Audio Technica AT-LP5

TURNTABLE

Simplicity. It's a beautiful thing. Albert Einstein was a huge fan. He's often quoted as having said '*Everything should be as simple as it can be, but not simpler*', though there's scant evidence that he ever said this. We do know, however, that he was a fan of simplification, because in his Herbert Spencer Lecture (titled 'On The Method of Theoretical Physics') which he delivered in Oxford, on June 10, 1933, he said pretty much the same thing, but expressed it far more elegantly, to wit: '*It can scarcely be denied that the supreme goal of all theory is to make the irreducible basic elements as simple and as few as possible without having to surrender the adequate representation of a single datum of experience.*'

Japanese multinational Panasonic Corporation (founded by Konosuke Matsushita) is also a fan of simplicity. It's one reason why it built the world's first direct-drive turntable, the SP-10, which it sold in 1969 using its Technics brand-name. It was the first time any turntable manufacturer had succeeded in building a motor that could rotate at 33.33rpm and 45rpm. Up until this point, all turntables used either a 'rim' or 'idler' drive (wherein a motor drove a rubber wheel that pushed the outside of the platter along… and undeniably the world's worst turntable drive mechanism) or a belt drive, where a rubber belt is wrapped around a pulley attached to a motor, and the same rubber belt is also wrapped around the outside of the platter, so the motor drives the belt which in turn drives the turntable platter.

Particularly exciting is that when it comes to connecting it to your hi-fi system you have three options—two analogue and one digital…

In essence, Matsushita said: '*Why have the complication of a motor, a belt and two spindles when you can just connect a motor directly to the platter?*' However this seemingly simple idea proved to have two problems, one of which was that the slow rotational speed of the motor resulted in the inevitable positional torque ripple of all electronic motors (caused by the interaction between the permanent magnets of the rotor and the stator slots) adversely affecting the motor's rotational stability (an issue that in common parlance became known as 'cogging'). The other problem was keeping the speed of rotation stable.

Matsushita eventually sorted both these issues out, but it's interesting that the very latest Technics turntable to be released (the SL-1200G, released 2016) claims to address these self-same issues, with the company saying it uses '*a coreless stator design that eliminates cogging*', as well as '*twin rotors to reduce bearing load and minimise tiny rotational fluctuations (wow & flutter),*' and that it has redesigned the motor control technology to incorporate '*spindle motor control technology that switches the stator winding drive mode according to operating conditions to provide both high starting torque and high rotational stability.*' So perhaps direct-drive wasn't quite solved back in 1969 at all!

But why talk about Matsushita, Panasonic and Technics in an Audio Technica review? Because, interestingly-enough, Audio-Technica was founded (in 1962) by none other than Hideo Matsushita, to manufacture phono cartridges. The company has since diversified its business model, such that its headphones are now even more well-known and widely used than its phono cartridges, but the company did enjoy huge success for its first turntable, a battery-powered machine called 'Mister Disc' that was released in 1980. Audio-Technica is now (privately) owned and operated by Hideo's son, Kazuo Matsushita, who took over following the death of his father in 2013.

THE EQUIPMENT

The Audio Technica AT-LP5 direct turntable looks deceptively simple, and it's certainly simple to assemble. You merely need slip the lightweight aluminium alloy platter over the drive spindle, pop the rubber platter mat on top and you're done. You will also have to fit the clear Perspex dust cover, but this too is supremely easy… and all credit to local distributor Technical Audio Group for including the cover with the turntable in the first place. Audio-Technica distributors in other parts of the world sell the dust cover as an optional (and added cost) extra. In my view, a dust cover for a turntable is not an 'optional extra', it's an essential part of the turntable.

As for the assembling the tonearm, there's not much to do here either other than fit the headshell and counterweight. The detachable HS10 headshell comes pre-fitted with a moving-magnet phono cartridge (a custom version of the very popular and relatively inexpensive Audio-Technica AT95E), so it's just a matter of attaching the headshell to the end of the J-shaped tonearm, after which you need to attach the counterweight, balance the arm, then rotate the counterweight to the desired tracking force. (Audio Technica recommends 2-grams, and it's a recommendation I'd follow assiduously, since Audio-Technica manufactures both the tonearm and the phono cartridge, and therefore is in the ideal position to have established the optimum tracking force for the combination.) Yes, you do have to set the anti-skating, but there's no fiddly 'string and weight' system here, just a small dial that should be turned to the same numerical value as the tracking force.

