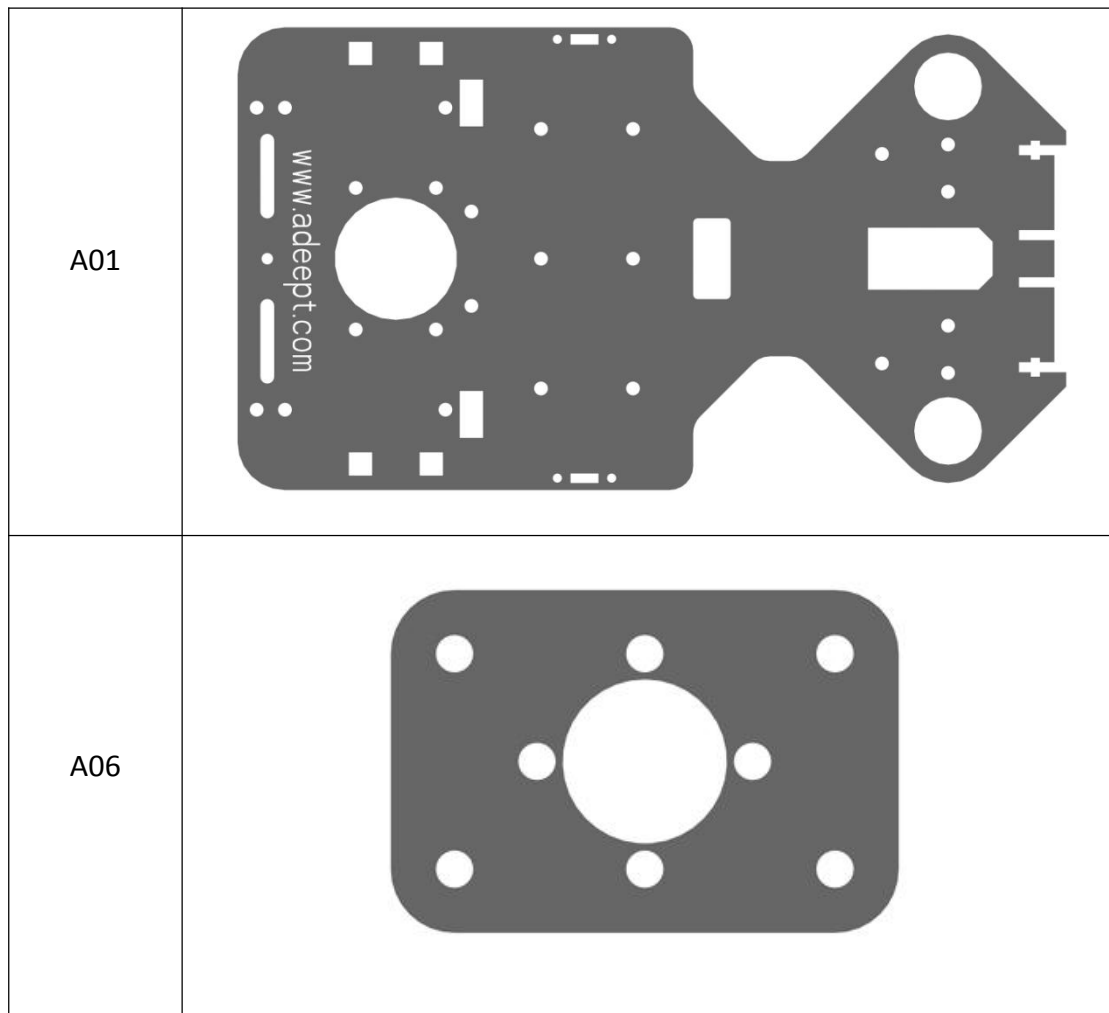


2 Assembly of PiCar-B

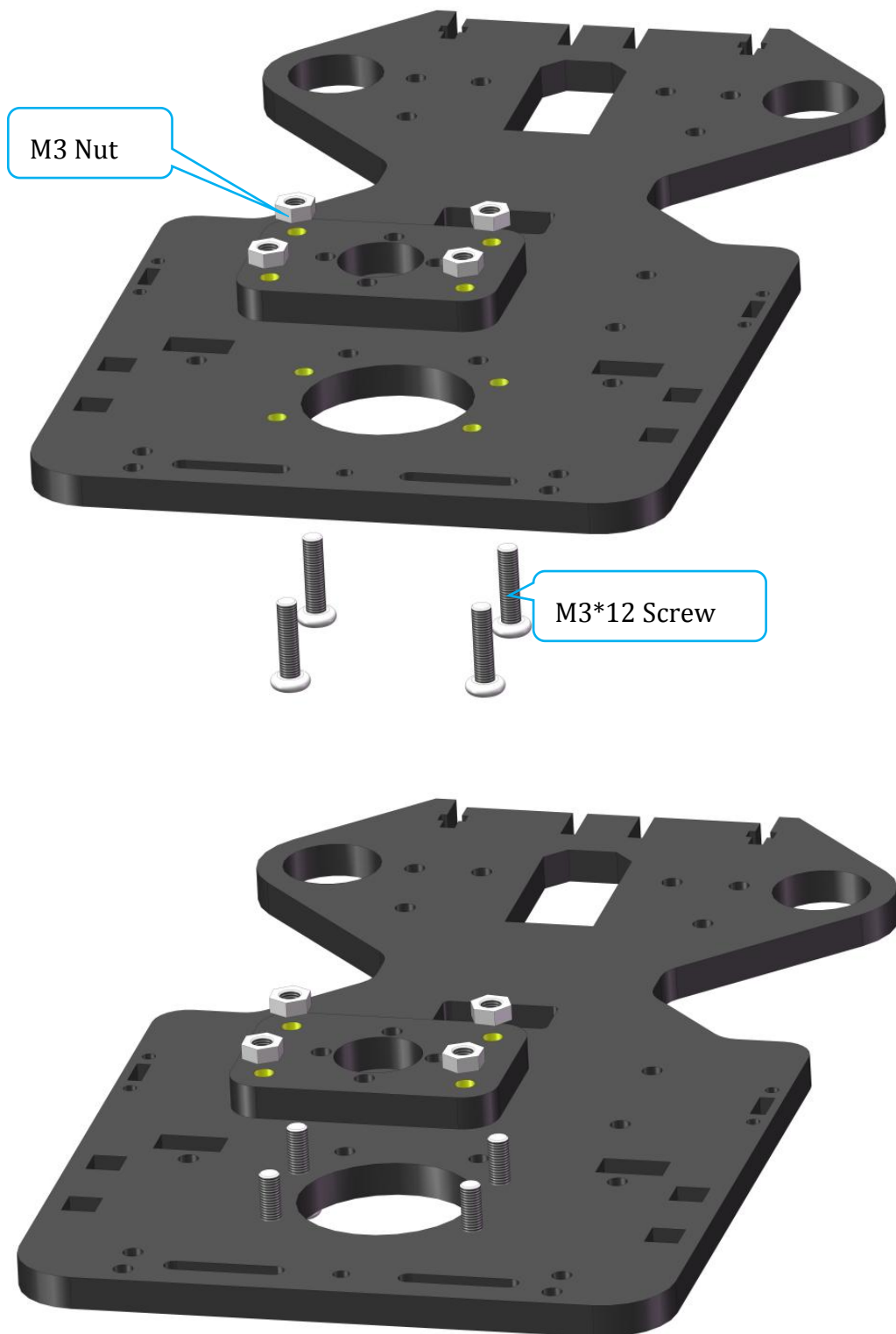
There will be a layer of protective paper on the acrylic board, please tear it off before installation.

2.1 Body Installation

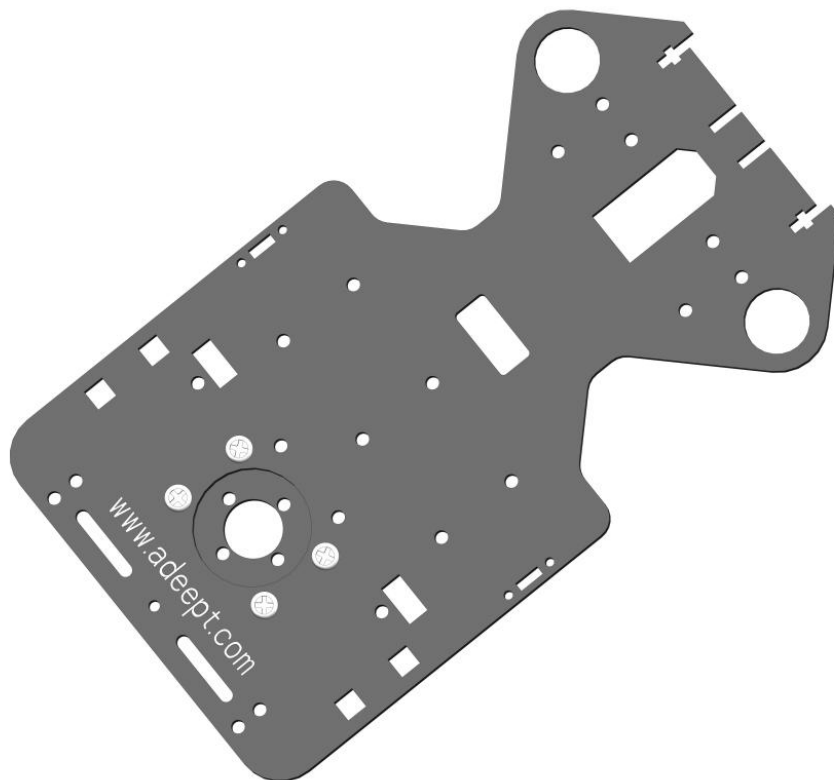
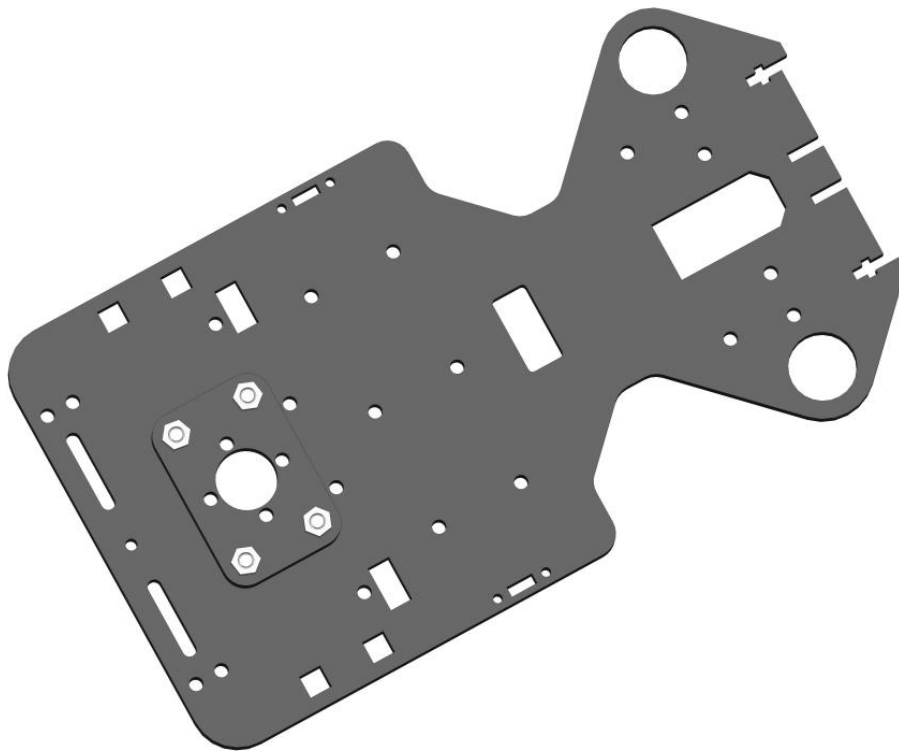
1. Acrylic plates **A01** and **A06** are installed with **four M3*12 screws** and **four M3 nuts** (The “www.adeept.com” written on the A01 will be facing down).



Assemble the following components:



After assembly:



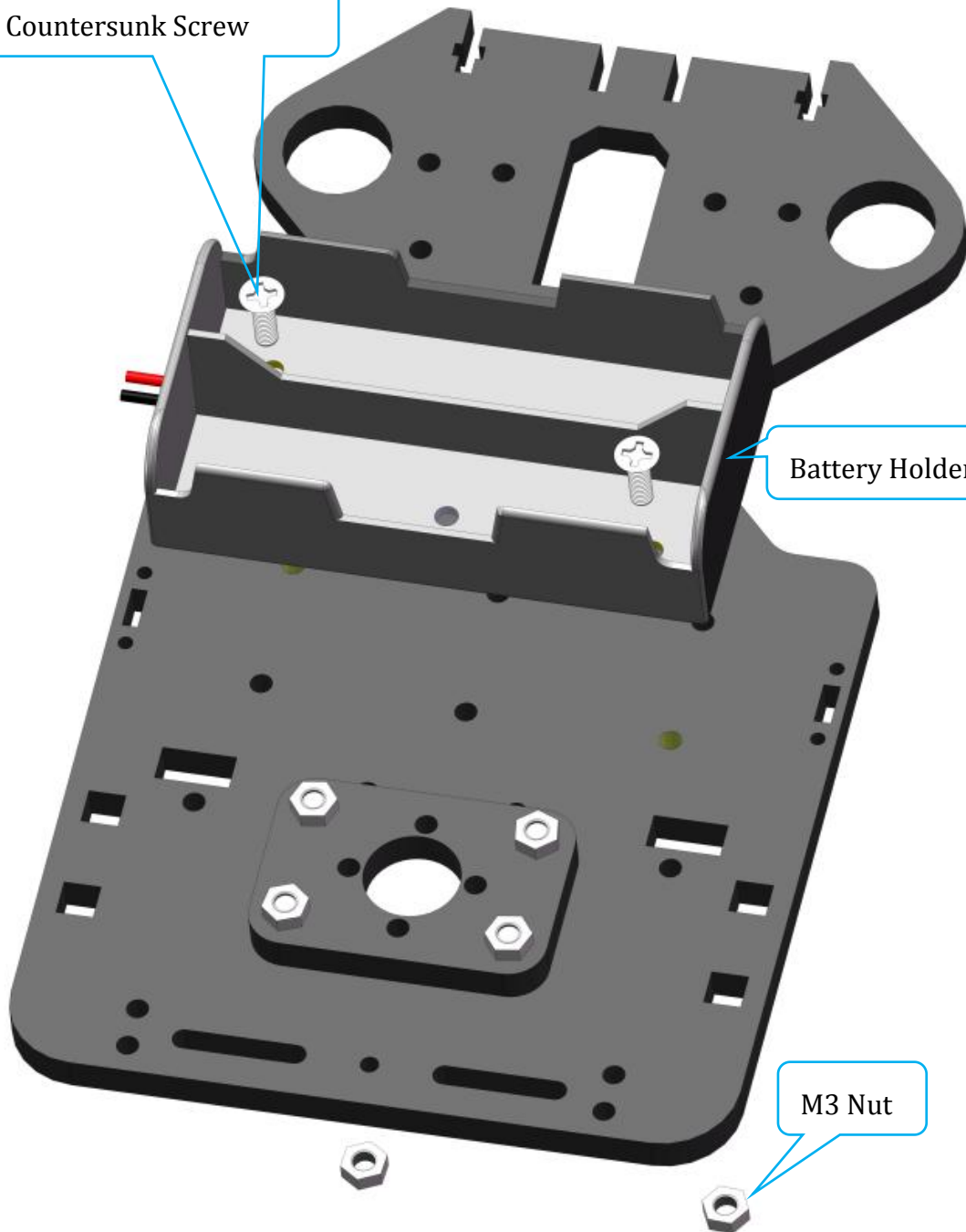
2. Install the **battery holder** with **two M3*10 countersunk screws** and **two M3 nuts**.

Assemble the following components:

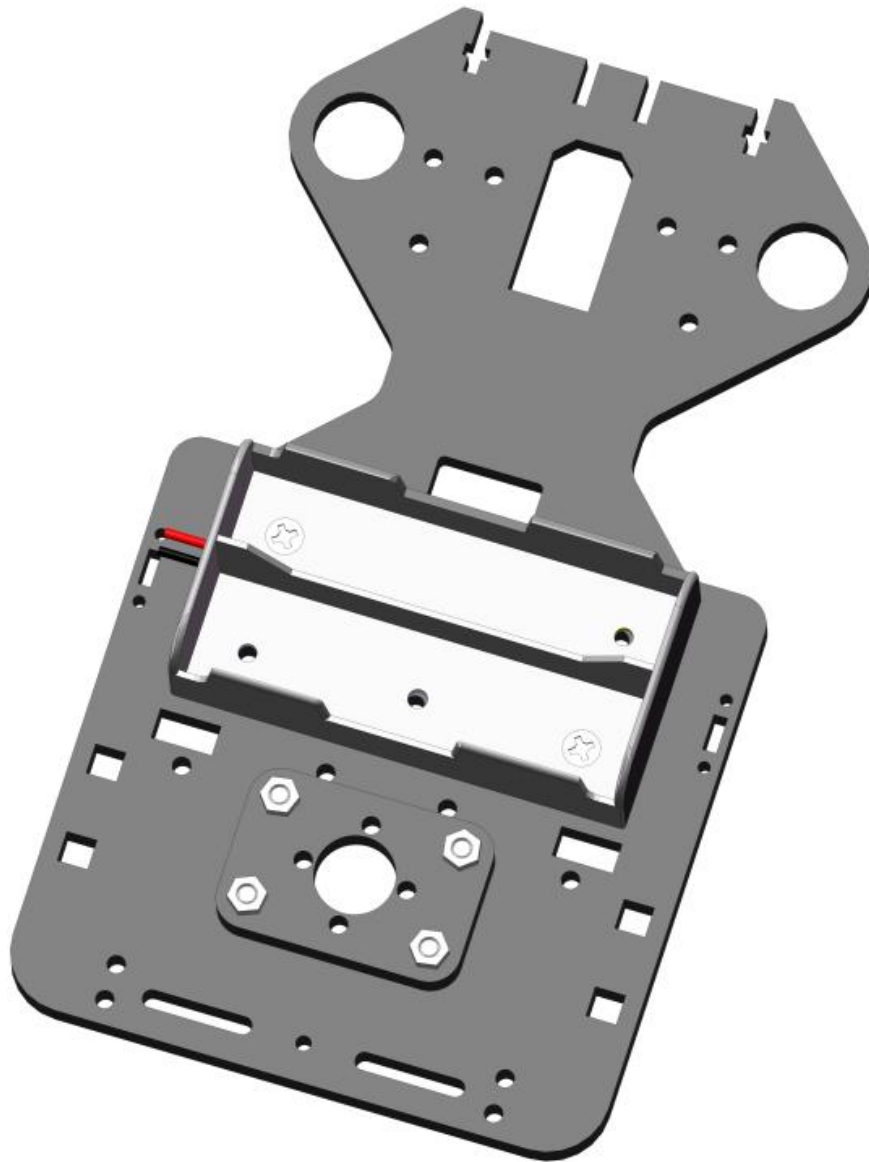
M3*10 Countersunk Screw

Battery Holder

M3 Nut



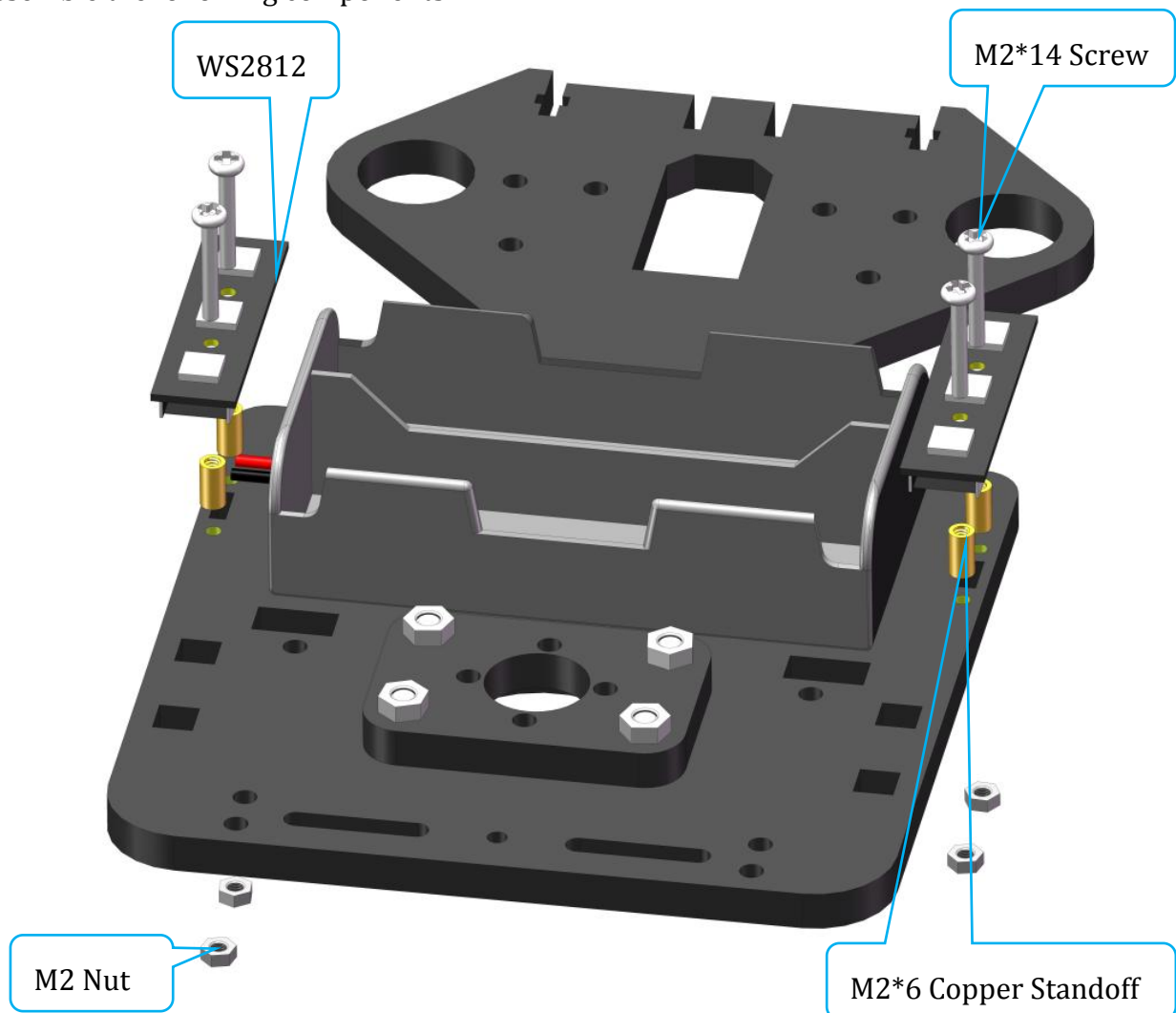
After assembly:



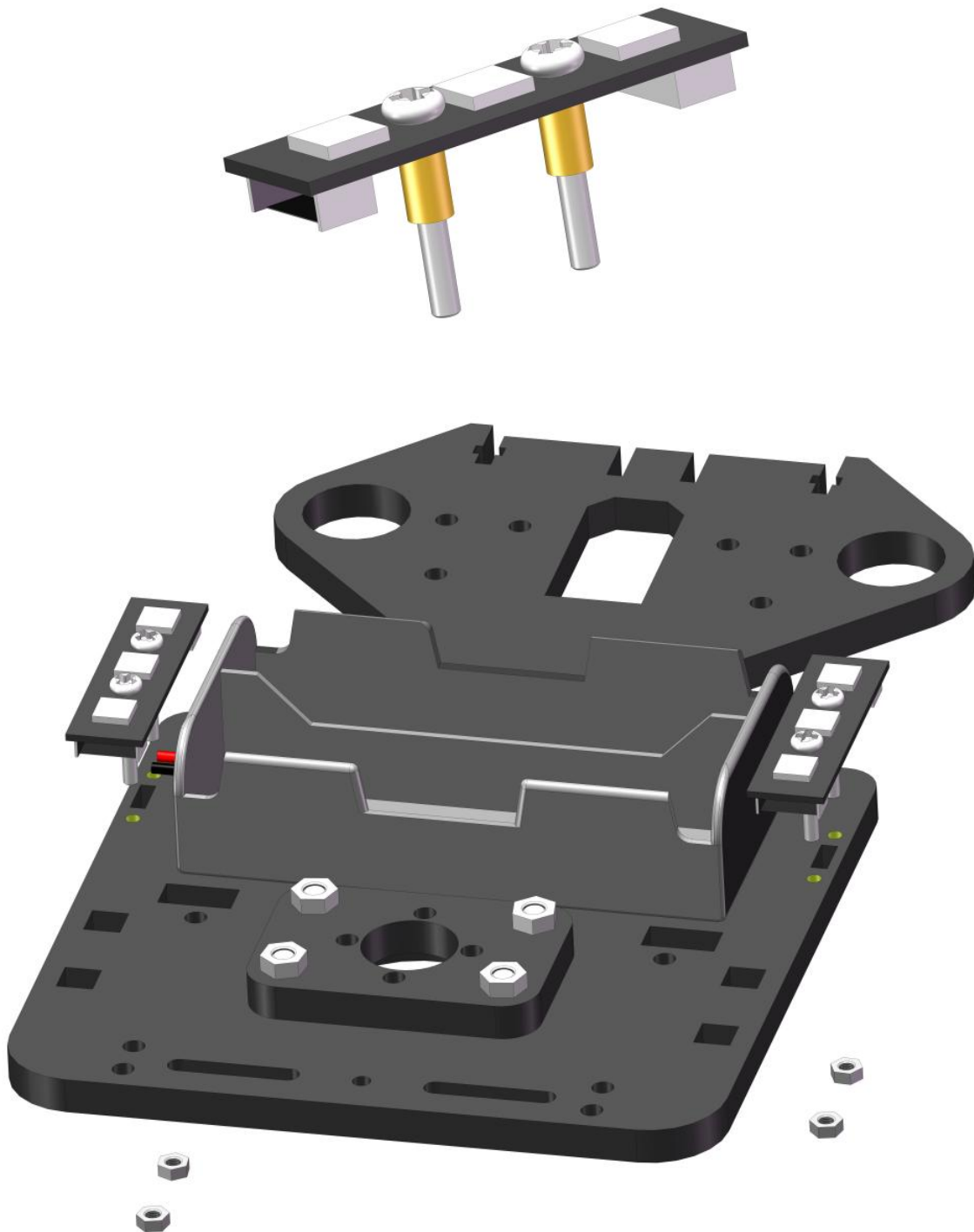
3. Use **four M2*14 screws**, **four M2*6 Copper Standoff**, and **four M2 nuts** are used to install **two WS2812 modules**.

The cable "**IN**" interface in the WS2812 module is used to connect the Adeept Robot HAT V3.1. The "**IN**" interface of the WS2812 module receives an electrical signal, and the "**OUT**" interface outputs the electrical signal to other WS2812 modules. (Please connect the circuit between multiple WS2812 LEDs well before installation.)

