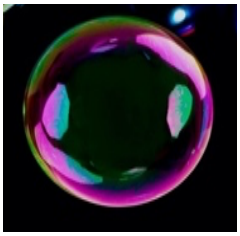


Funk's Isolation Bubble + Cinderella

Planar 3 - Kit 2 + Cinderella
Anodised Plum - Ice

SL1500C - Kit 1 + Cinderella
Bronze

Mission statement

"I want you to experience the very best in disc reproduction, *on your own deck*".
What other manufacturer wants that for you?

Now that all sounds great, only the following beautifully outlines most people's concerns:

"I read the Isolation Bubble details on your site the other day. Very interesting and it makes total sense to me. But what to do first? The arm seems an obvious place to start seeing as it would have the most effect, though my biggest concern would be who is going to install it.
The mat and boing feet I can handle. Changing the plinth, tonearm and anything that needs aligning concerns me. I spoiled things once before trying to make adjustments on my P3 and I'm reluctant to do it again, although Houdini is fascinating."

It's all well and good covering the smoke and mirrors, the technical mumbo jumbo, it's that nasty bit in red. That's the bottom line, the full-stop the average end-user is concerned about.
If that isn't addressed, most of the following doesn't matter. Well, you've come to the right place.
This document is your one-stop shop. Read. Learn and later you'll see how someone has actually thought how best to help you practically and in a foolproof way, to get the results you want.

If there was an Isolation Bubble dictionary, it would say, "Enjoy".

Both Formula 1 cars and HiFi are about performance. Improvements result from R&D. As companies grow, technology evolves the performance. That's what you the listener are looking to experience and savour.
But there's a problem. Unlike Formula 1, when companies become corporate, performance gives way to profit, and regrettably we'll see the evidence shows this to be the case, both technically and sonically.
By contrast, I've remained small and independent. I'm a physicist and fidelity is my focus. I've spent 40 years developing my ideas. The result is my concept of the Isolation Bubble. It underpins the mission statement.

To demonstrate the above, here are two Funk customers, both seeking performance but via different approaches:
Customer 1 owned SL1500C (£900) and an Achromat. He read about SL1200 GAE, its truly terrific motor and magnesium arm technology. He was sold. It had to better his SL1500C. He paid out **+£4,100.** He then wrote this:
I sold my SL-1500C (£899) today with its Achromat. I've now been using the stock rubber mat on the 1200GAE (£5,000) this afternoon and I definitely miss something(!)... Houdini and Cobra are now on my mind."
The only difference he mentions was his Achromat. The bottom line is that Big business had won.

Customer 2 had a basic Rega P3 (£500). His next stop? P6 / P8? But he stumbled across Isolation Bubble, and seeing it made sense, he chose to upgrade with: FX3 and Houdini, Achromat, and Bo!ngs (+£2,800). He then wrote this:

Good morning Arthur, All I can say is

😀😀😀

!!!!! O - M - G !!!!!

😀😀😀

The clarity and definition of the sound, how the stage is painted, how the subtle nuances are extracted - IT IS JUST AMAZING. - This upgrade is worth every cent I invested. Thank you!!! - (He's happy… I'm happy)

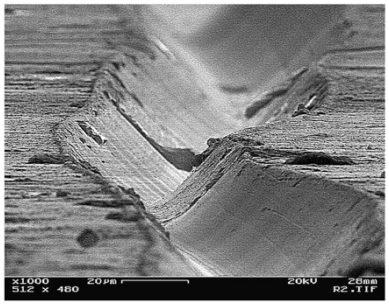
Given any manufacturer will praise their own efforts, unsurprisingly his comments seem over the top. Is it a case of more smoke and mirrors? Given he did actually write them, my job here is to convince you how you too can get these results, all before you've spent any money. Our money back guarantee means your money is never at risk. Read the following. It's worth the effort as you'll learn so much you never knew.

HiFi is meant to show close records match the original sound from tape. But, as it all good fairy tales, smoke and mirrors enters our story. In our case we find no magazine nor manufacturer compares the two. Without *any* reference, your upgrading is directionless. You first try this, then that, going round in circles. This is intentional, it keeps the tills ringing.
You need help, from the experts. Manufacturers design product. They're the real "experts" for their own product. They make dealers' life easy by supplying sealed, plug and go decks. You're no longer offered options to improve sound. Dealers' knowledge is now typically restricted to the limited range they carry. We've arrived at one-stop shopping; hifi fast-food.

You turn to reviews. Car magazines are highly informative, what of HiFi mags? How useful are they?
First, group tests have disappeared. Secondly, all new product is always great, and better than last year's models.

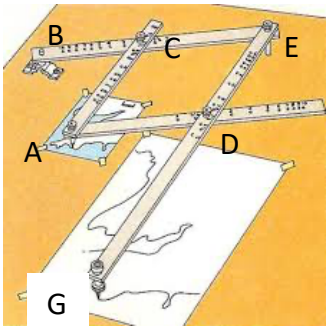
And then you find me and my funny little company, Funk. Is it more snake oil, or, do I actually know what I'm talking about as I knock on the doors that I see are stopping you getting more from your records?

The Formula 1 effect:
Over 40 years, Formula 1 cars' performance has improved. Magazines say decks have improved, that they're SO much better. Are they? To test this buy a 70s deck from Ebay, Planar 3 or SL1200, and using the same cartridge, compare it to one of today's models, say P6 or SL1200G. Incredibly they'll all sound similar.
How then is our Rega customer telling a different story?

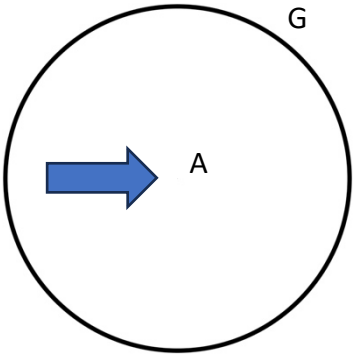


The stylus traces the groove. The energy goes into the record deck where its components – the arm, the arm-cartridge interface, the mat, the main bearing, motor errors, motor mounting, rigid feet and so on. They add and generate different distortions. We have plots, numbers, dBs and all manner of gobbledygook. Not only is it confusing, which ones matter?
Take GAE's motor, there's no argument that it is indeed technically impressive, but can you hear any benefit in the music? To the customer it wasn't obvious, yet the mat stood out.

