Continuously Variable Coil

By Pascal Veeckmans and Jef Verborgt
Translation by Jef Verborgt

Many antenna projects require the use of a high-quality tuning coil. Coils can be tapped but it is a lot easier to make use of a continuously variable coil or inductor. They come in handy and can be used for many antenna projects.

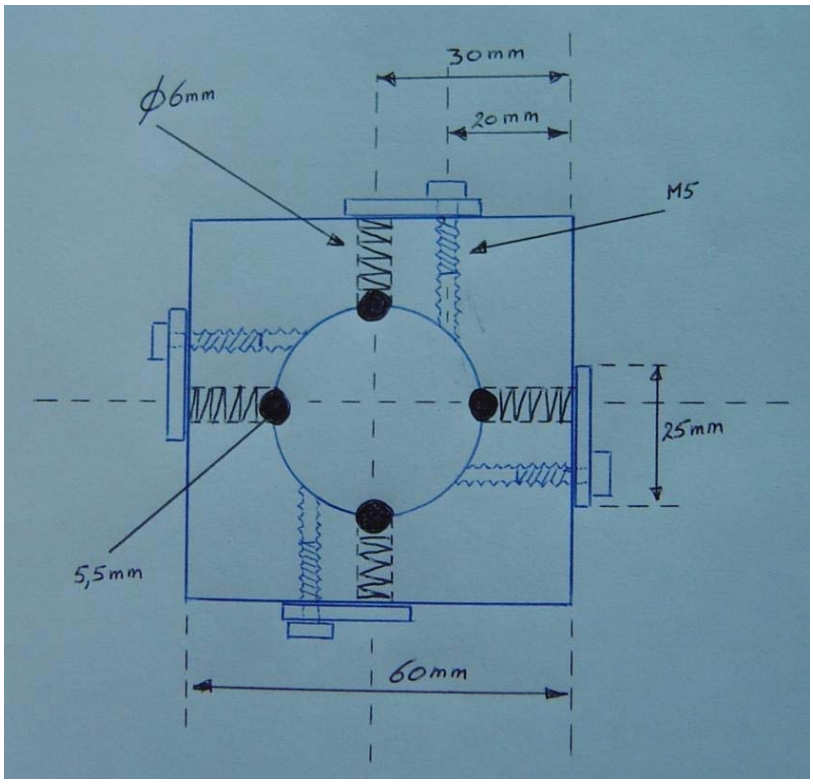
However, variable coils are a bit pricey so, we present the reader with an interesting home brew version of a tunable coil or inductor.

Pascal had been dreaming a long time of making his own " screw driver" antenna. This type of antenna makes use of a long coil and sliding contacts. A small motor moves the contacts (finger stock) up and down the coil. He decided however to make his own version of a large self-supporting variable coil. In this article we will explain how you can build your own variable coil and how it can be used for simple antenna projects. In a follow-up article we will present a screwdriver antenna making use of this coil.

Your shopping list:

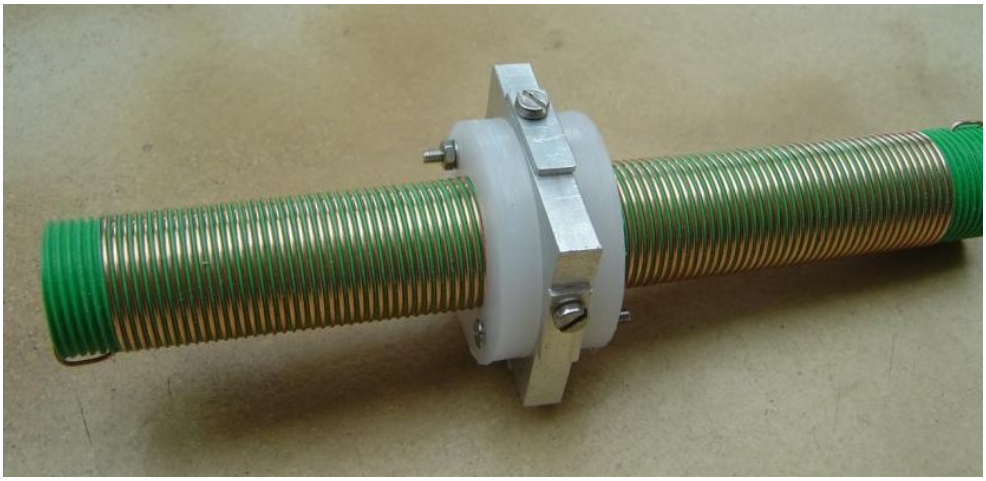
- four stainless steel balls and springs
- length of P VC pipe
- aluminum bloc: 60x60x10 mm
- four stainless steel screws
- small pieces of aluminum sheet
- plastic breadboard (polyethylene or acrylic)

