

Kuzma Stabi R turntable

MARTIN COLLOMS ASSESSES A SERIOUS, COMPLETE VINYL RECORD PLAYER AT £25,000, COMBINING KUZMA'S MODULAR STABI R TURNTABLE WITH THE COMPANY'S OWN 4POINT 14 TONEARM AND CAR50 MOVING COIL CARTRIDGE

Vinyl replay stalwart Franc Kuzma is a precision mechanical engineer specialising in high quality disc players. He has an abiding love of vinyl which he expresses in his pursuit of excellence in the design and build of numerous record replay components over several decades and over a wide range of price.

Motor units, supports, tonearms and cartridges are present in some variety, leading to many possible permutations: potentially there are more than 40. While there are some super-exotic formulations – even one working in combination with a ‘zero vibration’ active noise-cancelled support, originally designed for precision medical imaging equipment. There are also base models such as the Stabi ‘S’, matched with the Stogi S unpivot tonearm (in 9- and 12in versions) and complete with a matching CAR20 moving coil cartridge, it forms a complete package priced at under £10,000.

The top turntable, the *XL AIR*, as you might have guessed, is an air bearing design, runs to some £52,000 plus arm(s) and cartridge(s) and boasts an all-up mass of 120kg. The platter alone weighs 44kg! From these heady heights consider that a top of the range Linn LP12 is in our headline £20k price range while the Naim Solstice combo is just a few thousand

less, so this issue’s Kuzma review rig is pretty well in the heart of the high quality, but not uber-high-priced, disc-player category. We recently covered another fine example in this price range, namely the Vertere SG-1, another complete player at about £25,000 (HIFICRITIC Jan-Mar ‘20).

One aspect of the suggested specification for the review immediately caught my attention: the inclusion of the 4Point 14 tonearm. I surmised that the number ‘14’ denoted the effective length in inches. Noting that the disc grooves are cut using a groove tangential, ‘parallel tracking’ arm, records should ideally be played back in the same way. While radial 9 inch/23cm tonearms are very common, and certainly effective when well set up for cartridge offset angle and overhang, so that tracing error and associated distortion are held respectably low, they are not as good as is possible. Self-evidently, the tracing of music modulations with parallel tracking

arms offers zero or near zero tracking error, and this holds the promise of essentially no additional harmonic distortion from this source.

I have enjoyed the benefits of much reduced tracking error, notably with early parallel trackers including the classic Goldmund Reference, but tracking error is also significantly reduced with an increase in wand length from the usual 9in up to 12in, or – as here – still further to 14in, or 35.5cm. This should result in significantly lower tracking distortion, which will be of greater benefit if the pickup cartridge is optimally aligned and is itself a low distortion design.

In the days when distortion from loudspeakers was unexceptional – not uncommonly 0.2-0.4% of mainly third harmonic in the midrange – moderate distortion from disc replay might have been regarded as fairly trivial, but in recent years many speakers claim distortions an order of magnitude less. Magicos and Wilsons, for example, along with the FinkTeam Borg and Kim, have 0.1% distortion or less at natural levels in a listening room, putting greater pressure on analogue disc replay.

A matter of geometry

While the simplest arm geometry would be a straight arm tube with the cartridge affixed 'in-line', this doesn't address the natural variation in tracking error from this geometry which then can only be zero at a chosen median radius of the disc, defined by arm length and pivot location, as the cantilever and thus the generator axis of the cartridge will lie at an angle to the ideal tangent to the music modulated groove.

We do better for a radially pivoted tonearm simply by adding some extra length and by angling the cartridge inwards a little, this 'overhang' resulting in two disc radii where the tracking angle error is zero, while elsewhere it is lower than was previously found with simpler geometry. Consequently the overall tracking error will be less over the effective recorded range of playing radii. For several reasons, not least the extent to which some records are cut to smaller inner radii in order to extend the playing time, optimising the inner radius is favoured.

To some degree effective mass will also increase with wand length, but not by so much, and the cartridge compliance may be chosen to match, ideally for a resonance set at 7-9Hz, below the audible range, but of course also taking into account cartridge mass. A 14 inch arm in my view approaches that ideal zero error of a parallel tracker but without the known complications.