Although it's not as important to level a direct-drive turntable as it is a belt-drive design, it does affect tracking force, so the AT-LP5 has adjustable feet (four of them) that can be adjusted to accomplish this. While I was doing this I found that the feet are also flexible, but they did not seem to me to be overly shock-absorbing, so if you live in a place where there's lots of nearby traffic, particularly heavy vehicles, you may need a custom turntable support to help prevent structure-borne vibration from reaching the stylus (which would affect sound quality).

Platter speed is non-adjustable (that is, it's fixed at an exact 33.33rpm or 45rpm) and controlled by the circular knob visible in the photograph accompanying this review at the front-left of the turntable plinth.

There's an 'Off' position labelled midway between the two speeds, but it's not actually 'Off' so much as 'Standby' because in this position the turntable is still very much 'On', drawing 3.41-watts from your 240V wall socket. To turn the turntable off completely you need to press a very inconveniently-located mains power button which is not only at the back of the turntable, but also recessed about 3.5cm into the plinth, so it's quite difficult to access.

Where the AT-LP5 becomes particularly exciting is when it comes to connecting it to your hi-fi system, because you have three options—two analogue and one digital.

AUDIO TECHNICA AT-LP5
TURNTABLE

Brand: Audio-Technica
Model: AT-LP5
Category: Turntable
RRP: $799
Warranty: One Year
Distributor: Technical Audio Group
Address: Unit 19, 43–53 Bridge Road
Stanmore NSW 2048
☎ **(02) 9519 0900**
service@tag.com.au
www.tag.com.au

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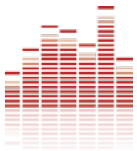
- Phono pre-amp inc.
- Removable headshell



- Fixed speeds
- Power switch
- Software version

LAB REPORT

Readers interested in a full technical appraisal of the performance of the Audio-Technica AT-LP5 Turntable should continue on and read the LABORATORY REPORT published on page 114. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

Lab Report on page 114

On the analogue side, the AT-LP5 has a built-in phono preamplifier, so if your amplifier doesn't have a dedicated phono input, you simply set the slider switch on the rear of the turntable to 'Line' and use standard phono connectors to connect the AT-LP5 to any spare set of line-level inputs on your amplifier (aux, tuner etc). If your amplifier *does* have a phono input, you set the AT-LP5's slider switch to 'Phono' and connect to the phono input instead. The digital option comes about because the AT-LP5 also has an analogue-to-digital converter inside, so you can simply connect the USB output of the turntable to your computer, after which you can then 'rip' your albums in order to listen to them from your hard drive or NAS… a tactic that certainly prevent both record wear and stylus wear. To help you with the ripping process Audio-Technica includes a CD-ROM containing the well-known Audacity recording/editing program. This is nice, but since Audacity is free, open-source software and the version bundled with the AT-LP5 is fairly old (V2.0.3) you'd be better advised to download the current version (V2.1.2) from the internet and use that instead.

IN USE AND LISTENING SESSIONS

Cartridge alignment is critical for both good sound and minimum stylus and record wear, so it's important to get it right. When I checked the accuracy of Audio-Technica's pre-aligned cartridge I found it was spot-on, so full marks for attention to detail. However, if you decide to upgrade the cartridge at some point in the future, you will need to align the cartridge yourself and to ensure you get it right, Audio-Technica provides a full LP-sized cartridge alignment gauge complete with detailed instructions on how to use it. So full marks again!

I next checked the accuracy of the calibration of the counterweight and was gratified to find that it, too, was spot-on. So assuming you get the zero balance correct (a trivial task), you can be sure that when you dial in two grams of downforce that two grams is exactly what you will get, not a milligram more or a milligram less. I also checked the platter's planar rotational accuracy using a laser and found that it, too, was perfect: the platter rotates perfectly 'flat' on its axis. (I must say I wasn't overly surprised about this, because when I first fitted the platter over the drive spindle, I was amazed by the accuracy of the fit.)

