

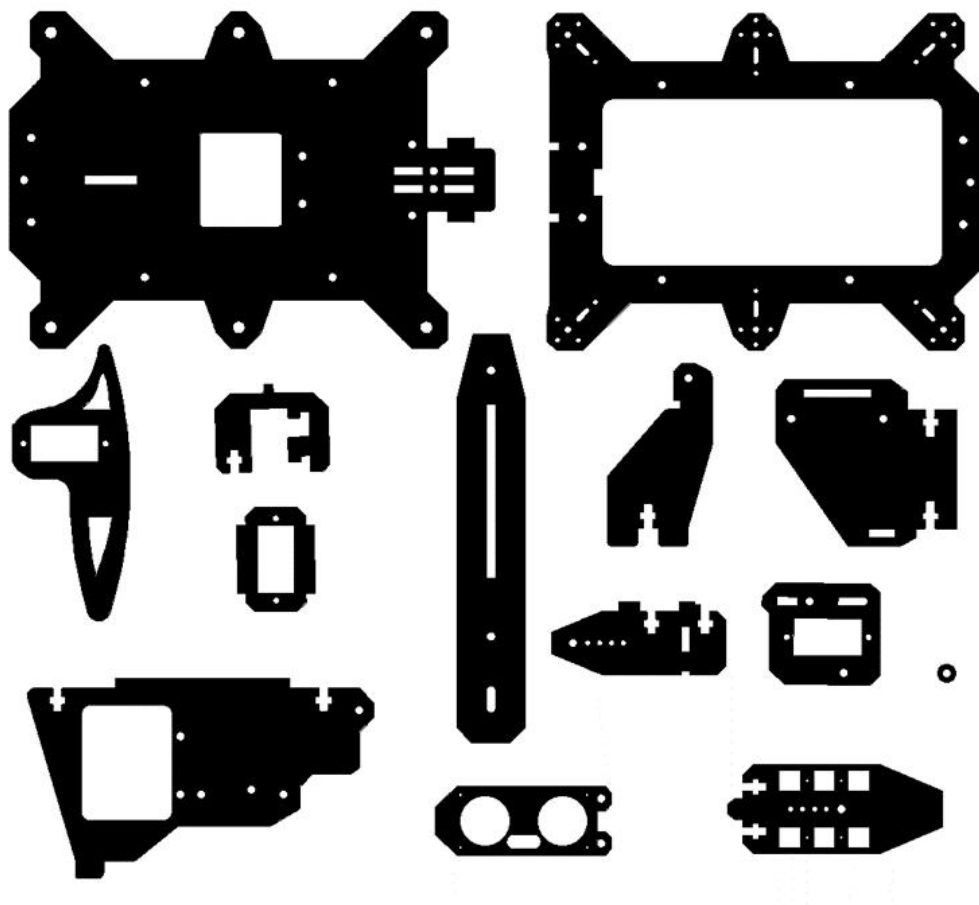
Lesson 10 Hexapod Spider Robot Assembly Tutorial

10.1 component List
















10.1.1 Acrylic Plates


The acrylic plates are fragile, so please be careful when assembling them in case of breaking

The acrylic plate is covered with a layer of protective film. You need to remove it first. Some holes in the acrylic may have residues, so you need to clean them before use.

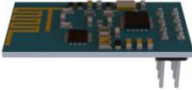
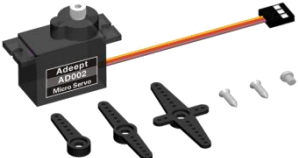

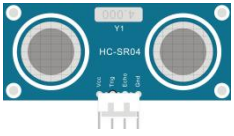
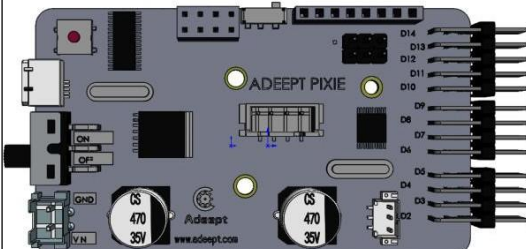
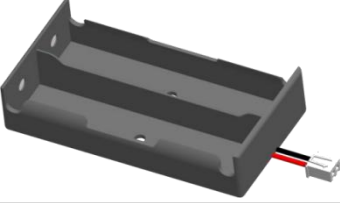







10.1.2 Machinery Parts



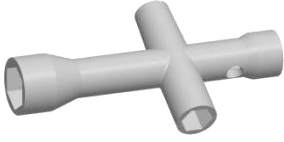



<p>M2</p> <p>Nut</p> <p>×26</p>  <p>www.aadept.com</p>	<p>M3</p> <p>Nut</p> <p>×33</p>  <p>www.aadept.com</p>	<p>M3</p> <p>Lock Nut</p> <p>×1</p>  <p>www.aadept.com</p>	<p>M2.5</p> <p>Nut</p> <p>×2</p>  <p>www.aadept.com</p>	<p>M1.4*6</p> <p>Self-Tapping Screw</p> <p>×8</p>  <p>www.aadept.com</p>
<p>M1.7*6*6</p> <p>Self-Tapping Screw</p> <p>×13</p>  <p>www.aadept.com</p>	<p>M2*8</p> <p>Screw</p> <p>×26</p>  <p>www.aadept.com</p>	<p>M2.5*8</p> <p>Screw</p> <p>×15</p>  <p>www.aadept.com</p>	<p>M3*8</p> <p>Screw</p> <p>×18</p>  <p>www.aadept.com</p>	<p>M3*10</p> <p>Screw</p> <p>×28</p>  <p>www.aadept.com</p>
<p>M3*16</p> <p>Screw</p> <p>×1</p>  <p>www.aadept.com</p>	<p>M3*10</p> <p>Countersunk Head Screw</p> <p>×2</p>  <p>www.aadept.com</p>	<p>M3*15</p> <p>Nylon Standoff</p> <p>×1</p>  <p>www.aadept.com</p>	<p>M3*20</p> <p>Nylon Standoff</p> <p>×2</p>  <p>www.aadept.com</p>	<p>M3*40</p> <p>Nylon Standoff</p> <p>×6</p>  <p>www.aadept.com</p>

<p>M3*14</p> <p>Screw</p> <p>×3</p>  <p>www.adeept.com</p>				
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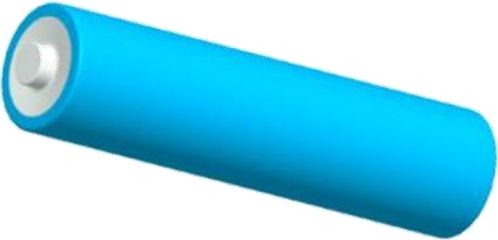
10.1.3 Electronic Parts

ESP-8266 Wi-Fi module ×1	Servo ×13
	
MPU-6050 ×1	Adept Ultrasonic Module ×1
	
Arduino Pixie Board ×1	18650 Battery Holder ×1
	
	USB Cable ×1
	
3CH WS2812 RGB LED V1.0 ×2	3-Pin Wire ×2
	
4 Pin Wire ×1	
	
4 Pin Wire ×1	
	

10.1.4 Tools

Cross Screwdriver ×1	Large flat-blade screwdriver ×1	Cross Socket Wrench ×1
		
Large Cross-head Screwdriver ×1		
		
Winding Pipe ×2		
		
Ribbon ×1		
		

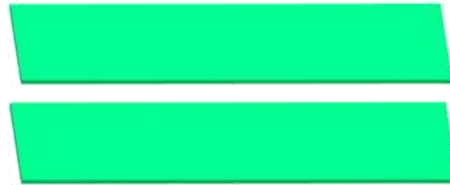
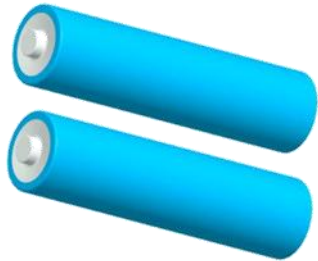
10.1.5 Self-prepared Parts

18650 Battery ×2


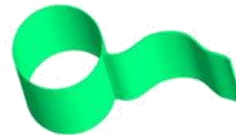
10.2 component List

10.2.1 Install and Remove Batteries

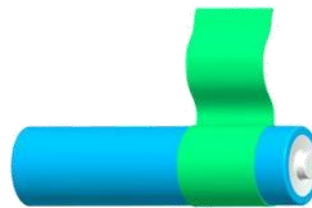
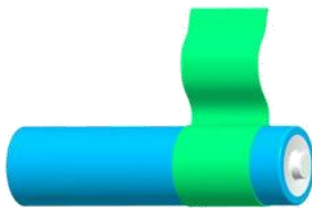
Take out 2 ribbons and 2 batteries.



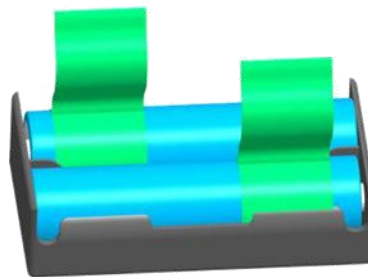
Roll one end of the ribbon to let through a battery and fix.



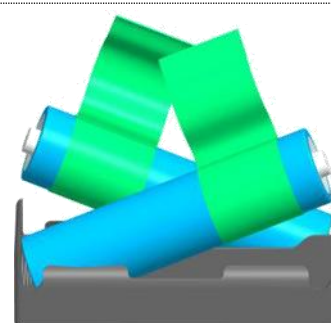
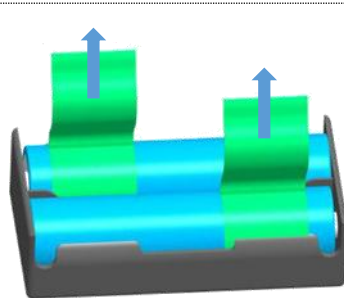
Insert the batteries into the rings-ribbon closer to the anode.



Install the batteries into the holder based on the pole.



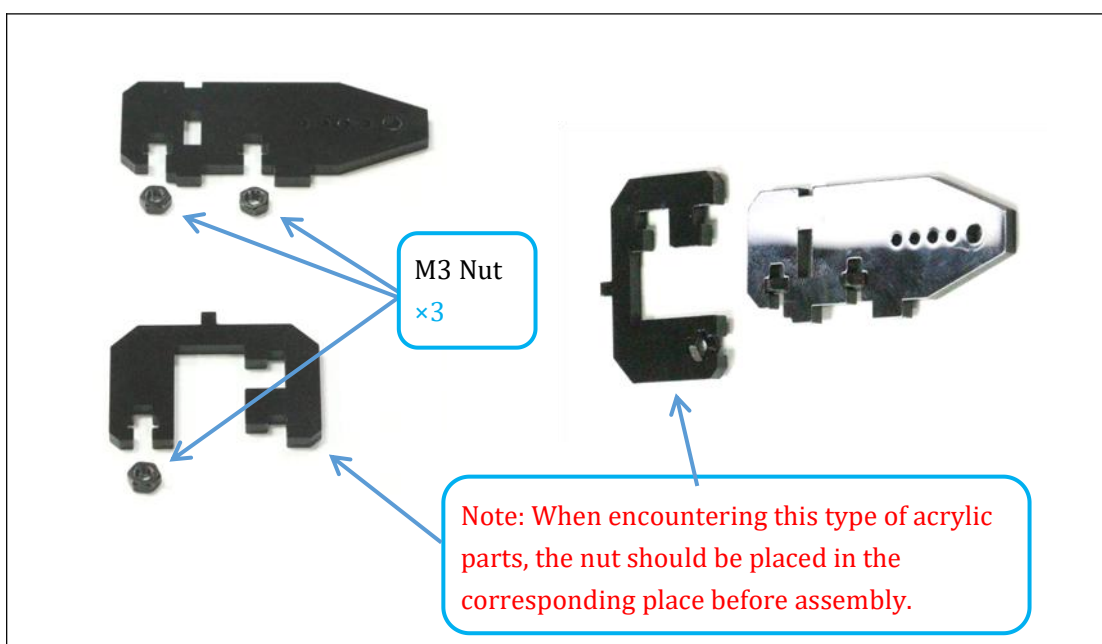
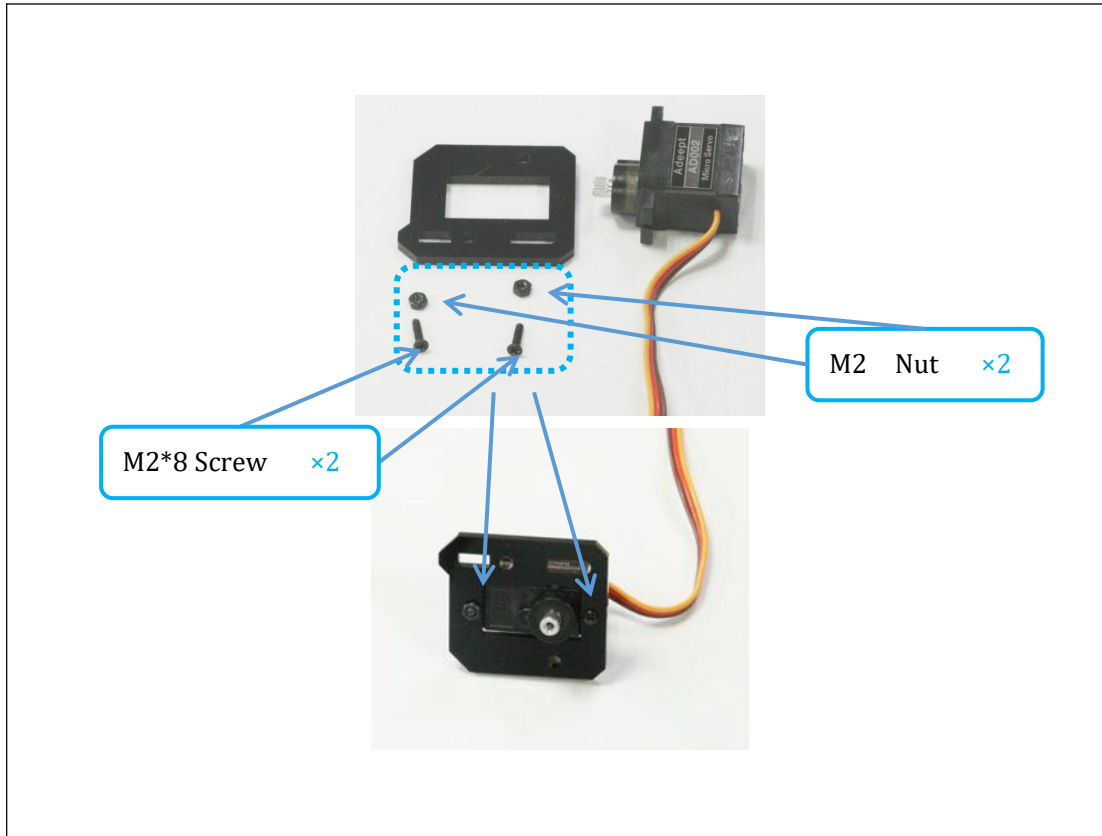
To remove the batteries, just pull the ribbon and take them out.



