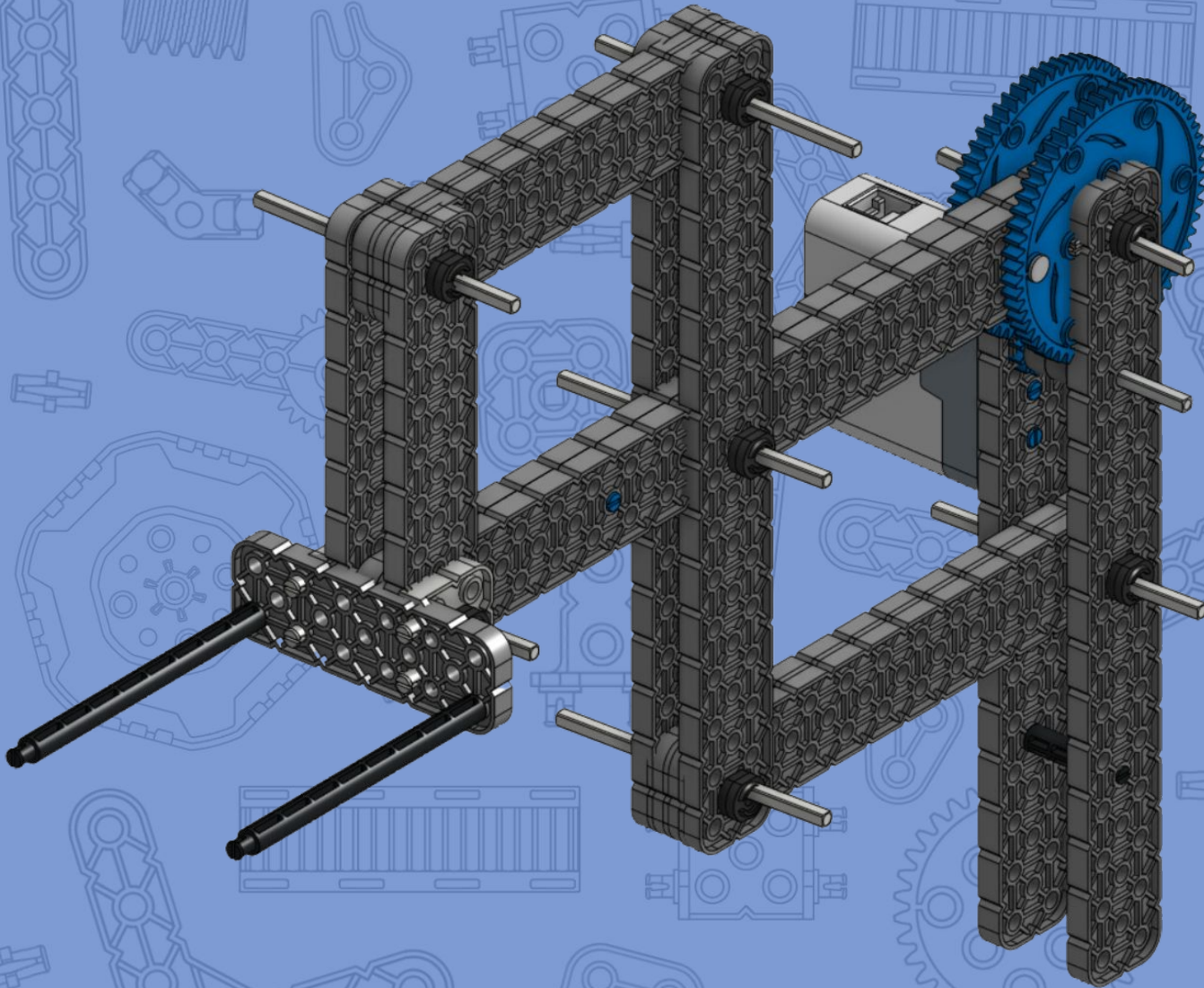


# Build Instructions

## 6-Bar Arm



A 6-bar arm mechanism is an advanced version of the 4-bar mechanism. It consists of six rigid bars connected by pivots to form a complex closed loop. This mechanism is used in robotics to create even more precise and varied movements than a 4-bar arm, making it suitable for complex tasks.

## How Does it Work?

The 6-bar arm mechanism operates similarly to the 4-bar arm but with additional bars that allow for more degrees of freedom and intricate motions. When one of the bars (the input bar) moves, it transfers this motion through the other connected bars (the output bars), resulting in complex and controlled movements. The extra bars allow for smoother transitions and more varied motion paths.

## Why is it Useful?

The 6-bar arm mechanism is useful because it can handle more complex tasks that require precise and coordinated movements. It provides greater flexibility and control compared to simpler mechanisms, making it ideal for applications that need intricate motion and precise positioning. This added complexity allows for smoother, more refined operations, which is crucial in advanced robotic systems.

## Make Your Own!

The point of these instructions is to show you a sample 6-bar arm. Pay close attention to the placement of the shafts as well as the size of the bars. When you decide to create your own custom 6-bar arm, you will want to keep these things in mind:

1. **Bar placement:** Notice the horizontal and vertical bars are perfectly parallel to each other. This is important to keep the bar moving correctly.
2. **Joints:** Pay close attention to the placement of the shafts in this project. They are placed in the center hole to allow the bars to rotate freely.
3. **Gear Ratio:** This project uses a 5:1 gear ratio with a torque advantage. This is important for controlling the speed and strength of the arm.
4. **Right angles:** How many right angles can you spot between the bars? Keeping perfect 90° angles is essential in making sure the prongs on the fork do not tilt.

# MATERIALS



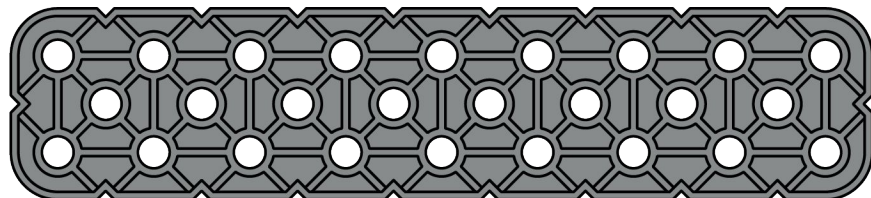
**x1** 4x Pitch Motor Shaft  
228-2500-079, 2238



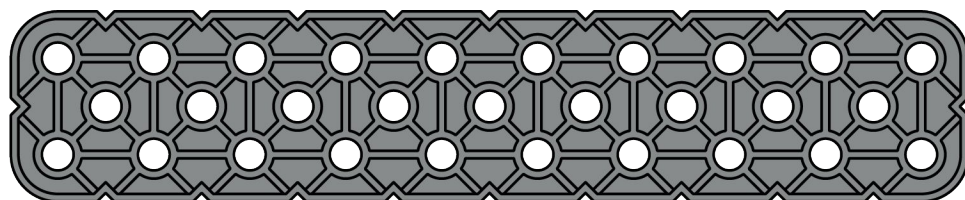
**x7** 6x Pitch Shaft  
228-2500-122



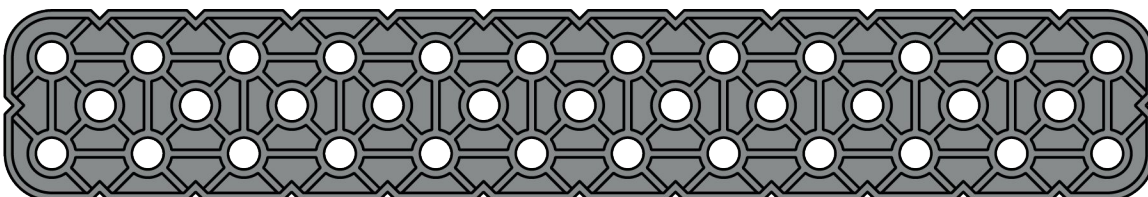
**x2** 6x Pitch Standoff  
228-2500-072



**x2** 2x9 Beam  
228-2500-024



**x2** 2x10 Beam  
228-2500-025



**x2** 2x12 Beam  
228-2500-026



**x2** 12 Tooth Gear  
228-2500-213



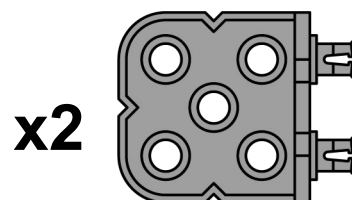
**x4** 1x1 Beam  
228-2500-154



**x2** Washer  
228-2500-112



**x14** Rubber Shaft Collar  
228-2500-143



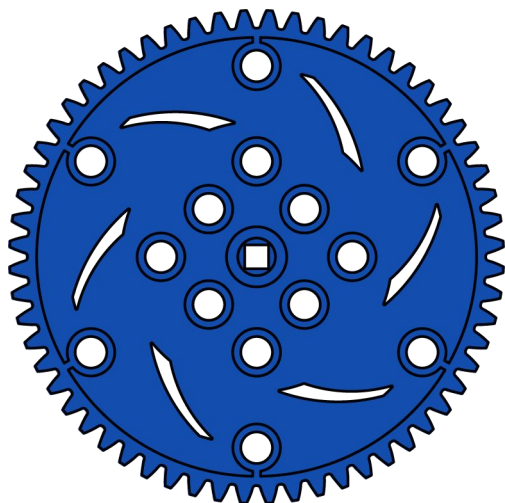
**x2** 2x Wide, 2x2 Corner Connector  
228-2500-134



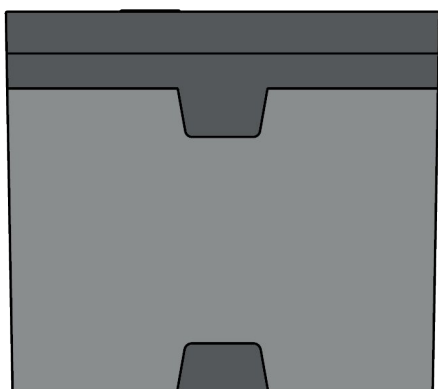
**x2** 0x2 Connector Pin  
228-2500-086



# MATERIALS



**x2** 60 Tooth Gear  
228-2500-215



**x1** IQ Smart Motor  
228-2560



1.5x Pitch Standoff  
228-2500-066



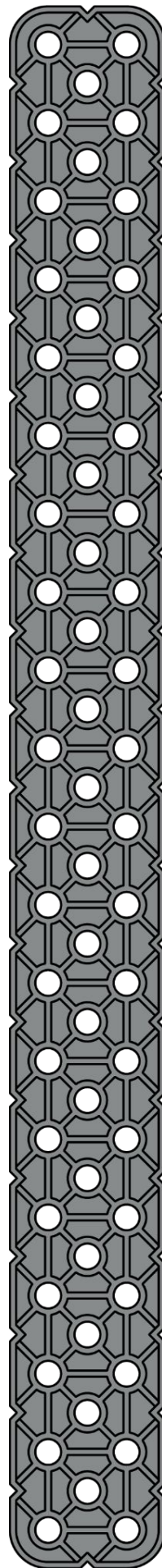
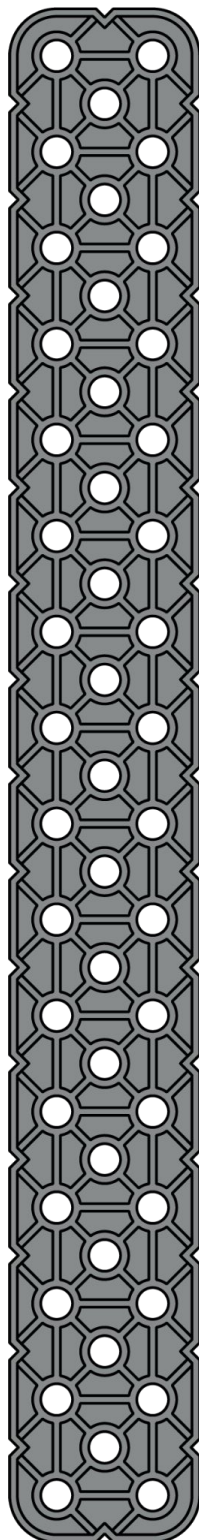
1x1 Connector Pin  
228-2500-060

**x2**

2x20 Beam  
228-2500-030

**x4**

2x16 Beam  
228-2500-028

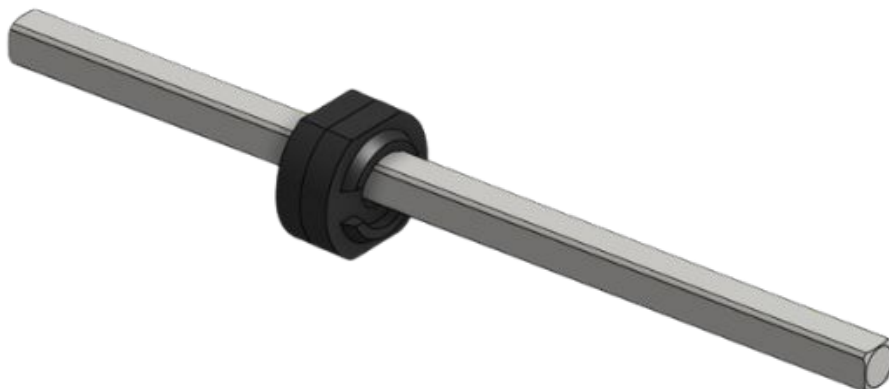
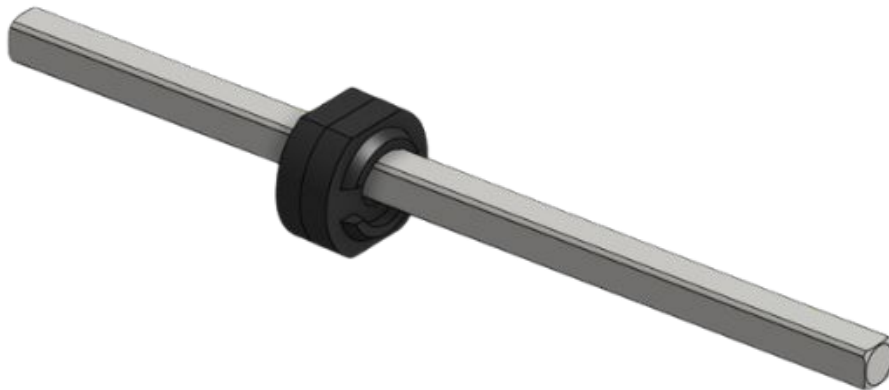
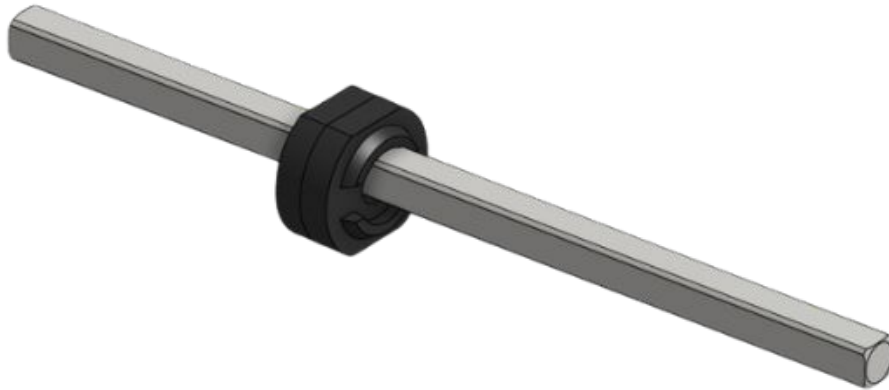