To make sense of measurements and help us focus on what matters, we need to combine all the distortions into a single, balanced figure.
As part of Isolation Bubble, I developed a tool for R&D and employed a pantograph or tracer and to show the results in one simple, easy to see image.



A tracer, follows an image at "A" and reproduces it at point "G" and has various bearings or pivots, "C", "D" E" and so on, and it recreates a perfect image at "G" if all pivots are perfect.
A tracer magnifies just a few times. A record signal is amplified 10,000,000 times! By tracing a circle, if just one pivot is sloppy, it generates a distortion. Each pivot will add a distortion, as it does in a deck, but at some point we reach our hearing's resolution, as with GAE's motor. We hear no sonic benefit. We've reached real world "perfection". By making the pivots operate differently, we mimick the different distortions we're interested in – wow, rumble, arm resonance etc. Some are more relevant than others, all with the aim of retaining a circular shape.



What 1:10,000,000 look like?
Here's an image of the original circle in the centre and the final circle at the outside. We can see the one outer one, but there's simply no way to see the starting circle. It's a feat your stylus pulls off every day.

The tracer represents our deck. Its pivots are the components, the weak points. We can then find at what point the ear stops resolving, or hearing. We have just set a real-world aural resolution threshold. Spending more time, money or effort going beyond that is merely an expensive engineering exercise.

As an example, the ear struggles to hear .02% wow and flutter (W&F), even on steady tones, so why bother spending £££s on a deck with .00002%, all the while ignoring much bigger, real-world problems - energy transmission, mats, arms, motor positioning and so on, because these are the real, distortions you hear every day, not the .01% W&F.

By playing with the numbers we get the various vanishing points. Once the circle gets sufficiently round, we can move onto the next problem.
By finding which ones are the worst offenders, we find what gives "biggest bang for your buck".
It really is as simple as that.

Five changes that make the biggest impact to record replay:
The arm, cartridge coupling, the mat, isolation, motor position.
The P3 owner followed Isolation bubble's rules that applied to his Rega. The result was he wrote what he did.

Removing 40 years of Myths and misconceptions: first of all, the Cartridge is King.
Since the 1970s, the foundation rock of turntable performance has been Linn's GIGO - Garbage in, Garbage out and the turntable is the culprit. Keep fixing the turntable, its springs, its power supply, its bearing, sub-chassis. all to get less junk to the cartridge, and after 40 years innovation, we're still getting junk into the cartridge.
Something's wrong.

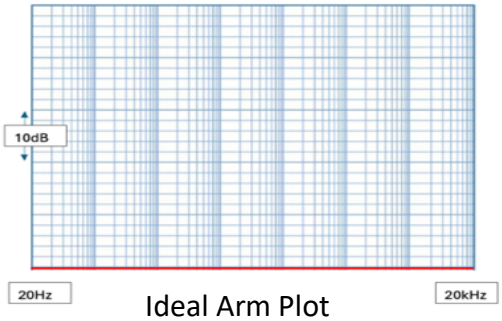
The Big industry maxims or myths:
Myth 1: The turntable: YouTube videos justify the price of SL1200G and RP10 with, "The turntable *vibration* is the problem". Really? *Where's the evidence*? F1 engineers want proof. It's not a lot to ask.
Myth 2: "Arm bearings need to be set up with all but zero-tolerance or you'll "lose information". Sounds plausible, but again, *Where's the evidence?* What does "Loss of information" actually sound like? Is it pseudo-science?
Myth 3: "Arms are "stiff"" That's better, it's what we want, only, *Where's the evidence?* Where are stiffness plots?
Myth 4: Mats are referred to as "accessories", but an "accessory" is an "add-on", *it doesn't affect anything.* Mats affect sound! Rubber mats are supplied on £10k turntables. You're still told: "Felt is best". *Where's the evidence?* Felt and rubber are 120 years old, i.e. when Ford's Model T was state of the art. Model T wouldn't fare well on today's F1 tracks; technology has moved it on. When we look at felt and rubber, it's the same story.

Myth 5: Possibly the worst sin: "Cartridges must be firmly bolted to the arm". Its seemed reasonable, but where's the evidence supporting it? We don't have to look far. This one action stops 99.9% of listeners resolving fine detail as it ties into Myth 3.

For too long, the industry has relied on the above. I started out by saying R&D created progress. For too long the industry has relied on the above and pushed it without evidence, a case of "Trust me, I'm the "expert".
Formula 1 designers only trust evidence. You should too. If I can't convince you then don't believe me.

Physics isn't as boring as you might think. It's your friend and it delivers answers.
Only the stylus gets music, but this delicate process is easily corrupted. Any vibration spoils the sound.
Let's look at "turntable vibration". -70dB rumble is quiet. Manufacturers go out of their way to make decks silent!
Talking about "turntable vibration" then is nonsense, but it's also very clever: How can one possibly separate "turntable vibration" from music? This is how they win the argument. Well, sorry guy, physics has the answer.
In my lab I've separated them out. OK. I'll be truthful: You don't need a lab. We can ALL *hear* "Turntable vibration"!
Just play an uncut groove from a test disc, or a runout groove - No music, just turntable vibration.
What you'll hear is a bit of rumble and not a lot else. There's your proof, it's not the turntable.
What then is causing poor sound?
It's the groove itself! Music is 100% vibration. The thing is only a bit turns to electrical music.
The rest goes into the arm and into the record: Now to see how much damage they do:

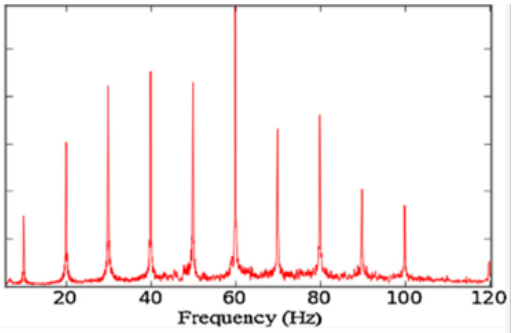
The arm:



Ideal Arm Plot

You've been told arms are "STIFF", a rigid tube (arm). A truly stiff tube will measure as a flat line or smooth curve, like the red line at the bottom.

