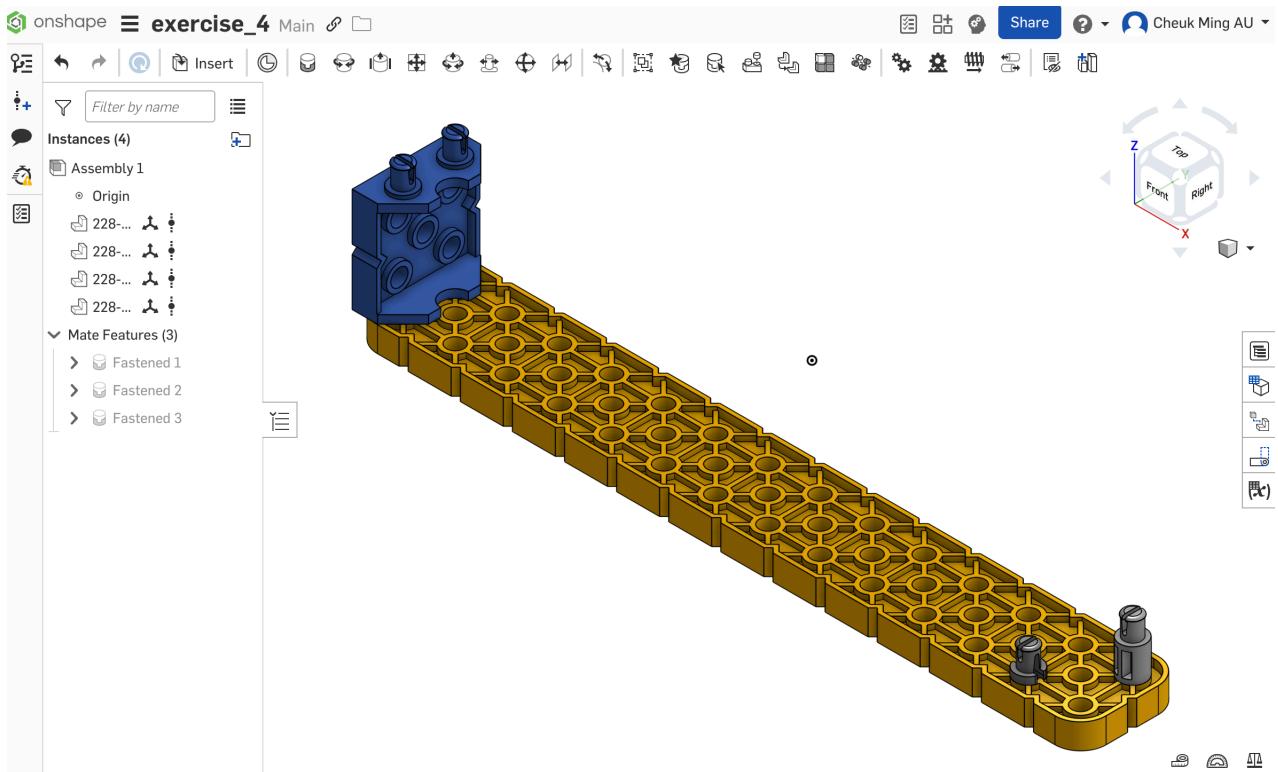


Exercise 4: Attach a VEX IQ Connector, Standoff, and Pin into a Beam:



The final result of Exercise 4

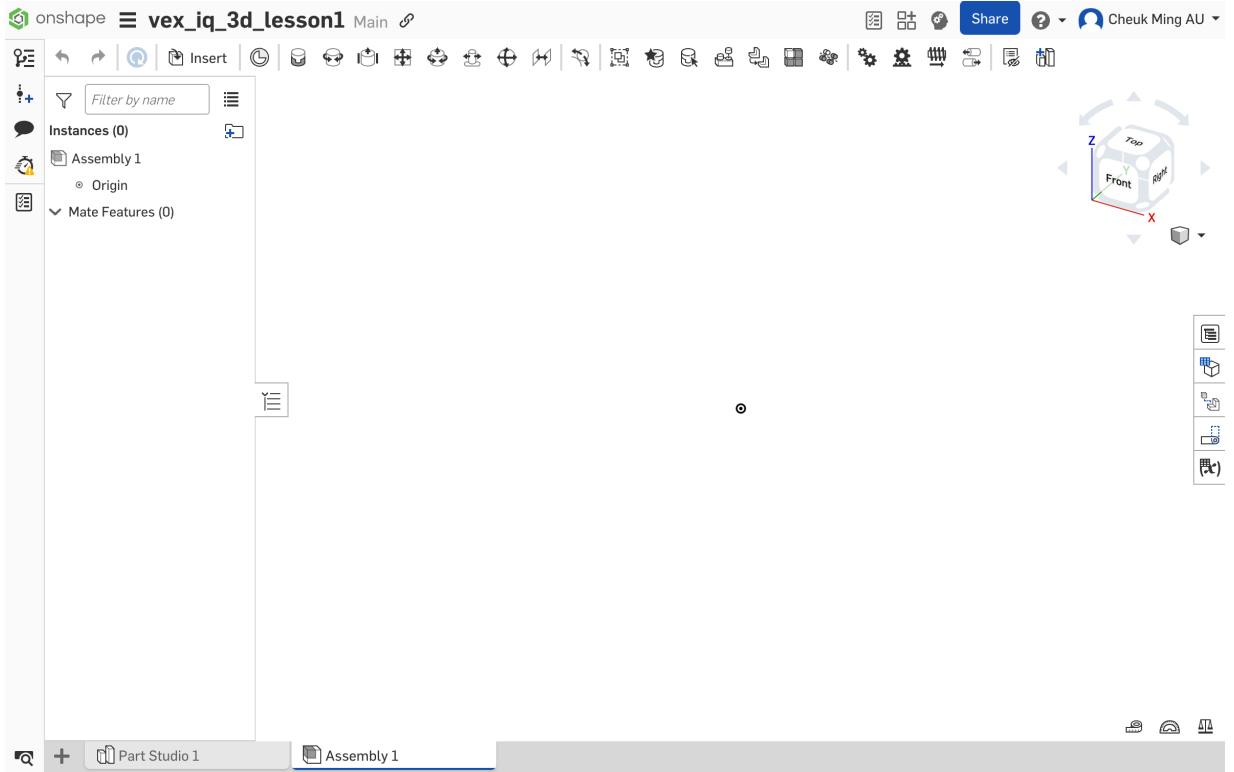
Objective:

To attach a VEX IQ connector, standoff, and pin individually to a beam using the **Fasten Mate** function in Onshape. Each part will be attached to the beam in separate holes, as they would in a real VEX IQ assembly.

