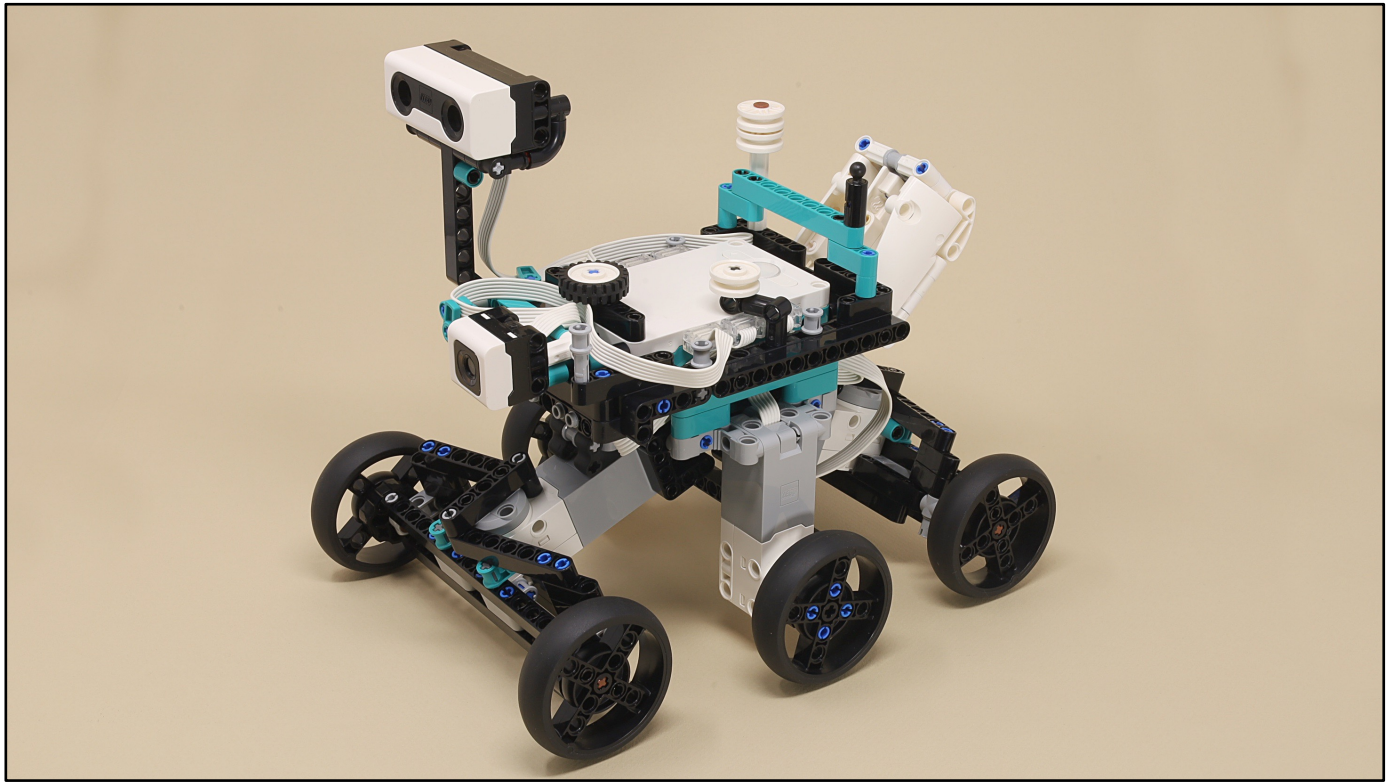
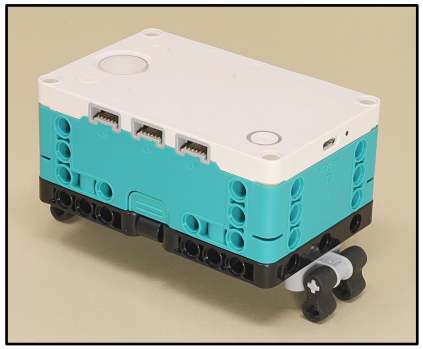
Mars 2020 Rover

Zero Radius Turn Version

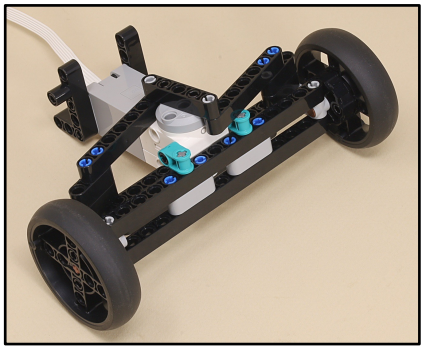


Scroll for building instructions

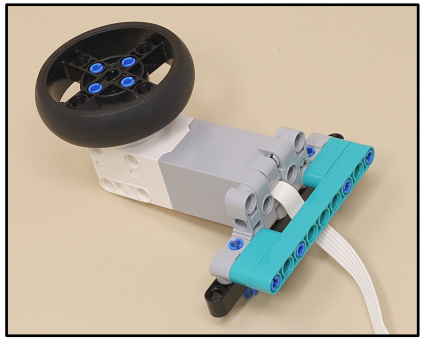
First build these sub-assemblies:



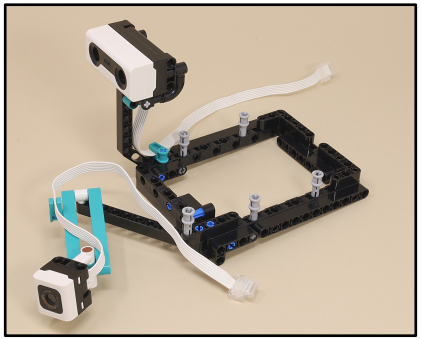
Base



Zero Turn Steering
(make 2x)



Drive Wheel
(make 2x)

