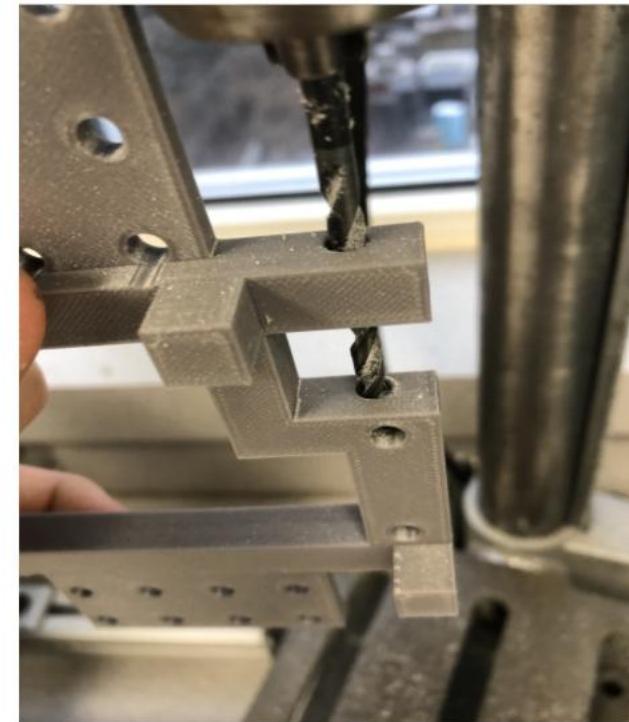
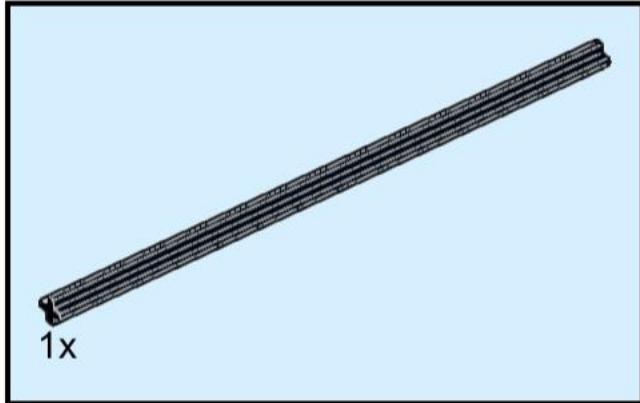


LEGOLAS Trolley Instructions



After 3D printing the Cart Base, the axle holes will not be perfectly cylindrical, so use a 3/16" or 5 mm drill bit on a drill press to bore out any remaining support material. Do this for both the powered and unpowered axle holes. Check that enough material is removed by inserting a Technic, 12L axle and ensuring that it can rotate freely

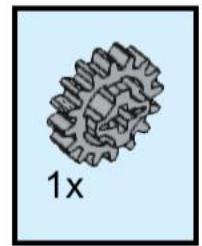
1



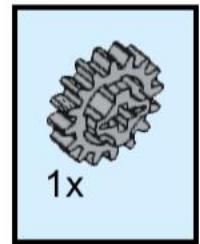
1x



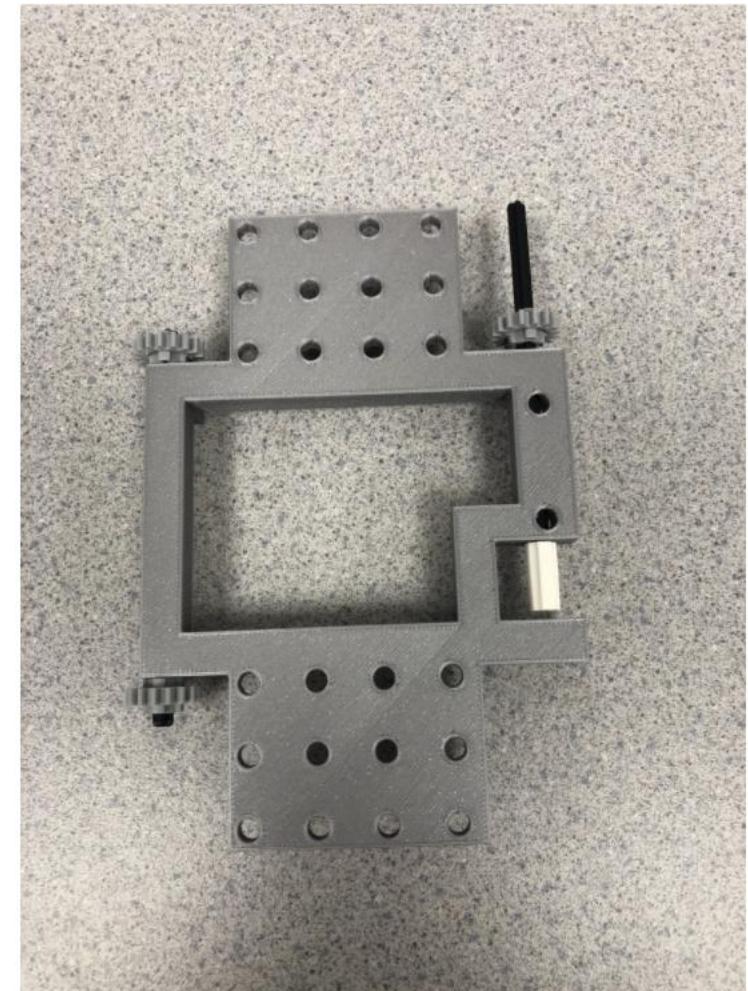
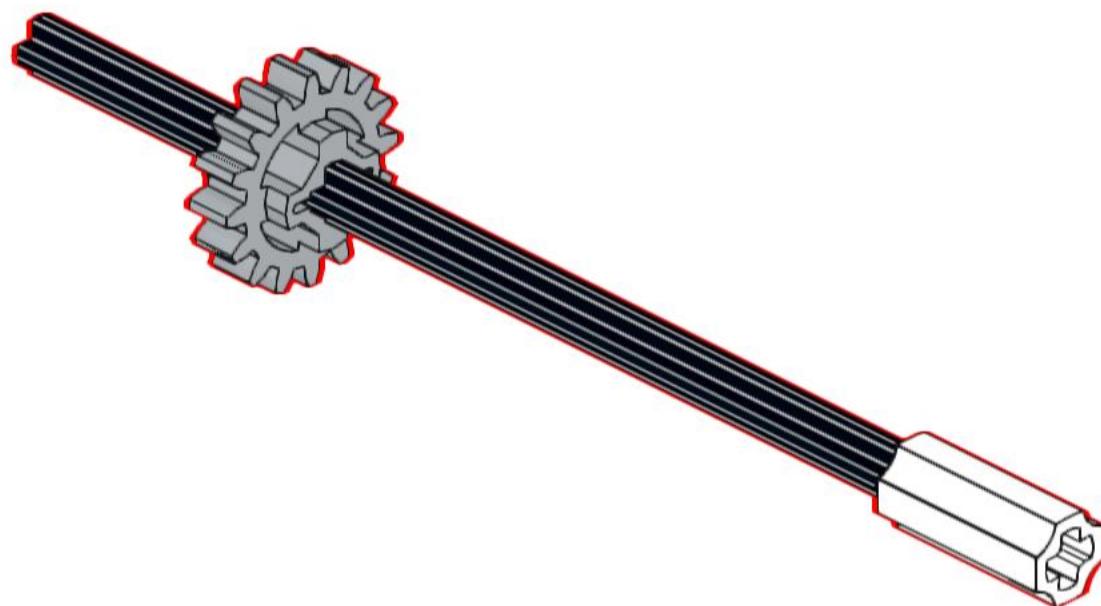
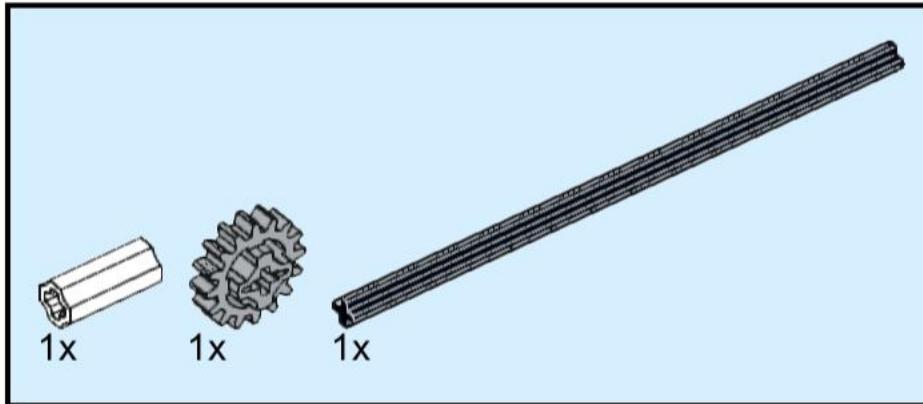
2



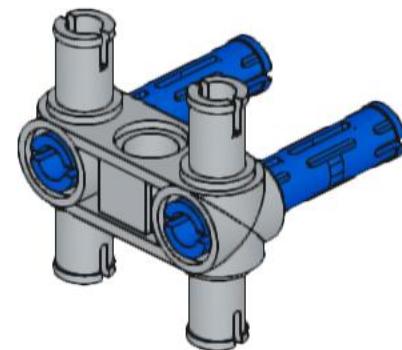
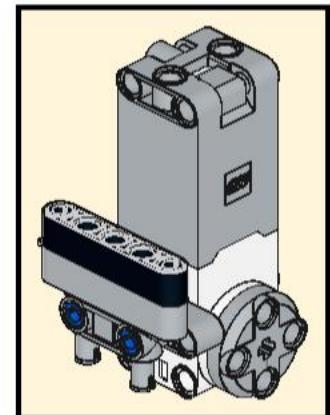
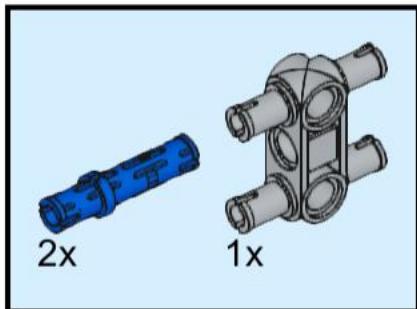
3



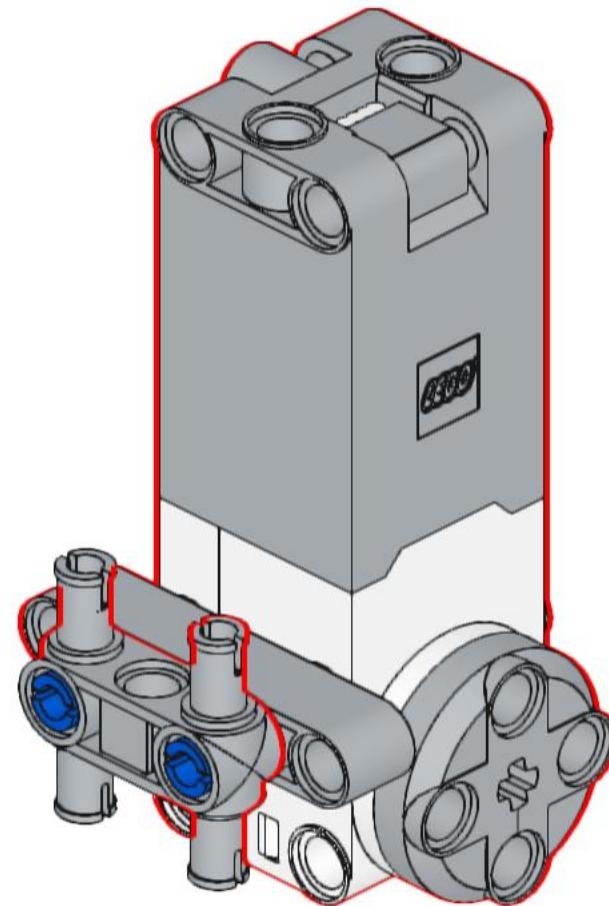
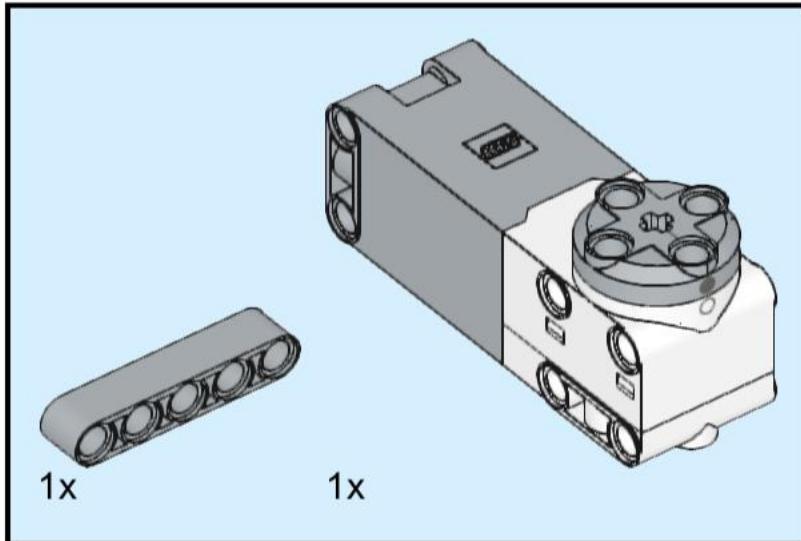
4



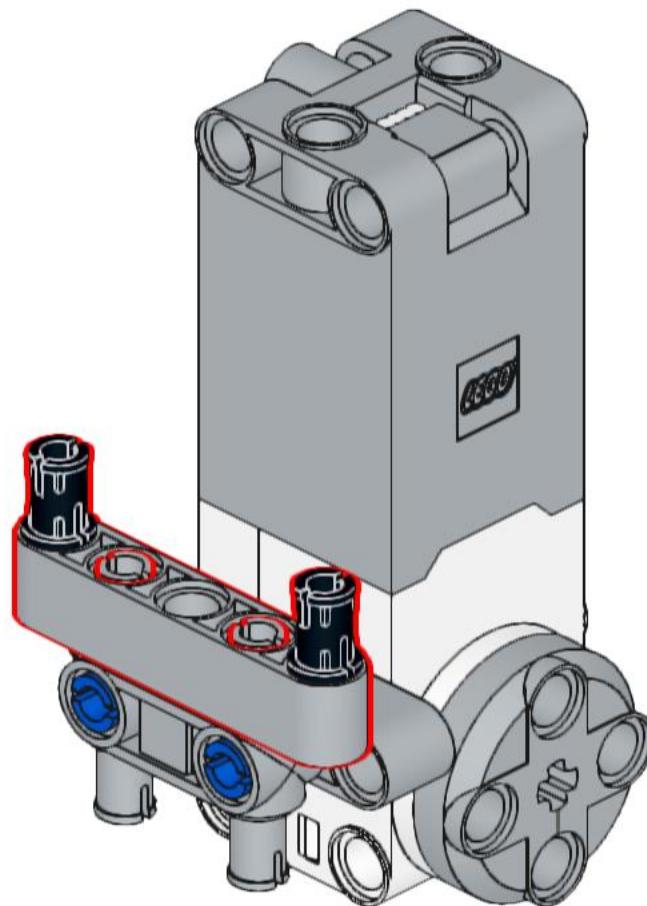
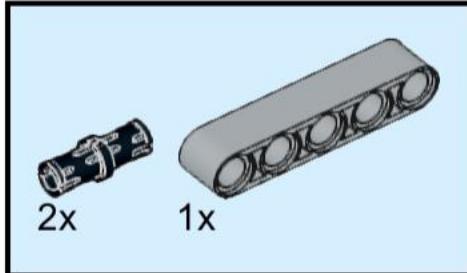
5



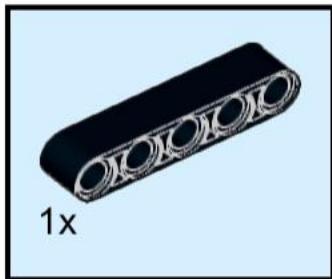
6



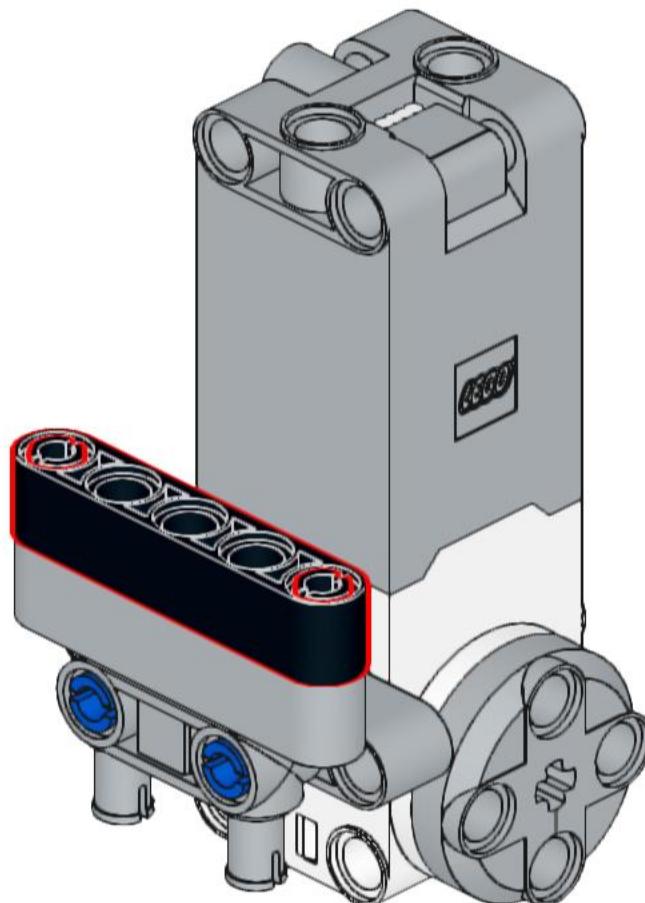
7



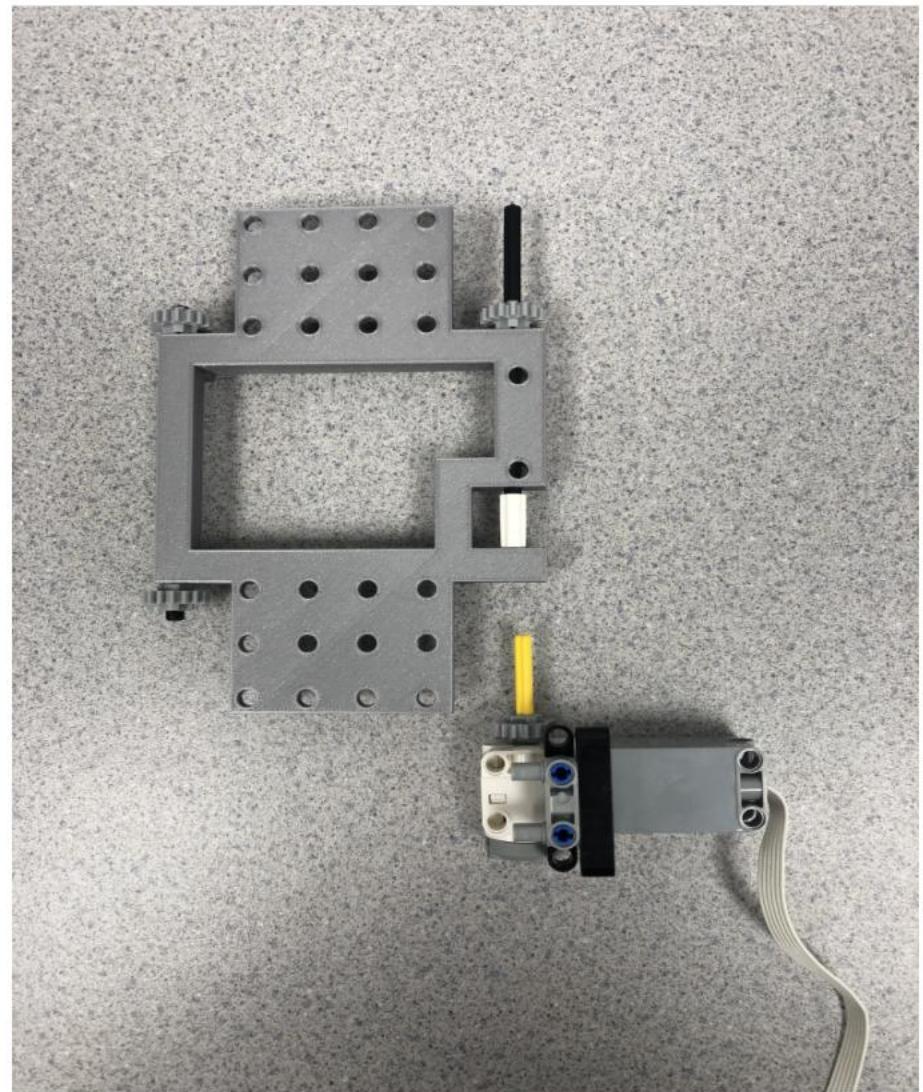
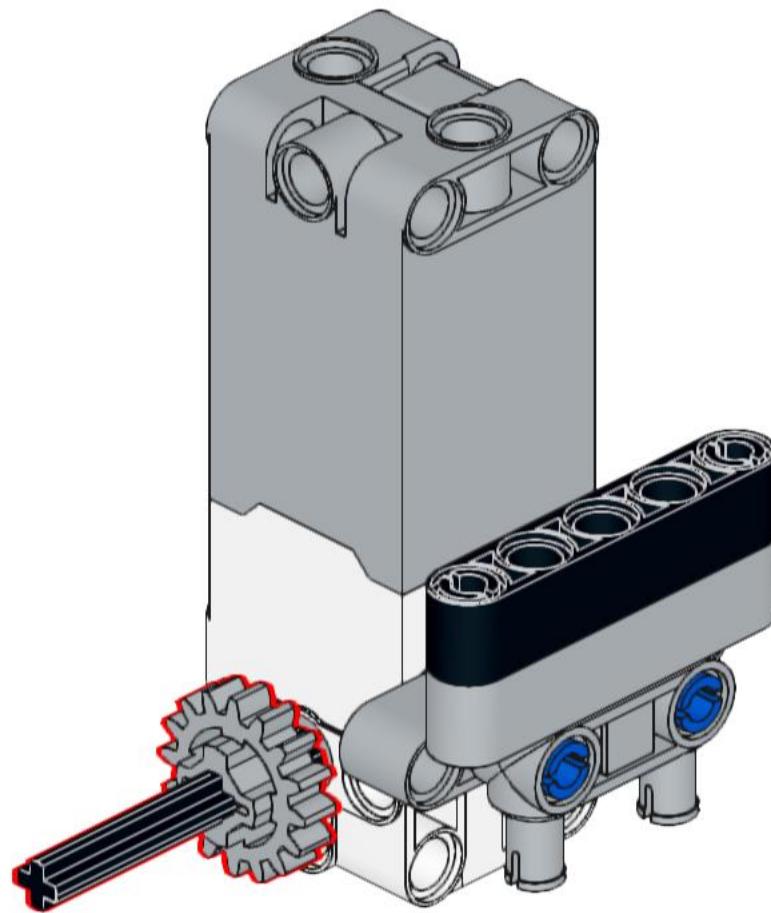
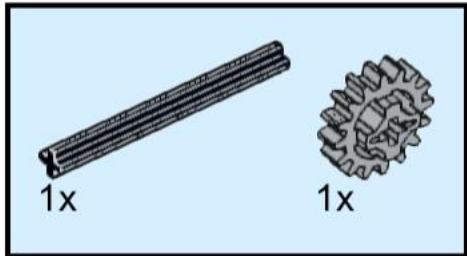
8



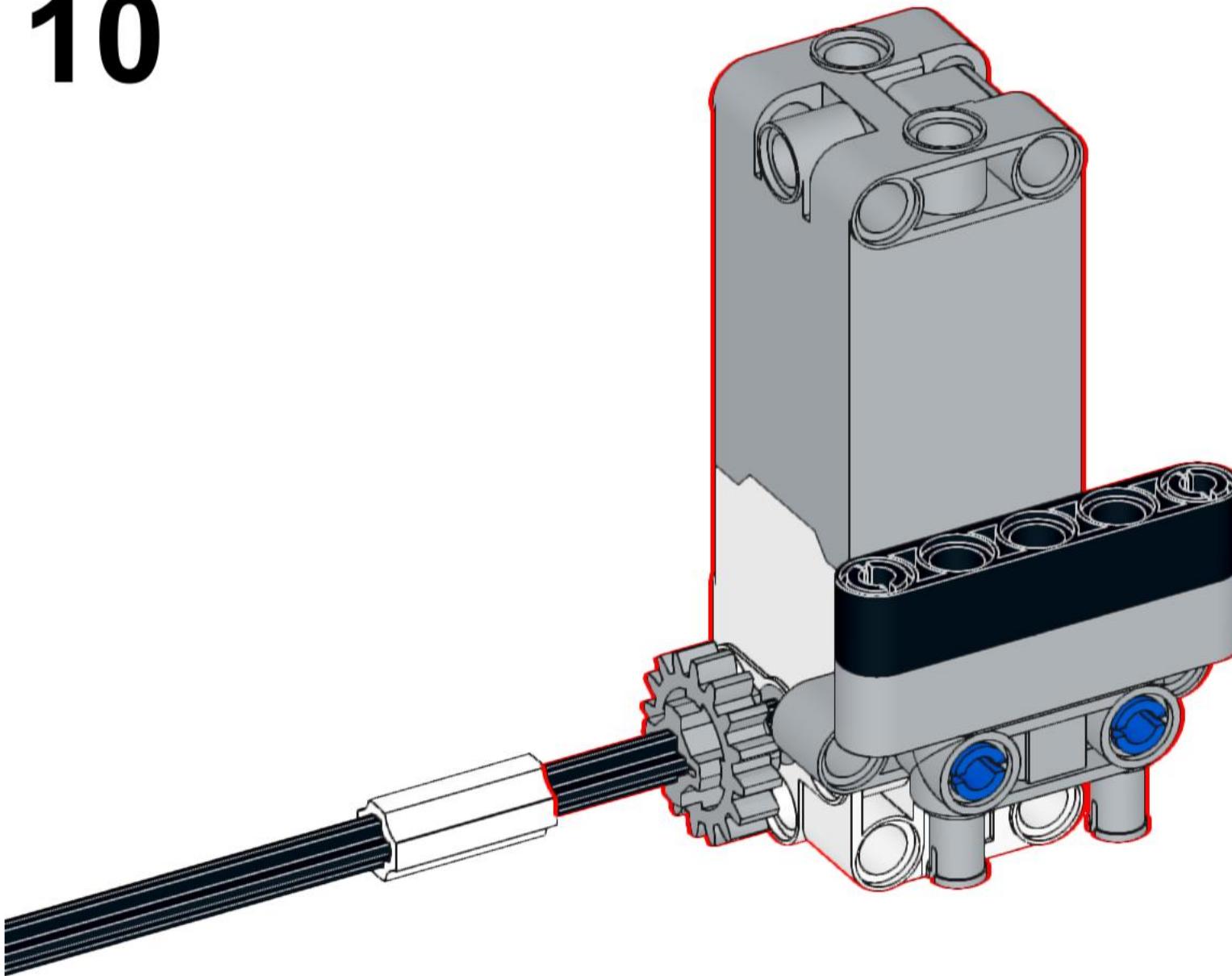
1x



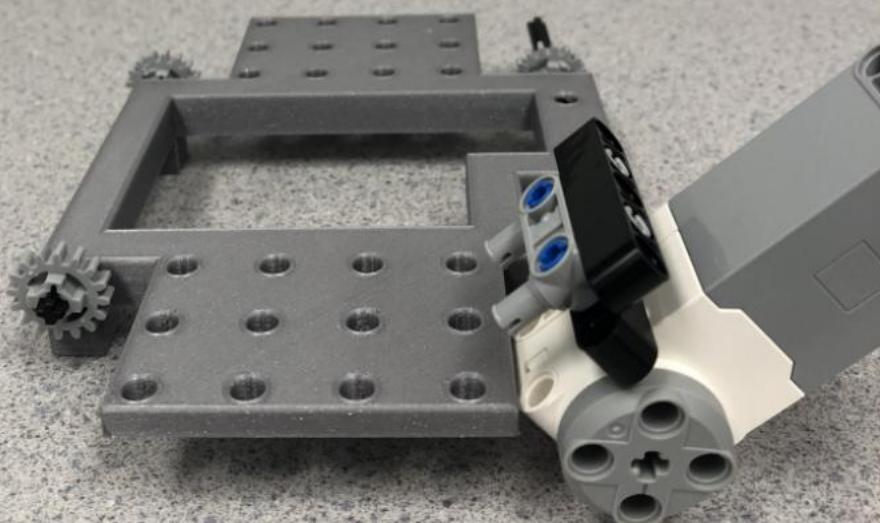
9



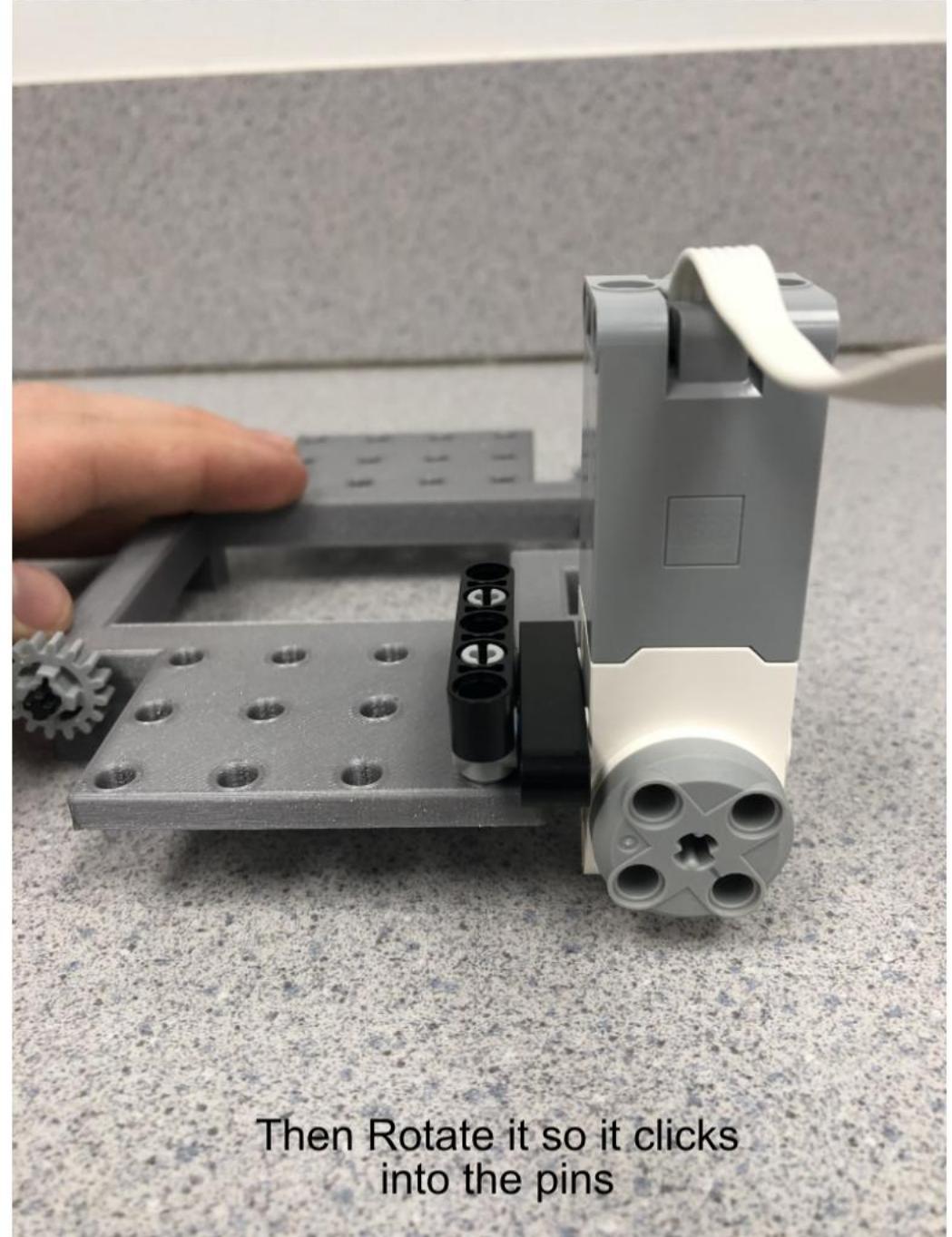
10



See next
page for
special
installation
instructions

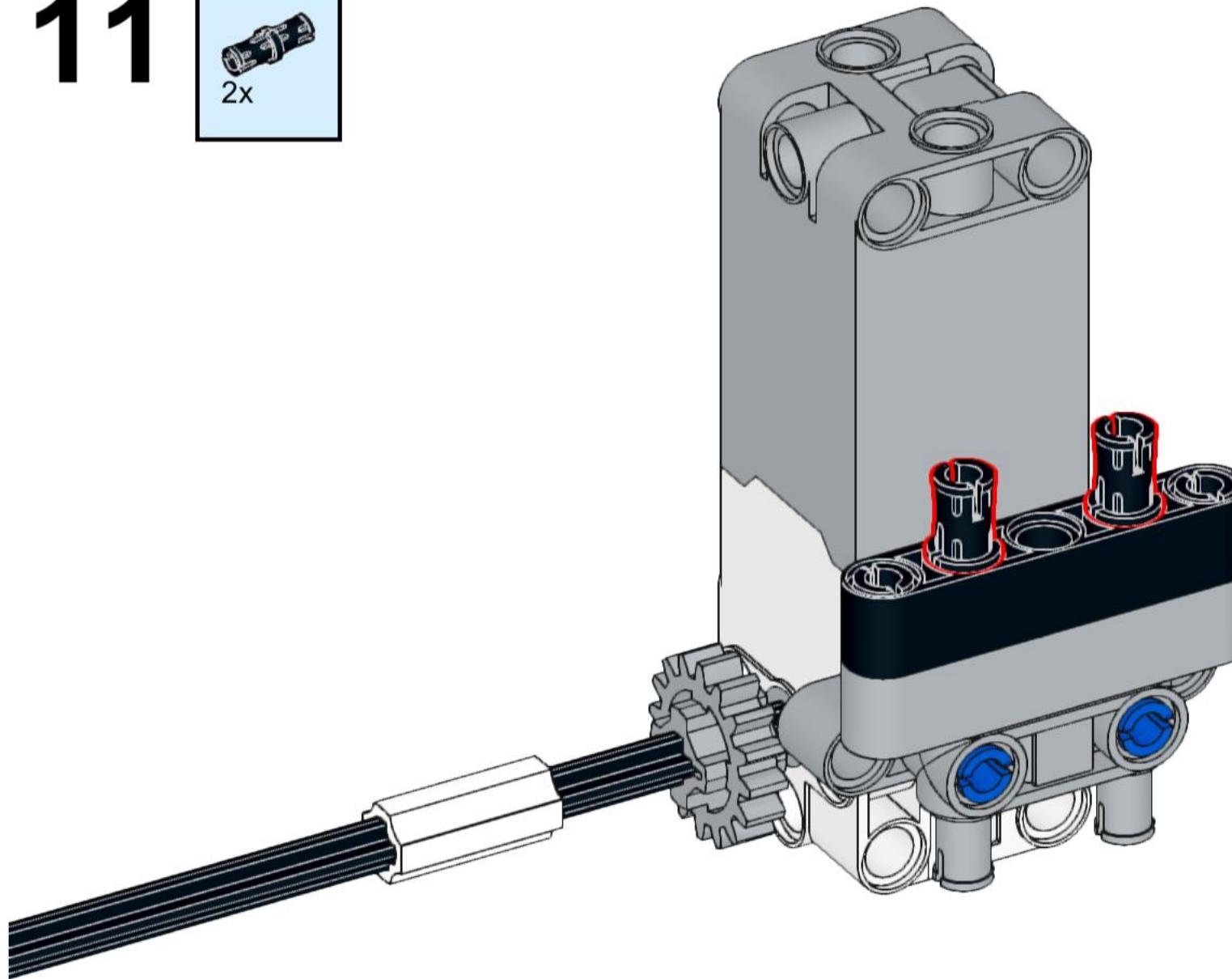


First Insert the Powered
Motor Assembly at an
angle into the axle

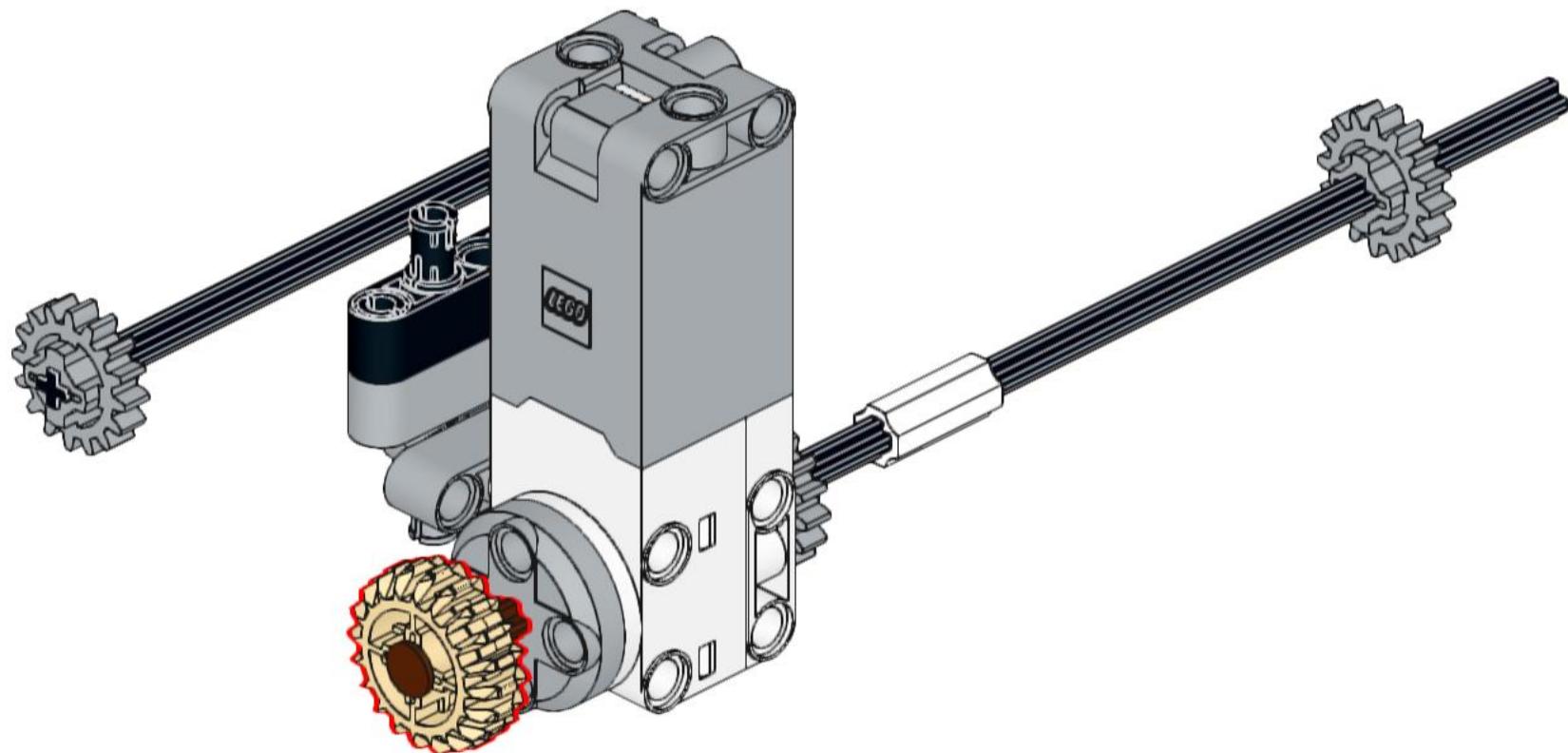
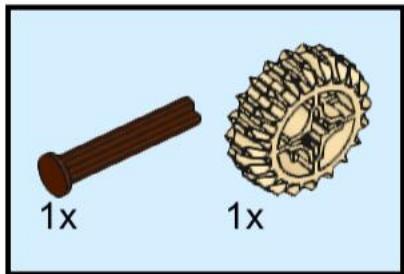


