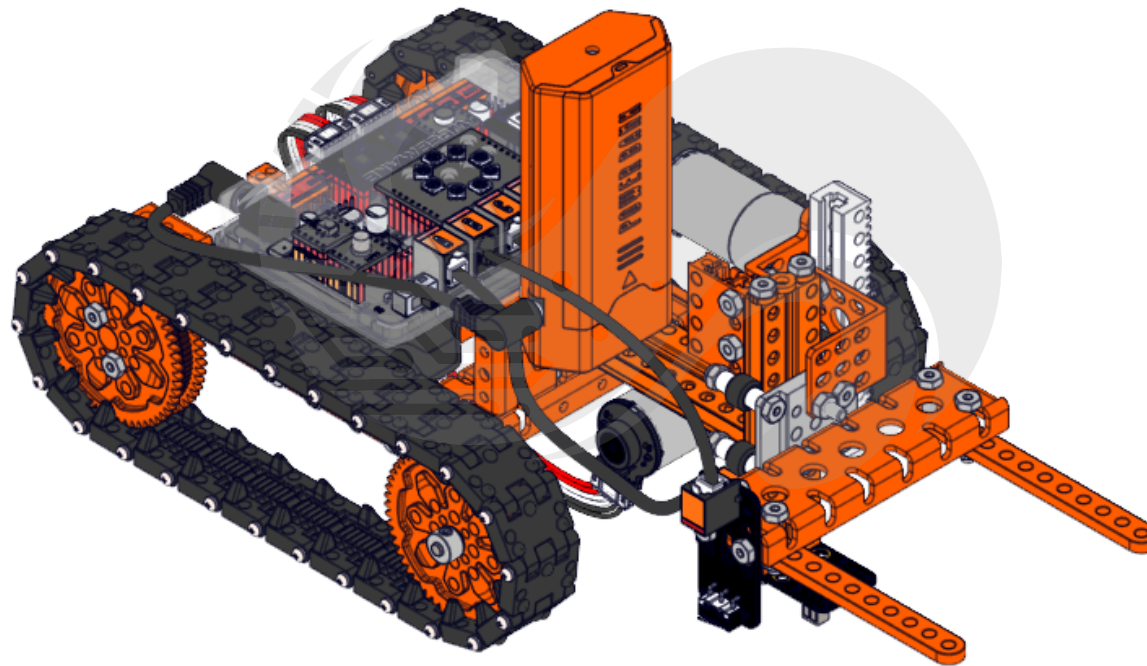


「 Chapter 11 Forklift Robot 」



0.Common Module Installation—Assembly Guide of Mainboard ELF



1x328P MicroChip Module V1.0



1xWeeeMake Bluetooth 4.1 Module



1xLight Sensor (Pin)



1xIR Receiver (Pin)



1xSound Sensor (Pin)



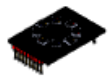
1xELF Mainboard



1xELF Mainboard Lid



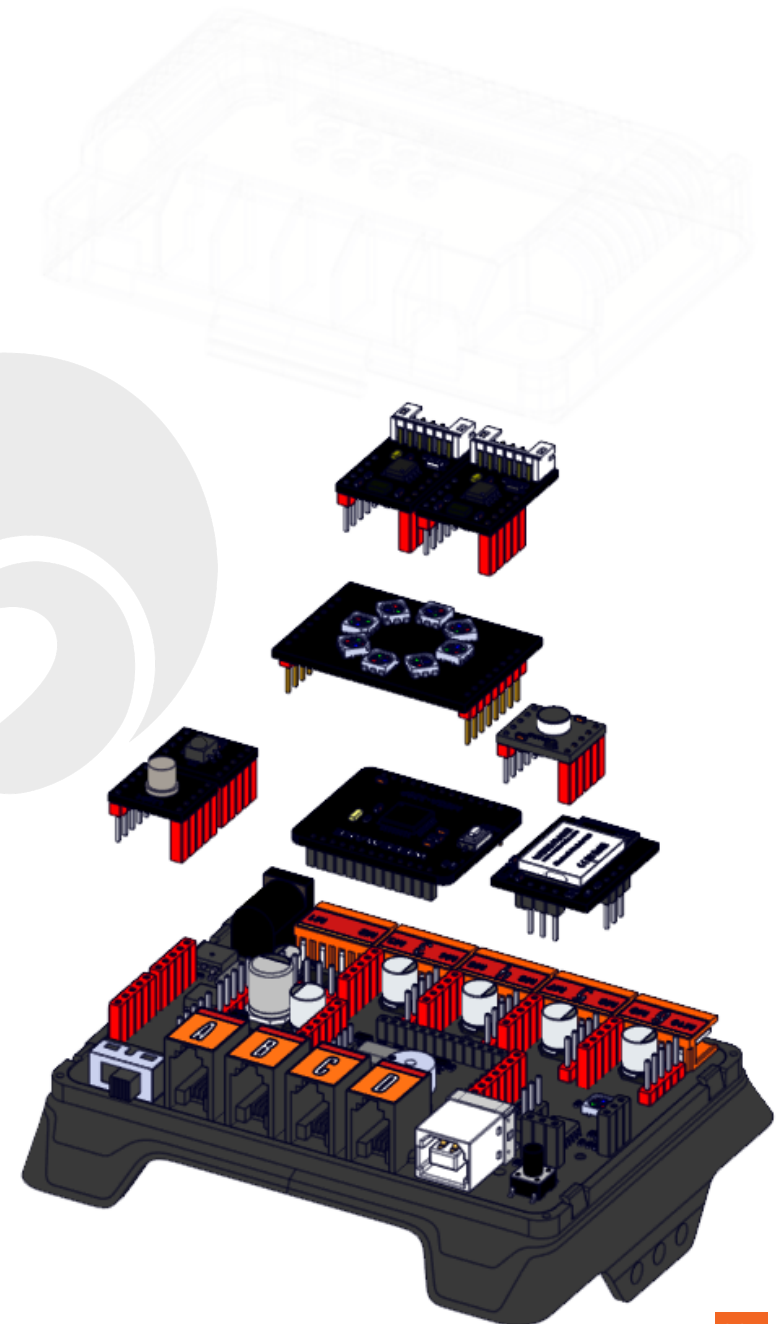
1xELF Mainboard Base



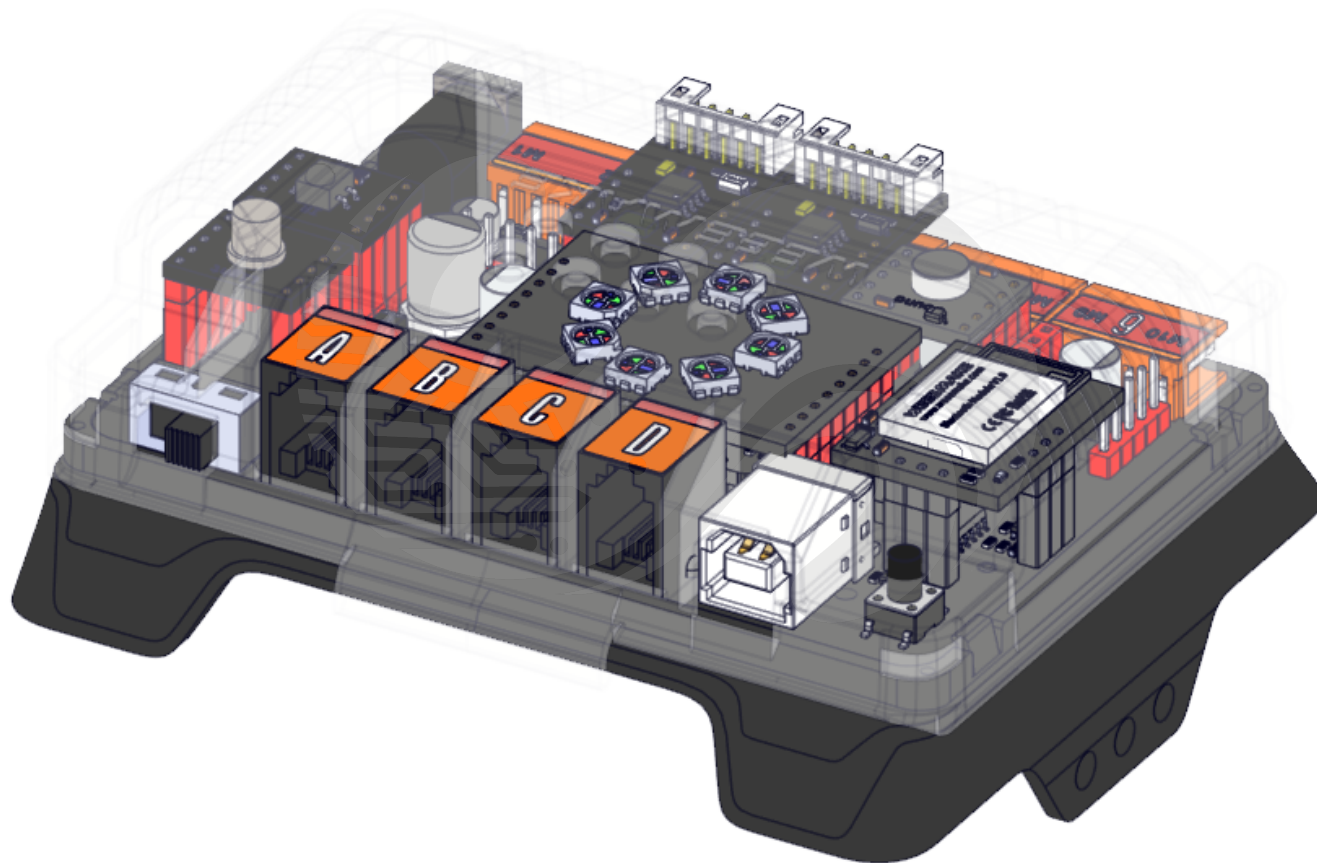
1xRGB LED - 8 (Pin)



2xDC/Encoder Motor Driver

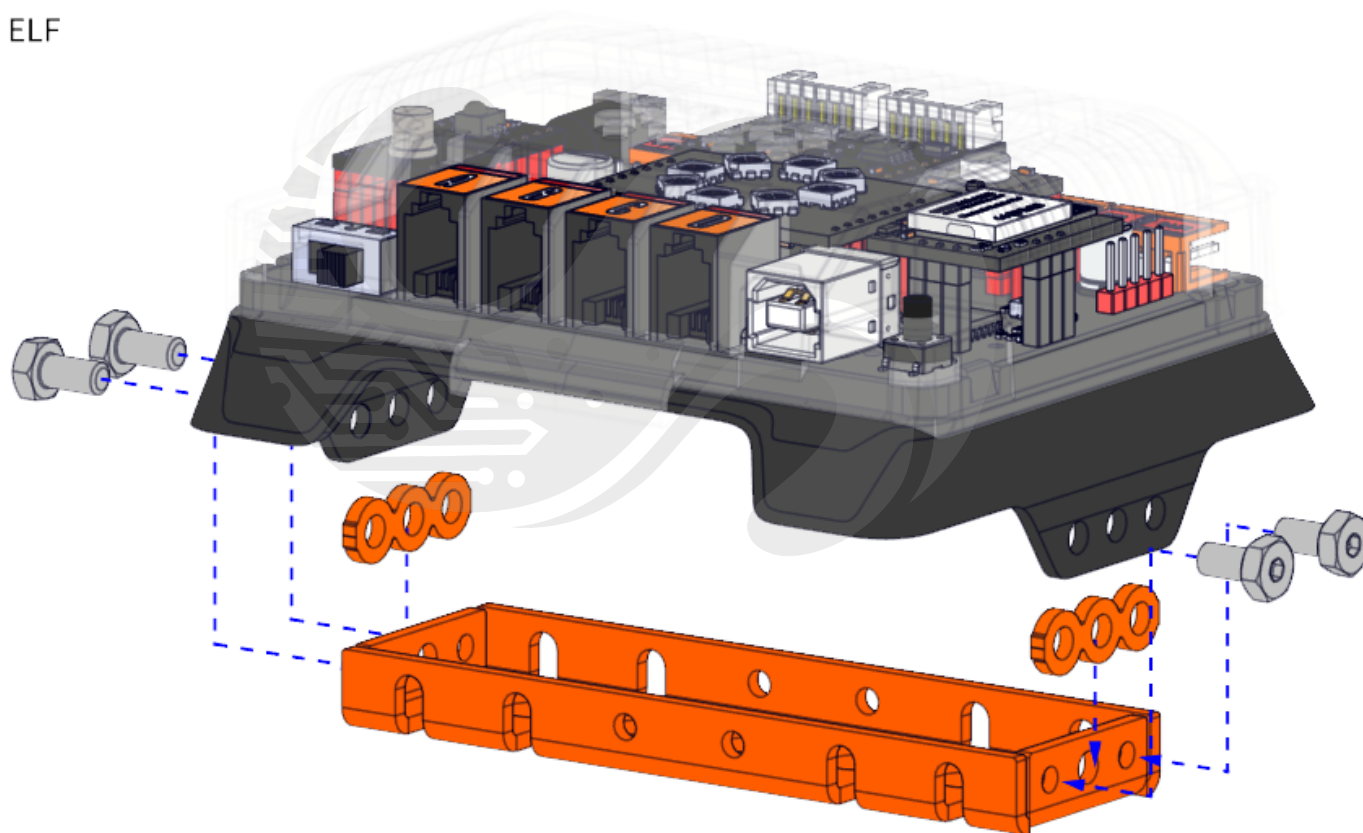


0.Common Module Installation—Assembly Guide of Mainboard ELF

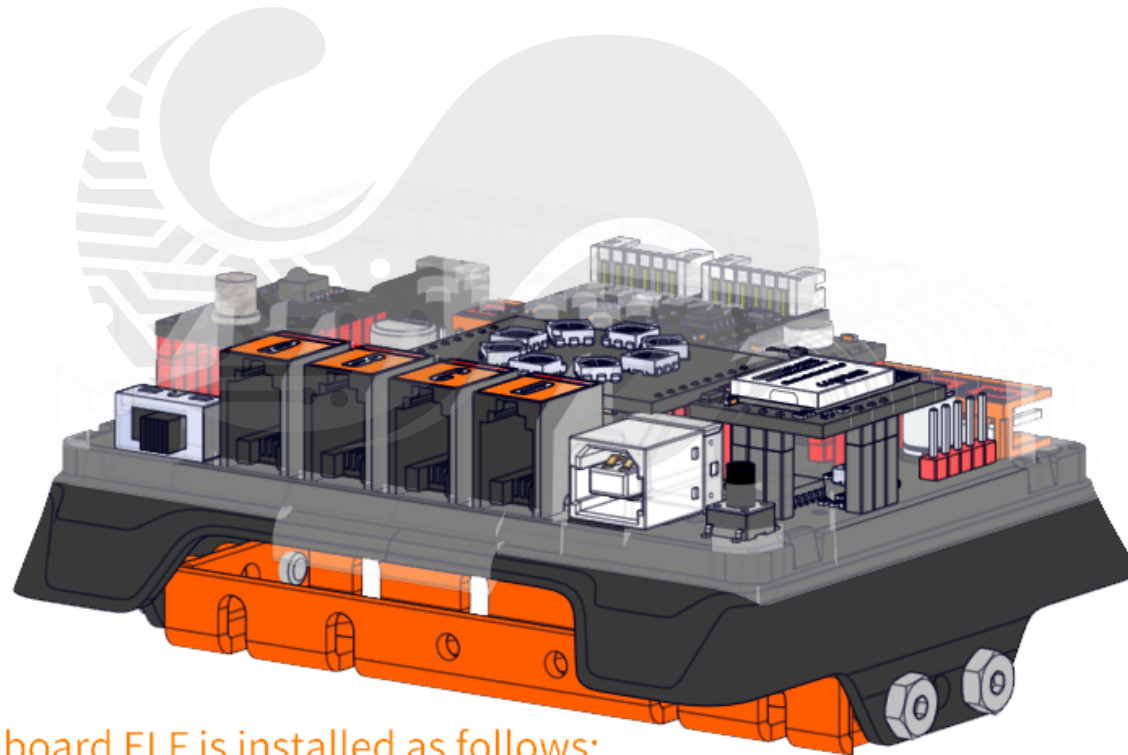


0.Common Module Installation—Assembly Guide of Mainboard ELF

-  4xScrew M4*8
-  2xLinkage 0208-24
-  1xBeam 1030-100-B
-  1xMainboard ELF



0.Common Module Installation—Assembly Guide of Mainboard ELF



Tips:

The default sensors on mainboard ELF is installed as follows:

Port 1 - Light Sensor Port 2 - IR Receiver Port 3 & 4 - DC/Encoder Motor Driver Port 5 - Sound Sensor