## Parts List:

x3

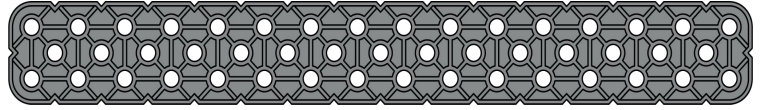


x3

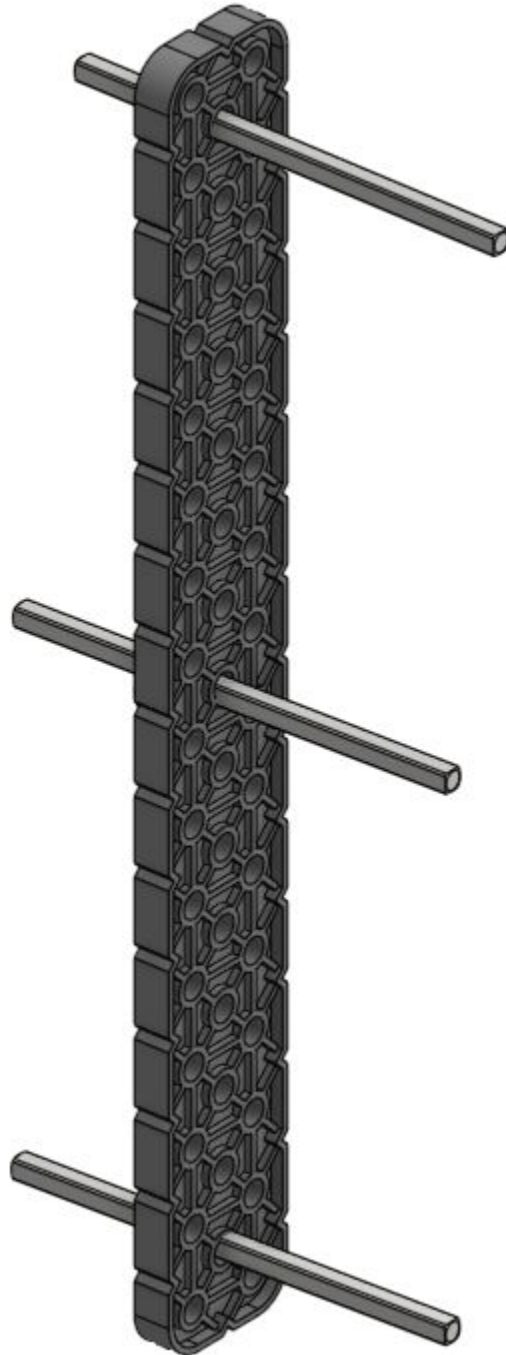


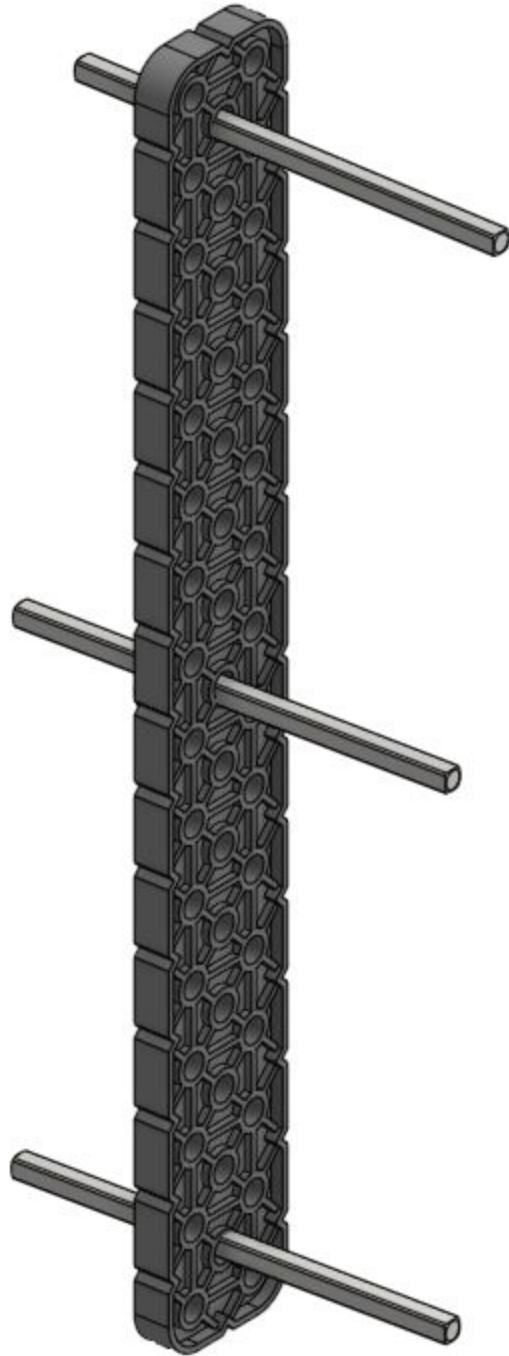
## Parts List:

x1



2x16 beam



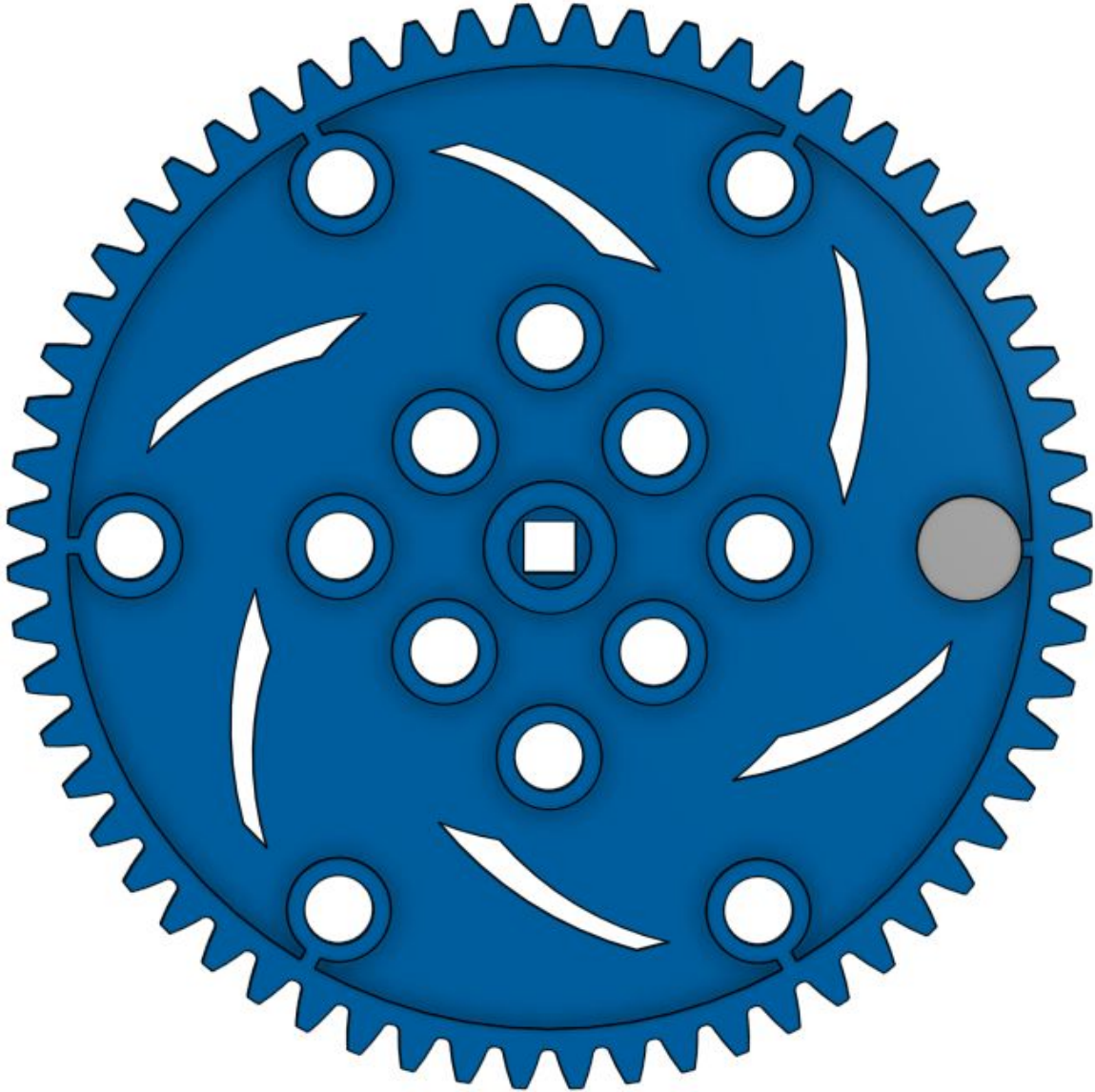
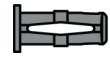


Parts List:

x1

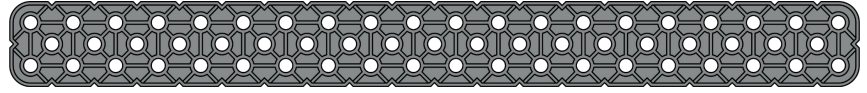
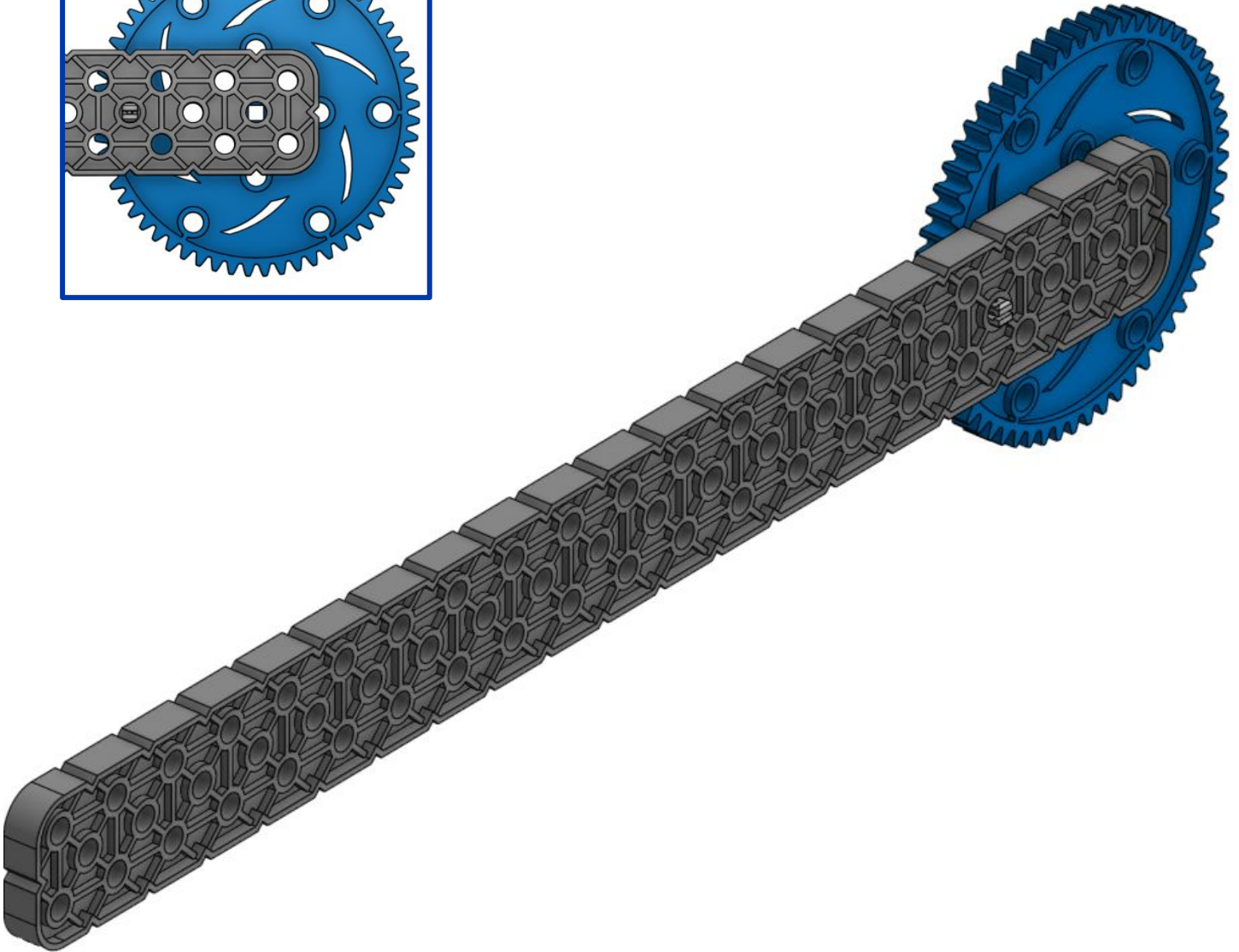
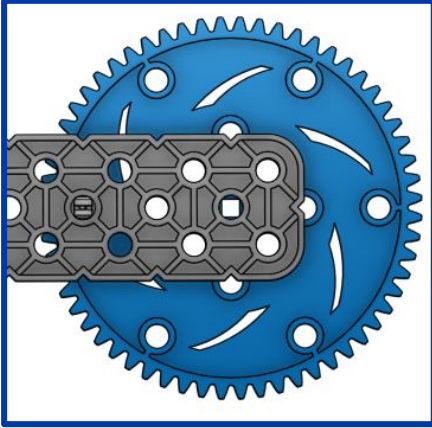


