



# Foot-Race...

## The ever-longer line of 12" tone-arms

by Roy Gregory

As reported in Issues 50 and 51, it's becoming increasingly difficult to ignore the claims for inherent superiority made for 12" tonearms over their shorter (or should that be "stunted") nine-inch relatives. It's not just the sonic evidence either. Whilst this trail arguably started with the revelatory uplift in performance offered by the SME 20/12, and was significantly reinforced by subsequent experience with the VPI JMW 12.7, Kuzma 313 and Schroeder tonearms, there seems to be no abatement in the flood of new arms reaching the market. Time then to examine these newcomers and discern whether the 12" effective length is of special significance or just a happy accident.

There's no denying the significant reduction in tracing distortion that comes with increased effective length. The questions that go with that observation are whether that increase can be achieved without compromising other areas of tonearm performance (effective mass, structural integrity and resonant behaviour) and perhaps more pertinently, if it's so significant, wouldn't we be better off using a linear tracking design? With these issues in mind, I've assembled a second group of tonearms to assess just how consistent the musical qualities detected in the previous reviews prove to be. Is this a function of arm-length and reduced tracing distortion, or something else entirely?

The arms selected were as follows. The SME 312S, but used in this instance as a standalone product, removed from its intimate association with the 20/12 'table. Whilst I compared the 12" arm with a nine-inch alternative on that deck, this gives us an opportunity to examine

the character and performance of the arm in isolation. Next up was the Brinkmann Tonearm 12.1, a refinement and evolution of that company's 10" design, itself based on the legendary Breur arms. This is much more than simply the 10" arm with another two-inches added to the tube, but has been substantially re-engineered. As with all things Brinkmann, the fit and finish is exquisite. Our final pivoted contestant is the Consonance ST600, originating in China.



This is both the first high-end design I've come across from China and an innovative and unusual beast, offering as it does, variable effective length! Like most modern Chinese products it applies expensive machining and high-tech materials to the problem with apparent abandon, whilst also being far from shy in seeking inspiration in existing designs. The question, as always, is how successful its builders have been in assimilating that knowledge? Finally, and as previously promised, I'll look at a new and (relatively) affordable linear tracking design from The Cartridge Man, the Conductor.

Reviewing this many tonearms, each with its own mounting requirements presents considerable logistical issues. Not only do you need a turntable that can accommodate each arm as well as meeting its requirements when it comes to physical stability and the like (essential where passive linear trackers are involved) you then need to furnish yourself with all the geometrical mounting requirements and

the appropriate armboards to match. Thankfully, Franc Kuzma's generosity in this regard has allowed me to use the Stabi XL4, whose independent arm-towers mean that not only will it accommodate all these arms, two at a time if required, but simple comparisons of effective length are also achievable

in the case of the ST600. It also means that Kuzma's own Stogi 313 becomes available as a stable reference and a link back to the previous review, providing

context for this new round.

Of course, the danger in relying on a single 'table is that you can't eliminate potential matching or interface issues, but finding two (or more) decks that meet the physical requirements and are also sufficiently familiar to provide a sound basis for judgement is a step way, way to far. Not to mention the impact it would have on what is already a pretty daunting project, making it twice or three times the size. So that is one compromise I'm compelled to accept on grounds of sheer practicality. However, the equipment bracketing the tonearms is another matter. I used Lyra Titan I and Skala cartridges, along with the Koetsu Urushi Sky Blue, a rebuilt EMT and the MySonic Eminent. Phono-stages were the Tom Evans Groove Plus (which will receive a long overdue review in the next issue) and the Connoisseur 4-2 PSE. Tonearm cable used was the Hovland, the latter employed on the SME, Connoisseur and Breur arms with their 5-pin sockets. The Conductor arrived with a captive ►



► protractor (a card item is available), scales or even arm-lead provided. You get all the fixings necessary and the allen keys to match, but that's pretty much it. This might seem odd at first, but really only reflects the fact that somebody purchasing this arm or a dealer installing it will have superior examples of all these items anyway. One anomaly I was unable to resolve was the stated spindle to pivot distance of 293mm. Using this I was unable to achieve correct alignment with the Feickert. I suspect that this is actually the effective length, and shortening the dimension to 290mm allowed perfect alignment, albeit with the cartridge mounted well forward in the slots. I'm trying to run this aberration to ground but until I do, the performance doesn't seem to suffer, so I'll go with what works.

