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TechDAS Air Force Two

Weep no more: TechDAS has delivered a baby brother to the all-conquering Air Force One turntable, at less than half the price! The Air Force Two has landed...

Review: **Ken Kessler** Lab: **Paul Miller**

T rue to its word and its long-term game plan, TechDAS has followed the ground-breaking Air Force One turntable [*HFN* Jun '13] with a scaled-down version... but 'scaled down' doesn't seem to apply in one area. For the Air Force Two actually has a slightly wider footprint than the One's and simply looks a lot bigger. This is but the first of the disconcerting differences, if one has presuppositions about what constitutes 'a less expensive version' of a flagship...

It was always TechDAS's plan to deliver as much trickle-down technology from model to model, despite the halving (or more) of the price with each new model – quite a mission when you consider that the One has a true air suspension, an air bearing and vacuum LP hold-down. But the team was undaunted in finding ways to preserve the operational features of the One, by any means possible.

DIFFERENT CHASSIS CONCEPT

Perhaps the most radical change for achieving this in the Two was a completely new alternative to the One's complex main chassis. It would deliver the cost savings, while also creating a new visual presence: the One is the curvier, the prettier of the pair, but the Two possesses its own ultra-functional charm.

And it cannot be emphasised enough that the newer model offers all of the operational niceties of the One, including the illuminated display, pitch control to a maximum of 10% pitch in $\pm 0.1\%$ steps, and pretty much adjustable everything else.

For the Air Force One, TechDAS used a CNC-machined solid block of aluminium with a polished surface.

RIGHT: The machined 10kg alloy platter is lifted 0.03mm above a hard glass surface by a cushion of air (the 'bearing'). The cast alloy chassis is supported on four air/polymer columns

The Air Force Two is more prosaic, its chassis being made of cast aluminium with a textured grey paint finish. While it's clear that they are siblings, the family resemblance is down to the details – like an isolated motor, suspension pillars and the illuminated control panel – rather than the actual styling.

The Air Force One sits on three feet, and it is entirely 'air suspended', while the Two sits on four pillars – hence the impression that it's larger. (The difference in the number of feet is due to the differences in weight distribution rather than costs or aesthetics.) They support the sub-chassis using not air suspension *per se*, but a hybrid suspension system with a sealed upper air chamber and a more economical lower section: a macromolecular polymer with a built-in spring, internally damped with oil in a sealed chamber.

If it's starting to suggest they're more dissimilar than alike, rest assured that the Two operates with an air bearing pump, suction pump, external motor power supply and condenser, just like its lofty predecessor. The cost savings in this

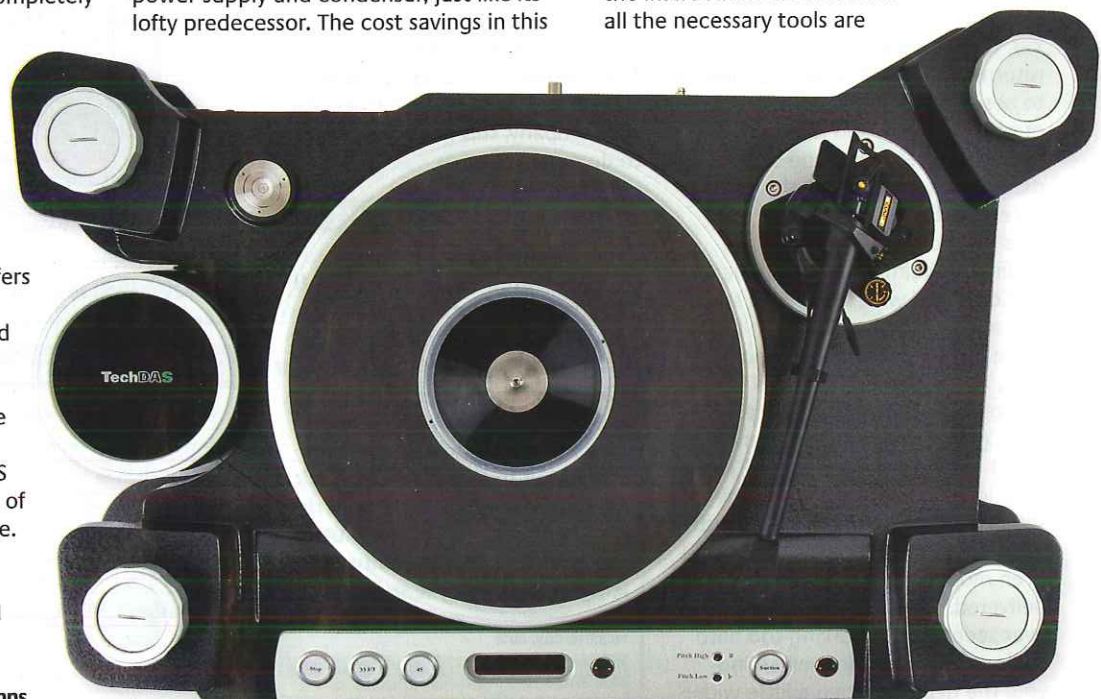
context are due to the Air Force One using two external boxes for these elements, while the newer model makes do with one.