Magazines publish response curves for Amps, CDs, speakers but have you ever wondered why you never see any plots for arms? Do such things even exit? Are they even relevant?
You've probably never thought about that because you've been fed "Trust us, we're the experts".

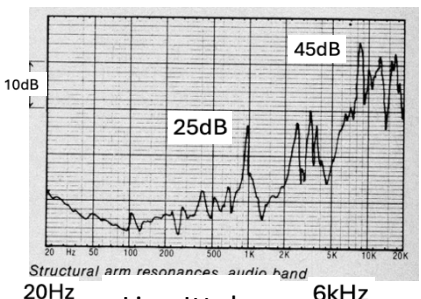


Tube Bending modes

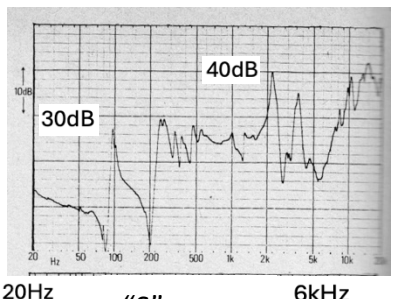
A windchime is a plain tube, and 99.99% of all arms are in fact plain tubes. This is its textbook plot. We have the desired flat plot at the bottom, but coming out of the flat bits are spikes – all the harmonic spikes. They peak at around 55dB – don't worry what that means, the relevance will soon be clear.

F1's engineers want facts. Fortunately for us HiFi Choice & HiFi World have been measuring arms for rigidity *since the 80s*. Page after page, hundreds of arm plots. Re-printed here is a very small sample of their results. Black and White are from HiFi Choice, the Black and Green are from HiFi World. We see *spikes* of 20-40dB.
There's not a flat line *anywhere*. They aren't even smooth.

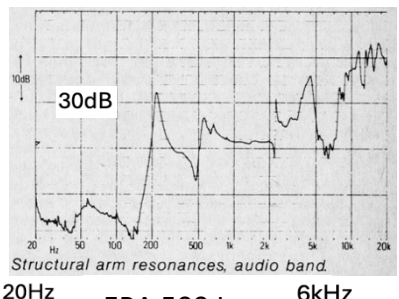
No manufacturer would publish curves like these, they'd be admitting their arms aren't fit for purpose!
By contrast, F1 engineers who pursue excellence? They'd have a field day.



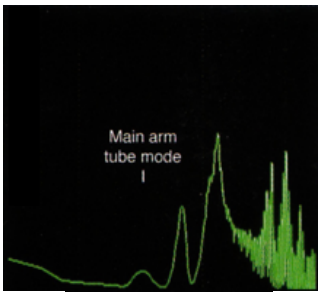
20Hz Linn Ittok 6kHz



20Hz "S" arms 6kHz

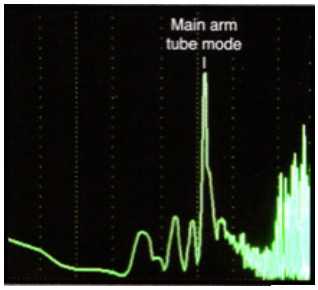


20Hz EPA 500 L 6kHz



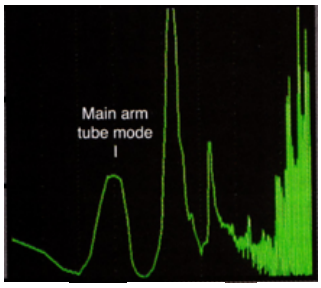
15Hz 6kHz

RB 3000: 20dB – that's big. You'd reject a speaker with a 20dB spike (+/- 10 dB).



15Hz 1kHz 6kHz

SME V is a tapered, damped, magnesium (exotic) tube. It's spike is narrower. But it's 30dB!

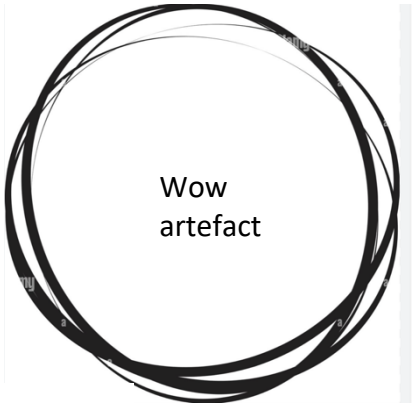


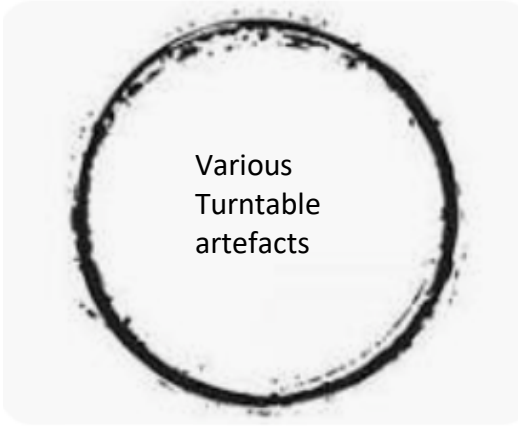
15Hz 750Hz 6kHz

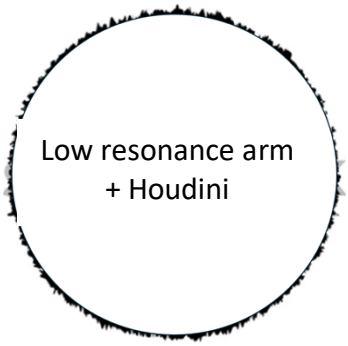
Carbon arm: Multiple peaks, one *exceeding* 40dB! It's so extreme that - no comment.

We have the "S" arm used worldwide, from budget and all the way through to expensive (SL1200 series inc GAE). Arm materials include aluminium, titanium (found in Linn, SME and here Technics EPA 500 with its super-close tolerance ruby bearings and system damper), or magnesium in SME's tapered Series V/ SL1200G/GAE. How about Rega's RB 3000 again with "super-adjusted" bearings to prevent "loss of information". Finally, the worst of all, the carbon arm. Worse still because it's a modern design, with the worst performance!