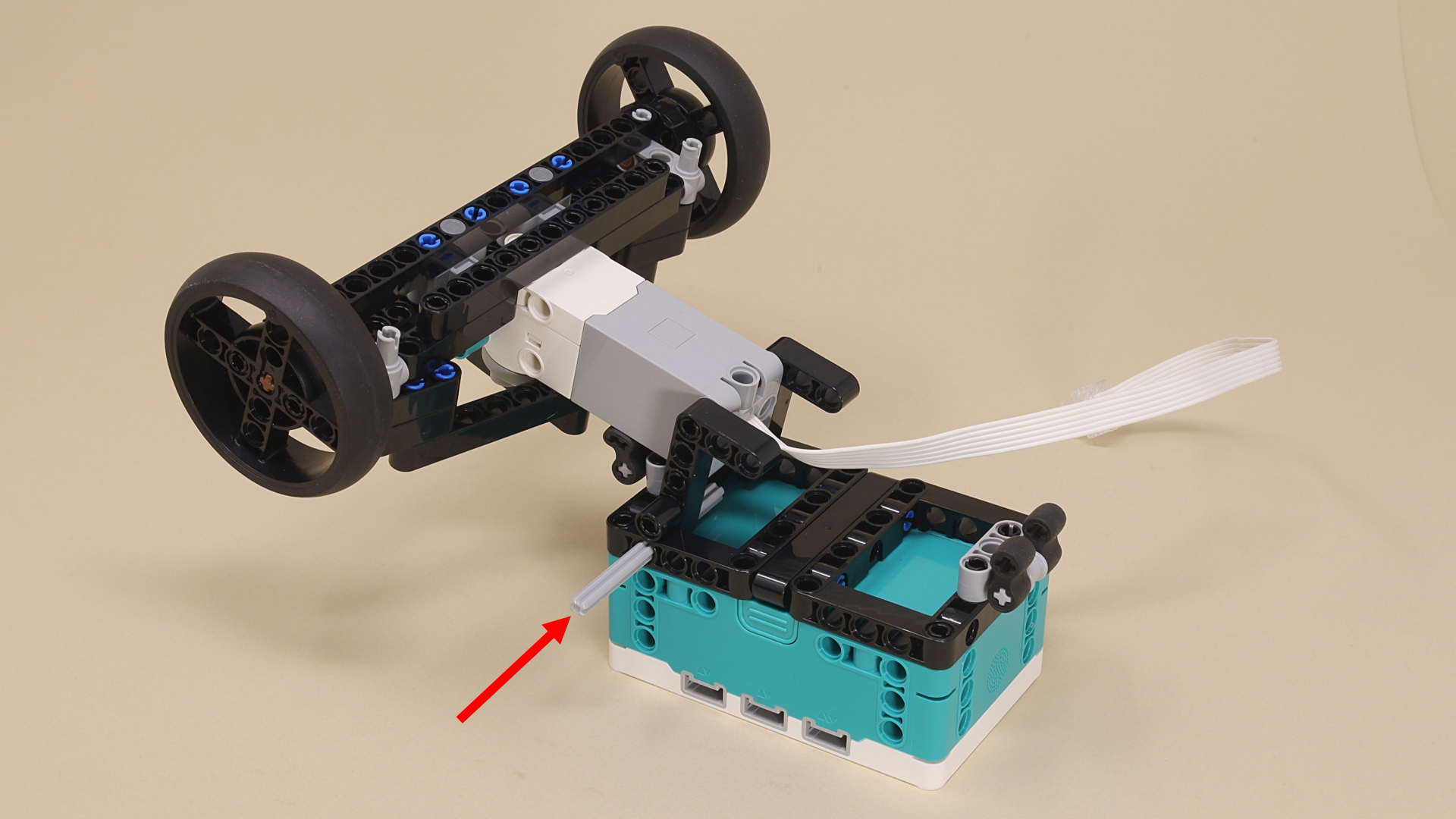


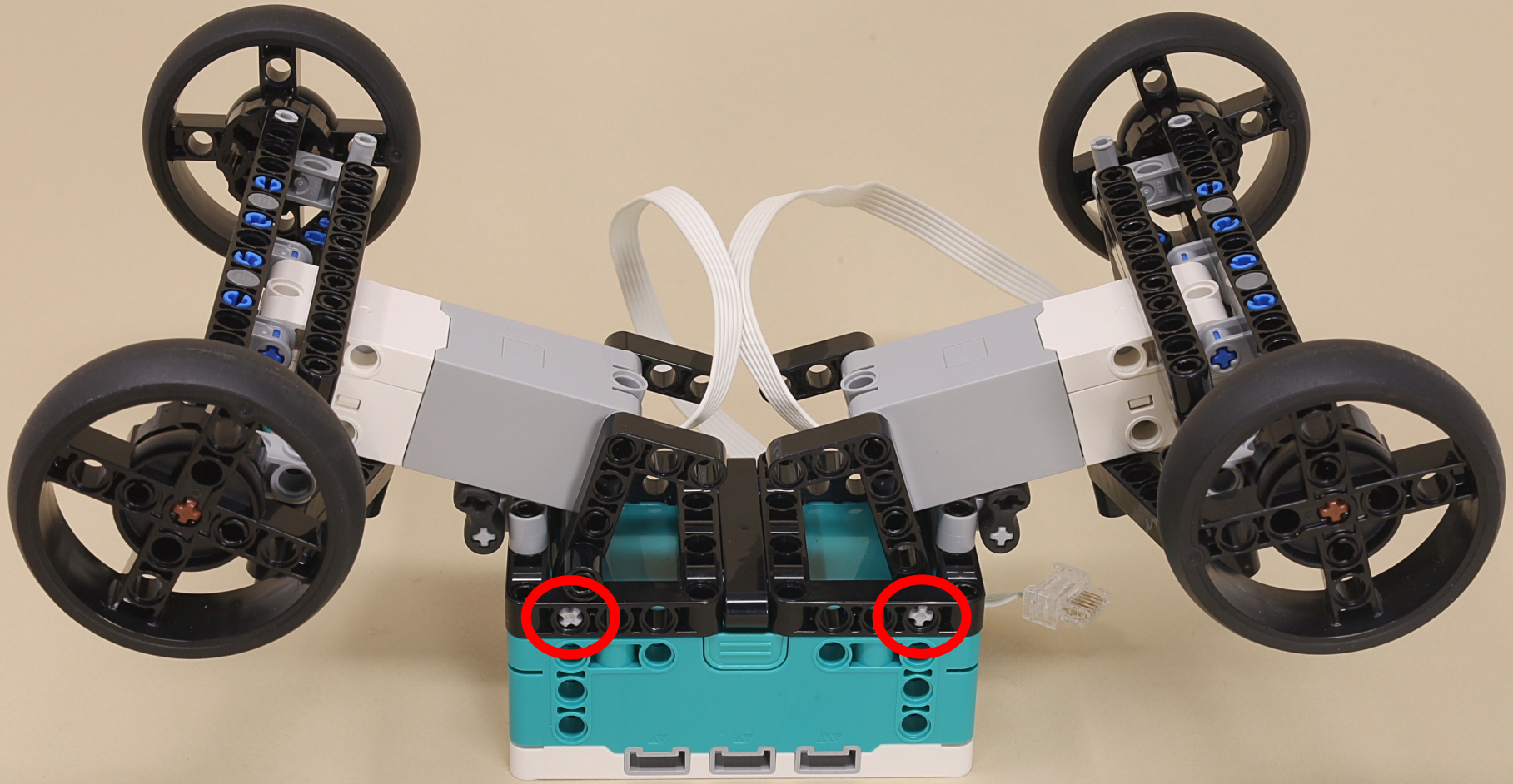
Sensor Deck

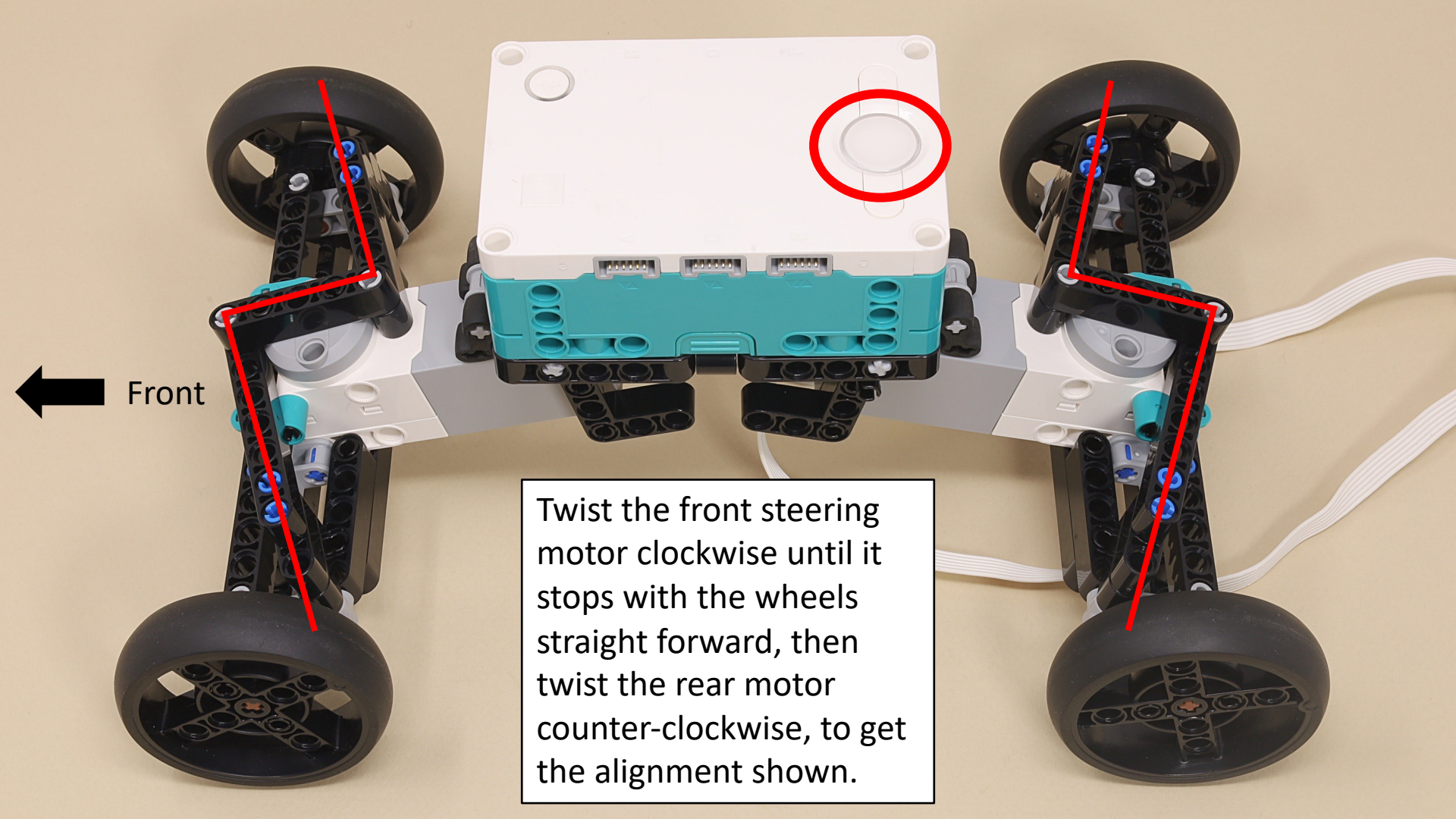
…then continue for assembly instructions

