

Kuzma XL AIR turntable

by Alan Sircom

The Kuzma XL and *Hi-Fi+* have a long history together. We first looked at the high-mass, twin AC motor turntable way back in Issue 41 (when it was called the Stabi XL, and later the XL2 to distinguish it from the four-motor XL4) and liked it so much we gave it an award two issues later. Then, we looked at it once again when its four-motor upgrade hit town in Issue 53 and once again in Issue 124 when the XL DC was released, replacing those four powerful AC motors with a strong, stable and quiet DC motor. We even revisited it as recently as Issue 196 as a complete package with 4Point 14 arm and CAR 60 cartridge, as a mark of the best the standard bearing bearer can get.

There's a reason for all those column inches. The original Stabi XL set a standard by which all other turntables should be evaluated, and its periodic upgrades mean it has continued to do so to this day. Also, unlike many high-

end projects that get replaced, that upgrade path keeps existing customers in the loop. Time and technology move on, though, and the original XL2 and XL4 models are no more, but those wanting even more from their already world-class XL DC can opt for the XL AIR, which as the name suggests uses an air bearing. As a result, it has a natural partner in the Kuzma Air Line air-bearing tonearm, although the two cannot share the same compressor, as well as arms like the outstanding 4Point 14... and the beauty of the open-plan design of the XL AIR is ▶





► adding an extra arm just means adding an extra arm tower.

But let's recap, looking at the original XL design first. As discussed, the XL turntable started its journey as a conventional high-mass turntable with a traditional (ruby) inverted ball bearing. This bearing housing has remained unchanged from the original Stabi XL to the latest XL DC; this longevity of design runs through Kuzma's designs like a red thread, with models like the Stabi Reference remaining essentially unchanged (except for a power supply upgrade 12 years ago) since 1992. However, there's a difference between 'long-lived' and 'forgotten' and Franc Kuzma is always on the lookout for a way to improve his products, without compromise or disenfranchising existing users. Which means that just as the XL4 took AC motors to their limit, so the XL DC went as far as it was possible to go with the original bearing. The next goal then becomes how to

make a high-mass, high inertia behemoth of a turntable become even more independent of and unperturbed by all the usual mechanical and environmental inevitabilities that hinder a perfect platter rotation. This is ultimately a question of making an already excellent turntable an even more perfect, stable, quiet and smoothly rotating platform, allowing the last scintilla of the music stored and hidden within the grooves of a record to be successfully realised. For Franc Kuzma, the solution was obvious; an air bearing. And, like all obvious, no-brainer solutions, the move from 'hypothetical' to 'product' took a lot of time and a big effort to realise.

When compared with a conventional, mechanical (shaft and a ball or a sharp point) bearing resting against a hard surface and rotating in a bath of oil, an air bearing allows for significant improvements with virtually zero friction or vibration within the bearing itself. In addition, a properly designed air bearing (not just something simply floating on a cushion of high-stream air flow) can take a considerably higher load without feeling wobbly or otherwise inadequate to achieve almost perfect rotation.

This allows the XL AIR to support twice the weight (rotational mass) of its platters compared to the standard variant. In addition to the standard 22kg of the XL platter (a sandwich concept with aluminium and acrylic layers bolted together in a pre-stressed manner, itself providing solid damping against vibration), the XL AIR has a secondary 22kg bronze platter positioned underneath the main platter. Bronze was chosen for its own density and excellent damping properties ►

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bearing housing of an XL2 and XL4 (once upgraded to the DC motor drive), or XL DC can be converted into an XL AIR in only a few simple steps... if you are a powerlifter!

None of the above would make sense without a high quality, correctly specified and executed air supply for the XL AIR bearing. After extensive experimentation, Kuzma decided to use a fairly large model from the renowned Italian manufacturer Sil-Air (Silent Air). To paraphrase ‘Sympathy for the Devil’, “it has a tank, of a generous rank” as the compressor (designed originally for high-precision airbrush work) has a large smoothing expansion air tank. When combined with proprietary additional air filters positioned relatively close to the turntable, the complete air supply package delivers a

- ▶ which, importantly, do not present any kind of ‘conflict of interest’ with the materials within the top platter. Total rotational mass of the XL Air is now 44kg, including the relatively light aluminium subplatter.