Assemble the following components:



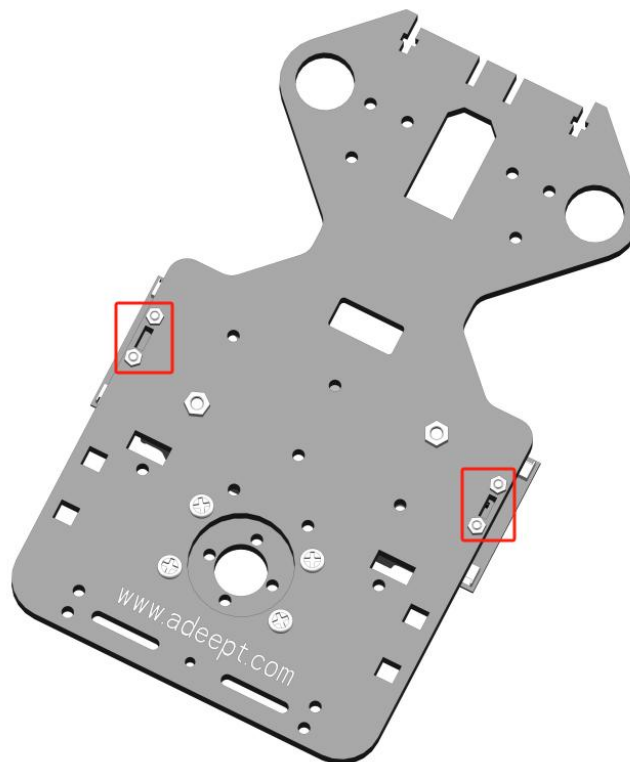
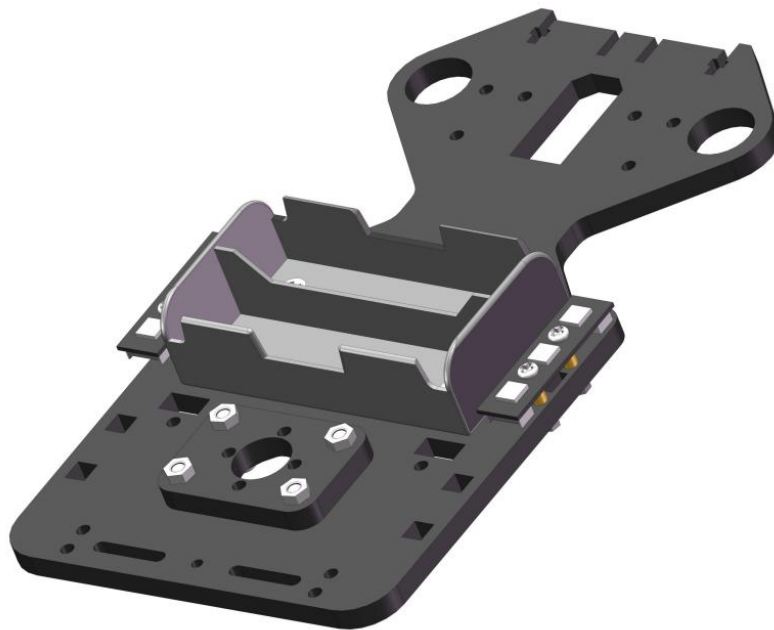
The first step is to use M2*14 screws and M2*6 copper brackets to fix the WS2812 module.



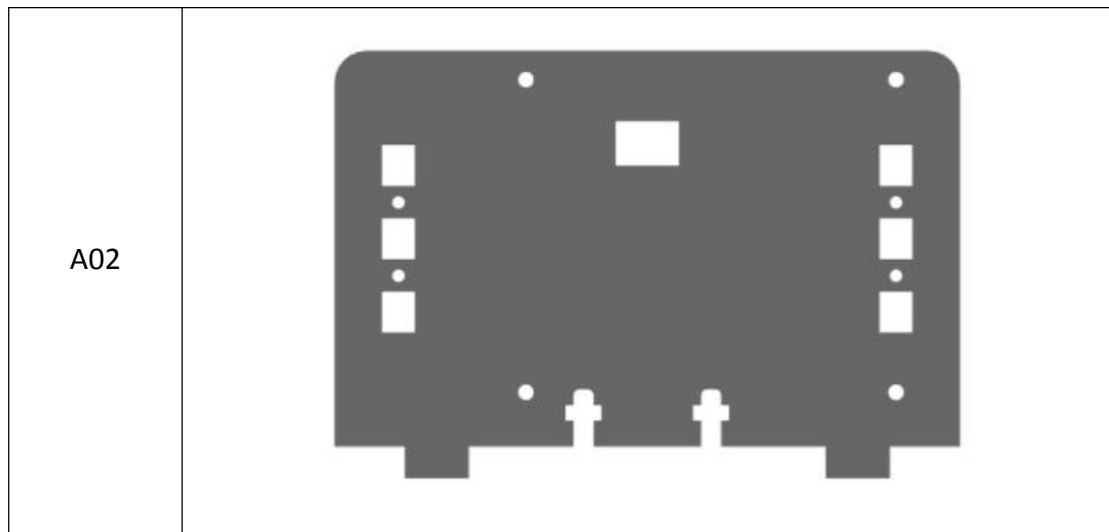
Then use the **Cross Socket Wrench** and four M2 nuts to secure the WS2812 module to A01.

The light source of the WS2812 module faces outward.

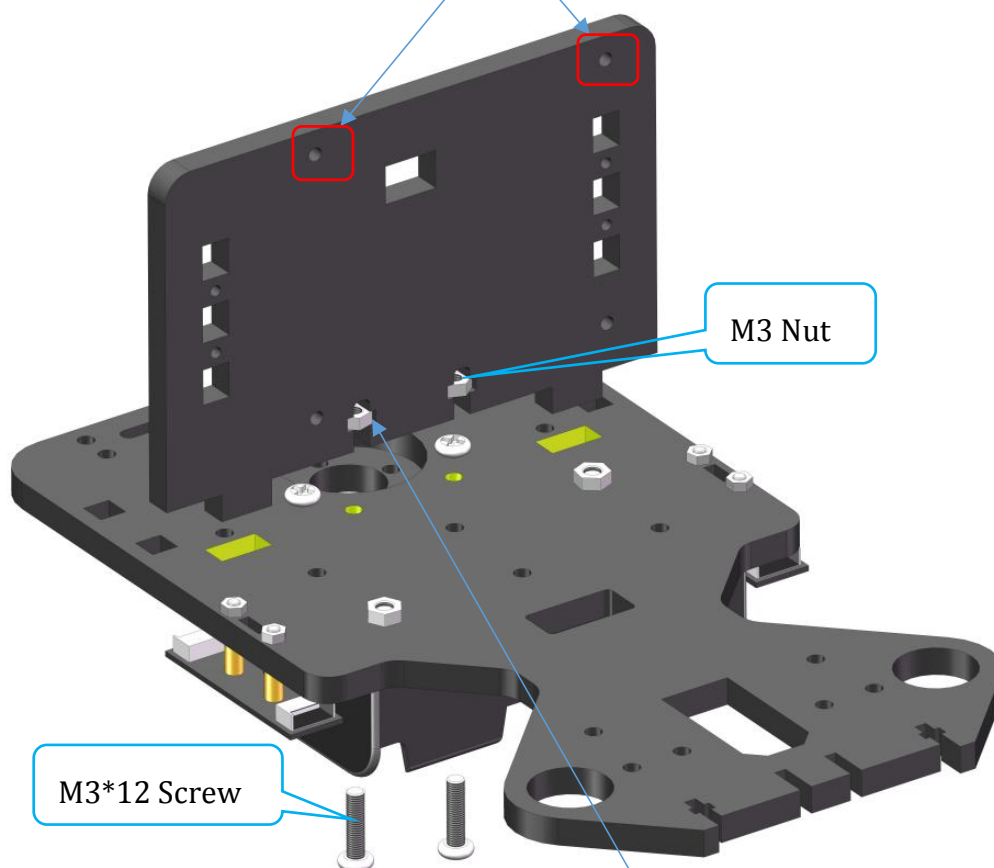
After assembly:



4. Install A02 with **two M3*12 screws** and **two M3 nuts**.



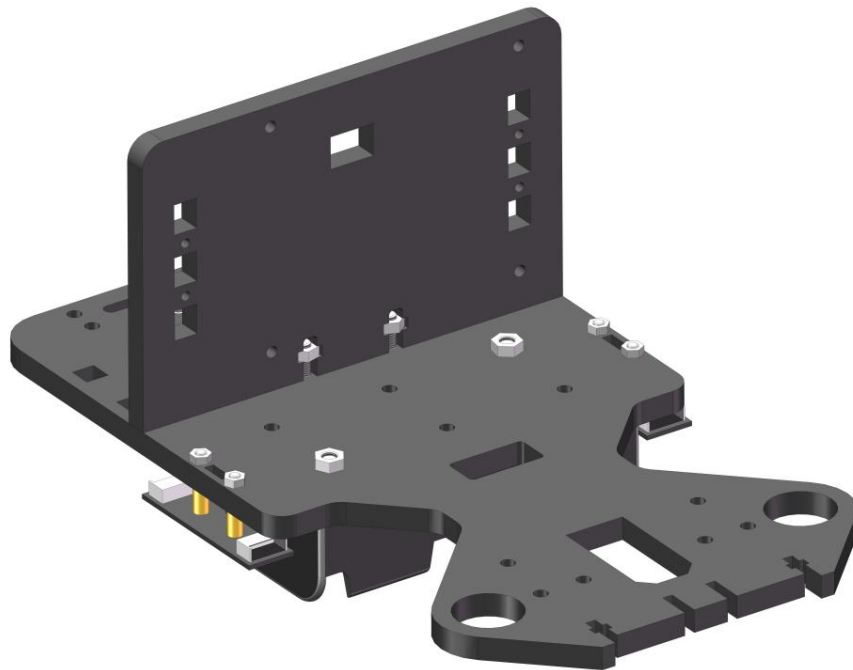
Assemble the following components (the A02 holes must be placed at the right position):



Note: The nut has a long side and a short side, with the short side being able to pass through

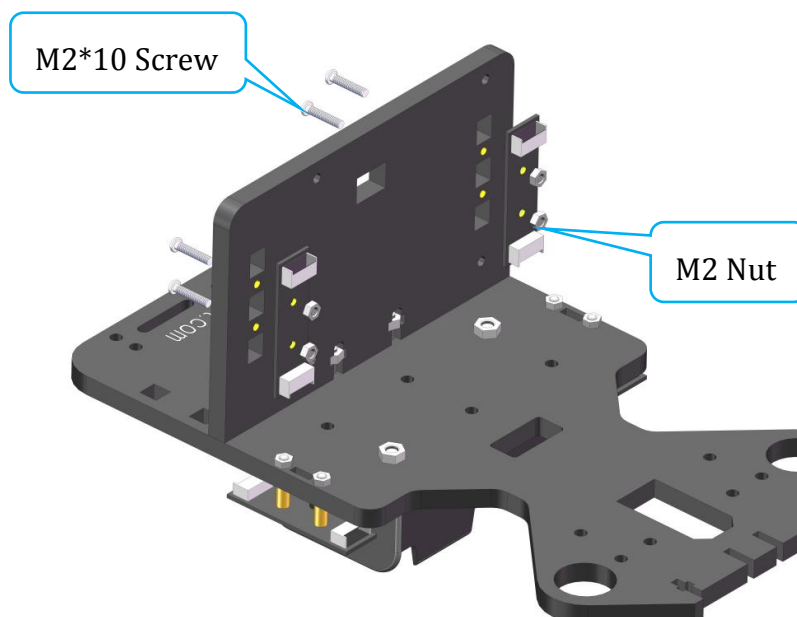
the hole in the acrylic sheet.

After assembly:



5. Install **two WS2812 modules** with **four M2*10 screws** and four **M2 nuts**.

Assemble the following components:

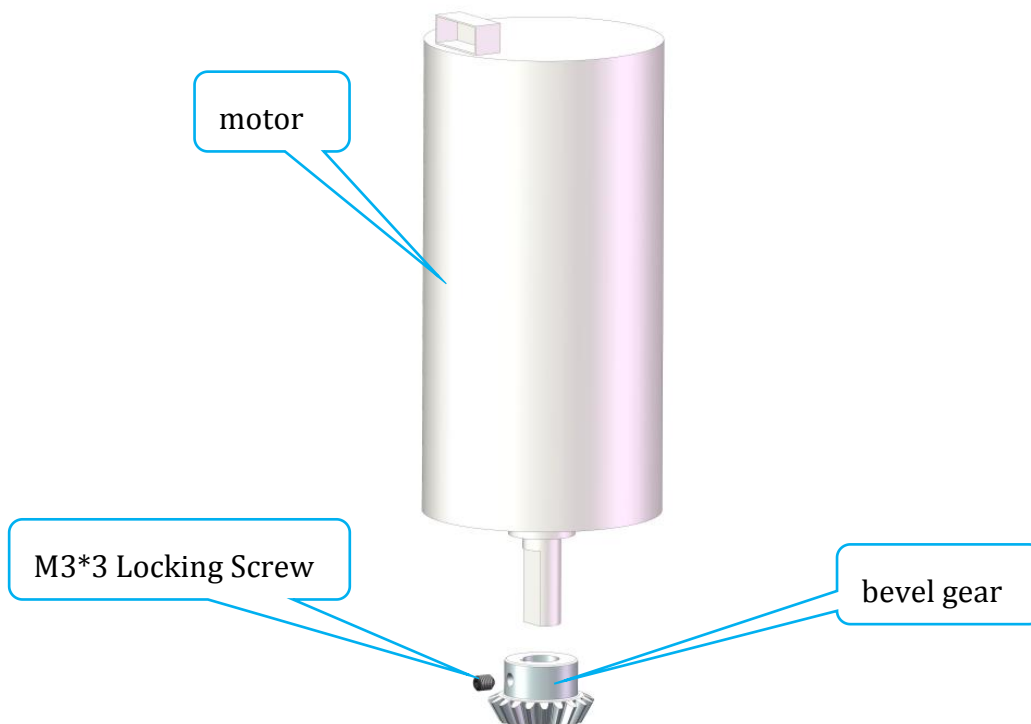


After assembly:

Note: The light source of the WS2812 module faces inward.



6. Install **bevel gear** with one **M3*3 Locking Screw**.



The bevel gear screw hole must be perpendicular to the plane of the motor shaft.



The bevel gear maintains a gap with the bottom of the cutting surface in the axial direction of the motor shaft. If the meshing angle of the two bevel gears needs to be adjusted to achieve perfect meshing during the subsequent installation process, it is necessary to adjust the length of the gap first and then adjust the position of the other bevel gear.

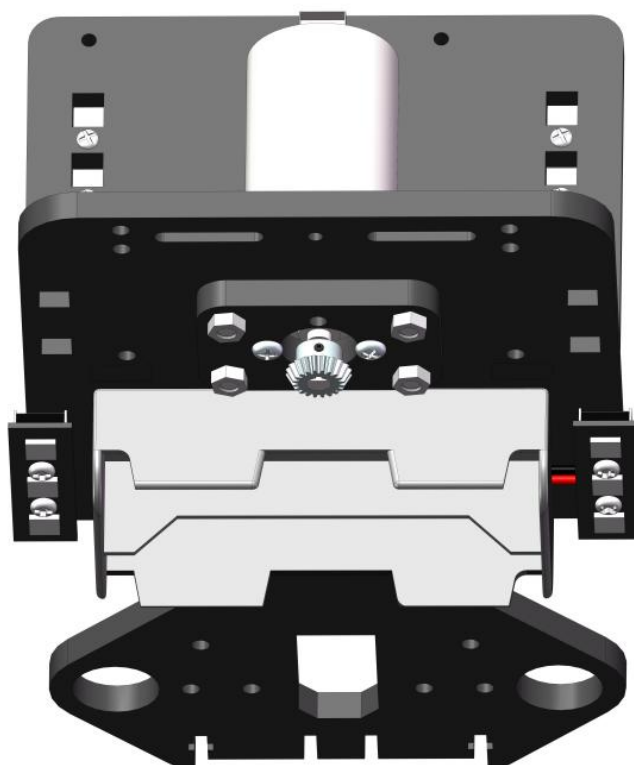
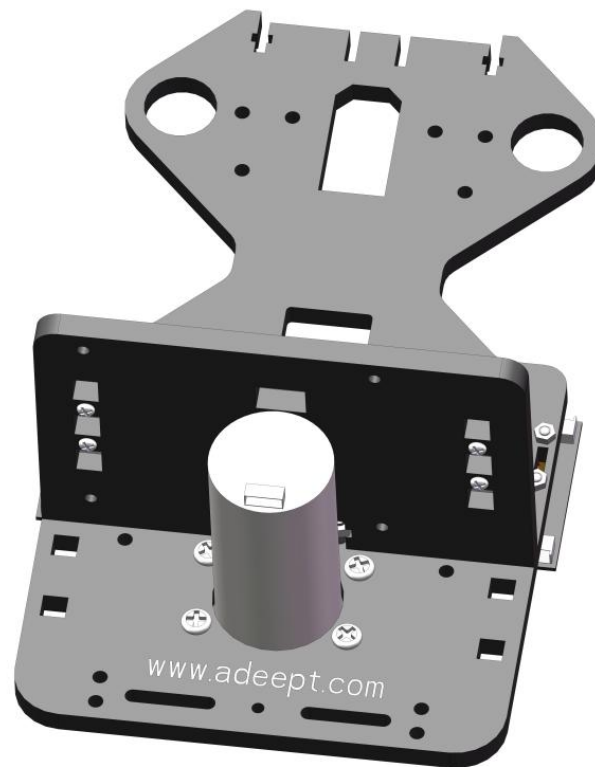


Note: The interface on the upper end of the motor faces outward (rear), which is convenient for connecting the circuit.

Use **two M3*8 screws** to fix the motor.

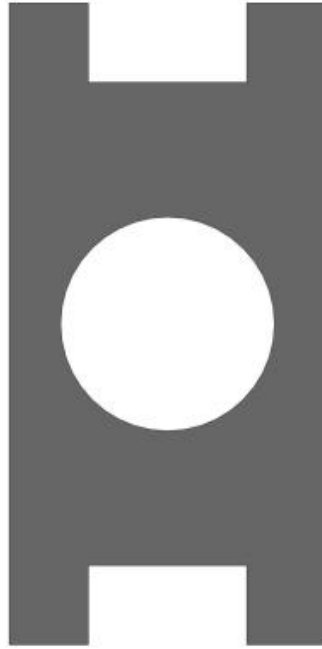


After assembly:

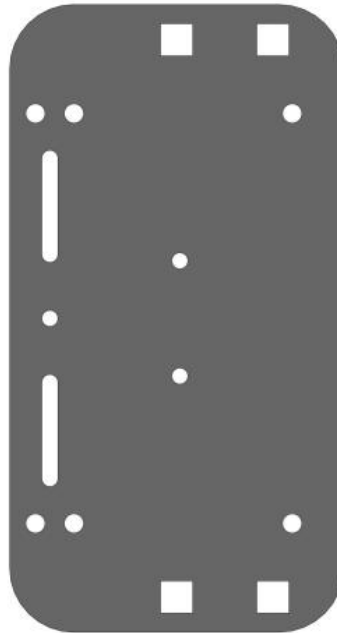


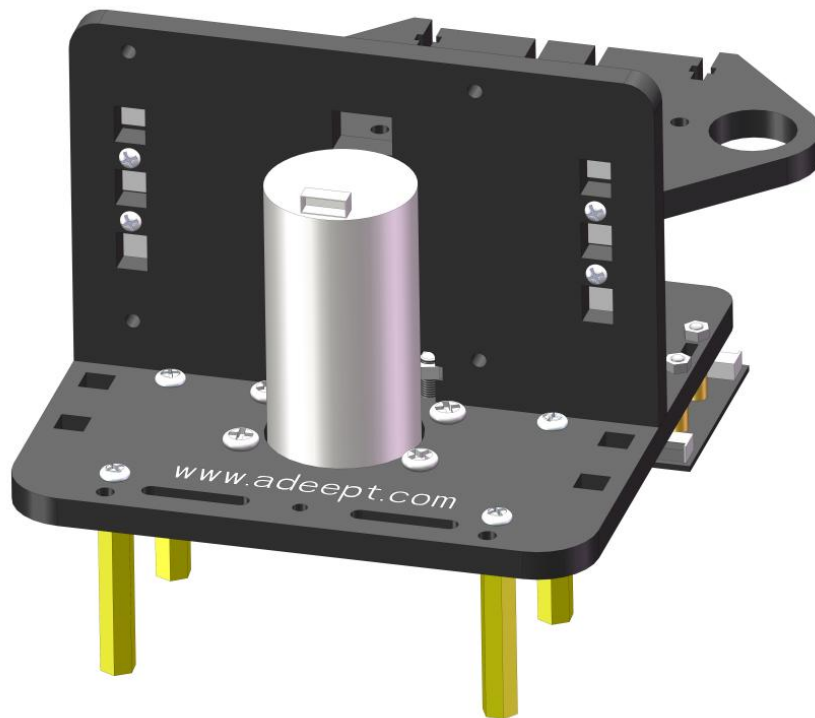
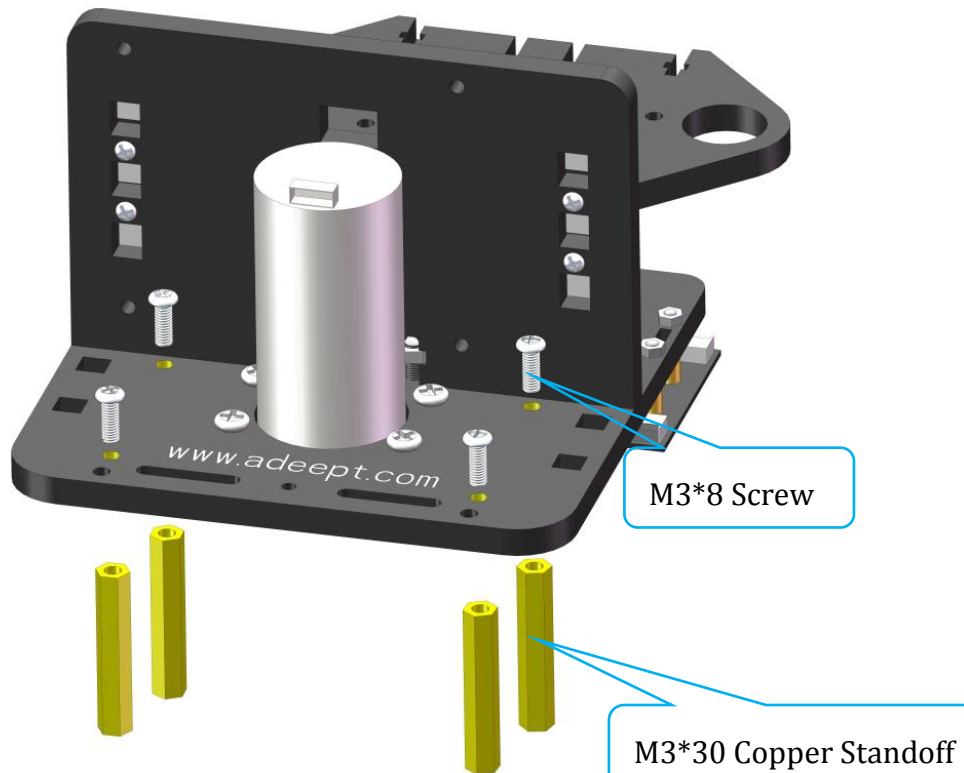
7. Install **two A10** and **one A04** with **eight M3*8 screws** and **four M3*30 Copper Standoffs**.

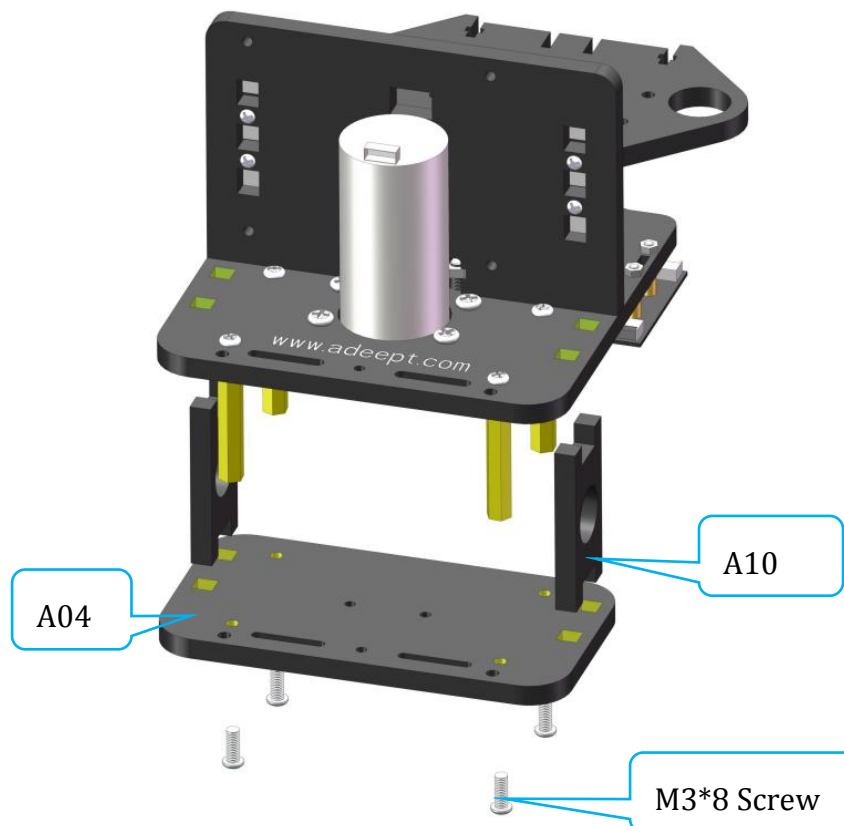
A10



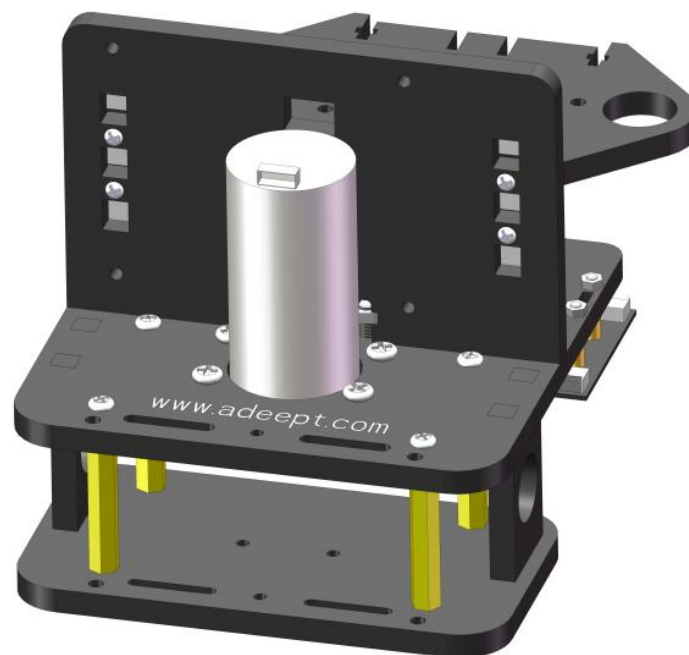
A04

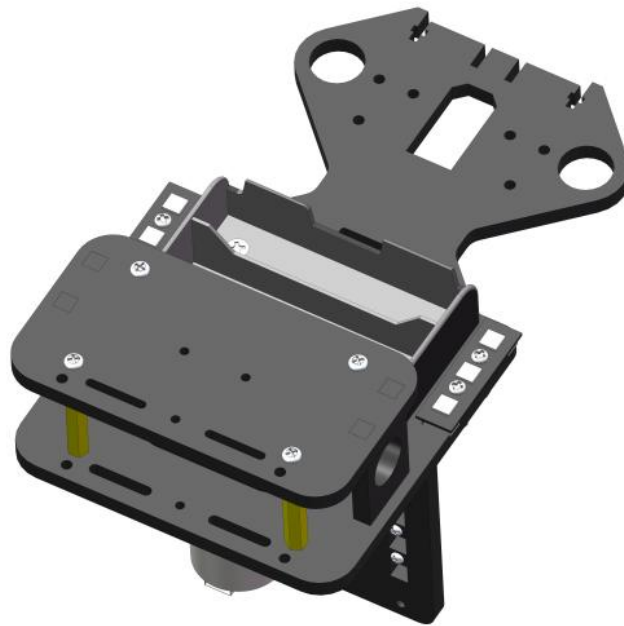




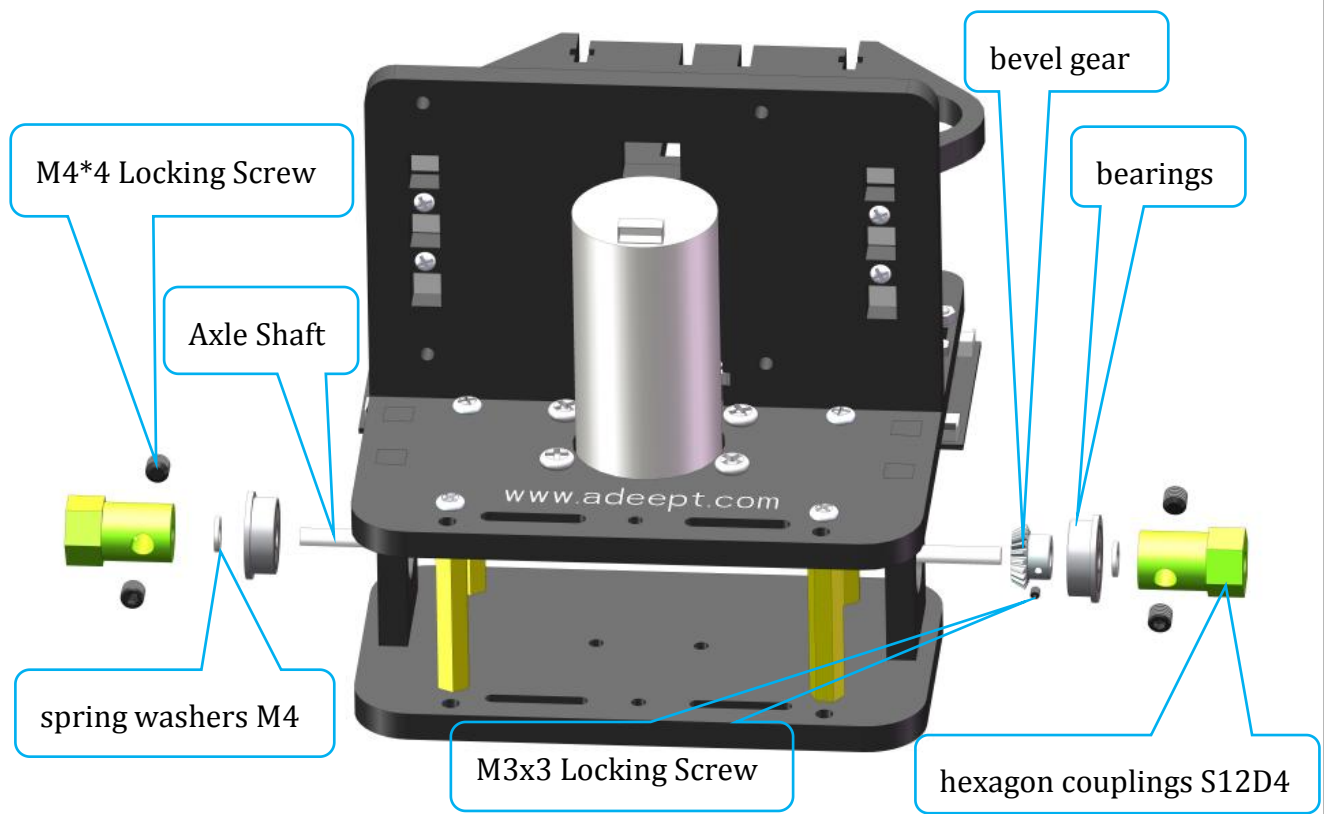


After assembly:

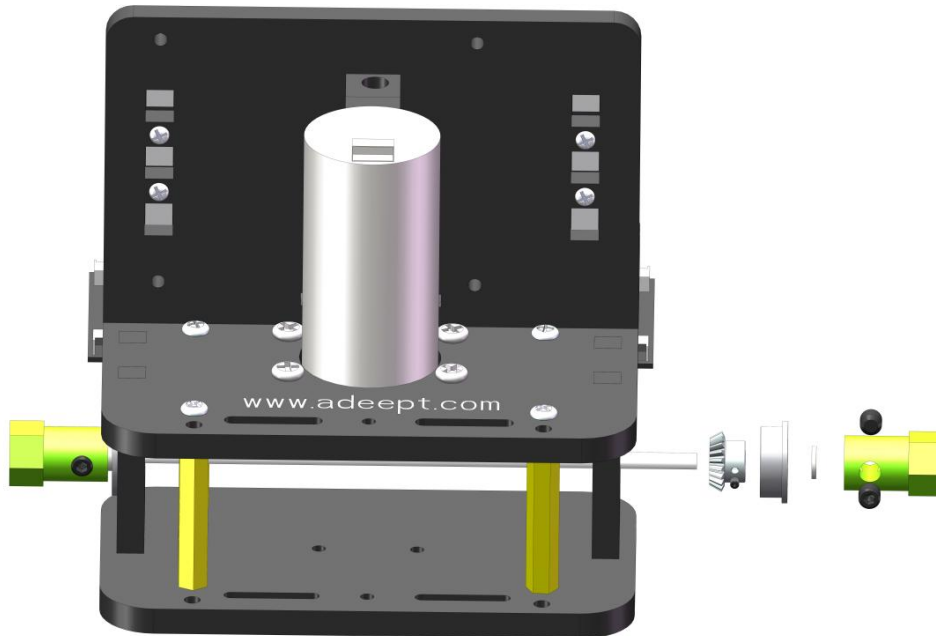




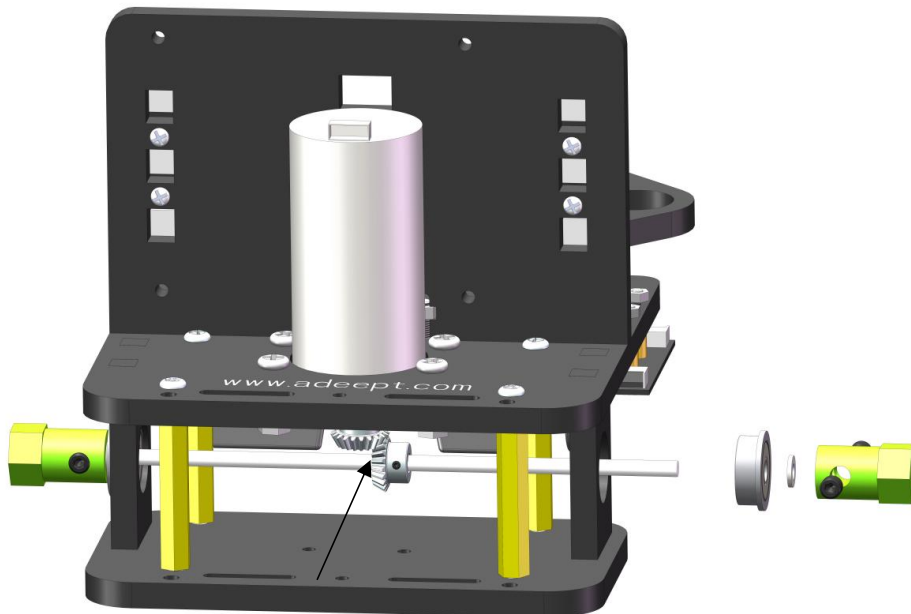
8. Use **four M4x4 Locking Screws**, one **M3x3 Locking Screw**, two **bearings F624ZZ**, and two **spring washers M4** to install two **hexagon couplings S12D4**, one **bevel gear**, and one **Axle Shaft**. Use the corresponding Allen Wrench to tighten the Locking Screw.



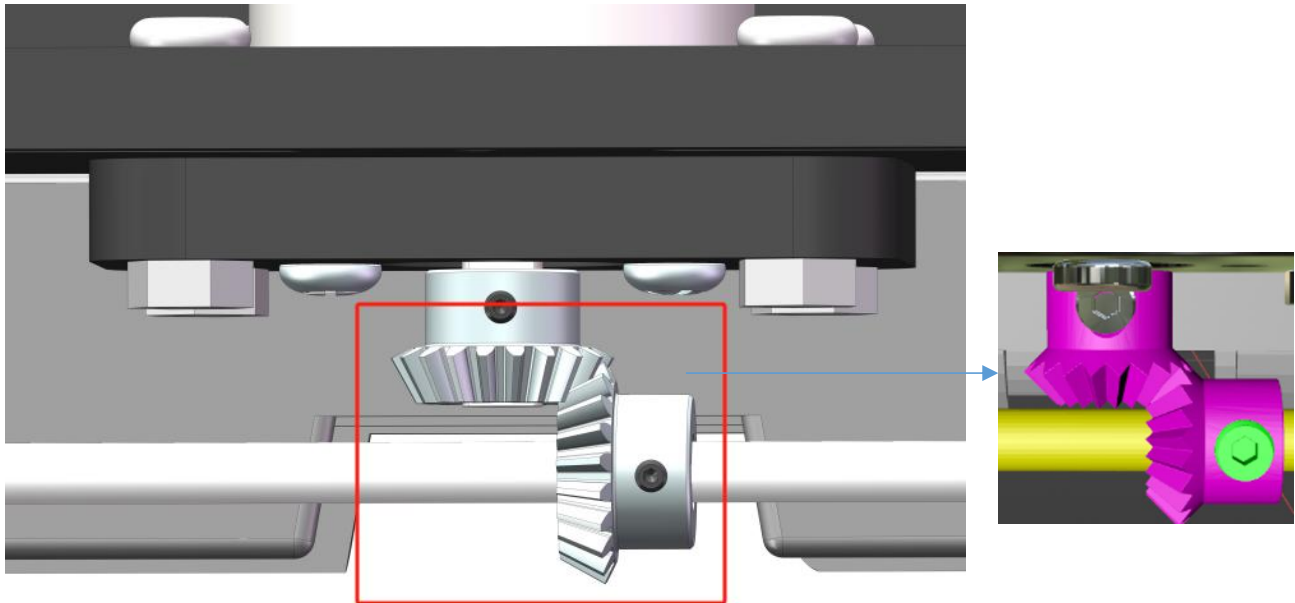
Fix the hexagon coupling S12D4 with M4*4 Locking Screw.



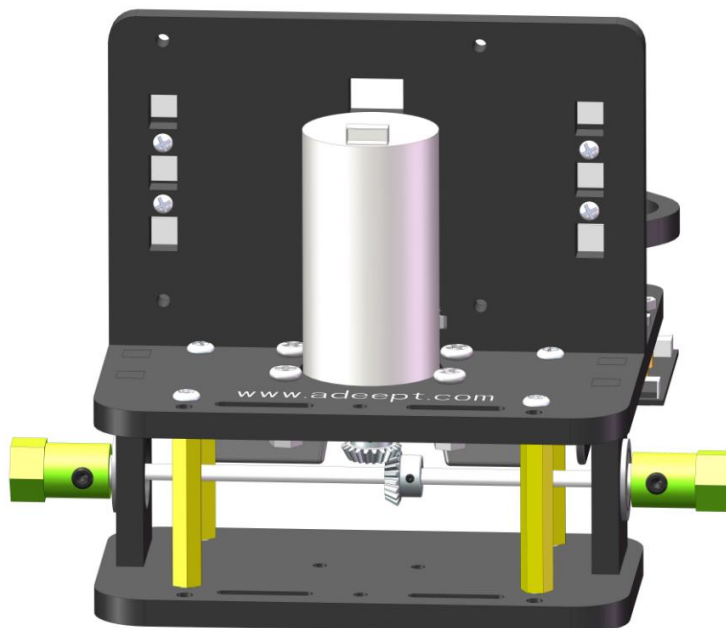
Install the right bearing on the acrylic board and fix the center of the Axle Shaft, then adjust the position of the bevel gear and fix it with M3*3 Locking screws.



Engagement angle after installation. Try to rotate the Axle Shaft to ensure proper engagement.

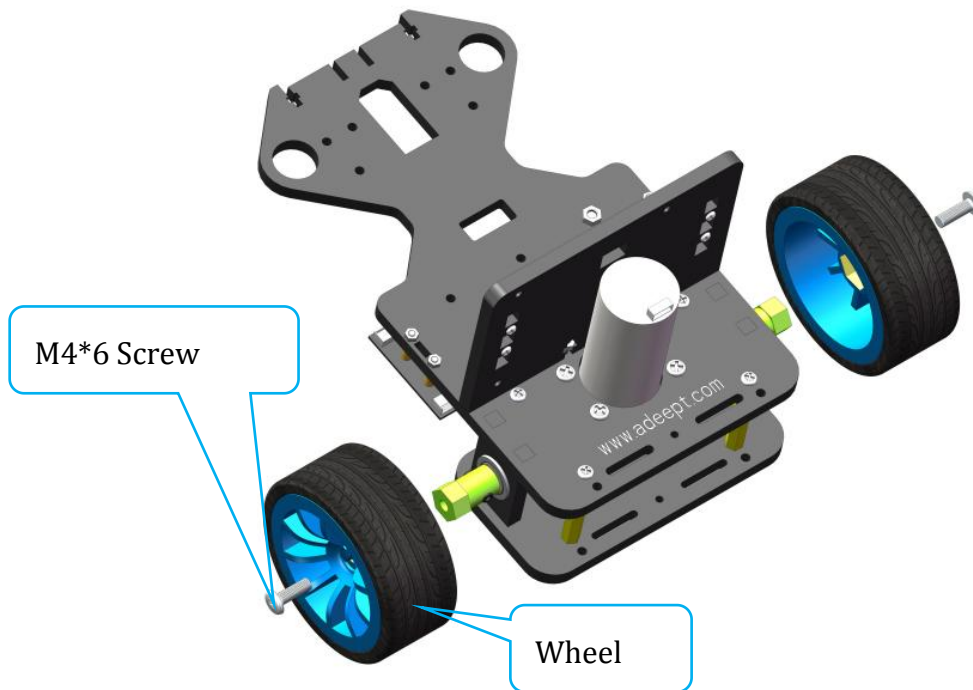


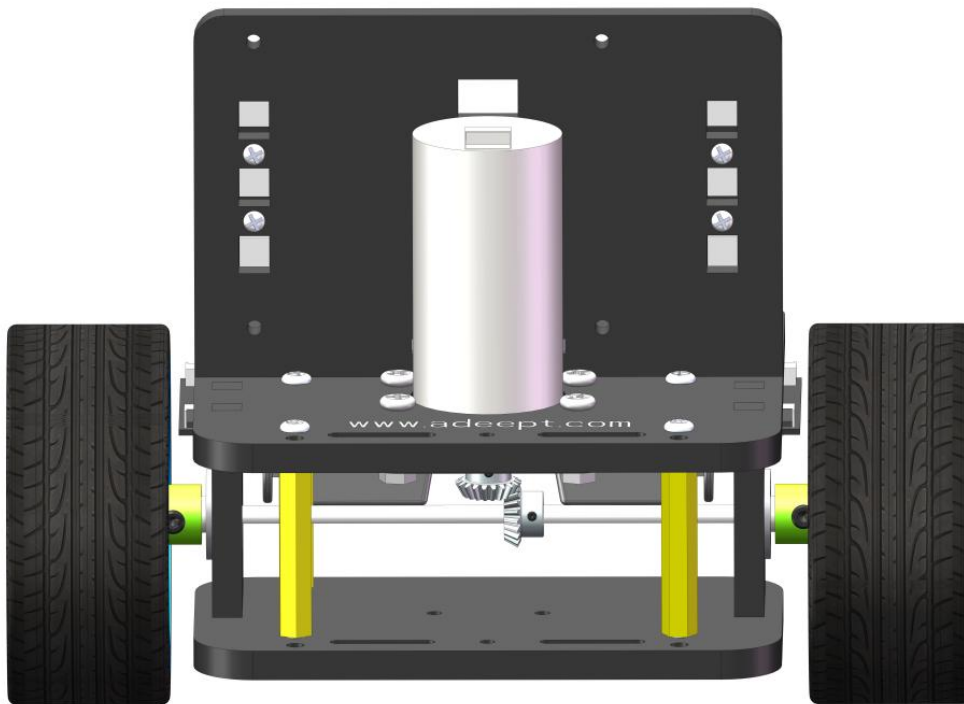
Make sure that the two bevel gears are in full mesh as much as possible. If misalignment occurs, it may cause "slip" between the bevel gears during wheel rotation. First adjust the vertical position of the bevel gear on the motor shaft, and then adjust the position of the other bevel gear. **And make sure the Axle Shaft doesn't move axially.**



Use **two M4*6 screws** to install the wheels.

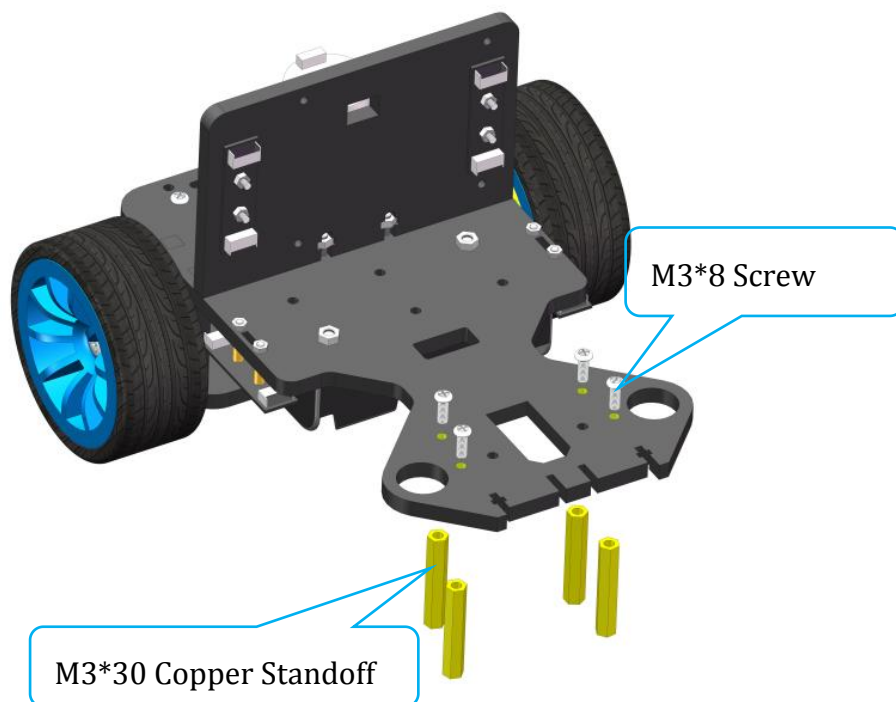
Assemble the following components:



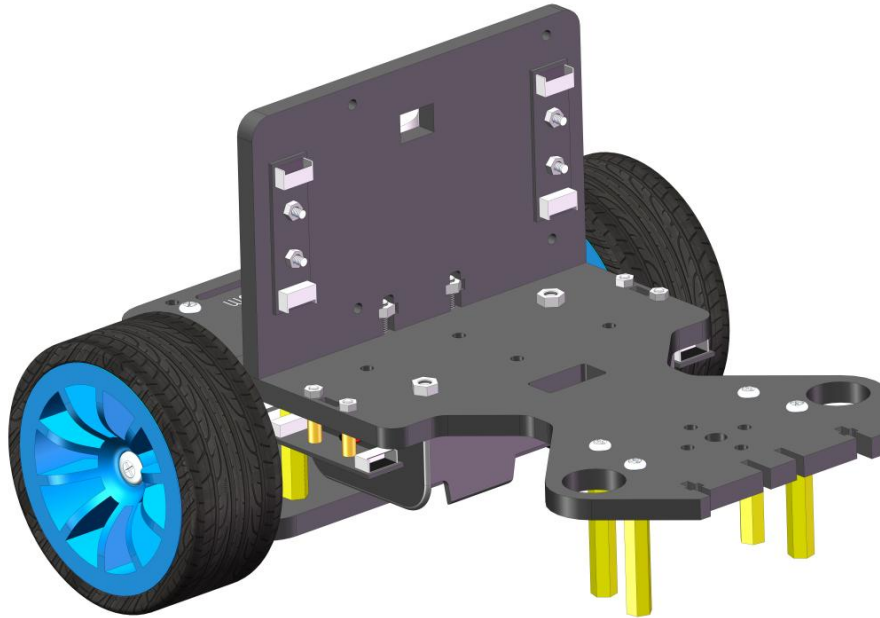


9. Use **four M3*8 screws** and **four M3*30 Copper Standoff** install on the A01.

Assemble the following components:

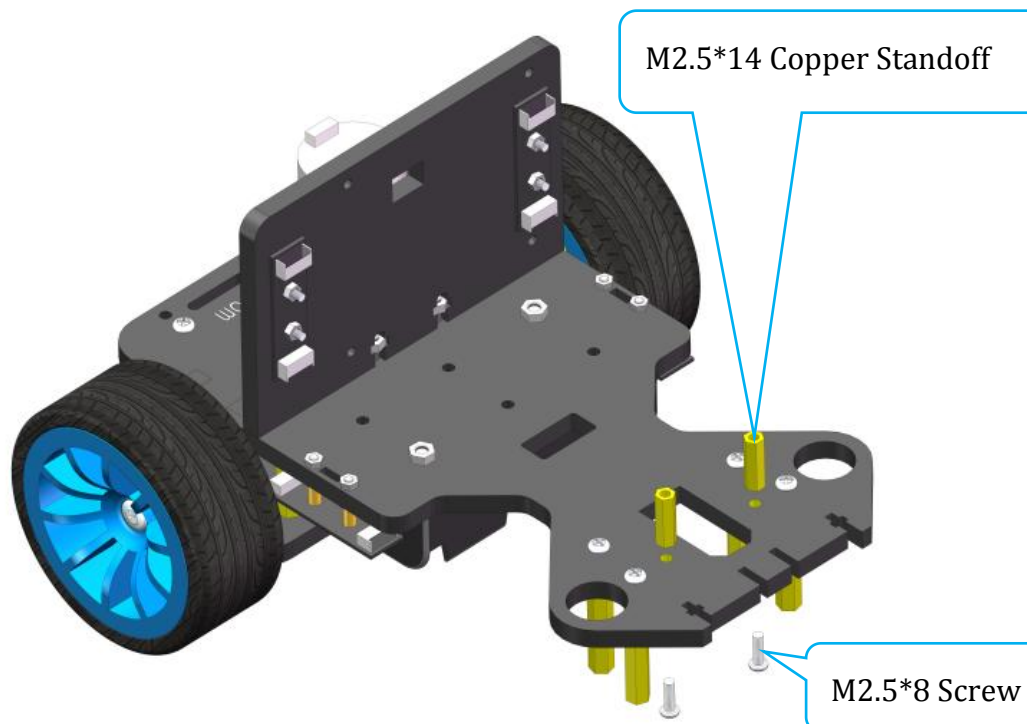


After assembly:

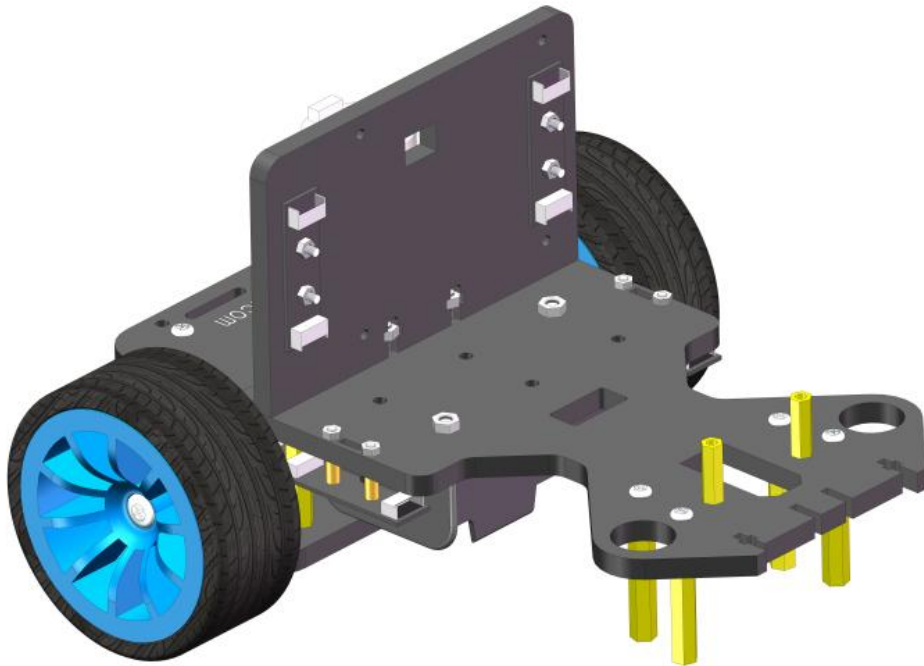


10. Use **two M2.5*8 screws** and **two M2.5*14 Copper Standoff** install on the A01.

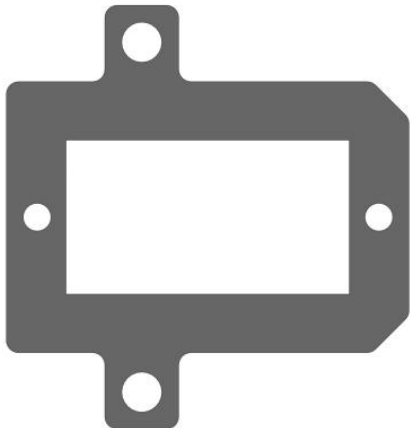
Assemble the following components:



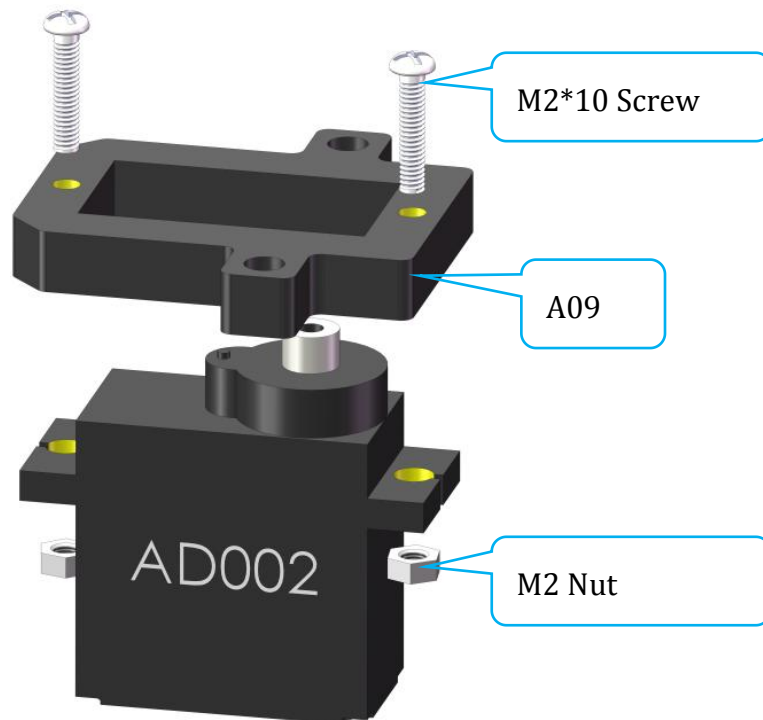
After assembly:



11. Use **two M2*10 screws** and **two M2 nuts** to install **servo** on the **A09**. (The servo rotation angle needs to be adjusted to the middle position before the servo is installed)

A09	
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Assemble the following components:

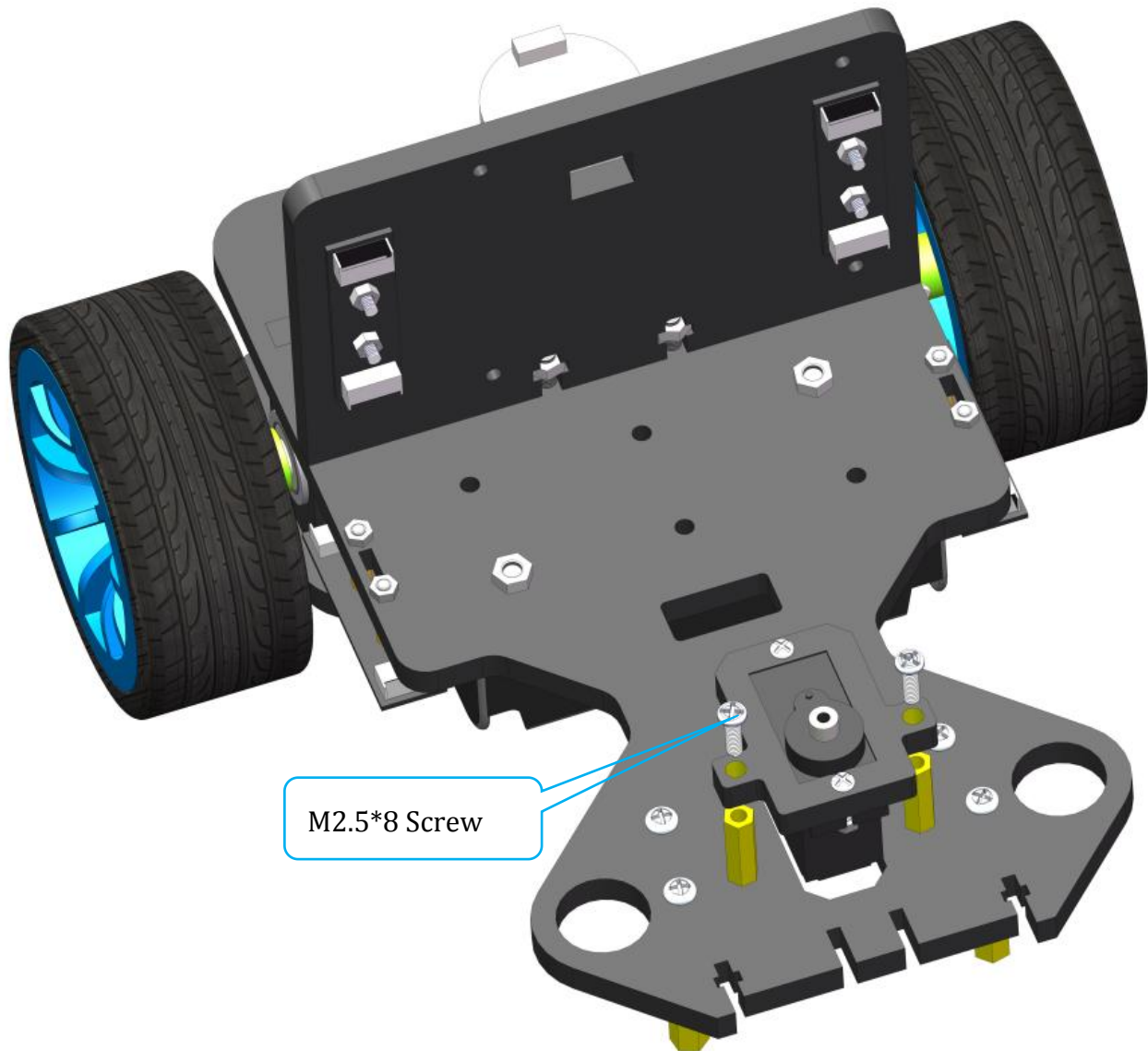


After assembly:

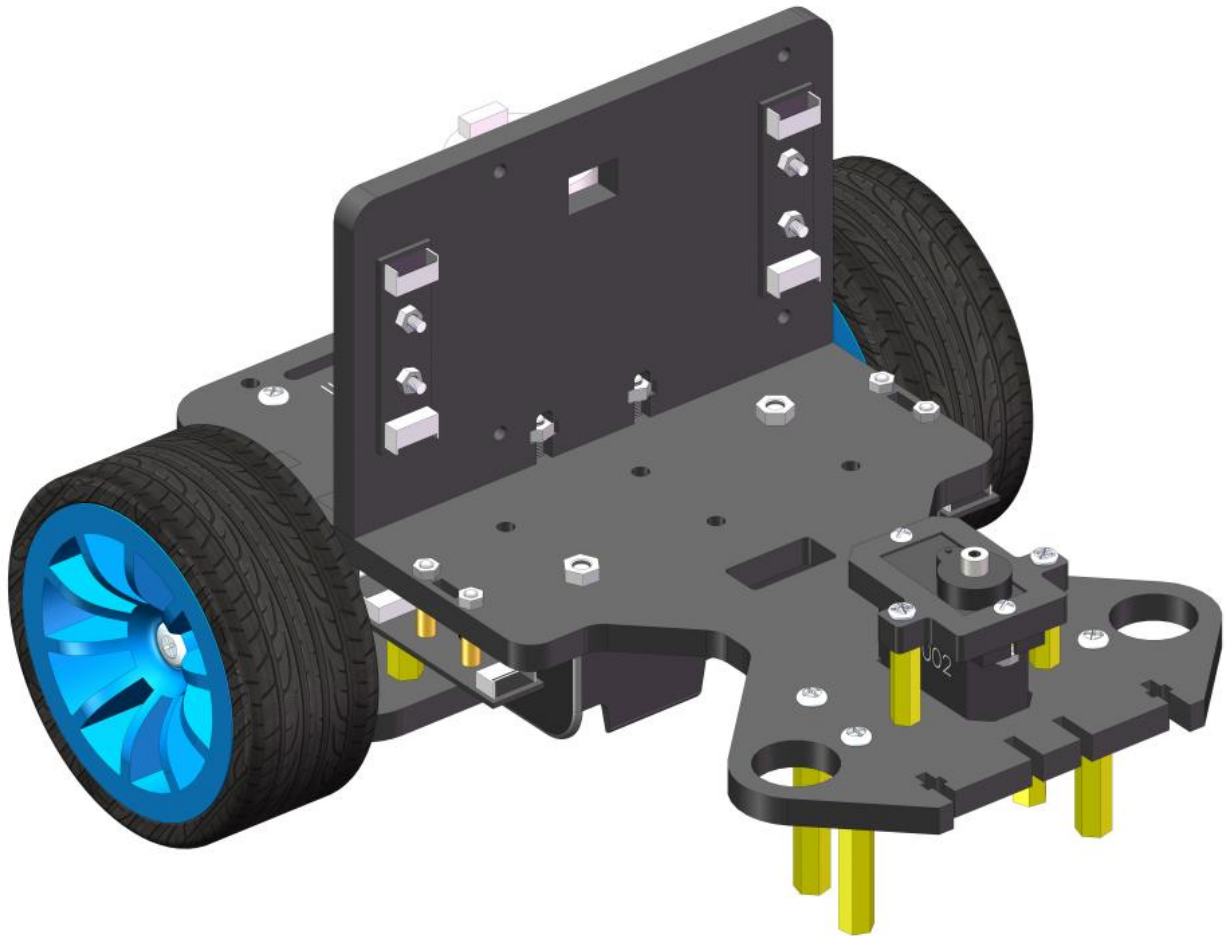


12. Use **two M2.5*8 screws** to install A09 on the A01.

Assemble the following components:



After assembly:



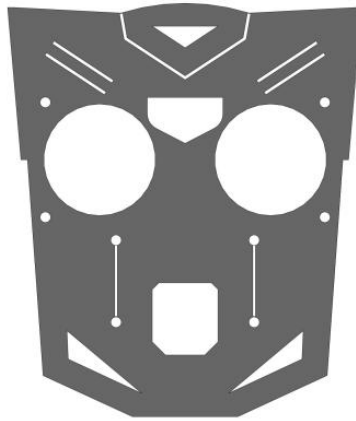
Install the top half.

13. Use **eight M1.6*10 screws** and **sixteen M1.6 nuts** to fix the **camera, ultrasonic** and **A18**.

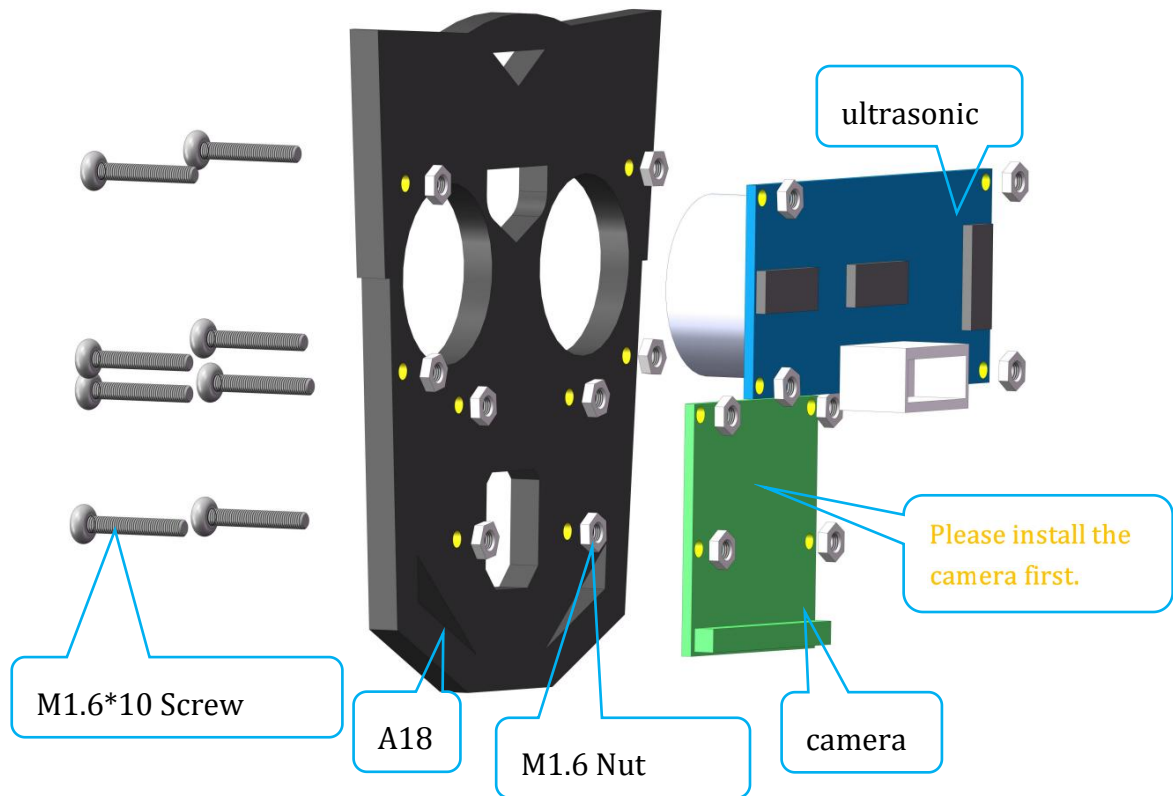
Please connect the ultrasonic and camera cable before installation.

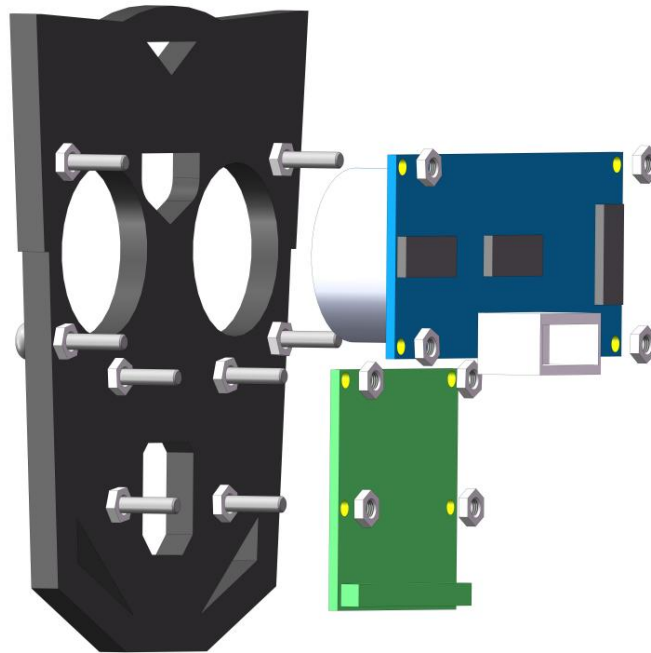
Since the ultrasonic module will cover part of the camera, install the camera first, and then install the ultrasonic module.

A18

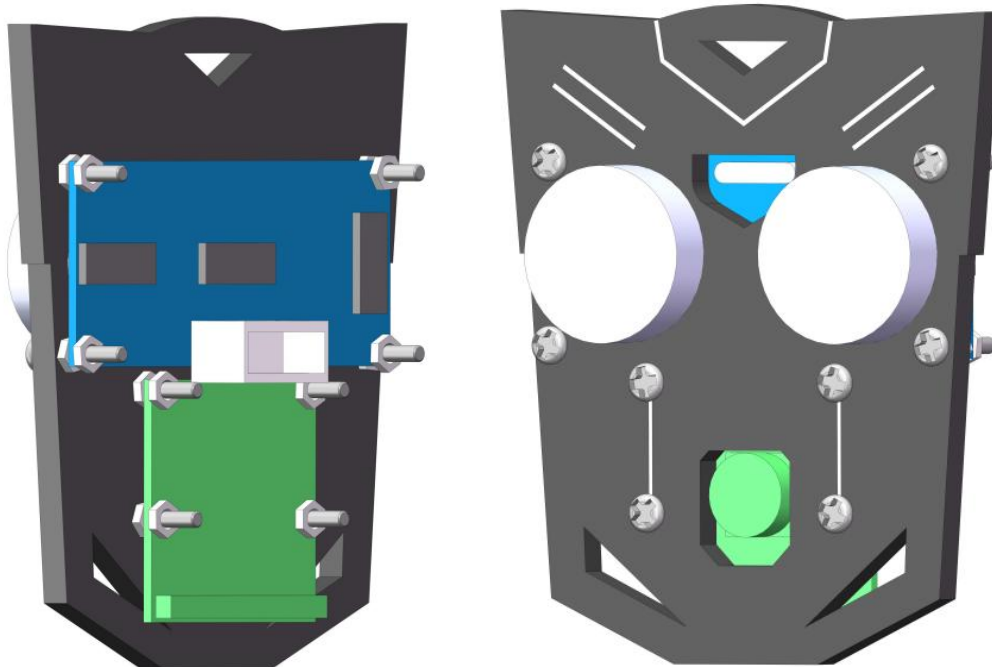


Assemble the following components:

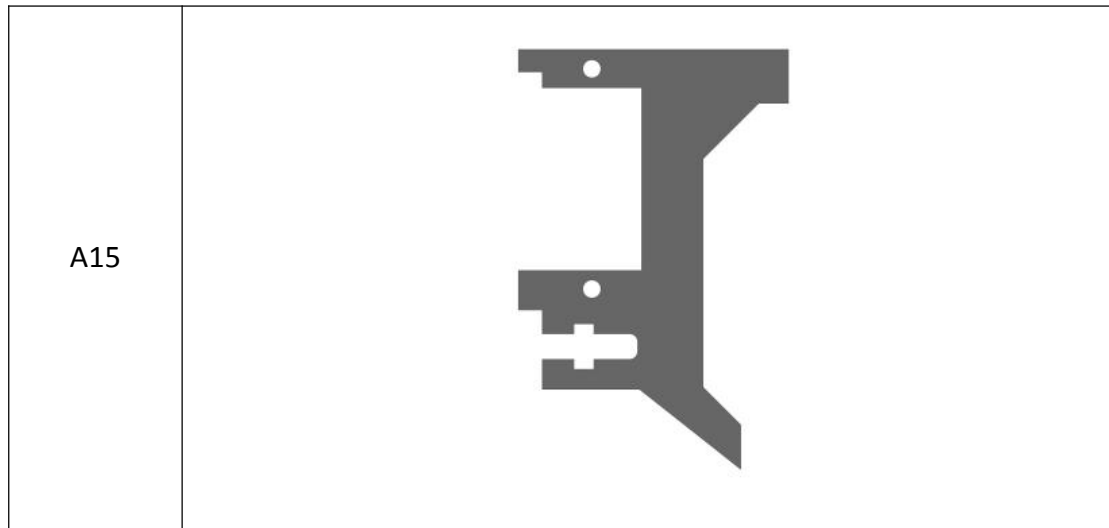




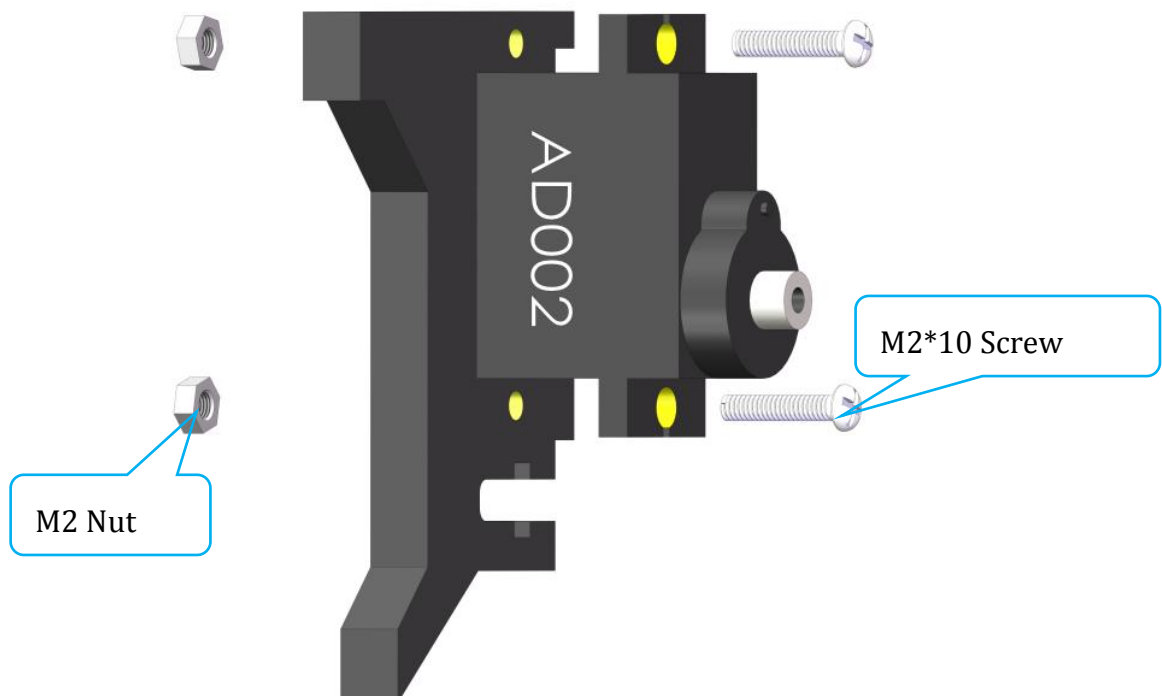
After assembly:



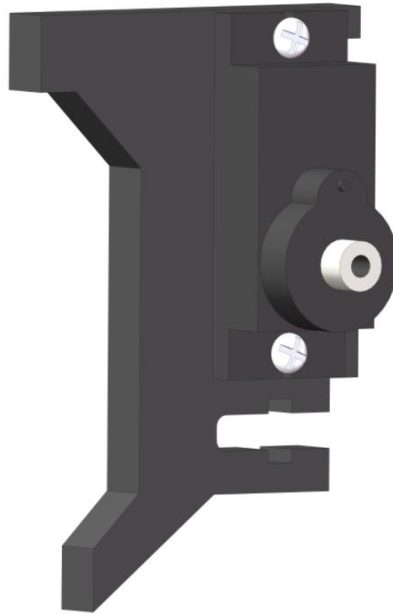
14. Use **two M2*10 screws** and **two M2 nuts** to install the **servo** and **A15**. (The servo rotation angle needs to be adjusted to the middle position before the servo is installed)



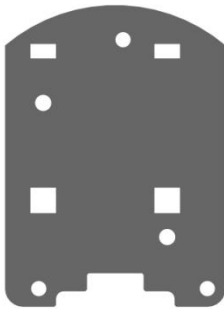
Assemble the following components:



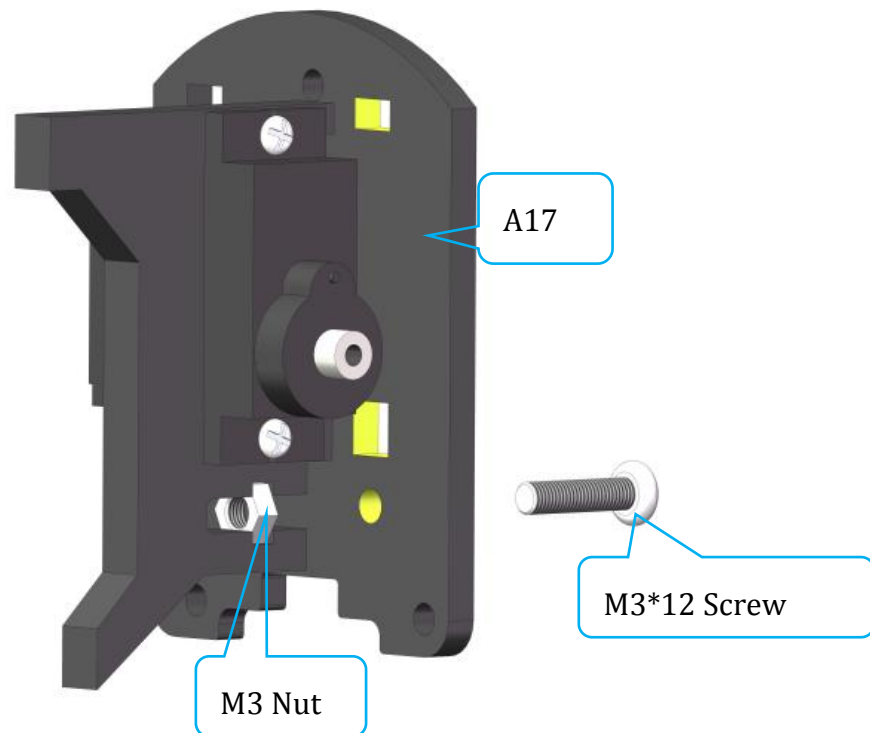
After assembly:



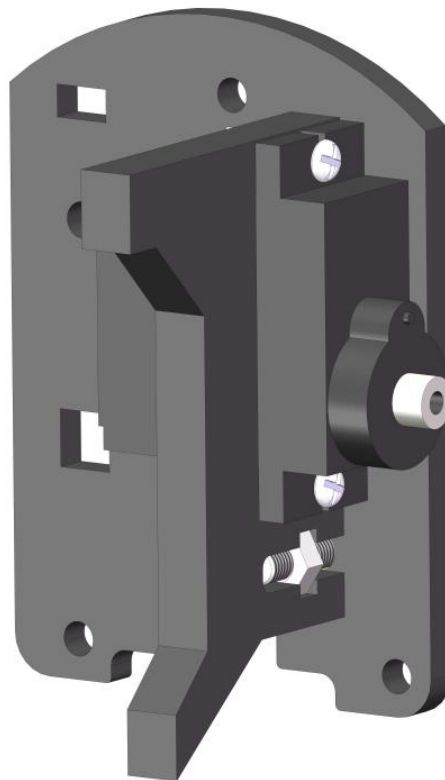
13. Use **one M3*12 screw and one M3 nut** to install the **A15 and A17**.

A17	
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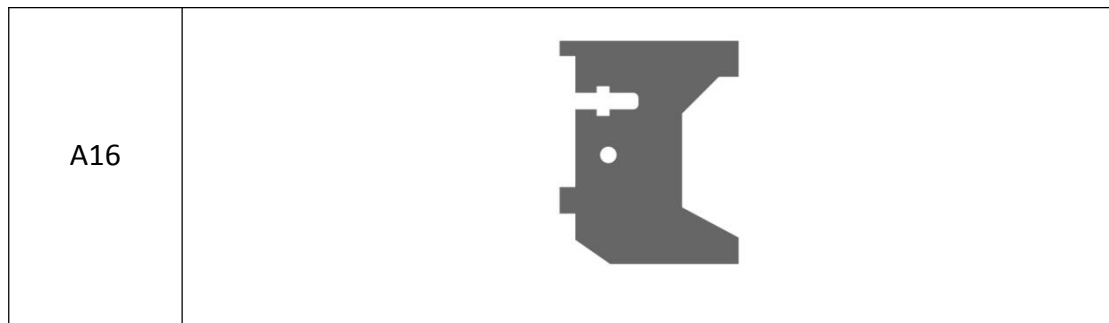
Assemble the following components:



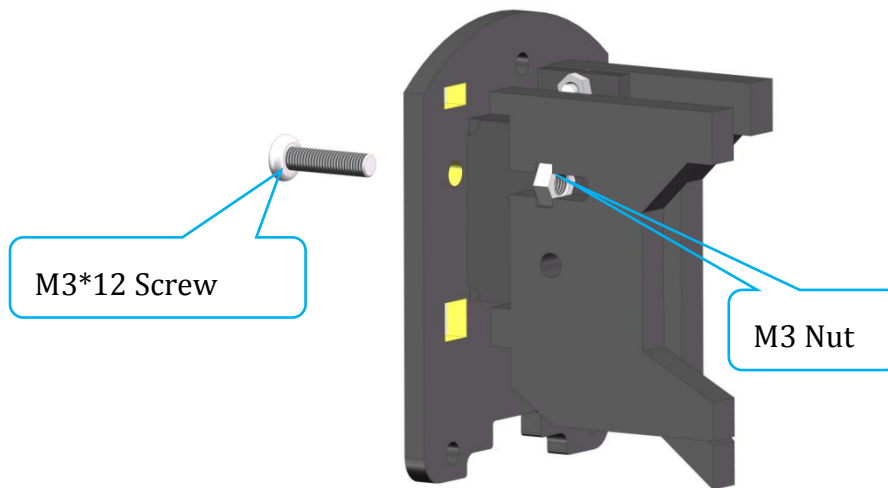
After assembly:



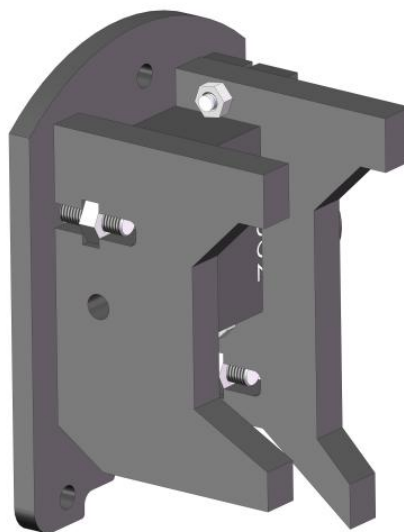
14. Use **one M3*12 screw** and **one M3 nut** to install the **A16** and **A17**.



