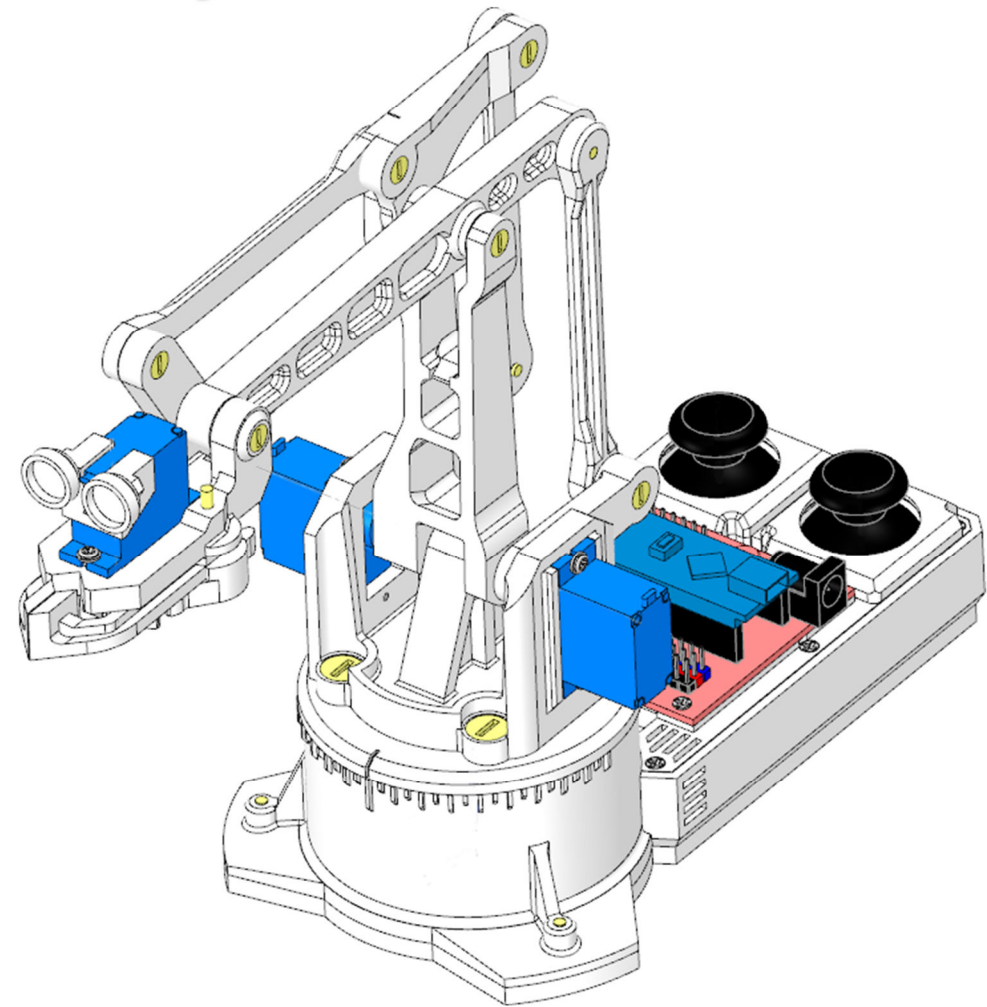
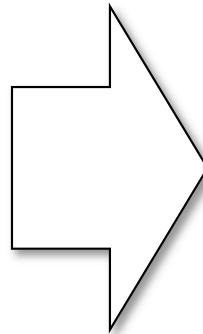
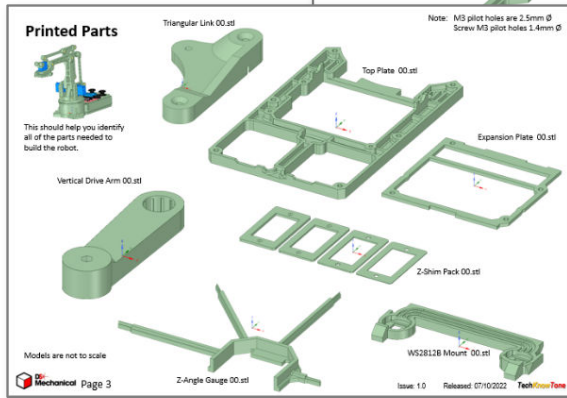
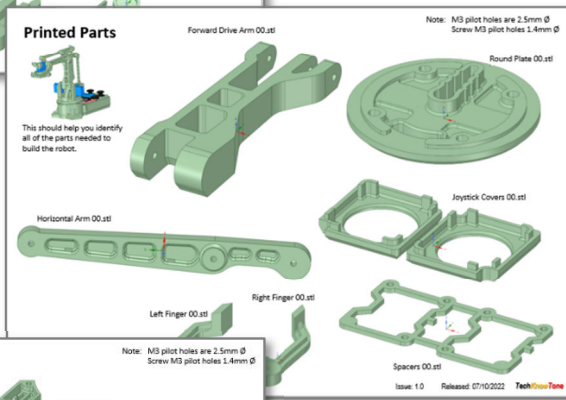
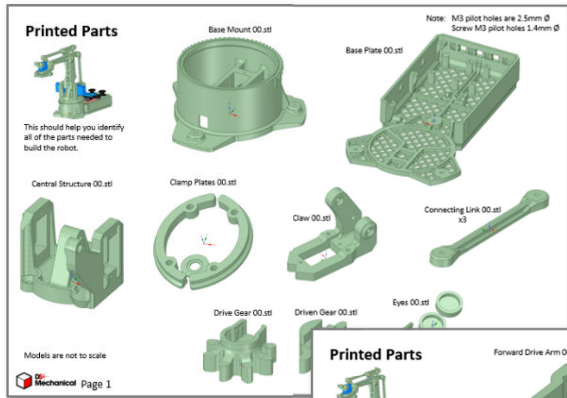