MCU Port - 328P Micro Chip

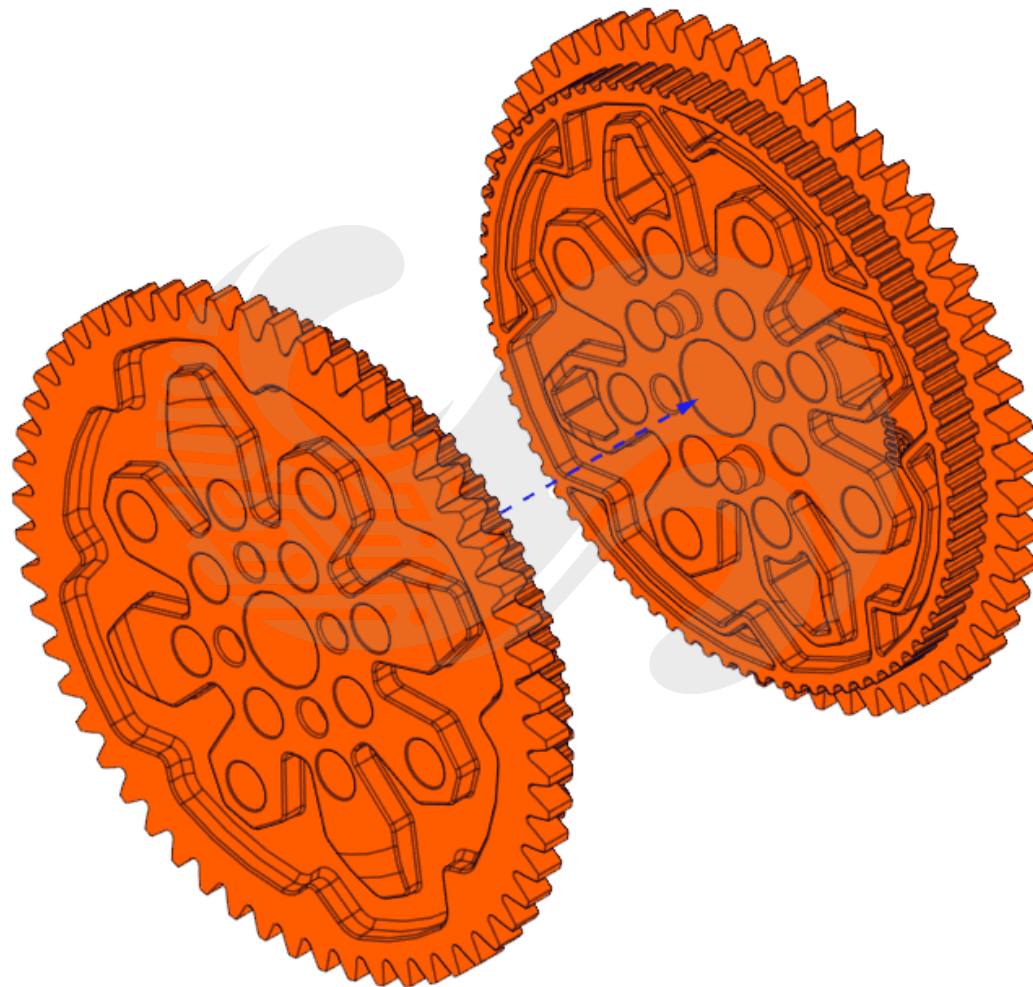
Communication Port - Bluetooth Module

Special port - RGB LED -8 Module

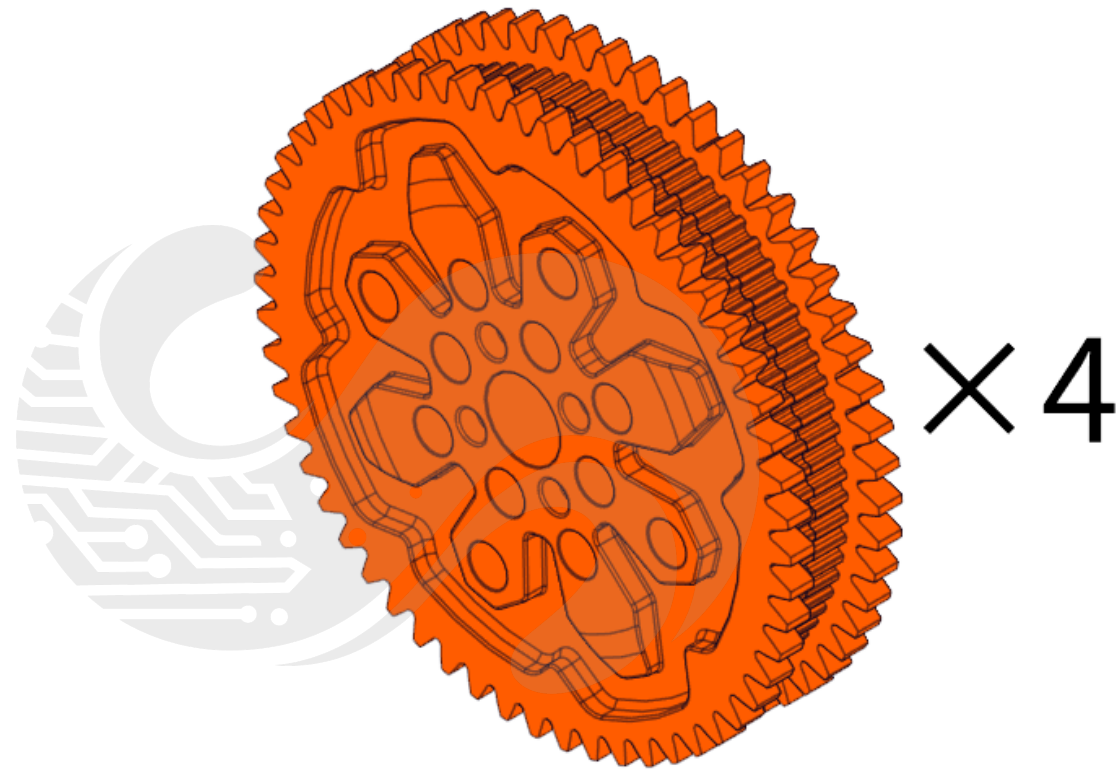
1.Assemble 56T Plastic Gear



2x56T-Plastic Gear



1.Assemble 56T Plastic Gear

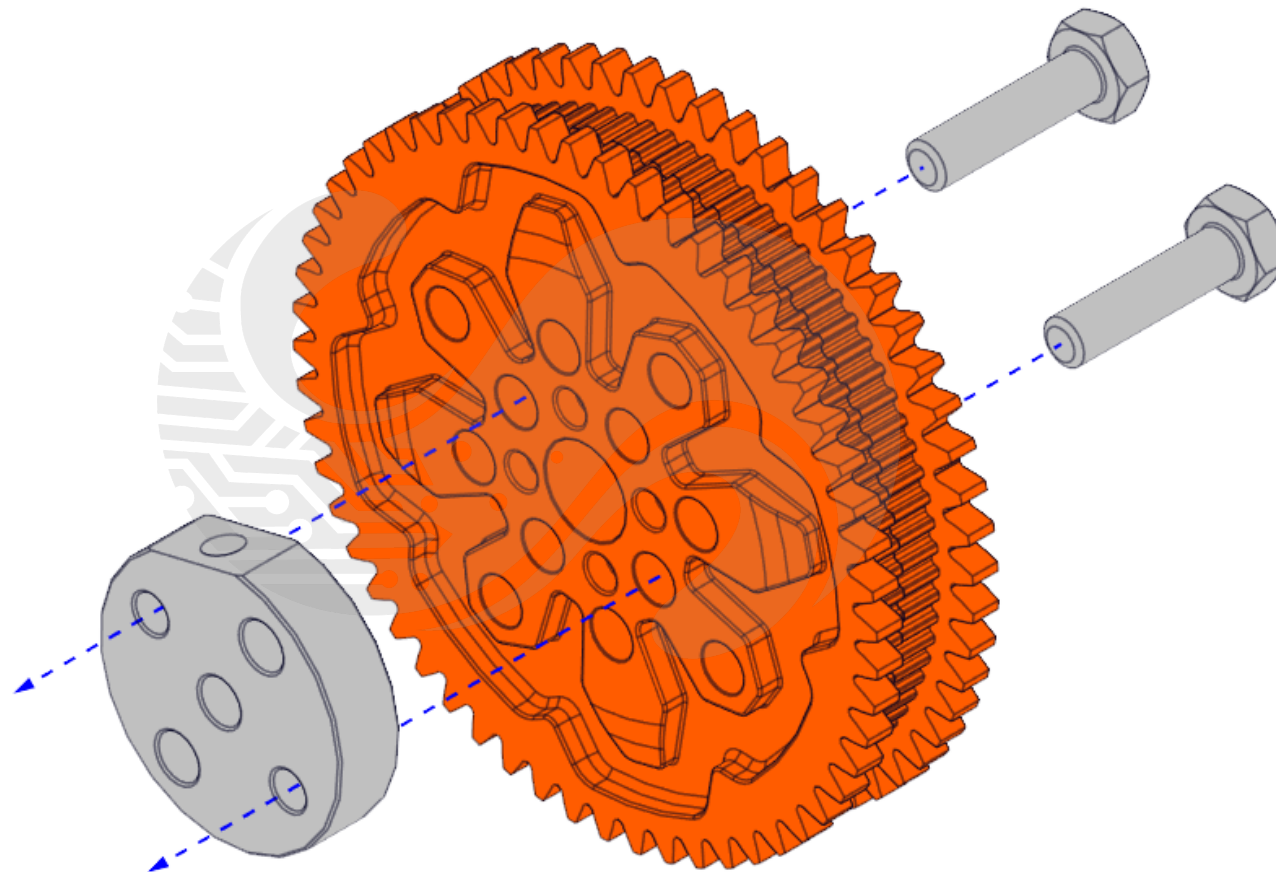


2.Assembly Active Wheel

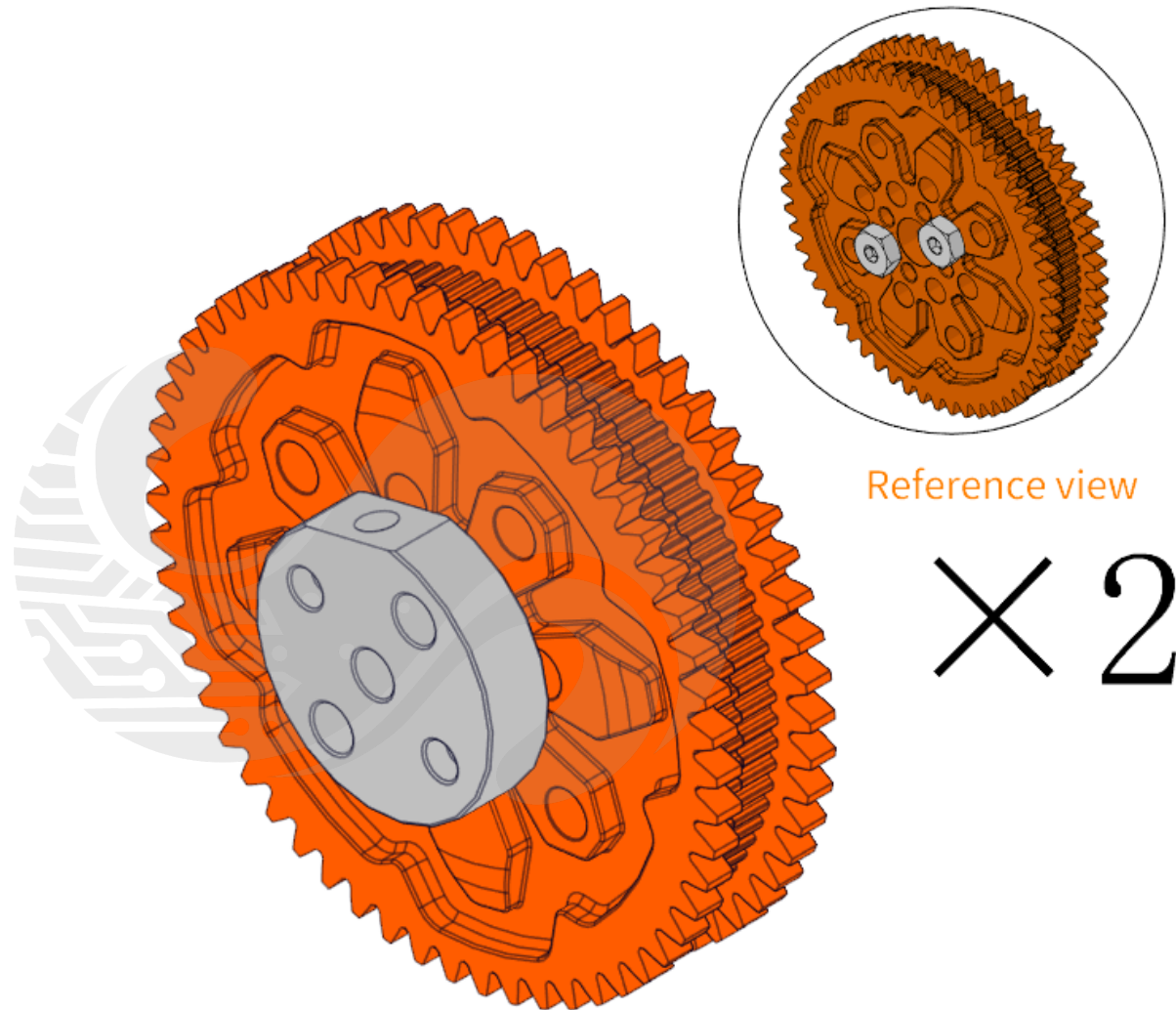
 1xDriving Flange Hub 4mm

 1x56T-Plastic Gear Assembly

 2xScrew M4*20



2.Assembly Active Wheel



3.Assemble Encoder DC Motor-25



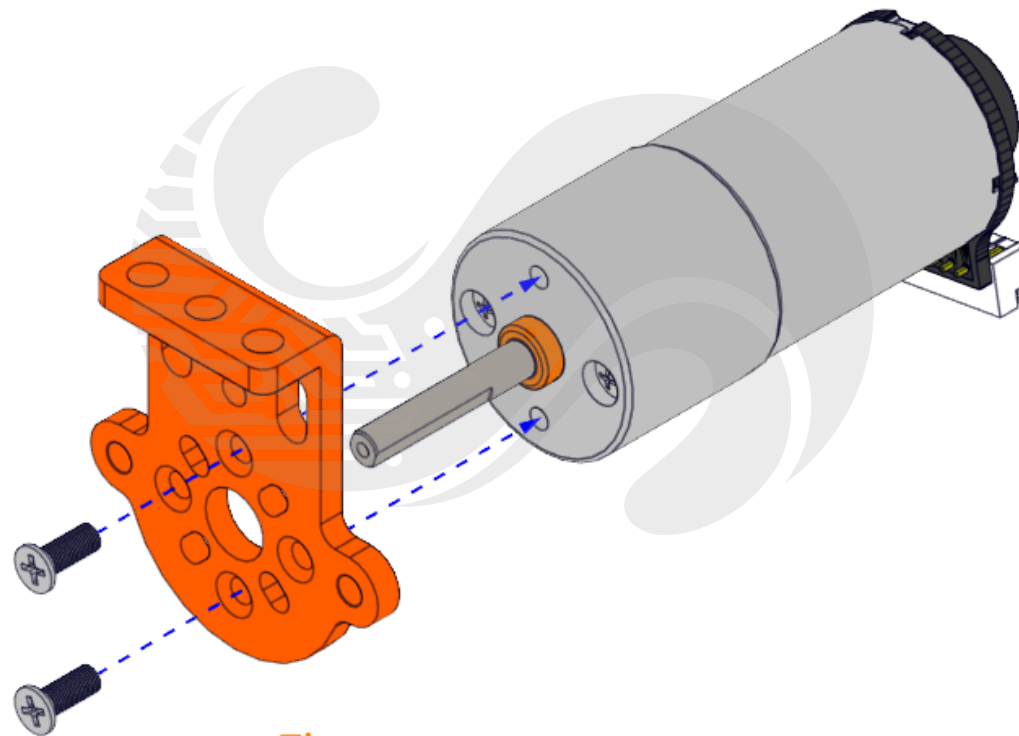
1x25 Motor Bracket



1xEncoder DC Motor-25 9V188RPM

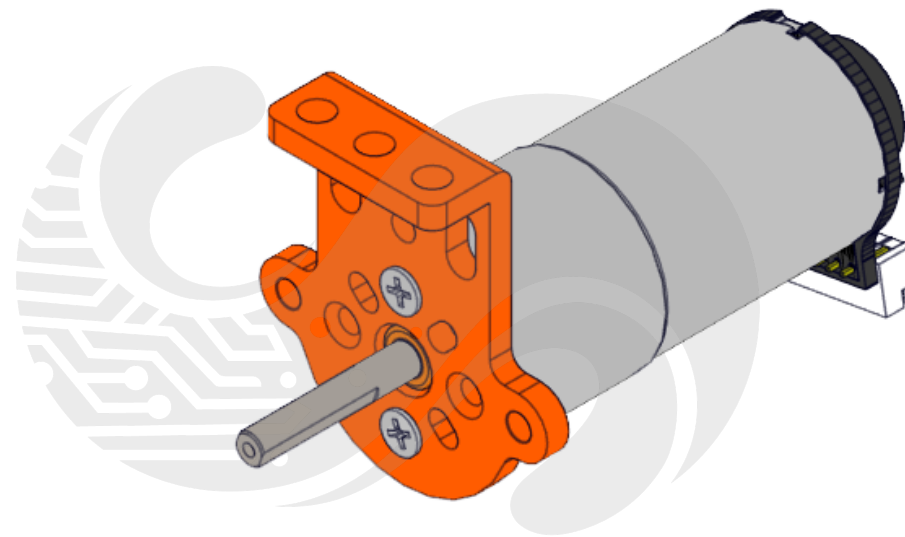


2xCountersunk Head Screw M3*6



Tips:
Please pay attention to the hole position and direction.

3.Assemble Encoder DC Motor-25



4.Assemble the DC Motor-25



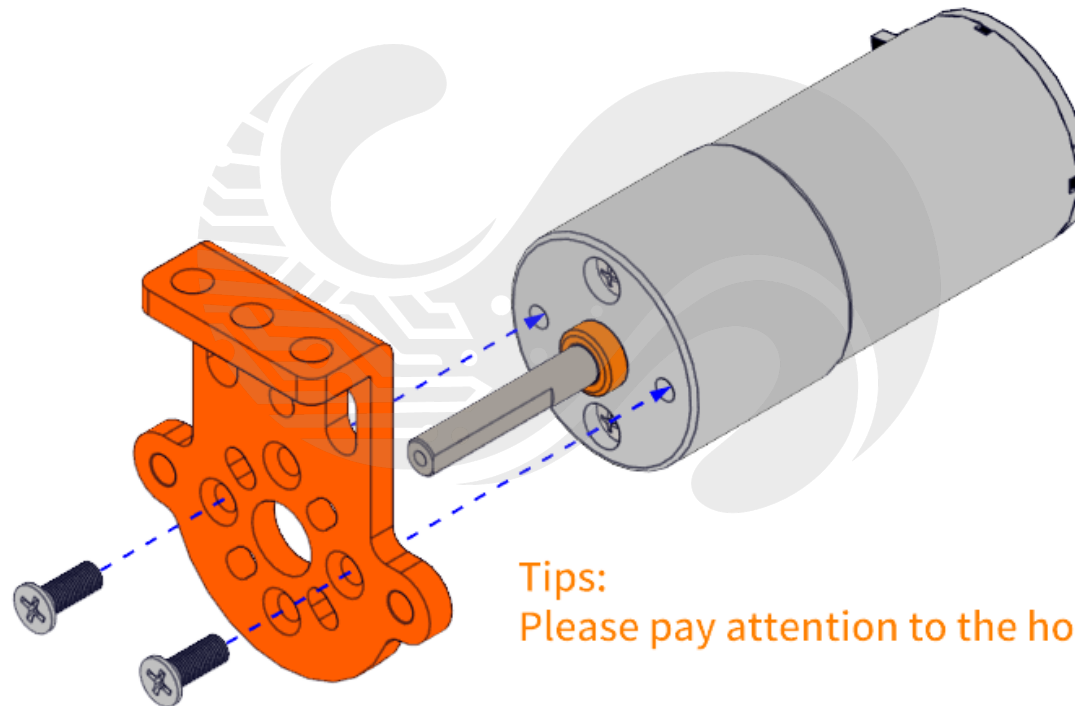
1x25 Motor Bracket



1xDC Motor-25 (50RPM)

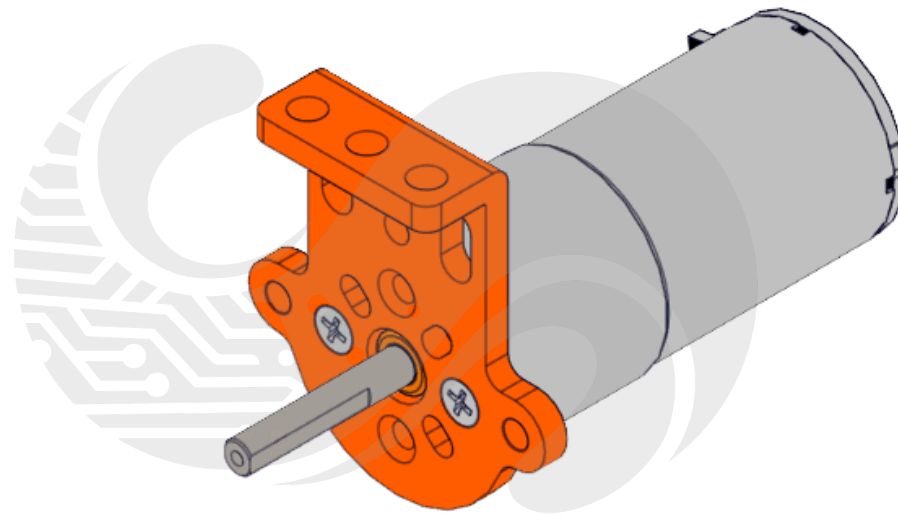


2xCountersunk Screw M3x6



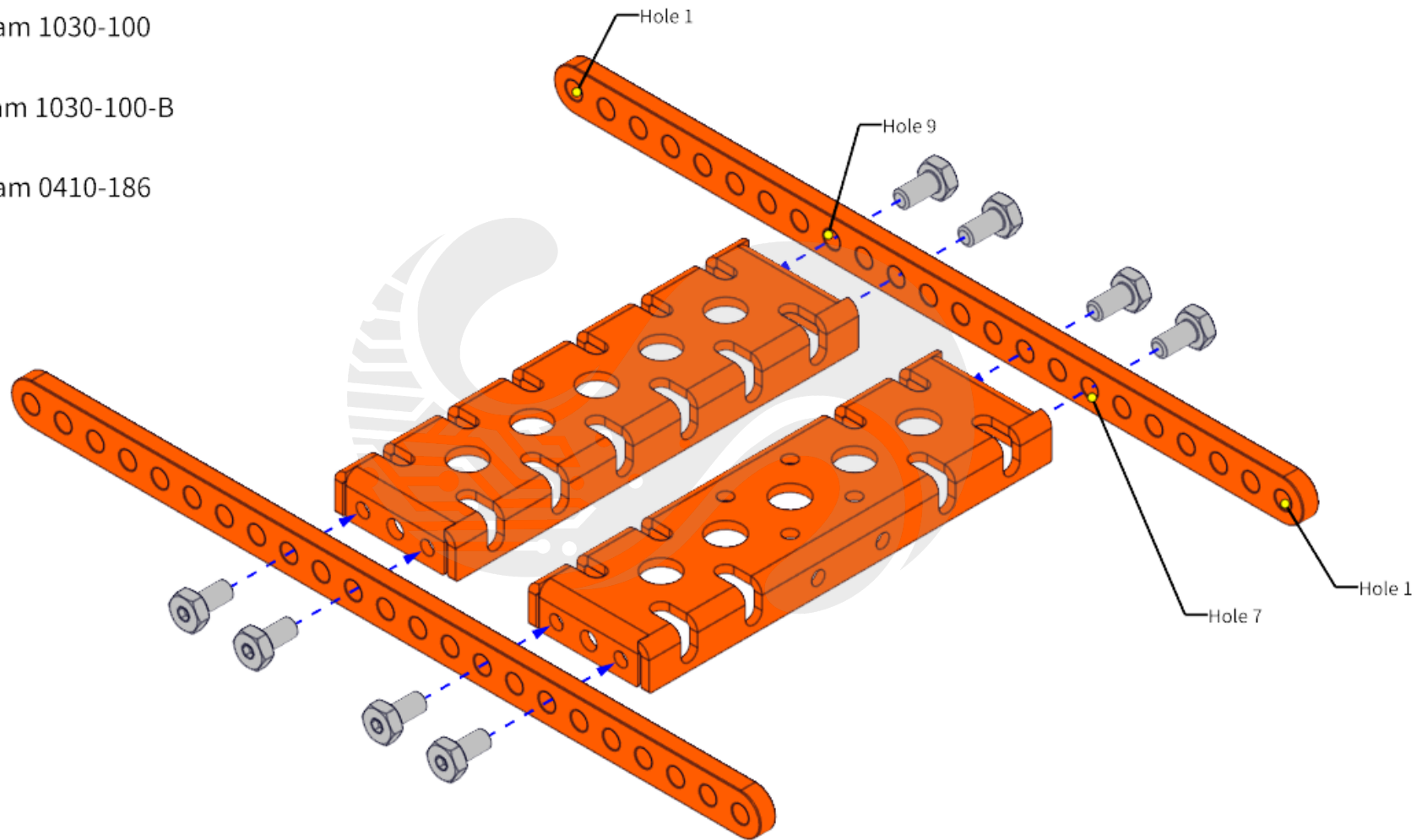
Tips:
Please pay attention to the hole position and direction.