Then Rotate it so it clicks
into the pins

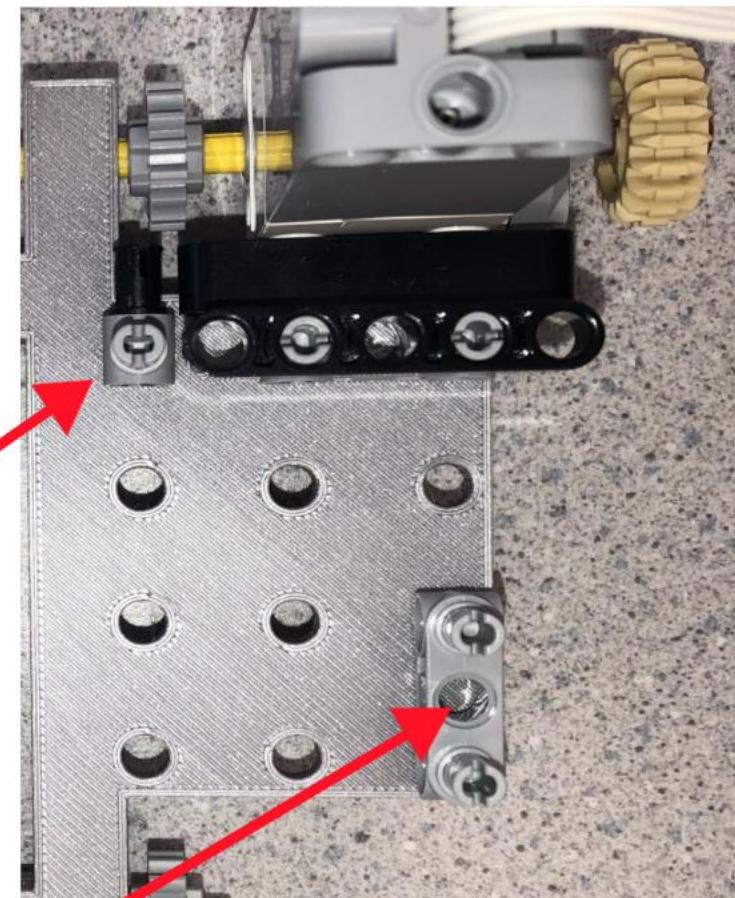
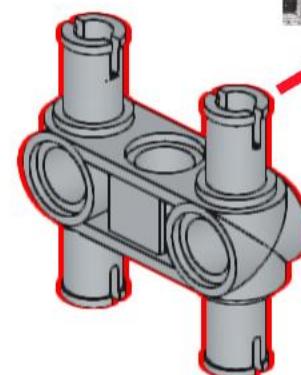
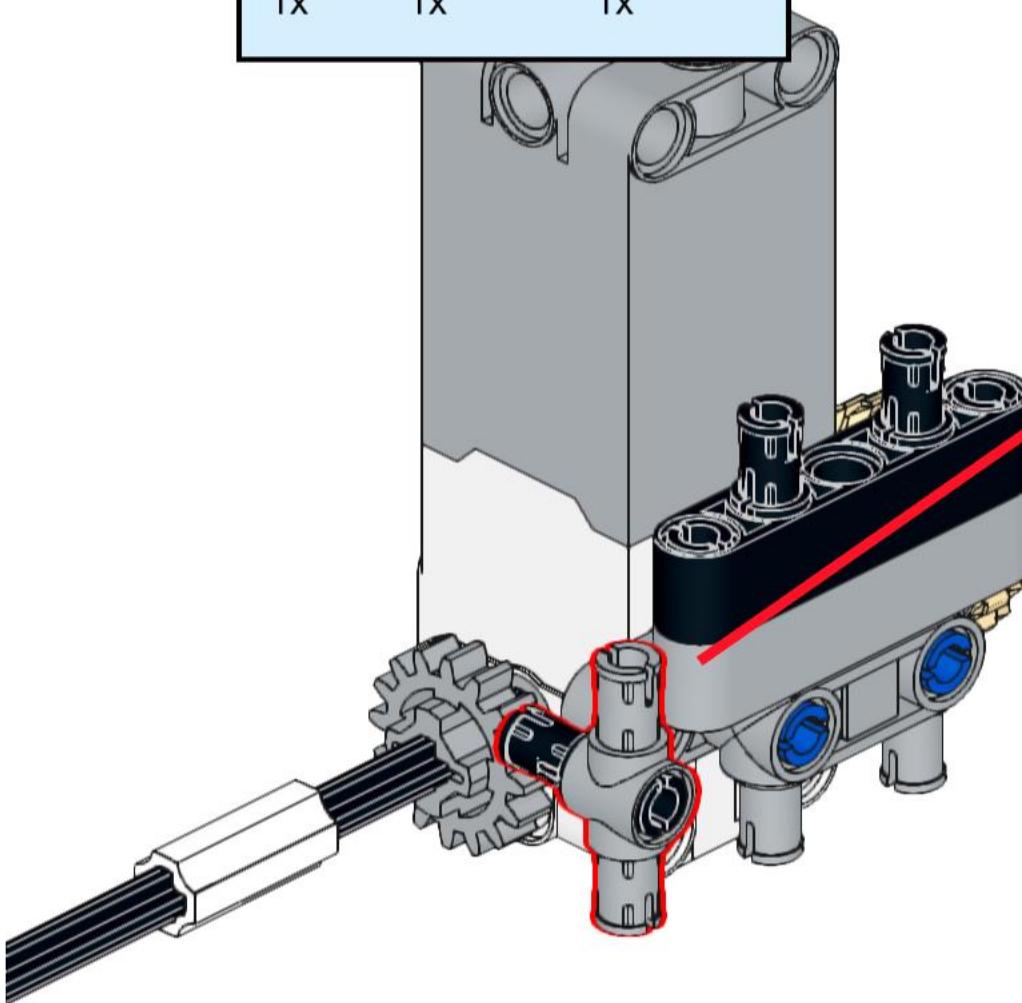
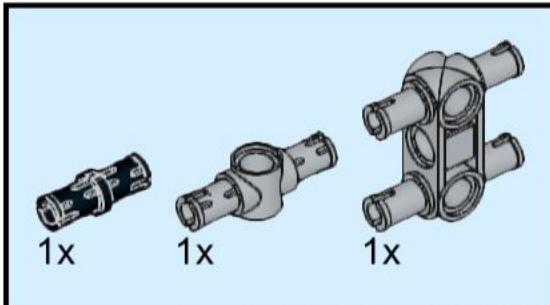
11



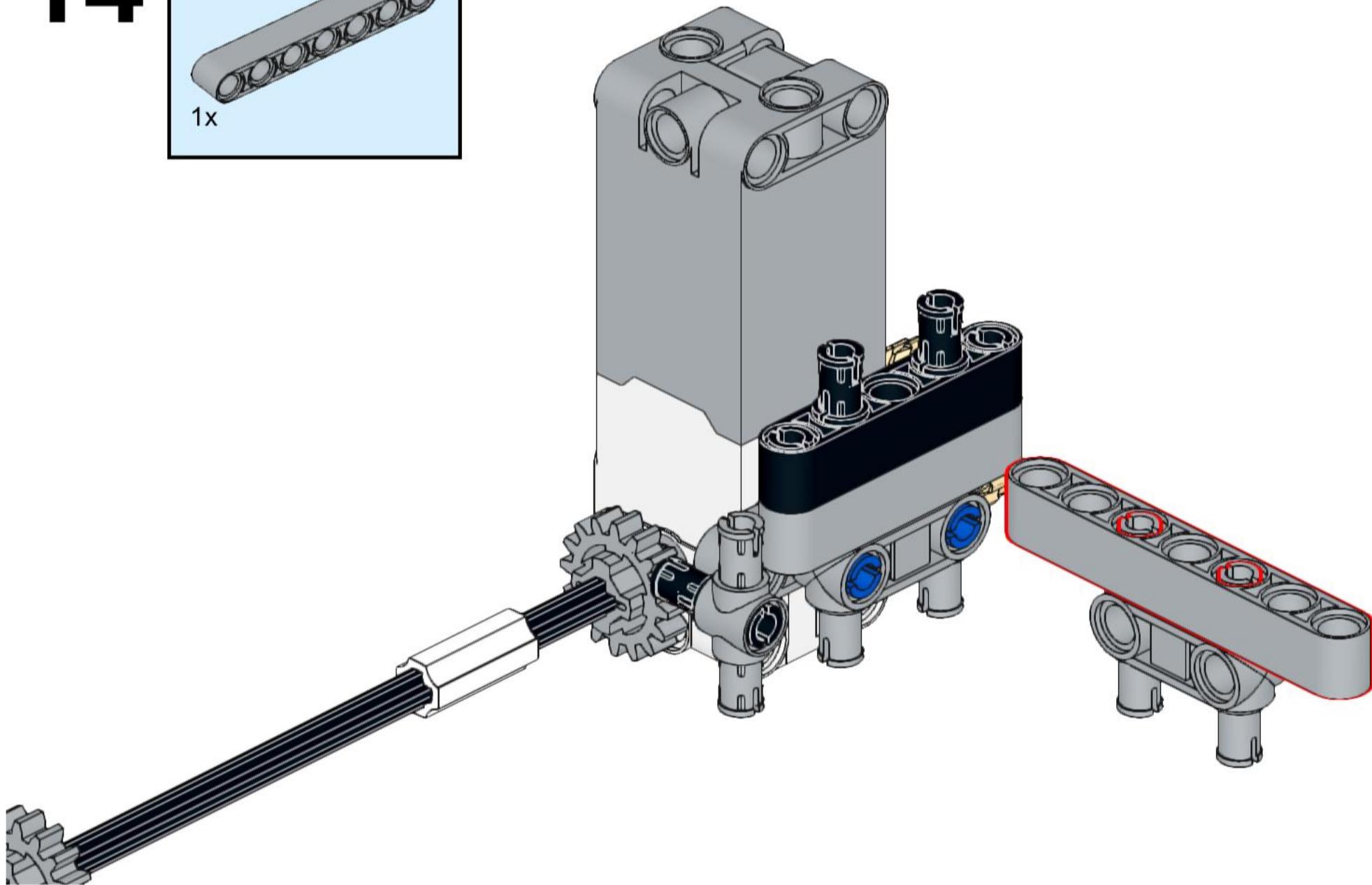
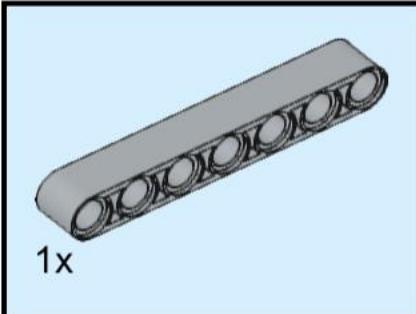
12



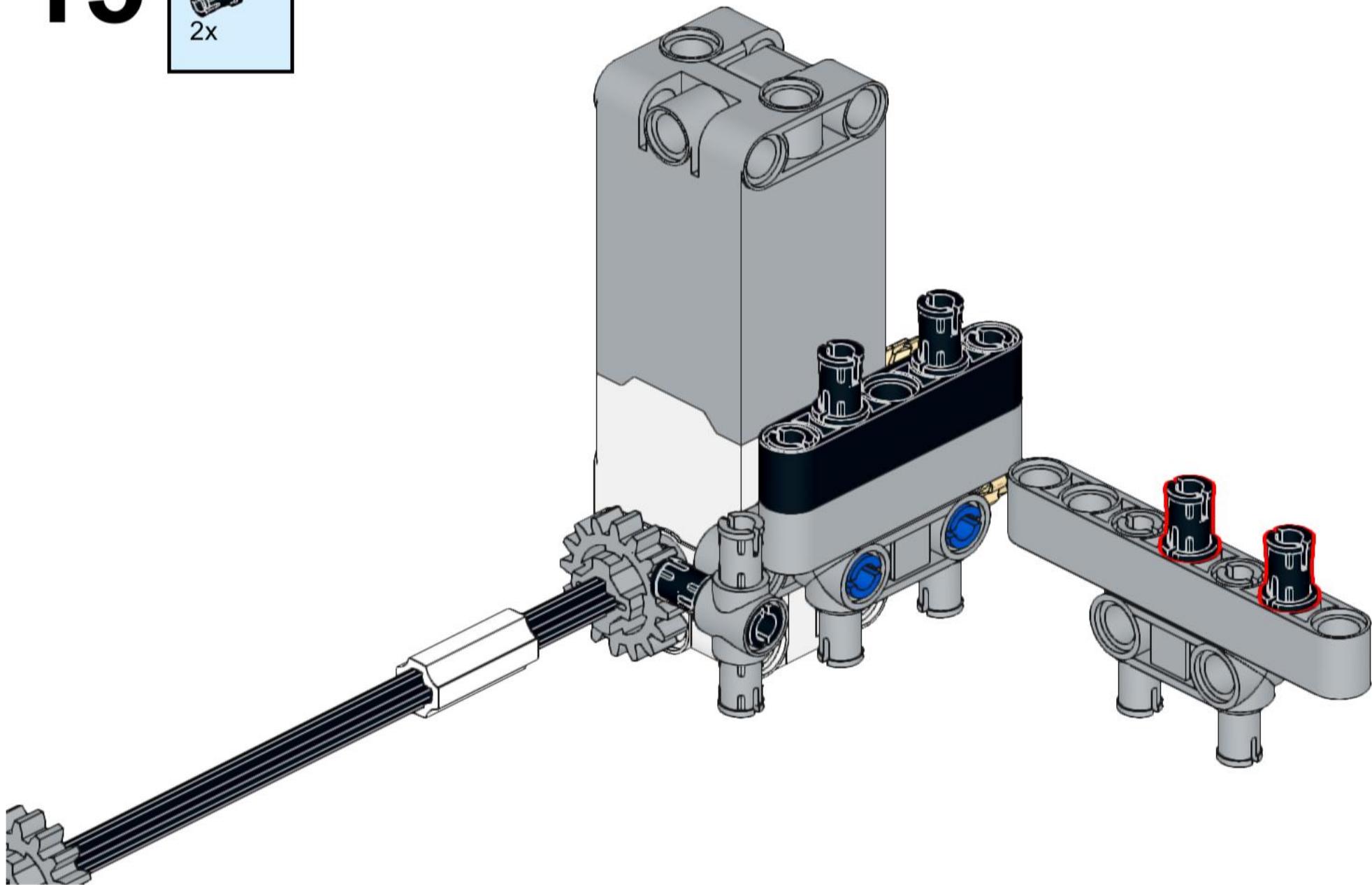
13



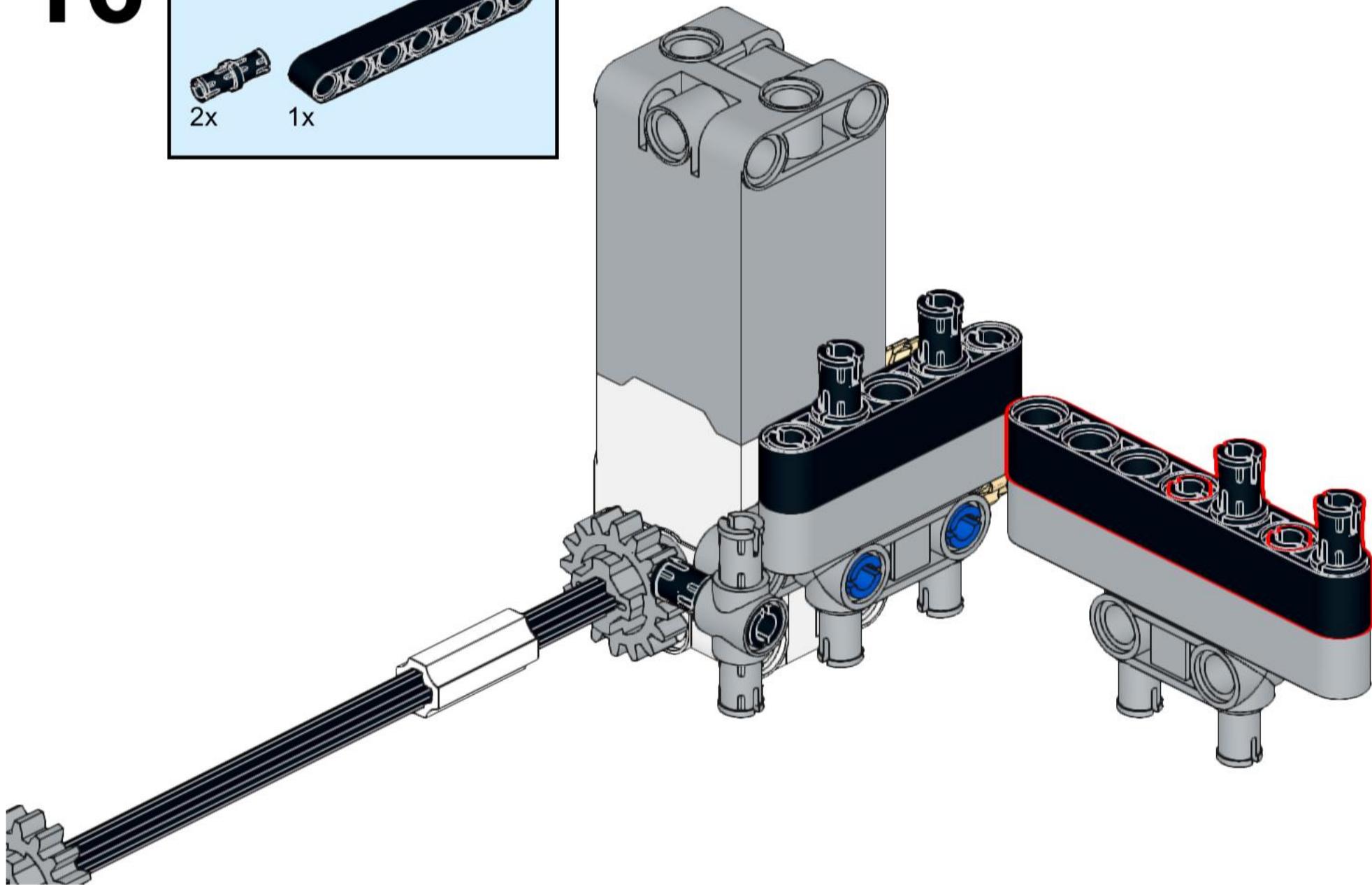
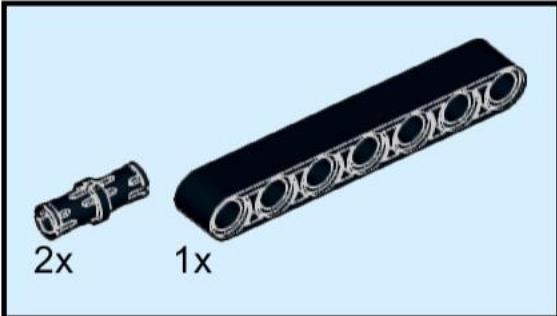
14



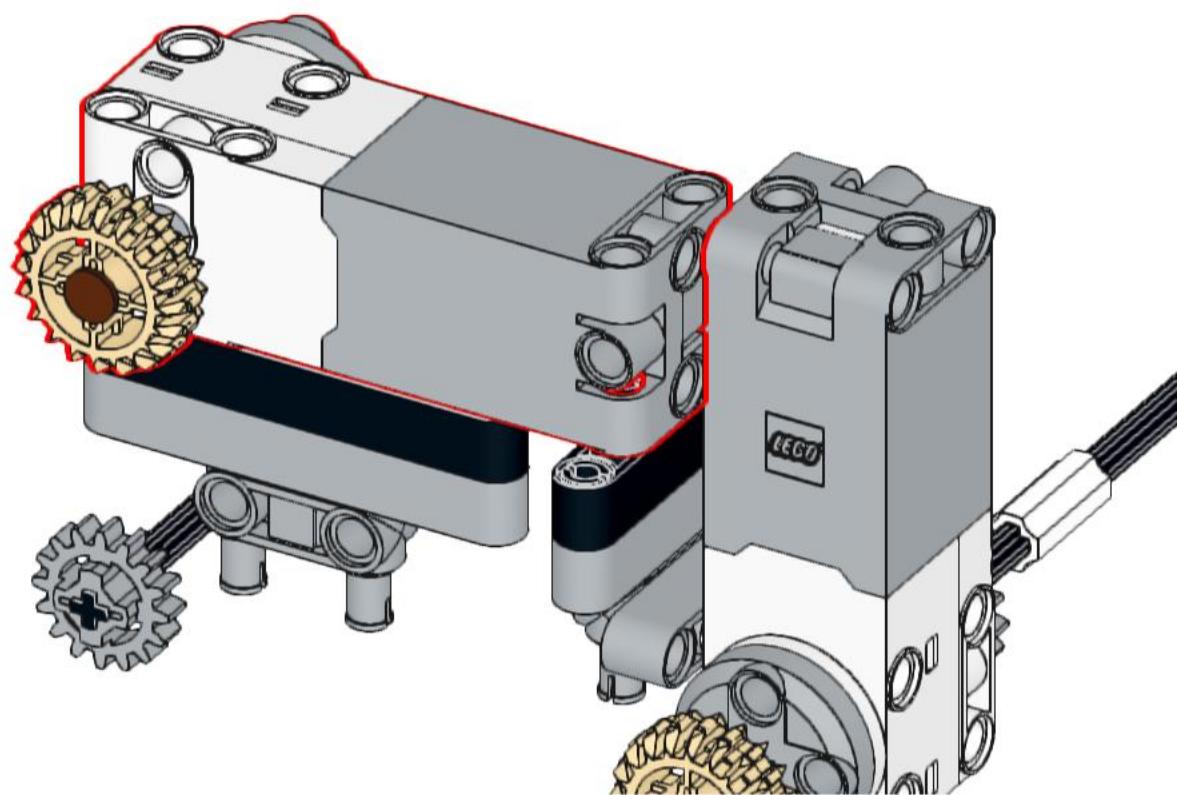
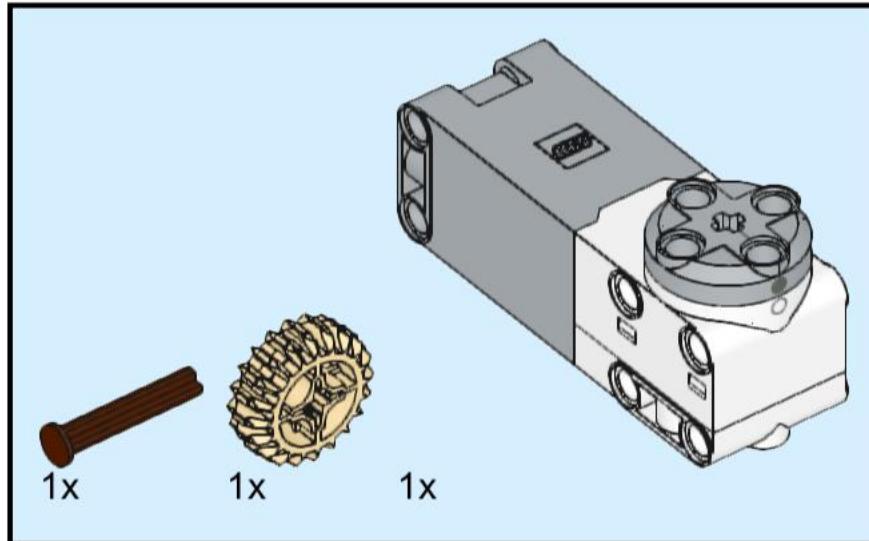
15



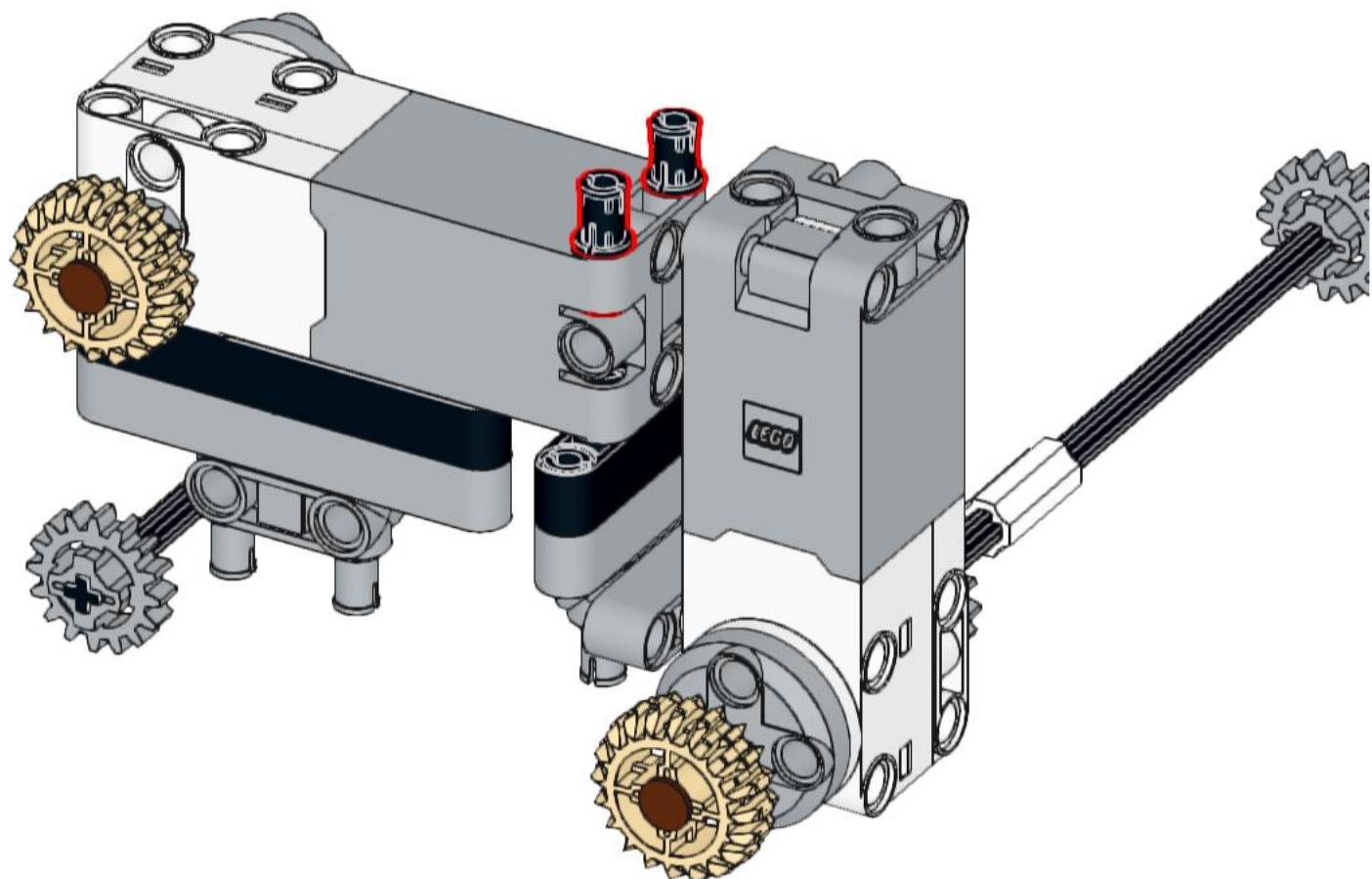
16



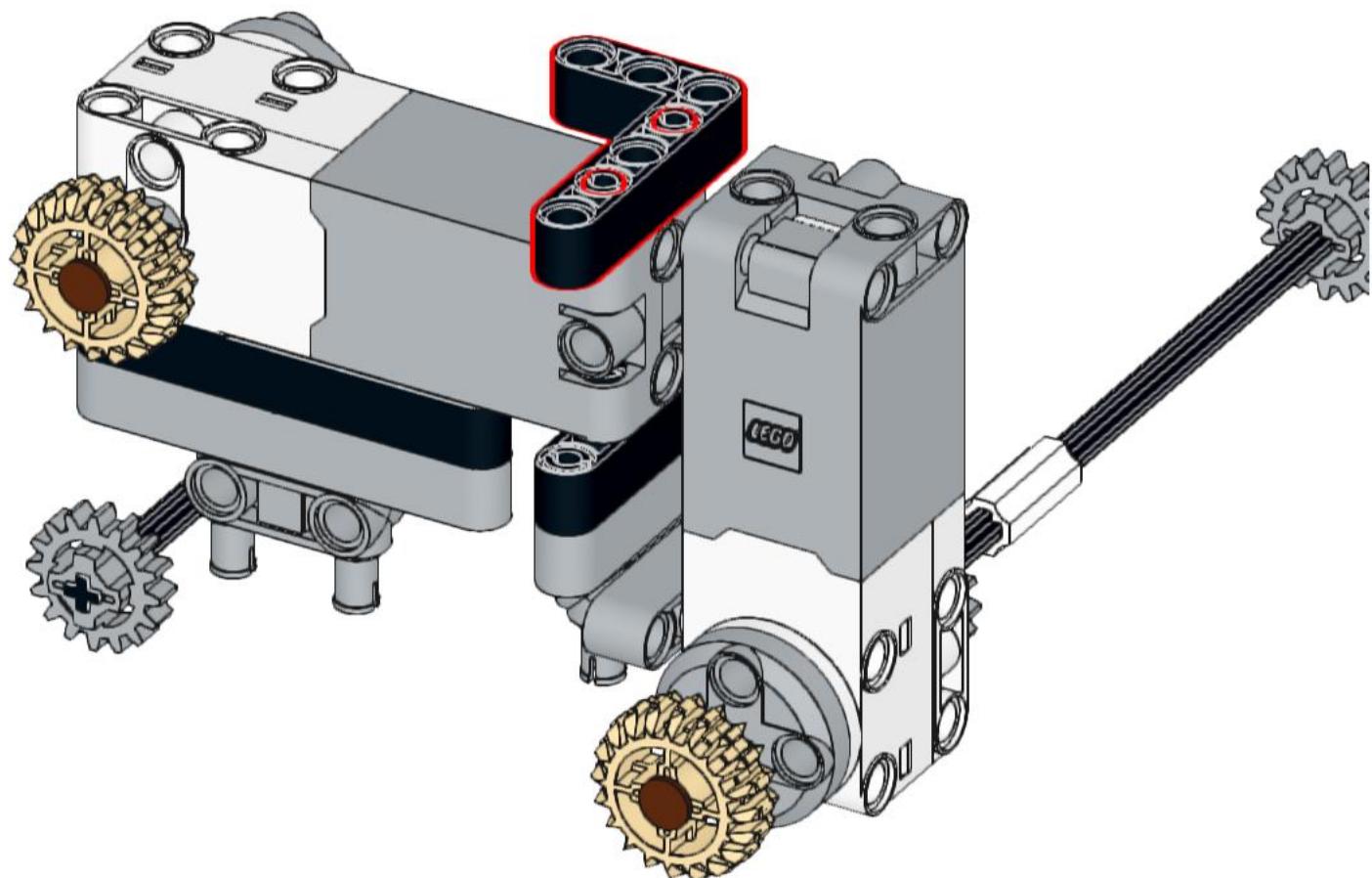
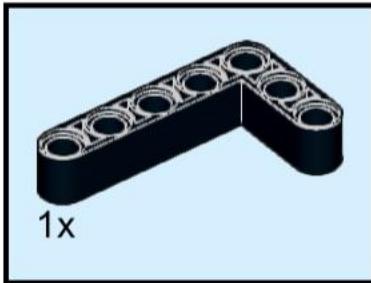
17



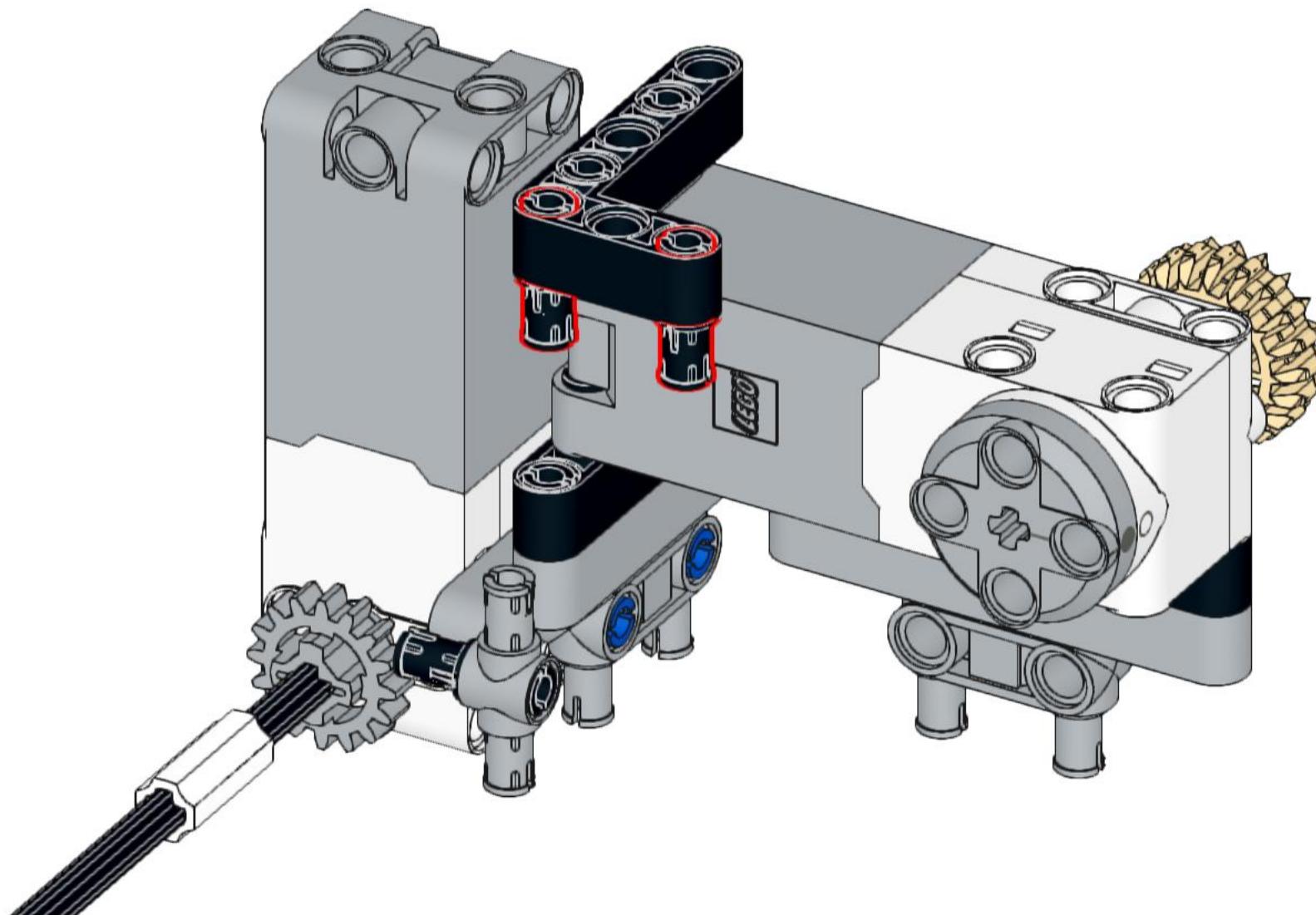
18



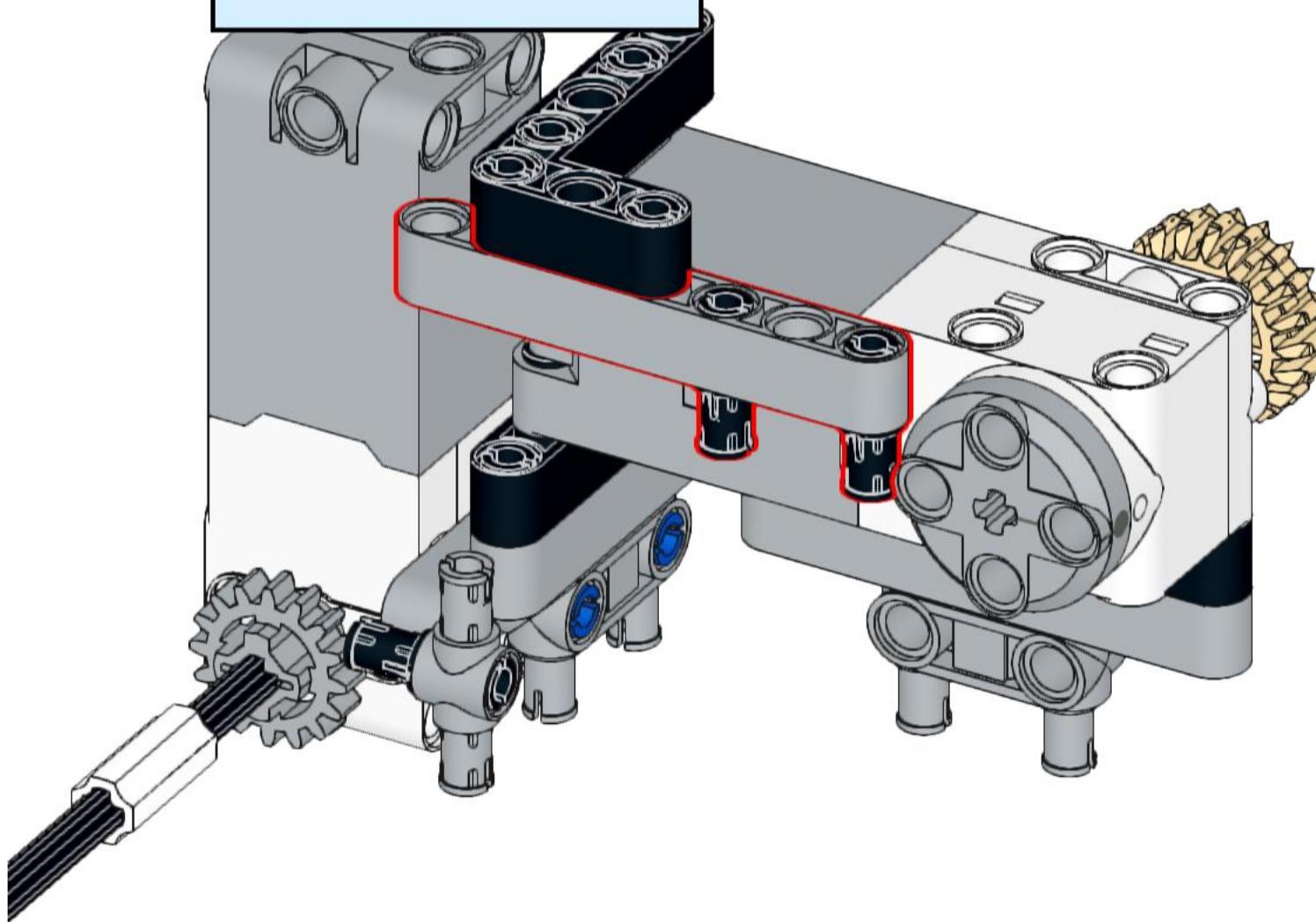
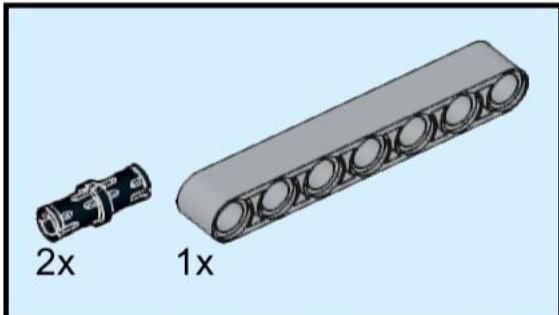
19