7

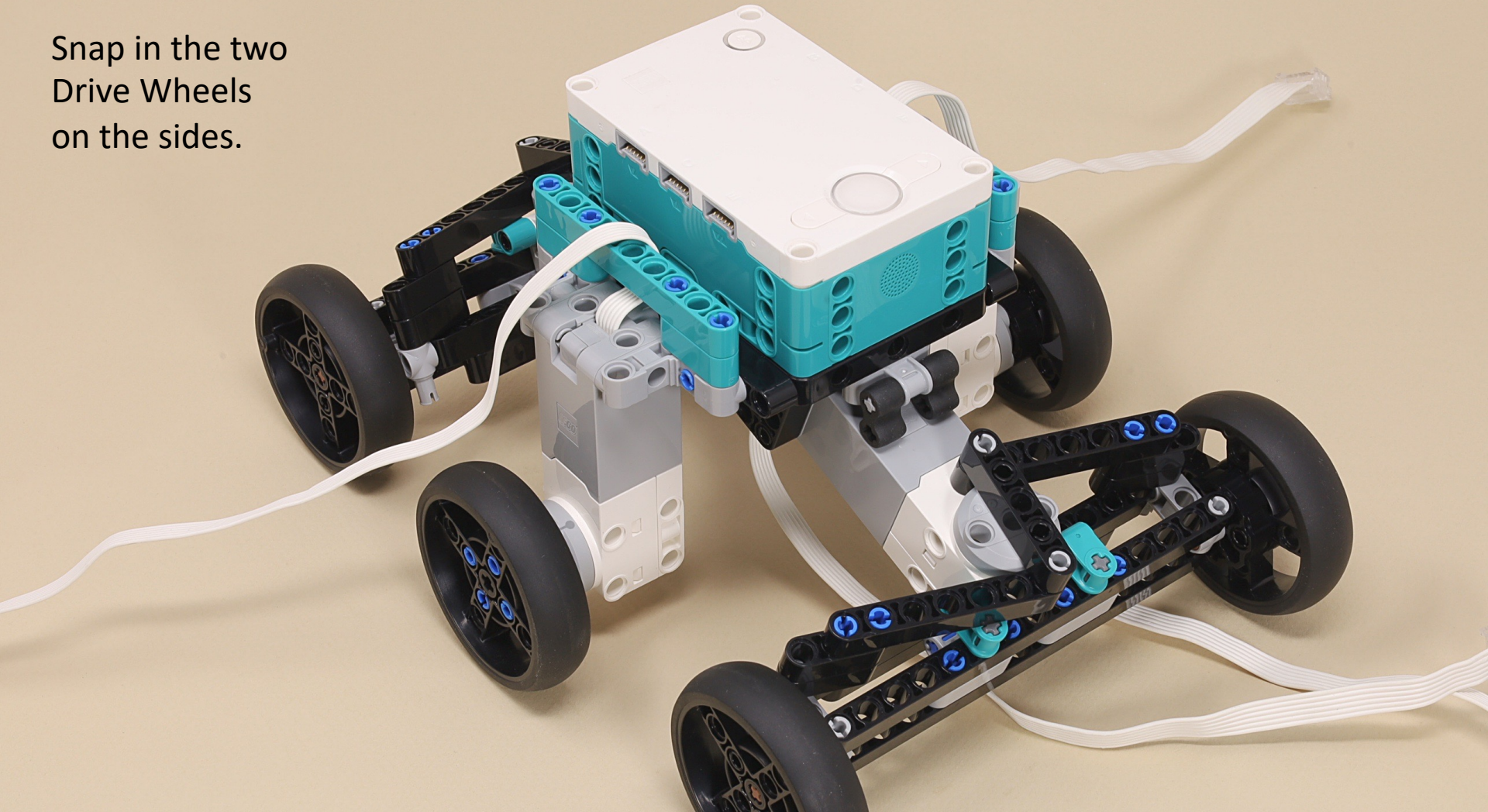
7



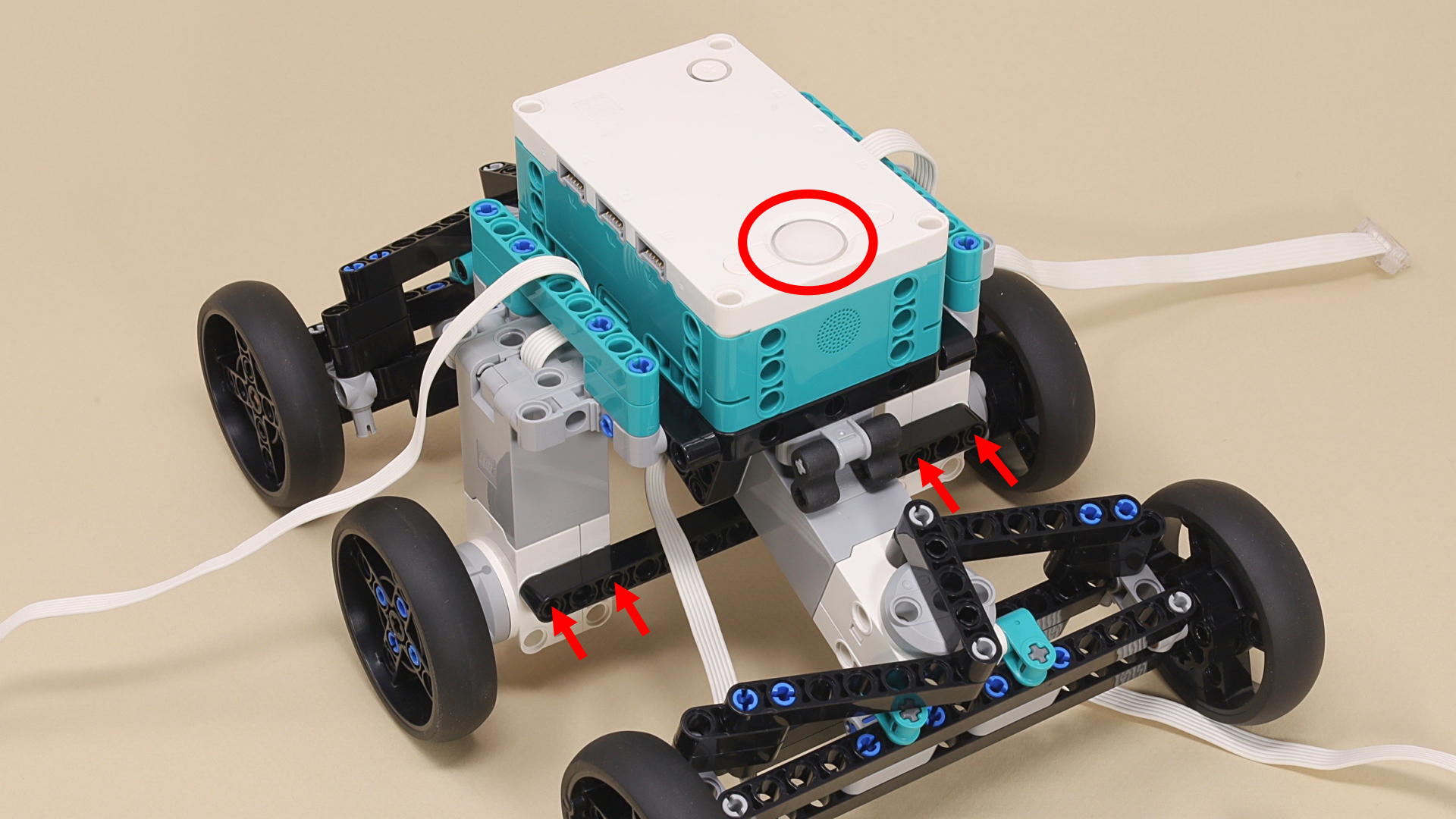


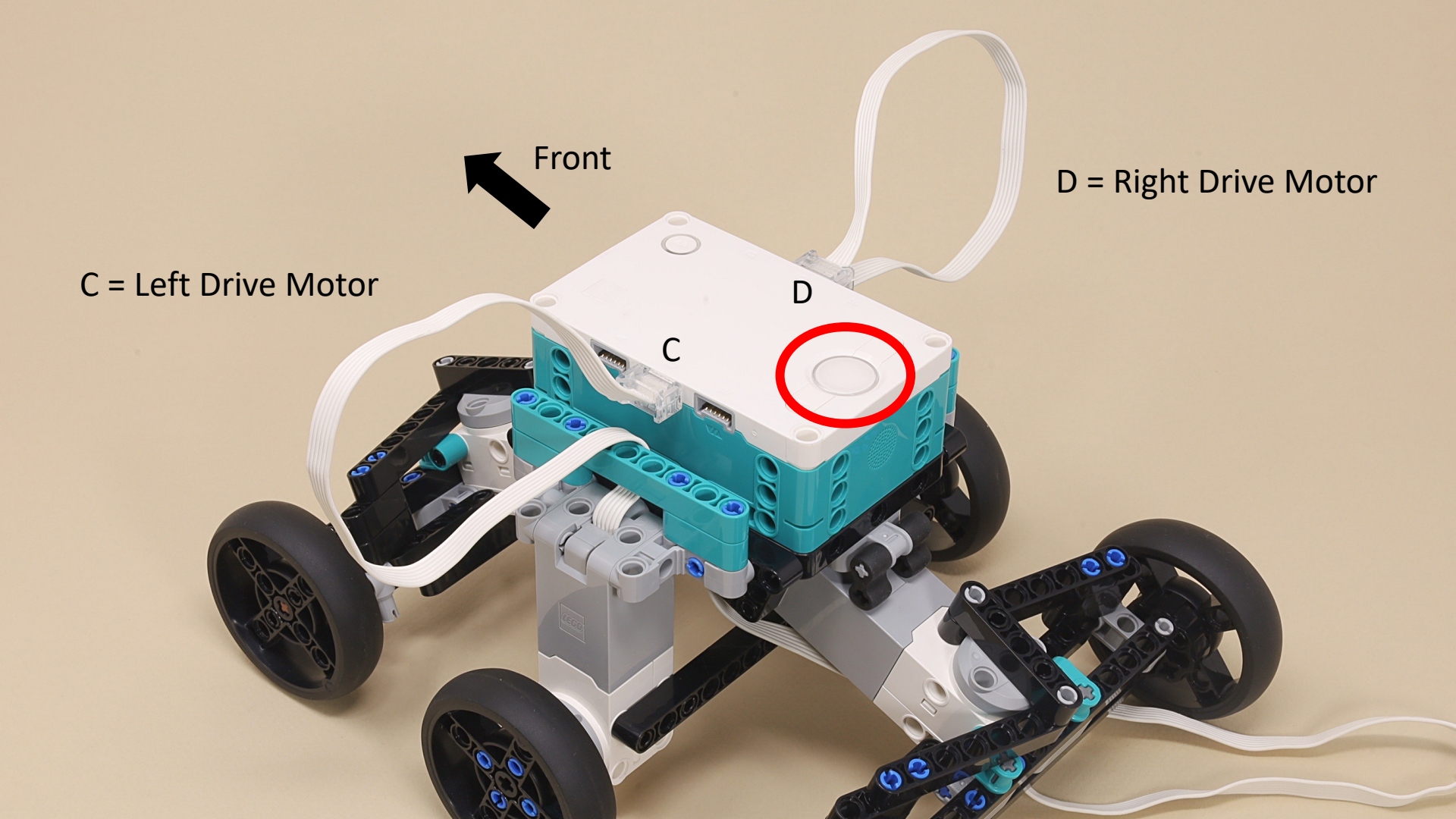

Front
Twist the front steering motor clockwise until it stops with the wheels straight forward, then twist the rear motor counter-clockwise, to get the alignment shown.

Snap in the two
Drive Wheels
on the sides.

