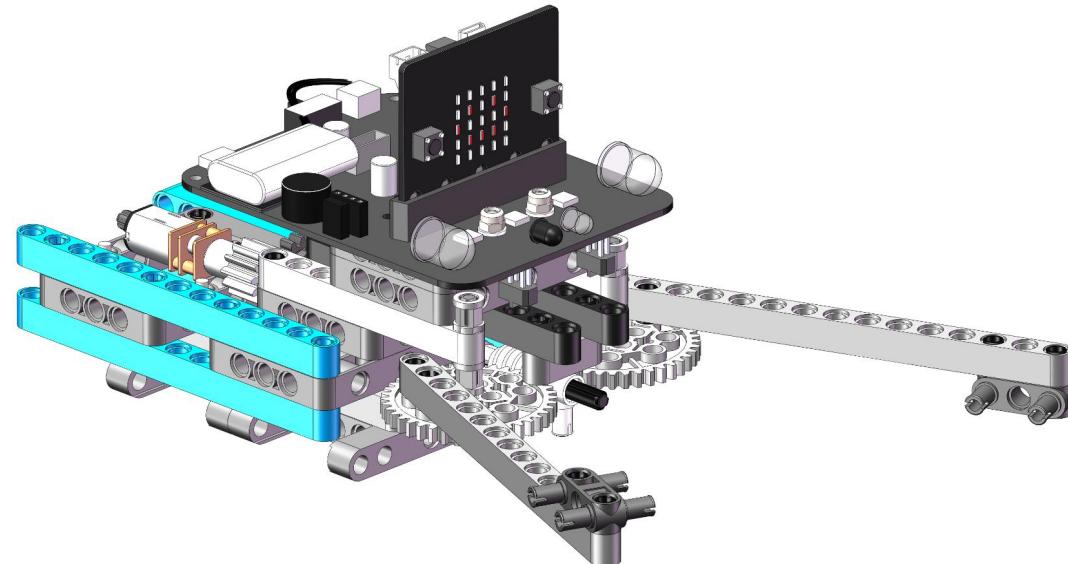
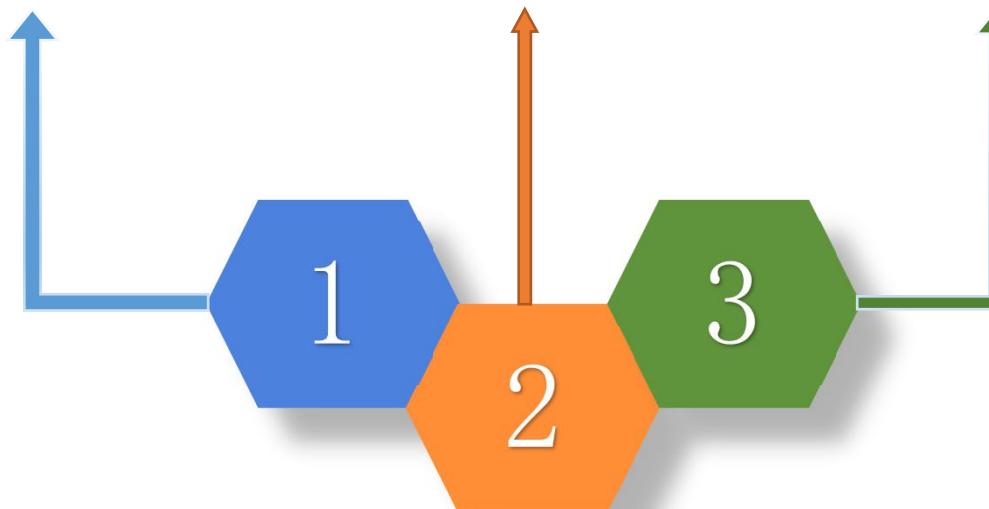


Yahboom Building:bit blocks

No.4 Mechanical Clip

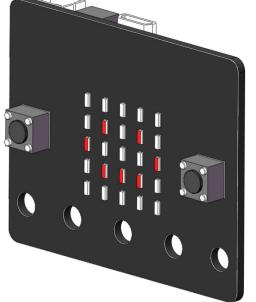
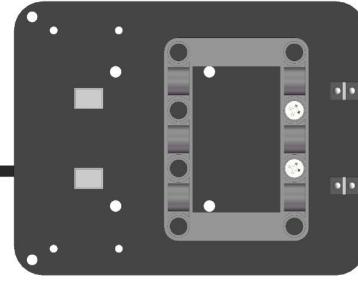
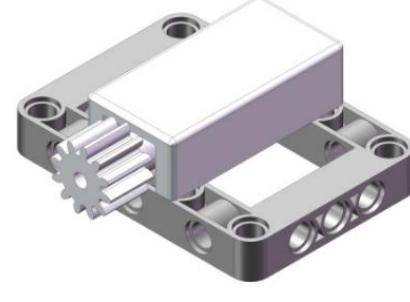
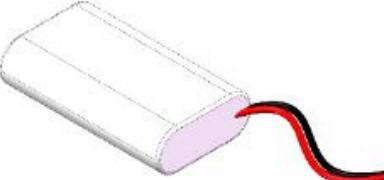
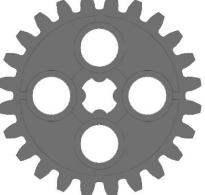
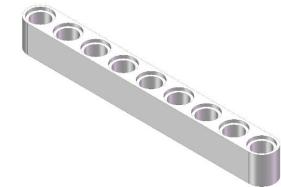
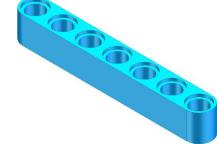


DIY Thinking Creativity

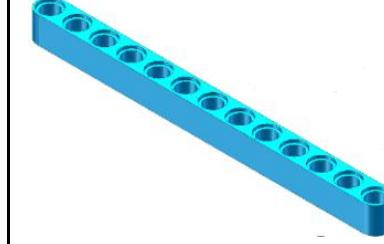
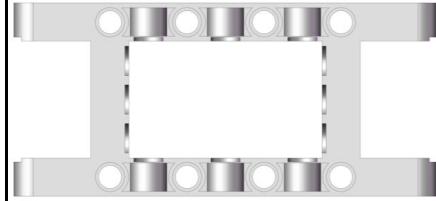
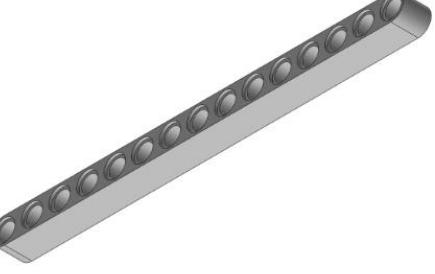


DIY: This section is mainly to teach you to assemble mechanical clip with building blocks.

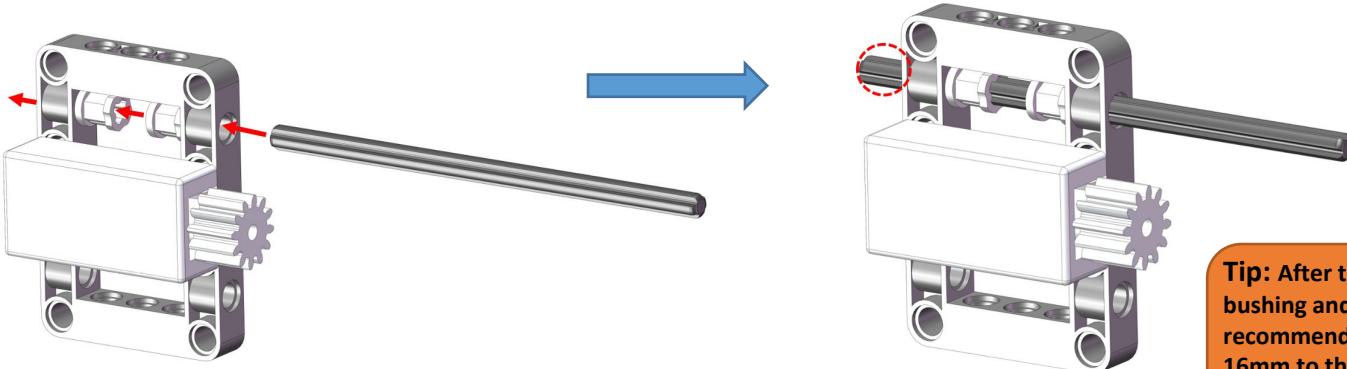
Prepare the following blocks and we will assemble a building block mechanical clip. 



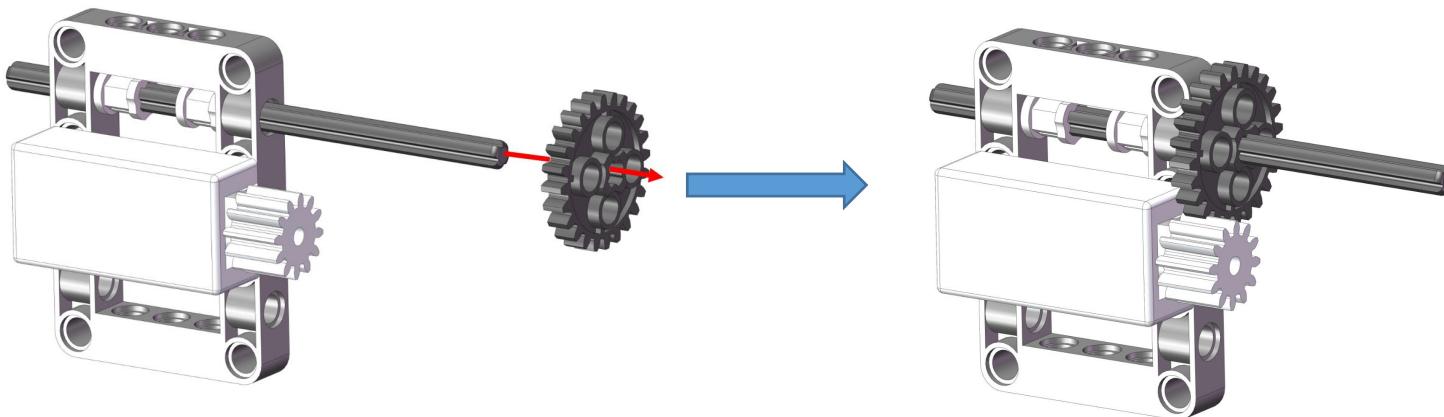
				
1x11 hole arm*2	1x13 hole arm*2	5x11 beam frame*2	1x3 Shaft*10	Spiral wheel*1
				
1x15 hole arm*3	1x8 Cross Axle*1	1x12 Cross Axle*1	1x2 Shaft connector*1	

Step 1: Find a motor module, two bushings and a 1x12 cross axle for assembly.

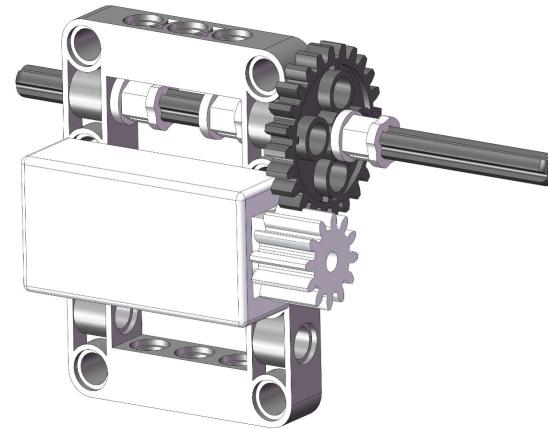
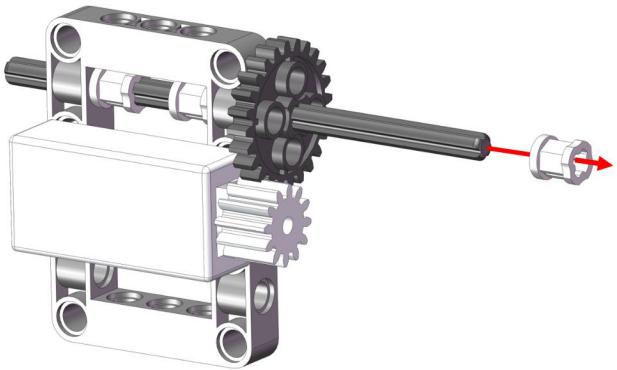


Tip: After the cross shaft passes through the bushing and the motor module, it is recommended that you reserve a length of 16mm to the left (where the red circle is). This is to facilitate the installation of the next building block.

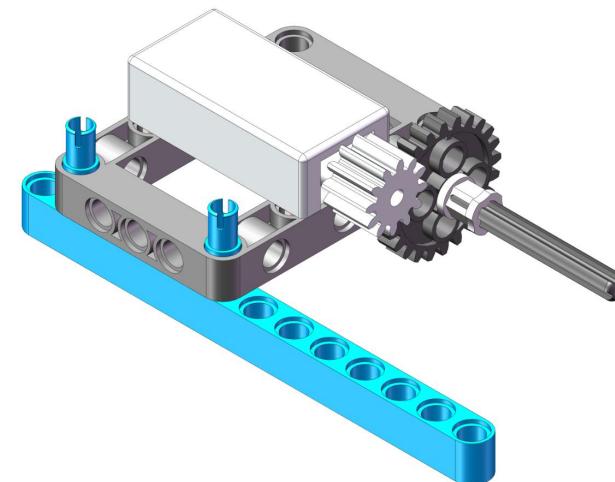
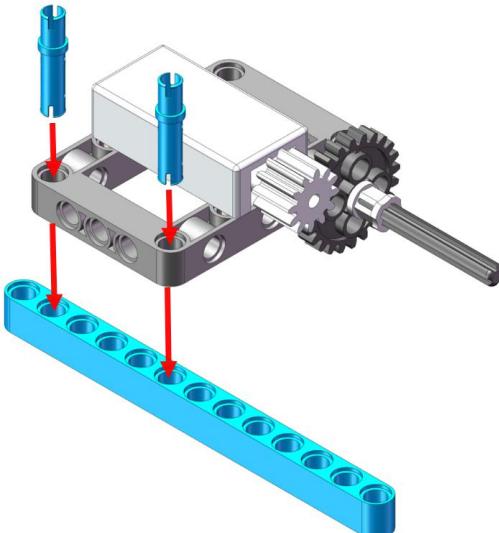
Step 2: Find a 24-toothed wheel and install it.



Step 3: Find a bushing to install it.

