

The AN Super-table

MARTIN COLLOMS SPENDS QUALITY TIME WITH AUDIO NOTE'S MASSIVELY POWERFUL MULTI-MOTOR TT-3 TURNTABLE

A few months back Audio Note UK's boss Peter Quortrup suggested that *HIFICRITIC* might care to try out his new *TT-3* vinyl disc player, as his pre-production unit was looking for a safe haven while his home was being redecorated. We agreed, and ANUK's set-up guru Mario duly arrived with a Mercedes estate car stuffed full of Audio Note equipment. Another delivery elsewhere, I assumed, but I was wrong – the whole lot was for the turntable!

A total of eight separate units included Quortrup's own Audio Note *P9* two-box pre-amp; three massive, bi-phase, synchronously locked synthesised power supplies for the huge turntable motors; a central command unit; and finally the deck itself. When told that each of the three drive motors was rated at two horsepower (around 1.5kW), I could immediately appreciate why the power supplies were so large – indeed, it turned out that they were not large enough, as the system overheated after a few hours of continuous use, and then had to be shut down for a couple of hours to reset. The well used pre-amp had also developed a fault during transit, with a very noisy left channel volume control; I decided not to use it for fear of damaging my loudspeaker drive units.

The *TT-3* needed little setting up. The player was simply put in position, and the power supplies were all wired up and interconnected in the right order; all turn on and off together, controlled by the master unit. Standard speeds include 33, 45 and 78rpm, and fine pitch control across a wide range is available, monitored

via a four-digit display. Second and third tonearms and cartridges may be fitted, for example for playing mono LPs and/or 78rpm discs, using additional mounting platforms on the symmetrical subchassis. While derivative of the Audio Note Voyd series of players, the *TT-3* has now taken those fundamental ideas to a new level of performance.

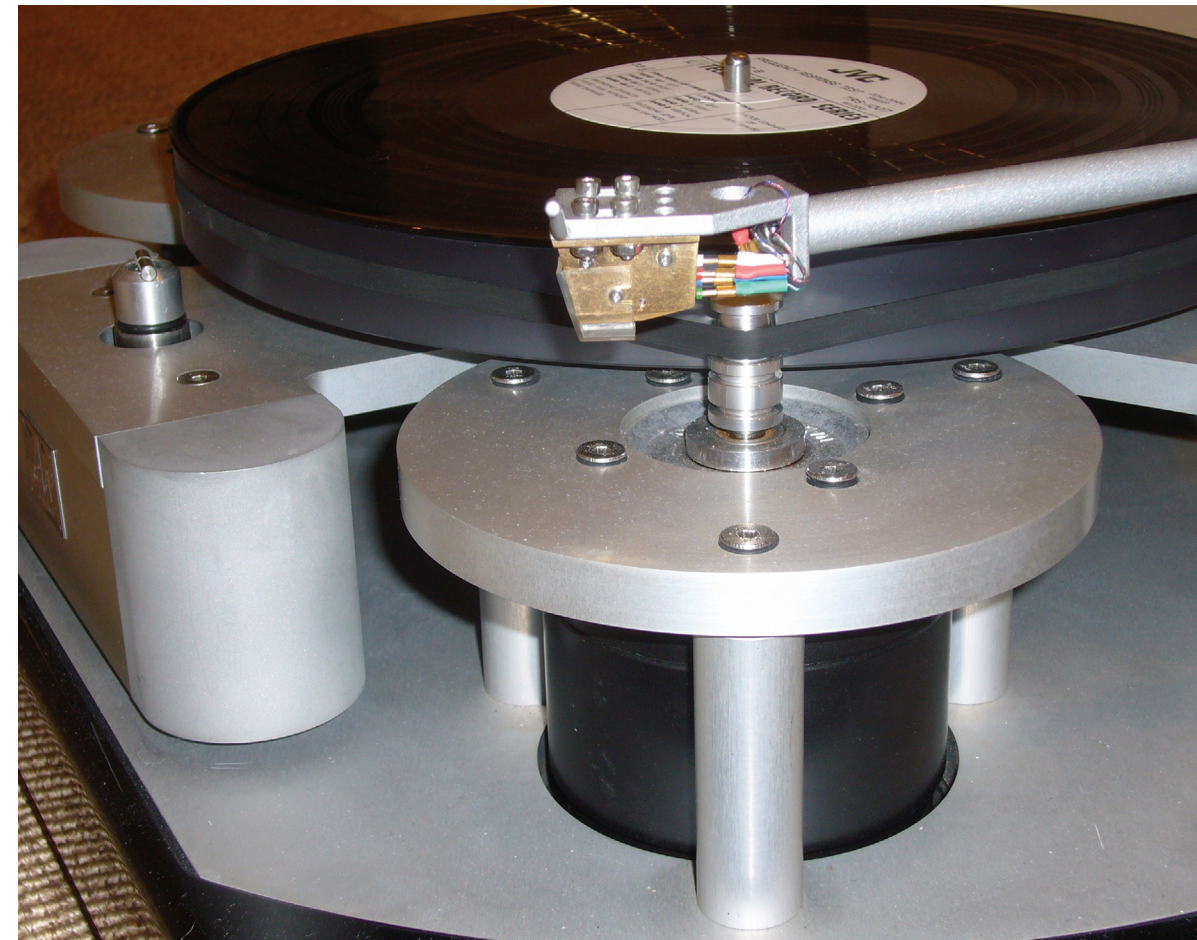
To provide as even an overall balance as possible, the subchassis is designed with three 'wings': one has the arm in the standard position on the far right, the other two normally accommodate balancing weights equivalent to the arm/cartridge mass, so that each spring is equally loaded, making the set up and installation very simple. All parts of the main frame and suspended system are made from aircraft grade aluminium – the ductile grade, which helps dissipate airborne energy arriving as the system plays in the loudspeaker soundfield.

