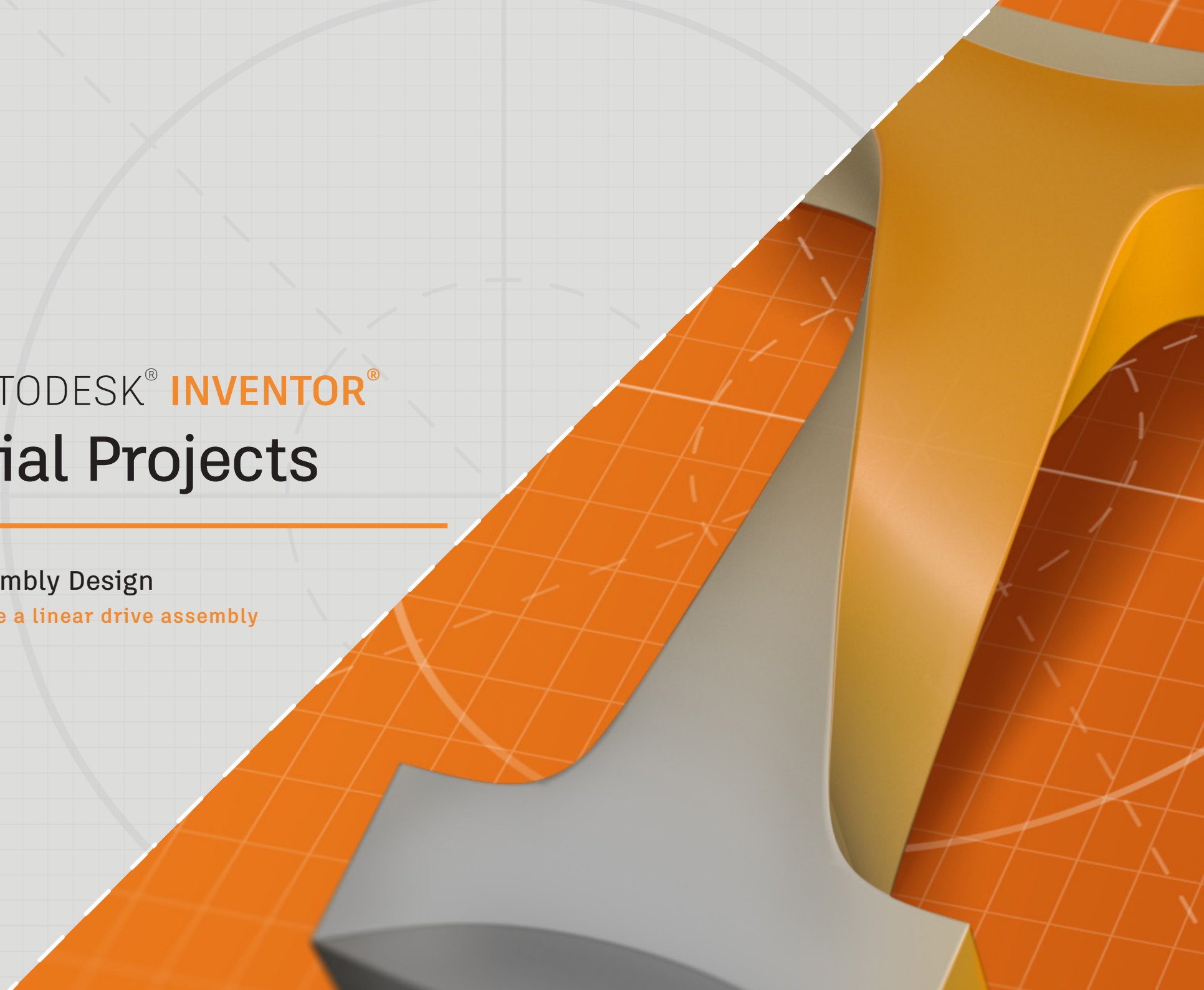
AUTODESK® INVENTOR®

Trial Projects

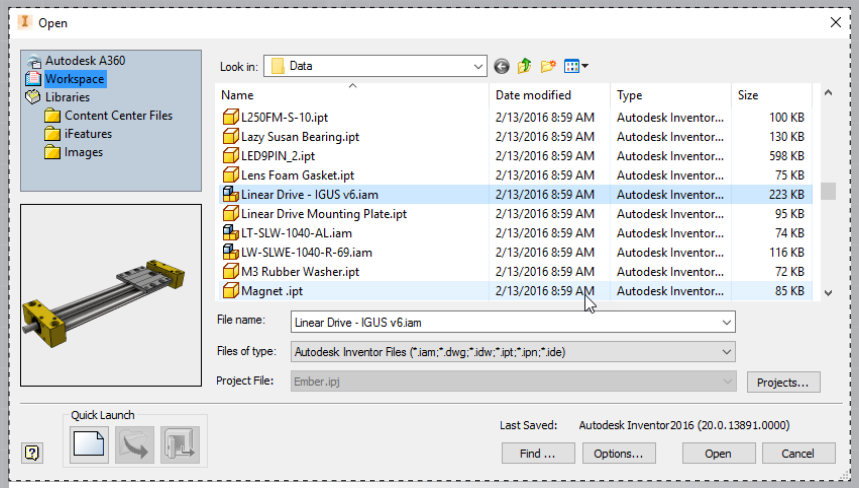
Assembly Design

Create a linear drive assembly



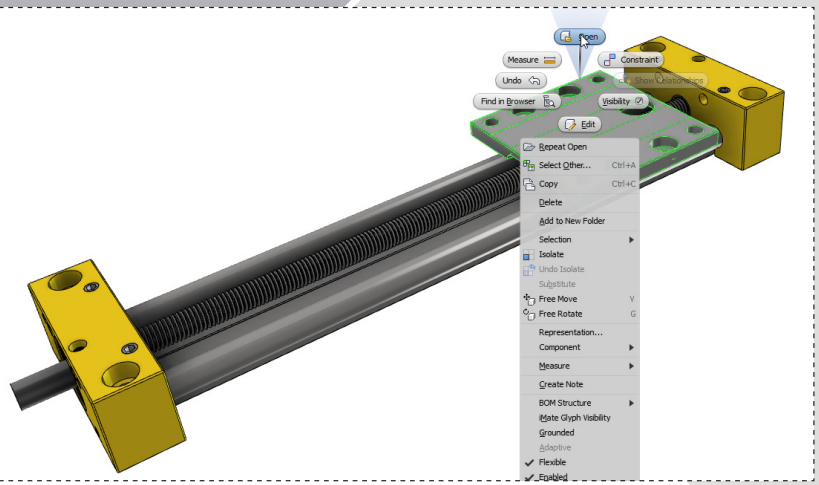
PART 1: ADDING CONSTRAINTS

1.