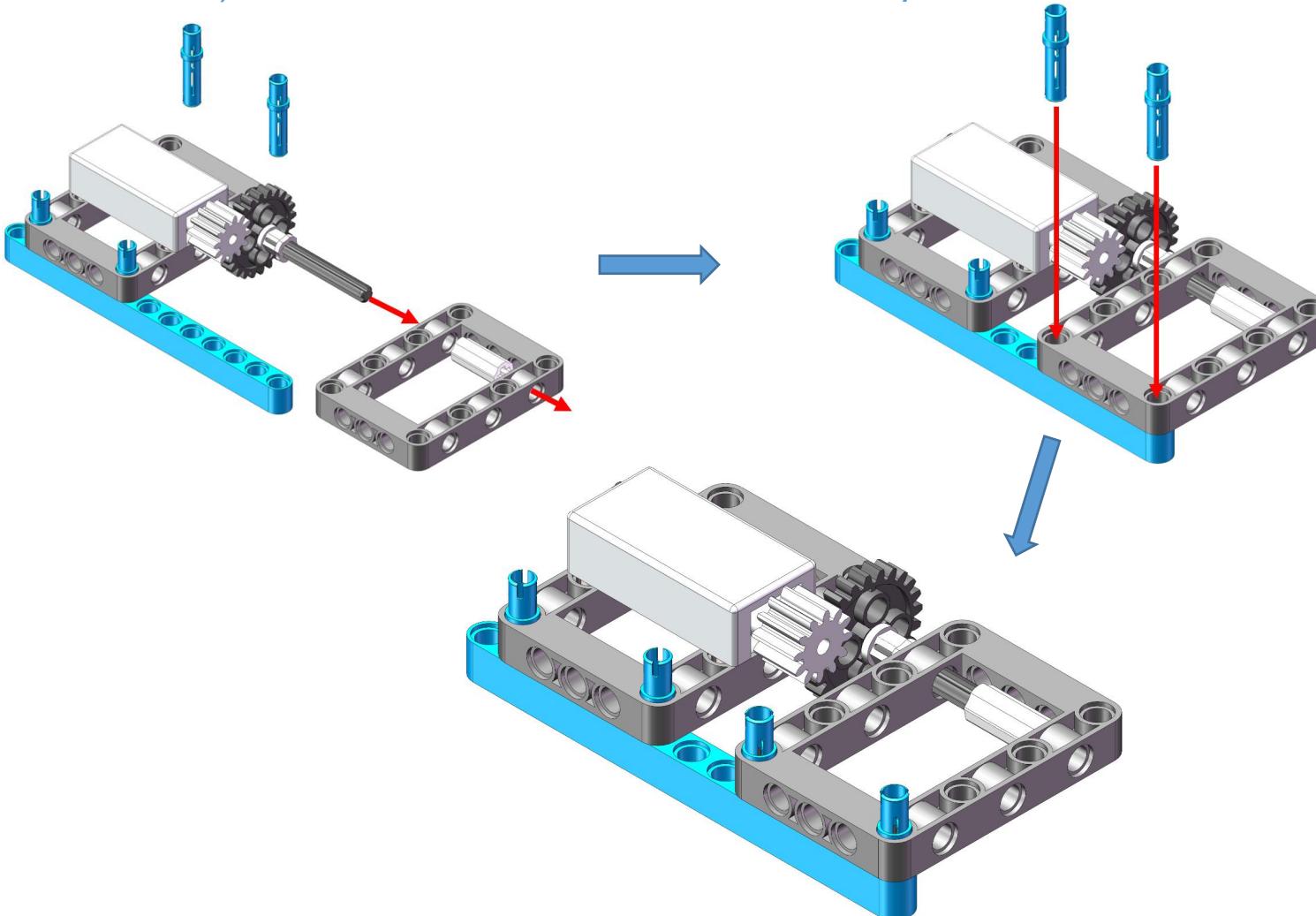


Step 4: Find two 1x3 bolts and a 1x13 hole arm and assemble them.

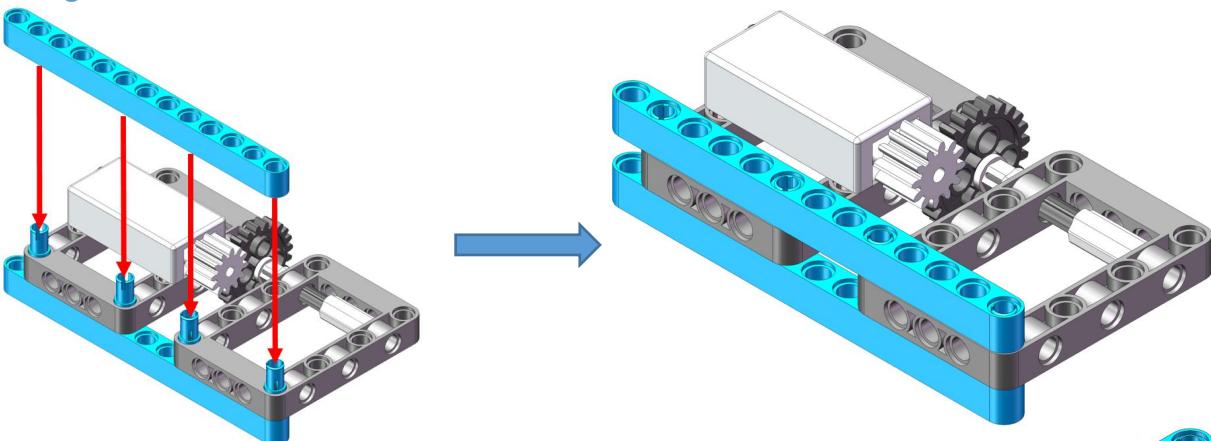




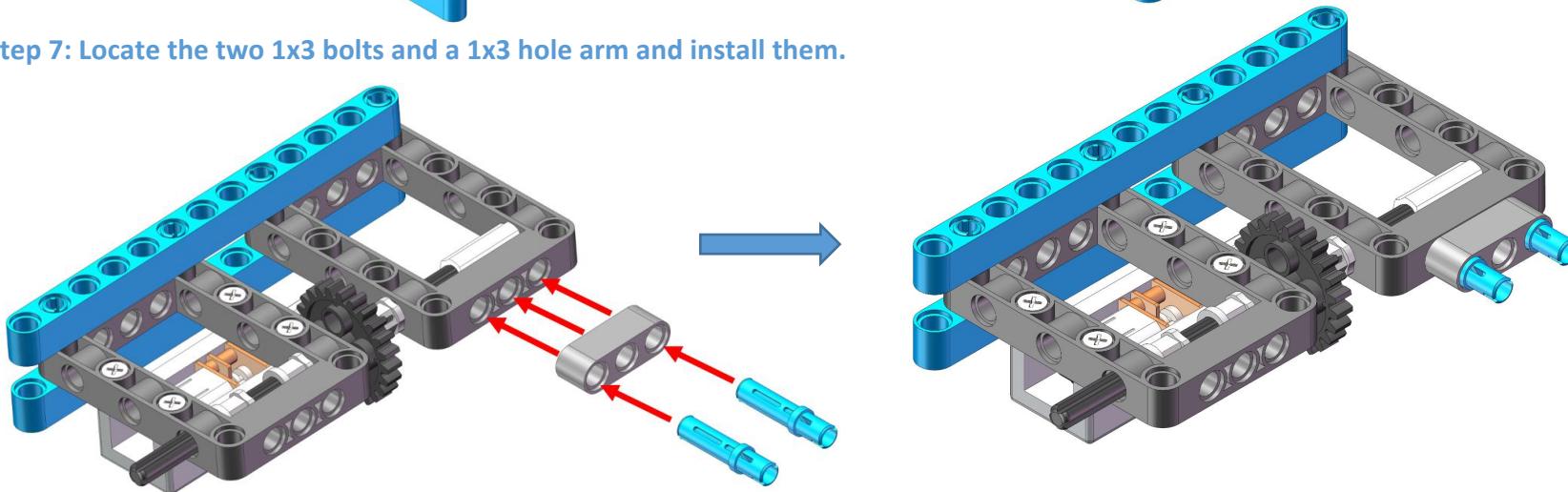
Step 5: Find two 1x3 bolts, a 5x7 beam frame and a 1x2 shaft connection for assembly.



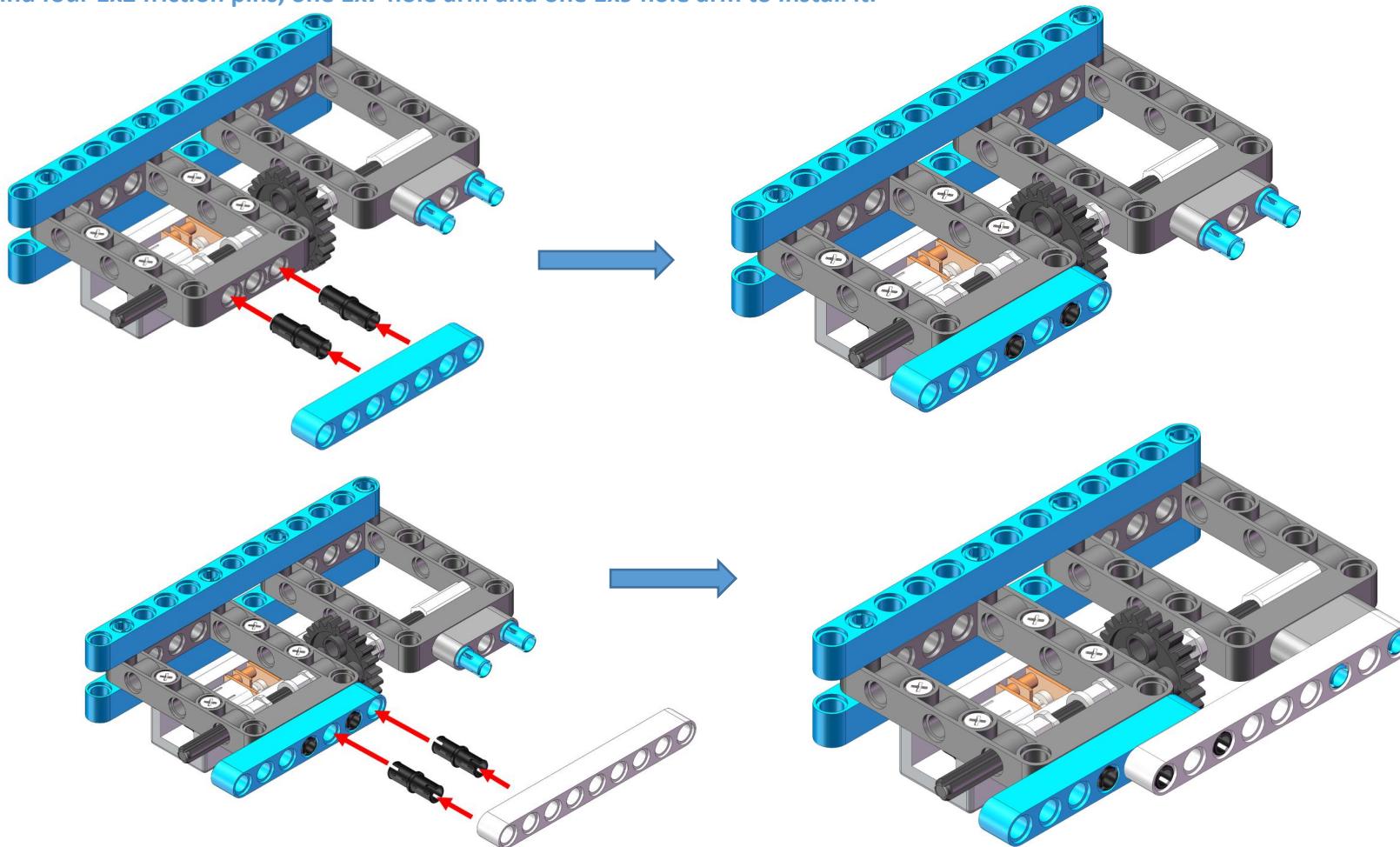
Step 6: Find a 1x13 hole arm and install it. The four 1x3 bolts that have been installed are inserted into the 1st, 5th, 8th, and 12th holes from the right side of the 1x13 hole arm.



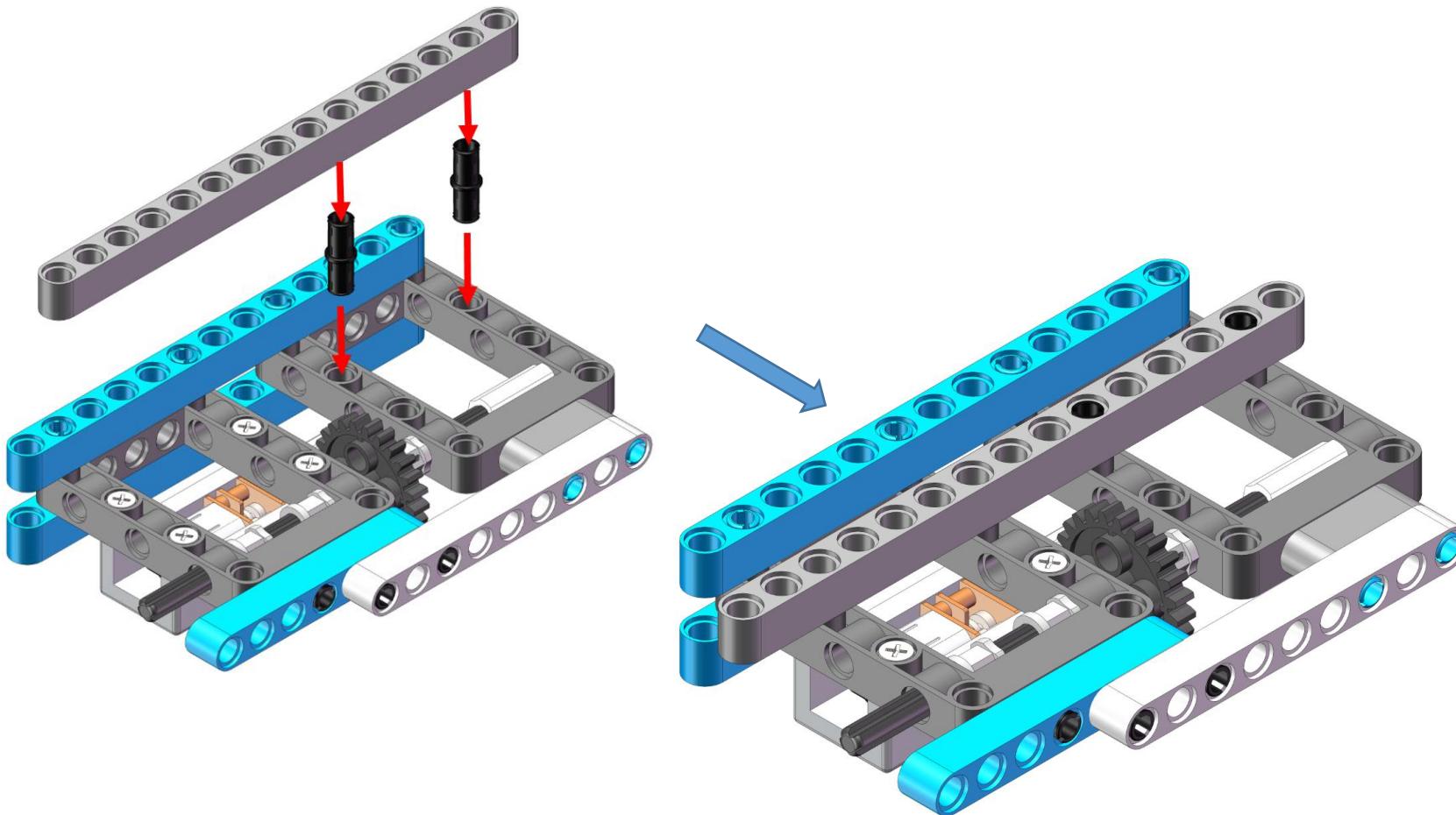
Step 7: Locate the two 1x3 bolts and a 1x3 hole arm and install them.