The subchassis can be cut for just two tonearms only: the Rega *RB*-series and the Audio Note *AN-1s*. Rightly or wrongly Audio Note considers most other tonearms unsuitable, because their particular energy transmission and dissipation behaviour is not designed to conduct potential resonance energy away from the cartridge, down the arm tube through the bearings and arm pillar to be dissipated in the subchassis structure.

Having identified dynamic pitch stability as a key issue, the subchassis has been configured as a mechanical system which is dynamically balanced around the main bearing. Adjustable counterweights are supplied to balance out the effective mass(es) of the installed tonearm(s), in order to achieve overall dynamic balance of the suspended subchassis.

The symmetrical drive uses three high speed motors equally disposed around the periphery, and coupled via a belt to the platter edge. The drive strongly resists any variations in speed and hence pitch that might result from subchassis movement, since an increase in belt tension in one direction provides a slackening in the others, so that accurate speed is maintained. The design obsession with speed stability continues with the tight grip the high tension machined rubber belt exerts on the platter periphery, helping to stabilise the subchassis in the horizontal plane, and the motor pulleys are accurately centred on the drive shafts of the huge flywheel-effect synchronous motors.

These are Papst motors of a type once used to drive Studer mastering tape deck capstans (compared to



the usual flea power clock motors employed for most turntables). Huge torque is available, and something like the grip of a mole wrench on the platter spindle is actually needed to slow it down. Huge rotational inertia is provided by the high speed motors which act as powered flywheels. A stable flow of power reaches a lightweight platter which has inherently low stored energy and is largely terminated by direct contact with an LP and vice versa,

The thin, lightweight polycarbonate milled platter is back-cut in a curved profile to inhibit self-resonance and minimise rotational inertia. Stored energy is at a minimum here, while the powerful drive can correct any speed deviation almost instantaneously. Dynamic wow (a subtle speed-wobble due to stylus drag variation) is banished completely.

The old Voyd styling with a sculpted wood plinth has gone, to be replaced by a non-resonant open-style base plate simply supported on three pointed feet. Three circular towers support the open frame motors and these

are directly bolted to the base. Concealed bolts rise from the base and support the coil suspension springs, making this deck both self-righting and naturally stable. With high suspended mass and compliant springs, the suspension frequency is a low 2.4 Hz, well below the typical 10Hz arm/cartridge resonance, ensuring secure groove tracing and a strong mechanical filter against structure-borne vibration. The subchassis may be easily levelled from above.

The *AN/VX* arm is a new version of what was once the flagship Helius model. Our 10 inch sample isn't designed to employ bias compensation. It has an Allen key locking counterweight. It looked to be well designed and constructed with fine bearings in a good state of 'tune'. It's fitted with six conductor silver-Litz wiring so it can be used with the special Audio Note *IO Limited* cartridge, an exotic moving-coil design which employs a superior sounding DC-powered electromagnet instead of a permanent magnet. (Yes, I have heard it, and yes, it works.)





Sound Quality

Some minor difficulties were encountered with this pre production unit, including the absence of the arm lead dressing/fixing clip which will be present on production units. We therefore jury-rigged a vibration isolating support for the cable in order to assess best performance with a truly free subchassis, and this was well worth the effort. Our sample would only run for two hours at a time before the power supplies began to loose their lock, and the rear motor became progressively noisier.

