

Coil Fast 5-Inch

Diameter:	127 mm (5 inch)
Inductance	365 μ H
Resistance	3.3 ohms
Self capacitance	62 pF

33 turns of 10 strands of 0.1mm copper wire



coil-former 3d printed:



Two halves of the Former, glued with Super Glue.
Can also be tacked together with spare / old soldering iron.



Setup shows 10 spools of 0.1mm 'polyurethane-coated' copper wire. Spools and guides are 3d printed.

Each spool is pre-wound with a single strand.

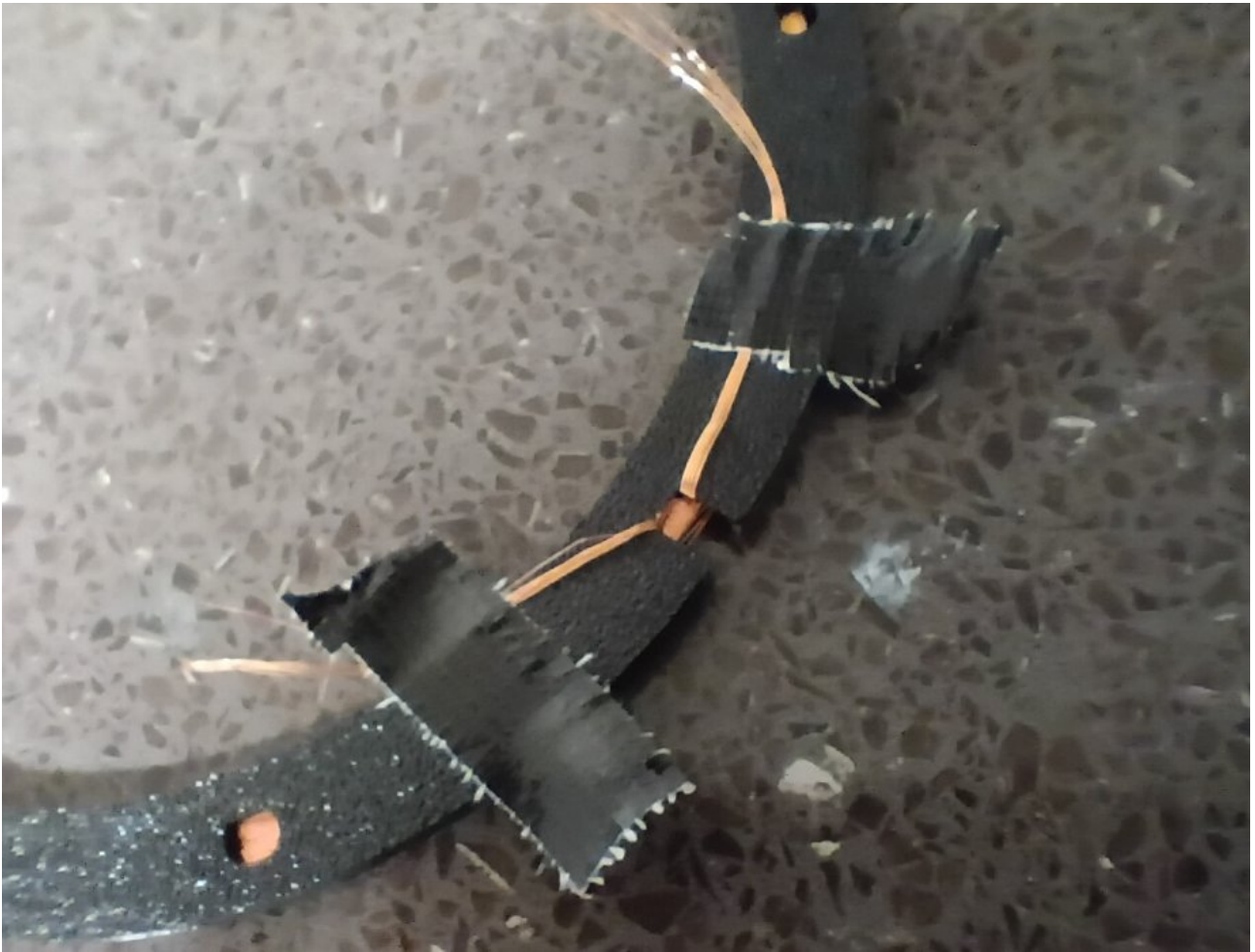
In this case, 40mm diameter spools needed 110 turns, to supply the 127mm (5 inch) diam coil with 33 turns