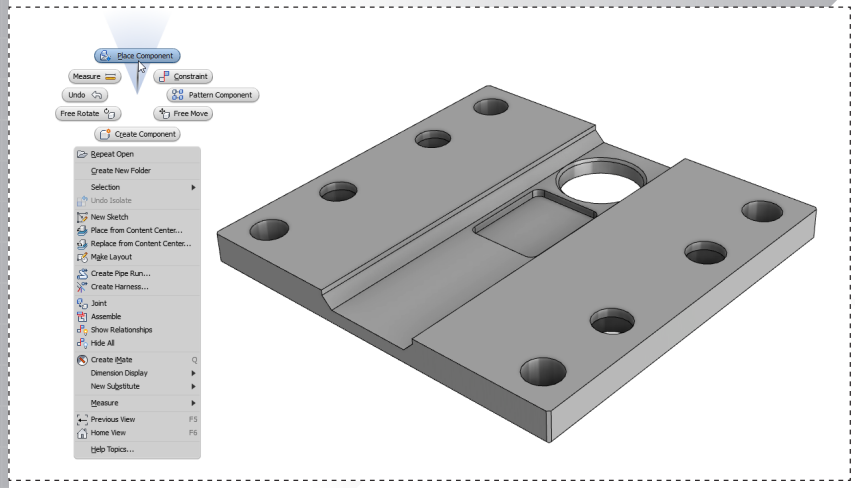
In Inventor, click the 'Projects' icon in the ribbon. Navigate to where you saved the project files and select ***Ember-LD-ASM.ipj***. Then open the file ***Linear Drive - IGUS v6.iam.***

2.



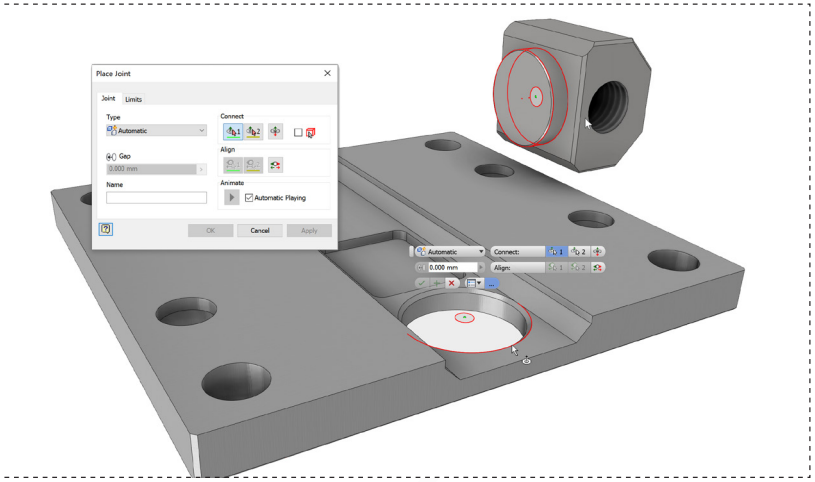
Select the sub-assembly ***LW-SLWE-1040-R-69.iam*** in the model window and right click to bring up the marking menu. Select 'open'.

3.



In the model window, right click to bring up the marking menu. Select 'Place Component' and choose ***SWZ-W-104003.ipt.*** Left click anywhere in the model window to place and then hit 'ESC'.

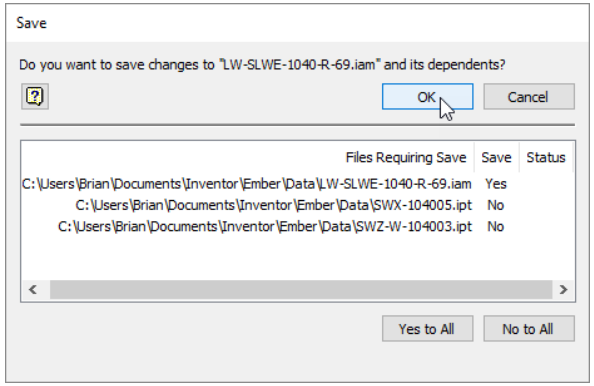
4.



Right click to display the marking menu and choose 'Joint'. Select the two cylindrical surfaces shown to create the joint, flipping the orientation if necessary.

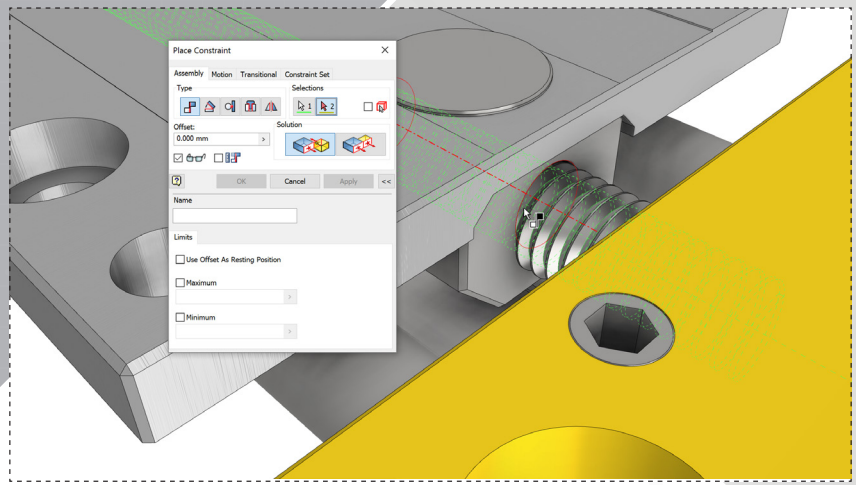
PART 1: ADDING CONSTRAINTS

5.



