CAD - Parts

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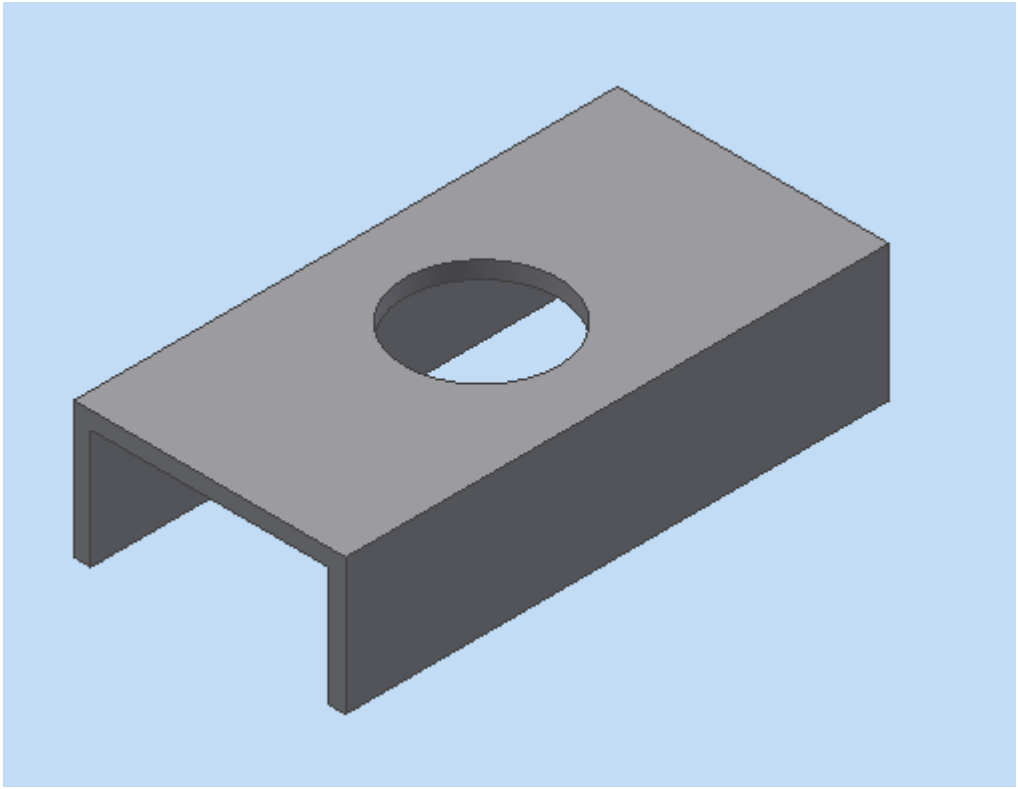
Homework check

C-Channel

- Why?
- Process: Model -> Drawing -> Real part

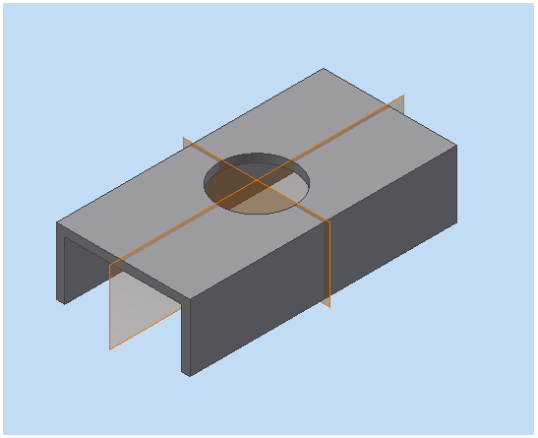


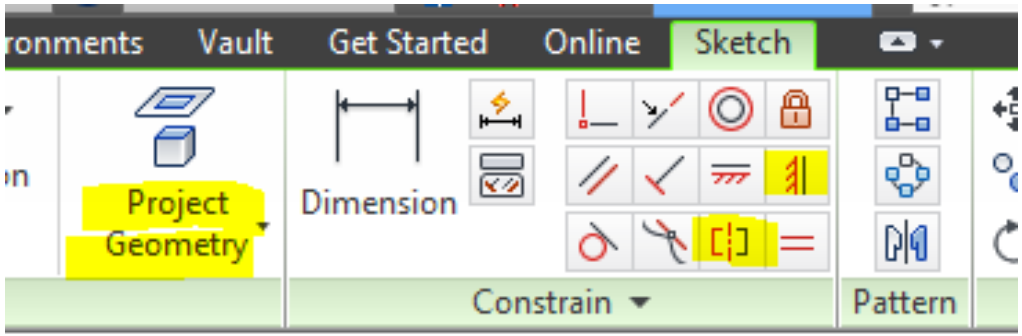
Setup

- Make sure you are on the right project
  - new project file
- New > (under part) Standard.ipt > Create
- Save the file