Pick this arm up: handle it and marvel at the quality of the finish, the almost watch-like delicacy of the engineering. Suddenly a price of £3295 if not exactly a bargain, certainly seems more than reasonable. In a world of heavyweights the Brinkmann is the exception; a rapier amongst broadswords, it has a rapier sound too...

If ever a product sounded the way it looks then it's the Brinkmann 12.1. The sound of this arm is all about quick, precise, delicate resolution. It unravels recordings with a consummate ease, separating instruments and voices, deftly revealing reverb or acoustic details, synthetic or natural, without fear or favour. Listen to a familiar disc and the first thing you'll notice just how quick the system sounds, the speed with which it reacts to musical and dynamic demands. Nothing demonstrates this better than that old audiophile chestnut, Ulla Meinecke's 'Die Tanzerin', with its sparse mix, sudden low frequency eruptions, reverb effects and myriad incidental noises used to punctuate and accent the track. Indeed, it's all those little touches: taps, finger snaps, claps, rubs, knocks and the rest of the battery of human percussion that underlines the effortless precision with which

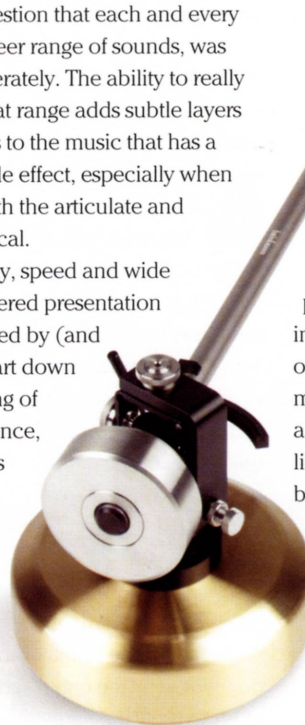
this arm goes about its business. The Brinkmann renders each individual sound so instantly identifiable, its nature (human or mechanical) and source (even down to the finger in the cheek 'pop') so apparent that the song takes on a new level of fascination, becoming a shop window of percussive interjections and subtle textures, all underpinning the carefully constructed mix. That might sound largely academic but it's not. In a recording this meticulously constructed, there's no question that each and every sound, the sheer range of sounds, was chosen deliberately. The ability to really appreciate that range adds subtle layers and emphasis to the music that has a less than subtle effect, especially when combined with the articulate and expressive vocal.

This clarity, speed and wide open, uncluttered presentation is accompanied by (and in no small part down to) a lightening of the tonal balance, a lean dryness at low frequencies that robs the mid and treble of substance and harmonic body, bringing a coolness to the tonal balance, but it's a relatively subtle effect and one that it is readily compensated for elsewhere in the system (all too often inadvertently – making the 12.1 a welcome addition indeed). Musically, it means pairing the Brinkmann with products that don't want for presence, and it's no surprise that the company's cartridge is based on the EMT generator, with its reputation for muscular dynamics. With that in mind I mounted my own modified EMT and sure enough, both it and the Koetsu delivered the musical goods, the former lending an impressive solidity to dynamics, the latter a welcome touch of warmth and colour.

This lightness of touch gives the 12.1 the ability to tease out the deftest of musical flourishes, the most intricate details of technique. So, taking two examples from a single label, its strengths make more of the absolute pitch precision and control of Zinka Milanov than the lyrical phrasing but perfectly centred notes of the young Leontyne Price. Or coming from the opposite direction, the emphasis in Martzy's 'Kreutzer' Sonata leans more

to her playing and less to the musical whole. Her flawless technique and poise are impressively apparent, albeit at the expense of the intuitive intimacy and balance that she enjoyed with Jean Antonietti.

