



AR4 Servo Gripper Manual

Version 1

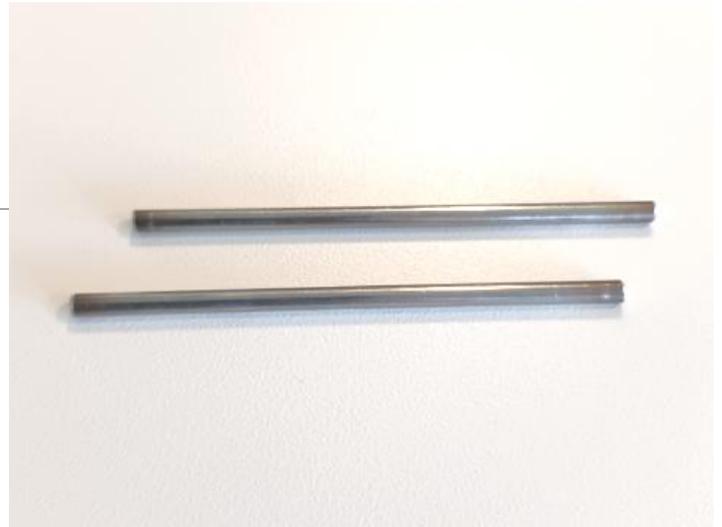
FREE DESIGN SERVO GRIPPER

Bill of Materials



25kg Servo Gripper – DS3225

(Available on Amazon, AliExpress, multiple online suppliers)



(x2) 3mm stainless rod cut to length of 70mm

(Available on Amazon, AliExpress, multiple online suppliers)



3mm stainless rod cut to length of 16.5mm

(Available on Amazon, AliExpress, multiple online suppliers)



(12) #6 x .375 or equivalent round head screw. I prefer thread forming screws for use with 3D printed components but any screw can be used.



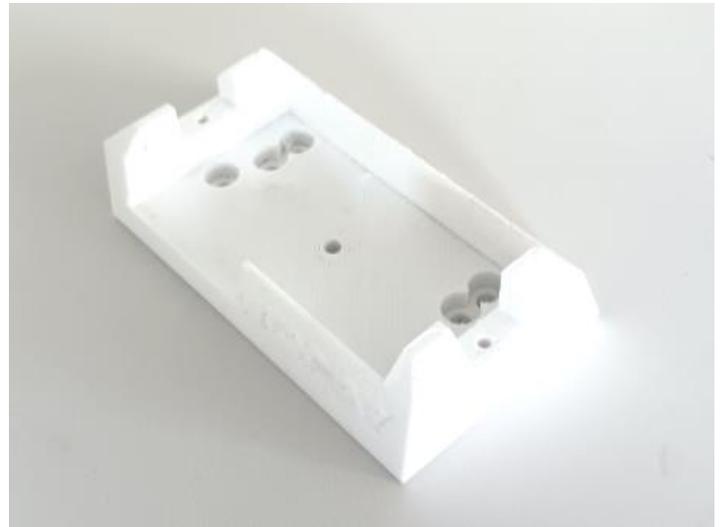
(x1) M3x8 socket head cap screw



(x4) M3x10 cap screws and nyloc nuts



AR4_SG1_base
(3D print – PETG 50% infill)



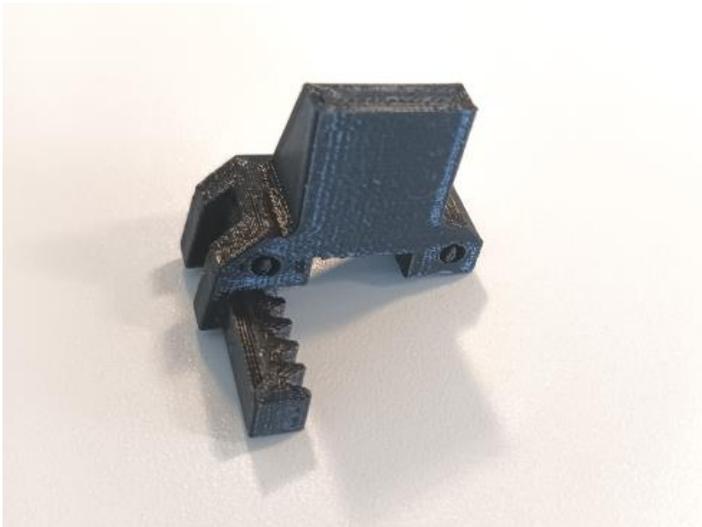
AR4_SG1_carriage
(3D print – PETG 50% infill)



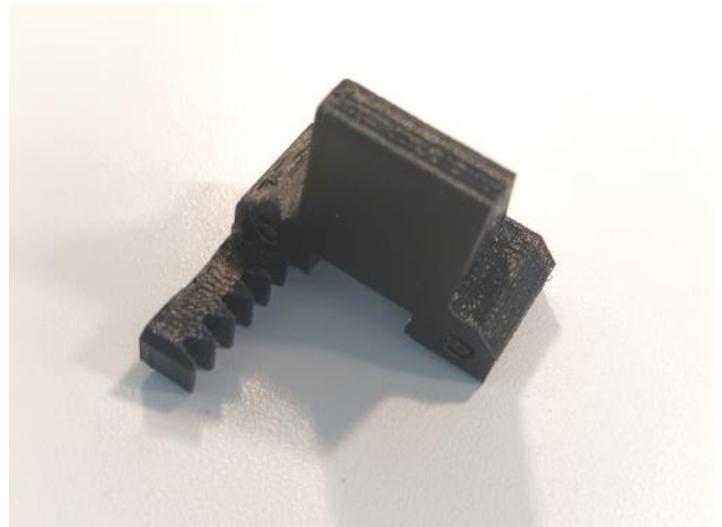
AR4_SG1_center_bar
(3D print – PETG 50% infill)



