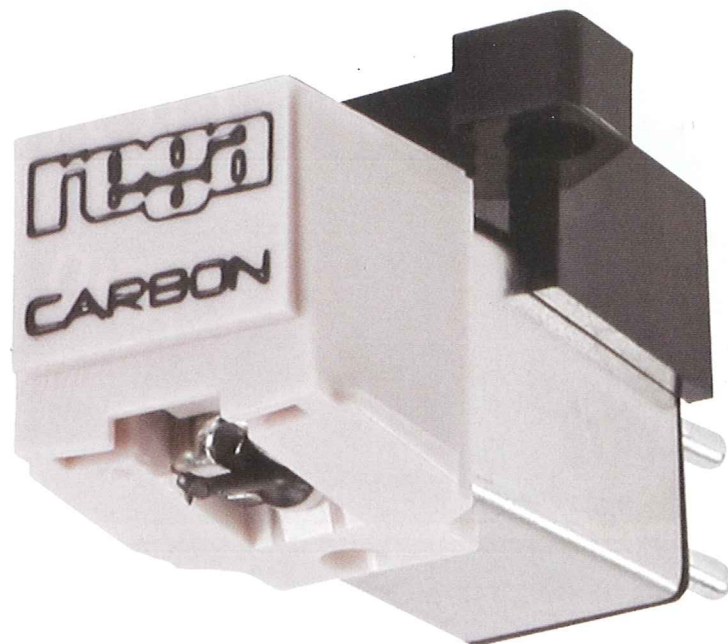


Carbon dating



Tony Bolton tries out a budget moving magnet cartridge from Rega Research

Every so often a product comes along that gives me a feeling of déjà vu. In the case of the Rega Carbon cartridge, as soon as I took it out of the box it seemed somehow familiar, and it took me a while to place the family resemblance to the long running Audio Technica AT91 moving magnet cartridge.

This was confirmed when talking to Essex based Rega Research, who advised me that the Carbon is made as an OEM product for them by Audio Technica, but is built to their specification.

The main difference between the two units is the usage of a carbon cantilever that gives the Rega cartridge its name. Attached to the end of this is a conical stylus. The whole assembly is user replaceable.

The unit was designed to fit into the recently introduced RP1 turntable where it is supplied pre-aligned, merely requiring the counterweight to be attached and balanced to 1.75g. This surprised me since the instructions suggest a tracking force of between 2 and 3g, and in my Hadcock 242 Cryo unipivot arm, I found that a downforce of 2.3g seemed to provide the best combination of tracking ability and sonic performance.

Setting it up was easy due to the

rectangular body and easily visible cantilever. I aligned it using the UNI-DIN alignment that I have come to favour over either Baerwald or Loefgren settings. (See HFW Sept 2013 Pp.86 - 87). I then played the cartridge for a good twenty hours to run it in before commencing serious listening.

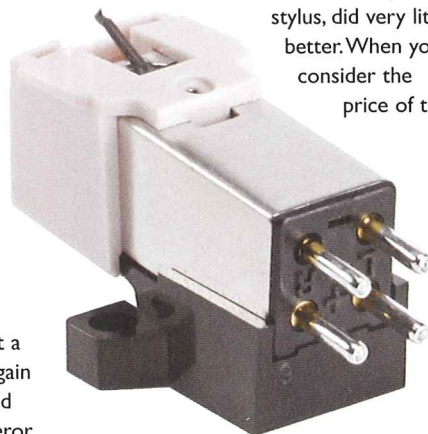
It is some years since I last listened to a cartridge retailing at a two figure price level, so before I went any further I dug out a Goldring Elektra cartridge just to retune my ears to this sort of price point.

SOUND QUALITY

Having reset my ears, albeit at a price that was half as much again as that of the Carbon, I settled down with Beethoven's 'Emperor Piano Concerto', and was pleasantly surprised at the competence of the conical stylus in tracking some very complex wave forms when the piano and orchestra reached crescendoes. The music retained a good level of cohesion, and although there was a bit of confusion over hard struck chords combining with the power of the full orchestra, overall it was a very creditable performance and one that immediately made me start to

respect this little device.

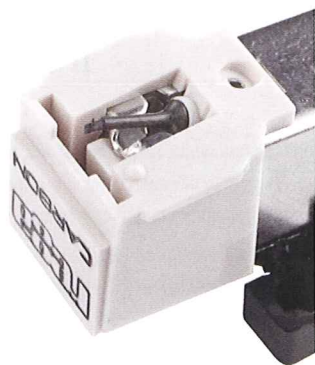
If I was being super critical then I would have said that the piano had a little bit of a jangle to some of the sounds. The complex harmonics of this instrument are amongst the most demanding of any to reproduce accurately, but, to be honest, the Elektra, with an elliptical stylus, did very little better. When you consider the price of the



The square edges of the cartridge body make alignment an easy task.

Carbon, I thought that the sound was very good indeed.

This particular record is a very good condition mono original pressing and there are few pops or crackles. The ones that are present were handled with a grace that again



The carbon cantilever that differentiates this cartridge from its Audio Technica AT91 cousin, tipped with a conical stylus.

belied the price tag of the cartridge.

