



Mini magnetic locking safe (using 6mm X 10mm cylindrical neodymium magnets)



Nano

[VIEW IN BROWSER](#)

updated 27. 4. 2023 | published 27. 4. 2023

Summary

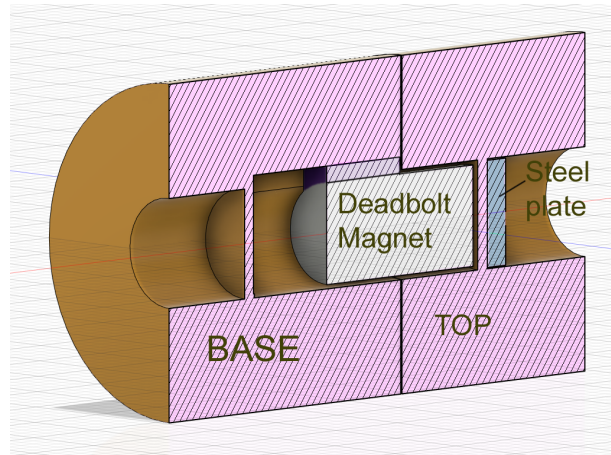
Small sturdy screw top container/safe equipped with a unique magnetic lock system using cylindrical neodymium magnets.

[Gadgets](#) > [Other Gadgets](#)

Tags: [lock](#) [screwtop](#) [magnetic](#) [safe](#) [neodymium](#) [locking](#)
[screwtopcontainer](#)

This is a small screw top container with a twist. This small container is equipped with a unique locking system using 6 mm x 10 mm neodymium cylindrical magnets: one magnet is used as a deadbolt, while another is used as a key. Axial or radial polarity magnets can be used, but radial polarity magnets are a better choice and make the locking mechanism more secure. The container can be used to store something secret or valuable, or pills...

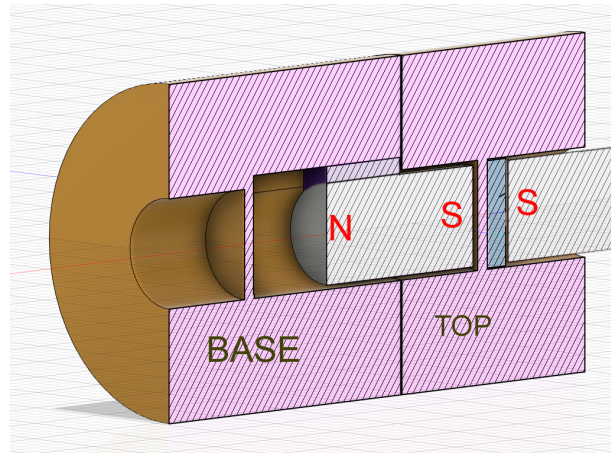
The container locks when the top is screwed on all the way and the holes in the base and the top are aligned. The magnet in the base can then come out and stick to the top, owing to the presence of a small steel plate which it is attracted to. To unlock, the deadbolt magnet has to be repulsed by another magnet (key) which is introduced in the keyhole from the top and positioned so as to oppose the poles of the deadbolt magnet.



If the deadbolt is an axial polarity magnet, its extremity

penetrating the top of the container will be either of north or south polarity.

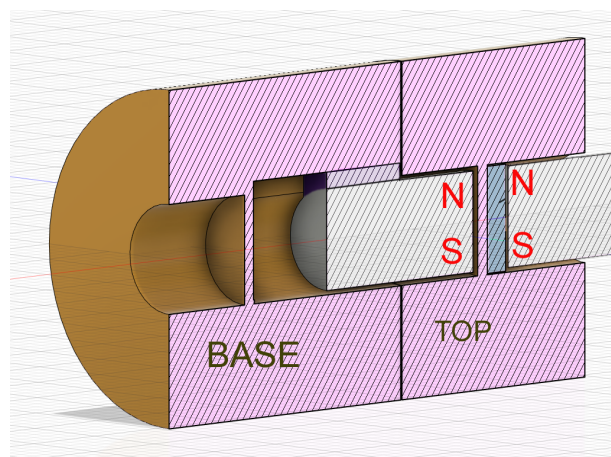
To unlock (see sketch), the same polarity end of the key magnet must be inserted facing the deadbolt magnet so as to push the deadbolt away allowing the top to be unscrewed.



If the deadbolt is a radial polarity magnet, its extremity penetrating the top will have two poles (N and S) one each side of the cylinder. When the extremity of the key radial magnet is inserted facing the deadbolt

magnet, the key will rotate itself

into position so that the opposite poles will be facing each other. Note that, at that point, the container is still locked. To unlock (see sketch), the key magnet must be turned 180 degrees, so that the magnet poles become opposite and the deadbolt is pushed back in its socket, freeing the top. This works because the deadbolt magnet has a small



piece of plastic glued to its side which prevents it from turning along with the key magnet.

For printing, note that the clearances for the screw top are tight. For best results, you need a well tuned printer and I recommend printing at a low layer height such as 0.15mm. I also recommend providing support for the key hole and overhang in the top as well as for the deadbolt sleeve in the base (it requires very little plastic).

The steel plate that has to be inserted (and glued) in the keyhole from the top can be anything made of steel or iron. It only has to be attracted to magnets. For my prototype, I used a simple small lock washer (see photo).

When inserting the deadbolt magnet (with the plastic side rail superglued on) in the base cavity, you must make sure it moves completely freely in the slot. If not, the magnet might become stuck preventing the locking mechanism from working.

Model files

capsule-safe.stl



License ©

This work is licensed under a
Creative Commons (4.0 International License)



Attribution-NonCommercial

-
- ✗ | Sharing without ATTRIBUTION
 - ✓ | Remix Culture allowed
 - ✗ | Commercial Use
 - ✗ | Free Cultural Works
 - ✗ | Meets Open Definition

