








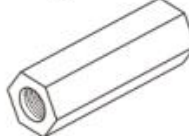








Sunflower Sun Tracker

Installation and debugging instructions

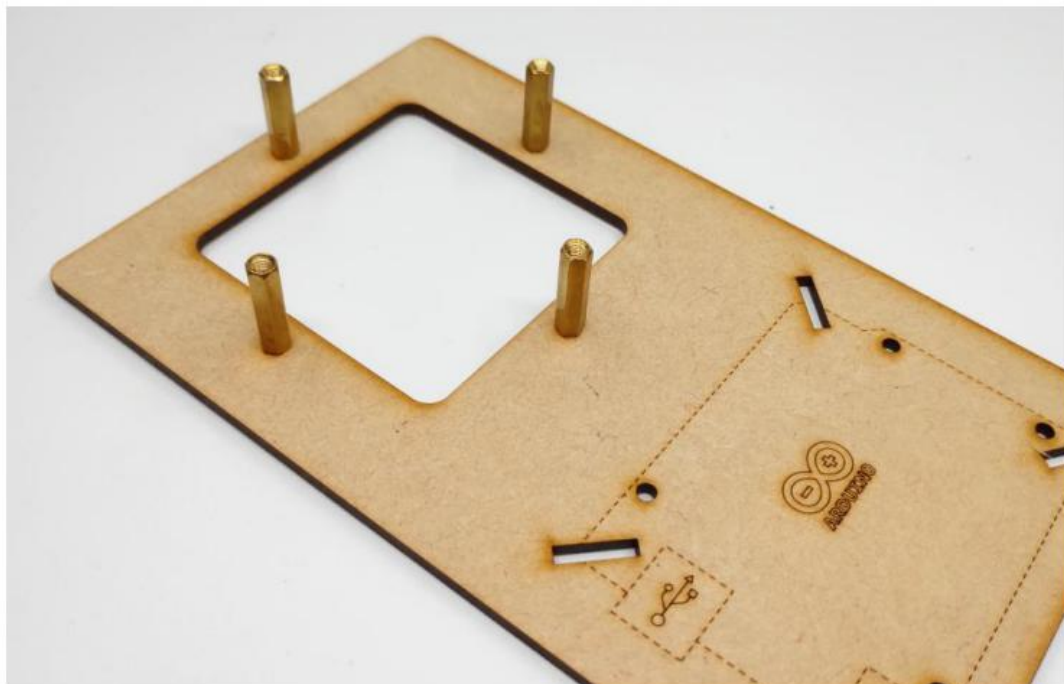
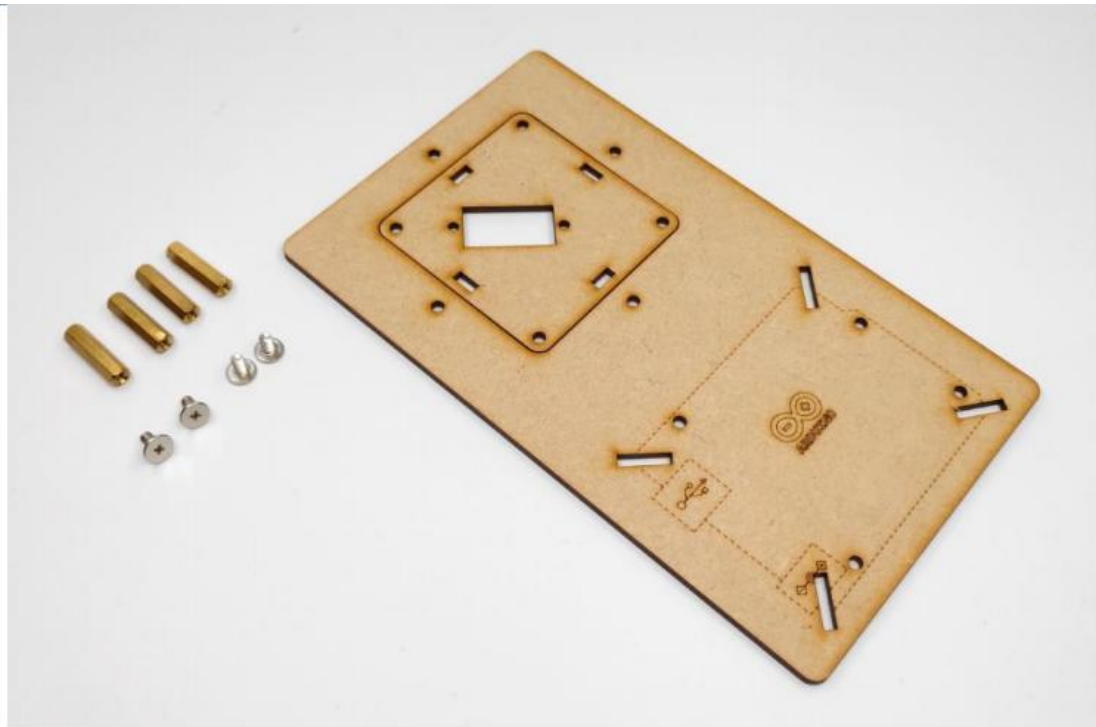
Video in Chinese: <https://www.ixigua.com/i6765878731480236547/>

1. Installation

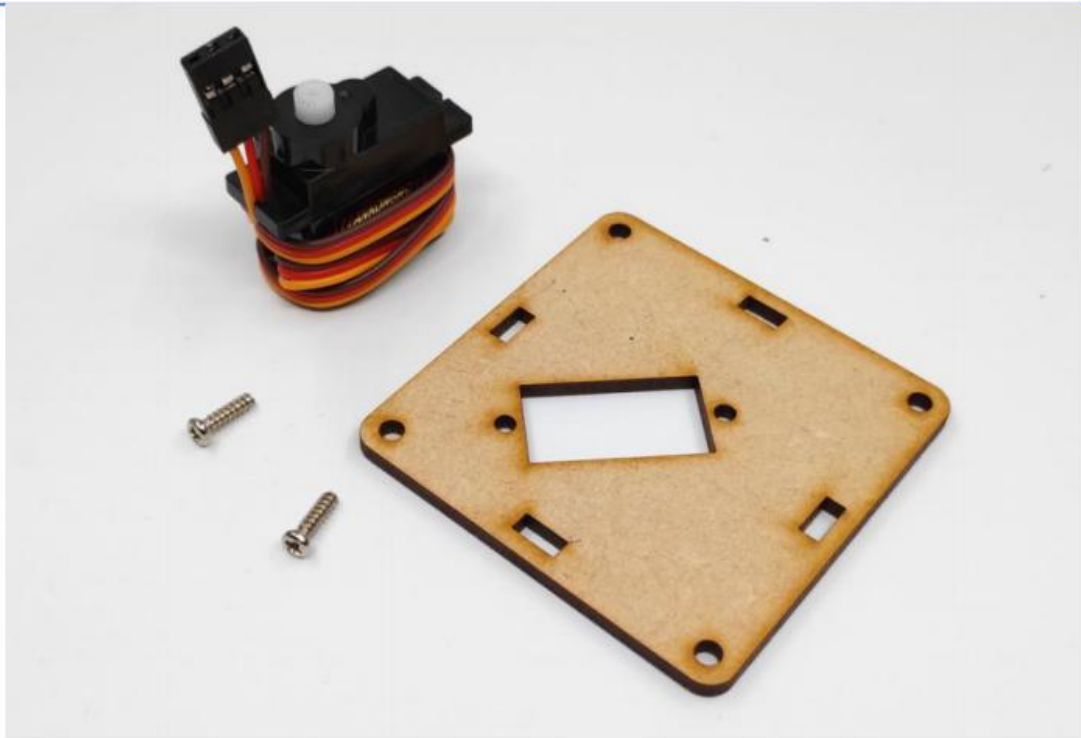
Fixing of movable joint/frame/copper column/base 活动关节/机架/铜柱/底座的固定 S023005	 	X 15	
Fix Arduino uno board 固定Arduino主板 S063004	 	X 4	
Fix Arduino board couplings Arduino主板铜柱 T3006		X 4	
base couplings 底座铜柱 T3018		X 4	
Photosensitive module fixed copper pillar 光敏模块固定螺丝 S042310		X 4	
Servos fixed copper pillar 舵机固定螺丝 S042308		X 4	
Servo shaft fixing frame screw 舵机轴固定机架螺丝 S042005		X 2	

There are many types of screws in the accessory bag, please make sure to distinguish clearly before starting construction.

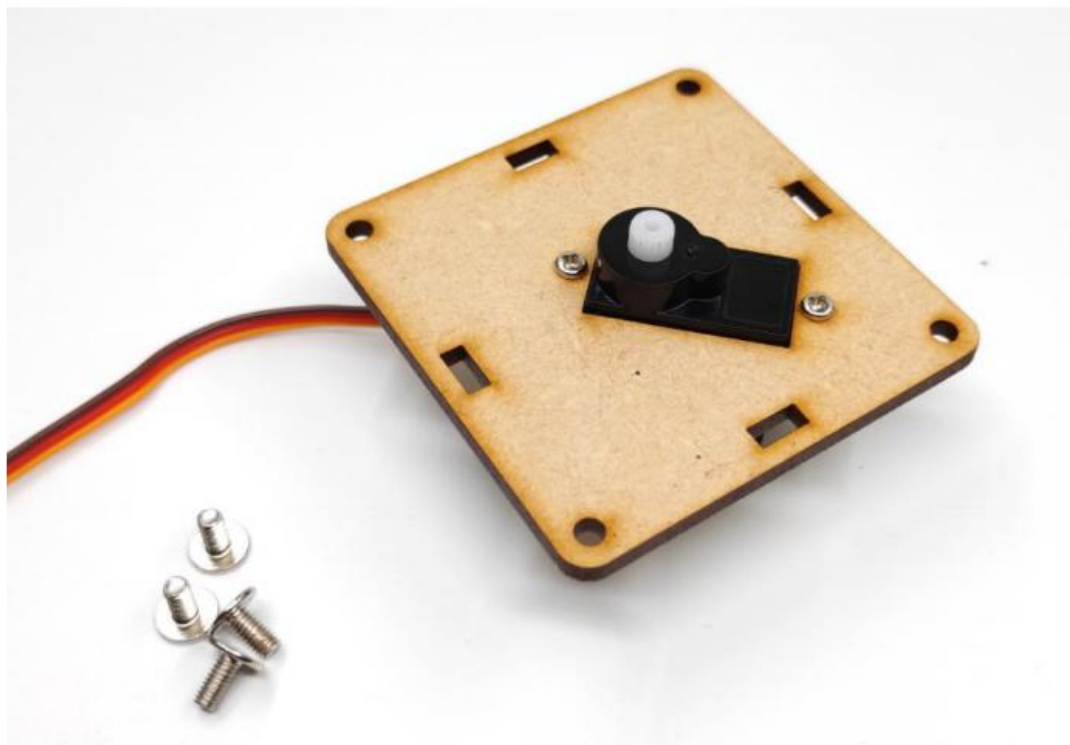
There are several kinds of screws that are very similar, do not mix them.