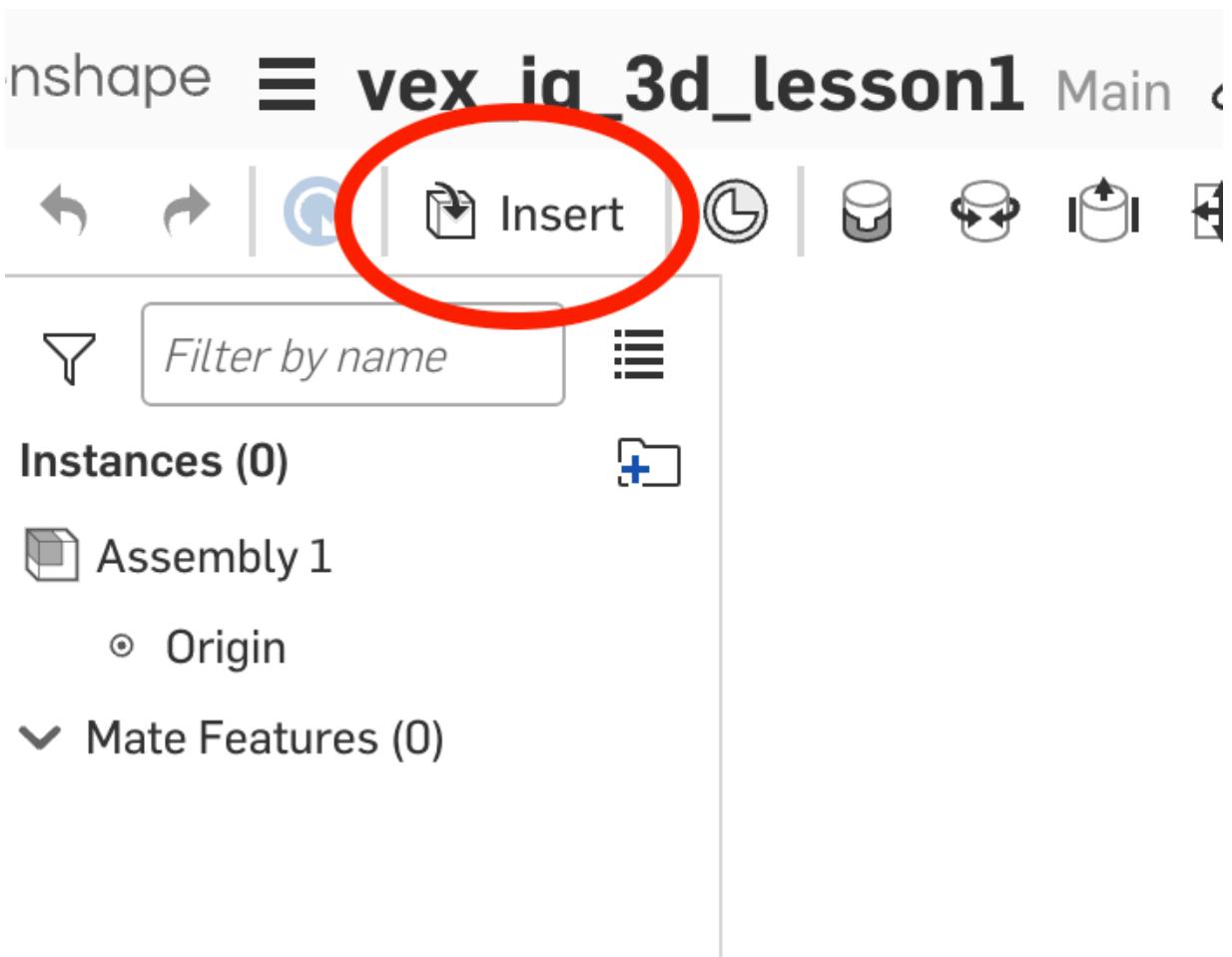
Step 1: Insert the Connector, Beam, Standoff, and Pin into an Assembly

- **Create an Assembly:**

Go to the **Assembly** tab in Onshape.



Click the **Insert** tool.



Click "Other documents".



Insert parts and assemblies ✓ ✕

Current document Other documents Standard content

vex_iq_3d_lesson1 ↵ Main

Part Studios Assemblies

Search Part Studios

No Part Studios available.

Go to the folder "VEX IQ/Part List".

Insert parts and assemblies



Current
document

Other
documents

Standard
content



Search in "Shared with me"



< Part_list

Generating
preview

Untitled document

Start



200mm Omni Wheel 2-pack.step
V1



1x2 Beam (228-2500-001).step
V1



1x3 Beam (228-2500-002).step
V1



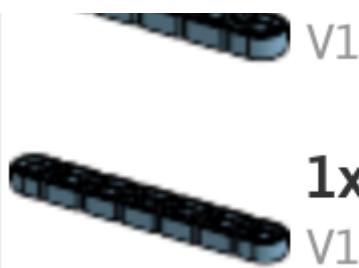
1x4 Beam (228-2500-003).step
V1



1x5 Beam (228-2500-004).step
V1



1x6 Beam (228-2500-005).step



1x7 Beam (228-2500-006).step

V1

- Use the **Insert** tool to bring the "Double 2x Wide, 2x2 Corner Connector (228-2500-220)," "2x14 Beam (228-2500-027)," "0.5x Pitch Standoff (228-2500-064)," and "1x1 Connector Pin (228-2500-060)" from the Part Studio into the assembly.



Double 2x Wide, 2x...

V1



Part Studios

Assemblies

Search Part Studios



Double 2x Wide, 2x2 Corner Con...



228-2500-220



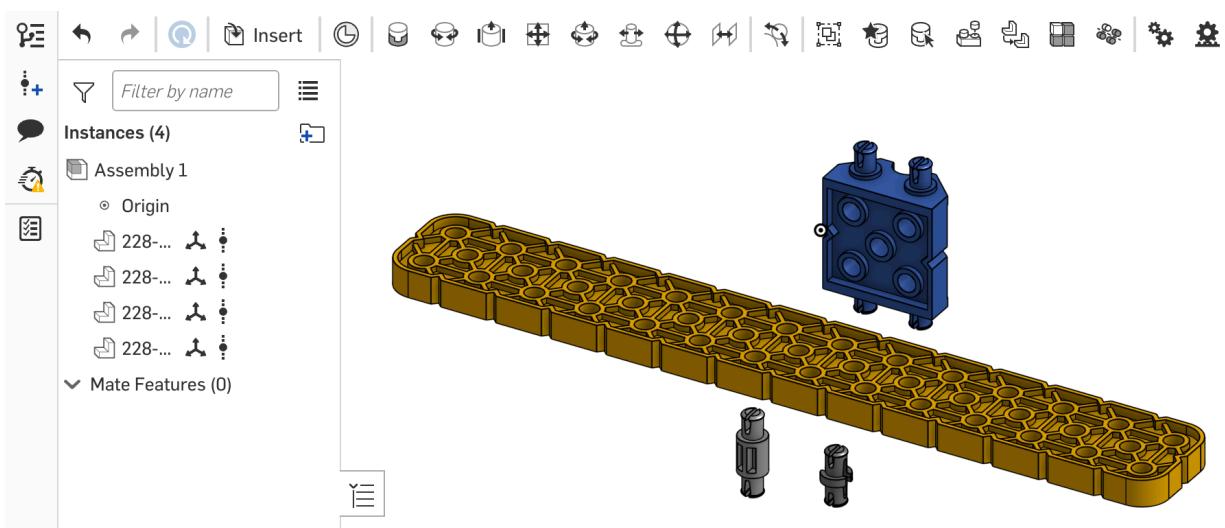
2x14 Beam (228-2500-027)



228-2500-027



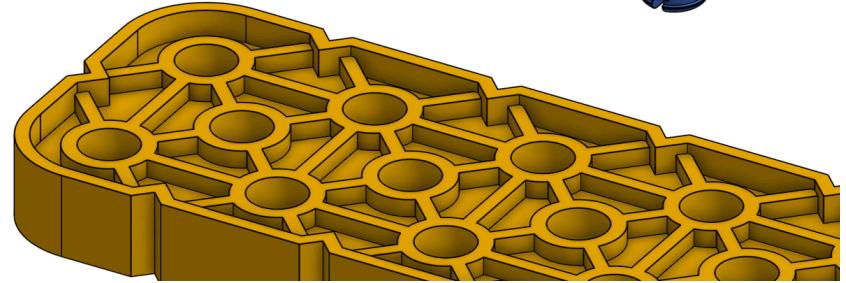
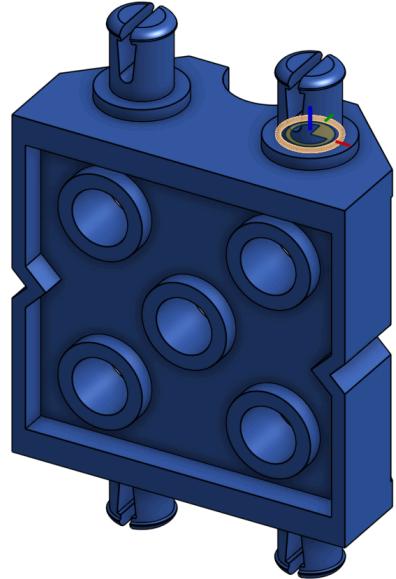
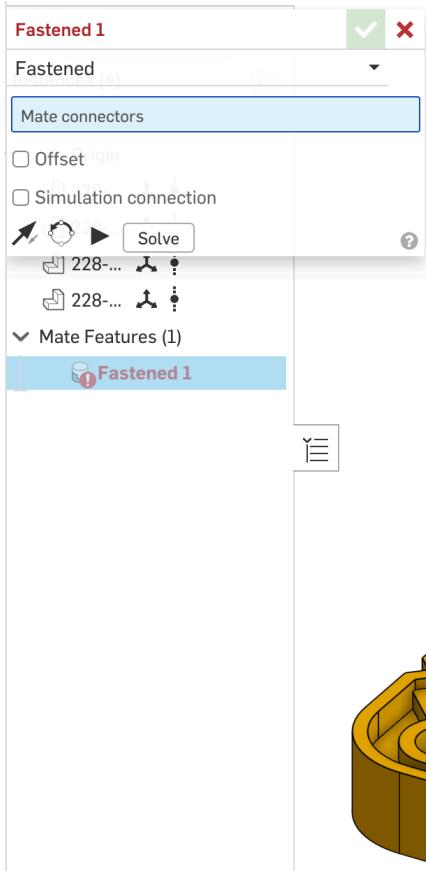
- Place the components in the workspace, with the beam acting as the base structure.



