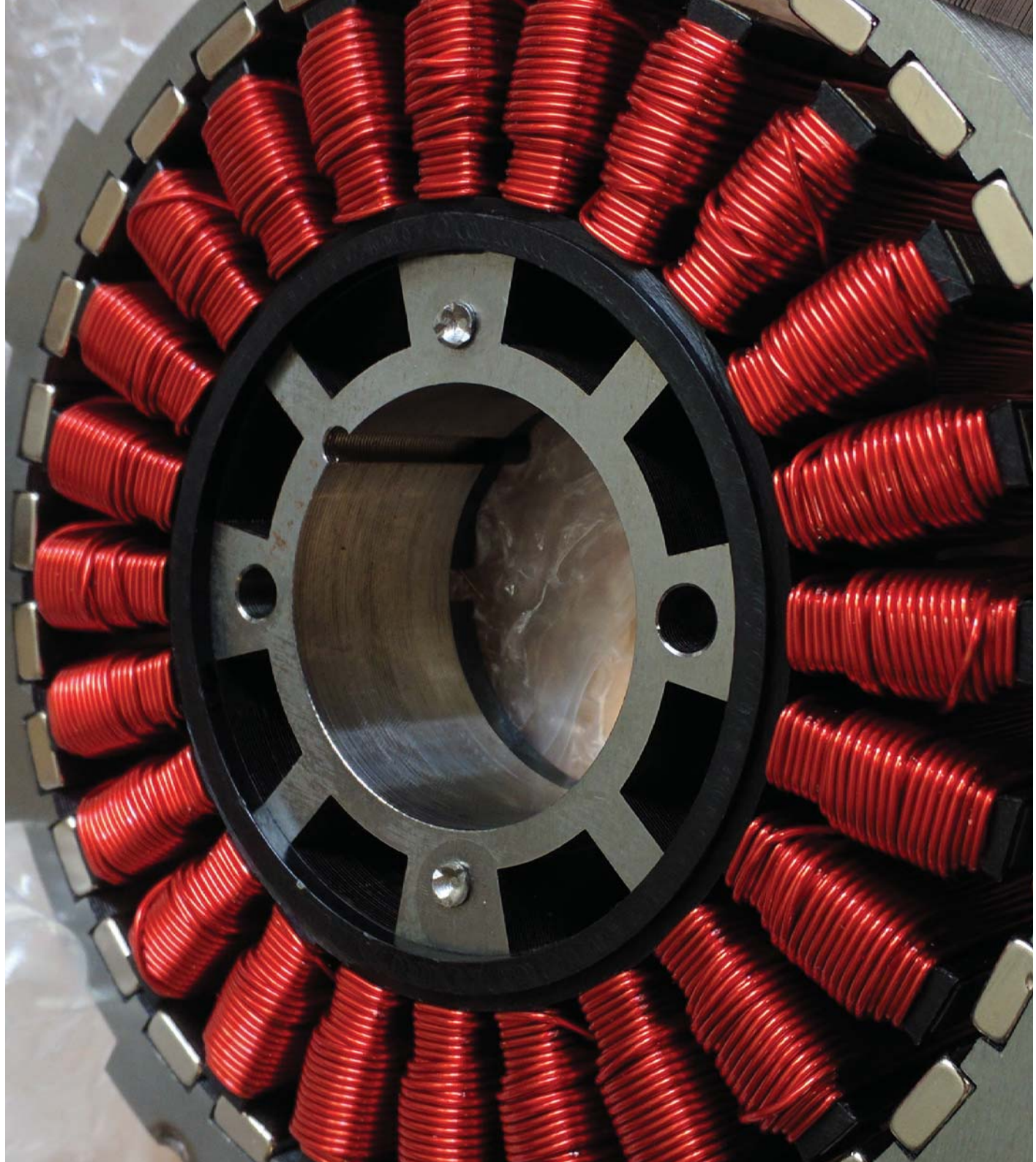
The rotating motors used in the very critical REEL and CAPSTAN operation are all "NASA" standard Swiss Maxon [4 motors, 2 reel and 2 capstan]. MAXON motors were selected as they are currently the most sophisticated motor/encoder/controller system that money can buy.

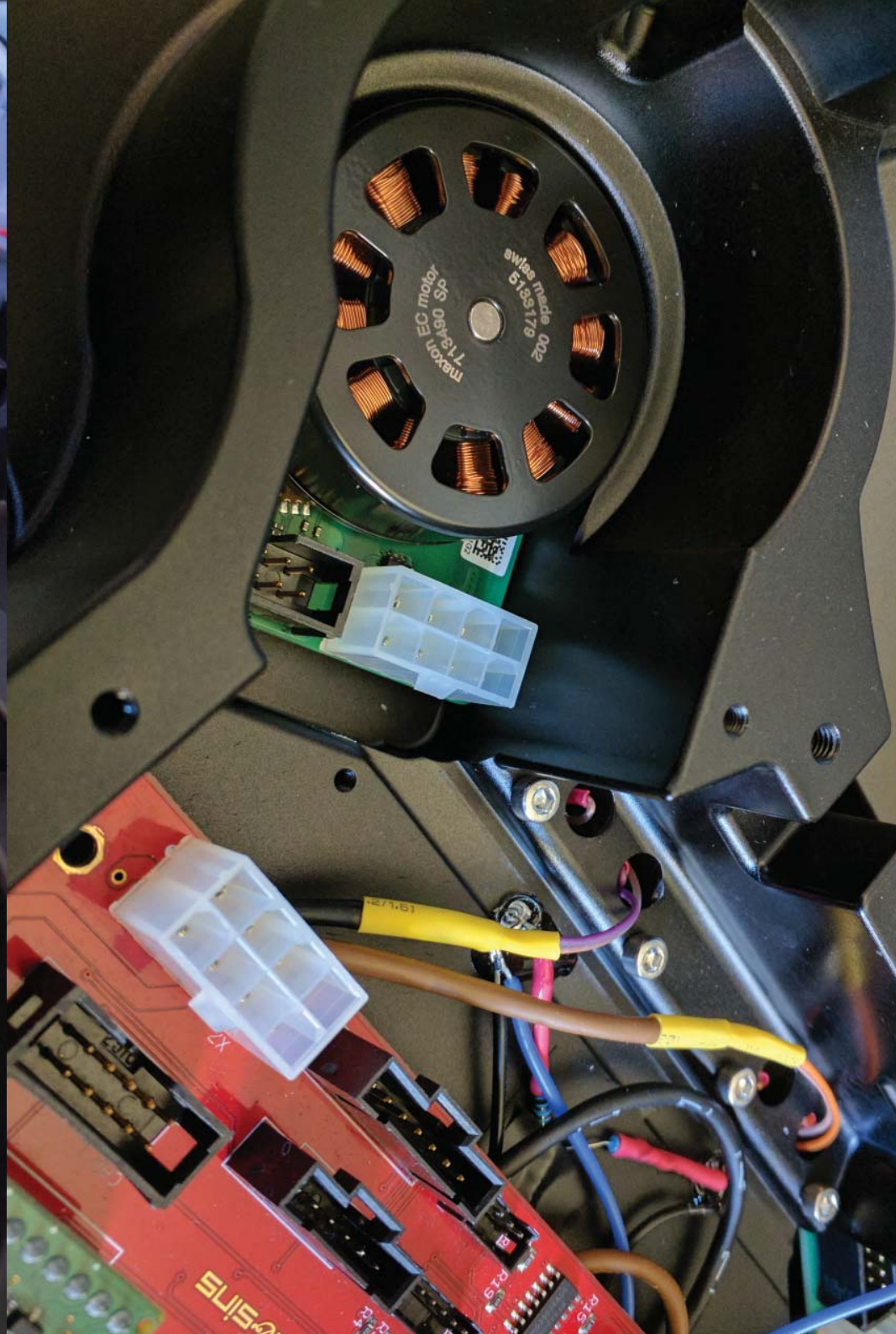
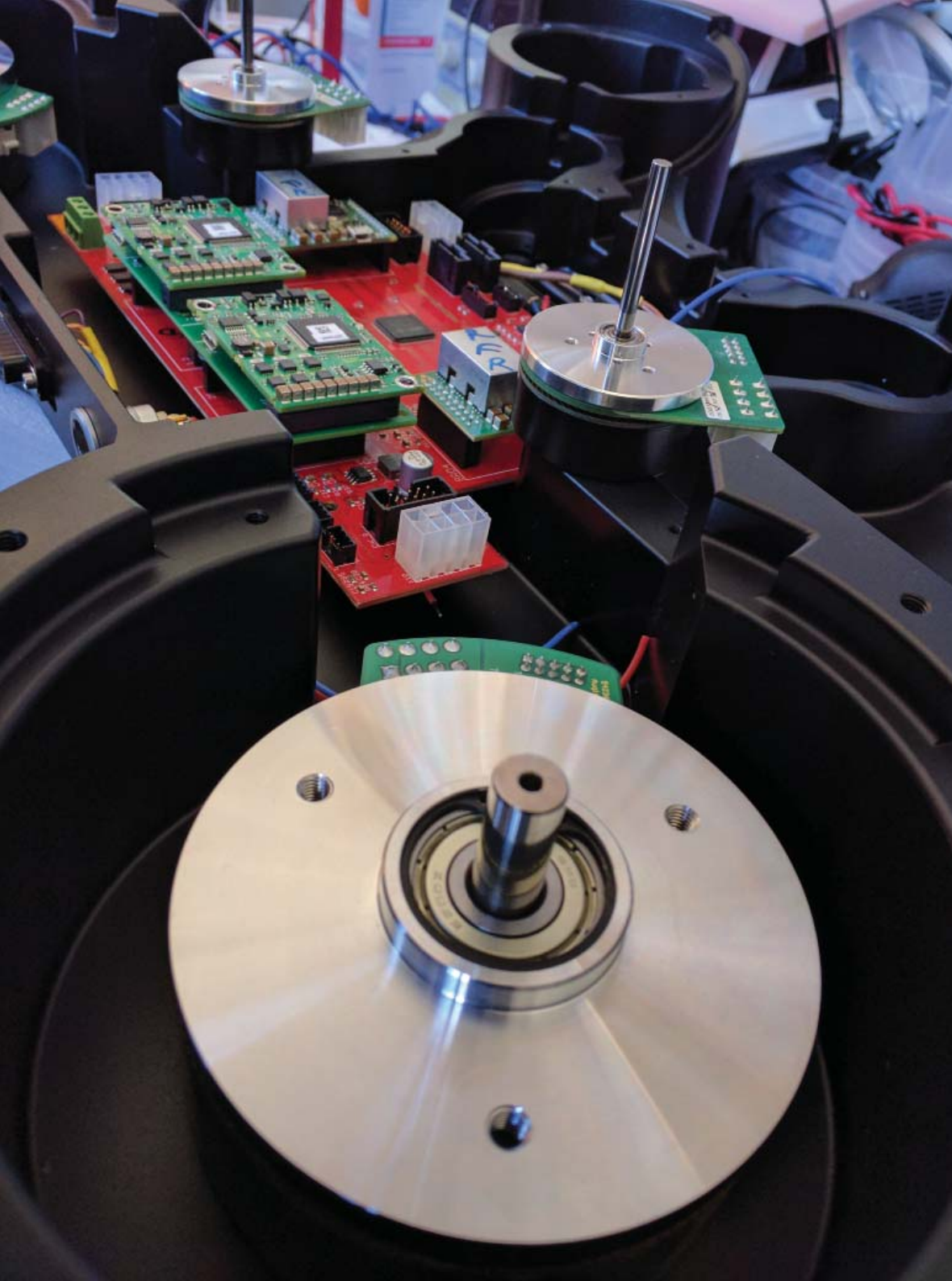
They have developed their own "system" including software to tune and control the PID of their motors well beyond any of their competitors.