My final check was for the accuracy of the stylus drop when using the cuing device fitted to the tonearm, and I can report that it drops perfectly vertically, taking just on two seconds to do so, which will make it a delight to cue your records, and easy to take up exactly where you left off if you interrupt play half-way through an LP. Since this last check involved putting a record on the platter I decided to let the stylus progress from the lead-in track and listen to the music…

The LP I'd selected to play first was Reinbert de Leeuw's version of Eric Satie's *Gymnopedies* on Philips, and I'd done this for a specific purpose, which was to check how much wow and flutter I could hear. Slow piano music is the definitive test for wow and flutter on a turntable, because if you can't hear any with slow piano music, you'll never hear any wow and flutter at all … ever … no matter what type of music you play. And, no matter how intently I listened, I could hear no wow from the AT-LP5, nor could I hear any flutter. I am sure there probably would be some present, but I can report that it is not audible… and that's always the proof of the pudding.

But wait! There's more… Another reason for me playing the *Gymnopedies* was so that I could check for rotational speed accuracy, since I could play along on my own piano and check that the piano's pitch was the same as the record. I am no concert pianist, but de Leeuw plays the *Gymnopedies* s*ooo* slowly that it's not hard to play in unison… though since I can never seem to get the timing quite right, '*almost in unison*' would be a better description! And yes, the two pianos' pitches were perfectly matched, so my review sample AT-LP5 was spinning the LP at a pitch-perfect 33.33 rotations per minute.

The same disc also allowed me to make a start on evaluating the sound quality of the Audio-Technica AT95X and I have to say I was impressed. The tonal accuracy was very faithful to the sound of the piano, with a good solid bass sound and a very real-sounding midrange. The high frequencies sounded very pure and clean, but did seem to lack a certain lustre, and there wasn't quite the 'air' I hear when I am listening to a first-class cartridge. On the plus side, however, this also had the effect of taking the sharpness out of the sound when the stylus encountered a small scratch or a dust particle in the groove, so rather than wincing whenever this happened (reminder to self: I just have to bite the bullet and invest in a good record-cleaning machine) I was able to roll with it and continue to enjoy the music rather than beat myself up because my records weren't pristine.

As it happened, it turned out that I'd trialled the AT95X using the musical genre with which it was least comfortable, because when I continued listening, but this time using modern rock and jazz albums, I didn't notice either the lack of lustre or the absence of air, but perhaps modern recording engineers push the levels harder in the highs than they did thirty-odd years ago, when there seemed to be more 'purist' engineers than there are now. So, whereas if I owned the AT-LP5 and played exclusively classical music, I'd likely upgrade the cartridge immediately, if I played mostly rock and jazz albums (and their ilk) I would be perfectly happy to stick with the AT95X… at least until the stylus wore out, at which time I'd look at upgrading it… probably to one of my favourite 'budget' cartridges, the Ortofon Red. However, thanks to the design of the headshell and the mass of the tonearm, you will have an extremely wide range of cartridges from which to choose in the event you decide to upgrade. Remember too that since the headshell is removable, it's super-easy to have several different cartridges on hand, all pre-mounted in headshells, so you can choose whichever one best suits the genre (and the condition of the LP… I'd be loath to subject the stylus of my most expensive cartridges to the rigours of my most badly-scratched LPs).

CONCLUSION

Beautifully built, the AT-LP5 screams 'bargain' from the rooftops, with its interchangeable headshells, no need to fuss around with belts and tuning suspensions, no need for an external phono stage or the requirement for an amp with a phono input, and no need for a USB converter in order to rip your record collection. Everything is all built-in already! The Audio-Technica AT-LP5 turntable represents 'no-fuss' fidelity at its finest. *Kane Courts*

CONTINUED ON PAGE 114

CONTINUED FROM PAGE 38

A measured wow and flutter test result of 0.09% RMS unweighted is an excellent result

TEST REPORT

Newport Test Laboratories measured the rotational speed of the Audio-Technica AT-LP5 as being exact at both 33.33rpm and at 45rpm, so that when replaying a test record with a 3000Hz test tone at either speed, the measured frequency was exactly 3000Hz. The lab also measured wow and flutter to several of the half-dozen standards in common use. CCIR unweighted wow was measured at 0.2%, and CCIR unweighted flutter at 0.07%. Using the Australian standard for combined wow and flutter measurement, *Newport Test Labs* reported a measured wow and flutter test result of 0.09% RMS unweighted. This is an excellent result.