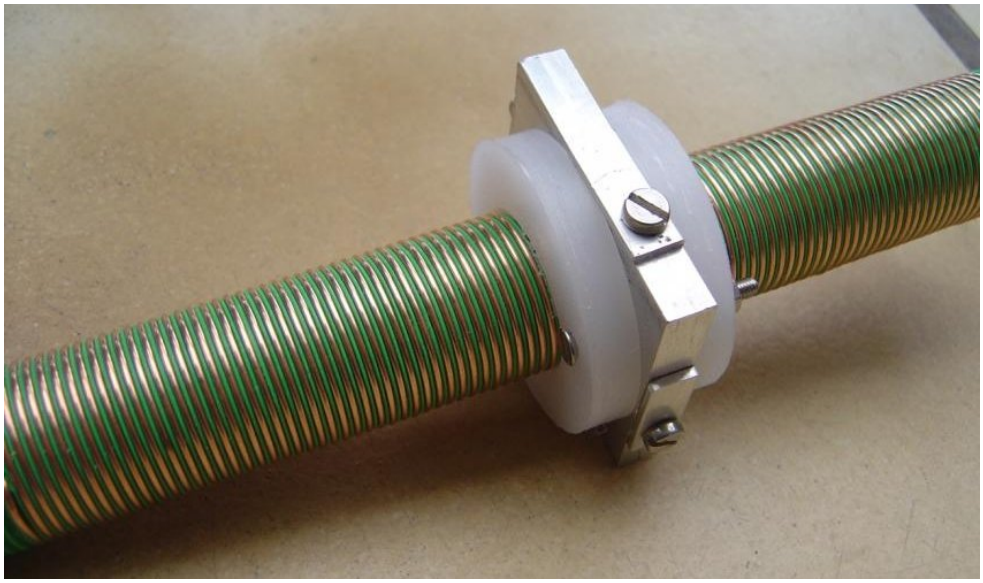
The sliding contacts in this design are made with four stainless-steel balls. They are spring-loaded and are pressed gently against the coil. The sliding mechanism is housed inside an aluminum block and two plastic collars. Sounds difficult? Not really: just have a good look at the drawing and the pictures of the different parts for dimensions.



Drawing of the contact block.

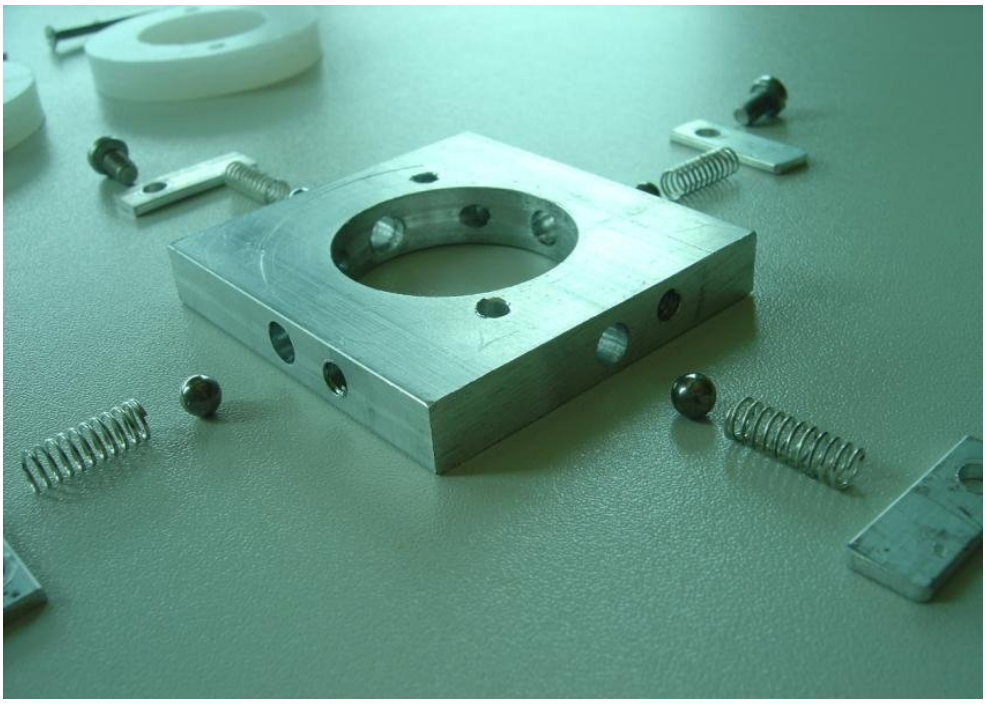
The coil former is made from a length of PVC pipe that is threaded with a tapping tool at the local plumber shop. If you cannot find the required tool for threading the pipe you might have a look at a local shop that sells swimming pool cleaners. They sell a kind of rubber hosing that fits tightly over a one-inch diameter PVC pipe and has the required thread. Make sure there is no metal reinforcement inside the rubber when you use this approach.