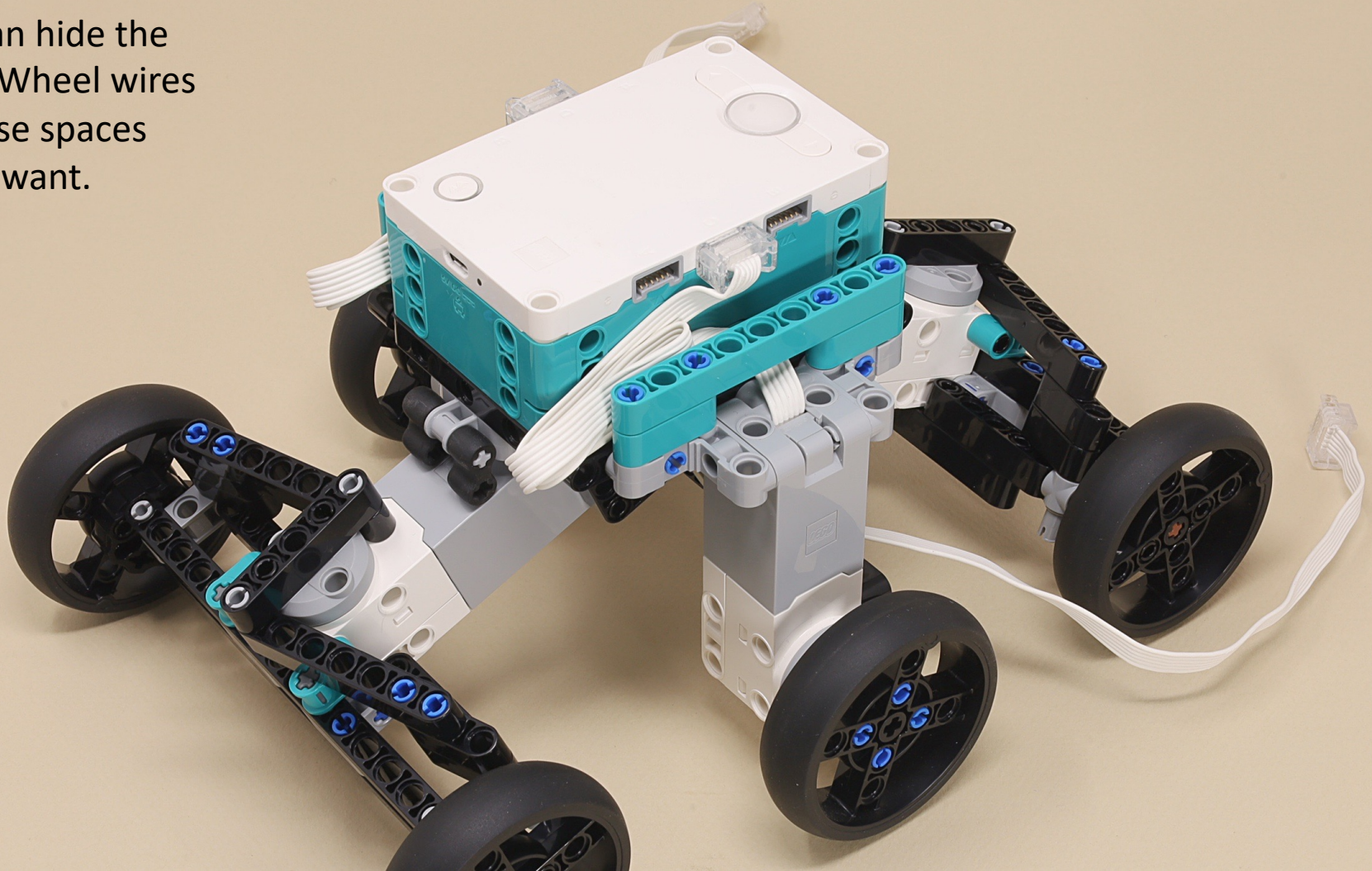


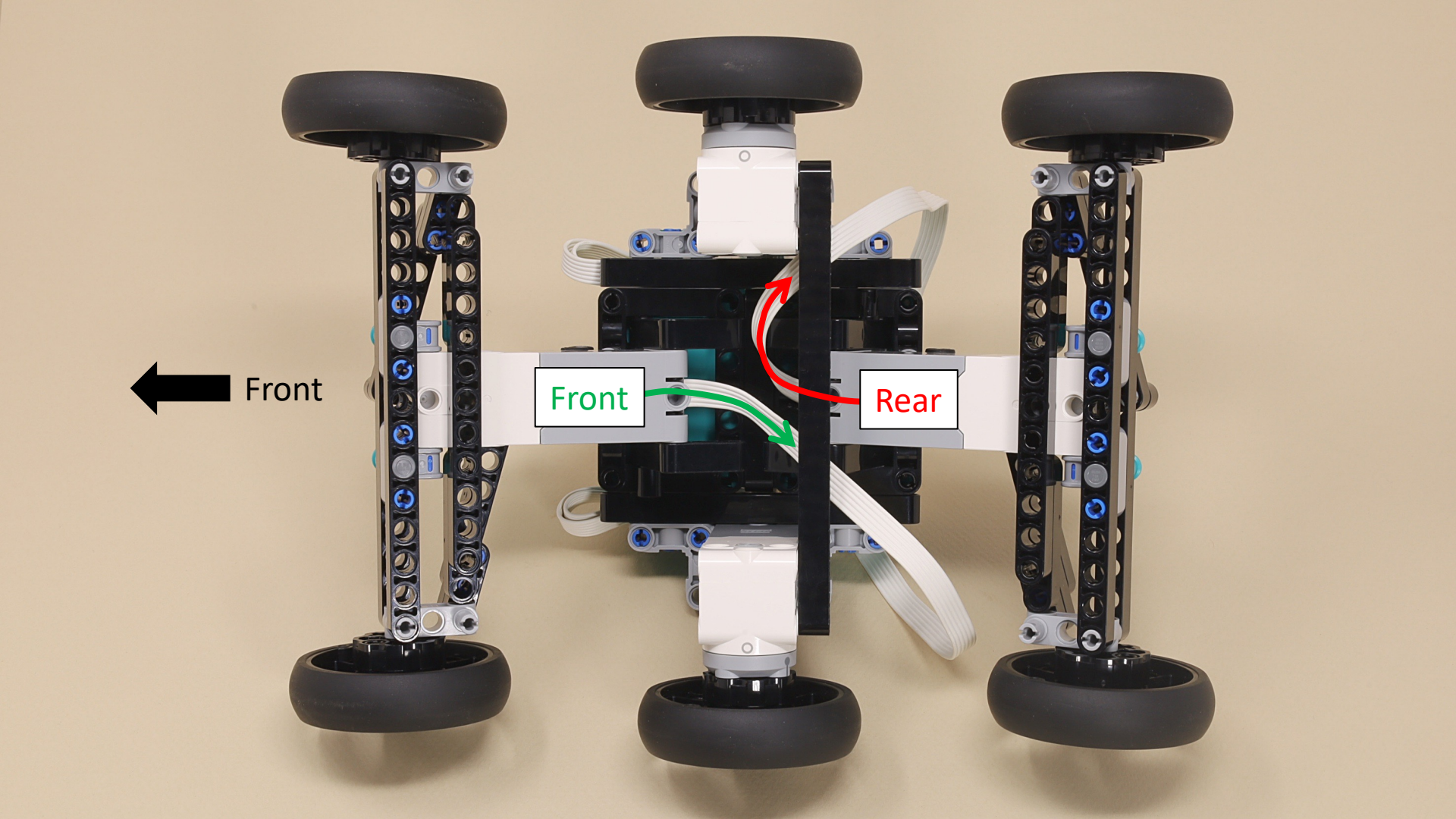
15

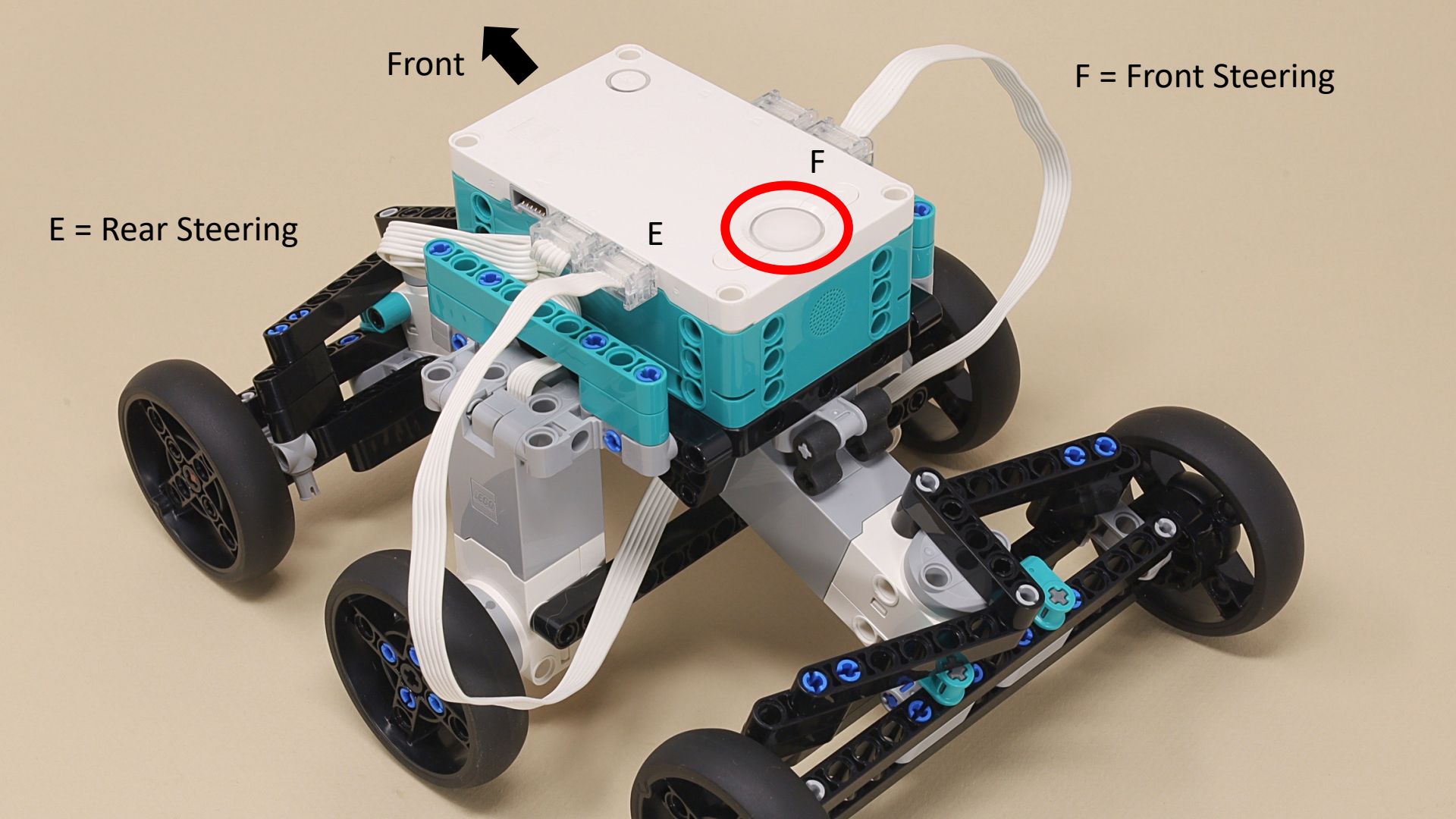



Front