AR4_SG1_gear
(3D print – PETG 50% infill)



AR4_SG1_jaw1
(3D print – PETG 50% infill)



AR4_SG1_jaw2
(3D print – PETG 50% infill)



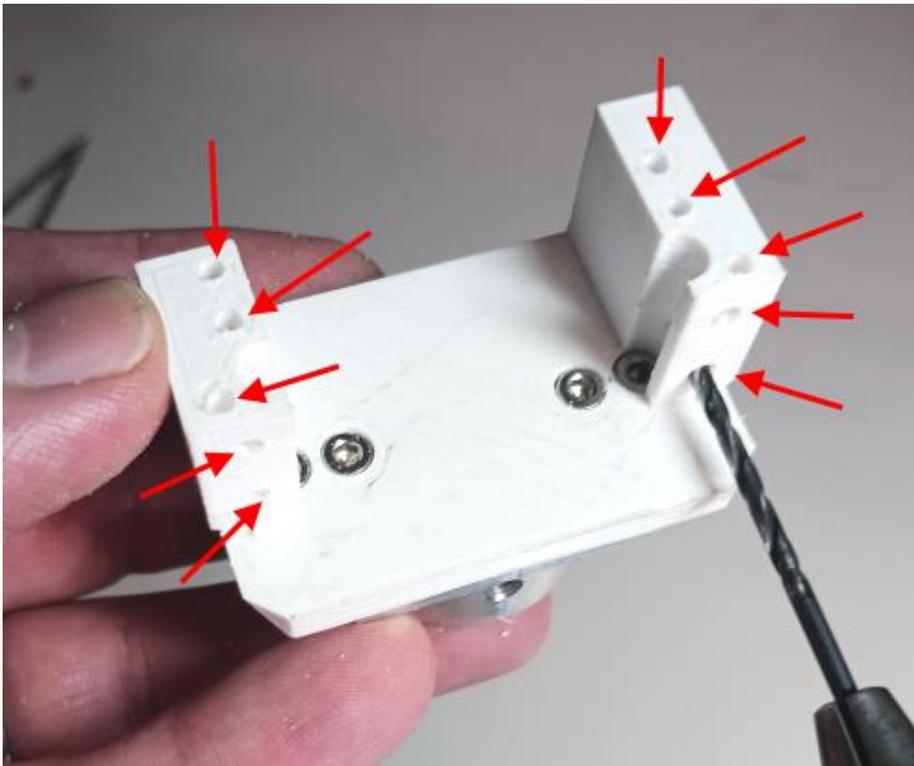
AR4_SG1_gear

(3D print – PETG 50% infill)

Gripper Assembly



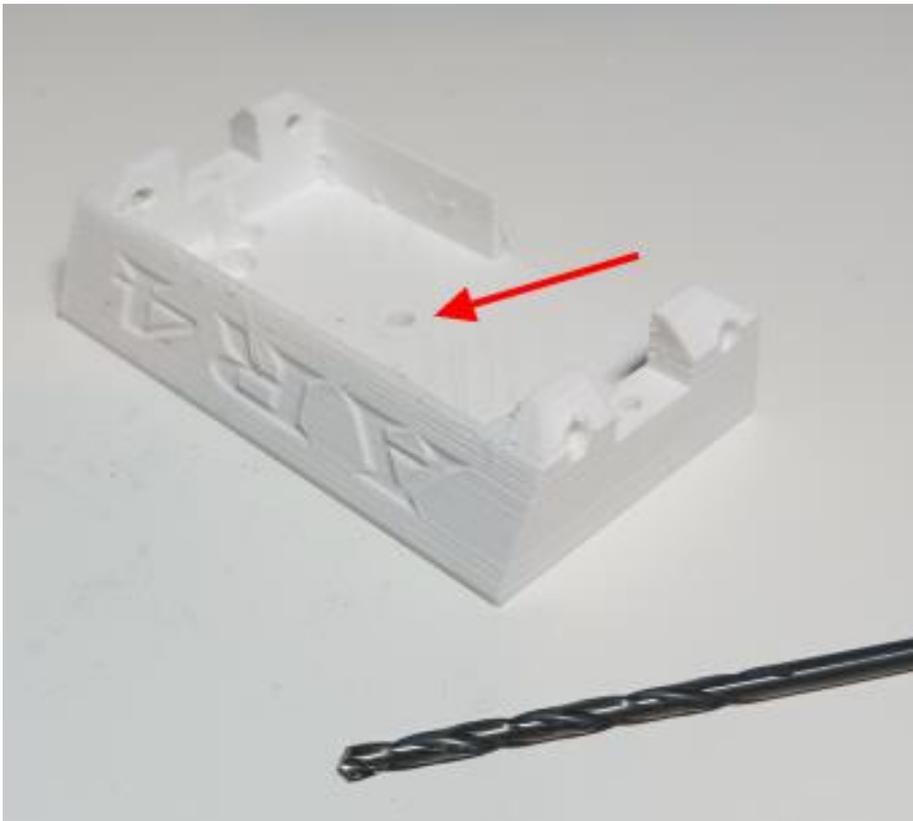
Use (4) M3x10 cap screws and M3 nyloc nuts to secure base to J6 mounting flange.



Use 2.5mm drill bit to clear out each of the 10 holes shown in photo.