Assemble the following components:

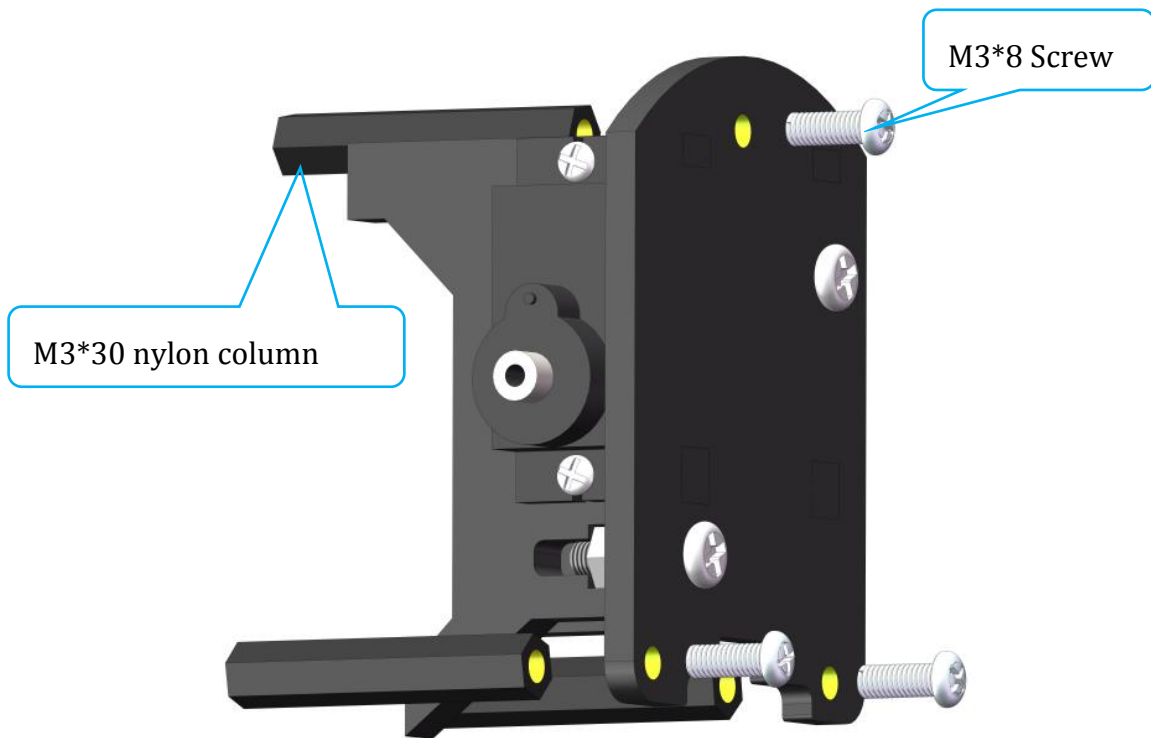


After assembly:

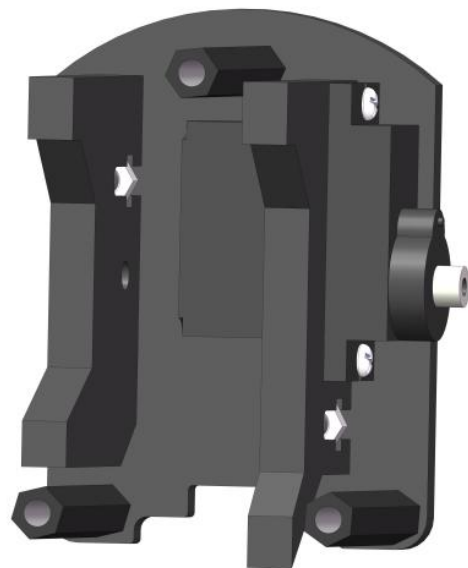
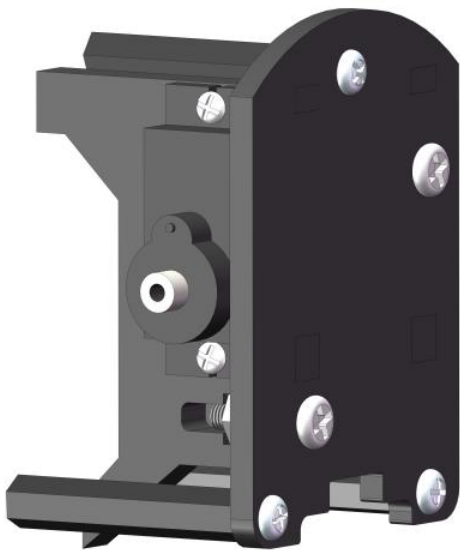


14. Use **three M3*8 screws** and **three M3*30 nylon columns** to install the A17.

Assemble the following components:

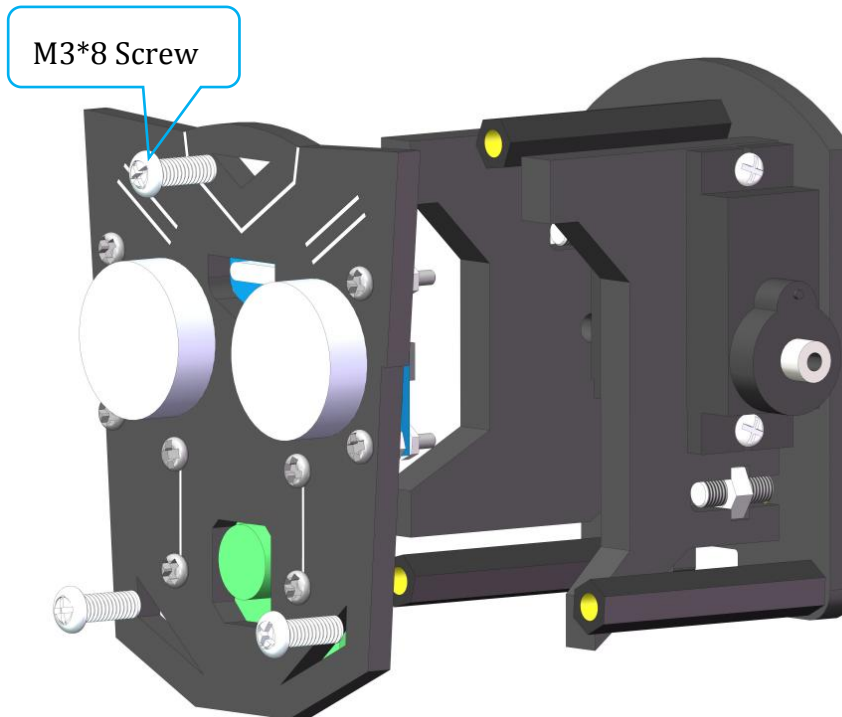


After assembly:

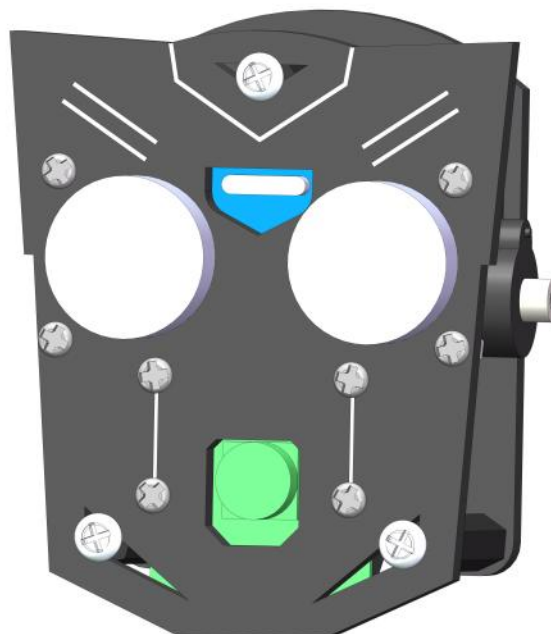


15. Use **three M3*8 screws** to fix the A17 and A18.

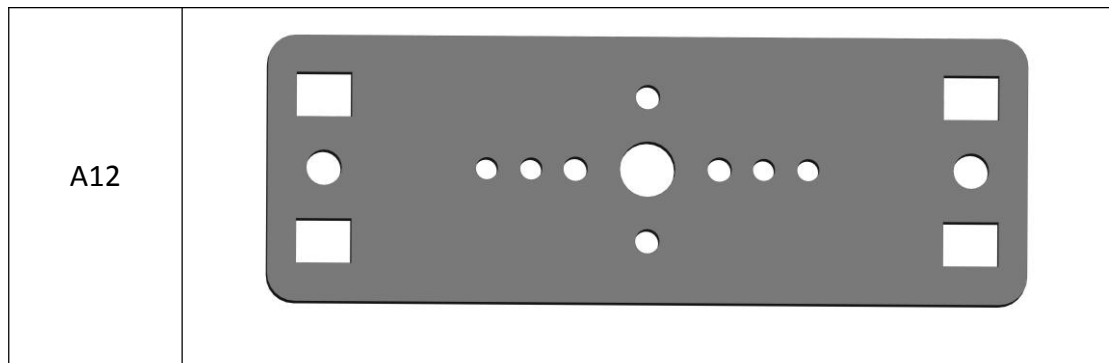
Assemble the following components:



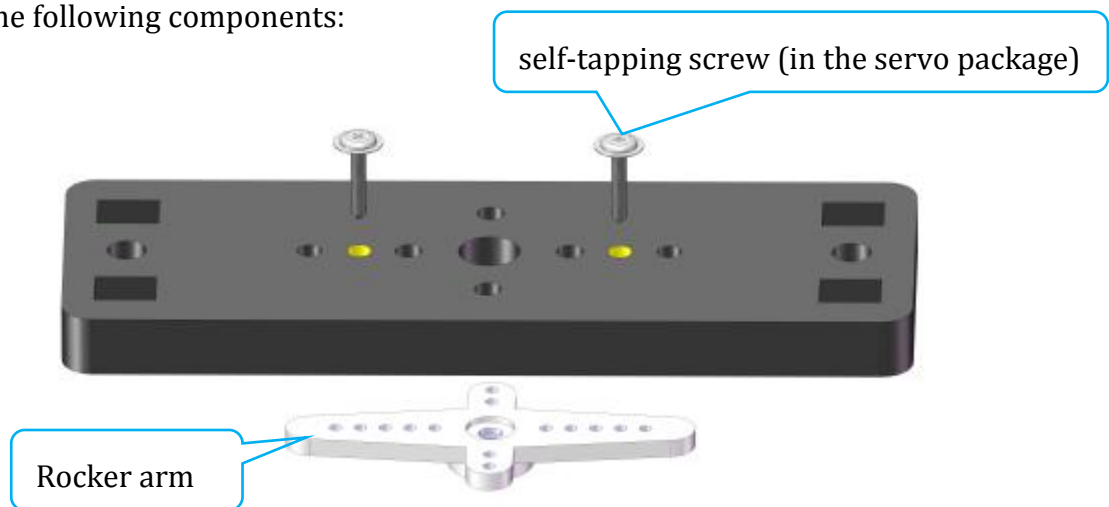
After assembly:



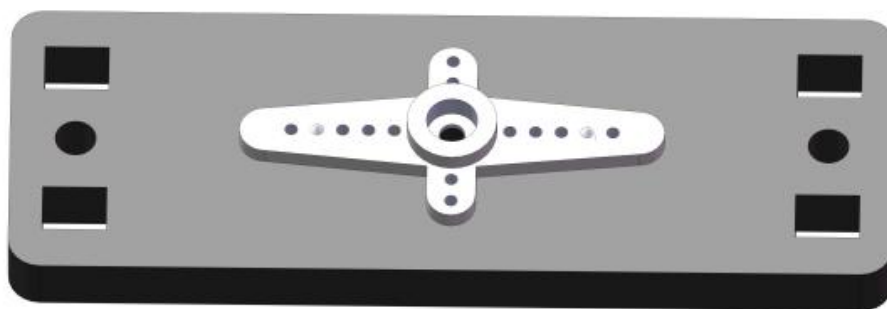
16. Use **two self-tapping screw (in the servo package)** and a **rocker arm** install to A12.



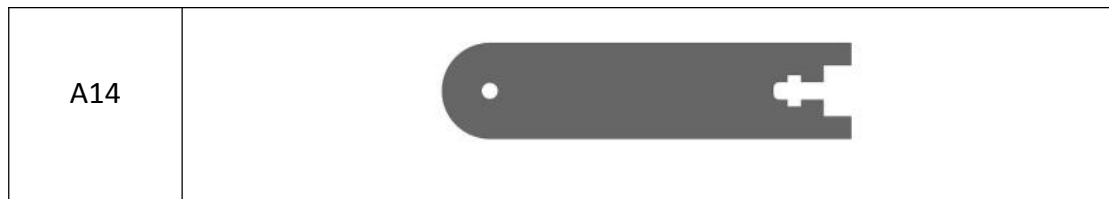
Assemble the following components:



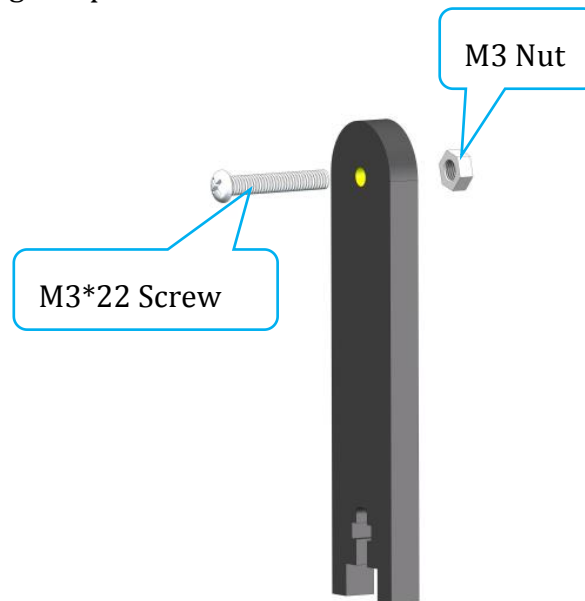
After assembly:



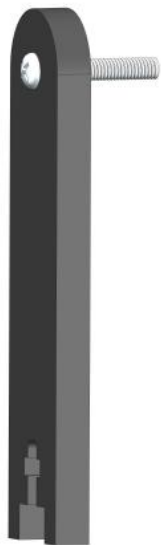
17. Use **one M3*22 screw** and **one M3 nut** to install the **A14**.



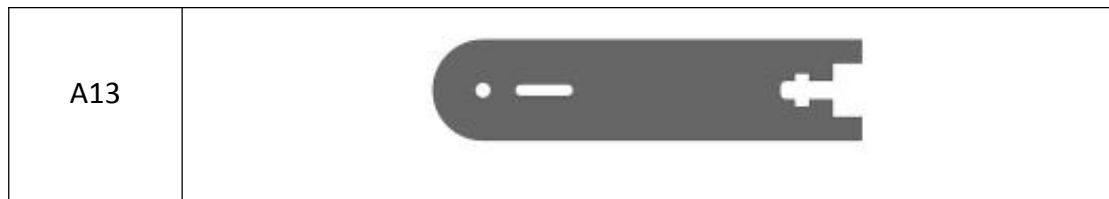
Assemble the following components:



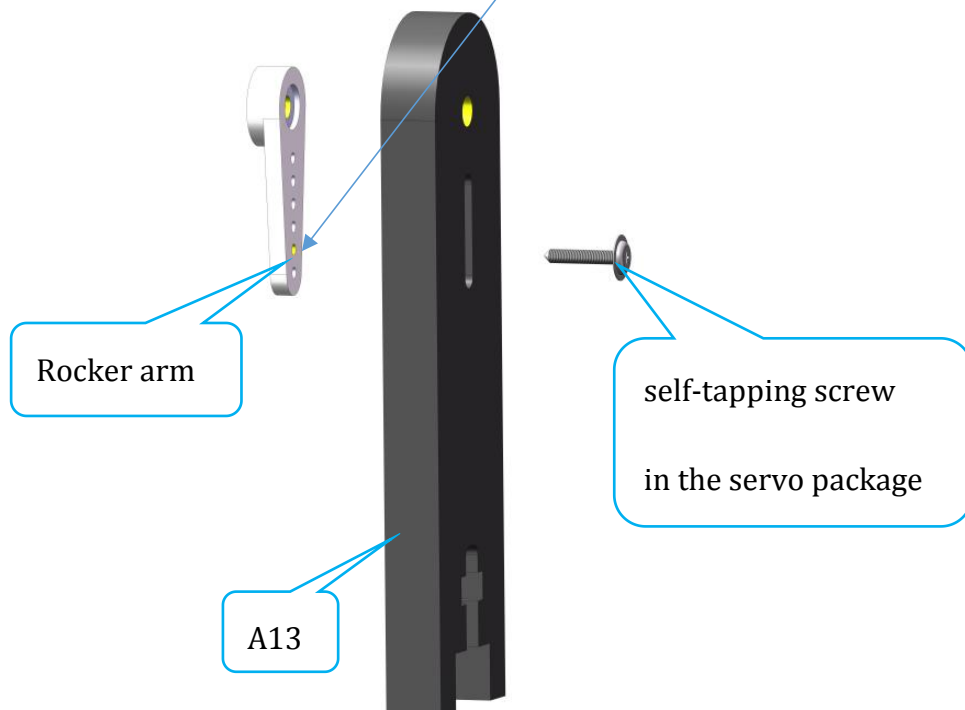
After assembly:



18. Use a **self-tapping screw (in the servo package)** to install the **rocker arm** on the **A13**.



Assemble the following components: (Install in the penultimate hole)

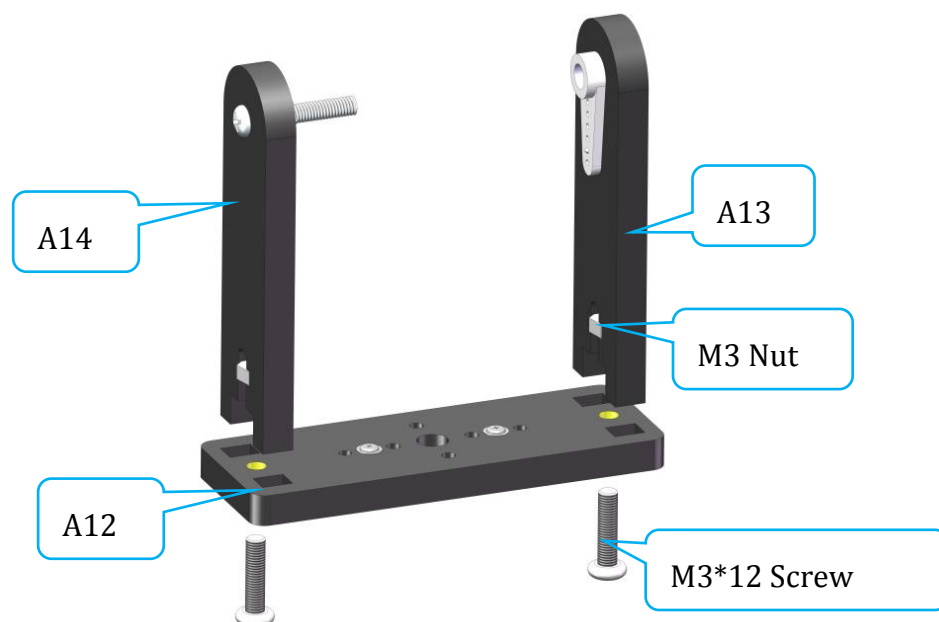


After assembly:



19. Use **two M3*12 screws** and **two M3 nuts** to fix the **A13** and **A14**.

Assemble the following components:

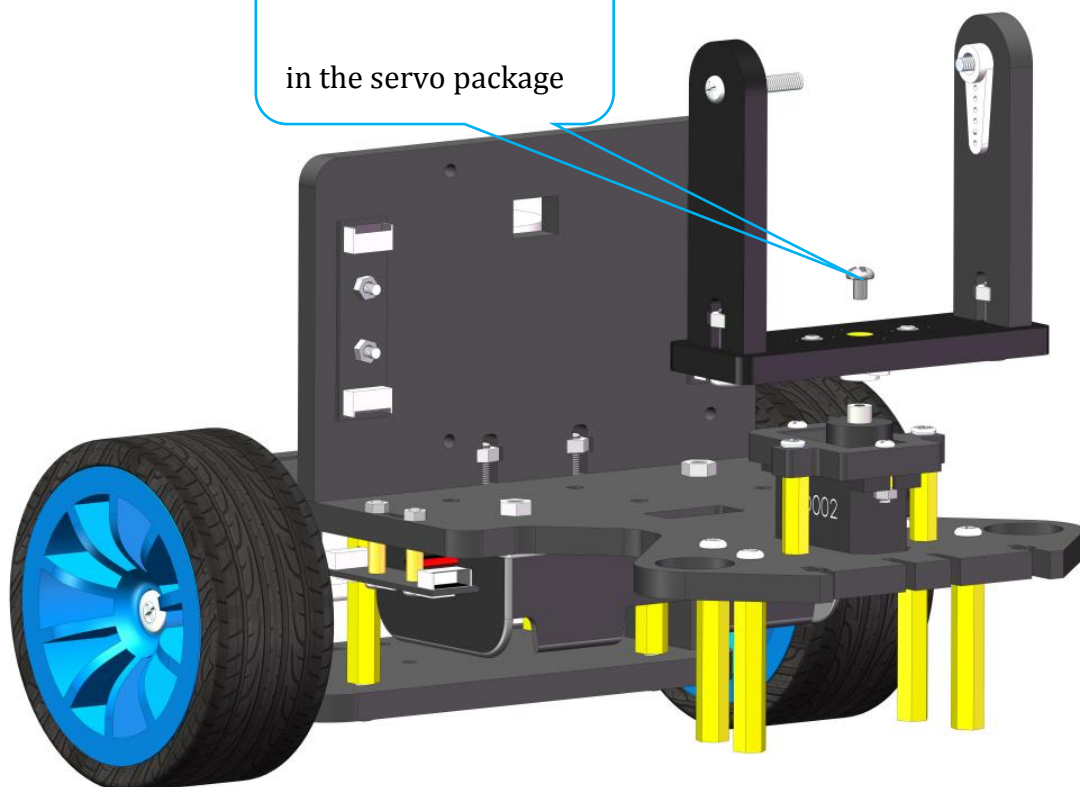


After assembly:

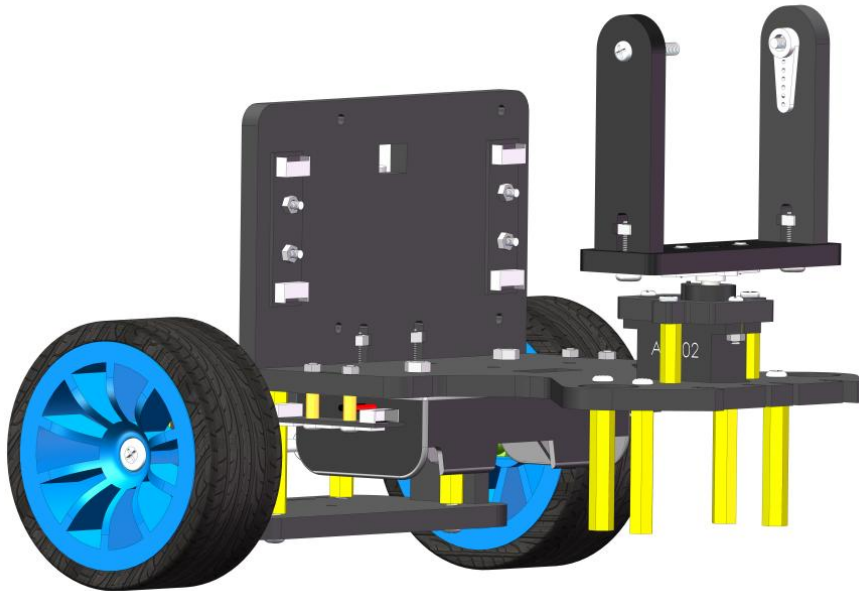


20. Use **one M2.5*4 screw (in the servo package)** to fix the **A12** on the servo.

Assemble the following components:

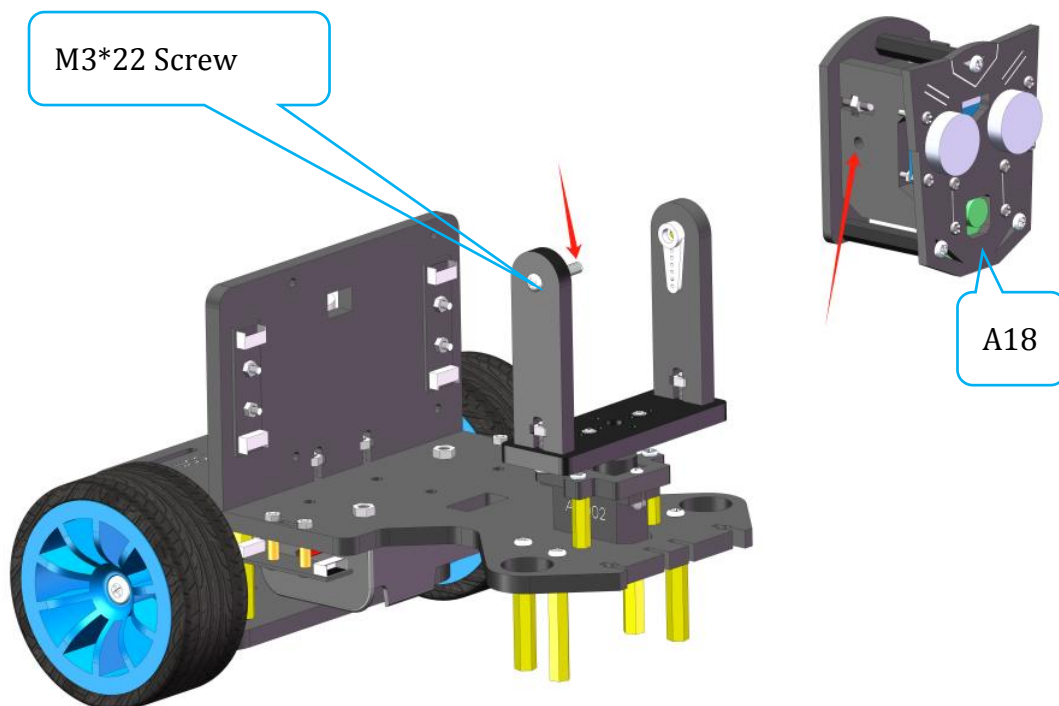


After assembly:

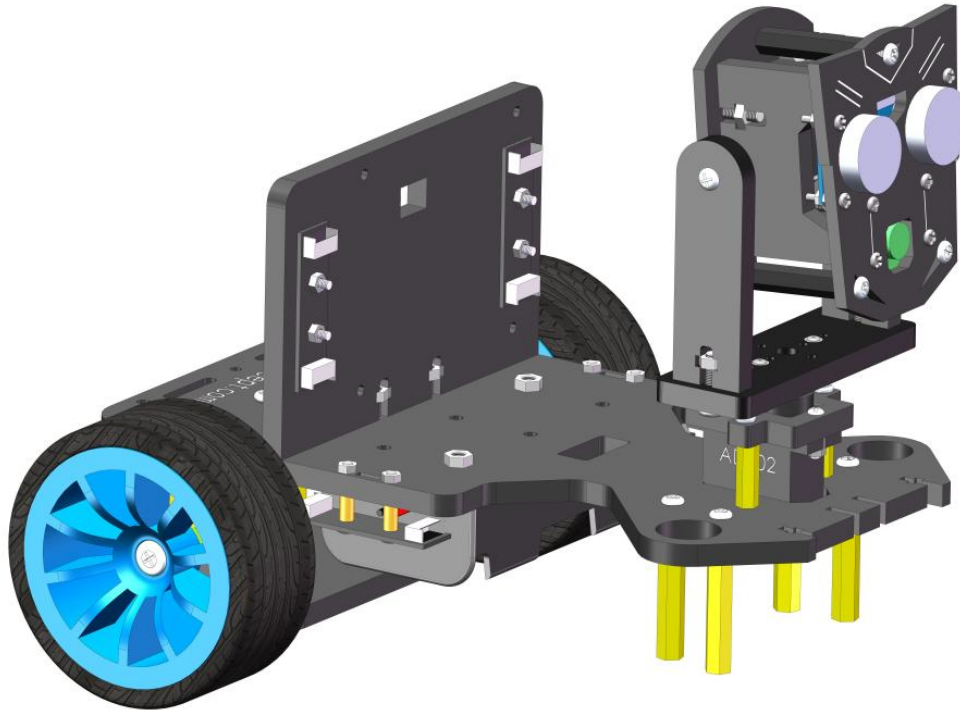


21. Use **one M2.5*10 screws** and **assembled A18** to fix on the **A13**.

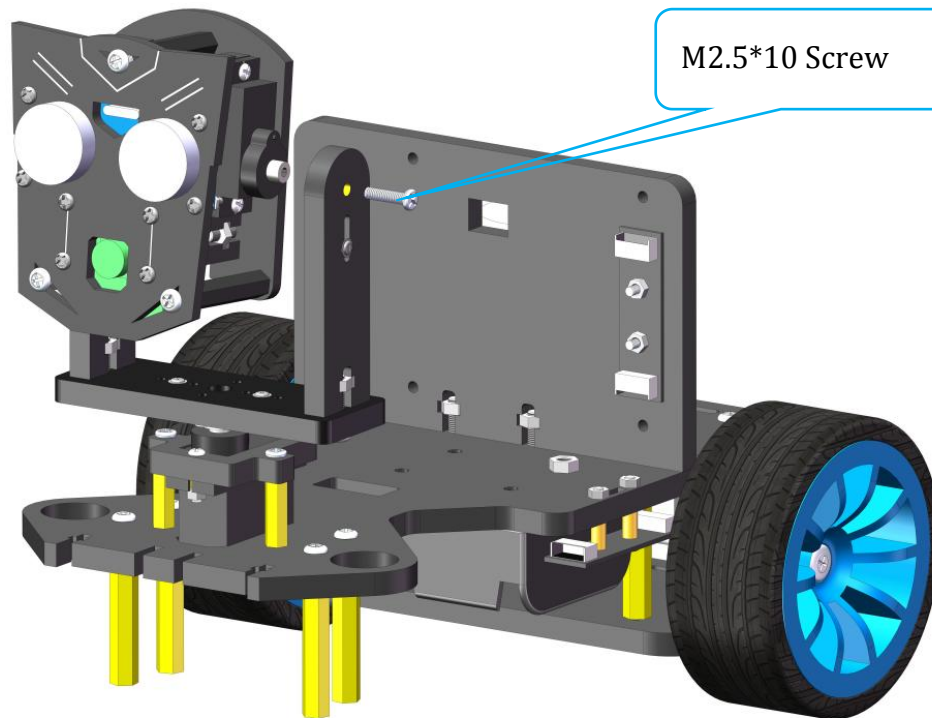
First, insert the M3*22 screw on A14 into the hole on A16.