In many ways the Brinkmann's presentation favours the smaller, more intricate and delicate works that thrive on its clarity, rather than the larger scale musical forces where something a little more visceral suits better. But like everything else it's a question of balance, and if your turntable or system wants increased resolution and separation then this is one product that will provide it with a beguiling grace and musical ease. Only one word really describes the way the Brinkmann is built; the same word that describes how it sounds – exquisite.



### The Consonance ST600 Tonearm

The ST600 is the first tonearm I've received that's of Chinese design and manufacture. The significance of that fact lies not in xenophobic questions of quality but in the very different cost equation that imposes on the creative process. Arm's built in the West go out of their way to avoid labour-intensive machining and assembly procedures or literally pay the price for not doing so. That's why the most successful and cost effective arm on the market, the Rega, is based on a one-piece casting that incorporates the bulk of the pivoted ►



► assembly into a single operation. Contrast that with the ST600...

A pair of carbon-fibre tubes are held together by a complex, double-barrelled fixing collar machined to accept four grub screws. An intricately machined headshell carries a separate finger-lift, while individually machined caps finish the exposed ends. A central bearing housing is constructed from three separate and heavily machined stainless-steel cylinders, held in place by further grub screws. The whole thing is hand-assembled. All of which the Rega achieves in a single manufacturing operation!

Of course, this level of complexity creates both potential problems and opportunities. So, whereas the Rega foregoes both azimuth and VTA adjustment in the name of mechanical simplicity, the cheap labour available to Consonance allows the creation of an arm that, whilst at \$1500 is considerably more expensive (and sets its sights considerably higher than) the Rega, allows the adjustment of every conceivable set-up parameter, including both arm damping and effective length – the latter unique in my experience, although Morch do provide different armwands for the DP-6.

The ST600 is possibly best envisaged as an amalgam of the VPI JMW and Triplanar designs. It mounts to a flat plate, secured by three allen bolts. On this is mounted a Vernier type VTA tower with a coarse vertical scale and a more precise dial on the top, viewed through the intricately machined knob. The arm-height can be locked using a large knurled screw and there's a horizontally disposed 5-pin IEJ connector to the rear. The entire assembly is again machined from stainless steel.

A large stainless plate extends horizontally from the moving sleeve of the VTA tower, providing off-set for the arm-base. The bearing is a uni-pivot design damped by a massive well that hangs below the outrigger, from the centre of which rises the bearing post.

The damping is further increased by an array of six cylindrical paddles that extend below the base of the massive and extremely heavy bearing housing. The stepped arm-tube arrangement obviously allows for the adjustment of effective length, but also drops the pivot height of the bearing much closer to the plane of the record. The low-slung dual counterweight assembly also aids stability as well as providing precise azimuth adjustment. However, the weights themselves could have been heavier as with the arm fully extended they rode close to the end of the (very long) counterweight stub. If the arm expects us to take its variable geometry seriously, then a choice of counterweights will be essential.

The large outrigger also supports the cueing mechanism and an

unnecessarily complex arm-rest that involves a small screw that locks the lower arm tube in place. Fiddly and time-consuming to use, it's probably self-defeating which is also probably a good thing as the rounded metal screw tip had already marked the lacquered surface of the carbon tube in transit. This is something that should be simple to sort out – but it does need attending to. Bias is adjusted via a simple falling weight arrangement, although a wider range of adjustment and values would have been useful.

These minor niggles are only to be expected from a first-time tonearm manufacturer (although the ST600 is top of a range of four designs) and are off-set to some extent by the comprehensive

set-up jig, fixings and the good quality arm-cable supplied. I'd have liked an alignment protractor, but given the beast's inherent variability when it comes to geometry, a universal design like the Feickert is always going to be a better bet. Incidentally, there is also an ST500, non-adjustable 12" arm of otherwise seemingly similar design that could be very interesting indeed. Announced but not yet available, I await its arrival with some interest, if only because cutting

the variables allows greater optimisation of the parts along with the reduction in price.

