Lesson 10 Hexapod Spider Robot Assembly Tutorial

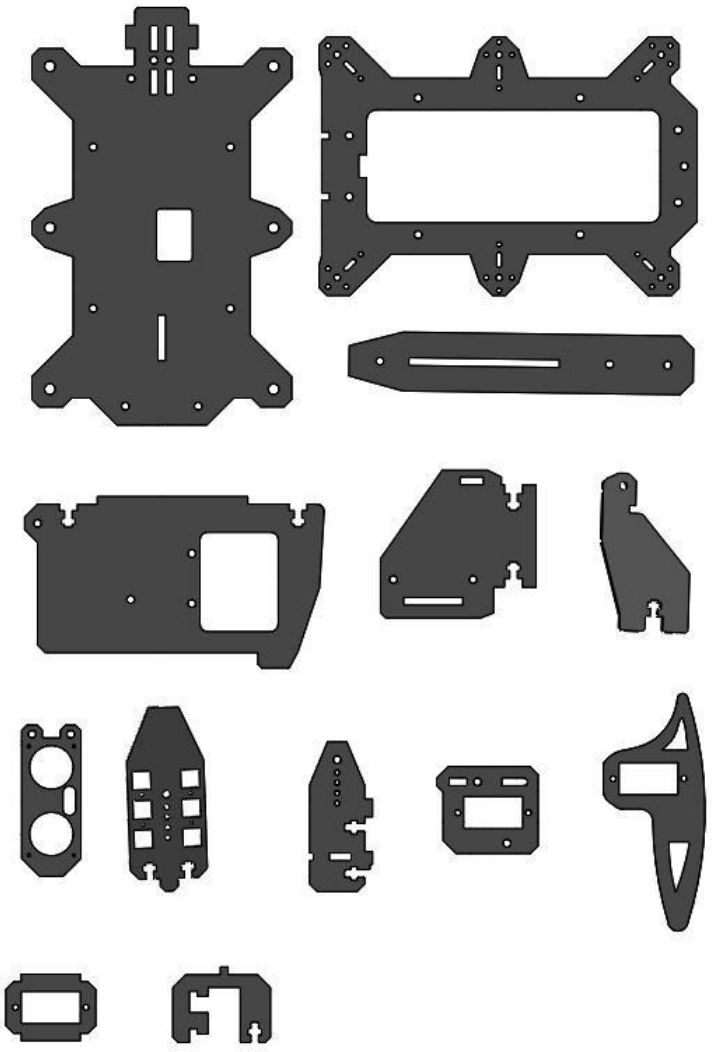
10.1 component List

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.

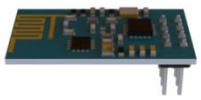
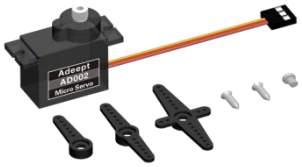
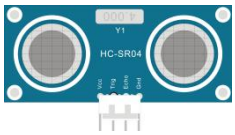
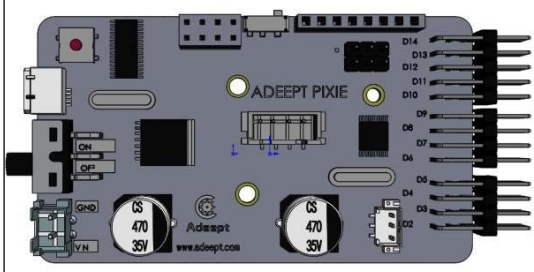
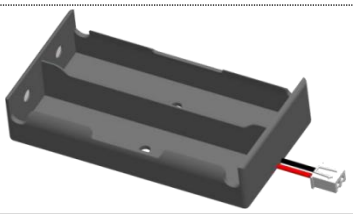


10.1.2 Machinery Parts

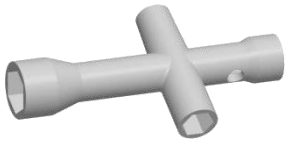
M2 Nut ×26  www.adeept.com	M3 Nut ×33  www.adeept.com	M3 Lock Nut ×1  www.adeept.com	M2.5 Nut ×2  www.adeept.com	M1.4*6 Self-Tapping Screw ×8  www.adeept.com
M1.7*6*6 Self-Tapping Screw ×13  www.adeept.com	M2*8 Screw ×26  www.adeept.com	M2.5*8 Screw ×15  www.adeept.com	M3*8 Screw ×18  www.adeept.com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

M3*14 Screw ×3  www.adeept.com				

10.1.3 Electronic Parts

ESP-8266 Wi-Fi module ×1	Servo ×13
	
MPU-6050 ×1	Adeept 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

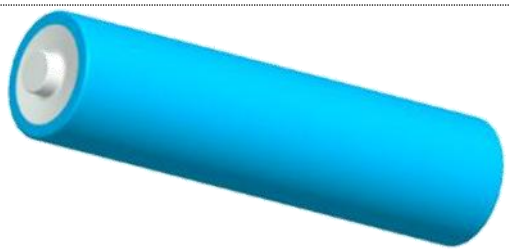
Cross Screwdriver ×1	Large flat-blade screwdriver ×1	Cross Socket Wrench ×1
		

Large Cross-head Screwdriver ×1


Winding Pipe ×2


Ribbon ×1

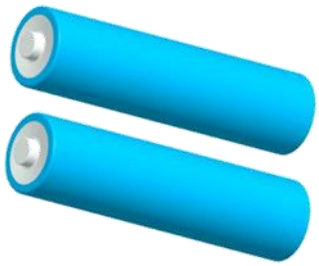
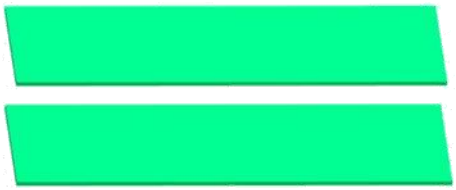

10.1.5 Self-prepared Parts

18650 Battery ×2


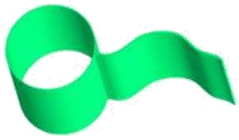
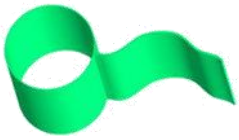
10.2 component List

10.2.1 Install and Remove Batteries

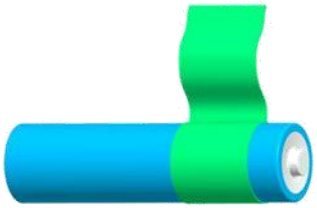
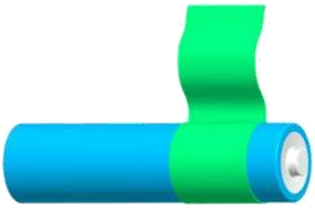
Take out 2 ribbons and 2 batteries.

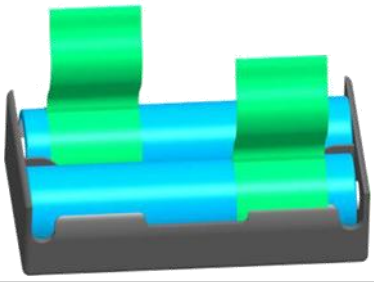
Roll one end of the ribbon to let through a battery and fix.

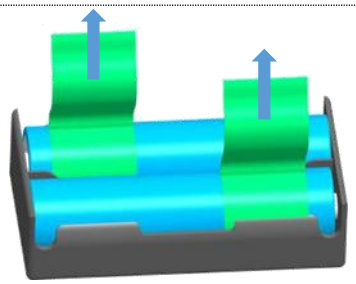
Insert the batteries into the rings-ribbon closer to the anode.

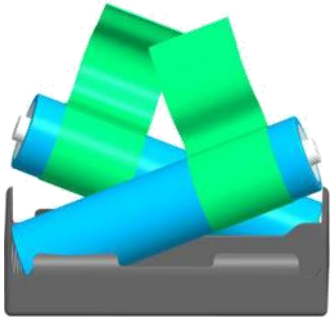



Install the batteries into the holder based on the pole.