2D Sketch

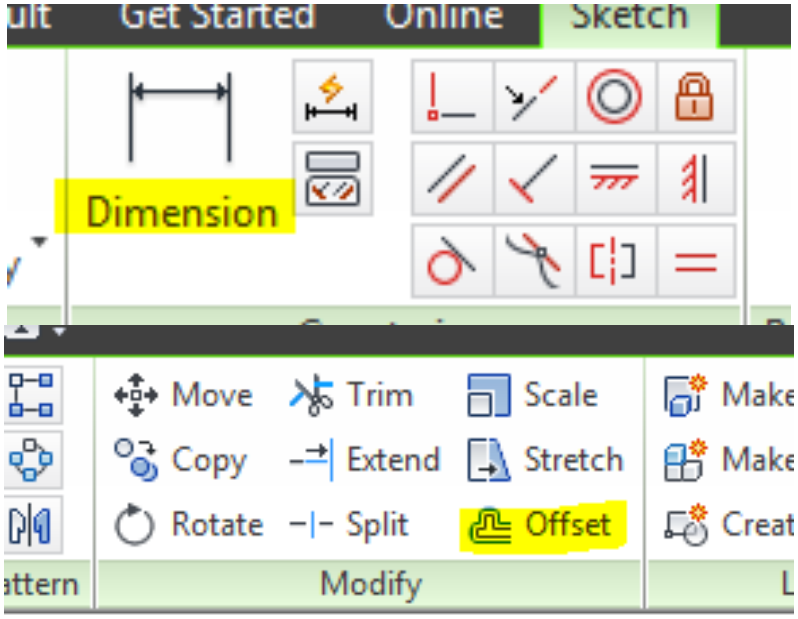
- 2D sketch > origin > XY plane
- project geometry > X & Y Axis
- make a 'C' shape
- Constraints
  - symmetric
  - vertical
- show constrain - F8
- hide constrain - F9
- save

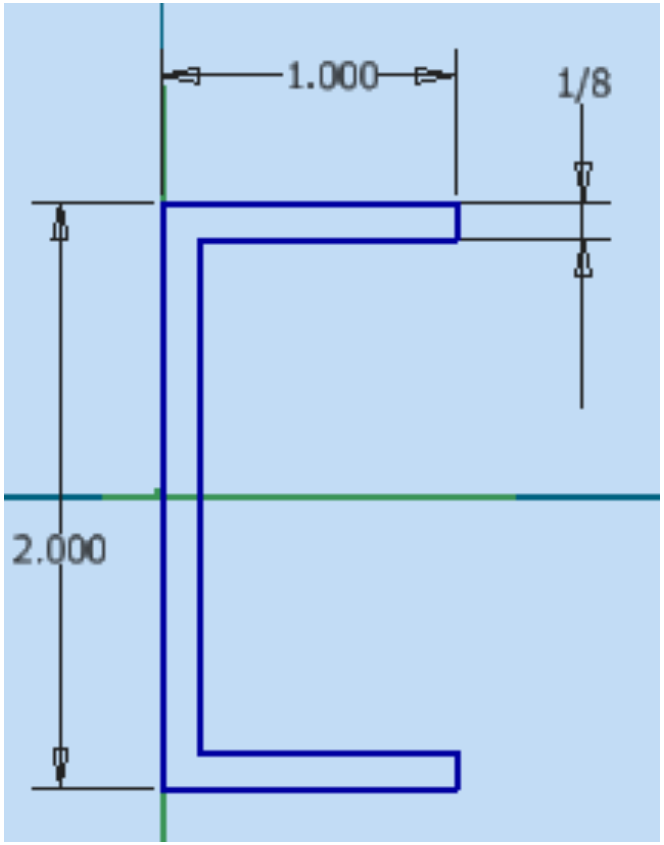




2D Sketch

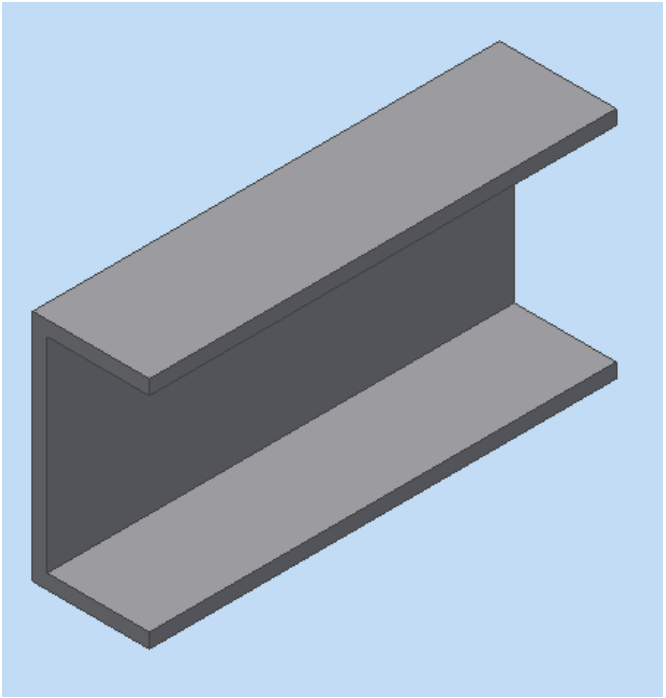
- Dimensions
- Make thickness
- Formula in dimensions
- Save