D = Right Drive Motor
C = Left Drive Motor
D
C

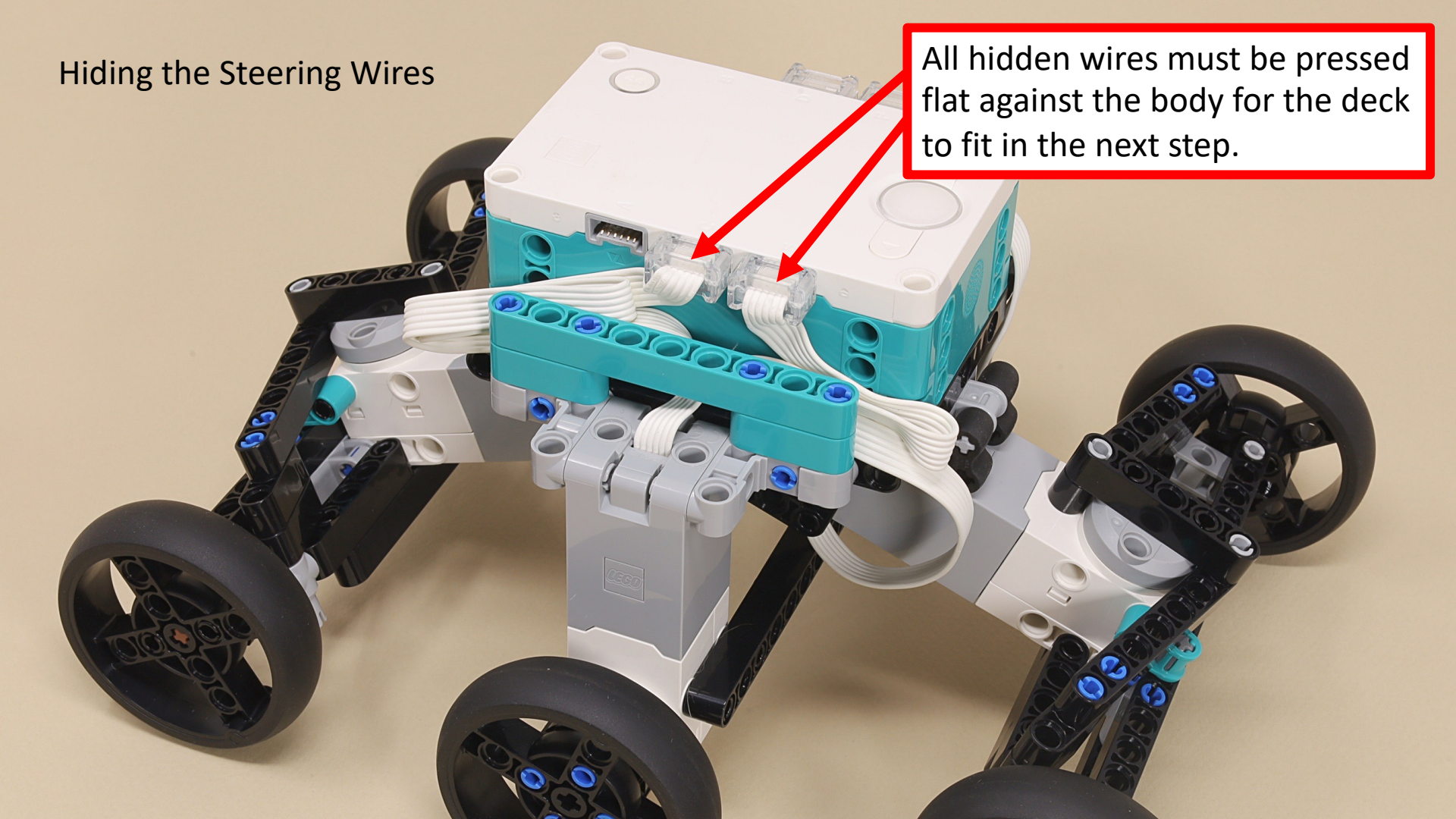
You can hide the
Drive Wheel wires
in these spaces
if you want.