Step 2: Attach the Connector to the Beam Using Fasten Mate

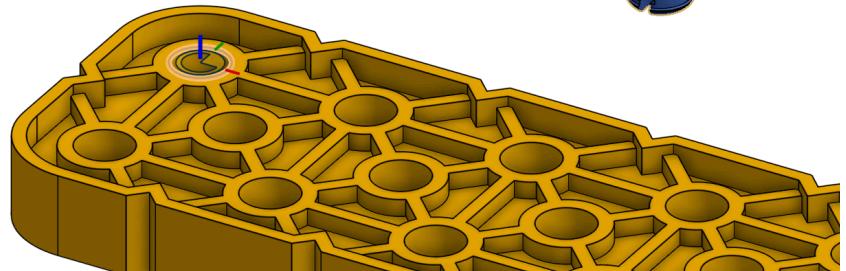
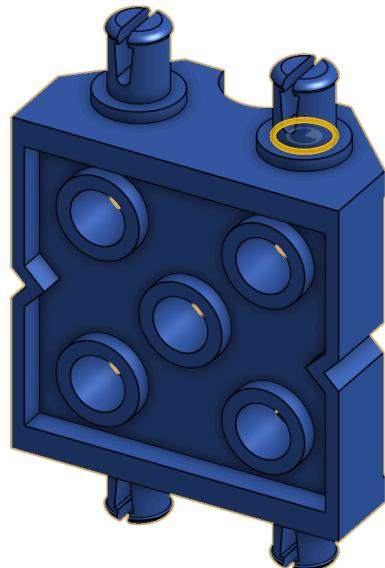
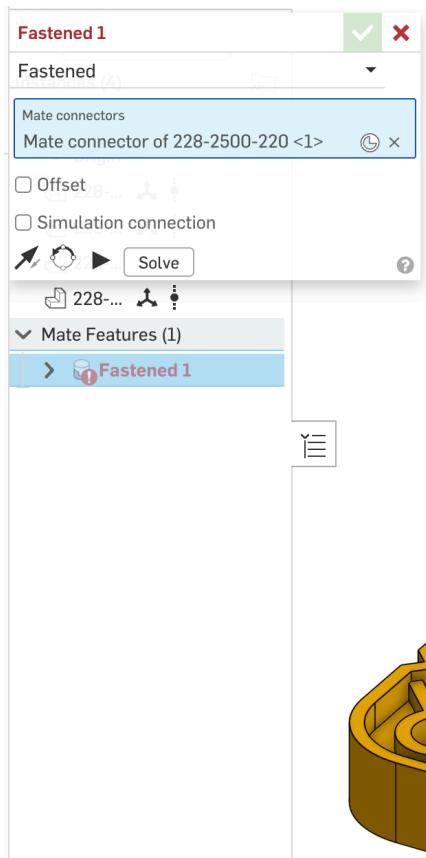
- Choose the First Mate Connector (Connector):**

Hover over the **connector** and select a mate connector at the bottom where it will be attached to the beam.

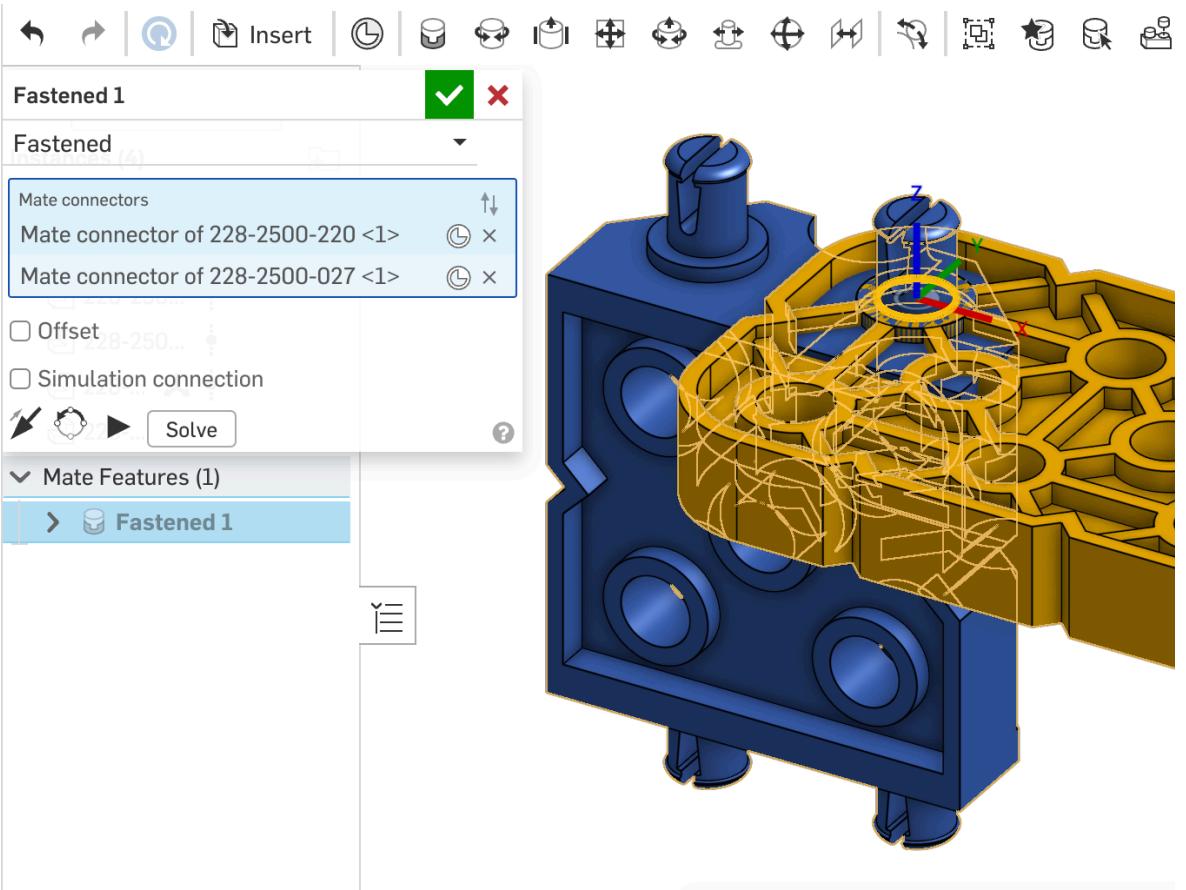


- **Choose the Second Mate Connector (Beam):**

Now, select the mate connector on the **beam** at one of the holes where the connector will be placed.