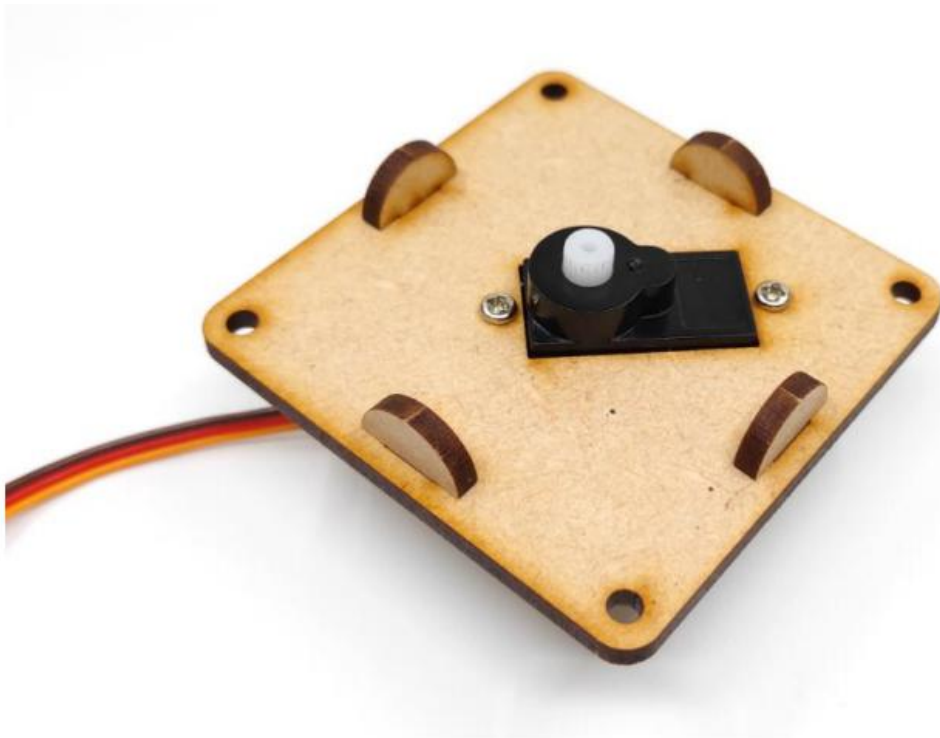
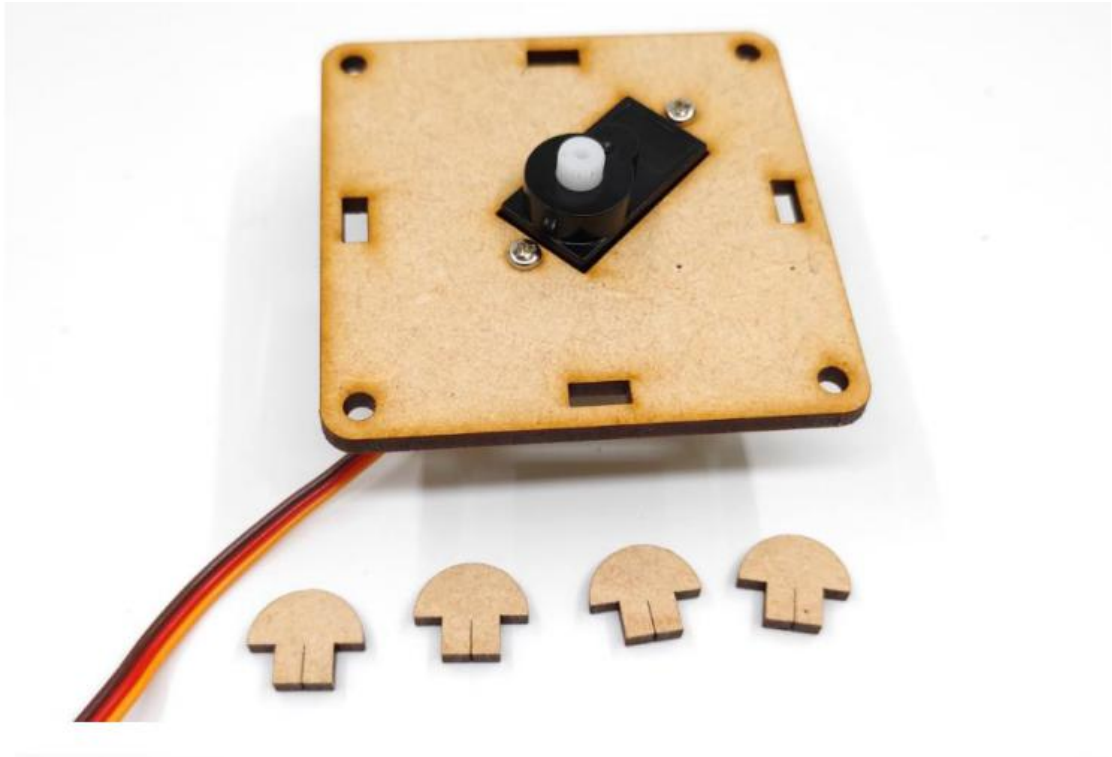
Fix the copper pillar from the bottom with screws

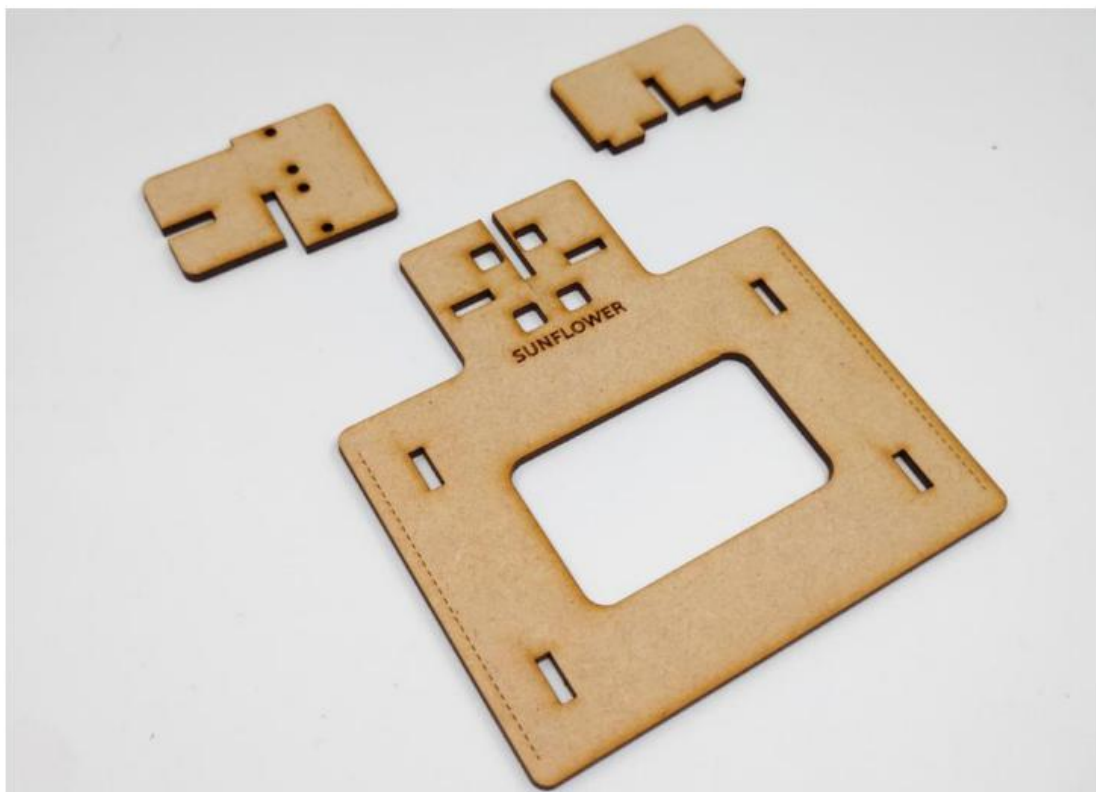
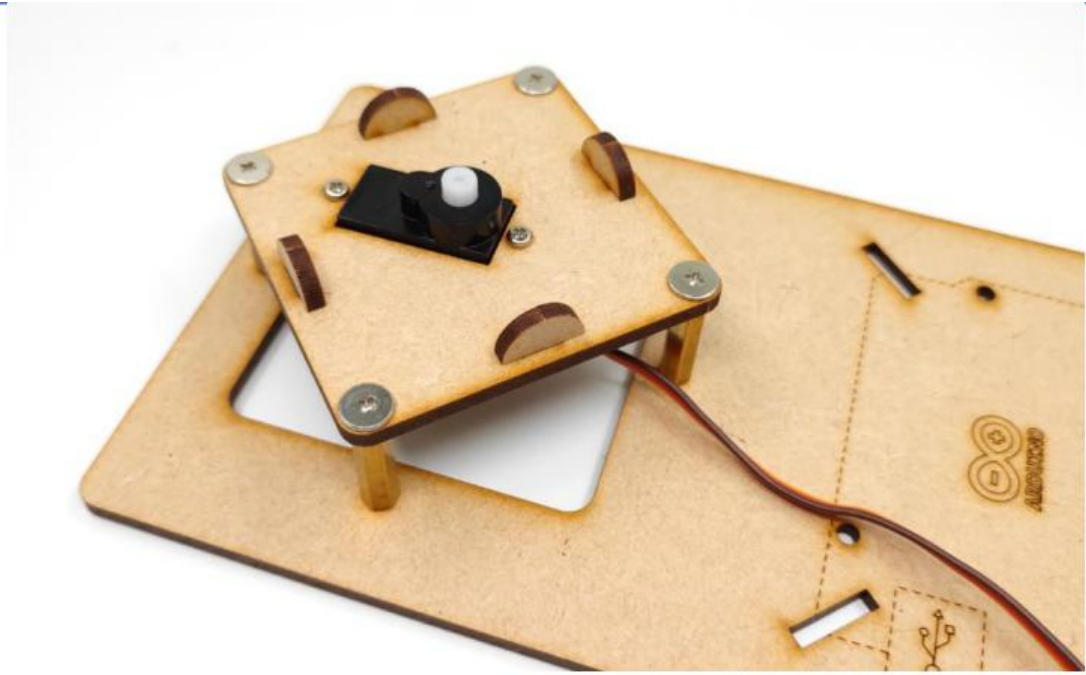