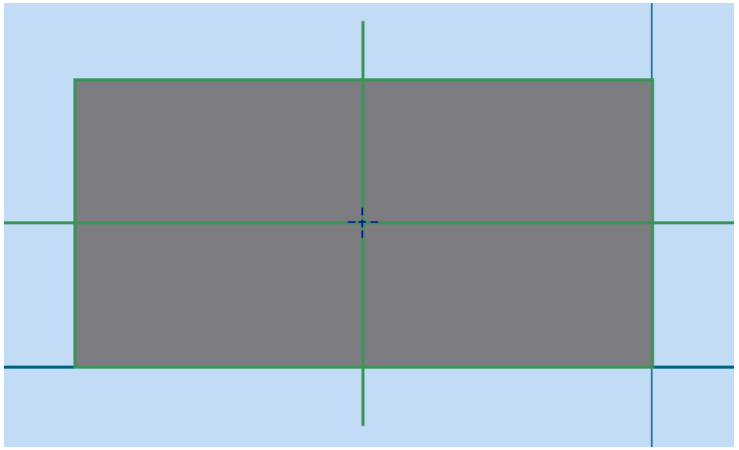
Make it 3D

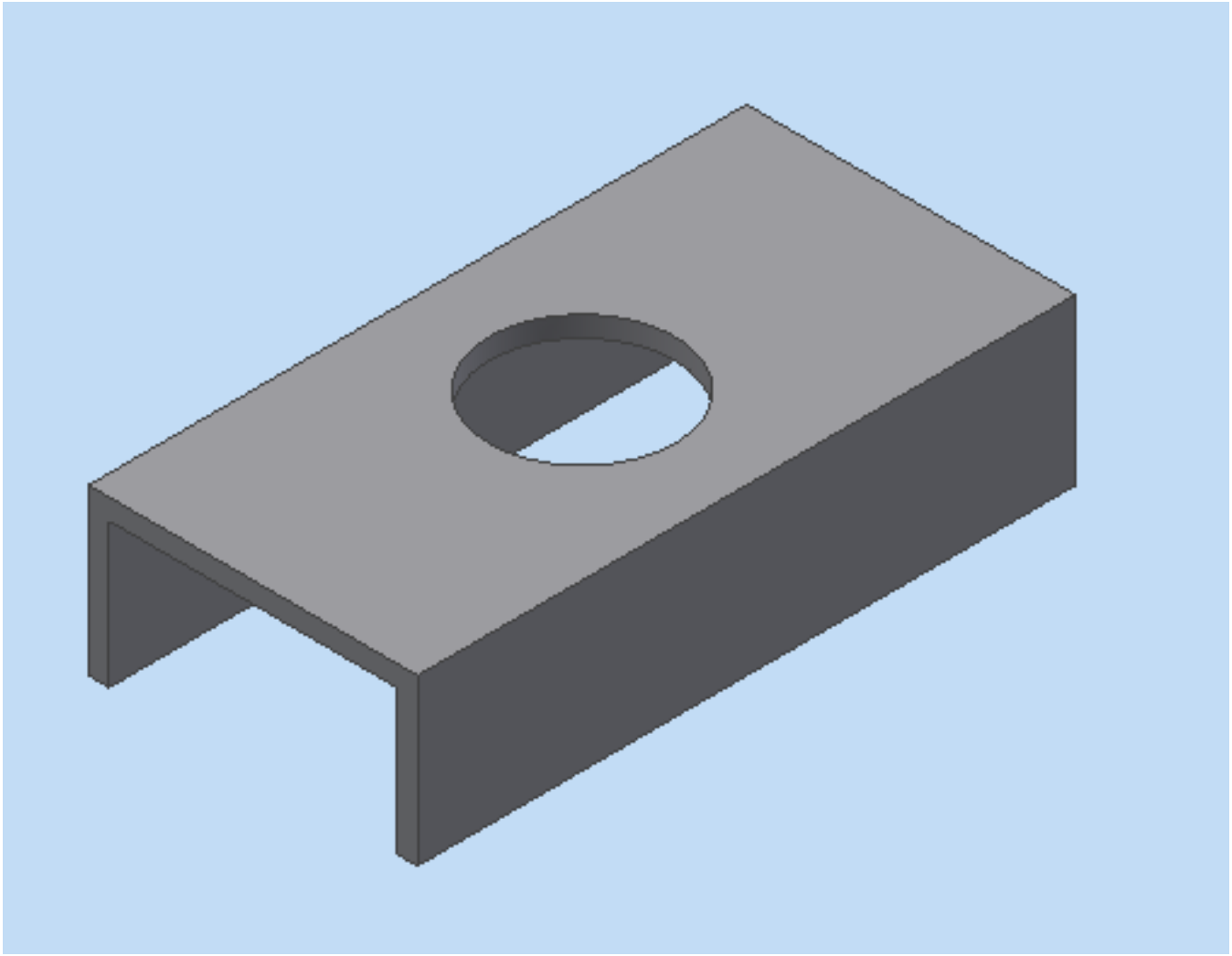
- quit sketch
- extrude
- extends both ways
- save



Add holes

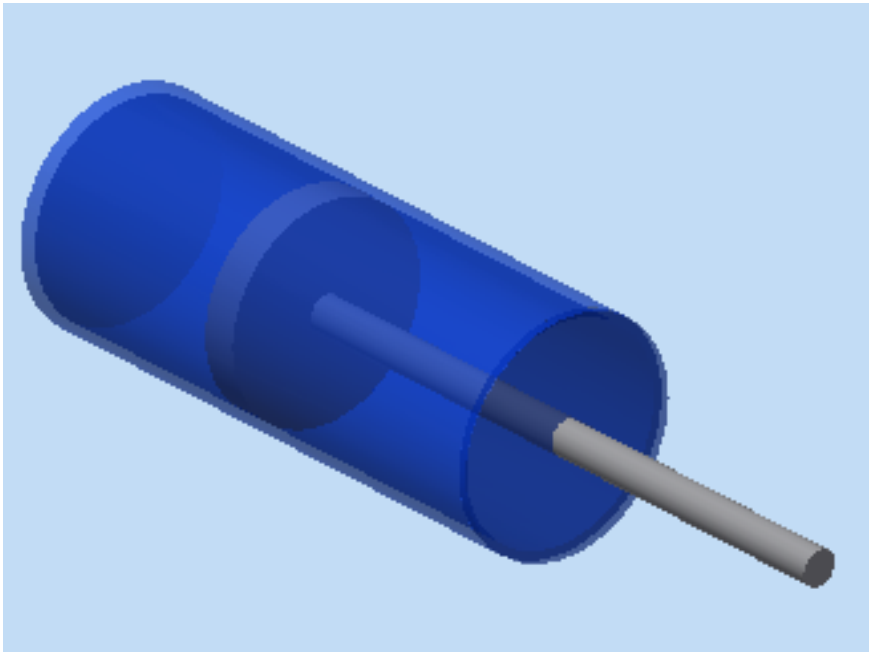
- create new sketch at the right plane
- see the center
- make hole
- name it
- save