10.3 Assemble the body

10.3.1 Assemble the legs of the Robot

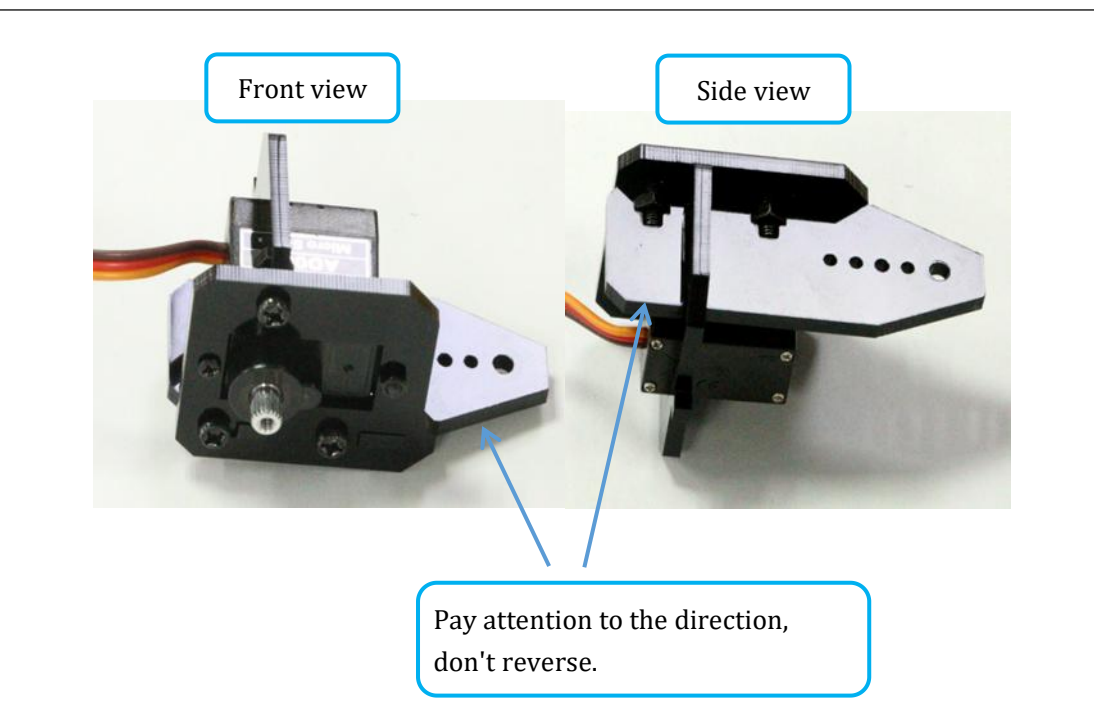
(1) Assemble the following component



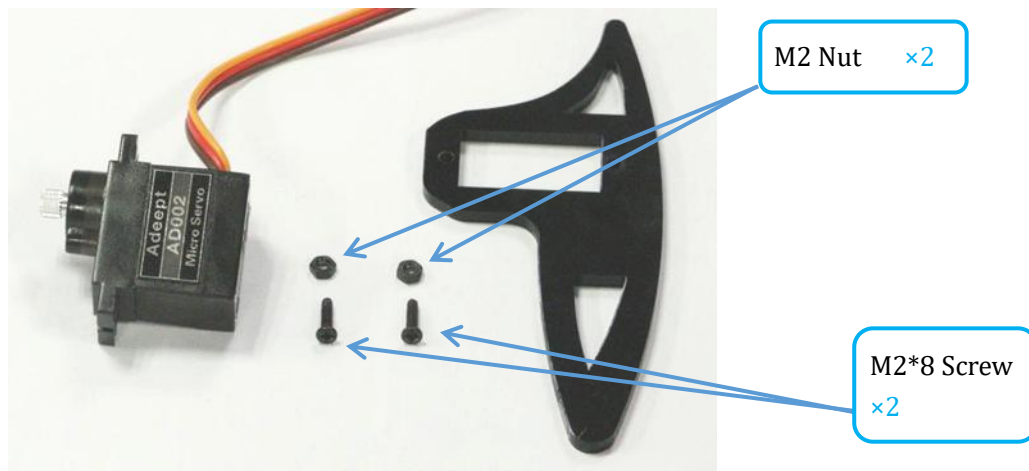
(2) Assemble the following component



Effect diagram after assembling:



(3) Assemble the following component

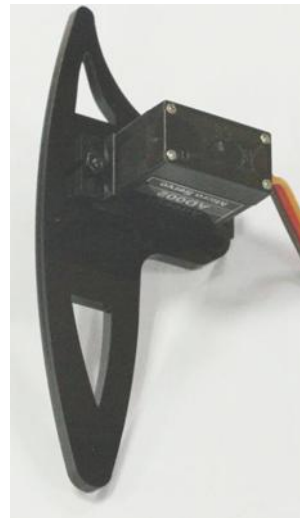


Effect diagram after assembling:

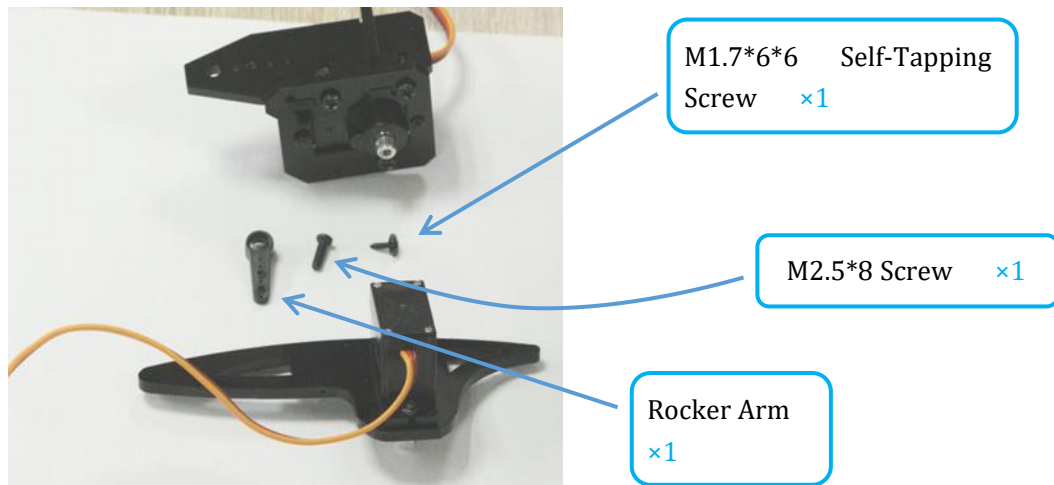
Front view



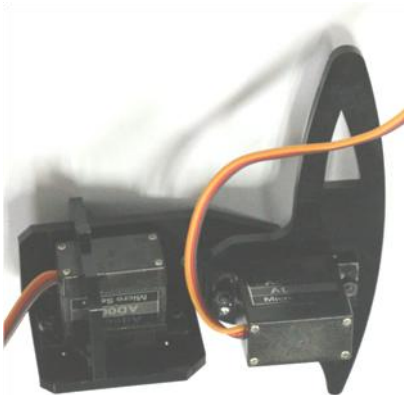

Back view



(4) Assemble the following component




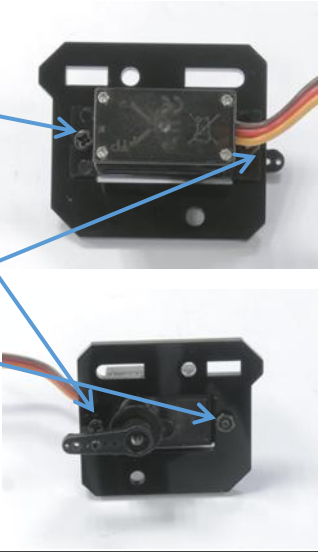
Effect diagram after assembling:

<p>Front view</p> 	<p>Back view</p> 
<p>Note: Do not reverse the direction of the servo after assembly. This has already been assembled. Then follow the same steps to assemble the remaining two feet on the left side.</p>	<p>Note: The two components are connected together by a rocker arm. The connection of the rocker arm has been illustrated above.</p>
<p>Effect diagram after assembling</p>	

Front view of the three assembled left legs



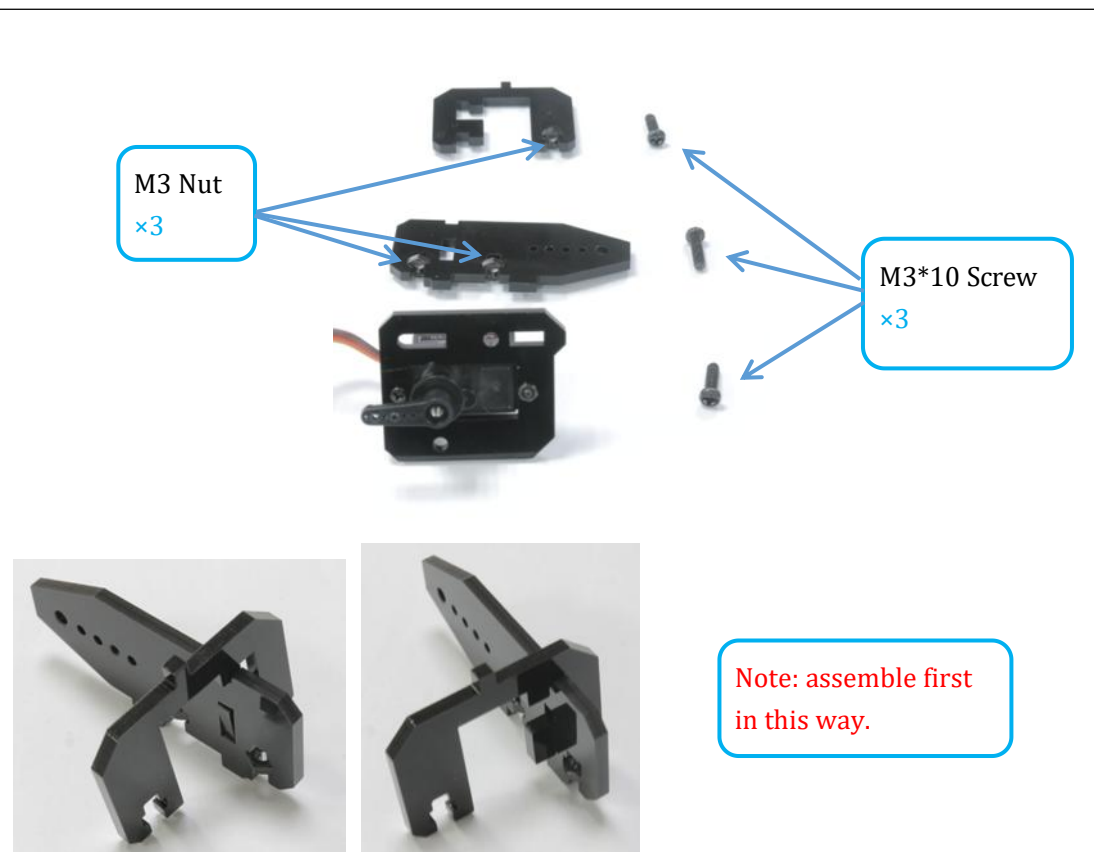
(5) Assemble the following component

Before assemble		After assemble
	<div data-bbox="659 1290 900 1357">M2*8 Screw ×2</div> <div data-bbox="659 1496 887 1563">M2 Nut ×2</div>	
Effect diagram after assembling:		
Motor comparison on both sides.		



Note: The position of the motor assembled this time is the opposite of the previous position.