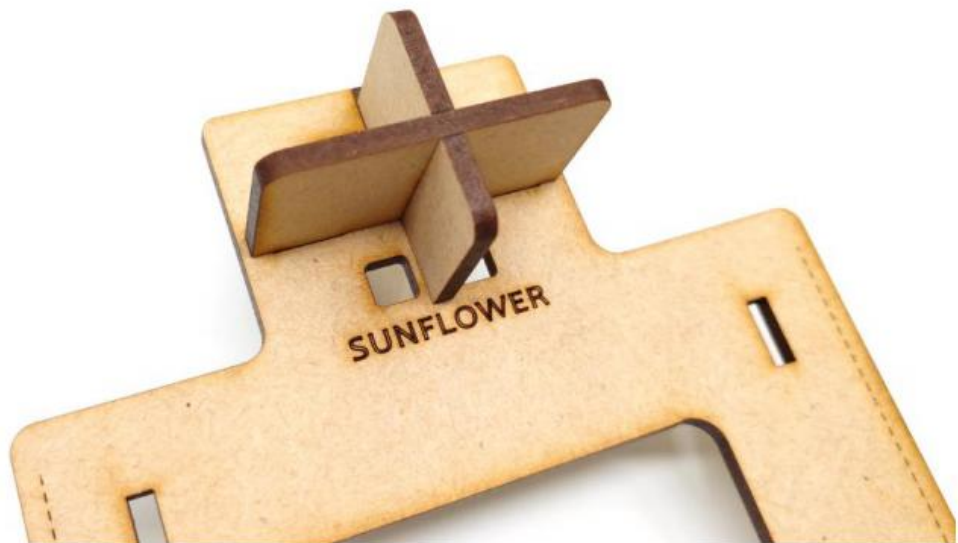
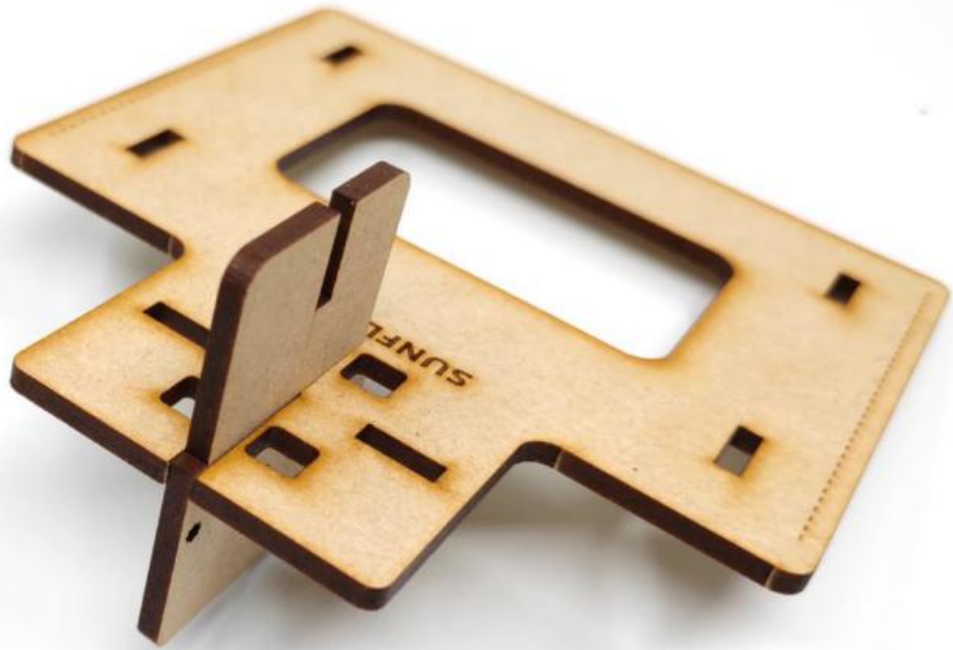
The screws for fixing the servos are small cap screws.

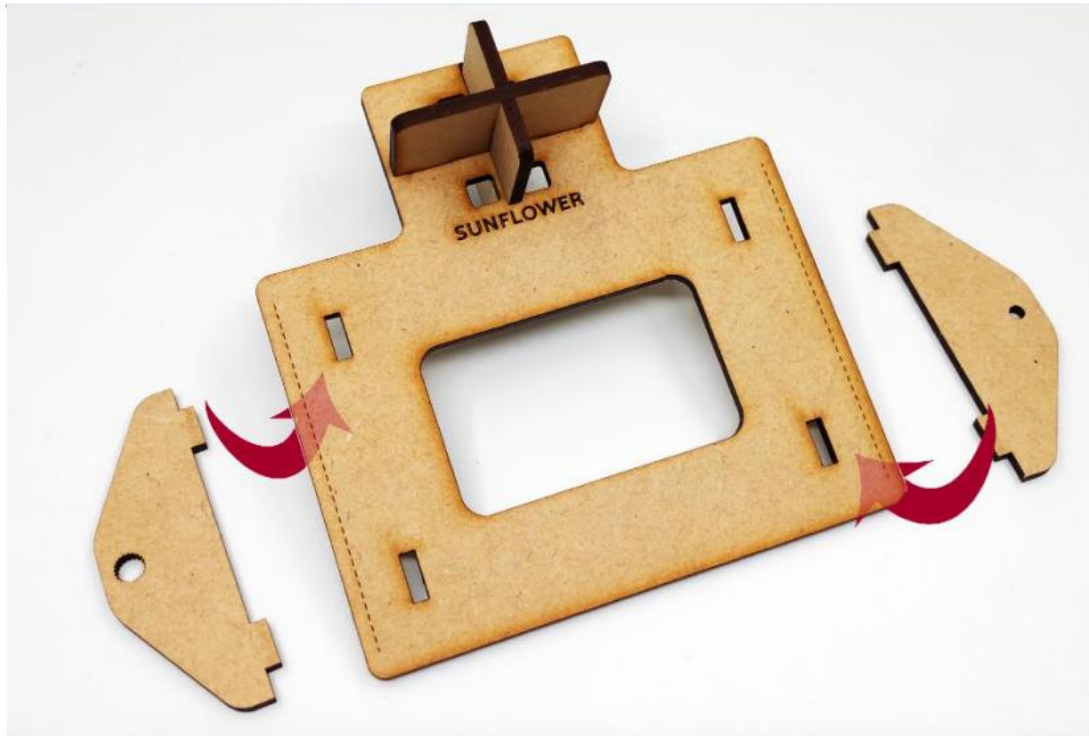


Note: The steering gear is facing, the main shaft is in the center of the base.

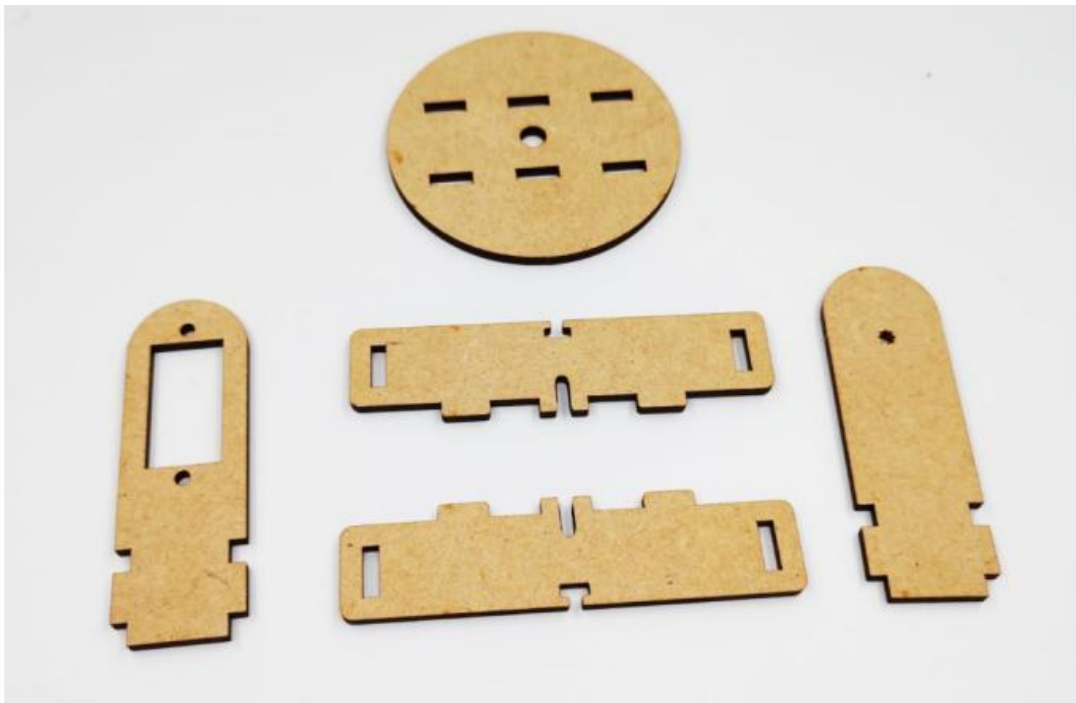








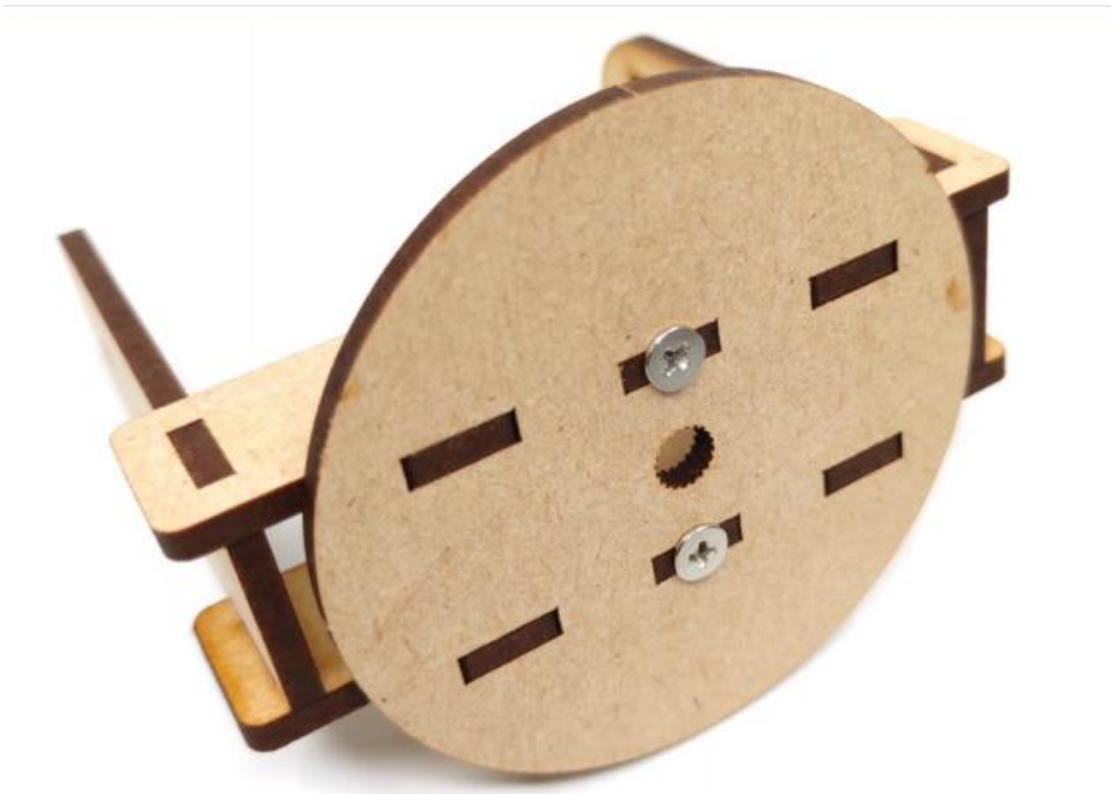
Two side brackets are installed from the back. The 2020 version adds fool-proof sockets, and the left and right sides have fixed positions and will not be inserted or turned over.