In the meantime, the ST600 offers a fascinating window on tonearm performance.

I started by listening to the Consonance arm in both 10.5" (266mm) and 12" (300mm) configurations, each carefully optimized and tweaked to achieve maximum performance. There was no doubting the crisp, stable and focussed delivery of the 10.5" set-up,

but it was also noticeably less fluid and engaging than the 12" arrangement. Bass notes were well defined and enviably solid, but there was no disguising their rooted, slightly ploddy feel, an overall sense of rhythmic reluctance pervading the musical proceedings that no amount of fiddling with cartridge set-up or damping could cure. These deficiencies clearly diminished around the null points (generally tracks two and four on a five track LP) but became all too clear as the end of side approached. Acid test was the track 'Hymn' from Janis Ian's *Aftertones* album, an end of side torture test. This acoustic track is sparsely arranged so that the listener can receive full benefit from the array of voices (and even a descant) that duet with Ian's soft contralto. With the ST600 in 12" mode the simple melody, picked out on acoustic guitar, ebbs and flows with the soaring phrases of the lyric. Each voice is separate and tonally distinct, changes ►





► in identity laid bare by the pitch and harmonic structure, while the acoustic is broad and open. Playing the same track on the 10.5" arm is almost shockingly different. The voices are focused, but there's no space around them, tonal and locational distinctions severely diminished. The phrasing and simply flow of the track has gone, and so too has its unforced, easy pace. Instead it plods and labours, granular in the highs, edgy on the descant. But it's the elimination of the simple clarity and soaring, uplifting beauty in the voices, the message in the music as well as the words, that's most telling. Ian called this song 'Hymn' for a reason, and chose a structure and performers to suit. With the 12" arm it's not just clear that that's the case, it's downright, unavoidably obvious. Yet with the arm shortened you'd never know and the fragile beauty of this track would escape you forever.

It's a little premature to call time on any arm that's less than a foot. After all, change the effective length and you're changing other parameters too, not least ideal geometry and offset, but even if the ST600 is optimised for its 300mm format, there's no escaping the clear impact of tracing distortion on what we hear, or the simple fact that a well-designed and accurately aligned 12" arm will help mitigate the problem. It should come as no surprise to learn that, with my professional investigative duty discharged, the ST600's arm-tube stayed fully extended for the duration of the review, in which state I have to say, it sounded really quite beguiling.

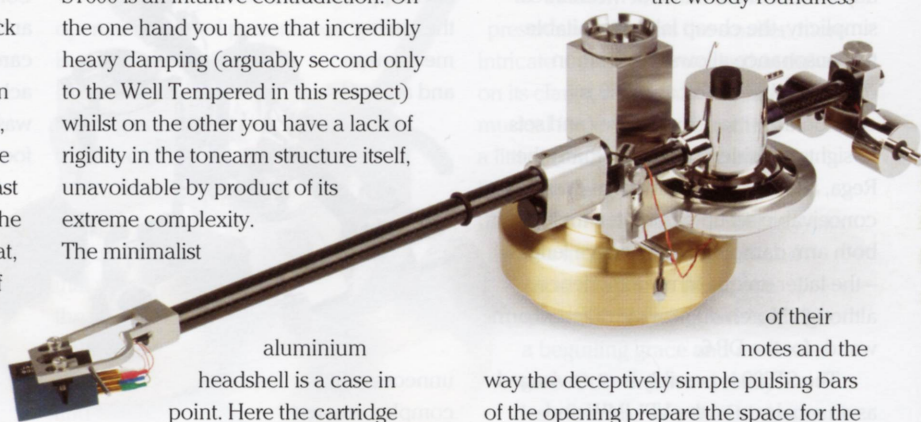
But first, a word of caution; you can't play fast and loose when it comes to matching cartridges for this arm. Low-compliance – really low compliance – is the order of the day. That awkward junction in the arm-tube does nothing to reduce the effective mass of what is already a very long arm. The manufacturer offers no figure for this critical parameter, but it feels to me not far short of my FR64fx – and that's heavy. Consequently it comes as no surprise to