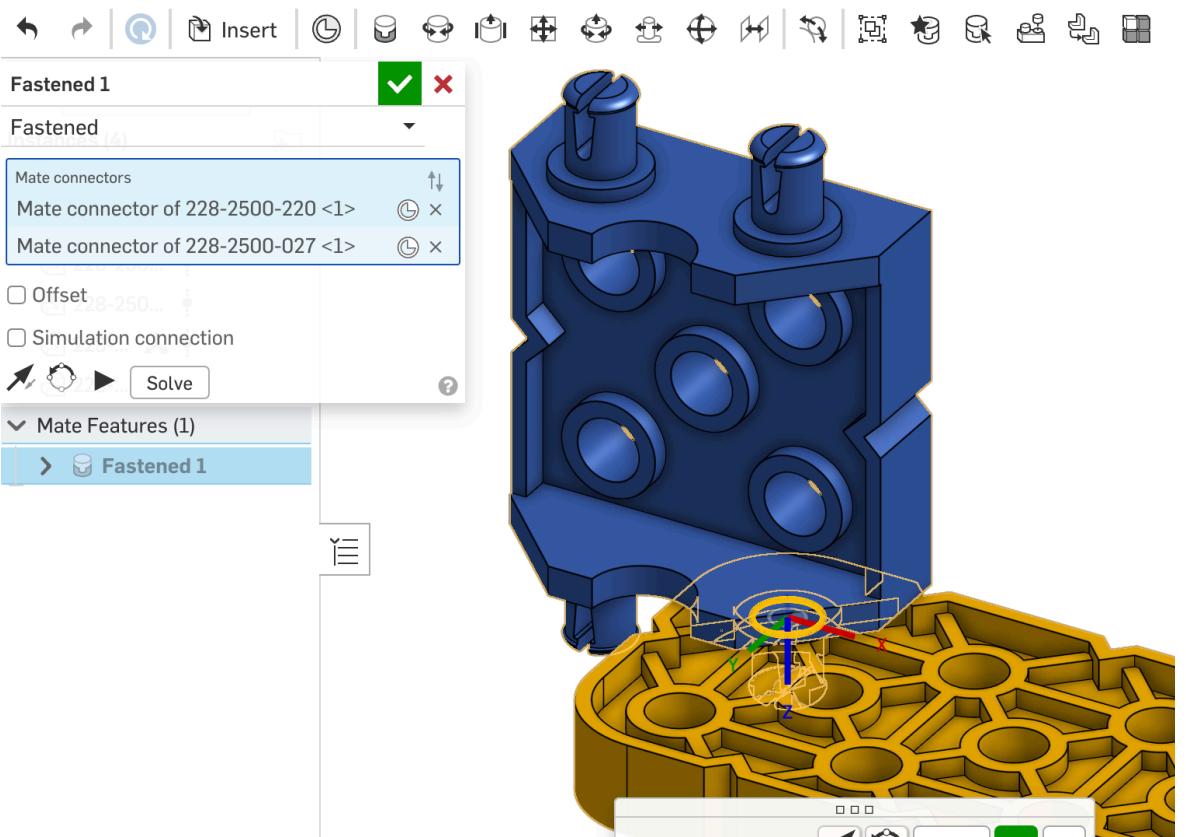


Onshape will align and fasten the connector to the beam.

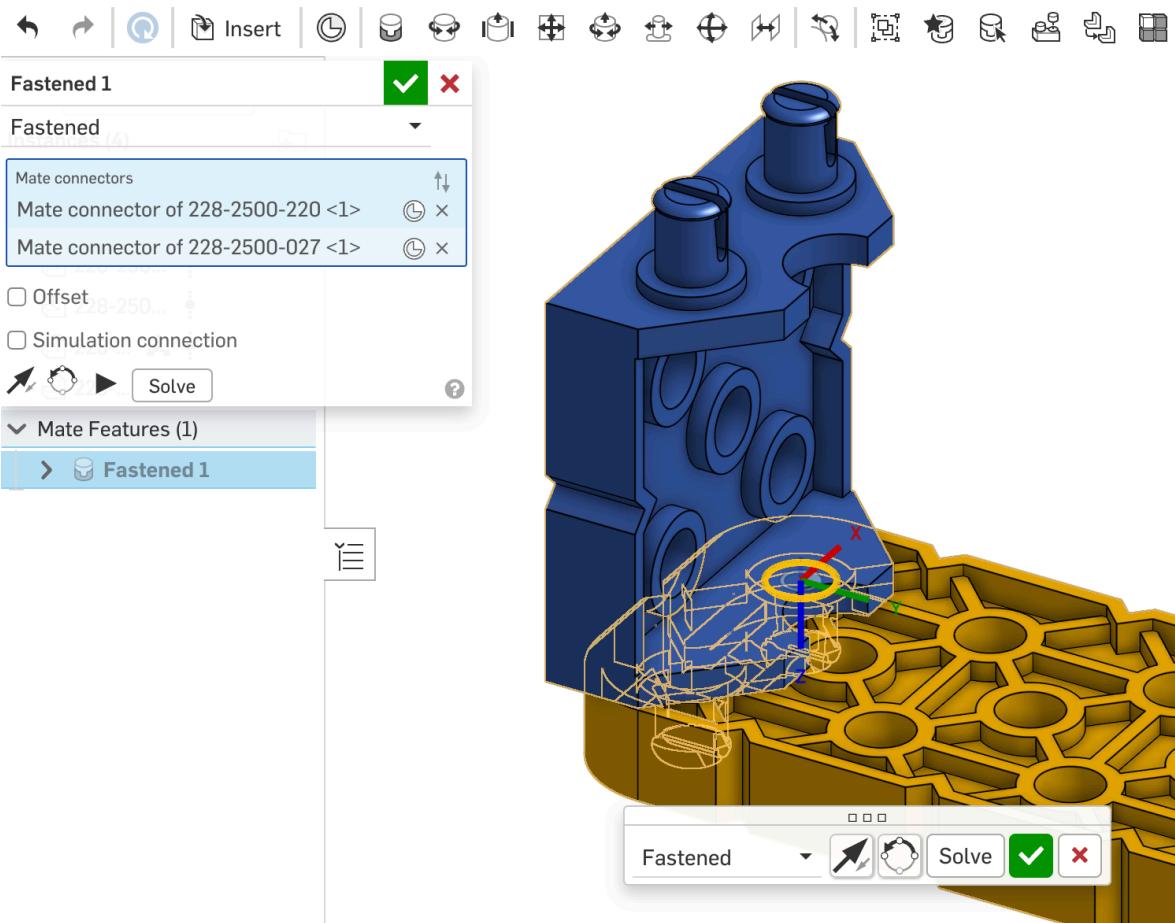


- **Check the Alignment:**

Verify that the connector is properly aligned with the beam and positioned at the correct hole location.



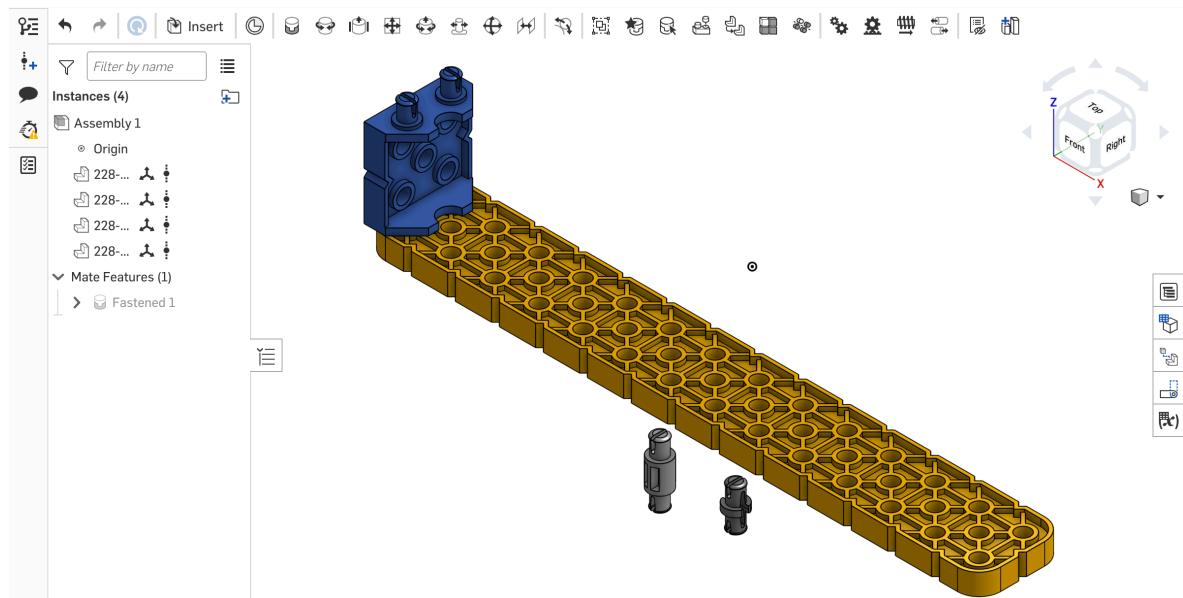
Since after fastening, the connector is at the bottom. Therefore, click the flip button to flip the connector back on top.