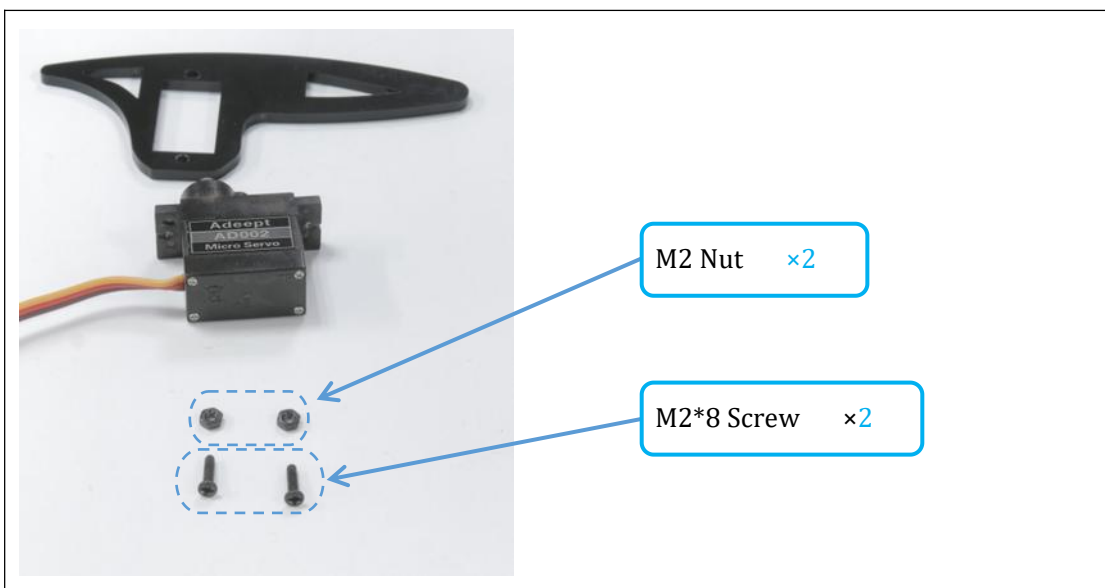
(6) Assemble the following component



Effect diagram after assembling:



(7) Assemble the following component



Effect diagram after assembling:

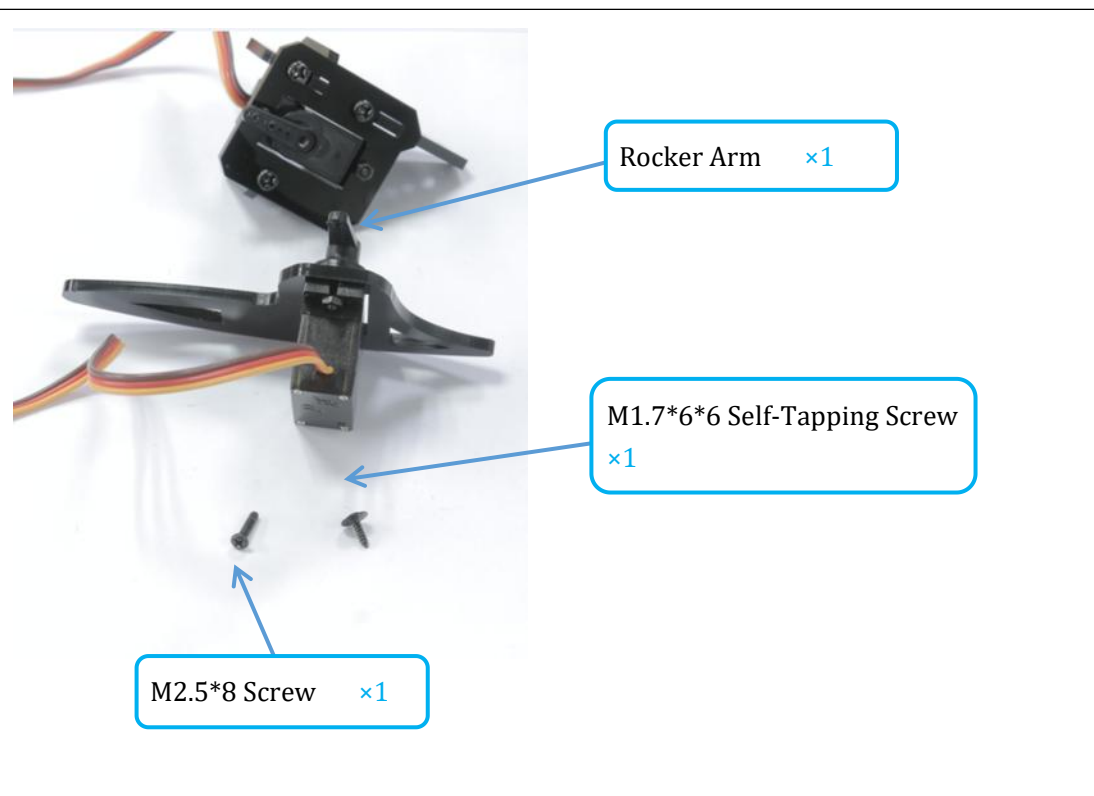


Physical map of the left and right

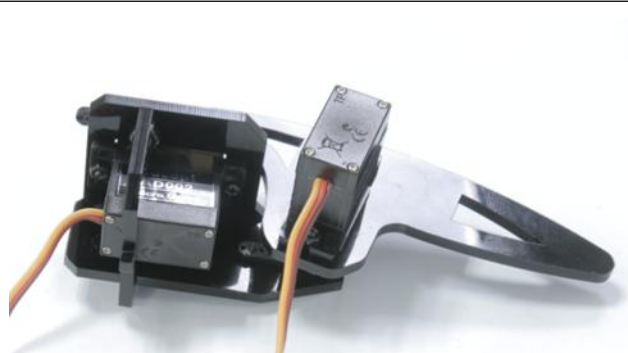


Note: Their directions are all opposite.

(8) Assemble the following component



Effect diagram after assembling:



Front view



Back view

This has successfully assembled one foot on the other side. Follow the steps to complete the remaining two feet.

Physical map of the left and right



Note : Legs of two side are installed with symmetry.

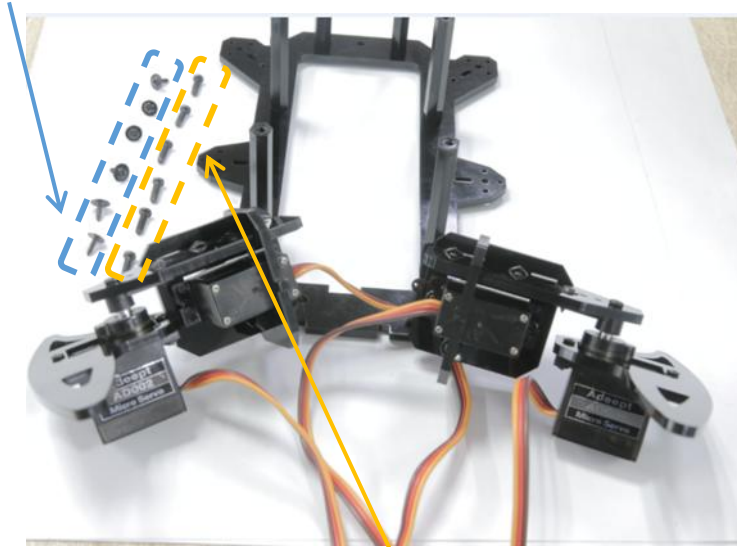
10.3.2 Assemble the body and rocker arms

(1) Assemble the following component

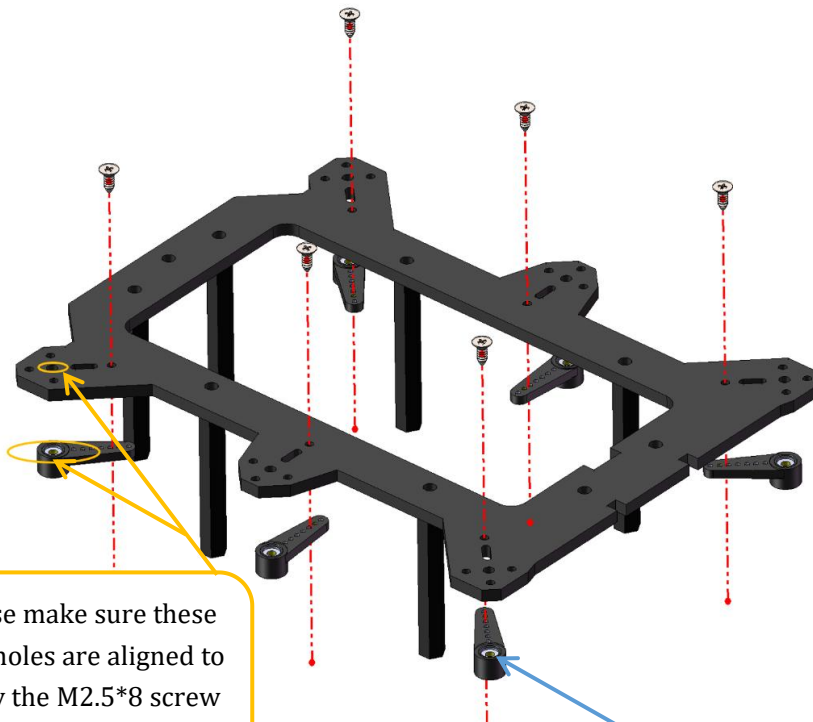


(2) Assemble the following component

M1.7*6*6 Self-Tapping Screw ×6



M2.5*8 Screw ×6



Please make sure these two holes are aligned to allow the M2.5*8 screw to pass through.

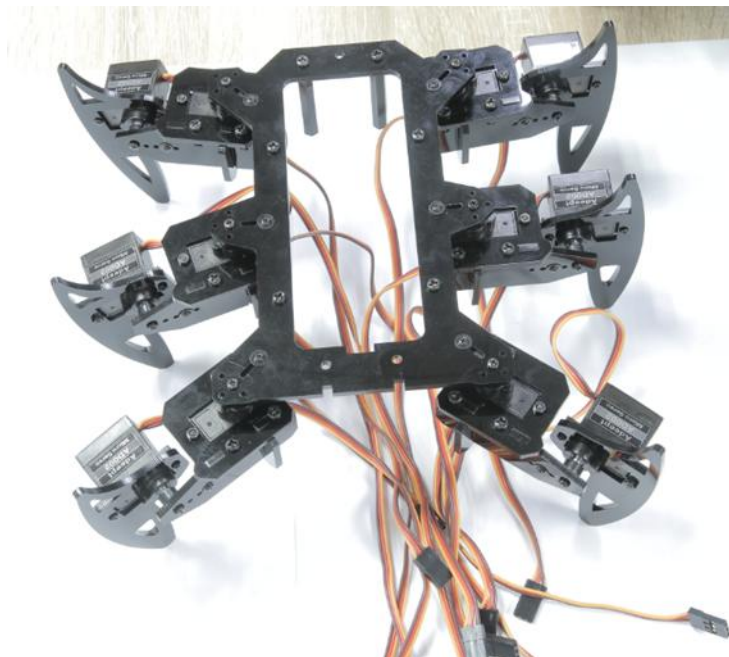
Rocker Arm ×6



First install the rocker arm,
then connect the motor base
with M2.5*8 screws.

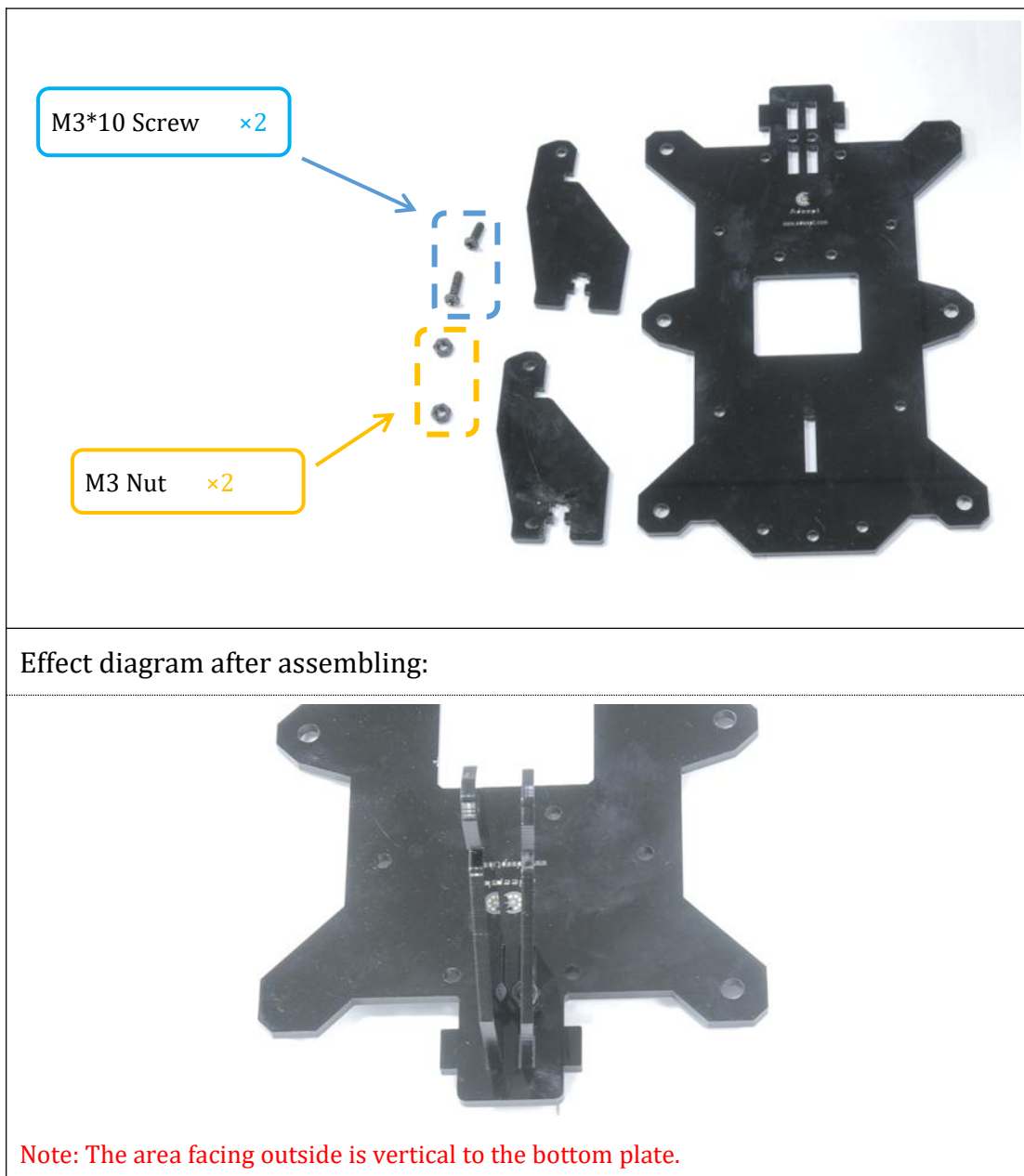
Effect diagram after assembling:

Front view

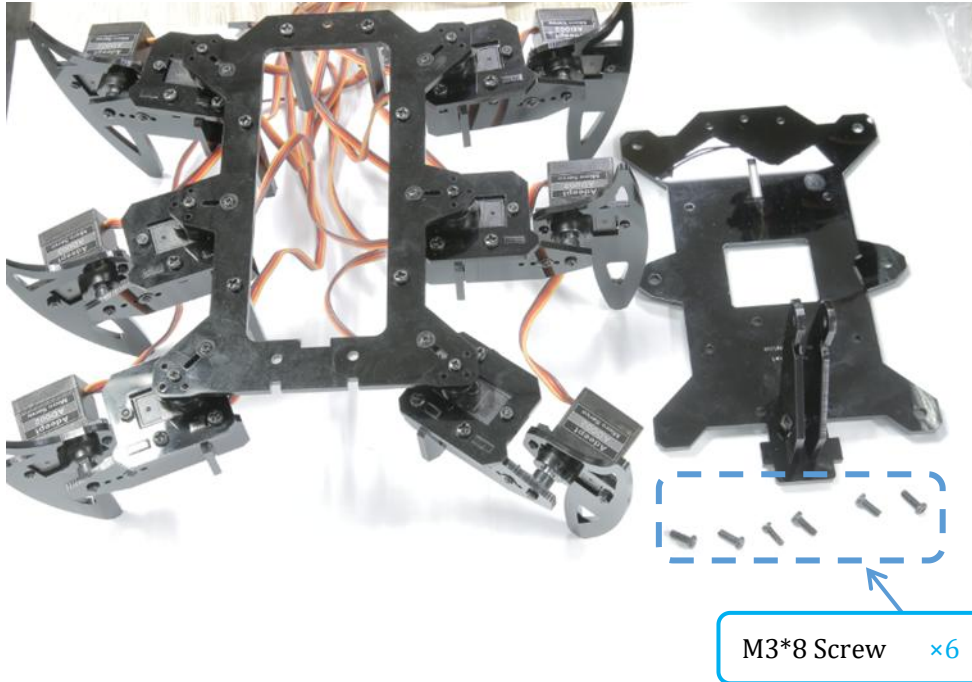


Note: The front of the bottom plate is without nylon standoffs. The legs on both sides should be as shown.

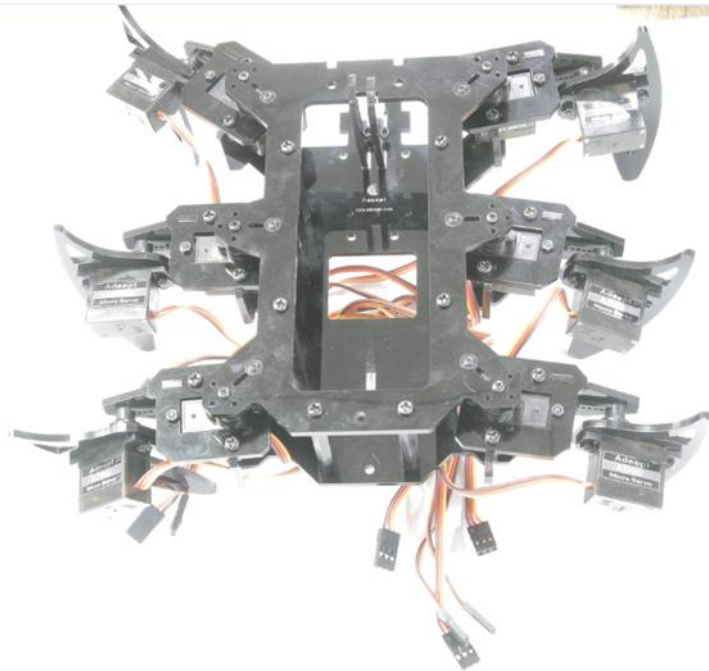
(3) Assemble the following component



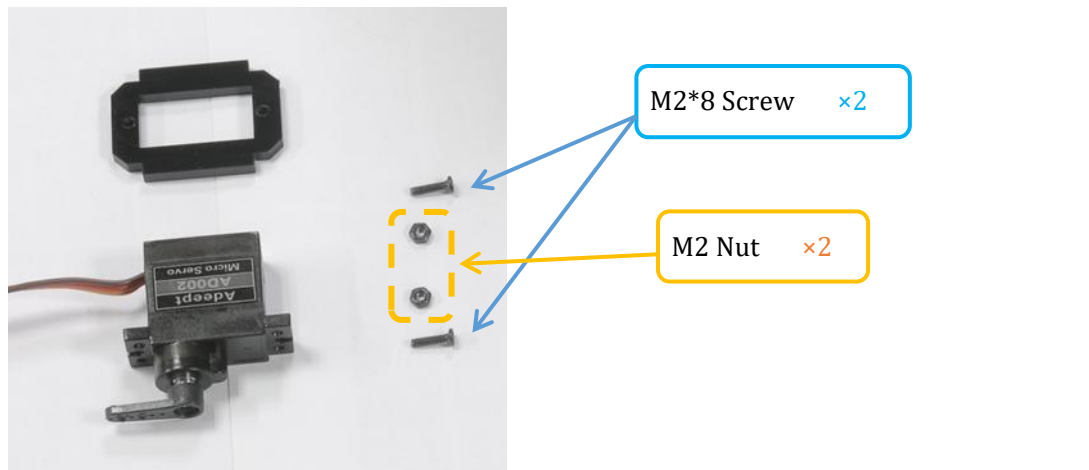
(4) Assemble the following component



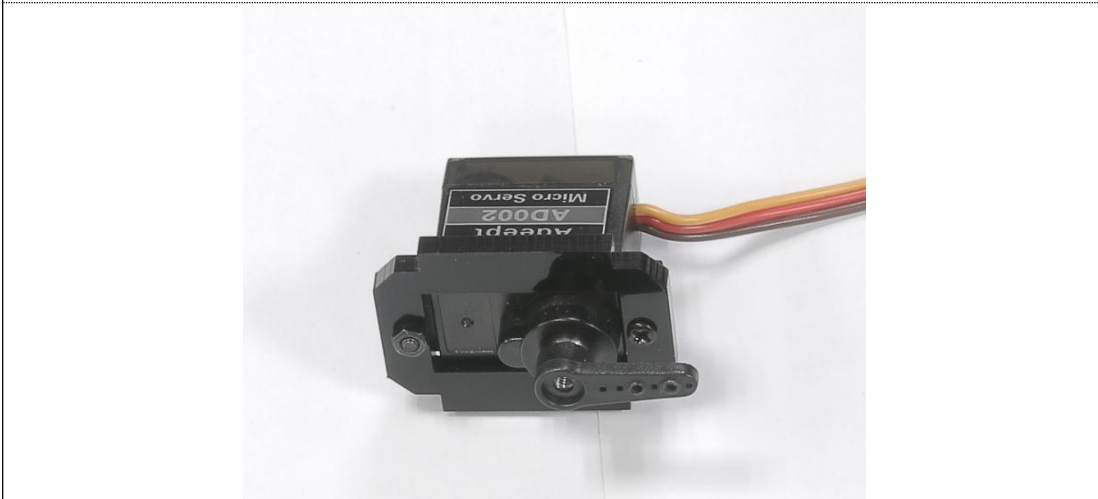
Effect diagram after assembling:



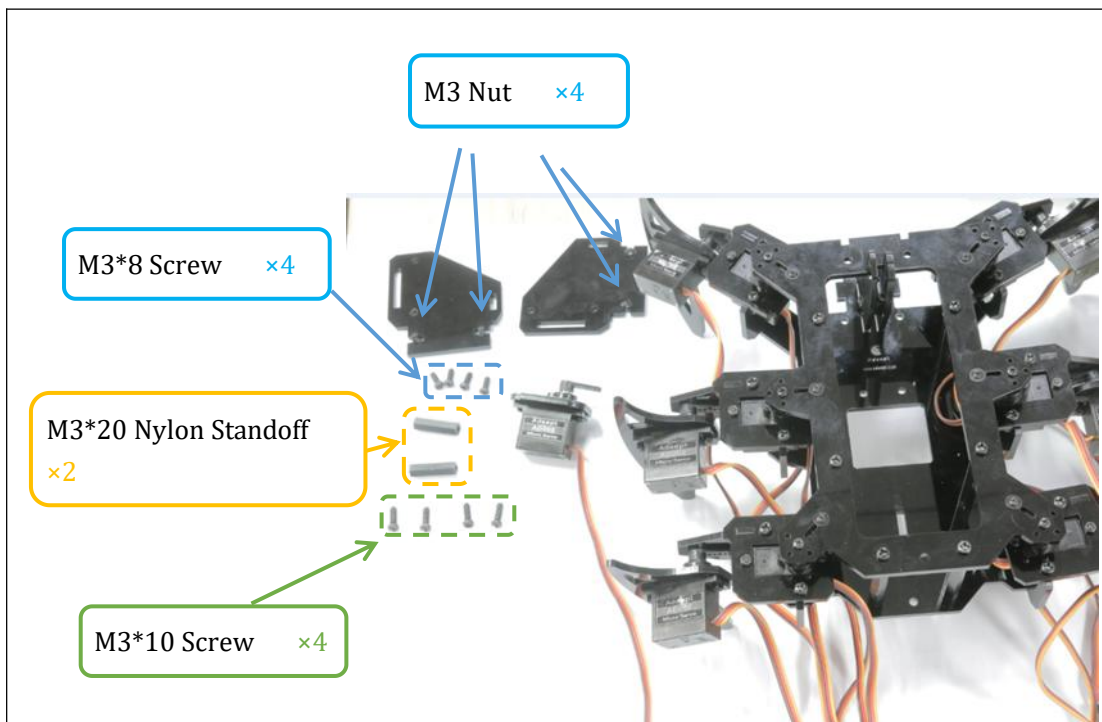
(5) Assemble the following component



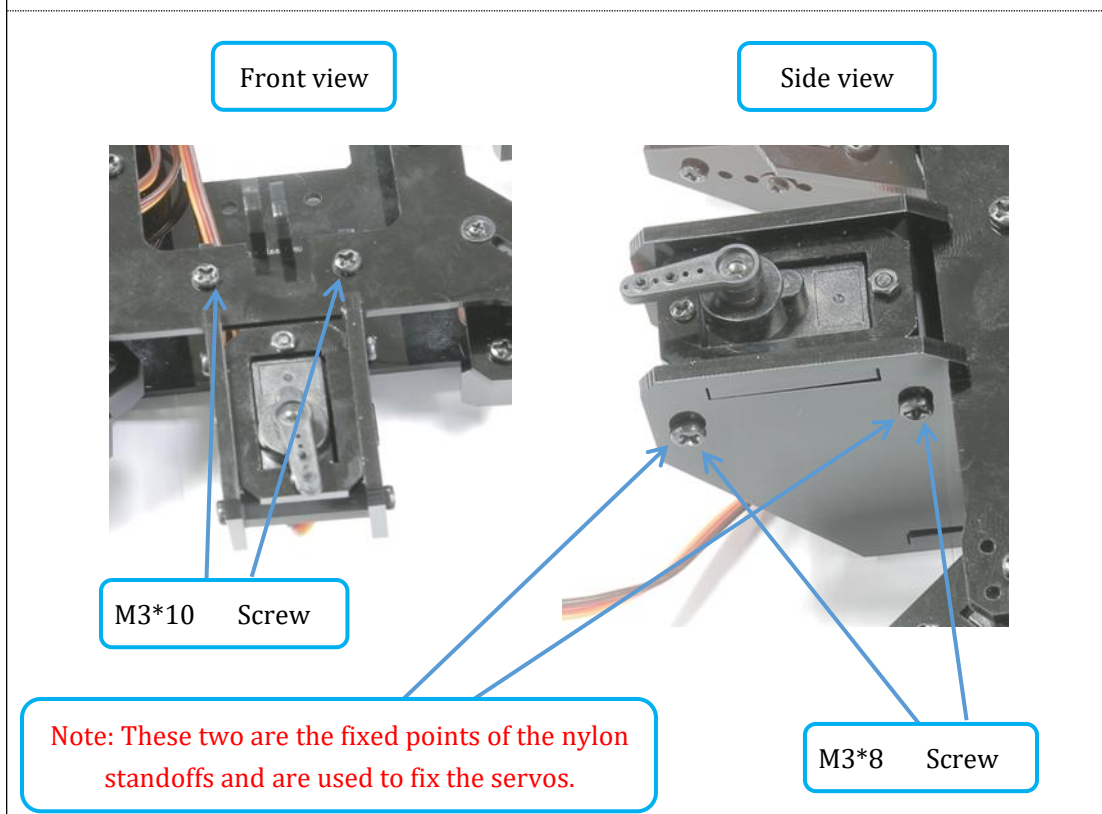
Effect diagram after assembling:



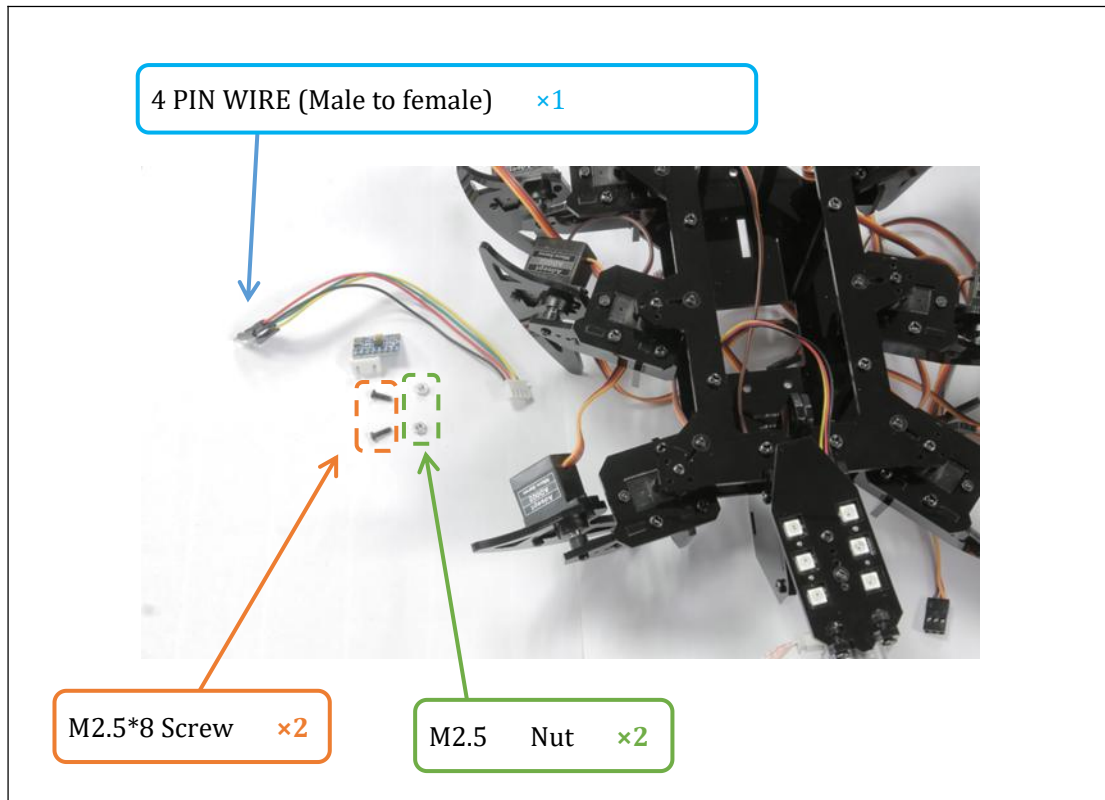
(6) Assemble the following component



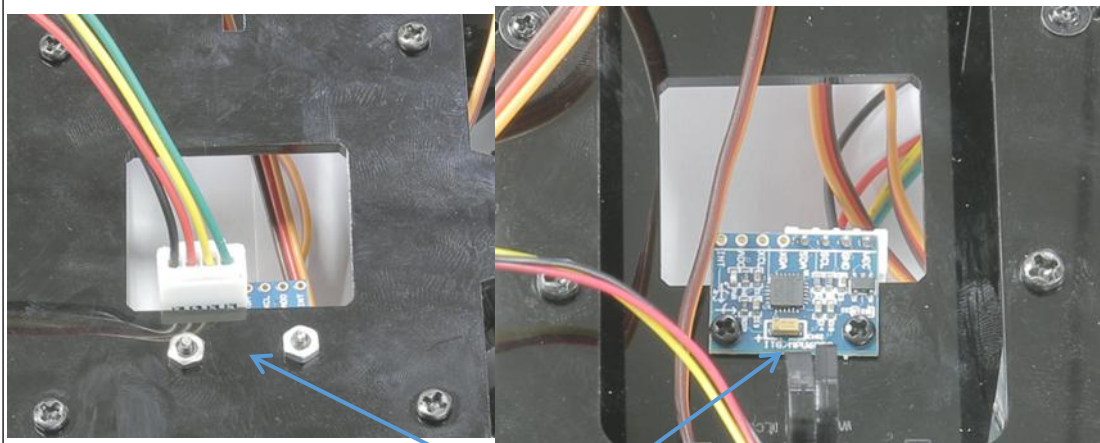
Effect diagram after assembling:



(7) Assemble the following component

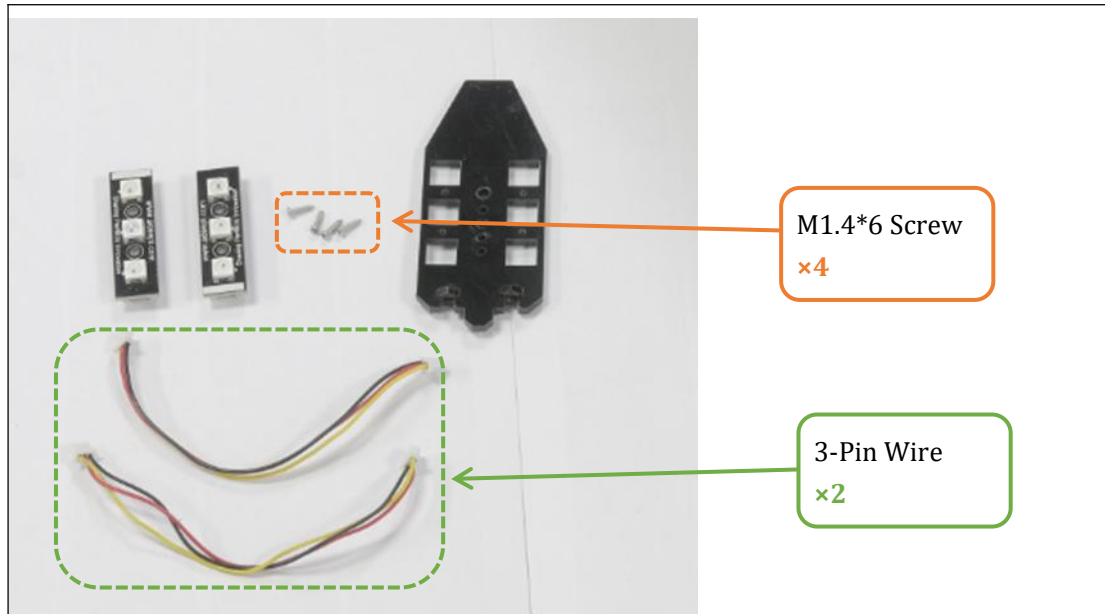


Effect diagram after assembling:

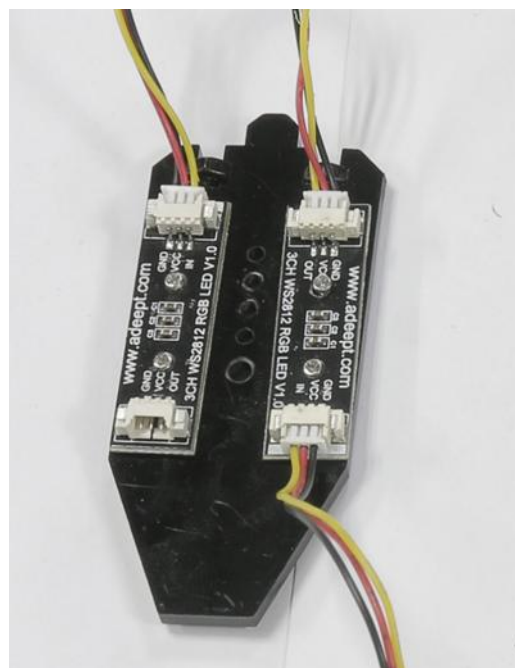


Note: The positions of the nut and screw are not interchangeable, otherwise the MPU6050 will be damaged.

(8) Assemble the following component



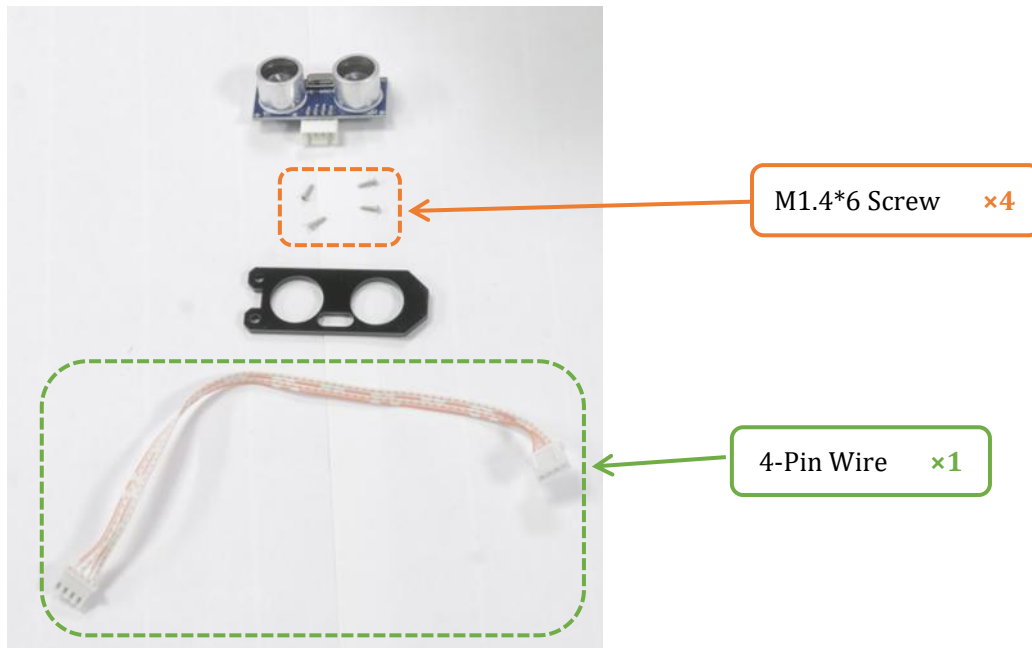
Effect diagram after assembling:



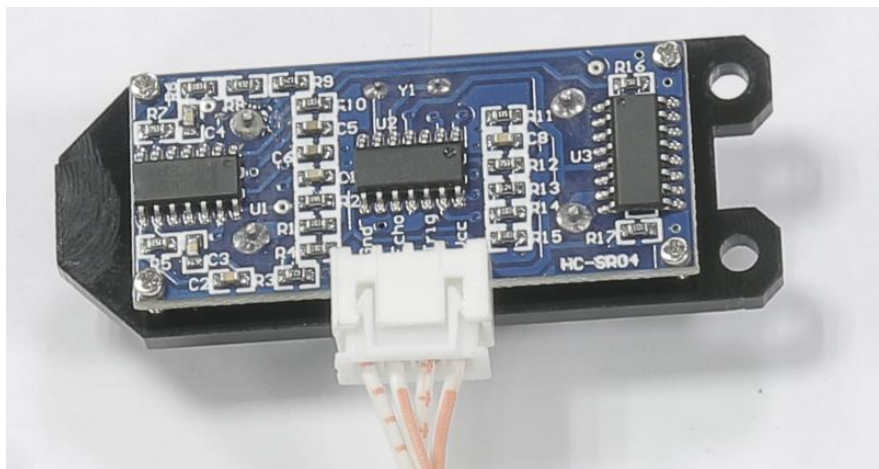
Note: The LED module has an input (IN) with a white edge and an output (OUT) without white edge. If the LED does not light up in yellow normally, then check if the input and output are reversed.

(9) Fix Adeept Ultrasonic Module on acrylic plate

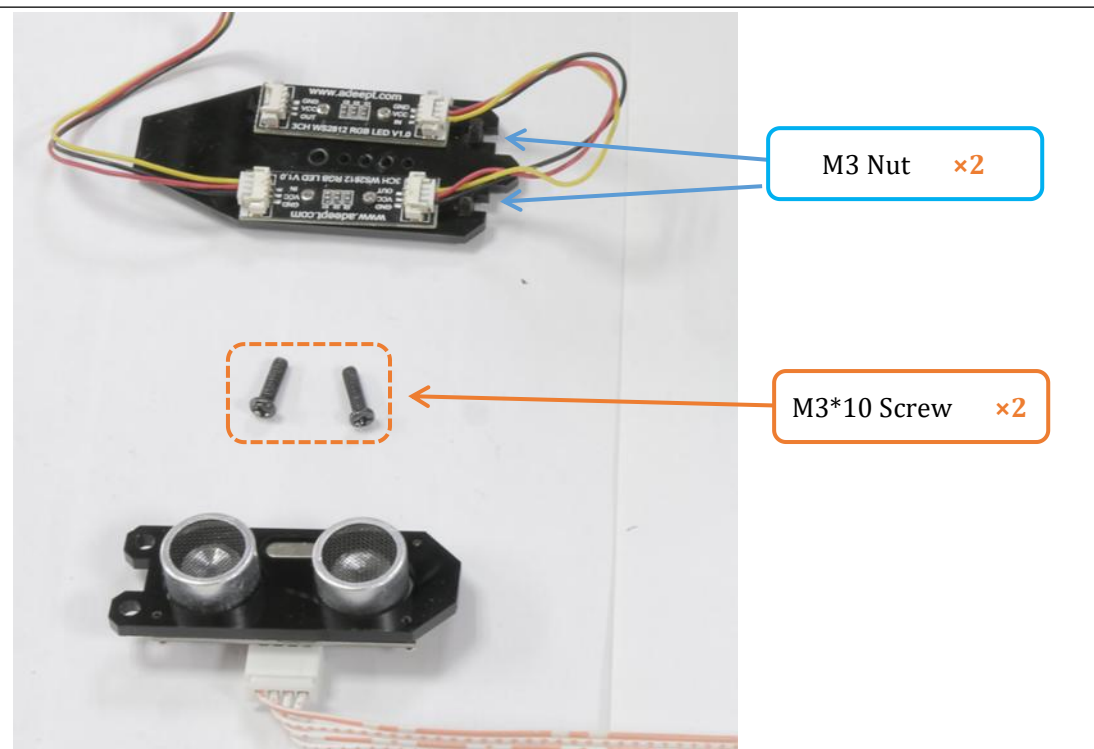
Assemble the following component:



Effect diagram after assembling:



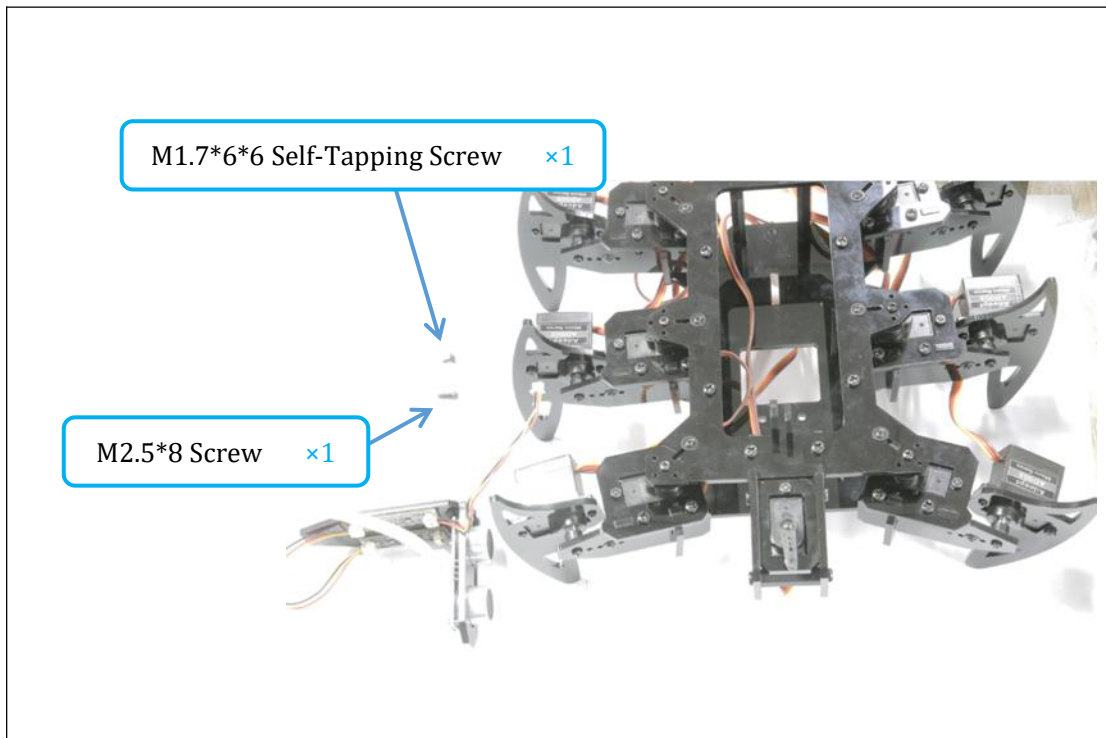
(10) Assemble the following component



Effect diagram after assembling:



(11) Assemble the following component

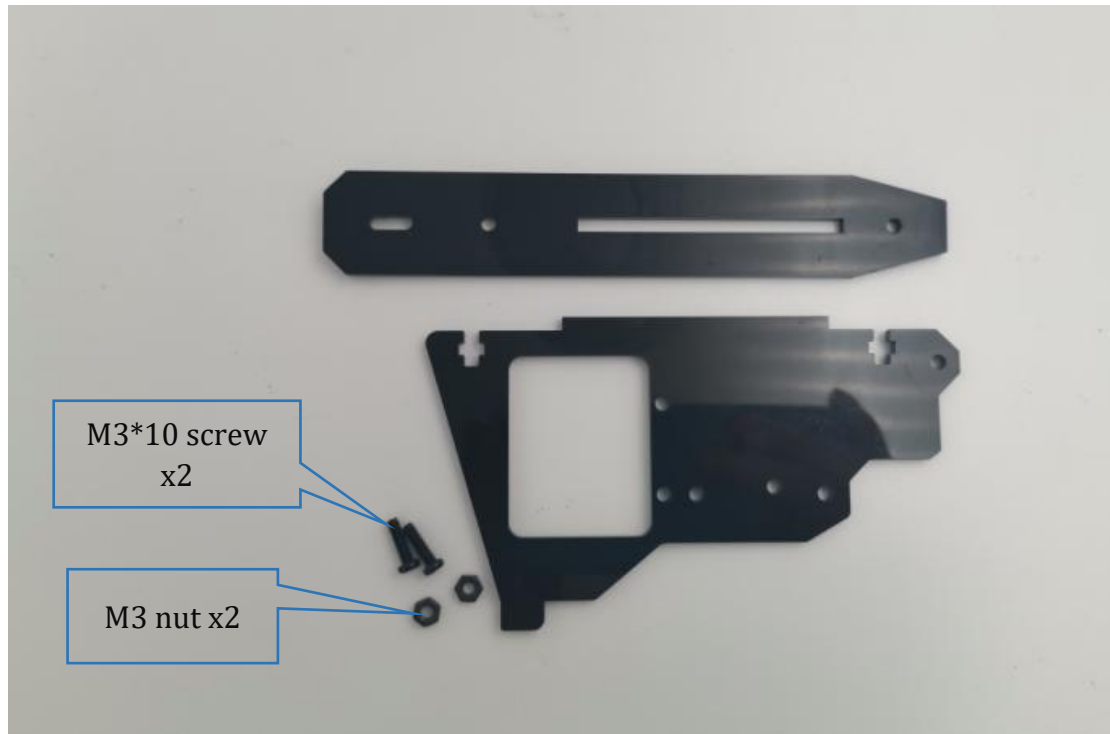


Effect diagram after assembling:



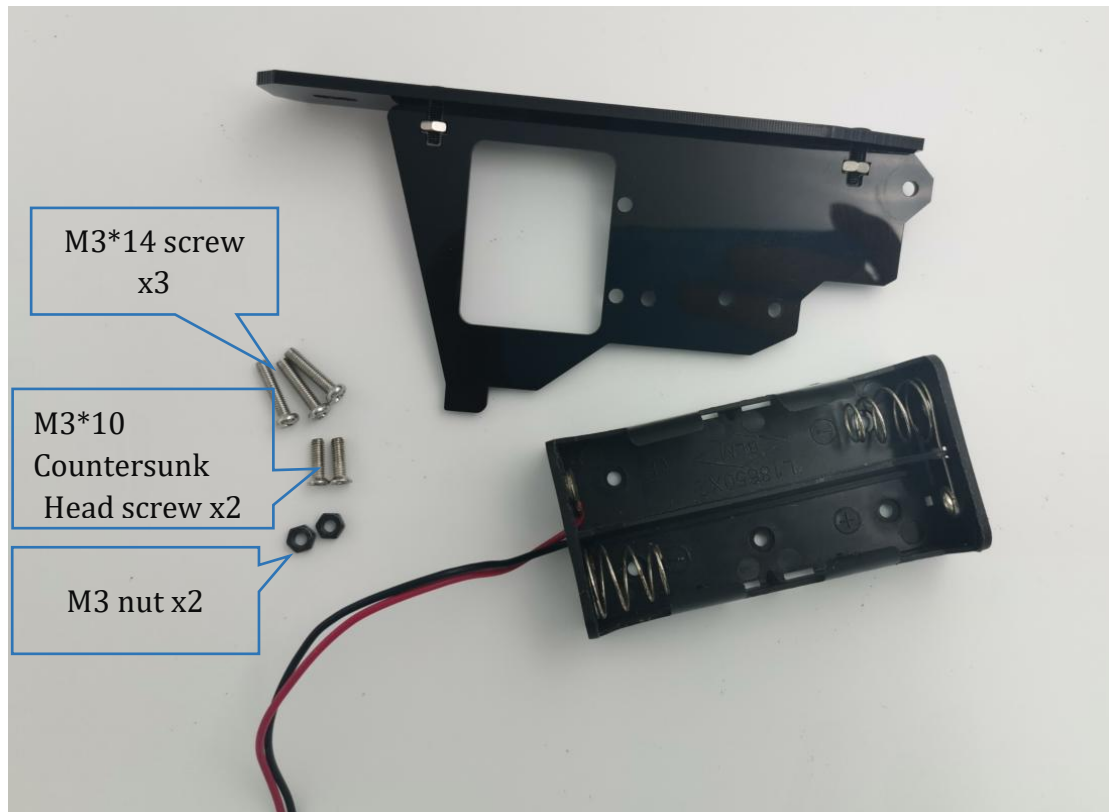
(12) Assemble the following component

Assemble the acrylic board using 2 M3*10 screws and 2 M3 nuts. Pay attention to the installation direction.





Prepare 3 M3*14 screws, 2 M3*10 countersunk head screws and 2 nuts to install the battery box.

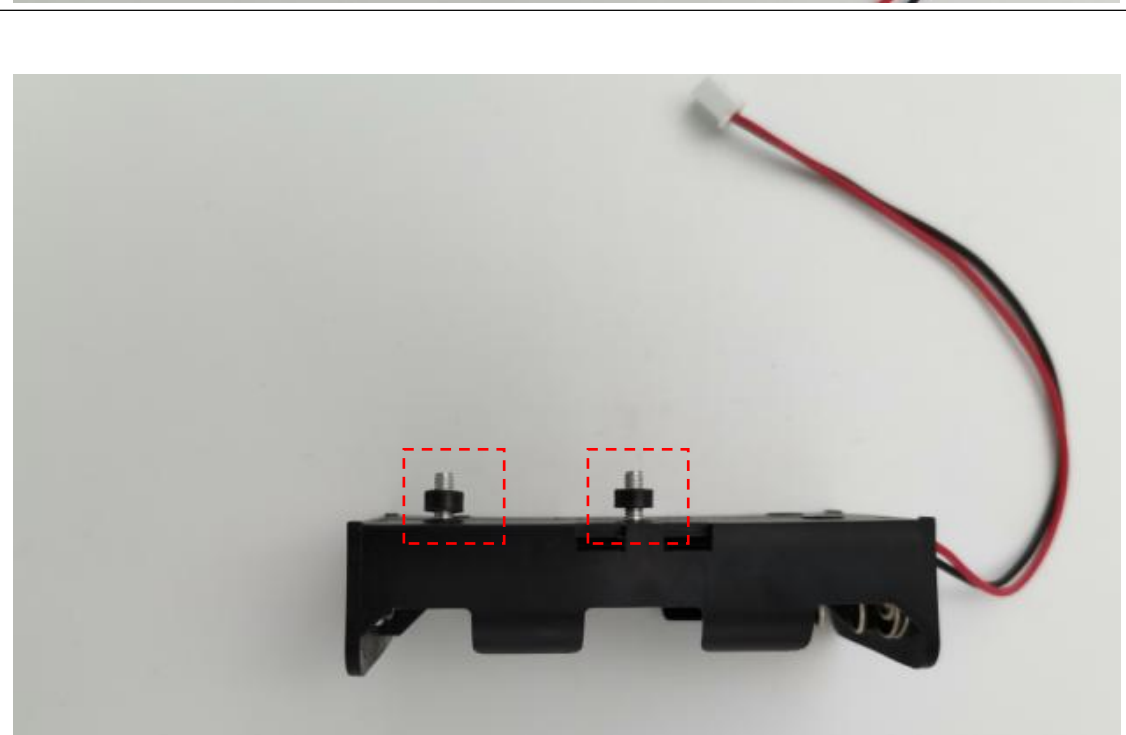
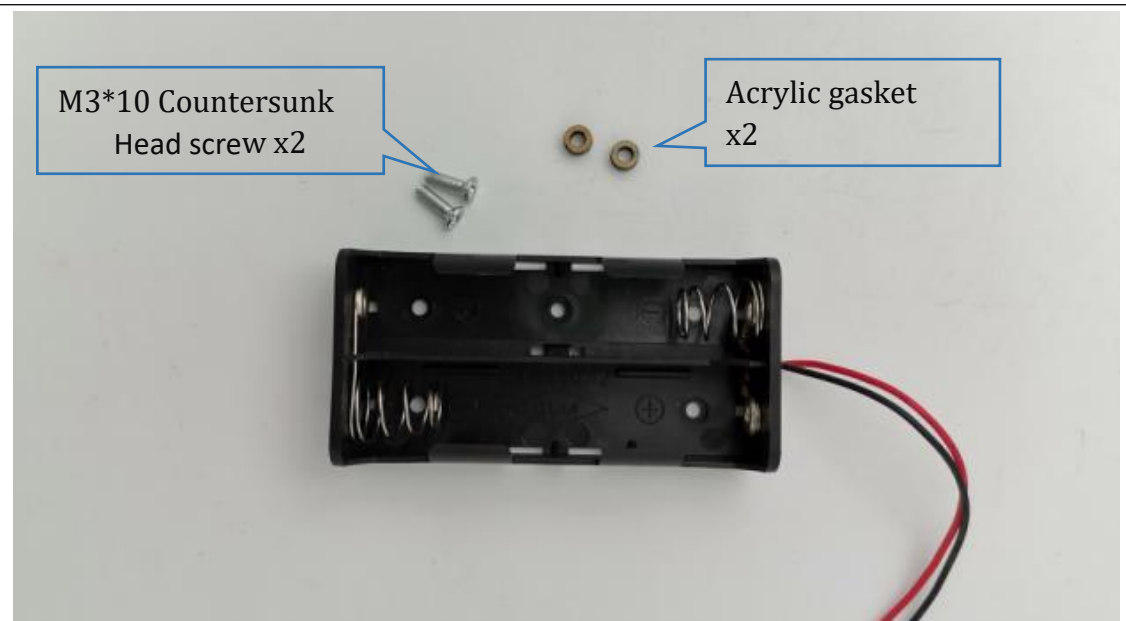