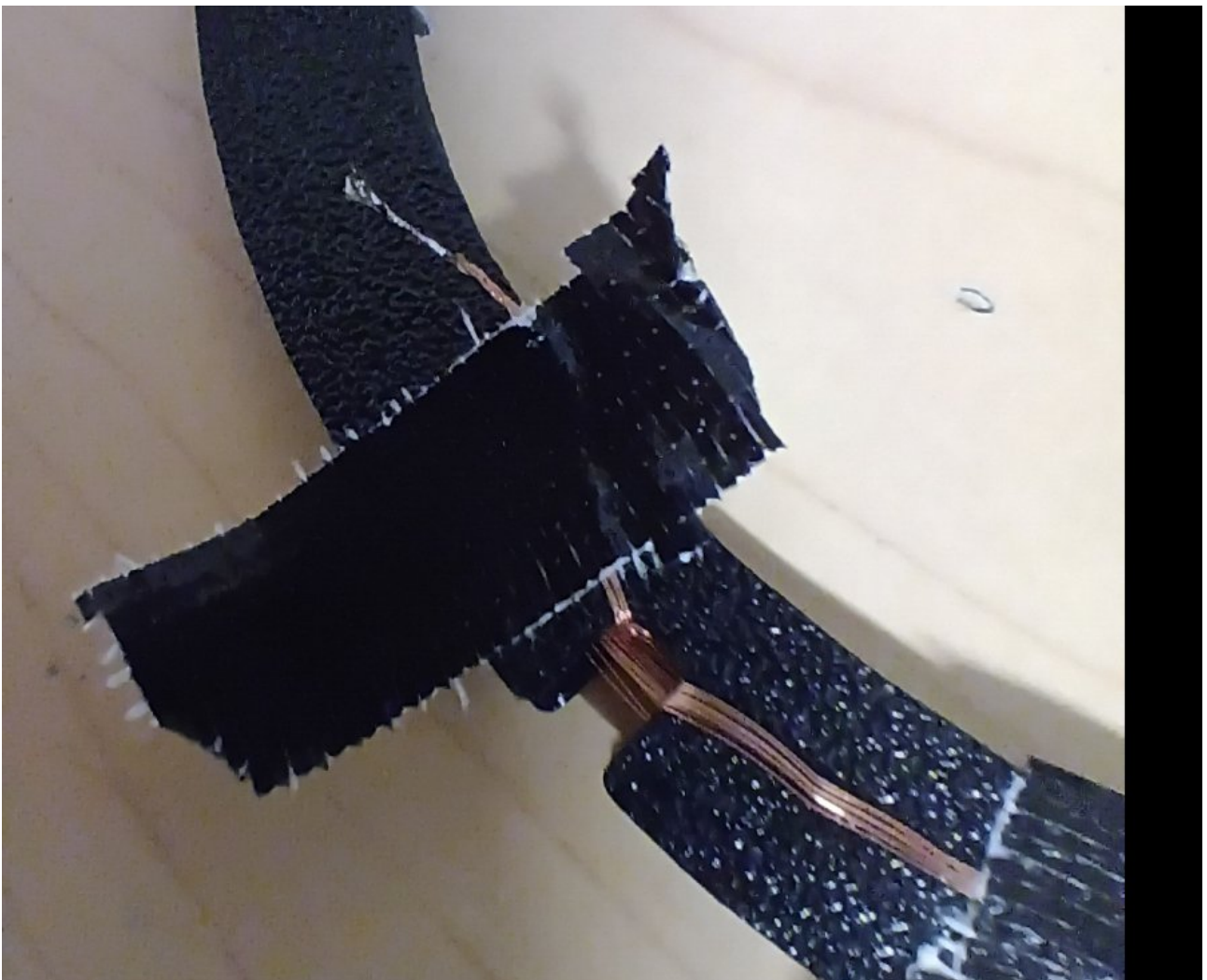
Wire pre-wound on 10 spools, use rubber-band to keep the wire.