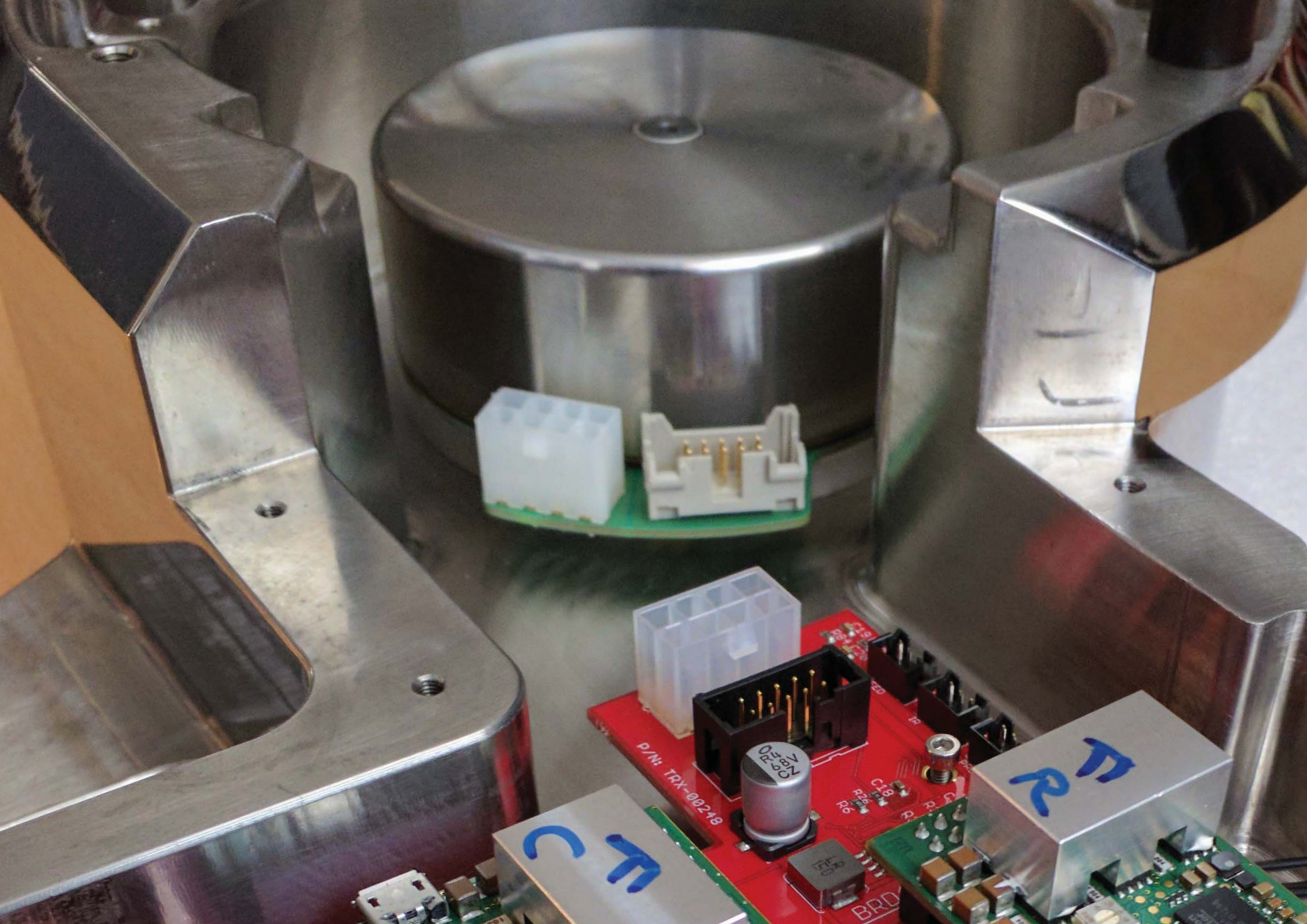
Pictured below are some of their motors which have a built-in 2054 position encoder embedded into the motor.

The separate controller modules - ESCON and EPOS provide ultra-precision control when used with our ARM-CORTEX controller.

The biggest difference between recorders made in the 1960-1980s and today is the use of software-driven motors with controllers. Things like braking and speed accuracy to 0.001% are the reason the Papillon is well ahead of any machine manufactured in the past.