4.Assemble the DC Motor-25

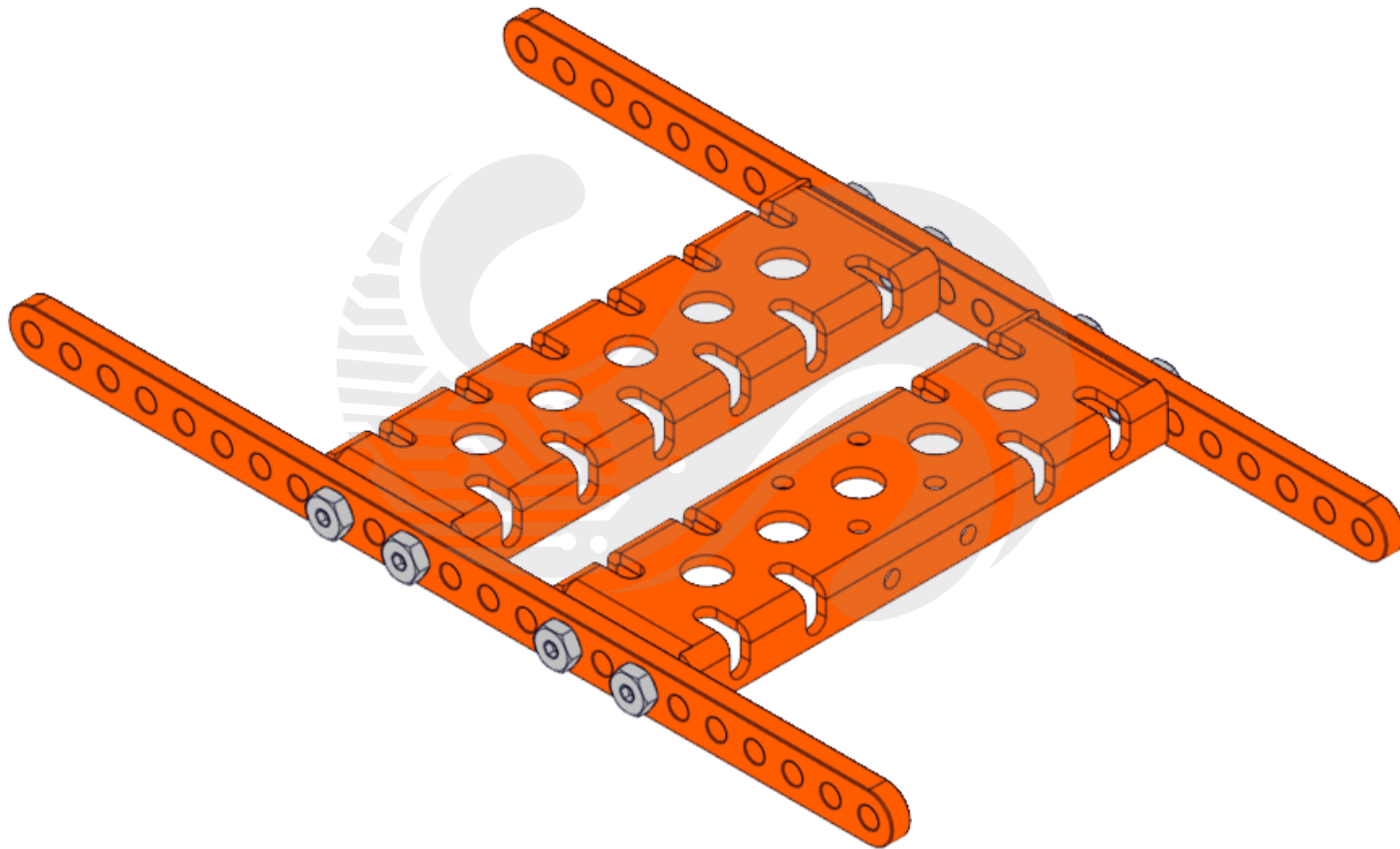


5.Assemble Base Structure

-  8xScrew M4*8
-  1xBeam 1030-100
-  1xBeam 1030-100-B
-  2xBeam 0410-186



5. Assemble Base Structure



6.Assemble Driven Wheel



2x56T-Plastic Gear



4xFlange Copper Bearing 4*8*3.5



2xNylon Spacer 4*7*10



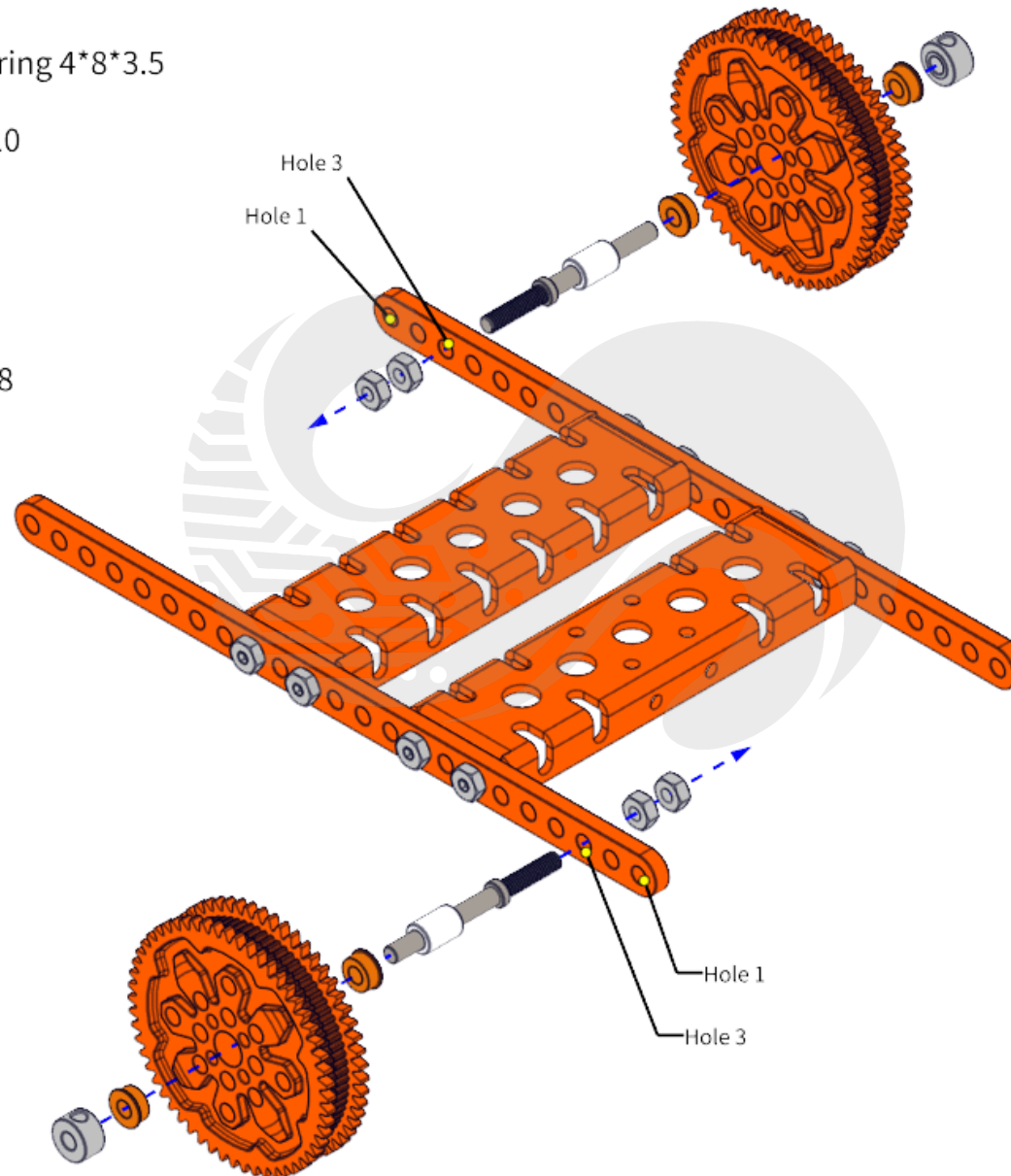
4xNut M4



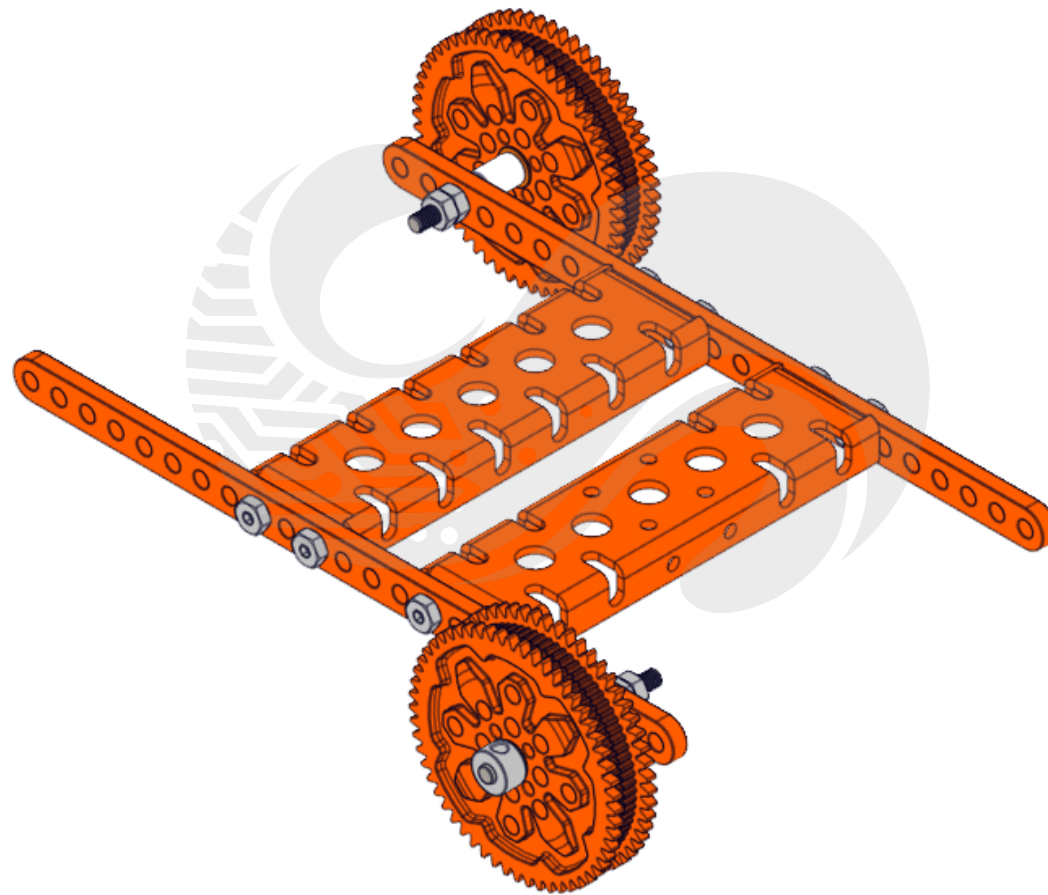
2xShaft Collar - 4mm



2xThreaded shaft 4-48

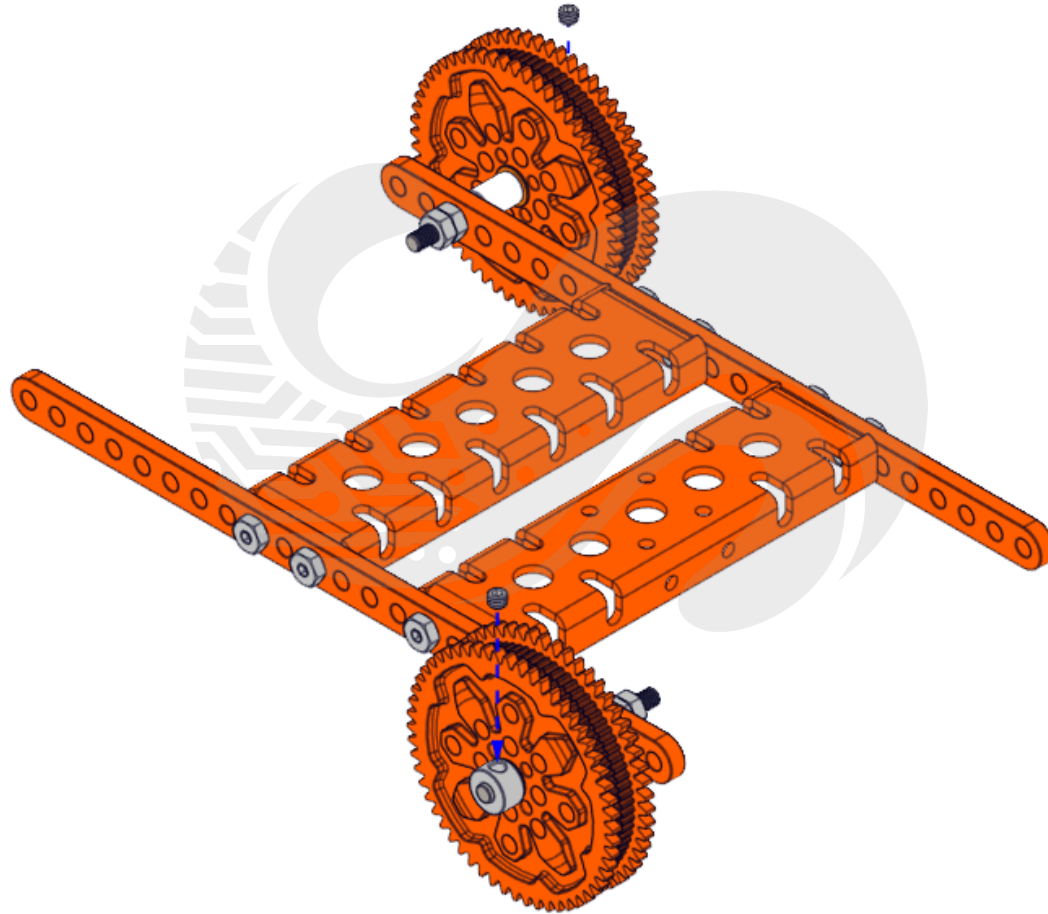


6.Assemble Driven Wheel

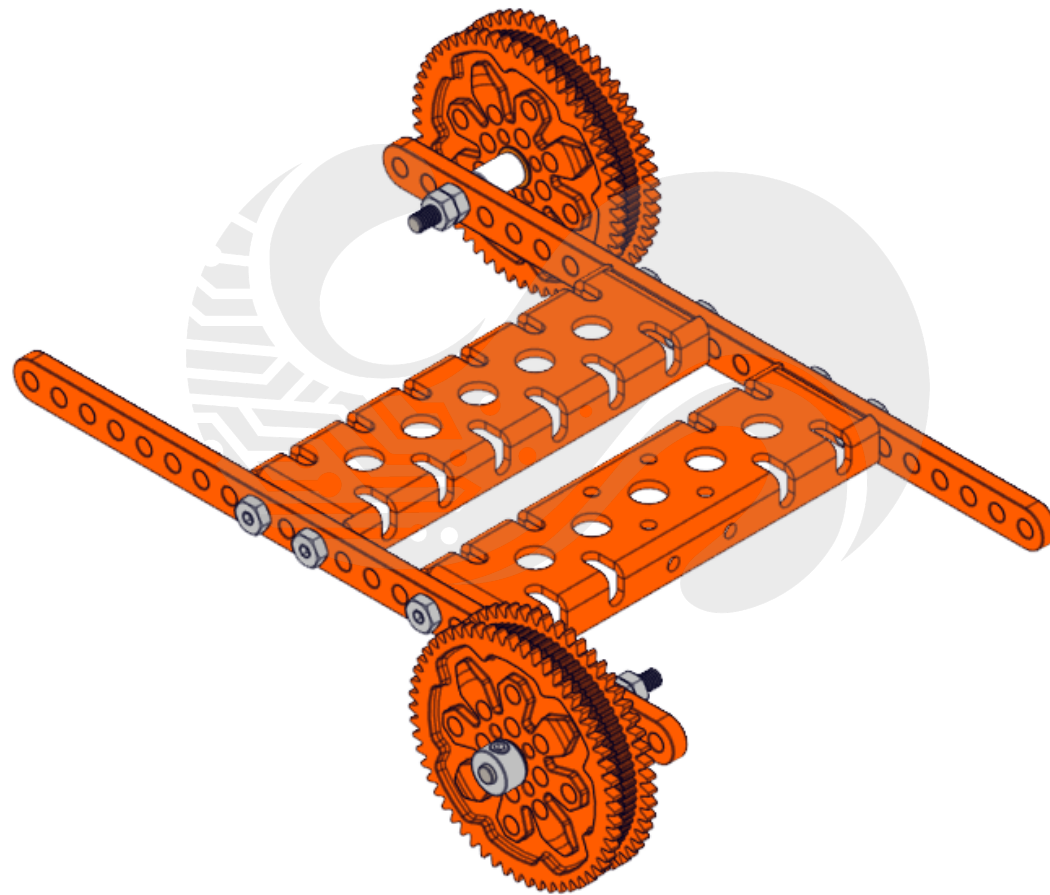


6.Assemble Driven Wheel

 2xHeadless Screw M4*3



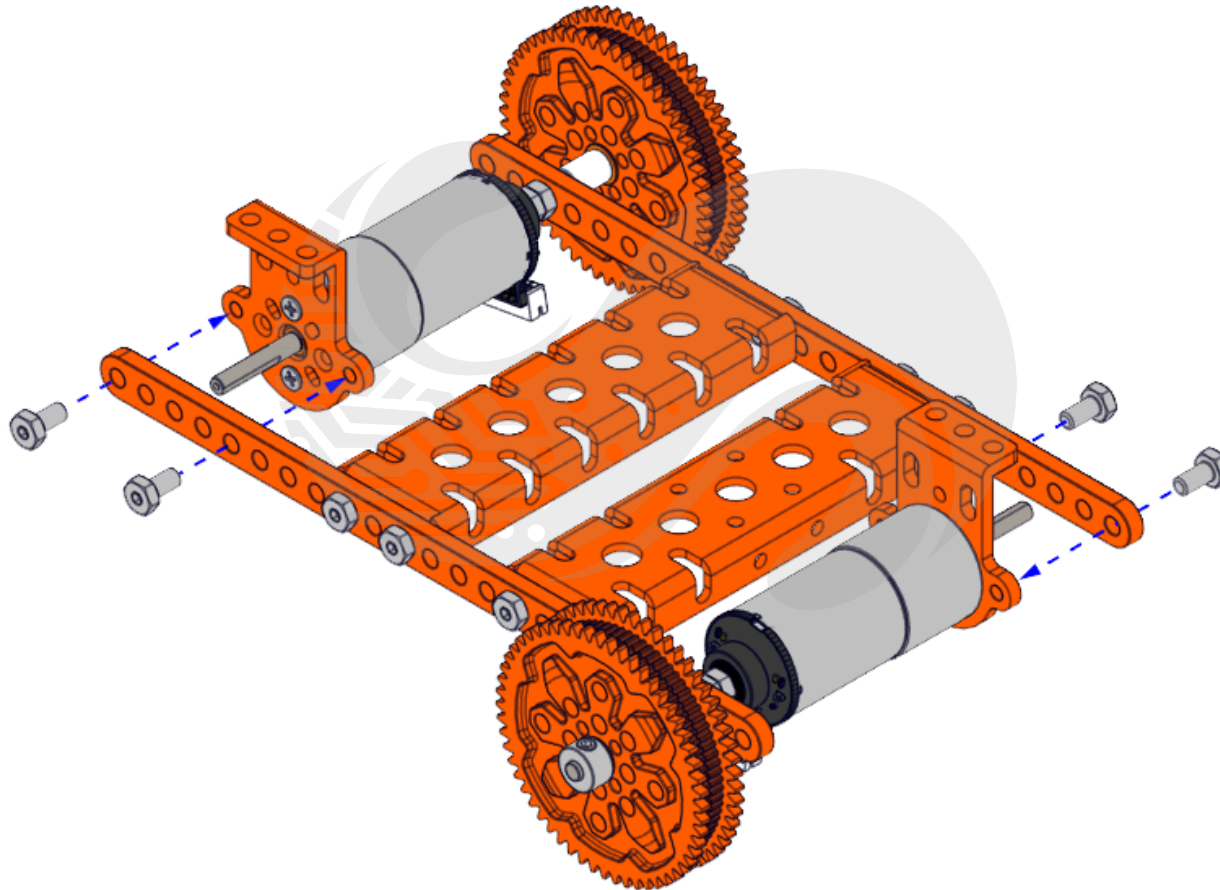
6.Assemble Driven Wheel



7.Assemble Base Structure Motor

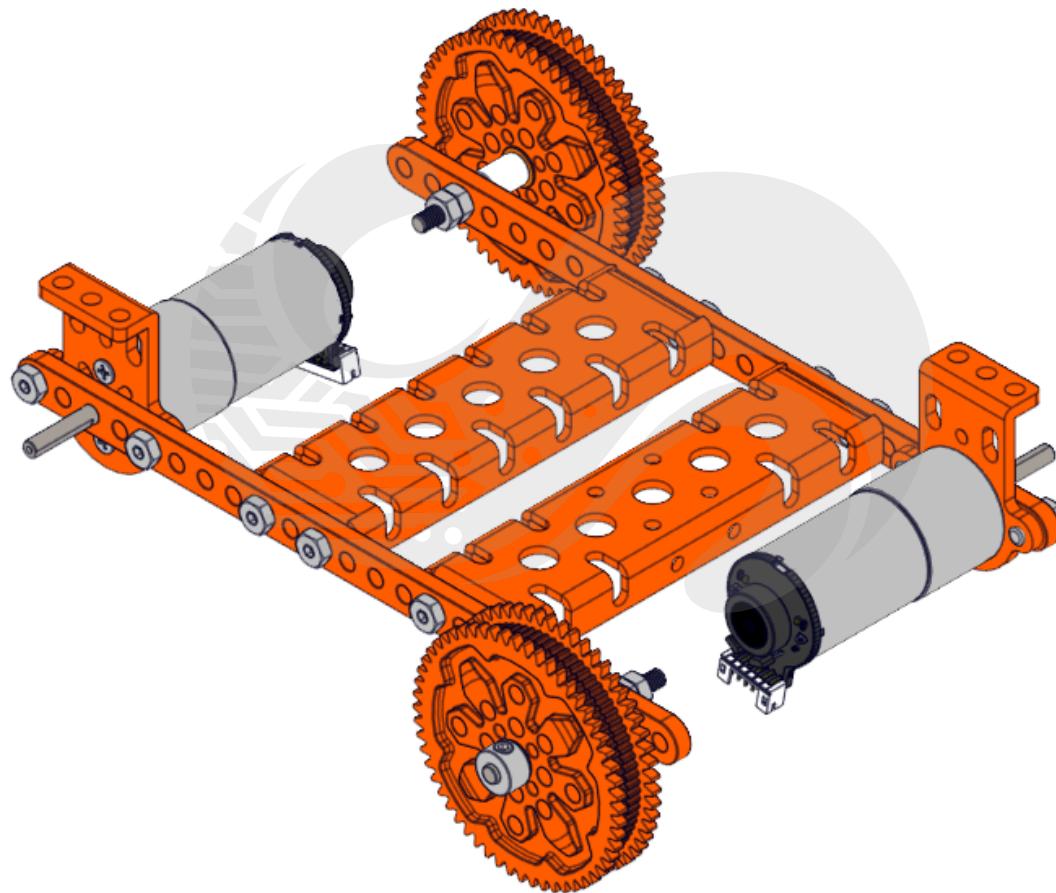
 4xScrew M4*8

 2xEncoder DC Motor-25 (188RPM) Assembly



Tips:
Please pay attention to the hole position and direction.