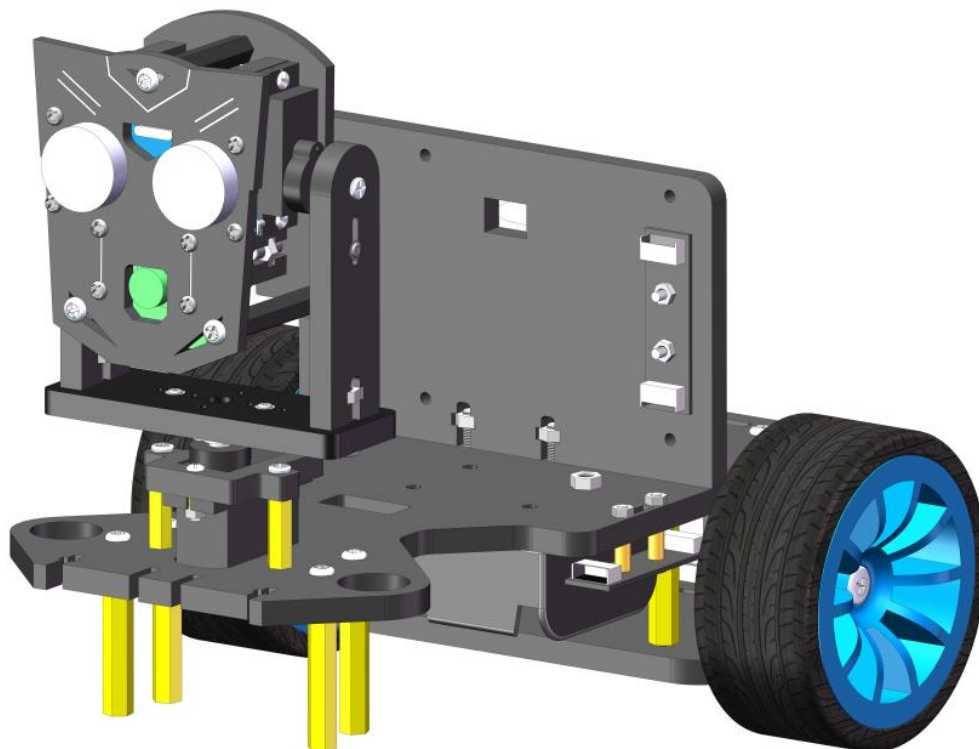
After assembly:



Then use **M2.5*10 screws** to fix the servo to the rocker arm of the A13.

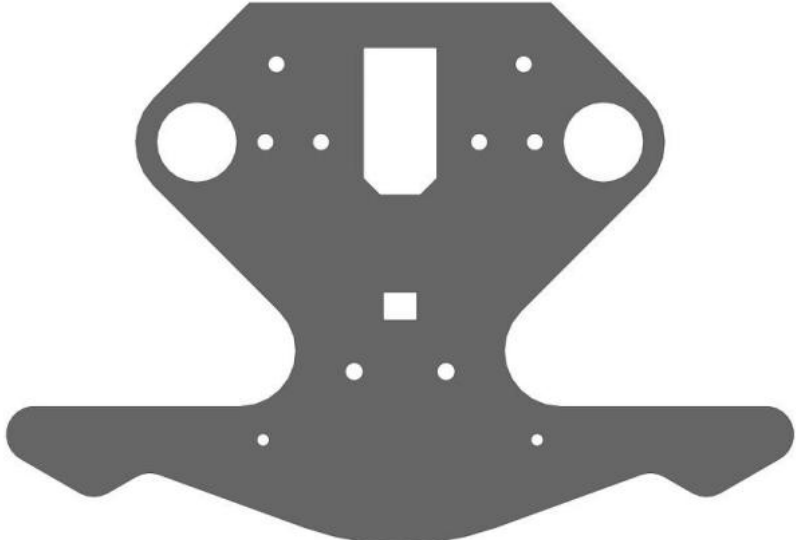
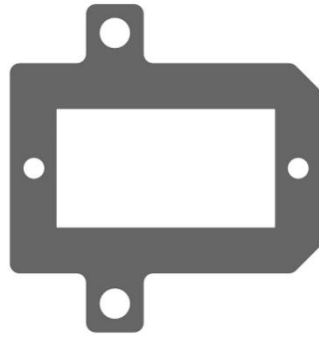


After assembly:

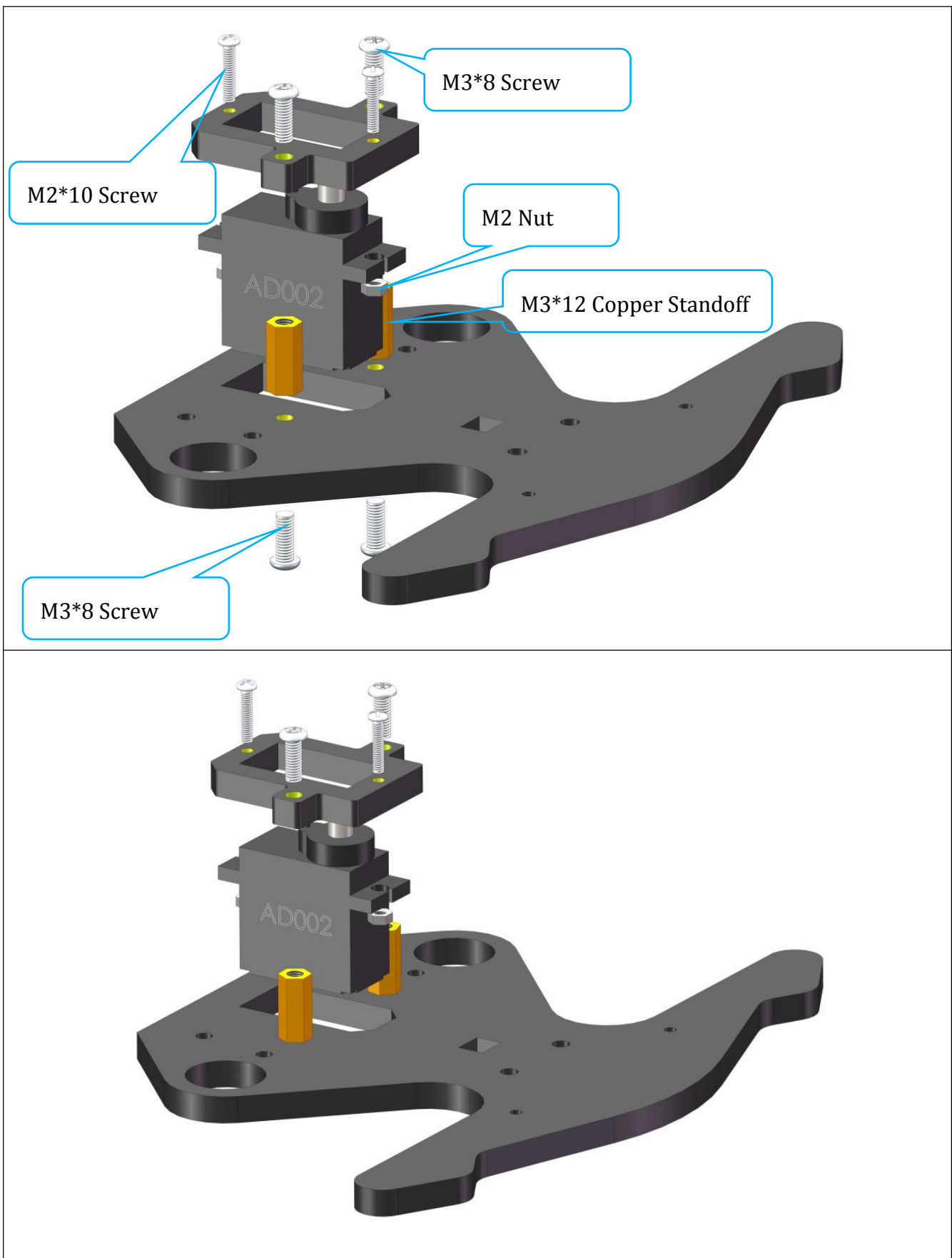


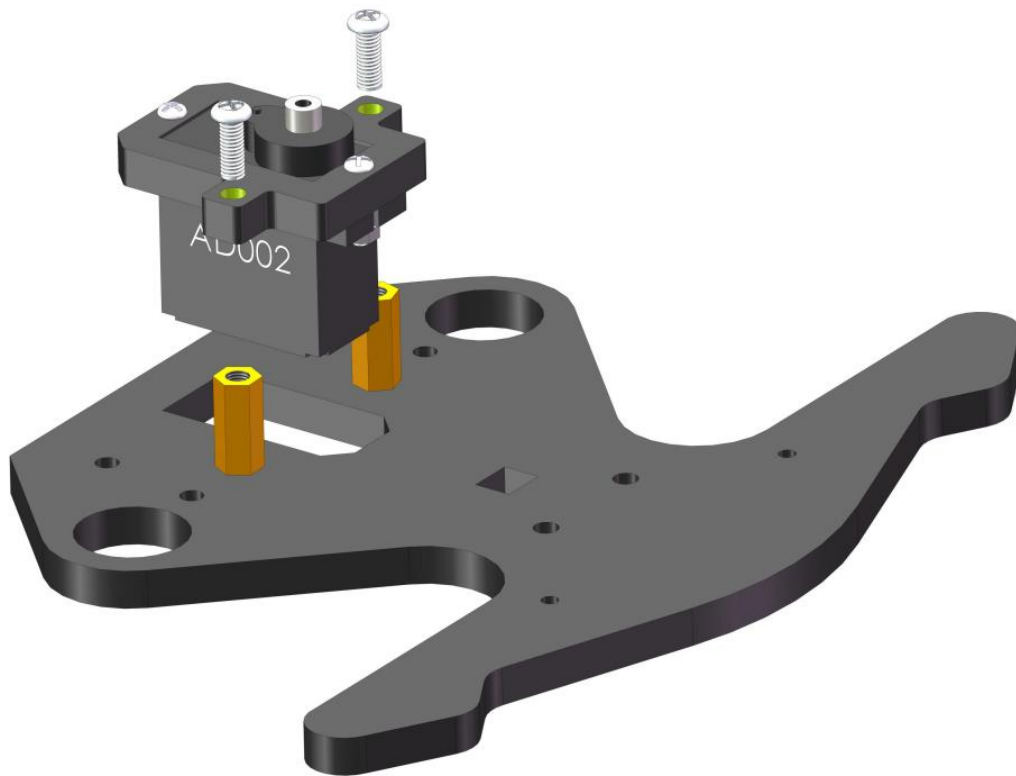
Install the front half.

22. Install the **AD002 servo** and **A09** with **four M3*8 screws**, **two M2*10 screws**, **two M2 nuts**, and **two M3*12 Copper Standoff**. (The servo rotation angle needs to be adjusted to the middle position before the servo is installed)

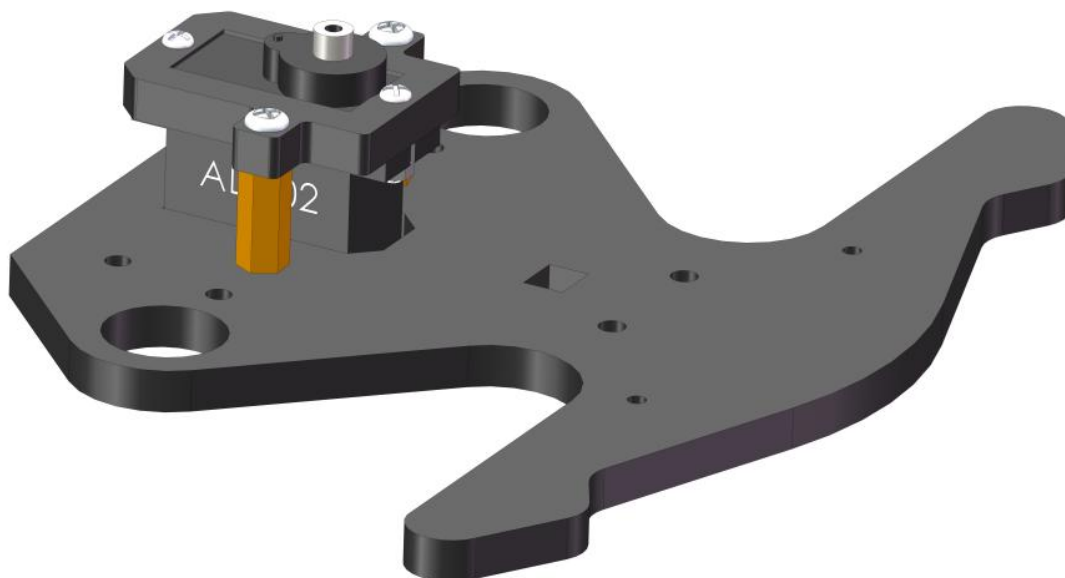
A03	
A09	

Assemble the following components:



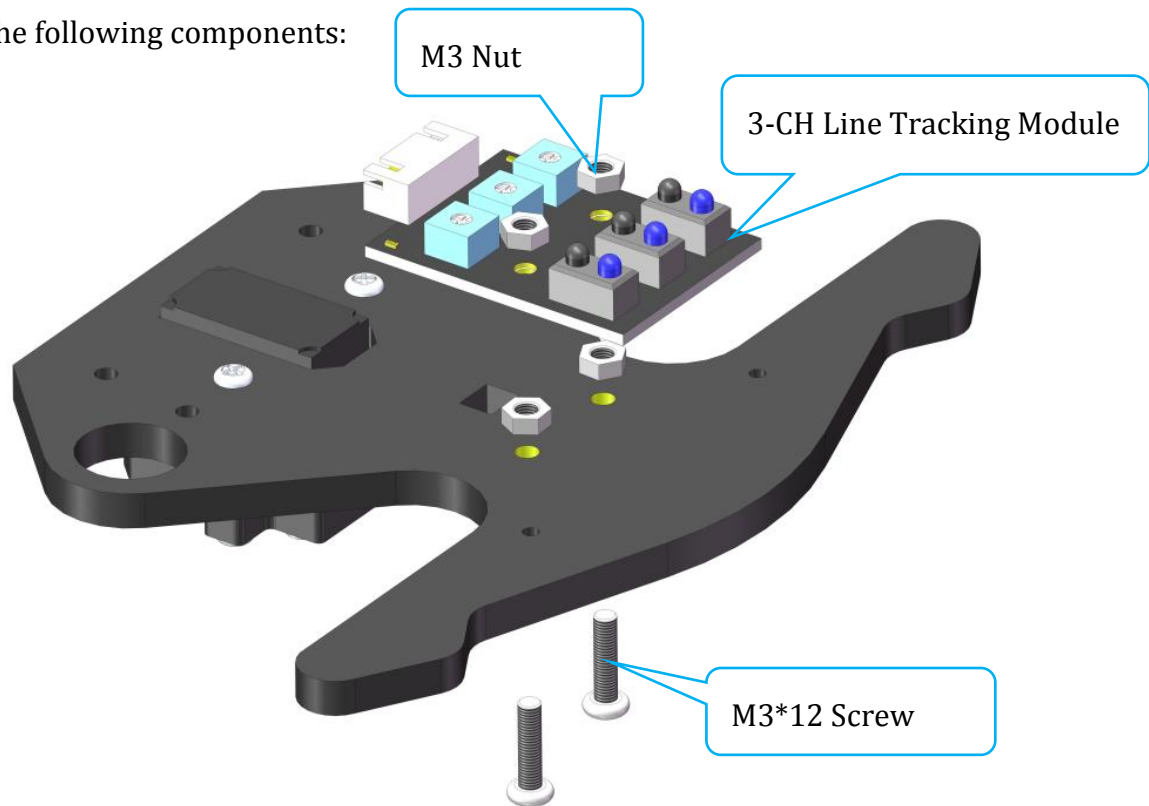


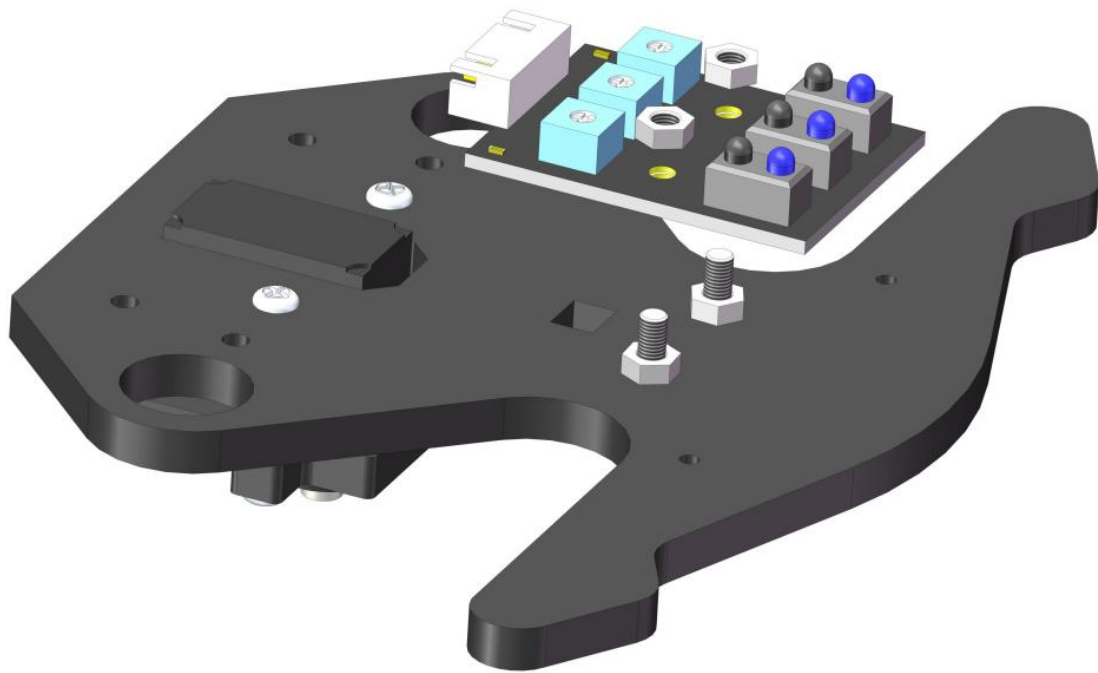
Effect diagram after assembling:



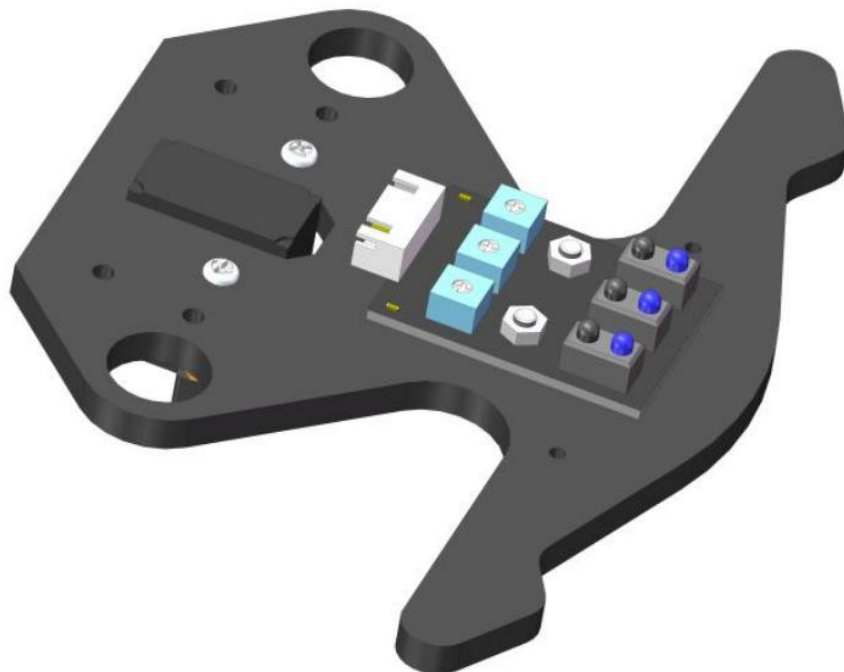
23. Use **two M3*12 screws** and **four M3 nuts** install **3-CH Line Tracking module**.

Assemble the following components:



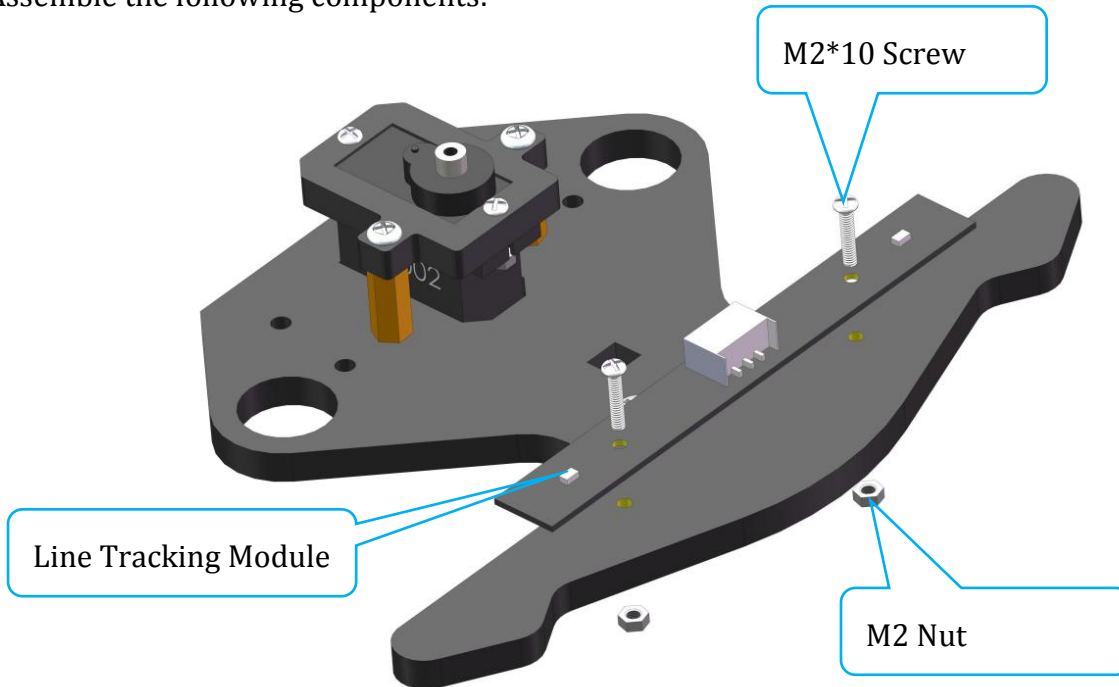


After assembly:

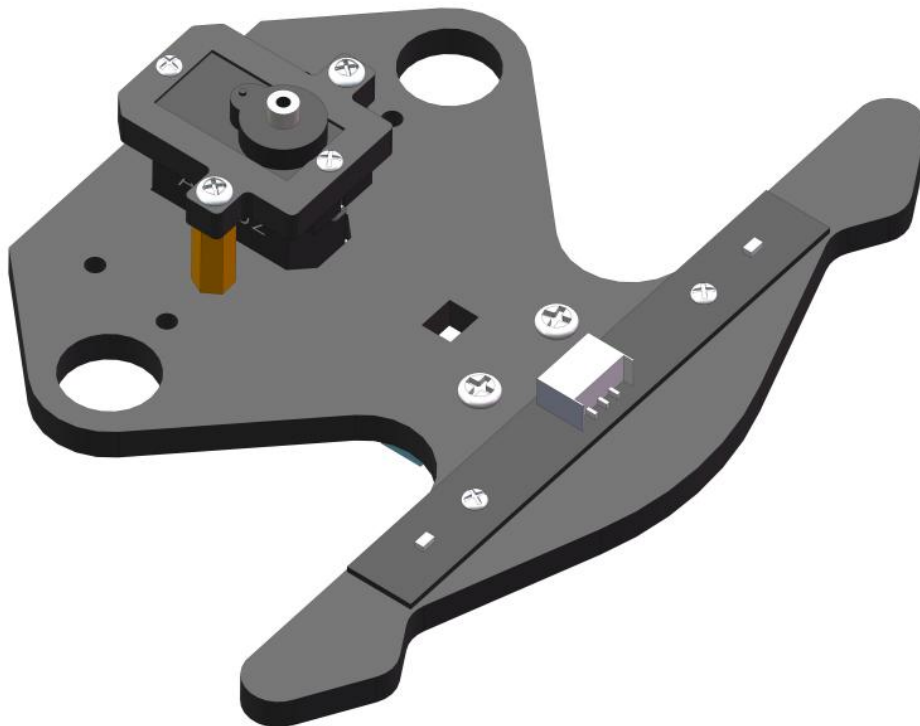


24. Use **two M2*10 screws** and **two M2 nuts** install **Light Tracking Module**.

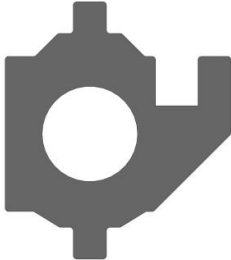

Assemble the following components:



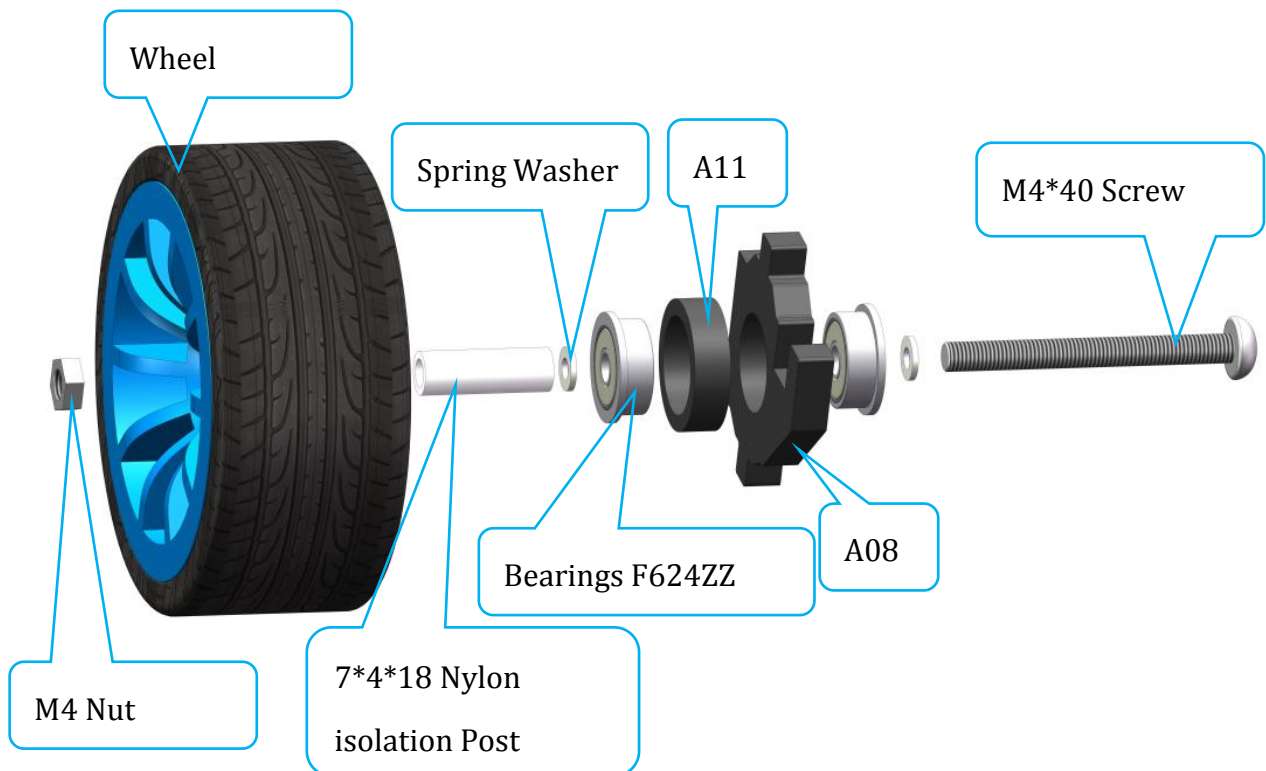
After assembly:



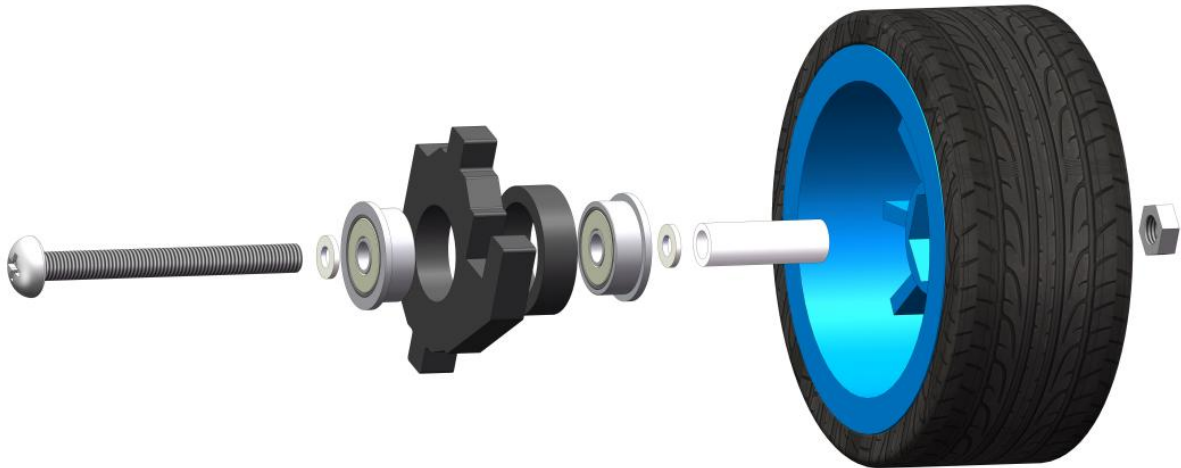
25. Use **two M4*40 Screws** and **two M4 Nuts** to install **four gaskets**, **four bearings F624ZZ**, **two A08**, **two A11**, **two 7*4*18 nylon isolation Posts** and **two wheels**. (the A08 must be installed in the right direction).

