

Make your own capacitors

Why:

Lower cost

Better (I explain later)

Easier to tune.

It should be flat capacitors, these are the easiest to make.

What you need:

<http://www.daycounter.com/Calculators/Plate-Capacitor-Calculator.phtml>

That is a calculator, to calculate how much you need to make.

You also need very thin metal foil, preferably copper foil.

You also need insulator sheets, preferably high-impact-polystyrene, also called HIPS.

Scissors, a boxcutter and a Corner Cutter.

A drill and some nuts and bolts.

Patience.

Aluminum foil, used by most people to make their own capacitors, always has an oxide layer on it, this gives extra resistance. It is also impossible to solder. Copper foil is far better for this purpose.

HIPS is the best insulator because it has a breakdown voltage of 200KV per mm. This is extremely high. It also has a dielectric constant of 2.6. That is Gooood. I will use a strength of 0,48 mm. That is the same as 1/64 inch A.K.A. 0.018897637795296 Inch.

The design, best quality capacitor with square shape, fastest discharge behavior.

The insulating sheet, cut with a boxcutter.



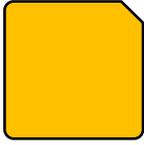
The copper foil, smaller than the sheet. Keep a bit less than one inch free around the foil.



A bunch of small strips of the foil, to make the connectors, one per layer.

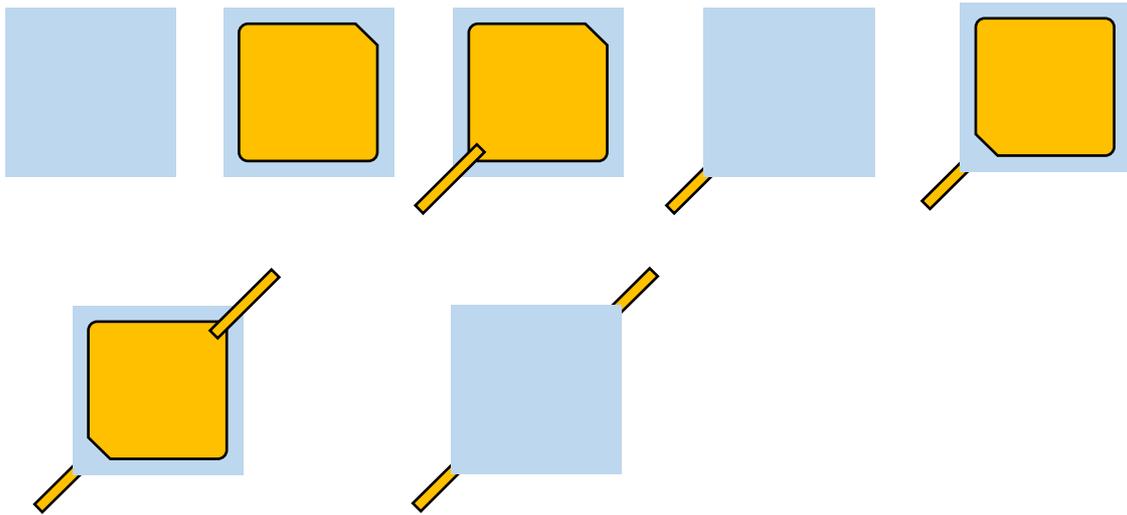


Use the corner cutter and the scissors to change the copper foil.



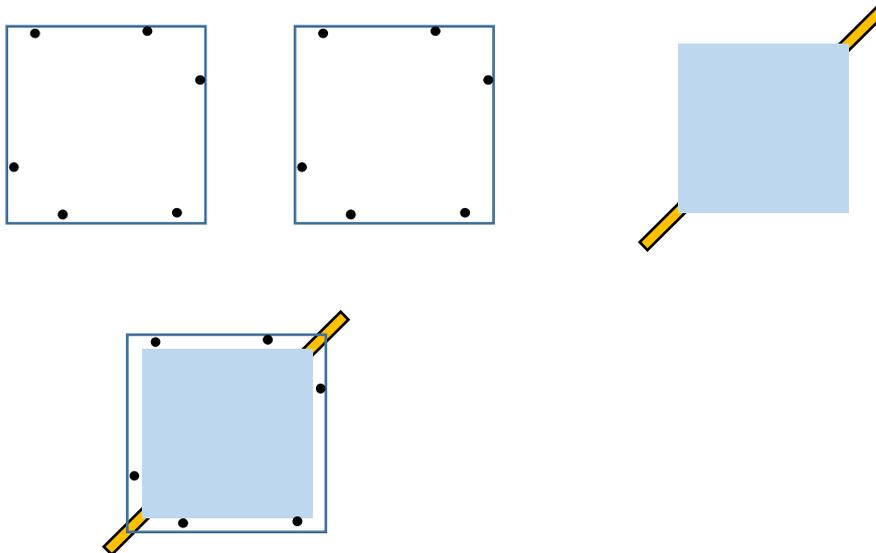
This is how it should look like, three rounded corners (to prevent corona discharge) and one cut off corner.

Now start stacking, each directly on top of the other:



Keep stacking until you reached the desired number of layers to get the surface amount you need.

Now enclose the stack between two sturdy plates of plastic, each predrilled with six holes



Now bolt the set together.

Now clamp one of the connector stacks together between two pieces of wood and drill a hole at the end of the strip. Be careful not to pull the strips out of the stack.

Same on the other side and use those holes to bolt a connector to each side.

Now you are finished.

These capacitors are far faster than a bunch of commercial capacitors in series. So the signal keeps its sharp edge and that is what it needs to do.

In order to tune the capacitor for the QEG, first discharge any residual load in it.

Keep it short-circuit connected.

Now take one of the stacks of leads, remove the bolt, bend one of the copper strips upward and insert a piece of extra sheet between the strip that is bend away and the rest. Re-bolt and connect the rest.

This tuning is a good reason to make the capacitor a bit larger in capacity than in the specs of the QEG. It is easy to go down in value.

If you are sure you found the right value after a lot of testing, loosen the bolts around the stack and remove the connection leads that you did not need by pulling them out gently. Now tighten the bolts again.

Good luck and work safe. If you do not know how to work safe with HV capacitors, get help or do not build a QEG!