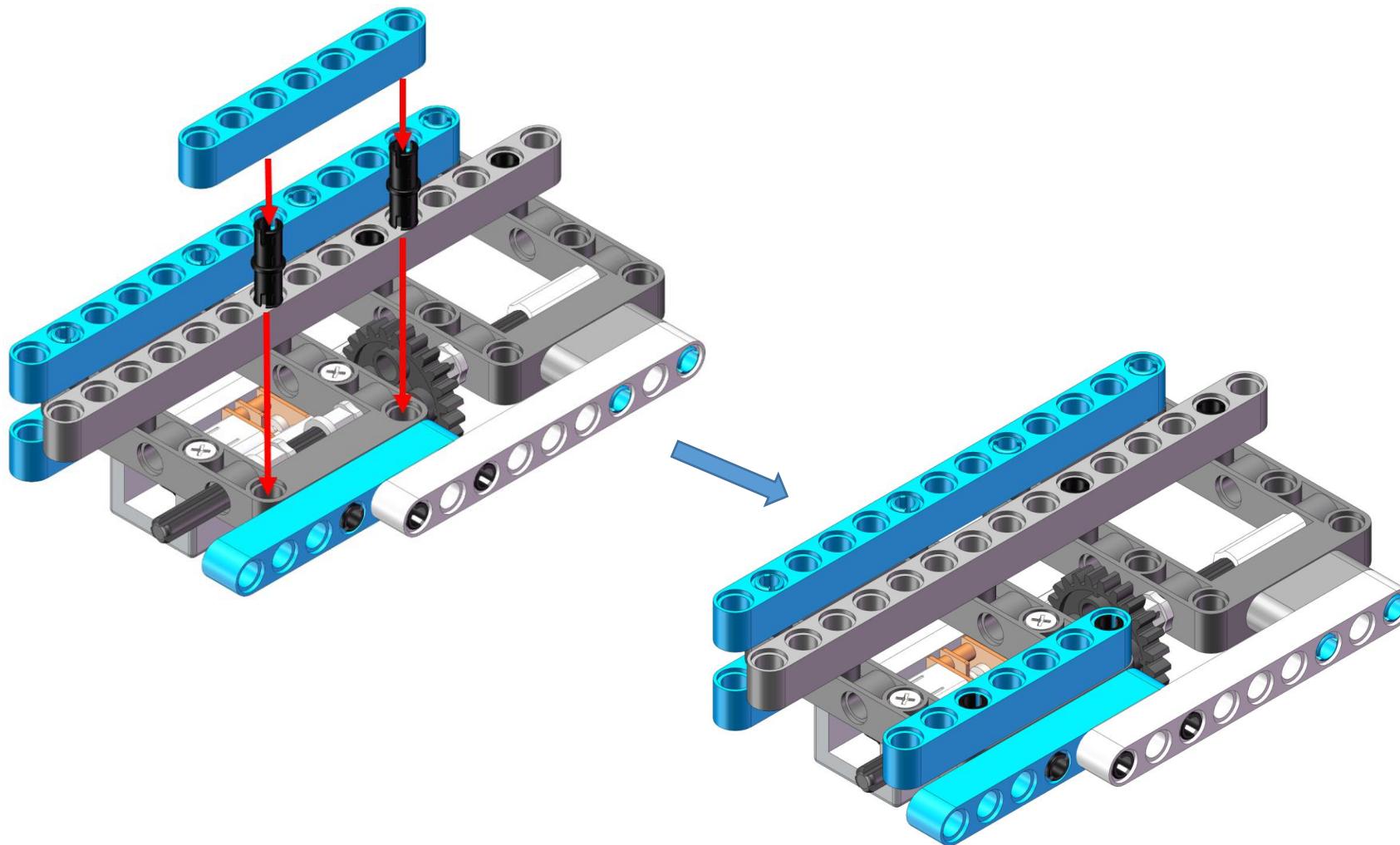


Step 8: Find four 1x2 friction pins, one 1x7 hole arm and one 1x9 hole arm to install it.

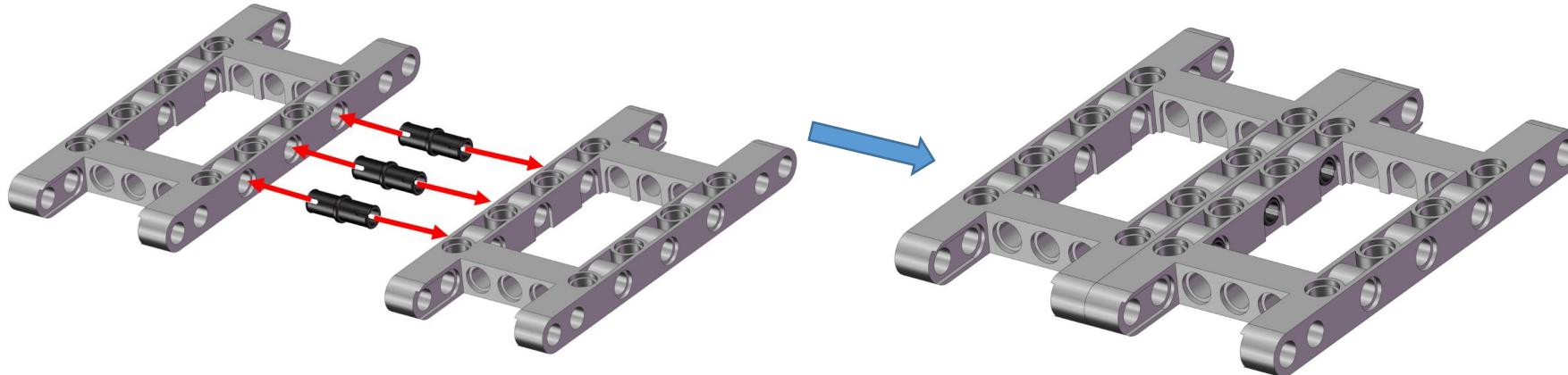


Step 9: Locate the four 1x2 friction pins, a 1x7 hole arm and a 1x15 hole arm for assembly.

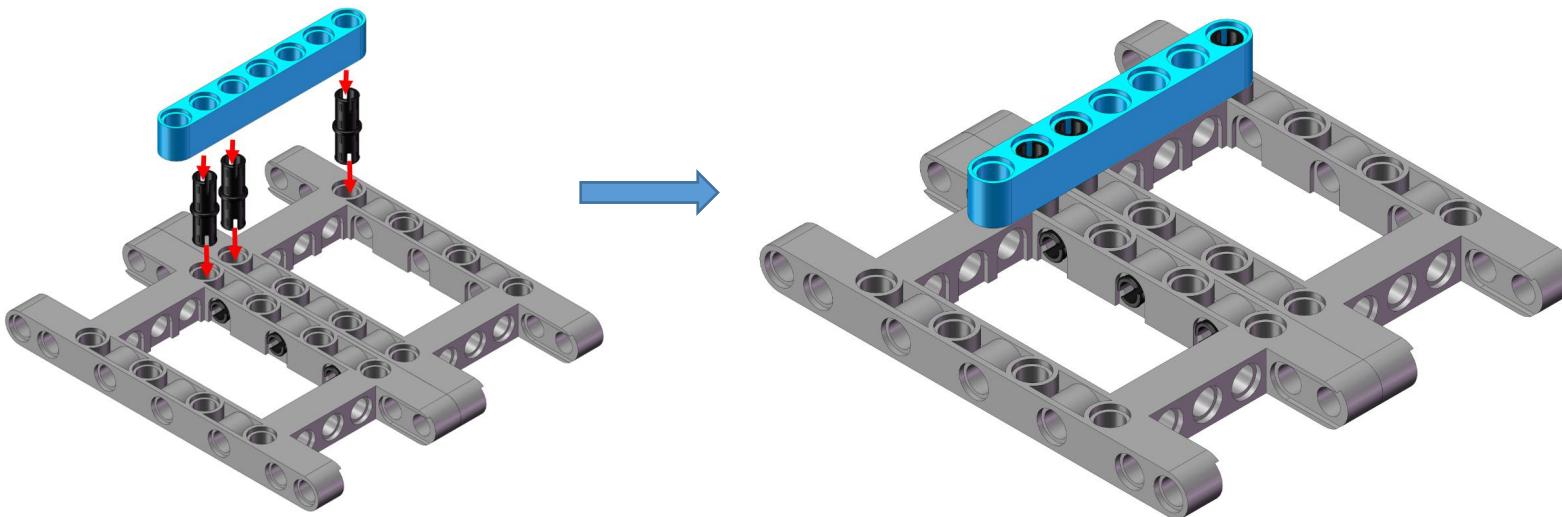




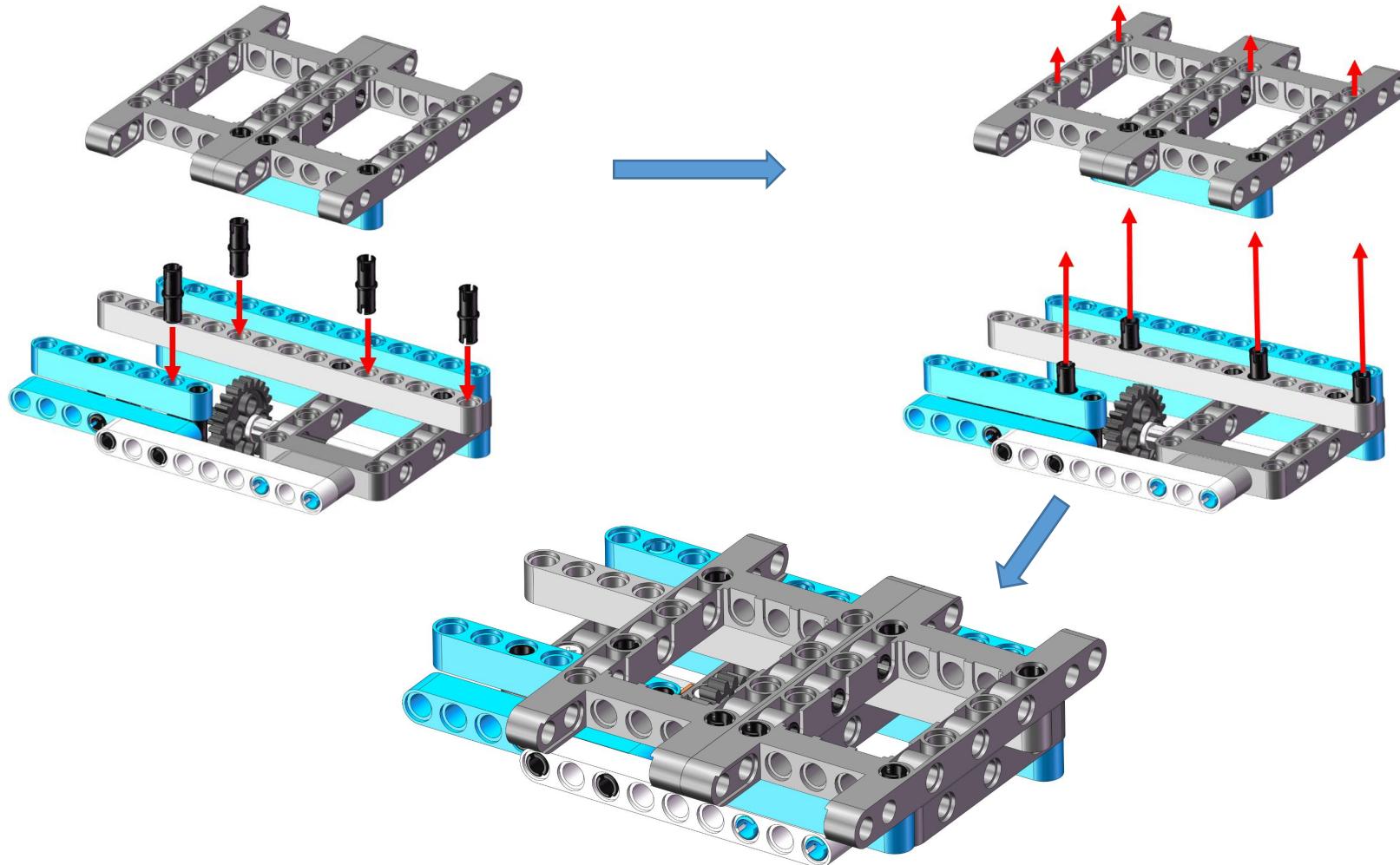
Step 10: Find three friction pins and two 5x11 beam frames and assemble them.