x1

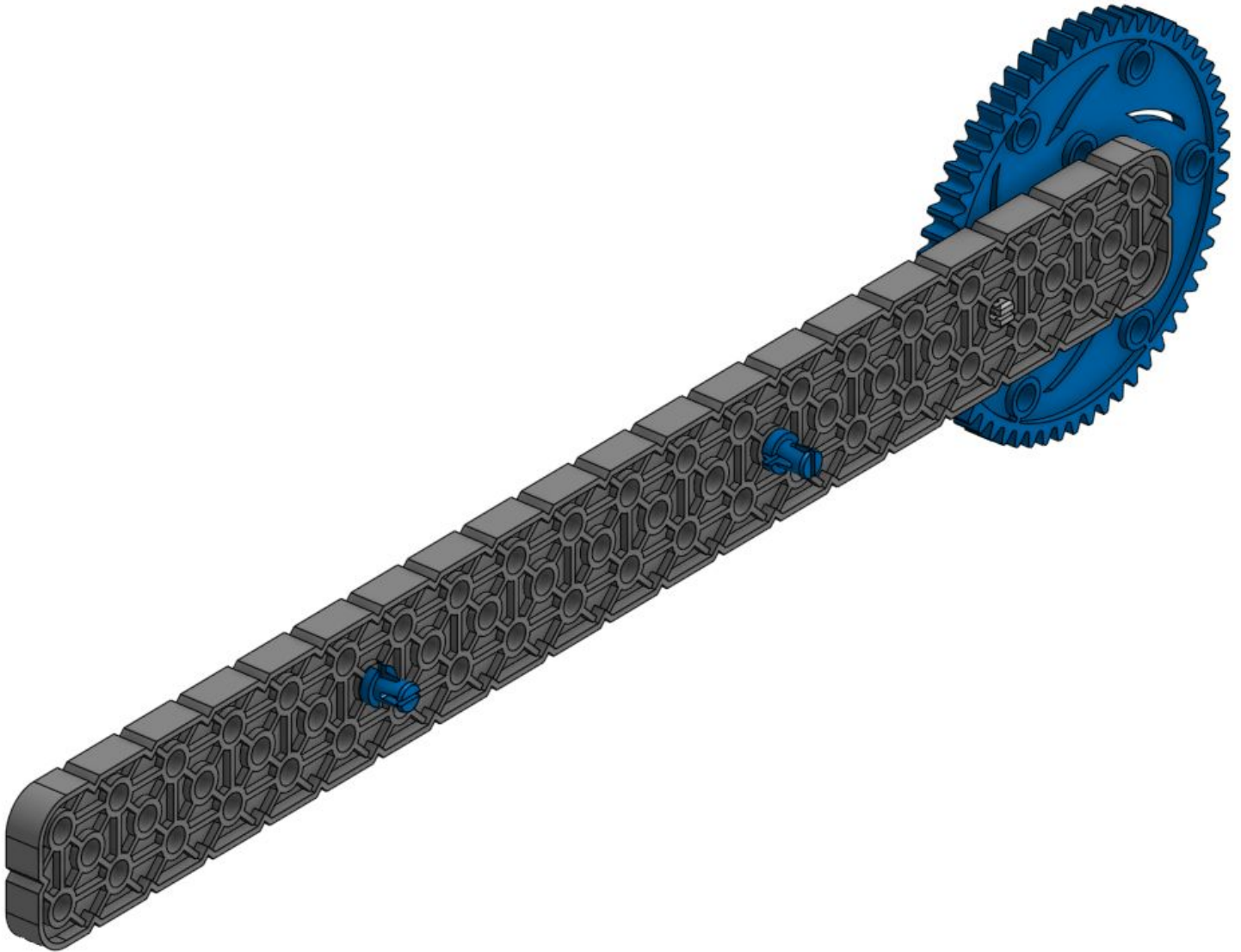




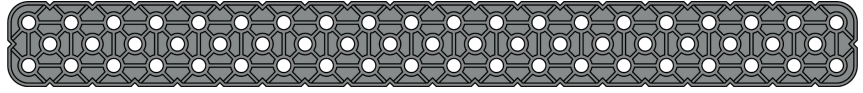
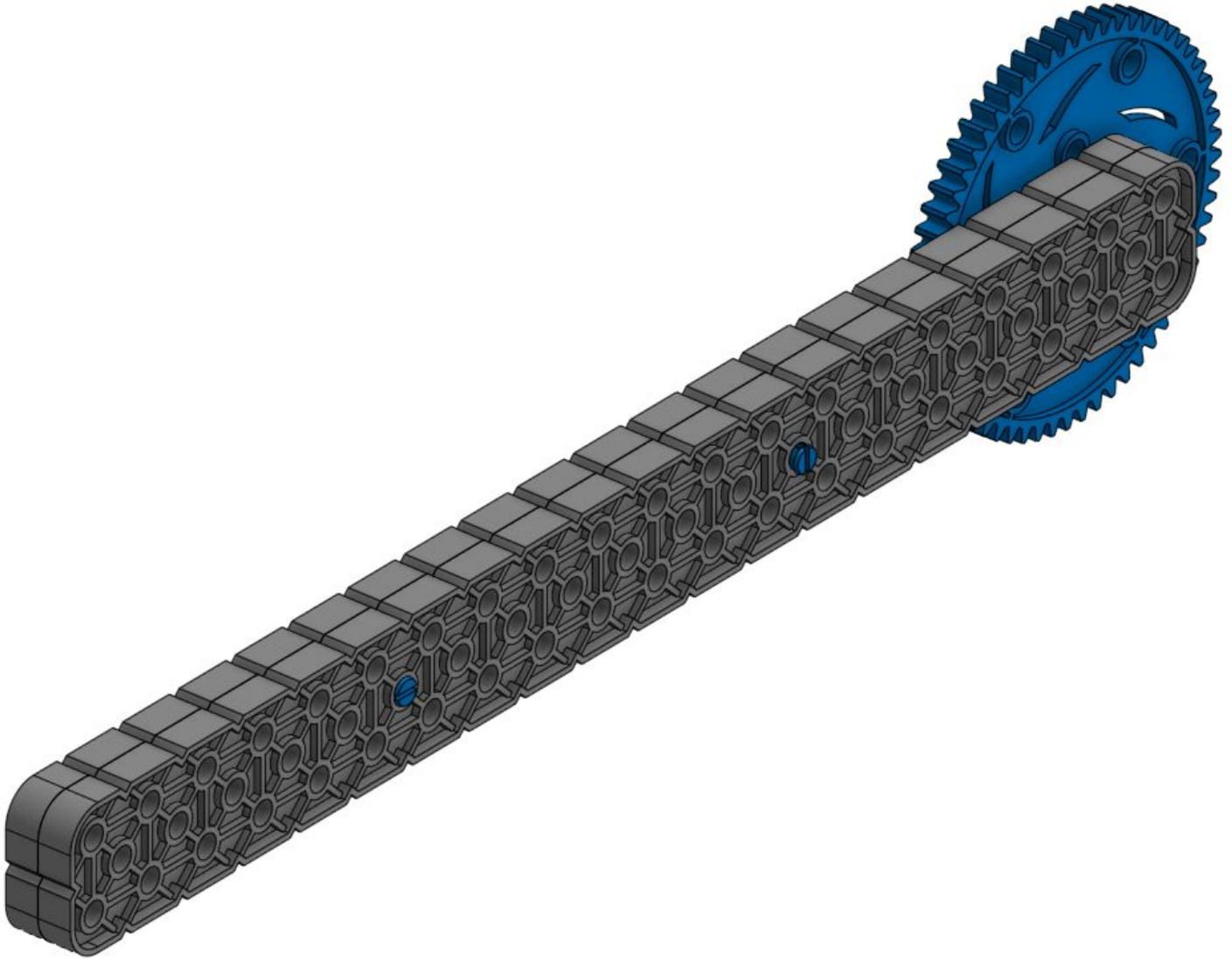
## Parts List:

**x1***2x20 beam*

## Parts List:

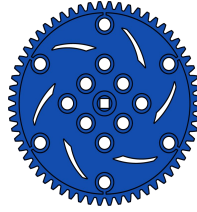
x2 

## Parts List:

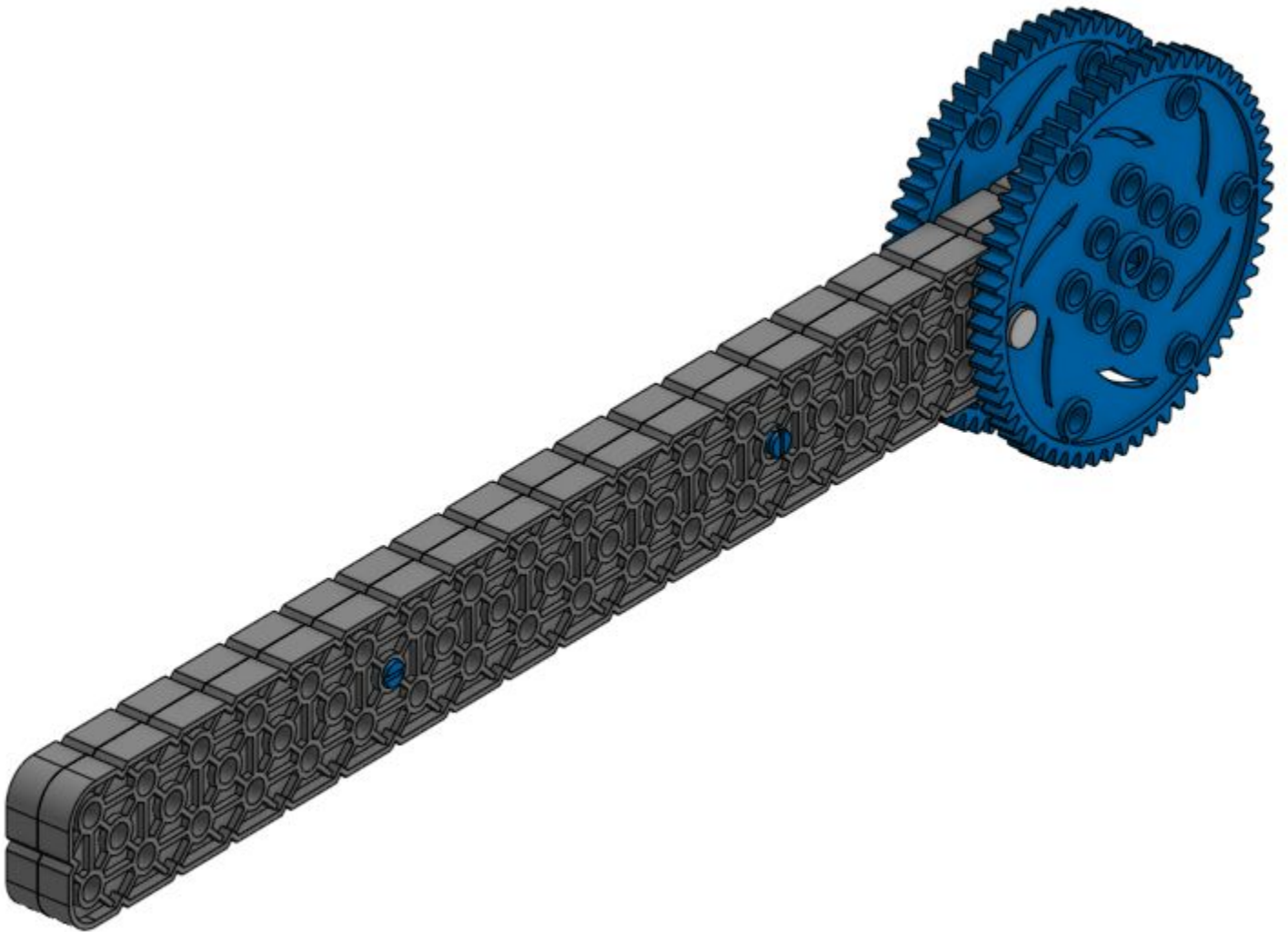
**x1***2x20 beam*

## Parts List:

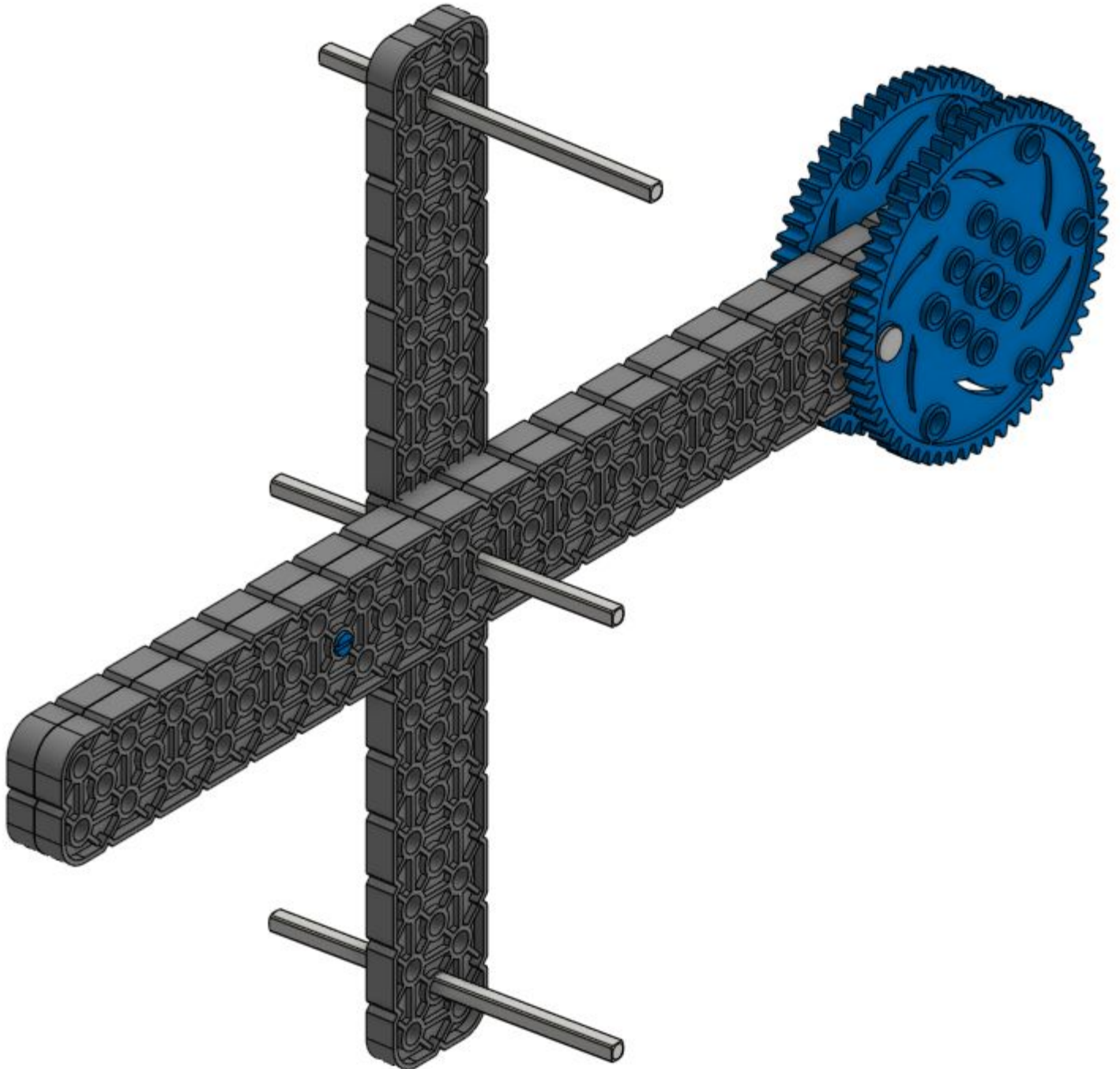
x1



x1





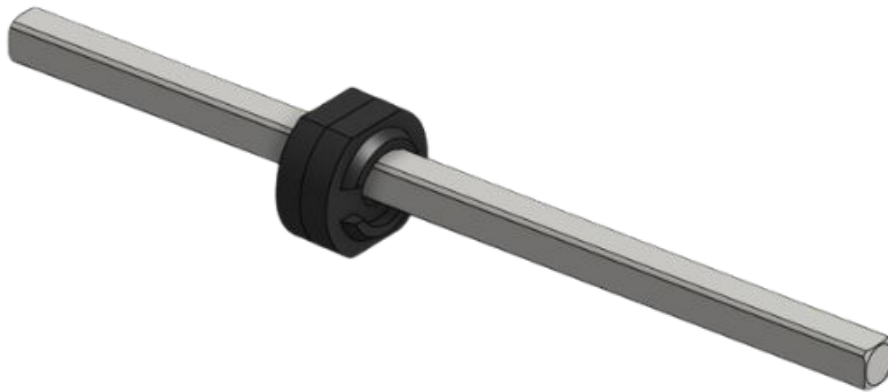


## Parts List:

x1

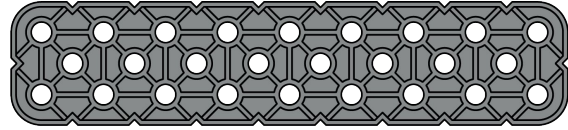


x1

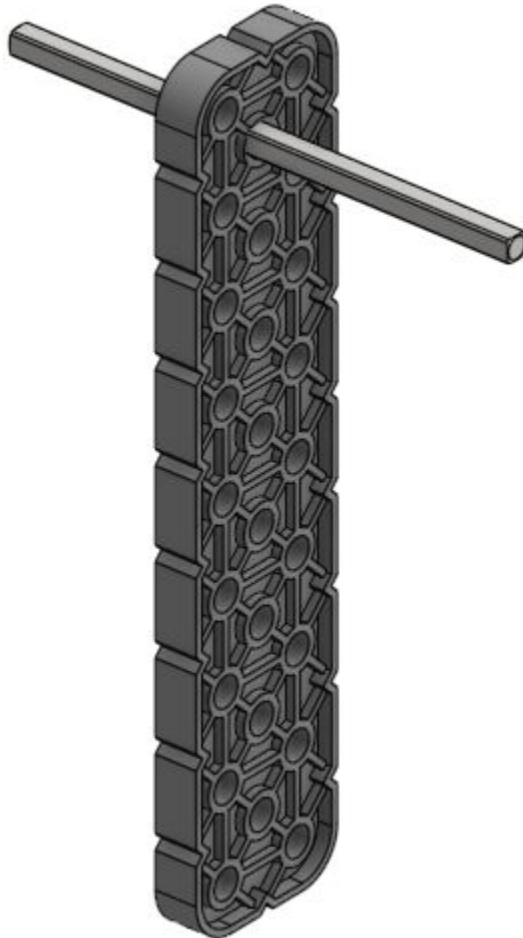


## Parts List:

x1

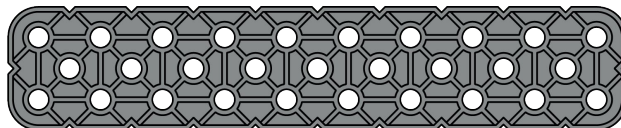
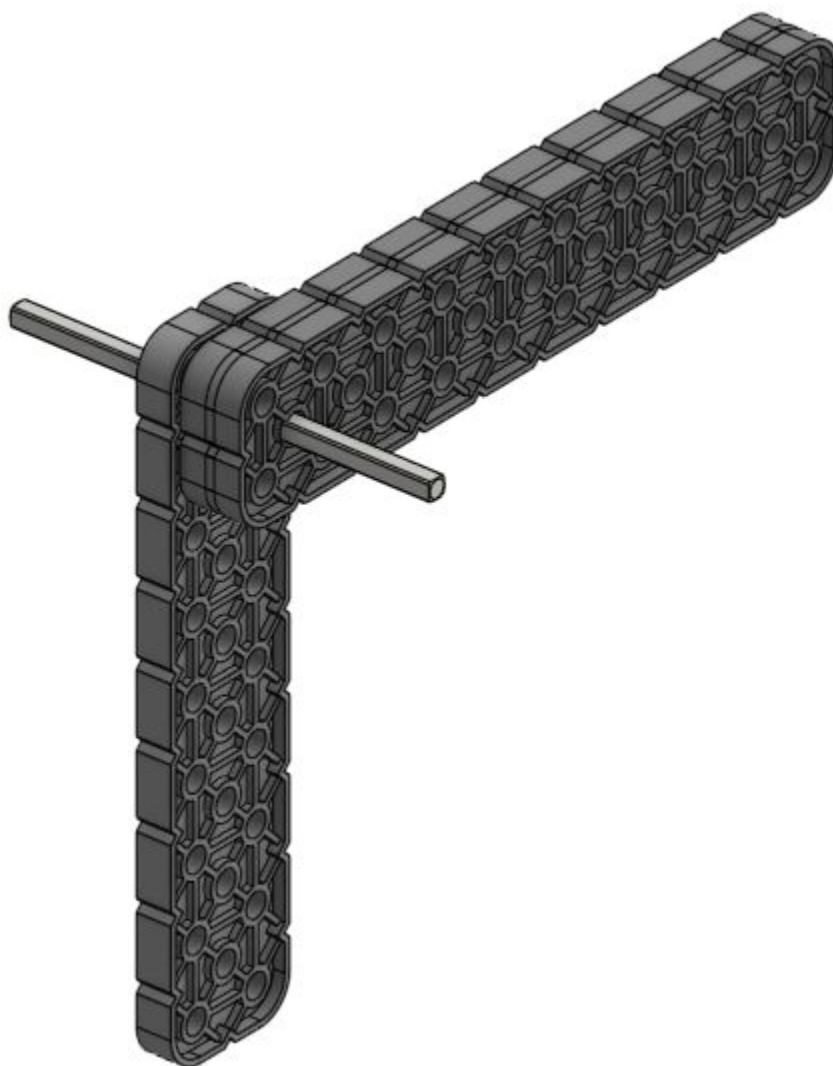


2x9 beam

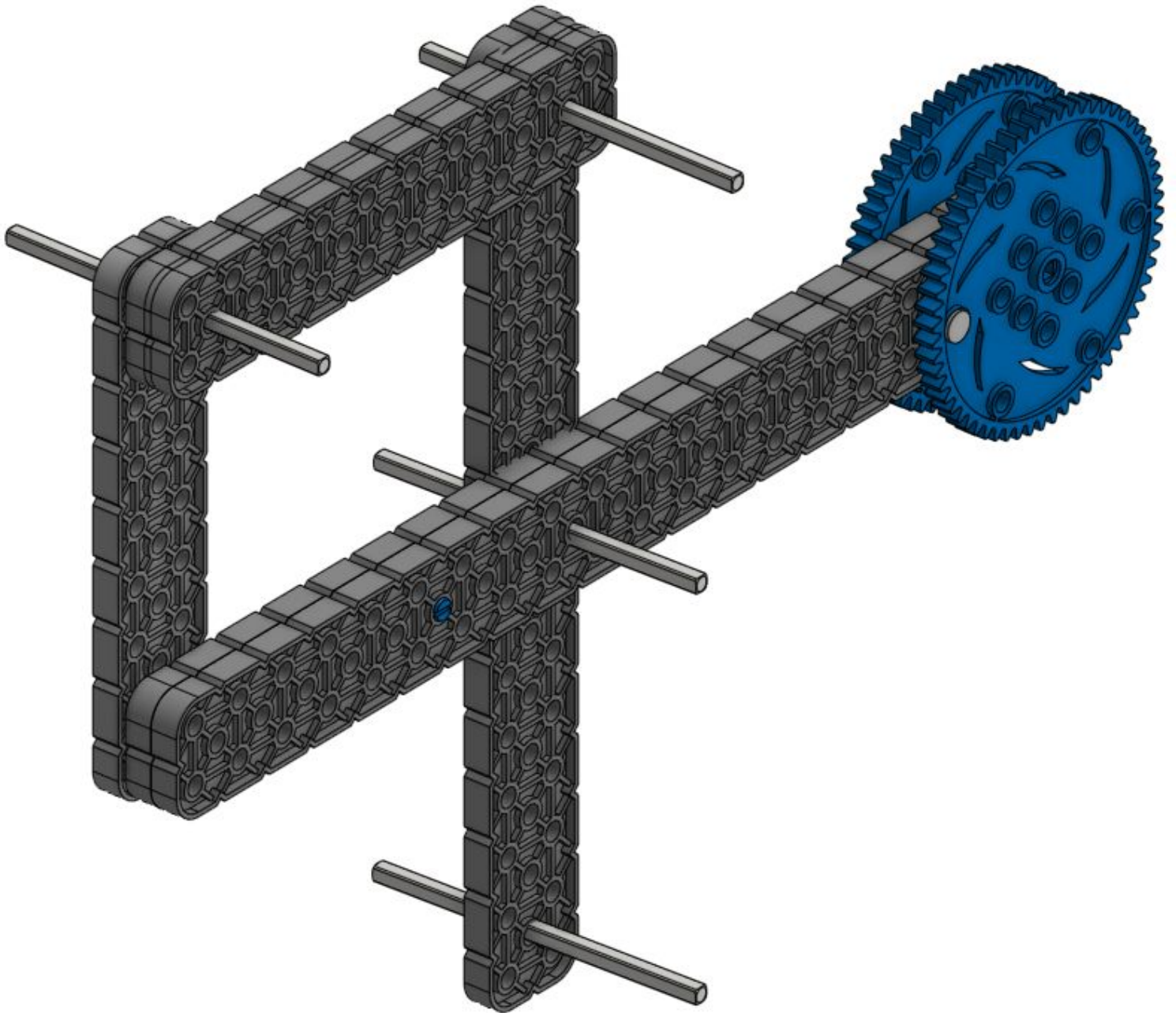


Parts List:

x2

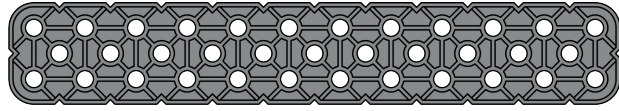
*2x10 beam*



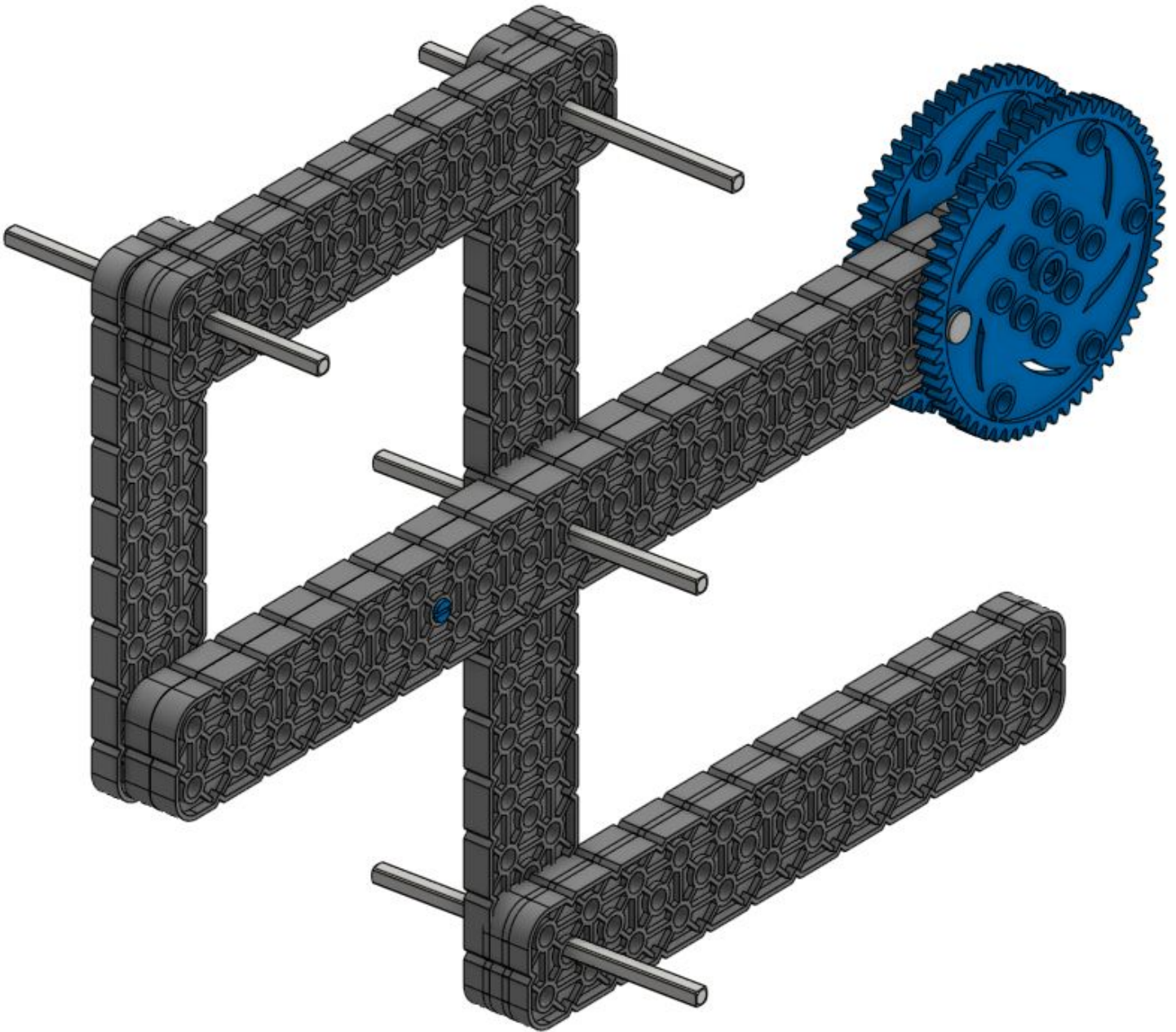


## Parts List:

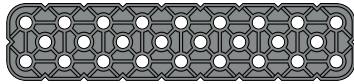
x2



2x12 beam

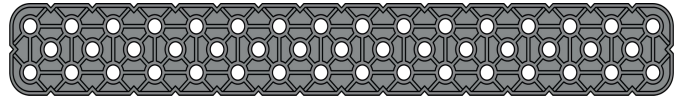


## Parts List:



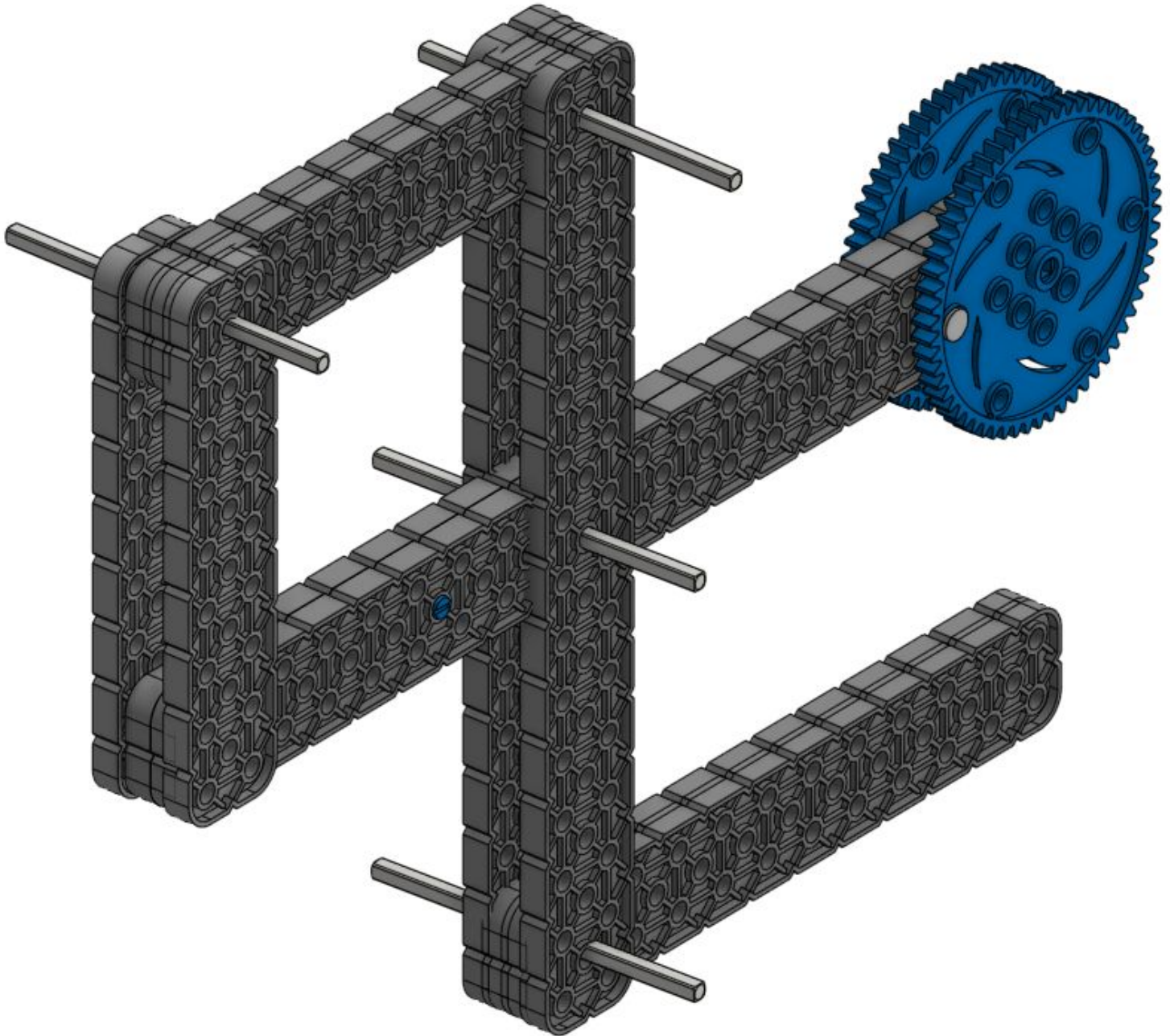
**x1**

2x9 beam



**x1**

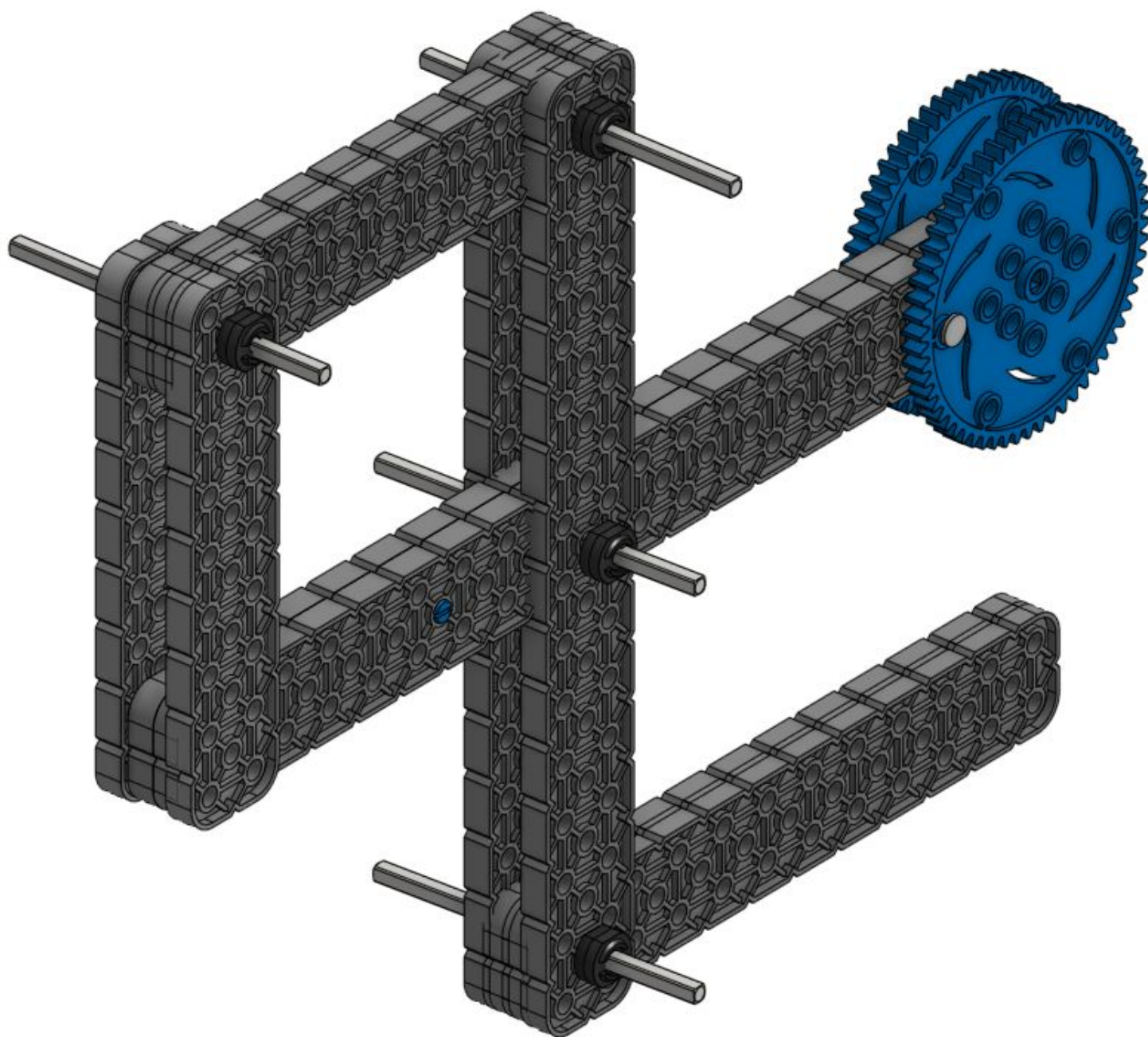
2x16 beam





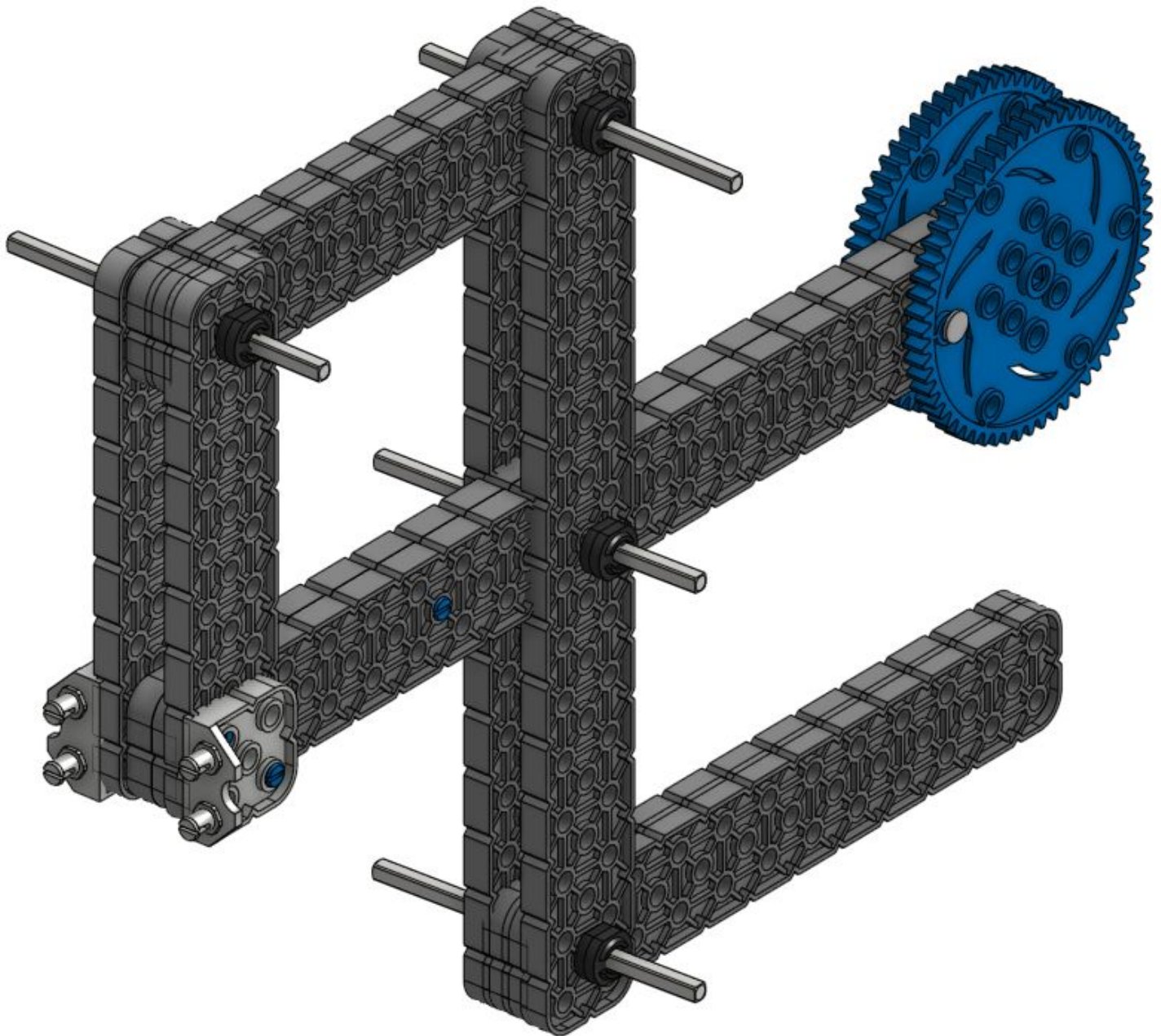
Parts List:

x4



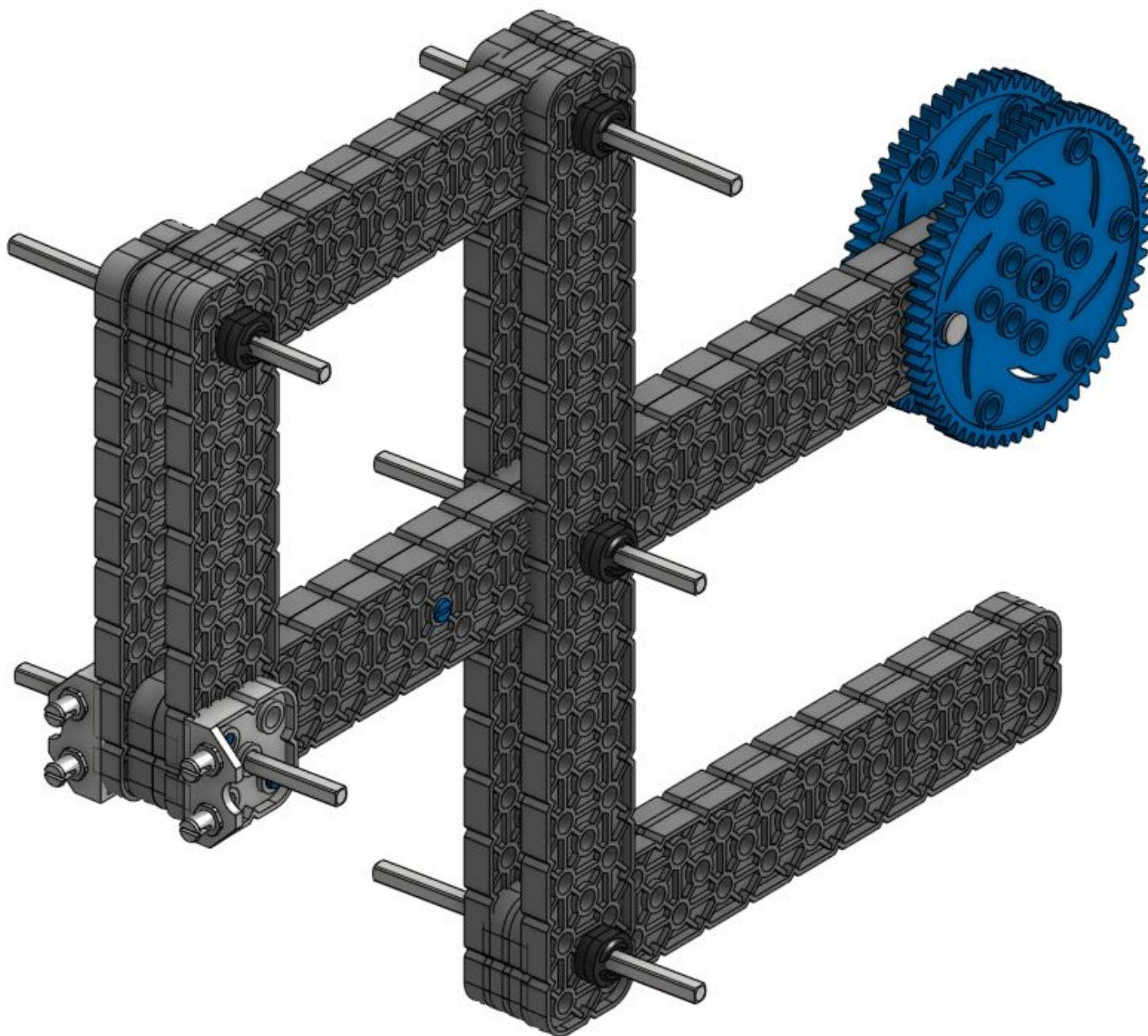


## Parts List:

x4 x2 

## Parts List:

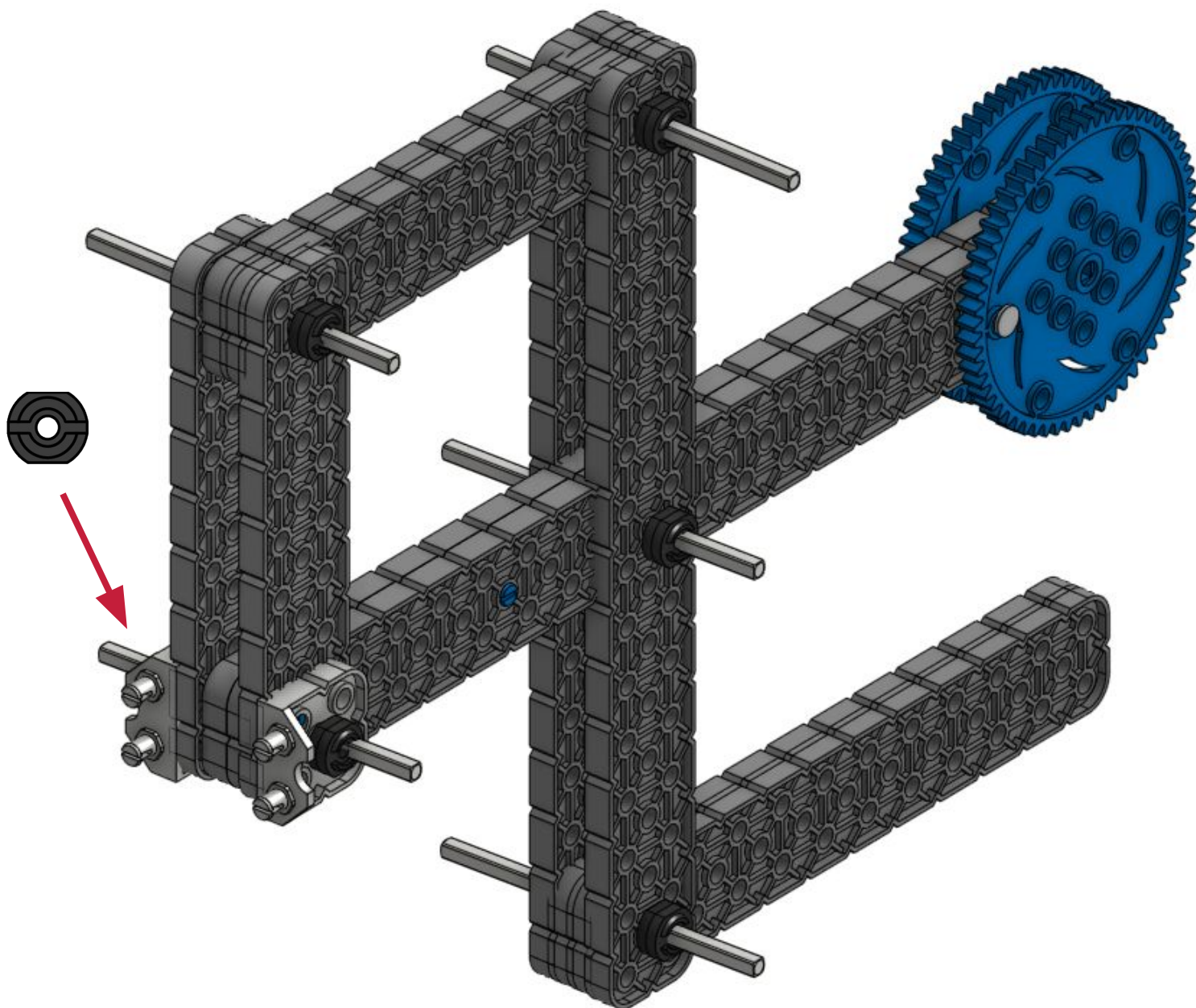
x1





## Parts List:

x2

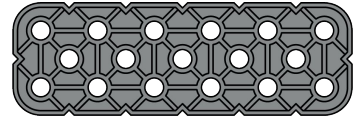


## Parts List:

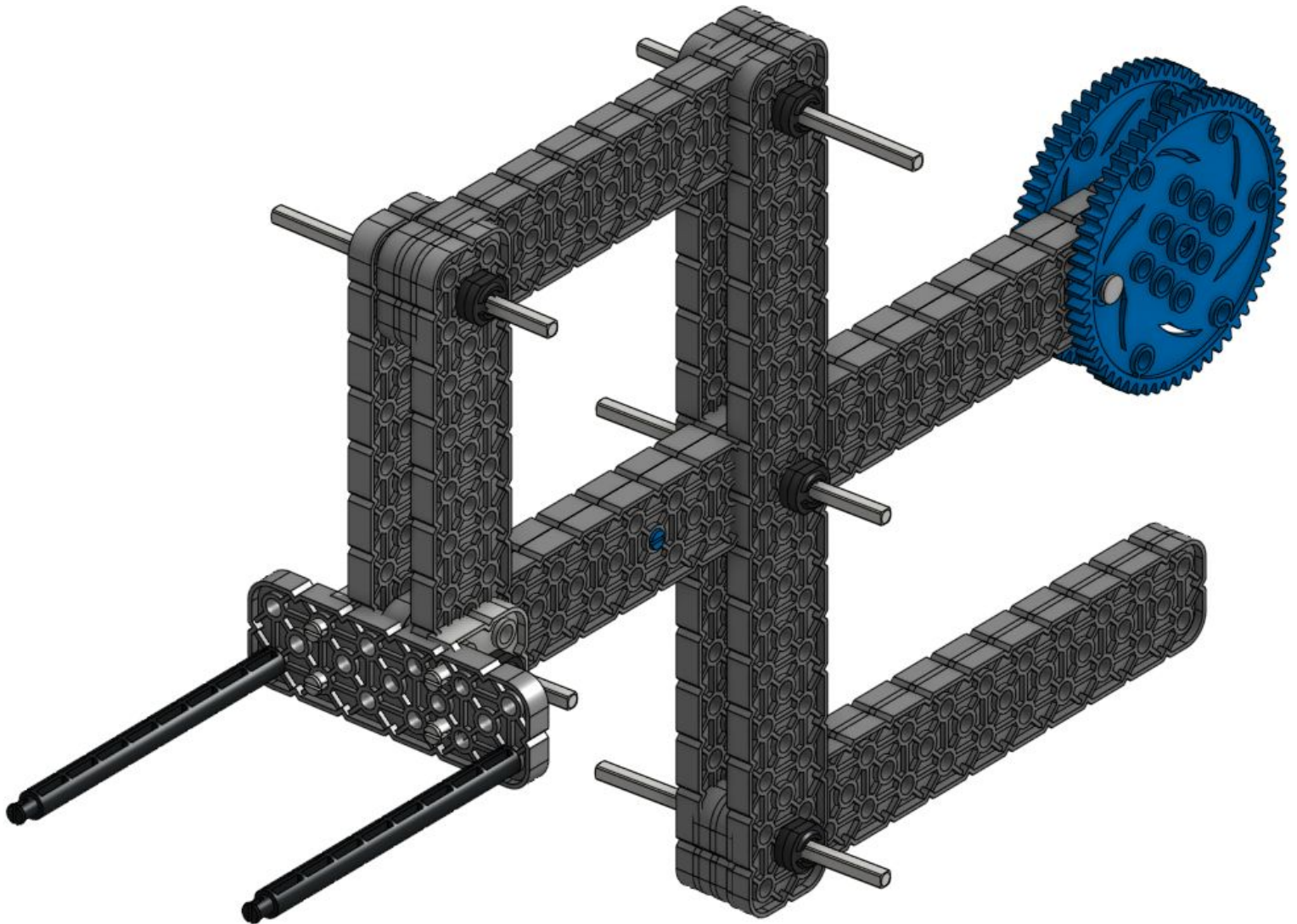
x2



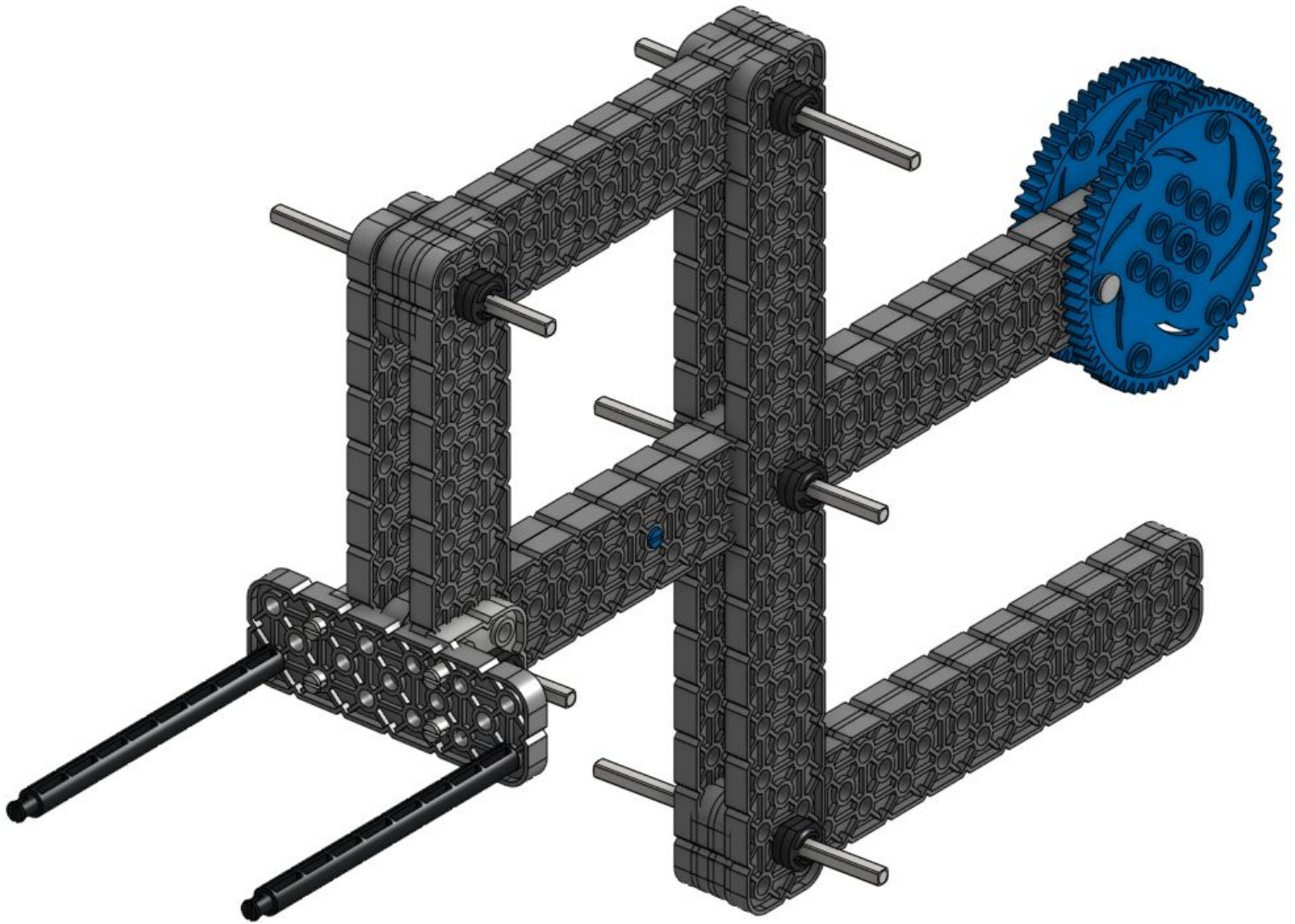
x1



2x6 beam





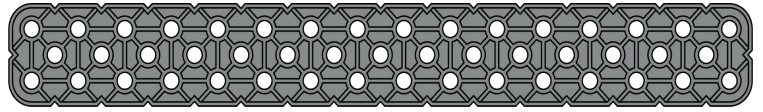


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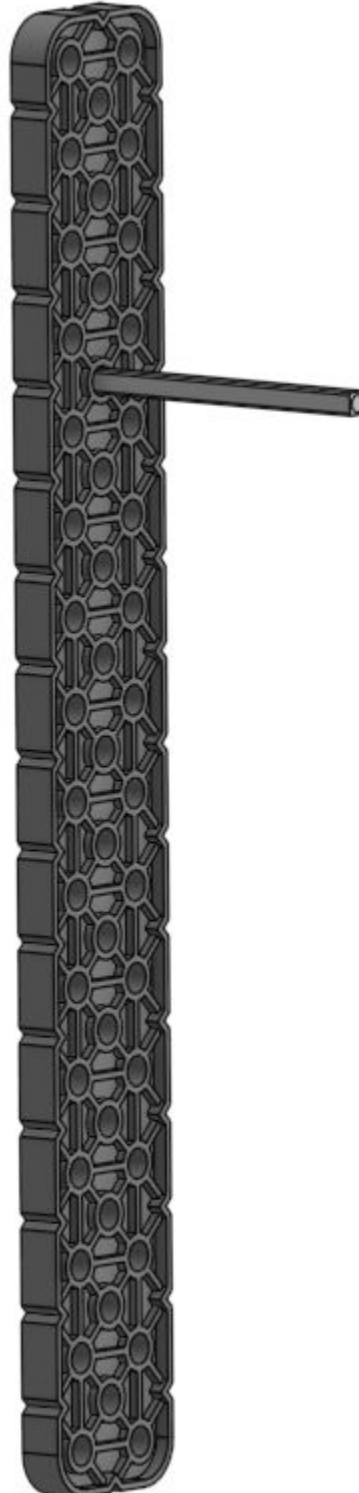
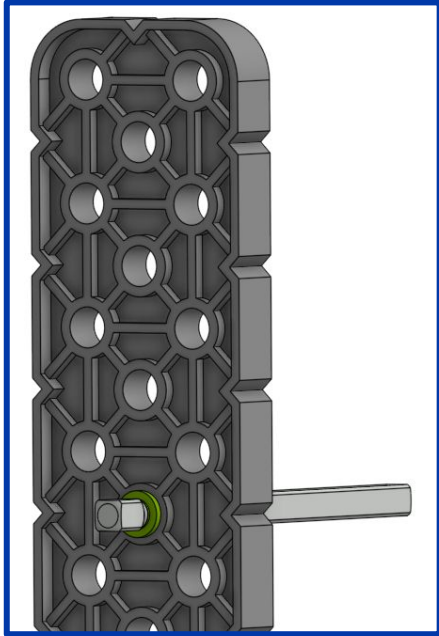
x1



x1



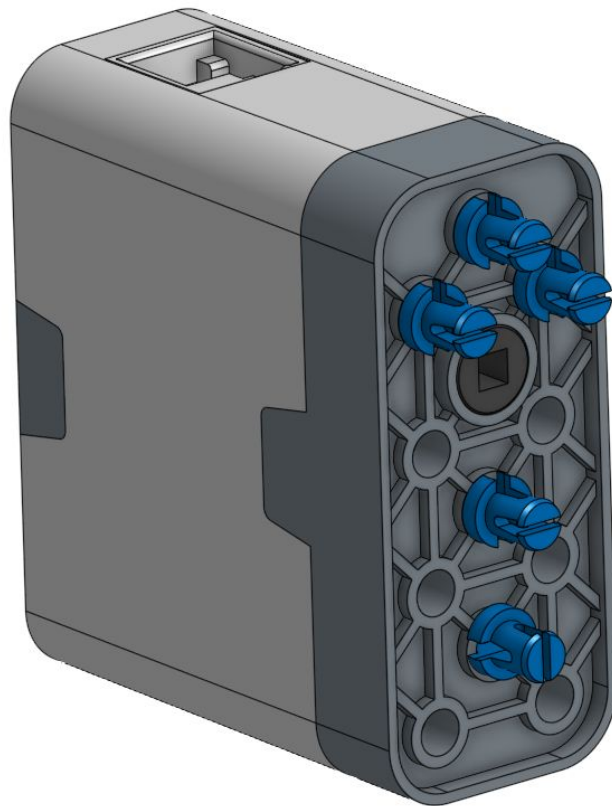
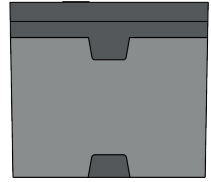
2x16 beam