33 Turns of 10-strand wire .



This shows the completed windings with the end of the 10-strand wire ready for soldering and connection.



'Super Glue' used to secure wires and windings.



'Shielding'

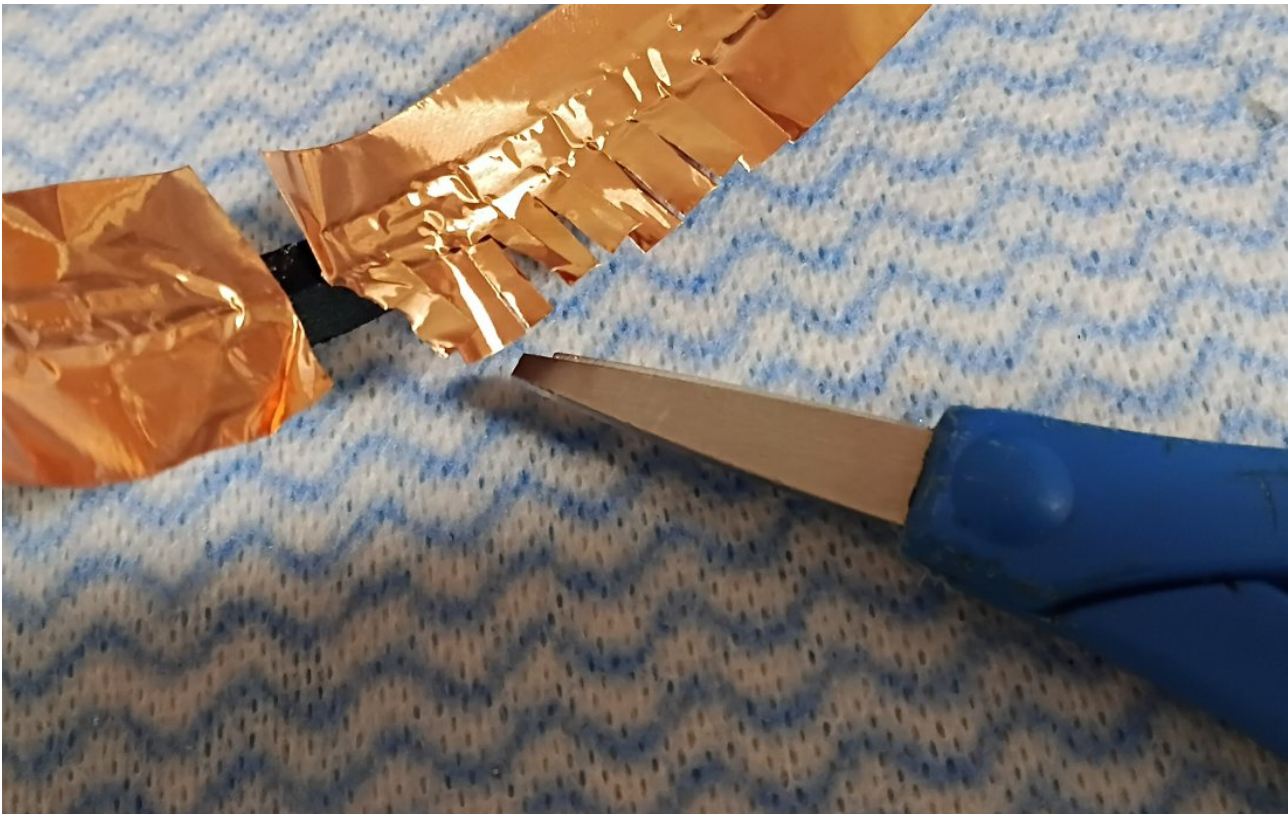
Shielding must NOT be a complete ring.

It provides a conductive barrier and constant Capacitance.
But it must not host eddy-currents.
25mm wide thin copper tape :

Typical thickness 0.05mm or less.