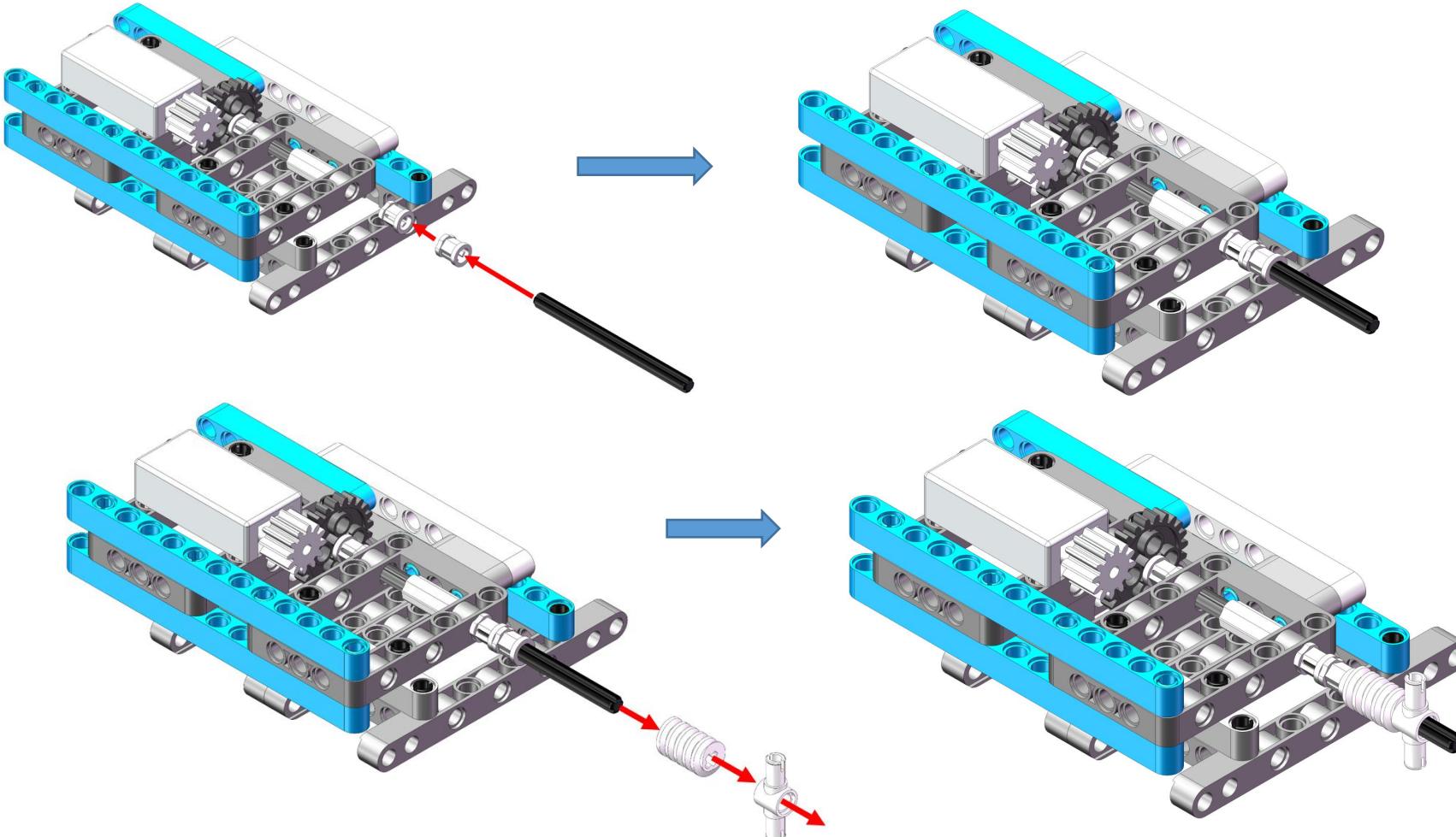
Step 11: Find three 1x2 friction pins and a 1x7 hole arm for assembly.



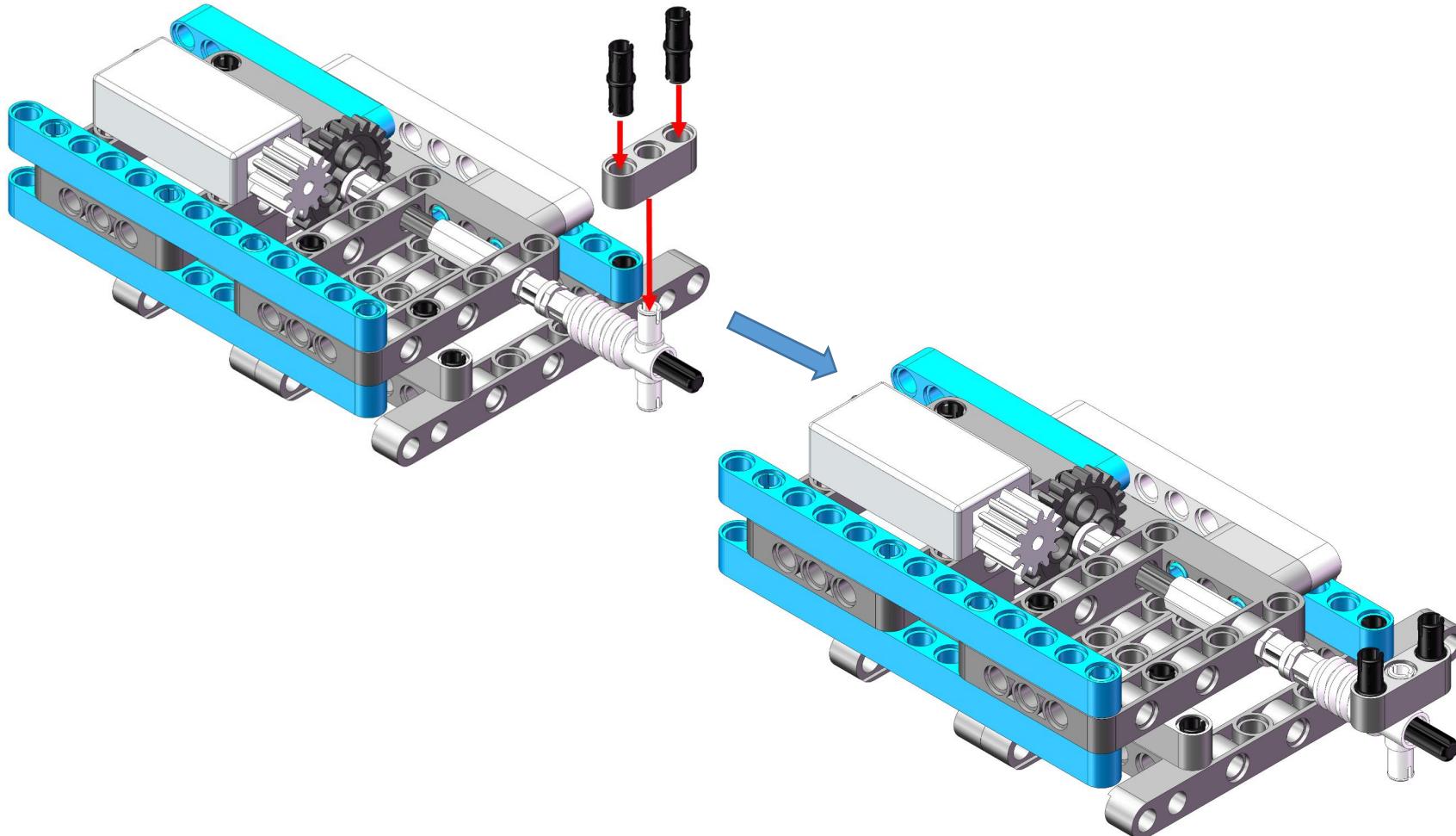
Step 12: Find four 1x2 friction pins and combine the blocks that we have assembled in step 9 and step 11.



Step 13: Find two bushings, a 1x8 cross shaft, a spiral wheel and a 1x3 bolt connector for assembly.

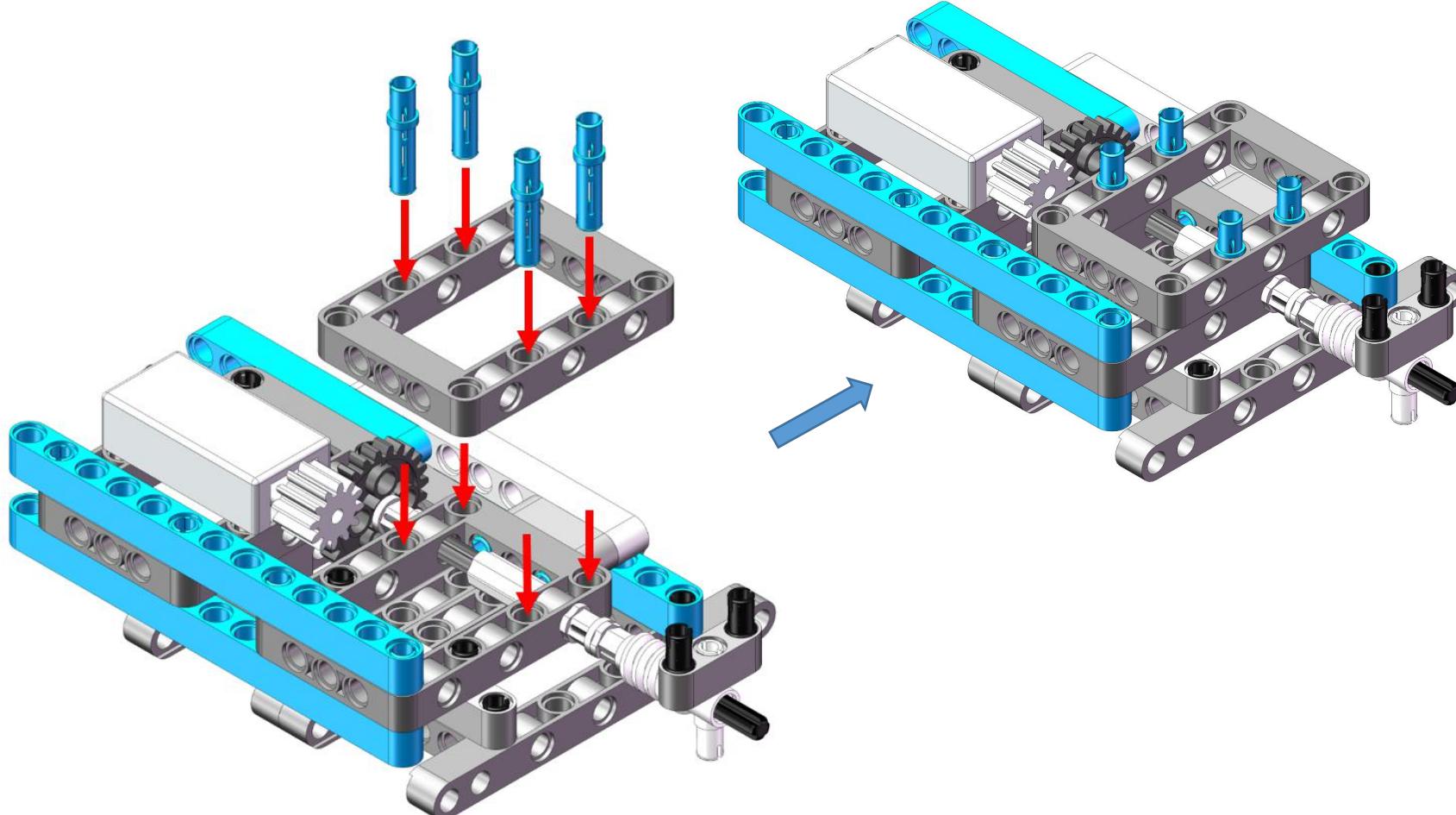


Step 14: Locate the two 1x2 friction pins and a 1x3 hole arm and assemble them.