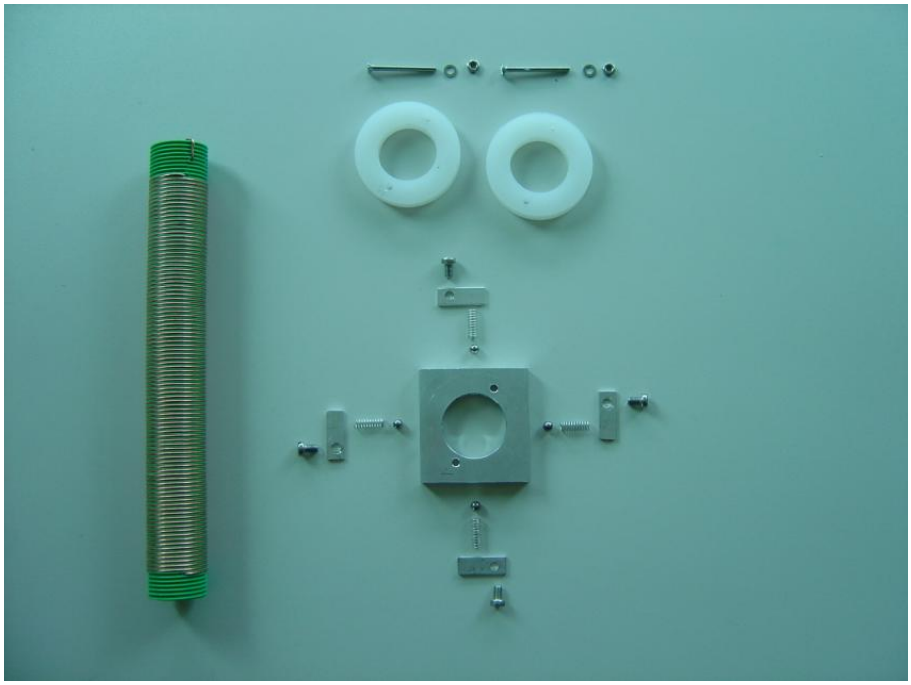


The copper conductor is made from standard electrical wire after removing the insulation.

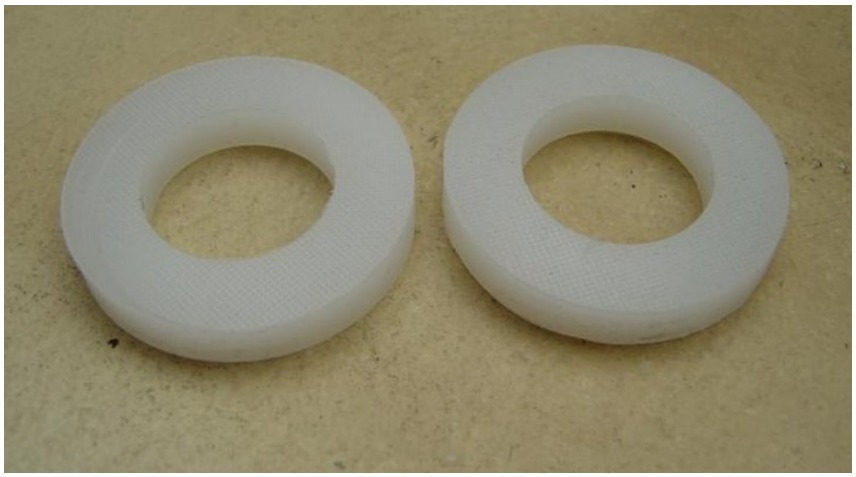
Let’s now have a look again at the “ contact block “:



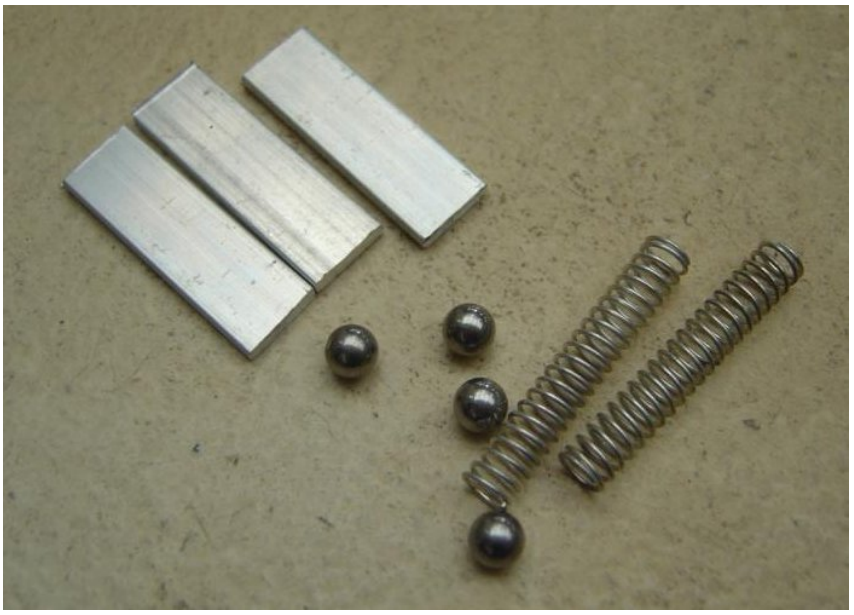
The block itself is made from a piece of thick aluminum 60x60x10 mm. A large hole is drilled in the center. The hole should allow for some play (2mm) when you insert the PVC pipe with the copper conductor on it. Each side of the aluminum block has a six mm hole in it. Six mm is what is used because the stainless-steel balls and springs had a diameter of 5.5 mm. If you use a different size you can of course adjust the diameter of the holes.



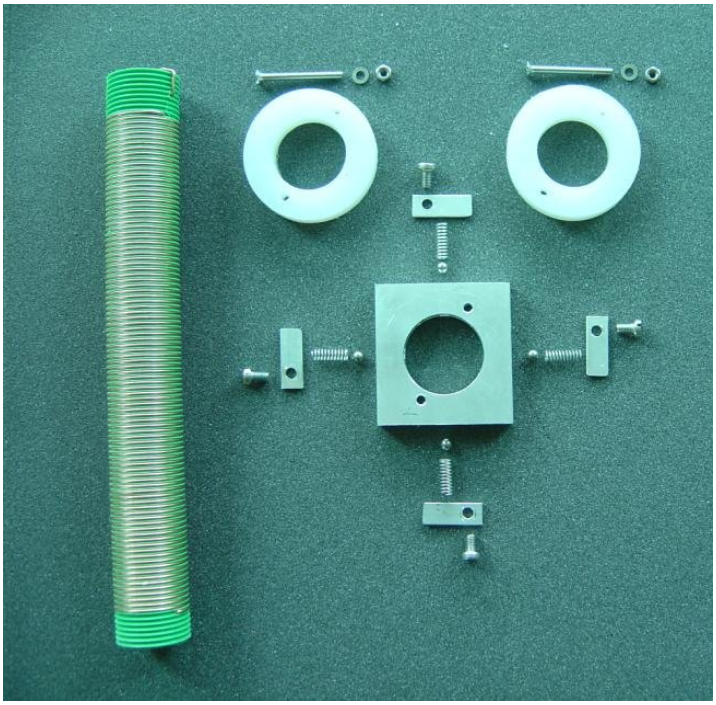
Next we need to fabricate two “plastic collars” from a plastic breadboard.