Although the plots carry information they don't convey any feel of what's happening. This is where circular tracer plots are useful. Firstly they can contain ALL turntable issues. You might think that would make matters worse, but from the representations below, they are in fact a lot easier for the human to understand. They start to be more meaningful to us.
We're really NOT interested in the details at all. Why? Because one bad arm is no better than another bad one.
We just want the errors to get smaller and the plot to be more circular.
These are pure representations to indicate the usefulness of the technique.
It would be highly unprofessional to publish any actual plots of any competitors' product not in the public arena.
It is felt that the evidence from HiFi Choice and Hifi World make the case well enough.







Spikes show arms aren't rigid - not even close. 20-40dB isn't just large, nothing else in hifi is as bad.
The fact is: *You really can't come up with a worse design for an arm than a tube*.
To see this, flip the design brief: "Please design something that causes cartridges to *vibrate* at high Q".
NOW tubes would get a gold star!

Look through the in all the issues of HiFi Choice and then onto HiFi World. It's a fair estimate that ringing arms account for *99.9%* of ALL arms ever made.
If this was a school project, they'd be given an "F" for copying and another for the abysmal results.
In the real competitive world of F1, designers would have been dismissed before they'd even started.

Comparing the above arms (same cartridge) it's difficult to pick out a best one as they are all messy in different ways. Against tape, they all fail. It's one set of failures or another. Using the tracer examples, We show a perfect deck – a pure round circle with one black corona, which are the arm resonances.
If the tube was indeed the best that human technology could manage, then fair enough.
Only, it isn't... Funk's FX3 shows otherwise.
HiFi World's plot of FX3's is dramatically different to the others. What of listening? For those who've come to the Funk room as shows, where FX3 has been compared to other arms, they the differences within *seconds*.
The ear immediately picks up on the lack of colourations.
(These comparisons will shortly be available as Hi-Res files on YouTube)
This is why the Rega customer got the results he did. It's neatly dropped out of the science.

Basically your cartridge has been screaming "Help!" as it vibrates, hi-jacked by the arm. No one's listened.
Dealers won't tell you, because it's against their interest. They need to "sell" product, not torpedo the sale. The thing is, the majority don't even know. They'll talk about "zero-tolerance" bearings. Never mind that there's no such thing as "zero-tolerance", the arm would seize up. There has to be a gap for a bearing to work, how we know it's the tube and not arm tolerance?
Once again, we can test it. In fact, *you* can test it.
Play a record, but with the amp off. All should be silent. Put your ear close to the arm tube and you'll hear music!
Cartridge energy is getting to the tube, setting it all off.

This evidence has been there for 40 years, but we shouldn't need to use plots: *It's all basic, school physics*.

This is the day job of the big brand manufacturers who you've looked up to. Have you been treated fairly?

How have these results come about? What's causing arms to resonate?
Conventionally, 2 screws are used to bolt the cartridge to the arm. Industry tells us it's the right thing to do.
Linn improved on two by patenting three screws, and since copied by another manufacturer. The patent reads:
"This arrangement improves the mechanical coupling between headshell and cartridge".
There are even cartridges that use 6 screws. Bolting, then, must be a great idea. Is it?

Again, F1 engineers analyse. Well, here's my take:
Strike a tuning fork. Its barely audible. But ground it to a table and immediately it's heard.
Tracing the groove vibrates the cartridge. It's the equivalent of the vibrating fork.
By bolting the arm to it, the vibrations pass into the arm, and the arm vibrates.
Once the arm starts vibrating, the roles reverse, the vibrations pass back to the cartridge. *The arm physically vibrates the cartridge!*
That's the why, and the how, we hear the resonant signature of arms, and.
That's is happening with 99.9% of conventional arms on the market.
The HiFi Choice and HiFi World plots show jagged peaks. As a designer, I'm horrified, but I've realised that to most people, the plots mean nothing. It's for this reason I'm using the pantograph representation:
Take a perfect deck, it'll draw a perfect circle. Now bolt a cartridge to a conventional arm. We'll see a whole lot of jagged edges mucking up a smooth line. There's your distortion. I don't see that as a good way to proceed.

At the end of the day can it be heard? Alan Sircom, HiFi Plus tested F•X and concluded:
*"... the **frankly shocking realisation** of just how **most** arms act as a **resonant obstacle** to the sound". **"The Funk (arm) just doesn't do that". "It's the star of the show"***

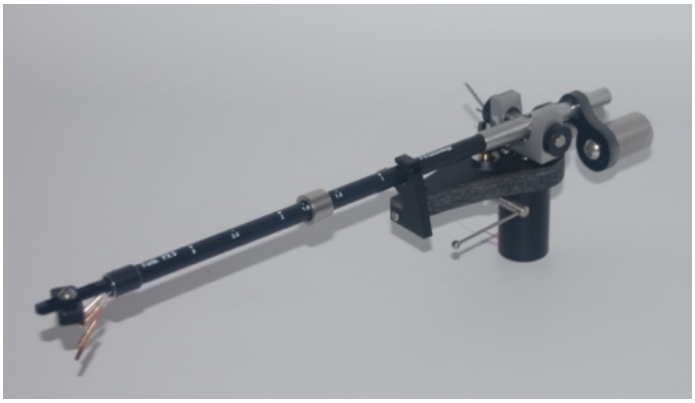
Jason Kennedy: Techradar. He compared (F•X) to SME's £5,000 Series V -
"...the V adds a distinct bloom to the sound...again smears detail...This was a shock."