discover that the Lyra Titan is a marginal choice in the ST600, the Koetsu Urushi Sky Blue and rebuilt EMT proving far happier. Even a slight increase in compliance results in a softening of transients and a loss of clarity, focus and detail, but with the right cartridge this arm can absolutely sing. The other major consideration is deadweight. At over 1300g this arm is extremely heavy, and despite the outrigger moving the mounting point towards the platter, I can't see suspended decks offering a sensible platform. Big, heavy and rigidly coupled is the order of the day, but with no shortage of such decks being offered, finding a home for the ST600 won't present the challenge it might once have done.

In some respects the sound of the ST600 is an intuitive contradiction. On the one hand you have that incredibly heavy damping (arguably second only to the Well Tempered in this respect) whilst on the other you have a lack of rigidity in the tonearm structure itself, unavoidable by product of its extreme complexity. The minimalist

easy separation of musical strands, the natural grasp of tempo are the ST600's forte. But only if you meet those provisos: allow the cartridge compliance to creep up and the sound softens; leave the VTA at some indeterminate setting and the music will become lazy and indifferent – and so will you. The Consonance arm demands care, but lavish it with the attention it requires and it responds with a musical energy and enthusiasm that's infectious.

I've already talked about the Janis Ian, this arm's ability to pick the different voices and hold the overall structure of the piece. Likewise, play the Adagio from Mozart's *Serenade for Twelve Winds and Double Bass K361* (a 1982 Crystal Records pressing) and the ST600 captures the tonality of the instruments perfectly, the woody roundness



aluminium headshell is a case in point. Here the cartridge is secured not to slots but the open-ended "prongs" of a rear-facing fork, presumably in an attempt to limit further increases to the effective mass. But even clamped to the top of the cartridge its hard to see those open ends as a desirable feature, especially that close to the energetic mechanical output of a low-compliance cartridge. Combine that with the sleeve joint half way along the arm-tube, and the different materials employed to execute it, and it's hardly surprising that this arm will never win awards for low-level resolution and absolute transparency. Yet, as long as you get the VTA right (thankfully easily adjustable on a record by record basis) and use an appropriate cartridge, the

of their notes and the way the deceptively simple pulsing bars of the opening prepare the space for the soaring delicacy of the melody in what is one of the composer's most beautiful and fragile musical moments. Easy to destroy, this music must be allowed to breathe and depends on the perfect control of tempo and the complete separation of line, qualities that the Consonance arm delivers with calm assurance and utter stability. It is this sense of rooted authority and unflappable presence that allows it to translate these abilities away from such delicate moments into perhaps its natural habitat, the dynamic sweep and stacked power of larger scale works. As wonderfully poised as it is with solo voice or small ensemble, what this arm revels in is giving urgency and purpose to piled power-chords, bringing ►



► pathos to the more bombastic orchestral crescendos, drama to the passion of grand opera. So whether it's *Tosca* or *The Real Ramona*, there's a life and easy separation to the densest musical moments, a propulsive urgency to the drumming on 'Red Shoes' and fluid control and lack of constraint to Caballé's vocal *tour de force*, a feeling that her voice could just go on and on. But if you want to really hear what this arm is all about reach no further than the layered slabs and filigreed artifice of pomp rock. Dropping the tip of the Koetsu into the opening groove of 'Supper's Ready' the sprawling vista, pinnacle of the Gabriel Genesis years, simply fills the room, shifting gear effortlessly between the fragile interludes and the huge slabs of guitar and keyboard that construct the edifice of 'Ikhnaton and Itsacon And Their Band Of Merry Men'. It's powerful, dramatic and whilst I feel slightly sheepish admitting as much, downright, indulgently enjoyable.