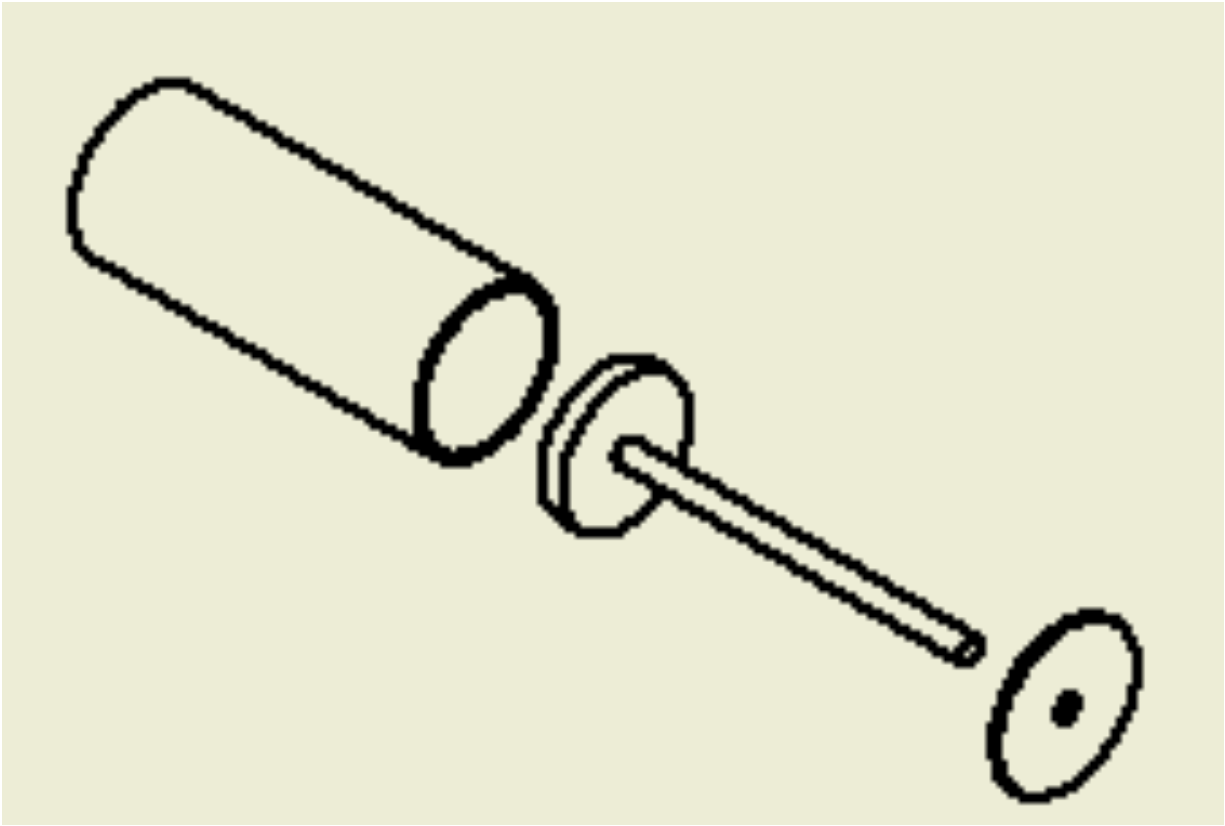


Pneumatic Actuator

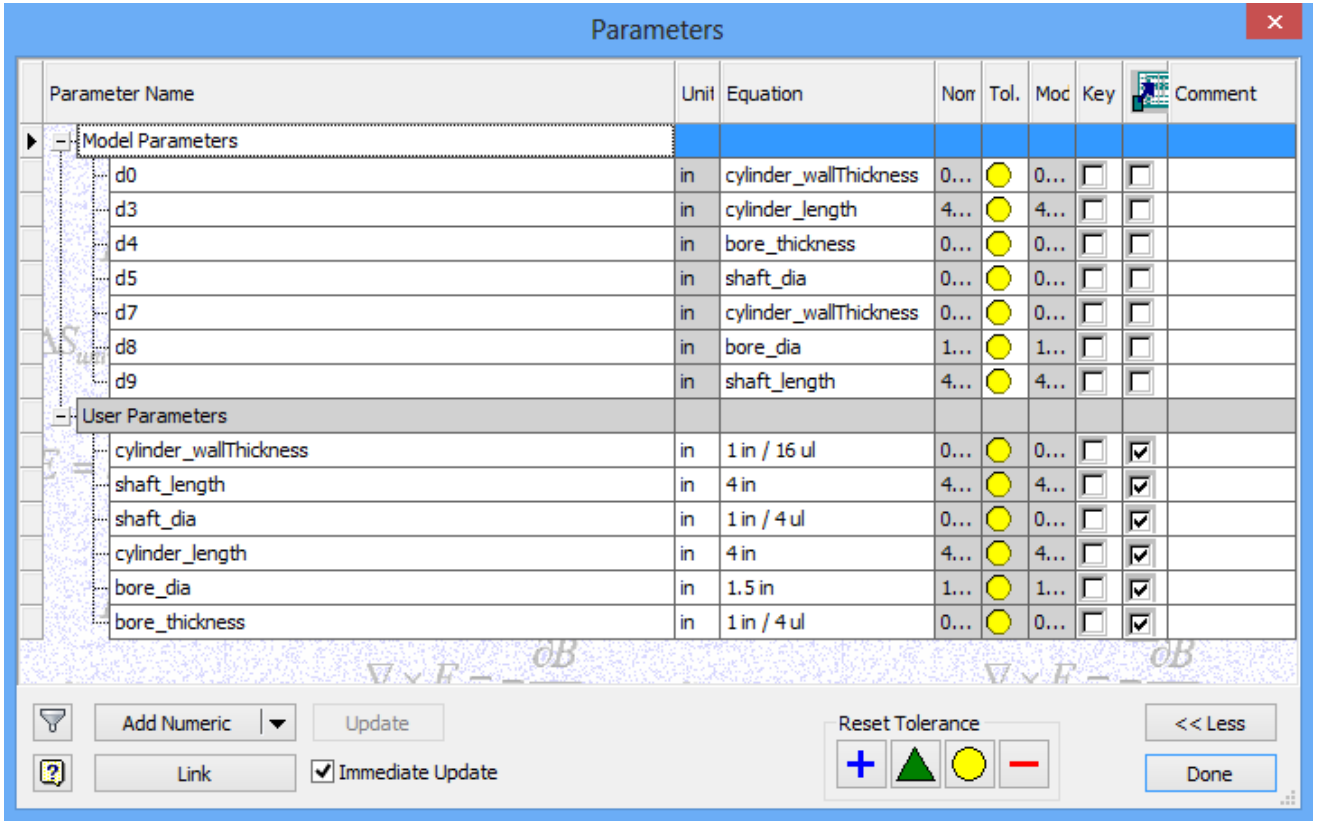
- pneumatic demo
- model demo



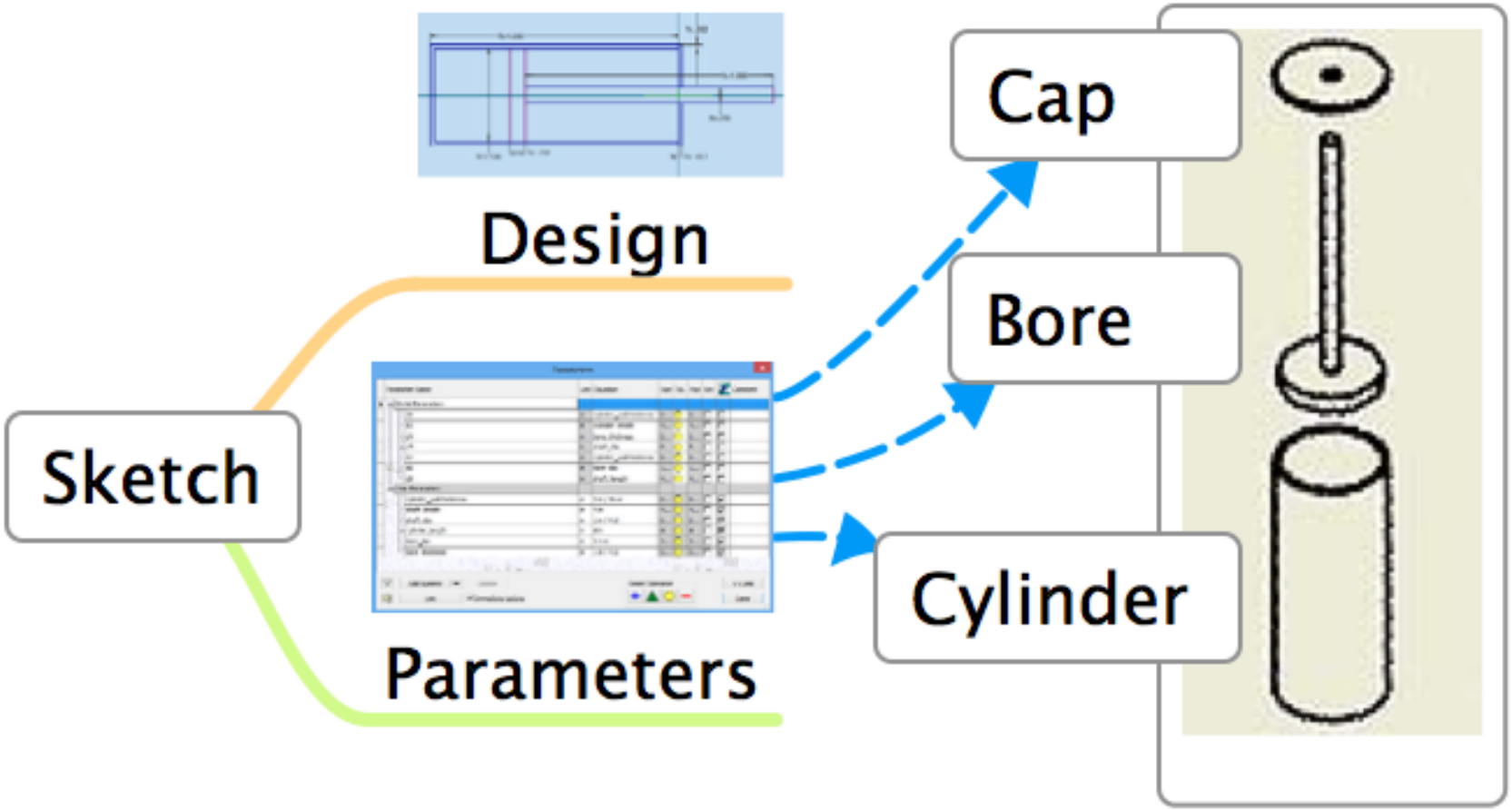