Rotate the connector by clicking the rotate button to let both pins of the connector can attach to the beam.

- **Confirm the Mate:**

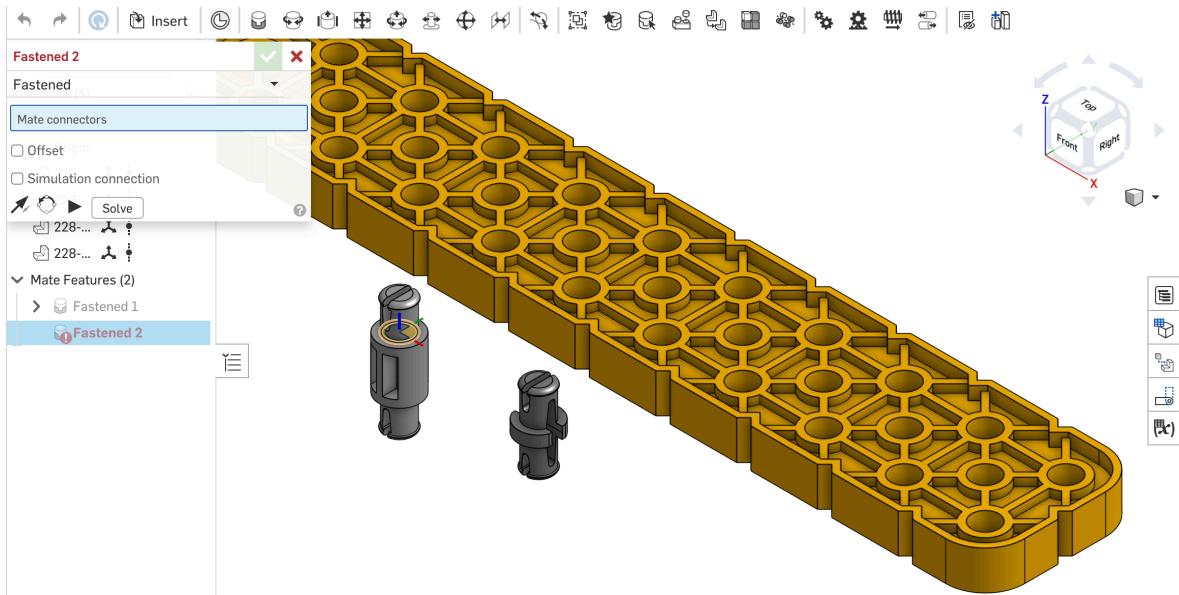
Once satisfied with the alignment, click the green checkmark to confirm the **Fasten Mate**.



Step 3: Attach the Standoff to the Beam Using Fasten Mate

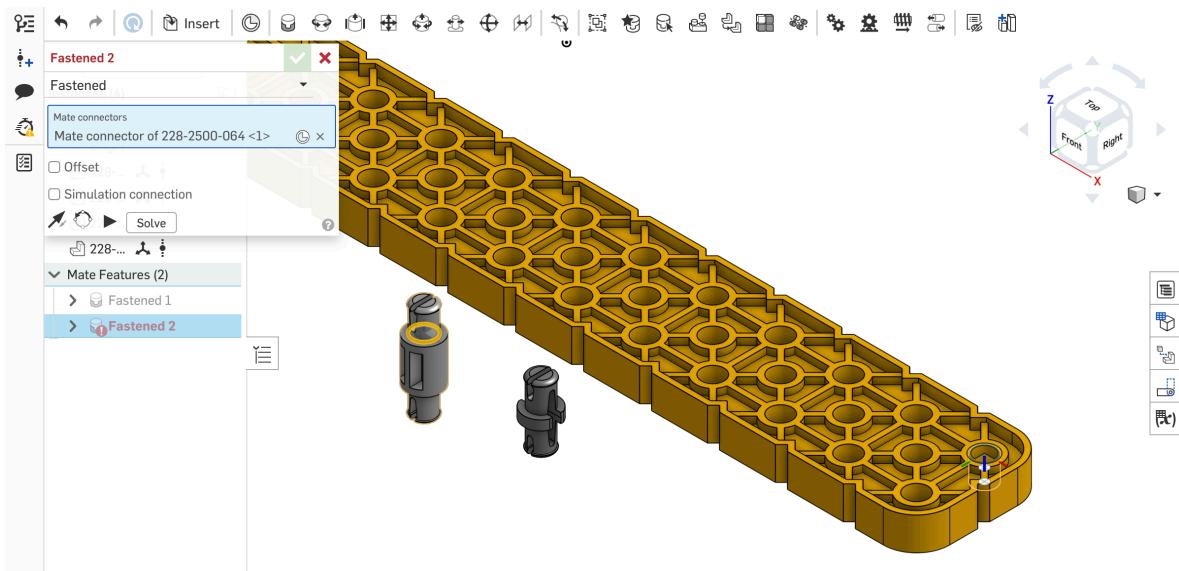
- **Choose the Mate Connector on the Standoff:**

Select the mate connector at one end of the **standoff** where it will attach to the beam.

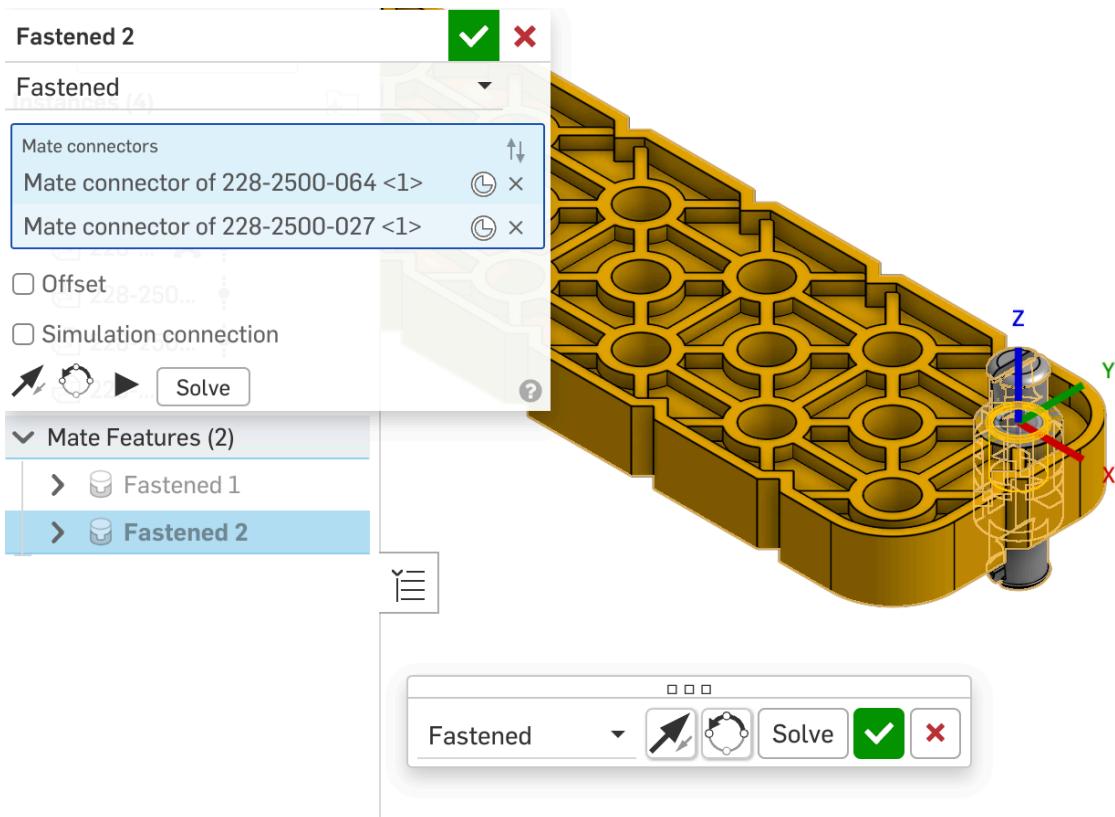


- **Choose the Mate Connector on the Beam:**

Now, select the mate connector at a different hole in the **beam** where the standoff will be placed.