A turntable air bearing consists of two bearing surfaces. One (on the top) deals with the vertical load, while the cylindrical hole (at the bottom) takes care of the horizontal load. The XL AIR bearing has a substantial shaft (31mm diameter) and 60mm of thrust plate. All bearing surfaces have been made from a porous material with millions of tiny holes to let the pressurised air out into space. This creates an environment for a very uniform air pressure of 4 bar inside the bearing’s gap (tolerance) of just five microns. This ensures an enormous degree of the air bearing stiffness with zero movement (free play) in any plane of action. Just as with the traditional XL, the housing of the air bearing is fabricated out of two massive solid brass elements, clamped together to yield good damping properties. This means the conventional

quiet supply of air at consistent and stable pressure into the bearing. The expansion tank means that when the platter is in rotation, the compressor powers itself up (to produce air) only for 20–30 seconds every three or so minutes. Needless to say, the compressor’s motor generates a certain amount of noise and it is essential that the compressor for the XL AIR turntable is positioned as far as possible from the listening area, preferably in another room (the same applies for the compressor feeding the Air Line tonearm, if used). The manufacturer supplies 25m of hose for the purpose which should suffice in most circumstances.

Kuzma XL turntables are supplied from the factory with one high-mass arm tower and the external electronic power supply unit. With the additional lower platter, the overall height of the turntable (compared to the mechanical bearing version) increases by 40mm, and suitable brass spacers for the arm tower(s) is/are provided. To make the use of the turntable even easier, a separate, very elegant controller unit (also machined out of brass) is supplied and is meant to be placed very near the turntable itself. This turns the deck on or off and controls speed, thus allowing the PSU to be left remote and permanently powered once the fine speed adjustment has been completed.

As the total weight of the XL AIR with a single arm tower (and tonearm) will be comfortably in excess of 100kg, due consideration when choosing a suitably strong (and, even more importantly, rigid) supporting surface is paramount. But, in the spirit of ‘go big or go home’, we could not resist a spot of absolute overkill – an XL AIR with two arm towers and two tonearms with a grand total of around 140kg (315lbs, 22.5st) of not completely symmetrical ▶

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► weight distribution all up. Clearly, this isn't the kind of turntable for 'plonking down on an Ikea LACK table'.

The Kuzma XL AIR was partnered with the company's twin flagship tonearms: the 4Point14 and the latest vintage of Air Line. The former is a pivoted (or, perhaps, better say 'pointed'), 14-inch long traditional (arc) design, while the latter is a tangential parallel tracking, air bearing design requiring its own air compressor.

Just like the XL AIR turntable, Kuzma's Air Line has an extremely rigid, minimally resonating aluminium structure, is easy to adjust (especially for a parallel tracker) and supports accurate VTA and azimuth adjustments. The original Air Line was upgraded with a trough for silicone damping fluid, which helps damp lateral resonance and enhances the overall performance quite noticeably (lateral resonance damping helps a lot even with a parallel tracking arm).

Installation and setup of the XL AIR (and both tonearms) is fairly simple. Four large, high-tensile bolts hold (and release) the bearing housing within the brass main turntable base and, once replaced, the rest (new subplatter, additional bottom bronze platter and the arm tower spacers) followed. The drive belt for the motor went back onto the subplatter and motor pulleys, main platter on top in position and... that's all there was to it. One must not forget to install and connect the airline (air supply hose) into the back of the bearing housing and, once the air supply is in motion, a tiny (but accurate) 'boost' (sorry, air pressure) gauge tells you there is rock-solid and stable 4 bar pressure of air flow ready to spin the platter. Special warnings all over the owner's manual warn, "never to contemplate starting the turntable motor before the air flow is open at the nearby valve, and never to disconnect the air supply until after the turntable came to a halt". Fair point.

The final choice of cartridges required some head-scratching. Ultimately, we ended up with two best models from two different manufacturers. One was an obvious choice – the Kuzma CAR60 – the other was the excellent Hana Umami Red. Yes, their prices are wide apart, but they both have an enviable reputation within their own worlds, and also have almost identical outputs which mattered in practice. The turntable is a platform that can allow some truly monumental tributes to the cartridge-maker's art, but alongside that, it's often more of an acid test of a deck to see how it handles less esoteric – but still first rate – cartridges. We also tried both cartridges in both tonearms to allow a more objective insight into their true abilities in conjunction with the arms, but the XL AIR never ceased to remain the main focus and interest of this project.

So, with the CAR60 moving-coil cartridge in the 4Point 14 and the Hana Umami Red in the Air Line, the concert was about to begin. That's a pretentious-sounding way to introduce the sound of a turntable, but it fits perfectly here.

There's a sense of occasion surrounding the top of the Kuzma tree, whichever arm you go for. That's not just because it's a big turntable to scale, but because the performance on the record is replayed with such a deft touch and so much accuracy. Everything is played the way it should be played, without the remotest interference, error or sin of omission, commission or transmission.

