

Creating and Adding Subassemblies

Goals:

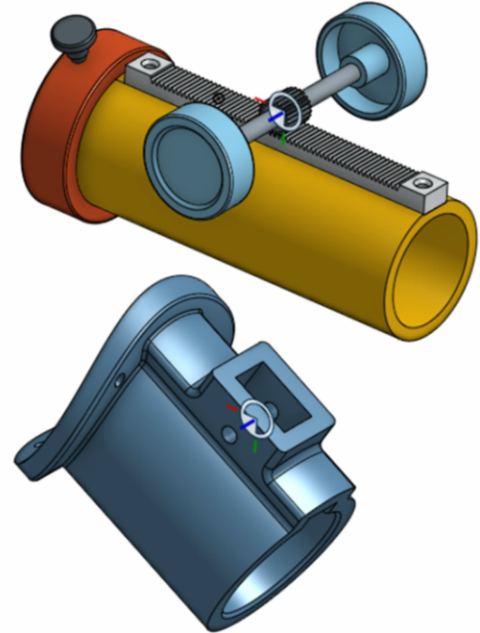
1. Create a subassembly that functions within a larger assembly.
2. Practice applying various mate types.
3. Determine how a subassembly should be mated into the main assembly.



Creating and Adding Subassemblies

Instructions:

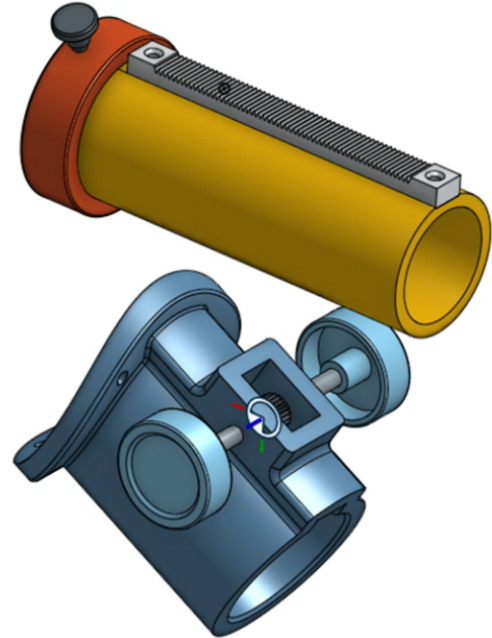
1. Open the Onshape document "[Exercise 8 - Creating and Adding Subassemblies](#)".
2. Create a new assembly named "Lens Tube Subassembly".
3. Insert the following parts into the assembly:
 - The entire Lens Tube part studio
 - The part "Lens Mount" from the Reflector part studio



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Instructions:(continued)

4. Add a Group mate for the following parts:
 - Axle Gear
 - Turn Handle (2)
5. Add a Group mate for the following parts:
 - Bezel
 - Lens Tube
 - Rack
 - Thumb Wheel Fastener (2)
6. Add a Revolute mate to the mate connectors for the Axle Gear and the Lens Mount.

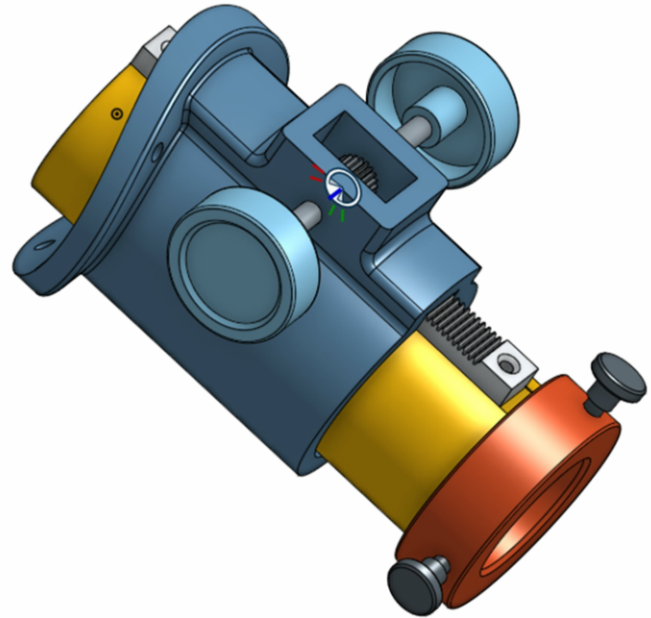


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Instructions:(continued)