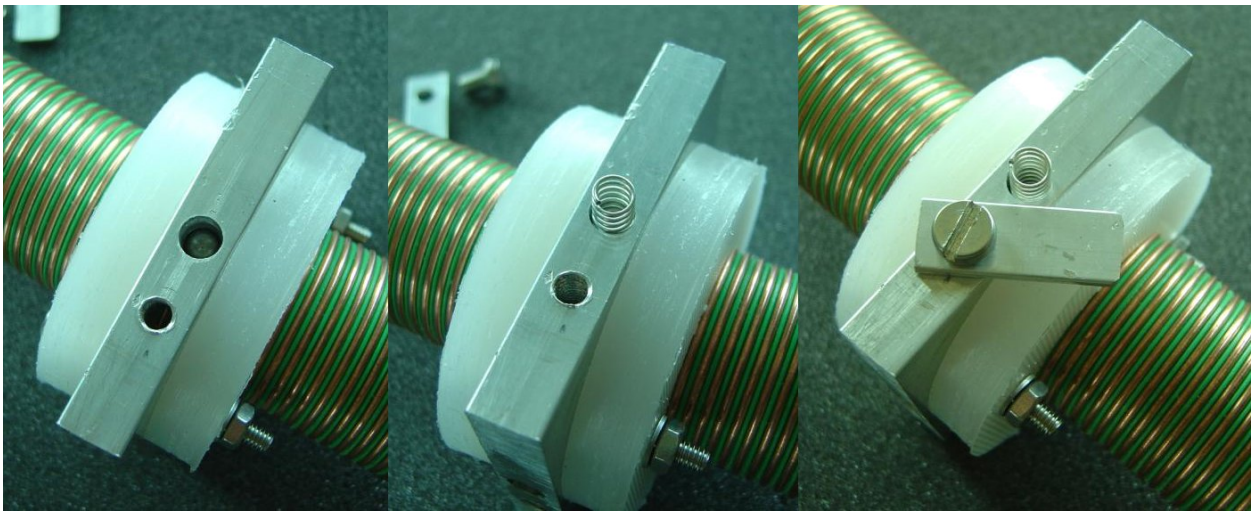


These collars can be round as shown in the pictures but of course if you do not have a lathe you can always make them square. The hole in the center of the plastic collars should have a rather tight fit on the coil body.



Mounting all the parts is straightforward. The springs are locked into position with small pieces of aluminum and a screw.





You now have a continuously variable coil that can be used for many antenna projects. Pascal used his variable coil for making a multiband vertical antenna as you can see from the following pictures.

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BRIEF BIOGRAPHY OF CO-AUTHOR

Pascal Veeckmans **was born on January 13, 1965 in Tienen Belgium. He is married to Marleen and has a teen-age son, Glenn. Pascal, employed by the Belgian army, and is a member of the BAFARA Belgian Air Force Amateur Radio Association. He got his first license in 1996 and passed the Morse code in 1997. That earned him the call sign ON4CFC. Pascal can be heard frequently on the HF band.**

DR. JEF VERBORGT – Co-Author & Translator

Jef Verborgt **was born in 1944 in Belgium. Jef was saved from a certain early death by meningitis by the American soldiers having the first penicillin for which he is still grateful. He went on to obtain a Ph.D. degree in Polymer Chemistry in 1970 at Louvain Belgium followed by a postdoctoral Fellowship with Dr. C.S. Marvel at the *University of Tucson*, Arizona. Jef has been Director of Research for *Sigma Coatings* for 15 years after which he became Director of the International Business Operations for Marine and Protective Coatings. Jef further held the position as President of *Sigma Coatings USA* in New Orleans, Louisiana.**

Jef is currently employed as a consultant/contractor at the Navy Research Laboratories in Washington DC where he is developing novel solvent free fast curing resin and coating systems.

Now living in Florida, he is married to Marijke from Holland where Jef had lived for some 20 years. He is the father of one daughter and two grandchildren who live in Belgium. Jef says he enjoys fishing, Louisiana food, experimenting with antennas and living in the USA.

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