There is a temptation to go for florid prose here; the XL DC already set us up for 'stentorian bass notes' and 'limpid pools of pellucidity' type of gushing wordsmithery. And the XL AIR only improves upon the XL DC in every way, without undermining what made the original performance so good.

The principle difference between the XL DC and XL AIR is close to the difference between the XL DC and most other turntables. It's more about the absence of impact on the music than the character it imparts. That holds regardless of musical genre and whether or not the recording is first-rate or something truly awful.

Most importantly, play something you know really well; 'Come Together' on the 50th Anniversary three LP set of *Abbey Road* by The Beatles [Apple] and the years roll back. The complete control this turntable has over the music means that louche, swampy, drum riff that only Ringo Starr could perform is played with absolute precision. If that sounds like a musical paradox, one listen to the performance convinces you otherwise. You keep going until 'The End' (which is remarkable on a parallel tracker due to the absence of end of side distortion anyway). It's putting you closer to four guys in a studio in St Johns Wood. However, the accuracy of the performance demands full-range systems, as it doesn't have the artificial mid-bass sweetener of some high-end decks. ►

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▶ The big difference the XL AIR seems to bring is an even greater precision to speed control (as well as exceptionally fast start-up and stopping times for a platter that weighs almost as much as a Flyweight boxer). Speed accuracy is an odd thing on LP. You could argue that any reasonably well-designed belt- or (especially) direct-drive design pretty much nails speed accuracy, and past a certain point, you are merely gilding the lily. But then you hear just how precise the XL AIR gets, and you start redefining your record-playing value system. We assume speed precision is best heard with very pure voices and instrument voices because of pitch stability, but in fact it's more to do with the way it copes with less pure tones that highlights just how accurate this deck gets; that little tape 'warble' mid-way through the overture to the *Pirates of Penzance* [D'Oyly Carte, Decca], Lana Del Rey's passing tones and part mumbled vocal on *Norman F***ing Rockwell!* [Polydor/Interscope]. They are dealt with in such a precise way, it tells you more than someone singing in perfect clarity. That kind of precision is absolute.

The turntable is such a neutral vinyl platform, it allows the differences in arms to be rendered in the sharpest focus, both in terms of similarity and difference. You understand why the XL AIR has multiple arm positions, and why so many XL AIR users use more than one arm. The turntable was honest and neutral enough to ensure the 'order' of the Air Line and the 'flow' of the 4Point 14 were rendered so accurately, it wasn't an either/or option; the choice of arm was a natural reaction to different records. This is not audiophilia nervosa, just the logical extension of how an arm, cartridge and record interact when the turntable is simply doing its job better than all the rest.

In a way, there's not a lot to say; the XL DC is one of the best turntables ever made and its performance reflects that. The XL AIR doesn't make that sound broken, but it pushes the envelope so much further in all the ways the XL DC does so well, and does so with few downsides, apart from the sheer physicality of the deck, with its raised height and considerable mass. Granted its XL AIR's all-up price of £52,000 weighs a lot too, but at no point do you look at the complete turntable concept and question that price. I actually think of this like a well-made suspension bridge; it's a piece of heavy engineering that you want to work right. OK, so the consequences of cost and corner-cutting in a suspension bridge are a little more catastrophic than when

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TECHNICAL SPECIFICATIONS

Type: High-mass, air bearing turntable

Platter material: aluminium/acrylic (top), bronze (lower)

Platter weight: 44kg in total

Air Pressure: 4 bar

Speeds: 33, 45, 78rpm

Dimensions of turntable (W×H×D):

45 × 40 × 30cm

Dimensions of compressor (W×H×D):

18 × 41 × 43cm

Total mass (including power supply and compressor): 120kg

Price: £52,000

Manufacturer: Kuzma d.o.o.

URL: kuzma.si

UK Distributor: Definitive Audio

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applied to a record player (no one dies from turntable bearing tolerances), but if you want the very best in vinyl replay – that will outlive your great-grandchildren – it's an exercise in engineering, and the XL AIR is engineered for the long game.

This is not a turntable for those who flip-flop between components in a system. It's not one of those big names on a list to check off. It's the kind you invest in and play for the long game. And, yet, for all the extended height and mass (and the need for at least one air compressor and tank squirreled away somewhere in another room), the Kuzma XL Air is the perfect vinyl partner. It behaves like it was meant to play record after record, and – like the 'sell' of a Patek Philippe watch, you never actually own a Kuzma XL AIR. You merely look after it for the next generation. Put simply, the best just got better. +