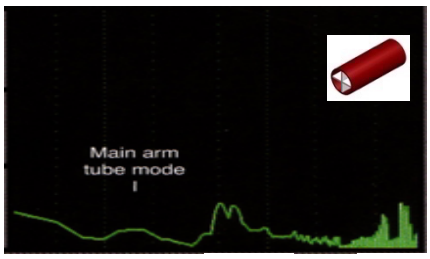
F•X was released in 2010, yet when it comes to *new* designs (5 years old, say), little has changed. Instead we're told zero-fit arm bearings are central to performance, to prevent "loss of information".
If they were really important, they'd be demoing it and building kudos. All we have is "Trust me. I'm the expert".
Magazines haven't helped you guys either. They've said nothing. They've passively supported this dead end.
Is it that they just don't know? I hope not, because if so, how are *they* then the "experts"? That's not good.
The alternative is it's about today's god: Money, in form of advertising. Fear of losing it; again they stay quiet.

I've gone on about this because it's important, but before you think I'm enjoying this, think of it this way:
This is MY industry! I love it. Writing this damming indictment… I've just taken my blood pressure. It doesn't lie, but if things are to change, and I believe they need to, someone has to put it out there so *you, the listener,* can start to benefit.

For now the smoke and mirrors has one aim: Corporate profit. These arms have helped make brands very rich.
The fact remains these limitations mean: **You'll never get faithful reproduction.**

What is F•X (F dot Cross)? Externally, yes, it's a tube, how does it actively *resist* bending, because when HiFi World measured FX3, they found its plot has no spikes.
F•X is a thin tube. inside it has a very stiff crossbeam that resists bending. Thus FX3 is a stable cartridge support.





FX3's minor +6dB Peak, Where's any *spike*?
It doesn't even look like an arm response.

The important bit is listening…Here's what greater enjoyment looks like. A user's experience:

"I've just installed the FX-3 on my LSD. I spent the first evening playing my favourite "hifi" albums (Talk Talk, Lloyd Cole, Blue Nile, Pink Floyd, James, Radiohead etc). It was a long evening enjoying the absence of rumble and the amazing bass slam.
I pulled out albums that sounded worse the more I upgraded my system… Magazine - Correct use of soap, I have hardly listened to over the last 20 years as it sounds awful on my system - but this didn't sound like a muddle - everything was separated and I still had that bass slam… another 5 hours digging… Magazine albums, lots of other "lo fi" albums - Joy Division, Echo and the Bunnymen, Stranglers and they all sounded incredible - without smearing. It's added about 100 albums onto my listening list.
I thought the problem was a worn out cartridge, I even dug out my old PT turntable and suspected the output valves on the power amp, but the arm has changed everything! With hindsight it seems obvious to make an arm very light and eliminate resonance - but I never thought just changing the arm could make such a difference!
A busy couple of weeks ahead, discovering what my albums sound like. That arm is genius!

Today, turntables cost as much as a house, promoting the idea that they're the holy grail to performance.
As you've now seen above, they aren't the solution.
A less costly good arm improves sound more than costly turntables.

When R&D continues, we end up with **FZ.** It's the ultimate expression for **F·X.**
FZ's measurements go into the noise floor giving FZ a "zero resonance" signature. When it comes to listening tests we can't hear it, even against FX3. It is true a passive arm with a couple of twists:

1: Other designs have effective masses of over 60g! Neutrality but at the expense of compatibility. What cartridges are they are meant to match? FZ's achieves its result whilst retaining a sensible 18g mass.

2: Perversely a perfect arm has problems! Think about it: If an arm is rigid, to do its job, rigidity transmits vibration *in both directions.* A perfect (rigid) arm might not be so perfect after all.
FZ has a unique system called REER - Rear End Energy Rejection. REER blocks any vibrations from the deck / outside world, leaving the cartridge to get on with its job unimpeded.

FZ. Another truly unique product from Funk.

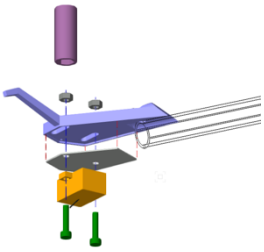
It's not all just physics.
Recall the concerns in opening paragraph to this document? Fitting an arm and setting the cartridge up? The fear of messing it all up.

Isolation Bubble has an answer for that, and it's another of my patents – Eezi-Lign.

There's a full video showing the details but even before that, check out the principles in your mind and take the anxiety away.

An arm is actually really straightforward to remove and fit. It's a matter of screws and screwdrivers, maybe a hex key. Here's an example on a Rega:
Undo two screws on the cable clamp on the underside to free the arm cable.
Undo the three mounting screws or even the big nut on RB250 / 300, and pull the arm free.
That's it!
Fitting an FX arm is simply a case of fitting the VTA base / mounting collar. Worst case you'll have to drill three pilot holes (drill bit provided) for the new screws into an old planar 2/3 plinth. Screw the collar and drop the arm in. If it's a newer deck (P3 onwards, say), it'll screw straight into the existing holes.
That's the worst bit is done.
That's because what to you is the worst bit, alignment, is managed by Eezi-Lign.

The Eezi-Lign difference:



Eezi-Lign is a fool-proof system.
Who am I kidding? Bitter experience has taught me that that humans are like water. If there's even the merest chance to slip through, they find it!
OK. I'll try again: Eezi-Lign is my attempt to create a self-aligning jigging system to help you mount your cartridge without tears, with or without Houdini.
It's *99%* fool-proof
Eeze-Lign is a specific 0.5mm thick shim that fits between headshell and cartridge. It's designed for your cartridge of choice and your specific arm.

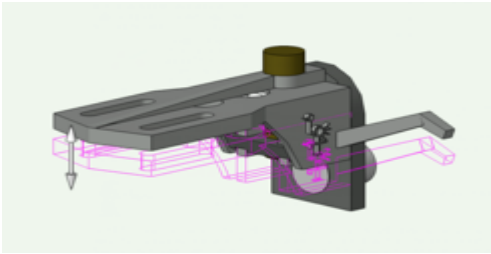
Typically you fit it before mounting the arm, only because it's easier to have the arm out on the table. There are then various simple instruction to complete setting up the arm… Note, you do nothing more to setting up the cartridge. Eeze-Lign's taken care of that.

Currently, Eeze-Lign is available for Rega, Linn, SME and Funk and Technics "S" shaped arms / headshells, including Cobra for alternate headshell shapes.