I stayed in mono, but moved up to an early '70s compilation of early Billie Holiday songs recorded in the 1930s before her voice became a metaphor for angst and drug abuse. Her 1936 version of 'These Foolish Things', accompanied by Teddy Wilson and his orchestra, had a gentle flowing swing to it that was enjoyable, quite tightly timed and presented with a focussed and quite detailed soundstage.

Having acquitted itself so well so far, I decided to give the Carbon a real test and put on 'Ball and Chain' from the 'Cheap Thrills' LP. The guitars were presented with an energetic attack that made for an exciting listen, and the difficulties of Janis's voice were overcome in a fairly creditable manner. There were a couple of points where things started to edge towards abrasive, but the sound was controlled enough to be acceptable even under this sort of duress.

CONCLUSION

I must admit that I was not expecting much when I first started listening to the Rega Carbon cartridge. The combination of a budget cartridge

MUSIC USED:

Beethoven 'Concerto No'5 in E-flat. Op. 73 "Emperor". Fritz Reiner conducting Chicago Symphony Orchestra. RCA Victor Records. LM-2562. 1961.

Billie Holiday 'The Billie Holiday story Vol.1' CBS Records. 68228. 1973.

Big Brother and the Holding Company. 'Cheap Thrills'. Columbia Records. PC 9700. 1967.

"the sound was controlled enough to be acceptable even under this sort of duress."

with a conical tip made me a bit wary, but I can honestly say that I was both surprised and pleased with the way it performed. I certainly don't see it worrying cartridges at three times the price but there are some at double the price that could not give such a capable rendition of the music that it is tracking in the grooves.

If you are looking for a starter

cartridge, or something cheap but capable, then this seems to be the place to look. The carbon cantilever seemed to me to be a major improvement over the aluminium one fitted to the related Audio Technica AT 91, and gave a less peaky and more balanced sound. As such it is a real bargain and comes thoroughly recommended.

SYSTEM USED:

Linn Sondek/ Hadcock 242 Cryo/ Goldring Elektra
Luxman E200 phono stage
Ming Da Dynasty Duet 300B amp
Kelly KT3 loudspeakers

MEASURED PERFORMANCE

Vertical tracking force (VTF) quoted by Rega for the Carbon cartridge is 2-3gms. I used 2.25gms as a sensible value and would be prepared to use 2.5gms, but avoid higher values. Tracking force mainly affects tracking ability; had I used a higher VTF then it would have improved. However, results with 2.25gms were good enough for a budget moving-magnet (MM) cartridge, especially in the mid-band where the Carbon stayed in the groove of a 25cms/sec torture track - unexpected. It just got through 20cms/sec with slight mistracking, and this is good, suggesting low-ish tip mass. The carbon cantilever likely is the reason.

The Carbon was less happy tracking the larger groove excursions of lower frequencies, due to low hinge compliance (hence high VTF) and so may well be unhappy with big bass sounds like canons in the 1812, drums strikes etc.

Frequency response was typical MM with a 47k load, and just arm lead capacitance (80pF). The upper midband drooped (generator loss) and high treble peaked (tip mass resonance). This gives a warm balance. Switching in 400pF capacitance on our measuring preamp smoothed out the curve nicely, lifting the upper midband to give the frequency response published here. As budget MMs go this is good; there will be some mellowness in the sound but it will not be dull, nor challenging in the treble (e.g. spitty).

Distortion was low on lateral modulation, but high on vertical modulation due to a high Vertical Tracking

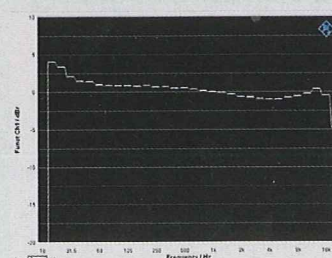
Angle of over 30 degrees. Output was adequate at 5mV, but budget Ortofonos do better. Channel separation was adequate at 22dB and the generator's mod. axes well aligned.

The Carbon is very light at 5gms, and some arms will barely accept this. It pushes arm resonance upward in frequency, hence the peak in lower bass in our graph.

Overall, the Carbon measured well in absolute terms and is extraordinary relative to its price of £35. It needs 400pF capacitive loading to give its best result, and 2.5gms VTF is a sensible maximum. NK

Tracking force	2-3gms
Weight	5gms
Vertical tracking angle	32degrees
Frequency response	20Hz - 20kHz
Channel separation	22dB
Tracking ability (300Hz)	
lateral	60µm
vertical	45µm
lateral (1kHz)	18cms/sec.
Distortion (45µm)	
lateral	0.8%
vertical	8%
Output (5cms/sec rms)	5.2mV

FREQUENCY RESPONSE



REGA CARBON CARTRIDGE £35



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

A competent and musically coherent budget sounding cartridge with a fairly unflappable nature.

FOR

- tracks well
- good bass output
- detailed soundstage

AGAINST

- treble can get a little edgy at times

Rega Research Ltd.
www.rega.co.uk