Franc Kuzma's guiding engineering principle is rigidity, affirming that a lack of stiffness, and the consequent imprecision, in mechanical parts and connections results in coloration and a loss of musical detail. So his primary metalwork is machined

out of heroically massive slabs of aluminium alloy, here finished in matt black, while many secondary components are milled from solid brass and heavier still. The overall appearance may be plain and workmanlike, more like a professional disc cutting lathe than a domestic audio design, but inventive options may liven up the appearance. Colour choices for the alloy chassis/plinth and wood framing options are possible, plus multiple arm arrangements with sturdy alloy chassis outriggers aid versatility. Dustcovers are available but look a little awkward.

Nowhere for resonance to hide

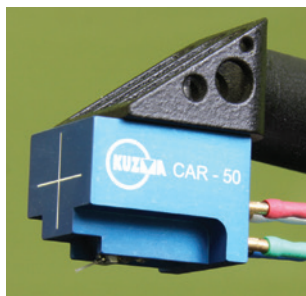
Knocking or tapping on almost any part of a conventional product generally results in a recognisable 'booiiiing' sound associated with the materials and construction; tapping anywhere, or anything, on a Kuzma only gives rise to a colourless dull thud. The shell-like elements, casings and covers commonly used in audio product design create the potential for bell-like or cavity-related resonance, but on a Kuzma there's nowhere to hide.

Some might suggest the visual design here lacks character, but the potential reward is sonic neutrality, allowing the sound of a chosen cartridge – and that of your recordings – to develop fully. Kuzma offers a coherent range of high precision Japanese moving coil cartridges built to his own specifications on a common Kuzma-made 'machined from solid' two-part aluminium alloy chassis, in total weighing 17g. All use well tested, high-channel-separation cross-coil geometry, wound on a low-leakage, flux-permeable 'X' former.

The entry-level model, at around £1000, is the CAR-20, with pure four-nines copper windings, an aluminium alloy cantilever, plus a naked diamond elliptical-tip stylus. Its nominal output is 0.3mV, but there's also a high output 'H' version, providing 2mV for direct connection to a MM phono input. The CAR-30 has upgraded oxygen-free OCC windings plus a micro-ridge true line contact stylus, mounted on a higher modulus sapphire cantilever.

The CAR-40 moves up to a four-nines purity silver coil winding (99.99%), while the nominal frequency response now extends to 40kHz, the CAR-50 sees a still more rigid boron cantilever, and in the CAR-60 the cantilever specification is stepped up yet again, to synthetic diamond of still greater rigidity.

These upgrades improve the extreme high frequency output and channel separation: channel balance reaches a tight 0.5dB for the upper two designs with an overall channel separation of 30dB plus. All models track securely at nominally 2g. With a moderate source impedance for the low output series at around 4 ohms, as such these cartridges are largely load insensitive and a loading of 100 ohms



shunted by 1nF is suggested for the low output models, which we used. Prices range up to £6,000.

Concerning the tonearm build, you might imagine some conflict between mass and rigidity and the requirement for precision low-friction, low-noise bearings: induced 'chatter' is not unknown when working with some lower compliance and energetic moving coil cartridge examples. Kuzma finds a novel approach to the potential imprecision: in the latest series, the hardened steel pivots benefit from a new combination of steel and sapphire-ruby bearing cups under a naturally defined and substantial gravity preload, active for both axes, this resulting in no play or imprecision in action and thus a very low noise contribution..

Highly-adjustable arm

The 4Point 14 arm, which looks as rigid as you could wish, feels like a brick when you handle it, yet has versatile and readily accessible adjustments to optimise its alignment. These including overhang, vertical tracking angle via a superb arm height vernier, azimuth, bias/ anti-skate, plus independent control of lateral and vertical damping, allowing for a very light touch, to optimise tracking dynamics without significant drag. Effective mass may also be increased if required using tare masses.

With care, all these – save overhang and azimuth – are adjustable on the fly, a great way to find those elusive optimal settings, adding value to the proposition. Built to the calibre of a precision scientific instrument, the arm showed no unwanted play, and its boldly tapered, and hence essentially resonance-inhibiting, light alloy tube – anodised matt black, and of generous dimension – is unusually rigid and has negligible sonic signature.

Although interchangeable by a dealer, the output cable is essentially captive and wired with 'four-nines' purity silver conductors, terminated in vestigial, low-eddy-current silver-contact Eichmann RCA plugs. Since the Naim Superline phono stage we used was also fitted with matching sockets I was momentarily nonplussed on first installation to have no sound, until the penny dropped and I remembered to give each connector something of a half turn to bring those intentionally displaced striped contacts into electrical alignment.