7.Assemble Base Structure Motor



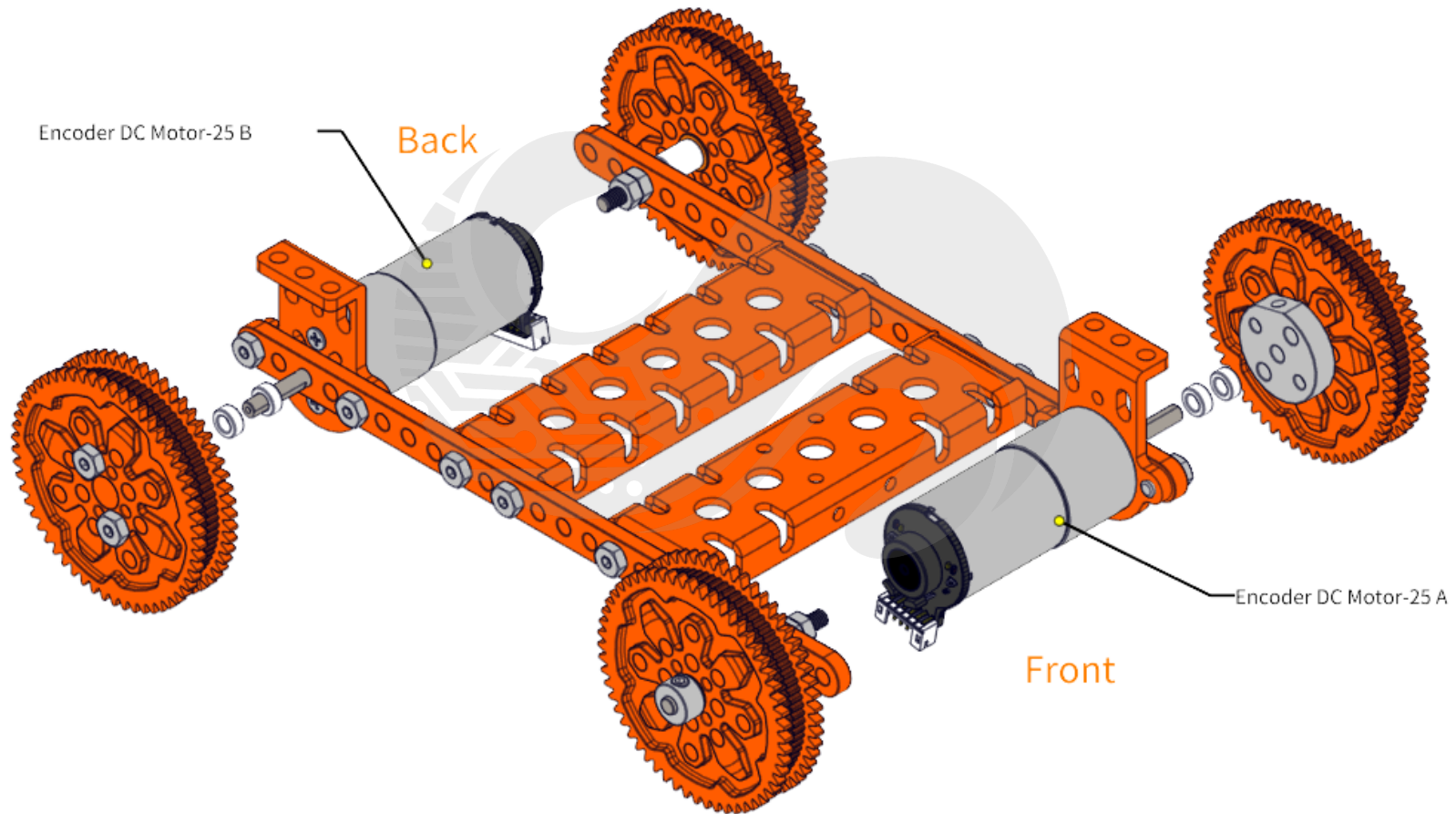
8.Assembly and Fix the Active Wheel



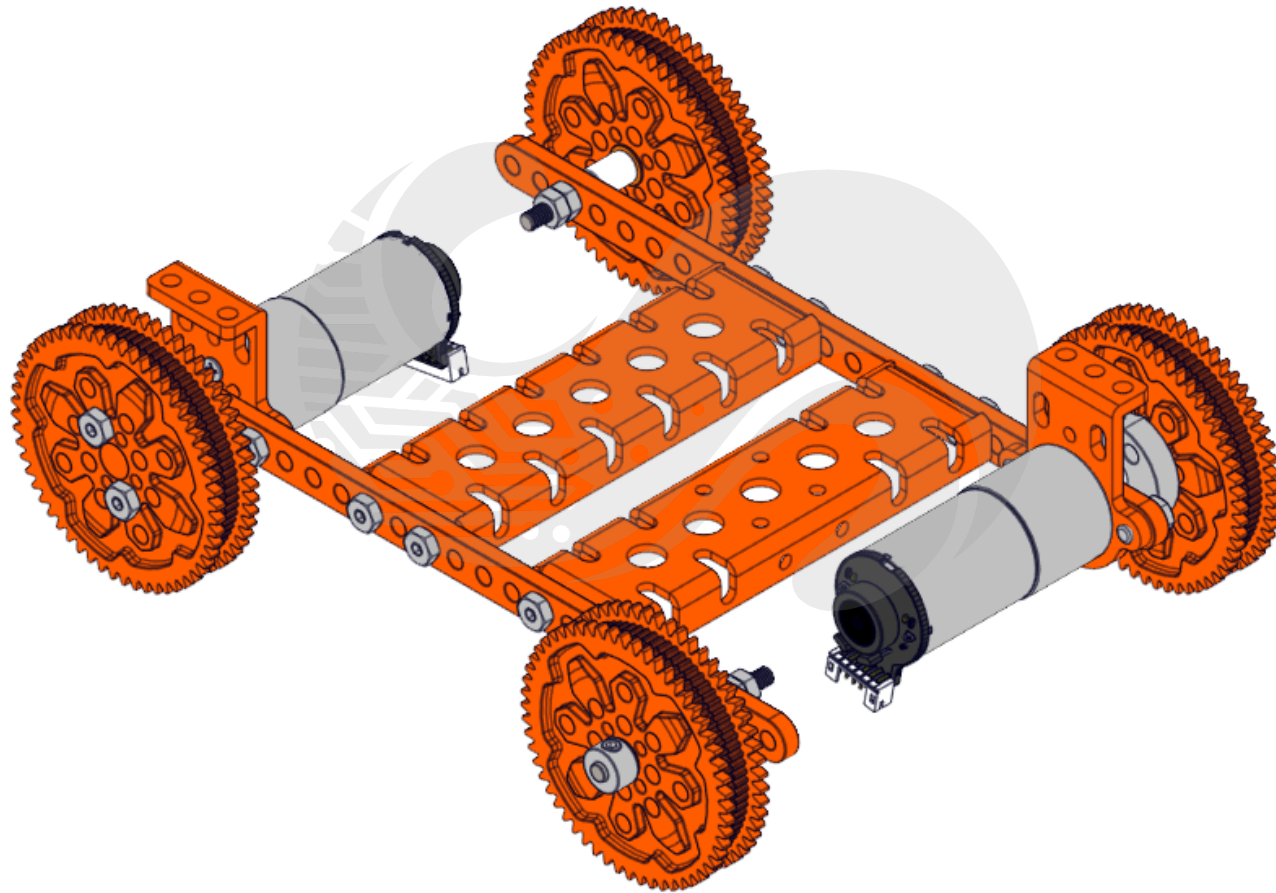
2xActive Wheel



4xNylon Spacer 4*7*3

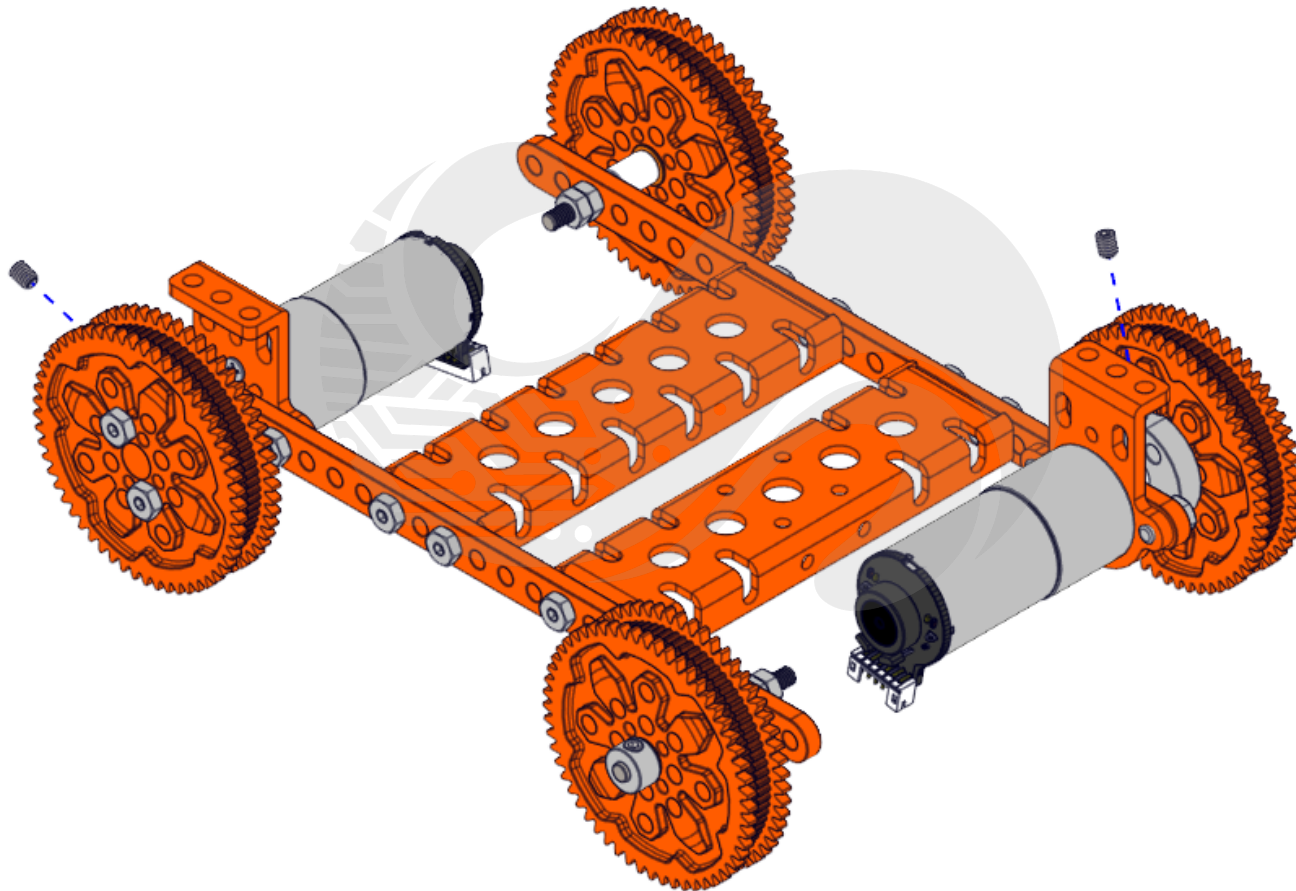


8.Assembly and Fix the Active Wheel



8.Assembly and Fix the Active Wheel

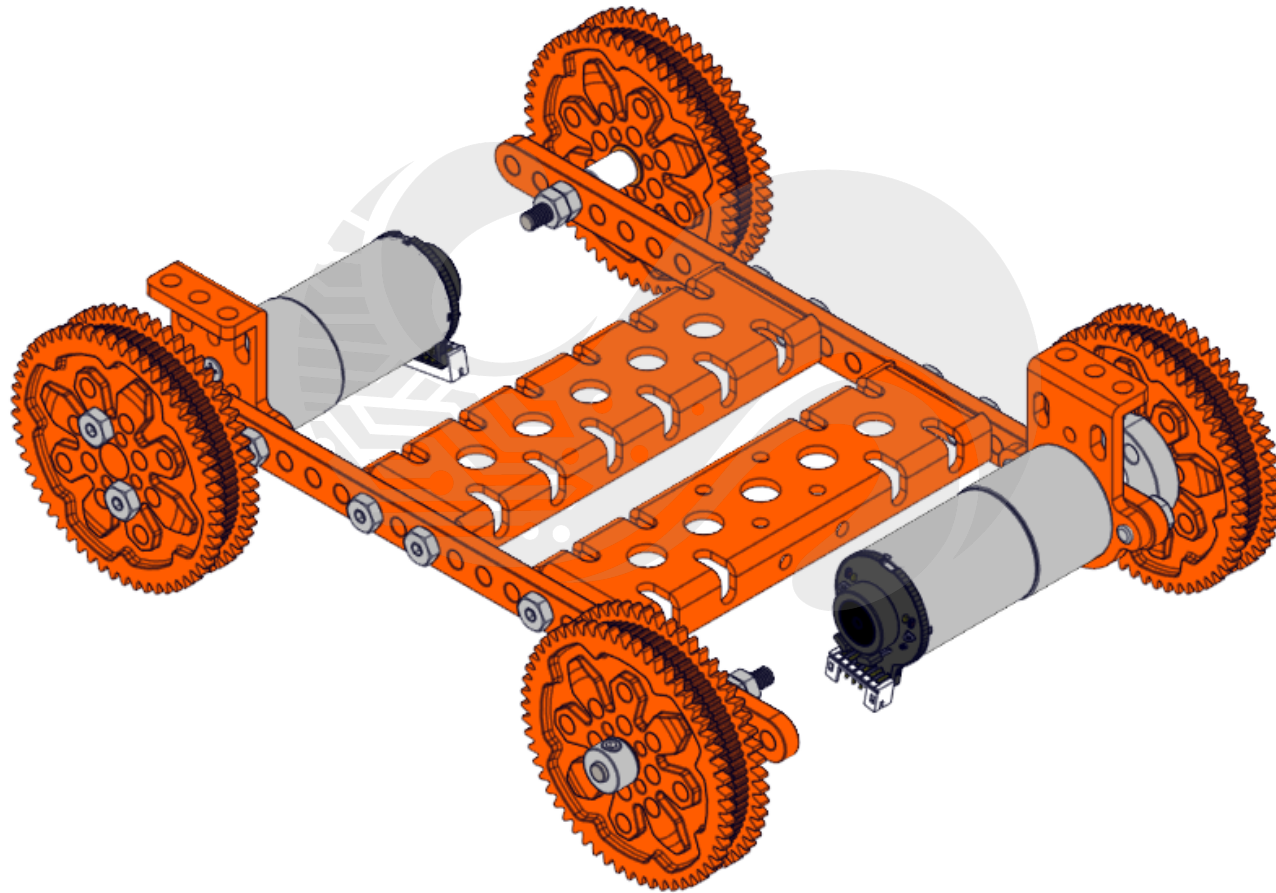
 2xHeadless Screw M4*5



Tips:

Please screw the headless screw M4*5 to the flat surface of motor shaft.