The Actuator



Inventor Parameters

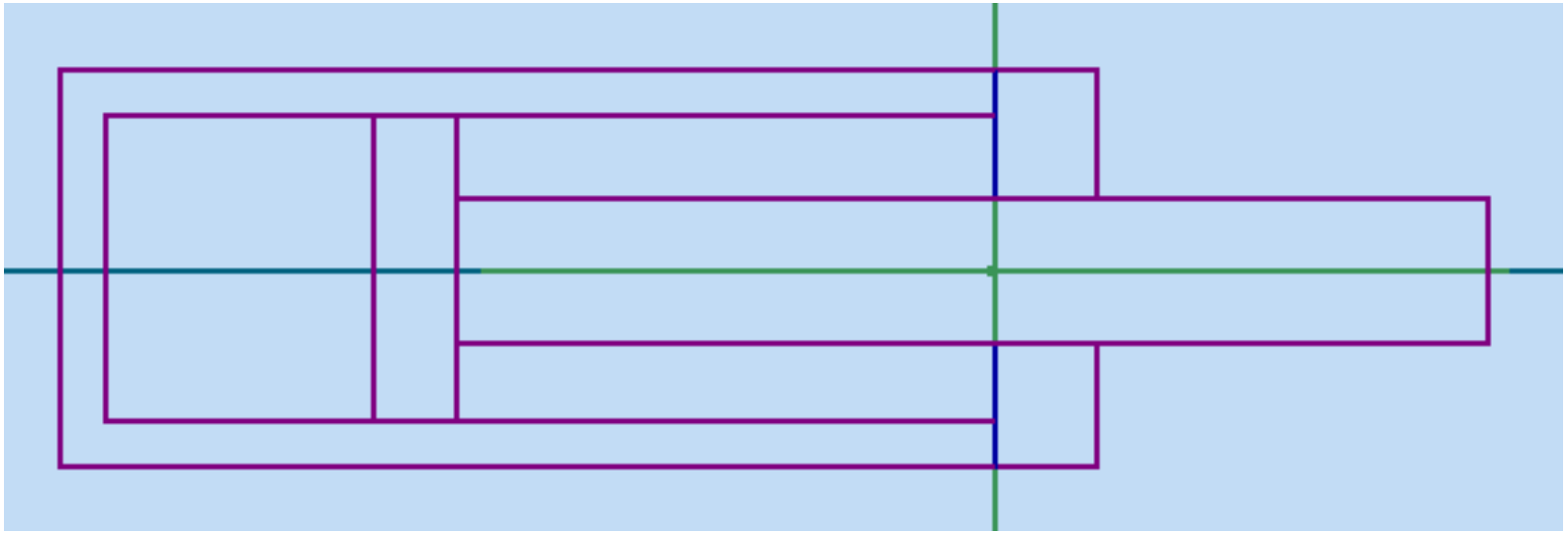


Inventor Parameters



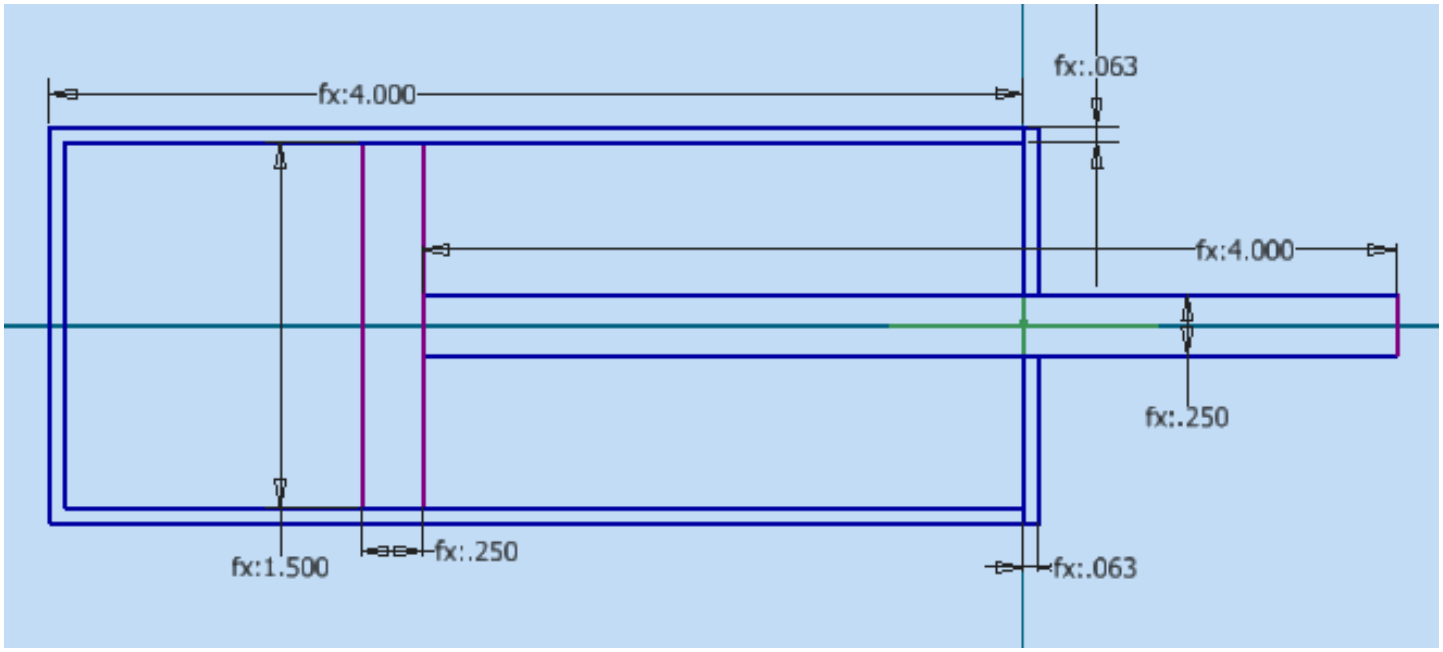
1. design the actuator using sketch

- Cylinder: like C-channel
- Bore: **make sure not to click the green dot
- Shaft: another rectangle
- Cap: 2 rectangle with vertical constraint