Kuzma installs Kondo 4N silver wire as standard while to order options include as Cardas Clear and Crystal Cable MonoCrystal. The machined-from-solid, but lightweight, headshell is detachable to aid cartridge installation, but the connection wires and lugs remain captive with the arm.

The platter is a most substantial eight kilo constrained layer design consisting of a slab of aluminium – acrylic – aluminium fabricated in generous proportion to maximise the damping

of the platter itself and also help absorb residual noise from actively traced groove modulations. The woven fibre mat is thin and dense, bonded to the platter for optimal energy absorption, designed with a mechanical impedance closely matched to the vinyl disc. The centre spindle is threaded to take a large machined brass record clamp which contact pressure may be fine-tuned by ear for optimal disc/mat termination.

Built on a massive scale the rigid 16mm main bearing is of hardened steel running in a close tolerance ultra-low noise, bearing-grade polymer sleeve. The spindle runs on a polished ruby ball which helps minimise friction and noise, the latter further reduced by a thrust assembly designed with vibration absorbing properties. Comparative measurements showed that the main bearing is both very well fitted for true running and imparts very little noise in practice.

High-torque motor

Despite its massive rotational inertia, the heavy 8kg platter is nonetheless rapidly accelerated to 33 1/3 RPM in just two seconds, powered by a high torque, ultra-low noise speed controlled DC motor from the German specialist Pabst, while the resulting wow and flutter figures are down at measurement thresholds. A tough, flat, largely inelastic polymer drive belt delivers ample power to the platter, stabilised by that substantial inertial contribution to deliver a first-class wow and flutter performance. With extensive use this belt should be replaced every couple of years for best performance.

The threaded spindle and choices of disc clamping, with and without the alloy reflex under-disc washers, provide for thinner discs while many of the heavier variety sit well on the platter without such intervention. Discs appear notably inert when well planted on the platter.

Despite that potential for a 14 inch arm install the player itself is quite compact: buried in that almost featureless alloy block plinth are the power supply and the control electronics. The supply is transformerless and thus generates no hum or vibration while it is fed via a standard chassis mount IEC 13A socket. Clearly the internal electronic supply is well filtered judging by the results.

While not a critical issue, thanks to the turntable's high-mass build, there's some mileage to be had in fitting a vibration decoupled mains lead such as a Naim Powerline to attenuate vibration induced by the loudspeaker which may be present at the wall socket junction.

Stable, low noise DC power feeds the precision speed controlled motor, which is exceptionally powerful, and thus considered to be almost totally resistant to momentary speed error which might

be induced by modulation-induced varying groove drag. It hauls the heavy platter up to stable speed almost as quickly as the stylus is lowered, and with no perceptible overshoot.

The speed control system is essentially critically damped and doesn't 'hunt': it offers the kind of power you would normally find on a cutting lathe. I measured exceptionally good figures here, with IEC weighted wow and flutter at 0.086%, (NAB 0.045%) with speed accuracy for the 3.150 Hz reference measured at 3.157Hz, just 0.22% fast.

It's also a tribute to the design and performance that by experiment, the stylus can be placed on the plinth, e.g. via suitable block, 'with the engine running' and nary a whisper can be heard from the loudspeakers at close to full system loudness. This points to superb build precision, vanishingly low motor noise and negligible rumble from the main bearing. Also, from this test, by definition, low frequency feedback must also be well controlled. That massive chassis block is supported on hard rubber tipped steel feet, adjustable for levelling, and in conjunction with all-up mass, these countermeasures are clearly effective.

Sound quality

Considered as a whole, first impressions are of an exceptionally stable performance, rather closer to mastertape than the majority of record players. Oft-encountered minor issues are seemingly banished here: sometime, imperfections in disc replay can accumulate to a point where the listener becomes aware of the process, of the associated operating machinery, while musical satisfaction is diluted in consequence – this wasn't the case here.

Initially I felt that this relatively newly manufactured player hinted at a degree of two-dimensionality, but after a week or two use this impression slowly faded to be replaced by the perception of a fully-fleshed, highly dimensional and excellently focused soundstage, completely lacking in exaggeration. That leads to the description I was seeking: insightful calm neutrality.

