

Vertere SG-1/SG-1 PTA HB

Based on Vertere's flagship RG-1 Reference Groove turntable, and differing only in the bearing and platter, there's a host of innovation in the brand's SG-1 Super Groove...

Review: Ken Kessler Lab: Paul Miller

Anyone who has followed Vertere's founder Touraj Moghaddam, all the way back to the early days of Roksan, cannot fail to have been impressed with his iconoclasm. A lifetime later, he's still making cutting-edge turntables from left-field. I knew he hadn't mellowed as soon as he dissuaded me from using a clamp or a weight on the LP, before removing the spindle with a flourish. That was my introduction to the SG-1 Super Groove, one model below the flagship RG-1 Reference Groove.

In its Clear finish, seen here, the SG-1 retails for £16,000, while £18,250 pays for Black, Pearlescent, or Champagne. All are elegant, the two levels of 30mm-thick cast acrylic for top and bottom strata of the plinth, with a 15mm intermediate level of acrylic, creating a futuristic see-through look. To the deck were added the SG-1 PTA HB arm (£3500), the middle of three models, with Verum tonearm cable (£2700), and Motor Drive Imperium PSU (£7950), also the middle of three, along with Redline Mains and Motor Link cables, for a heady package price of £30,150.

TRANSPARENT TURNTABLE

With most high-end LP spinners being massive, often of all-metal construction and fearsome weight, the use of cast acrylic was another of those clues that Touraj marches to the beat of a different drum, the deck weighing a 'manageable' 20kg. As he explains [see interview, p61], cast – rather than machined – acrylic was chosen for its inherent damping properties, while the three-tier design offers isolation from airborne and structural interference.

The uppermost 30mm acrylic layer is supported directly on the deck's three adjustable feet while the lower slab 'hangs' via six constrained silicone rubber bands.

RIGHT: Six (red) suspension points are clearly visible through the three-layer cast acrylic deck as are the positions of the three adjustable feet. Motor is screened beneath an illuminated cover while its long belt runs around the alloy platter (with 3mm acrylic surface and felt mat)

The middle 15mm cast acrylic layer is supported by, and decoupled from, the lower layer, hosting the platter/bearing and tonearm 'subchassis' that is located via another six domed decouplers – one at the rear and five at the front.

The 24-pole synchronous motor is mounted in its own state of isolation in the far left corner of the top plinth [see pic, p61]. A flat, ground-polymer belt runs around the circumference of the single-piece aluminium platter, which rotates on a stainless steel bearing spindle in a high-copper, phosphor bronze bearing housing.

Even the platter is slightly unconventional. It's topped with a 3mm-thick bonded acrylic layer to which is added a fabric/cork mat with a series of cut-outs. Here the user is invited to experiment even though Vertere wants you to use it cloth side up, and I suppose you could use it without any mat. I tried both of the mat surfaces, ultimately preferring

the cork, which also has a strobe pattern imprinted on it for checking the speed. Then comes the clincher: the spindle is removable, more of which anon.

IMPERIUM CONTROL

The three feet, meanwhile, extend slightly beyond the edges of the tri-layer chassis, so it's worth checking if the 490x400mm (wd)

footprint is accommodated by your favoured choice of racking. More compact at 254x58x214mm (whd), the external Motor Drive Imperium PSU [see pic, p61] controls on/off, speed change and fine speed adjustment. Small toggle switches handle

the first two operations, while fine speed tuning is achieved via a rotary offering $\pm 0.25\%$ and $\pm 0.75\%$ steps. Another detail for those who value pride of ownership is the deck's inbuilt LED illumination, also powered by the Imperium, which lights up the cover over the motor pulley that bears the Vertere logo.

'Cast acrylic has superior damping properties'



I was expecting the complex-looking carbon-fibre arm to be a bit of a handful, as I was thinking of old-school uni-pivots which are, in the main, a pain to set up, but this isn't quite a uni-pivot [boxout, below]. Rather, Vertere's Tri-Point Articulated (TPA) bearing makes it something of a half-way house between uni-pivots and other types and is very straightforward to adjust for VTA, azimuth (with outriggers on the counterweight) and, thanks to the tube's sliding collar, fine tracking force.

I installed a DS Audio Master 1 optical cartridge [HFN Dec '17] in the SG-1 PTA

HB tonearm, feeding an Audio Research REF 6SE preamp [HFN Jan '21] and choice of two power amps – an Audio Research REF 75SE and D'Agostino Momentum M400MXV [see p48], driving Wilson Audio Sasha DAWs [HFN Mar '19]. The presence of the latter proved fortuitous, as I soon discovered that the SG-1's forte is copious bass, and it took mere seconds for it to give the Sashas a work-out.

