Upgrading the Upgrade –The New Origin Live Turntable Motor
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In DIY Supplement 65 published with the May 2002 issue of Hi-Fi World, I described my experience of upgrading my turntable using the Origin Live (http://www.originlive.com) kit of parts. This was an extremely successful project that transformed the sound of my vinyl collection. However, the only criticism made of the turntable since then has been that a slight motor noise can be heard if you place your ear close to the motor. Being a DC motor, the noise was a purely mechanical 'whirr', but it did not seem to be transmitted to the cartridge. However, I was delighted to read in the June 2003 issue of Hi-Fi World that Origin Live has revised their DC motor kit with a new motor that runs silently and gives significantly better performance than the previous motor.

Figure 1. The Old and New Motors

The motor is available as a separate item for £79 and has identical fastening holes, which makes it very straightforward to replace. It was a relatively simple exercise to remove the old motor from my turntable. The two motors can be seen together in Figure 1, the new motor being on the right.

Figure 2. Audio Test Bench Software

While the motors were out of the turntable plinth, I powered them up to see if there was any discernable difference in motor noise. Noise from the old motor was very evident, to my ears, but the new motor was hardly audible at all. Of couse, this is a very subjective assessment, so I though it might be useful if I could somehow quantify the noise produced. In order to do this, I made use of my PC, a microphone and some freeware oscilloscope software that is available on the web. The software, "Oscilloscope 2.51", is bundled with a package called Audio Test Bench which is available from http://www.HigherFi.com (Figure 2) and also, incidentally, includes a very useful tone generator. Figure 3 shows the tone generator running at 440Hz with the resultant waveform being displayed on the oscilloscope!

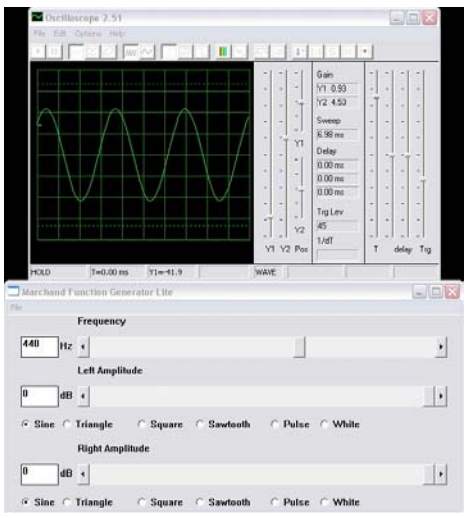

Figure 3. The Software in Operation

Armed with the above software, I took some measurements of the two motors Obviously, the the same oscilloscope timebase and gain settings

were used for each motor. With reference to Figures 4 and 5, the reduction in noise level with the new motor can clearly be seen.

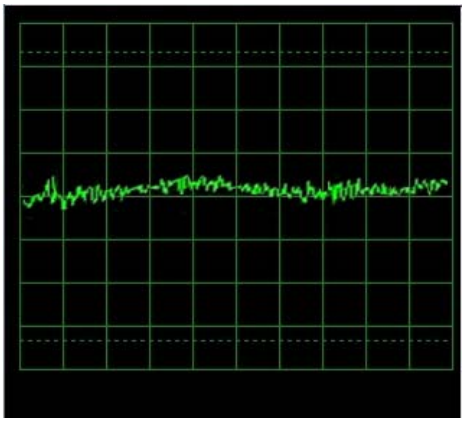

Figure 4. Noise from the Old Motor

This useful little program also has the cabability to display Fast Fourier Transforms and this feature was used to analyse the frequency spectrum of the noise produced. Figure 6 shows a comparison of the old and new motors. From here, it can be seen that the old motor produces measureable noise to over 4KHz, while the new motor produces noise up to about 1.5KHz.

I should point out that these simple programs can really only be used for comparison purposes and are not for accurate absolute measurements. There are also the limitations of using a computer sound card, but it does serve to illustrate the different behaviour of the two motors.

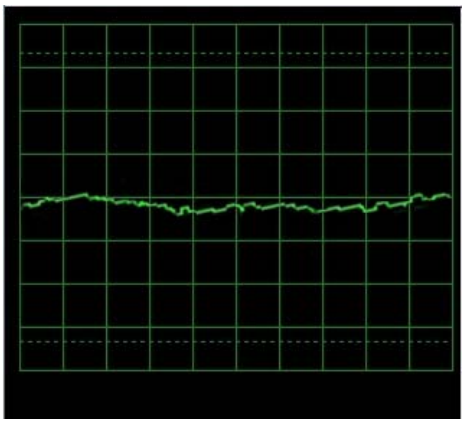

Figure 5. Noise from the New Motor

Having taken all the measurements, the new motor was fitted into the turntable plinth (Figure 7). The measurements have clearly justified the claim of lower noise, but the most important test was yet to be made! How would it sound in practice?

The sub-platter was re-assembled, having first added a couple of extra drops of the special oil into the bearing. The belt tension was then carefully set, having been cleaned with some methylated spirit. The speed of the turntable was then checked with a strobe to see if there were any differences with the newly installed motor.

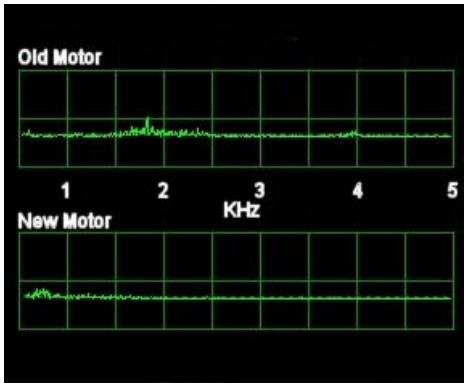

Figure 6. Frequency Spectrum of the Motors Noise

It was quite clear that, despite being very similar physically, the electrical characteristics of the two motors are quite different. The new motor rotated at about half the speed with the speed adjusters still calibrated for the old motor.

Having re-calibrated the motor speeds with the preset adjusters on the motor control board, I settled down to listen to my set of 'test' LPs, starting with an excellent recording of Vivaldi's Concerto in A minor for Oboe and Strings F.VII/5 (Telefunken 6.42355 AW). This recording has a solo instrument with strings and harpsichord and is very good for checking image placement and clarity.

The clarity was superb and I concluded that there was indeed an improvement in imaging and depth, when compared with the effect produced by the old motor.

In conclusion, I would say that the new motor is well worth the investment. It is easy to fit and has effectively eliminated the motor noise issue and gives a discernible improvement in sound quality.

Figure 7. The Old and New Motors Fitted

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