Often a great sounding, well-timed midband will carry the day, but this Kuzma player went further by displaying a very wide and neutral bandwidth, with exceptionally low coloration, distanced from the usual LP replay. It sounded great through bass, mid and treble, the whole evenly balanced and desirably lacking in 'character', and it so easily discriminated between direct cut and tape-based masters, a good measure of transparency.

Other connected music sources from differing technologies can affect each other if left powered on, and I

didn't find the final measure of the Stabi R combo until all unused electronics, especially those with digital audio functions, were powered down. This is more a reflection on the partial susceptibility of the Naim Superline/Supercap DR phono preamp-equaliser than the Kuzma player itself, but demonstrated how deeply this disc player could dig into recordings, and how worthwhile it is to 'housekeep' your system of spurious connected components to hear LP at its very best.

I was minded to play the early 1950s Debussy *Images* by Walter Gieseking, a mono recording at EMI Abbey Road London. Remembering that prior attempts had led to disappointment, the Kuzma player succeeded where others had failed, reaching 70 years back in time to capture the surpassing technique and lyrical artistry of this gifted but controversial performer.

My well-used direct cut Sheffields sounded almost as if they had never been played, so well did the combo differentiate between the musical message and the condition of these physical discs. From a technical viewpoint, this Kuzma showed barely any sonic footprint, rendering the expression 'closer to mastertape' redundant, since with direct cut recordings it took you still closer to the performance, the artists mysteriously captured, crisply defined, avowedly, unmistakably, better than a mastertape origination. The process, additional electronics, the translation to magnetised patterns on iron oxide coated plastic tape, this scraping across magnetic heads, and then the recovery of that information, was absent.

A drift through a raft of discs followed over some weeks and the Kuzma player combo never skipped a beat, or more precisely never hopped a groove. Impressively surefooted, there was no imprecision, no vagueness, just rock steady image focus, superb tracking, and with that hoped for reduction of tracing distortion. Now it was reduced to near imperceptibility. While regular LPs replayed really well, the 'super editions' and 'direct cuts' were often breathtaking in musicality, taking the listener closer to the heart of the performance and the production.

The trade-off was that, with general commercial pressings, the production quality bar was frequently set so low.

The System

Constellation Inspiration 1.0 pre, Townshend Allegri Reference control units; Naim NAP 250DR and NAP500DR power amplifiers, Naim SuperLine phono pre-SuperCap DR with Linn LP12 player/Karousel with Keel chassis and Radikal motor control, Naim ARO arm, Lyra Delos cartridge, Naim UnitiCore network server and S/PDIF source, Naim ND555 Streamer-DAC, 555 PS(DR) x2, Wilson Audio Sabrina X, Magico S-5II, Finkteam Kim, BBC LS3/5a (15ohm) speakers; Naim Fraim racks; Transparent XL MM2, Naim NAC A5 speaker cables, Naim Super Lumina, Transparent MM2 and Van Den Hul Carbon TFU interconnect cables. Roon Nucleus+/MCRU-PS/Qobuz online streaming



HIFICRITIC AUDIO EXCELLENCE

Kuzma Stabi R turntable, Kuzma 4 Point 14 tonearm, Kuzma Car50 moving coil cartridge

Technical data

4 Point 14 tonearm

Mass	2150 g
Effective length	353 mm (14 inch)
Mounting distance	291.50 mm (Kuzma cut- 291 mm)
Offset angle	15.35 degrees
Distance spindle-horizontal bearing	340 mm
Bearing type	4 point zero play, gravity loaded (sapphire & ruby cups / steel pivots)
Effective mass	19 g
VTA adjustment	yes
Azimuth adjustment	yes
Bias adjustment	yes
Vertical damping	yes, independent
Horizontal damping	yes, independent
Detachable headshell	yes (one extra supplied)
Cables	all silver
Review test cartridge	Kuzma CAR-50 (see text)

Stabi R

DC powered, belt drive	
Weight	36kg
Platter mass	8kg
Platter material	aluminium & acrylic constrained layer
Bearing type	inverted (ruby ball)
Shaft diameter	16mm
Chassis/levelling	aluminium / yes
Drive/ Belt	single DC motor/ non flexible
Warranty	2 years extendable to 5 years on registration