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

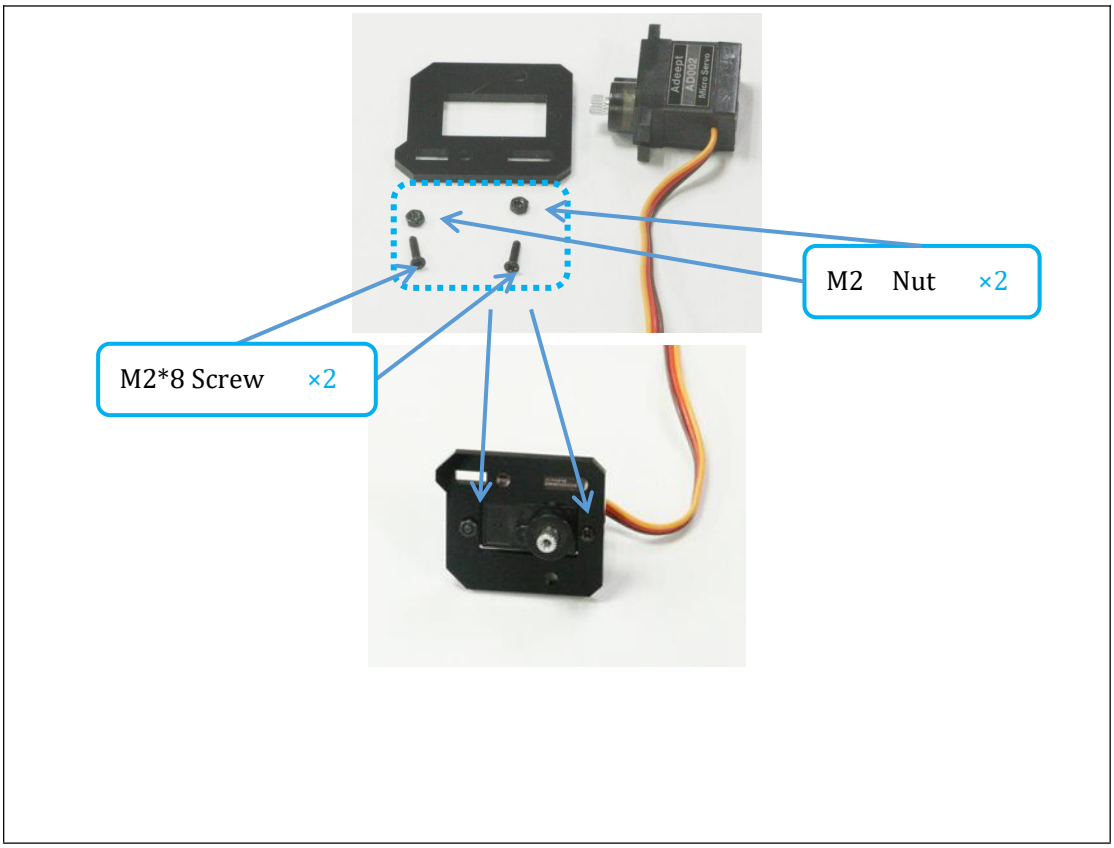


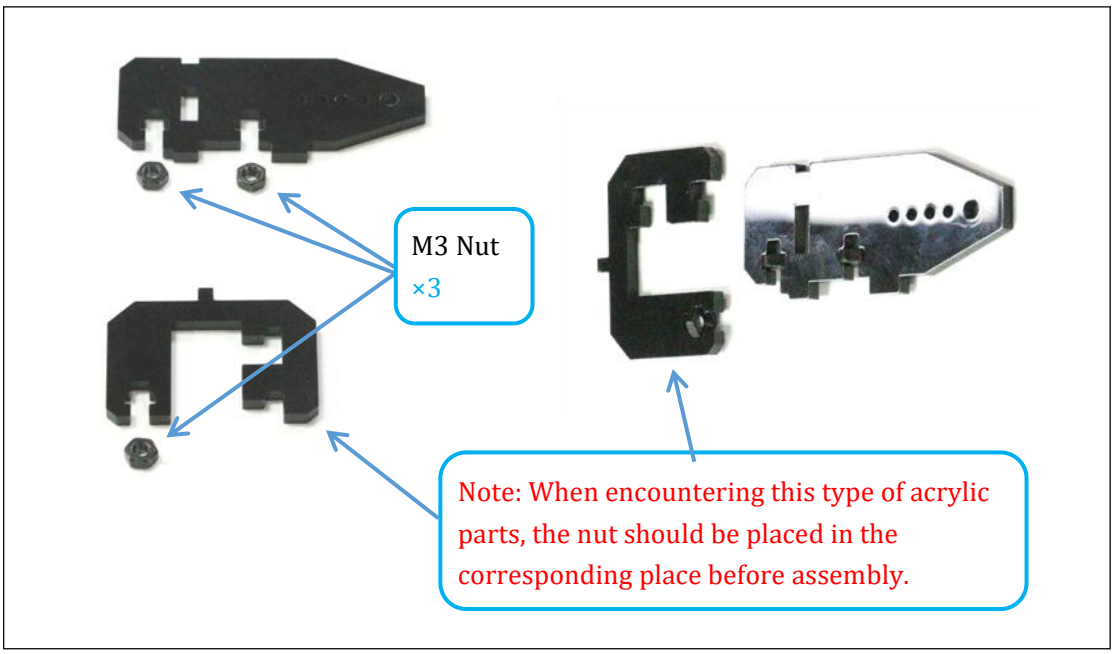


10.3 Assemble the body

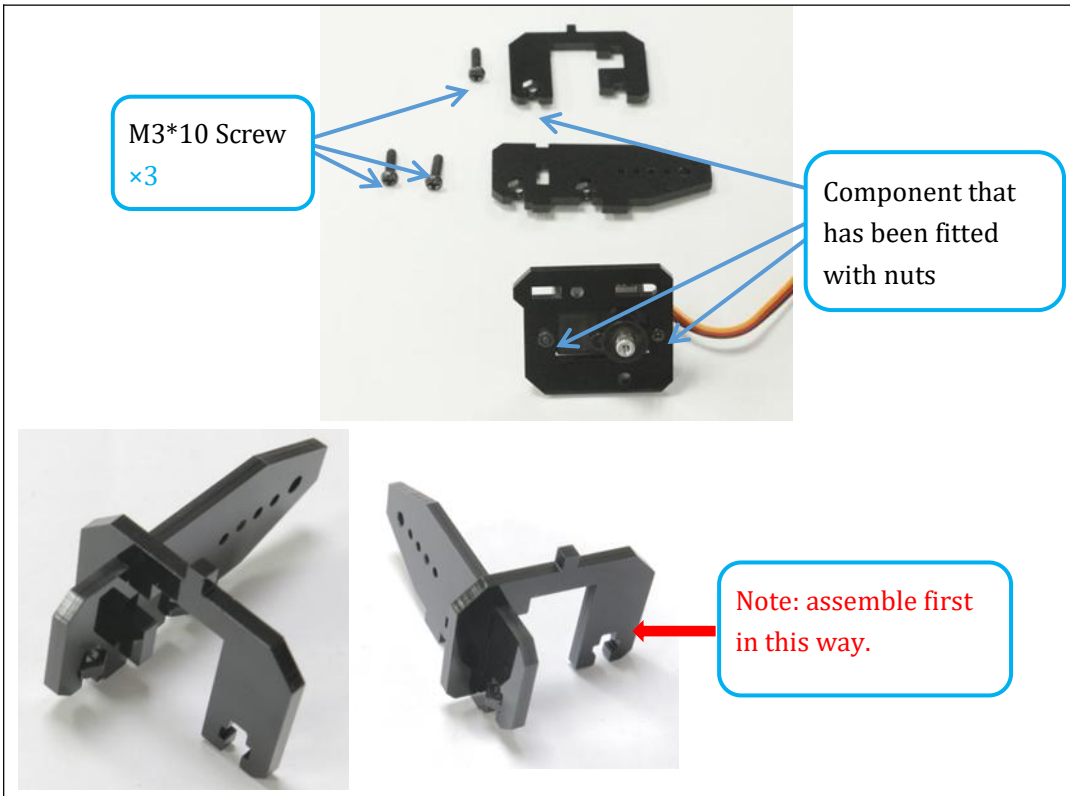
10.3.1 Assemble the legs of the Robot

（1）Assemble the following component

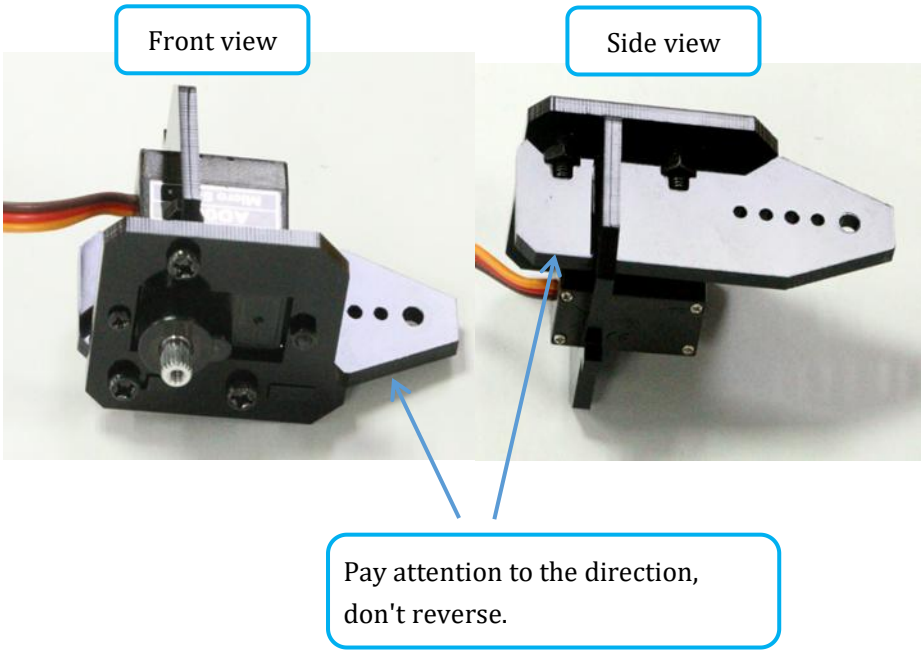




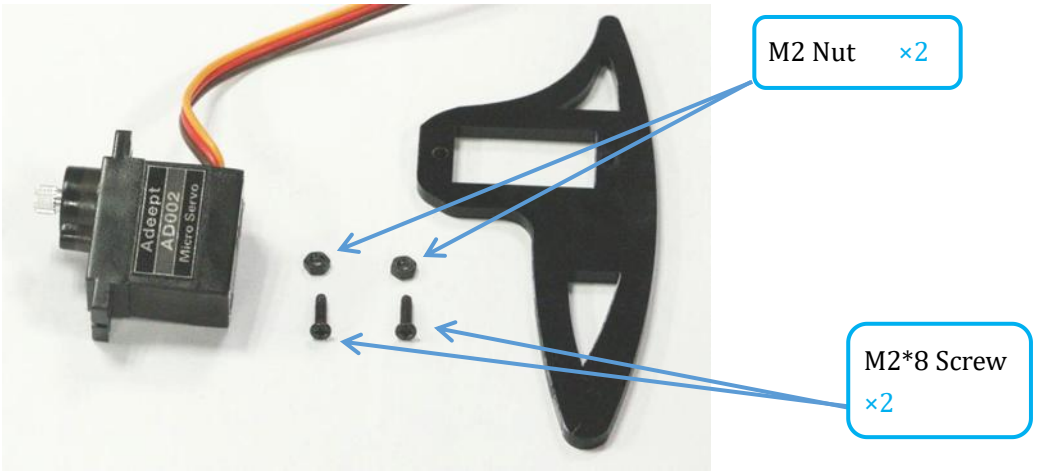
（2）Assemble the following component



Effect diagram after assembling：



（3）Assemble the following component

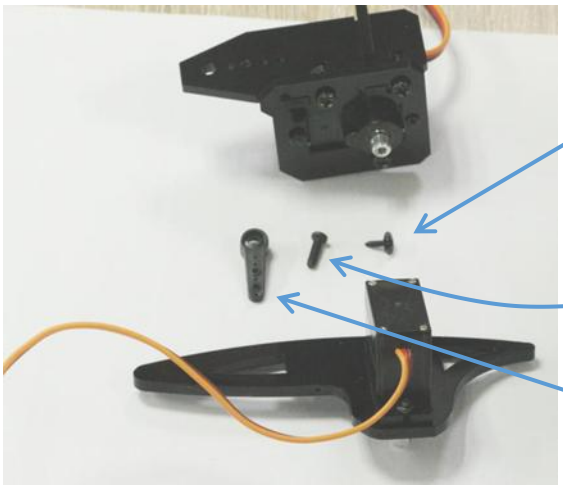


Effect diagram after assembling:

Front view

Back view

（4）Assemble the following component



Effect diagram after assembling：

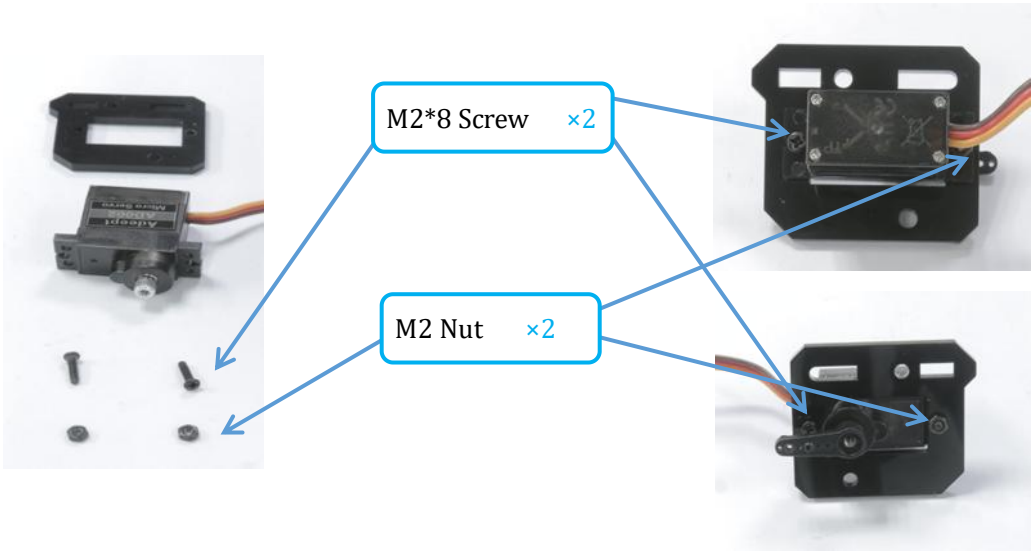
Front view	Back view
	
Note: Do not reverse the direction of the servo after assembly. This has already been assembled. Then follow the same steps to assemble the remaining two feet on the left side.	Note: The two components are connected together by a rocker arm. The connection of the rocker arm has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

Effect diagram after assembling

Front view of the three assembled left legs

（5）Assemble the following component

Before assemble		After assemble

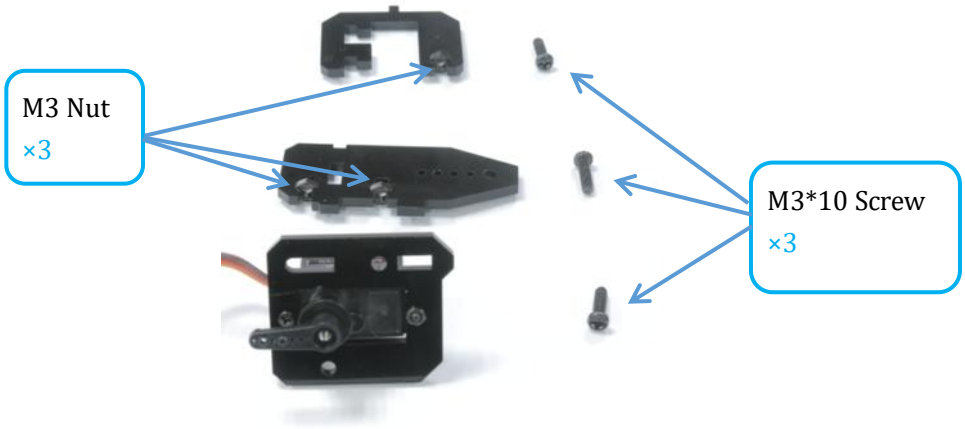


Effect diagram after assembling：

Motor comparison on both sides.

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

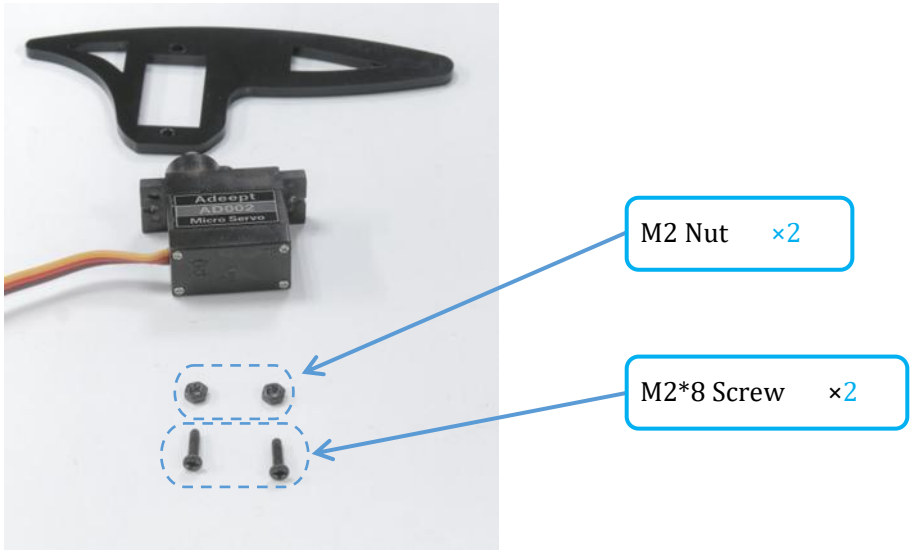
（6）Assemble the following component



Note: assemble first in this way.