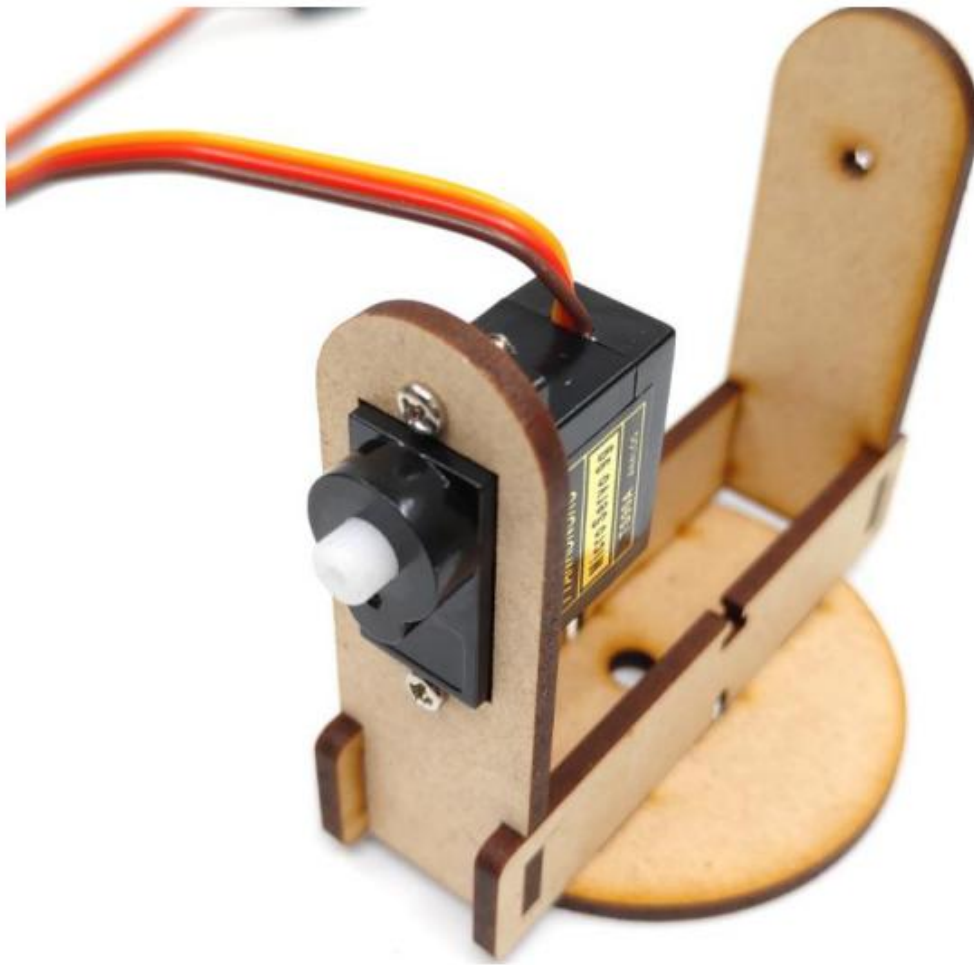


Fix the rack with 2 screws on the back

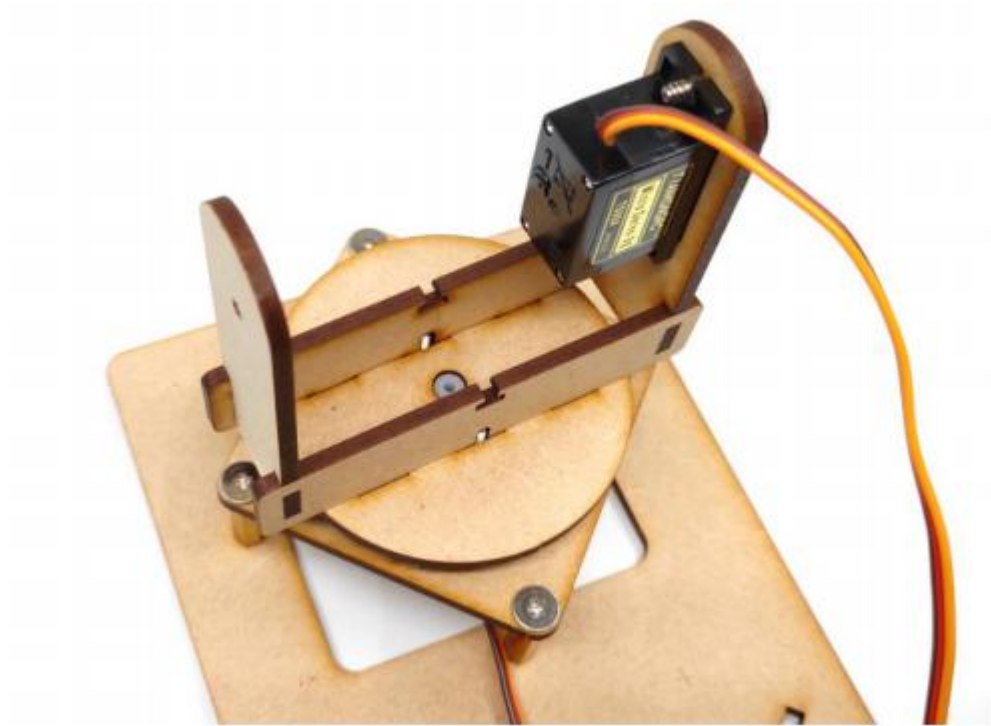


There is no need to overtighten the screw at this position, just click it

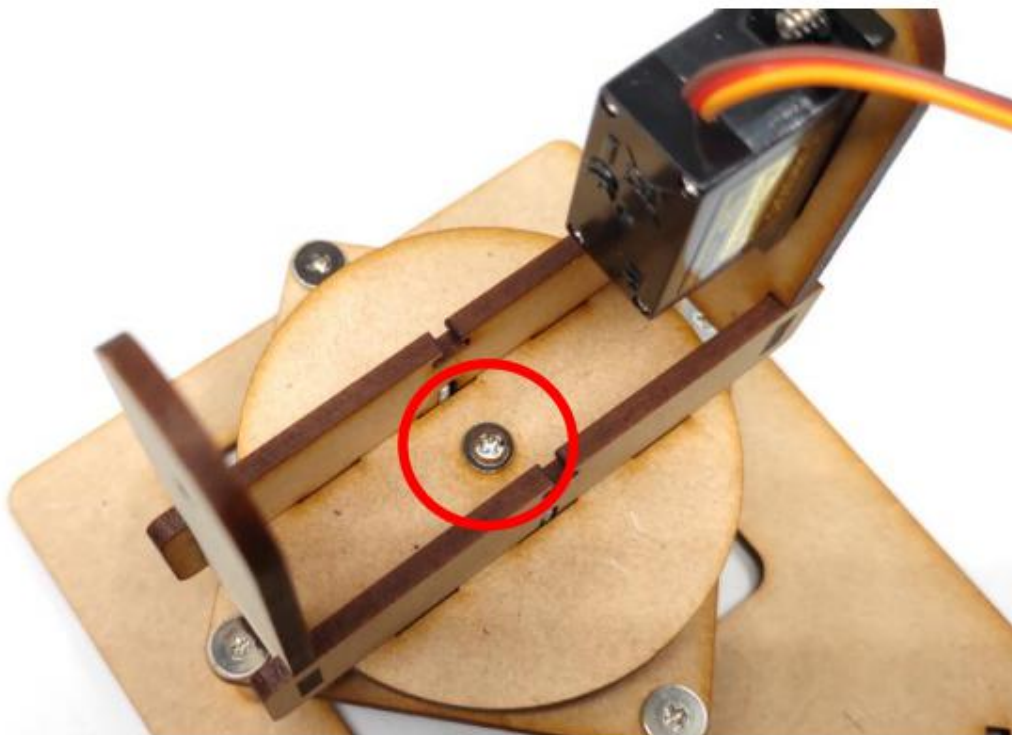




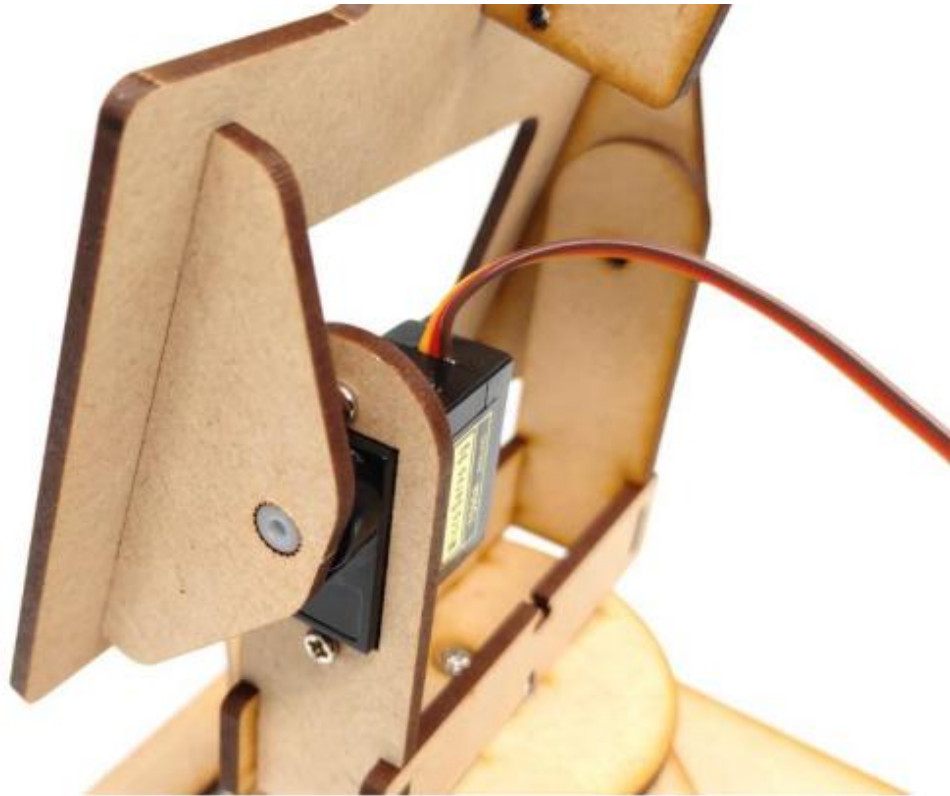
The main shaft of the steering gear is on the top, on the same horizontal line as the screw hole on the opposite side.



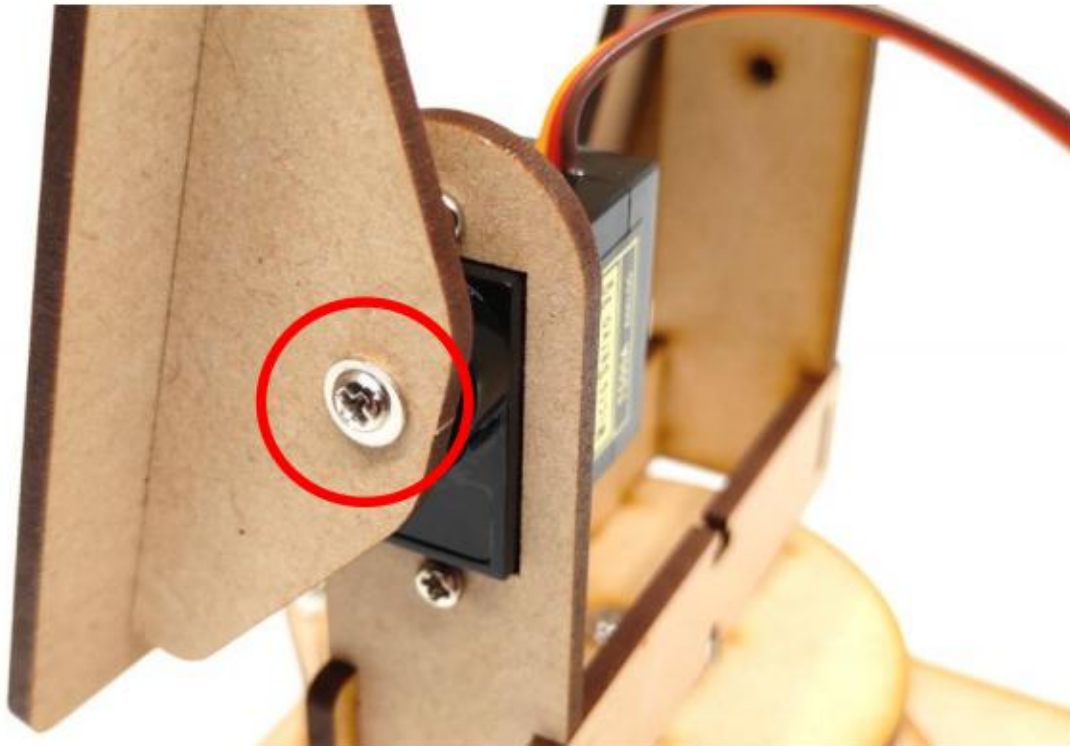
The main shaft of the steering gear is completely inserted into the middle hole of the base, and this hole is slightly tight.