A08	
A11	

Assemble the following components:

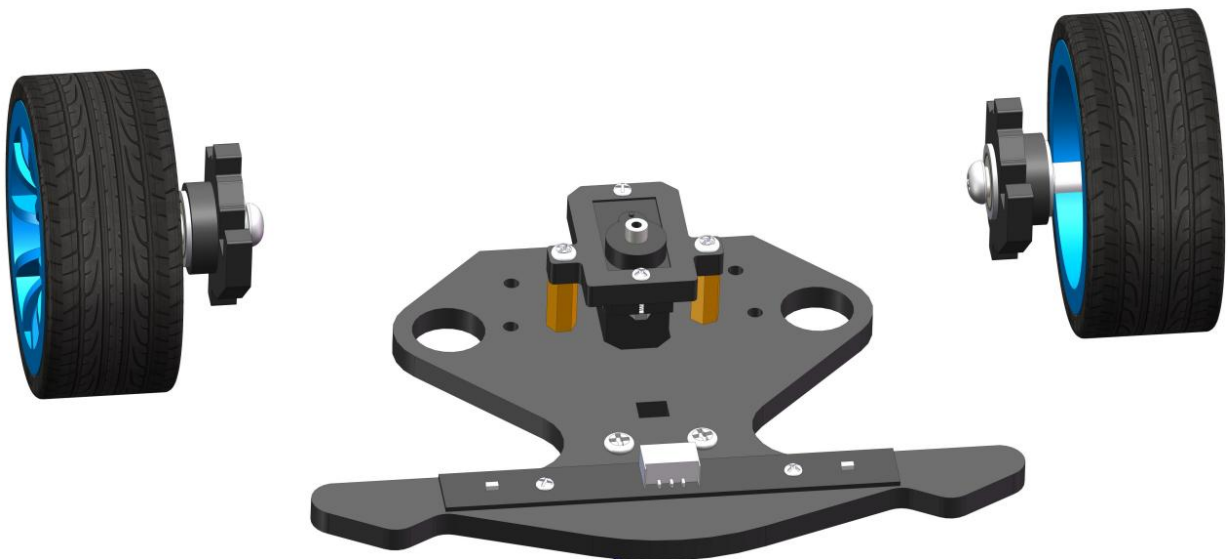


Install another wheel. (It's assembled in a different direction than the first wheel that was just installed)



A cross socket wrench can be used to secure the nut when tightening.

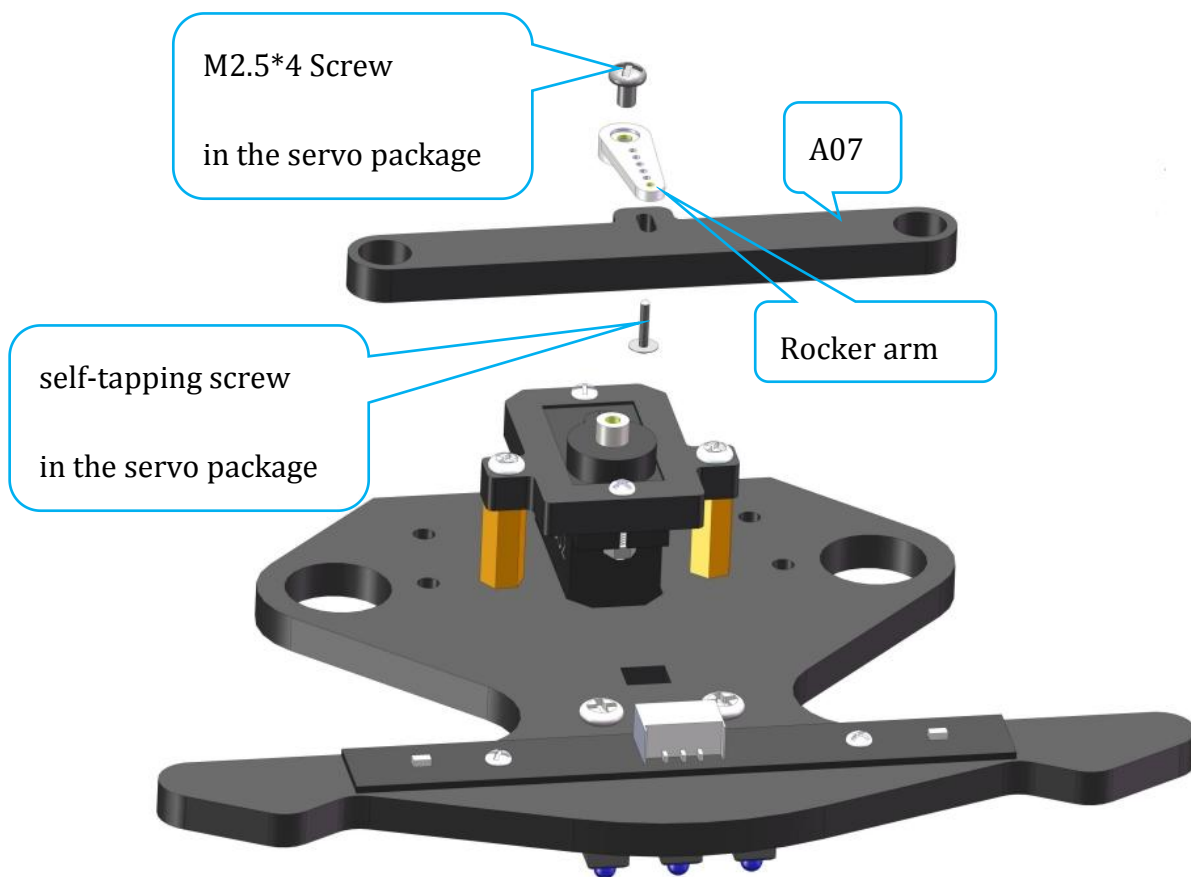
After assembly:



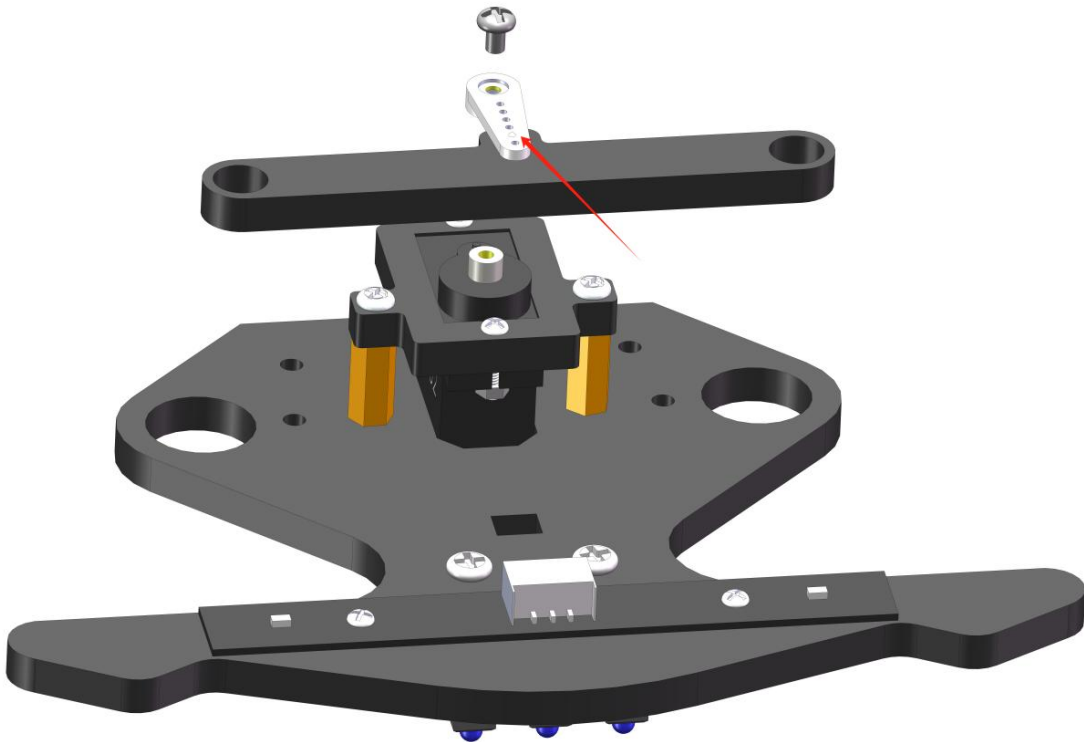
26. Use **one M2.5*4 screw (in the servo package)** and **one self-tapping screw** in the servo package to install **one A07**, **one rocker arm** and **four bearings F687ZZ**.



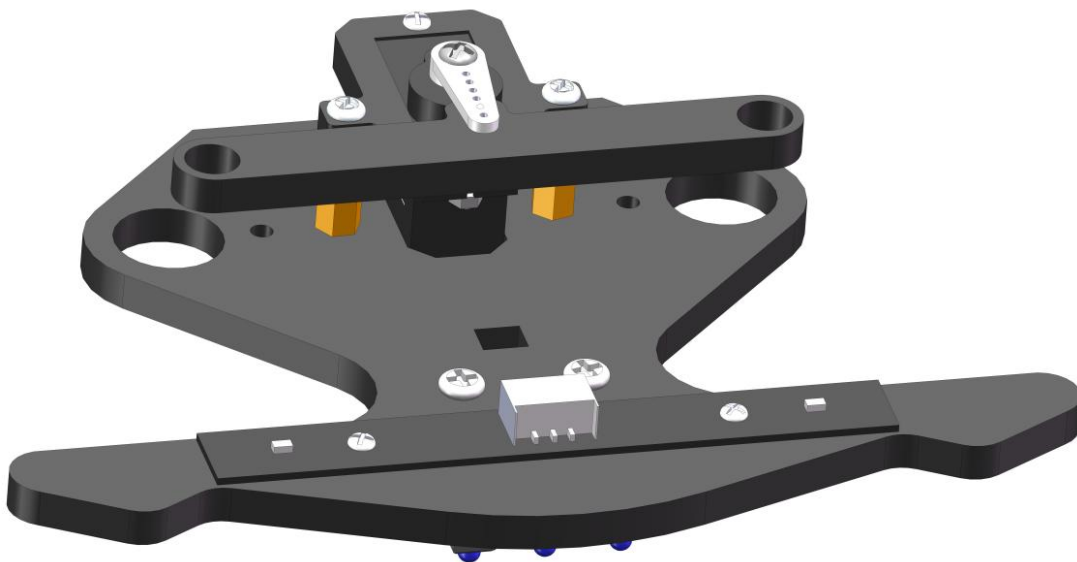
Assemble the following components: (The rocker arm self-tapping screw is installed in the penultimate hole)

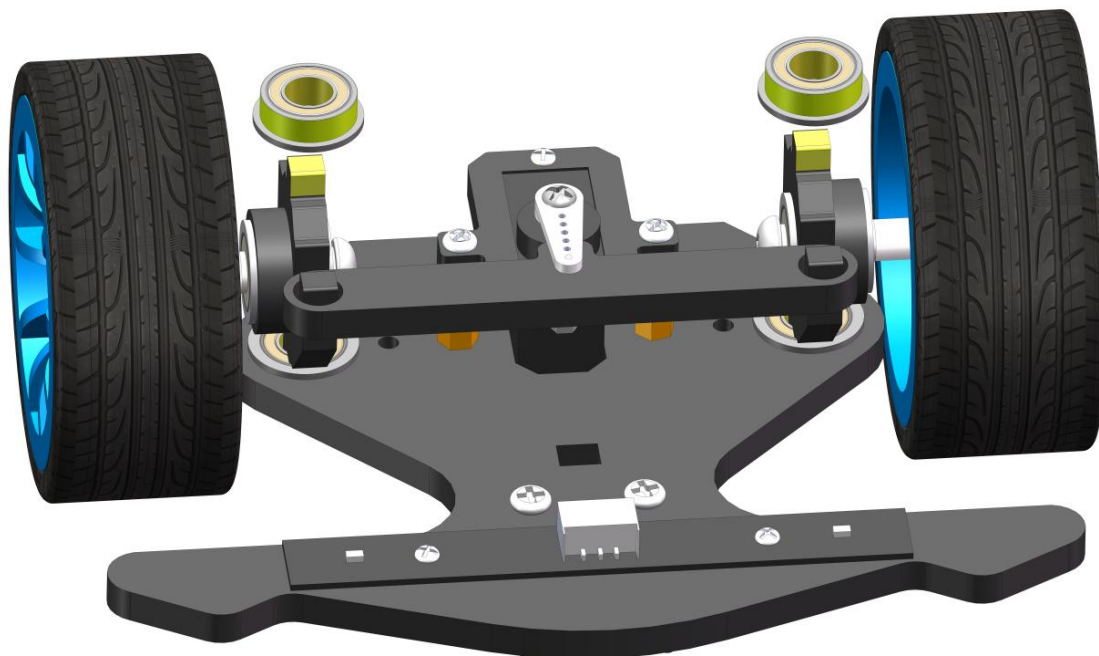
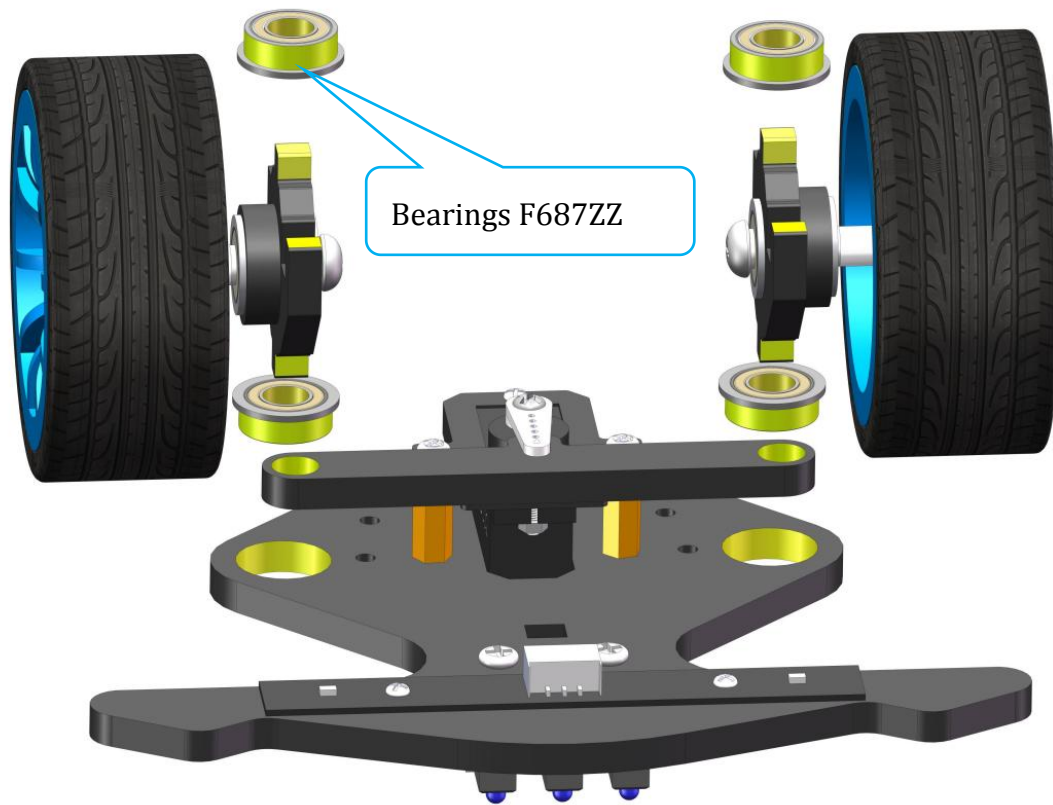


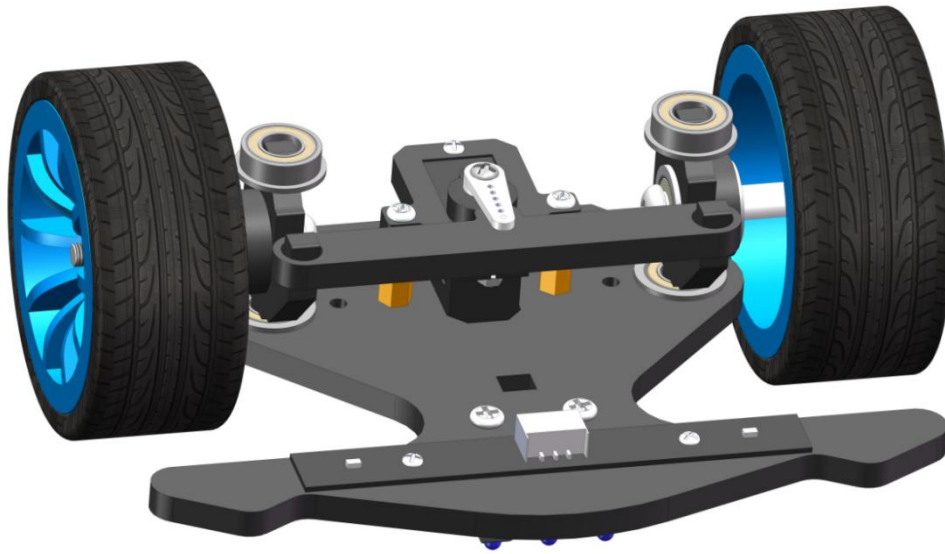
Install the rocker arm and A07 with a self-tapping screw.



Fix the A07 and install the rocker arm on the servo. Use an M2.5*4 Screw to fix the rocker arm.

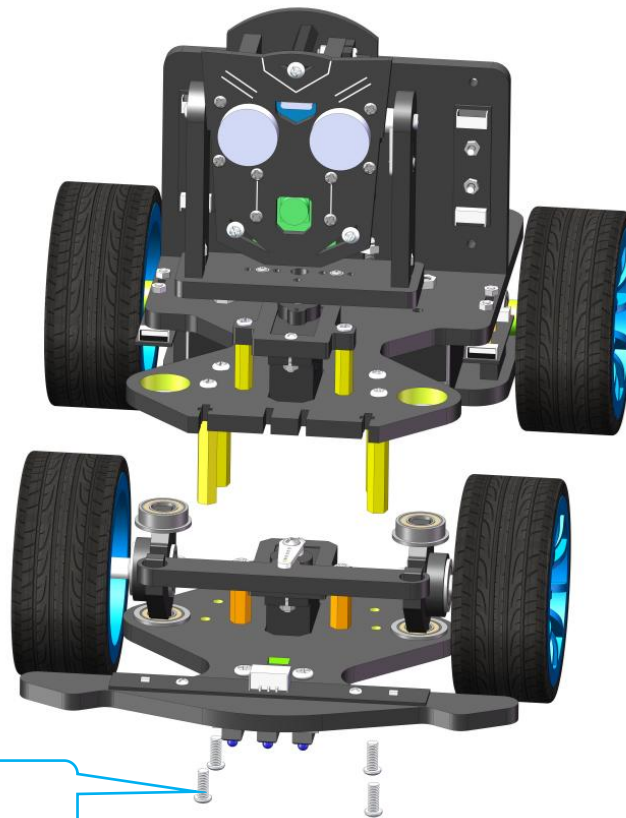






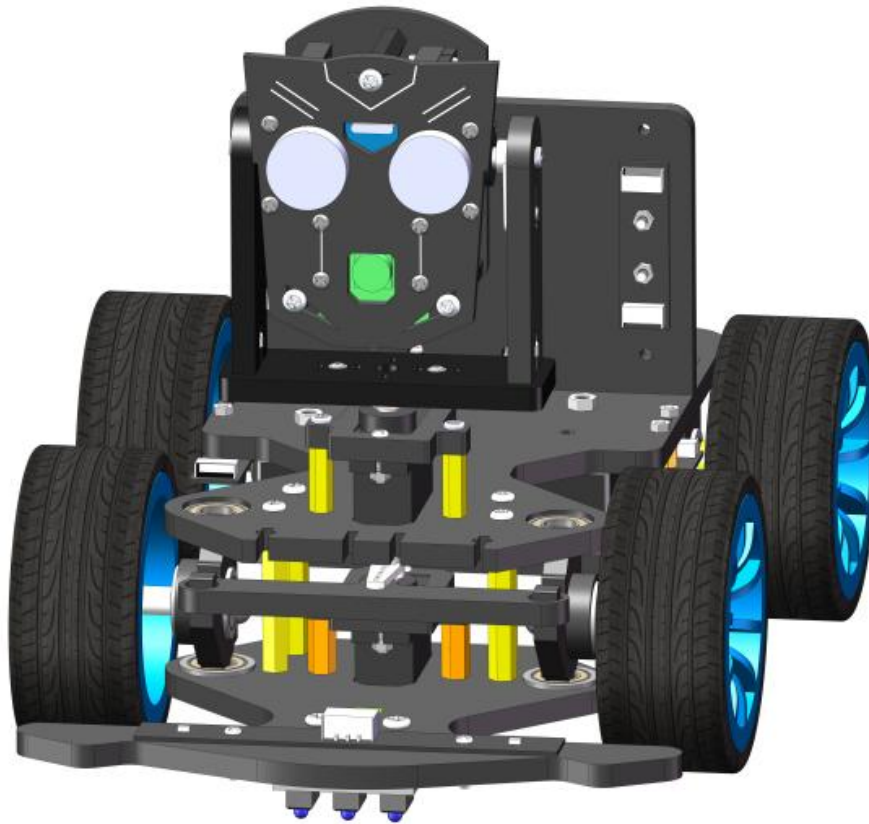
27. Assembled front wheel. Fixed with **four M3*8 screws**.

Assemble the following components:

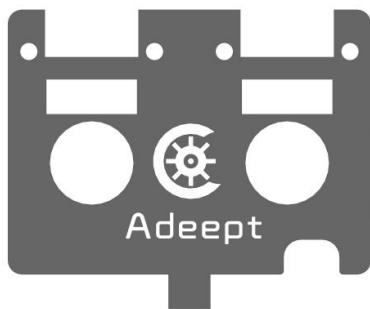


M3*8 Screw

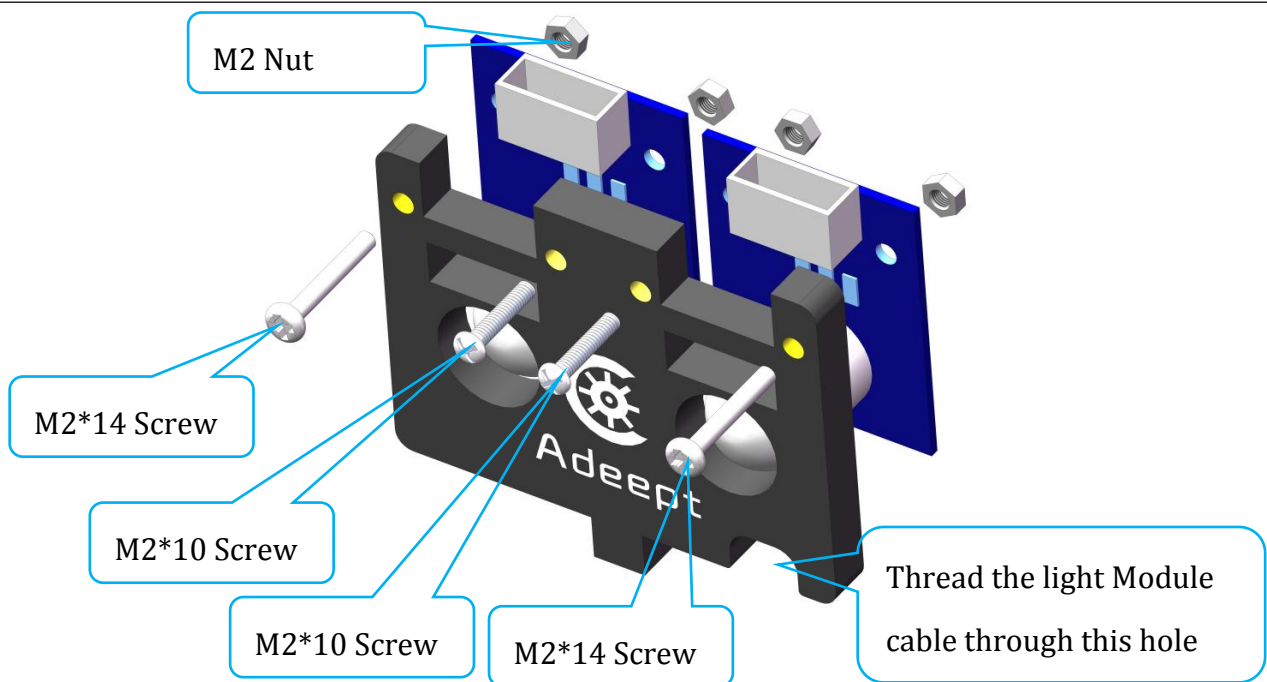
After assembly:



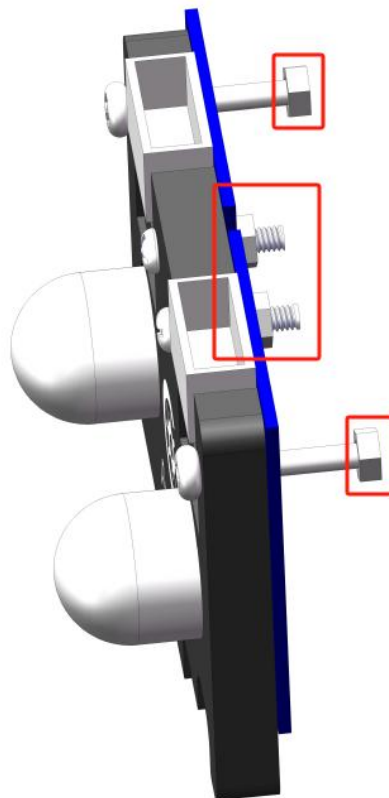
28. Use **two M2*14 screws** and **two M2*10 screws** and **four M2 nuts** to install the **two RGB LED modules** and **A05**.