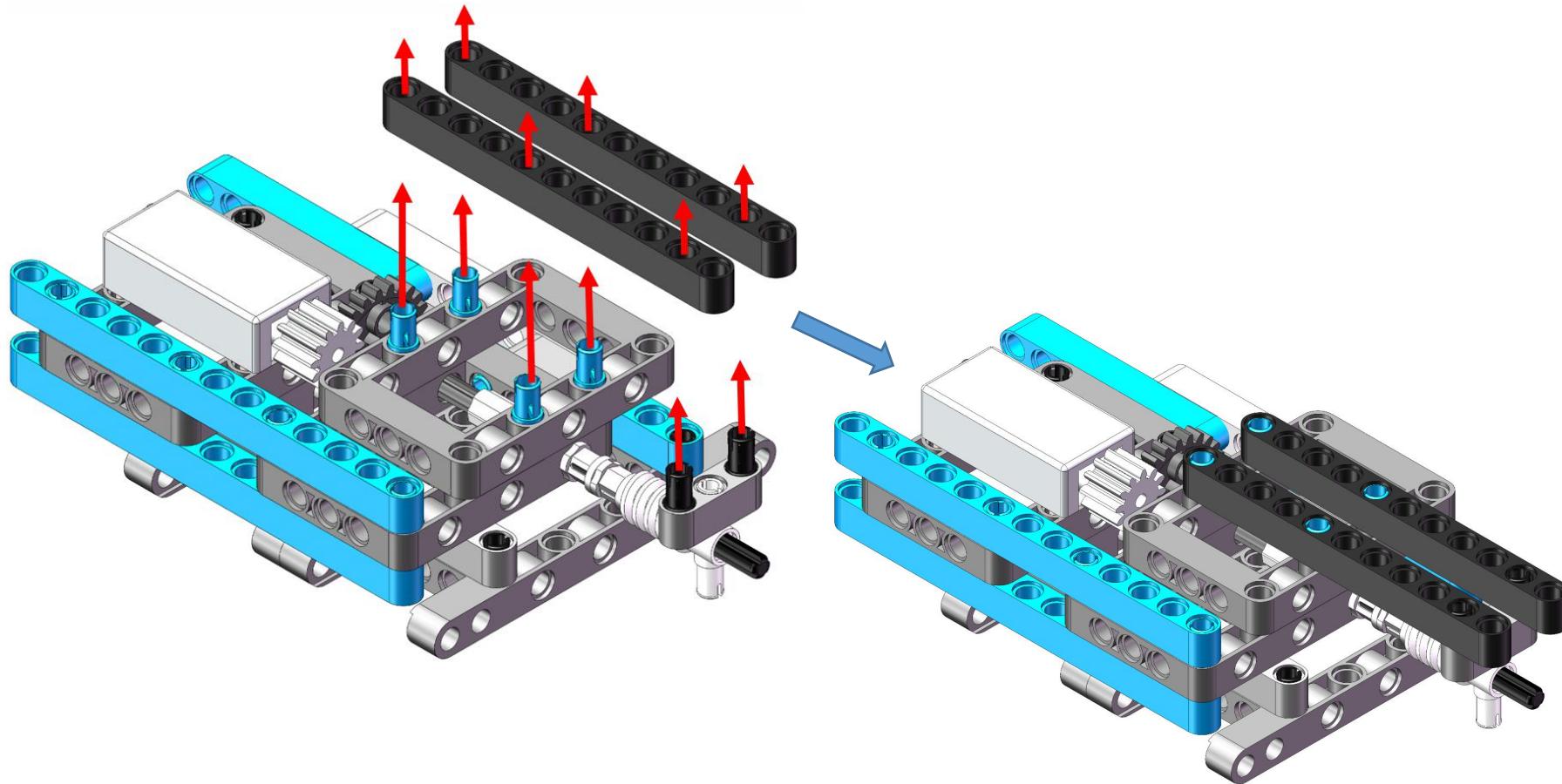




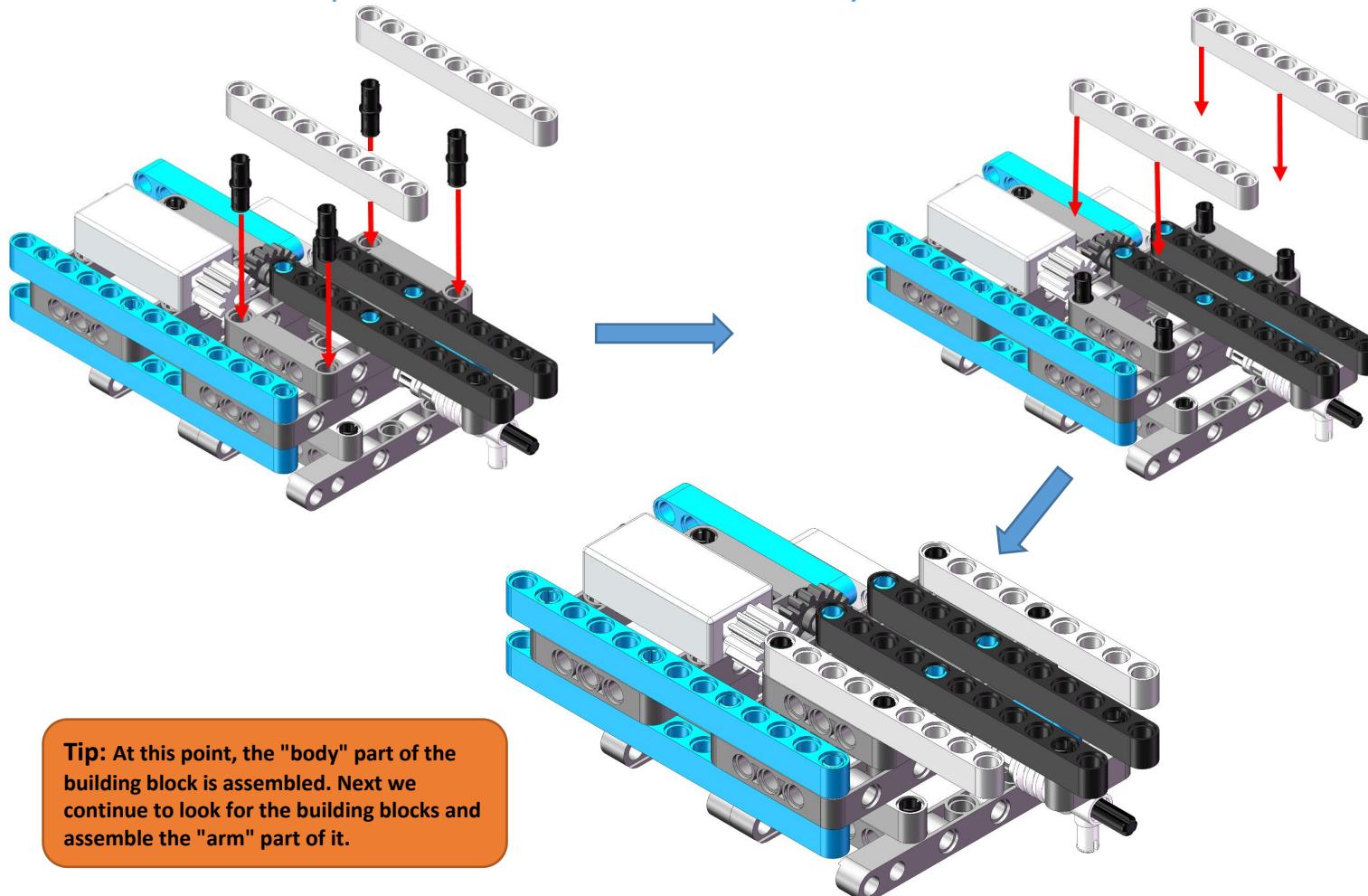
Step 15: Find four 1x3 bolts and a 5x7 beam frame and assemble them.



Step 16: Find two 1x11 hole arms and assemble them.

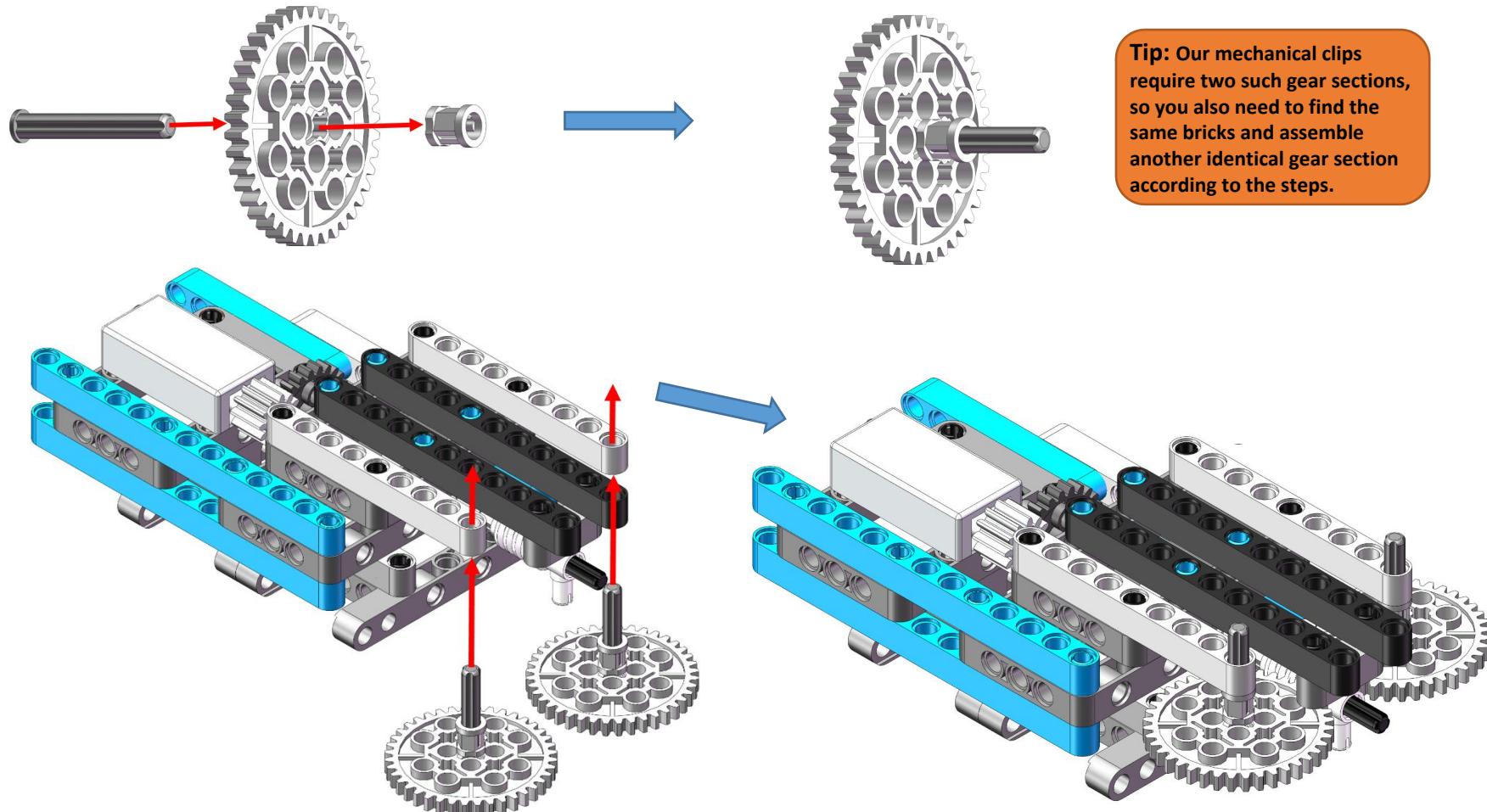


Step 17: Locate the four 1x2 friction pins and the two 1X9 hole arms for assembly.



Tip: At this point, the "body" part of the building block is assembled. Next we continue to look for the building blocks and assemble the "arm" part of it.

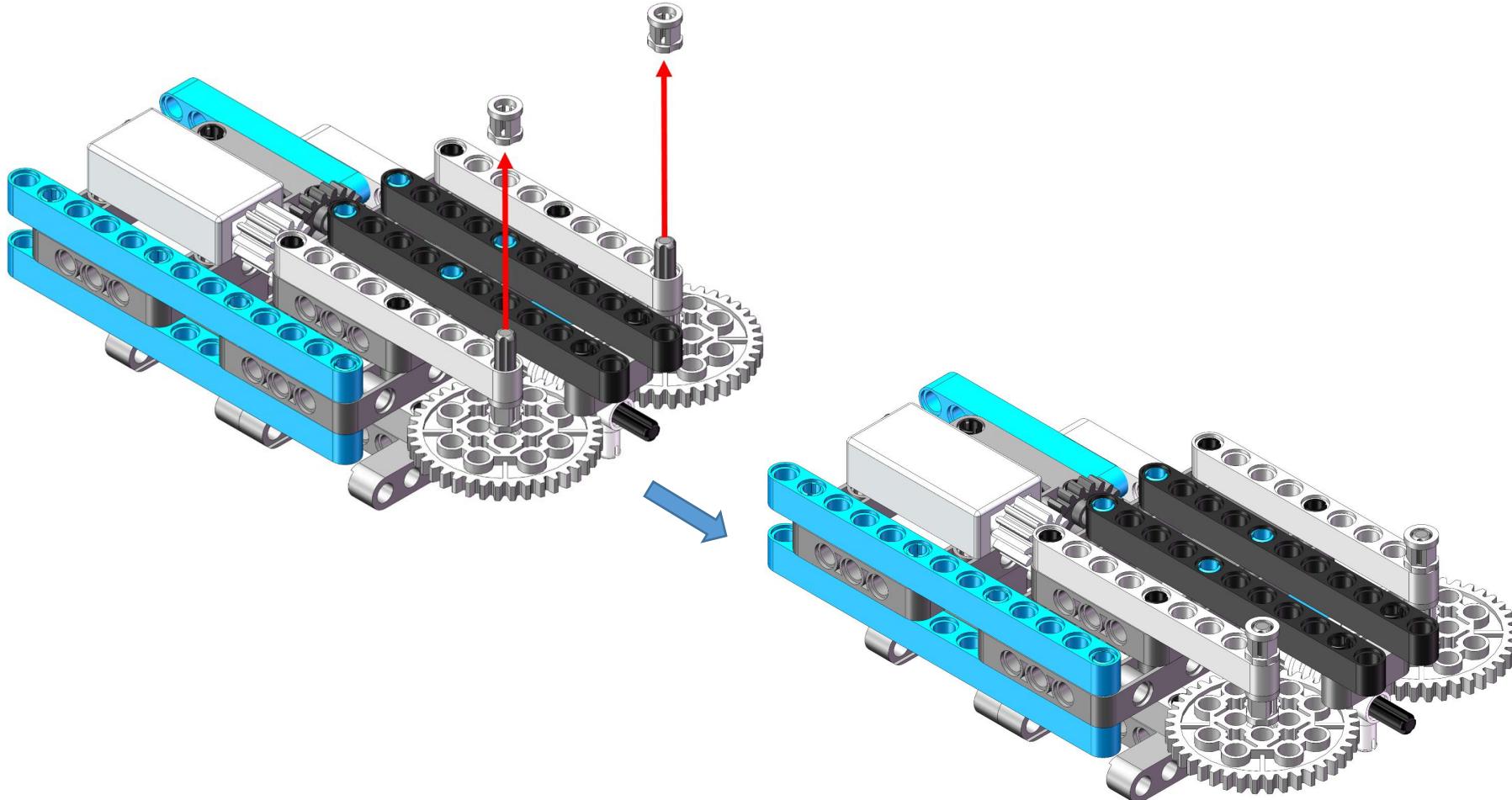
Step 18: We need to find a bushing, a 1*4 shaft cutoff, a 40-toothed wheel, and install it.



Tip: Our mechanical clips require two such gear sections, so you also need to find the same bricks and assemble another identical gear section according to the steps.

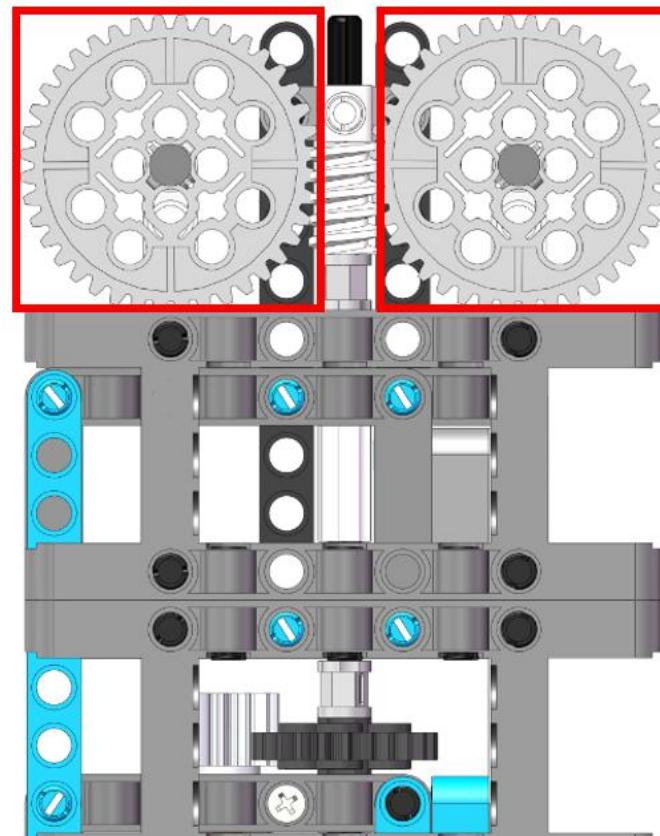


Step 19: Fix the gears we installed in the previous step with two bushings.