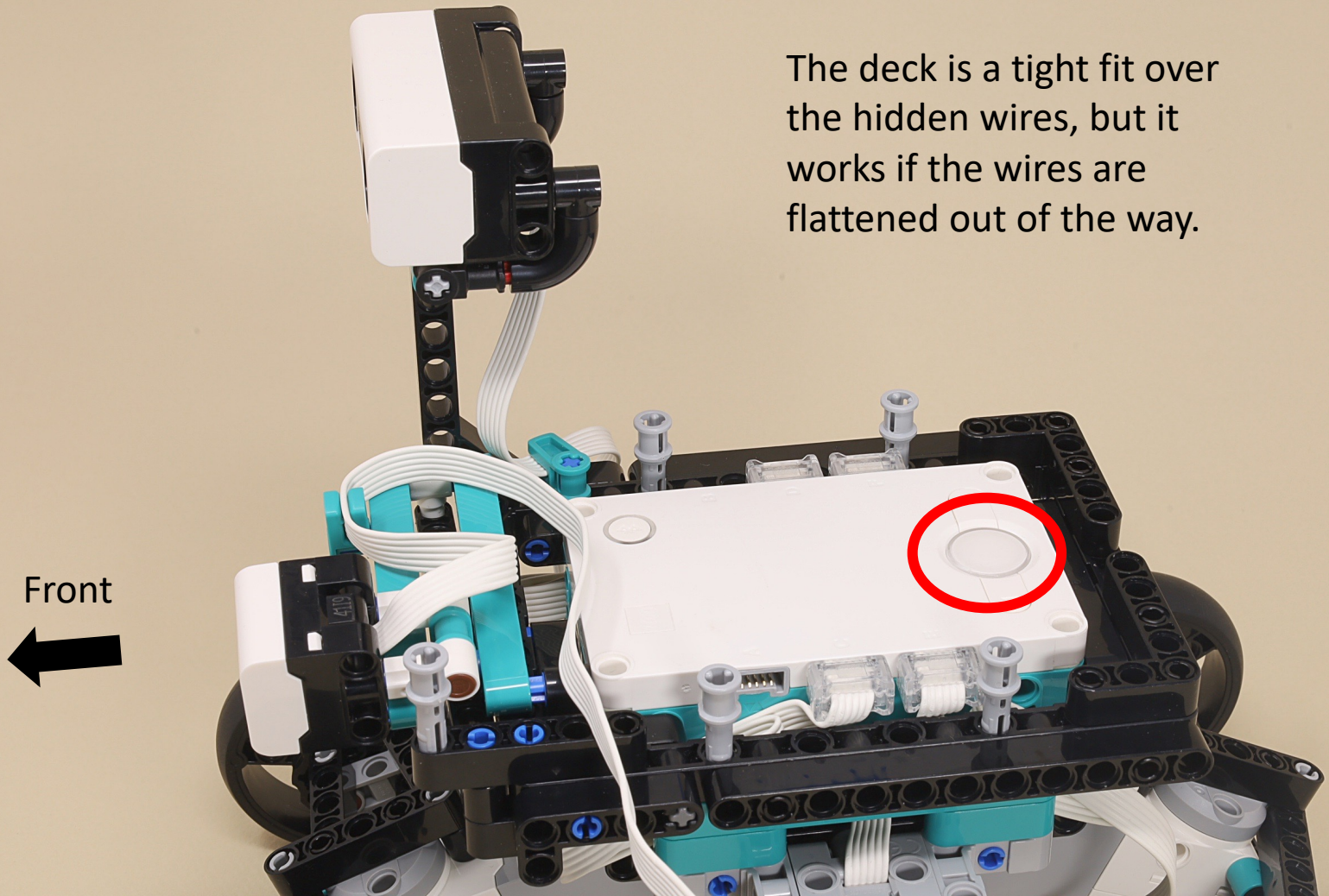



Front
Front
Rear


Front
F = Front Steering
F
E
E = Rear Steering

Hiding the Steering Wires

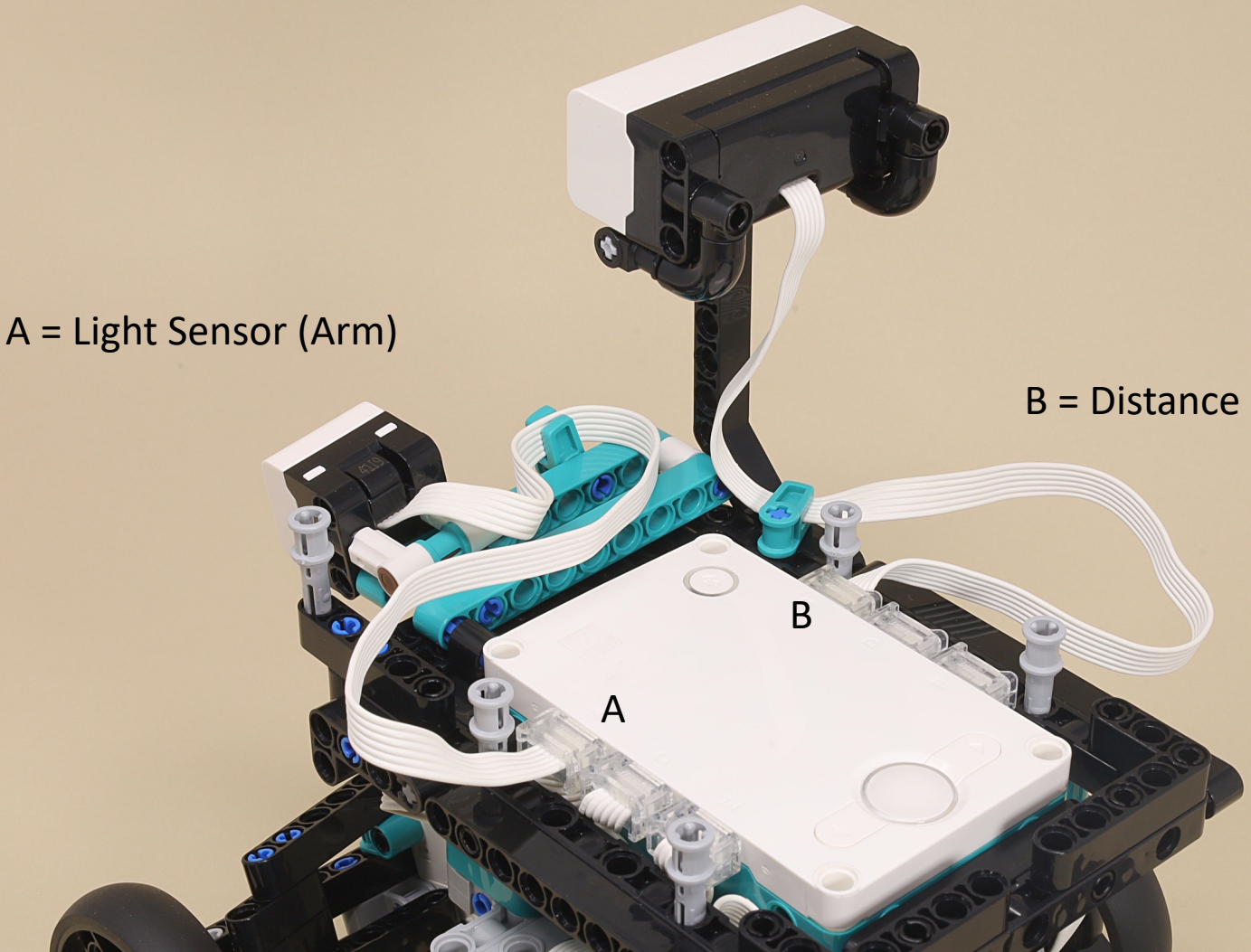


