

# Hard Drive

**SMD's V2.0 uses idler drive to spin its platter, like turntables of yore. Noel Keywood peers closely at an interesting update on his beloved Garrard 401.**

It was after seeing a beautifully restored Garrard 401 turntable at the National Hi-Fi Show in Whittlebury some years ago that I looked at the Peak Hi-Fi website – and my eyes popped out. There were restored Garrards everywhere it appeared, looking wonderful in a wide variety of finishes and plinths, ready to grace the home of vinyl lovers around the UK – and

outside it. Not surprising then that Peak Hi-Fi should end up producing a modern equivalent, the SMD V2.0 I am reviewing here.

The reason being that Garrard ceased production of this now-famous turntable a long time ago, in 1977 no less, and the company was closed down by owners Plessey a few years later. If you want a 401 today, as many do, you'll have to take

your chances buying a second hand unit – rare as hen's teeth – that will almost certainly need work done on it or buying a re-conditioned one.

Prices are around £400 for the former and up to £3000 for the latter, or even more, depending upon its state, plinth, etc. With a dwindling supply of the things it was only a matter of time before someone produced an alternative, since there's







*An open external arm support gives easy access to the signal cable. Our review sample came with an Ortofon Cadenza Bronze MC cartridge fitted to a magnesium SME V arm.*

a market within the UK and outside it.

This market existed long before today's vinyl revival: I first saw a container being filled with them for shipment to Japan way back in the early 1990s. And my own 401, bought from Garrard whilst still in production, was fettled to perfection in the early '90s by expert Dr Martin Basin. The 401 has been a recognised classic for decades.

In essence the 401 was simple engineering wise, if superbly made – sort of! Towards the end of its life, quality control went downhill and not all 401s were perfect by any means, which is why new bearings, idler wheels and a very solid plinth are often needed in restoration.

All of which is to explain why Peak Hi-Fi decided to build the new SMD V2.0. Priced at £4900, in essence it is an idler drive turntable designed along similar lines except that it uses not a 1960s squirrel cage motor seemingly strong enough to power a Tube train but a modern low speed d.c. servo-motor from Maxon, a Swiss motor manufacturer.

To feed this motor, the V2.0 has an external two-speed power supply, with on/off and 33/45rpm buttons. Speed is changed electronically, not by moving the idler wheel to a different pulley step as in the original 401, where 78rpm was also available I'll note.

Garrard used a high-torque motor for fast start, since the 401 wasn't really purposed for domestic

use so much as professional use, typically in broadcast studios. Here it needed to react instantly, have steady speed and bullet-proof construction to withstand heavy daily use year in, year out. A bright orange stroboscope illuminated the milled-in markings around the edge of the platter giving it strong visual appeal whilst ensuring chipmunk impressions would not be sent over the airwaves – annoying music teachers and music scholars throughout the Home Counties; perfect pitch can be an issue, mostly with Classical music. Rock demands a different set of sonic priorities and the Garrard met these too, which is why it is legendary today.

The 401 has a sound that

everyone likes, by good fortune. Turntables did not have 'a sound' back then, being seen as sonically inert and I doubt that Garrard subjectively engineered it. It was sonically effective all the same and has since bestowed magical properties upon idler drive.

The SMD V2.0 has been designed to recreate the sound of a 401, or at least its characteristic strengths, avoiding its weaknesses. There were weaknesses; 401s are not perfect by any means, as reviewer and violinist extraordinaire Rafael Todes (Allegri String Quartet) is wont to remind me; he progressed from 401 to Inspire Monarch. I accept the 401 is not an ultimate turntable and I can even tell you why, but this is a review of the SMD V2.0 – and I

must stick to the point!

One of the points is solid build quality, another is ease of use. On the former, the V2.0 is built in much the same way as the Garrard. It uses a gorgeously sculpted heavy and rigid machined alloy chassis, supported by three large support legs that use Sorbothane to provide isolation. A plinth is not needed – no woodwork here – instead there is a vestigial chassis.

The machined aluminium platter is both rigid and heavy at 2.9kgs, so it has a lot of rotational inertia. It spins on a bearing much like that used by Garrard in the 401, but SMD had to finely hone the tool steel spindle to microns to get speed stability figures



*A Maxon servo-controlled d.c. motor sits beneath the machined chassis, driving through an idler wheel. Power comes from an external supply through a two-core cable.*





**With platter removed the idler wheel and its support arm can be seen. Currently there is no hold-off mechanism to disengage it when the platter is stationary. The central bearing has an Oilite bearing and a central shaft ground to very standard of concentricity.**

able to match Direct Drive.