What the ST600 delivers is a secure and stable platform combined with an easy grasp of music's ebb and flow, both its pace and changes in density. If it glosses over the finest detail it more than makes up for it with its ability to deliver the sense and substance in a performance. In many ways it reminds me of the Dynavector arm and it could also be said that it plays straight to the strengths of the Koetsu cartridge. Why fight the inevitable would be my response. Yes, the Lyra Titan was capable of increasing the overall transparency and levels of information, but at the cost of that absolute security and physical presence, the feeling that nothing was going to disturb or divert the music's flow. With the Koetsu up front the whole was very definitely greater than the sum of the parts, the musical benefits easily outweighing the hi-fi costs. Whether offering protection to the intricate beauty of a small-scale piece or delivering the scale and purpose of the most bombastic work,

this combination kept recordings safe from outside intrusion and the unfortunate intervention of the system's end-stops, with poise and power aplenty. It is this ability to give the music its own, substantial presence that makes the Consonance/Koetsu combination special and which carries you to the end of each and every record. On the face of it, the ST600 breaks all the rules (and given its performance at 10.5" you might ask why) but almost despite that it succeeds handsomely on a musical level. The ST500 beckons enticingly...

### **The Cartridge Man Conductor passive parallel tracking tonearm**

Len Gregory's Conductor tonearm fills the spiritual void left by the passing of the ET11. An affordable passive linear tracker based on air-bearing technology, that's where the similarities stop. This has none of the operational or constructional elegance of the Eminent, bearing as it does more than a passing resemblance to the Meccano meets Bauhaus minimalism of the Forsell arm. This arm adopts the Lotus 7 approach to engineering, performance being its soul *raison d'être*. So, like its four-wheeled counterpart, the Conductor eschews all pretence of luxury when compared to the competition. Of course, it also eschews upwards of 50% (or more) of their price-tags.

Heart of the beast is a single-sided air bearing (it only has outlets along the top edge) on which floats an aluminium sleeve. This arrangement is similar to the one employed by the original Air Tangent and overcomes the tolerances required (and the associated costs that go with them) of an inverted or captive bearing as used by Rockport or Kuzma, but is not without its downsides. The single-sided set up can't match the rigidity of an inverted bearing as well as demanding a long carriage in order to float. This in turn dictates a longer (and less easy to accommodate) beam and allows less control over the lateral mass. Finally, the row of holes in the top of the

bearing beam that are not occluded by the sleeve are busy pumping air into space, meaning more air needs to be put into the bearing (generally meaning a noisy pump) and act as a source of noise in and of themselves. However, despite these considerations, this is the only serious air-based option at this price.

Atop the sleeve is mounted a carbon fibre arm-tube with a neat circular aluminium head-shell. Between this and the cartridge, the supplier had mounted his cartridge decoupler, an interesting parallel with the Teflon pads advocated by Forsell for use with his arm, along with his latest Music Maker Classic cartridge. I will be examining this in both the Conductor and pivoted arms in an upcoming issue, but for this exercise I stuck with the same range of conventionally mounted cartridges used with the other arms.

The Forsell's cantilever gate VTA arrangement has been replaced by a simple collar and post system, which incorporates a centrally mounted and threaded pole, allowing VTA adjustment via the large, knurled collar. Although this is delineated with small, engraved numbers, a set of much clearer markings would make repeatable adjustment much easier (and less of a strain on the eyes). The base is fixed from below by a single large nut in a similar manner to a Rega, while arm-height is fixed with a simple horizontal grub-screw that engages a slot in the side of the central pole.

The mounting pillar mates to the main beam assembly halfway along its length, again with a single fixing bolt. The plate which mates the two has to be attached to the bottom of the arm cradle, a row of threaded holes allowing some lateral adjustment. A second plate attached to the opposite edge of the cradle supports the lead-out wires or a pair of RCA/phono terminals, offering a choice of in-line sockets or the captive, one-piece Incognito wiring loom fitted to the review unit. A pivoted wire ►



► system, and concentrate instead on the musical performance itself.