A SIMPLIFIED PLATTER

Adding to the One's complexity is its 19kg platter with a choice of three upper platters ranging in weight from 1.5kg to 10kg and made of three different – and different-sounding – materials. The Two has only its standard platter, made of solid aluminium and weighing 10kg. (The Two is a much lighter machine, at 47kg overall, whereas the One is 32kg heavier.)

Our photos show an SME V arm fitted but the Two can accept two tonearms just like the One. The choices include 9in or 10in tonearms on the right, in the conventional position, while across the back the user can fit either 9in, 10in or 12in arms, and TechDAS says it will supply boards to suit any arm you care to fit. A natural partner is the Graham (or EAT).

Although the TechDAS turntables seem to present daunting set-up regimes, the instructions are lucid and all the necessary tools are





provided. Indeed, the Two is less of a hassle to configure than the One because it's a single-box design. You mount the chassis on a level surface, fit the platter onto the centre shaft, and screw and lock the spindle, fitting it to the air-bearing centre shaft. The deck is levelled by an adjustment knob fitted to each leg tower, set with a supplied gauge to the correct height. The free-standing motor housing is positioned in the 'cut-out' using another gauge, and levelled with its own adjustable feet.

You're then ready to fit the polyurethane fibre belt and fine-tune its tension [see box-out below], mount your arm and cartridge and it's ready to play. A trained dealer can do this in about 30 minutes. Once set up, it maintains a stable state of tune with near-mythic consistency.

Across its front are the buttons for all functions, all in a row, including Stop, 33.3 and 45rpm to the left of the speed display, with Pitch High, Pitch Low and Suction to the right. These are directly equivalent to the controls on the One, albeit

with the buttons in different locations. Ergonomically, the Two is more sensible in this regard, although one could hardly call the One awkward.

Operationally, the joyous feeling is similar to that of the One. There is something absurdly satisfying about a vacuum suck-down system that actually works without drama, and with almost indecent haste. As I grow older, I tire of fiddly nonsense. There is no need in this day and age to design anything badly, ergonomically suspect or which behaves in a recalcitrant manner (like my Pono player, for example). The Air Force Two – precisely like the Air Force One – does exactly what it is supposed to do, without melodrama.

For the tests, the Two was used as supplied, without the damping table and a stabiliser disc offered as options. If prices do have any influence in building a system where money doesn't seem to be in short supply, my own 'mid-level'

'It does just what it is supposed to do – without any melodrama'

SOPHISTICATED SET-UP

While most of the setup is straightforward, adjusting the inflexible belt requires man and machine to work in harmony. Tension is provisionally set by moving the motor backward or forward within its housing before locking it down with a finger/grub screw (*à la* the SME 20 or 30). After setting this approximately, you press 'Pitch High' and '45rpm' simultaneously. The speed adjustment menu appears on the display, and you tweak the belt tension as described above until the display shows 45rpm. After it settles for a few minutes, to ensure that 45rpm does not drift in either direction, you press 'Stop' to memorise the adjustment. The speed has thus been calibrated for both 33.3 and 45rpm.



ABOVE: The enamel finish and more utilitarian aesthetic distinguishes the Two from the One, but soft-touch speed control/adjustment and vacuum LP hold-down features are retained

assemblage (by today's standards, that is) seems to be a match with electronics and speakers in the same price band.

