



## The Rubanoide

### 1. History of a very original loudspeaker driver

Paul Paddock and Ben Stutz launched the Linaeum driver in 1983.

John Eargle in his "Loudspeaker Handbook", provided some description and details of the physical set up of the Linaeum, on page 394.

Going back as early as February 1927, we may even find first traces of such a type of loudspeaker by Clyde J. Fitch in the Magazine "Radio News". It was introduced as a "three foot roll type speaker" with "excellent tone quality".

That was to show how old the basic idea of a line source/wave bending driver is.

The German word "Biegewellenstrahler", literally "radiator of bended waves" explains part of its behaviour, while some piston movements also have to be considered when we try to explain its physics.

### 2. Audio Consulting's version of this type of drivers

Audio Consulting started research work on the Rubanoide (from the French language, meaning "similar to a Ribbon") in 2005.

The major task was to avoid any type of plastic for the membrane's material (which was the case for all Linaeum drivers) and achieve a driver of at least 40cm in height.

If assembling the magnetic set up is far from being trivial, if not to say even dangerous because of the magnetic force of the magnets used, the real challenge turned out to be the paper for the membrane.

Changes in the atmosphere's moisture content may easily lead to blocking the moving coil within the air gap and thus totally prevent the speaker from working, switching it to "airplane mode".

While plastic membranes of any sort were excluded for sonic reasons, we had to find the right paper that had to be completely dimensionally stable when facing important changes in the air's humidity content.

After two years of experimenting many types of paper from many parts of the world, we found such a special item.

We keep it confidential for the time being, but may say that it is 100% dimensionally stable even when laid into plain water.

Here we found ourselves with a functioning driver by the end of 2007.

We then had to find out in which part of the audio spectrum this driver will perform best.

While the efficiency of close to 100dB/w/m for a single driver was very promising for its use as a near-to-full-range-driver, the question arose of how much it may play as a full range driver?

After many hours of testing and listening we started using the single element Rubanoide with a 12dB/oct crossover at 250 Hz, while the Rubanoide Dvajnoy (double Rubanoide) is being used from 120 Hz also at 12 dB/oct.

The Rubanoide driver is per essence a dipole driver with the advantages of dipole drivers but much higher efficiency than most other dipole drivers. Even a single element of the Rubanoide driver is already close to a line source, while installing one atop the other in a pair, definitely is a line source.

Efficiency around 100dB/w/m and speed coupling to the air's impedance allow for a micro and macro dynamics encountered normally only with horn drivers, with the advantage of needing only one driver from 120Hz, resp. 250Hz to the higher end of the audio spectrum.

If properly set up in the listening room, it also may provide sound stages of incredible realisms.

We have developed three commercial products using the Rubanoide driver:

1. The "Rubanoide", featuring one Rubanoide speaker element atop a modified transmission line speaker using a 12" paper cone driver. The efficiencies of both drivers are similar allowing for a speaker based 12dB/oct crossover with in house made crossover elements.
2. The "Rubanoide Dvajnoy", featuring two Rubanoide drivers, one atop the other and coming with its speaker based crossover set at 120 Hz. Several high-end active sub woofers have been used with the Dvajnoy and very good results were achieved in doing so.
3. The "Rubanoide three Way Speaker", that includes two Rubanoide medium drivers per side, as well as one Rubabass 2 low frequency dipole driver for frequencies below 120 Hz. The latter is technologically similar to the Rubanoide medium drivers, but features about double the paper surface than the Rubanoide, which is equivalent to about 2.5 times the surface of a 15" driver per side.  
We also decided to add a super tweeter for frequencies above 12 KHz. After another year of R&D, we ended up using a dipolar design.

### 3. A few thoughts about the Rubanoide's sound.

With its resonance frequency set at 26 Hz, the Rubanoide driver is much more a full range driver when we consider its sound qualities over the entire bandwidth.

The neutrality, resolution, dynamics and life like character of the Rubanoide are one of its kinds.

The absence of any spider, and the use of a suspension that is very different from any suspension found in classical loudspeakers are part of the explanation of this unique driver's features.

We also have to realise that with the Rubanoide, the vibrational energy is transmitted to the air in "speed" mode, much more than in "pressure" mode.

The German word "Biegewellenstrahler", or "radiation of curved waves" explains parts of the Rubanoide's physical behaviour.

In fact this is very similar to a horn that transforms the pressure mode of the compression driver to a speed mode at the flare of the horn in order to meet the air's impedance and most efficient transfer of energy.

One also has to keep in mind that the active surface on the front side of a Rubanoide is 0.12 square meters, roughly equivalent to the surface of four 8 inch drivers.

The big difference between the Rubanoide and a horn system would be the Rubanoide's dipolarity.

Add a 100dB/w/m efficiency and one gets a very unique driver.

All Rubanoide based speakers we offer are absolutely unique systems.

More than a thousand words, we suggest to ask for a demo.