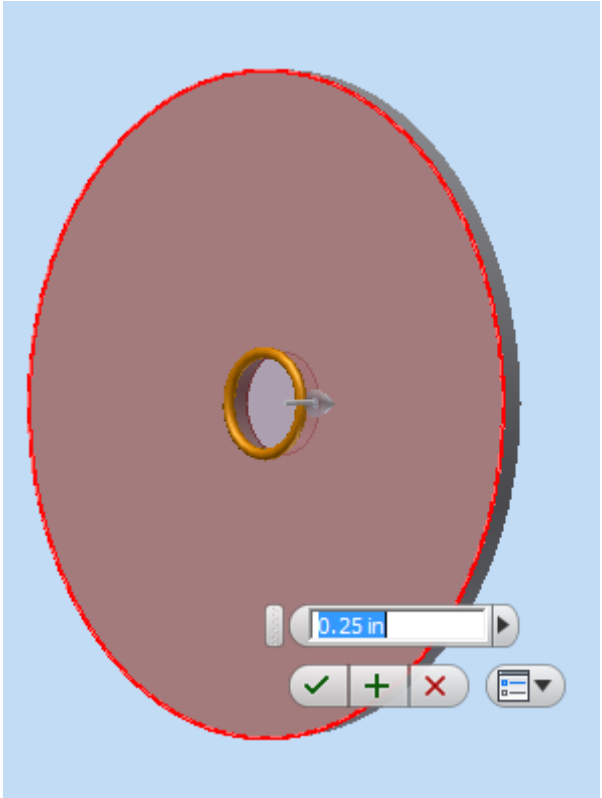
2. Add parameters

- add parameters to the table
- constraints with parameter
- change parameters & see it update



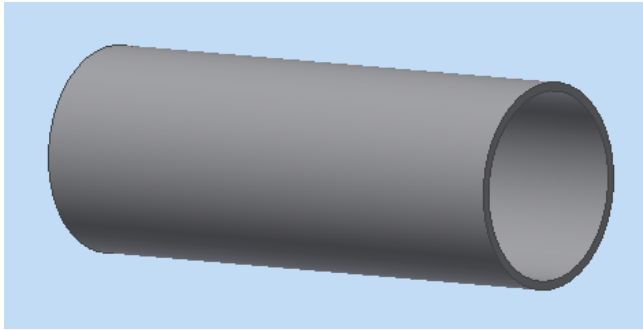
3-1. Make parts - Cap

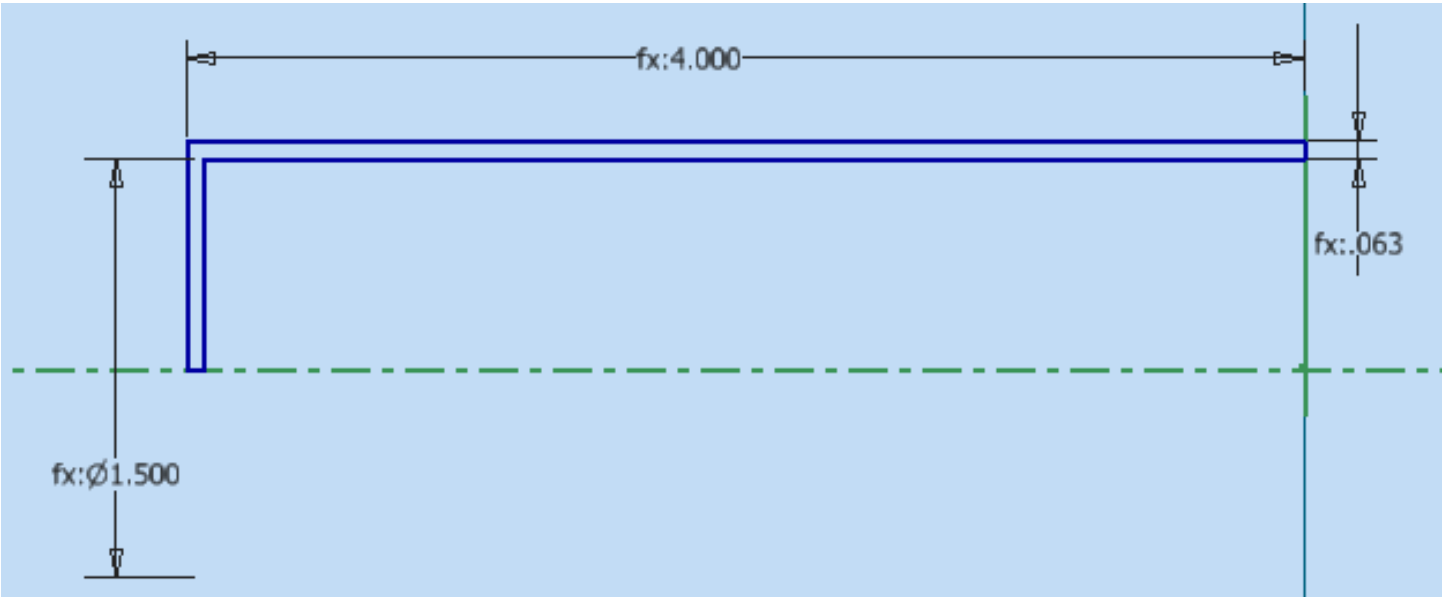
- what plane to create sketch
- make circle
  - parameter & formula
- make hole
  - Concentric