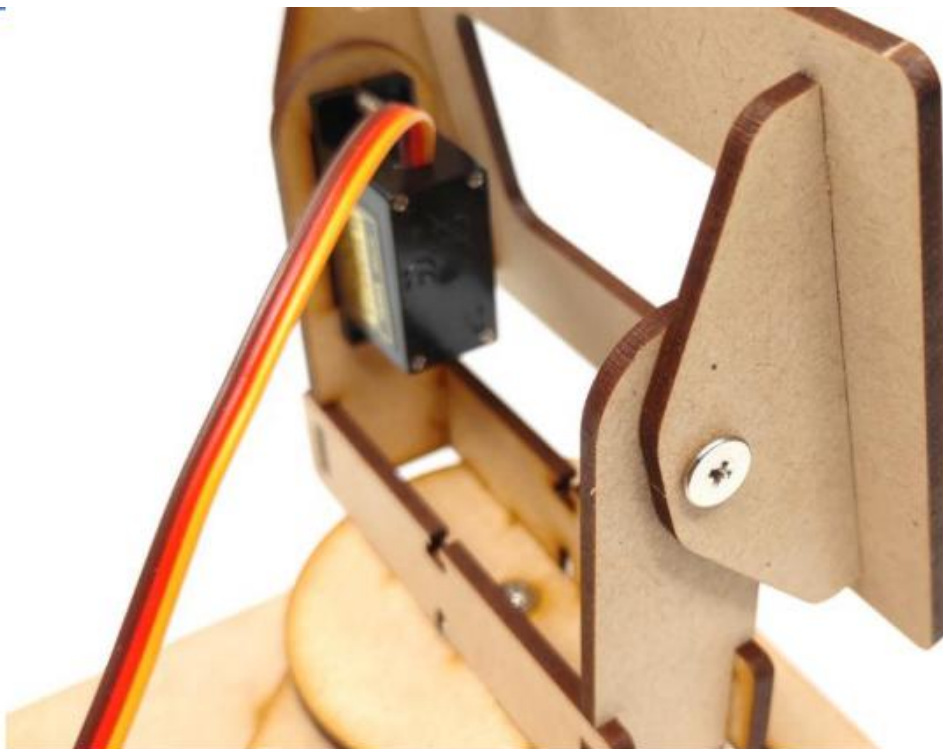
The main shaft of the steering gear is fixed with screws with washers.



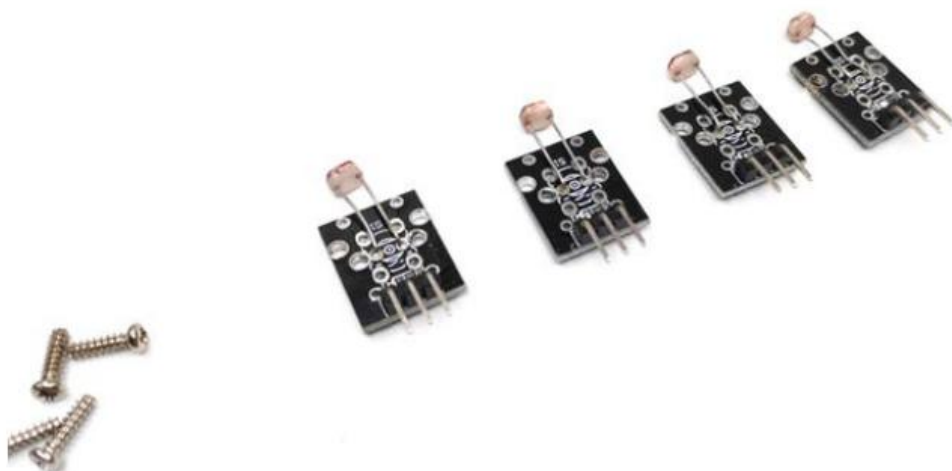
The main shaft of the steering gear must be completely inserted into the hole of the side plate. (Same as above, first determine the range of the steering gear)



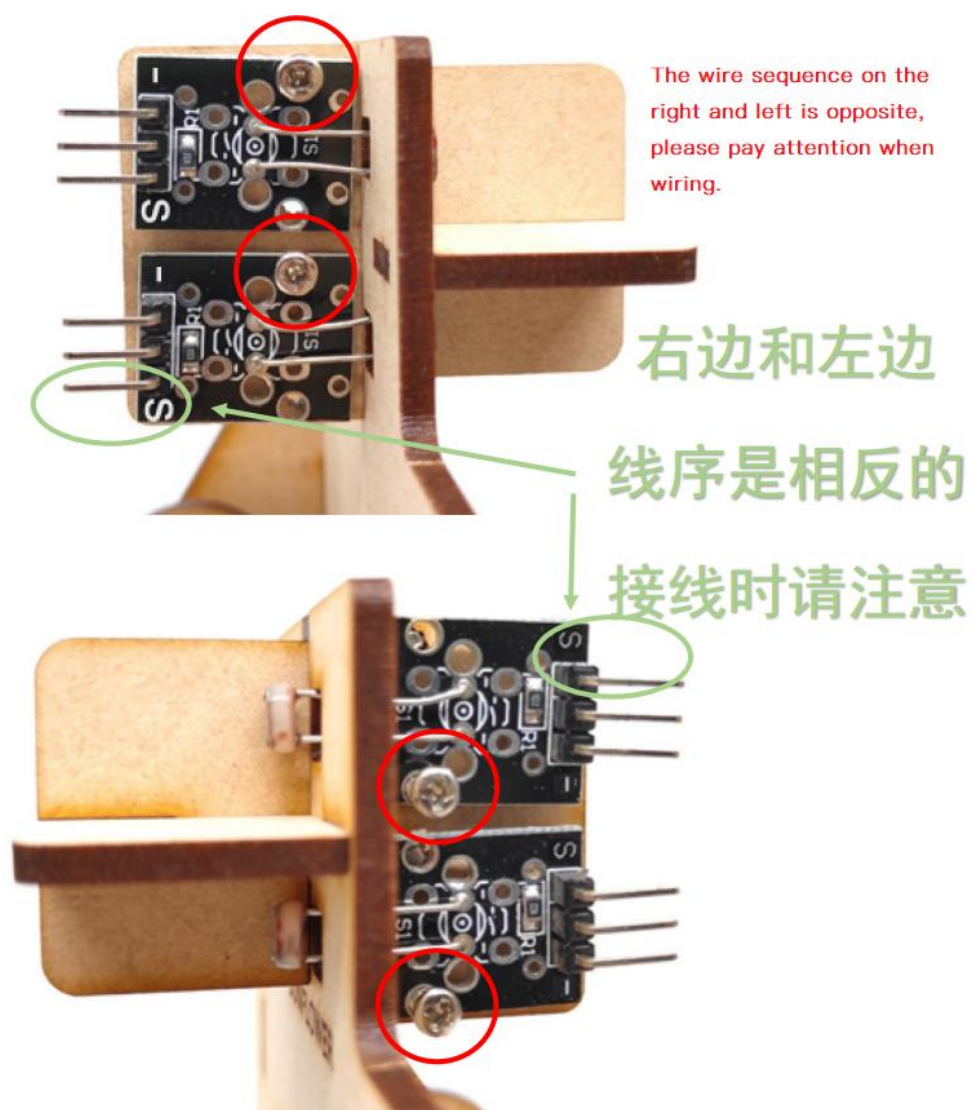
The main shaft of the steering gear is fixed with screws with washers.



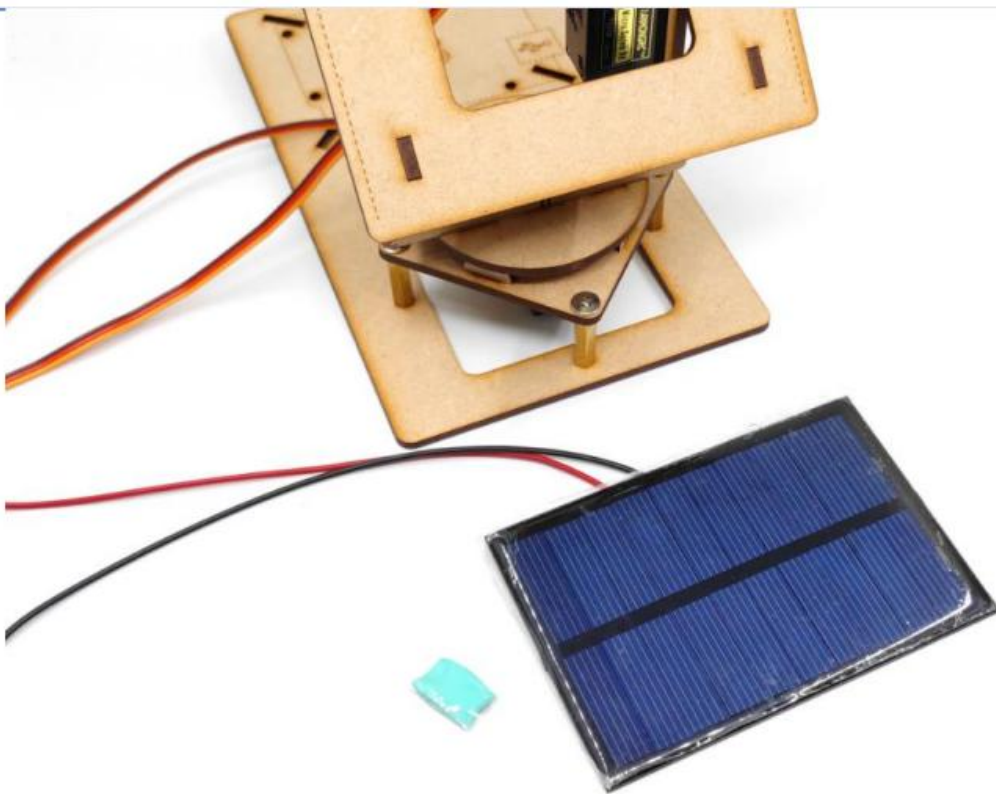
The screw of the rotating shaft cannot be tightened, and space is required for rotation