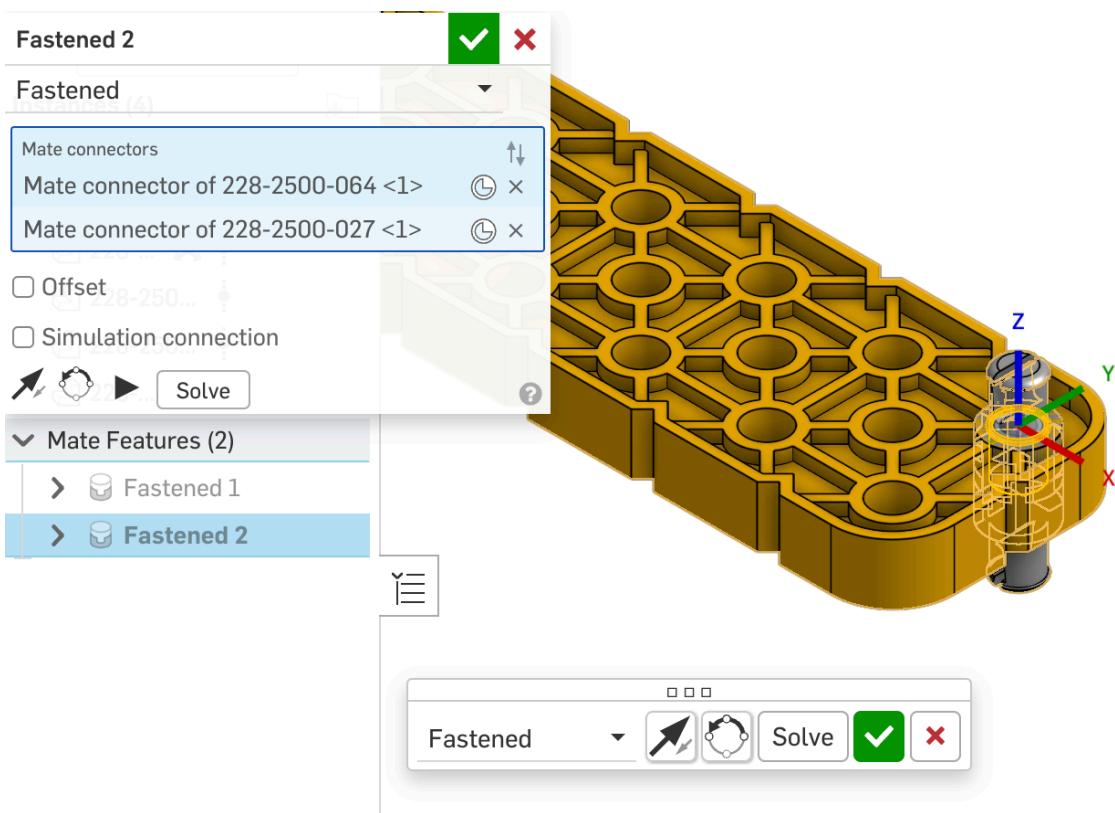


Onshape will align and fasten the standoff to the beam.

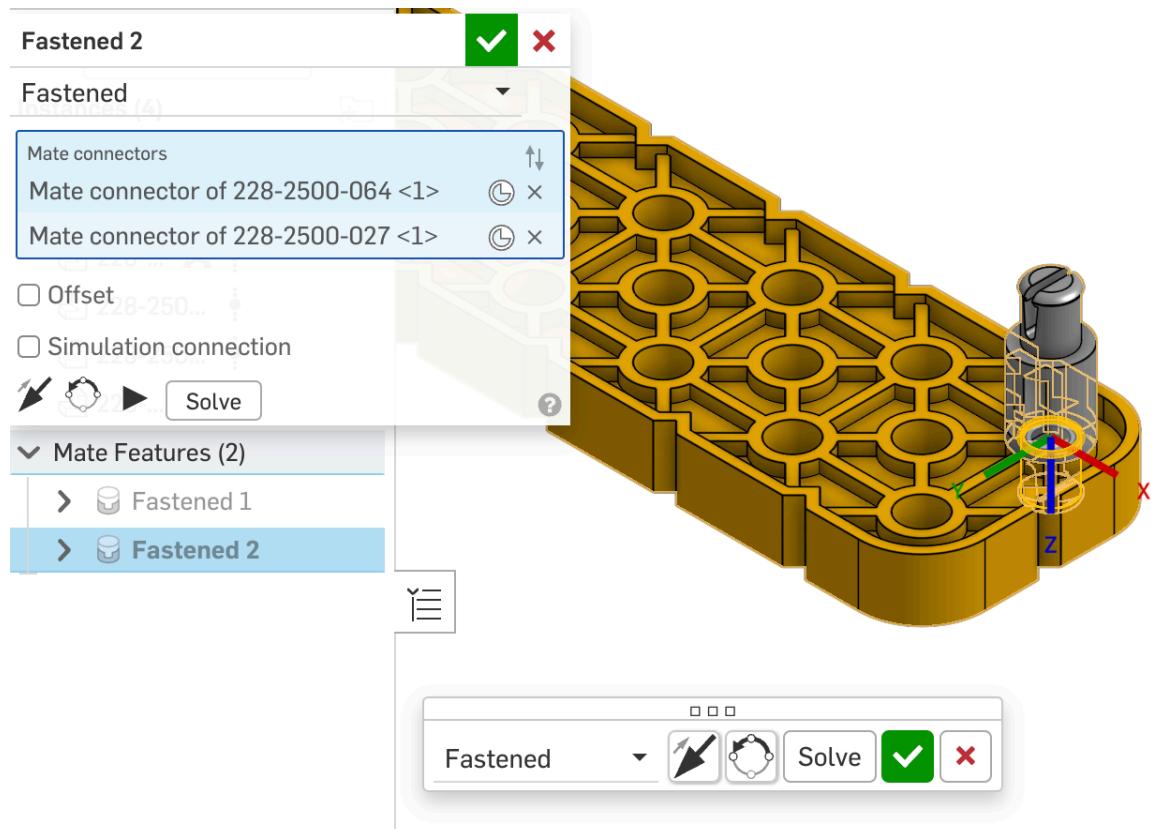


- **Check the Alignment:**

Verify that the standoff is properly aligned and positioned at the desired hole location on the beam.



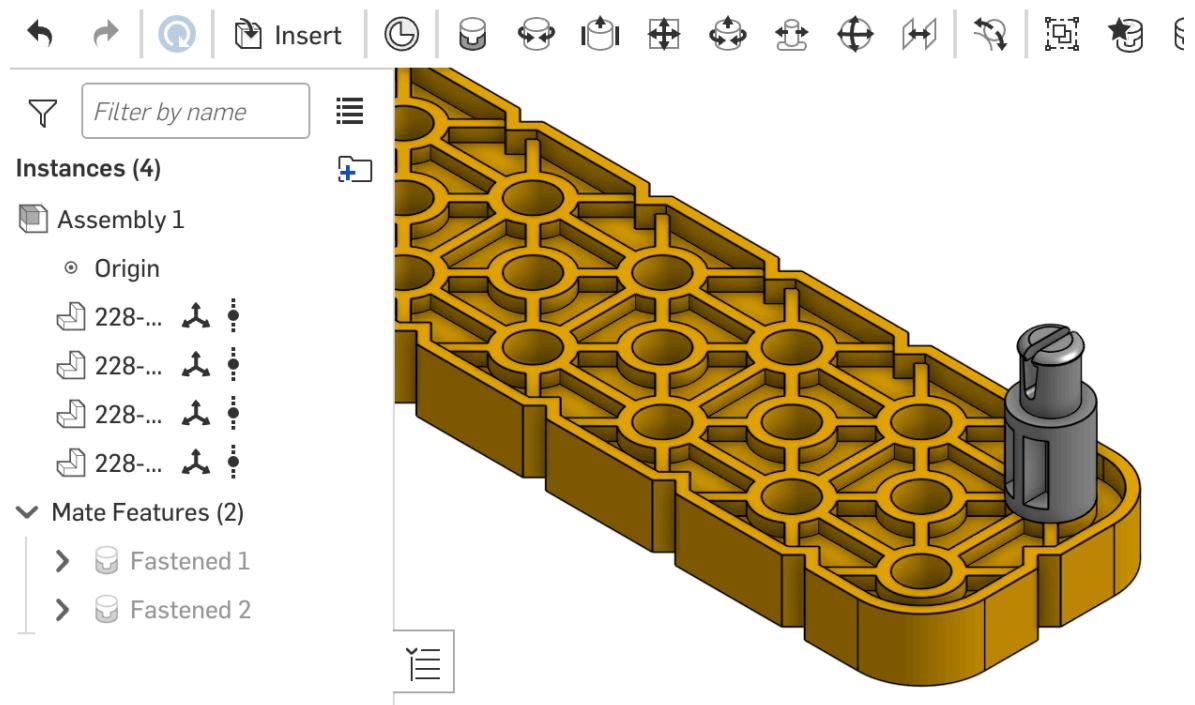
Since after fastening, the standoff is at the bottom. Therefore, click the flip button to flip the standoff back on top.