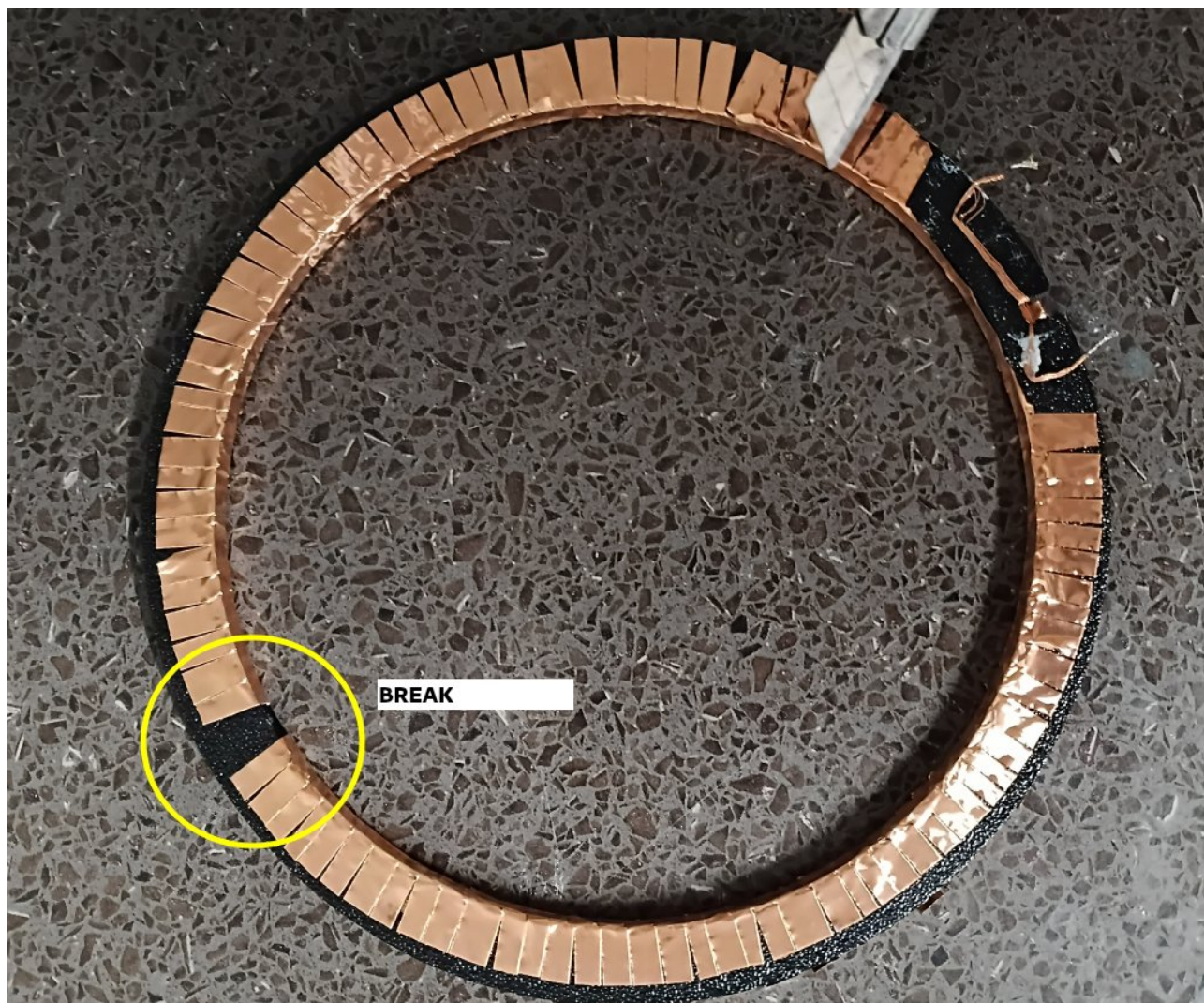
The eddy currents run in the same plane as the coil, so to prevent them, the shield is broken at one end, and all the horizontal parts are slotted.