HOT (MOGHA) DAMN!

Most audiophiles will admit that first impressions are rarely wrong, despite

ABOVE: Top layer of 30mm cast acrylic is connected directly through to the feet while the lowest 30mm layer is suspended by six damped (red) silicone bands. Bearing and tonearm are on the middle, decoupled, 15mm cast acrylic layer

exhortations to the contrary about needing to live with a product for months. That's a weasel's way of hiding a component's weaknesses, because – as with back pain or difficult neighbours – you can get used to anything, including most sonic irritants. Seasoned listeners, though, trust their ears: I cannot recall changing my opinion of a piece of equipment after weeks or months of living with it and the Vertere SG-1 was a knock-out from the get-go.

At first, however, I had to take a leap of faith and return to those bygone days when I simply put an LP on the platter – no puck, clamp or vacuum hold-down. I am so used to employing one of the three that it was almost like an act of heresy. Successfully undermining my conditioning, during set up, designer Touraj whipped off the spindle and placed it on its magnetic resting spot on the plinth, near the front left corner, saying it was needed only to centre the LP [see PM's Lab Report, p63].

A SCEPTIC CONVINCED

Stone me if its removal (and the absence of any form of hold-down) had no deleterious effect on the bass. It was rich, powerful, extended and nearly as dazzling as that of open-reel tape. I had kicked off proceedings with a series of raucous, bass-rich LPs which

PIVOTAL HISTORY

Although Vertere's Tri-Point Articulated (TPA) bearing precludes classifying the SG-1 PTA as a purist 'uni-pivot', it is still a variation on the theme in that it rests on a single point – the basic definition of such tonearms, as opposed to those which use a more stable gimbal arrangement. However, by settling its stainless pivot in the centre of three precision silicon nitride balls, Vertere's TPA bearing brings easier azimuth settling, levelling and greater stability than most uni-pivots, many of which rock, sometimes alarmingly, on their single-point support.

Why, then, would designers opt for uni-pivots? The purist's excuse is the alleged lower friction; the cynic's excuse is lower production costs. As there are good and bad arms of all types, the truth lays somewhere inbetween. The SG-1 PTA is a perfect example, like Graham Engineering's Phantom Elite [HFN Apr '13], of a uni-pivot with stability. Graham uses a magnet as a stabiliser, while other arms have tried myriad Heath Robinsonian solutions, including fluid damping.

Uni-pivots have been around for as long as there have been flat records, with Stromberg Carlson's RA498 dating back to the 1950s, while numerous classics over the years have seduced audiophiles, including yours truly. These include the Decca International optimised for Decca cartridges, Grace's G-940 and much-loved G-714 wooden uni-pivots, arms from Mayware and Hadcock, the refined UltraCraft AC-30 and too many others to recall.

TURNTABLE



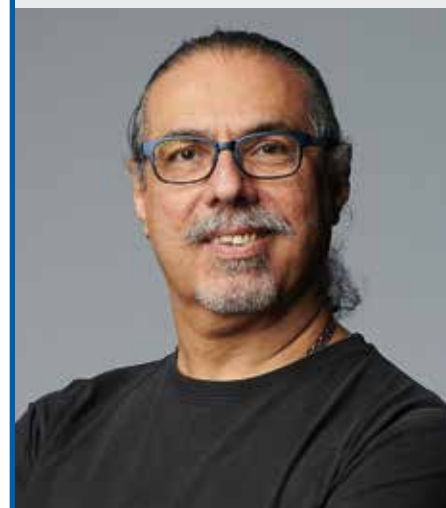
TOURAJ MOGHADDAM

Talking with Vertere founder Touraj Moghaddam requires suspension of disbelief. It's as if he's thrown out all the truisms and prejudices. His philosophy has been refined over the decades, and he maintains it is critical that high performance products perform consistently over long periods of time – something which could not be said for many suspended sub-chassis decks of the past. It's his main reason for choosing cast acrylic, which 'proved to be the most stable, inherently damped material – this was our main requirement for the plinth structure'.

As for tonearms, Touraj admits a standard uni-pivot is cheaper to manufacture than a ball-race design for a given performance, but 'Without the ball-race's inherent noise. However, it does have a disadvantage of its contact point "skating" about and thus creating distortion and instability. The SG-1 PTA behaves like a uni-pivot when it comes to setting up azimuth but has the added advantage of no "skating", which provides the best of both worlds, if at a higher cost'.