Secure servo to base assembly as shown and secure with (4) #6 screws



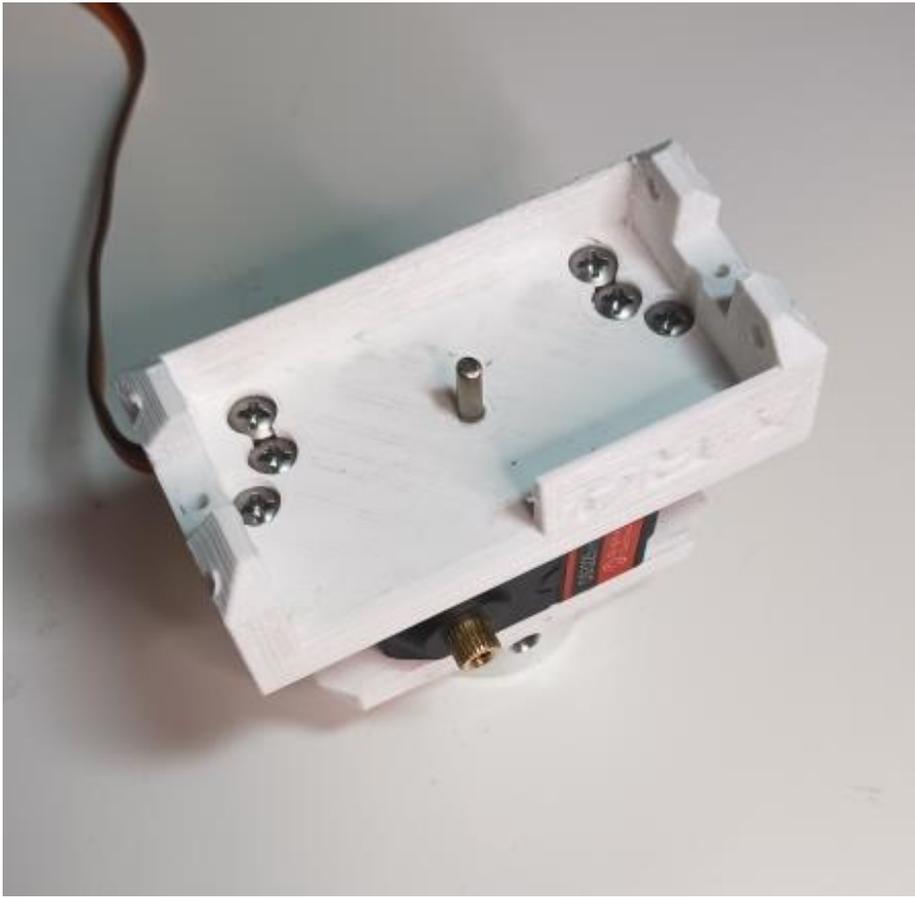
Use 3mm drill bit to clear center hole shown in 3D printed carriage.



Place small drop of super glue on end of 16.5mm long shaft



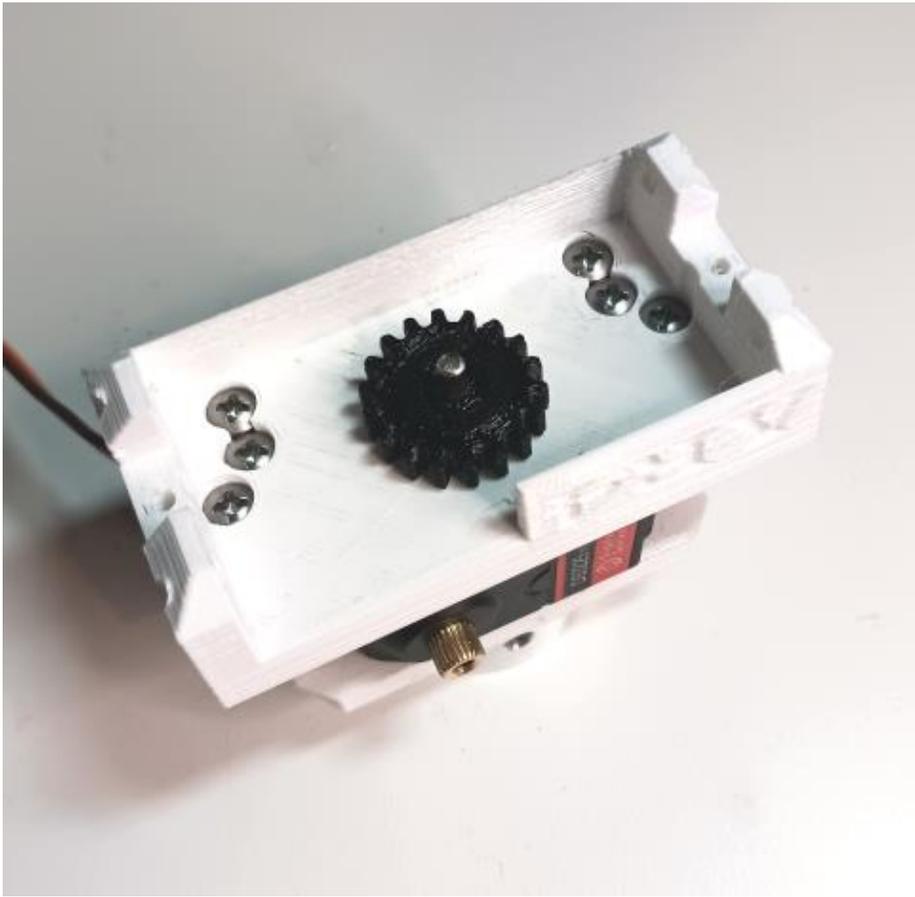
Insert glued end into carriage center hole and tap down into place. Shaft need to be fully inserted flush to bottom surface of carriage.