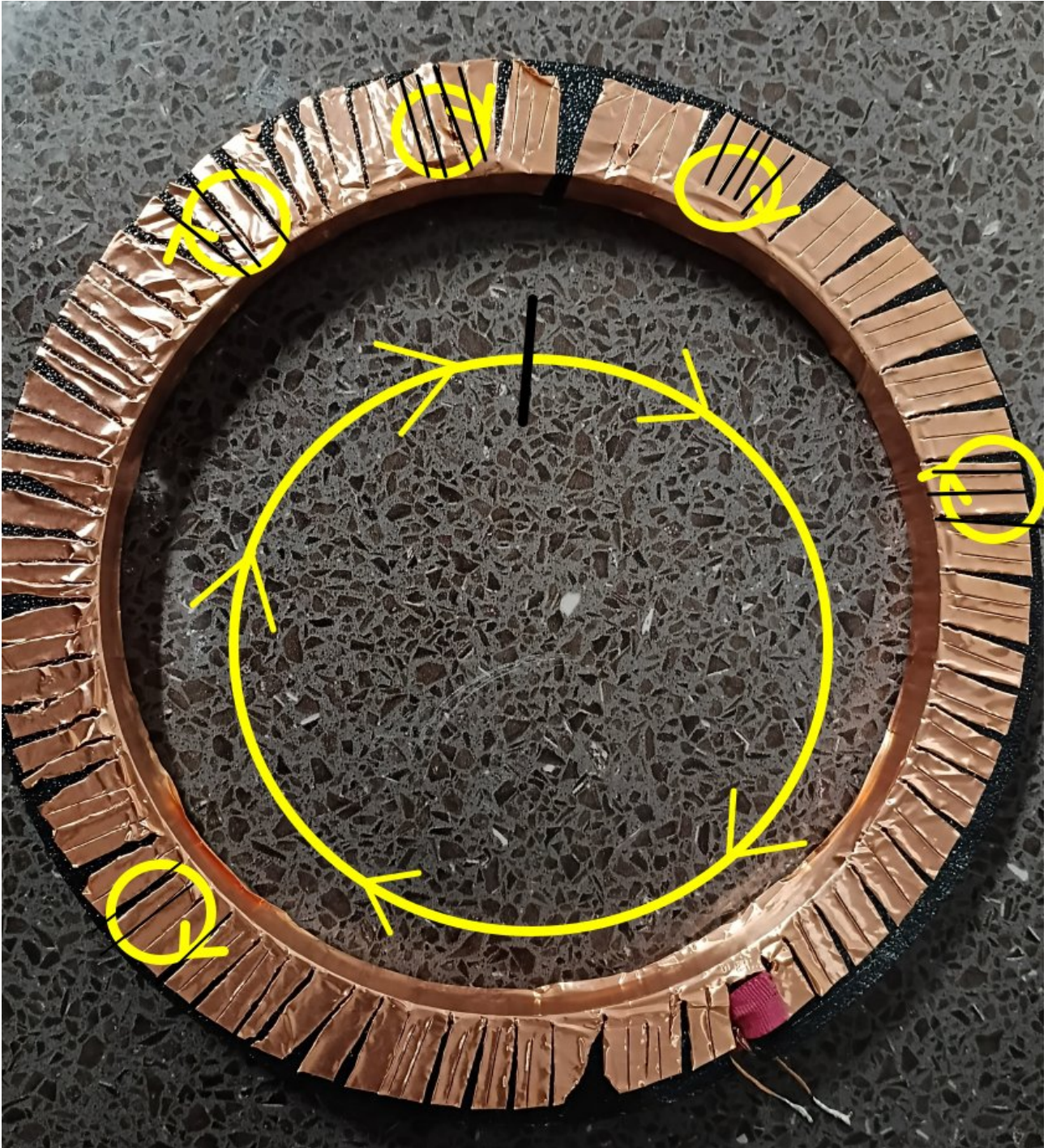
Use box-cutter blade to slot to < 10mm tabs. le ~ 5mm

*Both sides look similar to below



NOTE:

'Eddy Currents' (Yellow shows current direction) in the shield copper are broken and prevented by the slots.



Connection :



One side of the coil is connected to the shield. This is the 'Ground'. It connects to the outer sheath of the Coax .