COMPARING LIKE WITH LIKE

For the listening sessions, I used the EAT E-Go tonearm [HFN Apr '13], Koetsu Blue Onyx MC cartridge, the Audio Research REF Phono II SE and REF 5SE preamplifier feeding a D'Agostino Momentum Stereo amplifier [HFN Aug '12] into Wilson Audio Alexias [HFN Mar '13]. (PM's lab tests were with the SME V tonearm fitted.) On a separate occasion, I was able to audition the Air Force One and the Air Force Two side by side, and the experience was as enlightening as a duel between my personal references: the SME 20/3 and 30/12 [HFN Mar '09 and '11].

As for listening material, I chose to use the same discs I played through the Air Force One, 18 months earlier. That way I was able to make use of the notes I'd taken for comparison's sake, and the experiment proved interesting. I can't stress enough the similarity in the relationship between Air Force One and Two, and the aforementioned brace of SMEs, their relative values in performance and price being so consistently paralleled as to beggar belief. But it sure made life easier because the Air Force Two's only valid point of reference is the Air Force One!

Recalling my initial burst with the Air Force One in ideal conditions ➔

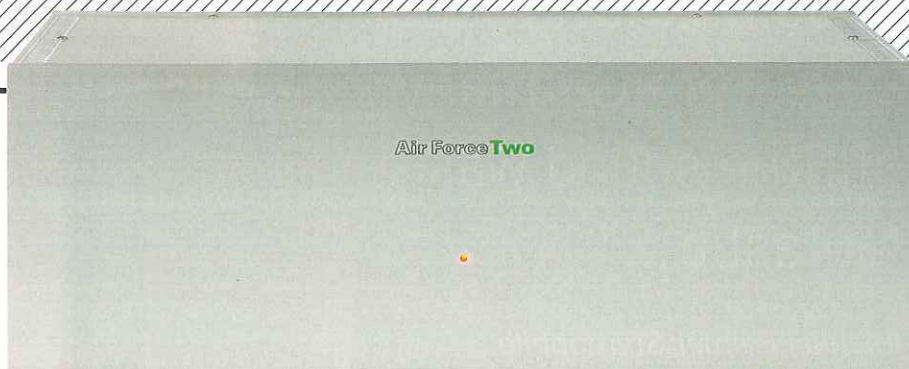
TURNTABLE

THE TECHDAS TEAM

When *HFN* met the TechDAS technical team in Japan, the design of the Air Force Two had been finalised, and production was just starting [*HFN* Apr '14]. They were rightly excited, as every indication showed their key goals had been met. Unequivocally, the primary concern was that the Two would sell for less than half the price of the One. History will repeat itself if the same price/performance formula succeeds for the forthcoming Air Force Three, because further lowering of the retail price is the constraint that forces innovative, lateral thinking.

Here's why: TechDAS insists on sacrificing none of its core design features. In addition to the Two lowering the price of the One by more than half, it did so without sacrificing the air bearing suspension and LP vacuum hold-down. TechDAS managed this by changing the construction and material of the main chassis, and producing fresh designs for the feet, the pump and other assemblies.

TechDAS will be tested even more by the Three, which may be ready in time for Munich 2015, but which one suspects will be saved for the Tokyo high-end Audio Fair in September. TechDAS says it will accommodate up to four tonearms at the same time – recalling Nishikawa-San's designs for Micro-Seiko three decades ago. It will employ the earlier TechDAS turntables' air-bearing and vacuum disc suction mechanism. And (deep breath)... the price would be half that of the Air Force Two.



ABOVE & BELOW: The main PSU, speed controller, vacuum and air-pump are all located inside this substantial outboard accessory. The pump, motor supply and control connections are on the rear

(as opposed to at a hi-fi show), it was the instant appeal of Rodriguez's *Cold Fact* [Blue Goose BMG002] that drew me in within a few bars. Because of the sort of performer he is, a singer-songwriter with edge rather than the kind who makes you feel all warm 'n' fuzzy, the emotional content has to be conveyed with sincerity.