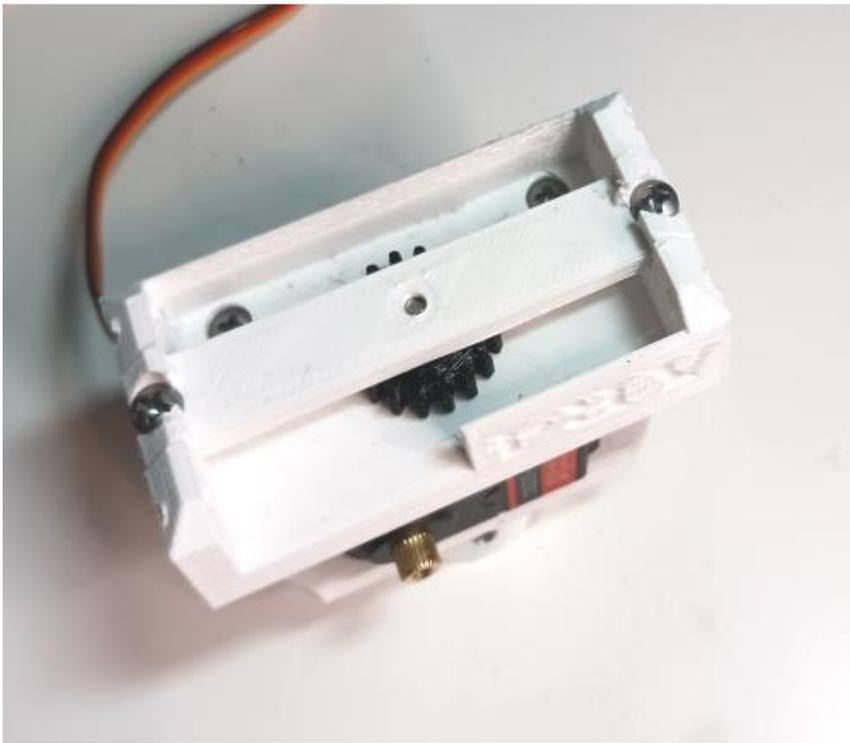
Secure carriage to base as shown with (6) #6 screws.



Use 3.1mm drill bit to clear center hole in 3D printed gear.



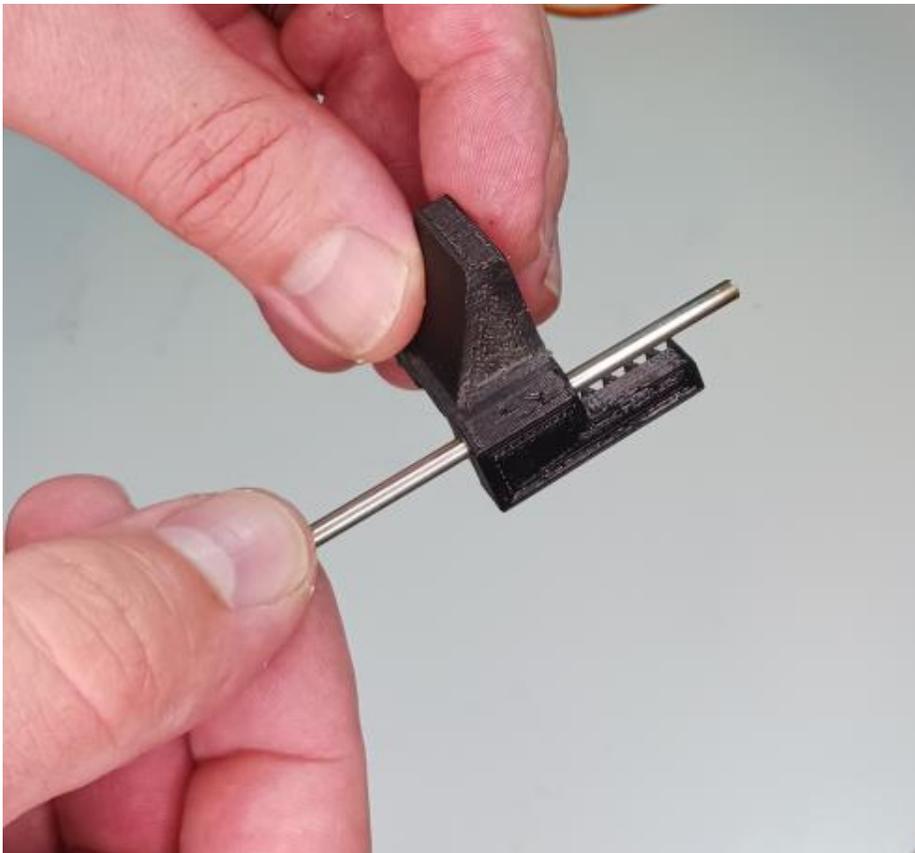
Install gear on center post and make sure it spins freely.



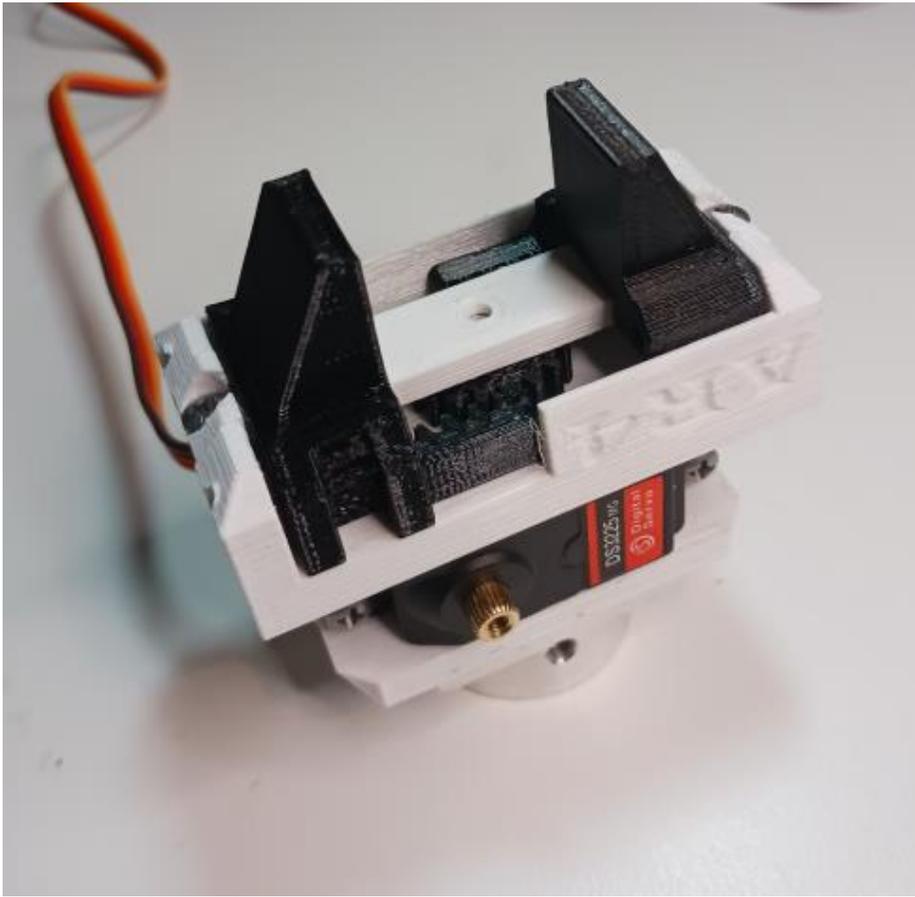
Install center bar and secure with (2) #3 screws as shown.