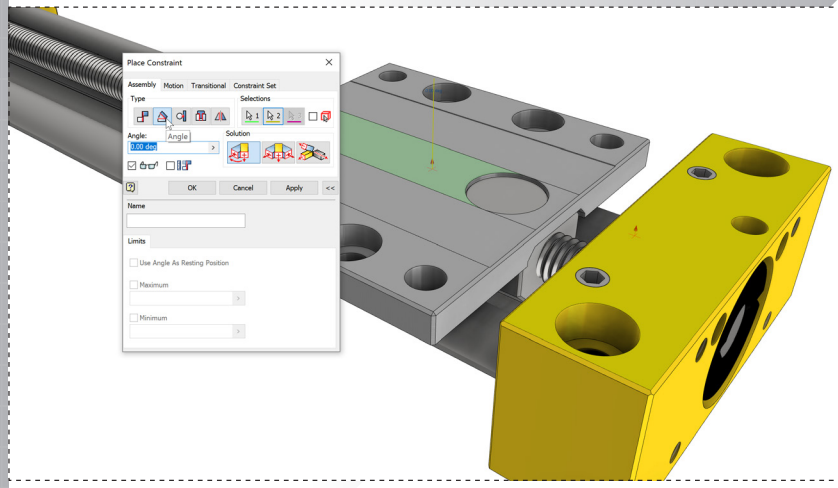
Save and close the subassembly. Make sure ***Linear Drive - IGUS v6.iam*** is now in the model window.

6.



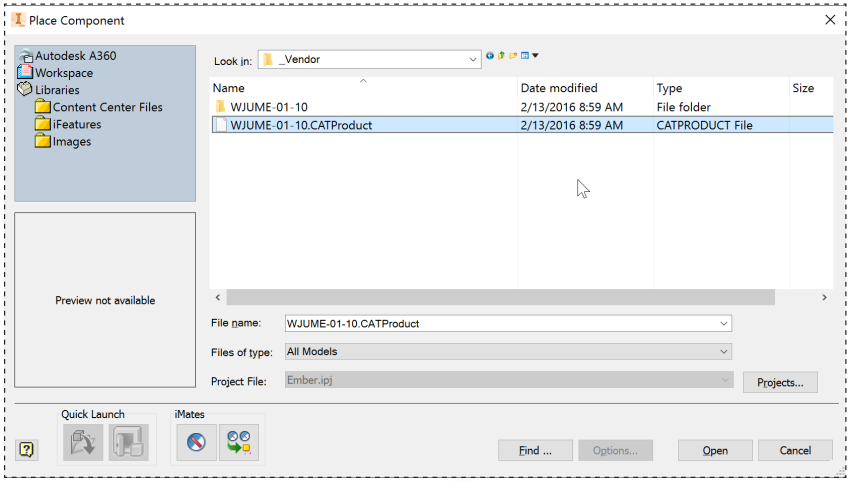
Open the marking menu and select 'Constraint'. Select the axes of the threaded rod and nut to place a mate constraint. Click 'Apply' in the dialog box to leave it open.

7.



Change the 'Place Constraint' type to 'Angle' and select the two faces shown. Click 'OK' to apply and close the dialog.

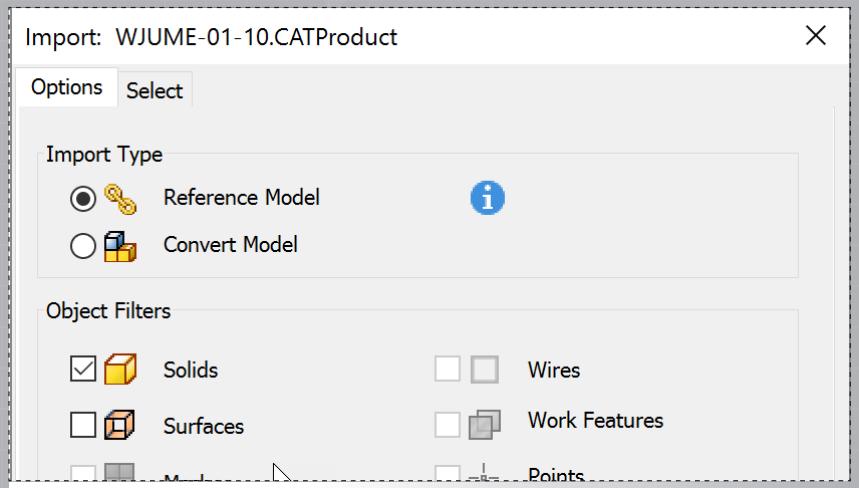
8.



In the ribbon, open the drop down menu under the 'Place' icon and select 'Place Imported CAD File.' Navigate to the "_Vendor" subfolder, and open ***WJUME-01-10.CATProduct***.

PART 1: ADDING CONSTRAINTS

9.

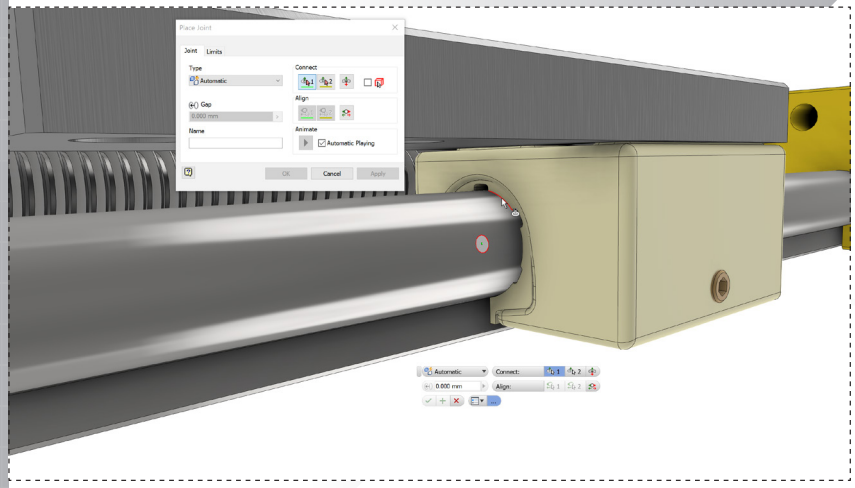


In the Import dialog, make sure Reference Model is selected and click 'OK.' Left click to place an instance of the model in the assembly and use 'ESC' to end the command.

10.