Effect diagram after assembling：

（7）Assemble the following component

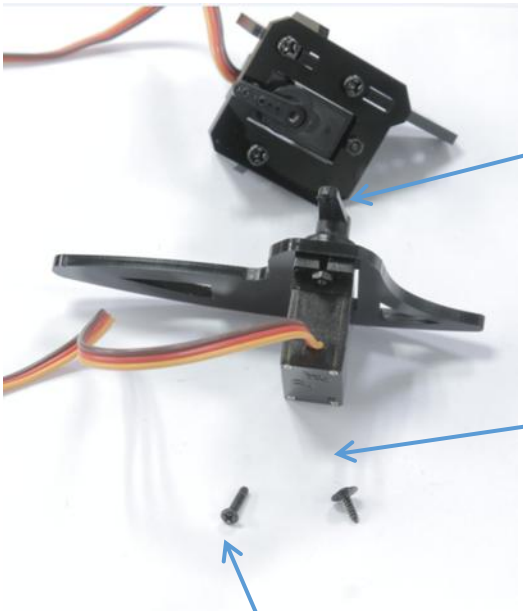


Effect diagram after assembling:

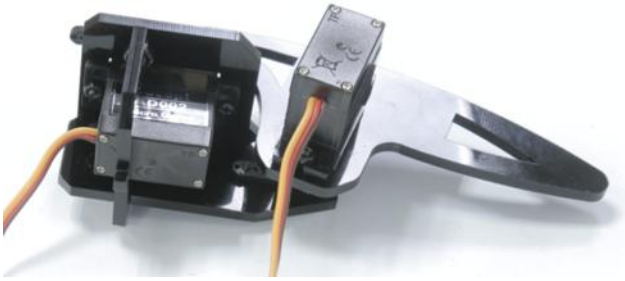
Physical map of the left and right

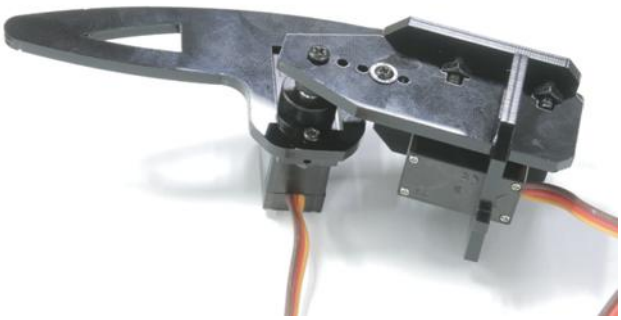
Note: Their directions are all opposite.

（8）Assemble the following component



Effect diagram after assembling：





Back view

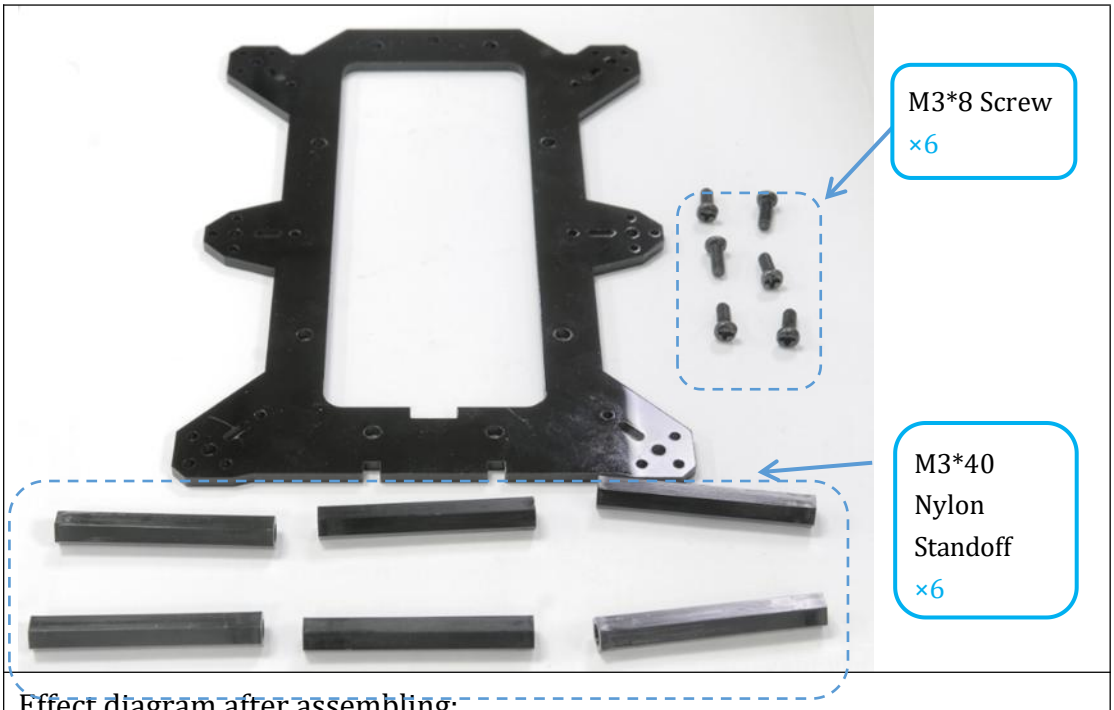
This has successfully assembled one foot on the other side. Follow the steps to complete the remaining two feet.

Physical map of the left and right

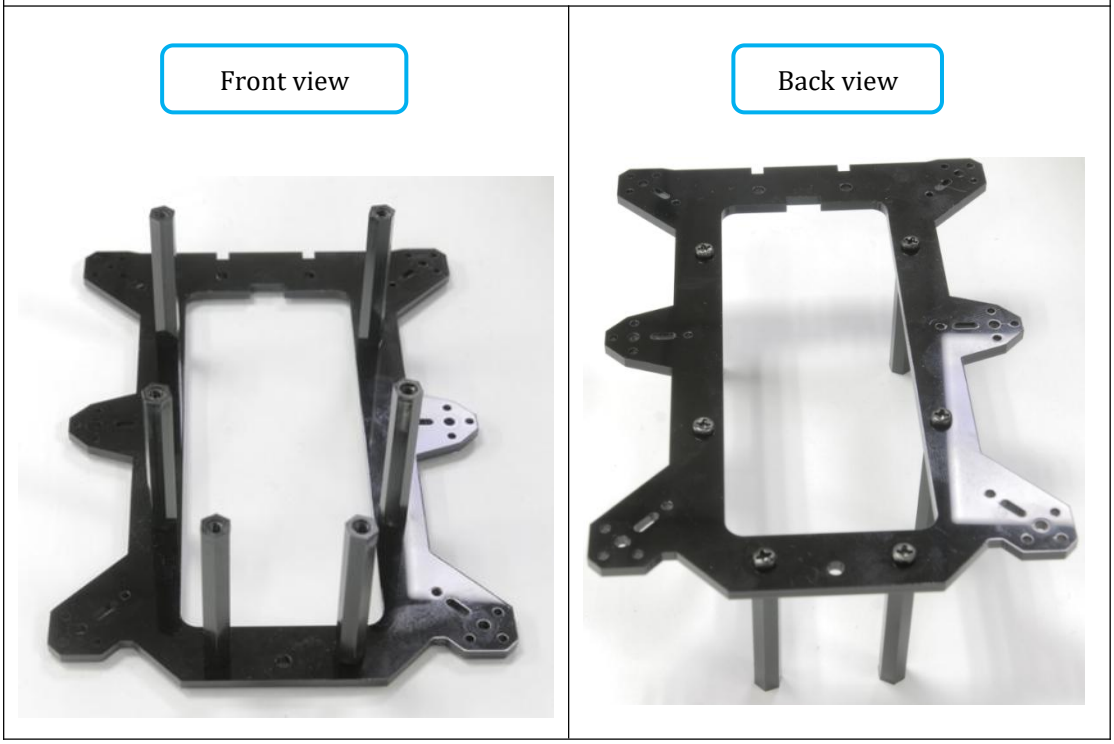
Note : Legs of two side are installed with symmetry.

10.3.2 Assemble the body and rocker arms

（1）Assemble the following component

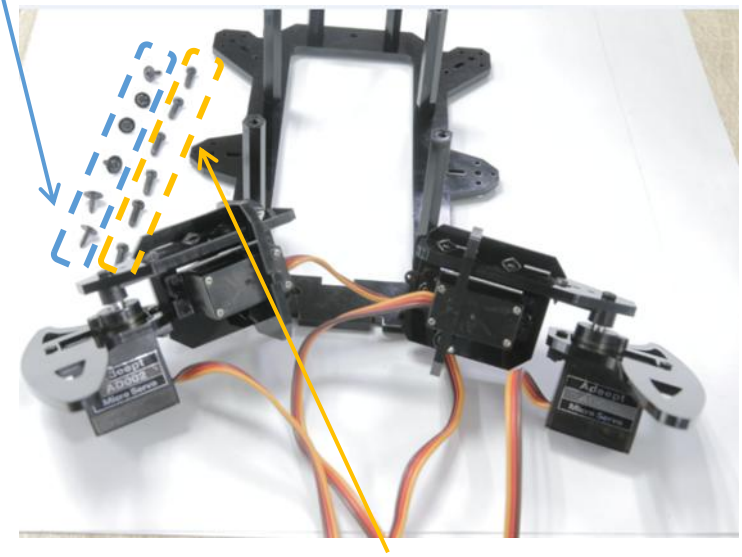


Effect diagram after assembling:



（2）Assemble the following component

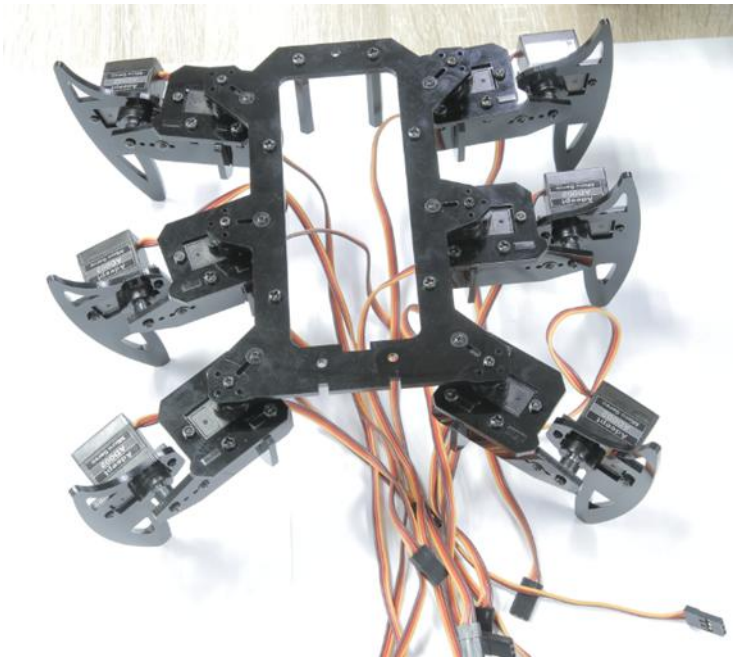
M1.7*6*6 Self-Tapping Screw ×6



M2.5*8 Screw ×6

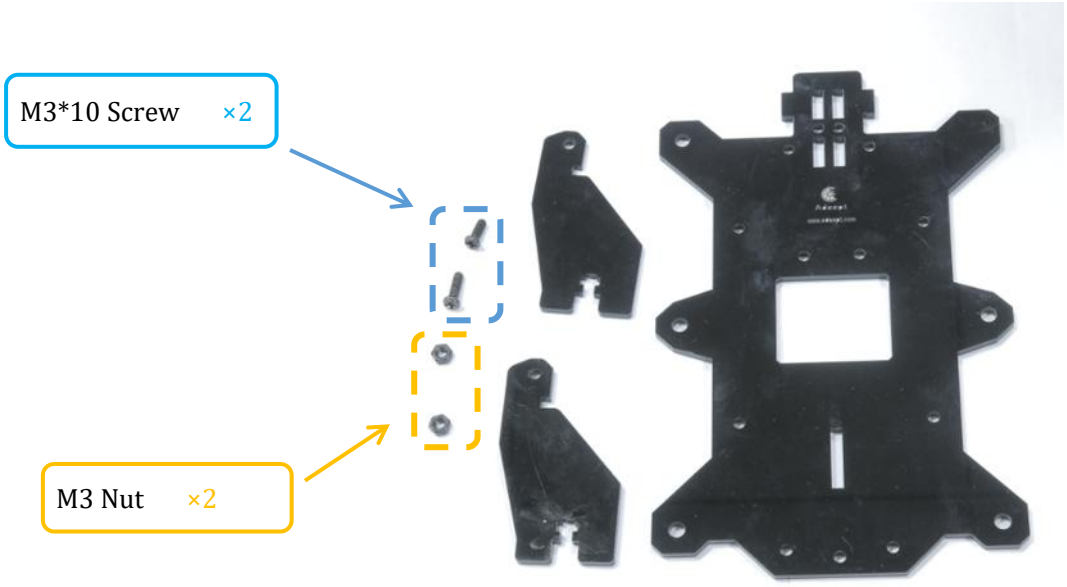
Effect diagram after assembling:

Front view



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

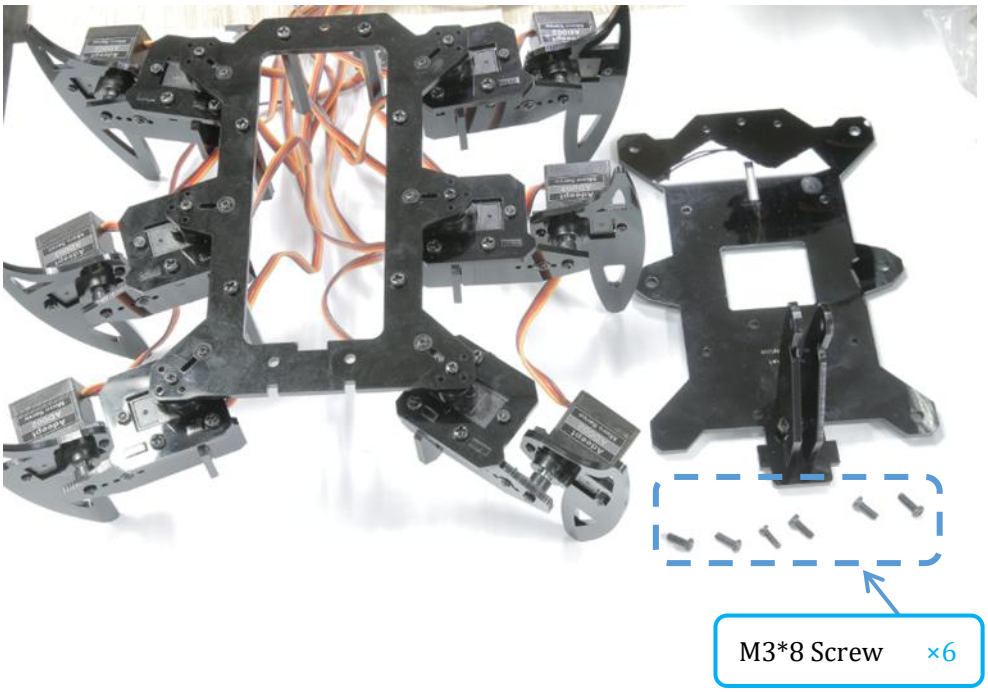
（3）Assemble the following component



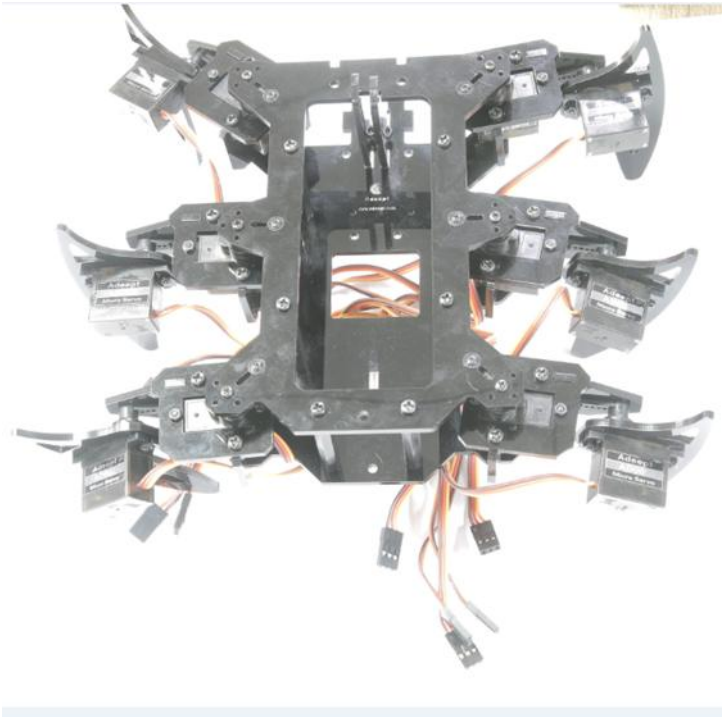
Effect diagram after assembling:

Note: The area facing outside is vertical to the bottom plate.

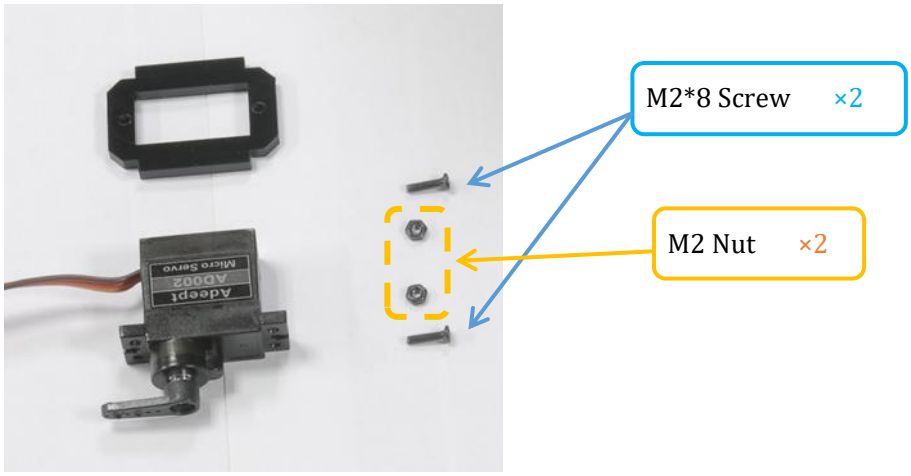
（4）Assemble the following component



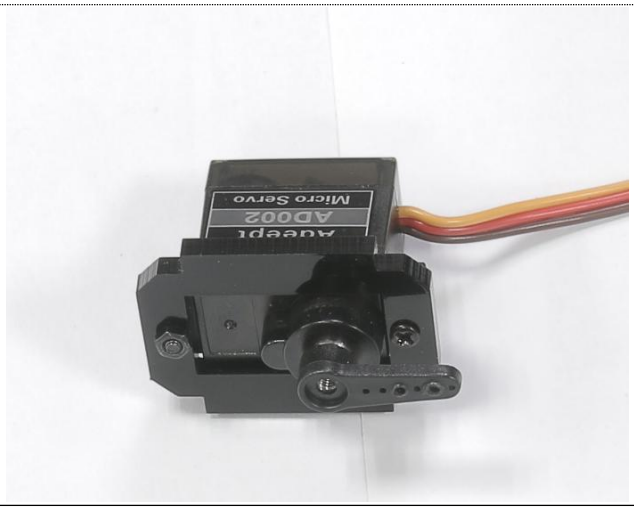
Effect diagram after assembling:



（5）Assemble the following component

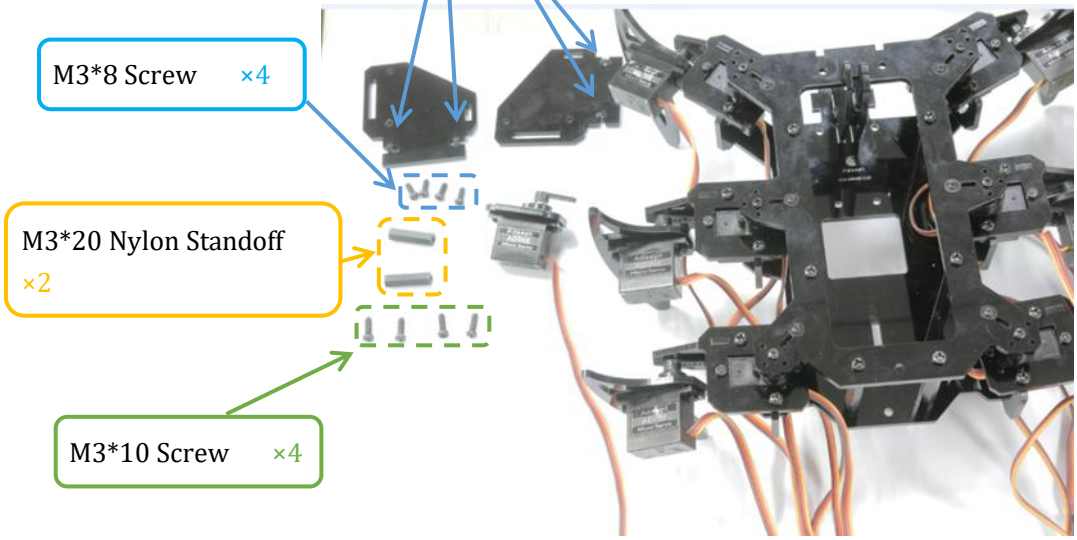


Effect diagram after assembling：

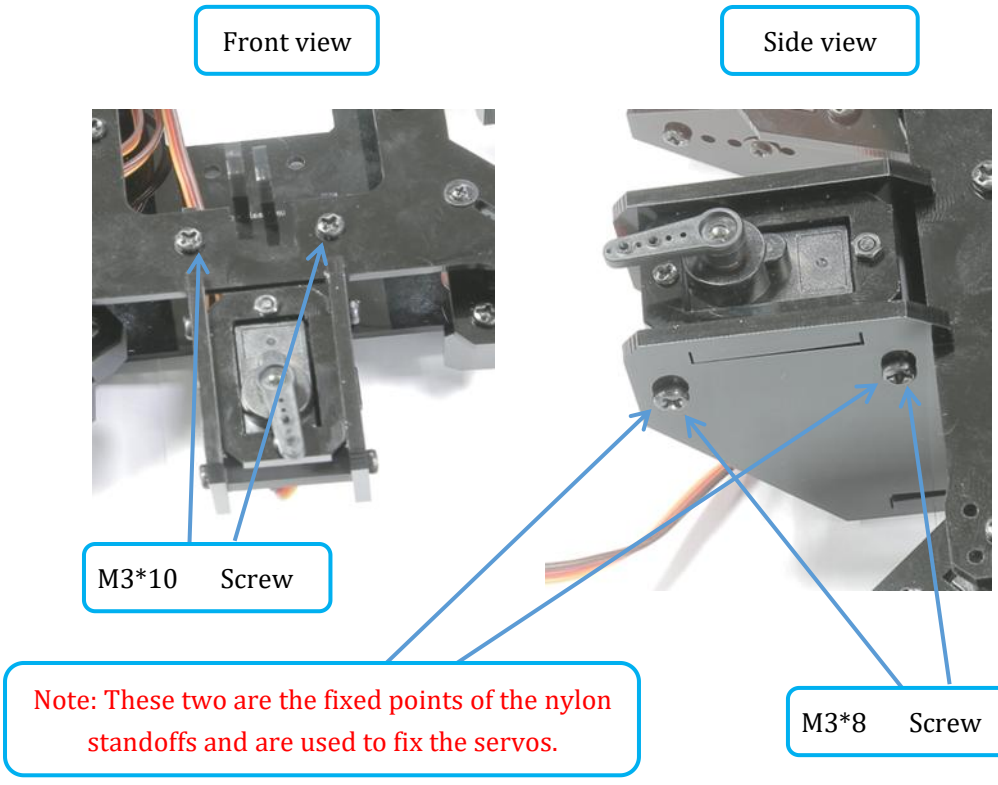


M3 Nut ×4

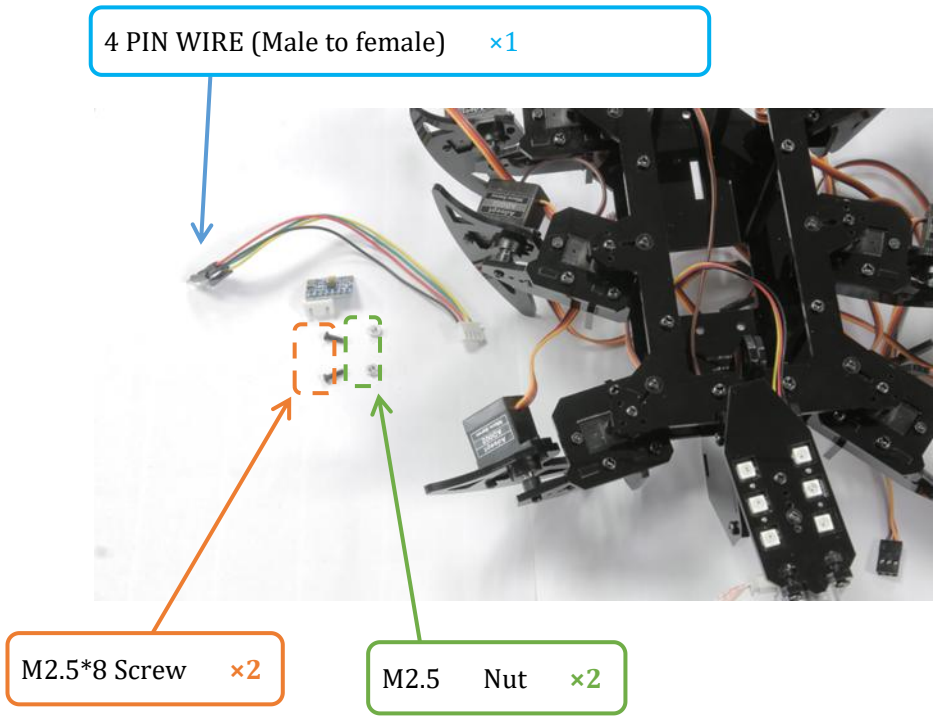
（6）Assemble the following component



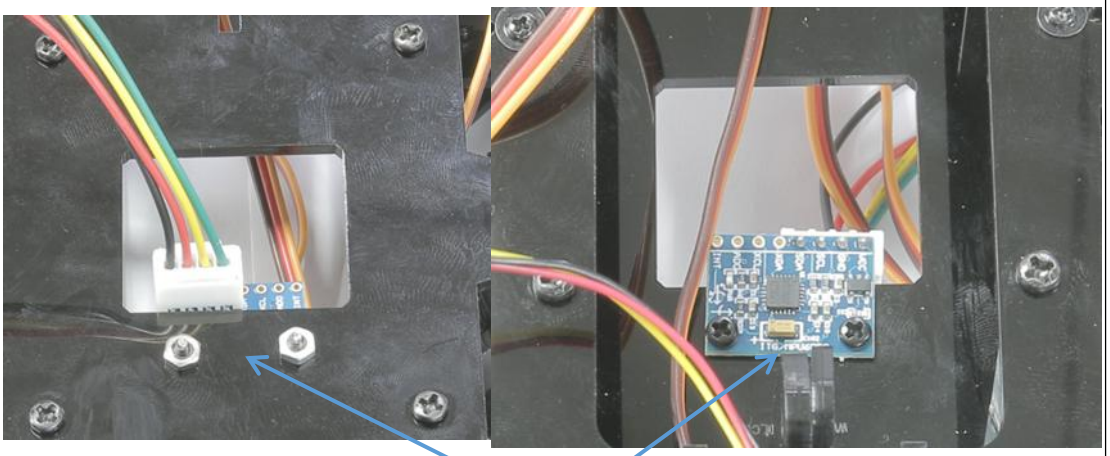
Effect diagram after assembling：



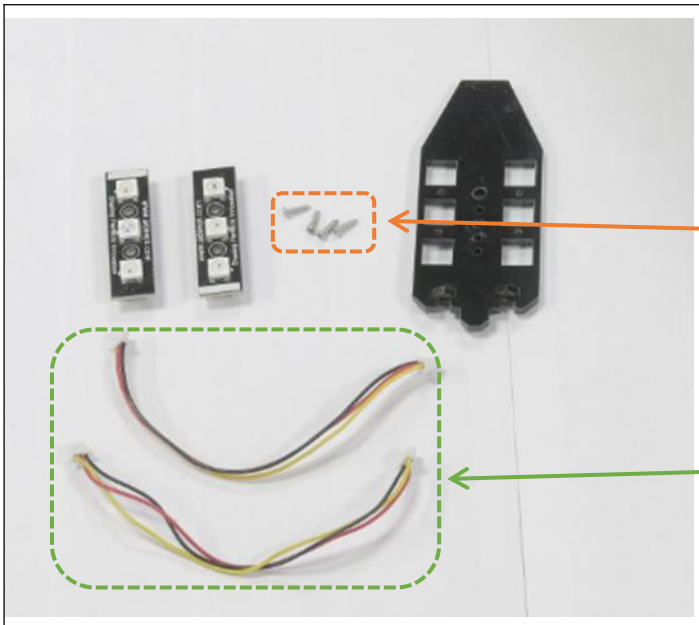
（7）Assemble the following component



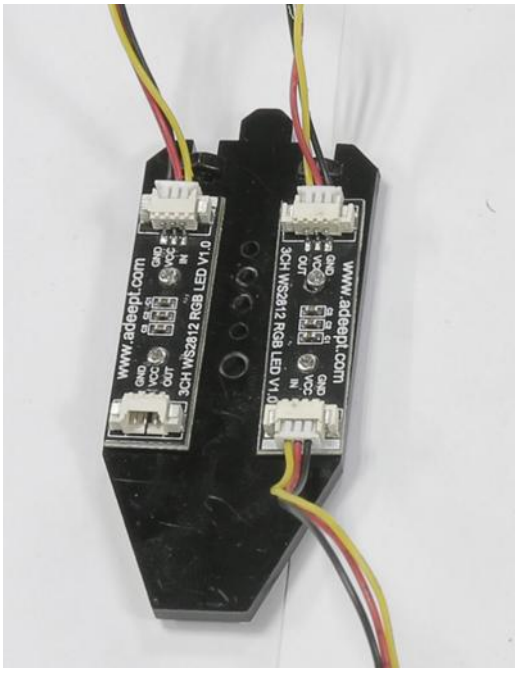
Effect diagram after assembling:



（8）Assemble the following component



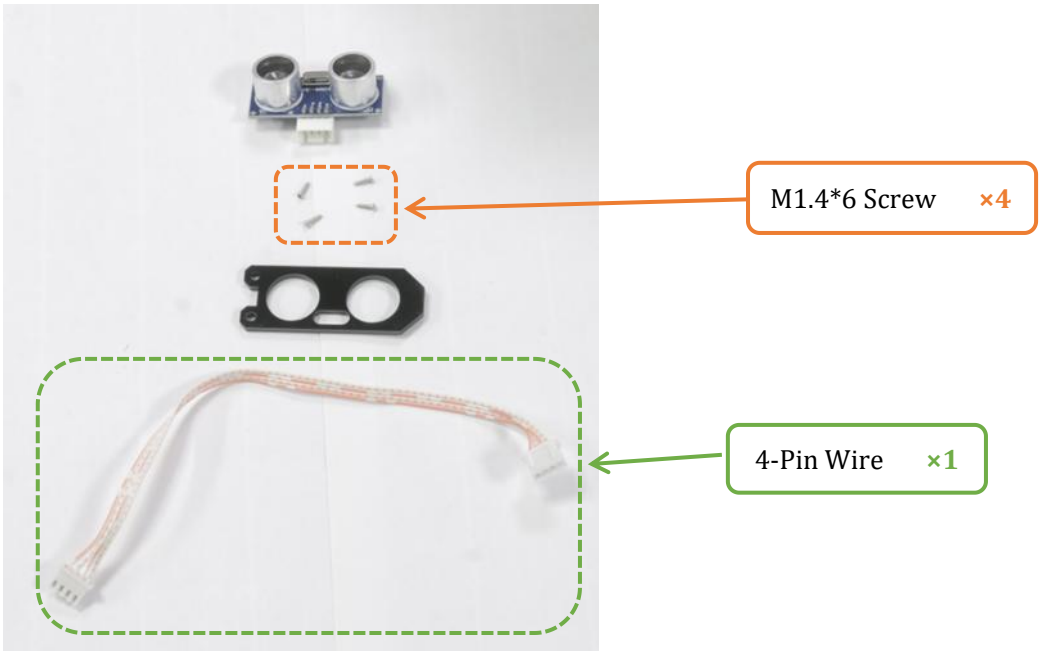
Effect diagram after assembling:



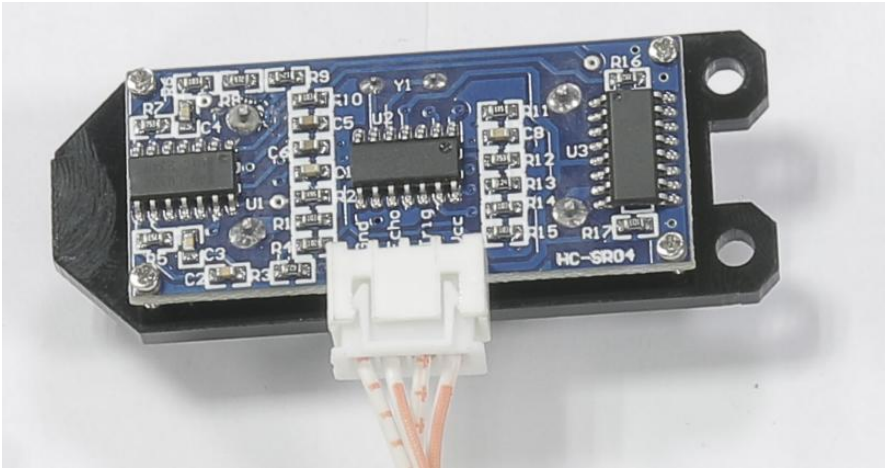
Note: The LED module has an input (IN) with a white edge and an output (OUT) without white edge. If the LED does not light up in yellow normally, then check if the input and output are reversed.

（9）Fix Adeept Ultrasonic Module on acrylic plate

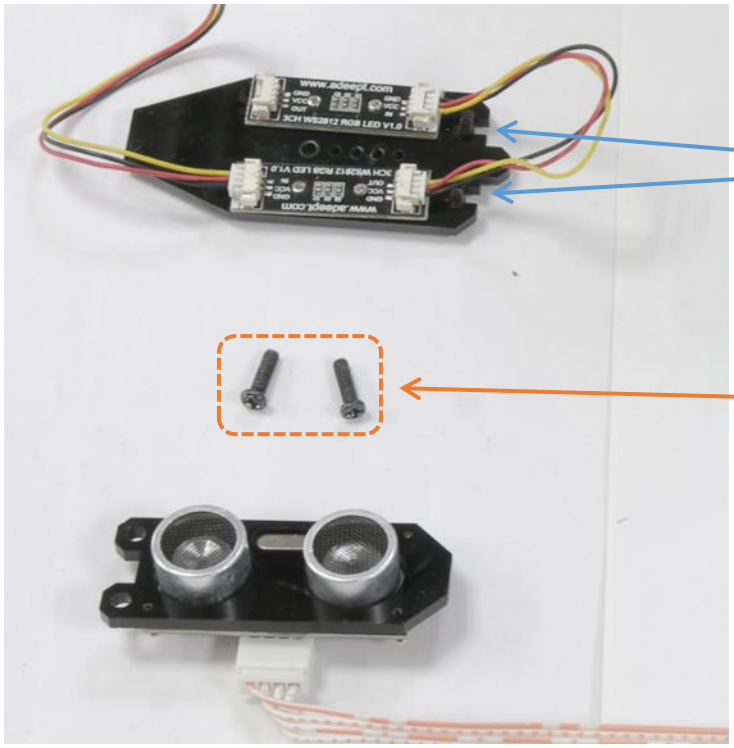
Assemble the following component:



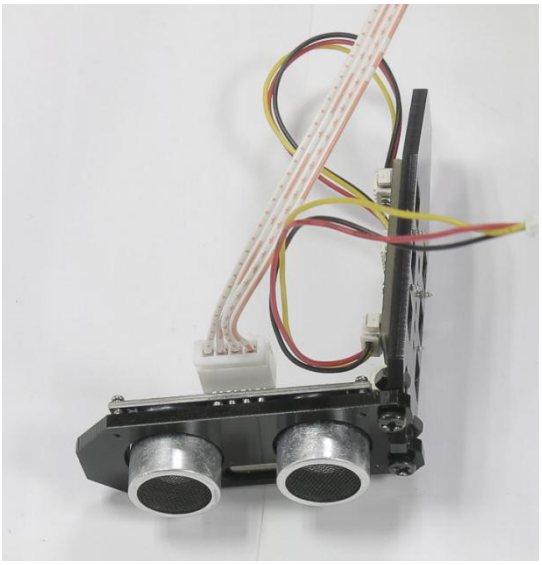
Effect diagram after assembling:



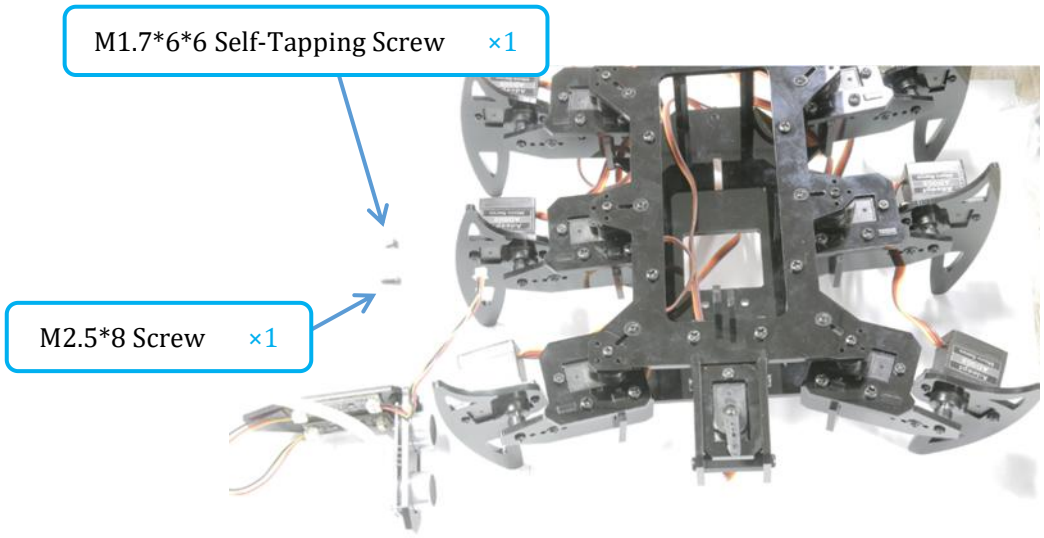
（10）Assemble the following component



Effect diagram after assembling：



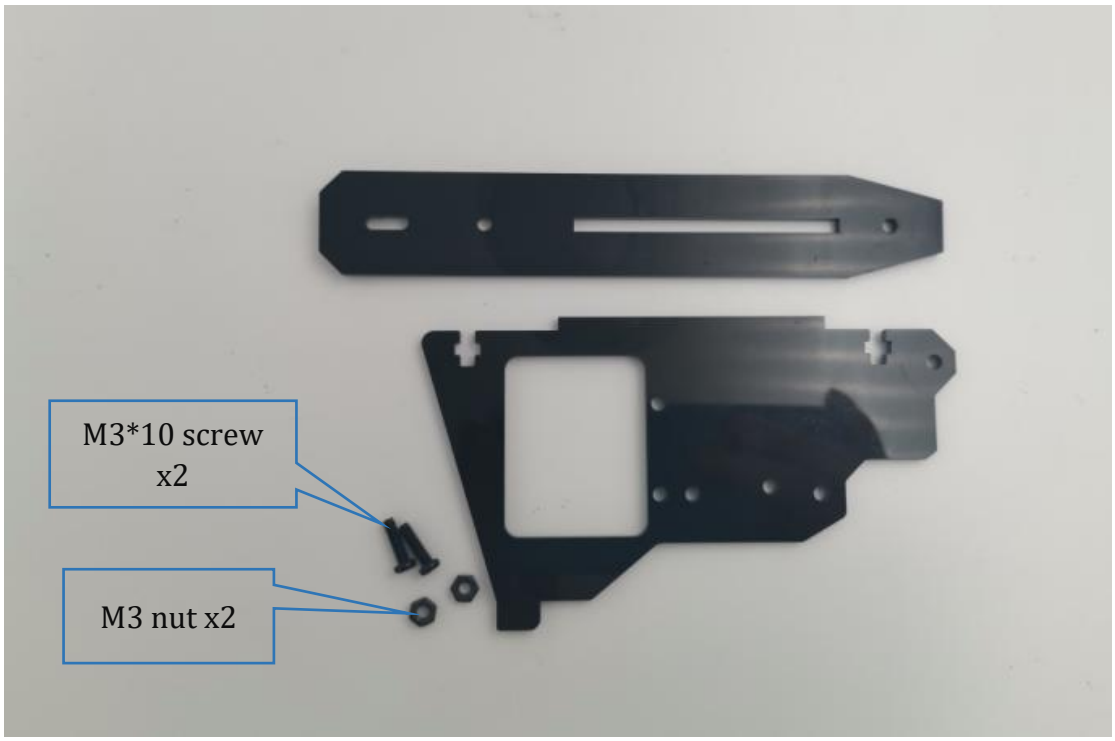
（11）Assemble the following component



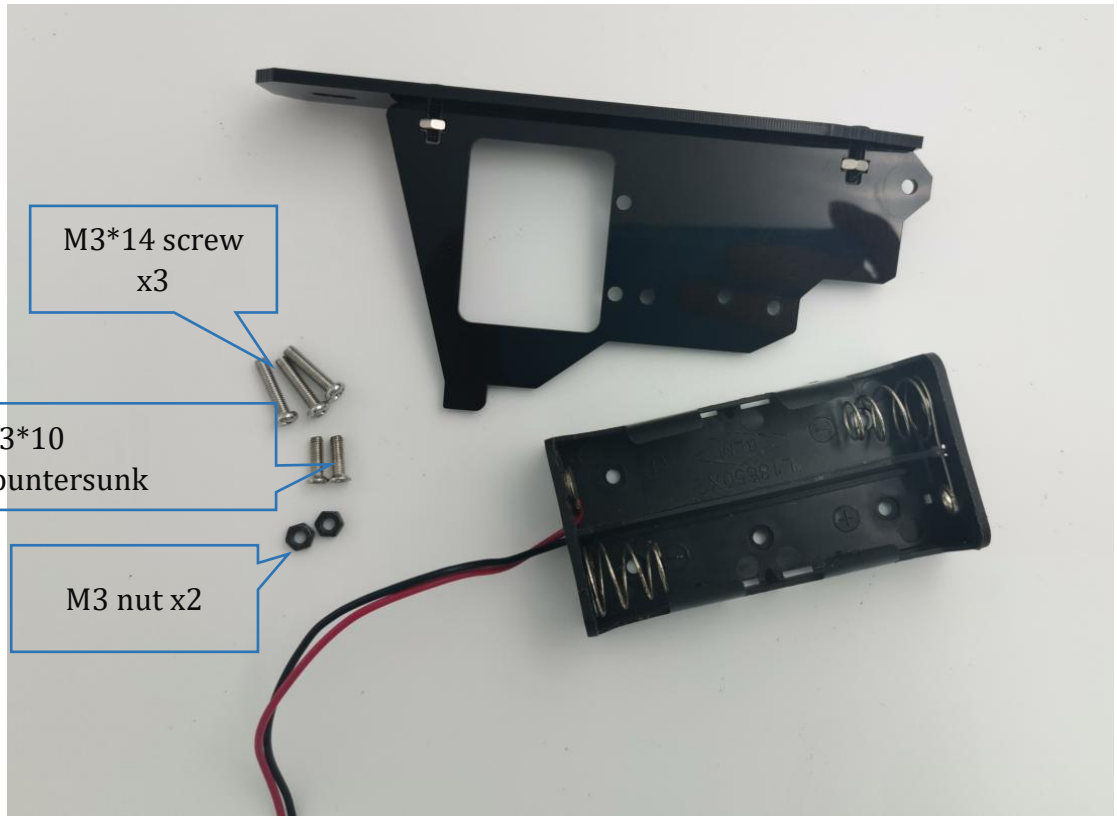
Effect diagram after assembling：

（12）Assemble the following component

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



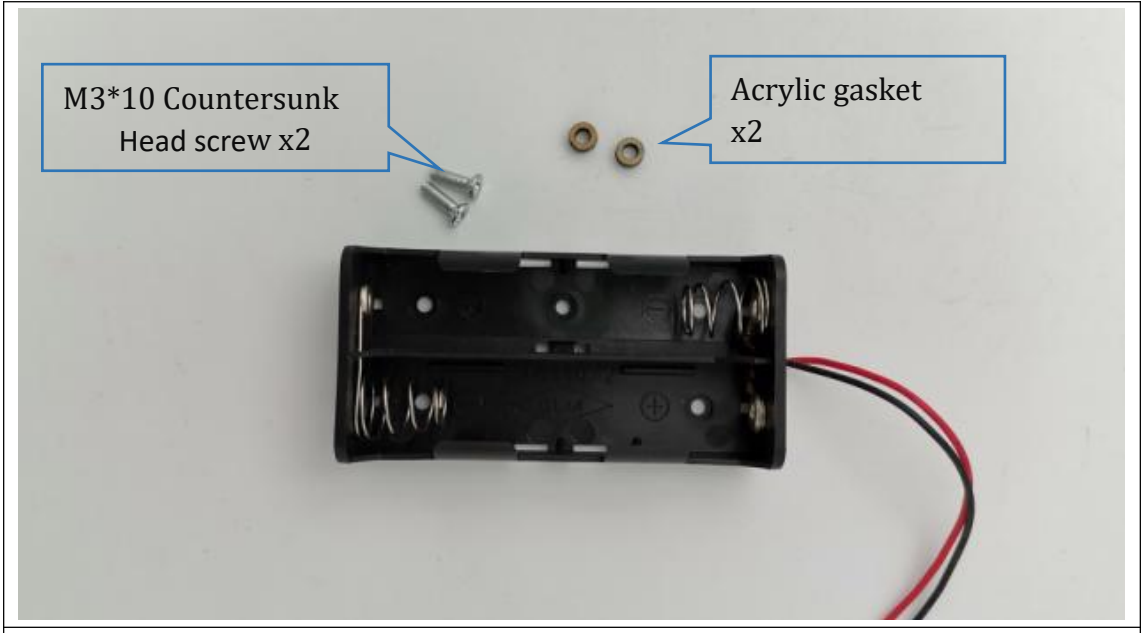
Prepare 3 M3*14 screws, 2 M3*10 countersunk head screws and 2 nuts to install the battery box.

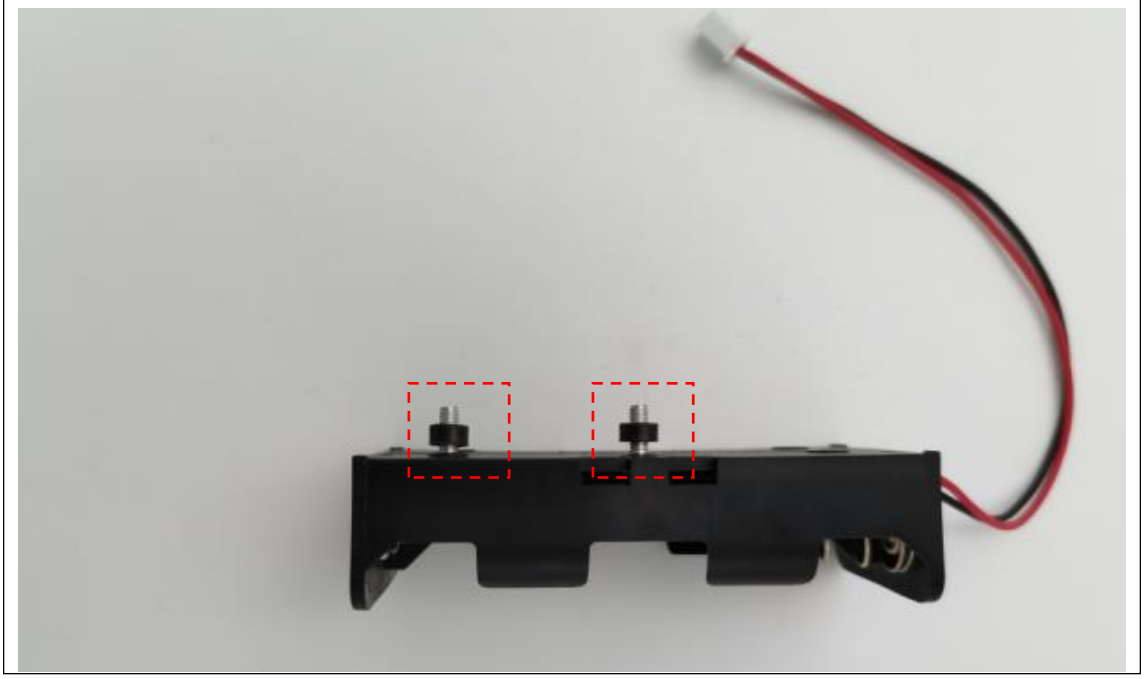


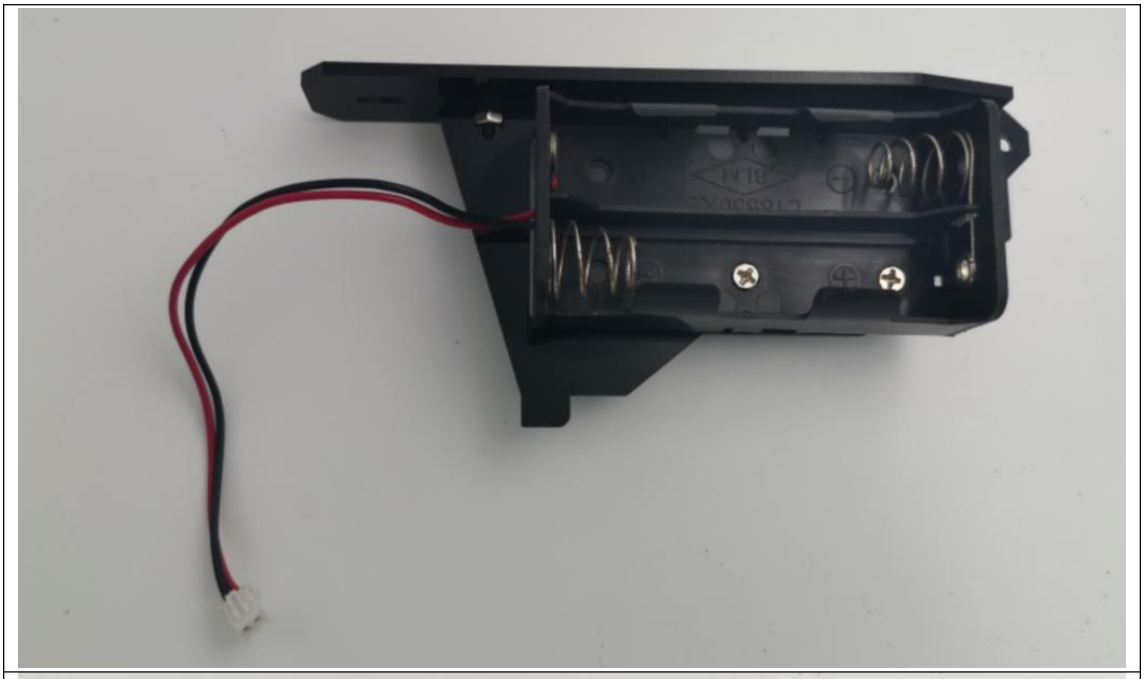
Put 3 M3*14 screws into the three holes below.

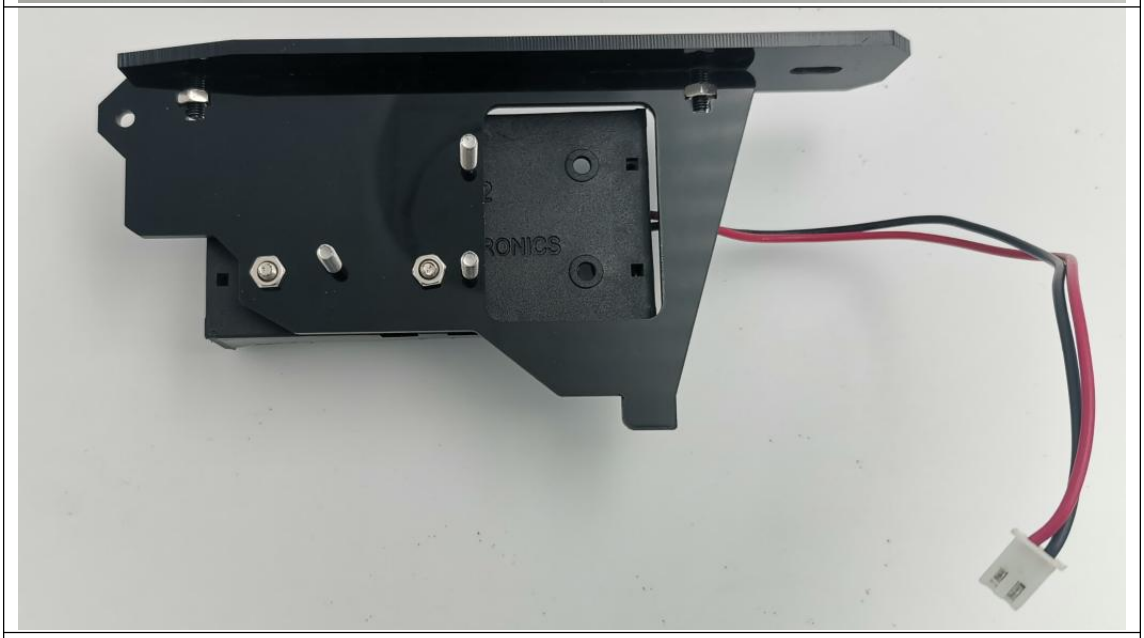
Use 2 M3*10 countersunk head screws and 2 M3 nuts to install the battery box. Note the orientation of the battery box. Put an acrylic spacer between the battery case and the acrylic plate.