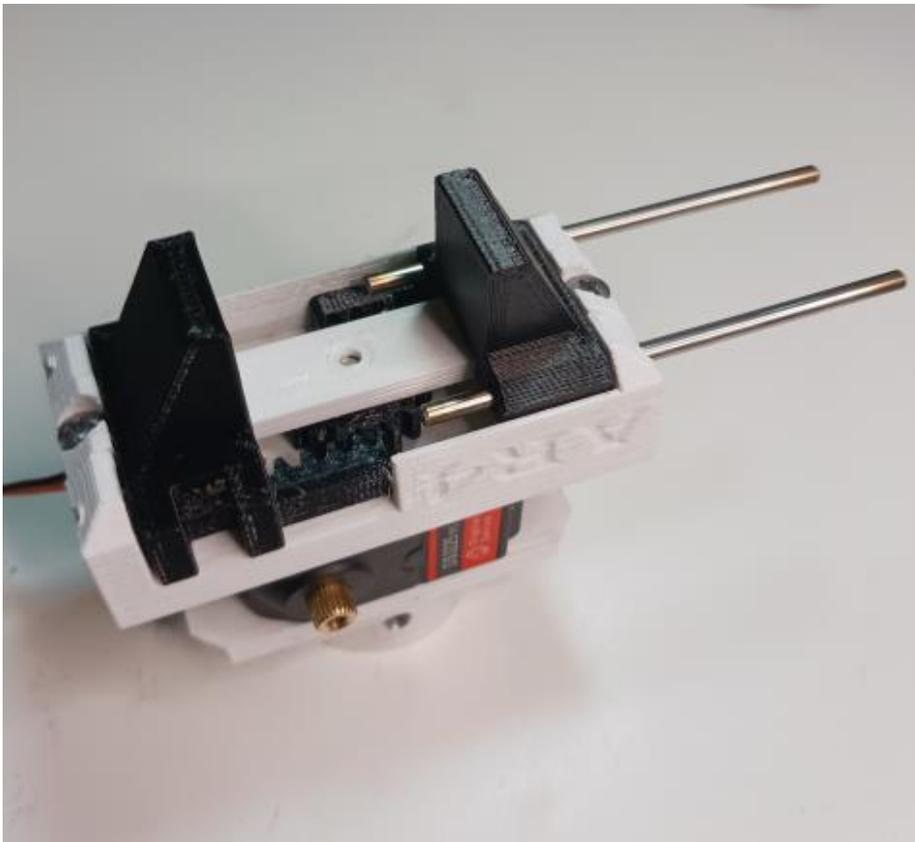
Use 3.1mm drill bit to clear both rail holes in the 3D printed jaw1 and jaw2 parts.



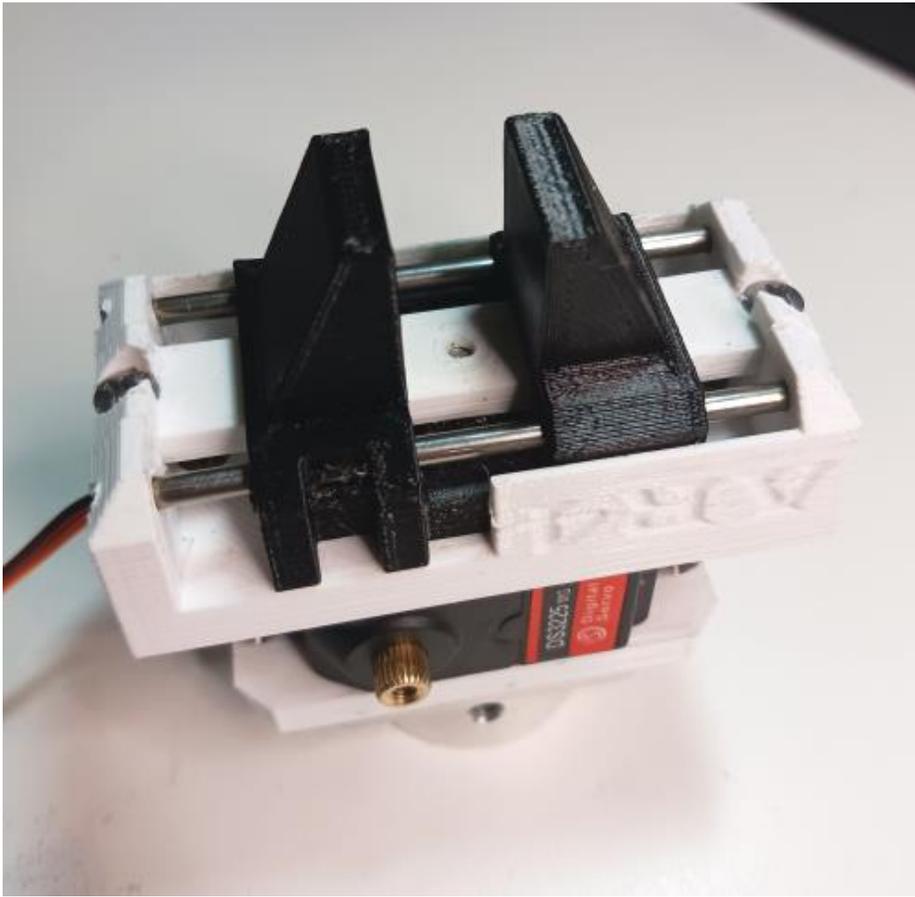
Make sure 3mm rod slides easily in each jaw rail hole.



