Cryptex (5, 6, 7, 8 or 10 letter wheels)

🧸 **Cees**

VIEW IN BROWSER

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Summary

This is a fully functional Cryptex with a user defined and changeable code.

🕐 15.71 hrs	</> 4 pcs	≡ 0.20 mm 0.15 mm	🔩 0.40 mm	⊛ PLA	⚖ 237 g	🖶 Prusa MK4

Toys & Games > Puzzles & Brain-teasers

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This fully functional **Cryptex** has an easily changeable code and is modeled after the Cryptex described in the novel 'The Da Vinci Code' by Dan Brown.

(Thank you Prusa team for this wonderful video of the Cryptex)
Design
I made this completely new Cryptex design in Fusion 360.

The design objectives were;

- Ensure optimal tactile feel, especially the rotating of the letter wheels
- No supports and no post processing needed,
- 'Heavy' and quality feel,
- Multi color look without the need for a MMU/XL/AMS.
- Allowing for full multicolor print if desired.

Multi Color
The Cryptex has been optimized for multi color printing but a multi color printer (MMU/XL/AMS) is not required to get a multi color effect; by printing the different parts in different colors you can create a multi color Cryptex. However, printing the letter wheels, the lock rings and the endcaps in multiple colors will give an amazing and very realistic effect.

Printing & Assembly
Although the Cryptex is a very comprehensive design, the printing and assembly is easy and straight forward if you follow the basic instructions.

It is suggested to use the .3MF files. The GCODE is included here for print time calculations.
The calculated print time (47+ hours) is based on a 0.15mm layer height for the visible parts, 3 colors where possible and a filament changer like the Prusa MMU or a Bambu Labs AMS.
If printed on a Prusa XL 5T then the print time would be less than 20 hours for a 5 Letter Ring Cryptex and all parts would fit on 2 build plates. For the fortunate ones among us I have added the XL build plate .3MF files.
The assembly requires either a few drops of super glue or it can be assembled with 4 M3x10 and 2 M3x20 screws (e.g. from your Prusa spares) as described in the assembly guide.

Please read the Assembly and Print Guide before you start.
Print times

Printing times depend heavily on how many Letter Wheels you are printing, the chosen layer height and if you print it in single color of multi color.
Printing time estimates for a 5 Letter Wheel Cryptex:
Single Color, 0.15mm on a **Prusa Mk4**: ~16 hours
Multi Color (3 color where possible), 0.15mm on a **Prusa Mk3 + MMU3**: ~48 hours
Multi Color (3 color where possible), 0.15mm on a **Prusa XL 5T**: ~20 hours

Info on January 2024 (Mk2) Update:

- Top Lock Ring has increased tolerances on the threads which should solve the tightness issues some reported.
- Separated the inlays in the Base Lock Ring and the Top Lock Ring to support a separate color for these.
- I have added Multi Color files for the endcaps
- Optimized all multi color parts to improve multi color printing quality
- I have added 'blank' versions for the Base Lock Ring, Top Lock Ring and the Letter Ring so you can easily add and emboss your own texts, logos and images
- I have added .STEP files for the Base Lock Ring, Top Lock Ring and the Letter Ring to support remixing of these parts
- The manual can now be downloaded here
- I have included .3MF files for complete build plates
- The Mk2 parts can be used interchangeably with the Mk1 files so you can you use any Mk1 remixed parts together with the Mk2 parts.

I hope you enjoy it!
Please let me know how you like it and if you feel I can make any improvements.

Please do leave a review, a rating and post a picture of your print. I would love to see which colors and filaments you chose and how yours came out. Join the ever growing family of beautiful makes!
Designing and optimizing the Cryptex was a lot of work .. really a lot..
If you like my design I would really appreciate it if you would 'buy me coffee' at https://www.buymeacoffee.com/Cees 😊

Thank you so much!
Happy printing!

Fun Fact: Contrary to popular belief, the Cryptex is not an ancient artifact. It wasn't conceived by the Romans or Greeks, nor does its name originate from those eras. In fact, the Cryptex is a modern creation, envisioned by the novelist Dan Brown for his book 'The Da Vinci Code'. This ingenious device, often mistaken for a relic of antiquity, is actually a contemporary innovation, barely two decades old.
Images
Material use of the displayed printed models:
I have printed everything in PLA

The black with 'bone' letter faces:
Printed on Prusa XL 5T and Prusa Mk4 in 27 hours total);

- Filamentum Vertigo Galaxy
- Ecogenius 'Osso' (Bone)

- Noulei Antique Gold

The Full 'Metal' one (Single Color print) ;

- Noulei Antique Gold
- Noulei Bronze

(My design of the Cryptex has been inspired by the design of MasonStonehenge https://www.thingiverse.com/thing:3074829)

Model files

📁 **3MF Files - by Part (Use these to slice)**	19 files

1-letter-ring-mk2.3mf

🗋 Mk2 Update: 3 color support, improved multi color print quality

2-encoder.3mf

3-outer-core-tube-5-rings.3mf

3-outer-core-tube-6-rings.3mf

3-outer-core-tube-7-rings.3mf

3-outer-core-tube-8-rings.3mf

3-outer-core-tube-10-rings.3mf

4-base-lock-ring-mk2.3mf

🗋 Mk2 Update: 3 color support, improved multi color print quality

5-top-lock-ring-mk2.3mf

🗋 Mk2 Update: Increased thread tolerance, 3 color support, improved multi color print quality