I know this because I had doubts about an early sample (good, but not exceptional). Shaun Daniels of SMD investigated and found that extreme precision of circularity was needed to minimise the 'once per revolution' wow at 0.55Hz (33rpm) that most turntables exhibit to a greater or lesser extent, as highlighted by our analysis of wow. This transformed the V2.0, by more than halving the wow, suppressing it to levels lower than other turntables. Servo-control was also adjusted to lessen the motor influencing the platter once at speed, relying on the platter's high inertia to provide speed stability. This allowed the SMD V2.0 to achieve slightly better than Direct Drive speed results and one of the most stable rotational performances I have seen but it lengthened start-up time.

These days electric motors are a big technology. Low speed d.c. motors and stepper motors are everywhere, in disc drives, CD players, washing machines and moving aircraft flaps. The low speed Maxon d.c. motor used by the V2.0 is much the same as these motors, or any Direct Drive motor, in that it is electronically commutated; it wouldn't work without transistors, put simply, switching current into stationary coils.

These days however, the whole process is packaged up into silicon control chips, complete with speed reference and servo-feedback. This then is a modern high-technology

motor, not a simple a.c. synchronous type you find in so many belt drives.

The turntable itself isn't Direct Drive of course: the motor is geared down by the intermediary idler wheel. The hard rubber idler is finely machined to concentricity and works perfectly, measurement showed.

It provides a hard coupling to the motor, removing the variability introduced by elasticity along the length of a belt and the speed variations this introduces – the reason why belt drive turntables commonly lack pace and timing.

The main issue that potential purchasers are likely to find difficult to accept in the V2.0, in current form at least, is the lack of a mechanism to easily disengage the idler when the turntable is not spinning to avoid

flat spots. Currently, a small tool is provided that has been pushed through an opening hidden beneath the base plate – a fiddly job impractical for everyday use.

Whether the SMD 2.0 will be fitted with a hold-off mechanism I do not know at this point. Shaun Daniels was uncertain it was needed but Garrard's 401 did disengage its idler when not in use, as did all idler drive turntables I believe.

I think it would be unwise to ignore this and suggested either a simple cord to pull the idler wheel arm out of engagement or, more ambitiously, a solenoid to hold it in engagement so when power was removed it would disengage.

The other difficulty with our sample was that absolute speed could only be set using a stroboscope. The speed adjustment control was uncalibrated although I did inevitably mark 33.3rpm onto a piece of masking tape for quick reference.

Otherwise, the V2.0 was easy to use. There's an on/off button on the power supply unit, a speed change button and speed adjuster – and that's it.

The adjuster provides 5% speed variation, measurement showed. Run up is slow, but not agonisingly so. A heavy puck holds down an LP, the platter mat being a hard vinyl disc – but this can be replaced of course.

Our sample had a lovely SME V magnesium arm fitted, complete with Ortofon Cadenza Bronze MC cartridge. I connected the arm's leads to an Icon Audio PS3 phono stage and thence to Quad II-eighty valve amplifiers (80W) driving Spendor SP200 loudspeakers, on review for next month's issue. This then is an arch-analogue system with nary a



**The power supply speed adjustment control was uncalibrated making a stroboscope essential for setting speed accurately to 33 or 45 rpm. Adjustment range measured +10% to -6%.**





**A two pin screw connector delivers power to a 1.4 metre fabric covered power cable. Mains power input was via a conventional IEC connector, the Maxon control board accepting 100V-240V mains input.**

transistor in sight – and it sounded delicious I will say right now!

**SOUND QUALITY**

Firstly, one of the peculiarities of a Garrard 401 is that it seemingly maintains blistering pace, having a rock-solid grip on tempo. There's much speculation as to why and the suspicion is that it better resists dynamic wow caused by the stylus in the groove than other turntable types. Belt drives, as a breed, have a more mellifluous sense of tempo.

I ensured the SMD V2.0 was set exactly to the right speed using a test disc, rather than a stroboscope, to be certain about what I was hearing – and sure enough with high-tempo Rock performance came out of the gate seemingly at breakneck speed. A fast tempo song with electronically timed synth beats such as the Scissor Sisters 'Filthy/Gorgeous' highlighted this property in breathless detail: the drum beat was powerful and hard locked onto the beat, whilst the bass line seemed to race along.