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

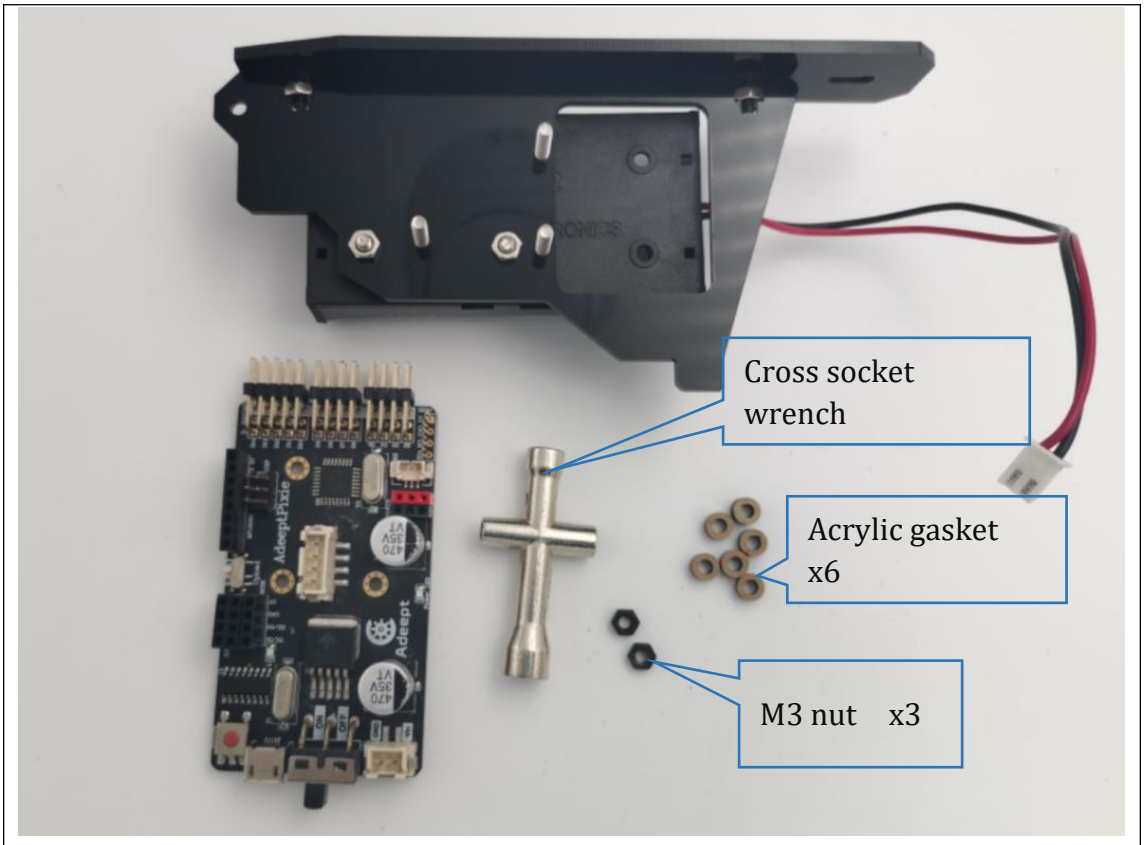

M3*10 Countersunk
Head screw x2
Acrylic gasket
x2



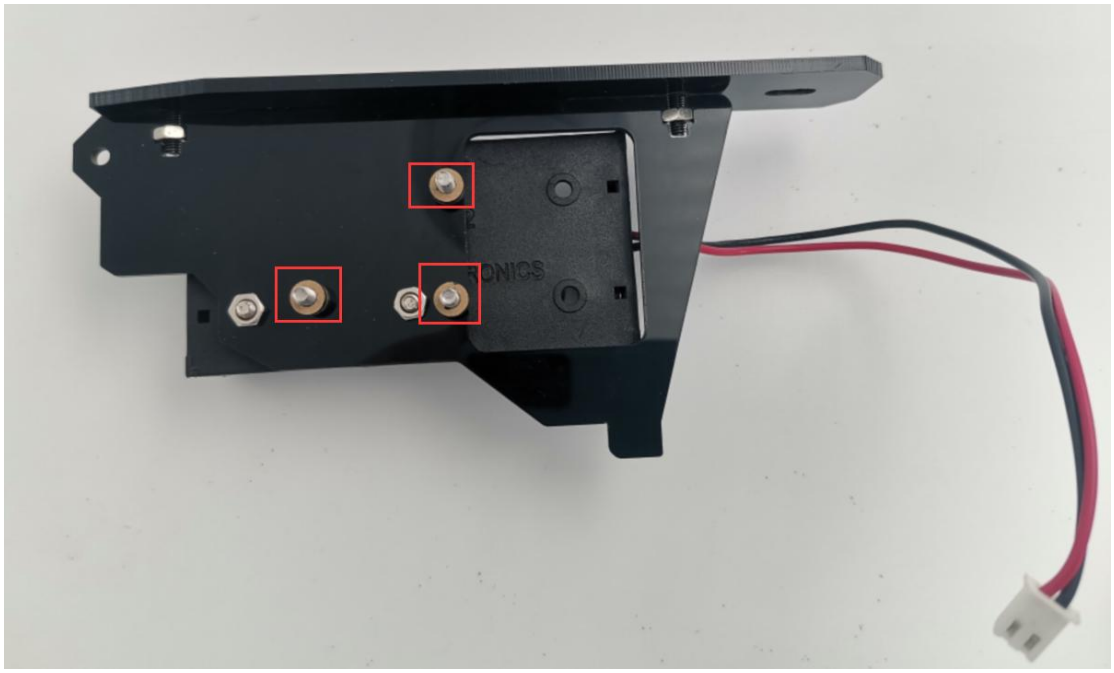




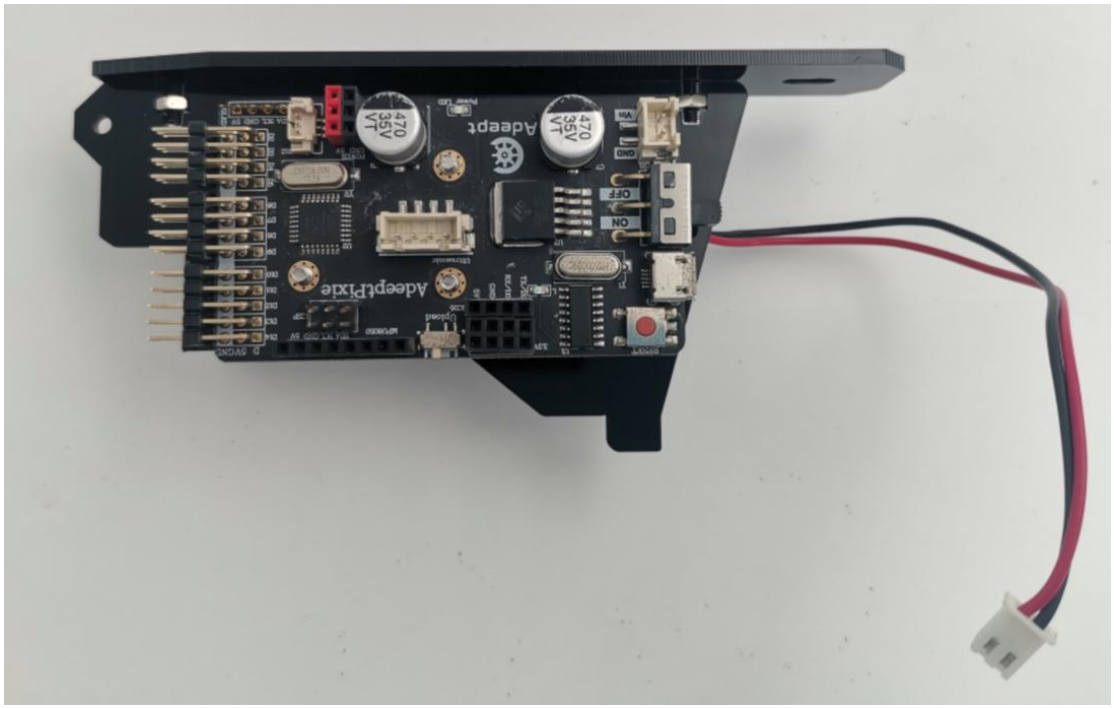
Prepare Cross socket wrench , 6 Acrylic gasket, 3 M3 nuts. (Acrylic gasket are on the acrylic sheet.)



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

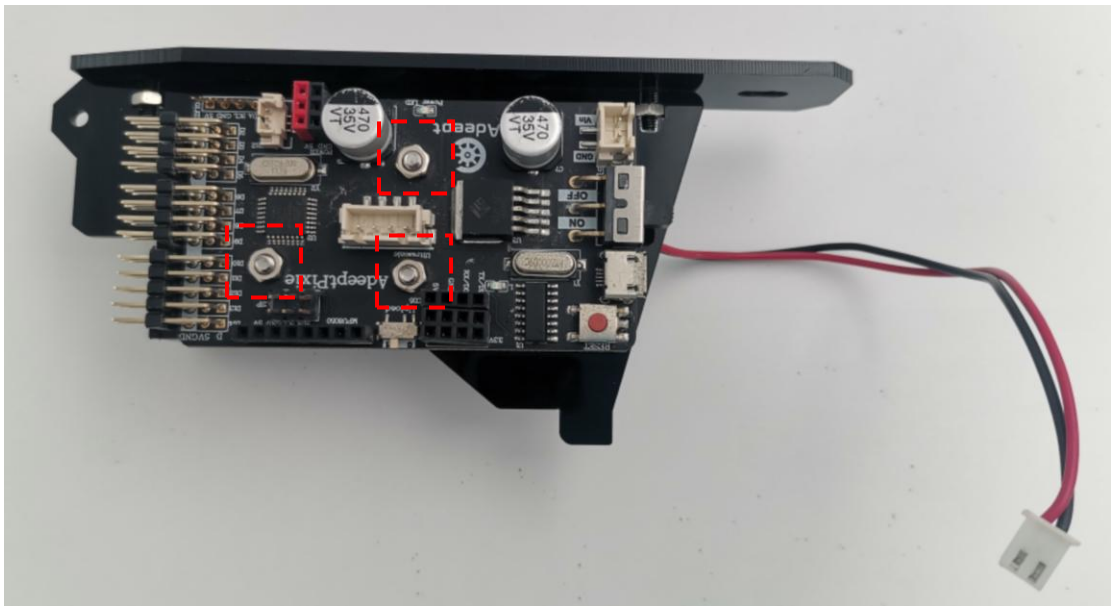


Install the Arduino board.

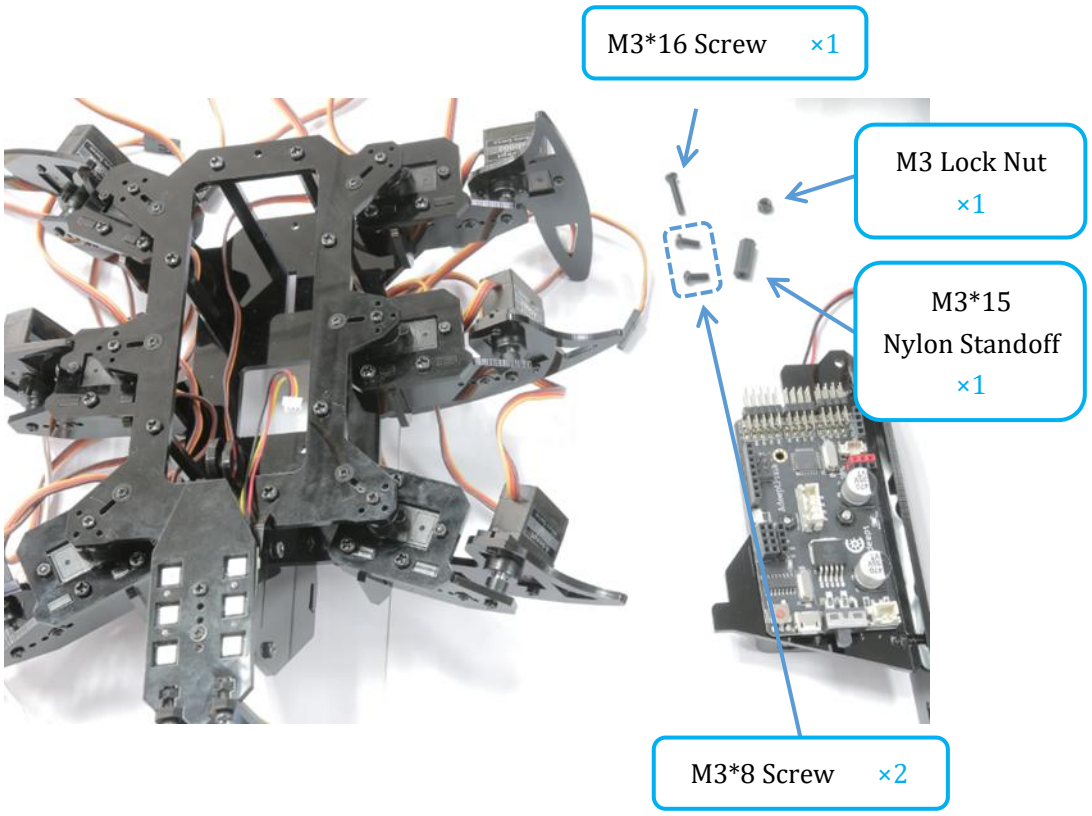


Use an Cross socket wrench to tighten the 3 M3 nuts.