Install jaw1 and jaw2 as shown. Make sure the jaws slide easily.

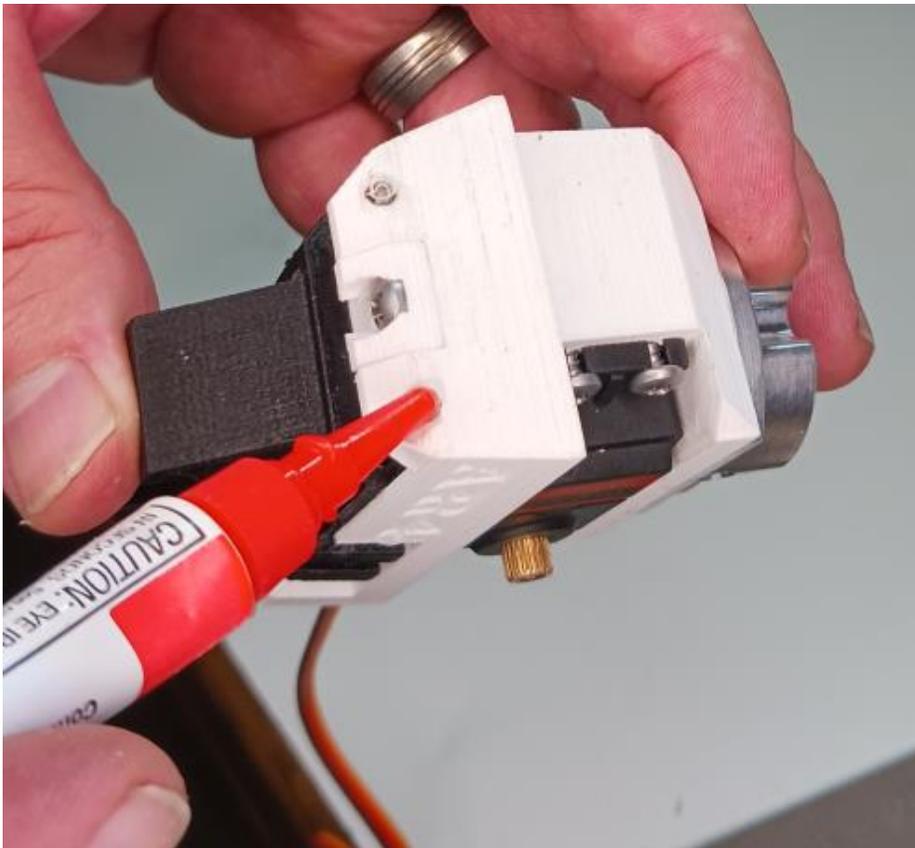


Use 3mm drill to clear end holes in carriage and then insert the (2) 70mm rods through carriage and through jaw rail holes as shown.

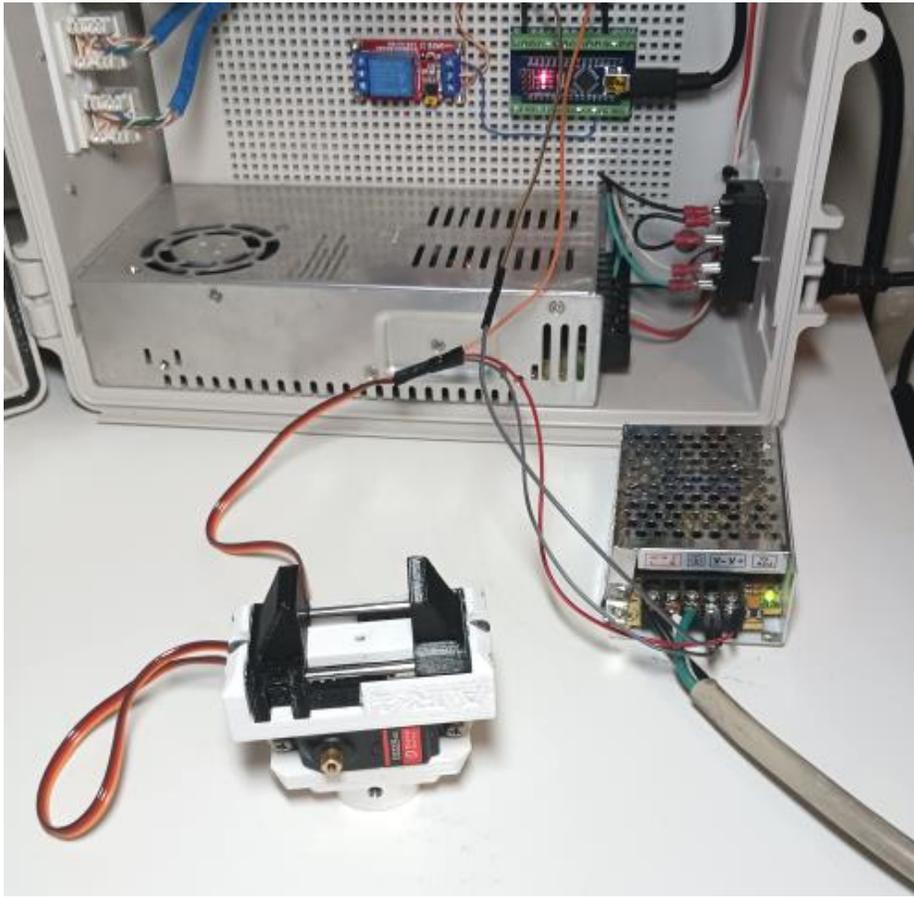


Finish inserting rods through the other jaw and into other side of carriage.