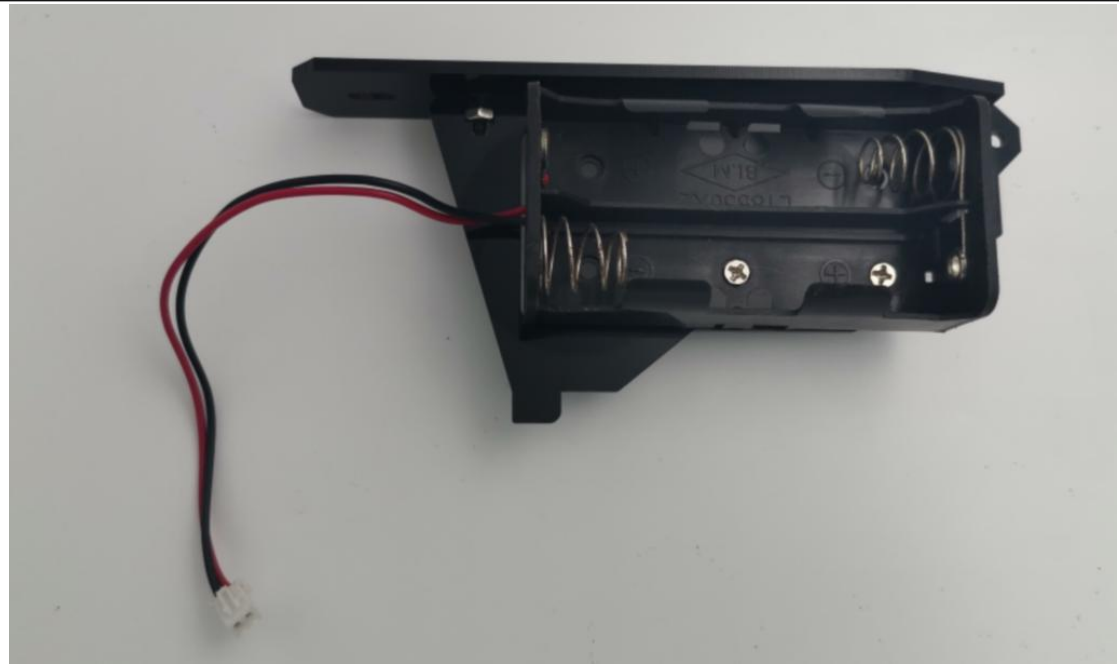
Put 3 M3*14 screws into the three holes below.



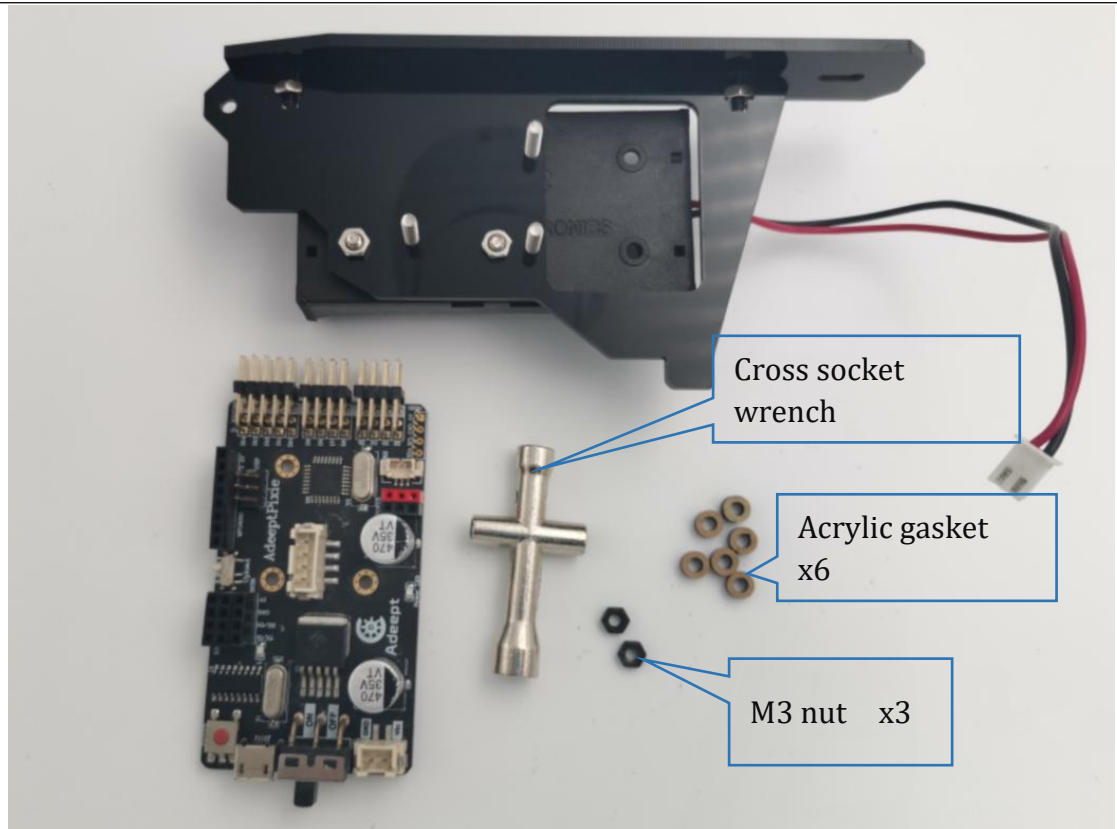
Use 2 M3*10 countersunk head screws and 2 M3 nuts to install the battery box. Note the orientation of the battery box. Put an acrylic spacer between the battery case and the acrylic plate.

NOTE: Tighten the middle screw first, then the side screws.

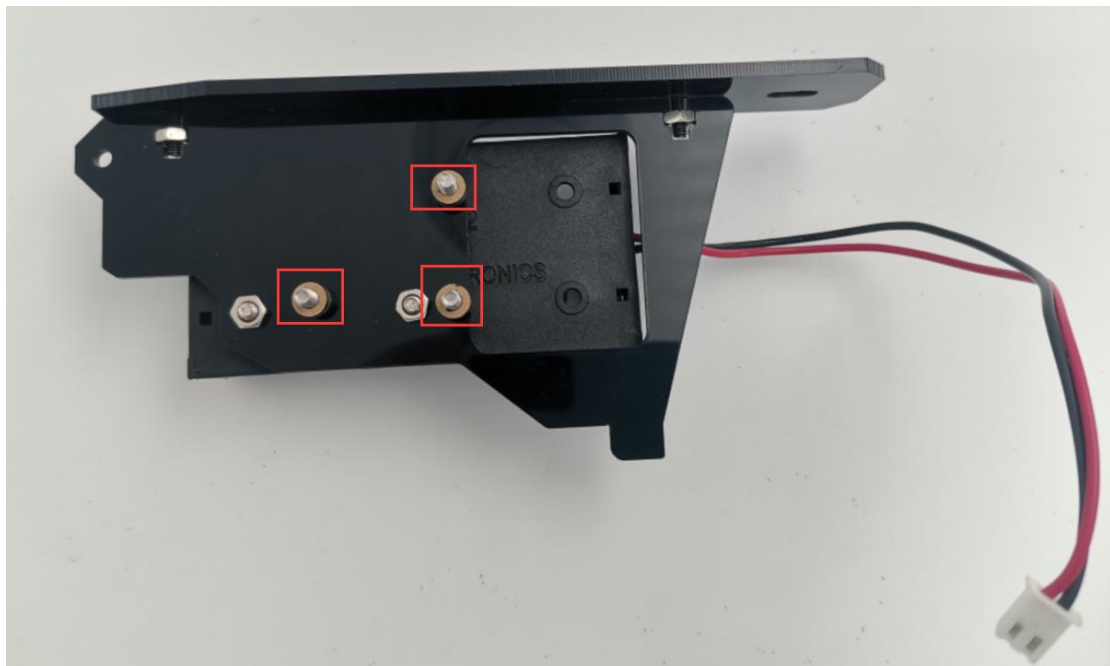




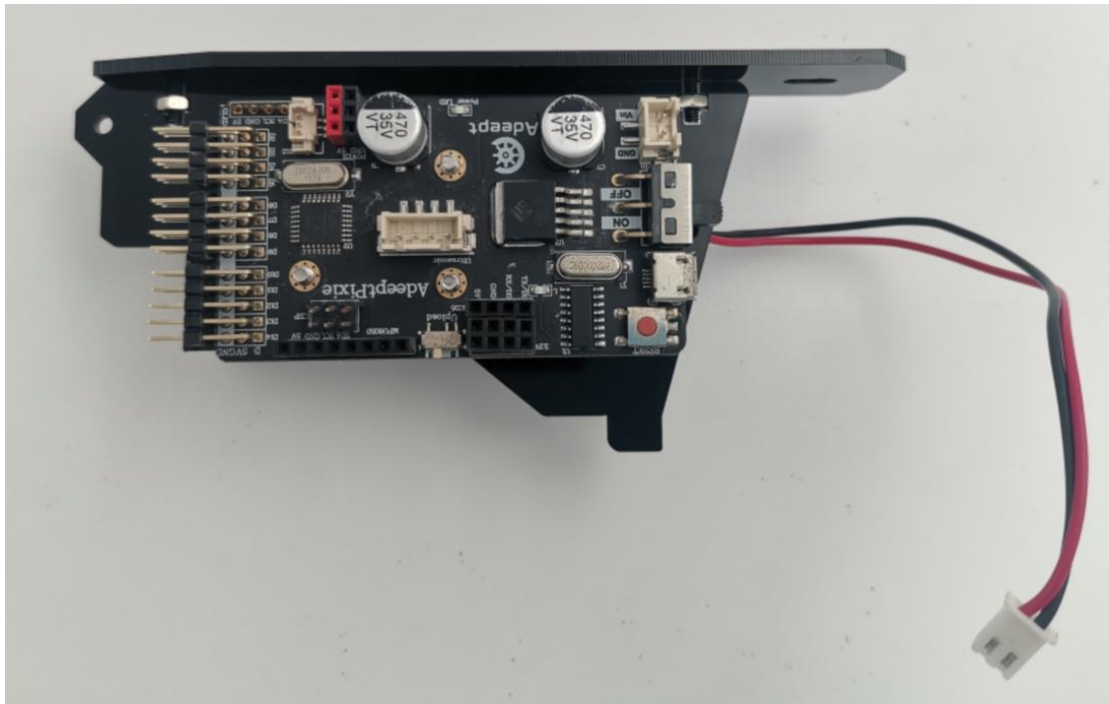
Prepare Cross socket wrench , 6 Acrylic gasket, 3 M3 nuts. (Acrylic gasket are on the acrylic sheet.)



Place 2 Acrylic gasket for each of the three M3*14 screws (**place 2 gasket for each screw**, 6 in total)

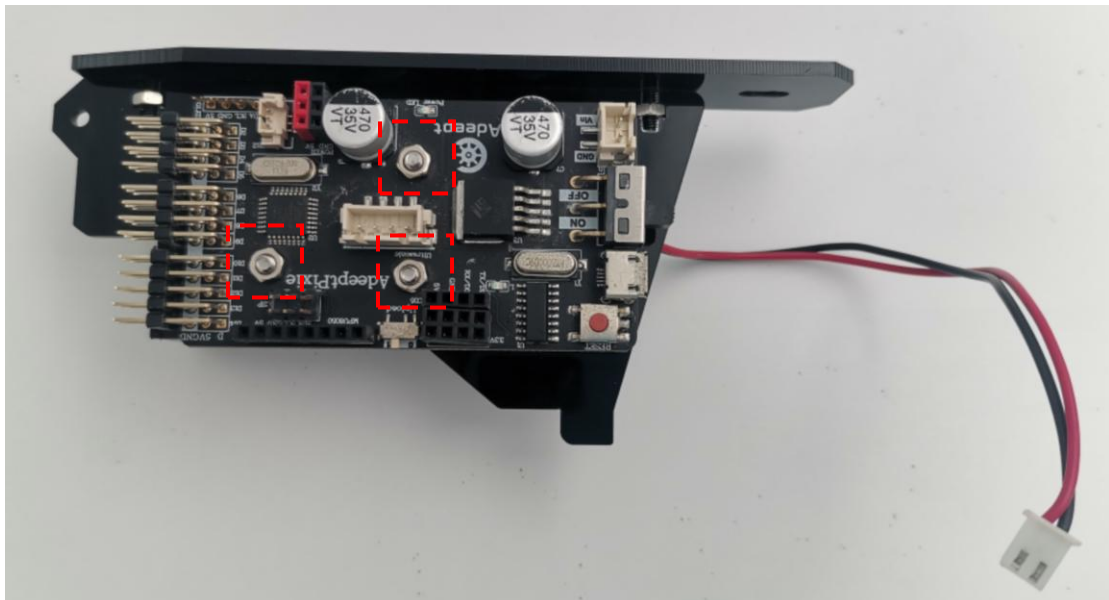


Install the Arduino board.