D/N: TRX-002-19

70 10V 0.1F

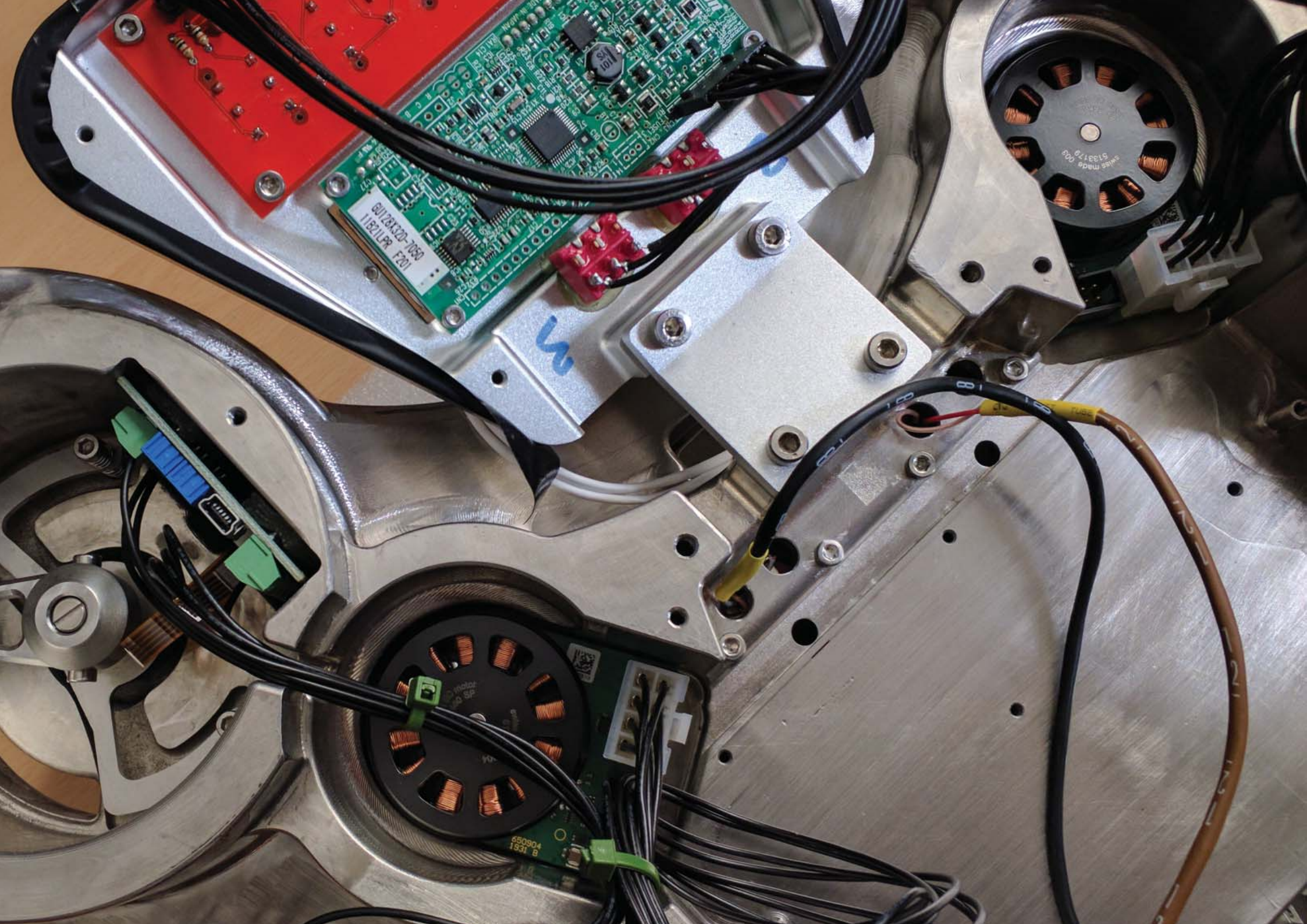
CT

CT

BRD



maxon bldc motors



BU283320-7090  
11821LR F201

3

650904  
1831 B

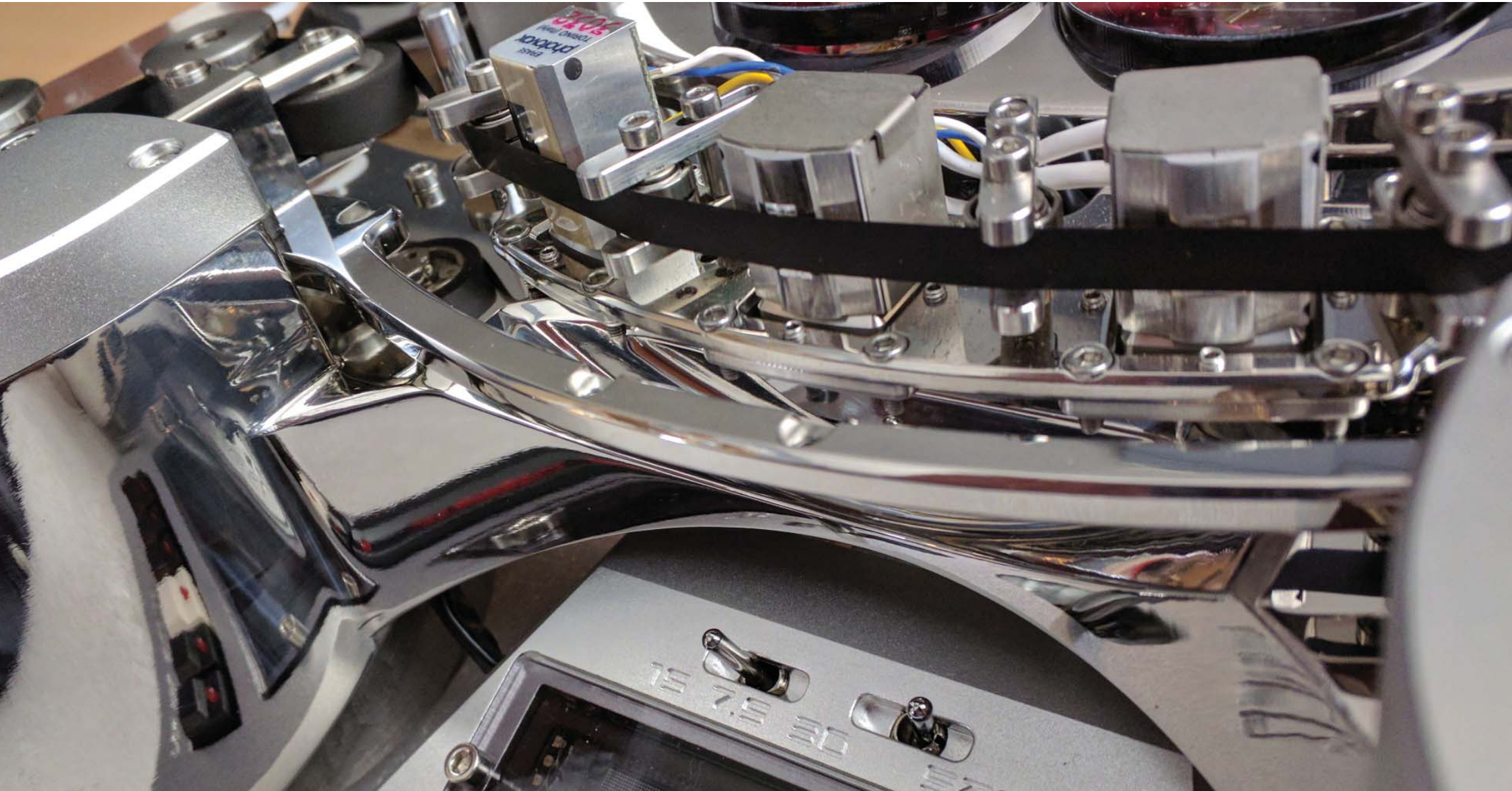
SWISS MADE  
513819  
008

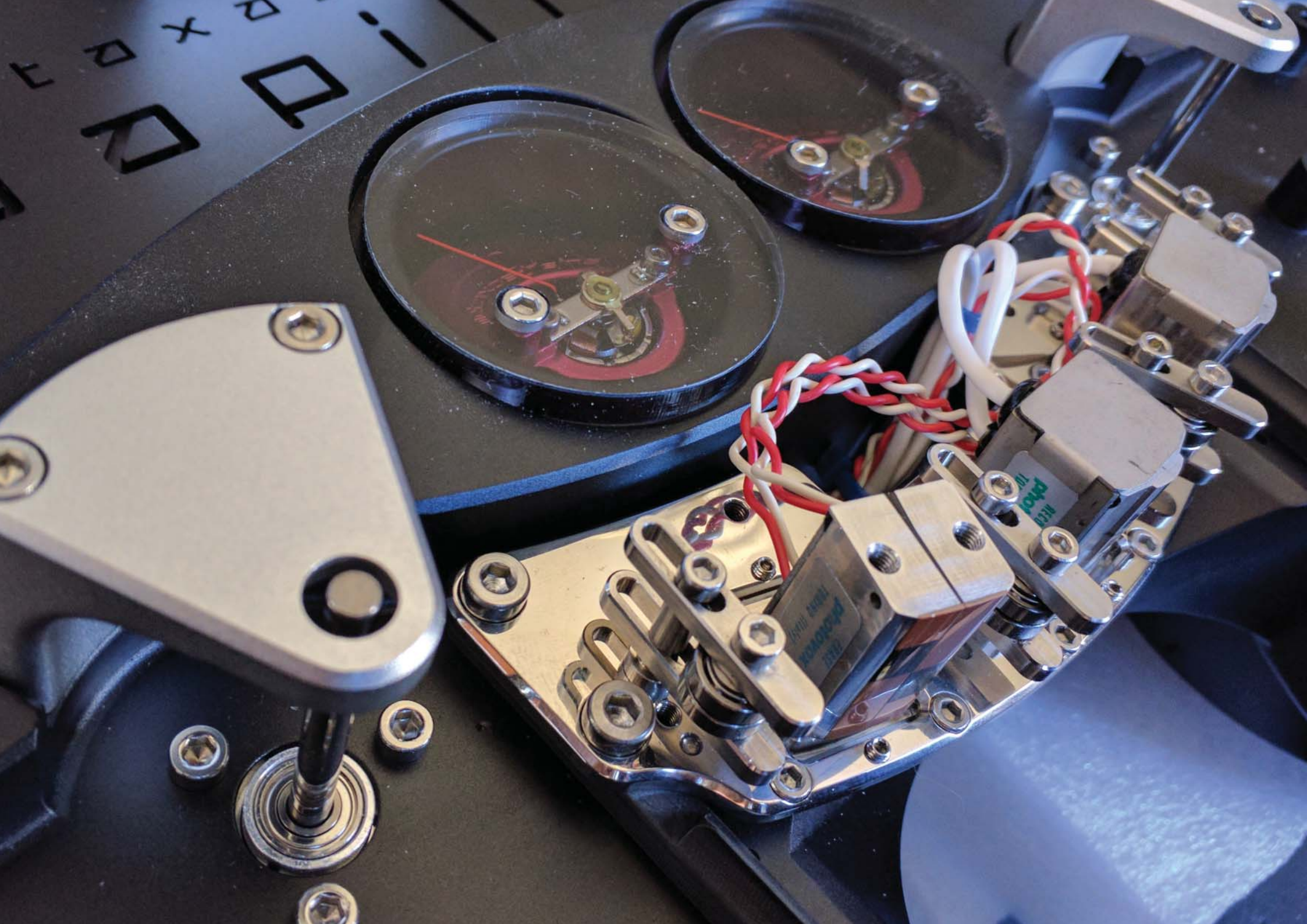


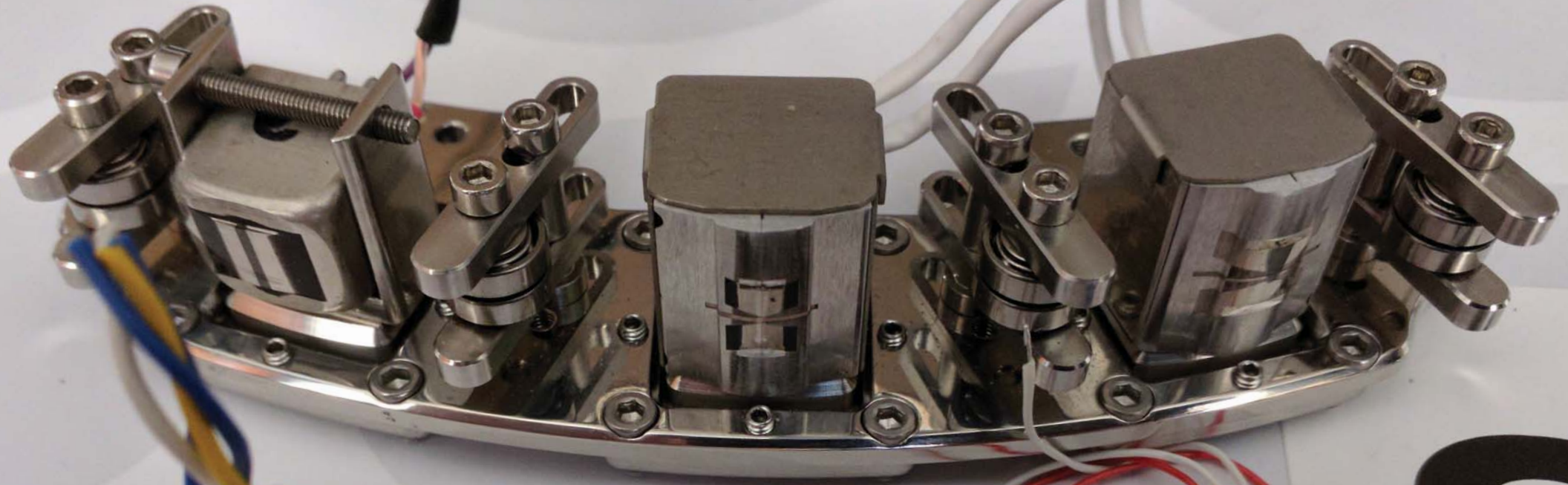
## tapz heads

The ERASE, RECORD and PLAYBACK heads currently used in the Papillon