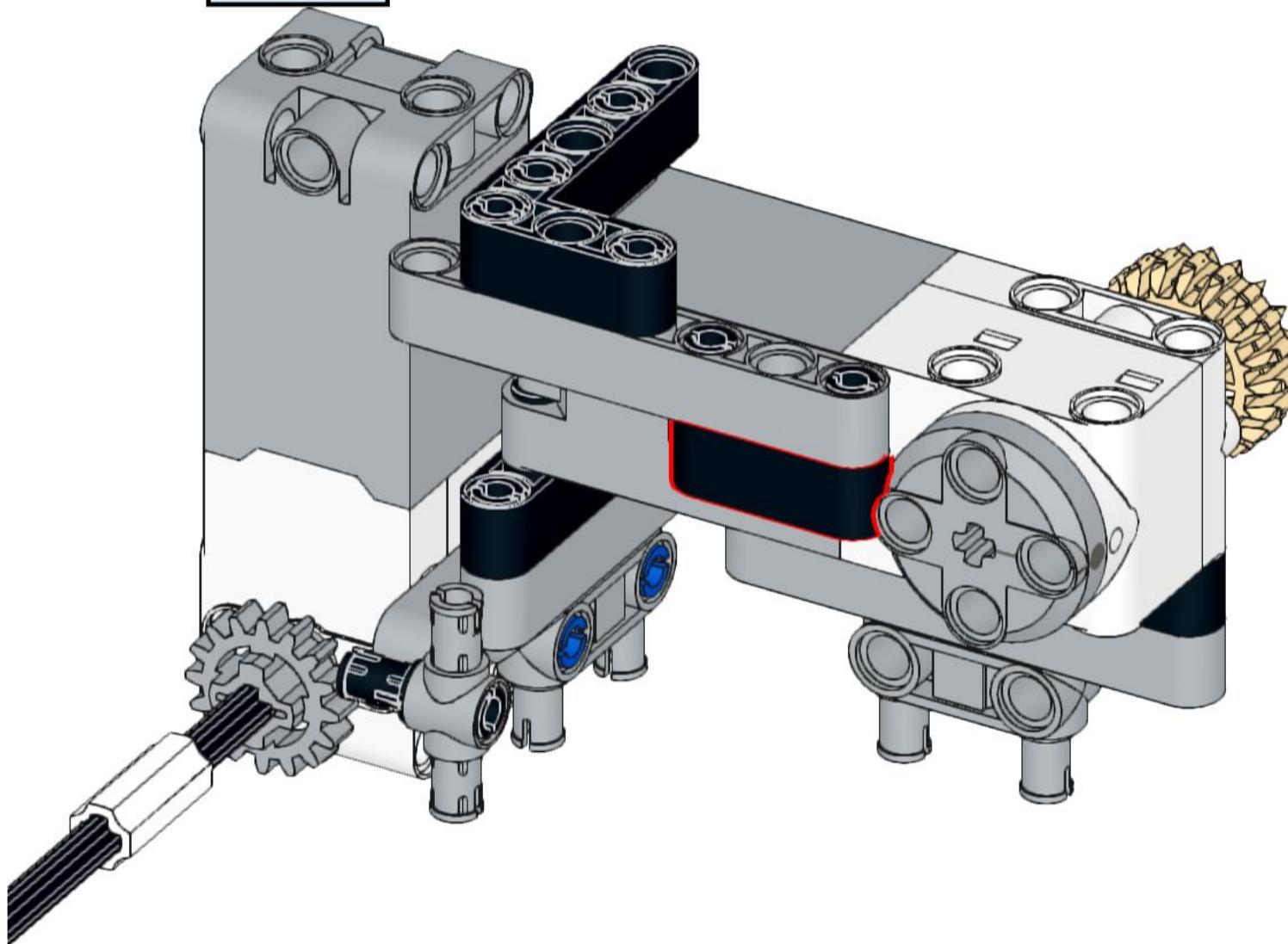
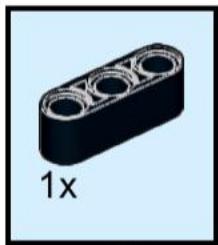
20



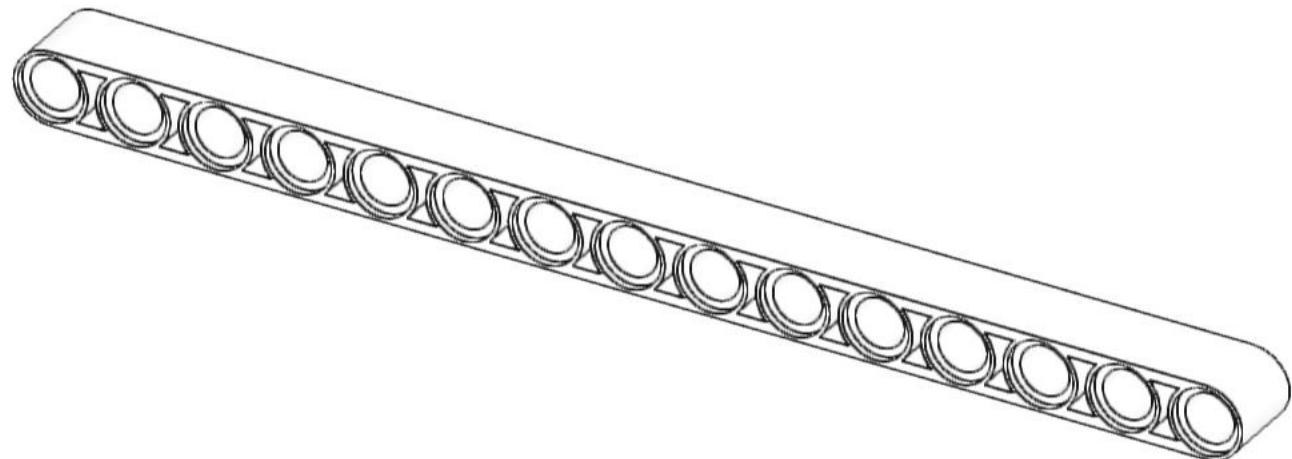
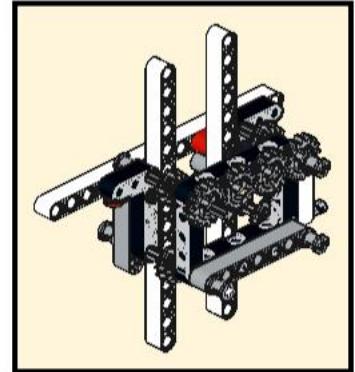
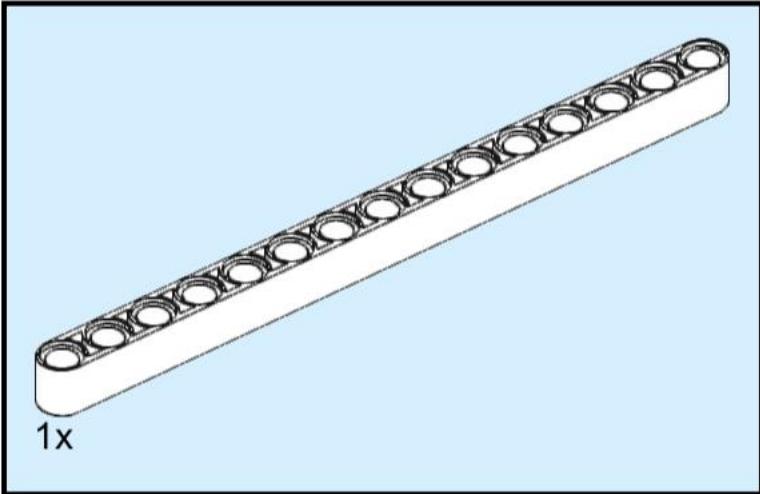
21



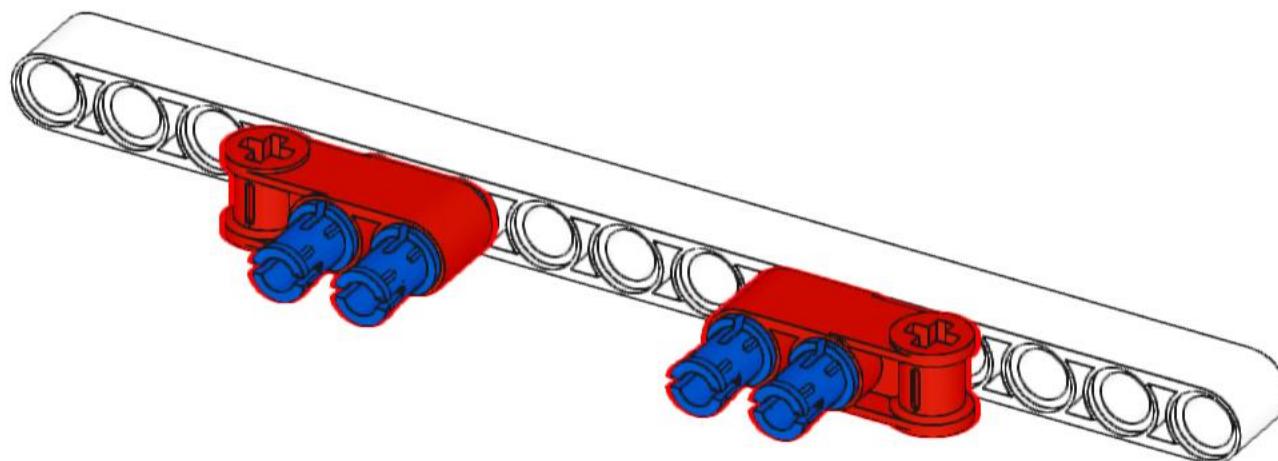
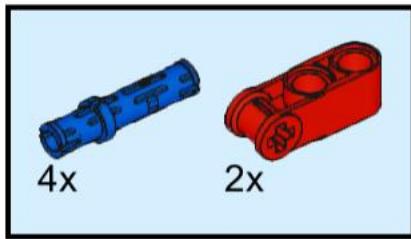
22



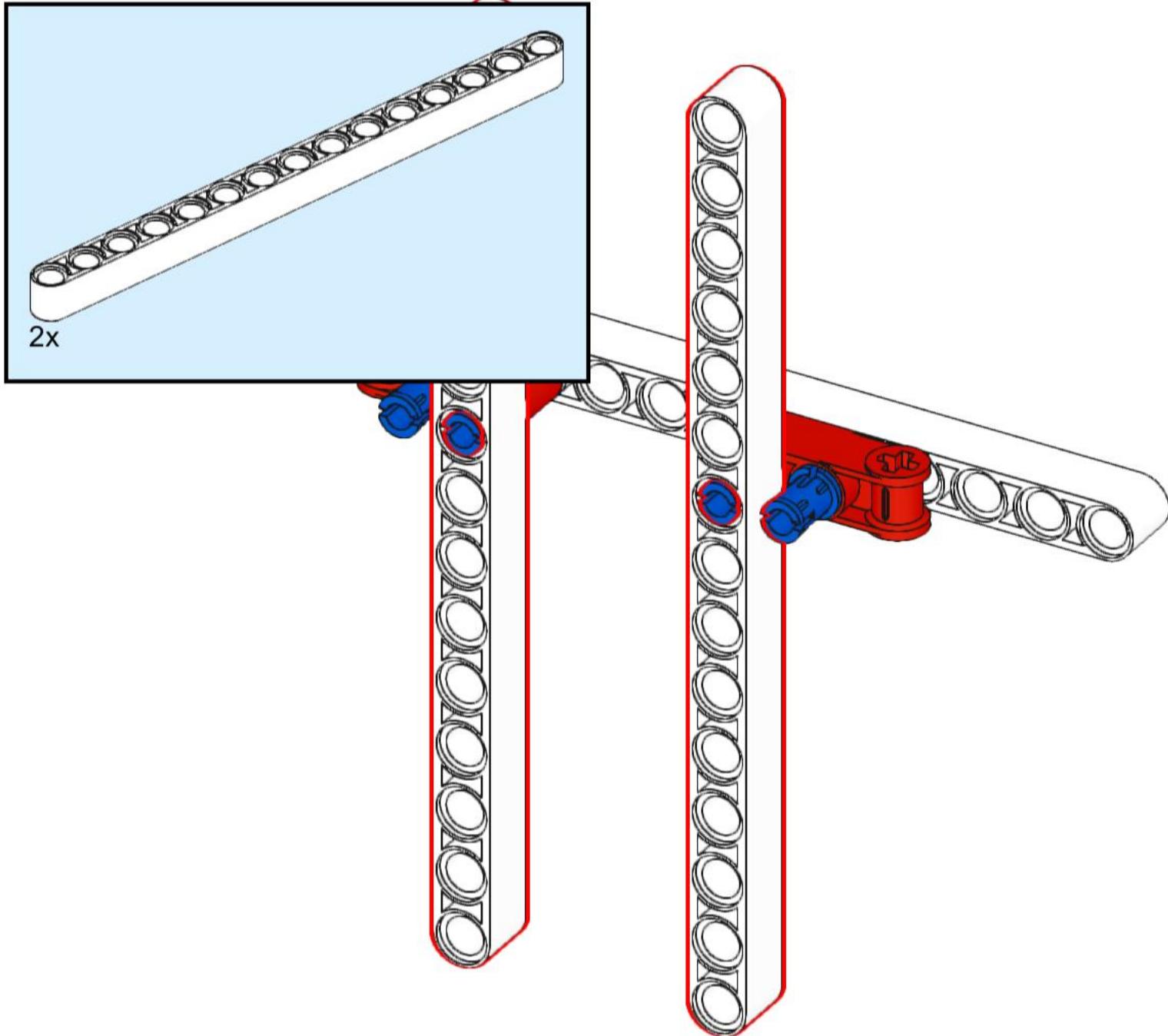
23



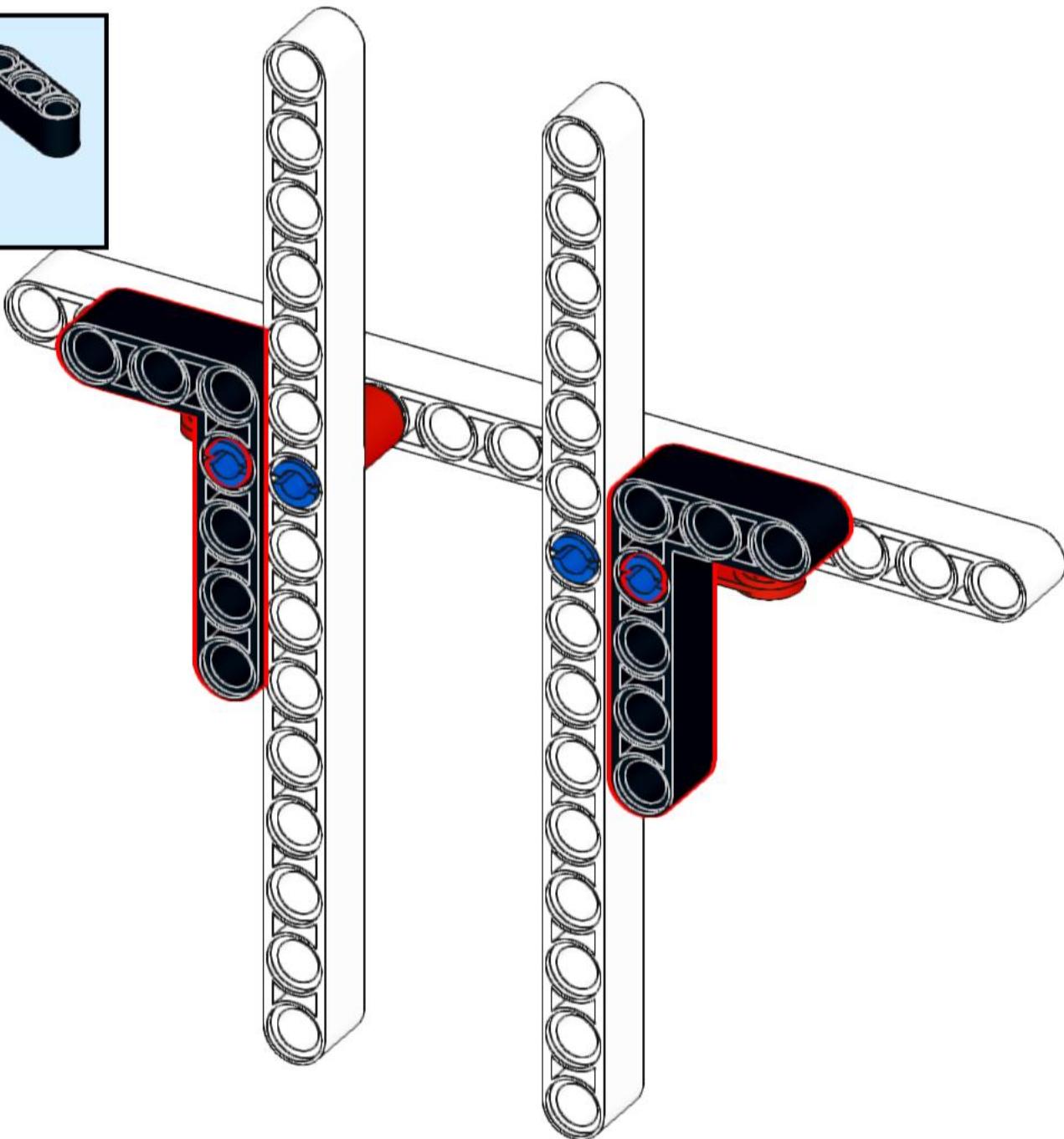
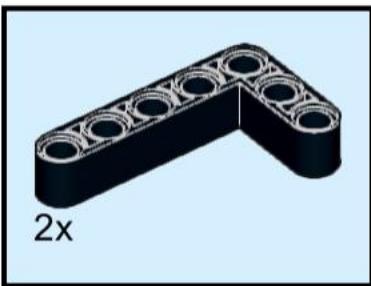
24



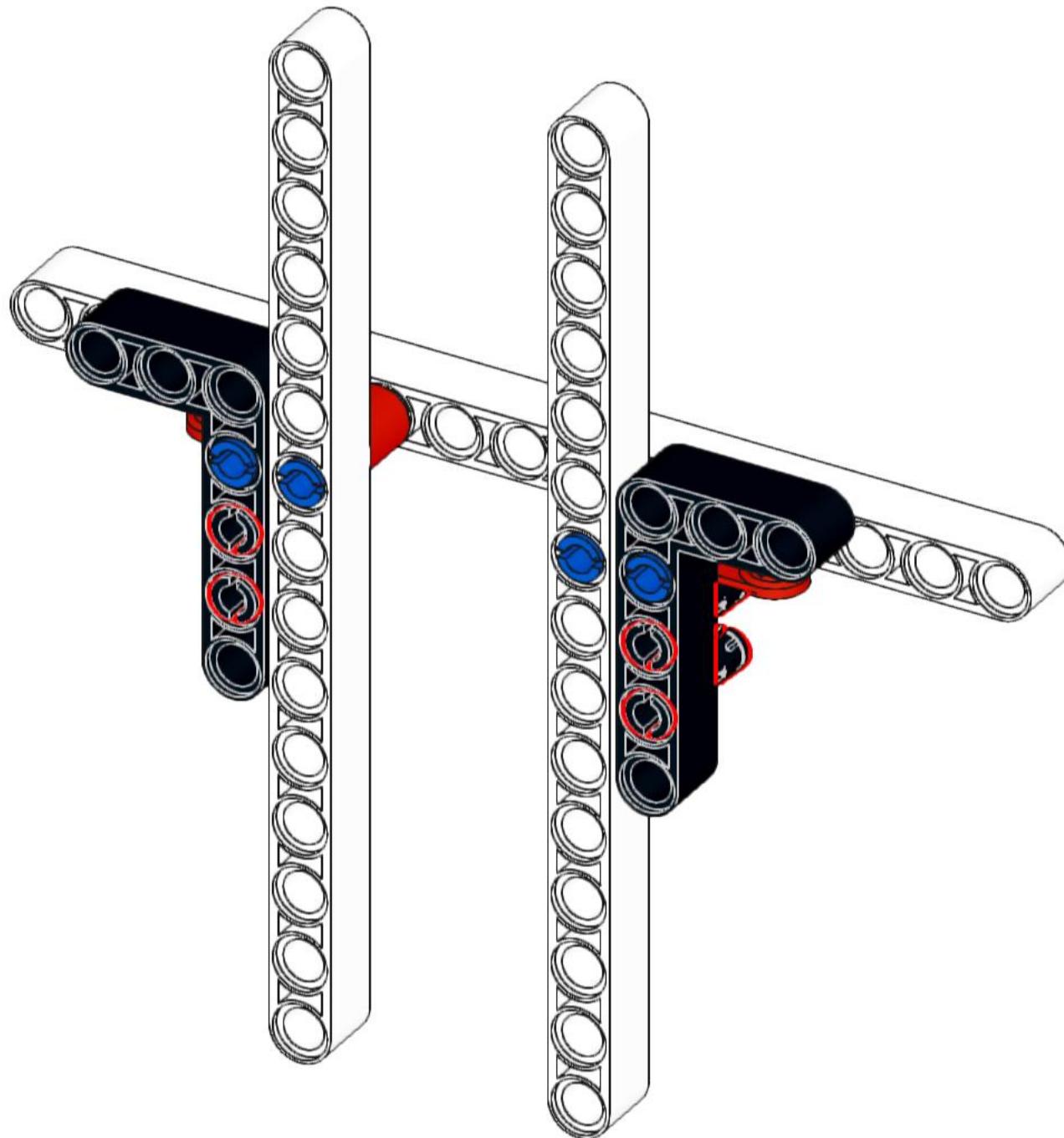
25



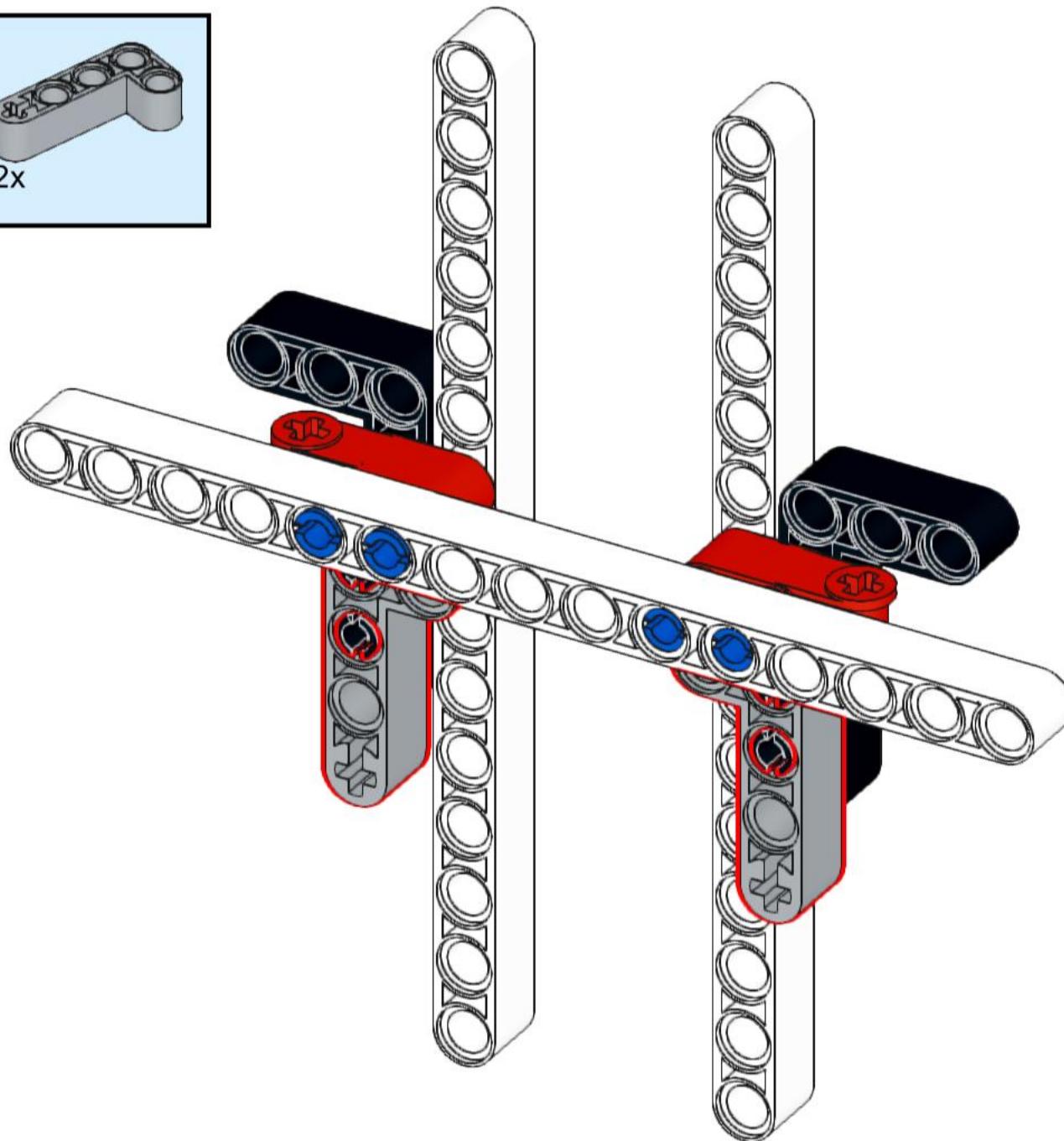
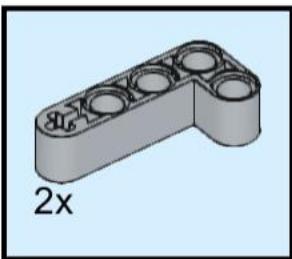
26



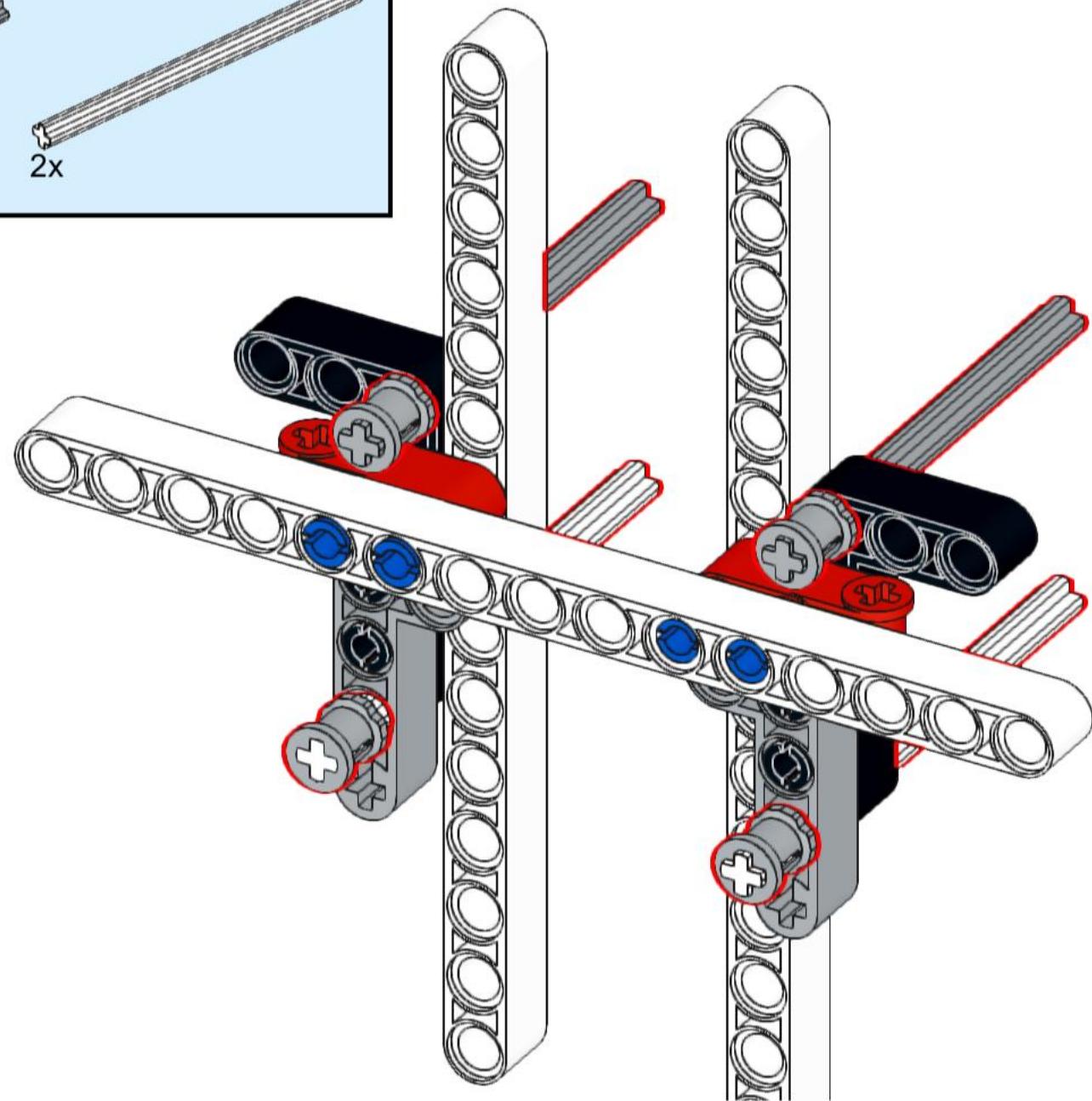
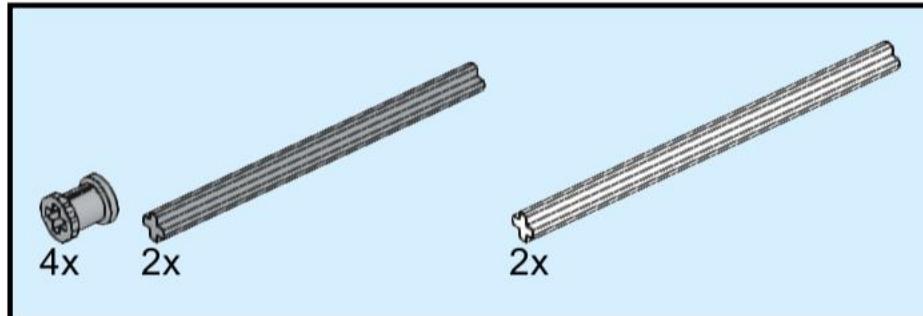
27



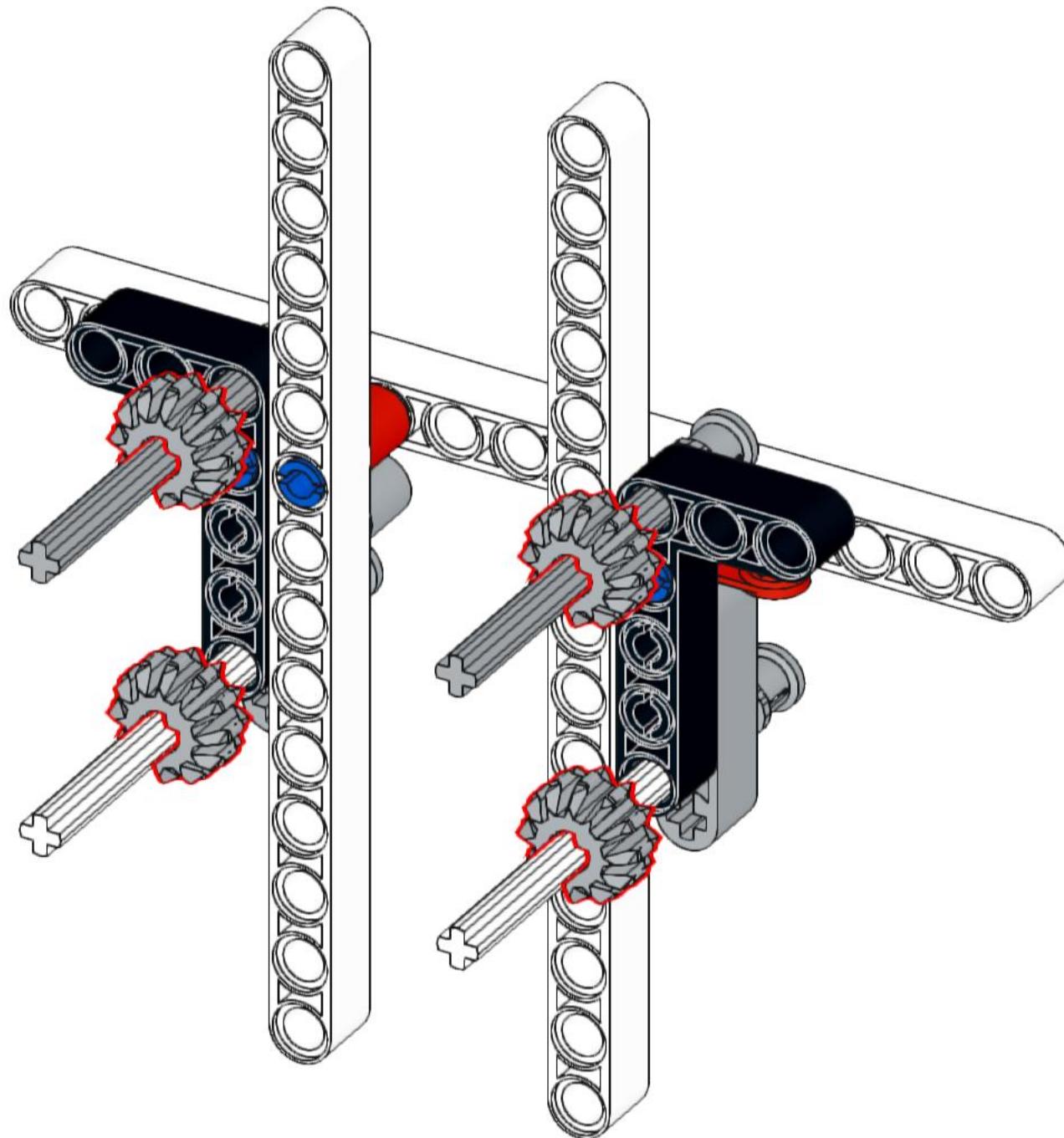
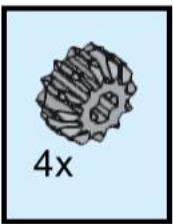
28

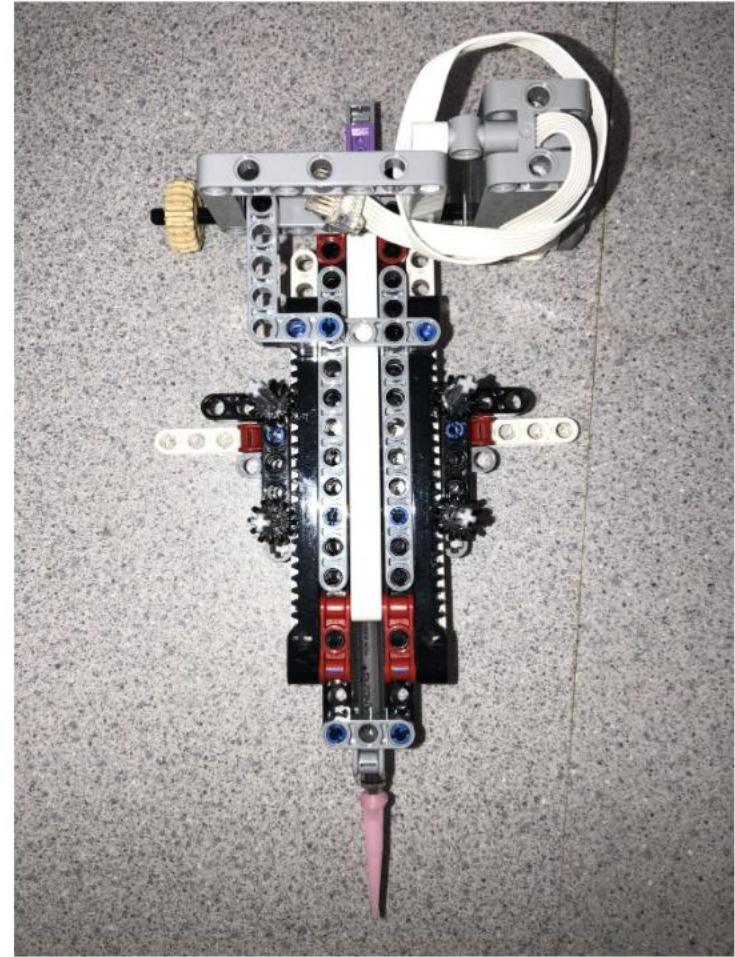
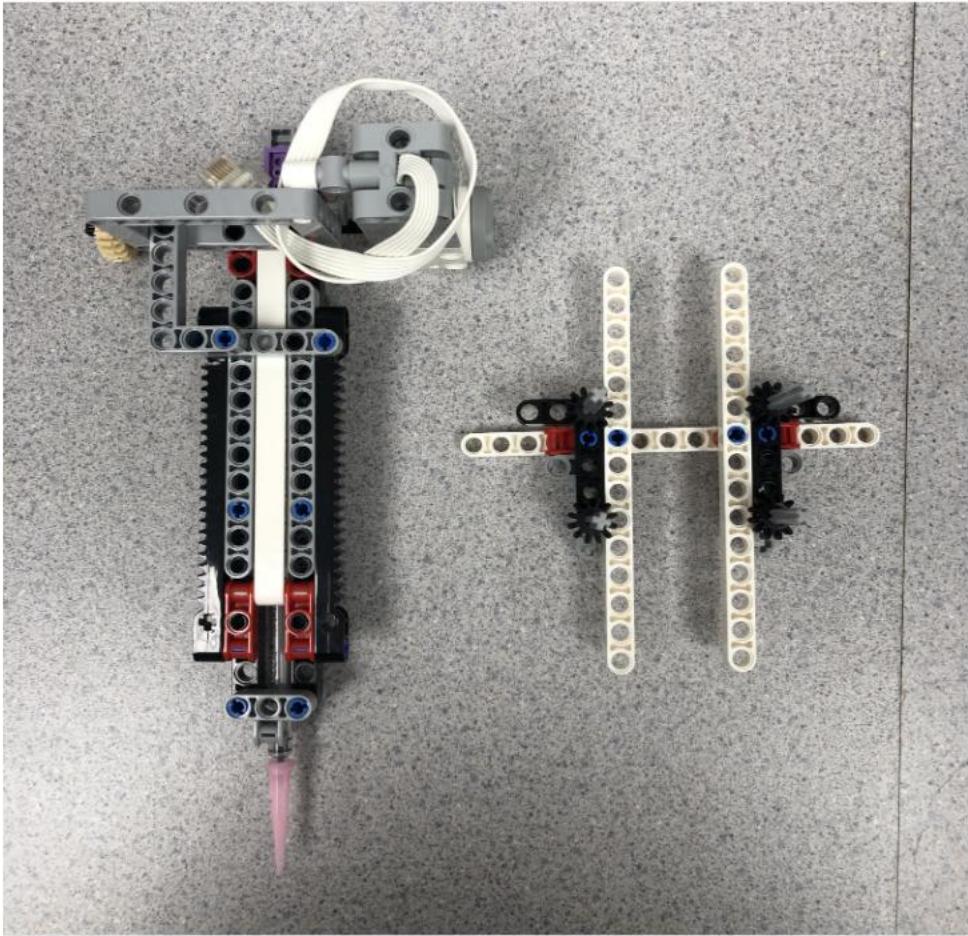