From vocal textures to the resonances one associates with acoustic guitars, the entire album enjoyed the sense of 'presence' that was conveyed by the One. Plenty of low-level detail and air ensured that one heard as realistic an acoustic guitar as could be obtained from vinyl not far off from its first half-century. But it was a marginally 'smaller' image than can be extricated through the good graces of the Air Force One.

In terms of warmth and texture, Rodriguez's voice via the Two was almost indistinguishable from the One. As mature and commanding as was the One with this LP, the Two came embarrassingly close. So it was necessary to ramp up the intensity of the listening session. The Rodriguez album certainly taxed both turntables for transmitting that ethereal, almost indefinable quality that is found only in nuance. But turning to the detailed, immaculately-produced masterpiece, Willy DeVille's *Miracle* [Polydor 833 669-1], provided just the ammunition for assessing

the two turntables' way with attack, extension, dimensionality, *et al.*

This is, of course, where 'Assassin Of Love' first appeared, and it proved to be one of DeVille's most anguished performances. His voice was a mix of the gruff and the nasal, like a street version of Doctor John, and it was truly inimitable. Mark Knopfler knew just how to frame it, and the production values were precisely those that made Dire Straits the darlings of audiophiles in its era.

While it's arguable that it's hard to make this disc sound anything other than scintillating, the Air Force One yielded an experience indelibly etched in my (audio) memory because

'Acoustic guitar was as realistic as could be conveyed by vinyl'

it addressed a design goal expressed by Nishikawa-San, CEO of Stella Inc.

MATERIALIZED BY MAGIC

And I quote this from my Air Force One review: 'From the most ghostly of background silences, a week before Nishikawa-san told me that's what he was trying to achieve, came a sound that materialised as if by magic.'

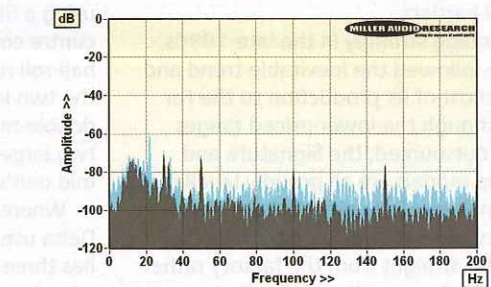
DeVille's voice would materialise from an inky black silence, the noise floor so low that one could mistake that aspect of the performance as near-digital. My impression is that the One bests the Two in this area, but not so you would think, 'Hmm, where can I find another £47k?'. It was hard to



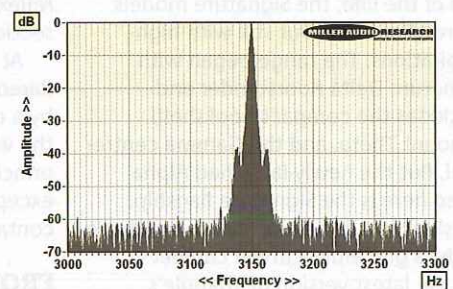
TECHDAS AIR FORCE TWO

Despite differences in the chassis and suspension design, the massive Air Force Two broadly matches the state-of-the-art performance secured by its big brother, the Air Force One [HFN Jun '13]. Once calibrated, the substantial 10kg platter comes up to speed a couple of seconds quicker than with the AF One at 18 seconds but it's still no direct-drive DJ-special! Once stabilised, our sample's platter was true to 33.33rpm within an uncommonly accurate 0.005% (the AF One achieved 0.02%). This *absolute* speed accuracy [note the precise central position of the peak in Graph 2, below] was reinforced by similarly low *cyclical* speed variations – the equivalent peak-weighted total of just 0.03% representing the current state-of-the-art set by the likes of SME's 20/3 and 30/12 [HFN Mar '09 and '11].