Houdini and Cobra:

Houdini:
1.1g of magic

Cobra:
VTA adjustable headshell



I was now left with not one, but two questions: FX3's minor bumps and what of fixed arms where FX3 / FX5 couldn't be fitted? There are literally millions of them out there. More out of the box thinking. I turned to decoupling. A complete, radical approach: I developed Houdini to *isolate* the cartridge.
Houdini interferes with energy coupling. It reduces those horrible spikes from arms by about 18dB.

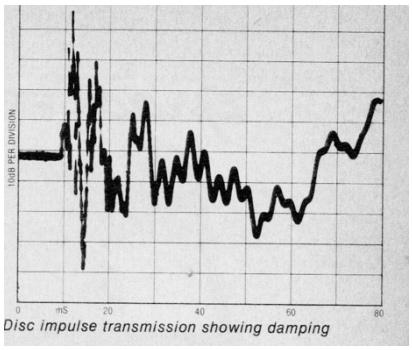
Houdini's magic – It isn't just High End. Budget arms get the greatest benefit.
Even if the industry changed tomorrow morning and every new arm was a good arm, we're still left with literally millions of good budget decks but with fixed "S" shaped arms that can't be adjusted – They're encouraging you to buy a new deck. But Houdini is 6mm thick. How to mount it, or change cartridges, or use thicker mats?
Funk's clever Cobra headshell. It fits Houdini, and it has VTA built in, thereby allowing the cartridge to be adjusted. Your lowly, budget deck with its fixed, resonant arm has just morphed: It is now pretty high end.

This is from a PL12D owner:
Given that this is a £100 turntable plugged into a £100 preamp, it was previously unavoidably obvious that I was listening to vinyl in that sinuous, warm, ringing sense - the top end would have nylon string harmonics whatever I was listening to, the bottom would sometimes feel like a mess of vibration. Everything was round and soft but lacked so much detail. That's all gone, replaced with crystal clarity that I didn't think possible from a 50-year-old AC motor and a tonearm that looks like it's been through the wars. I'm hearing detail that I've never heard before on some of my favourite records, I can enjoy vinyl at low volumes because the details are so much more audible than before, I can enjoy it at high volumes because it's no longer painful. There's no audible resonance at all, just physical grooves translated into sound. It's already truly phenomenal

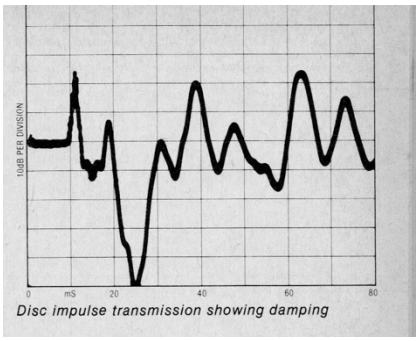
The Mat:
"Help! I'm told felt is best - they're fitted on a £22k deck". Or, "What of rubber? They're on £10k decks".
The record sits on the mat. A mat isn't passive. Play a record, there's a battle going on and the mat wins every time. The stylus in the groove is like a bobsleigh careering around. A bobsleigh experiences 5G. The stylus experiences

over 20,000G! That's a lot of energy. From the principle of "every action has an equal and opposite reaction", half the energy goes down into the disc. We have 20,000G pile-driving vibrations into our 2mm disc, like sonar.
At the boundary where vinyl changes to glass, metal, rubber or felt, say, they bounce back. The stylus picks them up. The damage is done. Even before the journey to the speakers has begun, because of a poor mat, distortion is added to our clean, musical signal. Once there, it can never be removed. The mat's role can now be seen as critical. Mats make such a difference the dealer's scared he'll lose the sale of a new turntable sale. He says nothing!
(Like it or not, it's another example of the industry not being interested in faithful reproduction)

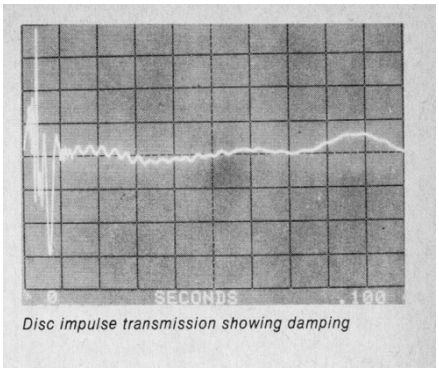
Which mat is best? F1 engineers test everything. Magazines aren't interested - no one tests any more.
Fortunately for us, once again in the 1980s, HiFi Choice carried out measurements:



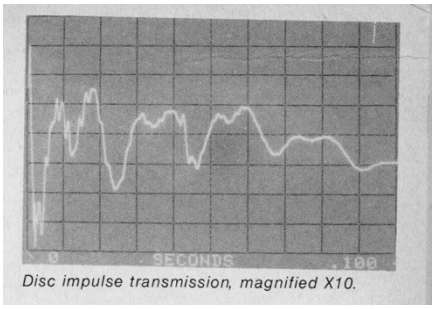
1: A totally unsupported, the disc rings badly and it carries on past the 80mS scale.



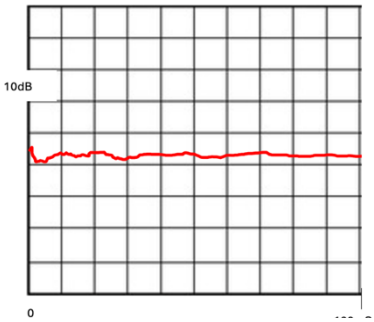
2:120 year old Rubber mat:
This has a smoother shape but rings just as loudly. It also goes on past 80mS. It sounds poor.



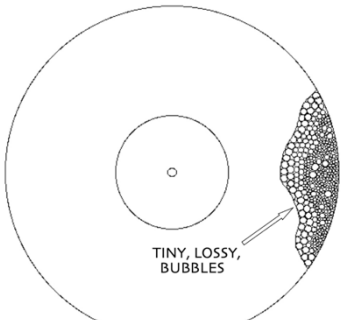
3: 120 year old felt mat. The first 10 mS, is the problem. The earpicks up information in 1.2mS. It easily hears the +/- 40dB peaks. Not good.



4: Acrylic is magnified 10 X.
(<5dB)



4: APM: It holds a very tight limit of < 2dB, typically <1dB. Nothing else matches it.