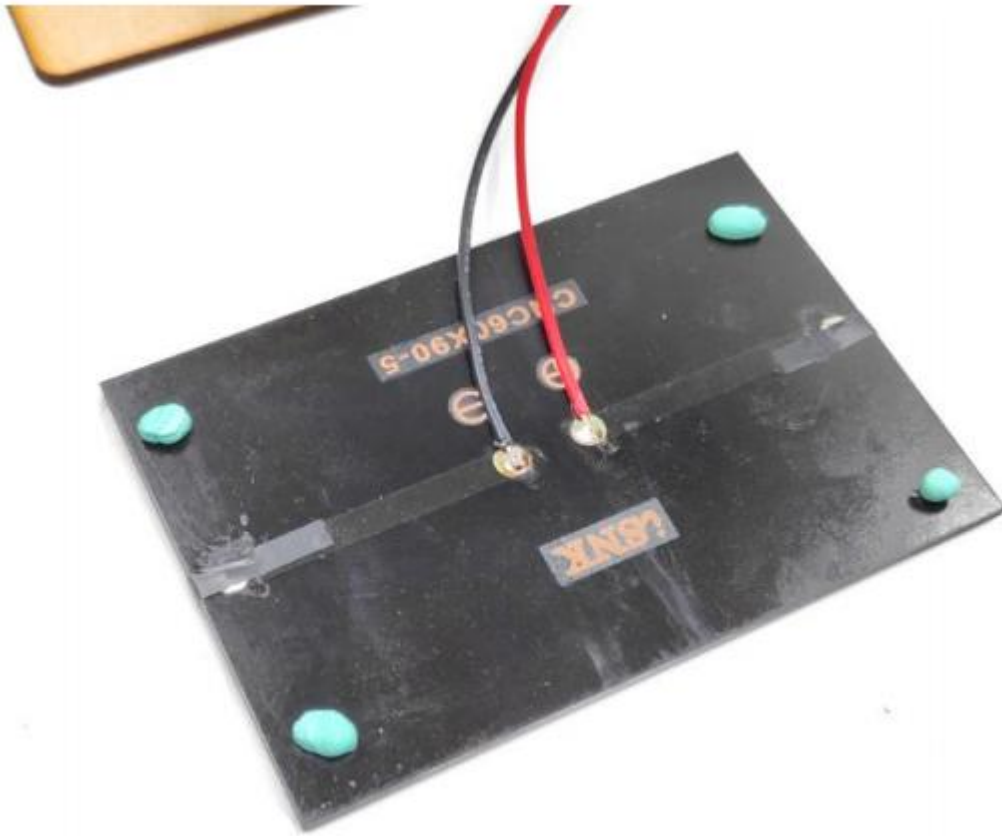
The photosensitive module is fixed with a long coarse screw



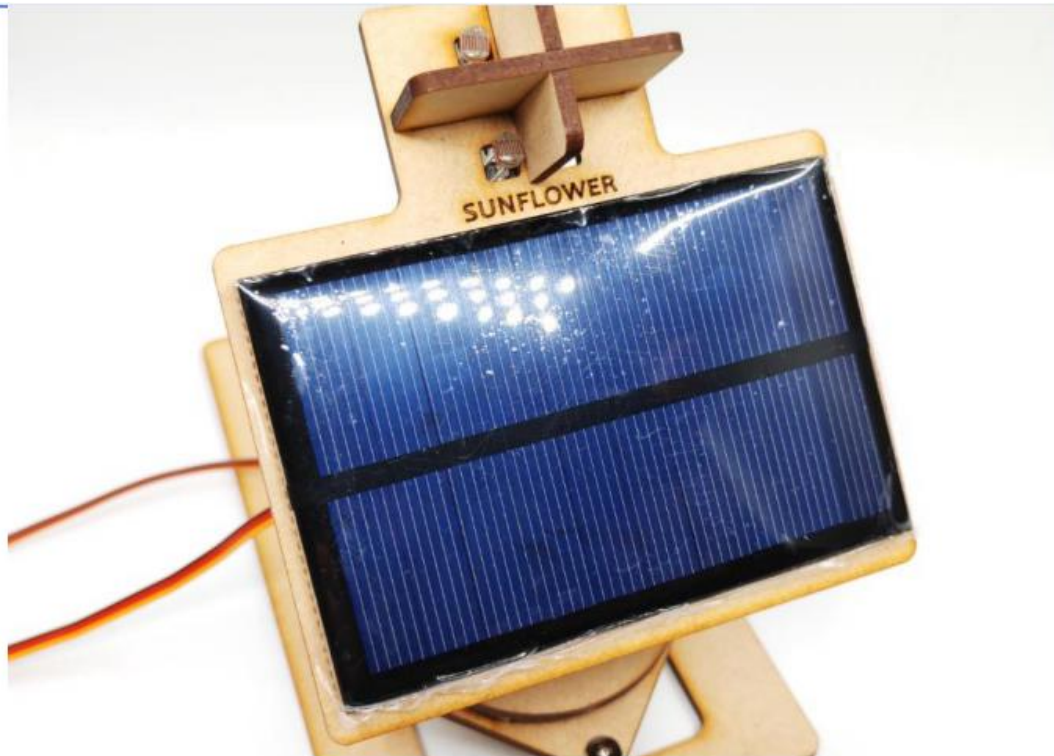
Screw one screw to fix the module from 2 sides



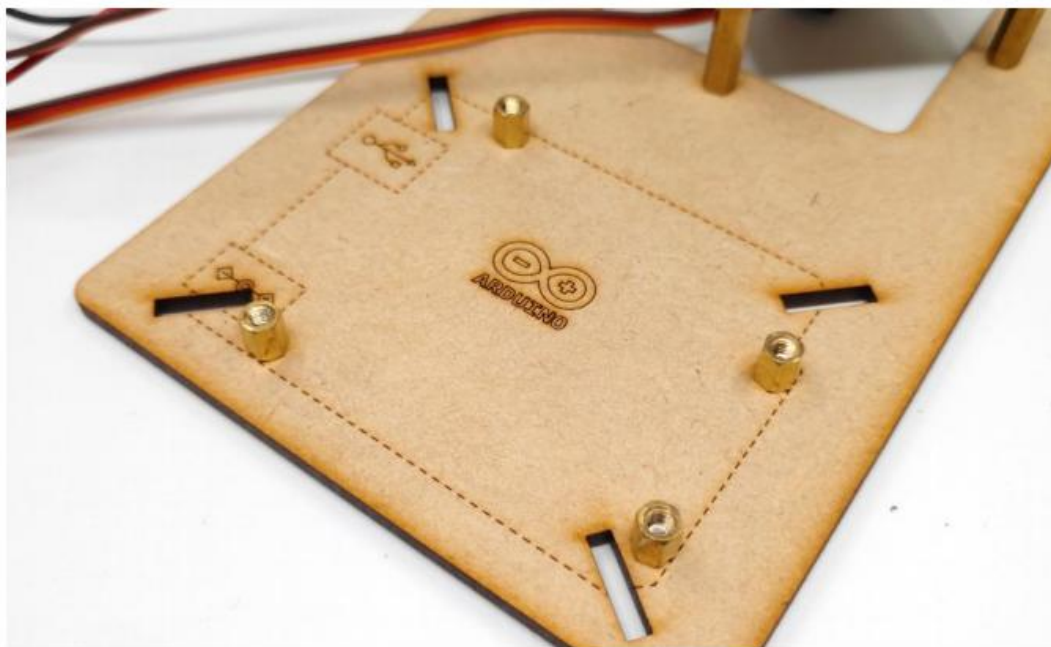
The blue or white "chewing gum" is double-sided tape and is not edible



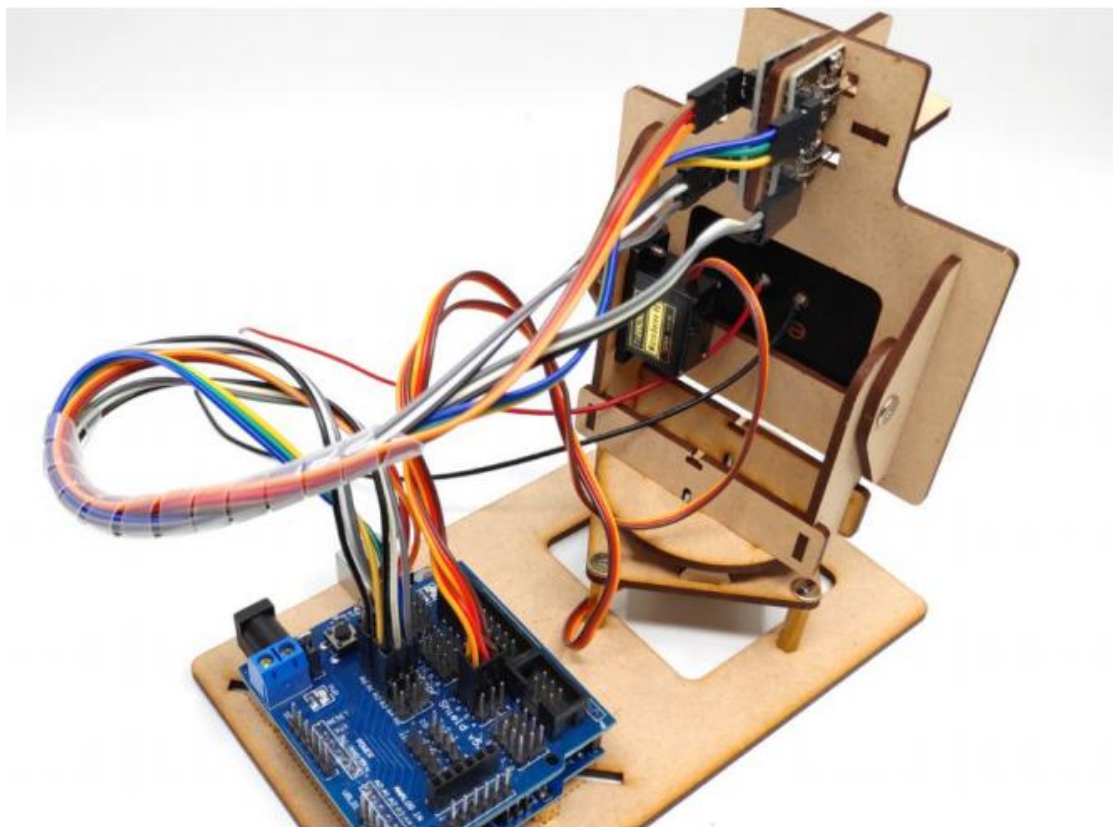
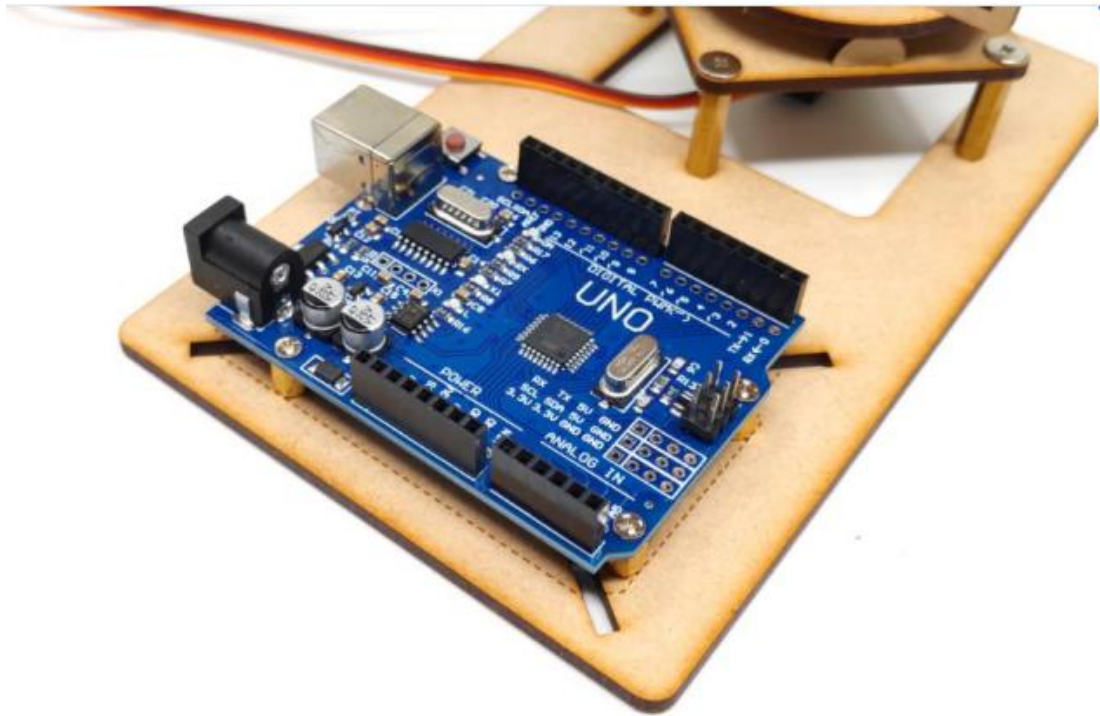
Knead the chewing gum into small pieces and paste on the back of the solar panel