6-inner-core-base.3mf

7-inner-core-tube-5-rings.3mf

7-inner-core-tube-6-rings.3mf

7-inner-core-tube-7-rings.3mf

7-inner-core-tube-8-rings.3mf

7-inner-core-tube-10-rings.3mf

9-end-cap.3mf

🗋 Mk2 Update: multi color support

10-spacer-ring.3mf

11-spacer-disk.3mf

12-top-disk.3mf

3MF Files - by Build Plate for a 5 Letter Ring Cryptex   6 files

1-internal-parts-5-letter-rings.3mf

2-visible-parts-5-letter-rings.3mf

3-visible-parts-5-letter-rings.3mf

4-visible-parts-5-letter-rings.3mf

xl-1-internal-parts-5-letter-rings.3mf

xl-2-visible-parts-5-letter-rings.3mf

📁 **STL Files - By Part**	34 files

1-letter-ring-single-color-embossed-mk2.stl

1-letter-ring-single-color-recessed-mk2.stl

1-letter-ring-multi-color-body-1-3.stl

1-letter-ring-multi-color-seperators-2-3.stl

1-letter-ring-multi-color-letters-3-3.stl

2-encoder-single-color.stl

3-outer-core-tube-5-rings-single-color.stl

3-outer-core-tube-6-rings-single-color.stl

3-outer-core-tube-7-rings-single-color.stl

3-outer-core-tube-8-rings-single-color.stl

3-outer-core-tube-10-rings-single-color.stl

4-base-lock-ring-single-color-embossed-mk2.stl

4-base-lock-ring-multi-color-body-1-3-mk2.stl

4-base-lock-ring-multi-color-mark-2-3-mk2.stl

4-base-lock-ring-multi-color-inlays-3-3-mk2.stl

5-top-lock-ring-single-color-embossed-mk2.stl

5-top-lock-ring-multi-color-body-1-3-mk2.stl

5-top-lock-ring-multi-color-mark-2-3-mk2.stl

5-top-lock-ring-multi-color-inlays-3-3-mk2.stl

6-inner-core-base-single-color.stl

7-inner-core-tube-5-rings-single-color.stl

7-inner-core-tube-6-rings-single-color.stl

7-inner-core-tube-7-rings-single-color.stl

7-inner-core-tube-8-rings-single-color.stl

7-inner-core-tube-10-rings-single-color.stl

9-end-cap-single-color.stl

9-end-cap-multi-color-layer-1-1-5.stl

9-end-cap-multi-color-layer-2-2-5.stl

9-end-cap-multi-color-layer-3-3-5.stl

9-end-cap-multi-color-layer-4-4-5.stl

9-end-cap-multi-color-layer-center-5-5.stl

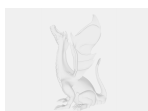**10-spacer-ring-single-color.stl**

11-spacer-disk-single-color.stl

12-top-disk-single-color.stl
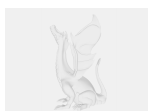
single-color-5-top-lock-ring-blank-embossed-mk2.step

single-color-1-letter-ring-blank-embossed-mk2.step

single-color-4-base-lock-ring-blank-embossed-mk2.step

📂 Blanks - 3MF Files   3 files

blank-1-letter-ring.3mf

blank-4-base-lock-ring-mk2.3mf

blank-5-top-lock-ring-mk2.3mf

📂 Blanks - STL Files   8 files

blank-4-base-lock-ring-multi-color-body-1-2-mk2.stl

blank-4-base-lock-ring-multi-color-mark-2-2-mk2.stl

blank-4-base-lock-ring-single-color-embossed-mk2.stl

blank-1-letter-ring-multi-color-body-1-2.stl

blank-1-letter-ring-multi-color-seperators-2-2.stl

blank-5-top-lock-ring-multi-color-body-1-2-mk2.stl

blank-5-top-lock-ring-multi-color-mark-2-2-mk2.stl

blank-5-top-lock-ring-single-color-embossed-mk2.stl

Print files

	GCODE files - Single Color - By Build Plate	4 files

1-internal-parts-5-letter-rings_04n_02mm_pla_mk4is_… .bgcode
⊗ PLA　⬦ 0.40 mm　≡ 0.20 mm　🕐 4.77 hrs　⚖ 89 g　🖶 Prusa MK4

2-visible-parts-5-letter-rings_04n_015mm_pla_mk4is_… .bgcode
⊗ PLA　⬦ 0.40 mm　≡ 0.15 mm　🕐 5.09 hrs　⚖ 55 g　🖶 Prusa MK4

3-visible-parts-5-letter-rings_04n_015mm_pla_mk4is_… .bgcode
⊗ PLA　⬦ 0.40 mm　≡ 0.15 mm　🕐 0.29 hrs　⚖ 4 g　🖶 Prusa MK4

4-visible-parts-5-letter-rings_04n_015mm_pla_mk4is_... .bgcode
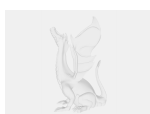
⊗ PLA　　🔩 0.40 mm　　≣ 0.15 mm　　🕐 5.56 hrs　　⚖ 89 g　　🖥 Prusa MK4

Other files

📂 **Assembly & Print Instructions**　　　　　　　　　　　1 file

cryptex-by-cees-assembly-and-print-guide-mk2-v12.pdf

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