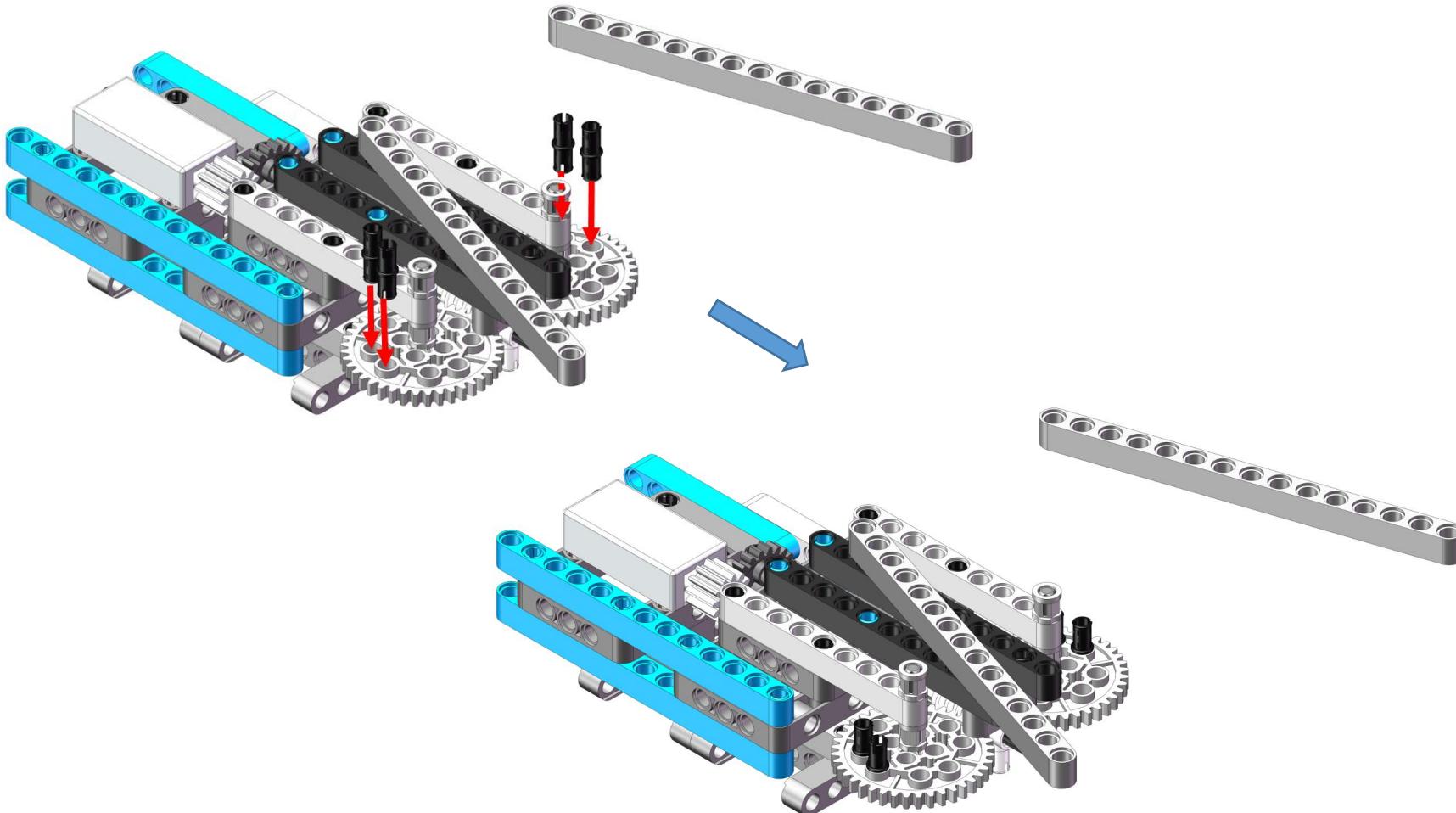


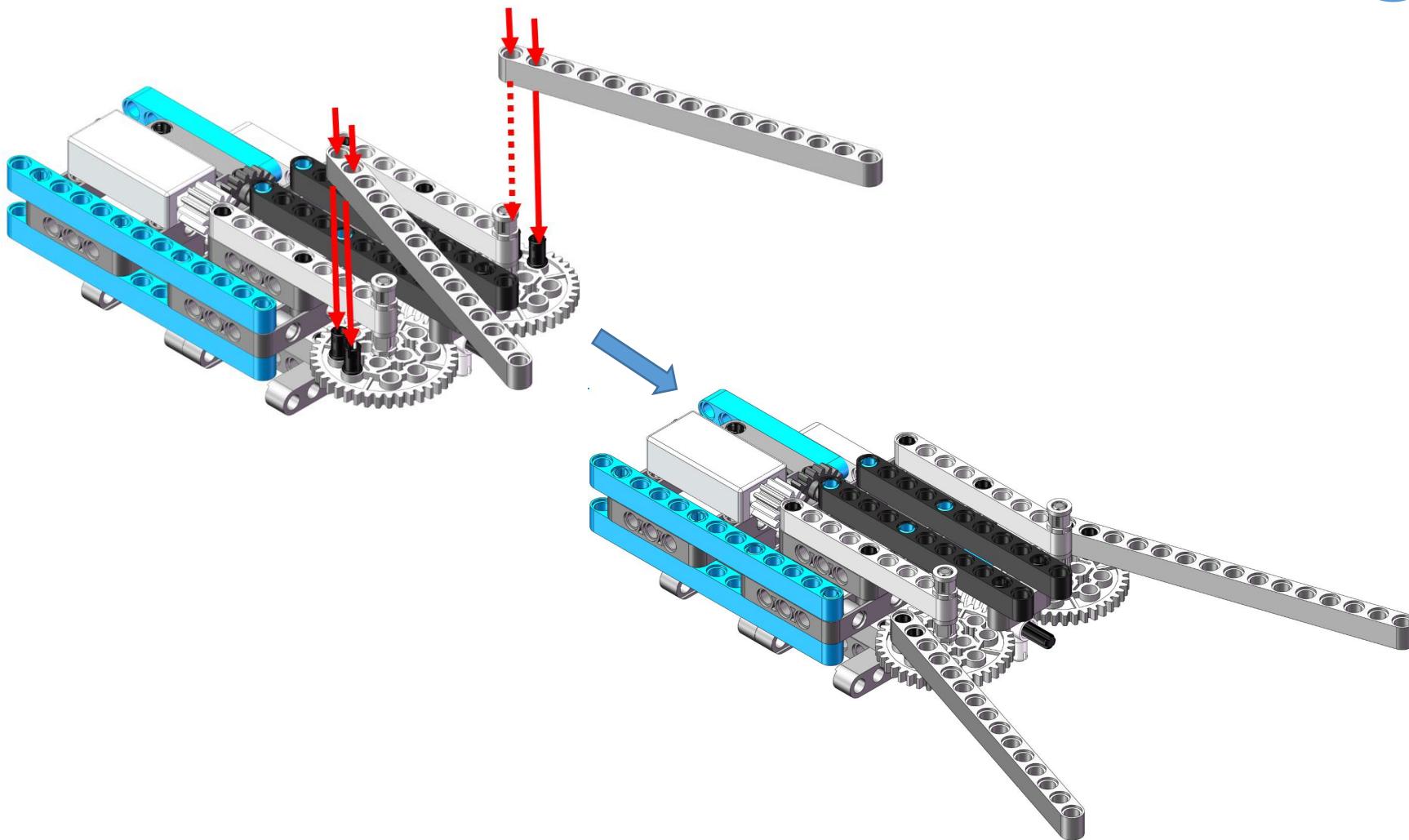


In order to ensure that the arm can be opened or closed normally after the gear is installed, we need to ensure that the two 40 toothed wheel are completely symmetrical. Please check according to the picture below.



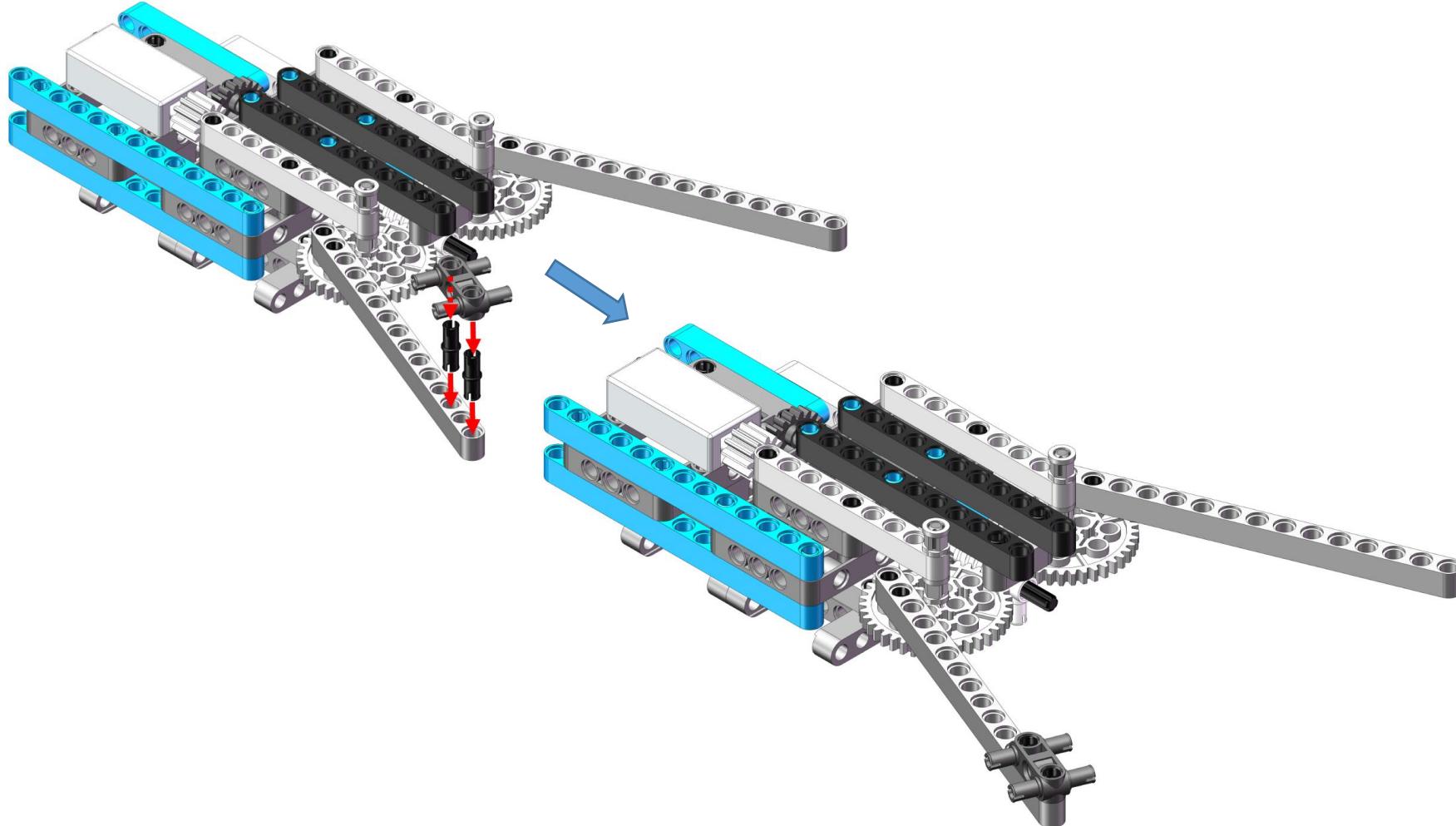
Step 20: Locate the four 1x2 friction pins and the two 1x15 hole arms. First insert the 1x2 friction pins into the corresponding holes of the two 40-toothed wheels, and then install the 1x15 hole arms on the 1x2 friction pins. After the installation is completed, their positions are bilaterally symmetrical.