With such a quick and agile performer, it's tempting to reach for densely scored and dynamically demanding torture tracks to show off its attributes. Yet, ironically, as impressive as the Conductor is on material as varied as Shostakovich symphonies, Cheap Trick playing live and the Basie Big Band, it's when things get intimate that the real delicacy and low-level resolution and integration of this arm really emerge. Whether it's Martzy's exquisite bowing or the coy vocals of Nanci Griffith, the Conductor conjures

once again into the Colin Davis *Tosca*, with Caballé singing the title role, the drama and scale of the performance is really impressive, its emotional range driven home by the singers (particularly Ingvar Wixell's demonic Scarpia) and the superb orchestral support. Ultimately, in these largest of works the absolute control exhibited by the Conductor finally starts to crack, but it is only bettered here by the likes of Kuzma's far more

## Conclusion

These arms, along with the 12" VPI JMW, Kuzma 313 and Schroeder, all share a common quality, a sense of uninhibited musical flow, that can only derive from their increased effective length and the subsequent reduction in tracing distortion. Reduce that factor still further and the gains become greater still. For once the verdict is clear; despite the associated compromises when it comes to complexity, rigidity and effective mass, as far as pivoted tonearms are concerned, longer is indeed better. Factoring parallel trackers into the equation simply demonstrates just how important this issue really is, with even significant deviations from the mechanical ideal easily being outweighed by the performance gains overall. For serious record replay 12" arms are fast becoming the de facto standard – and rightly so. ➤



them vividly to life. Listening to the sheer range of Ulla Meinecke's singing on 'Lieb Ich Dich Zu Leise' was a salutary experience. Unable to understand a word of German, the song leaves me concentrating on the articulation and expressive qualities in the delivery, qualities that the Conductor writes so clearly across the soundstage, so directly and intimately that this voice you can't even understand has you sitting transfixed.

Communication is the name of this particular game, and whilst the moniker Conductor might conjure images of tail-coats and batons aloft, the prefix 'Lightening' would not be inappropriate, so directly does this arm connect you to the performance encapsulated on the record. The unfettered dynamic range and easy grasp of time and space act to deliver the music right to you, with an immediacy and finesse that is both commanding and captivating. Delving

expensive AirLine or some of the better pivoted arms which can't match its grain-free clarity and top-to-bottom coherence.

This is a wonderfully musical device. It is also quirky in both construction (and for those raised on pivoted arms) operation. Fit and finish are more functional than decorative and even Len would be pushed to describe his baby as beautiful. But it can sing, sing with a voice of such purity and immediacy that if performance matters and the practicalities can be embraced, then I can't see anybody being disappointed with the musical results. Above all, the Cartridge Man Conductor underlines one simple fact; tracing distortion is clearly audible and musically destructive – minimising it is good, eliminating it is better. So much better that you should be prepared to go a fair way to achieve that goal.

## TECHNICAL SPECIFICATIONS

SME 312S  
Price: £1408.37  
Manufacturer: SME Ltd  
Tel. (44)(0)1903 814321  
Net. [www.sme.ltd.uk](http://www.sme.ltd.uk)

Brinkmann Tonearm 12.1  
Price: £3295  
UK Distributor: Symmetry Systems  
Tel. (44)(0)1727 865488  
Net. [www.symmetry-systems.co.uk](http://www.symmetry-systems.co.uk)

Consonance ST600  
Price: £1500  
UK Distributor: Alium Audio  
Tel. (44)(0)1273 608332  
Net. [www.aliumaudio.com](http://www.aliumaudio.com)

Cartridgeman Conductor  
Price: £1700  
Manufacturer: The Cartridge Man  
Tel. (44)(0)20 8688 6565  
Net. [www.thecartridgeman.com](http://www.thecartridgeman.com)