After clicked the flip button

- **Confirm the Mate:**

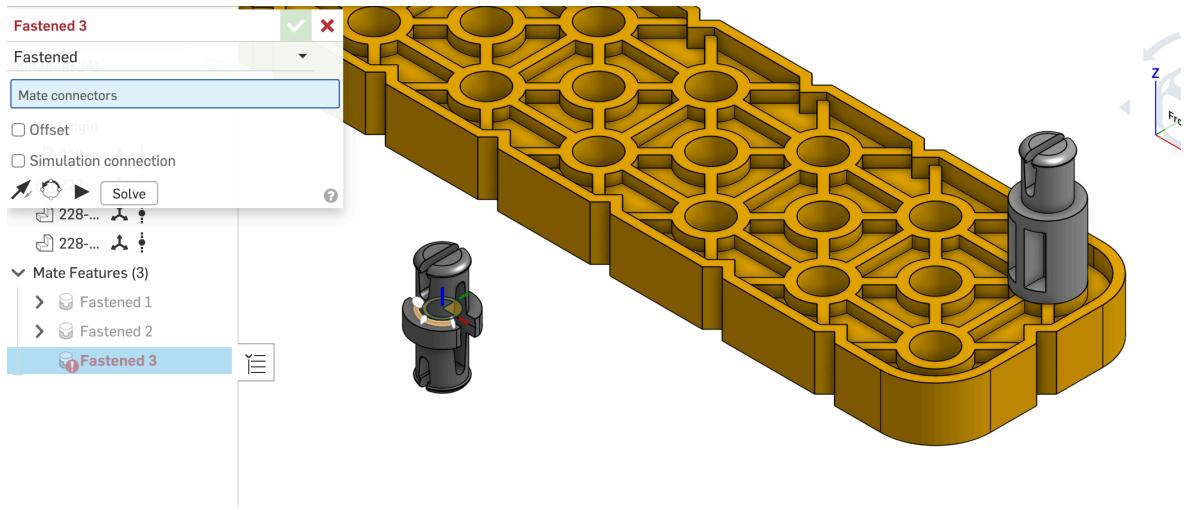
Once satisfied with the alignment, click the green checkmark to confirm the **Fasten Mate**.



Step 4: Attach the Pin to the Beam Using Fasten Mate

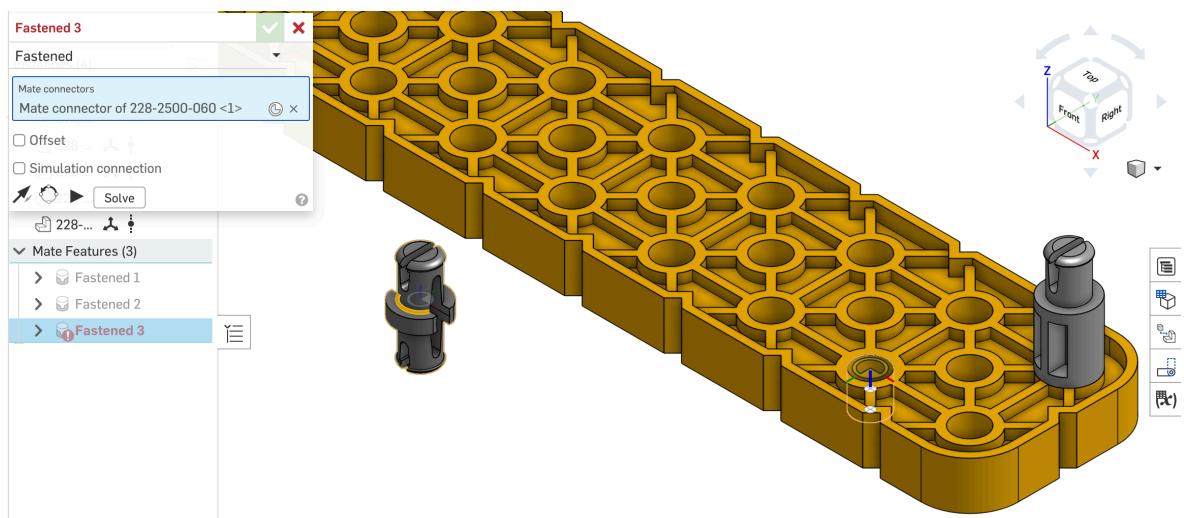
- **Choose the Mate Connector on the Pin:**

Select the mate connector at one end of the **pin** where it will attach to the beam.

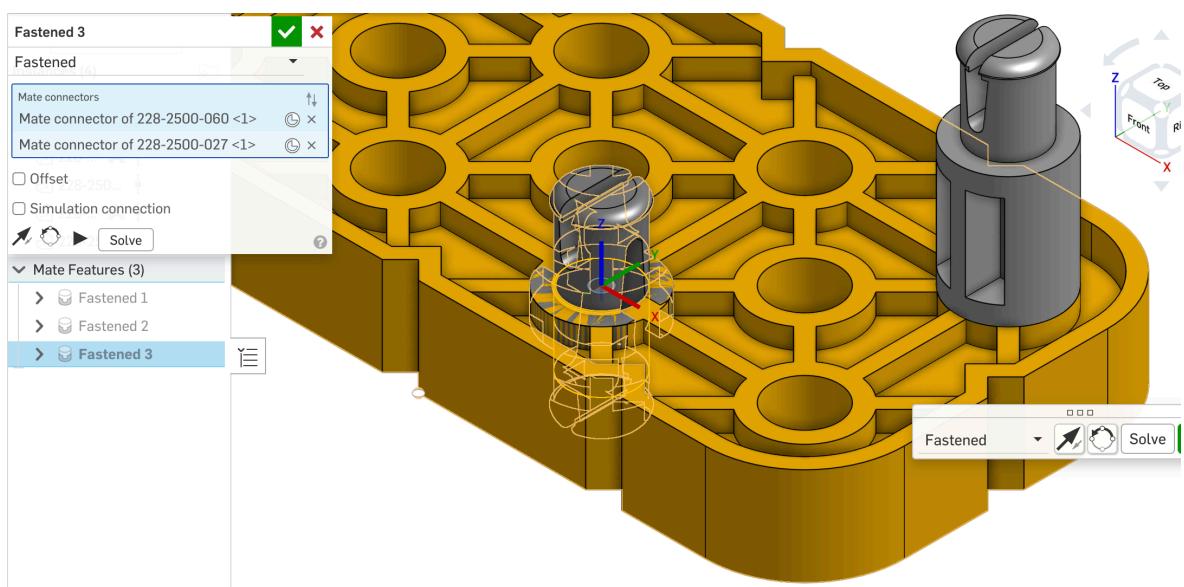


- Choose the Mate Connector on the Beam:**

Now, select a mate connector at a separate hole in the **beam** where the pin will be positioned.