29



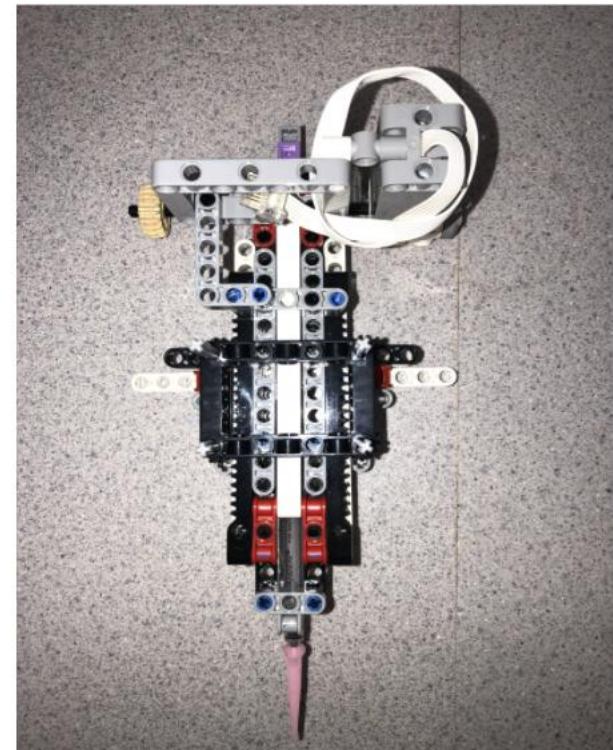
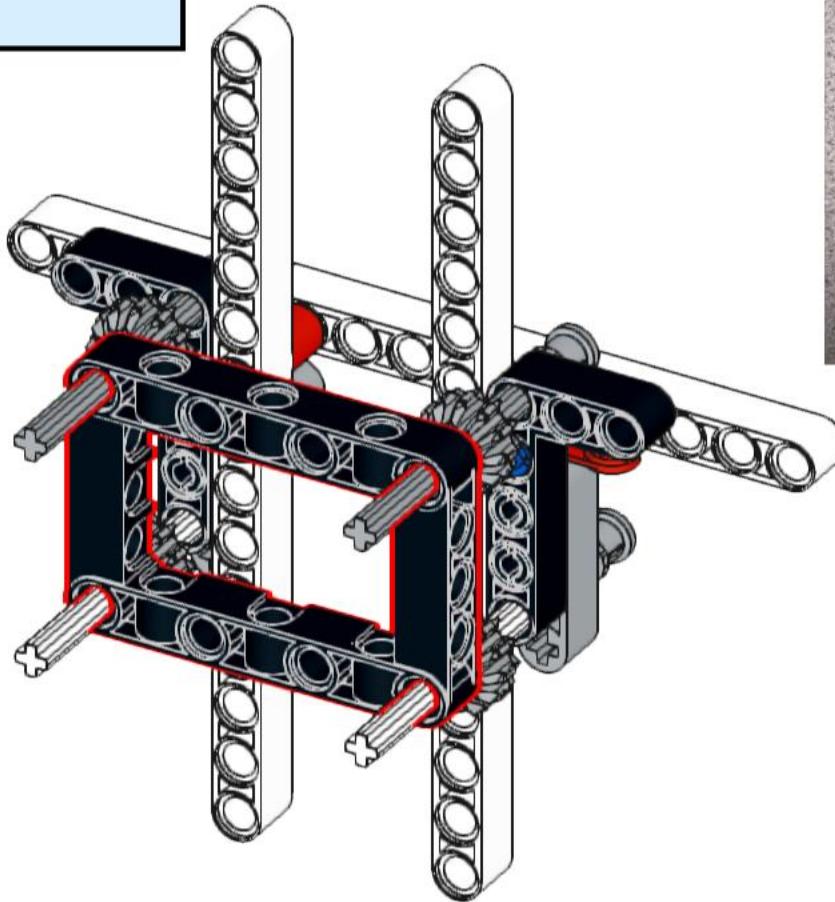
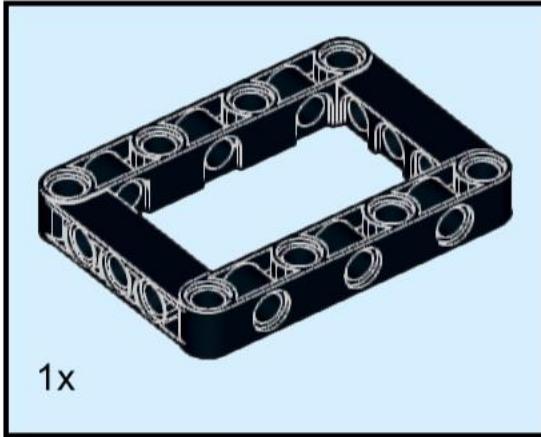
30



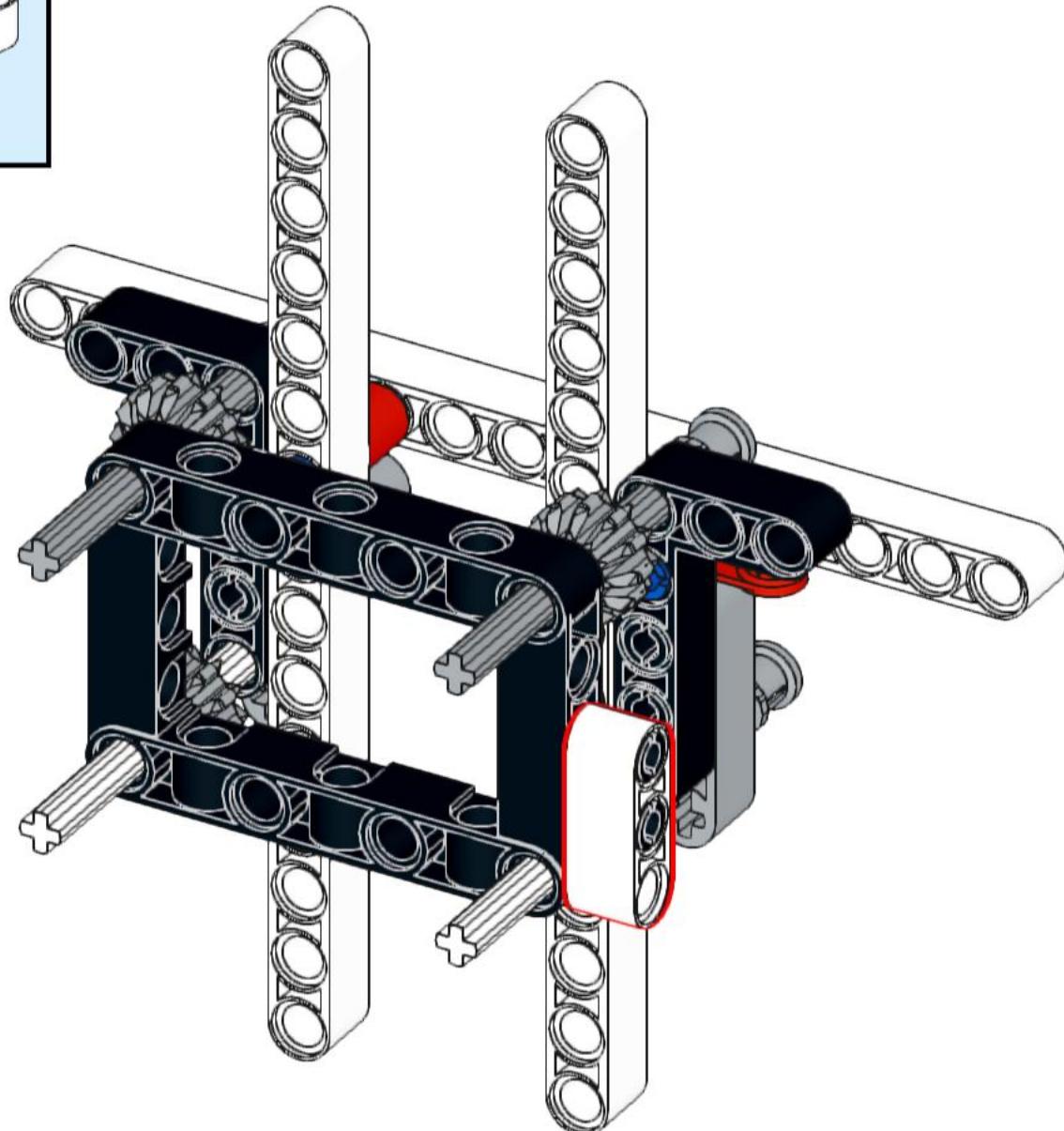
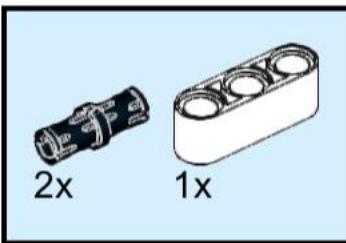


This is the easiest time to insert the syringe holder + plunger assembly within the lift mechanism. Place the assembly so that the gear racks fit into the teeth of the 4 small gears (right), then continue building on top of this

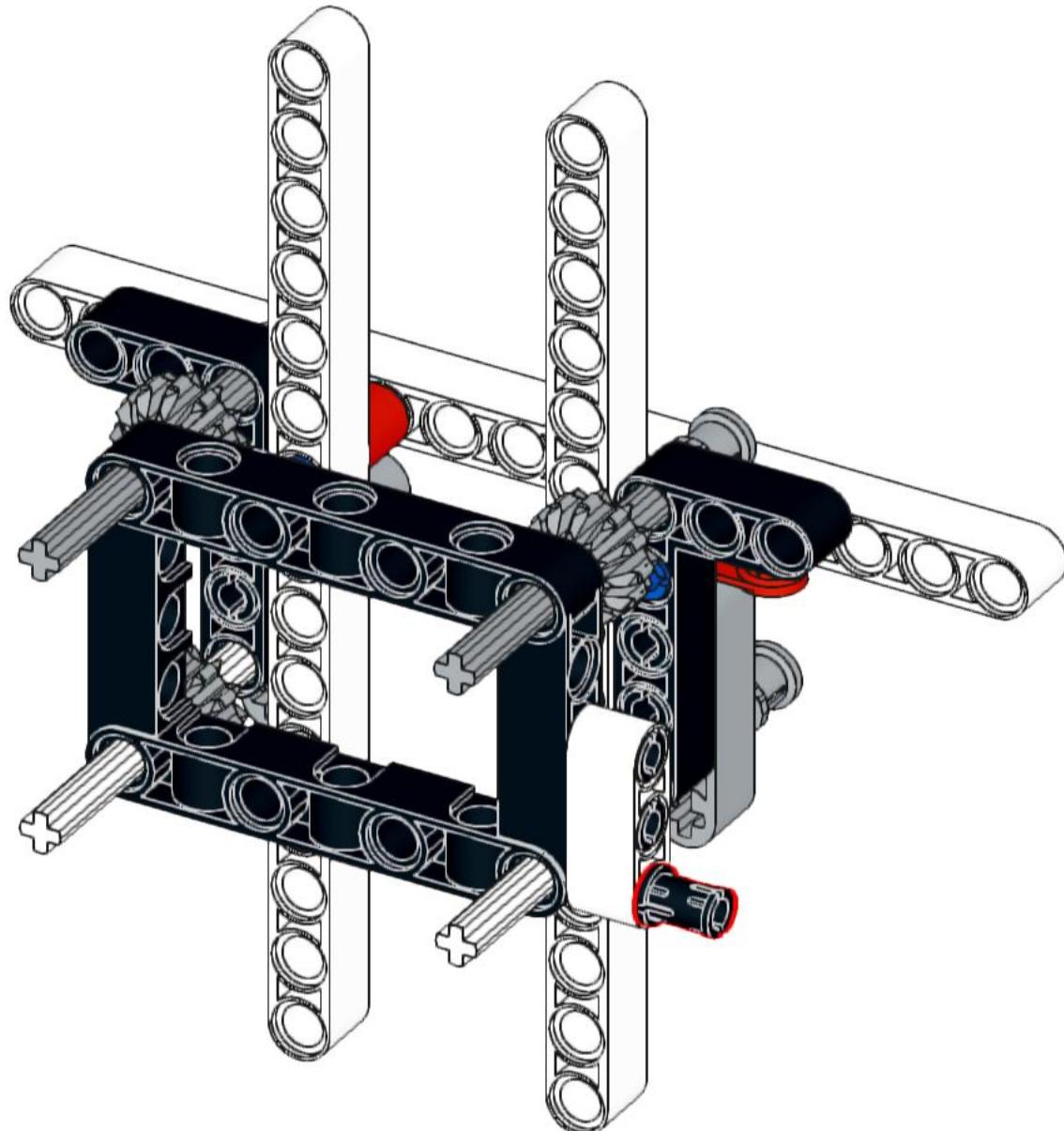
31



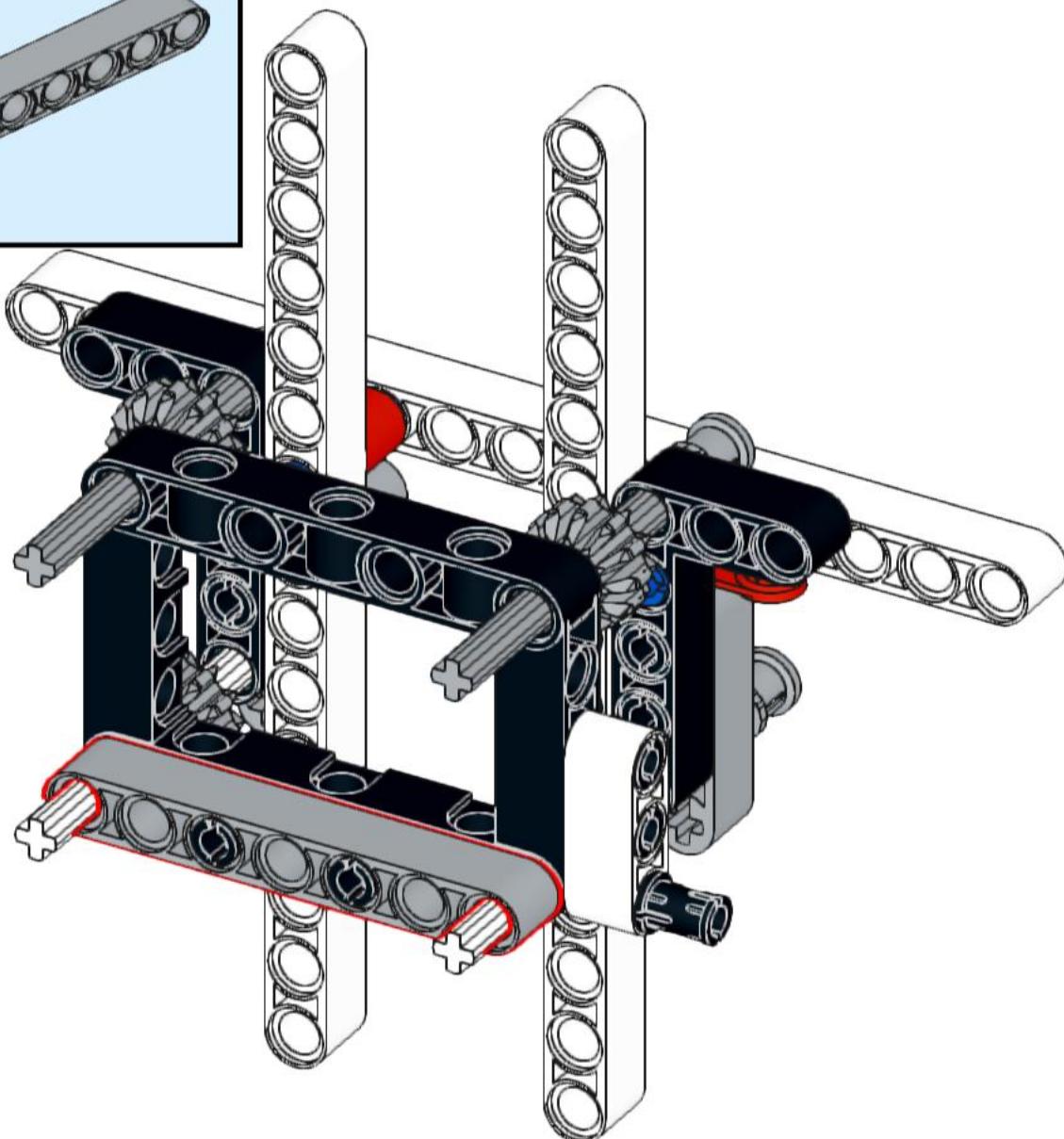
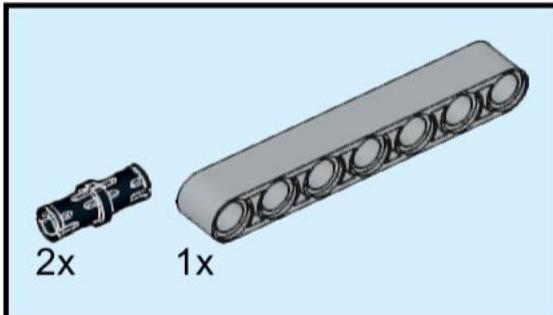
32



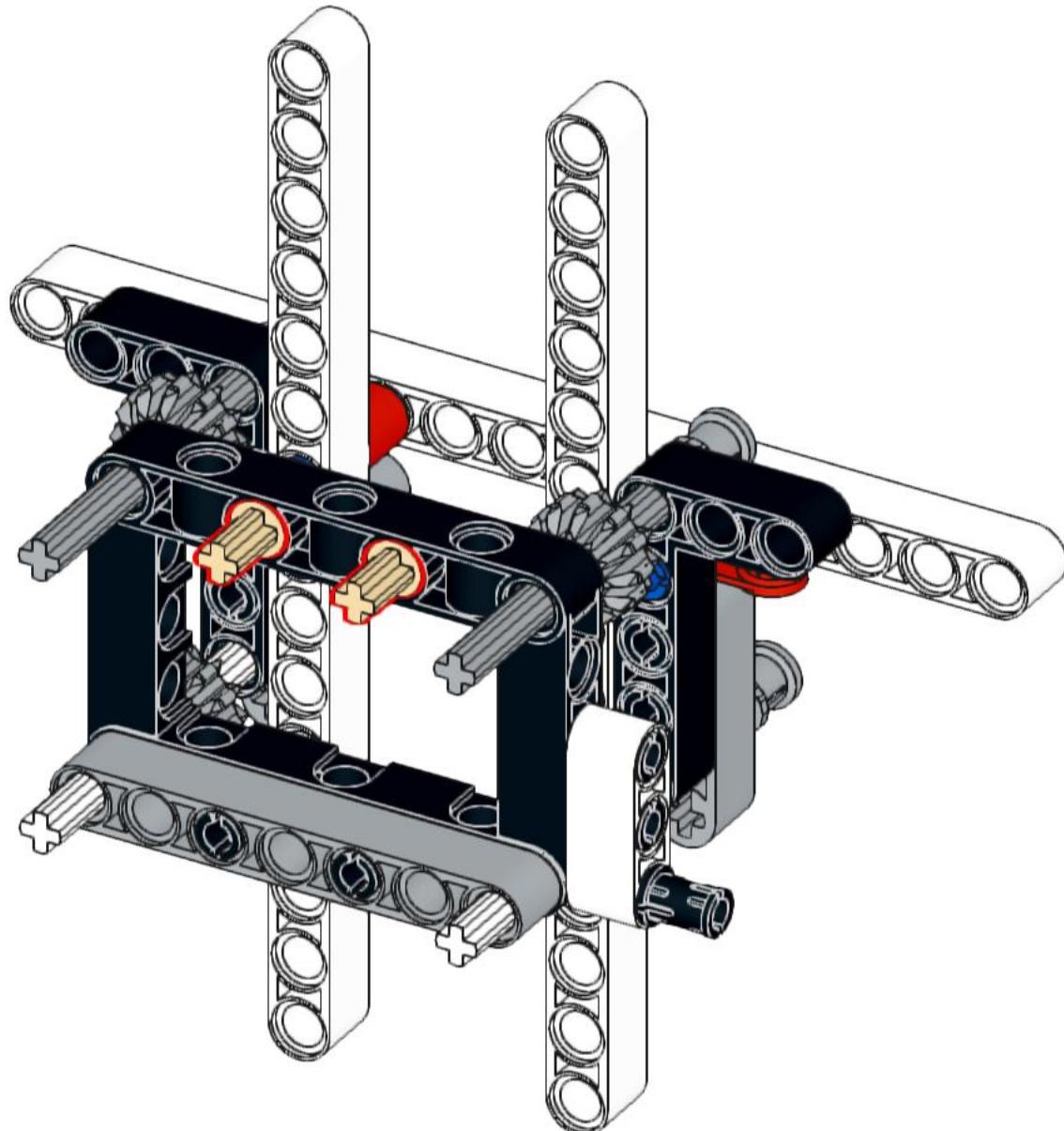
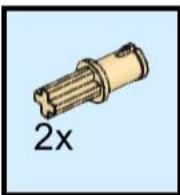
33



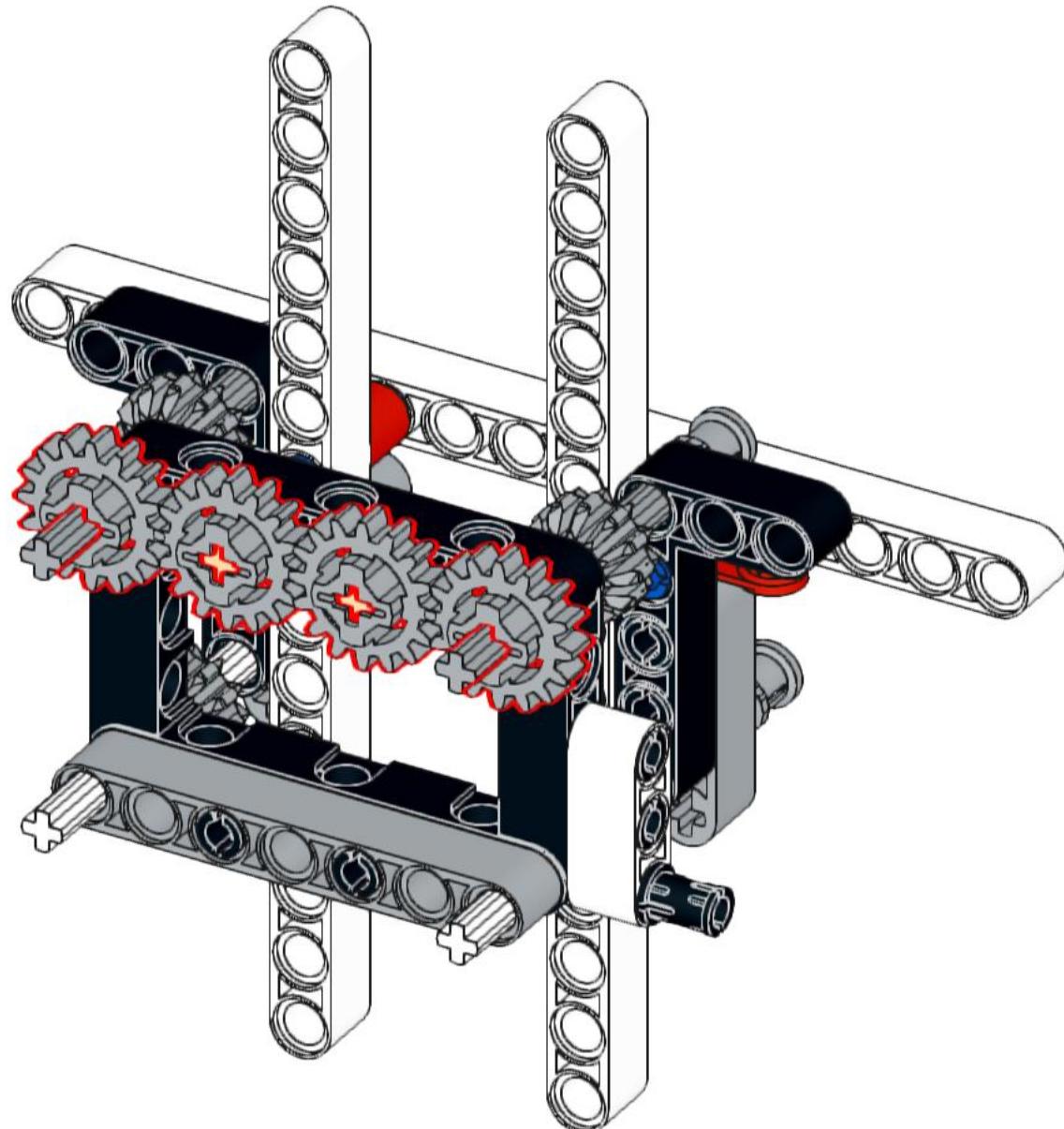
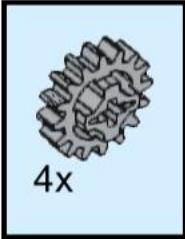
34



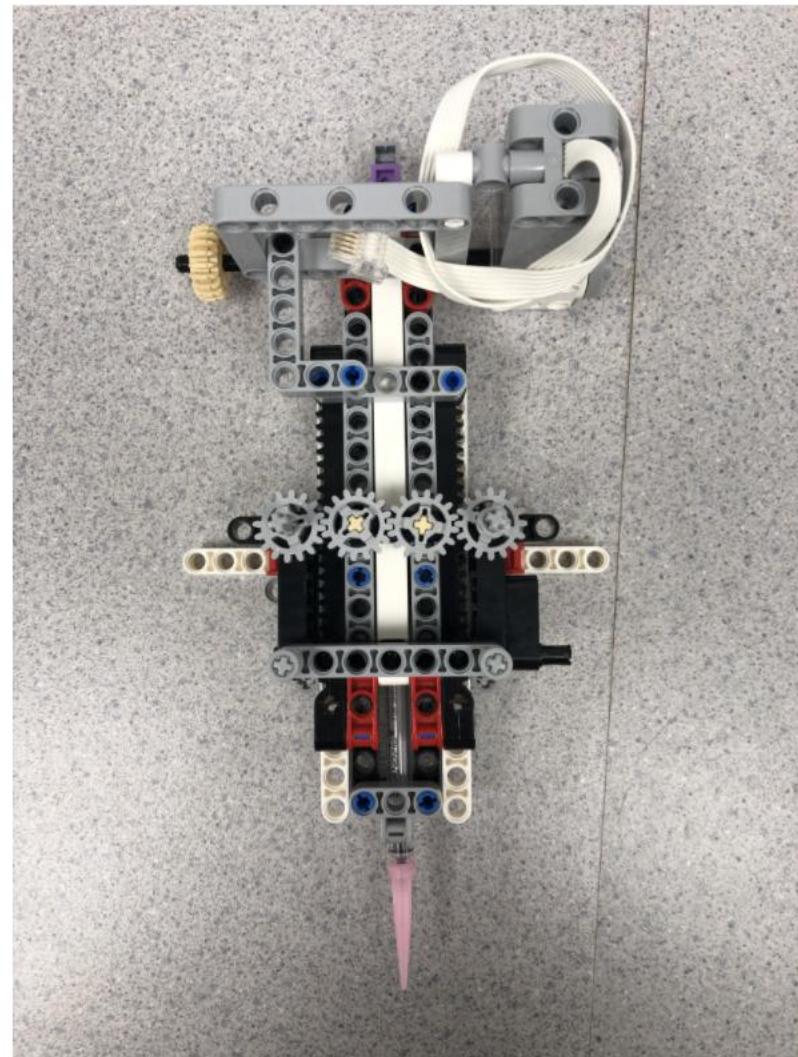
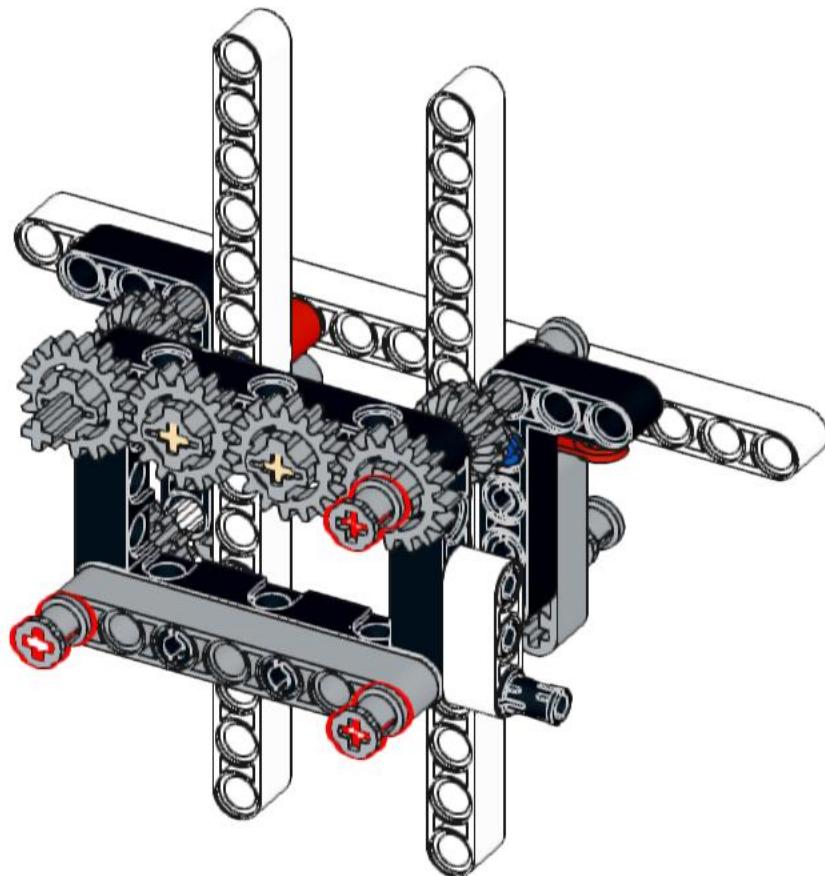
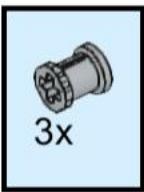
35



36

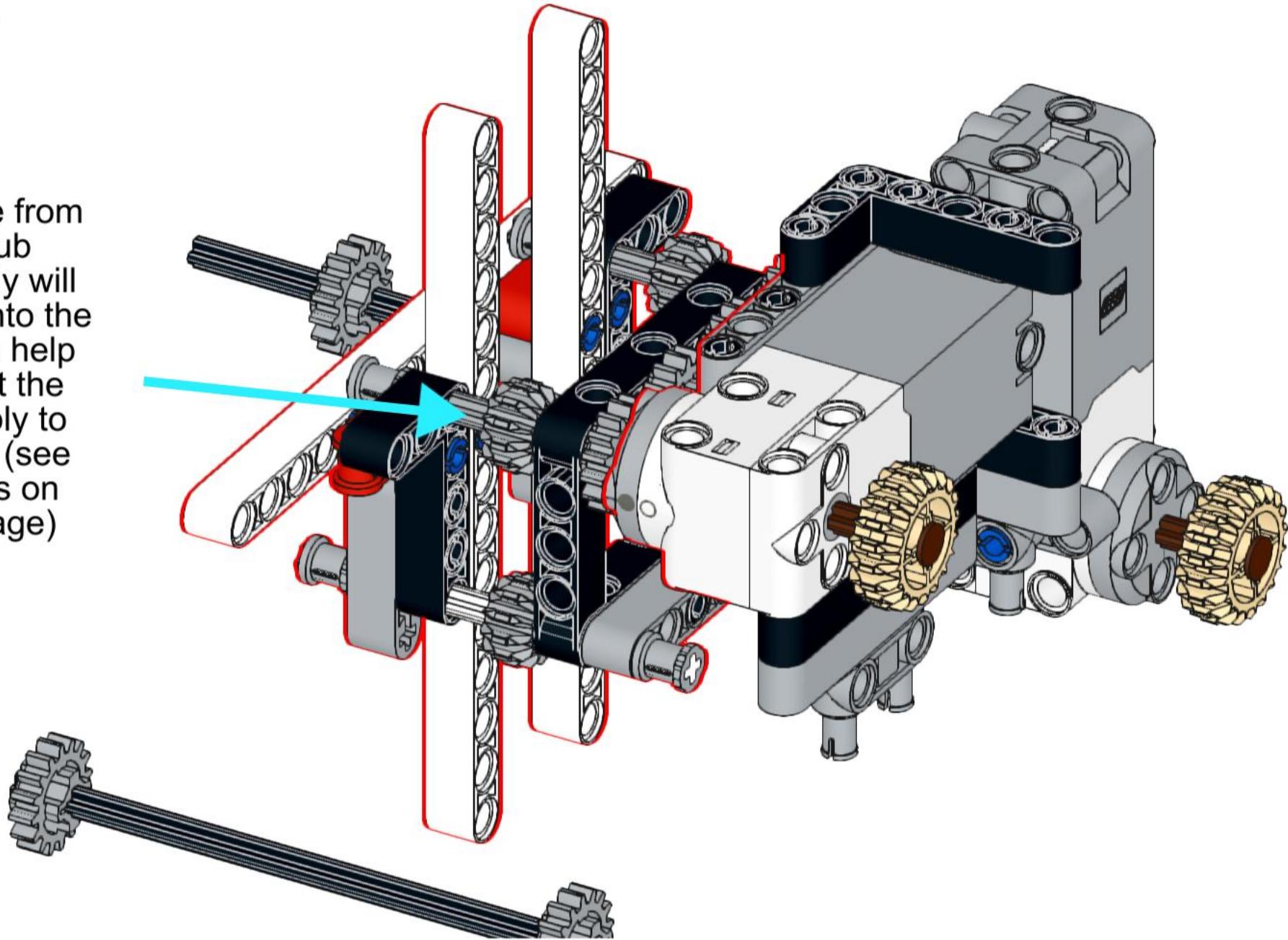


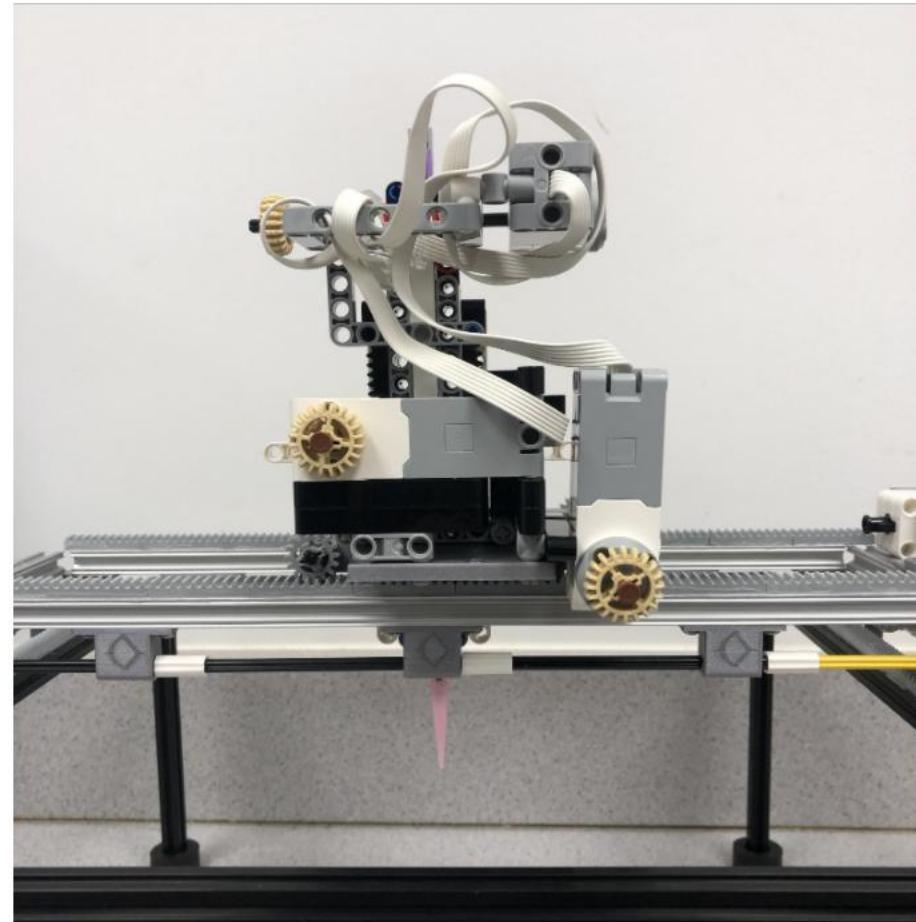
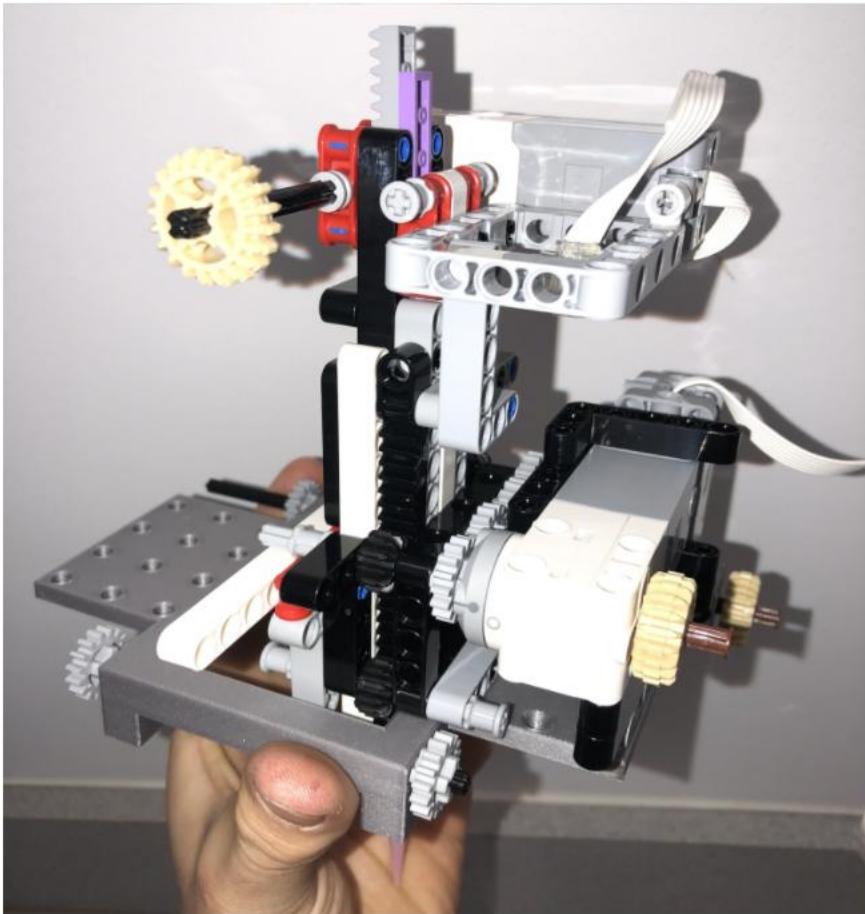
37



