

Lesson 6 Precautions for Assembly

Many servos are used in this robot. Therefore, the assembly of servos has great impact on its performance. Before assembling the servo rocker arm, it's recommended to power on the servo and control the servo shaft to rotate to the initial position, so then the rocker arm installed at a specific angle will be in the initial position.

Operation steps of powering on the servo:

Boot up the Raspberry Pi.

Connect the servo. Pay attention to the direction of the port when assembling. The yellow wire is connected to the yellow pin, the red wire to the red pin, and the brown wire to the black pin. Connect all 5 servos to pins 0-4.

- After the Raspberry Pi boots, it will automatically run WebServer.py, and then control all the servo ports to send signals to move to the middle position. When assembling the servo rocker arm, you can connect the servo to any servo port and the servo shaft will rotate to the center position after connected. After the rocker arm is assembled at a specific angle, you can disconnect the servo from the port. Wire another servo without rocker arm and the servo will rotate to the center position.
- The Raspberry Pi will control the PCA9685 to set the signal for all servo ports as rotating to the center position a while after booting – it may take 30-50s to boot.
- The angle of all servo assembly in the document is the center position of the servo shaft rotating. Therefore, when the servo is connected to the port, it will rotate automatically to the center position; you can simply assemble the rocker arm to the shaft as instructed in the images of the document.

- Pay attention not to move the servo shaft during assembly. If you want to adjust the angle of the rocker arm, please remove it from the servo, find a proper angle and insert again.

Pecautions for Power Supply

- You may power the Raspberry Pi via a USB cable during software installation, structure assembly, and program debugging. After assembly, 18650 batteries are required to power the robotic arm.
- If your robot reboots automatically after booting, or disconnects and reboots at the moment it starts to move after normal booting, it is likely that your power supply does not provide enough current as the robot automatically runs the program to control all servos to rotate to the center position when booting – it then drops the voltage on the Raspberry Pi and causes a reboot.