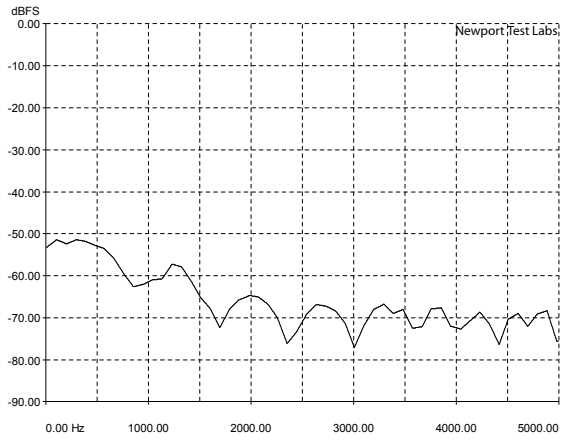
Turntable rumble, referenced to an output of 3.54cm/second, was better than Audio-Technica's own specification of –50dB, coming in at around –52dB below 500Hz, as you can see on Graph 1.

The frequency response (black trace) and channel separation (red trace) of the Audio-Technica AT95X moving-magnet cartridge is shown in Graph 2. You can see the frequency response extends from 24Hz to 15kHz ±3dB, which is an excellent result, but you can see that while the response is essentially flat to within 1dB up to 1kHz, it starts rolling off above 1kHz to be 3dB down at 7kHz, at which level it remains up to 15kHz before rolling off a further 2dB to end up 5dB down at 20kHz. Channel separation at the usual measurement frequency of 1kHz measured 22dB, exactly the figure specified by Audio-Technica, and is better than 20dB between 70Hz and 7kHz. Separation diminishes at the frequency extremes, which is typical of all phono cartridges.

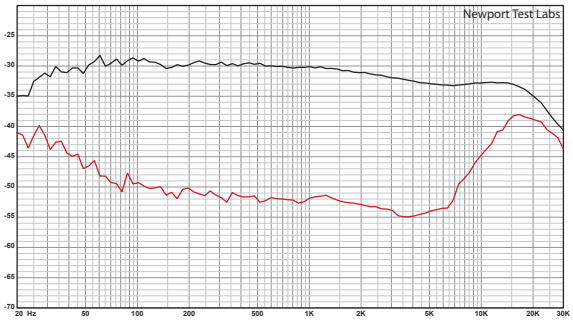
Total harmonic distortion at 1kHz, at 3.54cm/second, is shown in Graph 3. You can see that 2nd harmonic distortion is at –31dB (2.81%), third harmonic distortion is at –52dB (0.25%) and fourth harmonic distortion is at –60dB (0.1%). These are excellent results for a budget-priced cartridge.

Output voltage from the line output was measured at 2.0VRMS at 1kHz, referenced to 3.54cm/sec, considerably higher than Audio-Technica's claim of just 150mV (but one which is referenced to 5cm/sec). The added voltage won't go astray and is low enough that it's unlikely to overload any line-level input.

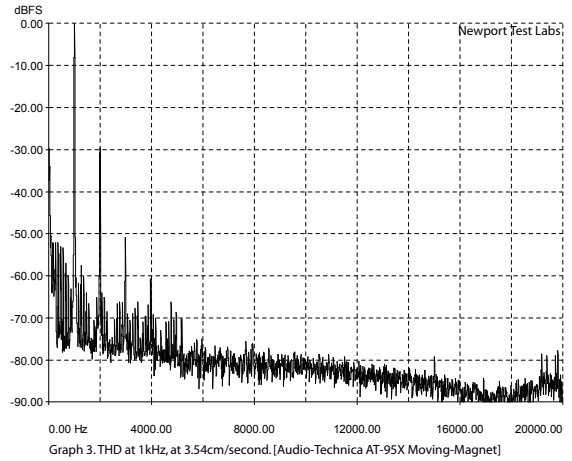
With the preamplifier switched off, output from the cartridge itself was measured at 4mV, which will perfectly suit any external RIAA phono preamplifier you might care to connect. ***Steve Holding***



Graph 1. Rumble, referenced to 3.54cm/second. Audio-Technica AT-LP5 Turntable.



Graph 2. Frequency response (black trace) and channel separation (red trace). [Audio-Technica AT95X]



Graph 3. THD at 1kHz, at 3.54cm/second. [Audio-Technica AT-95X Moving-Magnet]

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