7. Add a Slider mate between the Rack and the Lens Mount.

(Hint: Cylindrical surfaces can be used to select the correct mate connectors.)

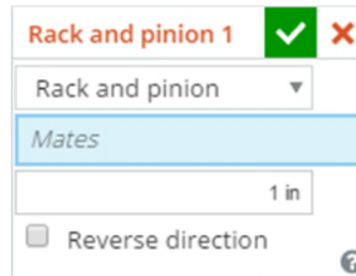
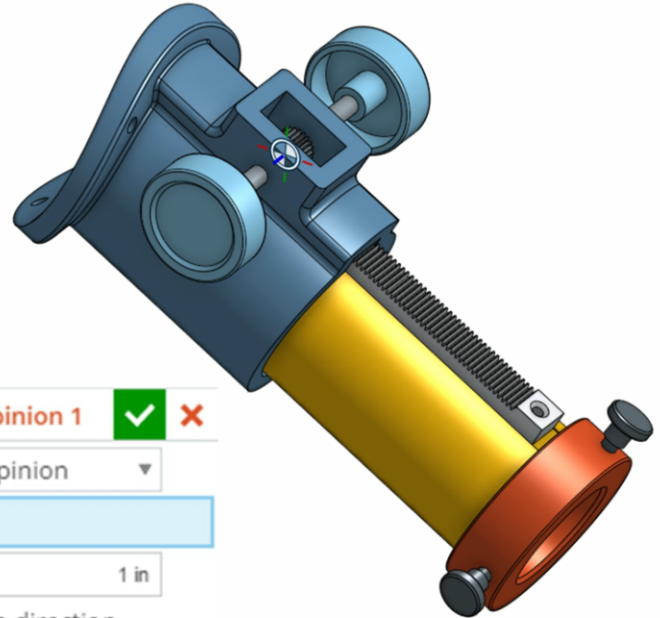


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Instructions:(continued)

- Optional Bonus! Add a Rack and Pinion mate between the Rack and the Axle Gear. Set the "distance per revolution" to 1.

(Hint: This mate type requires two specific mate types to be selected.)

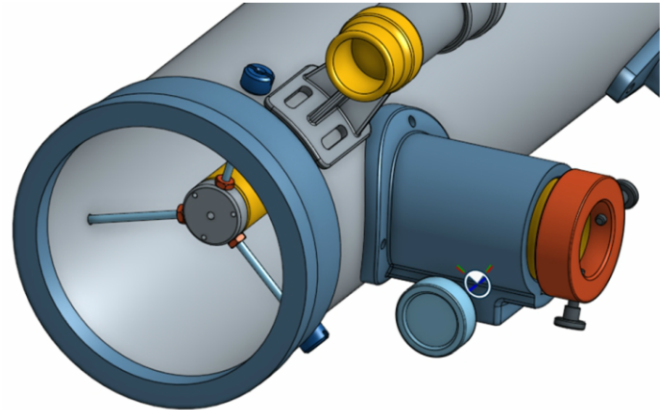


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Instructions:(continued)

9. Open the assembly "Reflector".
10. Insert the Lens Tube subassembly into the Reflector assembly.
11. Use a Fastened mate to attach the Lens Mount to the Main Tube.