As for record hold-down, he says, 'Coupling of the LP to the structure simply guarantees the existence of micro-noises, vibrations and disturbances, magnified thousands of times and fed into the amp. Vertere record players support the LP effectively by a "cushion" of air and tiny pieces of fibre'.

Having recently launched the Gen III Reference tonearm for the RG-1, says Touraj, 'It's clear there is a lot more we can get out of the groove'.



I imagined would expose Vertere's spindle/anti-clamp folly as more eccentricity, but the sheer power of the lower registers on 'Boogie 'Til You Puke' from *Root Boy Slim & The Sex Change Band With The Rootettes* [Warner Bros BSK3 160] suggested very firmly otherwise.

An example of syncopated funk reminiscent of Little Feat, with a dose of Dr John and a whiff of Captain Beefheart thrown in for seasoning, the track is ripe for dissemination by those enthusiasts who adhere to the concept of 'Pace, Rhythm & Timing', as if these are by-products of the system and not simply of the recording being played at the correct speed. I like to think we've moved on from that benighted era and the truth won out: the SG-1 simply extracted all that the grooves contained.

What followed was a more mournful track, 'I'm Not Too Old For You', the SG-1 then able to demonstrate its prowess in the midband, with Root Boy's gravelly vocals richly textured and full of emotion.

'Think of the weirdest noises ever made by Sun Ra...'

ABOVE: Seen with cover removed, the 24-pole AC motor's housing is centred by three spiked bolts on an acetal platform with two bearings. The ensemble is constrained by a silicone ring

You could sense the sheer anguish when he delivered that immortal line, 'When you turn seventeen, I'll just be thirty-two'. Behind him, with impressive depth, was a wall-to-wall array of instruments and backing vocalists, The Rootettes' singing with angelic sweetness. Better still, and experienced even through my first listening session,

the SG-1 was to prove itself a model of consistency and musical coherence.

HOME RUN

This hit home with the 45rpm, 2LP release of Love's *Forever Changes* [Mobile Fidelity MFSL 2-402], a Left Coast milestone that excels not just musically but sonically. I'd already heard the delicate 'Andmoreagain' a few hundred times, but the SG-1 added prominence to a few subtle details that I hadn't recalled having such presence.

Then again, this was the first ↻



LEFT: New Imperium outboard PSU offers fine adjustment for 33.3/45rpm speeds plus a separate 12V feed for the SG-1's LED illumination

TURNTABLE



ABOVE: Transparent rear of the SG-1 reveals 7-pin DIN connector for the Imperium PSU's dedicated motor link cable [right] and captive tonearm cable with strain relief [left]. Note adjustable 'wings' on the tonearm counterweight for fine azimuth tuning

time I'd heard it with the DS Master 1, so here I must show restraint. What can't be denied is the foundation which the SG-1 creates.

Forever Changes never struck me as particularly bass-biased, and it wasn't disproportionate via the SG-1, but the LP certainly seemed to have gained more body. What the Vertere/DS Audio front-end was emulating – also against my conditioning – was bass more in line with the kind of 'fill' I expect from open-reel tape but rarely from vinyl. To test this, I dug out an LP from Love's stablemates at Elektra.

SIGNATURE SOUNDS

Clear Light [Elektra EKS-74011] was recorded two months earlier, in April 1967, in the same studio, Sunset Sound, and with the same engineer, Bruce Botnick. Like The Doors' eponymous debut recorded the previous year, it possesses a distinct character which separates it from other LA bands of that fecund period, while distancing them further from the competing sound of San Francisco's bands. Sixty-five years on, these LPs remain paradigms of rock-with-subtlety.

So nakedly revealing is the Vertere SG-1, and so coherent its demeanour that you could hear with minimal effort the signature sound of both Botnick's skills (also heard on Buffalo Springfield's immortal *Again*) and the mid-1960s Elektra label *per se*. It's a delicious blend of the incisive and the soothing, as if fuzz-tone guitars and massed strings are natural allies. Yes, *Clear Light* and *Love* (and The Doors) are siblings.

With the SG-1 flaunting undeniable finesse above palpably powerful lower registers in

recordings so endowed, it seemed to be in direct contradiction to my near-religious belief that an LP should be all-but-glued to the platter. Yes, the truly commanding TechDAS Air Force III Premium [HFN Jun '19], at twice the price and with vacuum hold-down and air-bearing, can extract a trace more mass and solidity, but that's not the point. The SG-1 satisfies nearly as much by going in a different direction. Like I said, Touraj is an iconoclast.