Achromat
Construction

Some companies continue to use felt mats, even on their flagship decks. One even has their own a record label, so they have master tapes and be only too aware of how felt degrades the final sound.
These companies continue to defend the indefensible and sell even their flagship decks with felt mats.
For a comparison of mats, checkout the YouTube channel.

It's not about felt mats per se. Japanese manufacturers supply rubber mats on models costing £10k.
Felt and rubber mats not only cost pennies to make, they also have all but zero reject rates making them GREAT for the bottom line. But aren't you more interested in the final performance?
By contrast, Achromat, we have to reject some 25%! That's the price *we* pay for delivering good sound. Hey ho.

The beauty of mats is their low cost and ease of application / comparison. They make a great introduction to prove, or not, the physics, thereby providing confidence for the more costly items.

If having tried Achromat or APM, you hear the reduction to sound quality, the only conclusion for you as a prospective listener is sound is a low priority. Put simple, these mats are holding your music back.
Imagine how long an F1 team would last if it supported this stance against its competitors.
Again, if faithful reproduction is your aim, the limitations of felt, rubber etc. mean you'll never get there.

"I just wanted to pass on my heartfelt thanks for producing the Achromat…

I have used one now for many, many years and nothing (and I genuinely mean nothing) has come close to allowing the detail, clarity and naturalness of a vinyl record's audio to be retrieved.

I have used one on multiple turntables throughout the years with always a satisfying result, causing me to smile and relax whilst enjoying the now uncoloured audio that is being played.

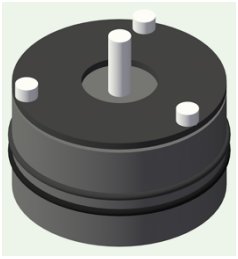
I honestly cannot thank you enough. *Paul S*

APM – the Advanced Platter Mat
Achromat is Funk's most perfect mat, but as with F1, technology and R&D continues.
We come to Funk's most highly developed mat, which incorporates a platter resonance killer. It combines the best mat with a real platter upgrade in one.

Platters on SL1200 style turntables (Pioneer ReLoop etc) and budget units are very thin – They resonate directly under the stylus. It's a real problem and one that Technics acknowledged by adding a brass plate to the 1200 platter to create G and GAE etc.
At a cost of £4-5k, these are not cheap turntables, especially once one acknowledges they still have all the inherent limitations that Funk's Isolation Bubble deals with – Correcting them will only add to the purchase cost.

The results you get by fitting APM to a budget turntable are so effective that you actually have the same high end platter, but for less than £200 – just tap and compare to SL1200G - It is all but as dead.
The good news continues. Your budget deck is actually *better* than those G and GAE; you also have Achromat…
They still don't!

Isolation:



The world is alive with vibration (Floorboards, furniture, music, buses and so on). Rigid feet transmit vibration, which our sensitive cartridge are designed to pick up, and it messes up our music.
Understandably, on grounds of cost rigid feet are found on budget decks. But why on far more expensive designs: - £2k, £7k, £12k? Rigidity means junk gets in, music loses purity, and our ears can hear this.

Ease of use might be a reason but spoiling performance on expensive decks designed for ultimate performance makes little sense, yet manufacturers excuse them in ridiculous and scientifically unjustifiable ways. You lose out.
(If mass worked, car manufacturers wouldn't need to design their sophisticated suspension systems! Isolation is done with springs – That's why they exist). Like cars, adding a suspension to turntables adds to the cost.

Bo!ngs have been designed as a cost-effective and easy to fit solution for many turntable applications. The most popular include the entire Rega range (inc P8, P10 and more), Technics SL100/1500and 1200 models, VPI, Project, Audio Technica. There are also many vintage models, from Pioneer, Sansui Sony, Dual… It's a long list.
Standard fitment is M6 screw. Other metric and imperial fitting options available + adapters wood screw fitting, e.g. early Rega Planar 2 and 3.

Bo!ngs. A modest outlay that isolated your deck and turns your deck into a suspended high end player.

Akutrak - Winner: Best Phono Stage - HiFi Plus.

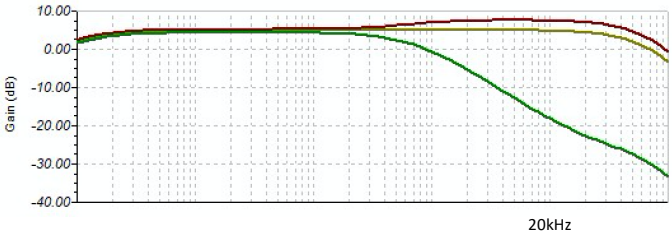
It corrects the signal and gives you a level playing field.

Cartridges don't have a flat response. There's nothing RIAA can do about it, and we hear it.

Streamers, amps and phono stages all have a very flat response. Cartridge signals are typically *non-flat.* Putting a non-flat signal in, you'll get the same non-flat signal out, only, louder! Just how dumb is that? For 100 years as with arms, we've had to live with this problem. It's another case of we're missing our goal.

Like F1, this is yet another problem for technology to solve, not to ignore. No one else has done it, Akutrak has! Akutrak is a state-of-the-art solution. It outputs a flat response, thereby solving this problem. No other design works like it. It is unique.
Akutrak is not a filter or tone control, it actually "reads" the load from the cartridge *and* cable and outputs corrects the response. Simply turn the Slope knob until it sounds "right". Your ears will tell you.

Moving magnet cartridges (MMs) and moving coils (MCs) work differently - It's not just in the name.
Because Akutrak isn't simply a filter or tone control, the technology only works with MMs.
The graph shows Akutrak in operation.



Green: This extreme response is from a very reputable turntable manufacturer(!). Many of you will have owned one, and it's 10 dB at 20kHz. It sounds very, very dull. See Akutrak cope:
Yellow: (middle) This is the corrected response via Akutrak and it is very flat.
(Red: (top) The response can be further modified if so desired.)
This dull cartridge shows why it's 100% critical to have the same cartridges when evaluating decks.
You ears will always pick the deck with a better, more open sounding cartridge, beating the dull one. I've heard too many instances of this: "Oh… er… yes. Come to think of it, the cartridges *were* different. At the same I didn't think". And with that, the dealer and manufacturer have just made their sale easily. See the YouTube video

For you the listener MMs are good news. They are more cost-effective than MCs and Audio Technica's VM760SLC with its superb SLC stylus profile, Special Line Contact, is remarkably good performer.