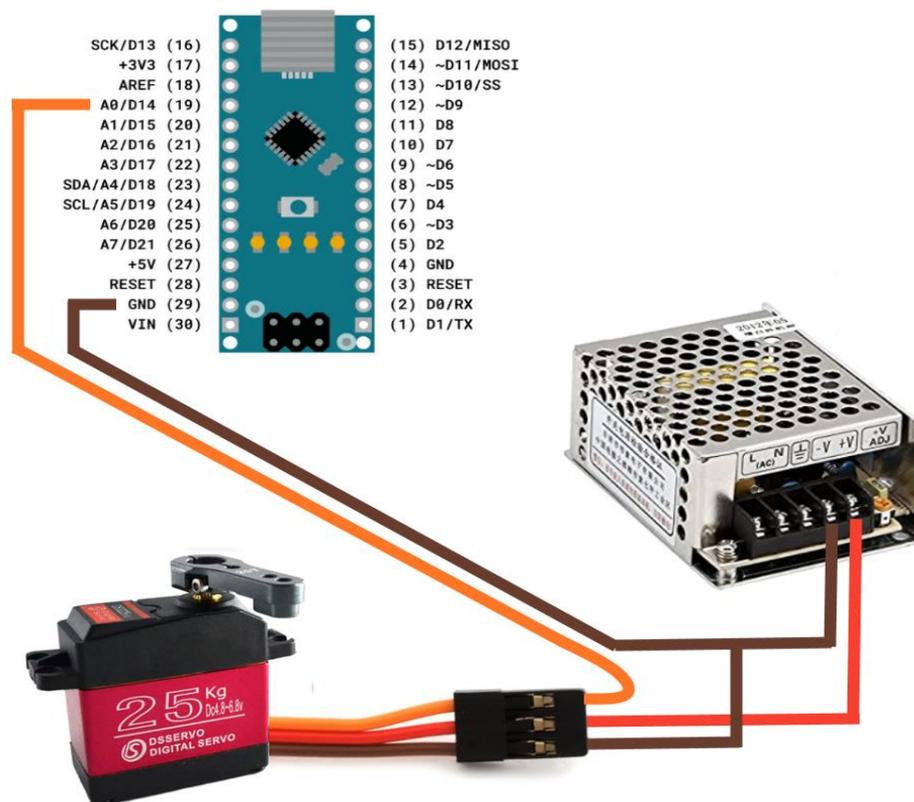
Make sure jaws slide easily.



Place drop of super glue at each end of both rods as shown.



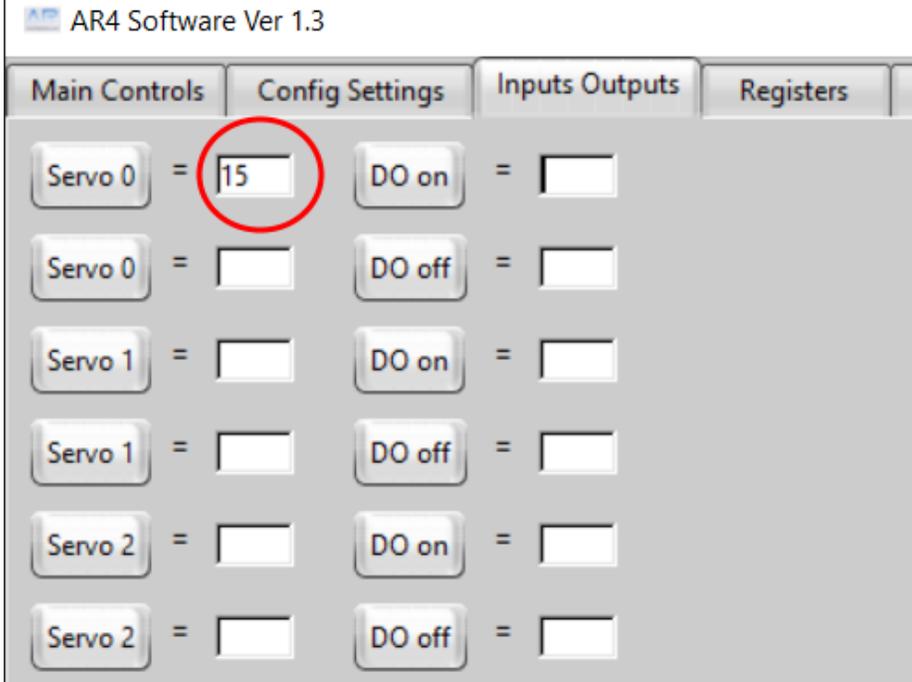
At this point we need to temporarily power up the servo to drive it to the correct assembly position. It is unlikely that your computers USB 5v to the Arduino board will be sufficient to power the servo so I am using a small 5v power supply.



The servo should be wired as shown. Note the power supply -5v is shared with the Arduino -5v or GND terminal.