38

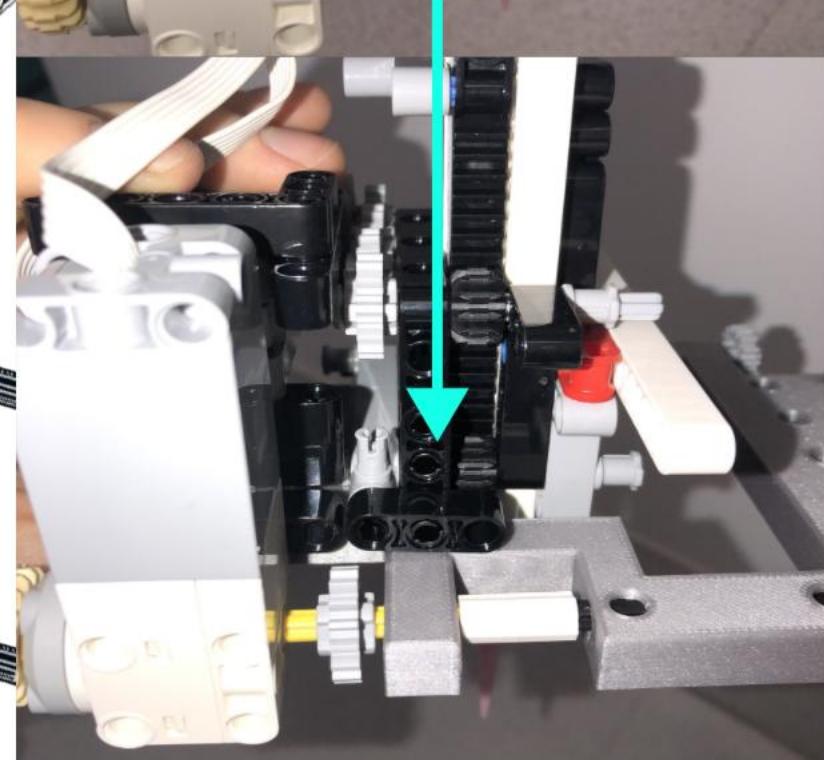
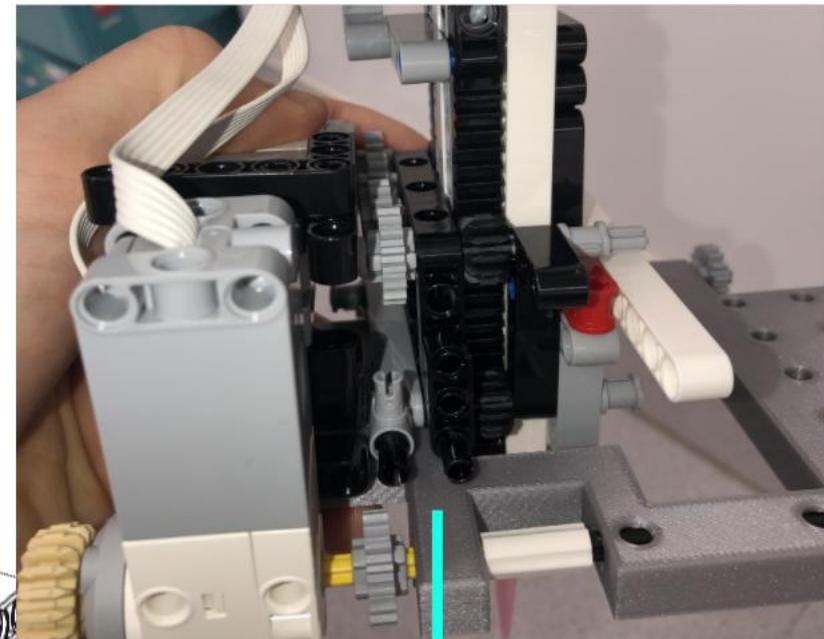
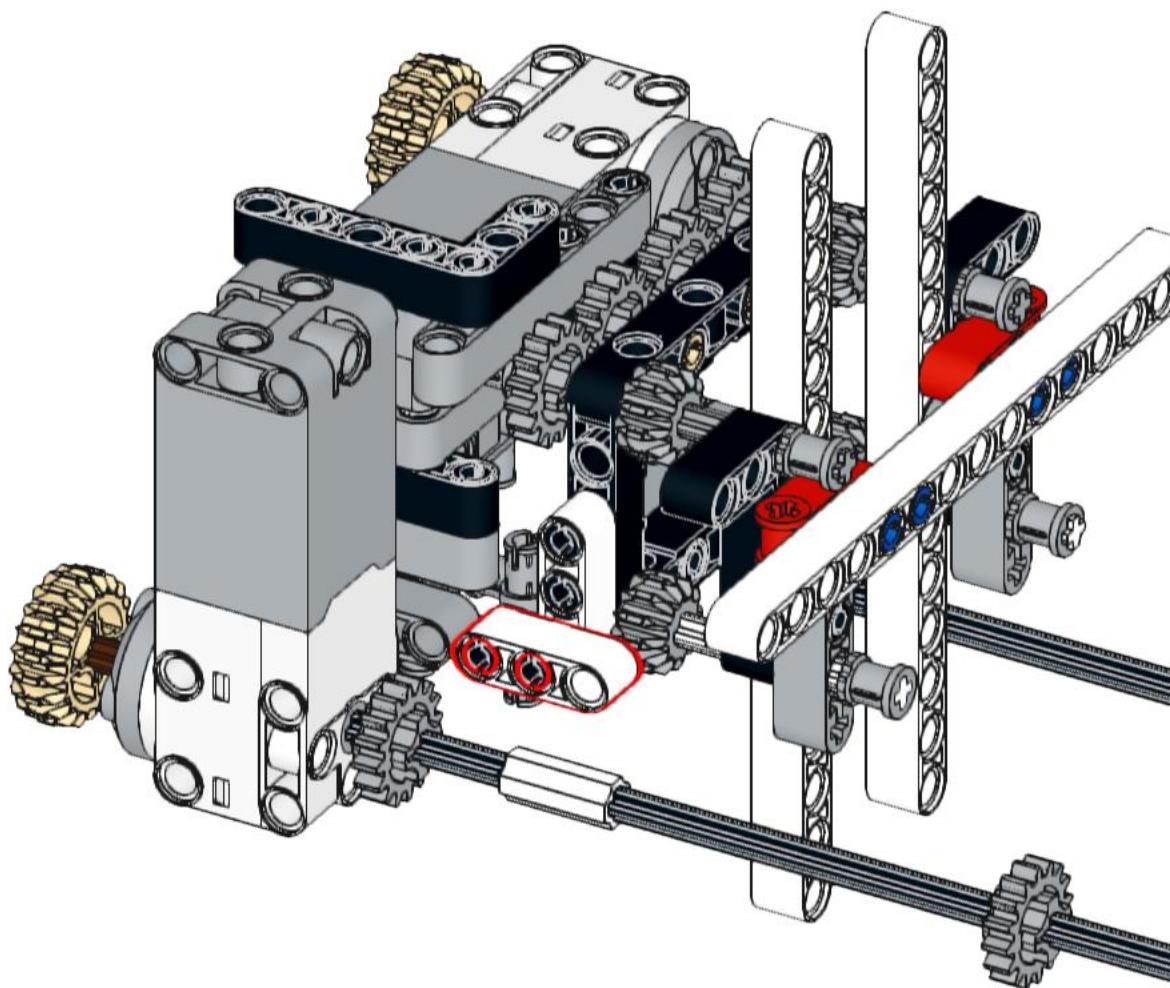
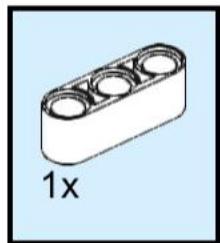
This axle from the sub assembly will now go into the motor to help connect the assembly to the cart (see pictures on next page)



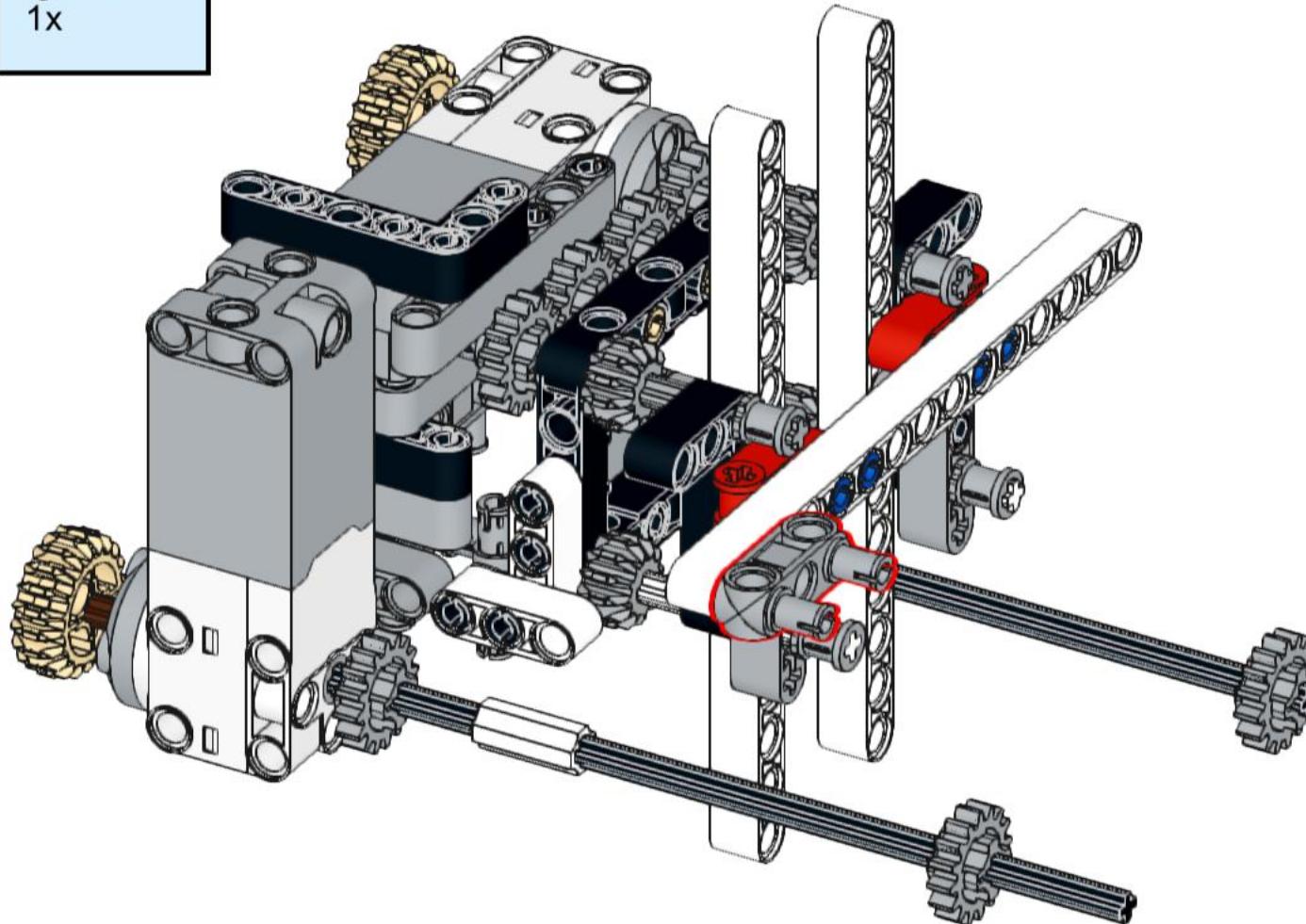
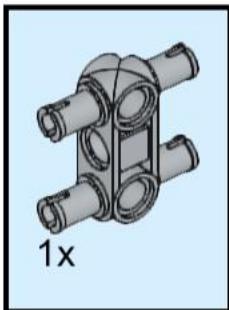


Insert the proper axle into the motor (left) to secure the assembly to the cart base. It may be helpful to place this all on the gantry frame now for further assembly, since the syringe piece is attached.

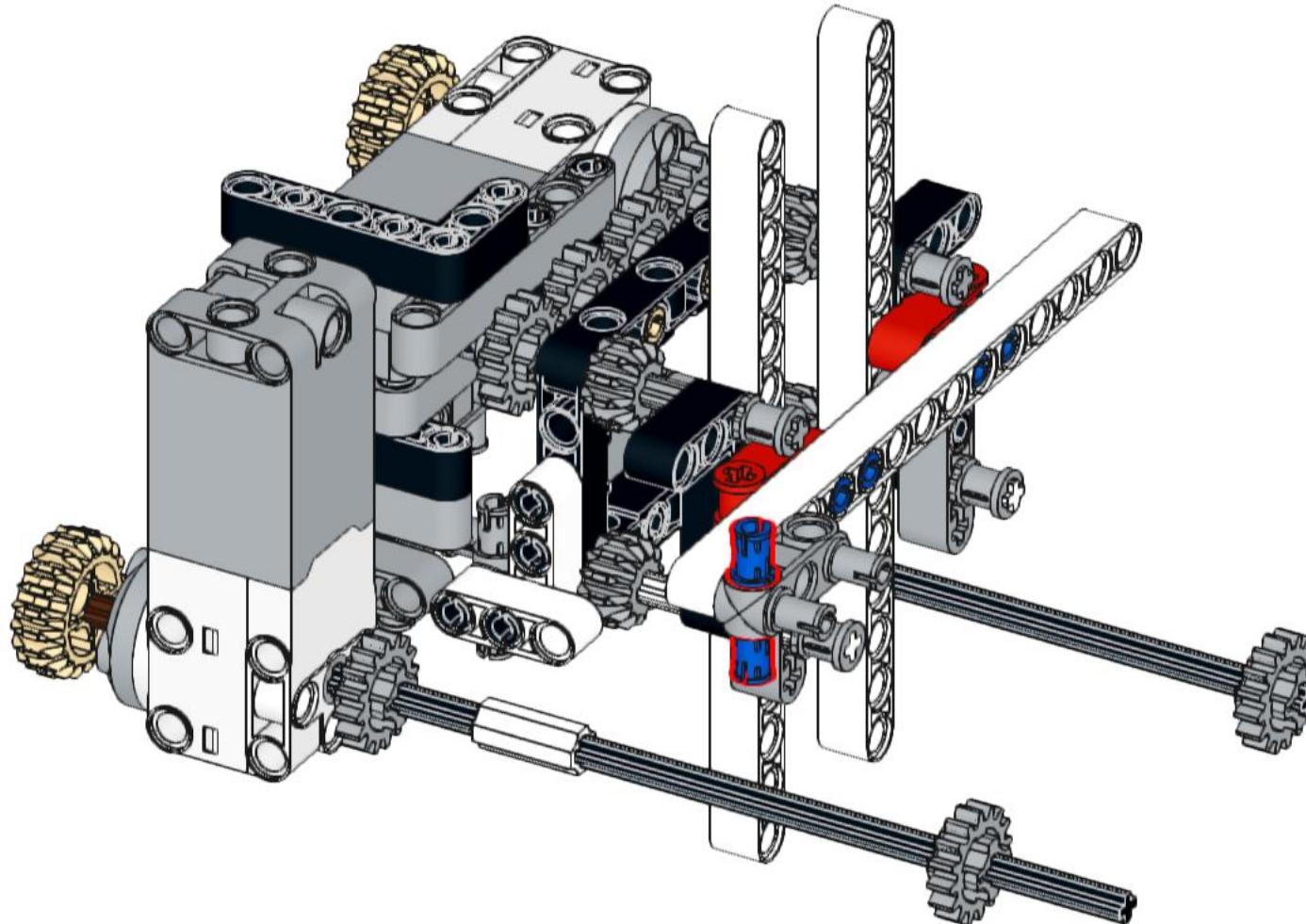
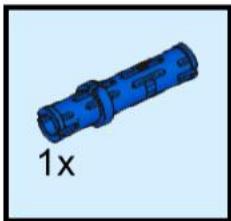
39



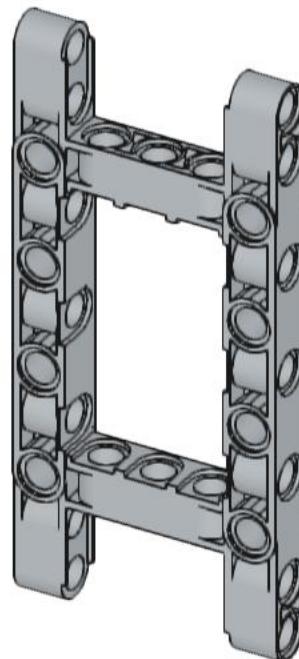
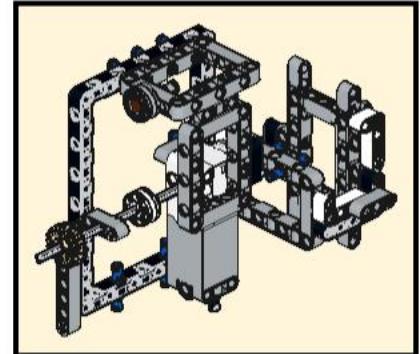
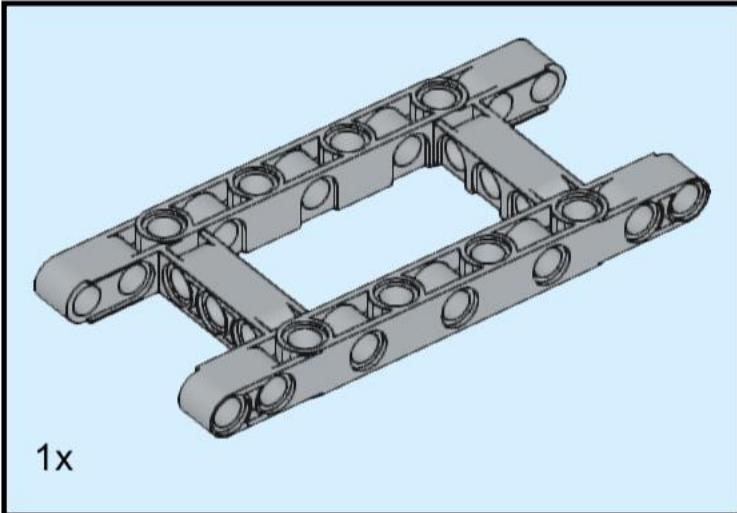
40



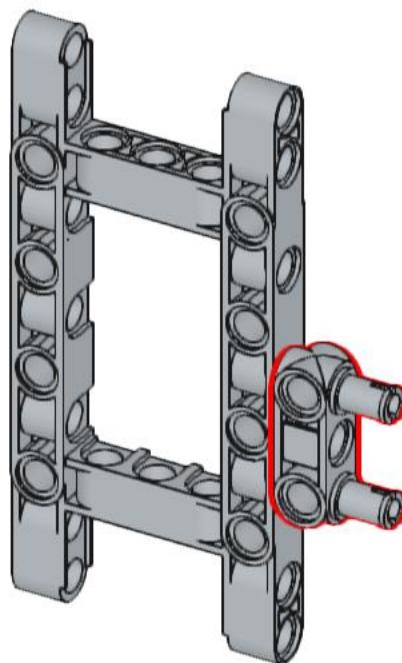
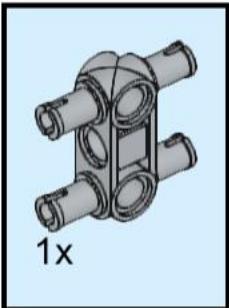
41



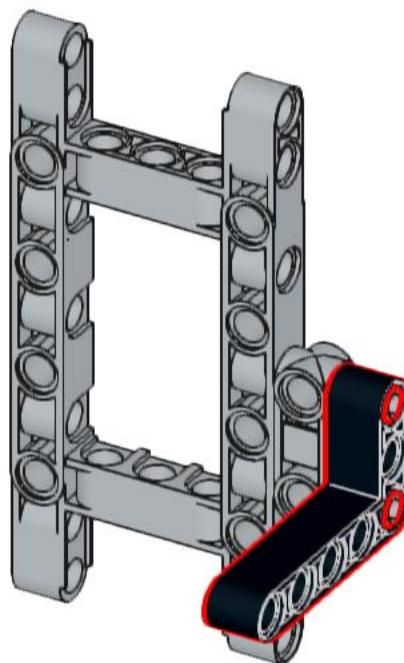
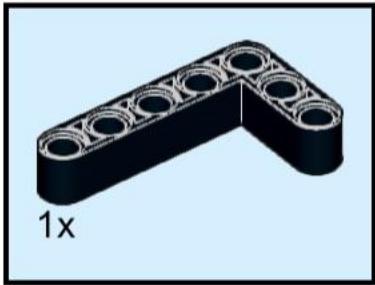
42



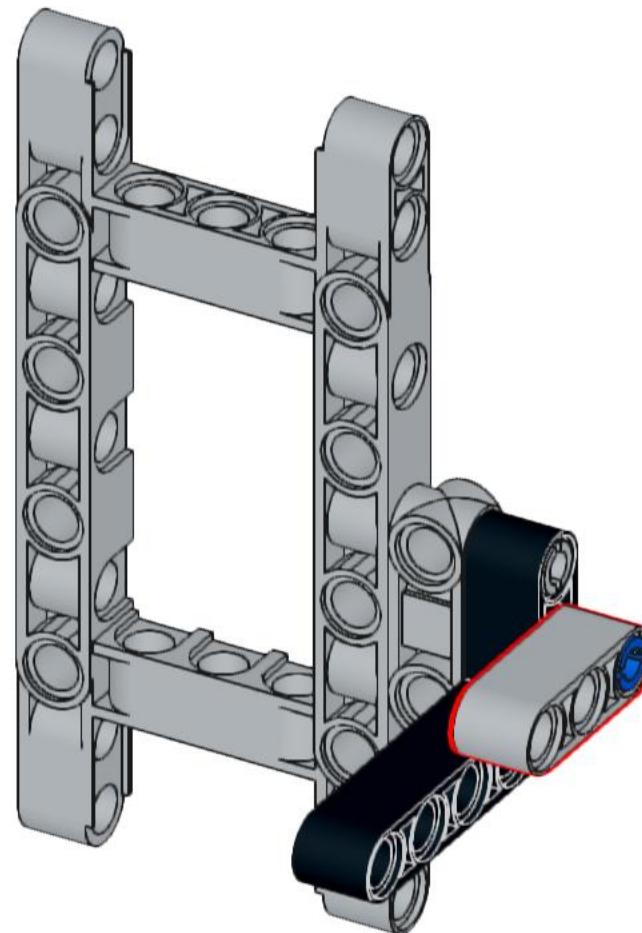
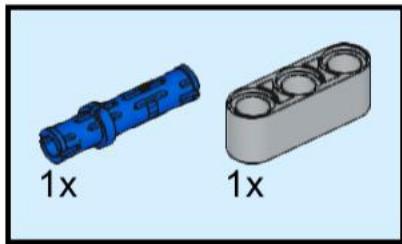
43



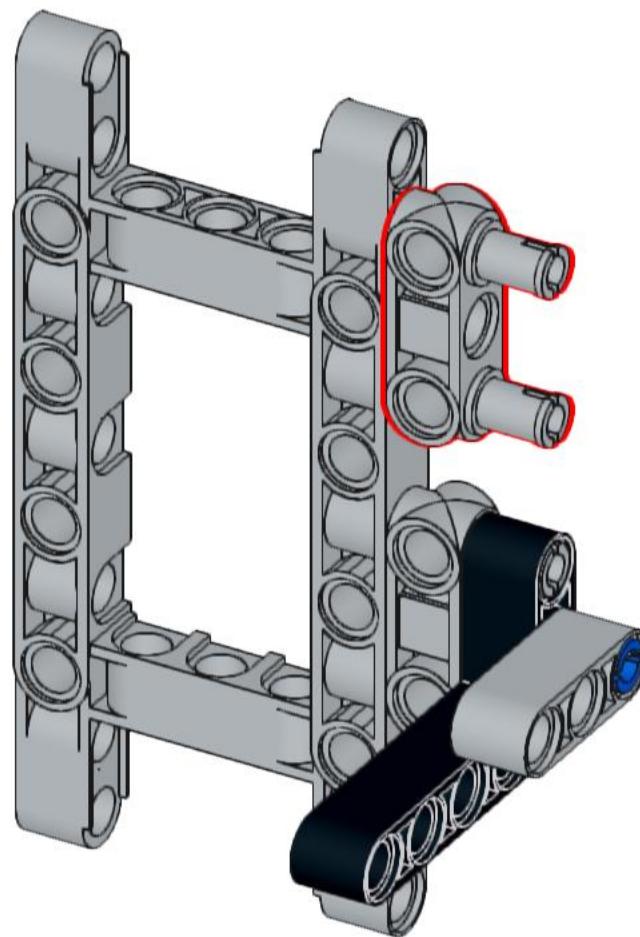
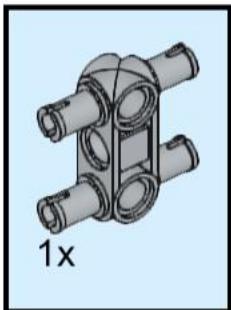
44



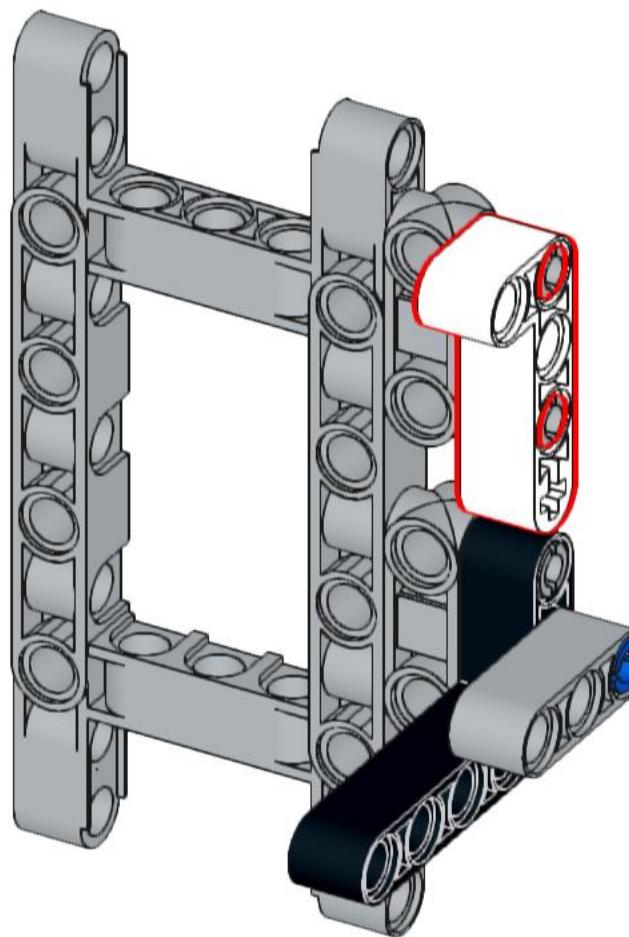
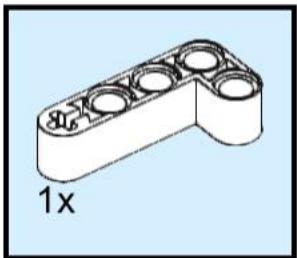
45



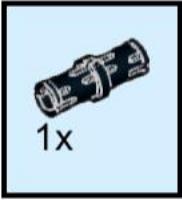
46



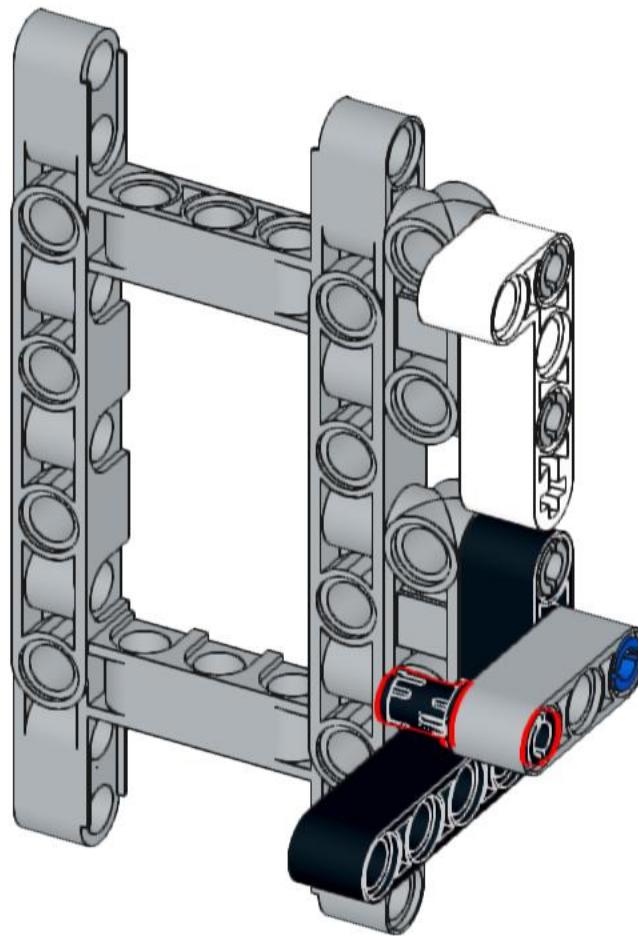
47



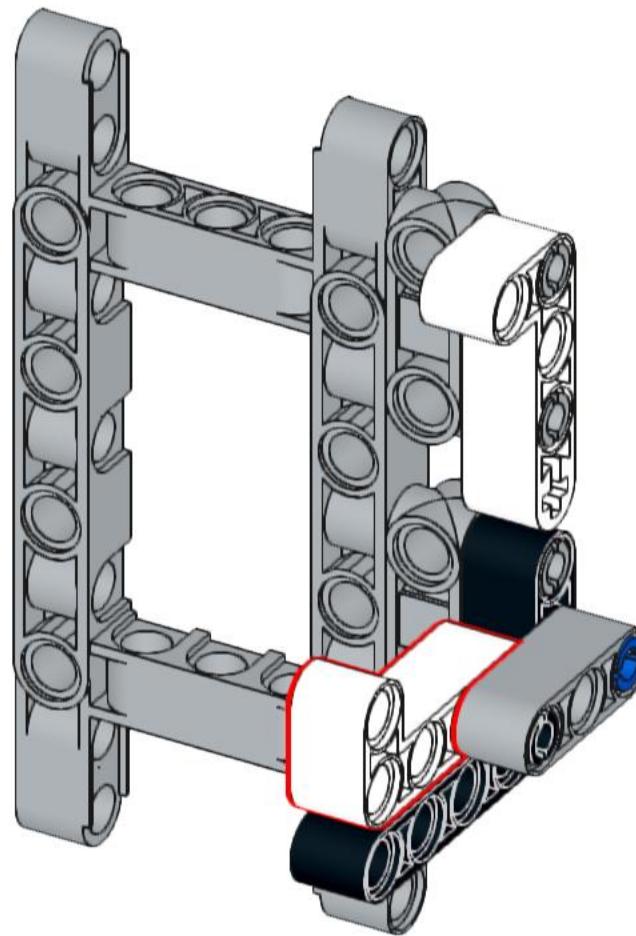
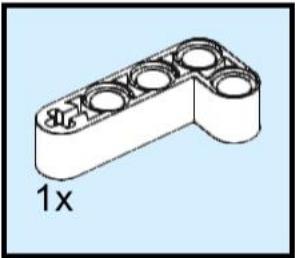
48



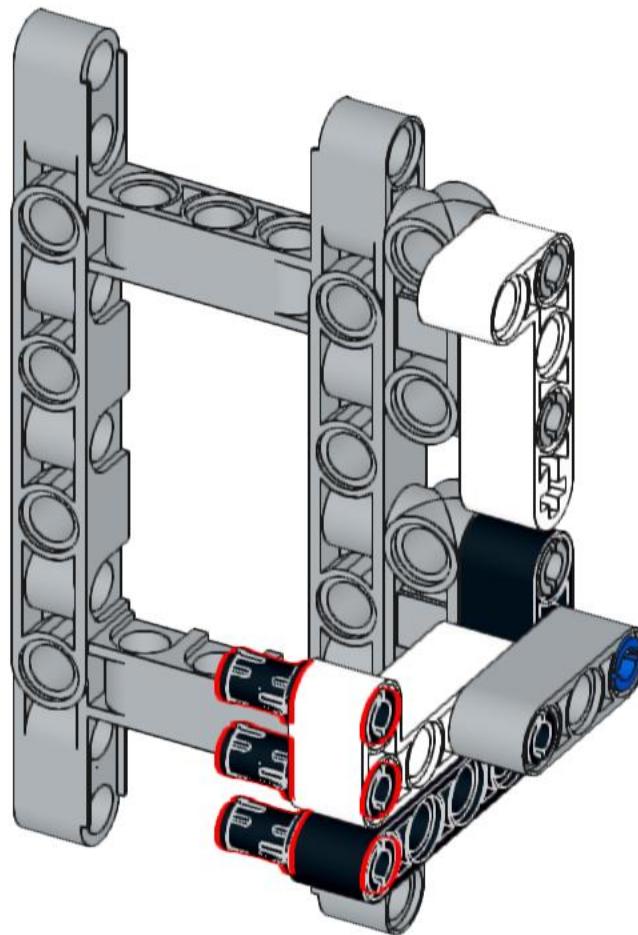
1x



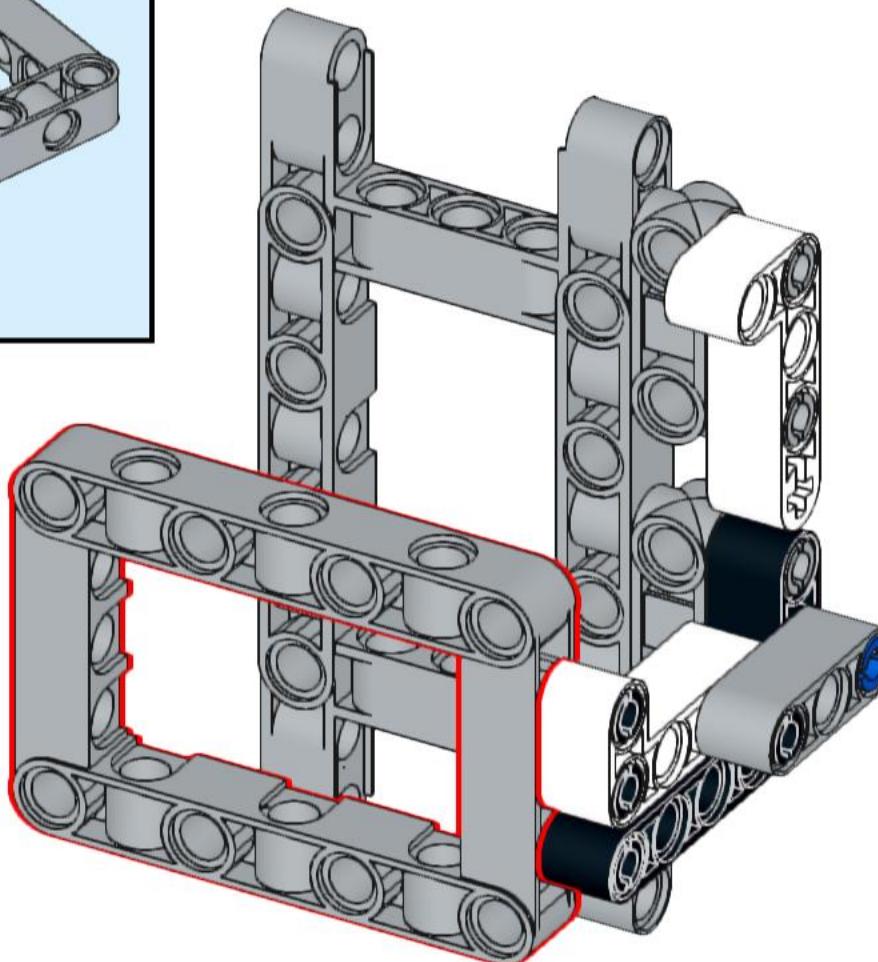
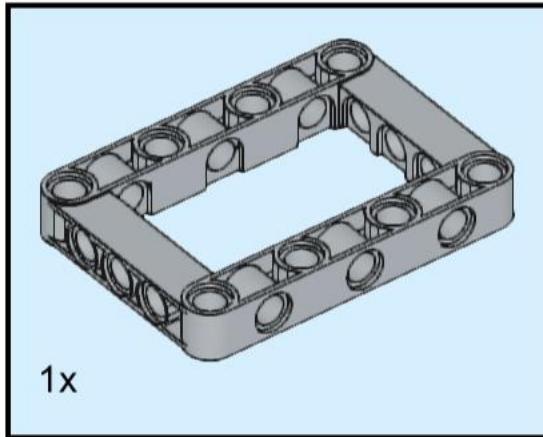
49