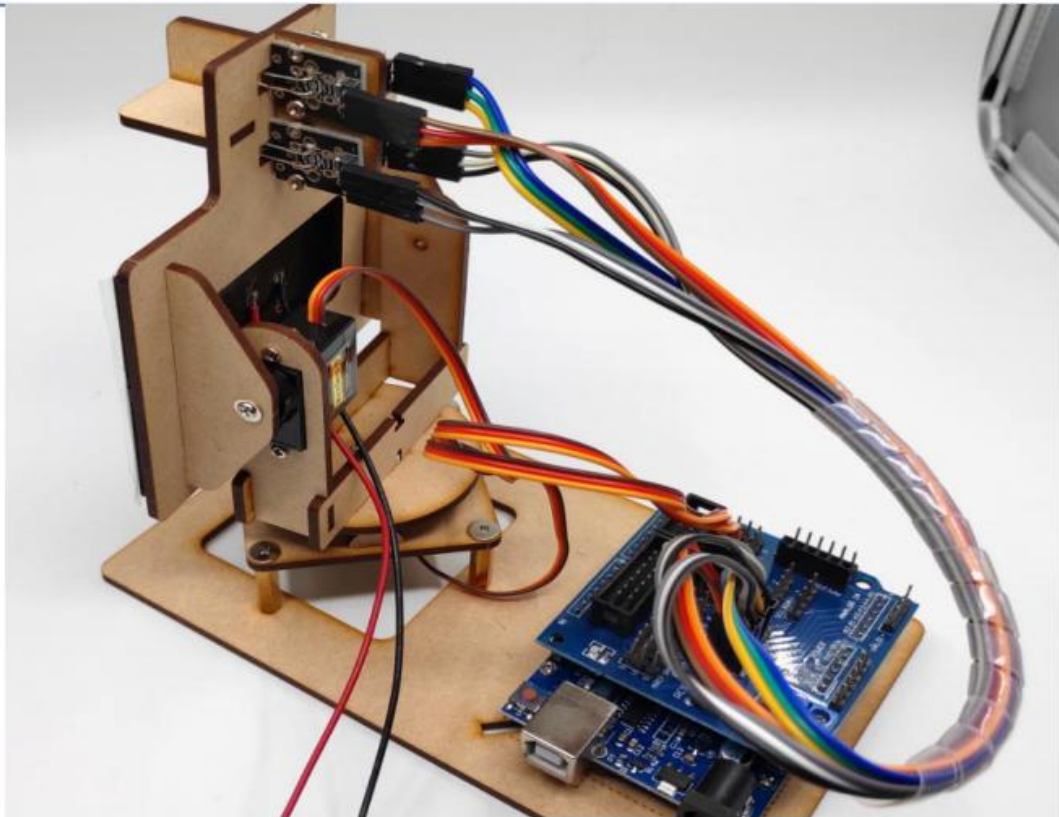
Pay attention to the wiring on the back of the solar panel, don't press it



Install the Arduino UNO



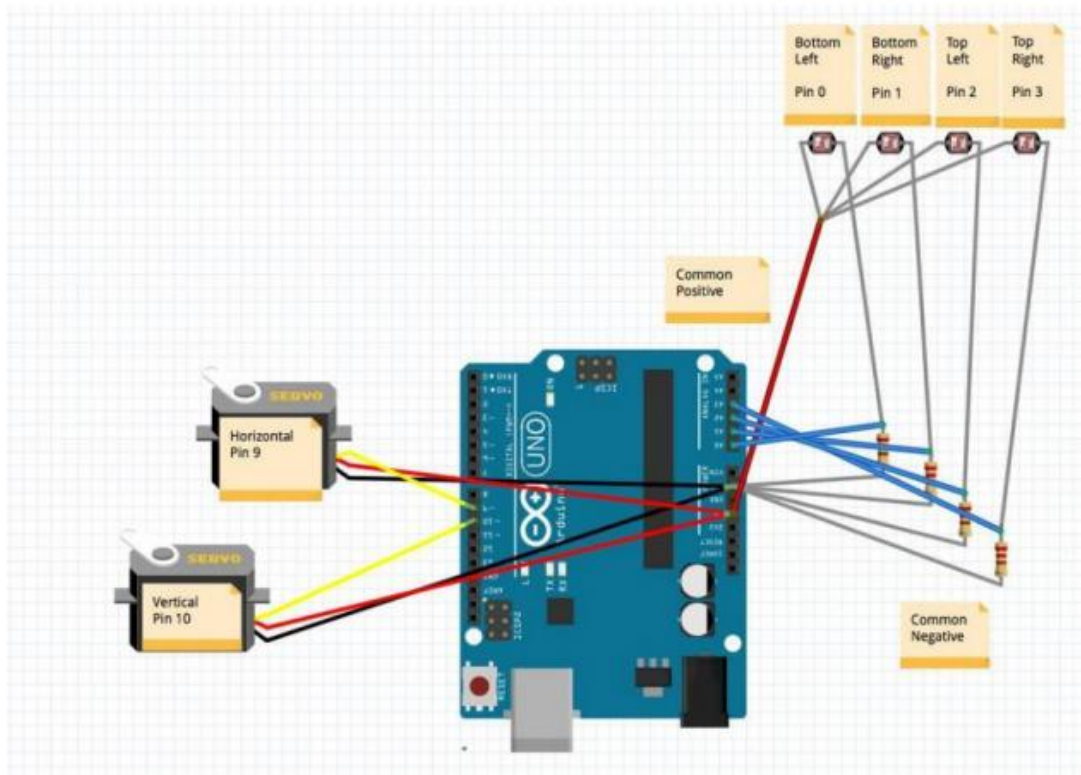
For the detailed wiring diagram, please see the subsequent wiring introduction, or refer to the program notes



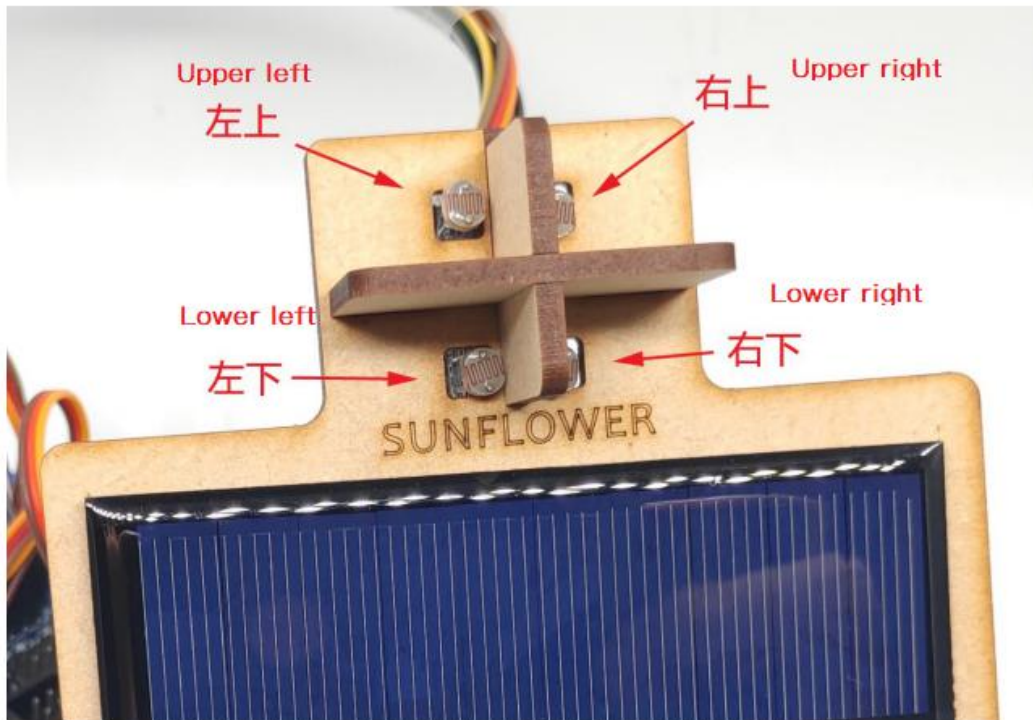
The solar panels can be connected directly, and a voltmeter is provided as

a gift. Other load equipment can also be connected.