are PHOTOVOX [Italy] also used by STELLAVOX in their TD9 machines. We can offer 1/4", 1/2" and 1" two track heads.

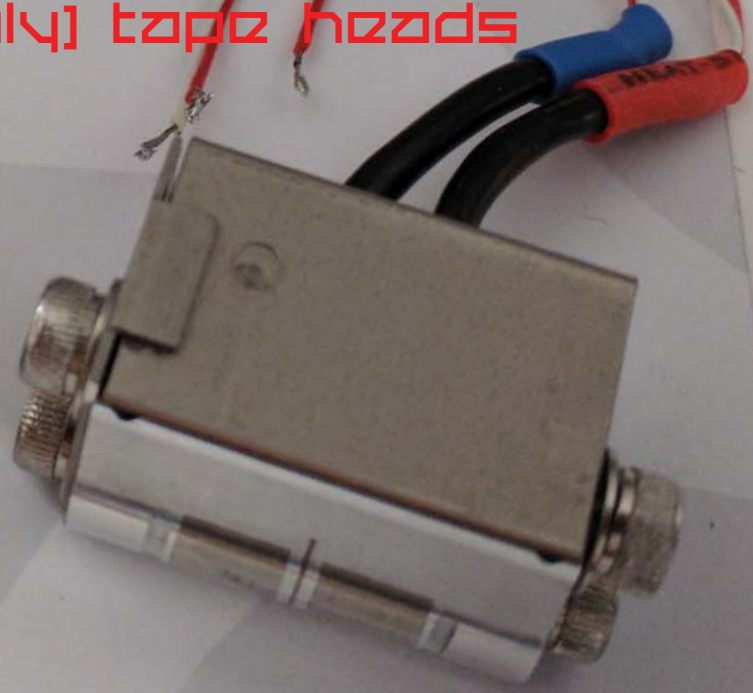
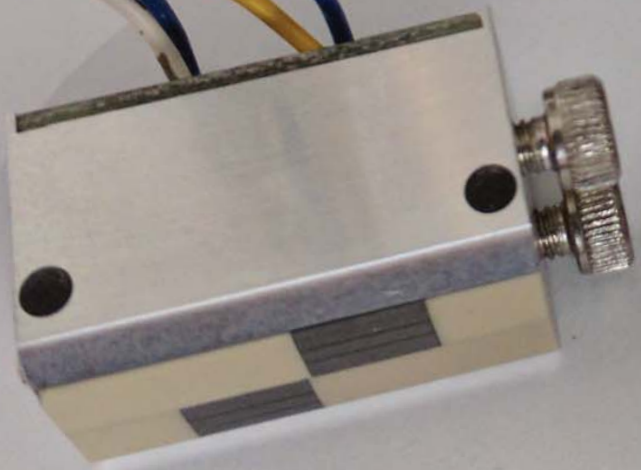
The flexibility of the detachable headblock allows us to offer other heads but would need to check the inductance which is critical for compatibility with playback levels and equalization.