The *Encyclopaedia of Recorded Sound* (revised by Howard Ferstler), contained this disappointing excerpt: *'during the 1970s however, some direct-to-disc masters were produced by outfits like Sheffield. The supposed advantages included a certain spontaneity in the performance, greater dynamic range, reduced wow and flutter and the omission of tape hiss and other tape related distortions. The rise of digital recording and disc-playback systems has rendered direct to disc superfluous'*

...and from Wikipedia: *Technically, direct-to-disc recording is believed to result in a more accurate, less noisy recording through the elimination of up to four generations of master tapes, overdubs, and mix downs from multi-tracked masters. The method bypasses problems inherent in analog recording tape such as tape hiss.*

Nevertheless, I found that direct-cut recordings replayed on this Kuzma were demonstrably better than the tape-based digital transfer replicant alternatives! This manifestly successful 'solid block' turntable delivers deep tuneful bass, very capably describing the majesty of a full orchestra in a great hall acoustic but it is no slouch on rock either, with bass assigned full weight and tuneful articulate power and with great rhythm. LPs that could sound slightly opaque and grainy on other players sounded cleaned up, this player reaching to the heart of these performances. It was not intimidated by *Spirits in the Material World* by The Police, sounding spacious, well-timed and punchy, with a very tuneful, agile bassline, and sounded upbeat and surprisingly clean.

14in advantages

In general LP replay can sound a mite congested towards end of side but here the Kuzma package was exemplary laying out spacious images, deep and wide, imbued with detail. The 14 inch arm has quite a bit to do with this: it tracks better and sounds clearer than the usual shorter alternatives; rough, worn discs come up almost like new, with gains in focus; and image depth was consistently convincing. A LP12 aficionado thought the Kuzma slower in pace and timing when started up from cold, after a few days of inactivity, but was surprised to hear it 'free up' after running for ten or so minutes, whereupon it picked a genuine sense of pace which remained throughout the day's sessions. Could the belt and/or main bearing have been 'warming up'?

Another contemporary pressing from the Police, secondhand to boot, and which at times had previously sounded a bit rough, was now heard to be tuneful and well timed. *Ghost In The Machine* was powerful and involving, with a driving beat and exceptionally articulate bass playing, One thing led to another and we continued to the new half speed

mastered, 45 rpm, four disc remaster of Pink Floyd's *Momentary Lapse of Reason*. Utterly self effacing the installed CAR 50 moving coil cartridge never got in the way, was so neutral that you were not really aware of its presence so well did it integrate with the overall performance. It also tracked very well and sounded clean and well detailed right to end of side. Soundstage width, depth and focus were considered first rate, also noting the very stable groove contact.

My late American father's *Mahler's 5th* (Leinsdorf, Boston Symphony 1963), an RCA Dynagroove pressing he bought 56 years ago, came up almost like new. Played on the Kuzma combo this recording, from the golden age of classical and jazz music recording, sounded full of brio and detail, bridging that half century: I've never heard this disc sound this good. The eccentricities of RCA's then favoured dynamic 'eq' for low level expansion, plus Varigroove compensation – to help early microgroove pickups to track the peak levels in stereo – were evident, nonetheless it still sounded pretty fair, managing to communicate the drive and commitment of this early two channel performance.

Donald Fagan's new *Nightfly Live 2021* issue was a clean as a whistle, sounding almost like a live feed from the mixing desk, while a previously murky-sounding ancient copy of Kodaly's *Háry János*, with Ernest Ansermet conducting for Decca, was brought to life by the Kuzma player digging deep to extract clarity, image depth and instrumental focus, and not least that awareness that a fine musical performance was being recreated under Ansermet's direction.

Leading edges were crisp, and time and again the recording pedigree mattered less than this turntable's ability to draw you into the performance, from which point time became a non-issue. It would be easy to forget the CAR 50 cartridge as it was so neutral and self effacing that it made no negative contribution, a tribute to its high performance. The package supplied for review approaches an ideal of fit and forget for a precision design such as this, but which still requires the usual care in installation calibration and use.

Conclusions

The precision technology employed for this Kuzma vinyl disc player does not intrude, nor does it try to impress: it simply steps back and lets your recordings carry the day. The player, tonearm and cartridge are all rated as individually excellent and they complement each other very well in this player. Both rumble and wow and flutter are also excellently low in this closely toleranced design. An expression of skilled and refined precision audio engineering at the highest level, Kuzma's common sense, well balanced approach delivers a fuss-free solution for top class vinyl disc replay.