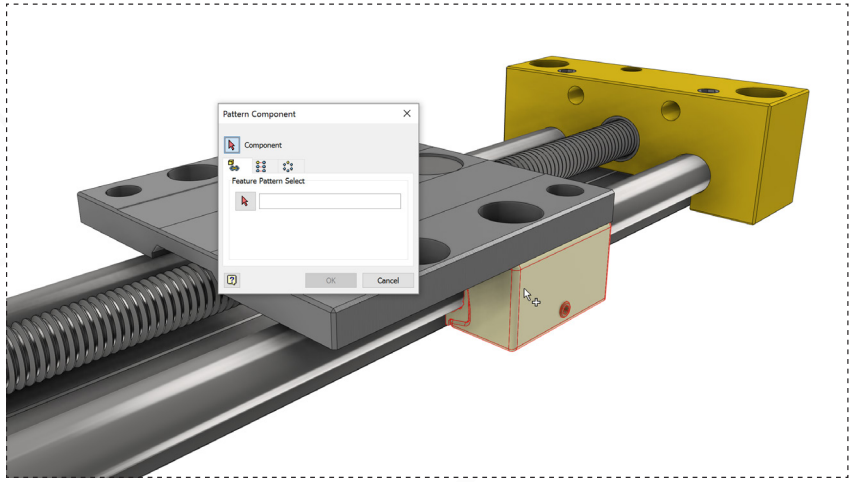
Open the marking menu and select 'Joint.' Click the circular features as shown and then select 'Apply' to create a rotational joint.

11.



With the Joint dialog still open, click the circular edge of the bushing (as shown) and guide rail. Change the Joint Type to 'Cylindrical' in the dialog and flip if necessary. Click 'OK'.

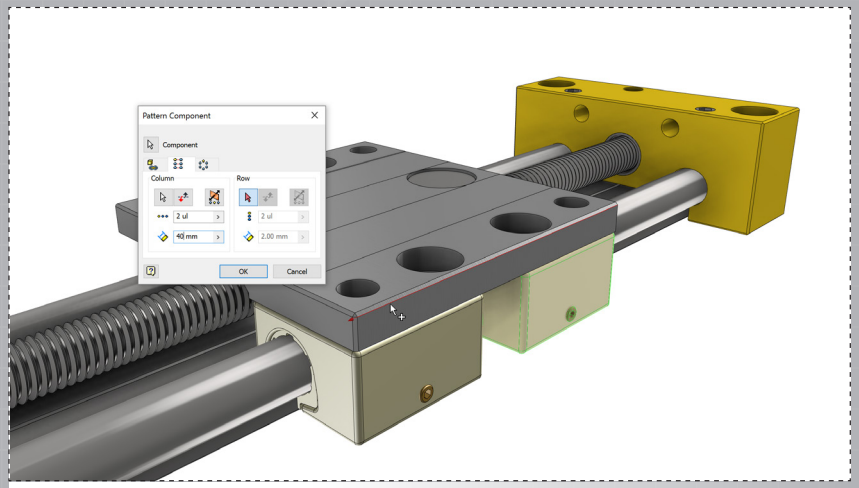
12.



Right click to open the marking menu and select 'Pattern Component.' Select the linear guide subassembly as the component to be patterned.

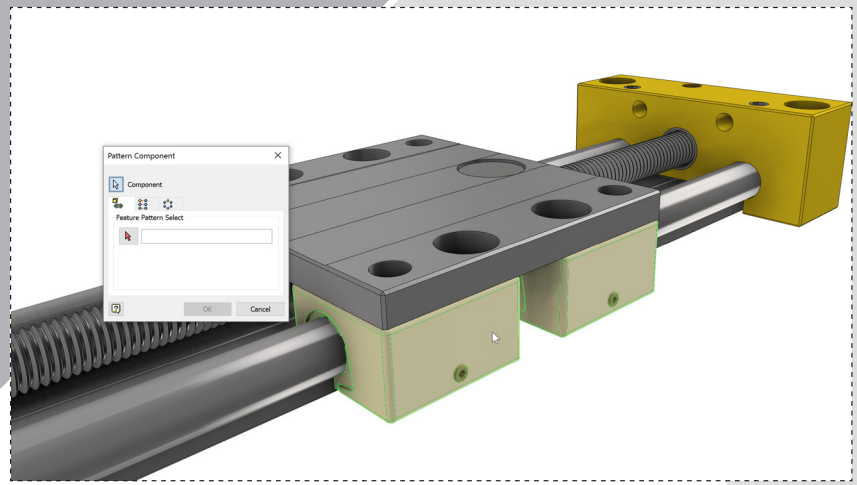
PART 1: ADDING CONSTRAINTS

13.



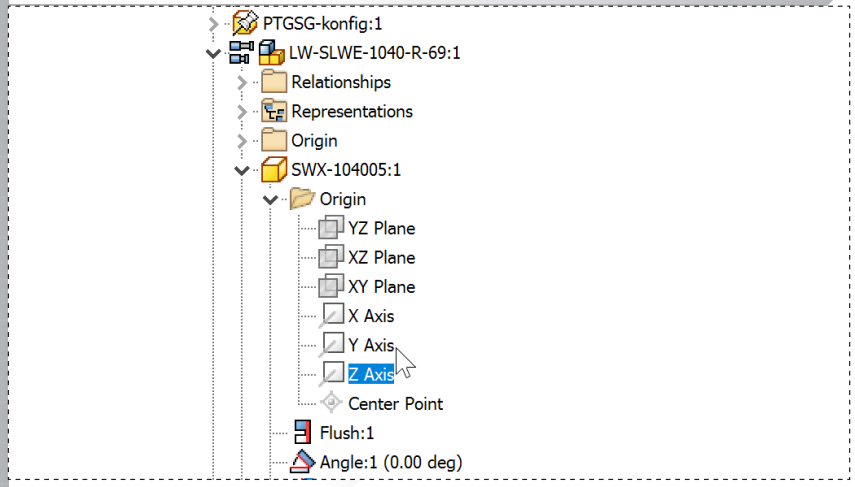
Pick the rectangular pattern tab. In the 'Column' section, click the cursor icon and select the edge of the assembly shown (flip if needed). Change the spacing to 40mm and click 'OK'.

14.



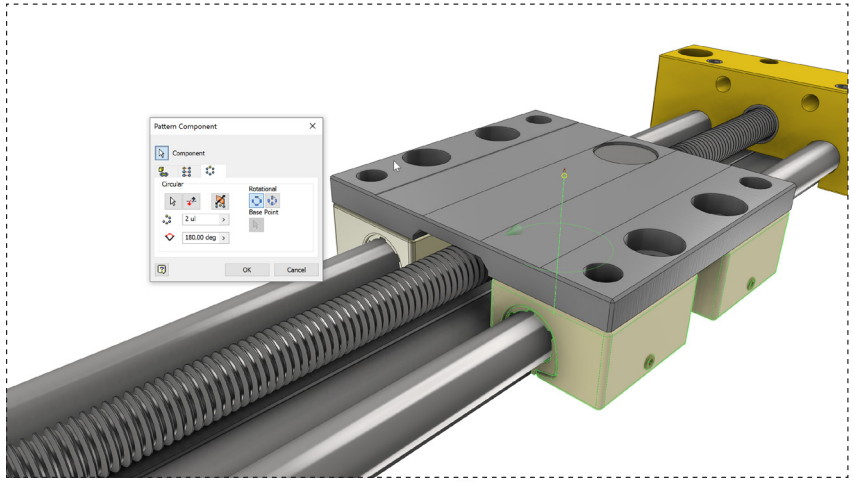
Reopen the 'Pattern Component' command from the marking menu. Select the two linear guide subassemblies as the components to be patterned.