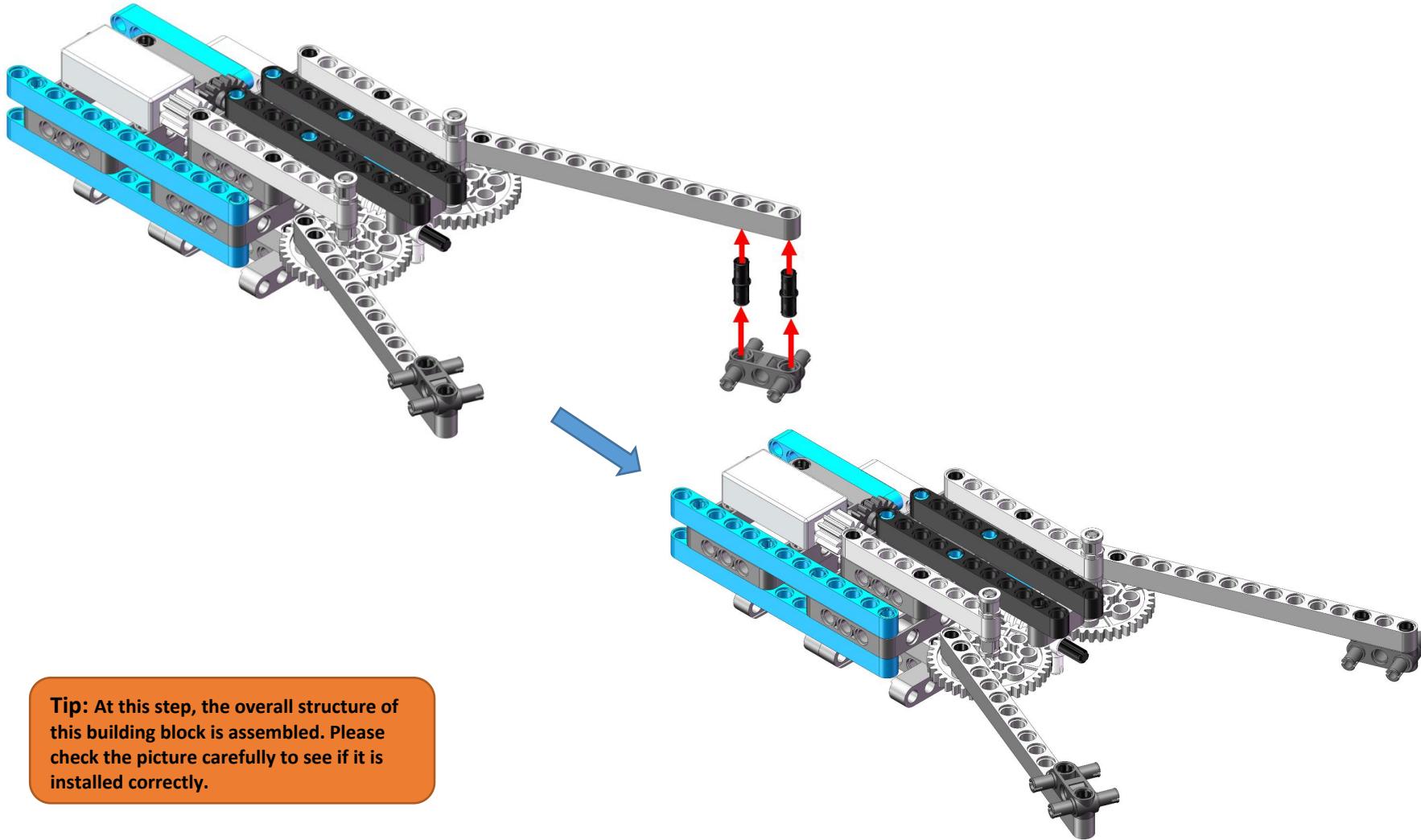






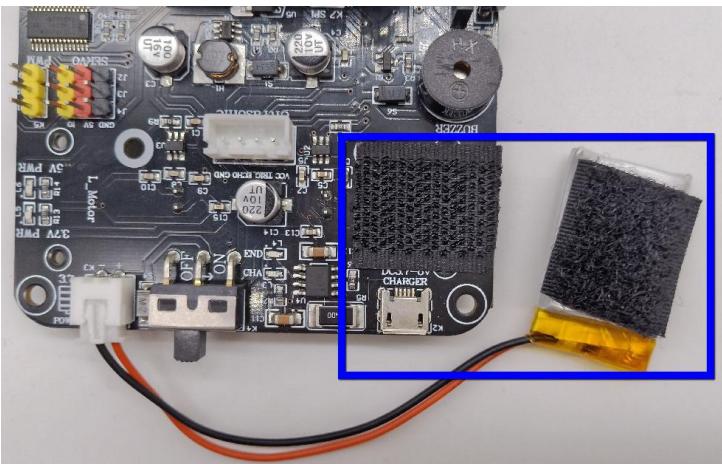
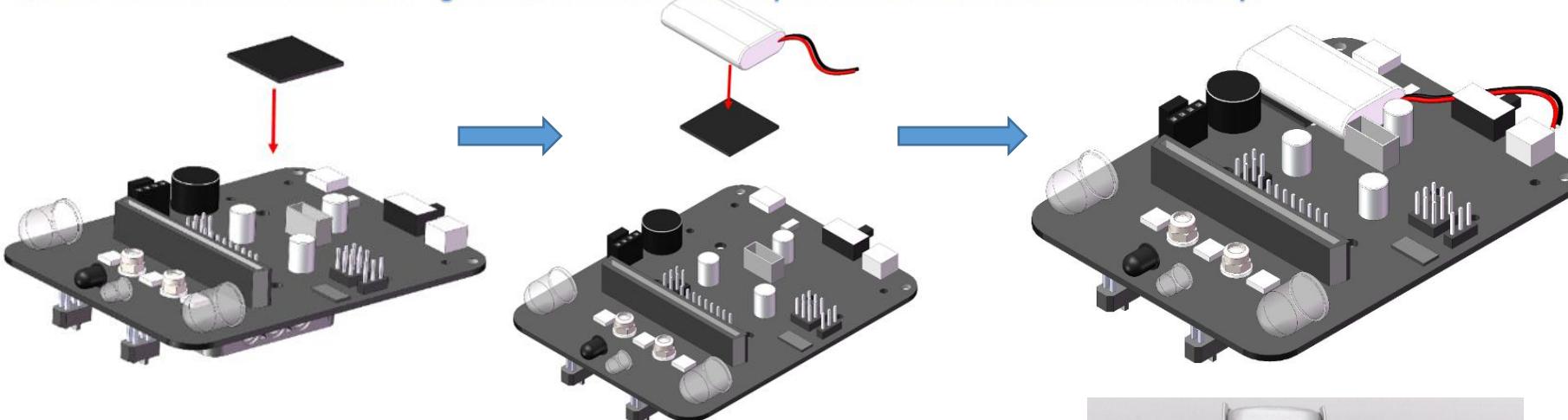
Step 21: Find four 1x2 friction pins and two 3X3 bolts to assemble them.



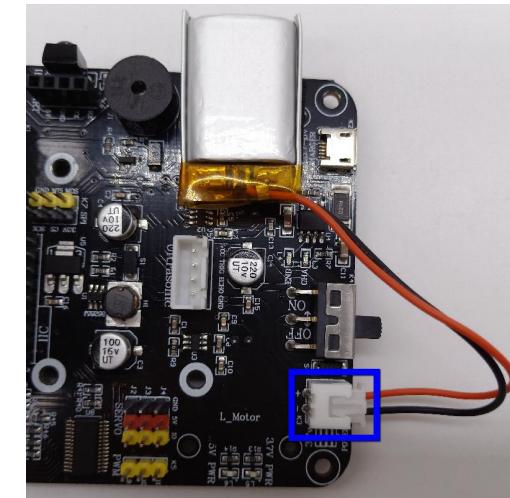


Tip: At this step, the overall structure of this building block is assembled. Please check the picture carefully to see if it is installed correctly.

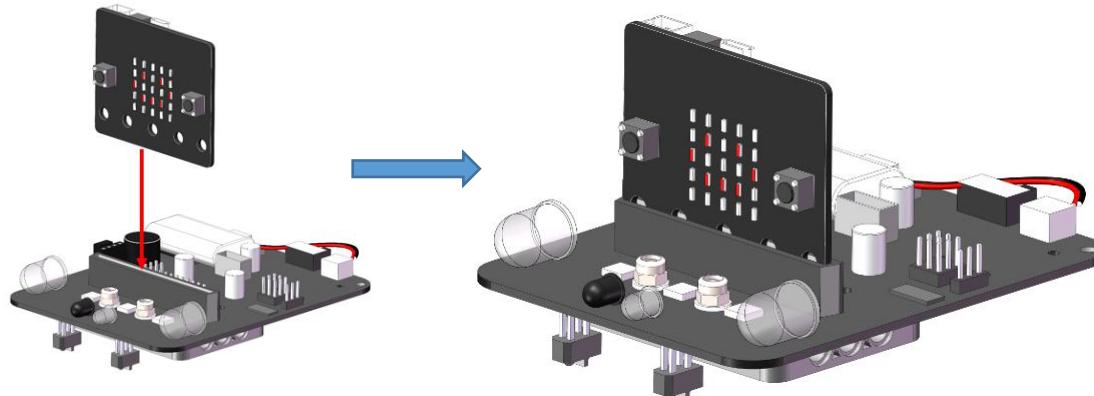
Step 22: Find the Velcro and micro:bit expansion board, remove the protective film on the back of the Velcro, and attach the two Velcro stickers to the lower right corner of the micro:bit expansion board and one side of the battery.



Tip: The socket for battery wiring, we use anti-reverse design. Just plug the battery cable into the socket.

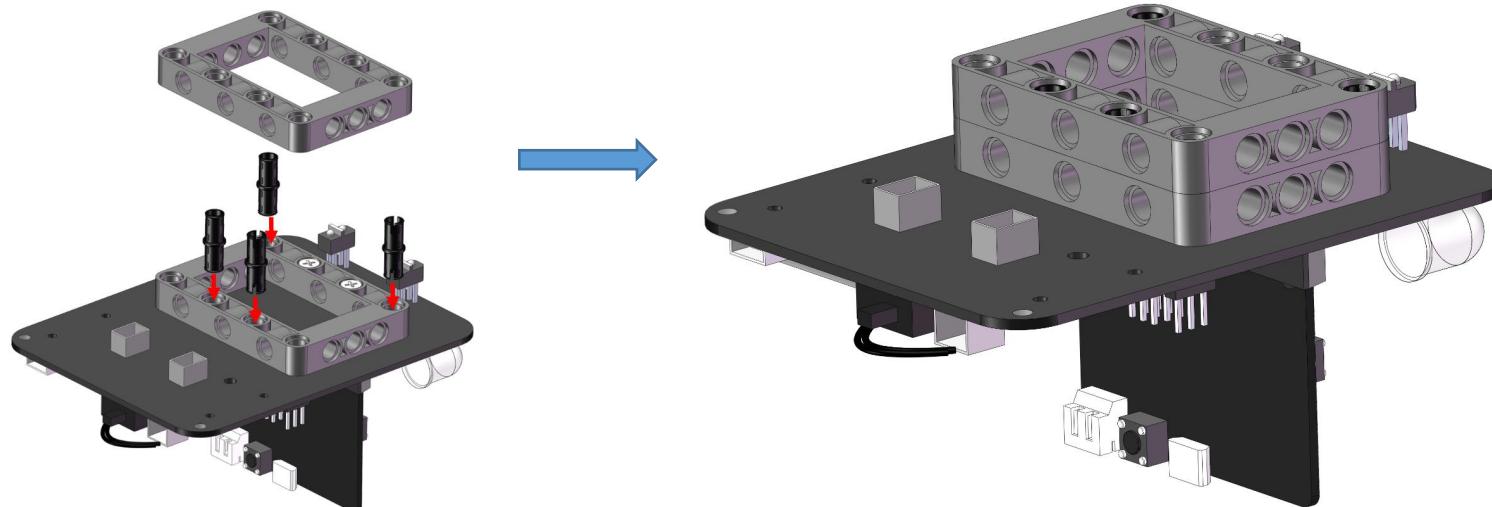


Step 23: Find the micro:bit motherboard and insert it correctly into the micro:bit expansion board.



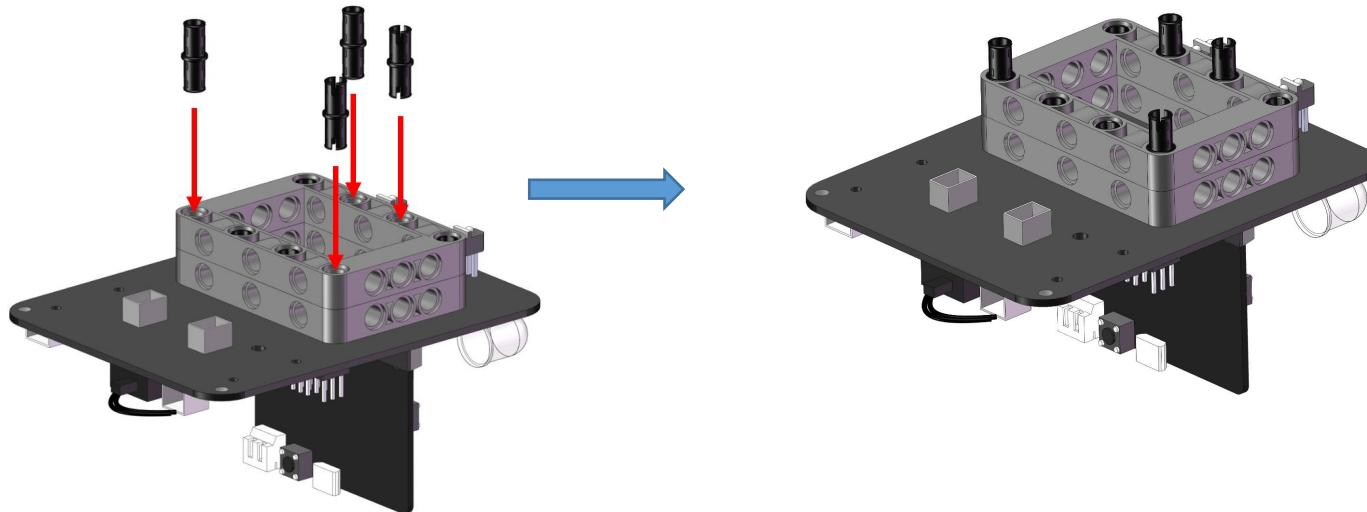
Tip: The micro:bit board is equivalent to the "brain" of the mechanical clip, so be sure to remember to install it properly. In this case, the mechanical clamp can work normally.

Step 24: Locate the four 1x2 friction pins and a 5x7 beam frame and assemble them with the expansion board.



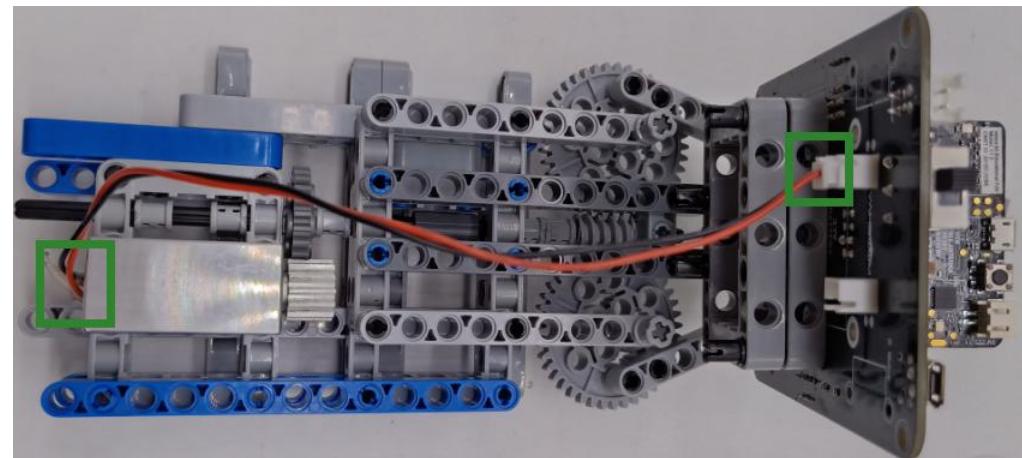


Step 25: Continue to find the four 1x2 friction pins and insert them into the 5x7 beam frame we have assembled in the previous step.