photovox [italy] tape heads



10



zm (belgium) tape heads



tapz heads direct out accessory



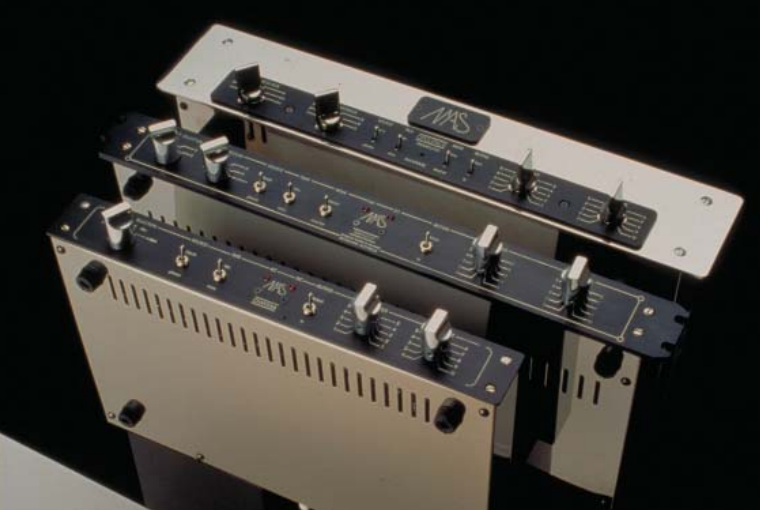


At the time [early 1980s], the reference for most designers was a Linn Sondek or SOTA turntable... Harry Pearson of TAS had just discovered the Goldmund Studio - so I purchased one from Michel Reverchon in Paris, then a Goldmund Reference. My Swiss distributor at the time introduced me to Stellavox - and that was when I had my "Tape Epiphany". When I purchased my Stellavox SM8 and TD9 ~ 1985, they cost ~ \$50K - the price of a suburban house in Melbourne, Australia. The same house today is ~ \$1 million.

MY REFERENCES







BEST GALLERY

## Gli ampli con la valigia

di SANDRO RUGGIERI

tenuti da un'inattaccabile barriera di filosofie di progetto, e caratterizzati da un grado di fabbricazione e da una satilità senza eguali, i pre e finali Metaxas, con i loro inusitati bauletti di imballaggio, entrano inaspettamente e in grande stile nel Gotha della high-end.



rama della high-end mancava un che, pur perseguendo senza con- migliori prestazioni sonore possi- esse altrettanta dedizione alla ver- l'affidabilità dei suoi apparecchi; D. Metaxas sembra l'uomo destina- re questa lacuna. Australiano di ca educato in Germania, ha fon-

dato nel settembre del 1981 la Metaxas Audio Systems, di cui è titolare e progettista, de- dicandosi alla realizzazione di circuiti di am- plificazione «custom» di altissima qualità, da cui sono lentamente scaturiti dei preampli e dei finali di eccezionali caratteristiche, la cui fama incomincia ora a varcare i confini del continente australe.

L'equilibratissima molteplicità di requis- cui tali prodotti si conformano rispecchi- poliedricità del loro autore, che conosce esperienza diretta tutti gli aspetti della ri- duzione sonora: melomane in primo luog- audiofilo egli stesso, ha fatto esperienza campo della progettazione creando svar- componenti considerati «di riferimento»