15.



Pick the circular pattern tab. In the 'Circular' section, click the cursor icon. In the model tree, expand the tree as shown in the image above and select the Z-axis.

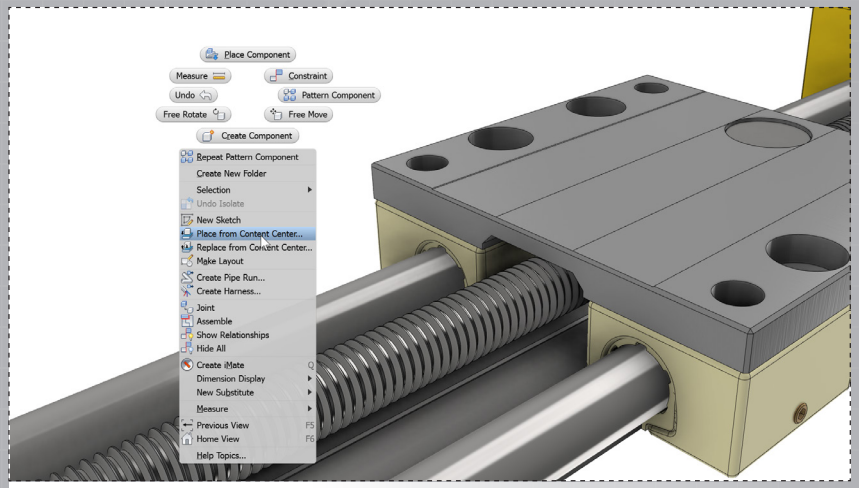
16.



Change the number of instances to 2 and the angle to 180° and click 'OK' to complete the pattern. Save the assembly.

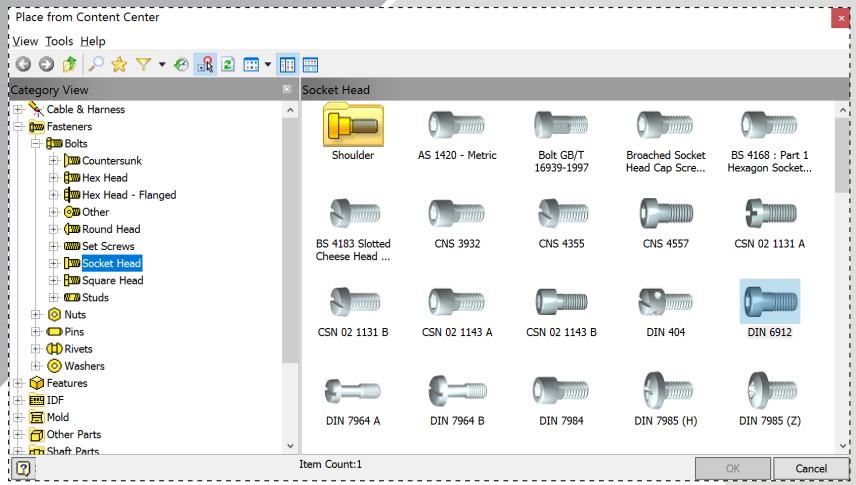
PART 2: ADDING FASTENERS

1.



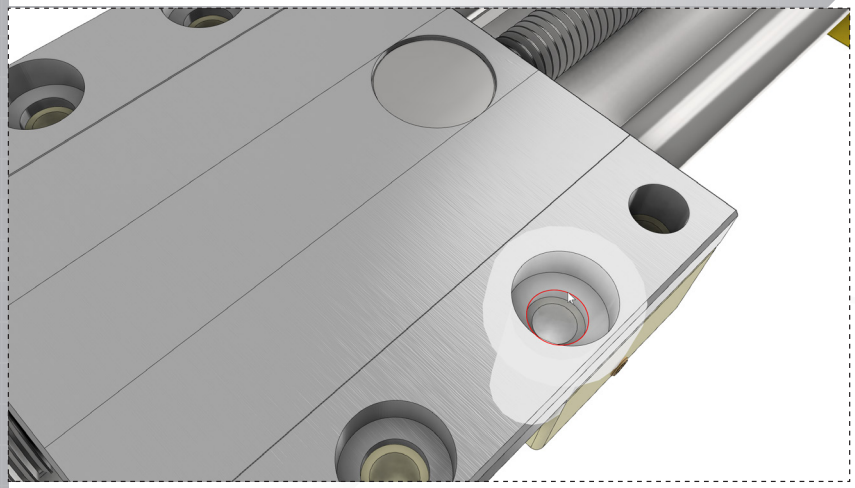
Continue with the assembly from Part 1. Right click to open the marking menu, and select 'Place from Content Center'.

2.



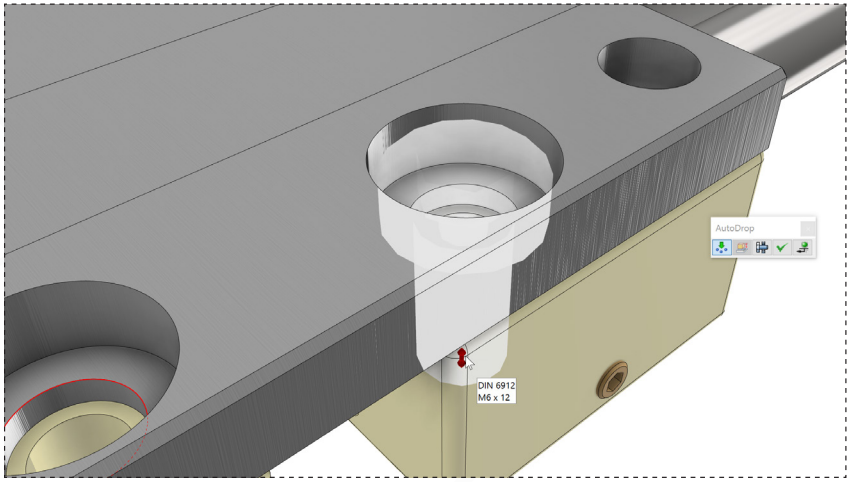
Expand the Category View for Fasteners > Bolts > Socket Head and choose DIN 6912. Click 'OK'.