Although TechDAS's outboard PSU and pump accessory is whisper quiet, I'd still recommend it's isolated from the deck itself on a separate rack (the long pneumatic hoses certainly assist here). Tested in this fashion, the AF Two's through-(air) bearing rumble is only fractionally higher than that achieved by the AF One (-74.0dB versus -74.5dB) although its spectral composition is very different. In this case, the AF One's cyclical peak of electrical noise every 1.8secs is replaced by a broader span of high frequency white noise and structural modes at 30Hz and 32Hz [see black trace, Graph 1 below]. Incidentally, the peak at 22Hz from the in-groove rumble test is 'built into' the test LP and appears in all our (blue trace) rumble spectra. Electrical noise was significantly lower at -64.3dB (re. 1kHz/5cm/sec), possibly due to the superior wiring of the SME V tonearm. Readers are invited to view a full QC Suite report for the TechDAS Air Force Two turntable by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Unweighted bearing rumble from DC-200Hz (black infill) versus silent LP groove (with vacuum hold-down, blue) re. 1kHz at 5cm/sec



ABOVE: Wow and flutter re. 3150Hz tone at 5cm/sec (plotted ±150Hz, 5Hz per minor division)

HI-FI NEWS SPECIFICATIONS

Turntable speed error at 33.33rpm	33.33rpm (+0.005%)
Time to audible stabilisation	18sec
Peak Wow/Flutter	0.01% / 0.02%
Rumble (silent groove, DIN B wtd)	-73.0dB (with vacuum hold)
Rumble (through bearing, DIN B wtd)	-74.0dB
Hum & Noise (unwtd, rel. to 5cm/sec)	-64.3dB
Power Consumption (PSU + pump)	39W (4W standby)
Dimensions (WHD) / Weight	685x160(+arm)x460mm / 47kg



ABOVE: Pneumatic hoses from the outboard pump are connected to the air-bearing 'Flotation' and LP hold-down 'Vacuum' fittings while power and speed control are communicated via a multi-pin connector. Note the separate grounding post

define, more a *feeling* than an actual sonic reality. Suffice it to say the Two delivers the goods with such expansive dynamic contrasts.

For some reason, it made me picture that scene in Terry Gilliam's *Baron Munchausen* where Robin Williams' disembodied head hovers in the heavens. With *Miracle*, so silent is the background that the voice seems to float. And in order for this to happen the 'sound' of the hardware must disappear.

So coherent is the Air Force Two's playback that this talent will find favour with those who adore wide dynamic contrasts, the surprise element of 'attack', especially from punchy horns. While not quite as sharp as the leading edges heard through the Air Force One, the etching is of such a high calibre that it can fail to impress only those who have the dearer deck to hand.

NAKED PLAYBACK

But that's audiophile stuff: I unearthed Sam and Dave's *Soul Men* [Stax S725] on the ground that it was familiar, not that well-recorded but containing some of the most emotional soul music ever recorded. Again, it was as if Nishikawa was telling me what the turntable would do with each sound. The removal of unwanted noises, like even the most minute traces of vinyl 'whoosh', left me with the most naked-sounding playback of an LP I've heard too many times to consider.

This duo was comprised of two disparate voices that complemented each other with an uncanny balance perfect for the call-and-response techniques they favoured – rooted in Southern gospel. Behind them a rhythm section like no other.

Rumbling lower registers, slightly less weighty than through the One but still of undeniable substance, underscored the performances. While the title track wailed, it was

the torment of 'Broke Down Piece Of Man' that would be the final arbiter. This, though hardly one of Sam & Dave's best-known songs, embodies all that defined their particular brand of soul music. The Two nailed it with nearly all of the force borne of the Air Force One. For a deck costing less than half its price, that's a miracle, and any shortcomings must be put into context.

With turntables at this level – think Clearaudio, SME, Hanss, *et al* – the sonic differences are minuscule even if apparent though nakedly revealing systems. Because I had been fortunate enough to hear the Air Force Two alongside the much dearer One, I am prepared to say – under caution – that the former is the 'lite' version of the latter. It is less minutely detailed, slightly less convincing in the deepest reaches of the bass and a drop less 'polite' in ultimate refinement.

I'm even prepared to say that the SME 30/12 is its direct rival – and I'm sure which is the angel and which is the 'evil twin'. The SME 30/12 has grace, finesse and command. The Air Force Two? A wee bit of a head-banger. But I would not want to choose between them. ☺

HI-FI NEWS VERDICT

TechDAS's designers ensure that each model represents a position in the brand's hierarchy defined by price and technology: more money equals better performance. The Two is among the finest turntables you can buy, period. But the One remains the big brother in this family. Considering the huge price difference, though, it's a decision that will probably be made by your wallet rather than your ears.

Sound Quality: 89%