Akutrak also helps to *balance* the system to your room or headphones! We all have discs that don't work in our system, yet we enjoy the *music*. Akutrak moderates screechy recordings *or* lifts muffled, unintelligible recordings.

Akutrak. The world's most advanced MM Phono stage. It really is quite clever.

Alan Sircom's review concluded: **"This gives an exciting glimpse into what turntable replay can sound like and I think for many, there might be no turning back".**

Isolation Bubble – It says it all. Being a heretic isn't such a bad thing.

No one *understands* analogue like Funk

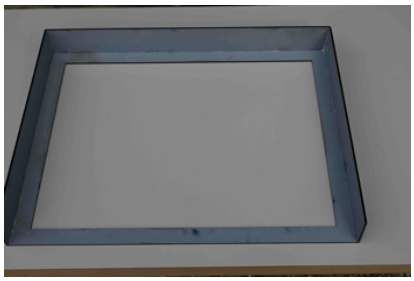
The Beauty… Cinderella goes to the Ball.

Whether new or brought down from the loft after 20 years, your deck's looks don't match its new performance.
Cinderella, (The Beauty), turns people's heads. Your super-charged deck takes pride of place in your home.
Adding a second skin can also reduce plinth resonances – Invaluable for thin plastic budget decks.
Choose from five finishes: Mirror: Rose, Aqua, Obsidian (black), Bronze and Plum /Ice.
Cinderella is an easy to fit overlay and comes ready to be fixed into place and fits:
Cinderella. Beauty is more than skin deep.

SL1200 Electric Blue - Rega P3 Mirror Rose

LP12 20/20 + FX3

SL1200 Obsidian + FX3

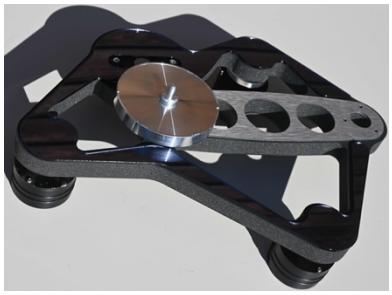


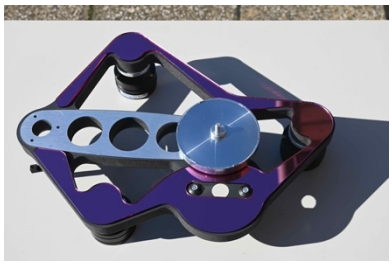
Kit Shell form

(Updated Images to follow)

P10 •
Rose / Obsidian / Aqua

LP12 / Keel • Obsidian





Isolation Bubble fits:
LP12, TD 150-166, all SL1200, 1500 +, GL75, all Regas, Dual 250, Crosley, AT 120, Pioneer, vintage, etc.

Cinderella is not a plinth replacement. It is an easy to fit overcoat or secondary skin that you simply slip over your existing, perhaps tired 40 year old Planar 3, say, or to update your deck's wardrobe on LP12 or Technics and so on.

Klever Motor Kit:

For years Linn publicly dismissed Pink Triangle's use of the DC motor … and then one day they "discovered" it for themselves! Certainly it has improved LP12 and as far as it goes, it carries our support… As far as it goes…
You see there remains the even bigger issue that hasn't been addressed. Once again it goes back to the 80s when Pink Triangle first highlighted it. It's since been updated with Funk. Interestingly, even users on Linn's forum have wondered about it.
It's the motor's placement on the top plate.
Once again and as with Achromat, nothing's been done about it.

Where the motor is mounted matters and conventionally, mounting a motor on the top plate and directly opposite the cartridge is absolutely - the - worst - place - imaginable.

This is true not just for LP12 but for any suspended turntable including Thorens TD150, TD160 and TD166.

The belt is a mechanical link that forms a bridge for LF junk to enter from the outside world to the sub-chassis, in the direction:
motor-platter centre. In the case of LP12 and Thorens, the cartridge is directly opposite. The arm is free to swing in time with the LF junk and the cartridge generates junk output and once in, there's no getting rid of it.
There's another, albeit lesser problem - An isolated turntable is a floating system, the chassis moves. and as it does, belt tension will vary and as it does so, it modulates the drive. It's inherent.

In F1 cars, their engine placement evolved, moving from front to mid-rear. The top plate motor mounting is an ideal problem for F1 engineers, except they don't need to.
At far less cost Klever has solved it. The motor has been banished from the top plate. It's now correctly mounting on the sub-chassis. With no more negative coupling, we have the best of all worlds:
Effectively we have a belt-driven direct drive system.

The improvements in speed control and low frequency performance are all audible. Let's test it.
Conventionally, evaluating anything on LP12 is a performance, because as part of the stage set for LP12, any change (new bearing, springs etc), necessitates a complete strip, re-build and re-set. It's a brilliant tactic. There's a long time gap, plus, everything's changed. It will sound different, and when you get it back, what are you really listening to? Talking of bearings, we are on bearing three? Man's been to the moon, we have driverless cars, one wonders when they might get this one right? (AI to the rescue?)

To evaluate Klever, a 2-motor setup is employed – see photo.
Normally the isolated motor's pulley will again go through the existing hole, but for the test, Motor 1 is bolted in the original LP12 position. With motor 2 on the sub-chassis, where the platter goes, the motor goes, so it can fit anywhere. With both pulleys the same distance from the record centre, the differences in mounting positions are now easy to demonstrate - One simply changes the belt from one motor to the other and evaluates. Back and forth, as many times as you wish.
Easy and objective. Using the same type of motor means there is only one variable – Motor position.

Klever/LP12 fits Keel or any LP12 steel sub-chassis. Klever/ TD is designed for TD 150,160, 166.
Power is by the latest generation of K-Drive. German magazine Audio measured it: "The lowest wow, flutter and rumble in all of Audio", so you're assured of state of the art performance for your LP12.