# StereoPlay

Das internationale HiFi-Magazin

**HiFi Stereo phonie**

## Aristokraten 4 der teuersten Vorverstärker

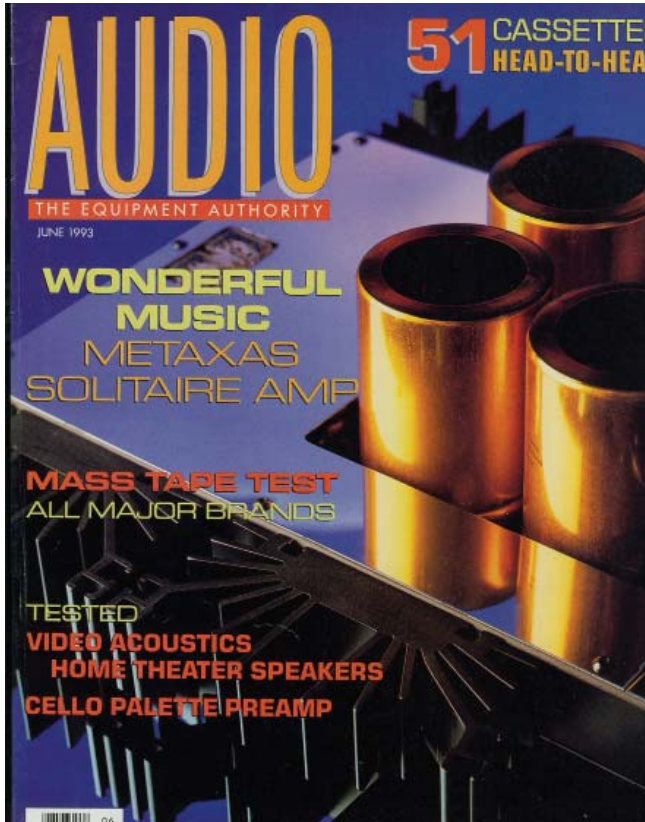
Kurs: Welt Transistor

**Super- feines Cinch- Kabel**

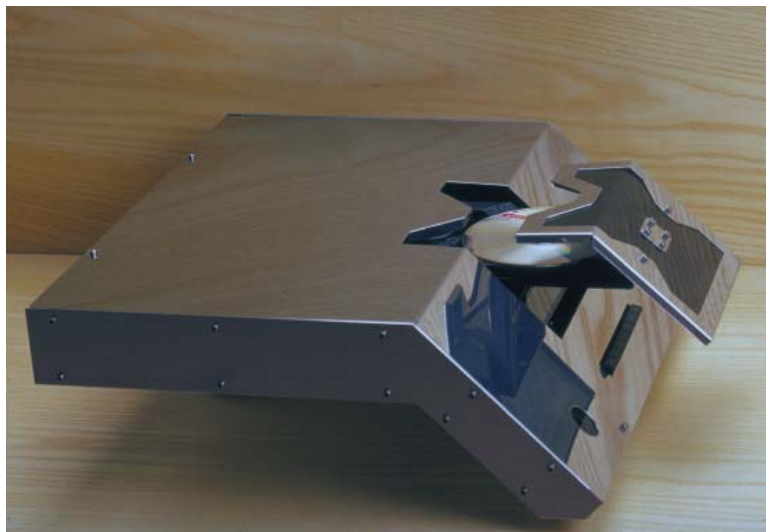
**2 neue Highlights**

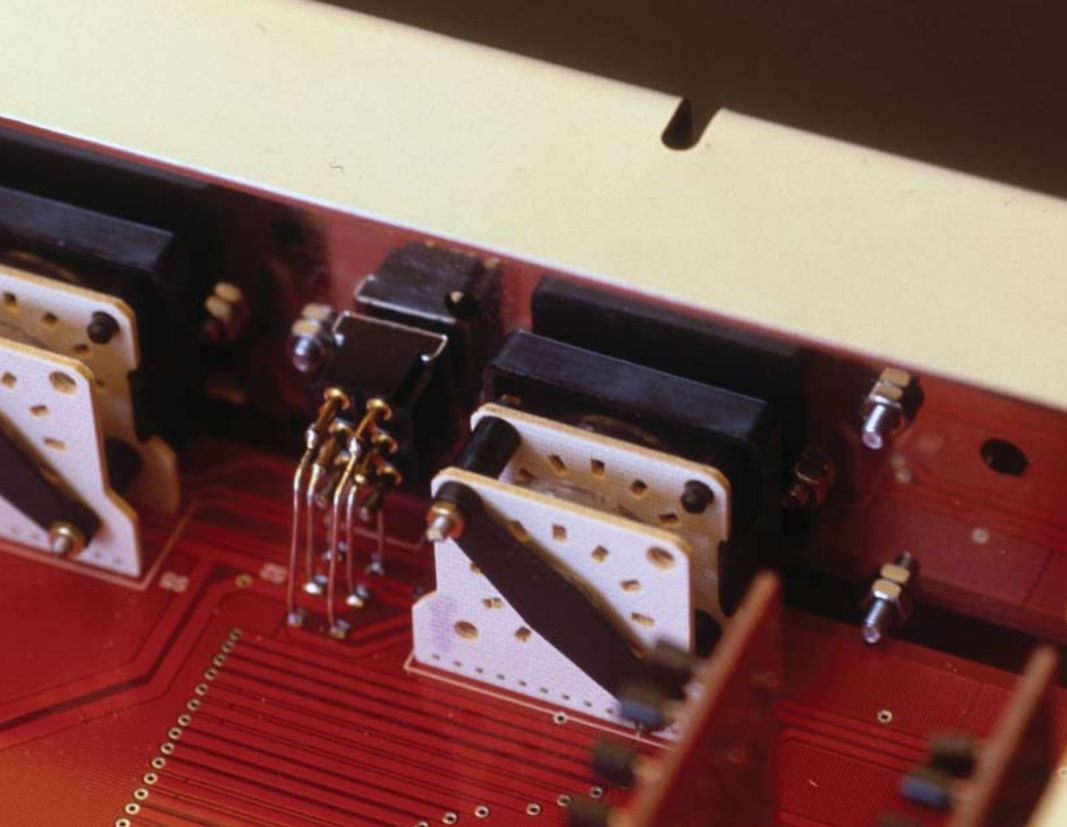
**Exklusivbericht**  
**Michael Jackson: Genie oder Schurk?**

thz 19805



the 1990s





thz 2020s



## MY PREVIOUS REFERENCES



**stellavox si8**

**SM7**

**SMB**

“The original goal of the Papillon & Tourbillon was to exceed my current references which include Stellavox machines from the 70’s, 80’s and even a heavily modified SI8 transport in terms of record and playback sound quality.”



“The SI8 was the perfect transport to marry the actual TRX REC/Playback/Bias Oscillator electronics so I could compare directly the sound of my heavily modified Stellavox electronics to the modifications I already carried out to my other Stellavox machines.”