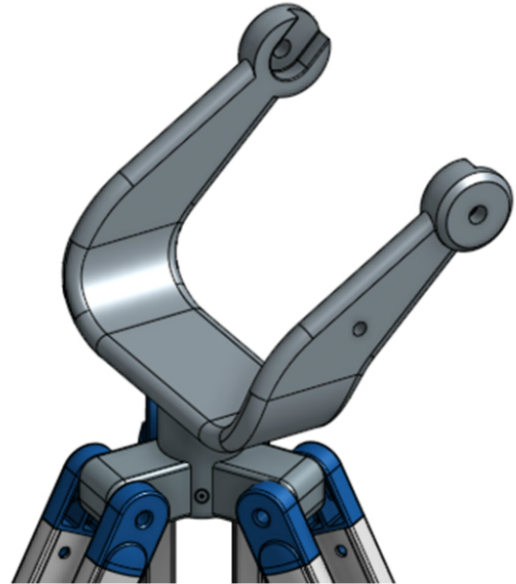
(Hint: Selecting a corner on the Lens Mount and an exterior corner on the Main Tube will allow for the correct mate relation. The mate orientation may need to be adjusted.)



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Instructions:(continued)

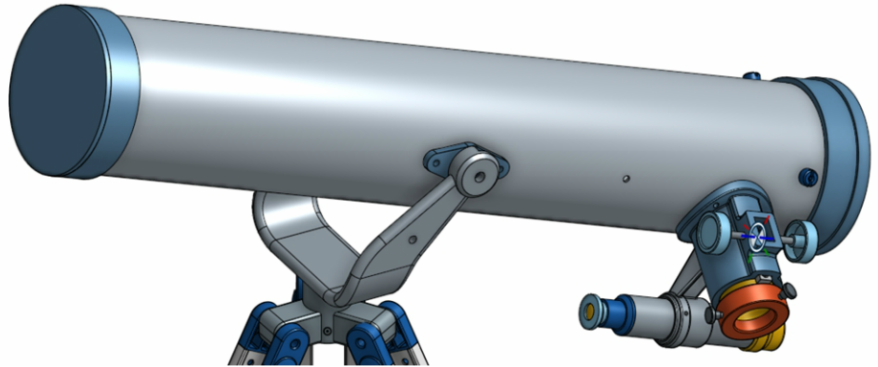
12. Switch over to the tab "Main Assembly".
13. Insert the following into the assembly:
 - The "Reflector" subassembly
 - The "Height Adjuster" subassembly
 - The "Mount" part studio
14. Add a Revolute mate between the top of the tripod and the Mount.



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Instructions:(continued)

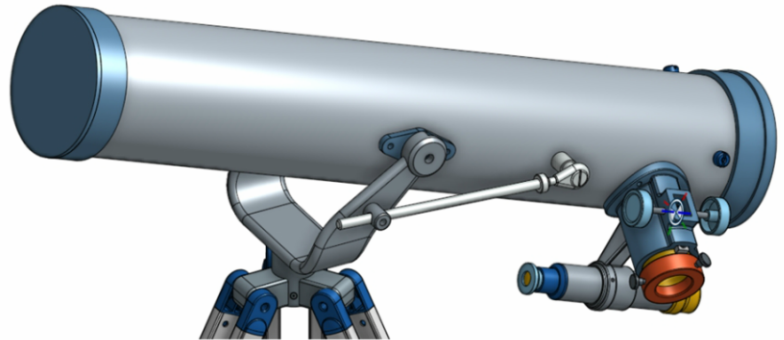
15. Add a Revolute mate between the Mount and the Pivot Mount of the Reflector subassembly.



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Instructions:(continued)

16. Add a Revolute mate between the Mount and the Guide of the Height Adjuster subassembly.
17. Add a Revolute mate between the Main Tube of the Reflector subassembly and the Mount Boss of the Height Adjuster subassembly.



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Assessment:

How many of each of the following mate types were used in this exercise?

Fastened -

Revolute -

Slider -

Group -

Rack and Pinion -