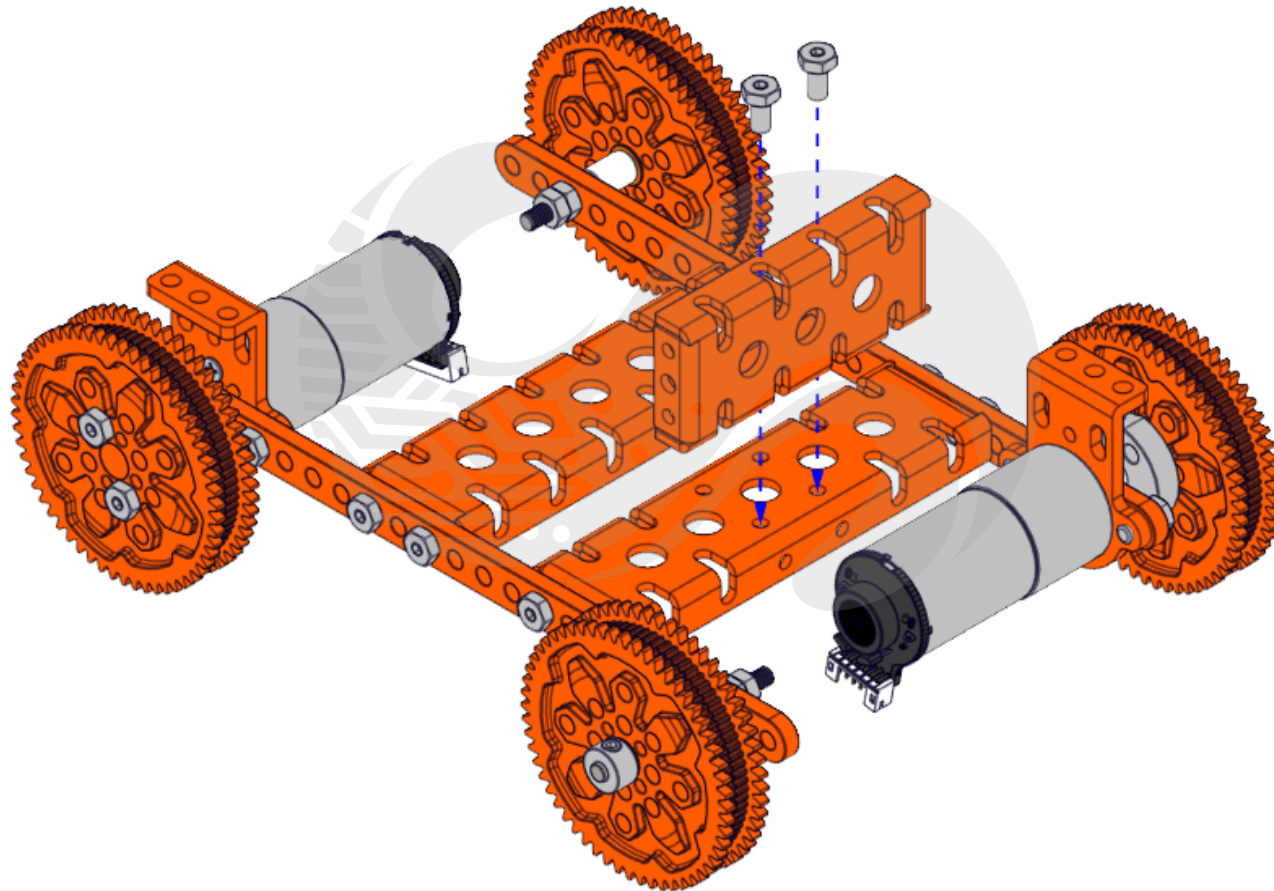
8.Assembly and Fix the Active Wheel



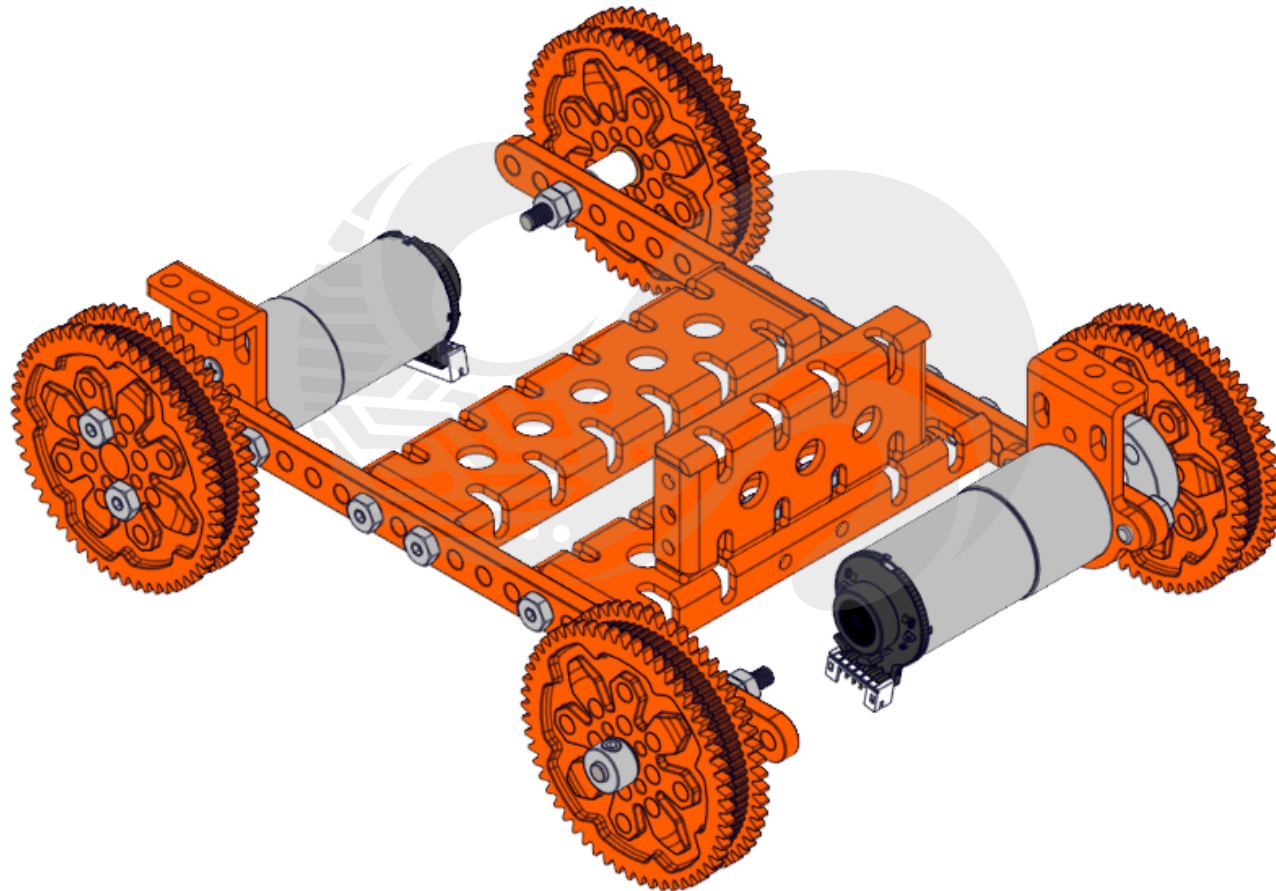
9.Assemble Beam 1030-68

 1xBeam 1030-68

 2xScrew M4*8



9.Assemble Beam 1030-68



10.Assemble Lifting Motor

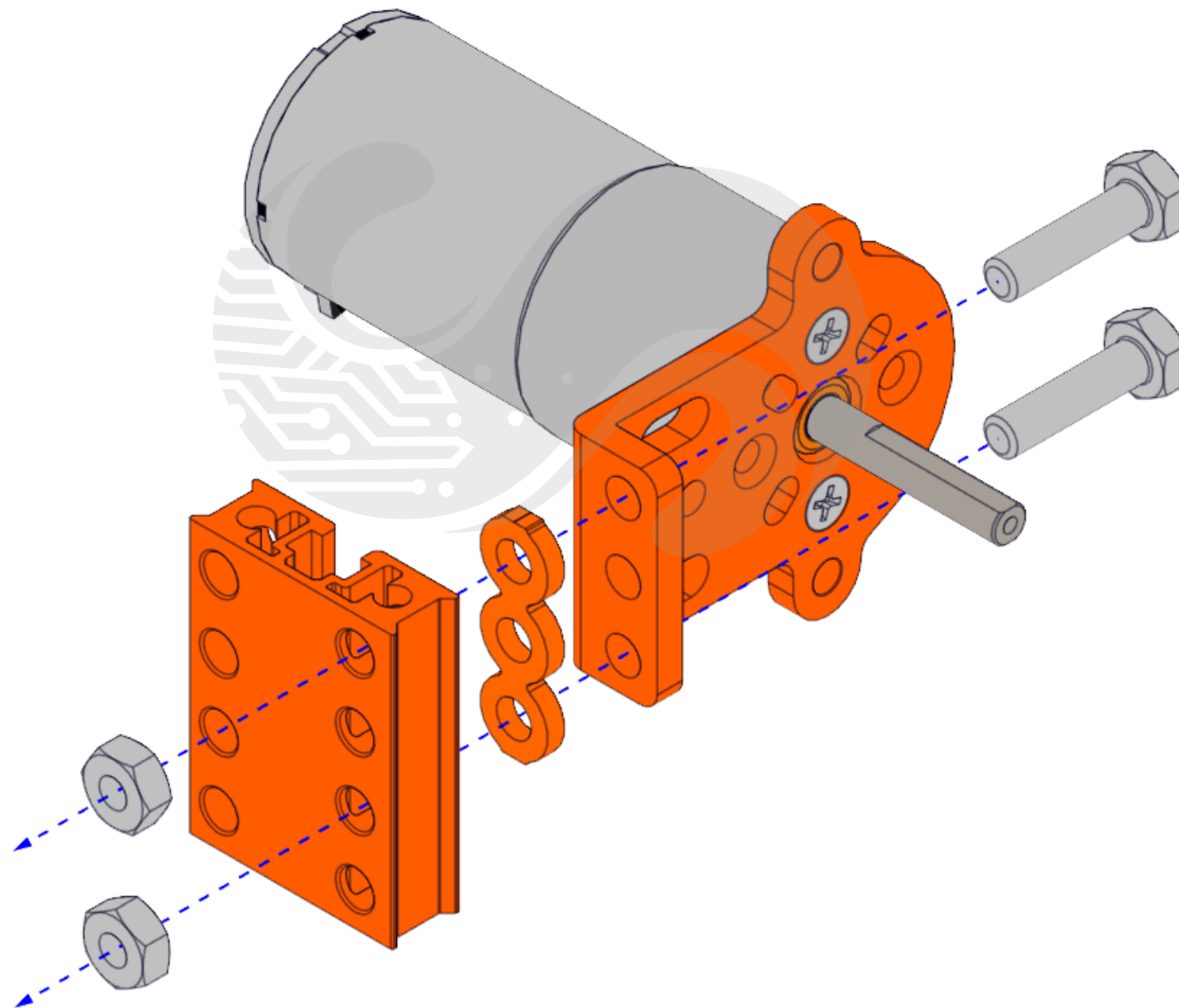
 1xDC Motor-25 (50RPM) Assembly

 1xBeam 0824-32

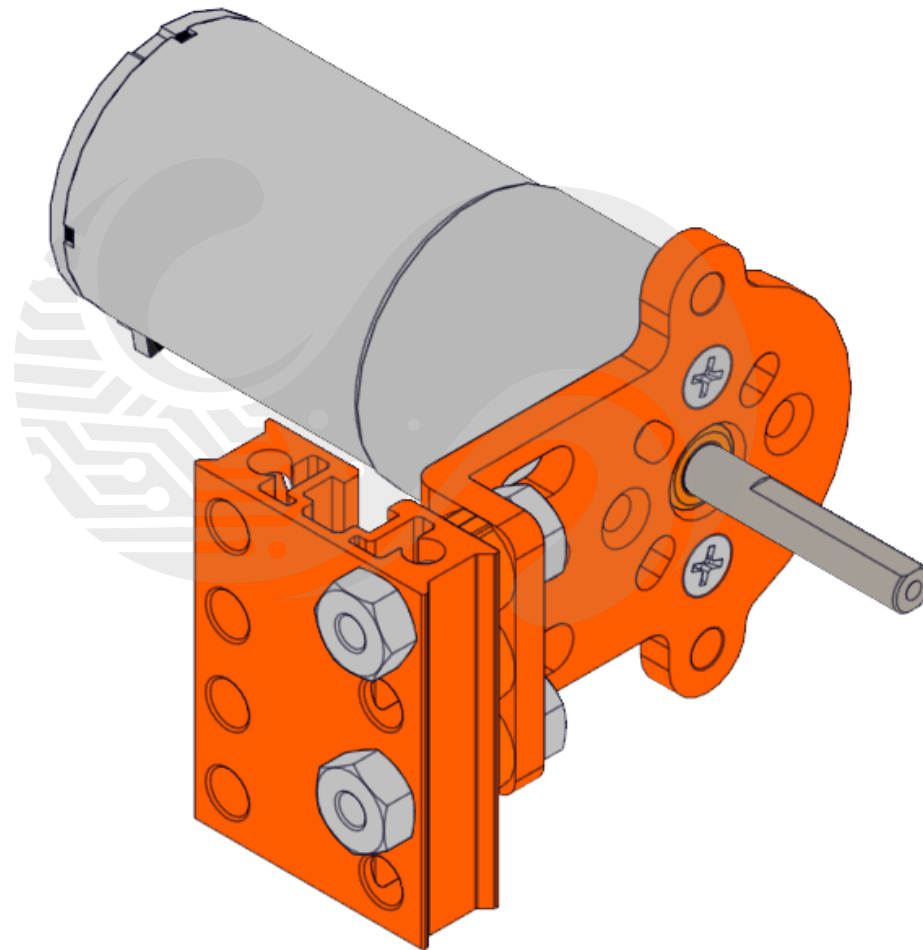
 1xBeam 0208-24

 2xScrew M4*20

 2xNut M4



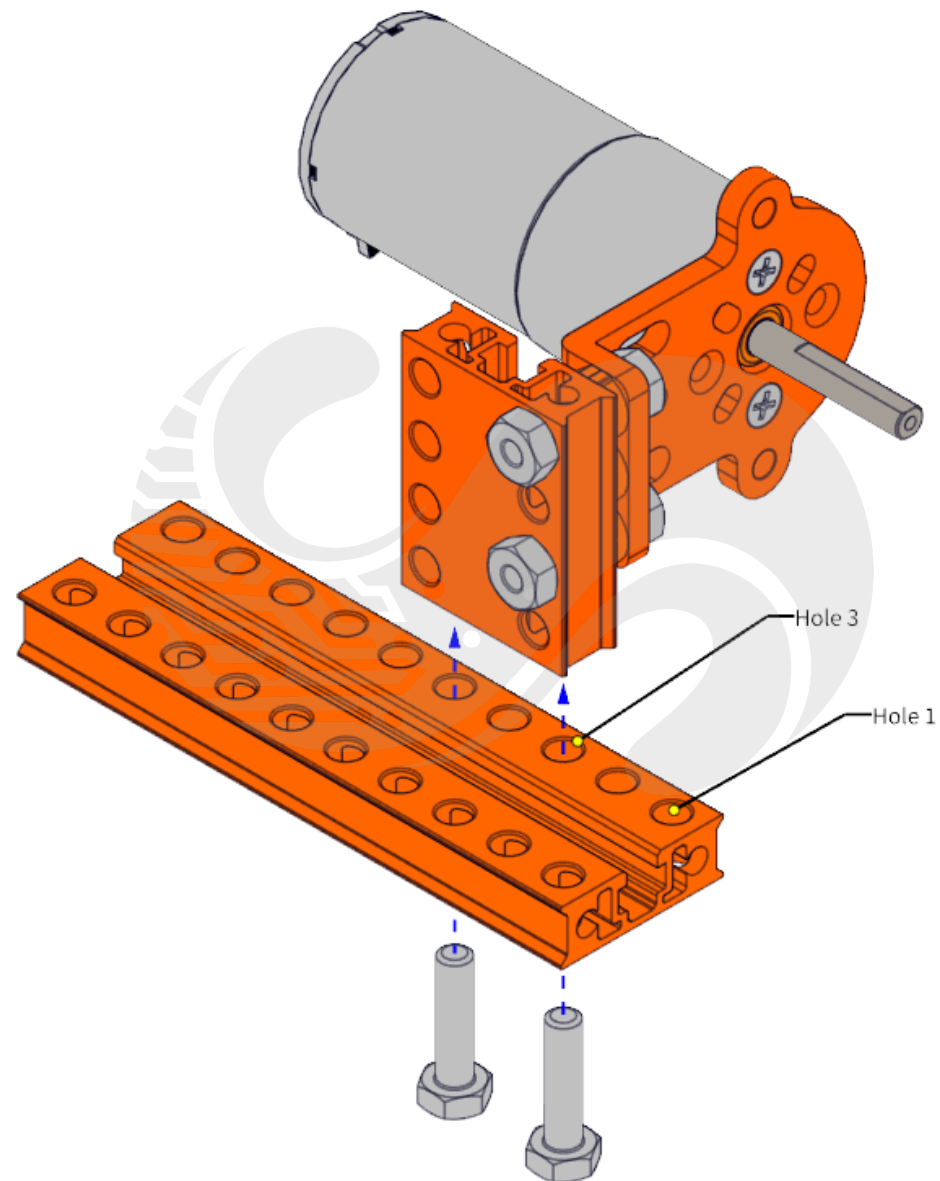
10. Assemble Lifting Motor



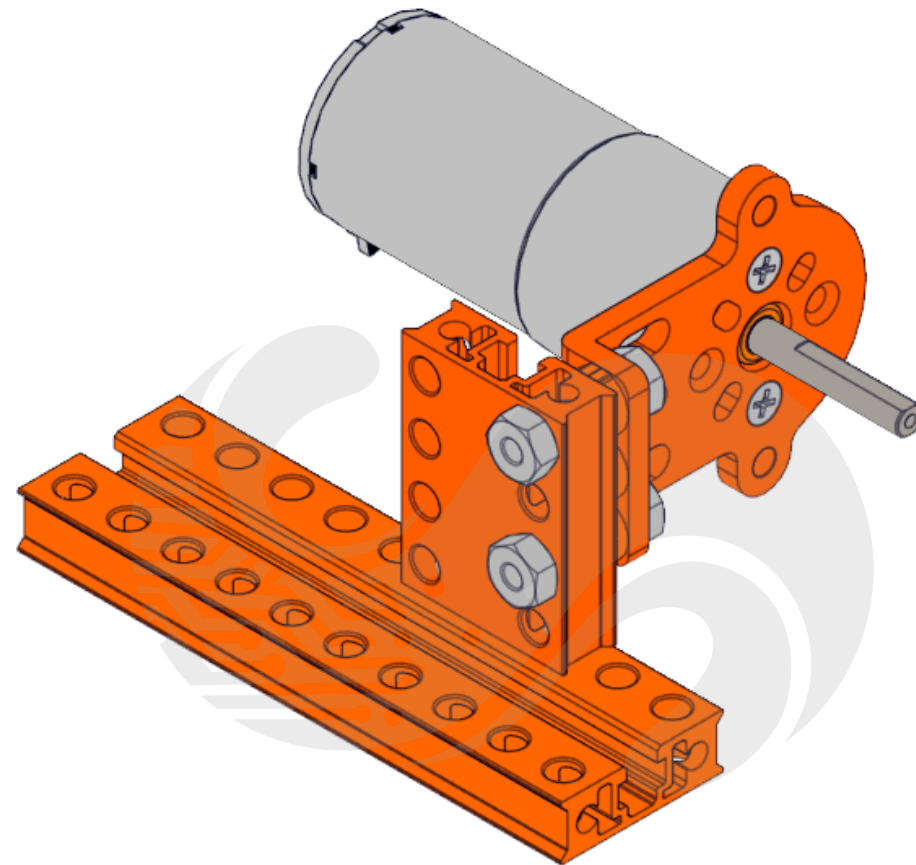
10. Assemble Lifting Motor

 1xBeam 0824-80

 2xScrew M4*20



10. Assemble Lifting Motor



11. Assemble the Line-following Sensor



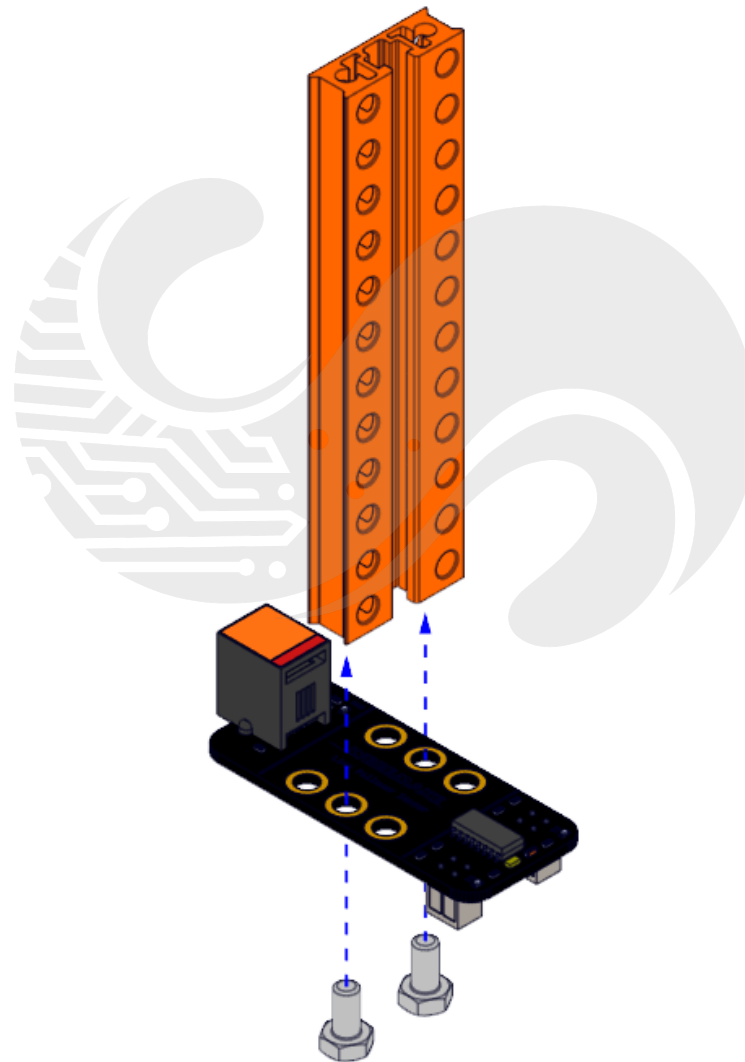
1xBeam 0824-96



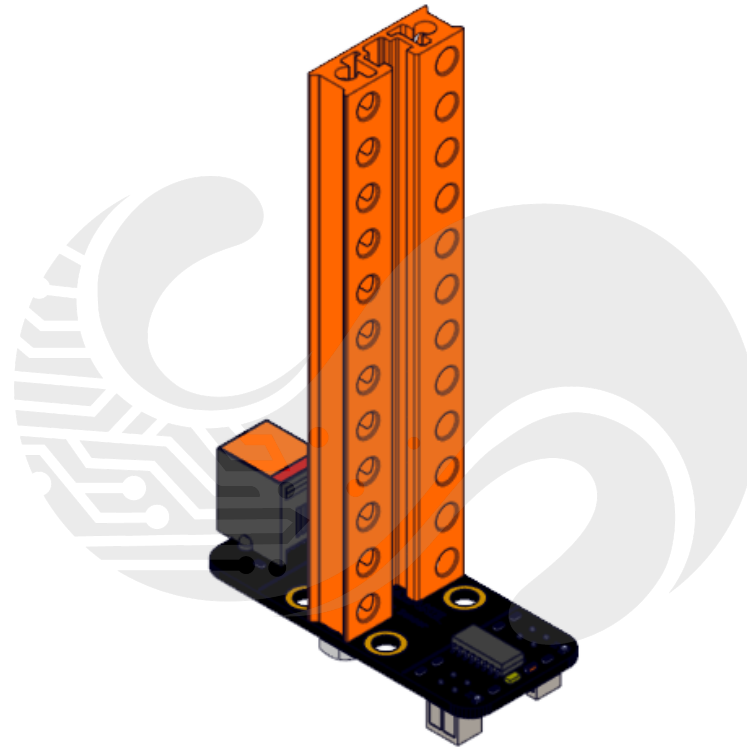
1xDouble Way Line-following Sensor



2xNut M4*8



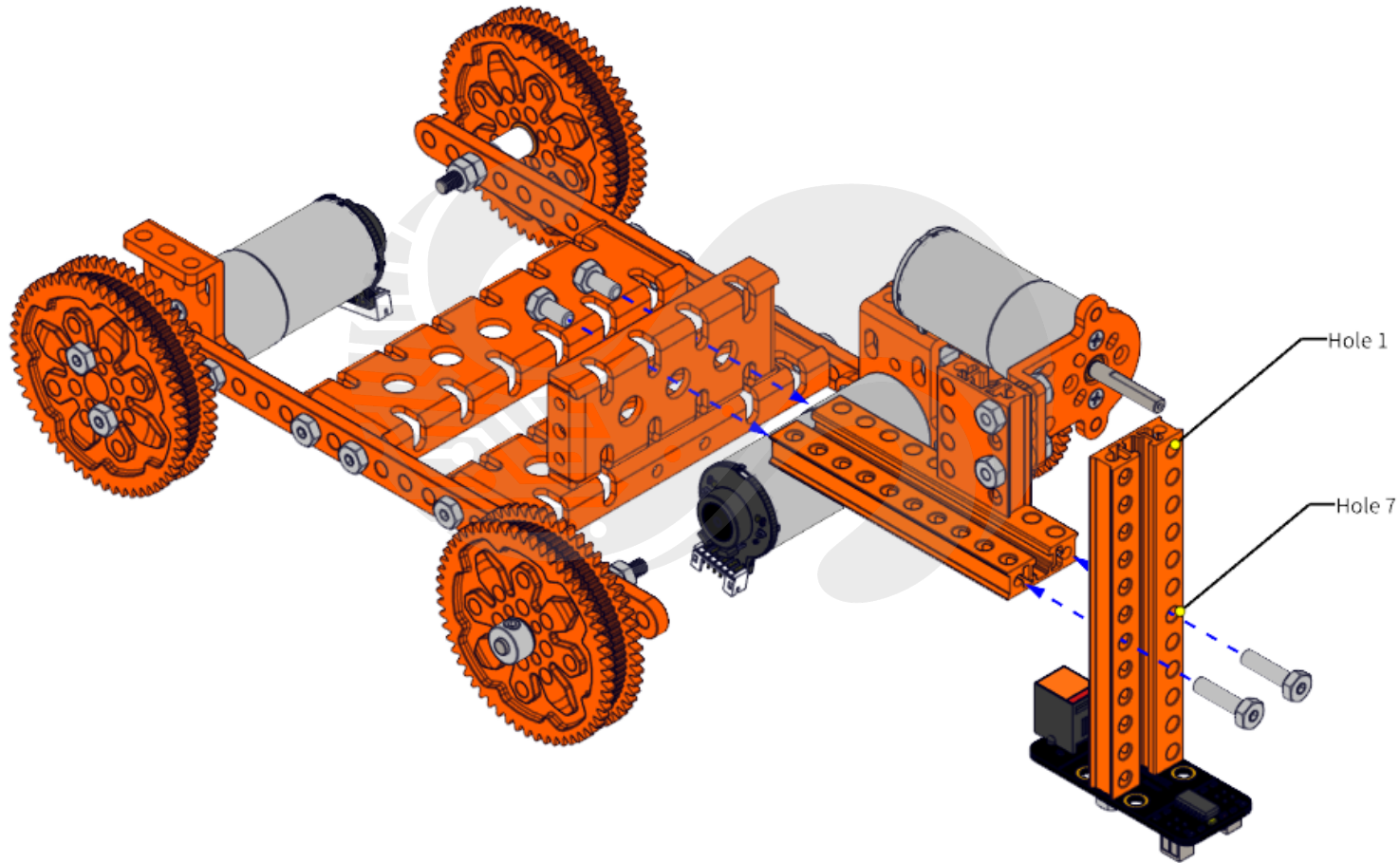
11. Assemble the Line-following Sensor



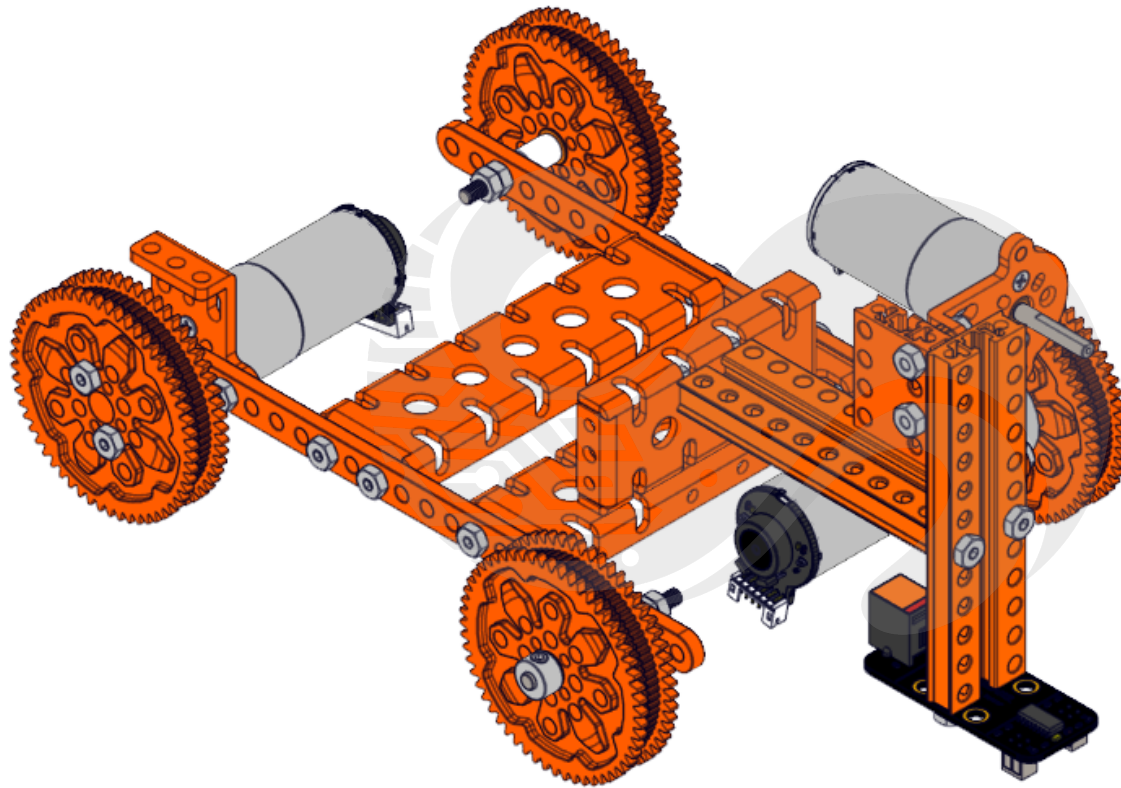
12. Assemble the DC Motor-25

 2xScrew M4*8

 2xScrew M4*20



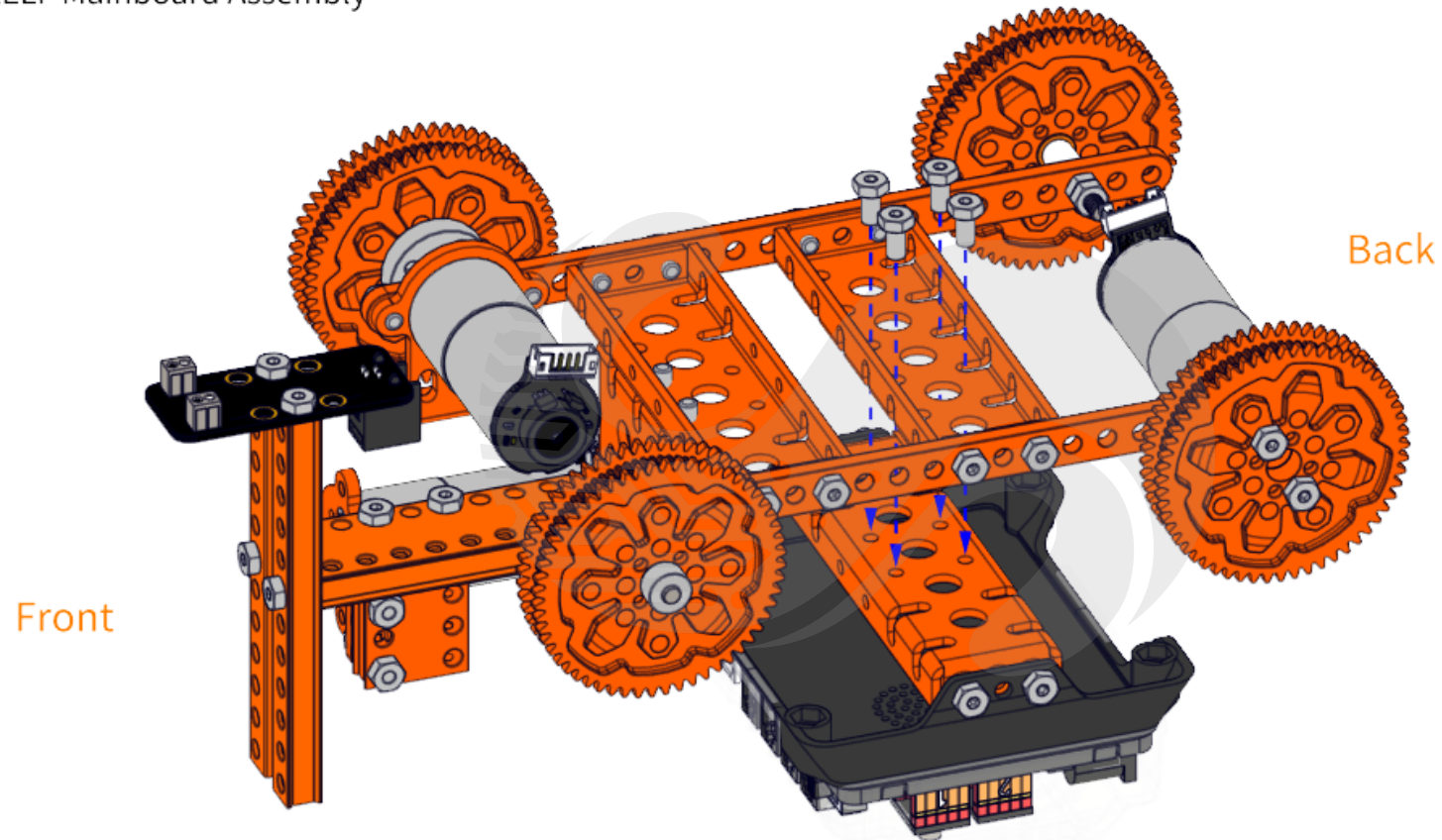
12. Assemble the DC Motor-25



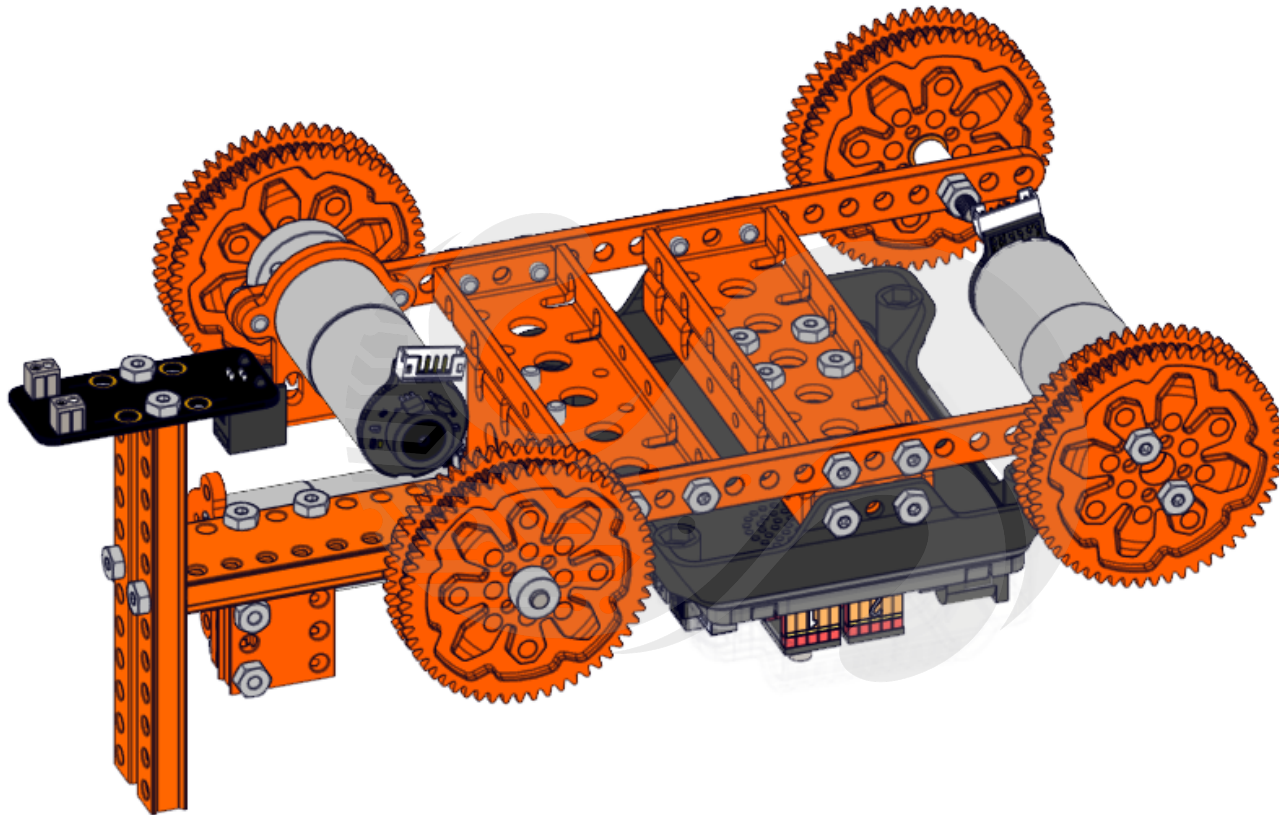
13. Assemble The Mainboard ELF

 4xScrew M4*8

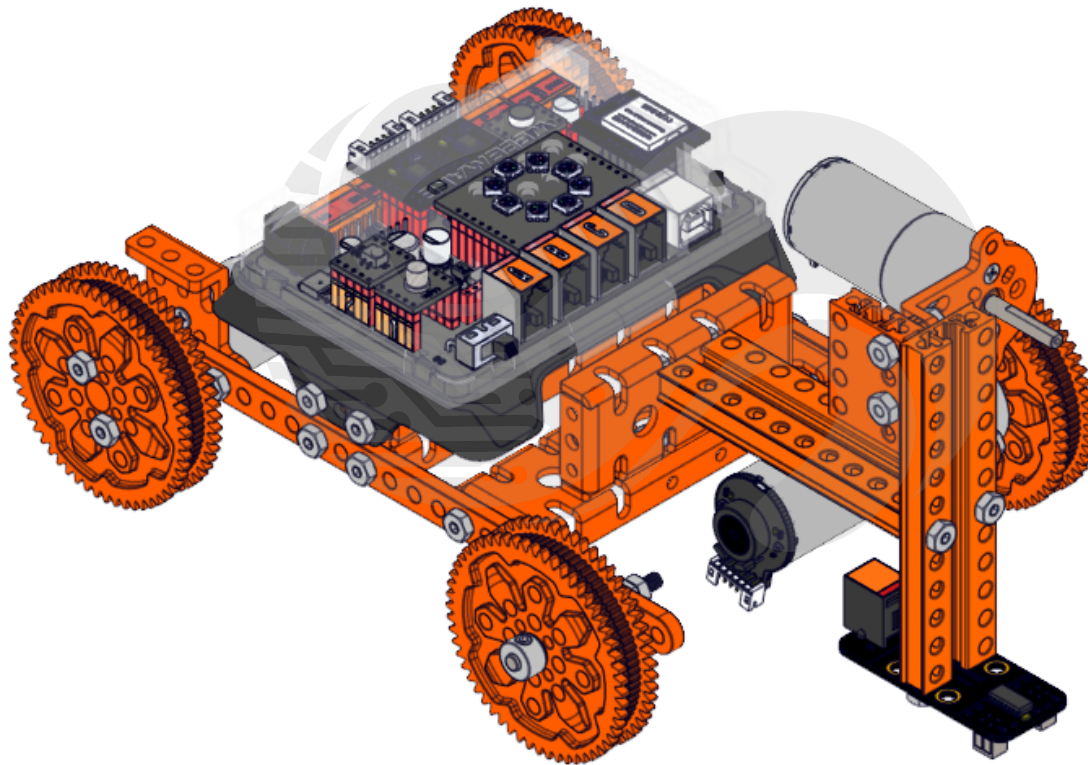
 1xELF Mainboard Assembly



13. Assemble The Mainboard ELF