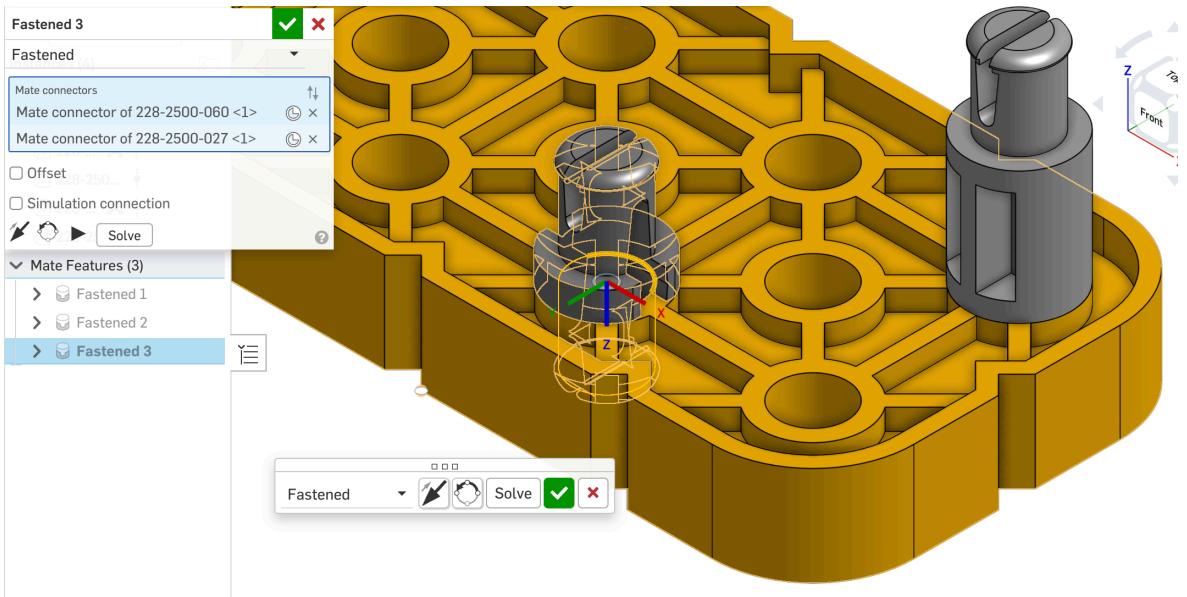


Onshape will align and fasten the pin to the beam.



- Check the Alignment:**

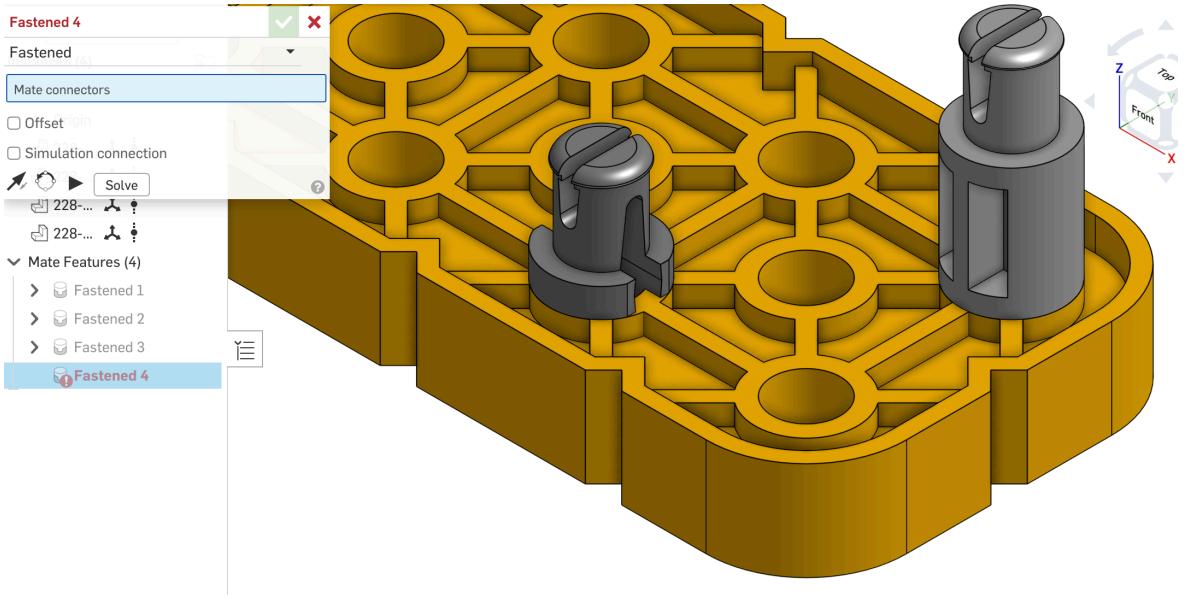
Ensure that the pin is properly aligned and positioned in the correct hole on the beam.



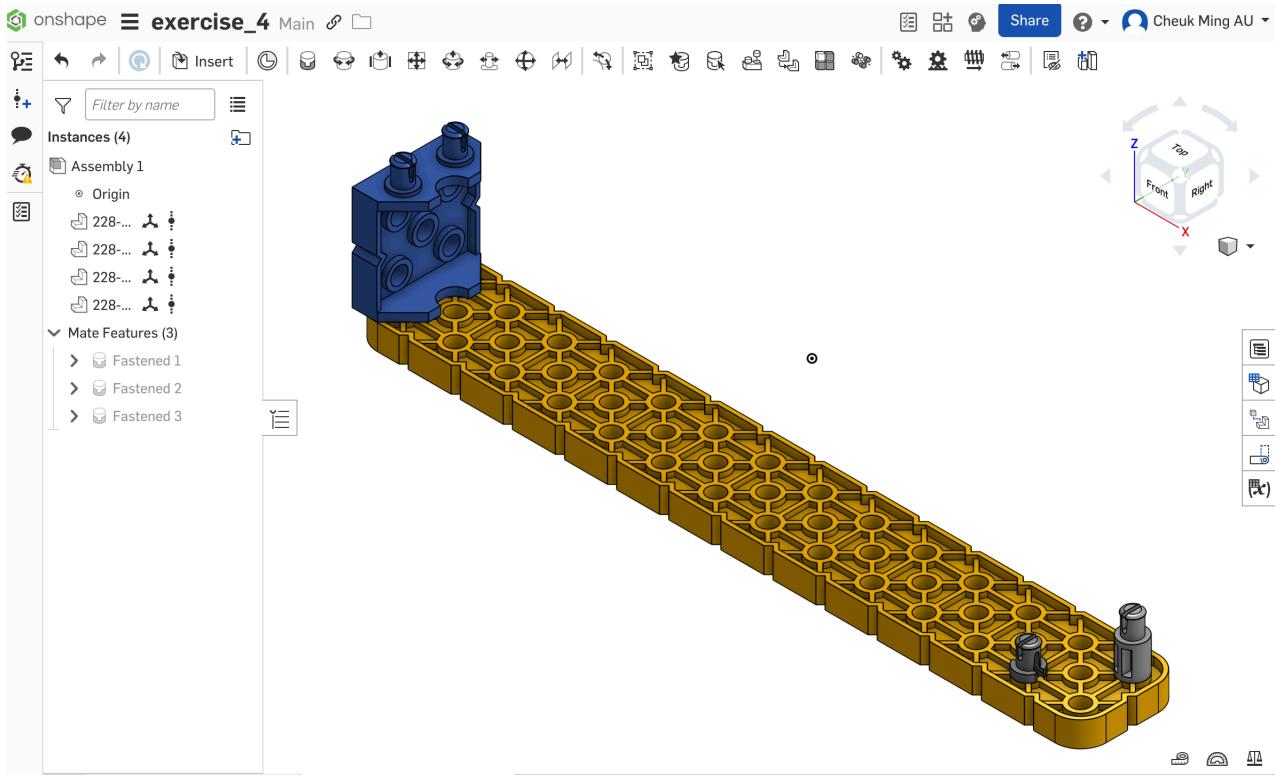
Since after fastening, the pin is at the bottom. Therefore, click the flip button to flip the pin back on top.

- **Confirm the Mate:**

Once satisfied with the alignment, click the green checkmark to confirm the **Fasten Mate**.



Step 5: Finalize the Assembly



The final outcome of the exercise

Conclusion:

By following these steps, you have successfully modeled and individually attached a VEX IQ connector, standoff, and pin to a beam using the **Fasten Mate** function in Onshape. Each part is securely attached to the beam, replicating how components are fastened to a structure in VEX IQ assemblies.