stellavox modified si8



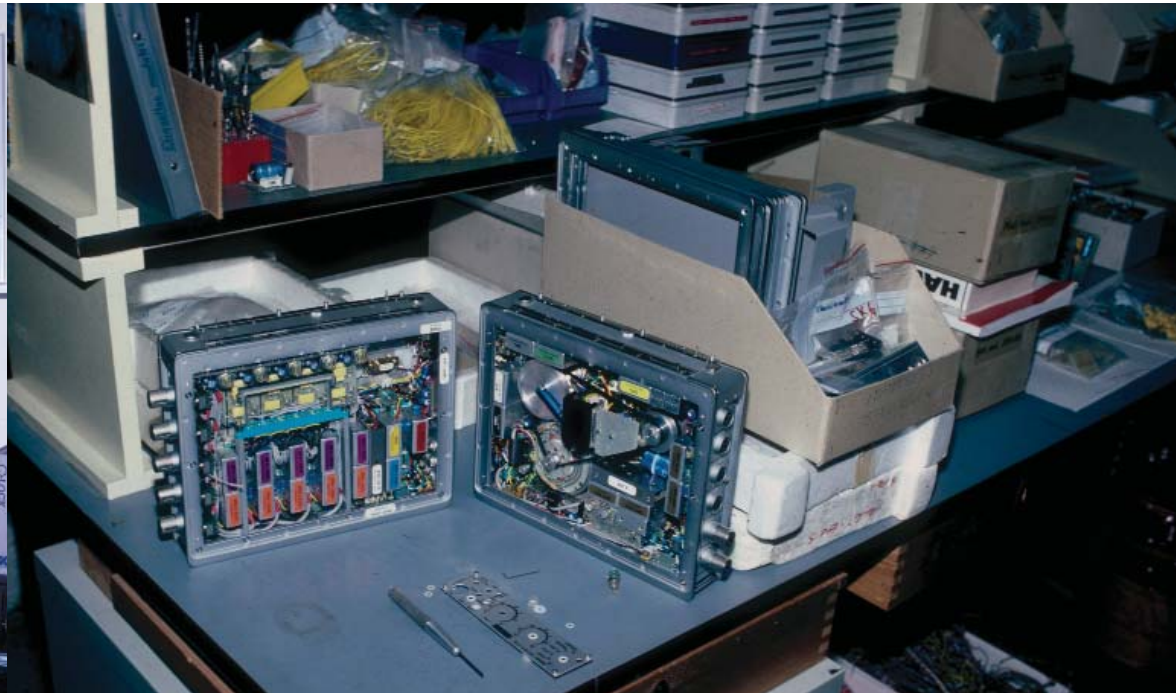
stellavox sm7

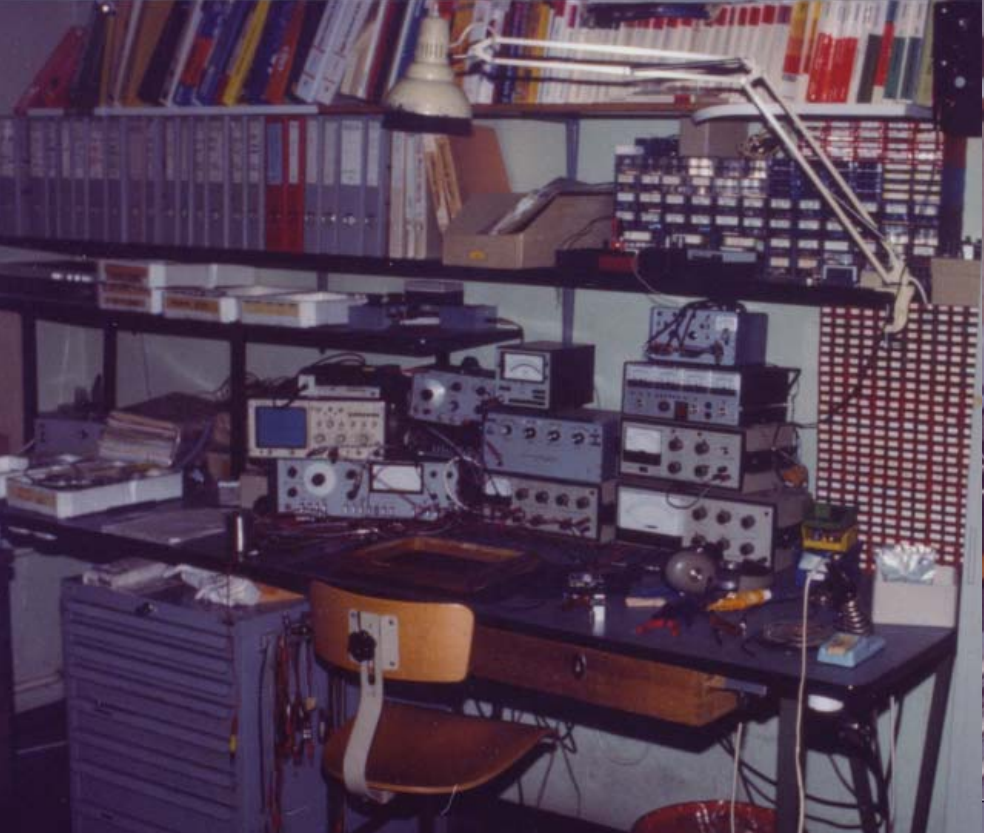




stellavox sma

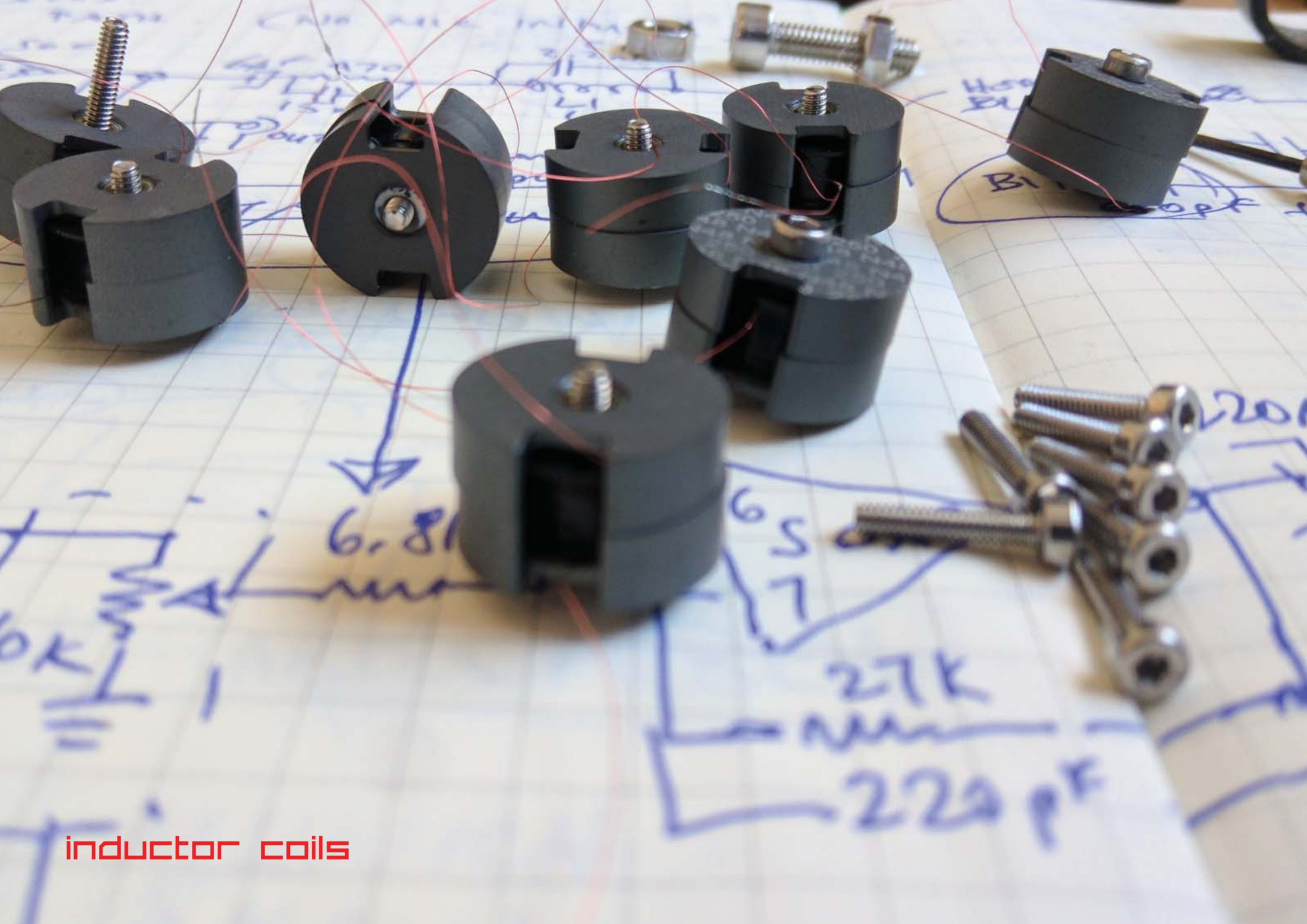
# STELLAVOX FACTORY VISIT - 1986





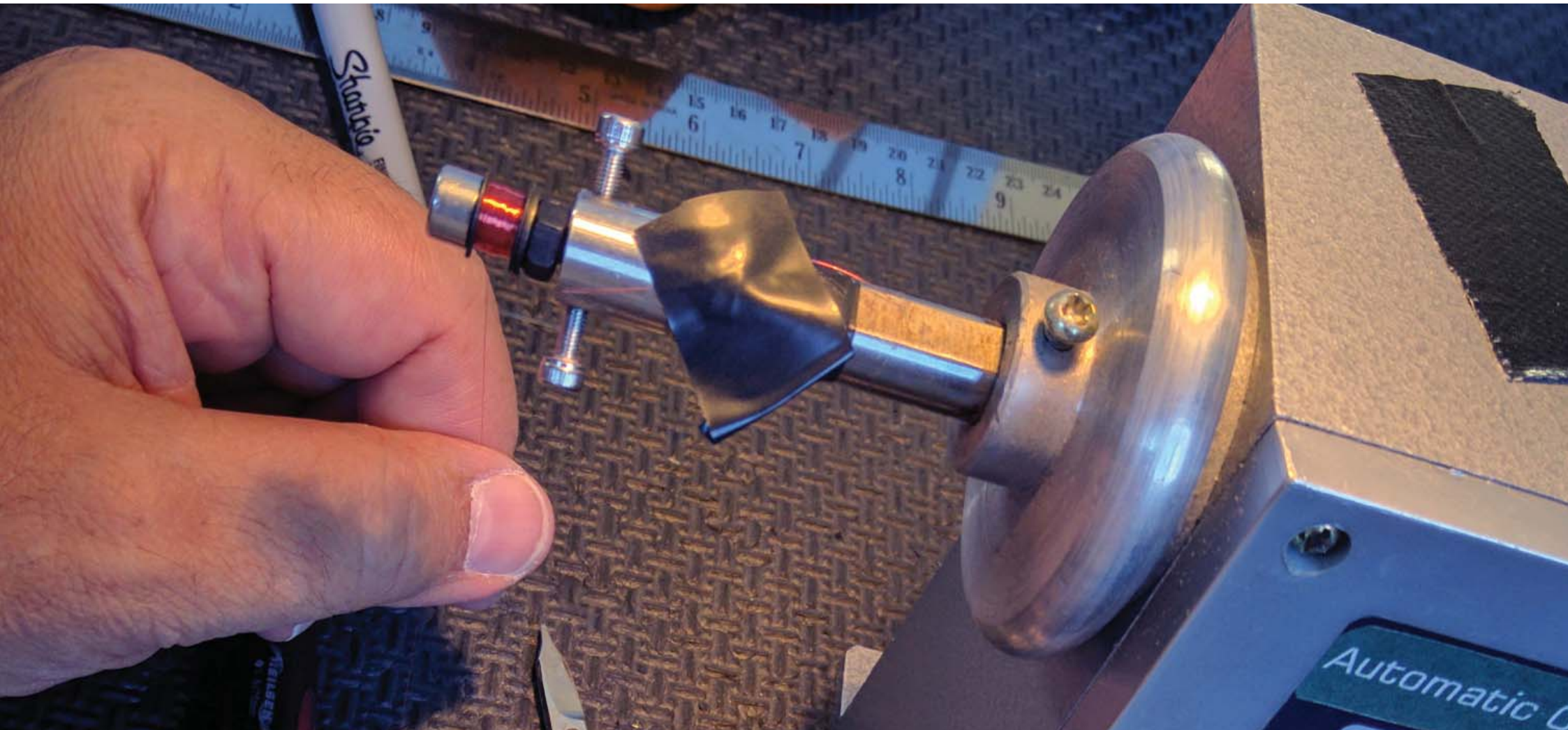
td9 recorder - 1986



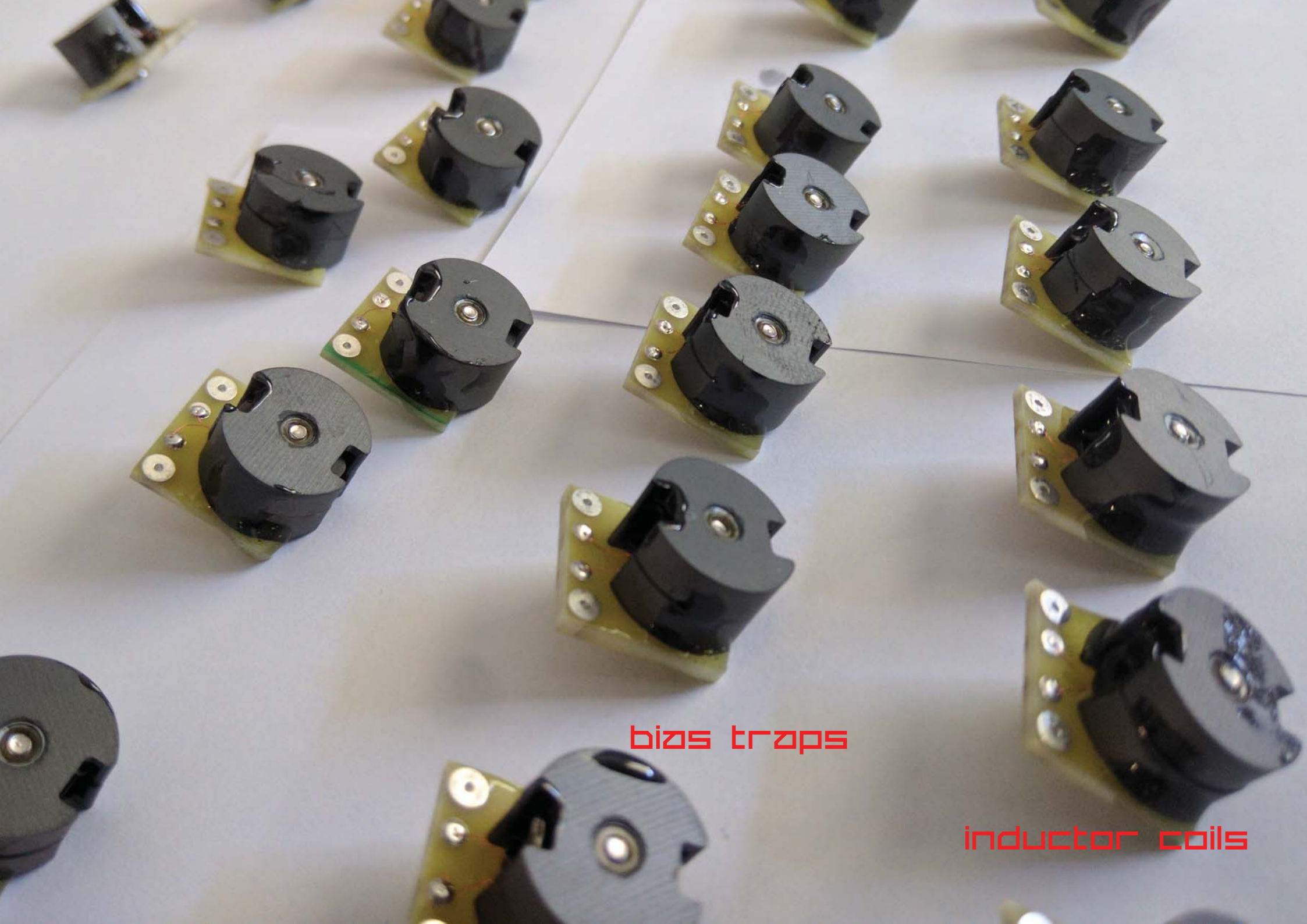


inductor coils

## inductor coils



One of the lost "arts" in tape recorder production is the winding of coils [bias traps, bias oscillator] and transformers. Luckily, we can do this in-house.



bias traps

inductor coils



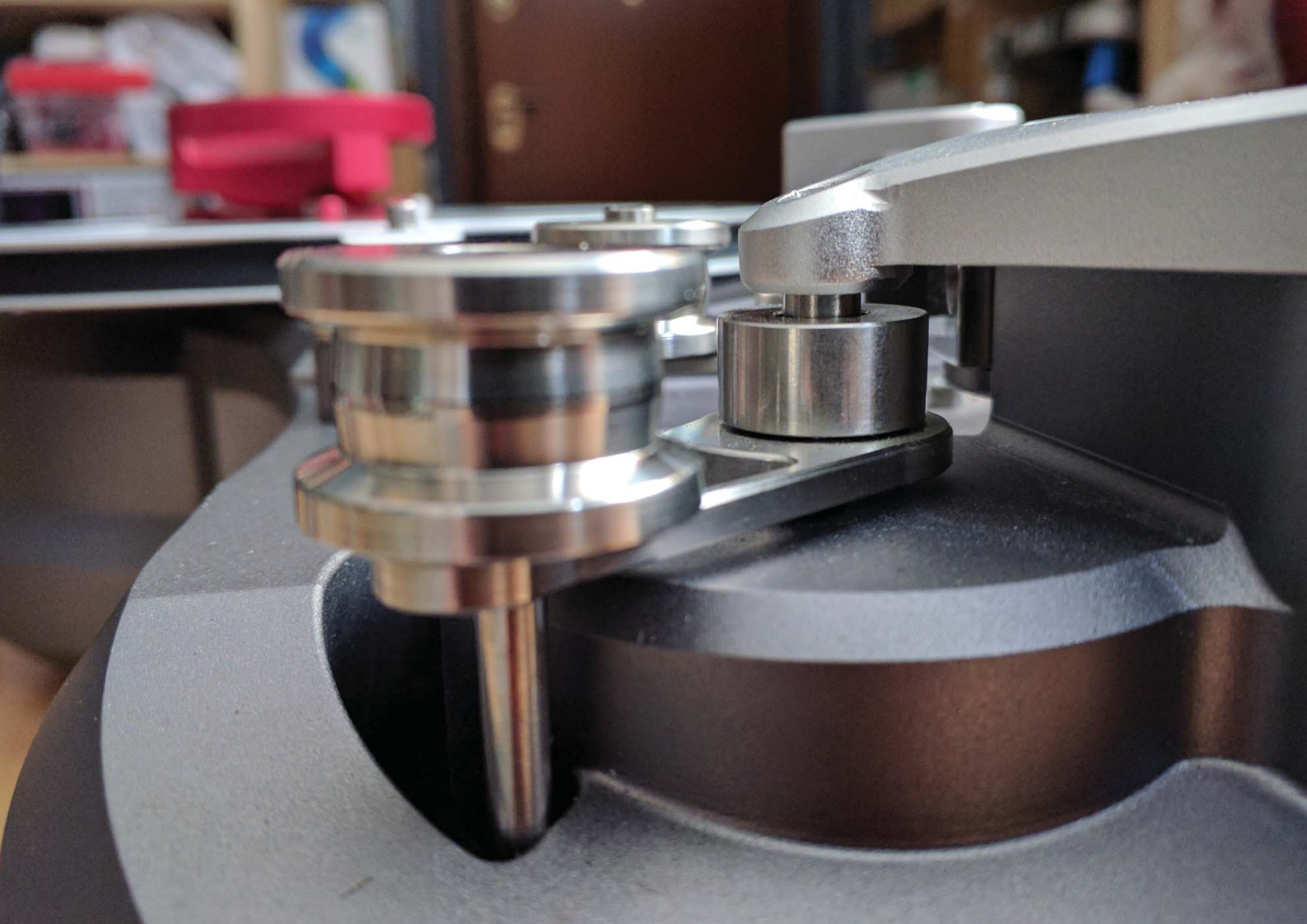


# swiss millgous steel rollers and other parts













OVER 500 CONCERTS RECORDED,  
MORE THAN 300 ON ANALOG TAPE

# my recordings



With over 35 years of concert recording experience we have learnt a few things about "recording".

Reference Recordings [with videos]:  
<http://metaxas.com/recordings.html>

Seminal recordings [downloadable wavs]  
<http://metaxas.com/concerts.html>

Munich Hi End in 2012 about recording concerts:  
<https://vimeo.com/144719554>









matroxos sins MX-S  
headphones  
lights  
motor  
top

CH1 CH2 CH3 CH4 CH5  
outputs pho

MX-5