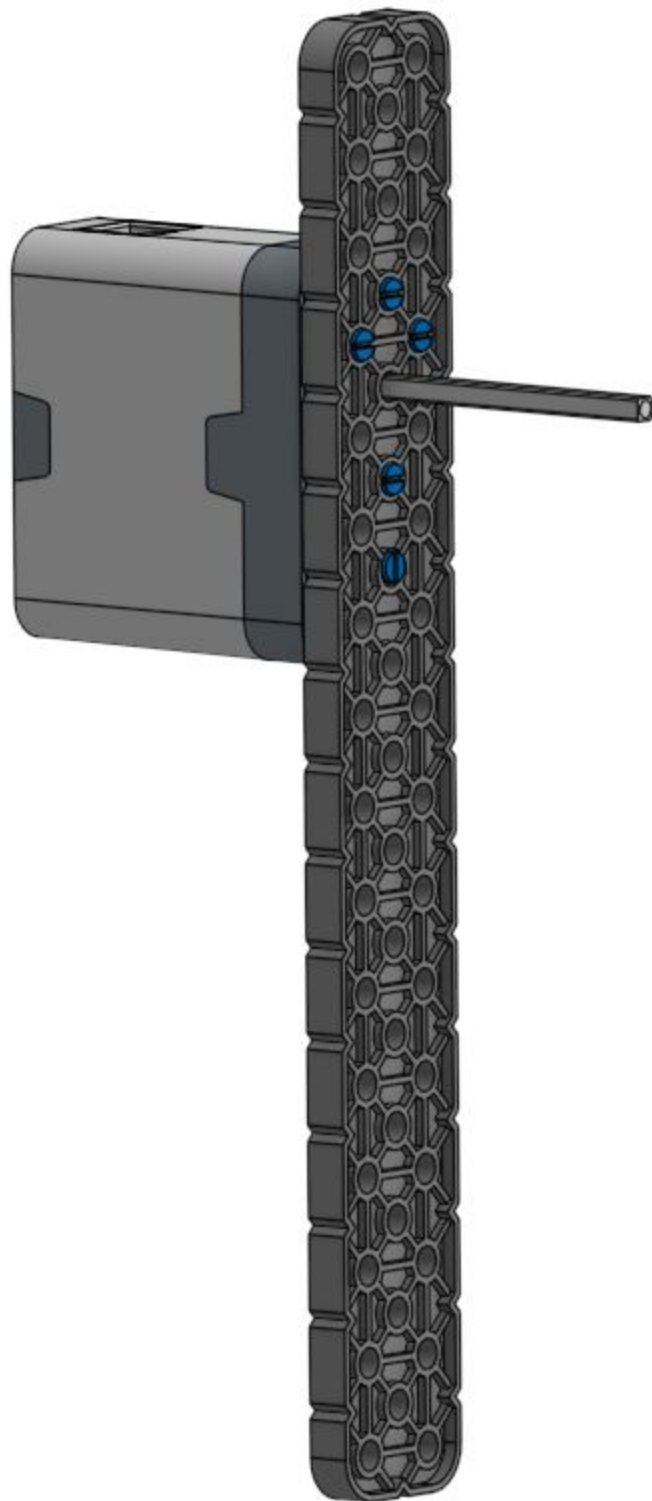


## Parts List:

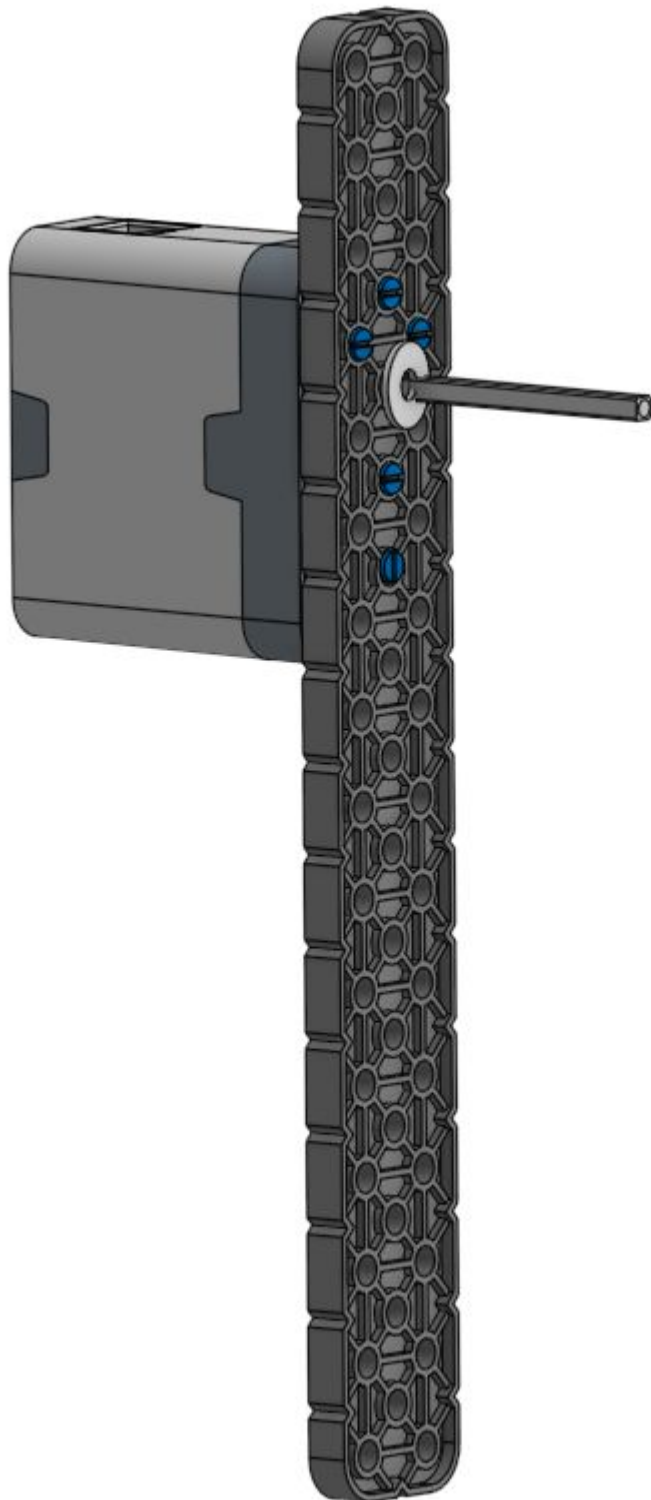
x5 

x1



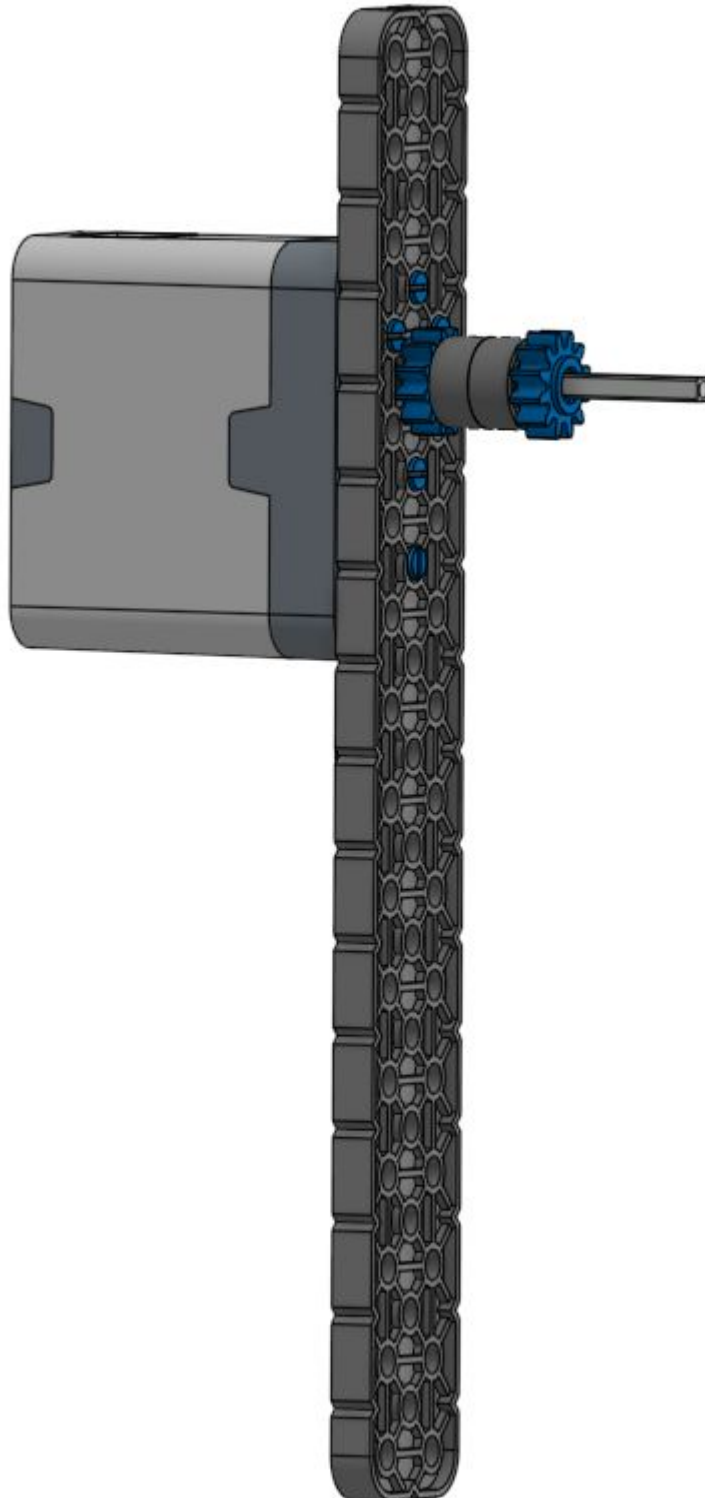


## Parts List:

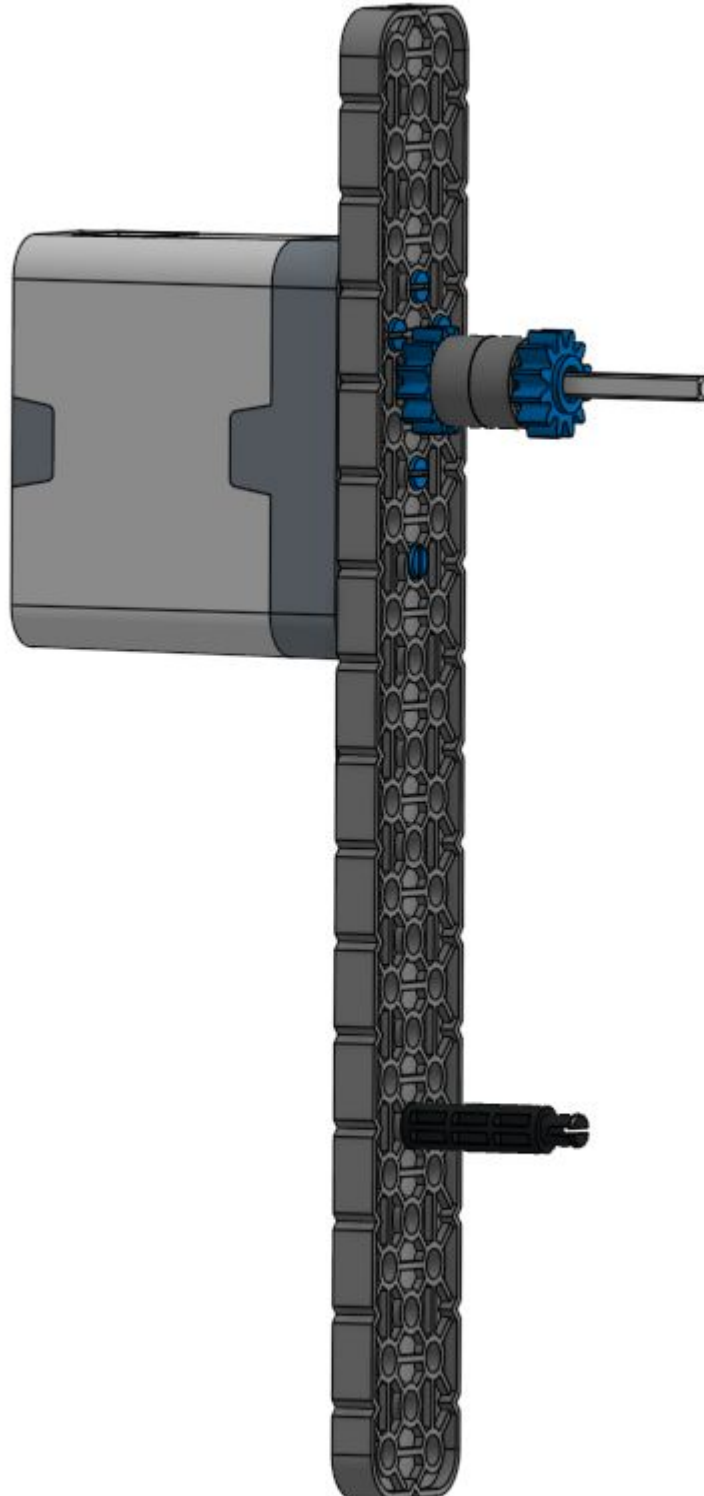
x1 



## Parts List:



## Parts List:

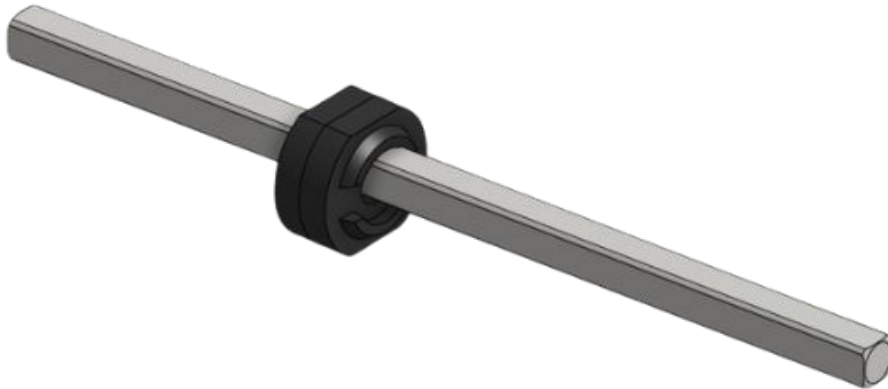
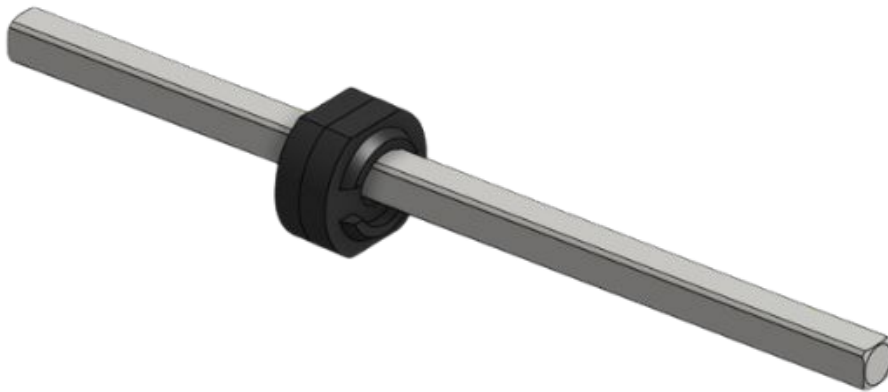
x1 

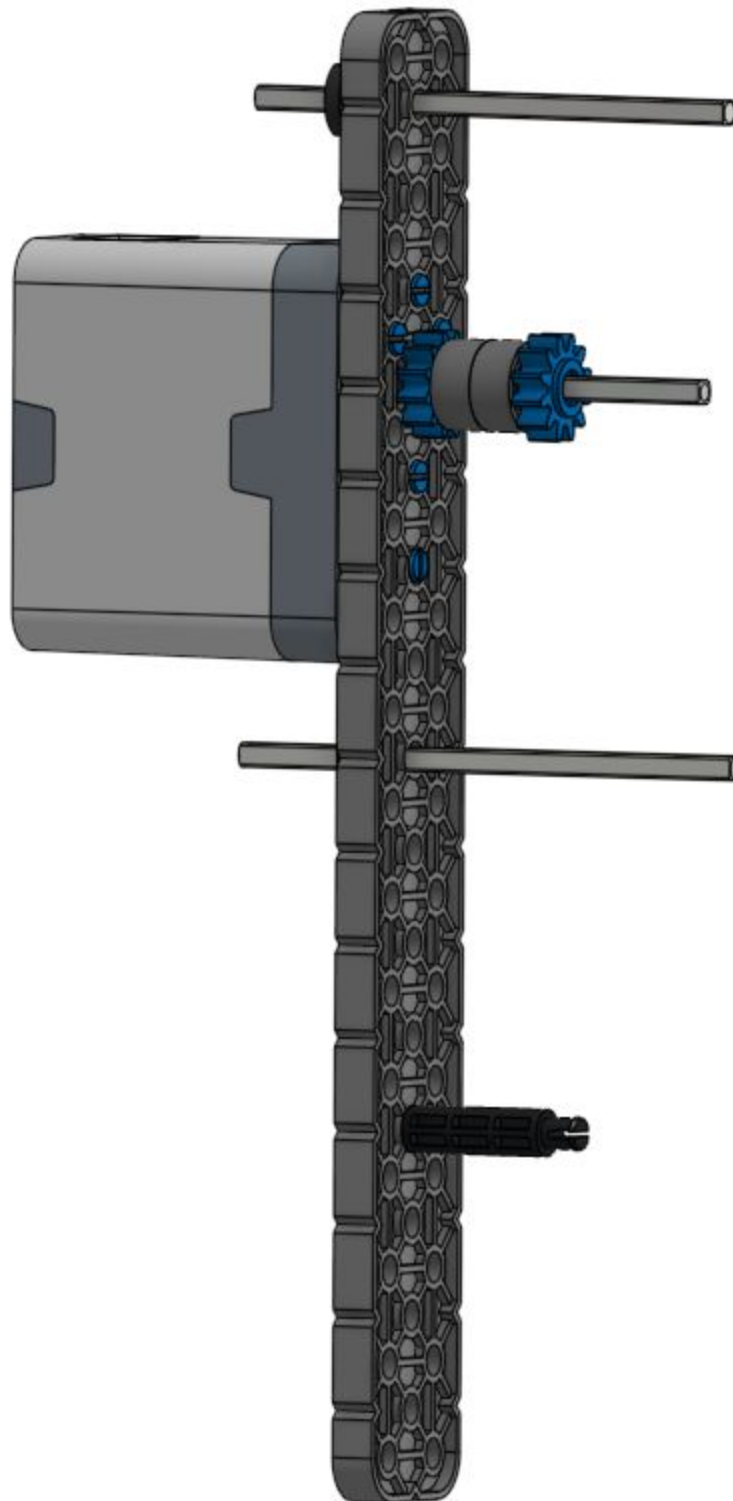
## Parts List:

x2



x2

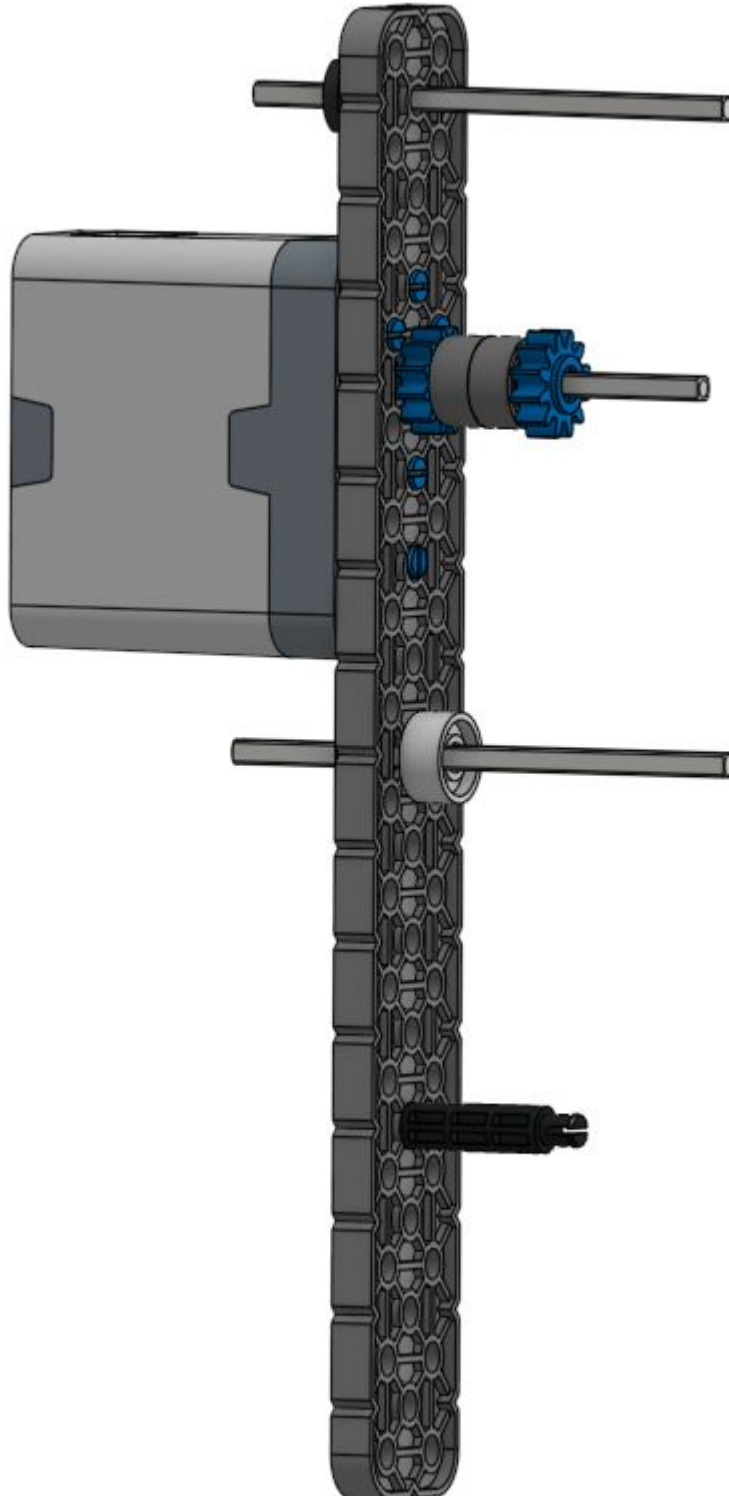


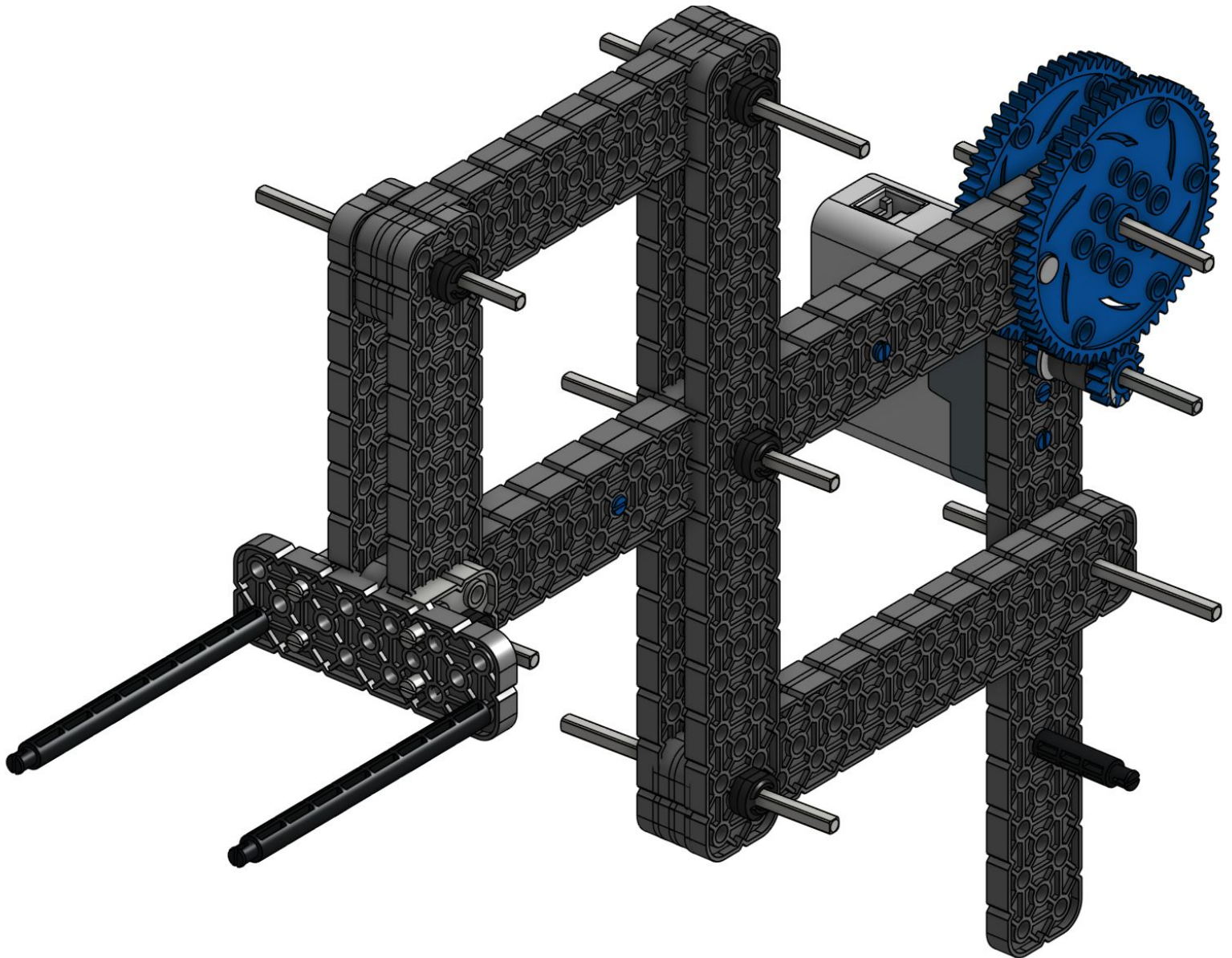




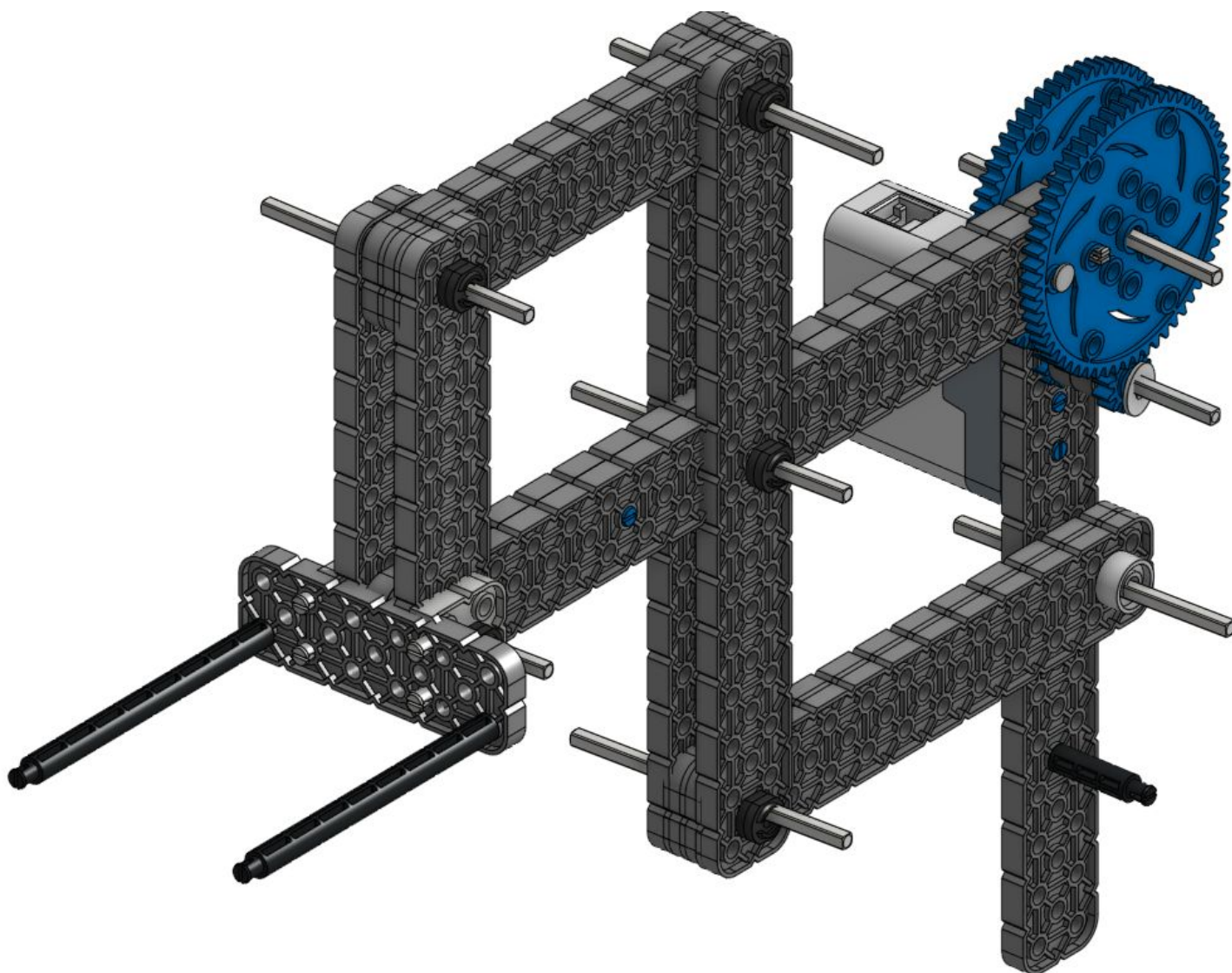
## Parts List:

x1





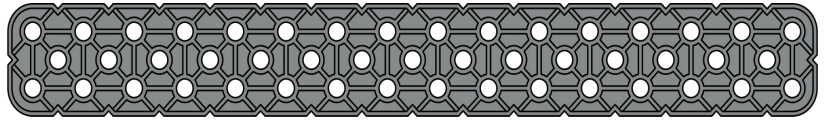
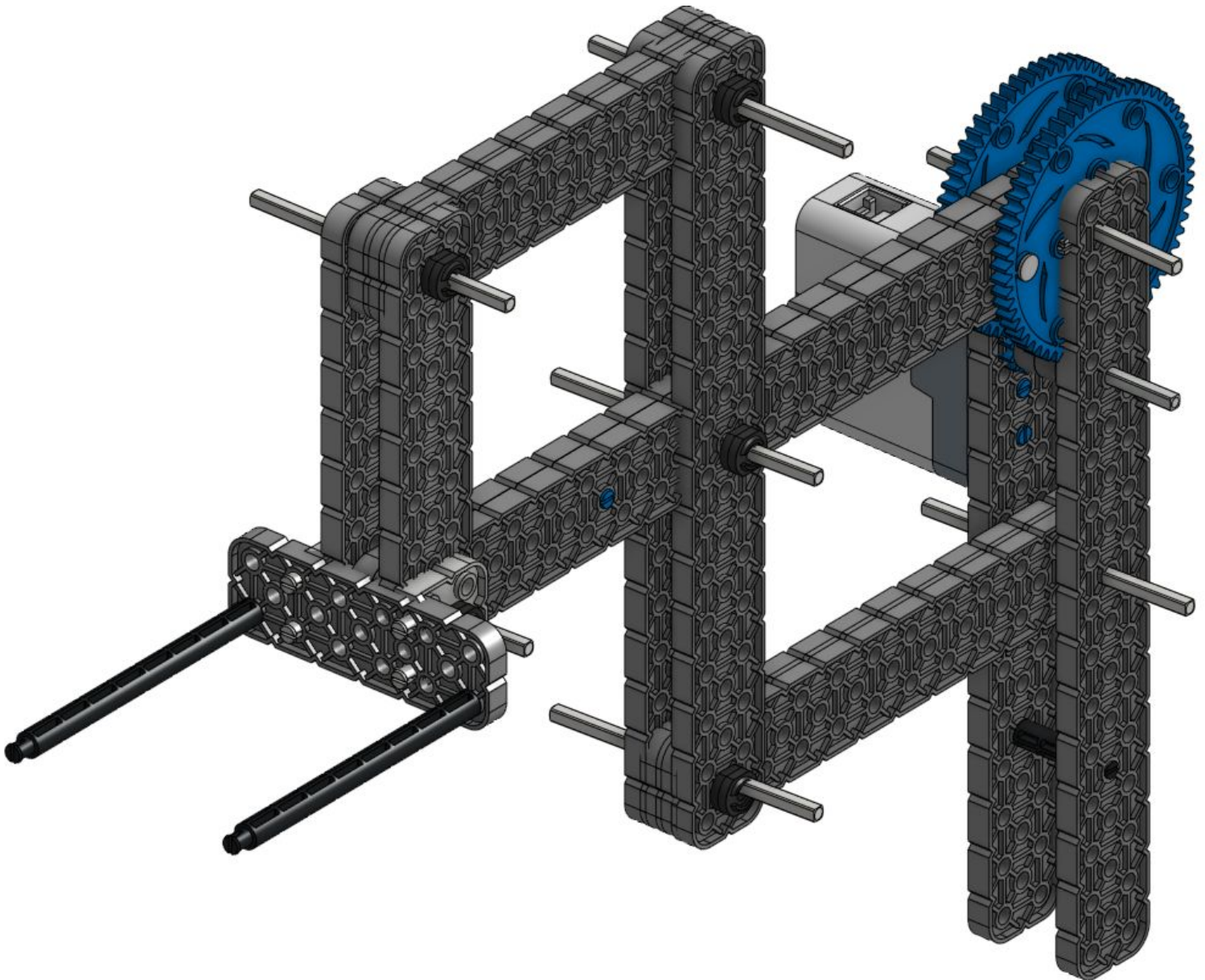
## Parts List:

x1 x1 



## Parts List:

x1

*2x16 beam*



## Parts List:

x2