3.



Select the circular edge as shown to define the placement of the bolt. The bolt will autosize based on the dimensions of the hole.

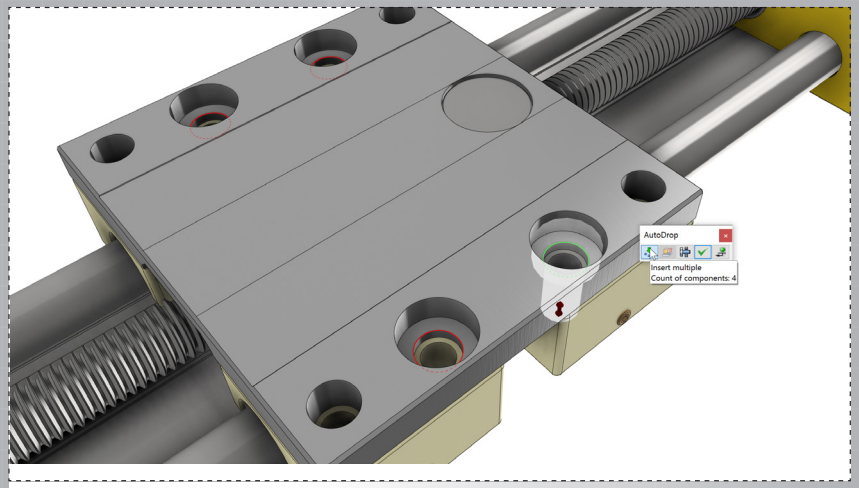
4.



Adjust the height of the bolt by clicking and dragging the red arrow. The length should be 12mm (M6 x 12).

PART 2: ADDING FASTENERS

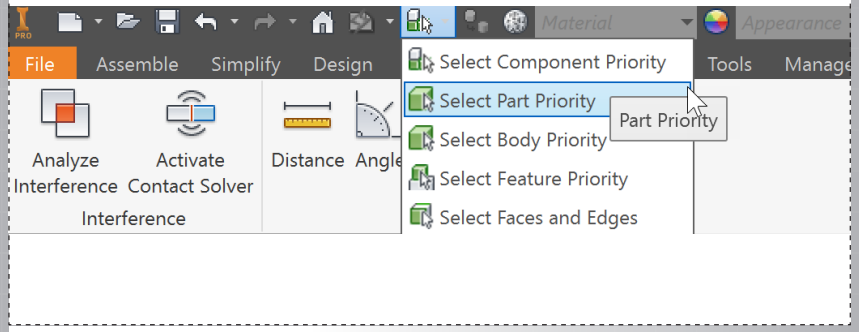
5.



Make sure the AutoDrop option is selected and click the green check mark to place bolts in all four holes simultaneously.

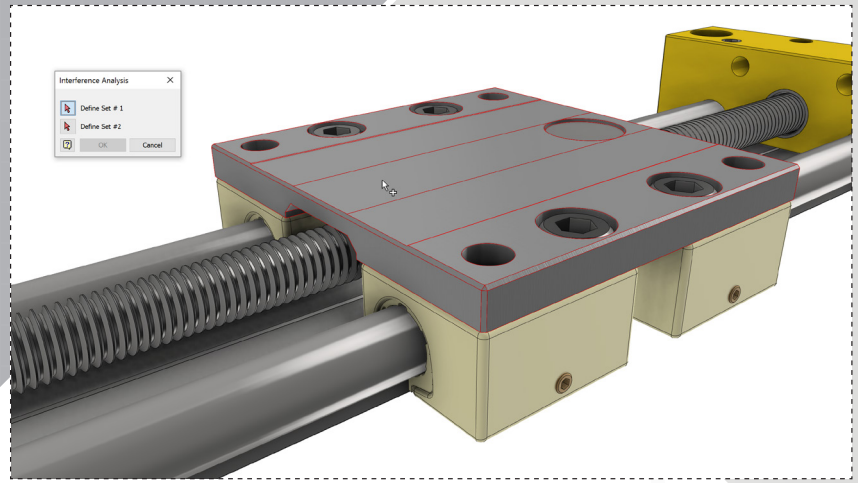
PART 3: INTERFERENCE & MOTION

1.



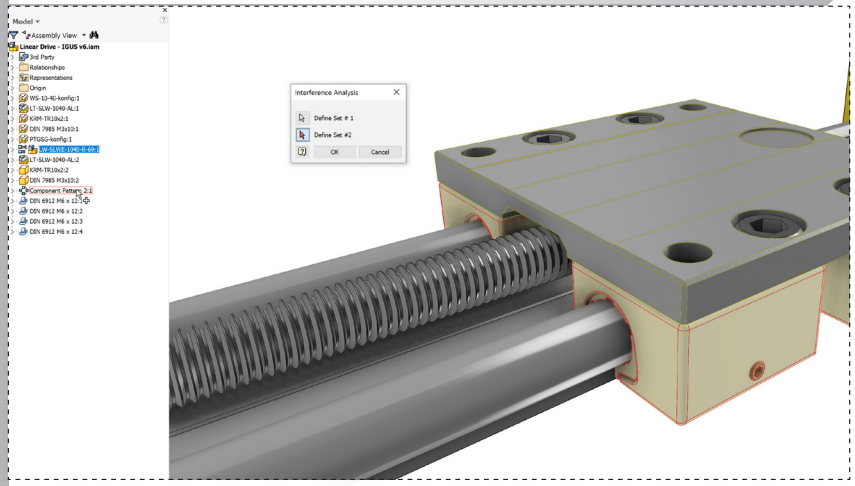
Continue with the assembly from Part 2. Make sure 'Select Part Priority' is selected. In the ribbon, select the 'Inspect' tab and open 'Analyze Interference'.

2.