SOUND DEVICES  
MIXER  
REEL TO REEL  
MIXER



some highlights



sir neville martinson



chick corea



nigel kennedy



some highlights



charles dutoit, jean yves thibaudet



takacs

somz highlights



jazz szorolath



Melbourne Chamber Orchestra

some highlights



Konstantin Lifschitz



some highlights

k d lang



il giardino armonico



paul lewis





some highlights



royal melbourne philharmonic orchestra and choir



Richard Tognetti - ACO

some highlights



strøtcar named desire



orchestra victoria



## Audio Recording and Playback

Nominal recording level: 0dB @ 514nWb/m

Maximal peak rec level +4dBm

Erase efficiency at 1 kHz >65dB

Recording / Playback: 19cm/s[7.5ips], 38cm/s [15ips] & 76cm/s [30ips]

Frequency response [+/- 2dB] 30Hz -20,000 Hz

Distortion 1 kHz 514 nWb /m: <1%

Crosstalk: > 55 dB

Signal to noise ratio: 38cm/s ASA filter 514nWb/m: -67db

Wow & Flutter: <0.25%

## INPUTS/OUTPUTS

Line level inputs 10K input impedance,

Outputs: Line level 560 Ohms output impedance

As we are constantly striving to improve the sound quality, these specifications are subject to change without notice

[www.motaxos.com](http://www.motaxos.com)