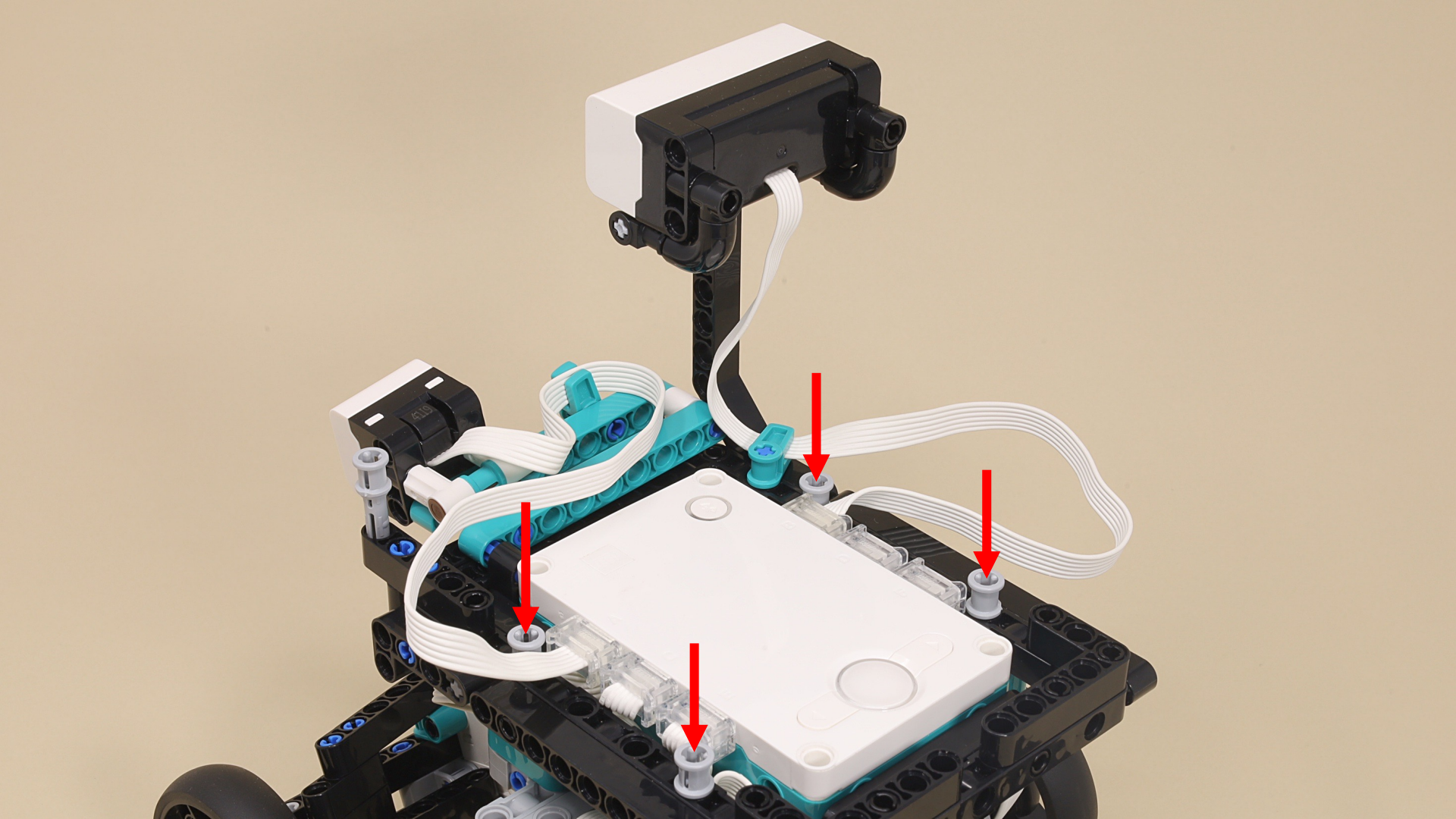


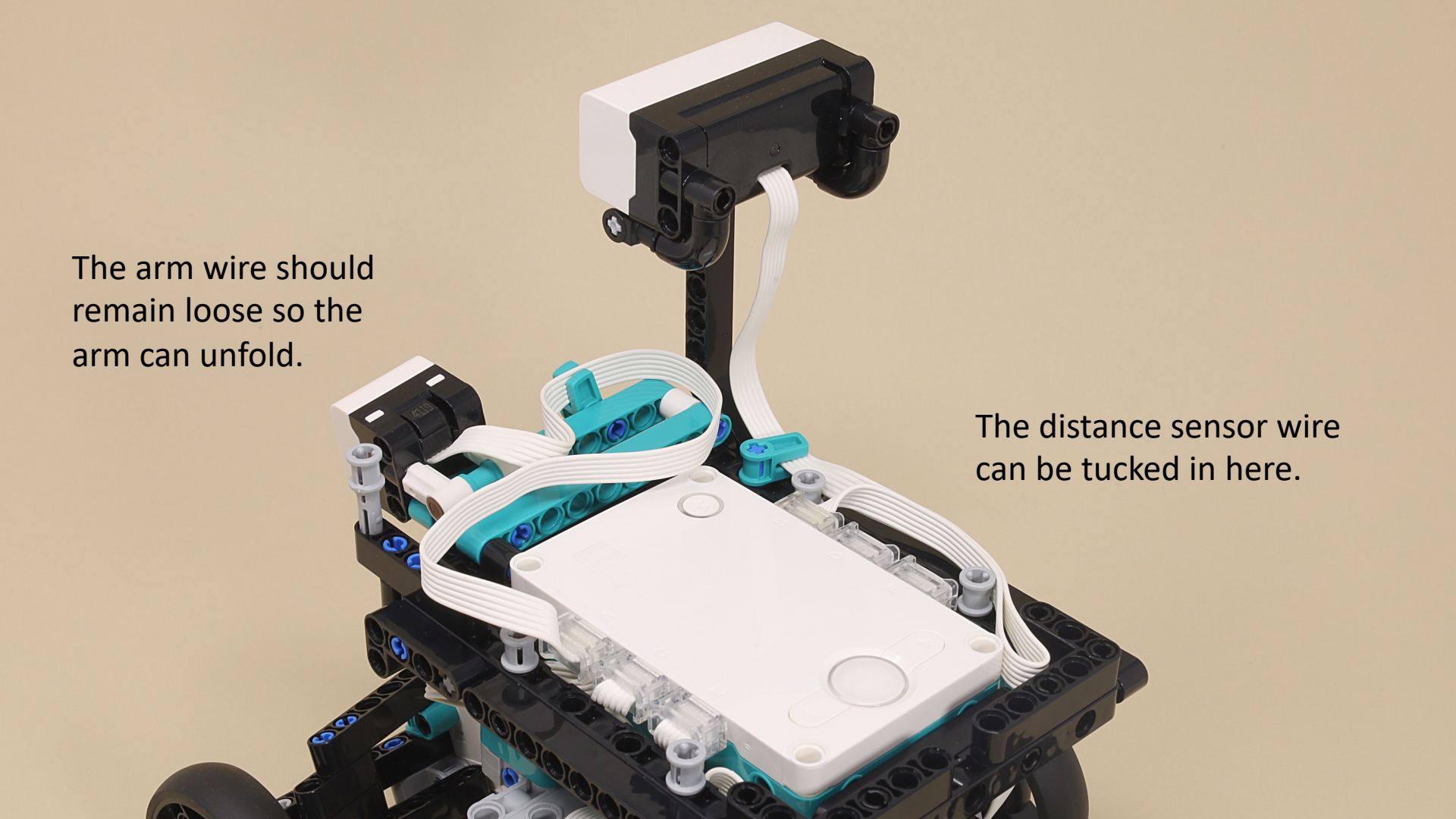
The deck is a tight fit over the hidden wires, but it works if the wires are flattened out of the way.