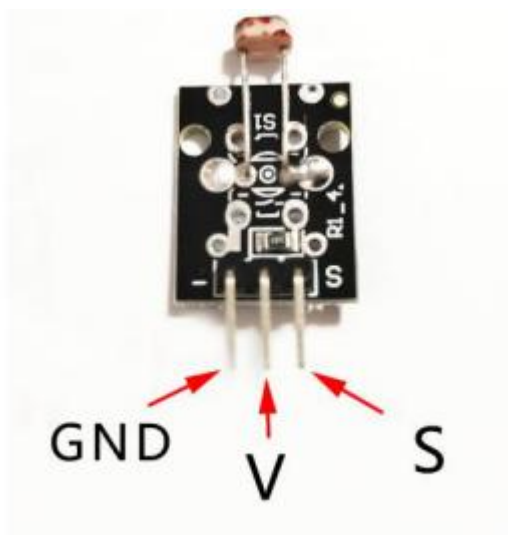
2. Wiring



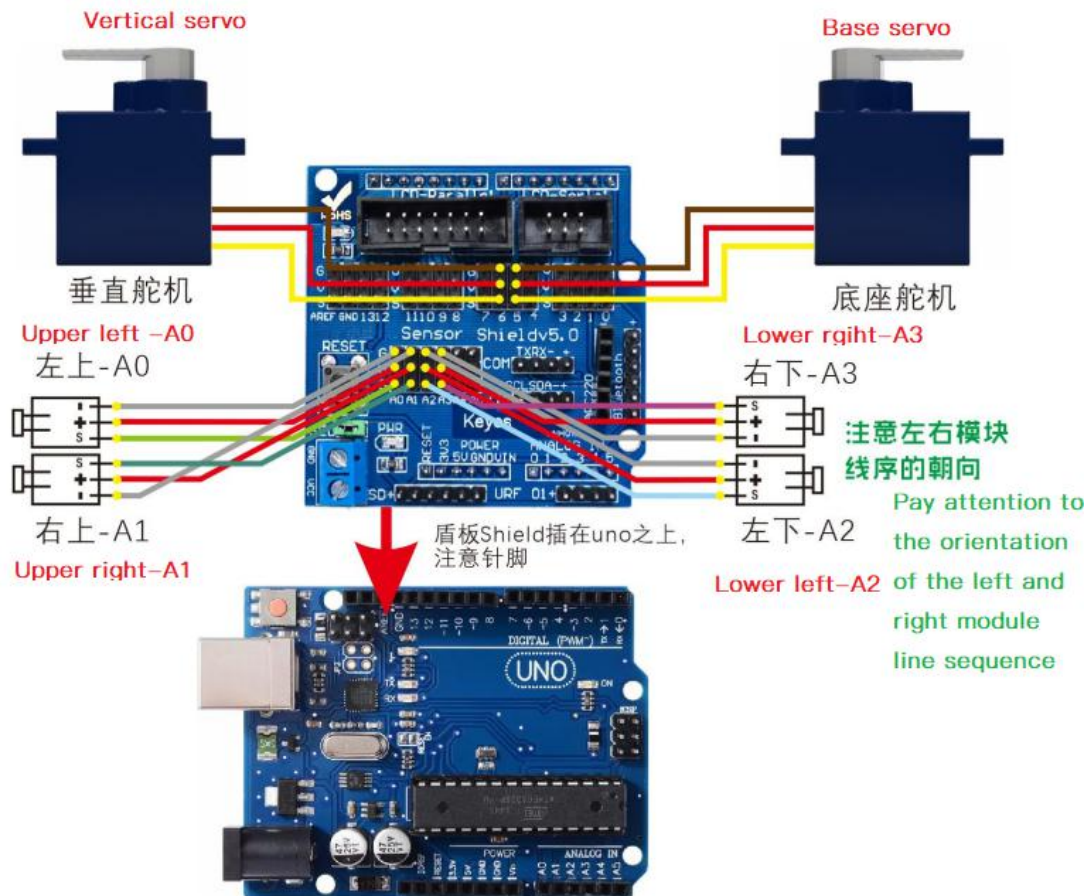
Schematic diagram of the circuit, there is a photo below (the photosensitive module sold in the shop has its own resistance without additional plug-in resistance)



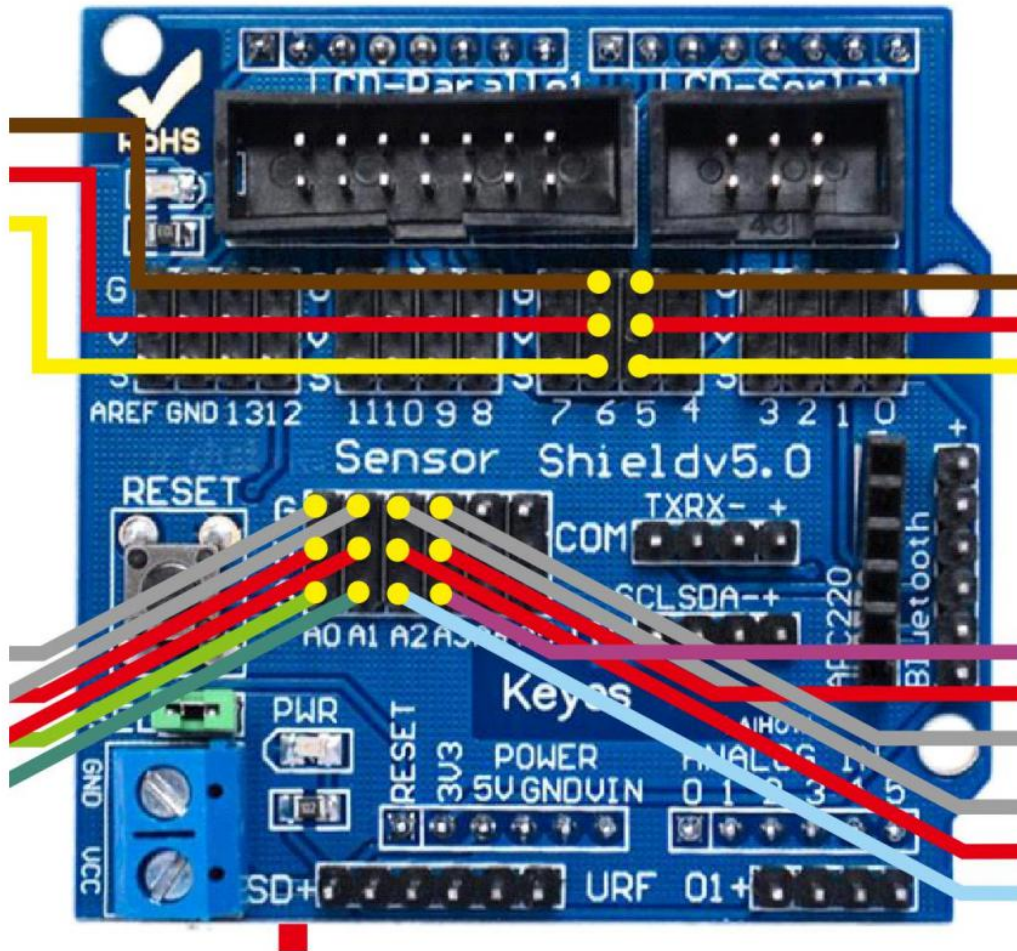
The location of the four photosensitive modules. (Not from the back!)



The wiring sequence of the photosensitive module is GND-on the left, VCC + in the middle, S signal on the right

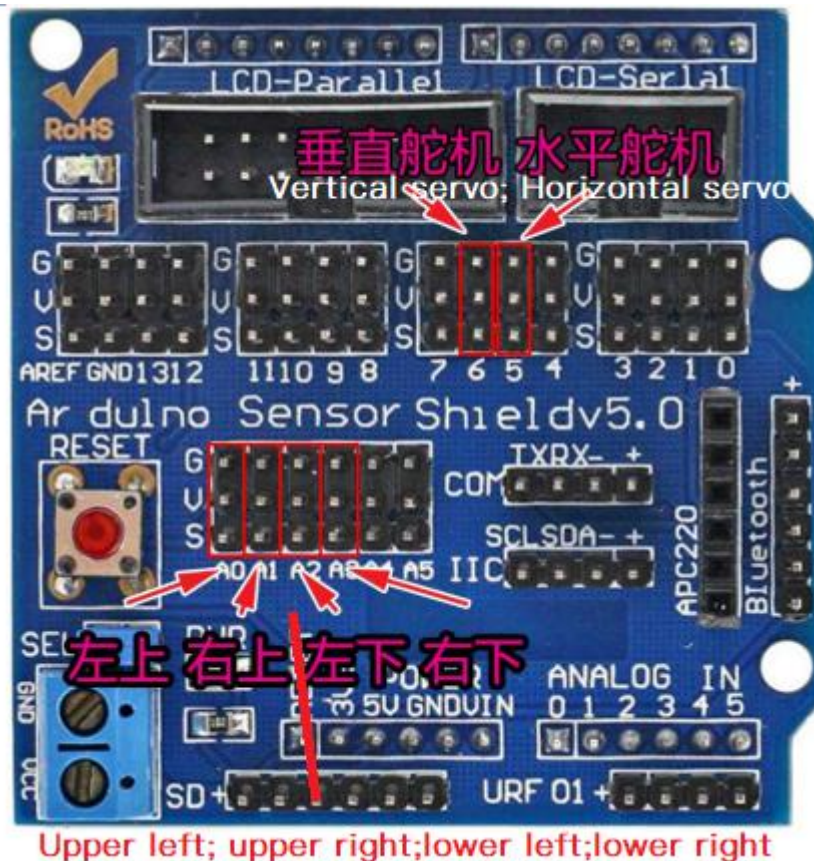


The color of the line is only for the convenience of distinguishing, and has nothing to do with the actual line color. For the wiring position in the program, the VCC of all devices is connected to power +, GND is connected to power -, and those with a shield can be directly connected to the corresponding port.



Enlarged view of center position

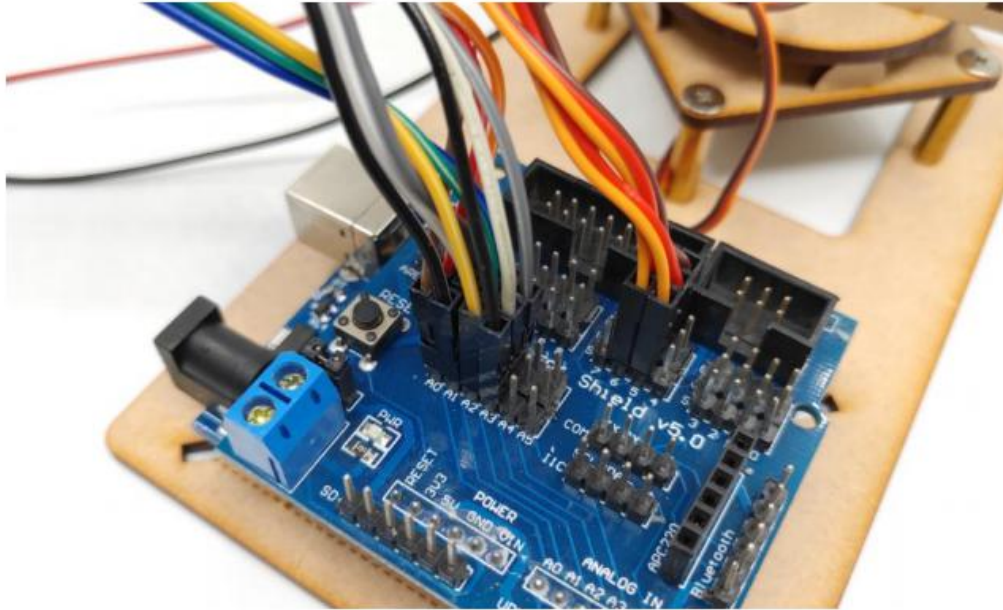
- Horizontal steering gear 5# Vertical steering gear 6# Servo wire is brown GND, red VCC, yellow is signal.
- The 4 photosensitive modules are respectively connected to the upper left of A0 (facing the solar panel, not viewed from behind), the upper right of A1, the lower left of A2, and the lower right of A3. The 3 lines of each module are GND, Vcc, and S signals.



Shield

Insert the shield board on the Arduino UNO, and align the pins of the shield board with the UNO cable holes. The role of the shield is similar to the wiring board, which can be easily connected to the steering gear and other equipment. The pin numbers of the shield plate correspond to the ports of UNO one by one. Each port has a GND (abbreviated G), VCC (V) and S signal connector. No breadboard wiring is very convenient.

Students with strong hands-on ability can connect the G and V of the 4 modules in parallel, saving 6 wires can reduce the pressure on the steering gear and run more smoothly.



Frequently Asked Questions

1. The panel always moves in the direction of weak light, or the up and down is abnormal, the left and right are normal or vice versa

Answer: The position of the photosensitive module is inconsistent with the position in the program, or the direction of the servo is inconsistent with the preset, just modify the rotation direction of the servo in the program (180-angle), if it is already 180-, remove 180-, Just keep the angle value

2. The solar panel is connected but the Arduino cannot be started

Answer: In the schematic model, the power of the solar panel is not enough. It can only support devices with small loads, such as small motors.

3. The direction of movement is opposite to the direction of light

Answer: The angle parameter of a certain servo is wrong. Change it to

180 degrees minus the angle and the other way around. (If there is already 180-, remove 180-)

4. The power-on self-test is normal, and then it stops moving to one side

Answer: The wiring of the photosensitive module on the left and right sides cannot be mirrored, and the wiring on one side is reversed. The order of the 3 legs of the photosensitive module on the right is upper S, middle +, lower -. On the left is up-, down S. Not symmetrical! ! ! Don't all head in the same direction for good looks