

**Purpose**

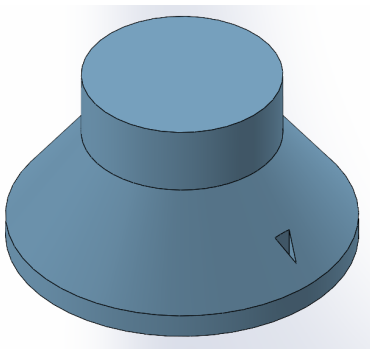
This assignment provides an opportunity to utilize all the part creation and assembly skills that you have learned thus far.

By completing this assignment, you will be able to:

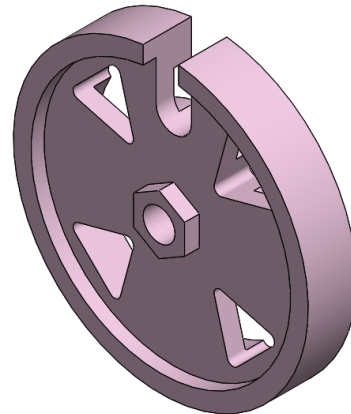
- Accurately model 3-dimensional parts/objects using CAD software (SLO 2)
- Design components of an assembly to function together and interface appropriately (SLO 3d)
- Apply basic relations to constrain parts (coincident, concentric, tangent, distance) to produce a fully constrained assembly (SLO 3a)
- Utilize CAD tools such as rendering, animations, and/or embedding to communicate designs outside of the CAD environment (SLO 5b)
- Understand how to use feature-based modeling to support fabrication/prototyping techniques such as 3D printing, laser cutting, basic woodworking, etc. (SLO 5c)

**Task**

Create a part file in SolidWorks of your design for the missing connector of the combination lock assembly. Reference your concept sketches and answers to the questions posed in APPs G03, G06 and G07.



Dial



Front\_Rotor

Once you create your part, create a subassembly of dial, connector, and rotor. Your created part should interface properly with both the dial and front rotor; you're encouraged to make modifications to your connector design to ensure that it fits properly and would allow for adequate rotation of the rotor when turning the dial by hand.

Create multi-view drawings for both the connector part you created and the subassembly. **These drawings do not need to be dimensioned.**

Answer the following questions:

- 1) What method(s) of fabrication would you recommend to fabricate this connector?
- 2) How has this recommendation influenced your design?
- 3) If you were to manufacture this part, what design considerations (such as tolerancing) should you consider to ensure the connector interfaces with the dial and front rotor appropriately?

### **Submit**

For both the connector part and subassembly, submit a screenshot of the entire SolidWorks window following the guidelines in the *SolidWorks Submission Standards* document in Carmen. Your submission should include the part in isometric view, expanded model tree (features or mates), and the mass properties window as shown below in the *Criteria for Success* section.

For both the connector part and subassembly, submit a PDF of the drawing with a completed title block (full SolidWorks window not needed) following the guidelines in the SolidWorks Submission Standards document in Carmen.

Also submit a word document or pdf containing your answers to the questions posed above.

### **Criteria for Success**

Grading of this assignment will be based on:

1. Adhering to the submission standards.
2. Generation of a complete and reasonable connector part.
3. Inclusion of all necessary subassembly components
4. Proper use of mates to correctly orient and define subassembly.
5. Reasonable and well thought out responses to the questions posed.

For detailed descriptions of the grading criteria for this assignment, please see the rubric on Carmen.