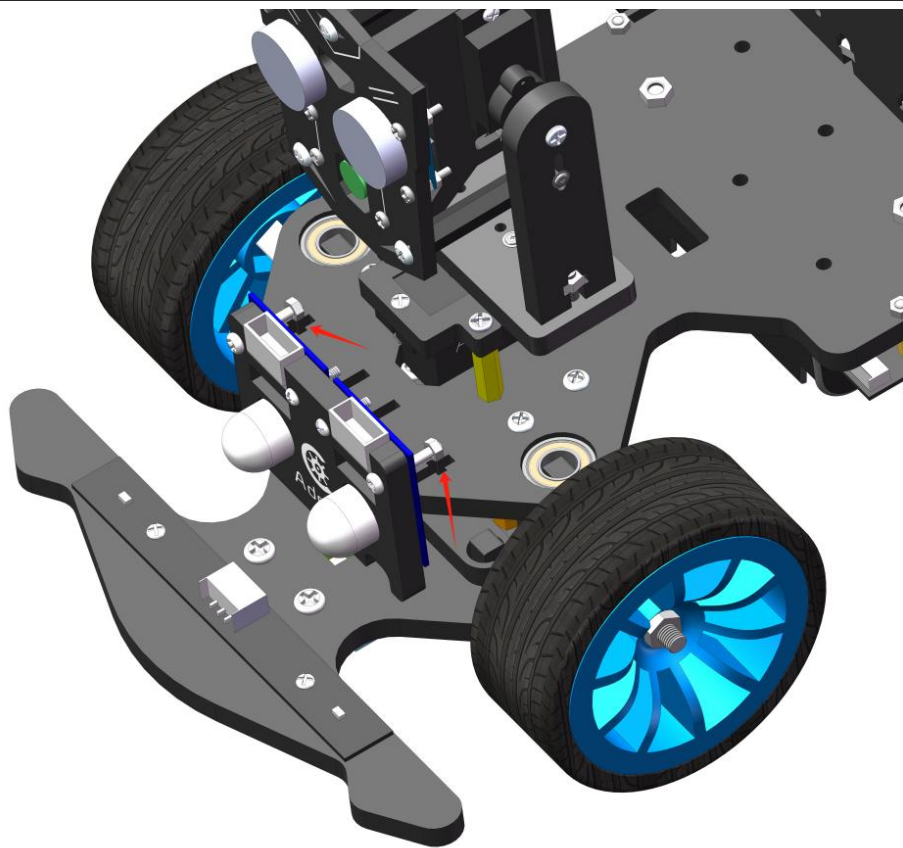
A05	
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Assemble the following components:

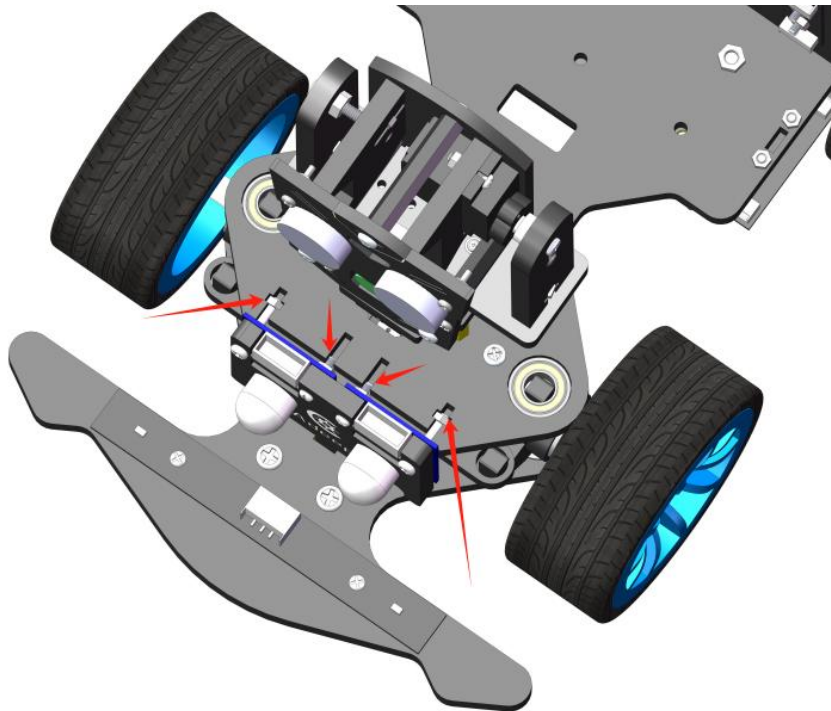


First, tighten the two nuts in the middle, then screw on the two nuts on both sides, and then put them into the corresponding slots, and then tighten them.





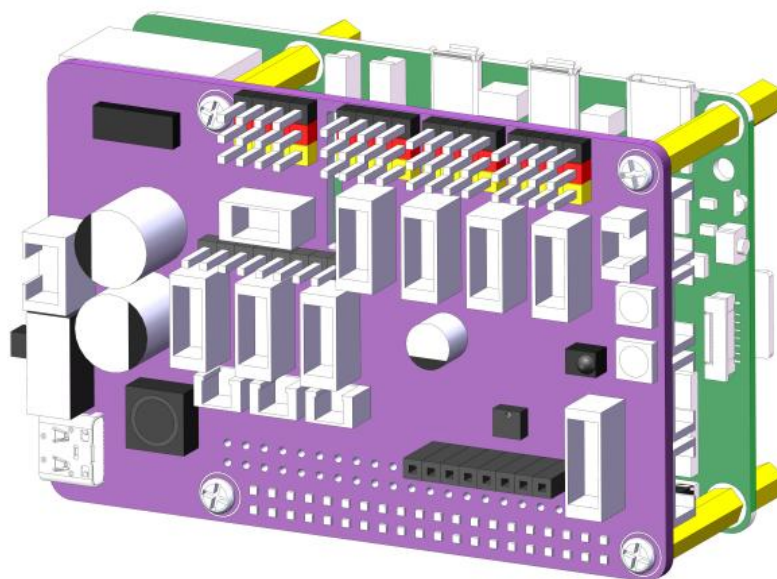
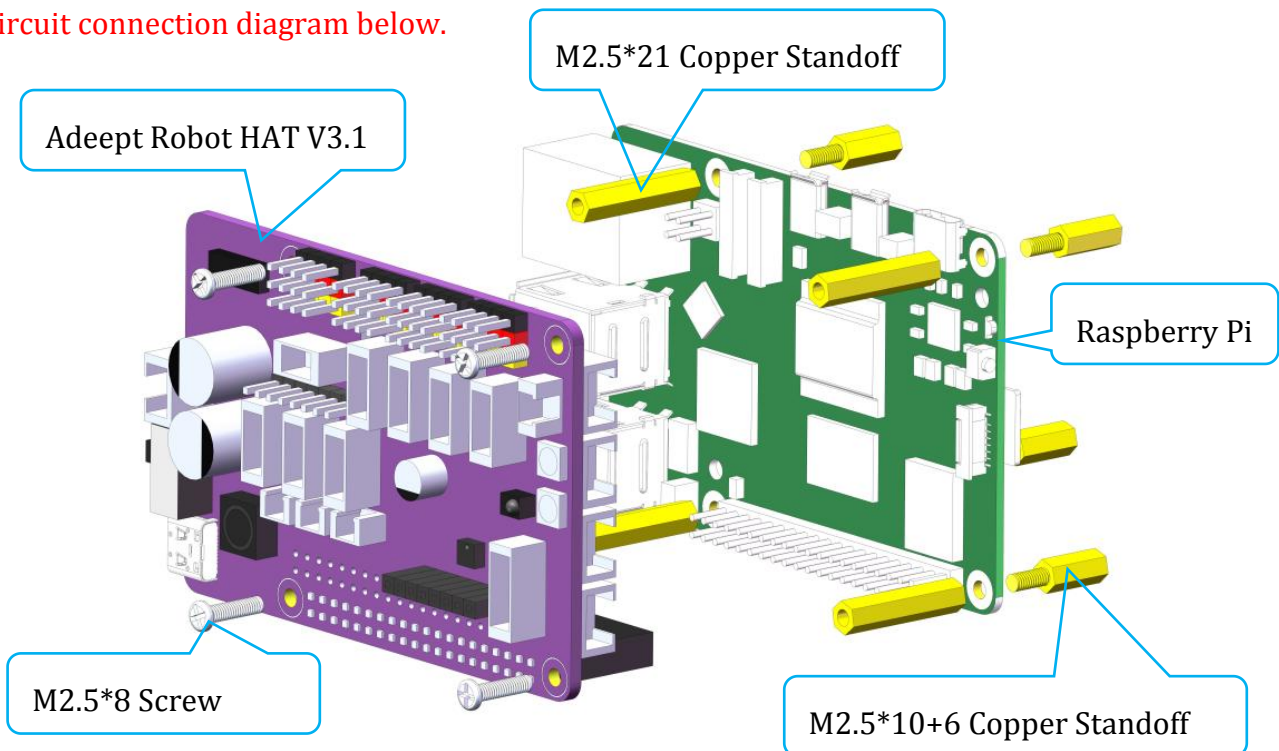
After assembly:



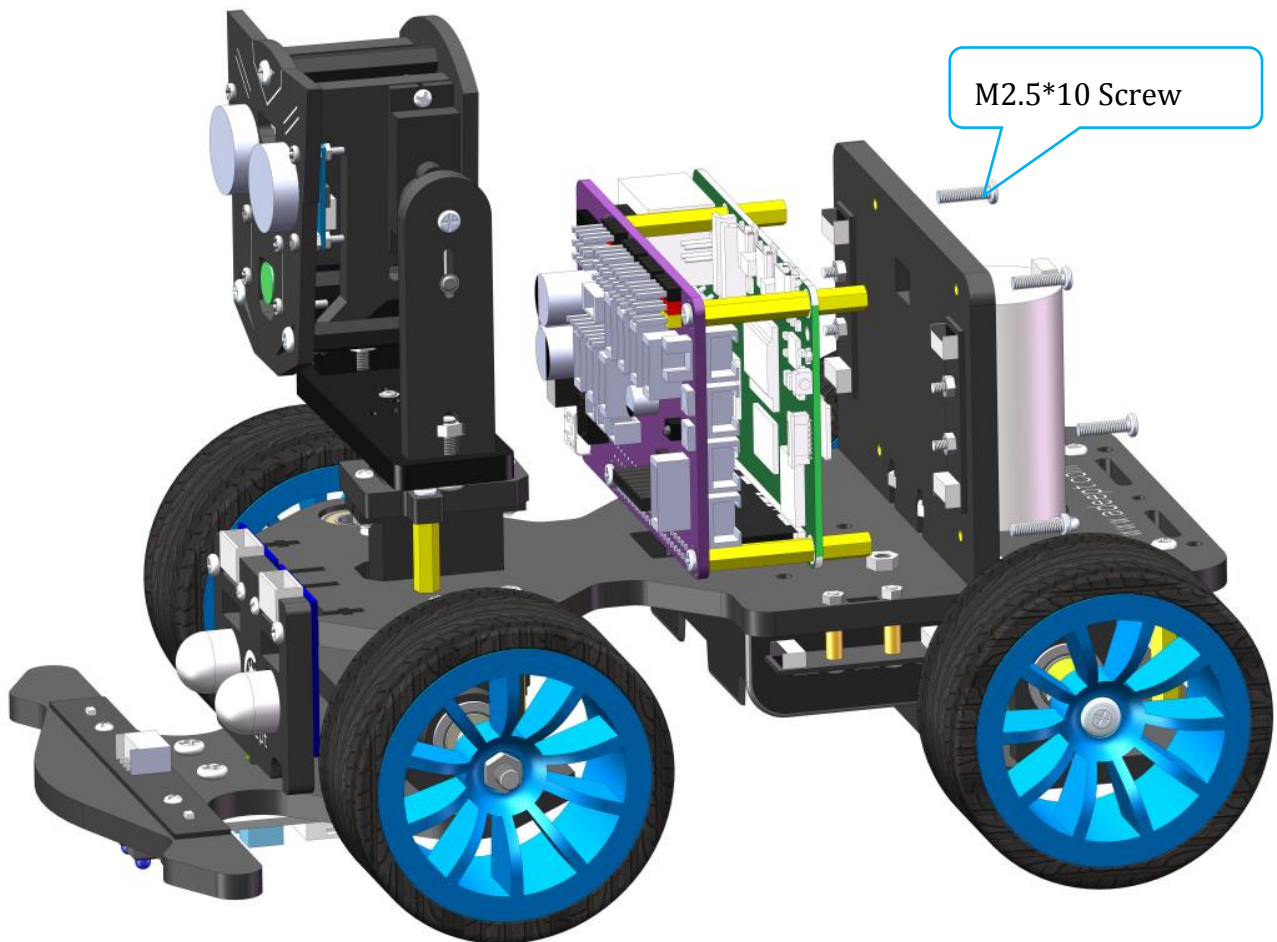
29. Use **four M2.5*21 Copper Standoff**, **four M2.5*10+6 Copper Standoff**, **four M2.5*8 screws** and **four M2.5*10 screws** to install the raspberry pi and Adeept Robot HAT V3.1.

Raspberry Pi is not included in the kit.

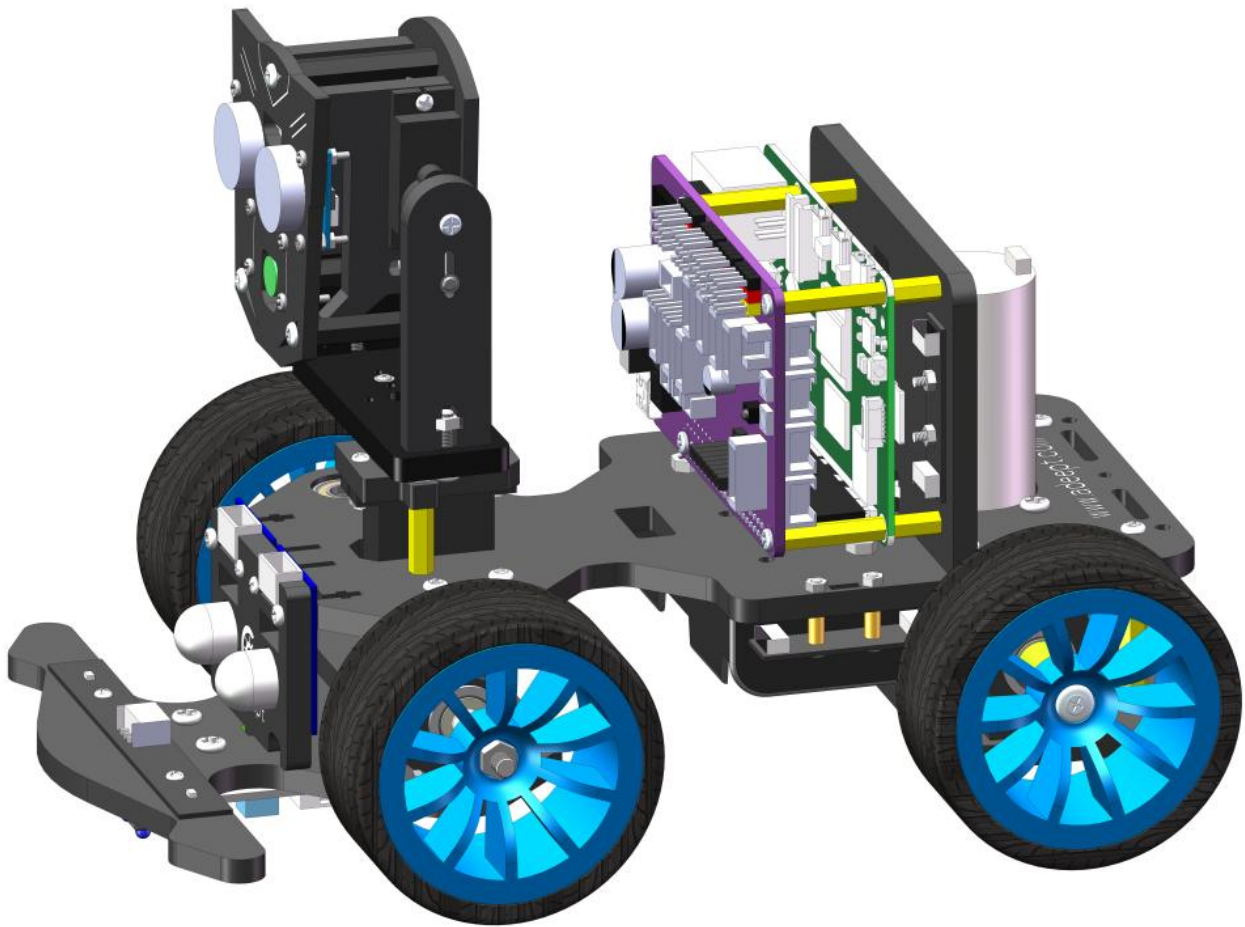
Note: Before installing the Raspberry Pi, please connect all circuits correctly according to the circuit connection diagram below.



Before installing the raspberry pi on the acrylic board, connect the circuit to the Adeept Robot HAT V3.1 board according to the circuit diagram.



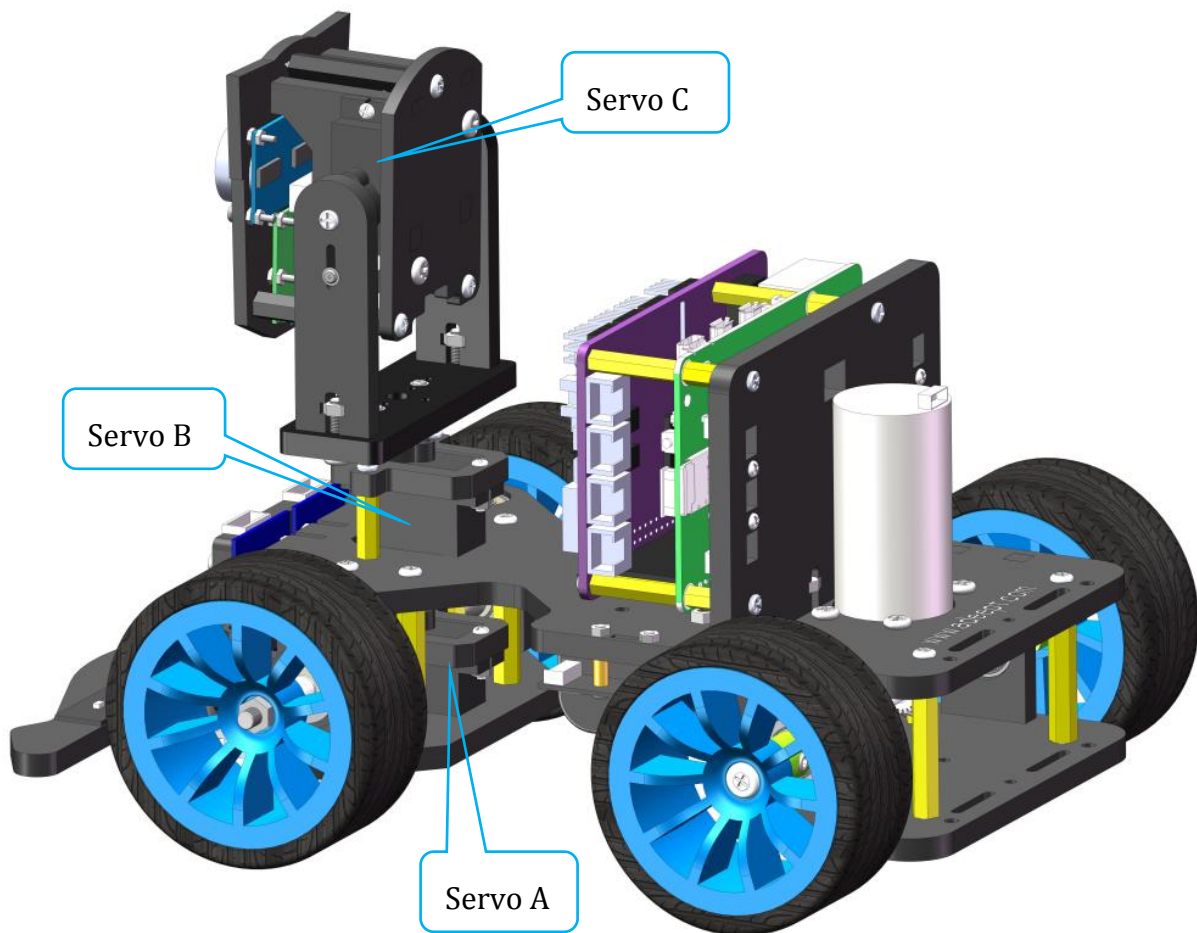
Install the raspberry pi on the acrylic board after connecting the circuit.



When the assembly is complete and the car has been tested and it works, try wrapping the cable with a spool to make it neater.

2.2 Circuit Wiring Diagram

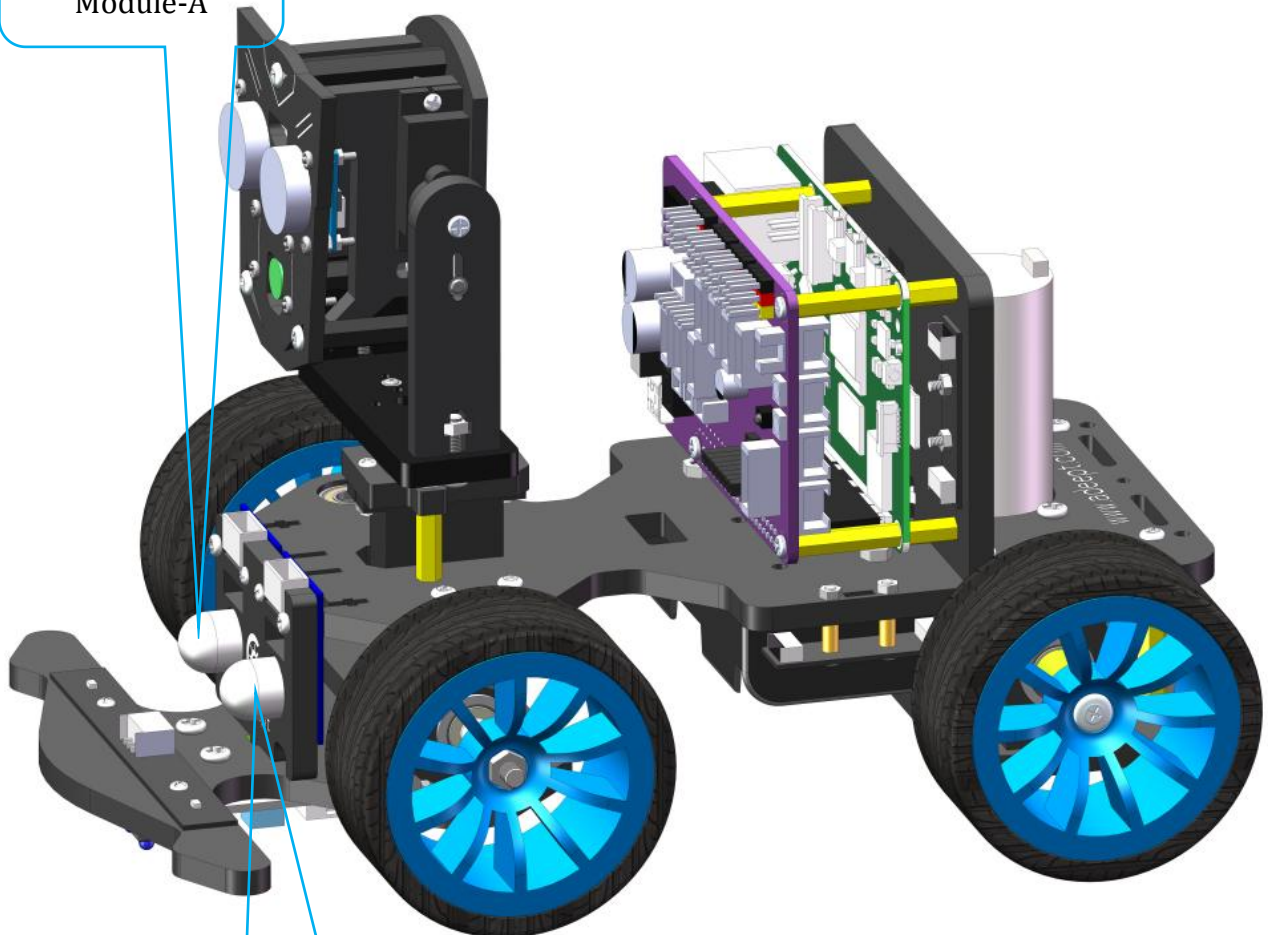
The number of three servos.



The RGB LED module number.

Adept RGB LED

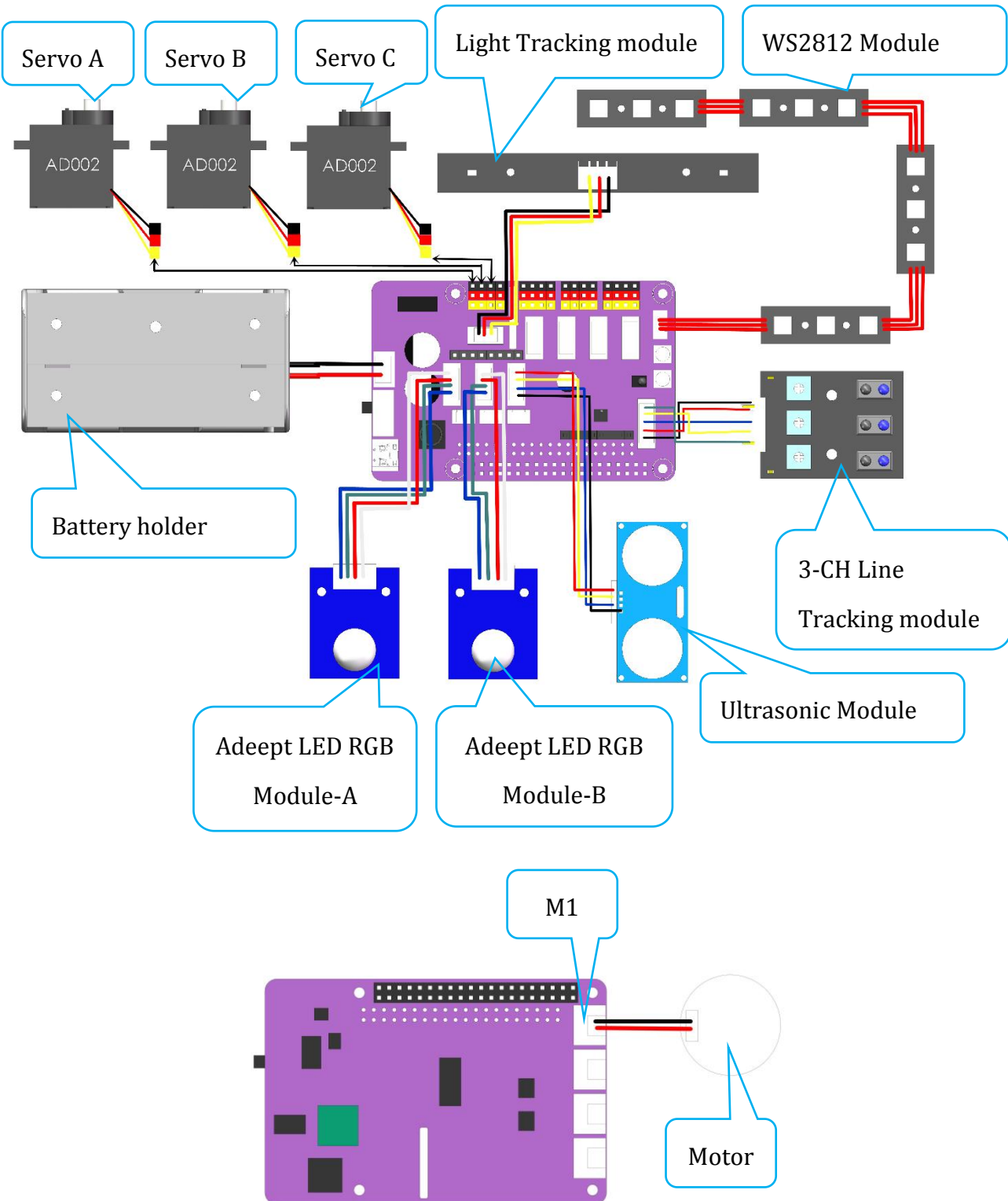
Module-A



Adept RGB LED

Module-B

Connect the components as shown in the figure. The cables must be matched with the ports.



Install and Remove Batteries

Choose an 18650 battery that supports a maximum output current of at least 4A or choose an 18650 battery with "high rate discharge".

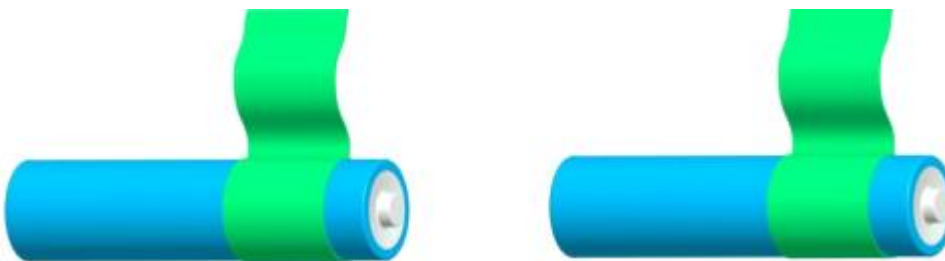
Take out 2 ribbons and 2 batteries.



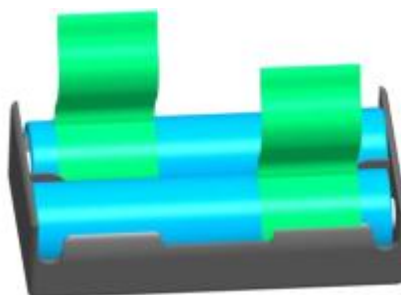
Roll one end of the ribbon to let through a battery and fix.



Insert the batteries into the rings-ribbon closer to the anode.



Install the batteries into the holder based on the pole.



To remove the batteries, just pull the ribbon and take them out.