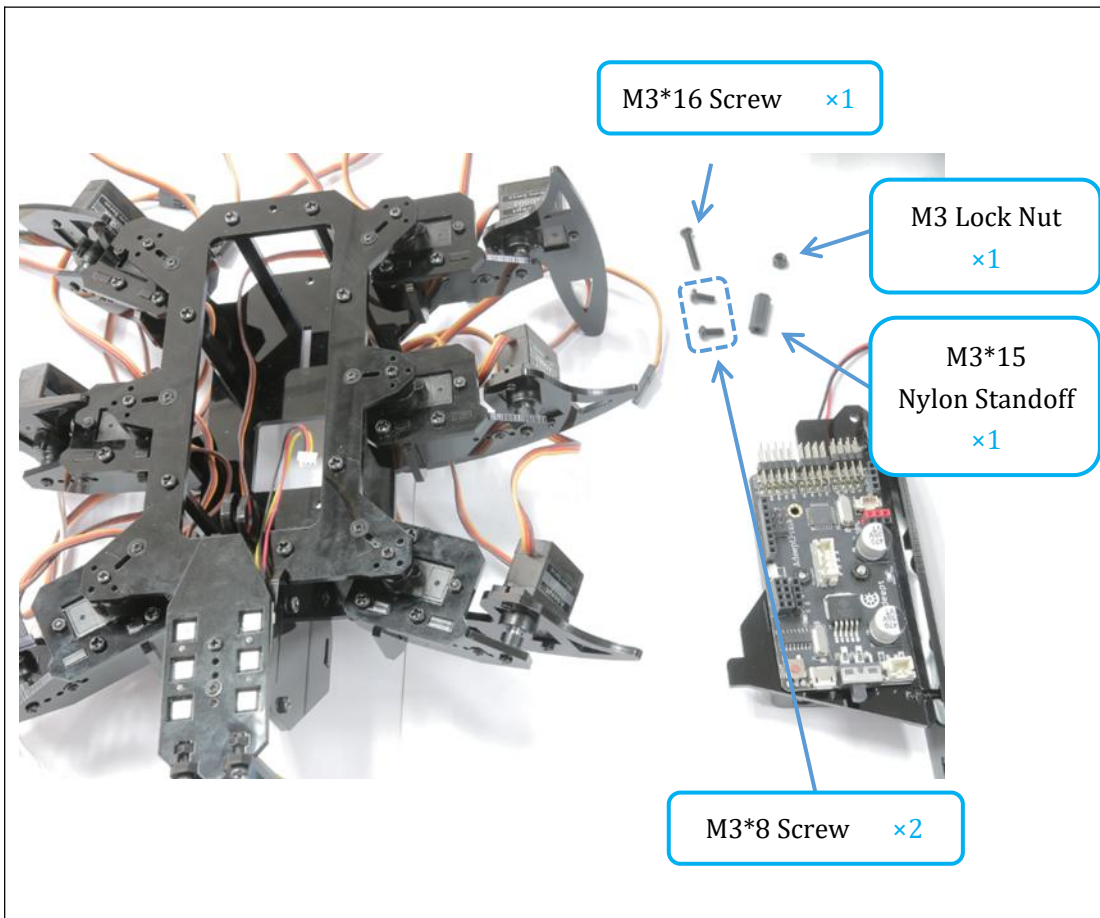


Use an Cross socket wrench to tighten the 3 M3 nuts.

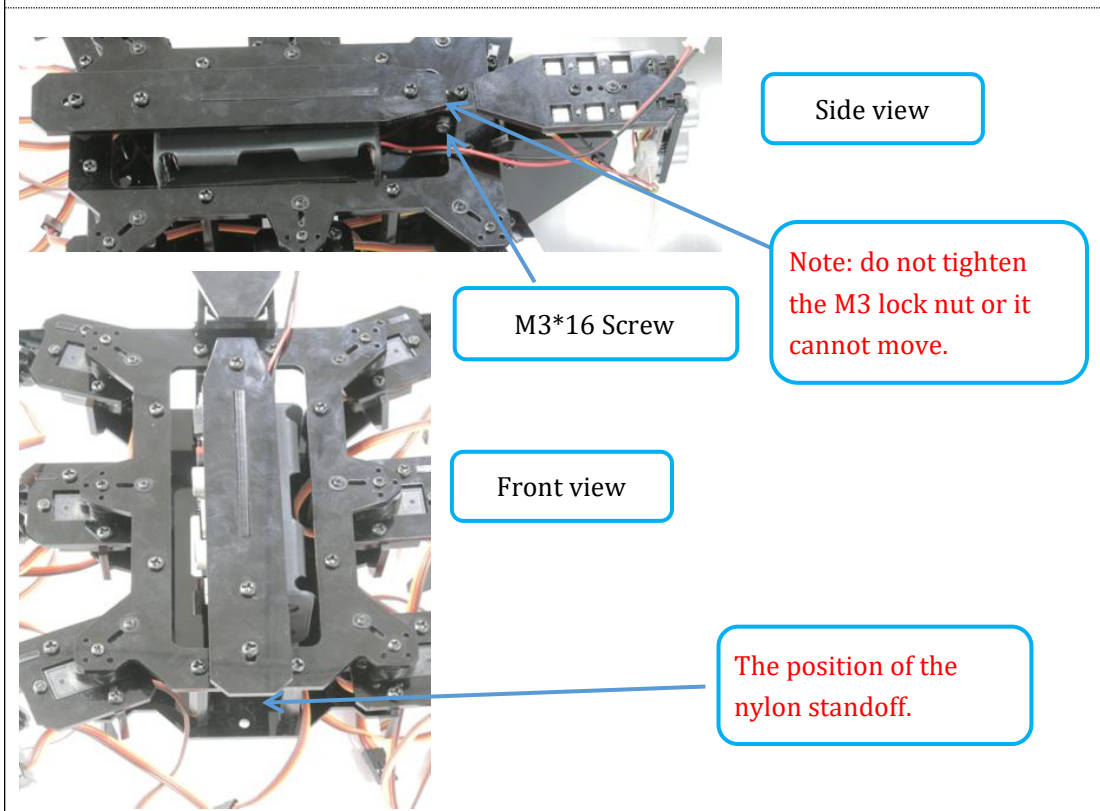
Note: When tightening the nut, please press the Arduino board slightly to avoid the M3 nut not being able to be tightened.



(13) Assemble the following component.

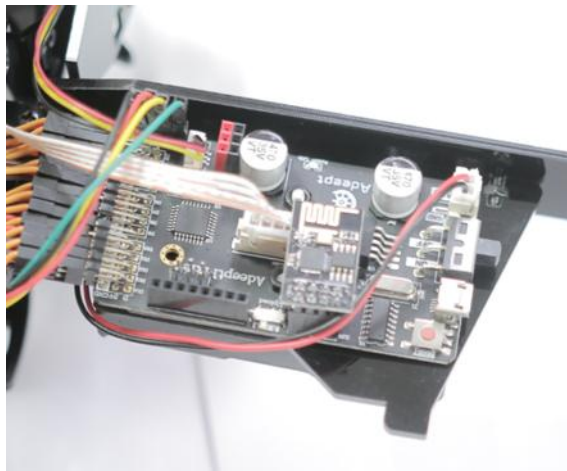


Effect diagram after assembling:



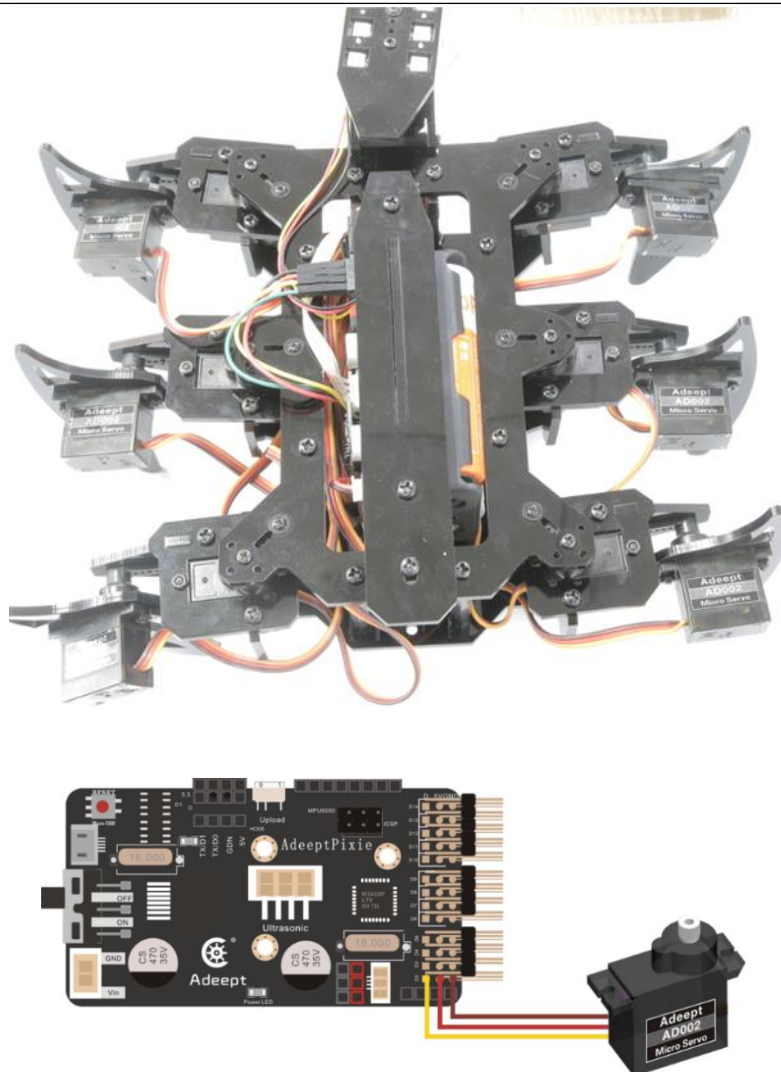
(14) Connect Arduino HAT and the robot.

Effect diagram after assembling Wiring diagram:

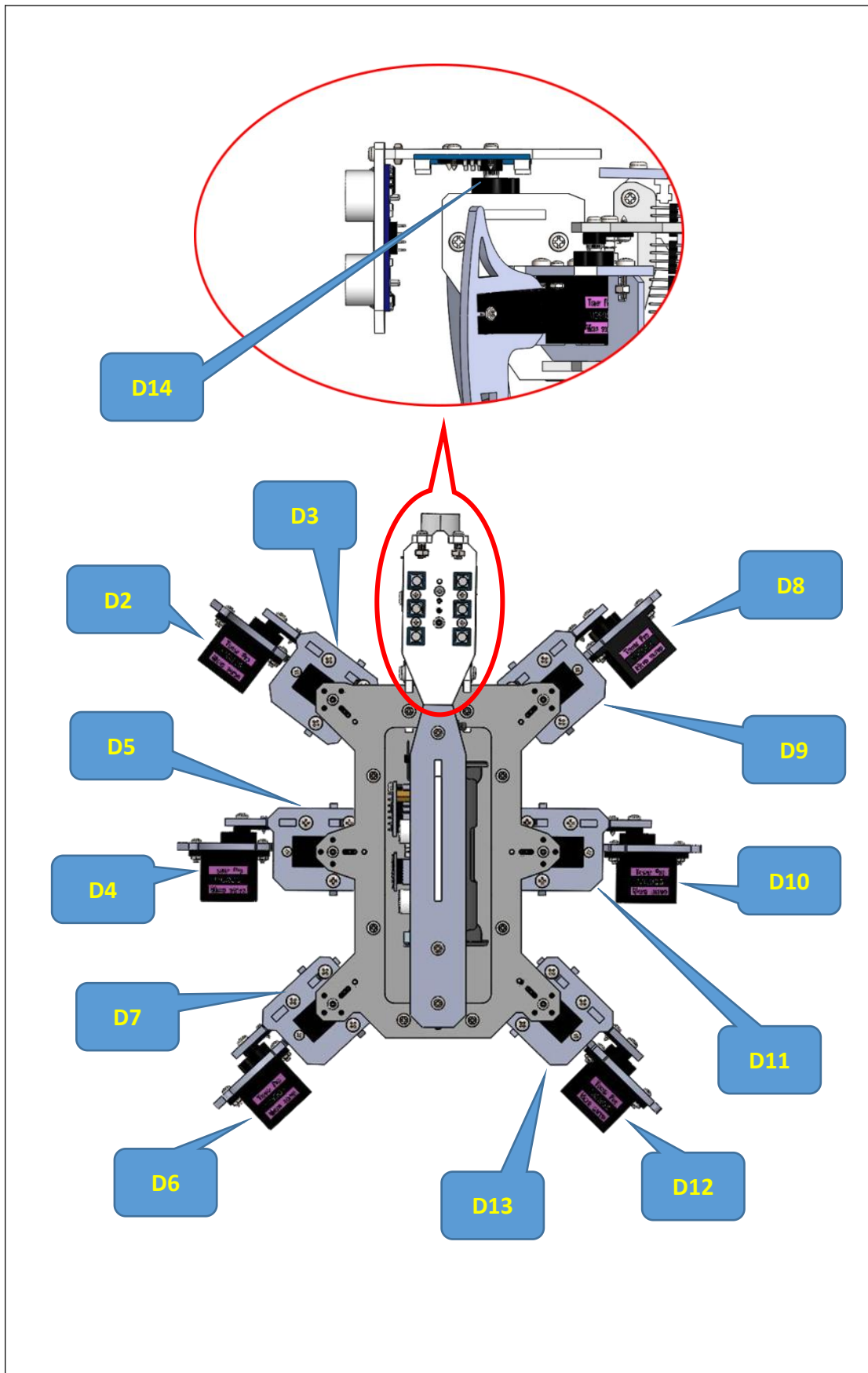


Note: Please connect the circuit correctly according to the circuit connection diagram below.

Effect diagram after assembling:



(15) Now, you can connect AdeptPixie and robot body:





(16) After completing the assembly, please later courses below to further learn how to control the robot.