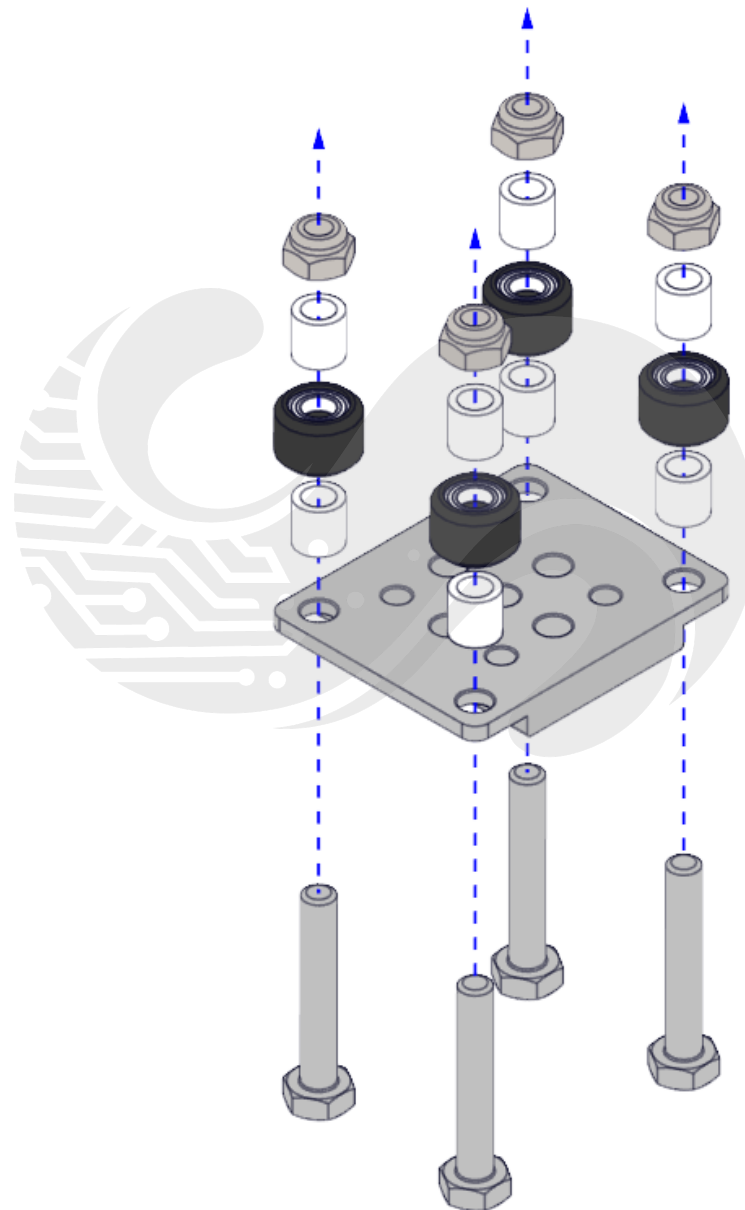


13. Assemble The Mainboard ELF

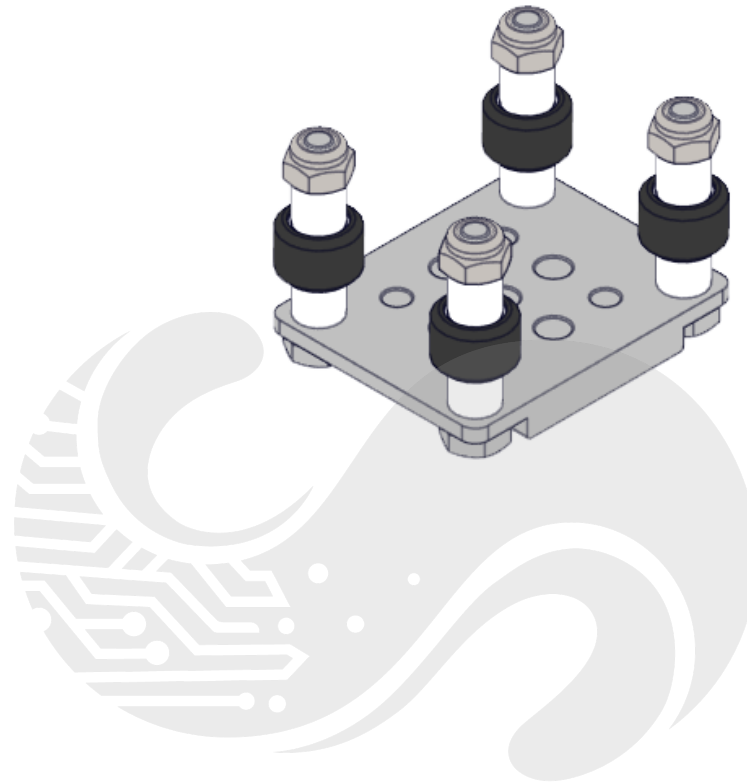


14. Assemble the Linear Motion Slide Unit

-  4xRoller
-  8xAluminum Column 4*6*6
-  4xScrew M4*25
-  4xNylon Lock Nut M4
-  1xSlide



14. Assemble the Linear Motion Slide Unit



15. Assemble Gear Rack on Bracket



2xNut M4



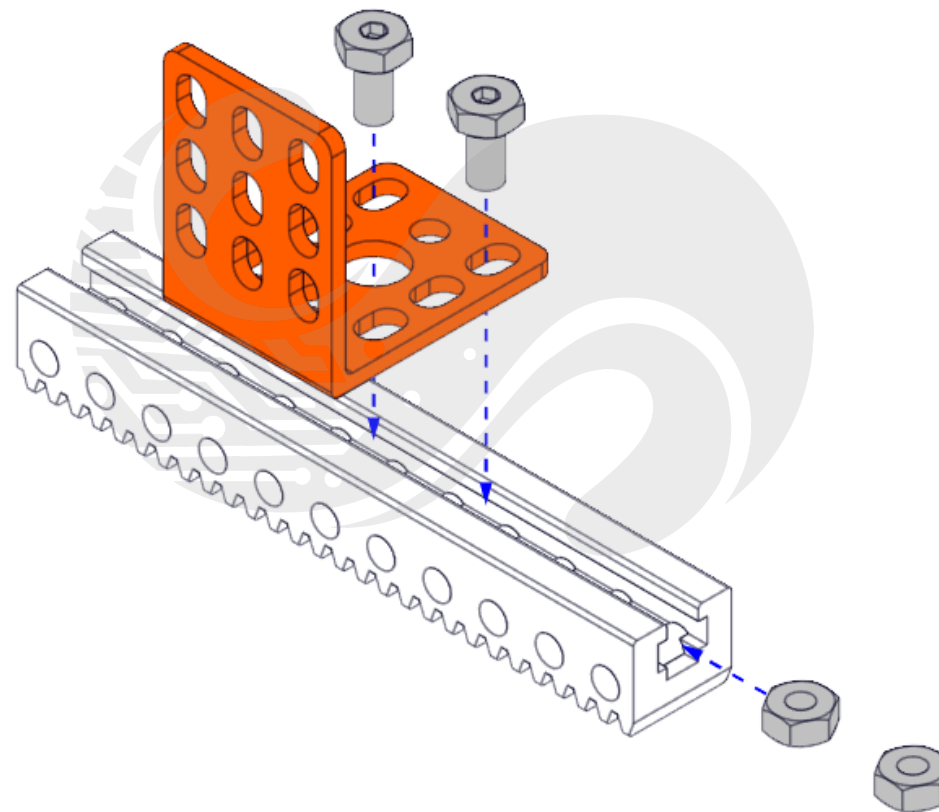
2xScrew M4*8



1xBracket 3x3

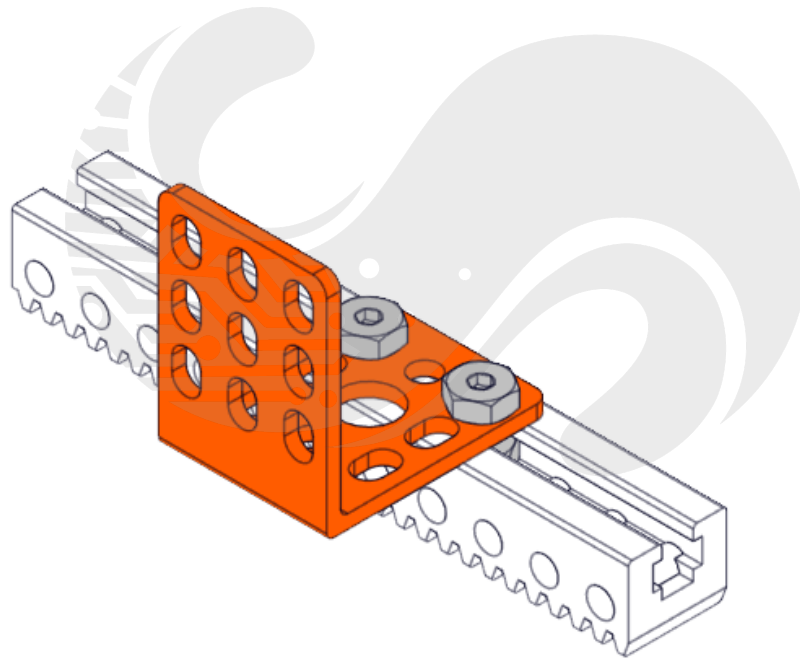


1xGear Rack 28Tx m1 V1.0



Note: According to the actual situation, adjust the distance between bracket 3x3 and gear rack.

15. Assemble Gear Rack on Bracket



16. Assemble the Limit Switch on Beam 0410 and Beam 1030

 1xBeam 1030-100

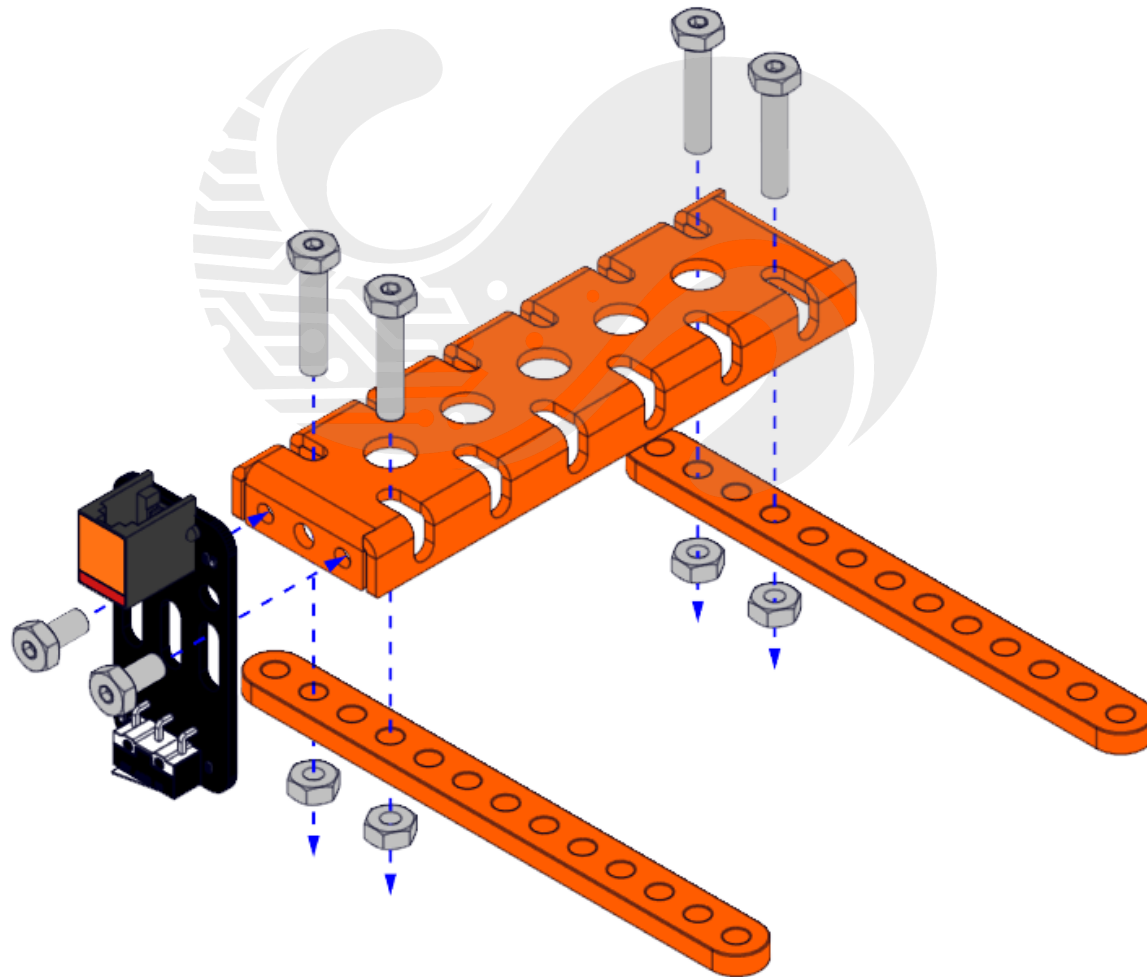
 2xBeam 0410-106

 1xLimit Switch

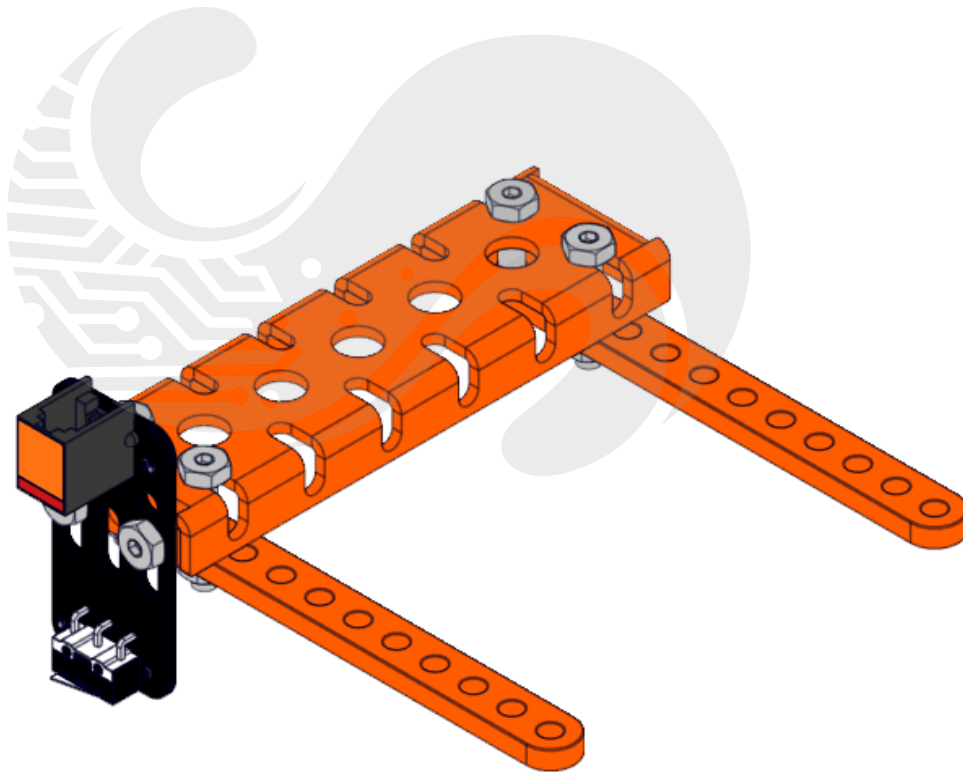
 2xScrew M4*8

 4xScrew M4*25

 4xNut M4

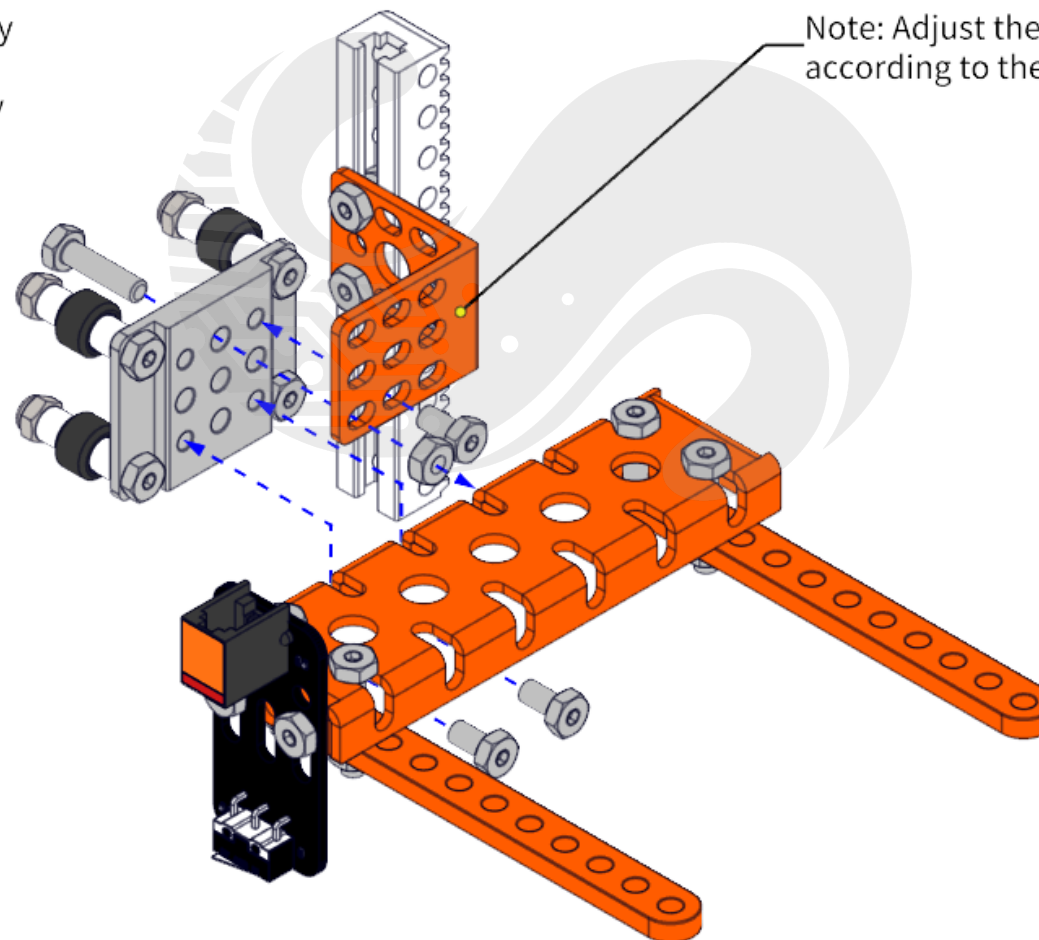


16. Assemble the Limit Switch on Beam 0410 and Beam 1030



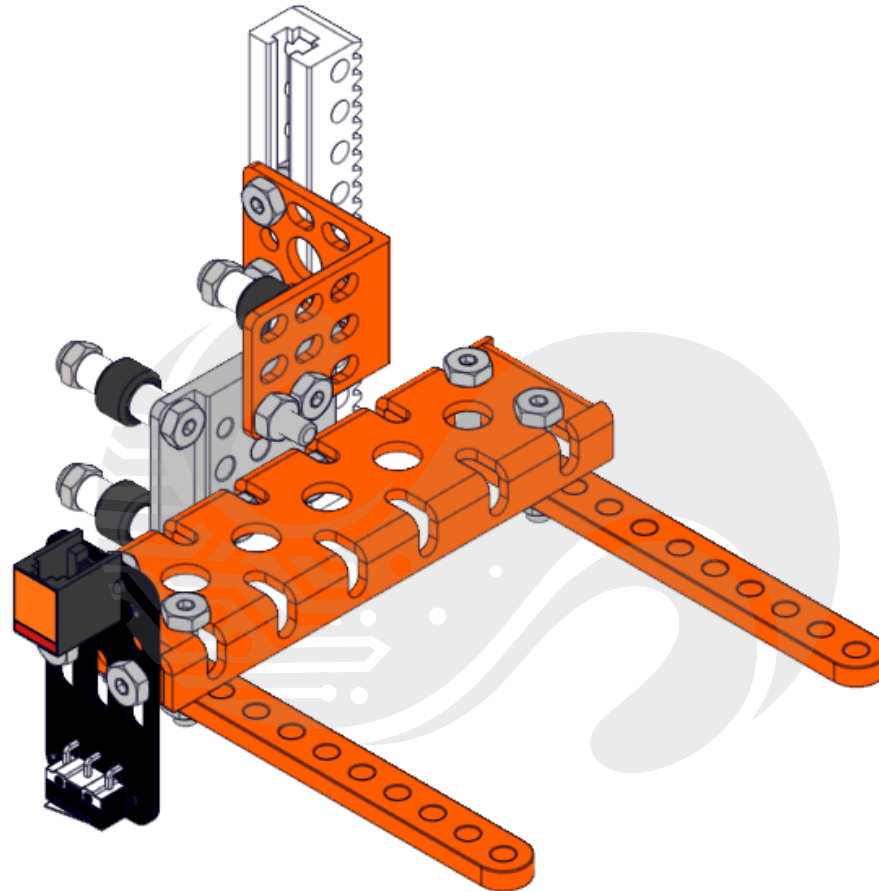
17. Assemble the Linear Motion Device

-  1xNut M4
-  3xScrew M4*8
-  1xScrew M4*20
-  1xGear Rack Assembly
-  1xLimit Switch Assembly
-  1xLinear Slide Assembly



Note: Adjust the tightness of the installation according to the actual situation.