3-2. Make parts - Cylinder

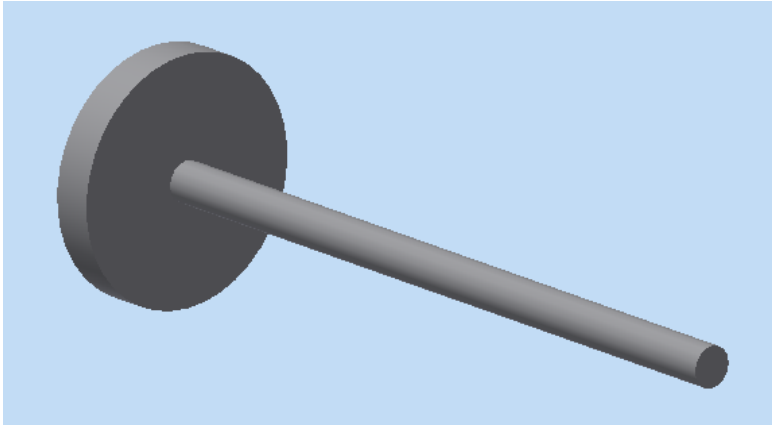
- make half of the cut area
- centerline
- revolve

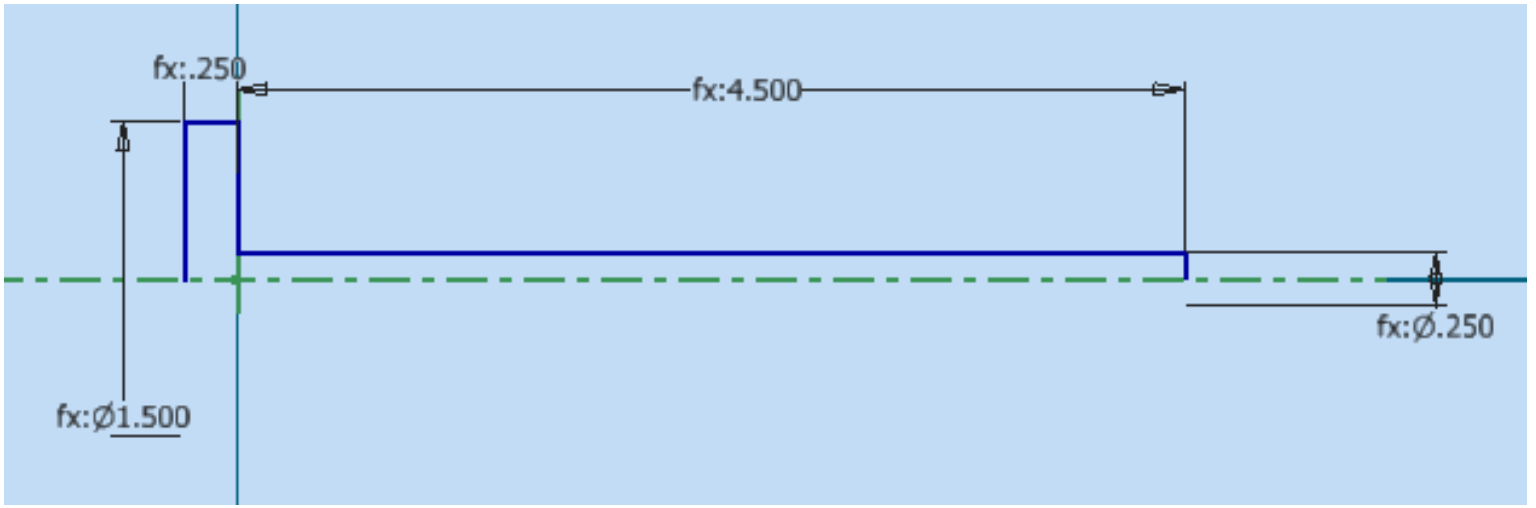




3-3. Make parts - Bore

- let's revolve again
- draw a half 'T' shape



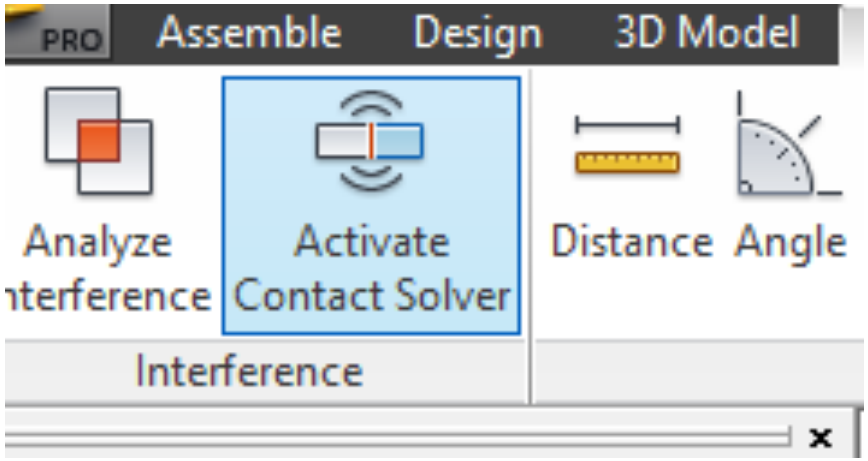


4. Put them together

- new assembly
- **place the cylinder first
- remember how to place constraint?
  - Mate for bore
  - Insert for the cap
- make the cylinder and cap invisible

5. FancyStuff++

- contact set
  - Inspect > Activate Contact Solver
  - right click on parts > Contact Set
- change parameters



Homework!

- 4-bar linkage
- LEGO
- Wheel