Below shows the connections to the coil, shield and cable leaving the coil



Epoxy the connections and cable tube:



Coil Mounts filled with Epoxy for strength



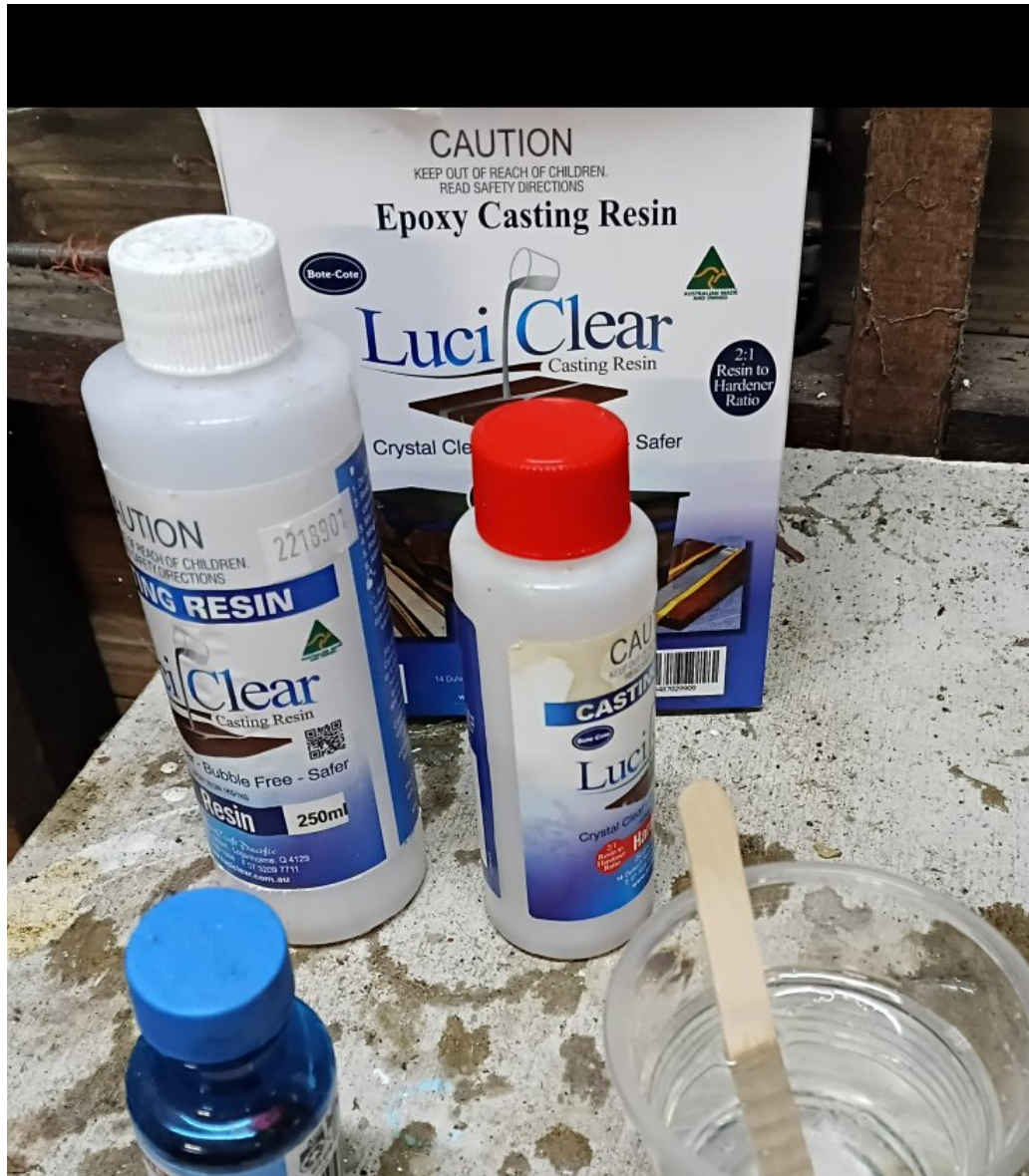


Also attached with epoxy.

Cable guide filled with epoxy.



Casting resin for the coil. This takes > 1 day to cure. The coil must be level
This is 'clear epoxy casting resin'



Optional : a few drops of food-colouring









END.