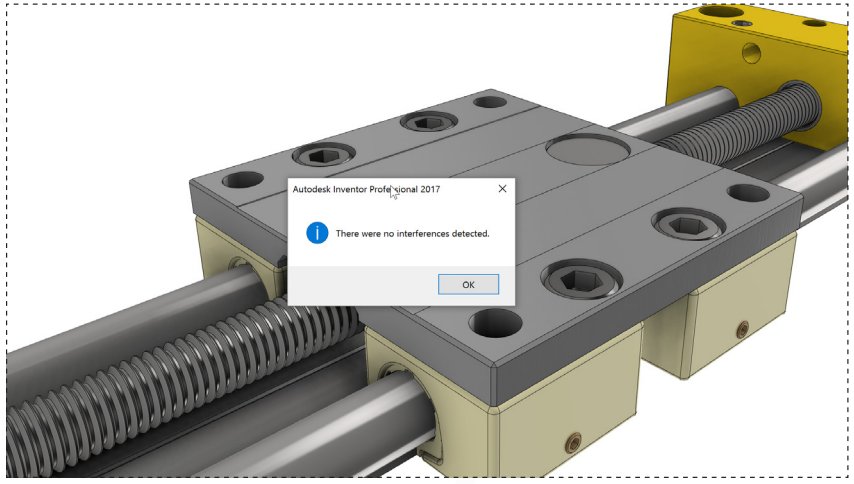
The objective is to determine if there is any interference between the top plate and the linear guides placed and patterned in Part 1. For Set #1, select the plate as shown.

3.



Select the arrow next to 'Define Set #2' and choose 'Component Pattern 2:1' in the Model Browser to select all four linear guides.

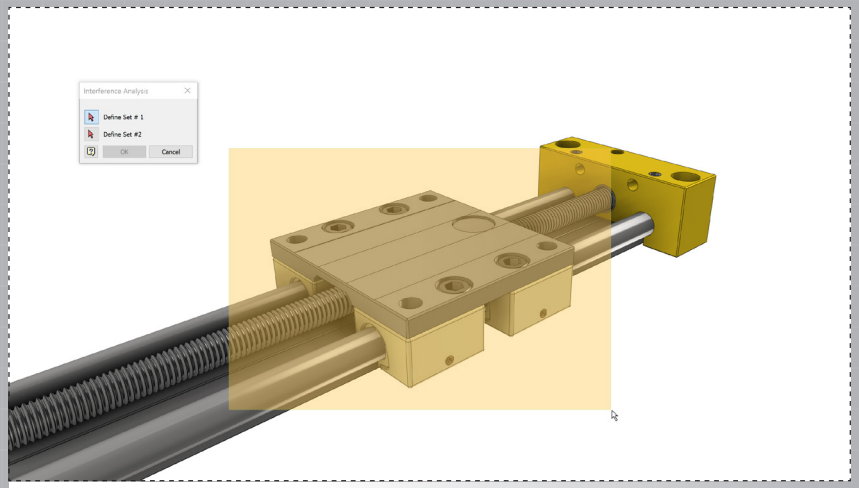
4.



Thee guide rails were placed appropriately, and no interferences are present.

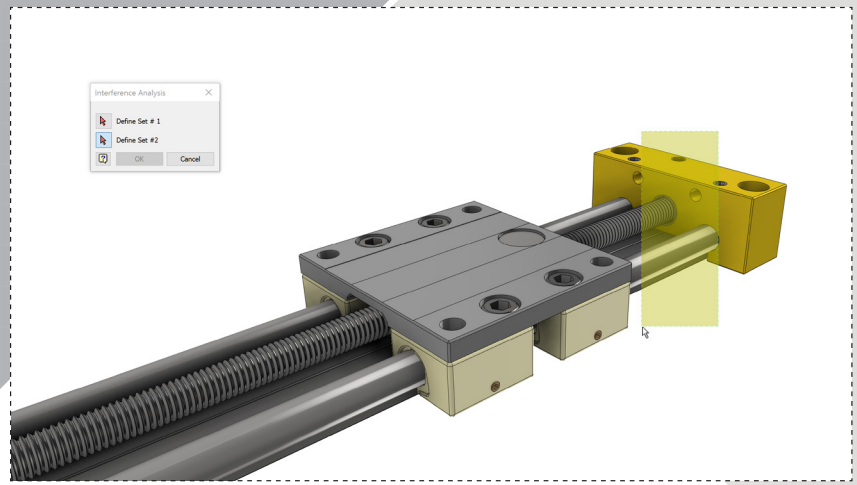
PART 3: INTERFERENCE & MOTION

5.



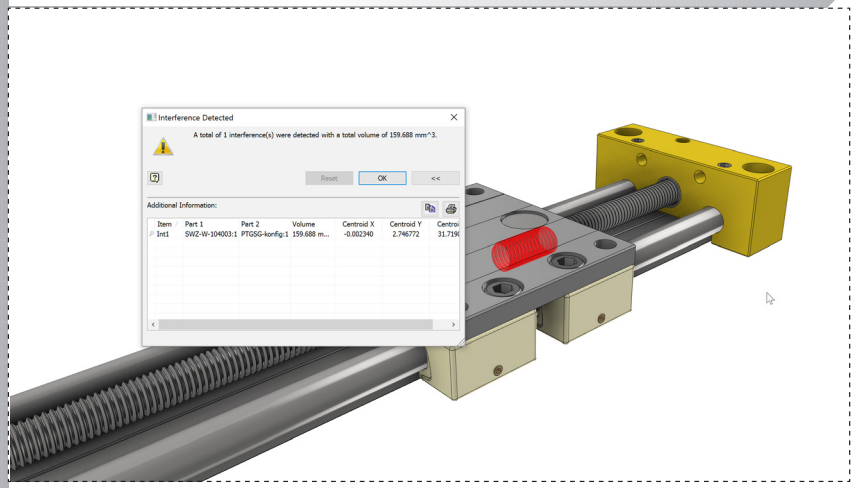
Restart the 'Analyze Interference' command. Window select the parts shown in the image above for Set #1.

6.



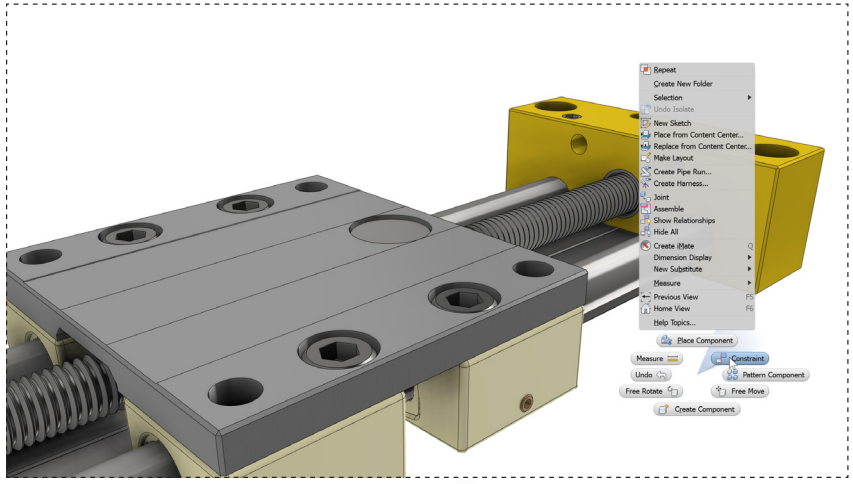
Select the arrow next to 'Define Set #2' and window select as shown in the image or simply select the threaded rod.