The *TT-3* was placed on a Finite Elemente *Pagode* stand, and the power supply stack was mounted on a nearby *Pagode* floor base. We connected these to a separate mains supply spur to avoid interference with the amplifier mains supply. We ran the unit with the supplied Audio Note components: *IO II* cartridge via an *S4* step up using *Silver Litz* cables. Monitoring was mainly via Avalon *Eidolon Diamond* speakers, driven by Conrad Johnson *ACT 2-2* pre-amp *350 SA* power amp amplification alongside various equalisers on longer term test. Cables were Audio Note *Silver-Litz*, Cardas *Gold*

Reference, and Yter silver-palladium ribbon speaker cable.

This turntable's excellent speed stability was immediately unmistakable. Minor disturbances to the equilibrium of a subchassis normally result in audible wow and pitch changes lasting a second or two. Not so with the *TT-3*, where the level of torque available reminds me strongly of a cutting lathe used for disc mastering, where a really secure lock on absolute speed is essential. From the very first musical note, the sound quality of this deck was shockingly good, clearly transcending the performance of tonearm and cartridge, yet also delivering the best from them.

This deck quite simply defines the twin objectives of sound field noise isolation and rock like pitch stability, delivering a killer blow to the competition and retrieving an astonishing amount of detail from vinyl grooves. Such detail is certainly impressive from an aesthetic viewpoint, but it's the manner in which this detail emerges that so effectively defines its contribution to the art of vinyl replay. It focuses all the detail into clear musical strands: theme and counterpoint; bass line and harmony; and properly constructed musical phrasing. It helps define the importance of those silences between the notes, and delivers an all encompassing compulsive and propulsive

momentum which leaves most of the turntables on the market floundering in its wake.

It's very light on its feet, toe tappingly agile, highly tuneful and powerfully involving. Fast rhythm bass lines in rock material form a solid backdrop to perfectly tuned lead vocals and percussion, revealing new insights into the musicianship of familiar performers. This turntable is simply and powerfully addictive, delivering a performance well beyond the involvement factor that the best CD and DSD (ie SACD) digital replay can manage. (The jury is still out on 24/96!)

Lab Report

A spectrum analyser was used to check rumble, and this showed some mild motor breakthrough (not hum frequency related), particularly when it was well warmed up, limiting the figure to -63dB. However, I anticipate that -70dB should be possible with the second generation power units, which should certainly be below the audible threshold. The main bearing was suitably silent.

This turntable runs at such a high torque that new belts are recommended every three months. Despite the clearly well used and somewhat stretched belt on our example, DIN wow and flutter measured just fine at 0.07%; 0.04% should be easily obtained with a new belt. Full testing was not possible but the suspension isolation was judged close to state of the art and provides a low resonance platform for the playing elements. The tonearm is a strong 10inch design which will accept higher mass cartridges. Its low friction bearings had no detectable play, and it clearly performed with great clarity and low coloration.

Conclusions

Once you feel and tune into the pulse, the wholly positive influence of the *TT-3* can be heard on almost everything you spin on its skinny polycarbonate platter. You instinctively know it's right, as it goes about its business recovering the key qualities found in real live sound – pitch and time stability, expressive dynamics, and naturally spacious airiness.

There's no arguing with the effectiveness of the direct disc-to-platter interface. The open, clear tonal balance and the way complex sections were illuminated without clutter and congestion put paid to any misgivings, or my usual preference for a felt mat. Somehow, that awesome motor power, delivered as pure time-locked torque, coded itself into the reproduction, making this turntable sound like it was founded on tons of concrete.

The *TT-3* is indisputably very expensive, but it really delivers on performance and sound quality. I can certainly

believe the rumour that it has been independently compared to a number of established industry dreadnoughts at up to double the price and has not been found wanting, bettering the competition on dynamics, timing, bass tune playing and grip.

While we have not yet tried any of the super-expensive turntables, on the evidence of our *TT-3* loan sample, and with some caution concerning its pre-production nature, we consider that this turntable establishes a clear reference standard of sound quality for vinyl disc replay. Using it has been a pleasure.

DATA AND TEST RESULTS

Make	Audio Note UK
Model	TT3 + AN 1s /VX tonearm
Type	medium mass coil spring subchassis belt drive turntable/tonearm
Serial	No pre-production model
Speed options	33/45/78 rpm, electronic with fine speed adjustment
Speed accuracy	0.05% (excellent)
Tonearm	AN 1s/VX; no bias compensation; six pure silver conductors; 10inch; Excellent bearings (20mg) , no detectable play
Platter	lightweight back-cut machined polycarbonate, direct LP contact
Motor type	3x High voltage, high speed synchronous/ hysteresis. Outer rotor 2HP each
Wow & flutter	0.06% DIN (very good)
Rumble	very good
Size (HxWxD) (turntable)	52x20x46cm
(power supplies x3)	53x14x41cm
Weight	c75kg
Price (inc VAT)	£29,500 (turntable) + £5,950 (arm)



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