Please see this video for more information on servo wiring.
<https://youtu.be/76F6dS4ar8Y>

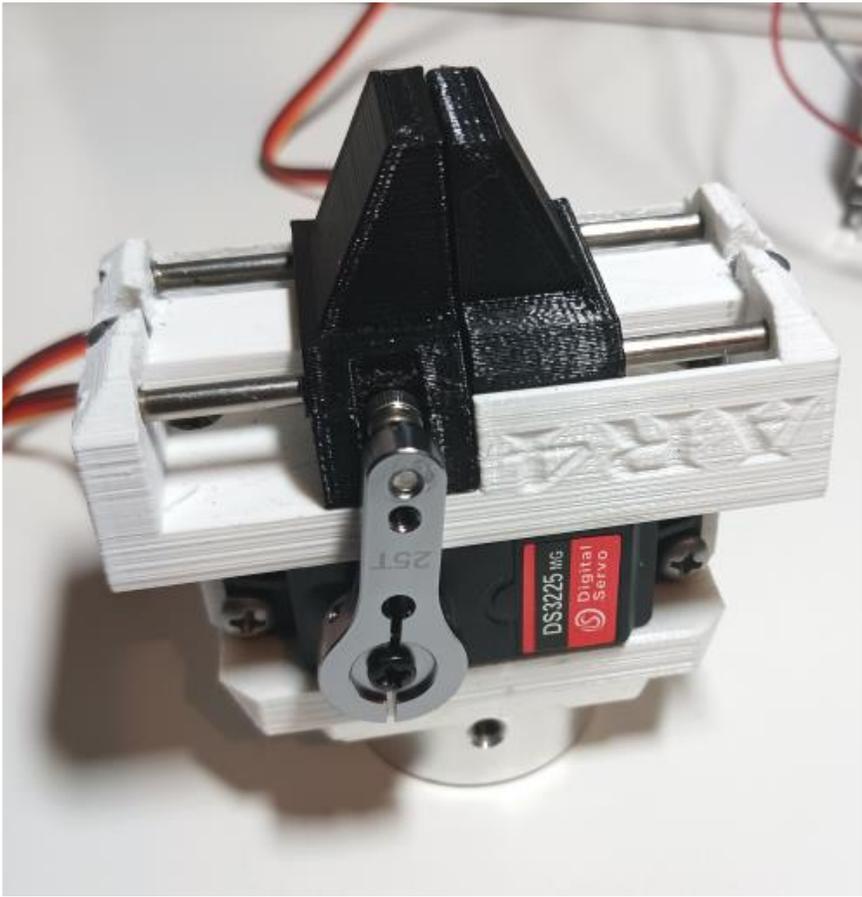
Open the AR4 software and from the inputs outputs tab set your servo position to 15°



Make sure the servo has moved to the 15° position

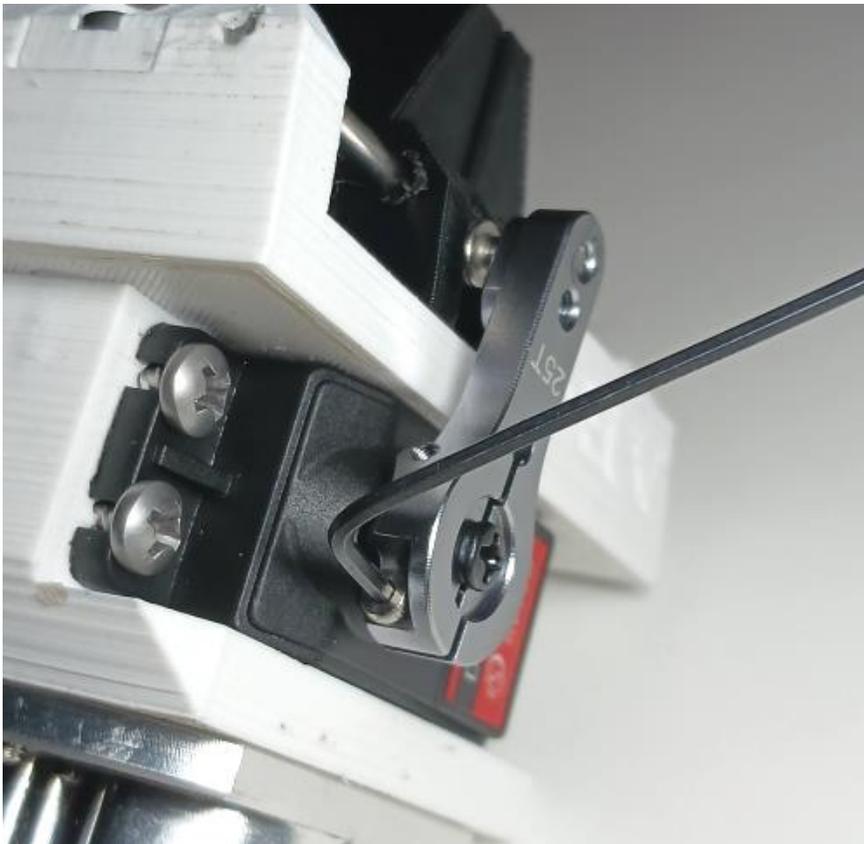


Apply Loctite thread locker to M3x8 cap screw and install cap screw in servo arm as shown.



With the servo at 15° and the jaws completely closed install the arm on servo as shown with cap of M3 screw inserted into the slot on jaw1.

Secure servo arm with screw provided with servo.



Tighten arm clamp cap screw as shown.

| Main Controls | Config Settings | Inputs | Outputs | Registers |
|---------------|-----------------|--------|---------|-----------|
| Servo 0 | = 0 | DO on | = | |
| Servo 0 | = 55 | DO off | = | |
| Servo 1 | = | DO on | = | |
| Servo 1 | = | DO off | = | |
| Servo 2 | = | DO on | = | |
| Servo 2 | = | DO off | = | |
| Servo 3 | = | DO on | = | |

This completes the assembly of the gripper. To close the gripper give it a servo command of 0° and to open the gripper give it a command of 55°.

Version Log:

- 1.0 8/13/22 – original issue
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