17. Assemble the Linear Motion Device



18. Assemble the Linear Motion Device to the Rail



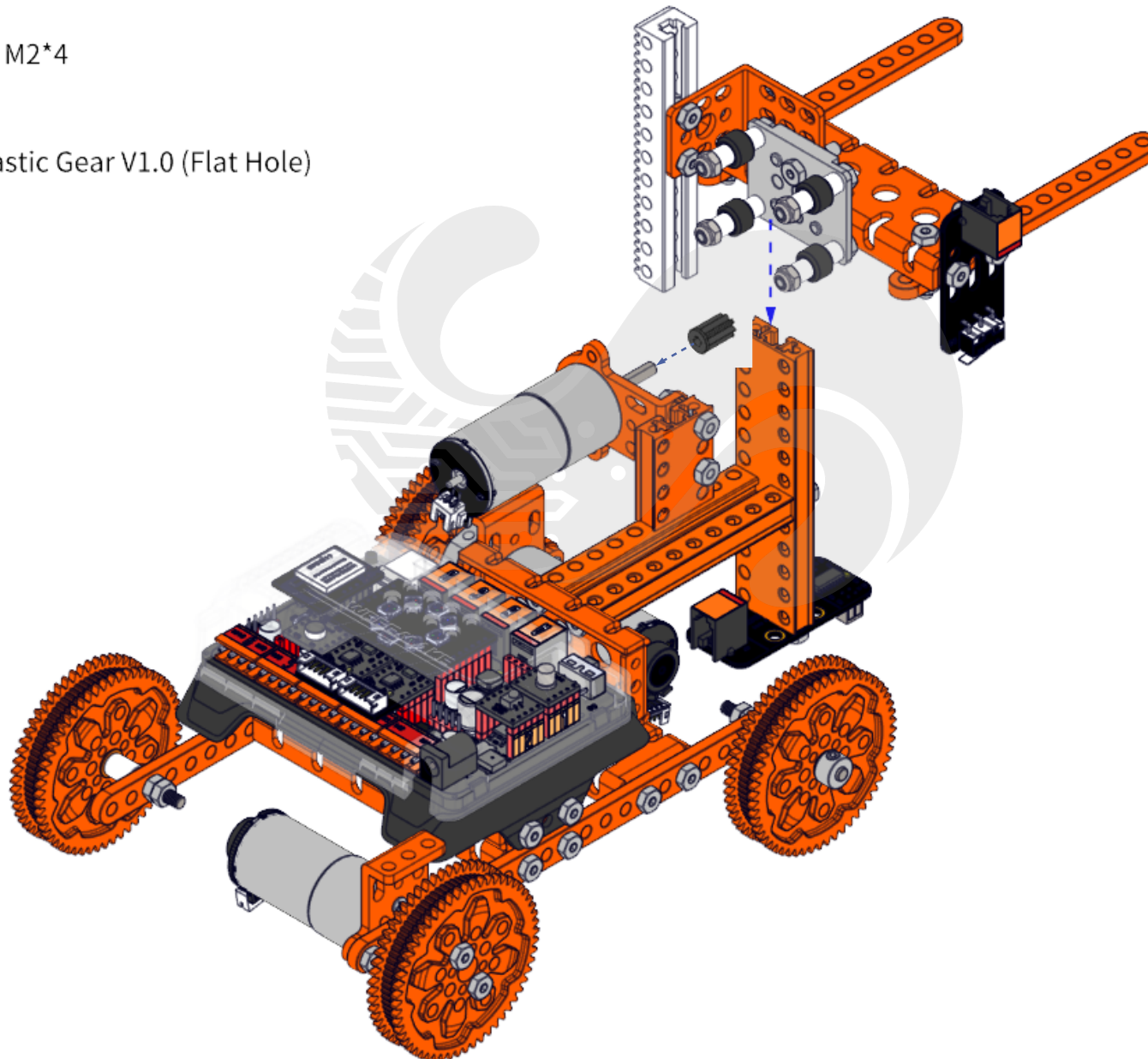
1xLinear Motion Device



1xScrew M2*4



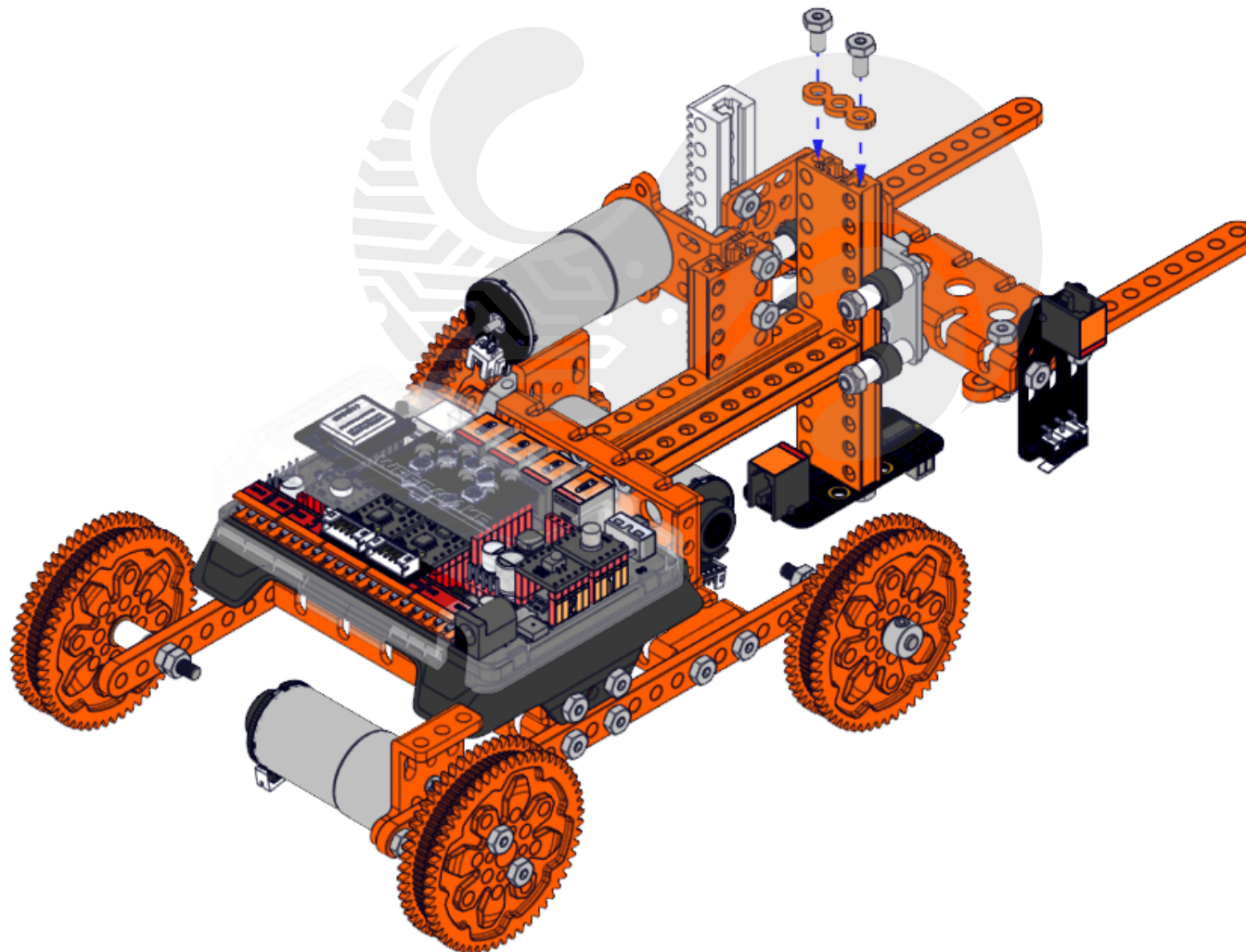
1x8T-Plastic Gear V1.0 (Flat Hole)



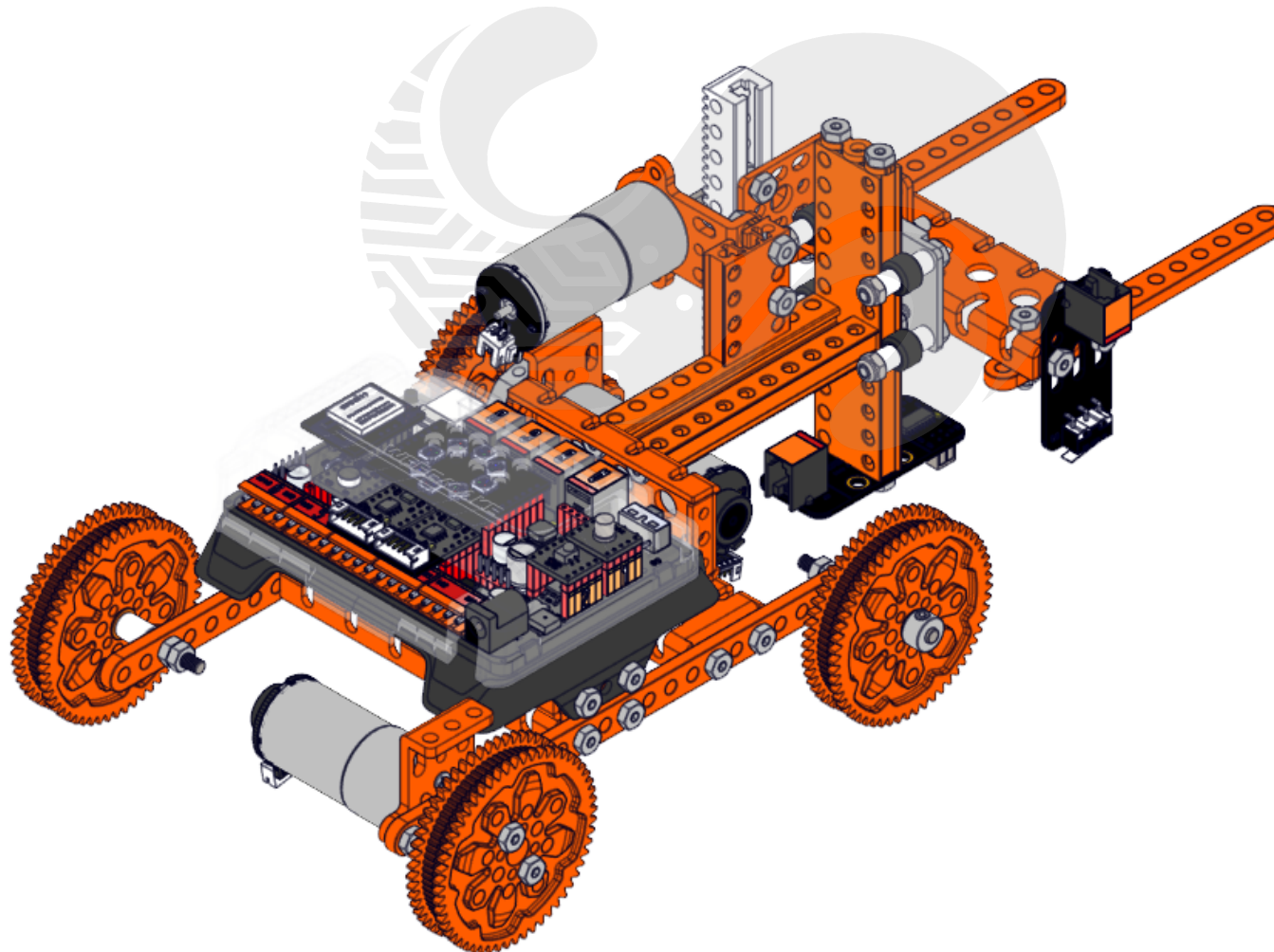
18. Assemble the Linear Motion Device to the Rail

 4xBeam0208-24

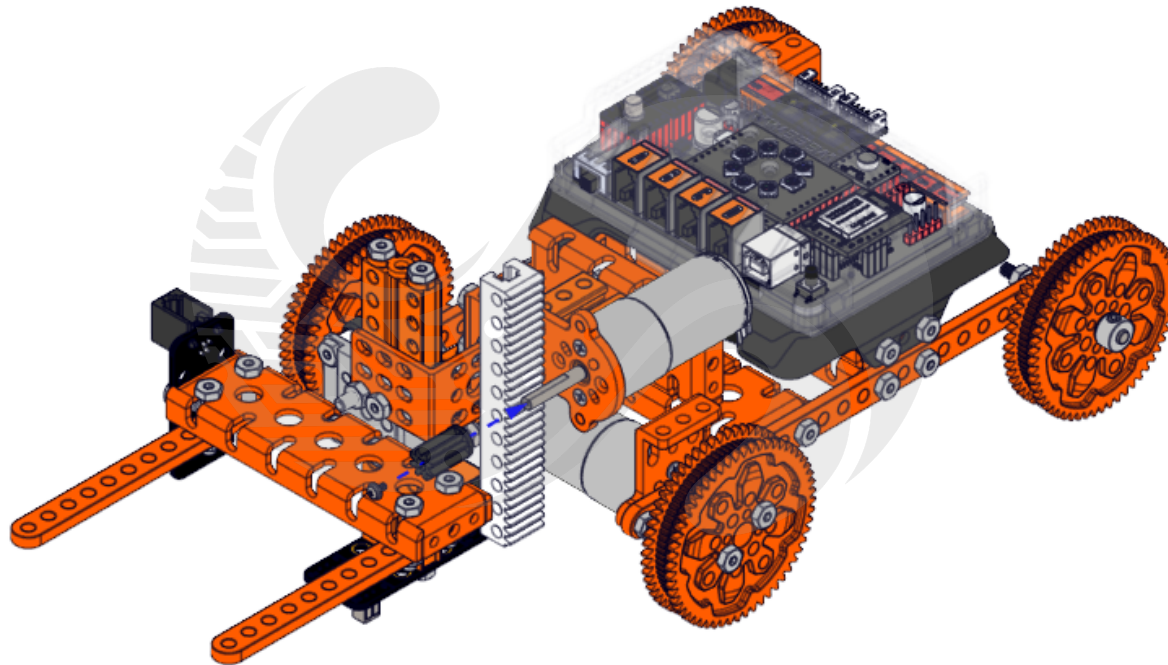
 2xScrew M4*8



18. Assemble the Linear Motion Device to the Rail

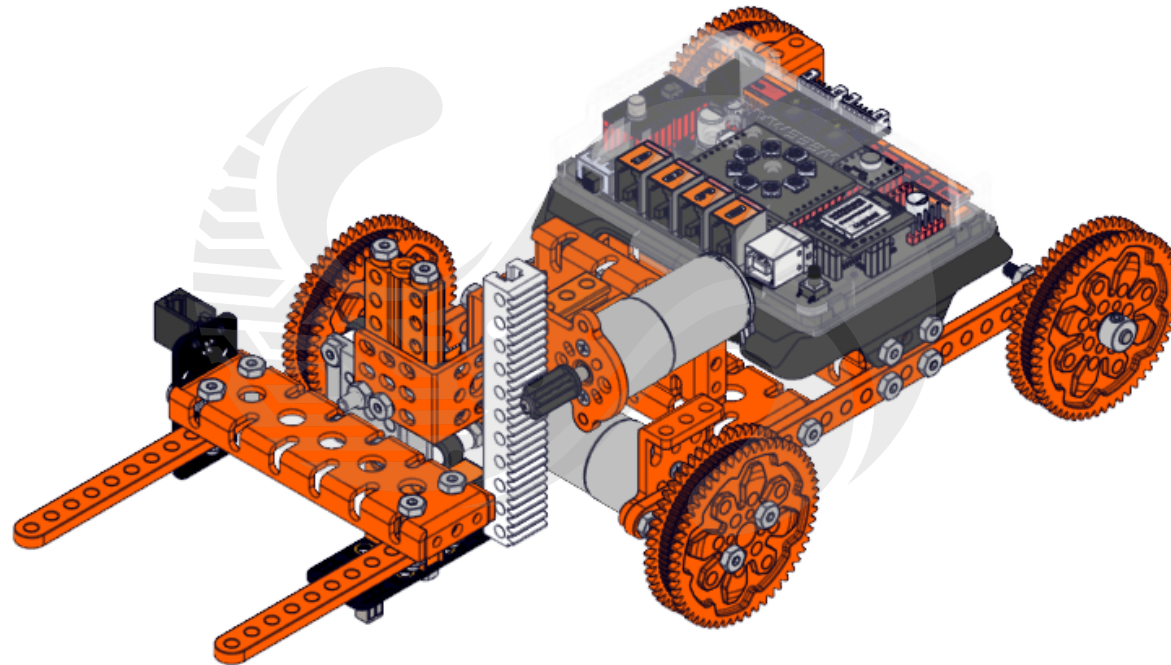


18. Assemble the Linear Motion Device to the Rail



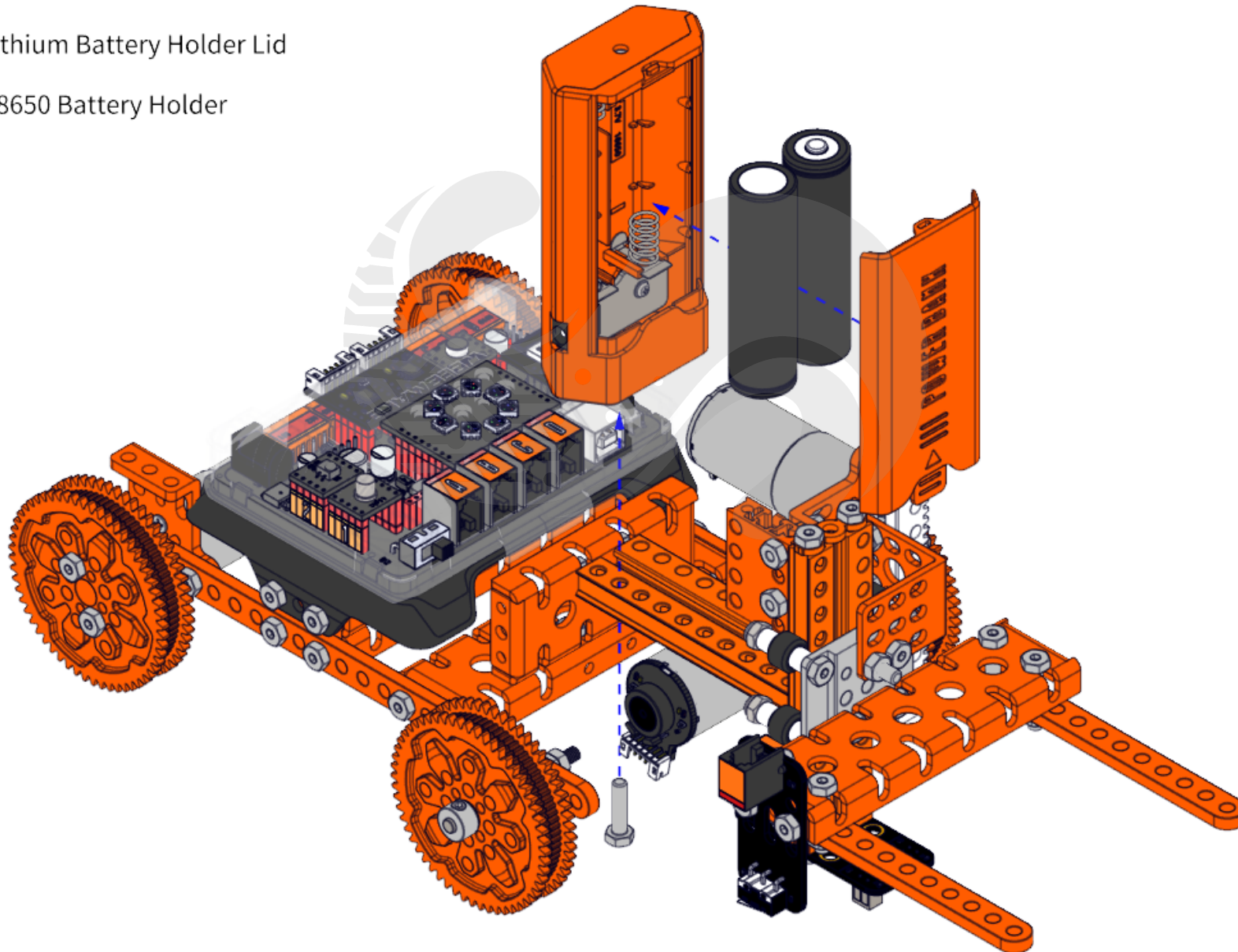
Note: While assembling gear 8T, please pay attention to the direction and tightness so gear rack and gear 8T engaging properly.

18. Assemble the Linear Motion Device to the Rail

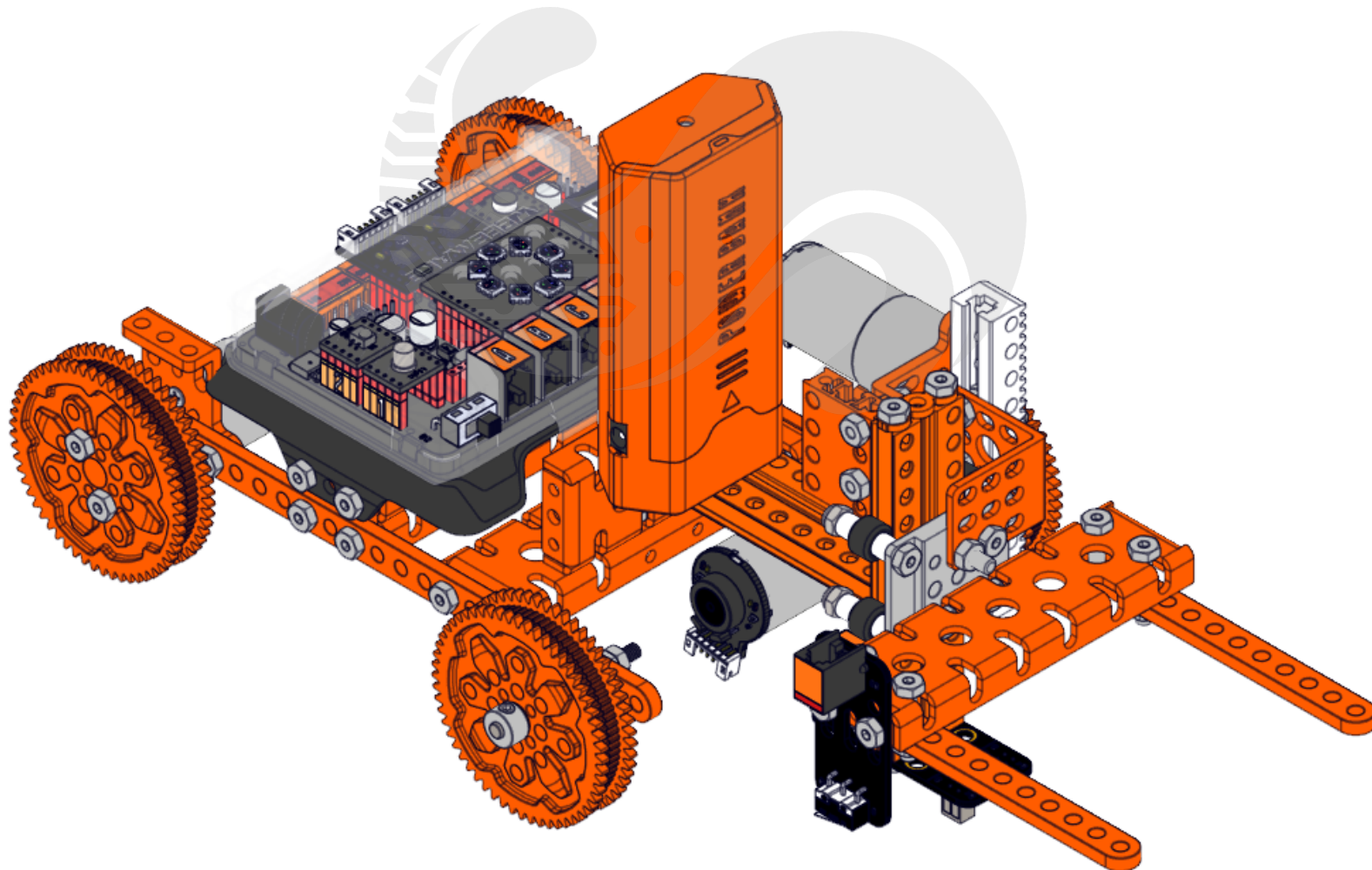


19. Assemble the 18650 Lithium Battery Holder

- 1xScrew M4*20
- 2x18650 Lithium Battery
- 1xLithium Battery Holder Lid
- 1x18650 Battery Holder