A = Light Sensor (Arm)

B = Distance Sensor



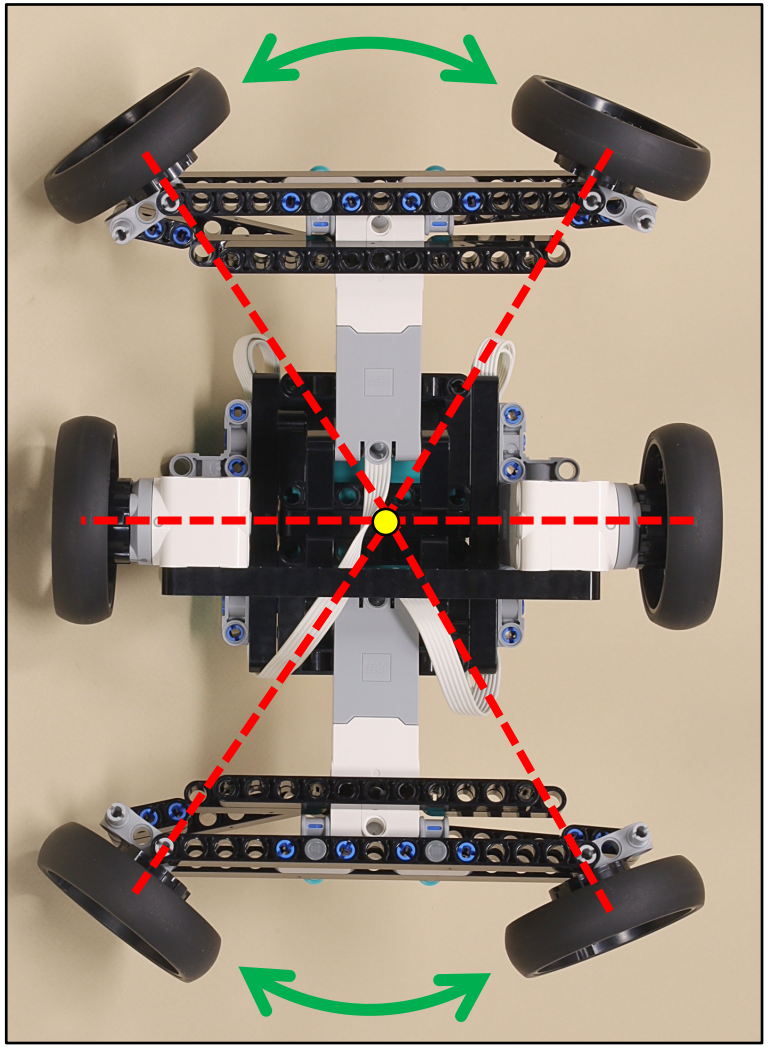



The arm wire should remain loose so the arm can unfold.
The distance sensor wire can be tucked in here.

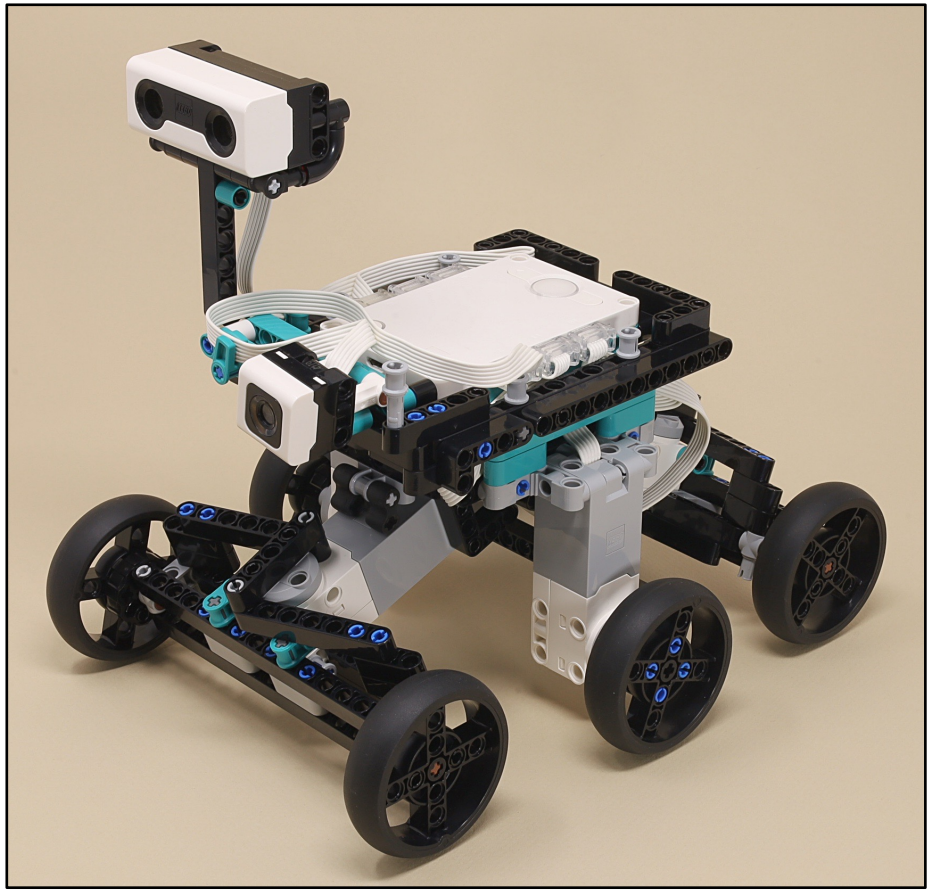
In a Zero Radius Turn geometry, all four of the outside wheels turn to become perpendicular to a turning center at the very center of the robot.

This allows the robot to pivot in-place around its own center for maximum maneuverability in tight spaces.

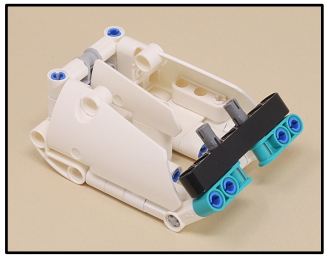
However, only two steering positions are effective: the zero radius turn shown here, and all wheels parallel to drive straight.



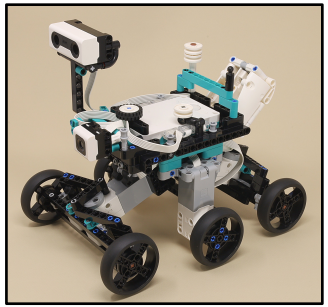
The rover is fully functional at this point



…or for more visual details, add:



Nuclear Power Source



Finishing Touches