Sudden changes in the song's structure were dramatically underlined: the V2.0 brought clarity to what was going on dynamically and in temporal terms, making the song just viscerally more exciting. This is what the Garrard does, it leads music – Rock – on a long high-octave charge that makes it a gripping listen.

I'm aware that Direct Drives like my Technics SL-1210 and Pioneer PLC-590 are actually more metronomically correct and measurement underlines this, yet they don't seem to have the pace and dynamics of the Garrard, which is why I still use it. The SMD V2.0 offered a very similar performance across a wide range of Rock I span on its platter.

Where the V2.0 pulls ahead

of the Garrard is its sense of stage depth, and lack of midrange "greyness", a slight coloration the 401 is known for.

I was well aware when spinning torture 45s like Alison Goldfrapp's 12in 45rpm single 'Ride a White Horse' that this system was not only maintaining the beat and power of the song, but also resolving space and depth in the soundstage around Goldfrapp at the mic.

It added life into the track, making me aware that not only were there programmed synths but also a singer at a microphone. Sudden drum cascades and changes of tempo were vivid in their portrayal: great fun, it brought a smile to my face.

And that was one reason why

you would want a turntable like this: if you have the wish and the home to play Rock as it should be played (cough) then every bit of the hi-fi chain needs to do its job in appropriate fashion and with LP we are talking a big idler drive like this up front.

With more laidback material like Jackie Leven's 'Some Ancient Misty Morning', opening percussion sounded fresh and crisp, timed to perfection but supple and forceful too. This being a more organic Rock ballad, Jackie's voice takes prominence and it was easy to hear him at the microphone, the V2.0 offering a convincing sense of stage openness. This brings a natural, relaxed character to its sound.

**CONCLUSION**

Shaun Daniels has obviously worked hard and spent money on the SMD V2.0. It is beautifully built, solid – and every bit a successor to the 401 in these terms. You have to work hard to sound like a 401 and I think the V2.0 has managed it. It has also overcome the weaknesses of the 401, offering less colouration and more air and space in the stereo sound stage.

Our review sample was finalised in performance, being more speed stable than Direct Drives, but issues such as idler wheel retraction and speed calibration yet need to be resolved. Potentially then, a great turntable.

**MEASURED PERFORMANCE**

I set the V2.0 to 33.3rpm with a DIN 45 545 test disc and the servo-controlled Maxon motor held it very steady at this speed.

By not changing speed either regularly (wow) or over the long term (drift) speed variation was low all round. Our analysis shows basic rate rotational wow at 0.55Hz (33rpm) was extremely low, measuring just 0.08% with little fluctuation. I expect to see around 0.2%

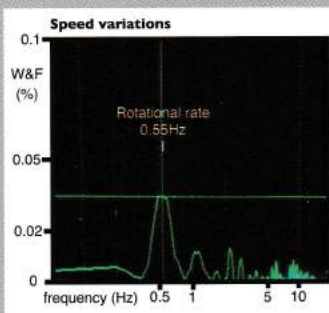
with good belt drives (0.3% for budget designs) and 0.08% with Direct Drive, so the V2.0 is as good as it gets here.

The test disc used and disc centring are critical to measuring low values like these accurately. Our analysis clearly shows the V2.0 has minimal wow at 0.55Hz (33rpm) by the low level of the peak at this frequency.

Apart from this basic rate variation there was little else of note, with no sign of idler wheel disturbance at 7Hz.

The V2.0 was as speed stable as a Direct Drive under measurement, showing the effectiveness of a high quality servo-controlled d.c. drive motor allied to a heavy platter, with no compliant belt to introduce variance in the drive chain. **NK**

**SPEED STABILITY**



<b>Speed accuracy</b>	<b>adjustable</b>
<b>Speed range</b>	<b>-6% to +10%</b>
<b>Wow</b>	<b>0.08%</b>
<b>Flutter</b>	<b>0.05%</b>
<b>Total W&amp;F weighted</b>	<b>0.06%</b>

**SMD V2.0 TURNTABLE**  
**£4900.00**



**OUTSTANDING - amongst the best**

**VERDICT**

Top performance and sound, but details need finalising.

**FOR**

- pacy sound
- solid bass
- adjustable speed

**AGAINST**

- uncalibrated
- idler hold-off tool
- no 78 rpm

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