50



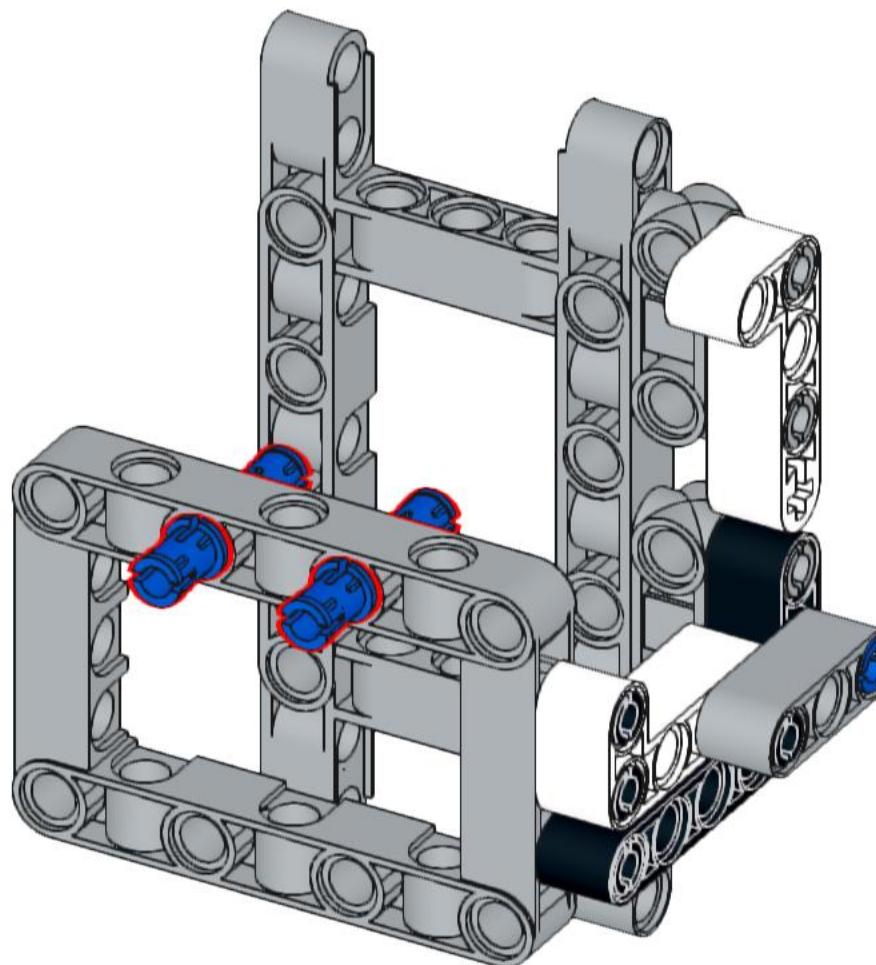
51



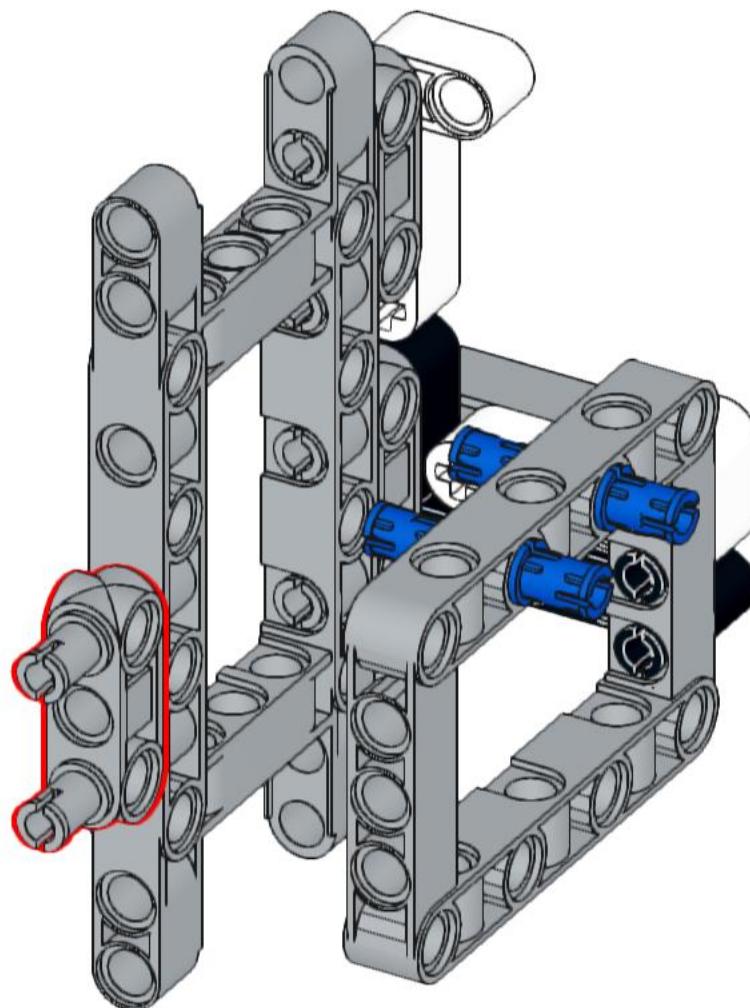
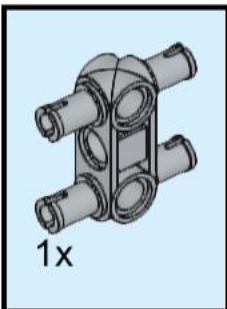
52

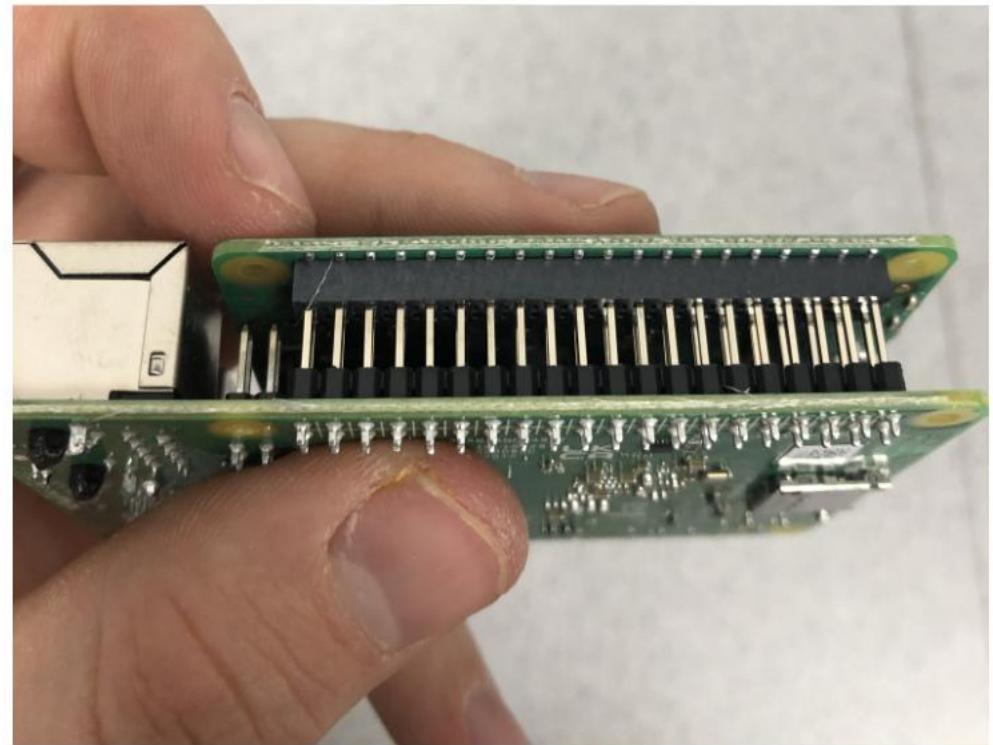
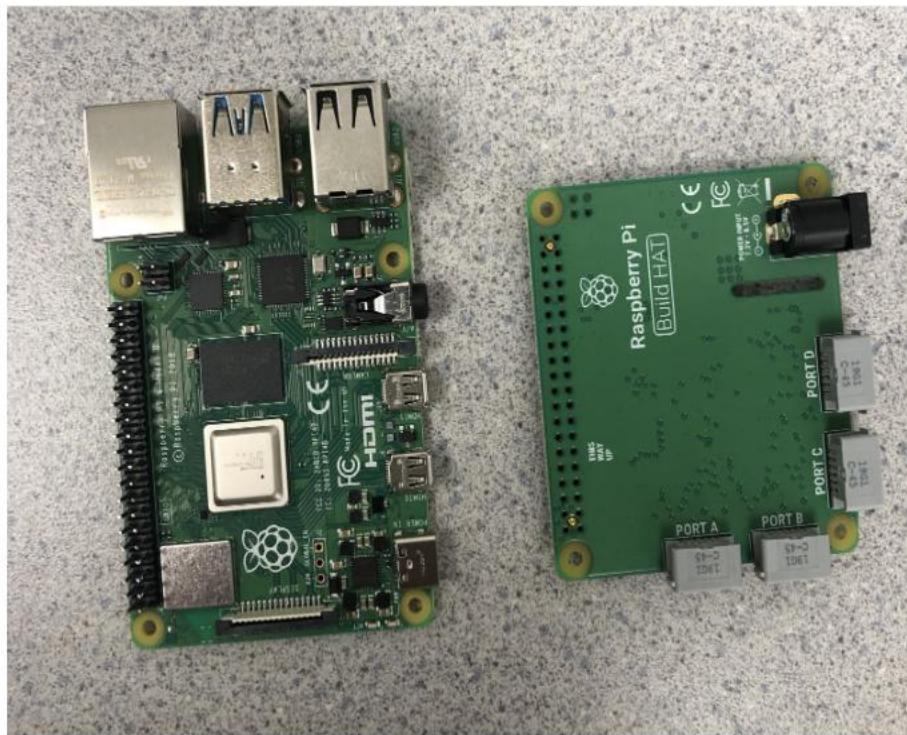


2x



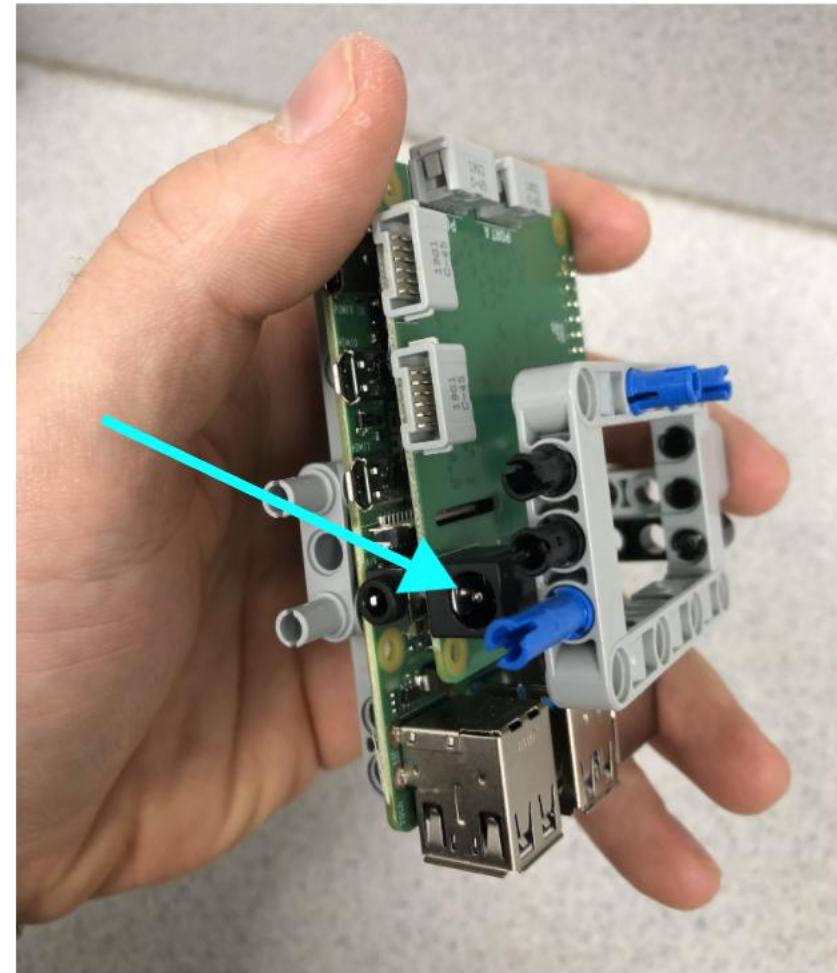
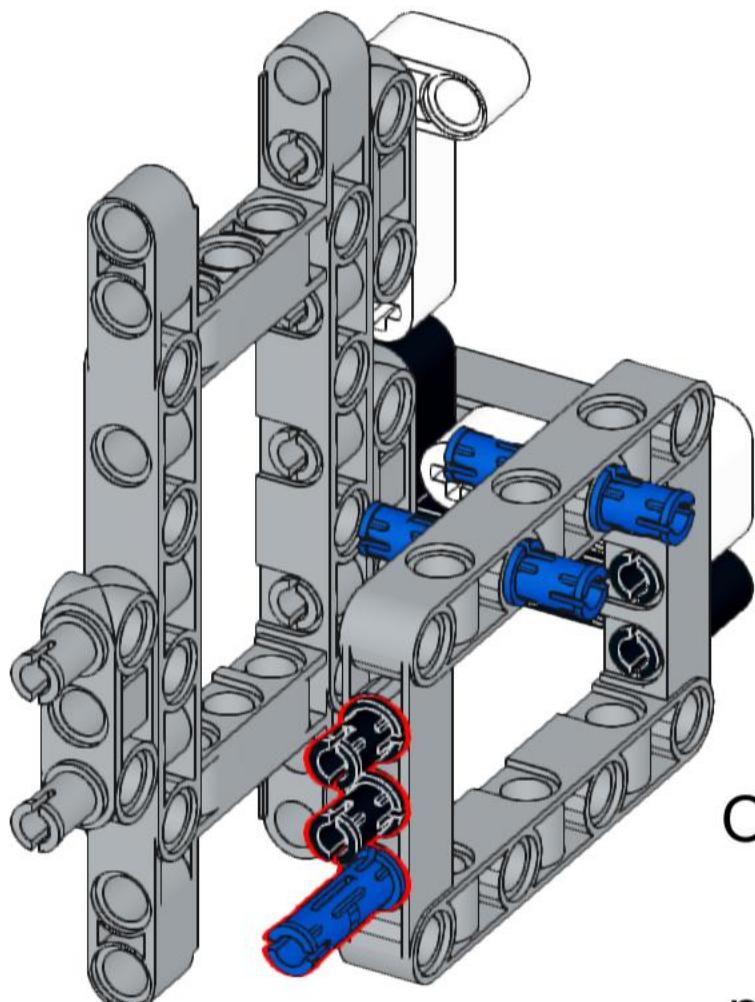
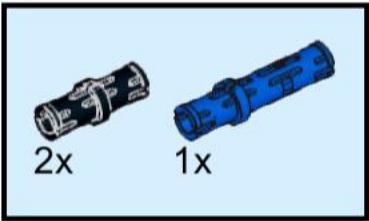
53





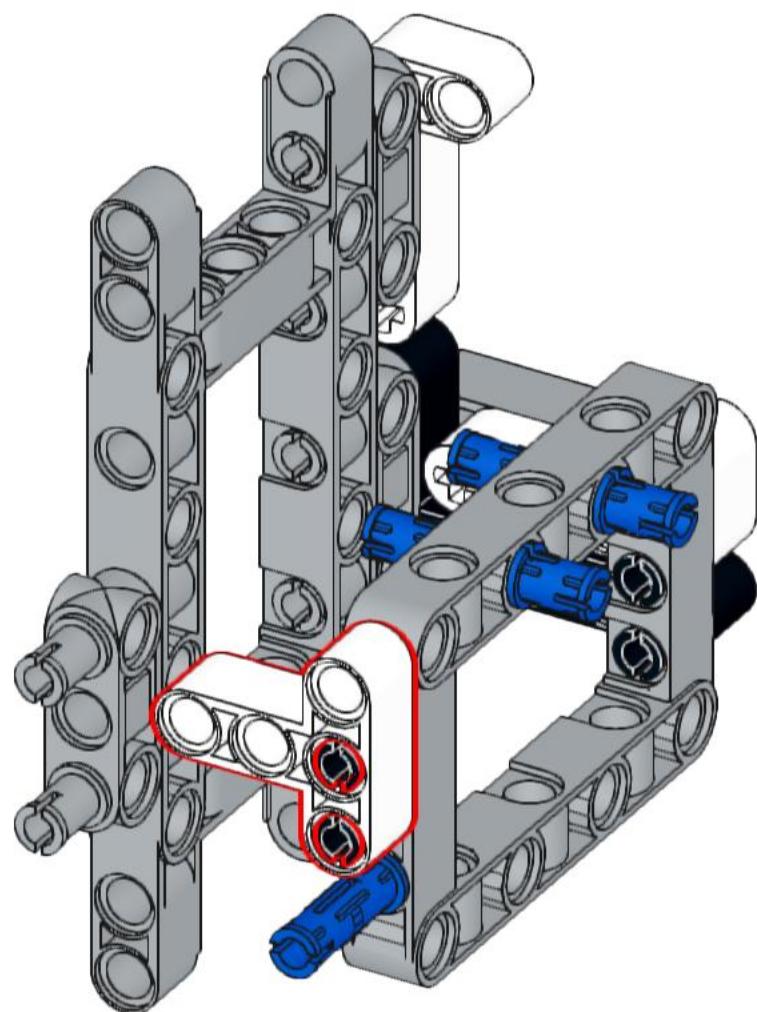
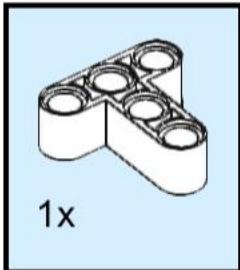
Gather R-Pi and Buildhat, and align pins as shown in the image on the right, then push them all the way in.

54



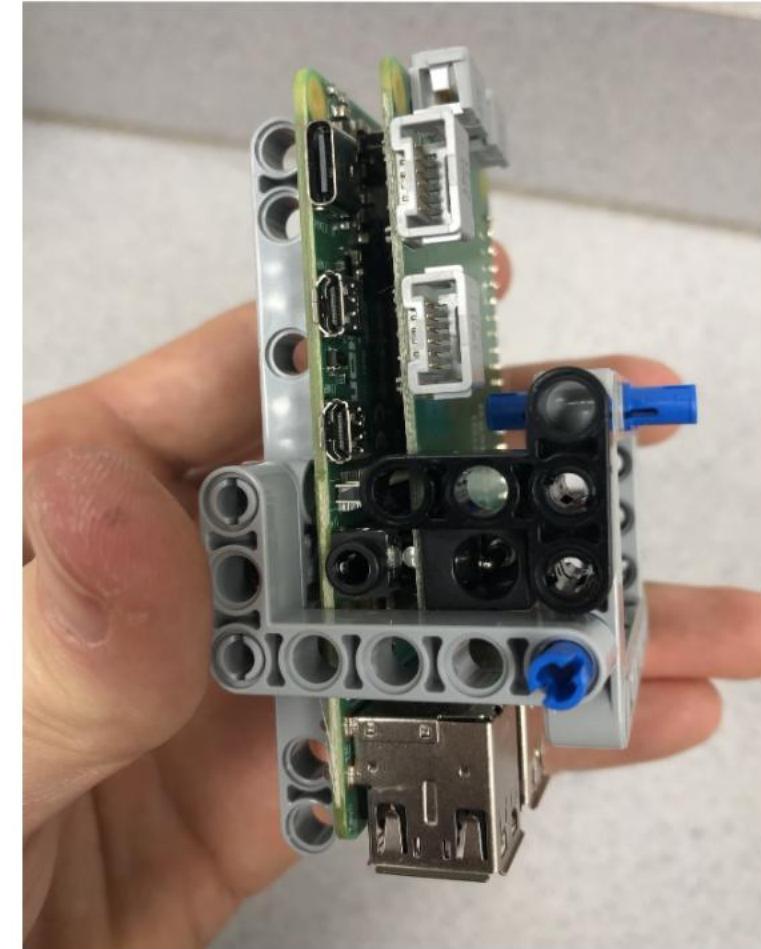
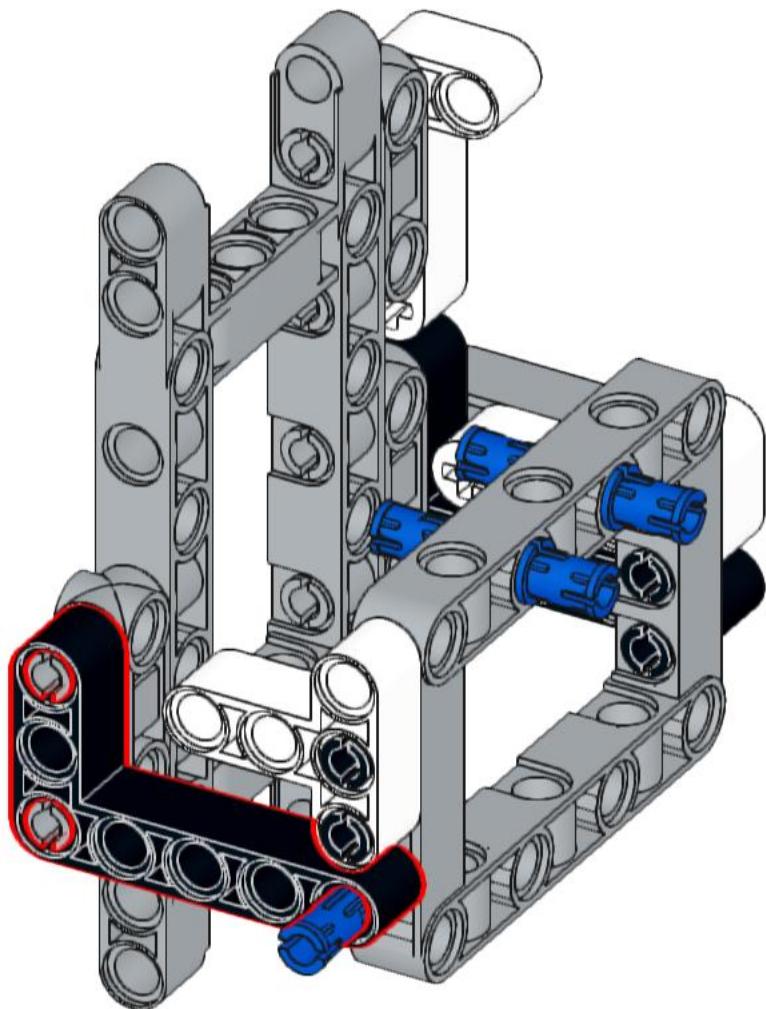
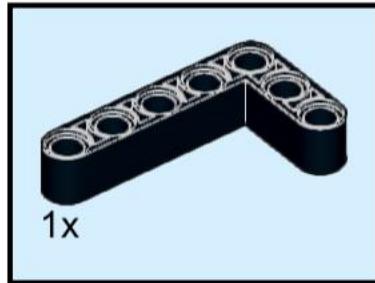
Once the 3 pins are inserted, place the R-Pi + BH in the assembly with the orientation shown here, so the black power supply (arrow), is near the pins.

55



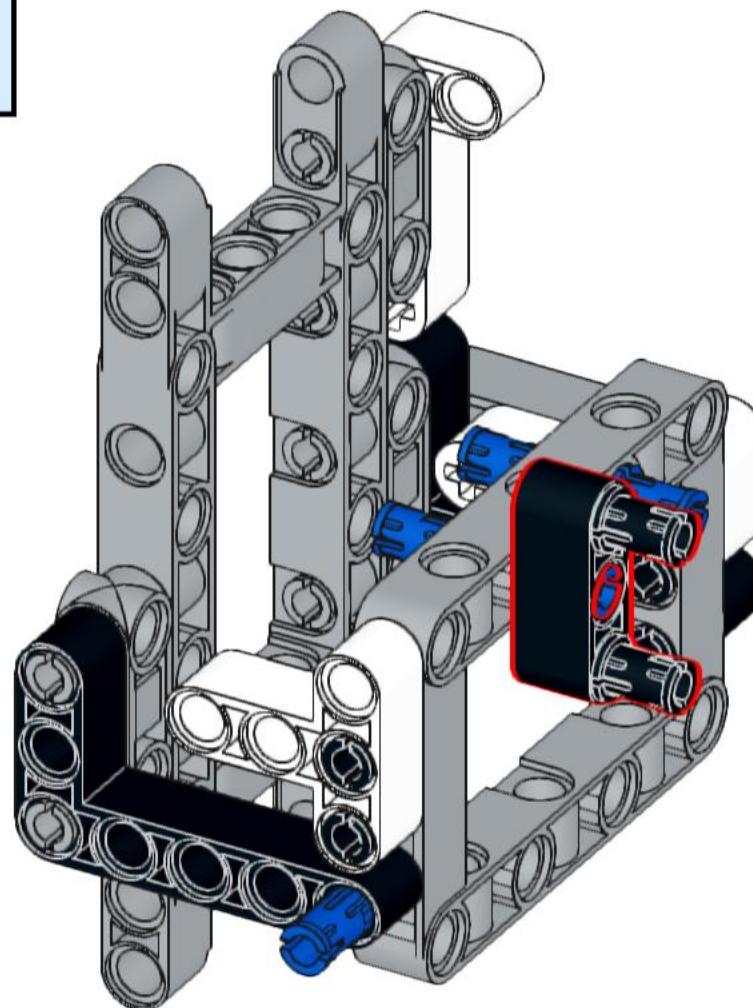
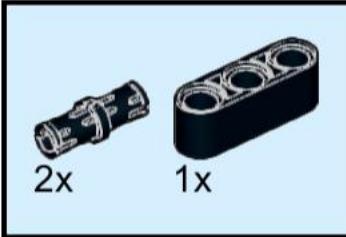
Insert the T-shaped piece and press the top of the flat edge of the power supply against it

56

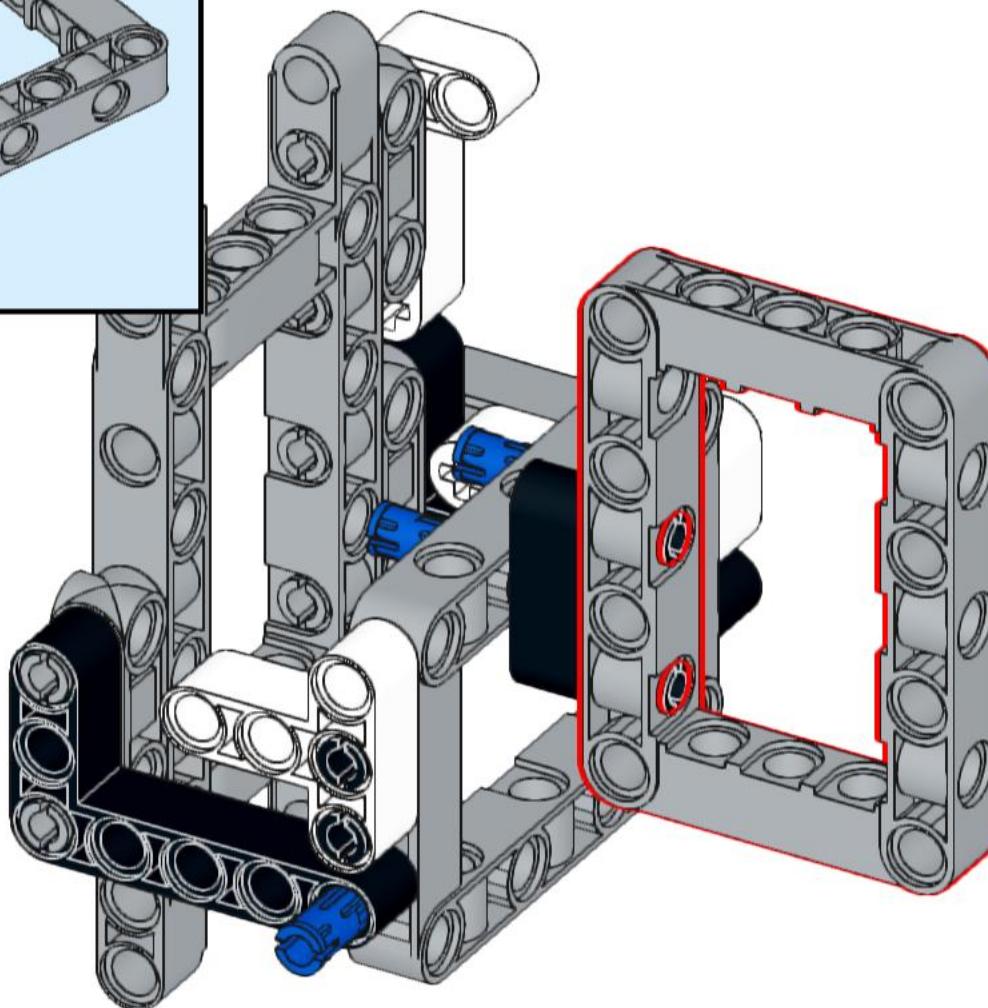
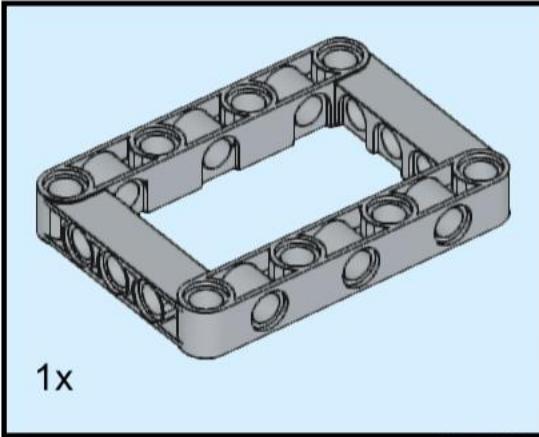


Insert the L-shaped piece so that it pushes up against the bottom flat edge of the power supply box, thereby wedging it in. The R-Pi + BH should be secure enough that it does not need to be held in place anymore

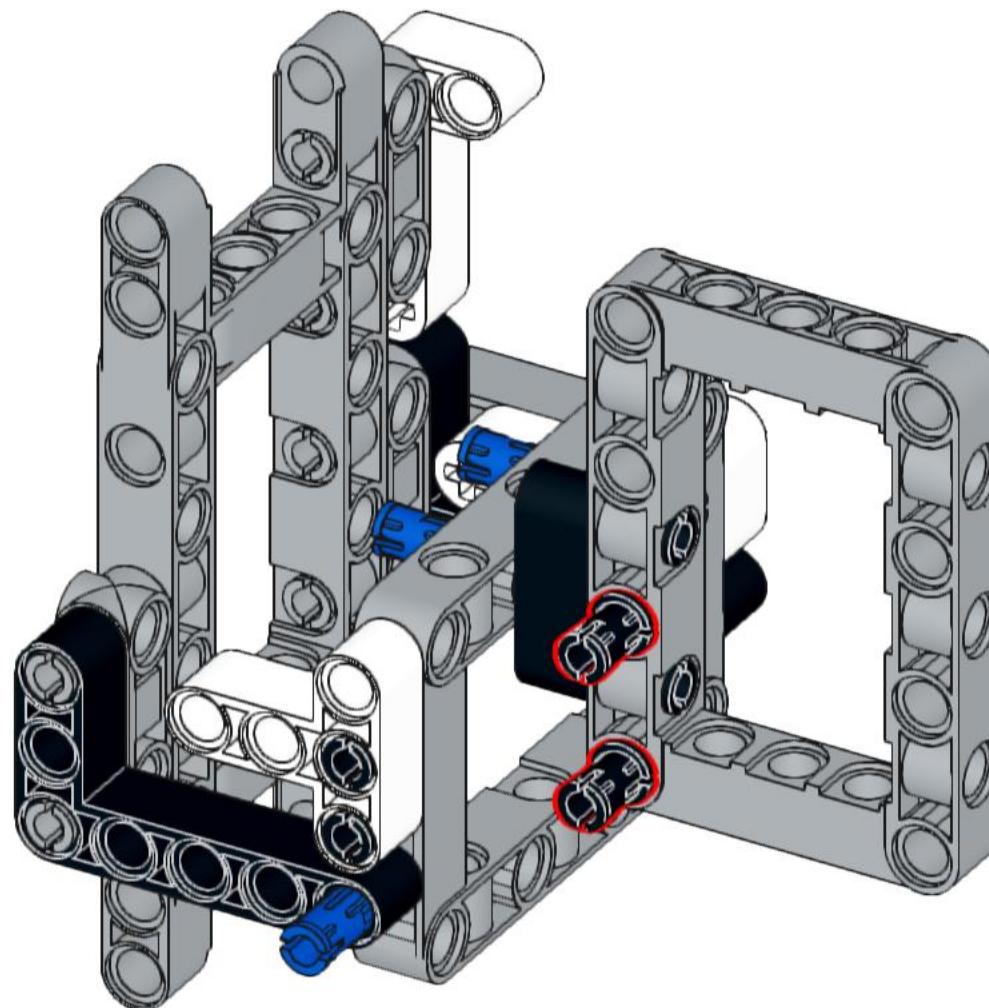
57



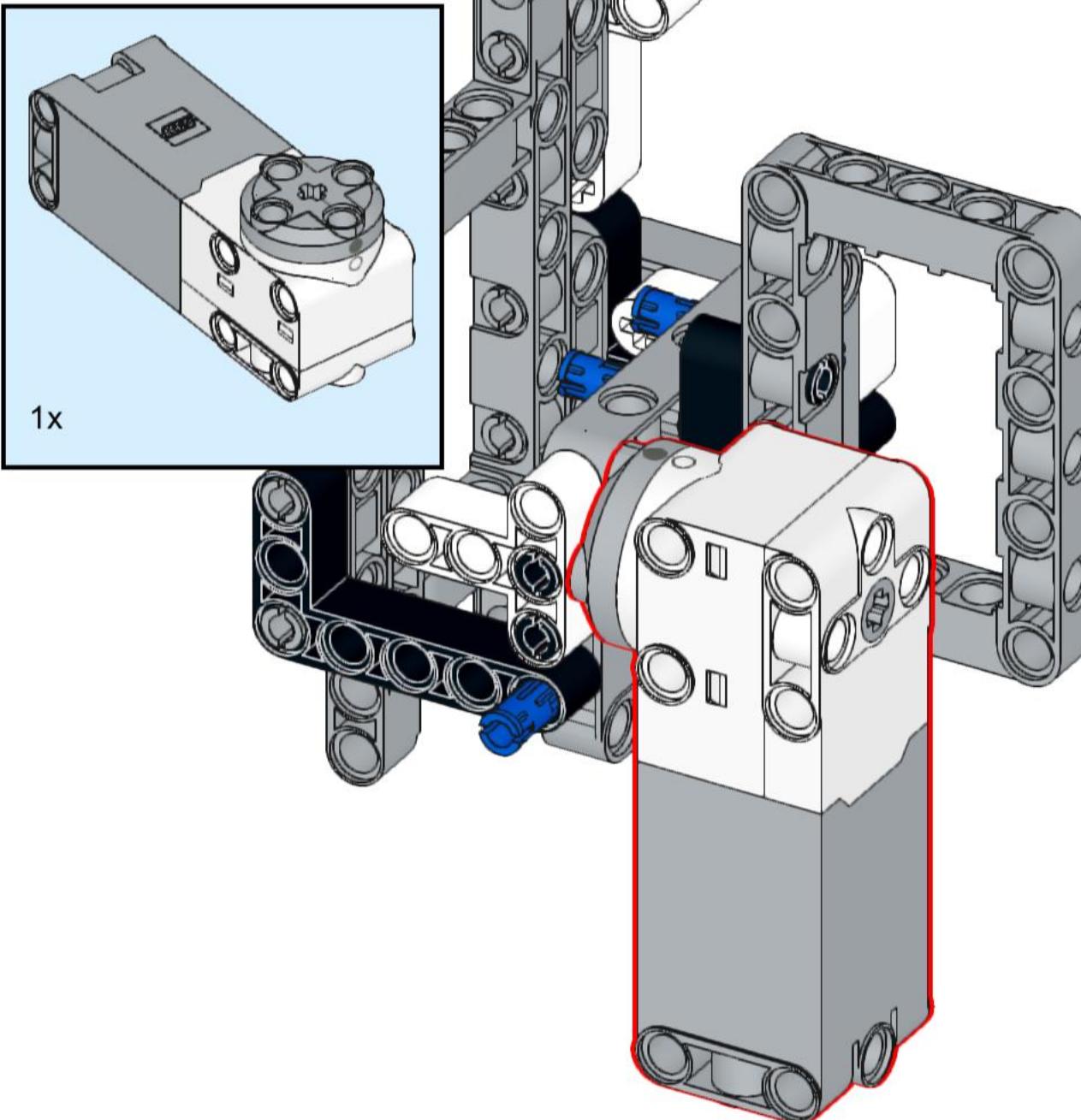
58



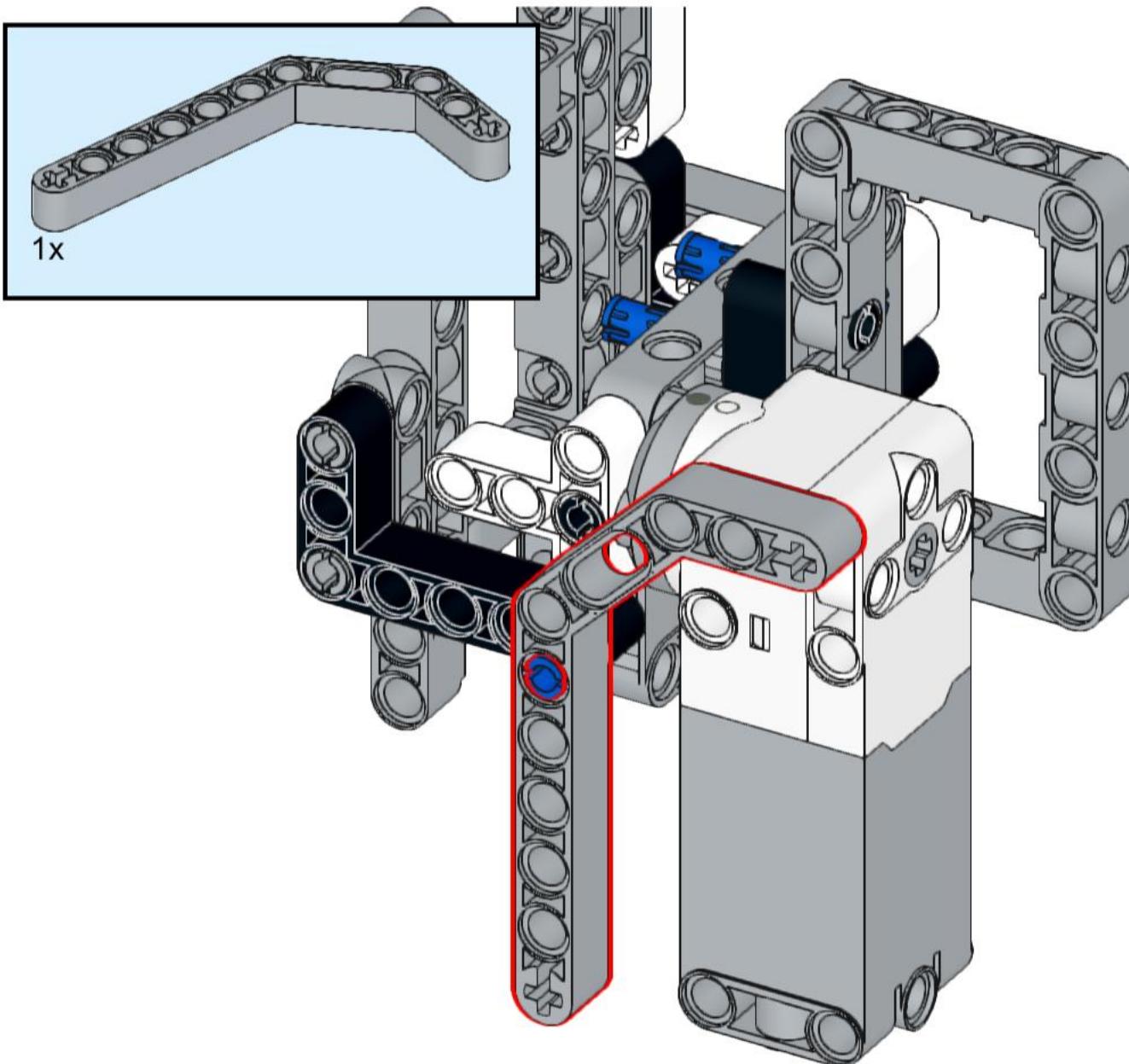
59



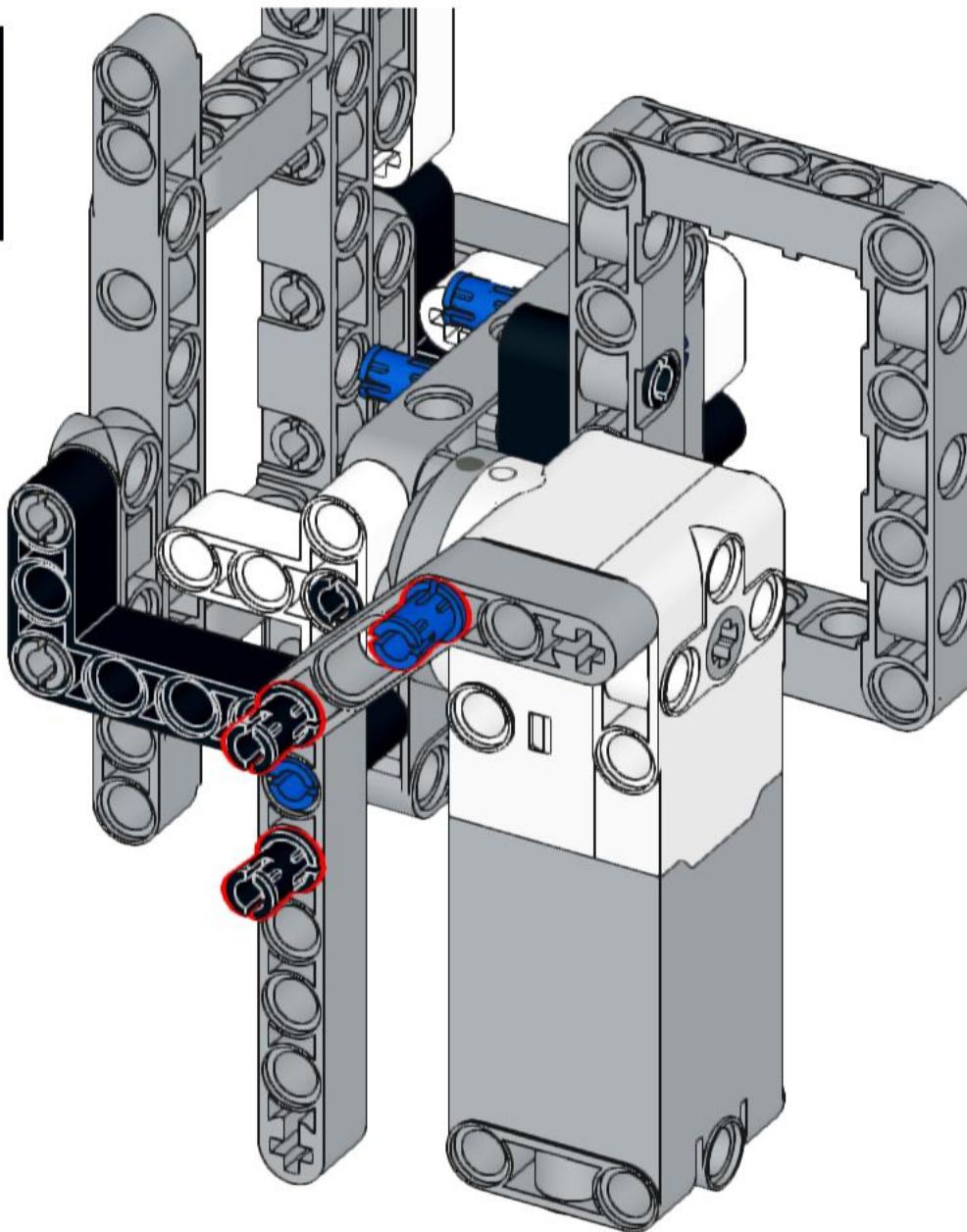
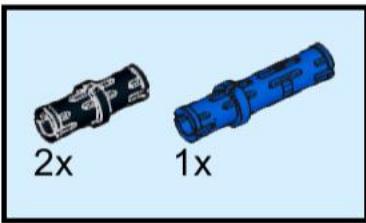
60