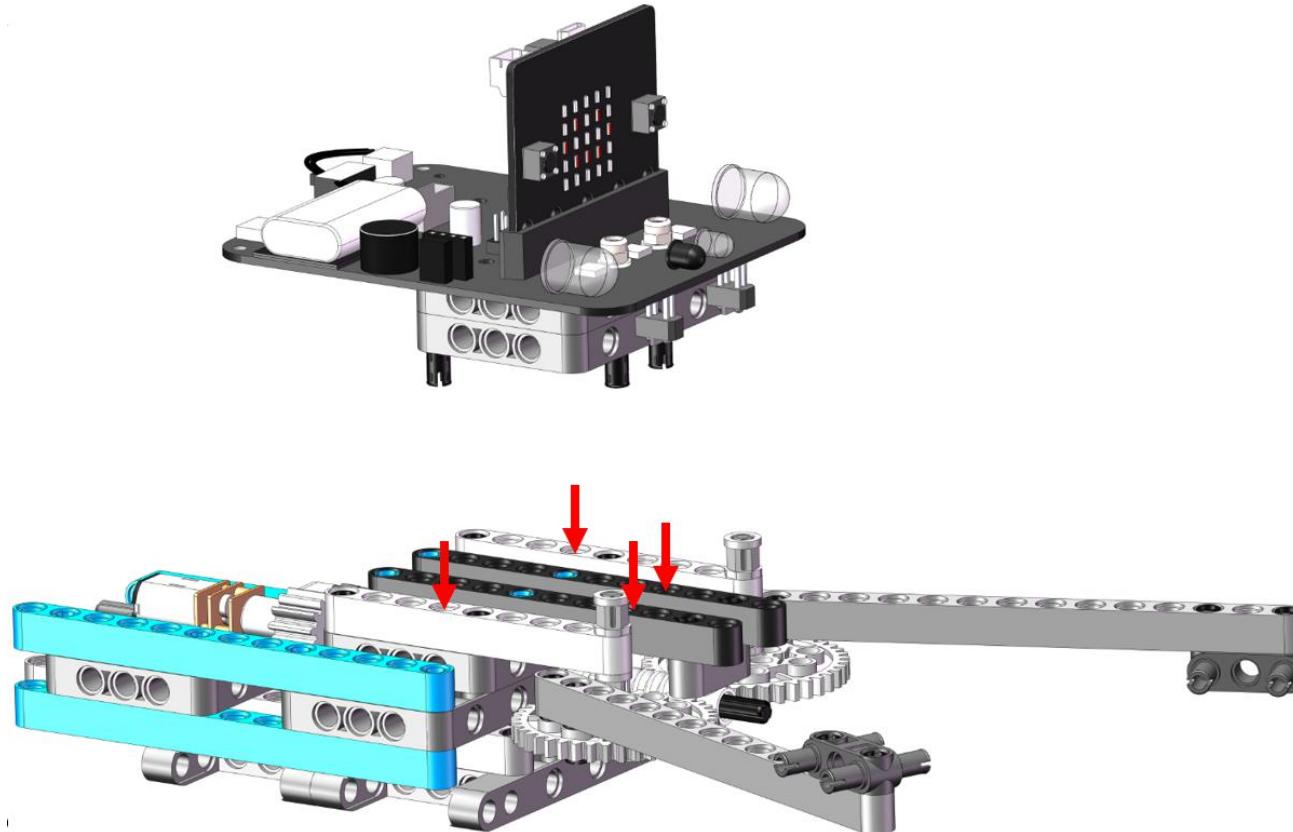
Step 26: Wire as shown on the right.

Tip: After the assembly is complete, please insert the motor wiring into the correct position. As shown on the right picture.



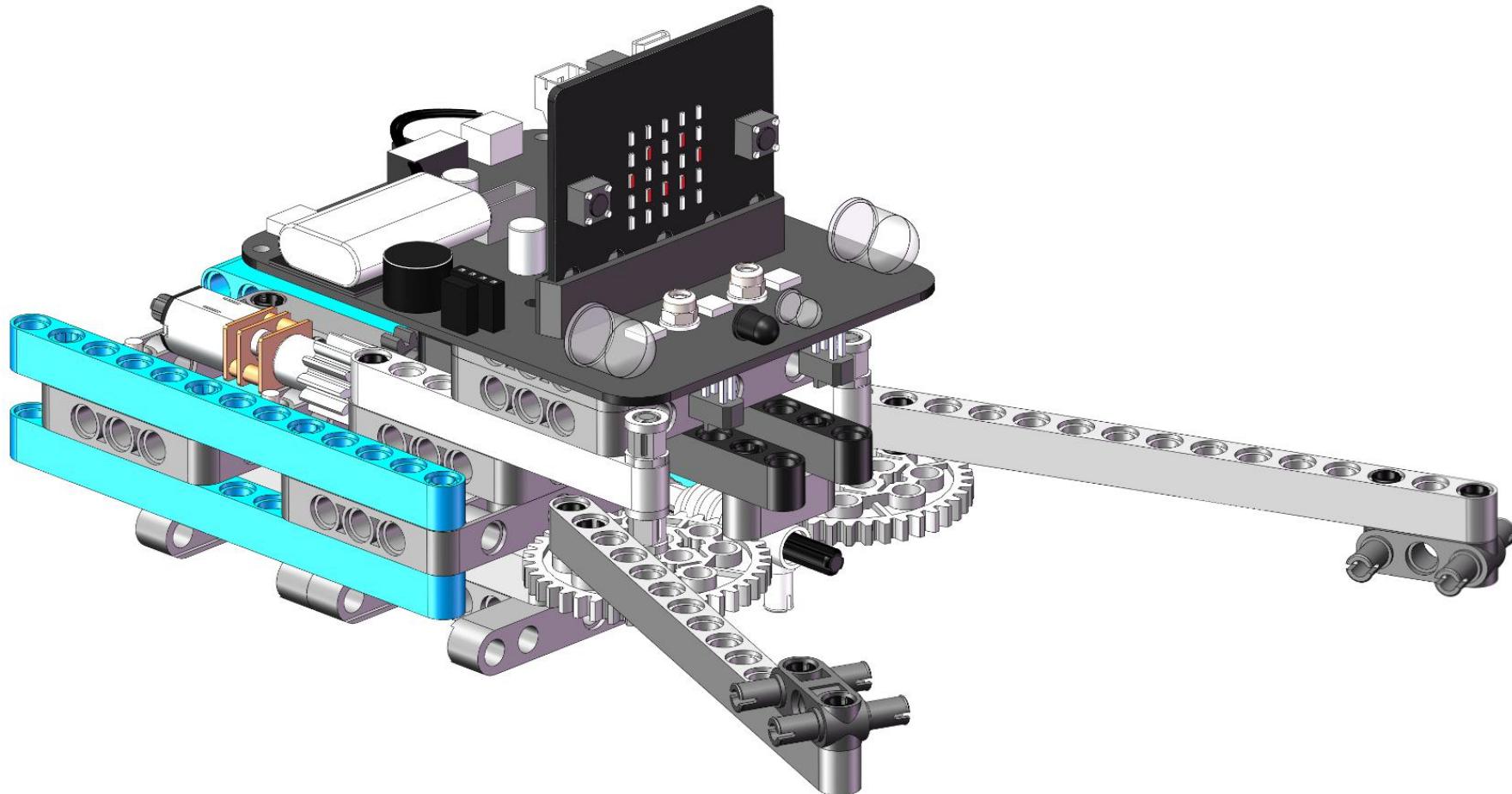


Step 27: Combine the blocks that we have completed in step 21 and step 25. Two of the 1x2 friction pins are inserted into the fourth hole position of the two 1x11 hole arms from the front side, and the other two 1x2 friction pins are inserted into the sixth hole position of the two outer 1x9 hole arms from the front.





The building block robot arm after assembly is the same as shown in the figure below.

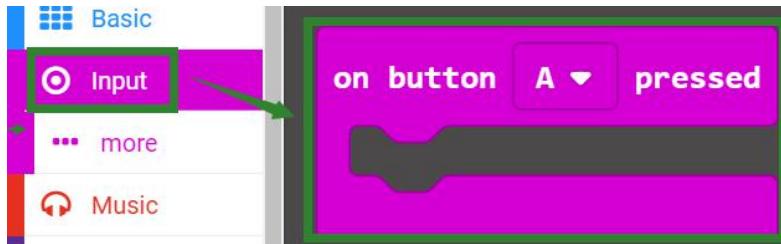
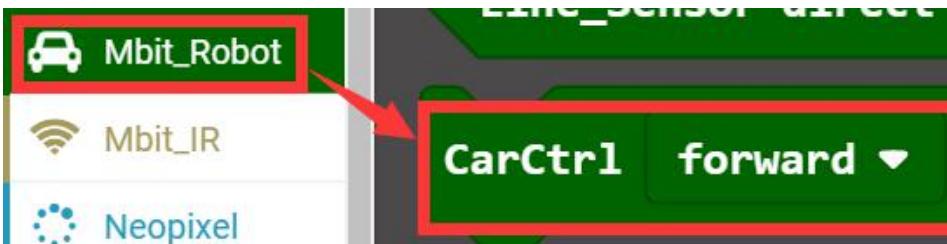


Thinking: This session is mainly to teach you how to use graphical programming to control the mechanical clip.

Preparation

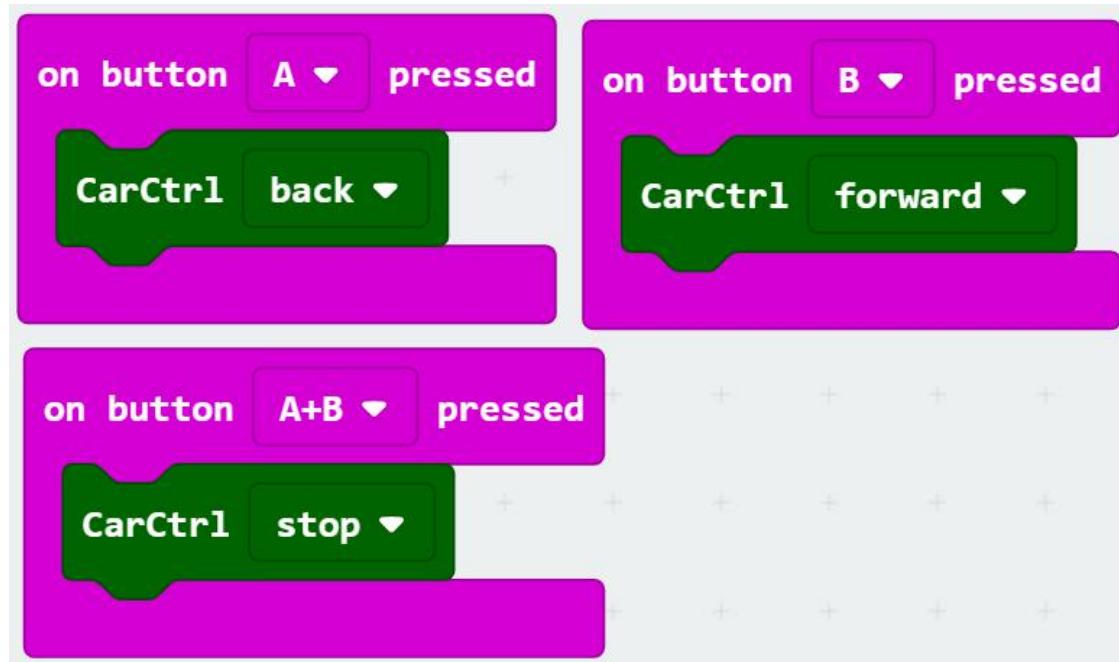
- USB cable *1
- Mechanical clip *1

Blocks

Block	Instruction
	When the button on the micro:bit board is pressed, the corresponding content is executed.
	The CarCtrl forward represents the forward rotation of the motor, and the CarCtrl back represents the reverse rotation of the motor.

Programming

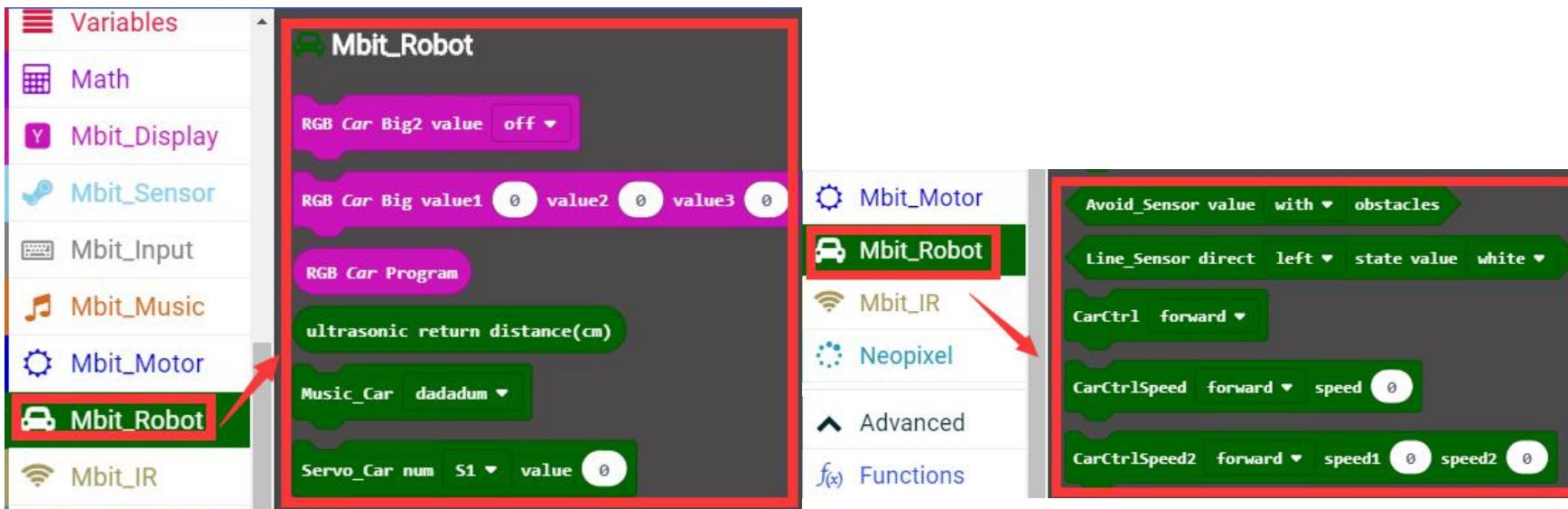
The program of this course is shown in the figure below. After downloading the program, after downloading the program, open the power switch of the mechanical clamp. Press the A button on the micro:bit board, the clip will open. Press the B button on the micro:bit board, the clip will close. And press the A and B button on the micro:bit board, the motors stop rotating, that is, both mechanical clips remain stationary.



This experimental program file has been provided, you can download and use it directly according to the steps in “Instruction” .

Program path:Building bit starter kit\2. Experimental course\D.Mechanical Clip\2.Mechanical Clip\Mechanical-Clip.hex

We have packaged the blocks as shown in the two figures below for this mechanical clip.



If you see these blocks, you can definitely think of more gameplay, so don't hesitate to try it bravely.
Drag these blocks and play with our building block mechanical clip.



On our official website, we also provides other tutorial: [Mechanical Clip Infrared remote control](#), [Mechanical Clip bit handle remote control](#).

Official website learning website: www.yahboom.net/study/Building_bit