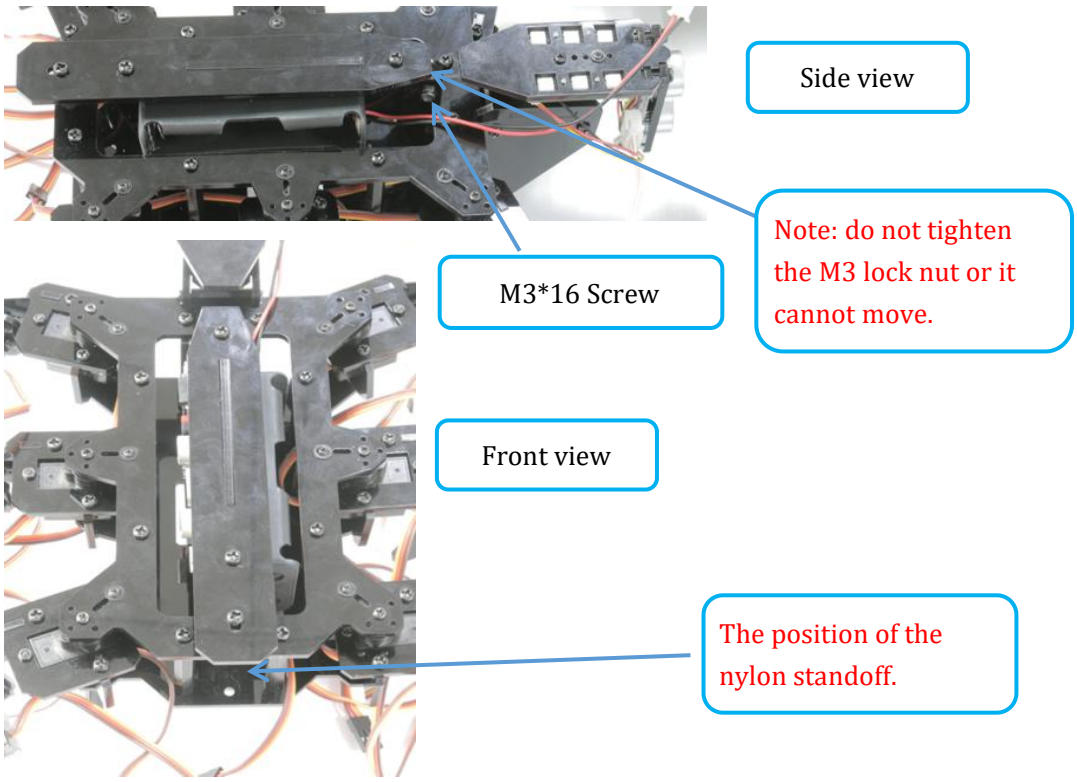
Note: When tightening the nut, please press the Arduino board slightly to avoid the M3 nut not being able to be tightened.



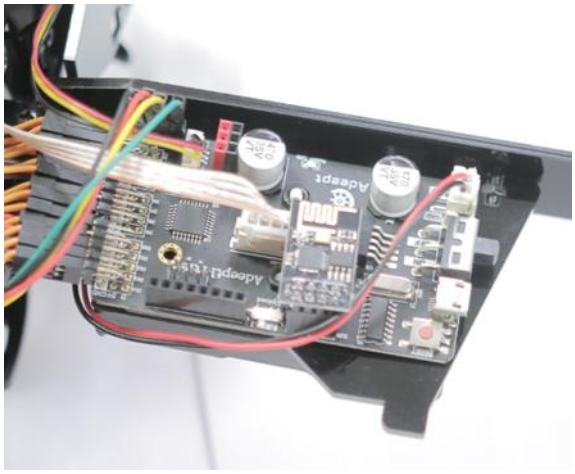
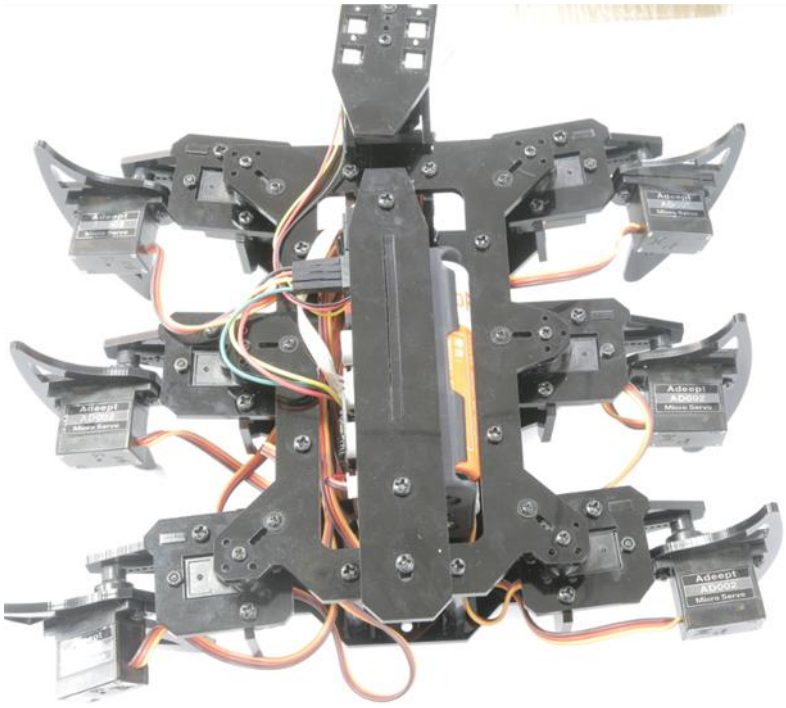
（13）Assemble the following component.



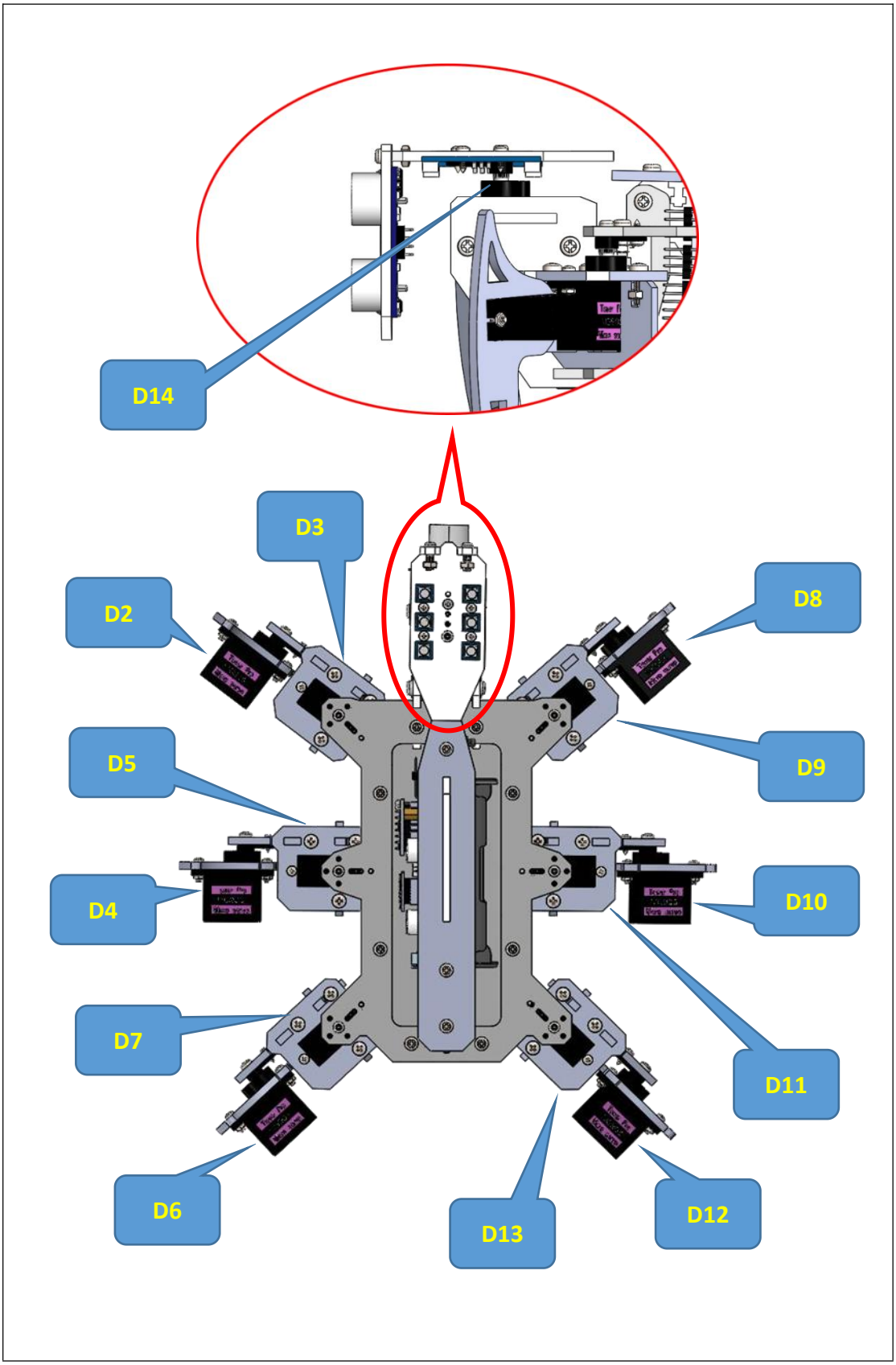
Effect diagram after assembling:

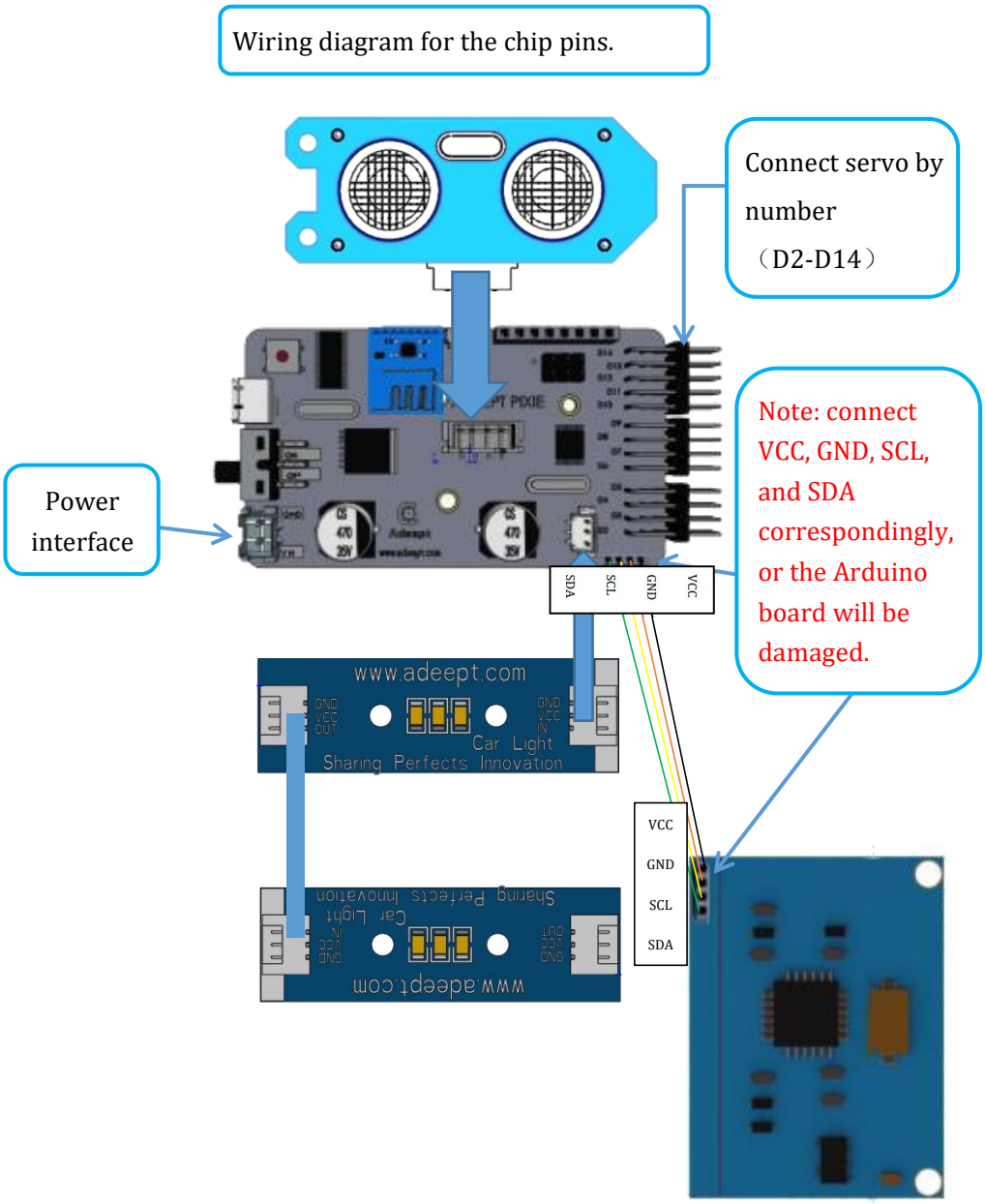


（14）Connect Arduino HAT and the robot.

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 AdeeptPixie and robot body:




Wiring diagram for the chip pins.
Connect servo by number （D2-D14）
Power interface
Note: connect VCC, GND, SCL, and SDA correspondingly, or the Arduino board will be damaged.
SDA
SCL
GND
VCC
www.adeept.com
Car Light
Sharing Perfects Innovation
VCC
GND
SCL
SDA

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