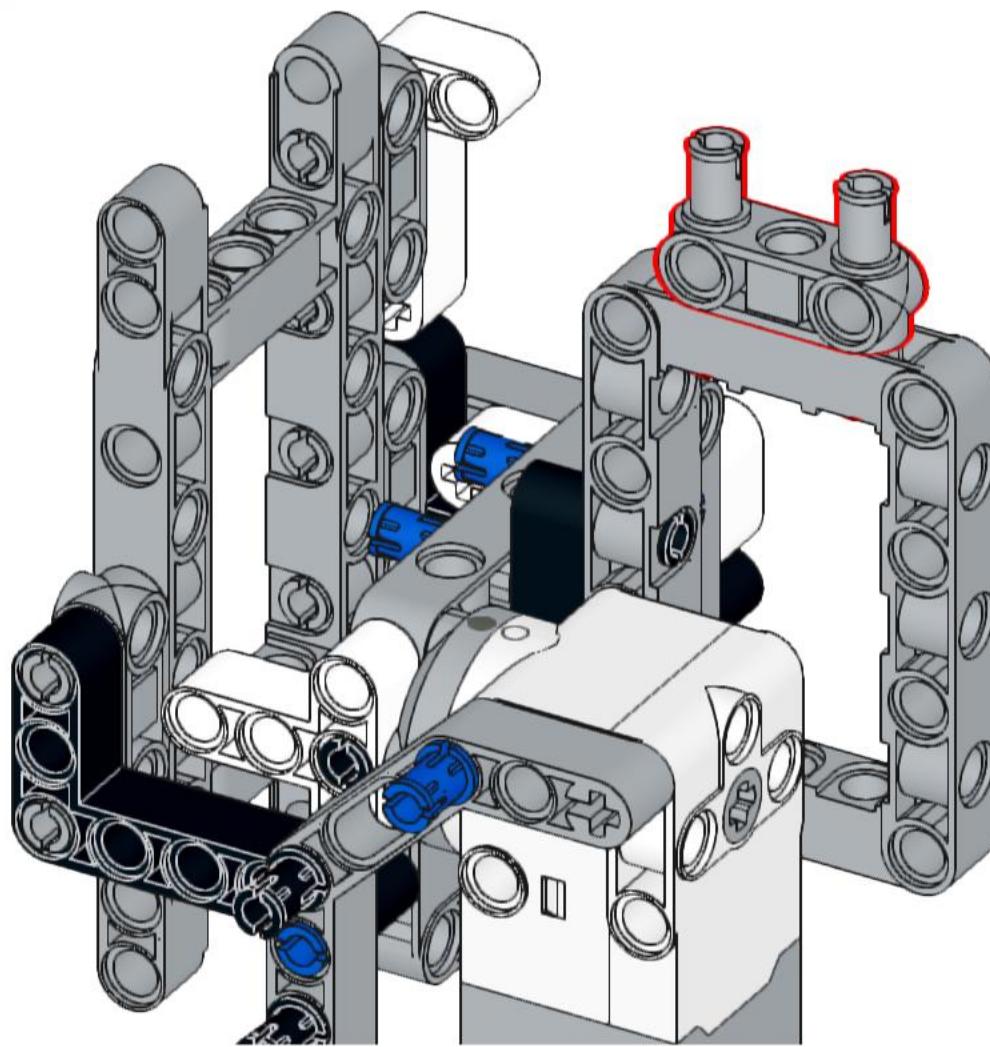
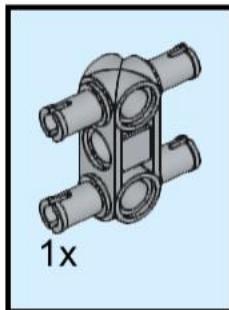
61



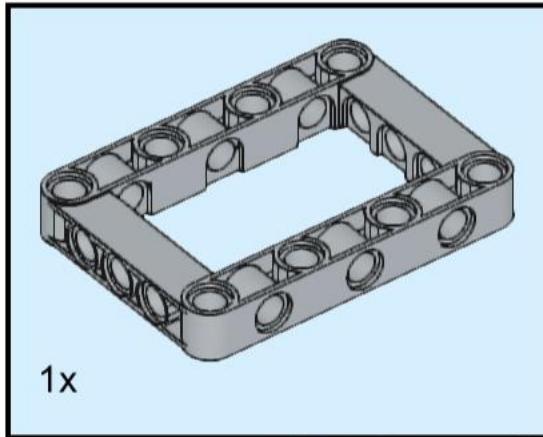
62



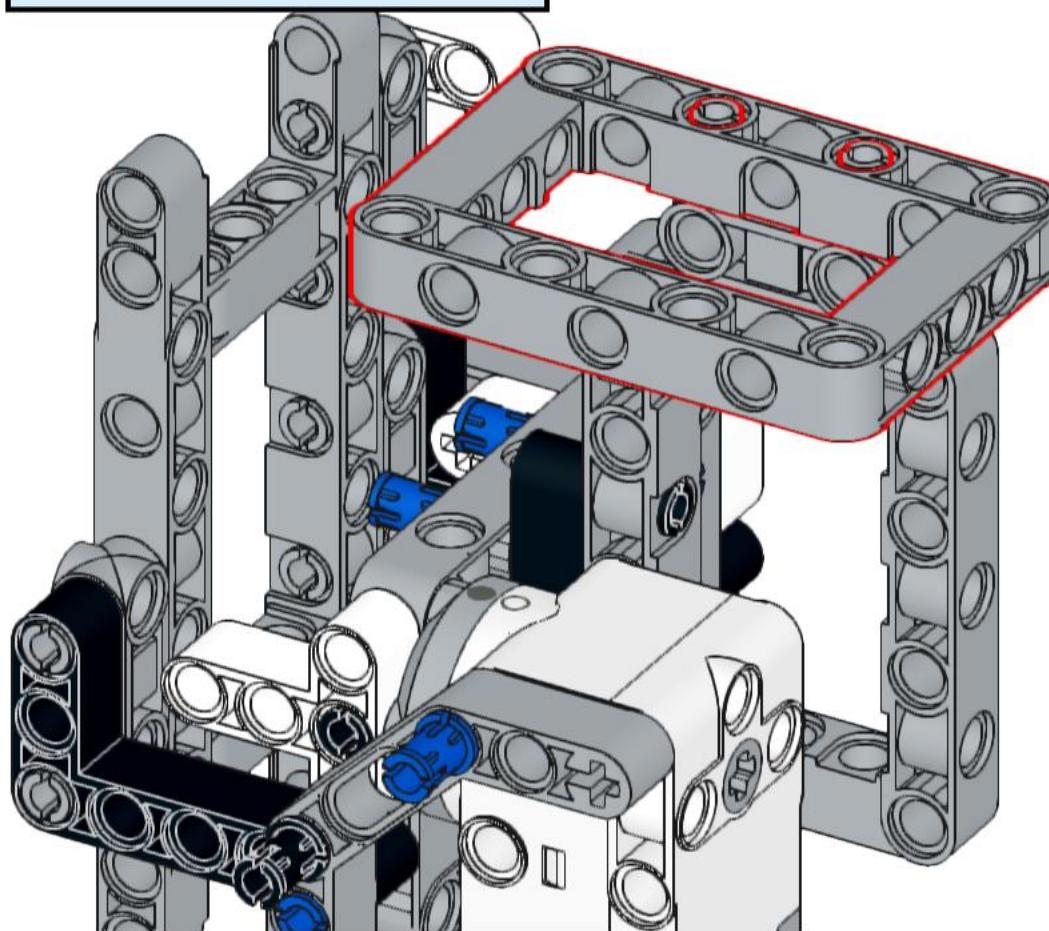
63



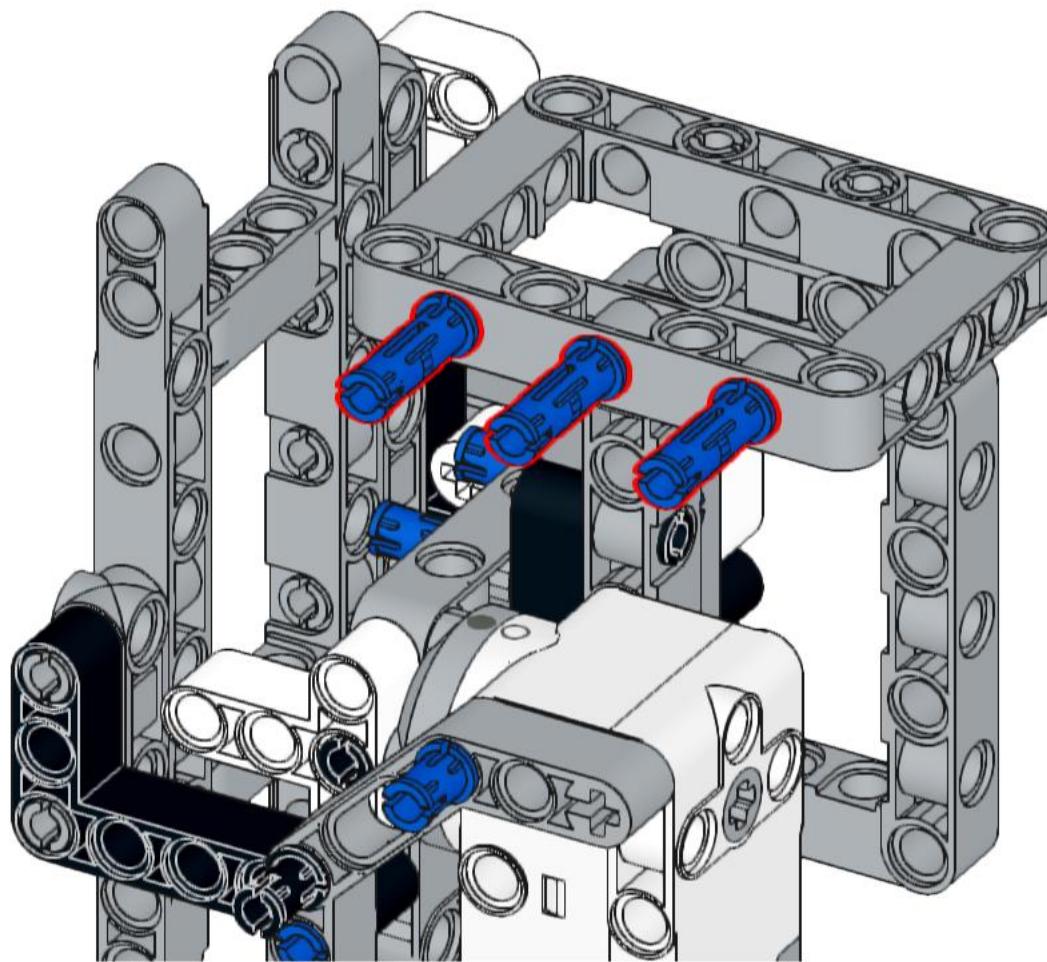
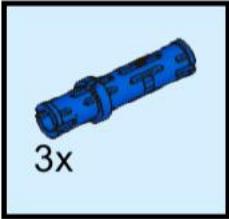
64



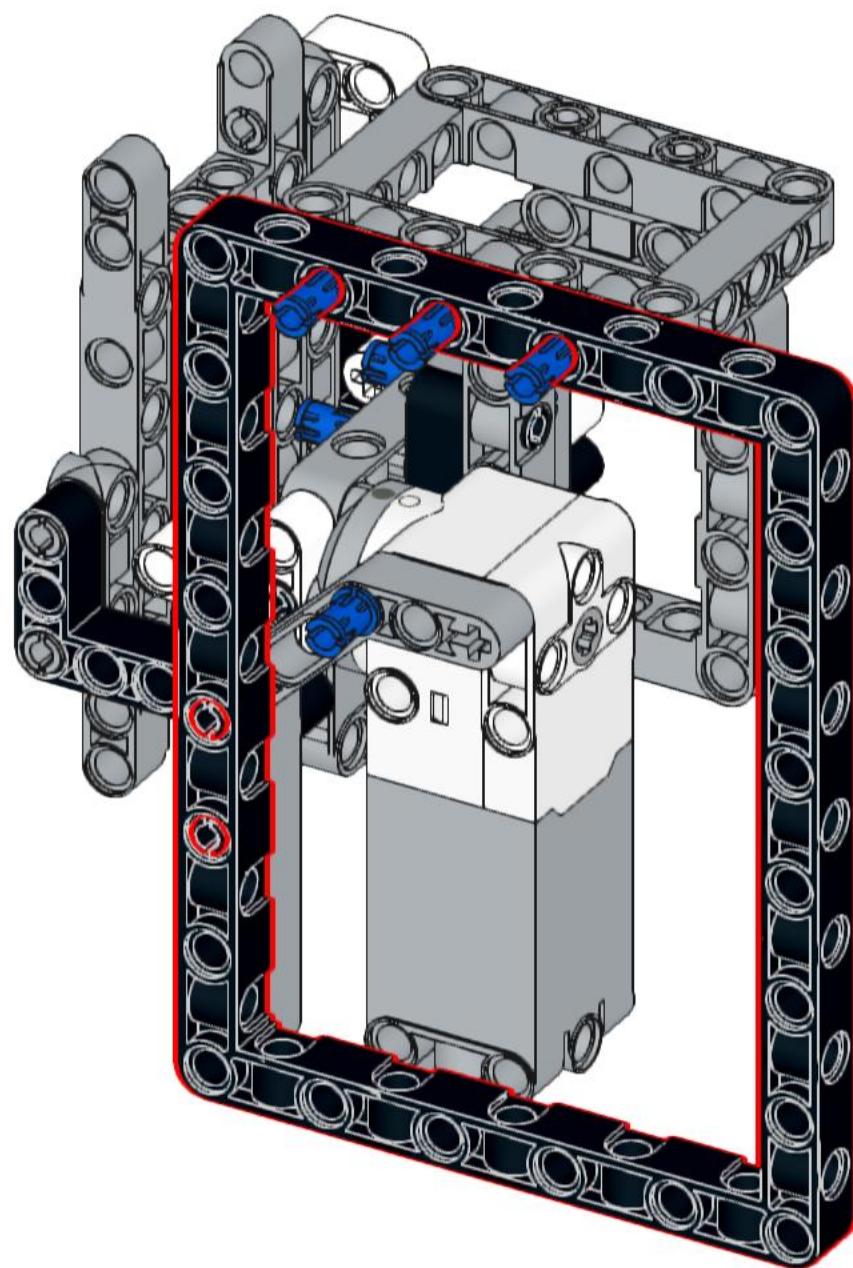
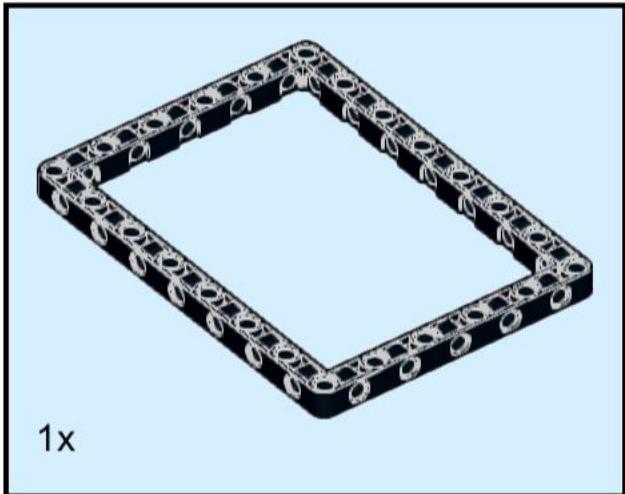
1x



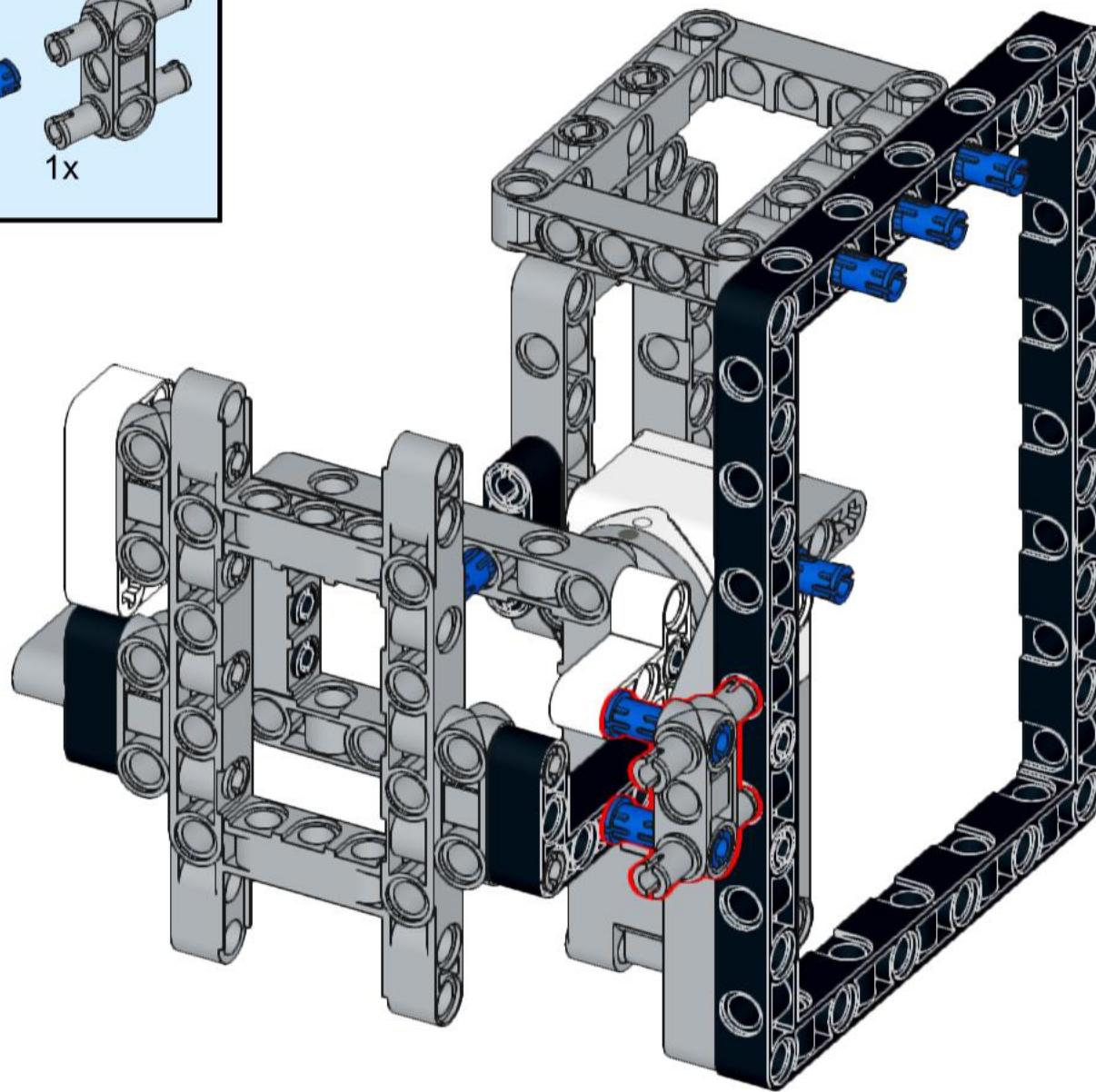
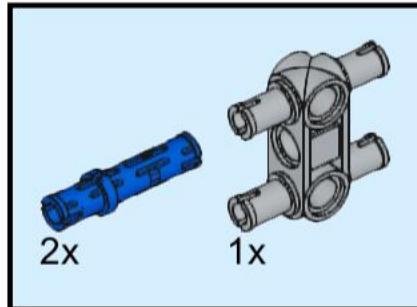
65



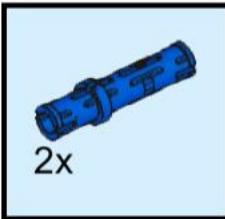
66



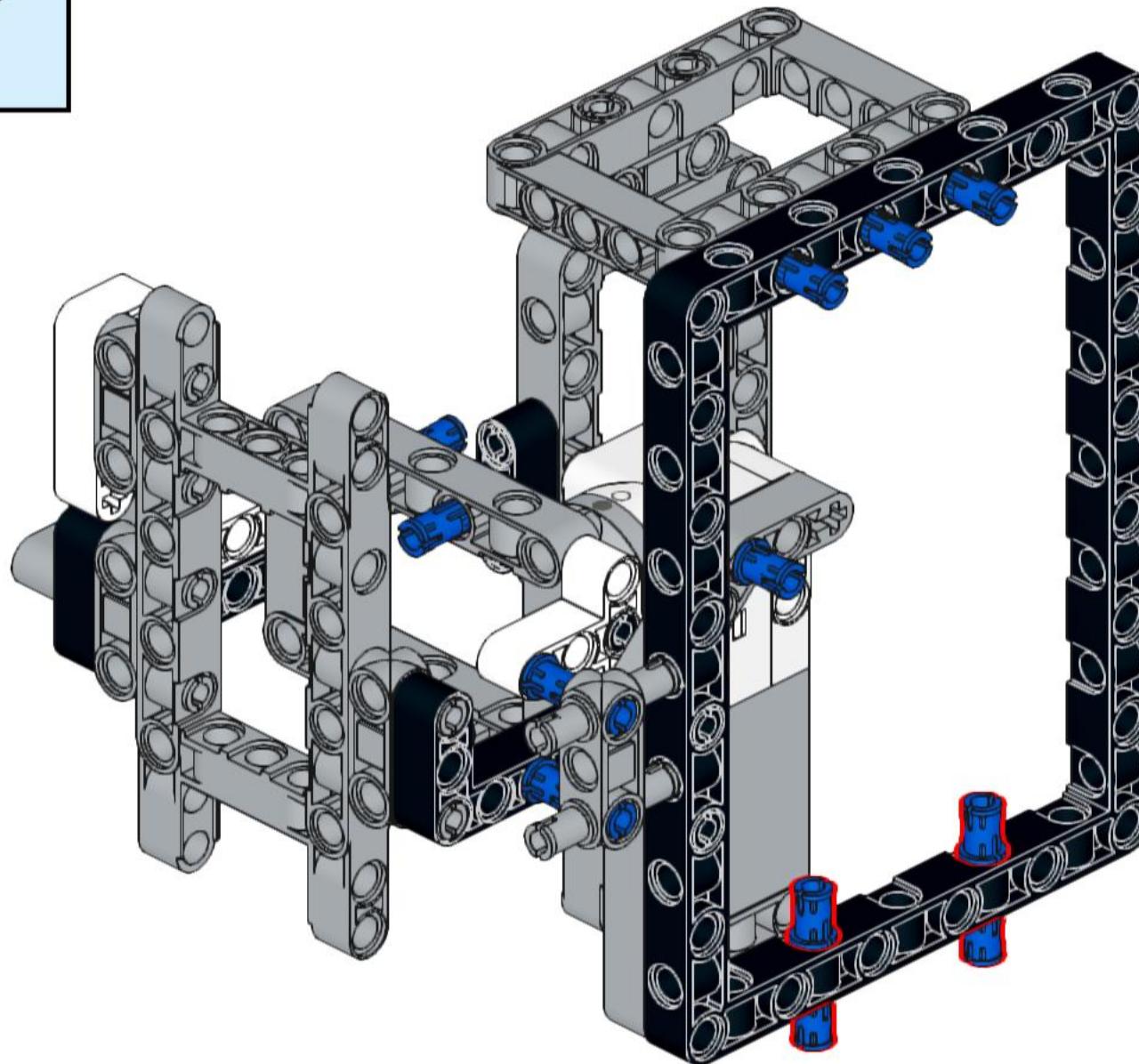
67



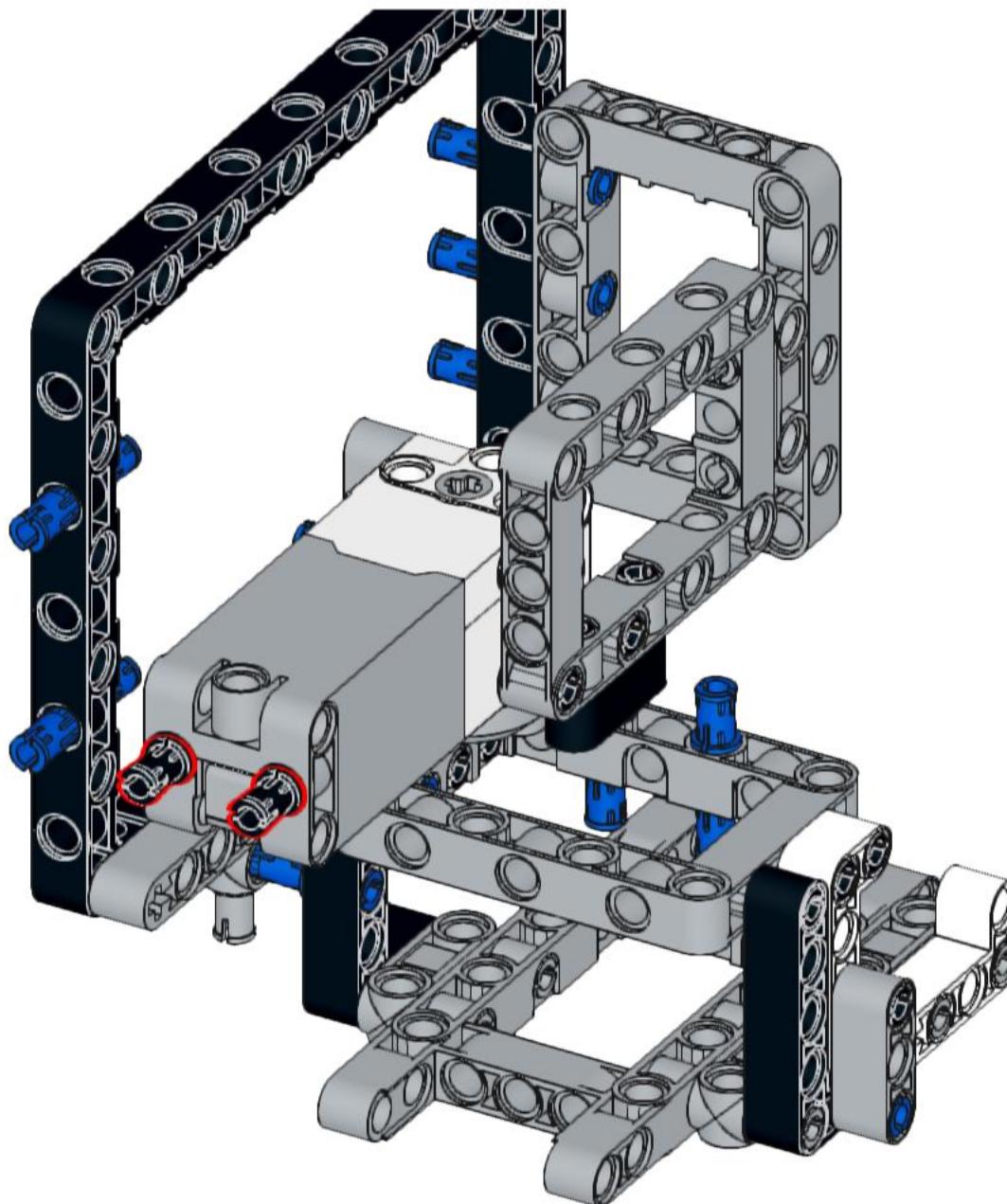
68



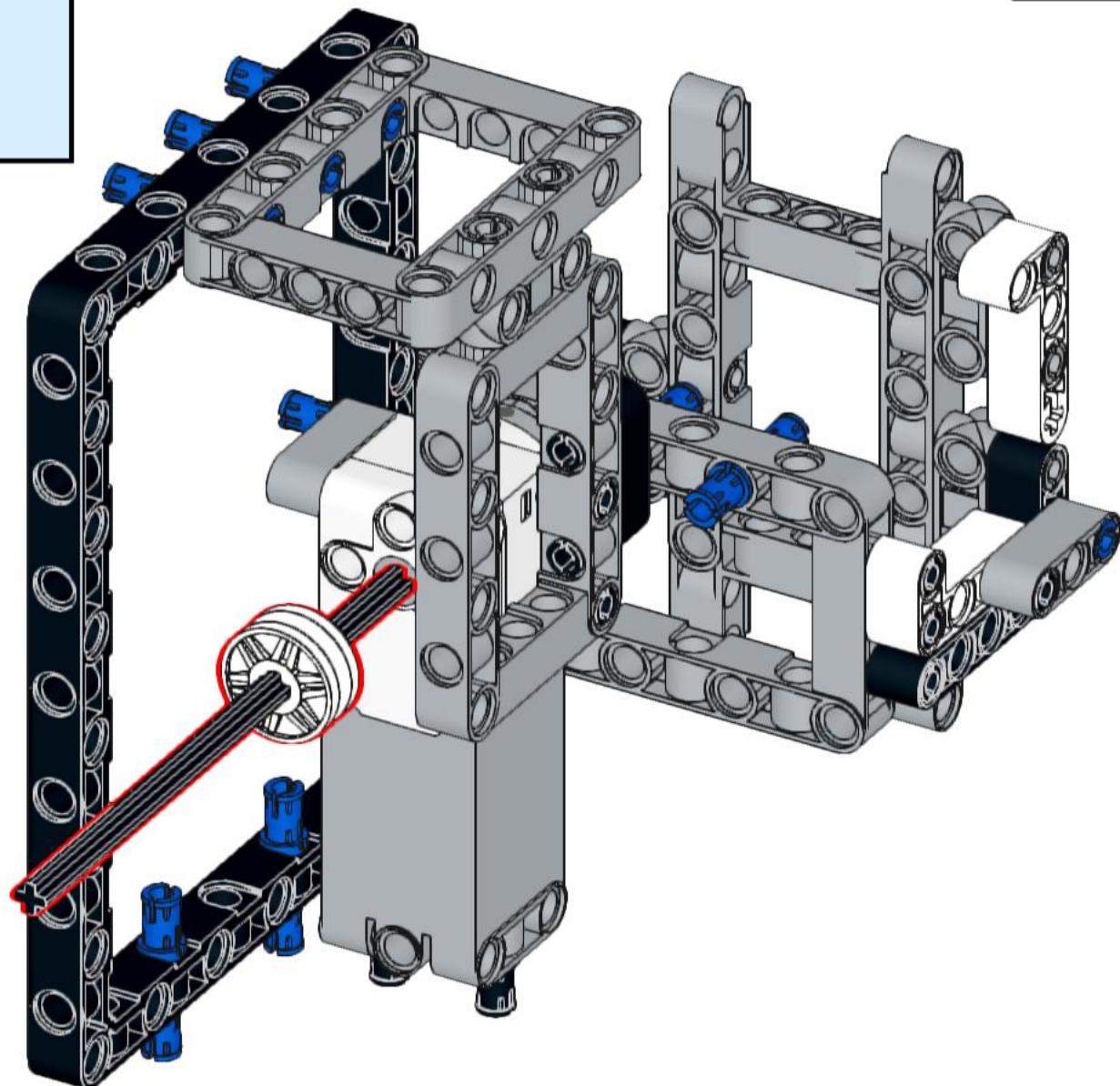
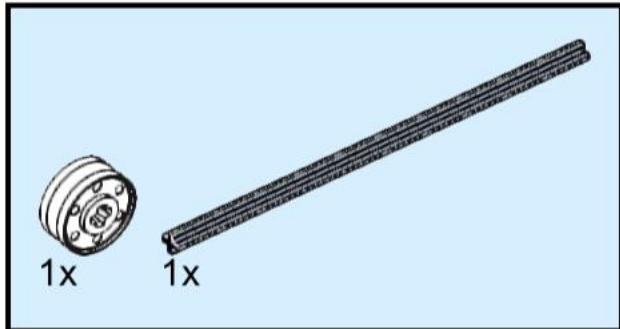
2x