Even cacophony doesn't faze the SG-1. Few saxophone solos are as madly screechy as that in 'Astronaut Food' from Sopwith Camel's *The Miraculous Hump Returns From The Moon* [Reprise MS2108]. Think of the weirdest noises ever made by the astounding Sun Ra and you're close: soaring treble, rapid attack, red hot transients. By the time I got to Carole King's *Tapestry* [Ode Records SP-77009], chosen to relax me by wallowing in its deliciously convincing piano and yet more floor-filling bass, I was hooked. ☺

HI-FI NEWS VERDICT

Turntables are 'hands-on', so it's always a bonus when a deck excites a pro-active listener. The SG-1 is the antithesis of streaming and a completely fresh approach to vinyl playback, right down to the counterintuitive removal of the spindle. Against all my preconditioning, I fell in love with the SG-1 for both its iconoclasm and its sound, especially the quietness and the cavernous bass. This deck rocks.

Sound Quality: 88%

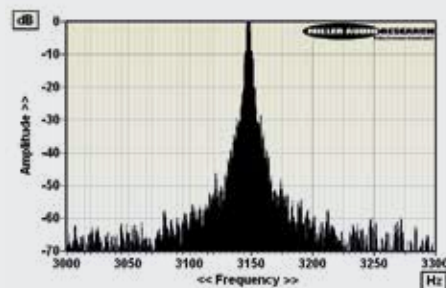


LAB REPORT

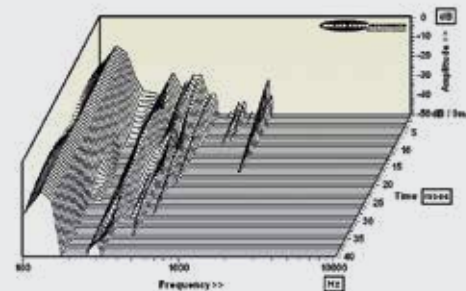
VERTERE SG-1/SG PTA HB

Driven by the Imperium's biphasic 17.8V PSU output, the SG-1's 24-pole AC motor and long belt (shiny side outwards!) achieve excellent speed stability – as supplied, the *absolute* speed was imperceptibly slow at -0.06% but this is well within the finest $\pm 0.25\%$ increment available for fine adjustment. Peak-wtd wow is just 0.02% with little or no drift and no dominant sidebands [see Graph 1, below]. The same is true of higher frequency flutter, also just 0.02% peak-wtd, where correlated speed variations are traded instead for innocuous noise. Furthermore, the phosphor bronze bearing sleeve, with hardened steel spindle running on a tungsten carbide ball, offers a low -70.5dB rumble (DIN-B wtd, re. 5cm/sec). We've seen lower [HFN Jul '22] but the efficacy of Vertere's removable spindle and air-rich/fibre mat is reflected in its far *lower* through-groove figures which, quite frankly, is where it really matters. Measured in-groove on the 3mm bonded acrylic platter surface this figure falls to -72.5dB , and further still to -74.5dB once the spindle is removed and mat introduced.

With the fine tracking force adjustment ring set midway down the partnering SG PTA HB tonearm's 'roll-wrapped' carbon-fibre tube, the principal resonant mode is deferred to a respectable 135Hz. There are also harmonic/torsional modes revealed at 290Hz, a complex cluster at 370Hz-540Hz and a single peak, possibly related to the titanium headshell fingerlift at 1.2kHz [see CSD waterfall, Graph 2]. Bearing friction/stiction is within 10mg in both planes while the underhang counterweight, low pivot point position and captive array of three silicon nitride balls all contribute to the inherent stability of the design even if it can never be entirely resistant to 'twisting'. PM



ABOVE: Wow and flutter re. 3150Hz tone at 5cm/sec (plotted $\pm 150\text{Hz}$, 5Hz per minor division)



ABOVE: Cumulative tonearm resonant decay spectrum, illustrating various bearing, pillar and 'tube' vibration modes spanning 100Hz-10kHz over 40msec

HI-FI NEWS SPECIFICATIONS

Turntable speed error at 33.33rpm	33.31rpm (-0.06%)
Time to audible stabilisation	3-4sec
Peak Wow/Flutter (Peak wtd)	0.02% / 0.02%
Rumble (silent groove, DIN B wtd)	-74.5dB
Rumble (through bearing, DIN B wtd)	-70.5dB
Hum & Noise (unwtd, rel. to 5cm/sec)	-55.5dB
Power Consumption	5W (4W standby)
Dimensions (WHD) / Weight (TT only)	490x240x400mm / 20kg