19. Assemble the 18650 Lithium Battery Holder



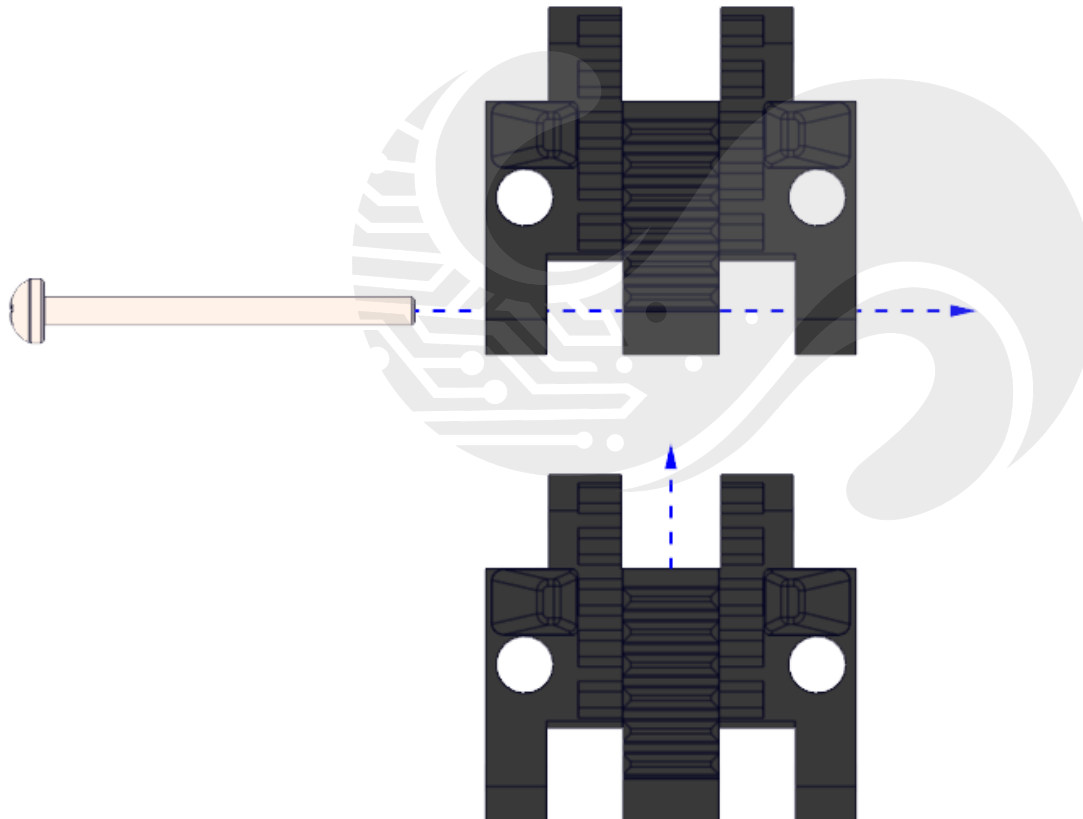
20. Assemble Caterpillar Track



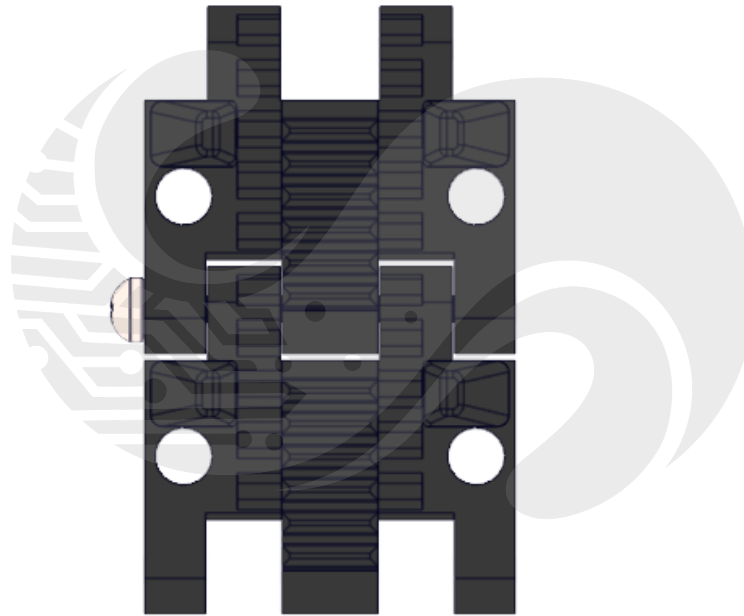
2xTrack



1xTrack Axle 2*26



20.Assemble Caterpillar Track



20. Assemble Caterpillar Track



26xTrack



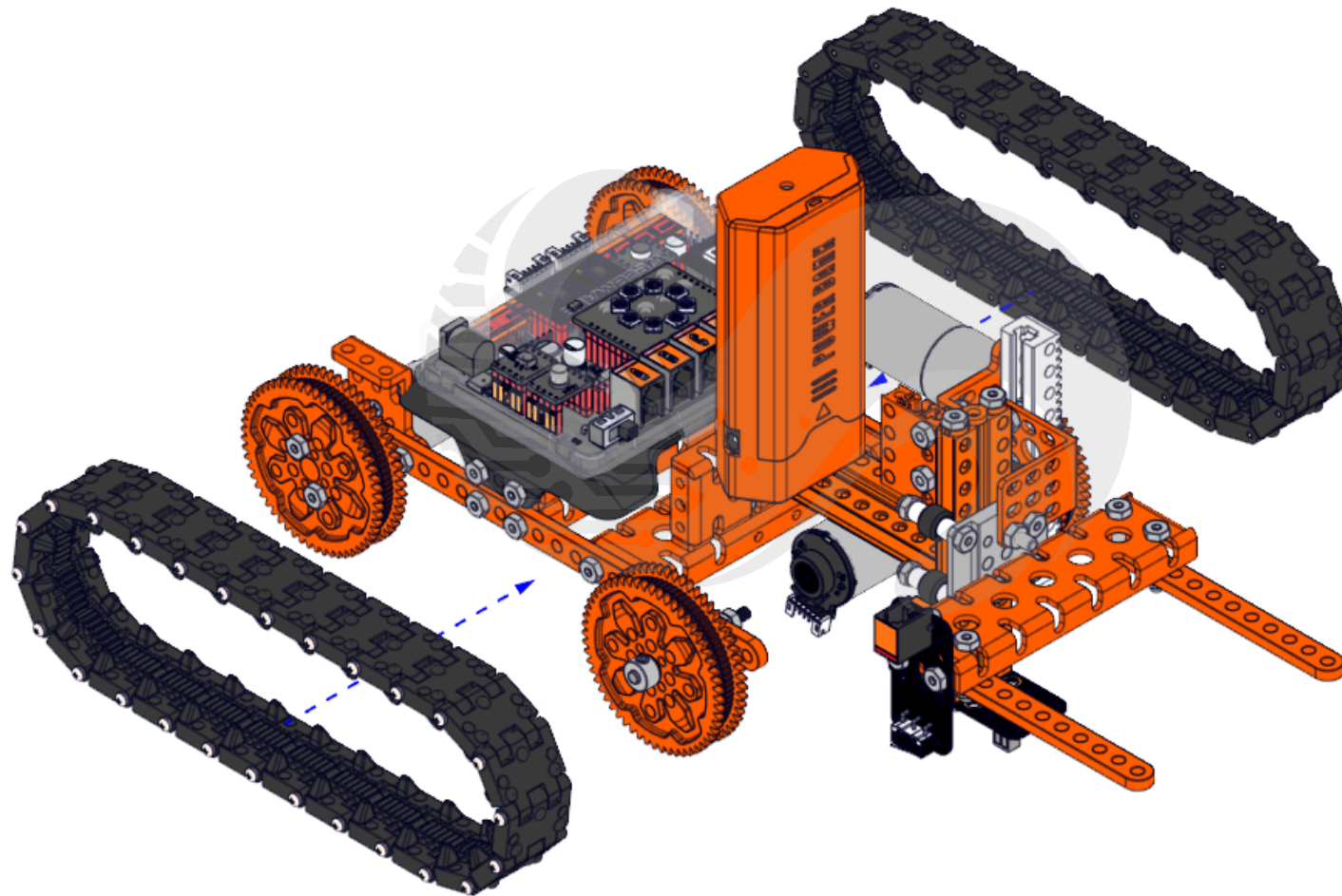
26xTrack Axle 2*26



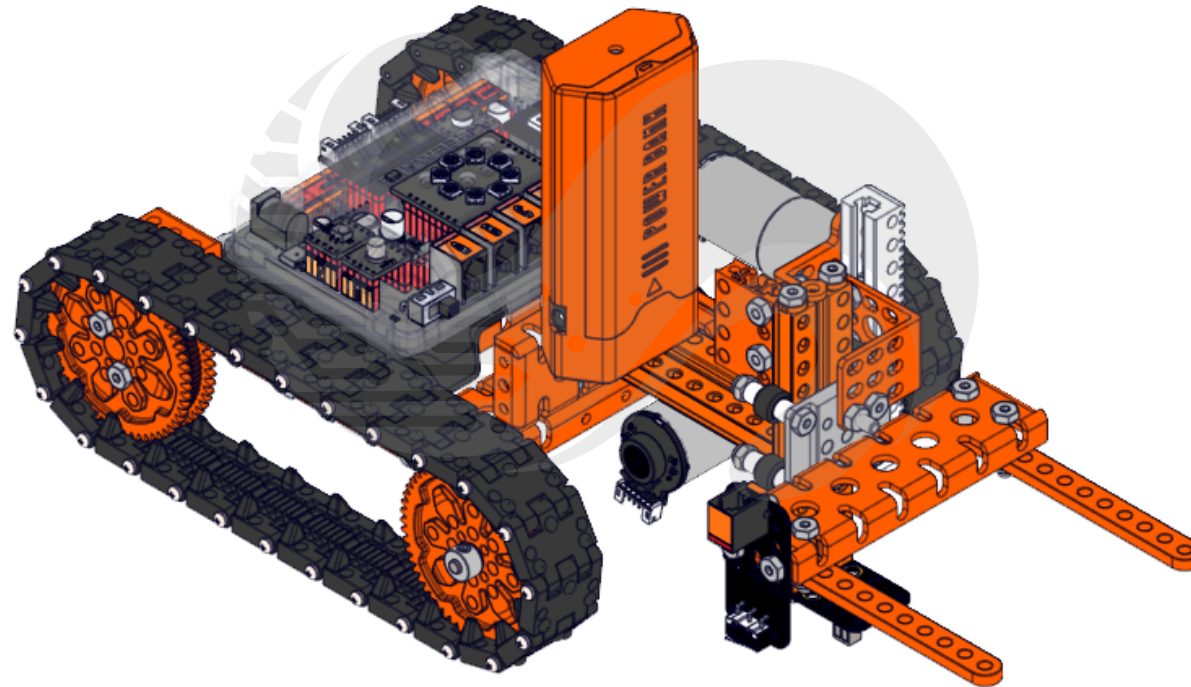
× 2

Tips: Assemble two caterpillar tracks as shown, each caterpillar track is consisted of 26 pieces of track.

20. Assemble Caterpillar Track

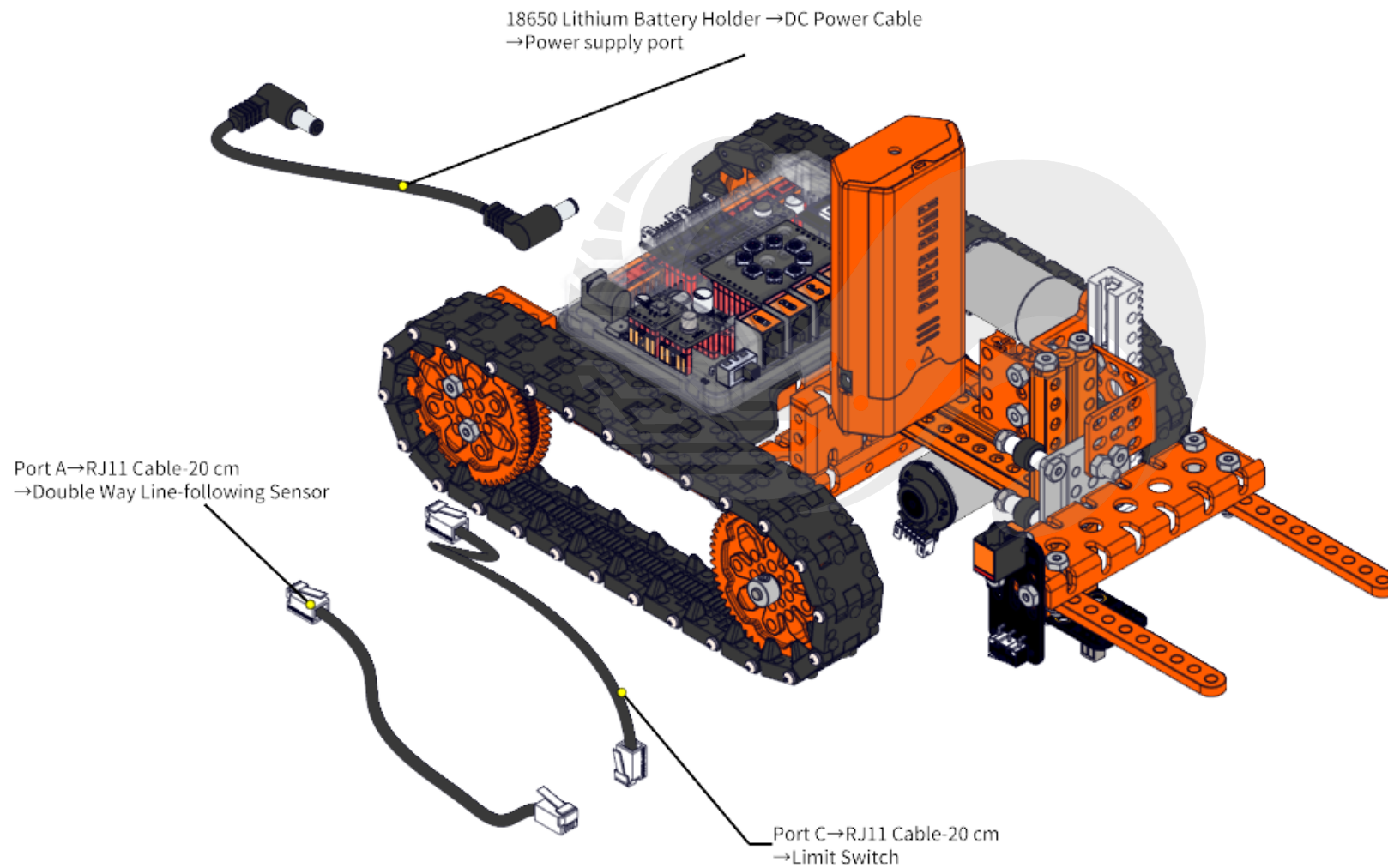


20.Assemble Caterpillar Track



21.Wiring

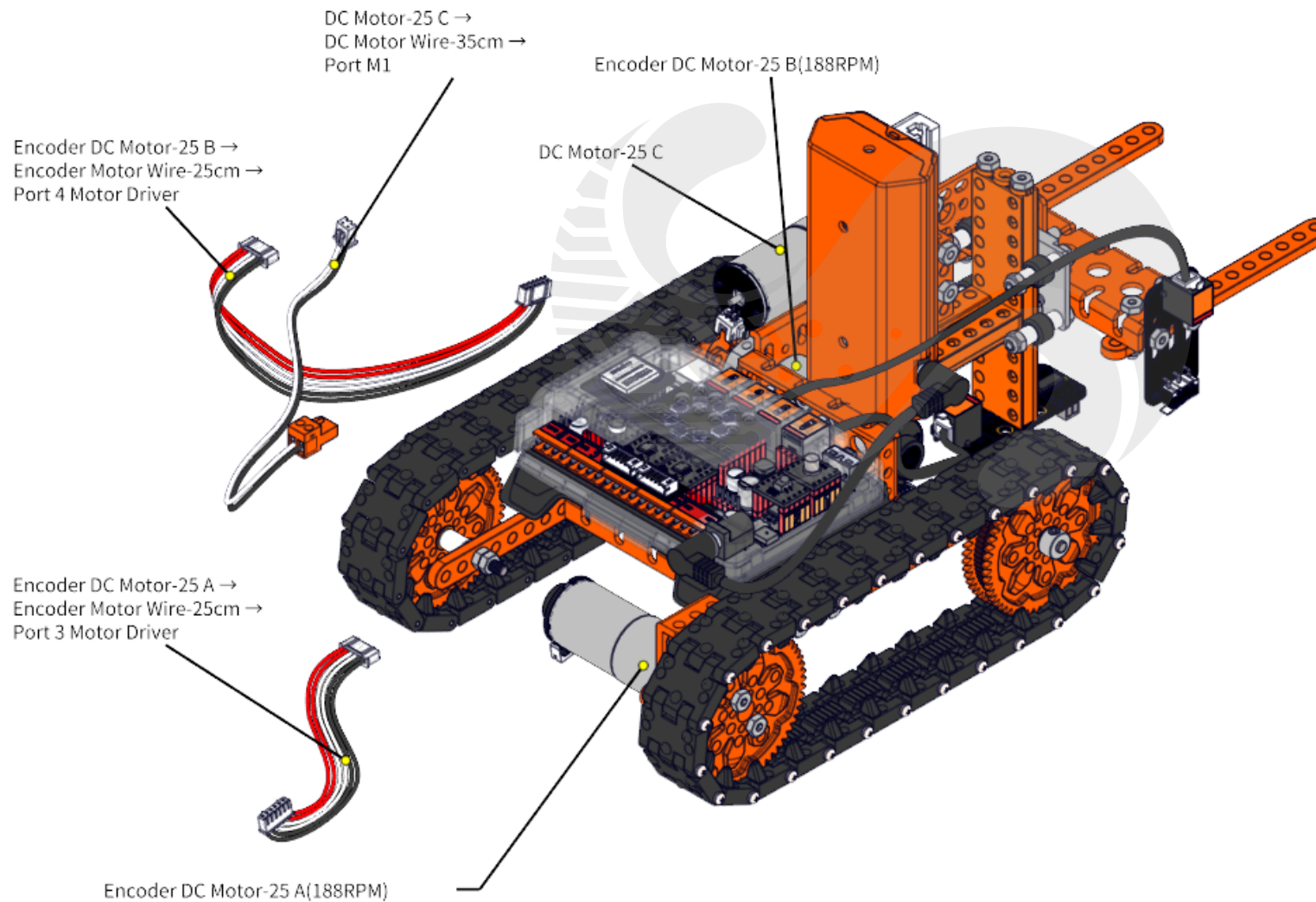
- 1xPower cord 5.5-2.1
- 2x4P4C RJ11 Cable -20cm



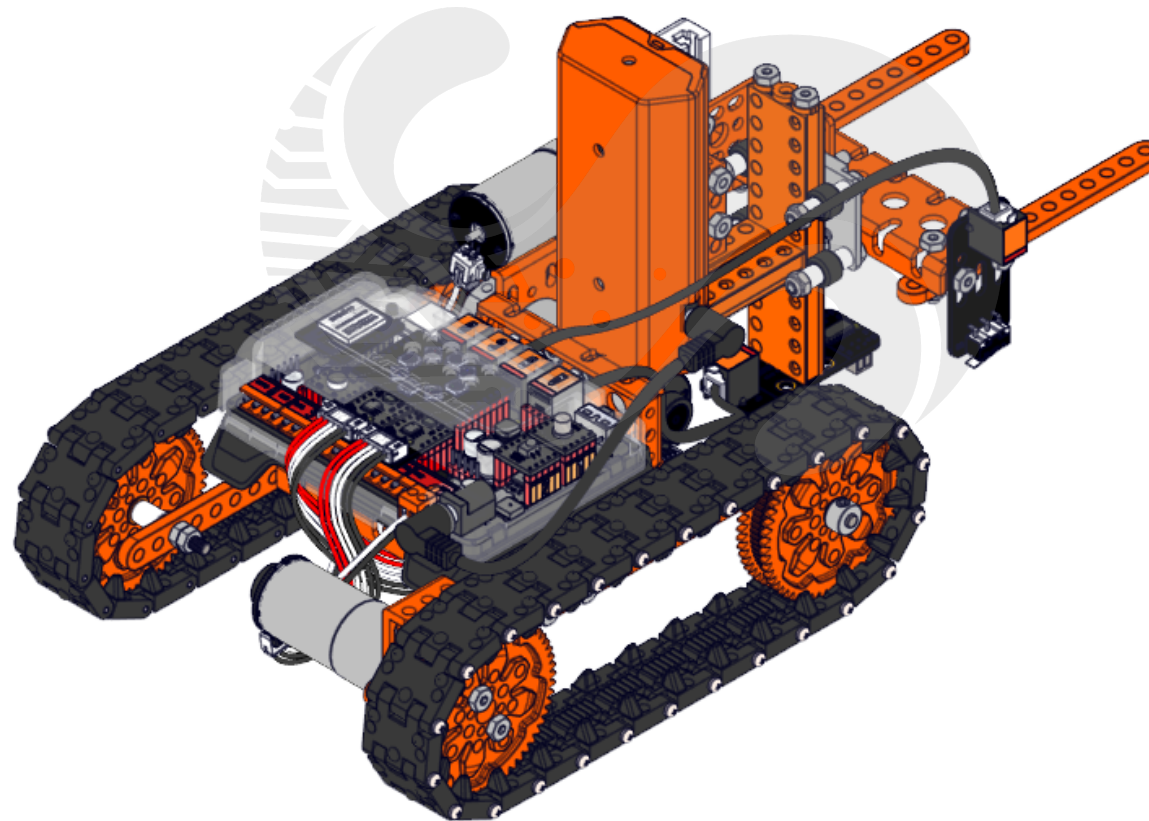
21.Wiring

2xEncoder Motor Wire-25cm

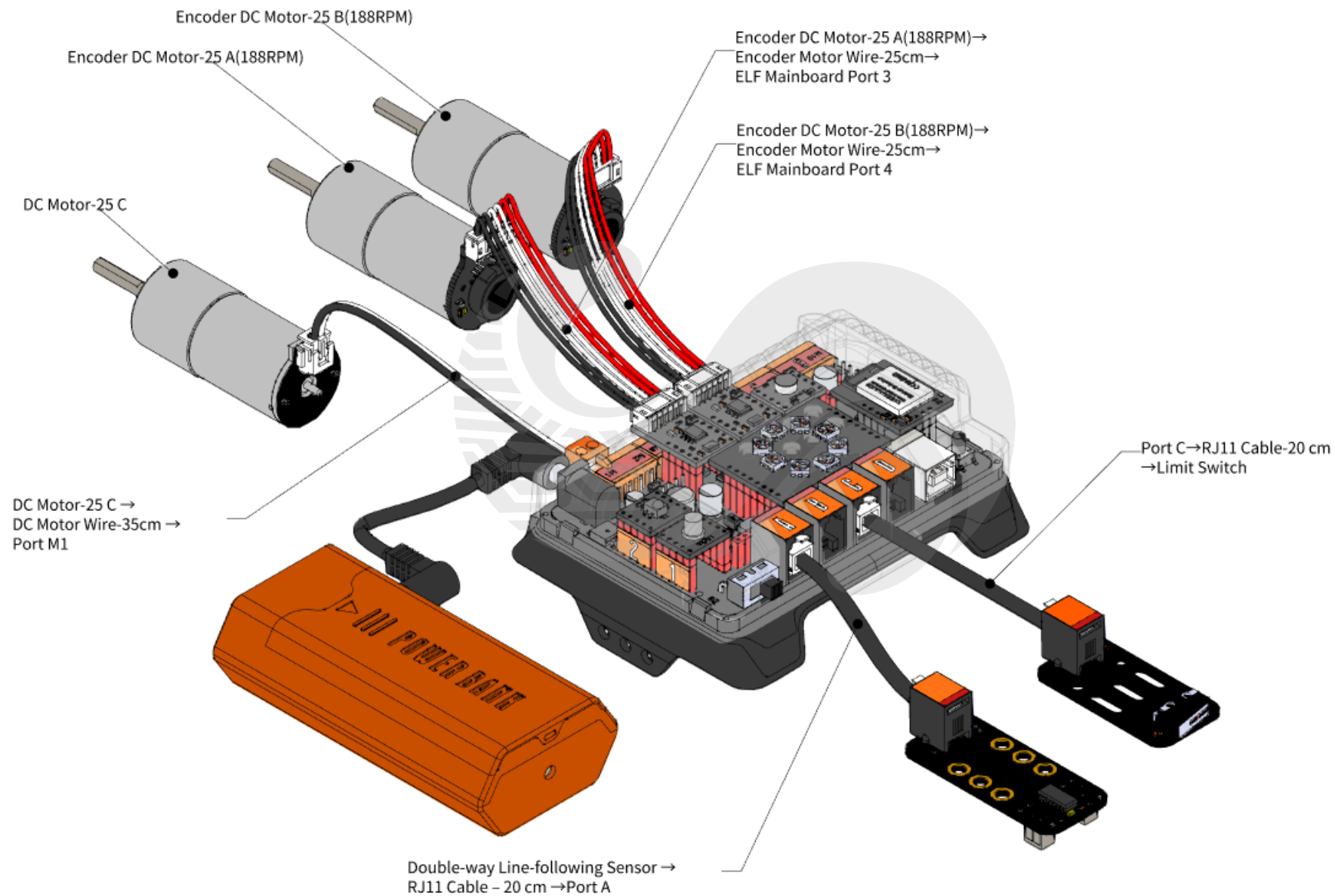
1xDC Motor Wire-35cm



21.Wiring



22.Wiring



23.Completion Diagram