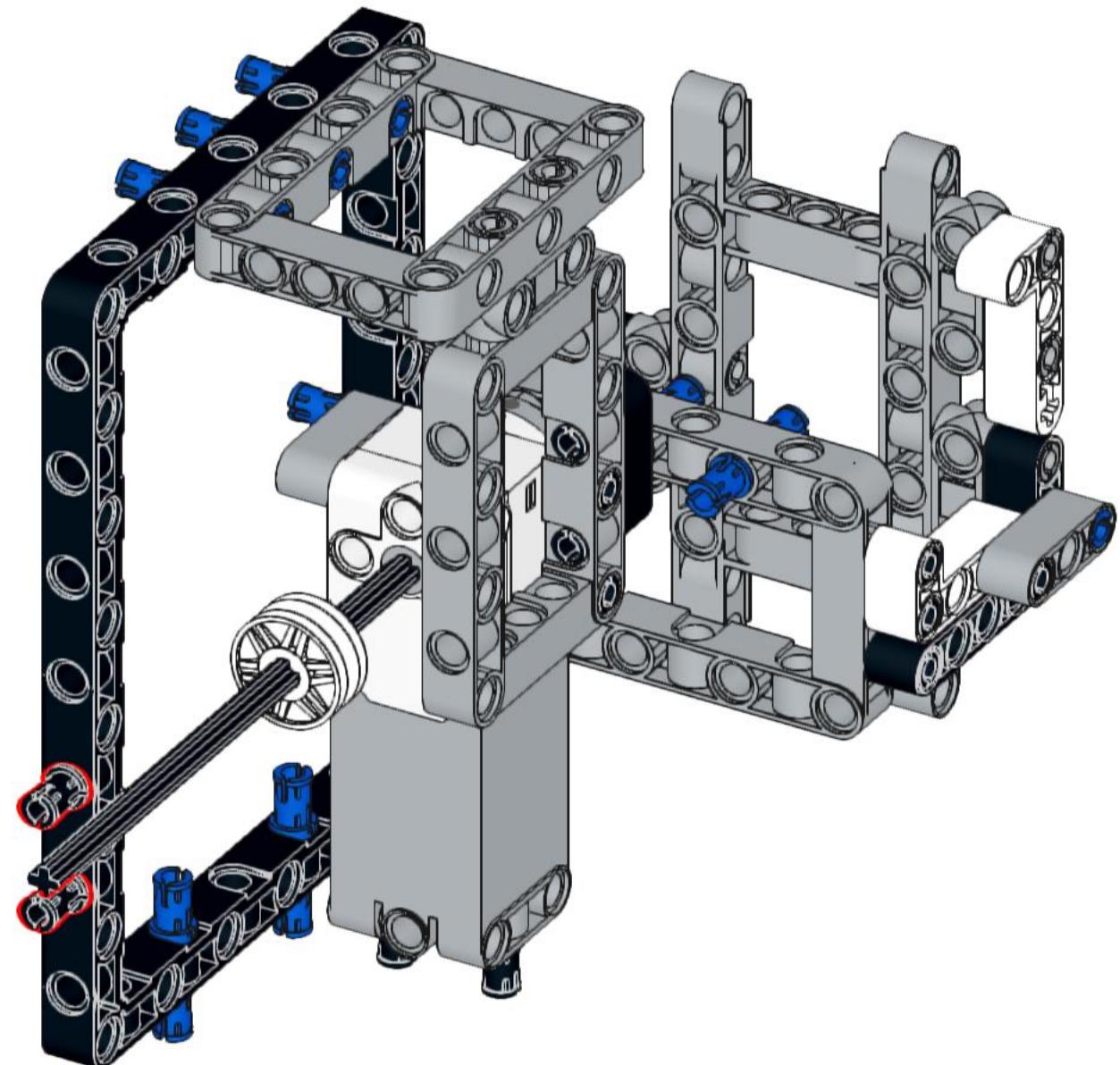
69



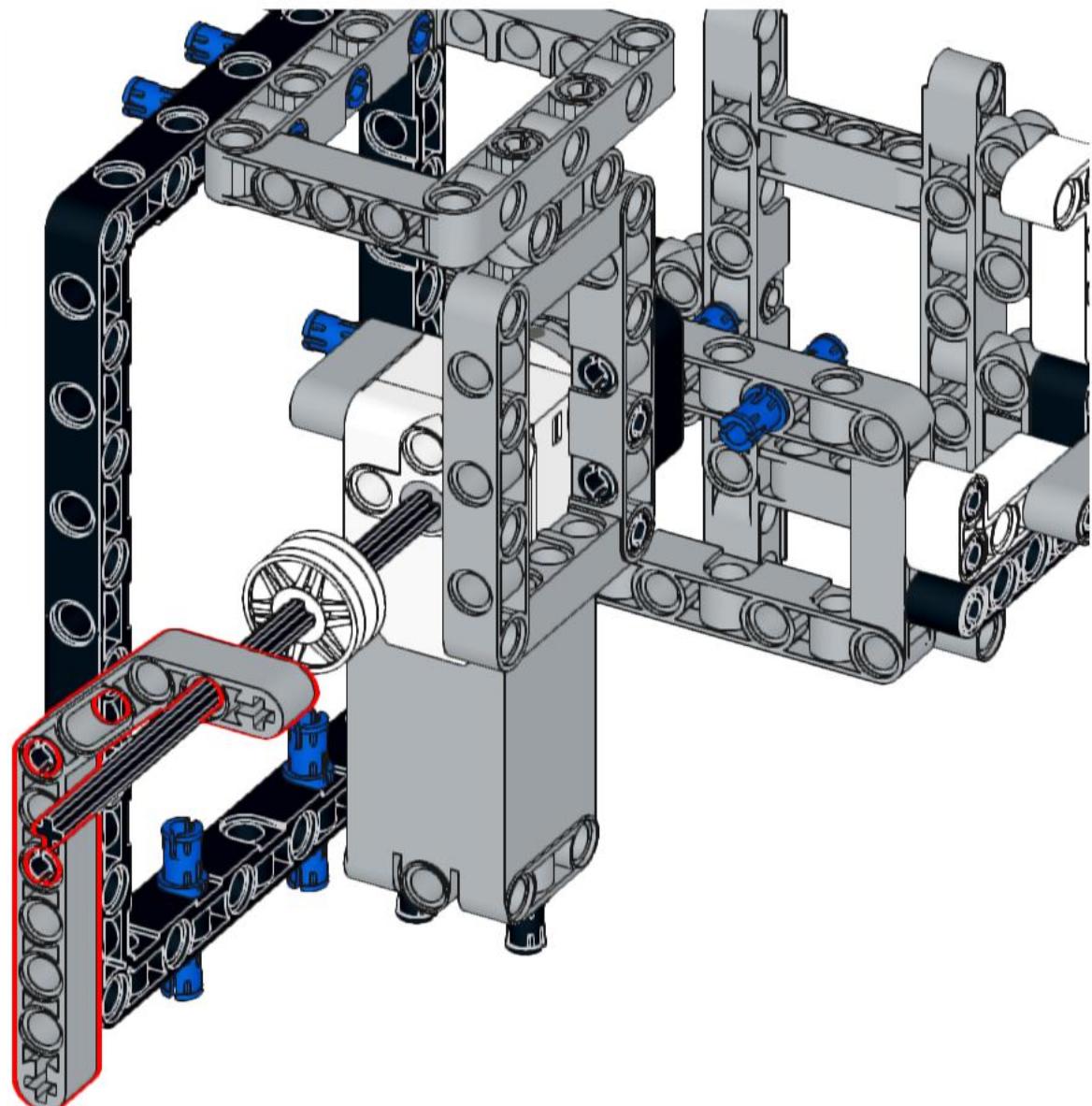
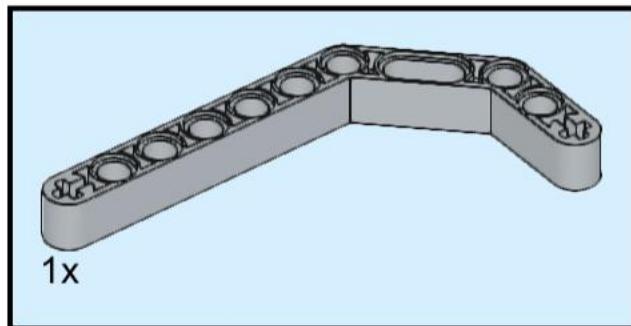
70



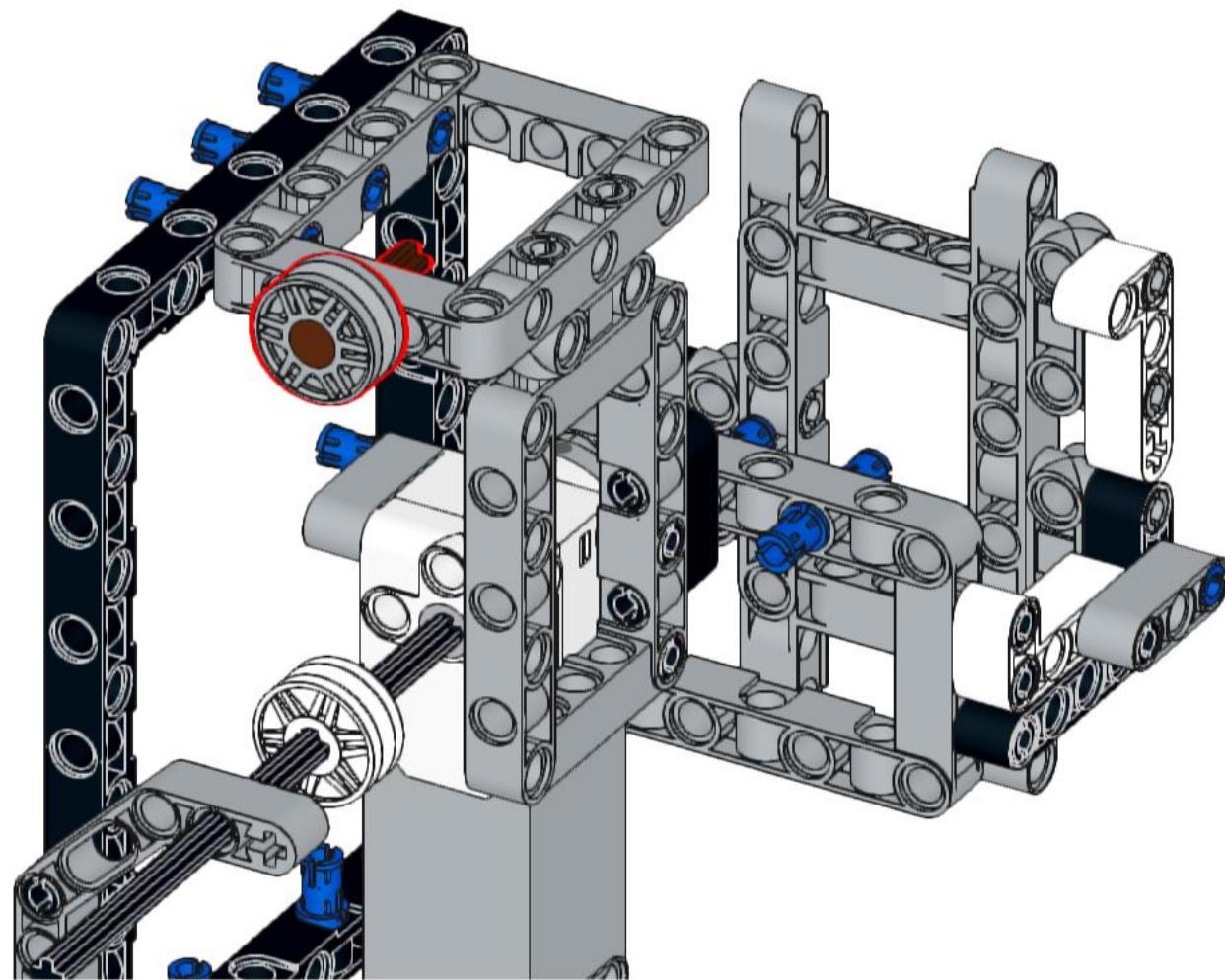
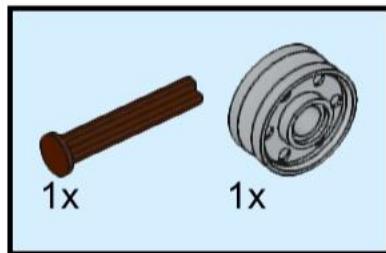
71



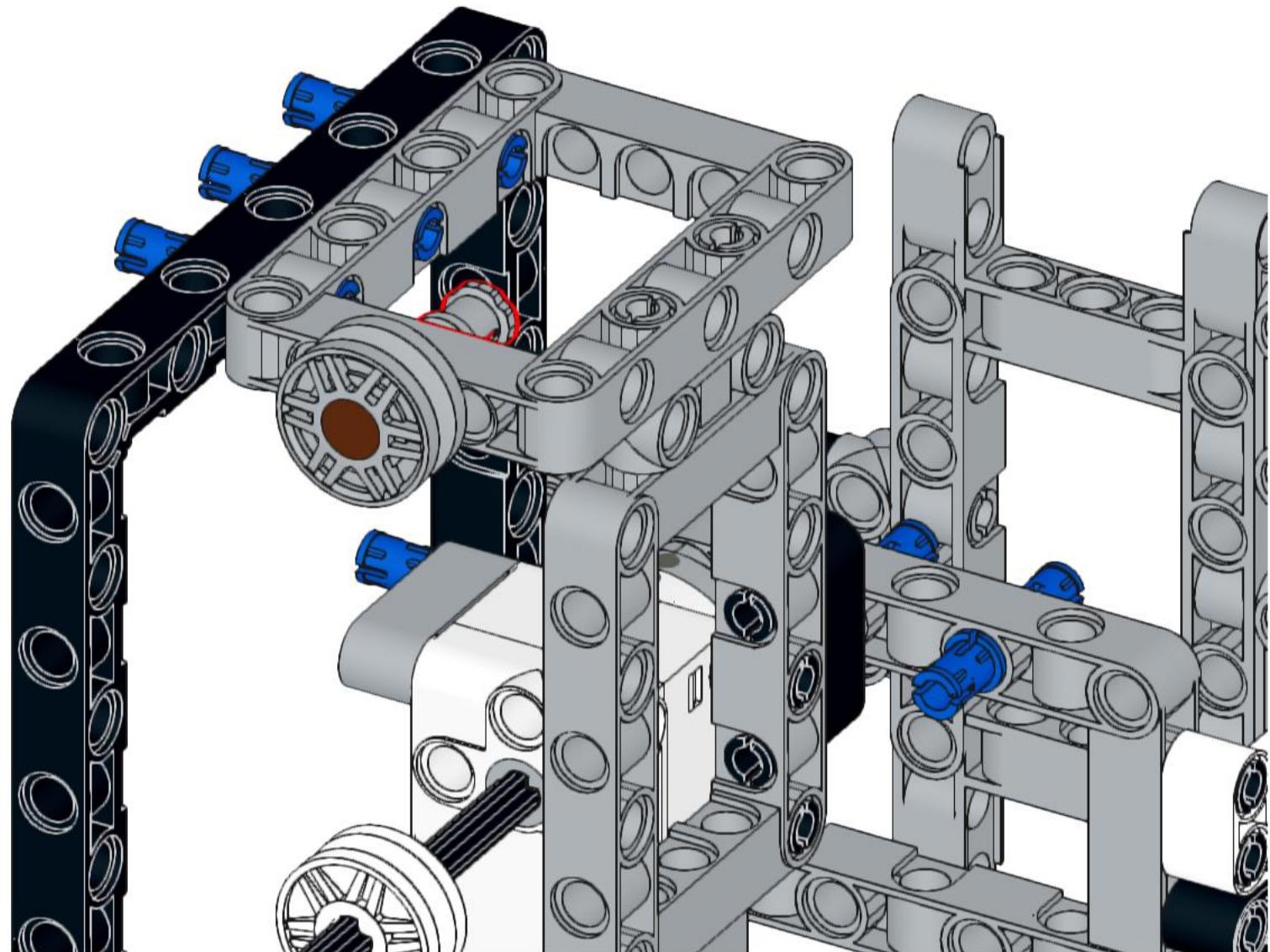
72



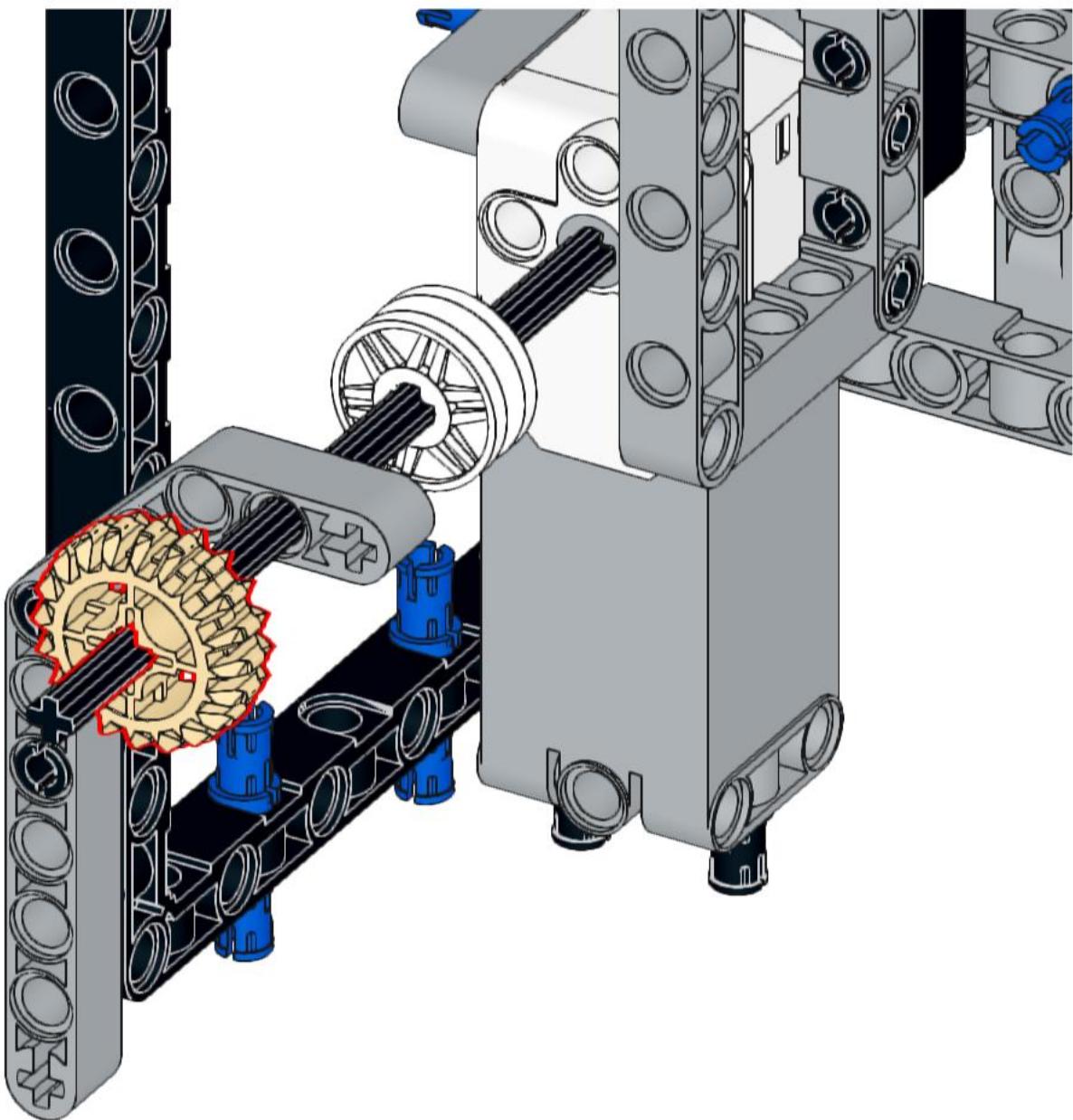
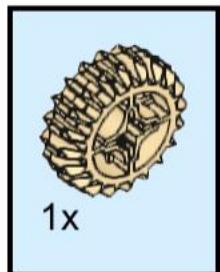
73



74

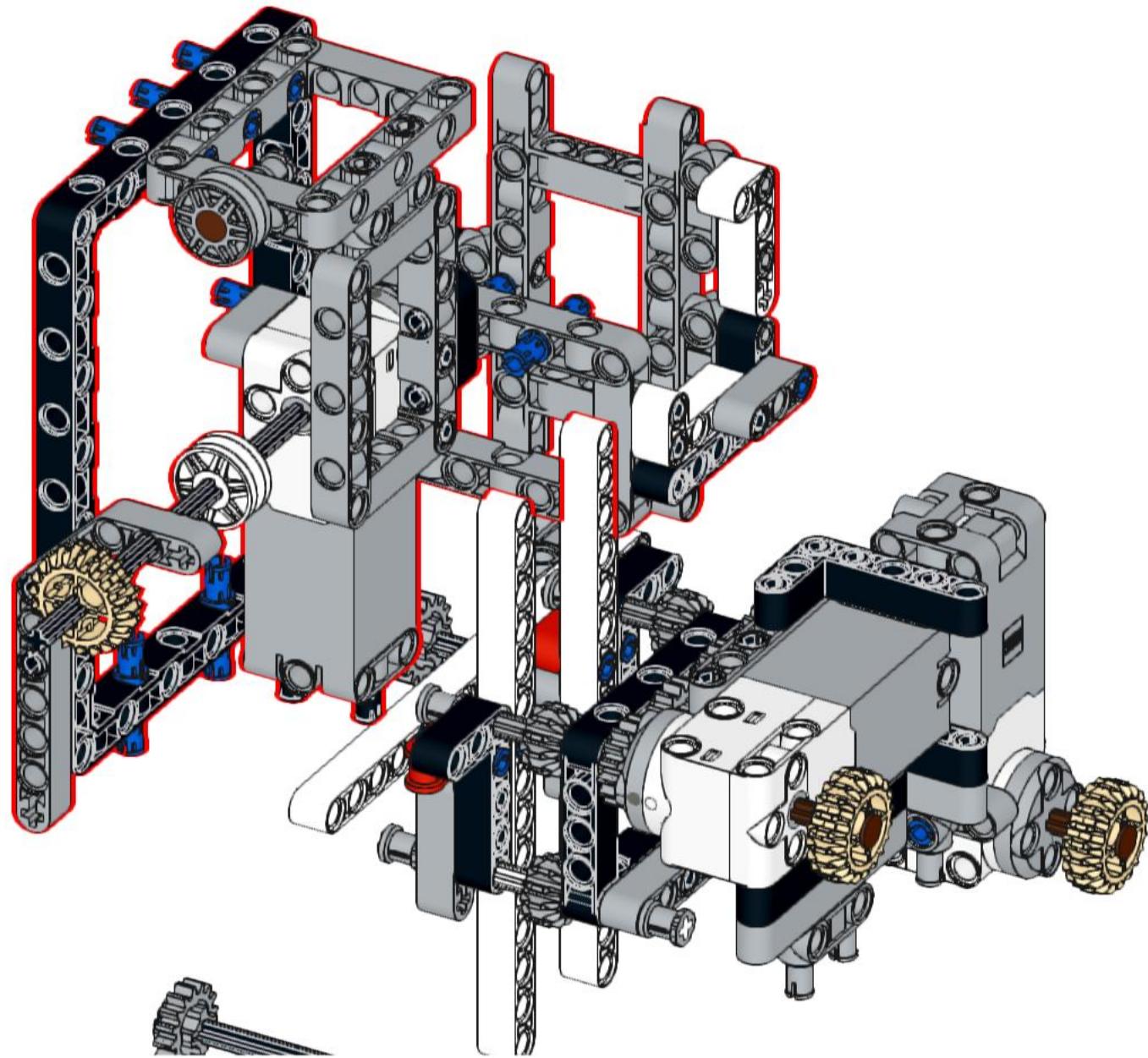


75

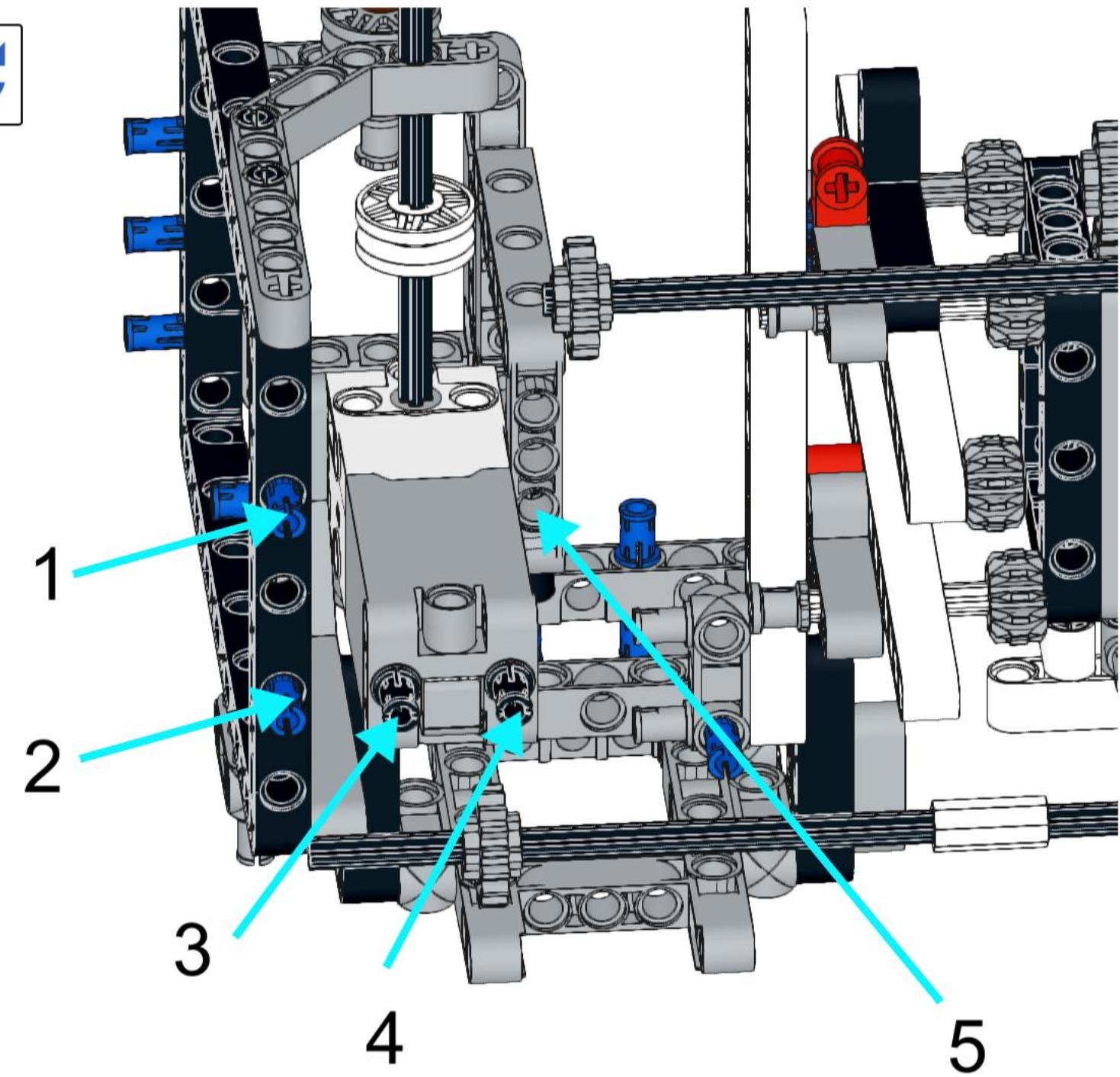


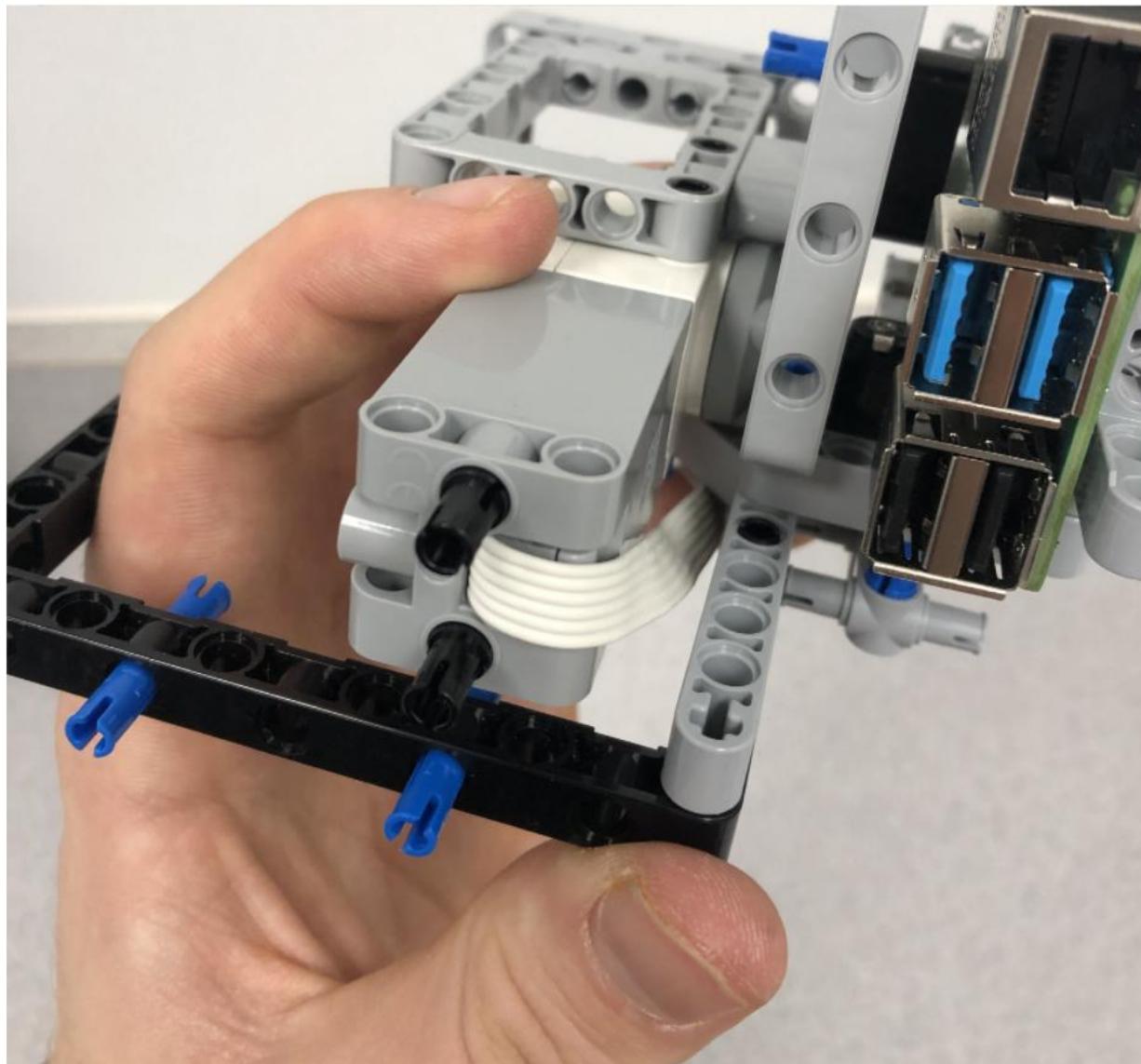
76

To connect to the cart base, identify the 5 main connection points and their location on the frame (see next few pages)

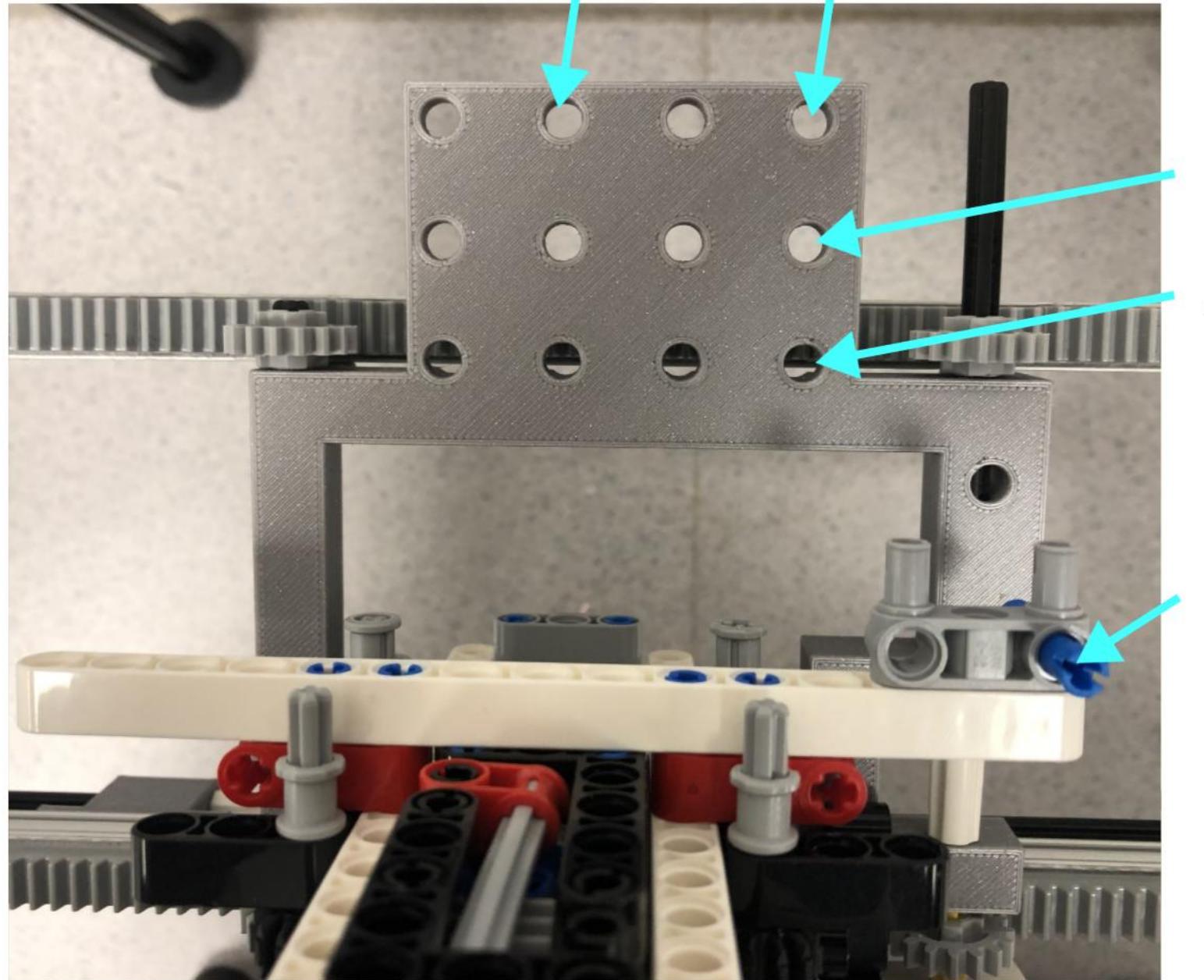


77





Prior to making any connections, ensure that the motor cable is wrapped through as shown here



1

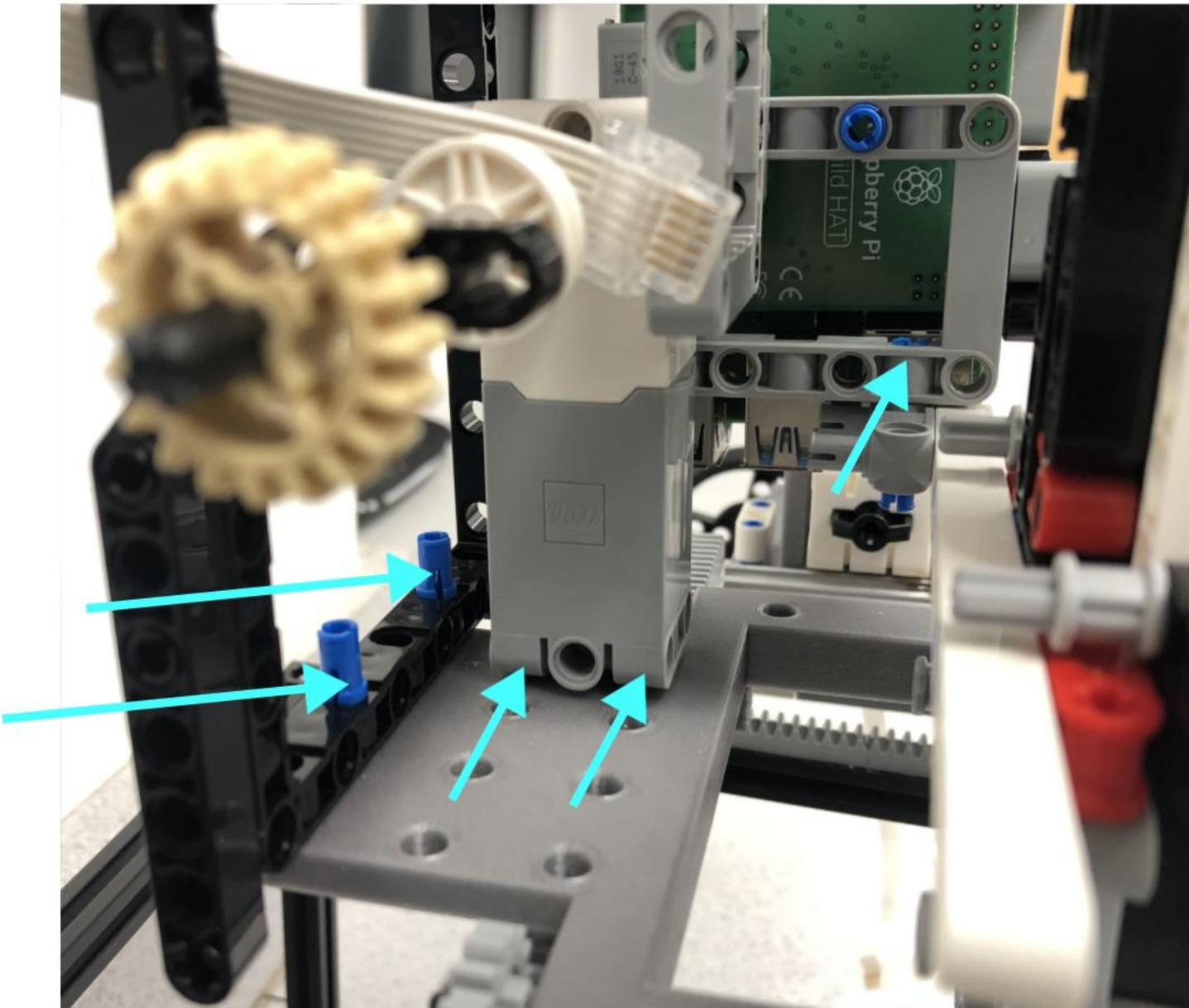
2

3

4

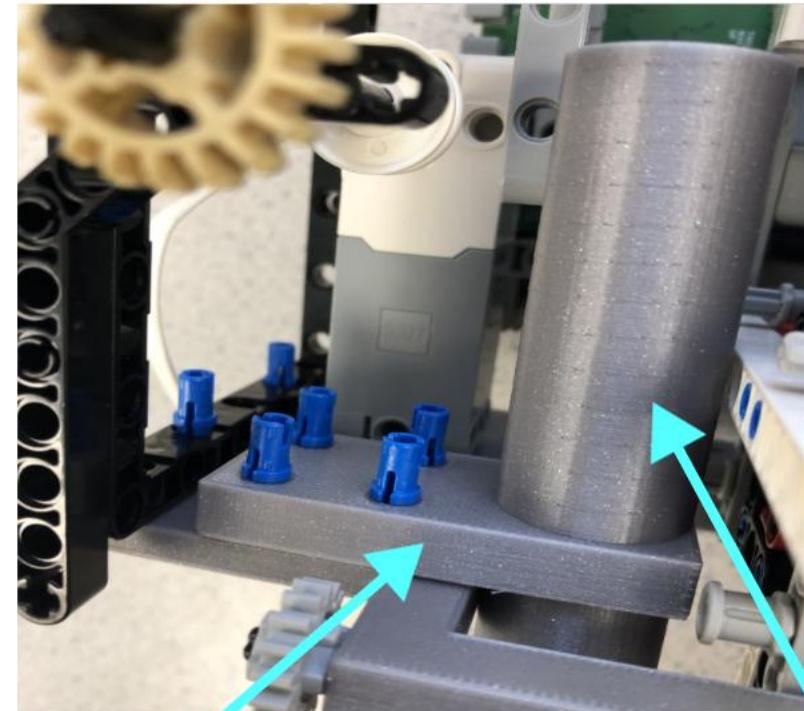
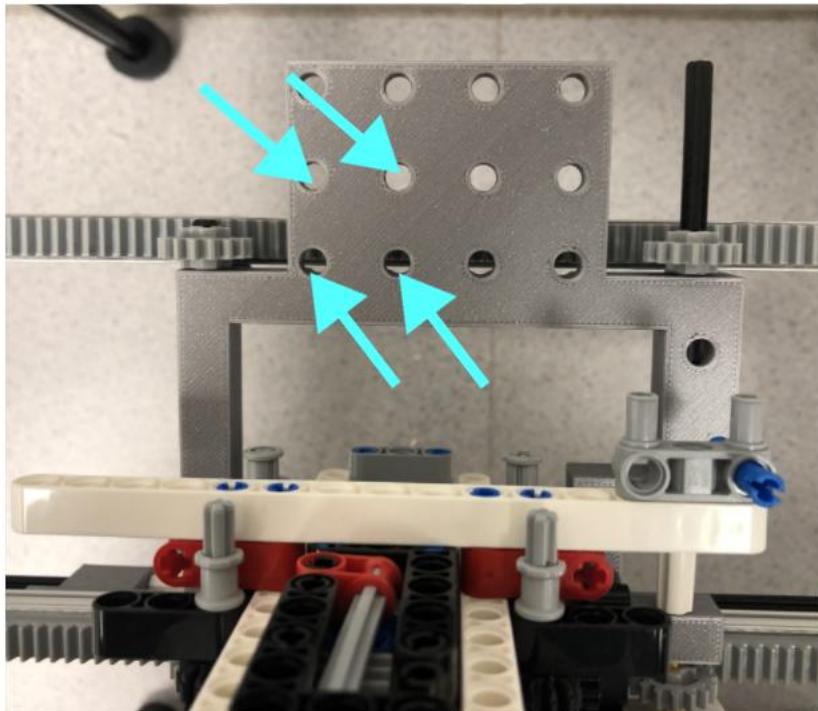
5

Completed





Next, we will add the pH Outer Guide tube to the cart frame. If it has been printed with support material as shown here, carefully remove any of this and ensure no strands or debris are left.



Guide Tube Plate

Guide Tube Cylinder

Keeping the long-end of the guide tube cylinder facing down, insert the 4 Long Blue pins through the Guide Tube plate into the Cart beneath (see left image for proper holes). This can be a tight fit, and if it becomes too difficult you ultimately only need to insert 2 blue pins to keep it in place.