7.



An interference is detected - between the nut and the threaded shaft. Inspect to make sure only the threaded area is in contact.

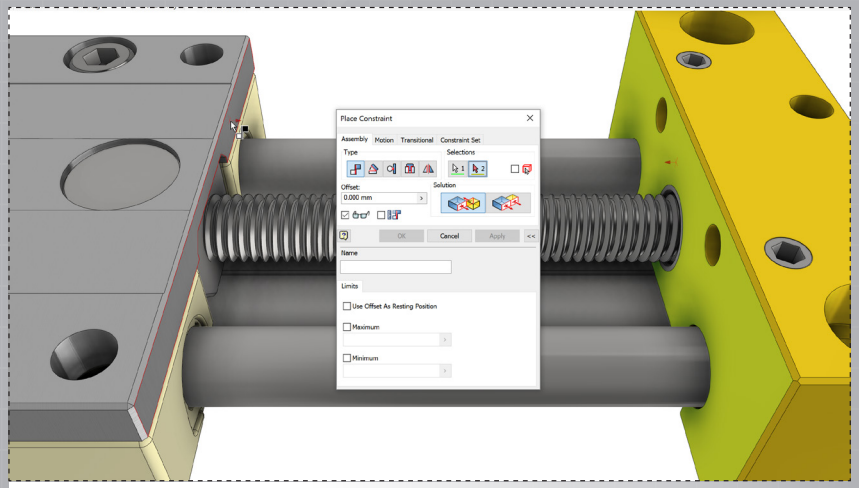
8.



To setup the motion analysis, start the 'Constraint' command from the right click marking menu.

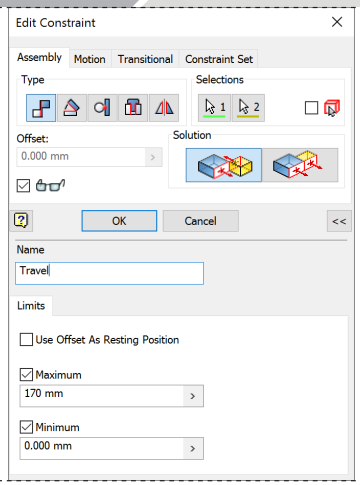
PART 3: INTERFERENCE & MOTION

9.



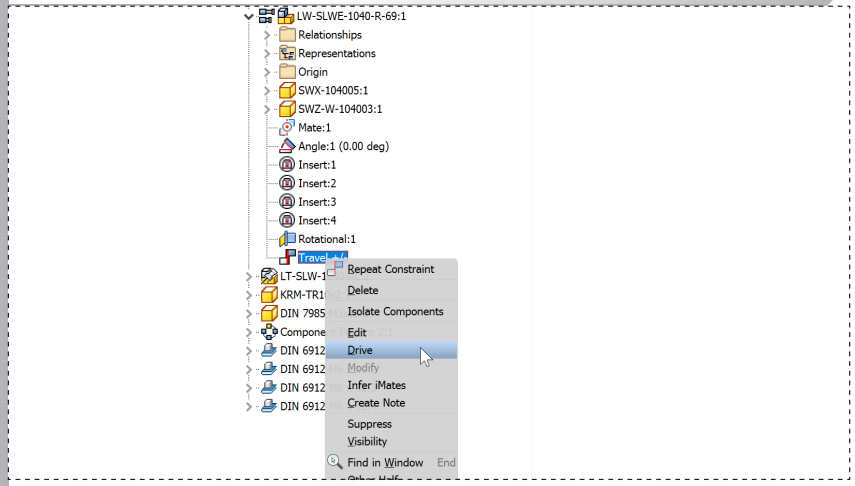
Select the two surfaces shown in the image above as the mating surfaces.

10.



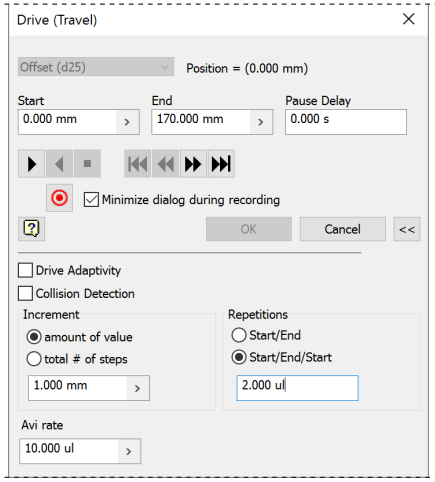
Click the double arrow (>>) in the bottom right corner. Click the check marks next to 'Maximum' and 'Minimum', entering 170mm in the 'Maximum' box and **Travel** in the 'Name' field.

11.



In the Model Tree, expand as shown and right click on the constraint named Travel. Select 'Drive'.

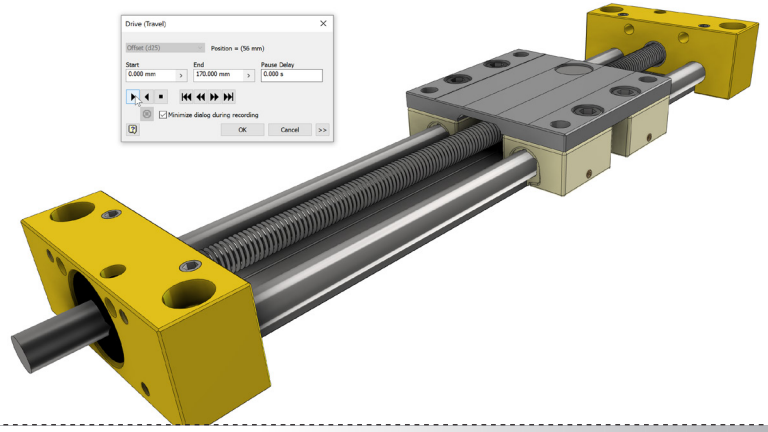
12.



In the dialog, click the double arrow (>>) to expand. In the repetitions box, change to Start/End/Start and enter 2.

PART 3: INTERFERENCE & MOTION

13.



Click the play button to start the motion analysis and animation.