# Reach Robot NANO

## 3D Parts Assembly



# Construction - Tools:

Drills: 1.5mm, 2.0mm, 2.5mm,  
3.3mm, 4.0mm

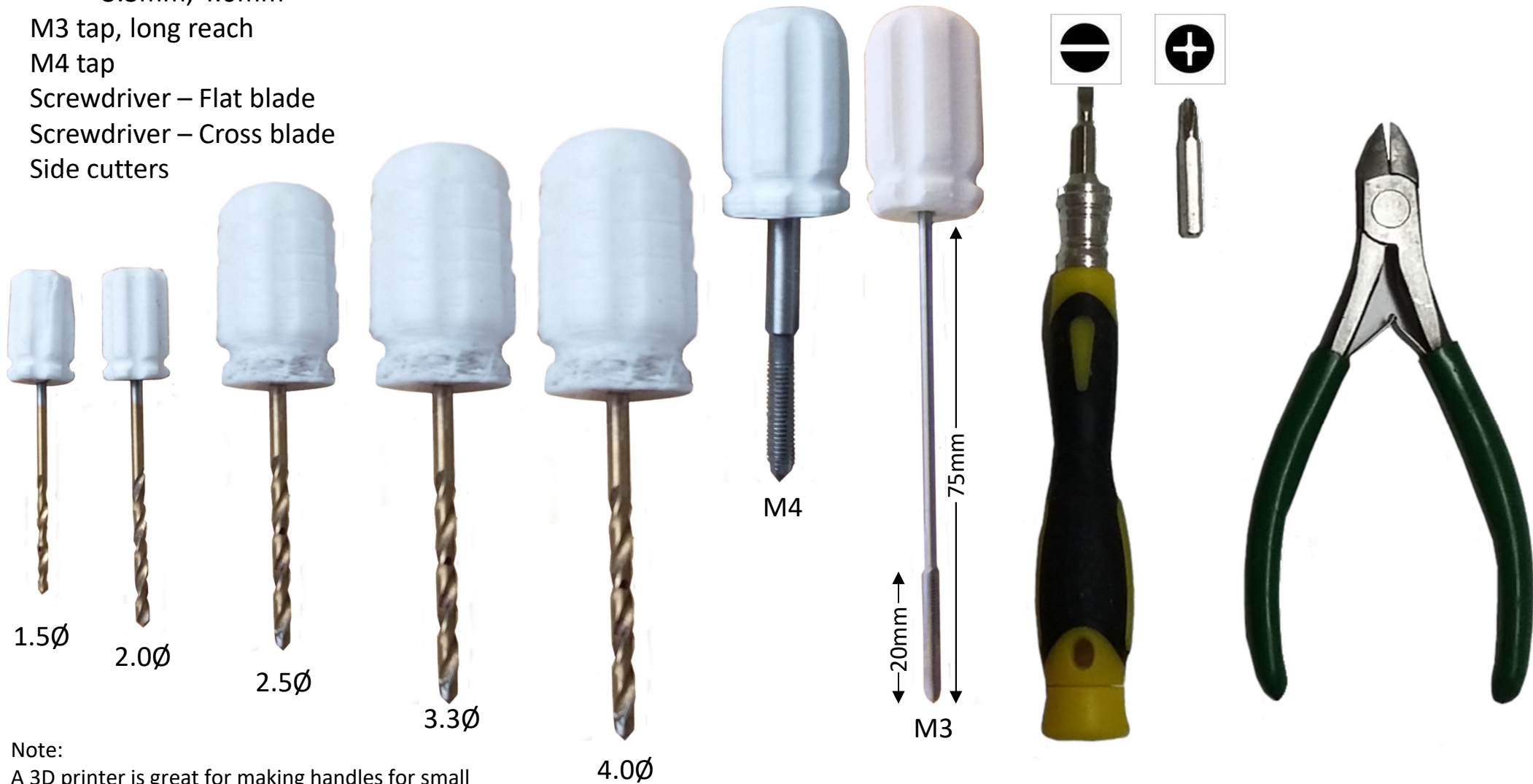
M3 tap, long reach

M4 tap

Screwdriver – Flat blade

Screwdriver – Cross blade

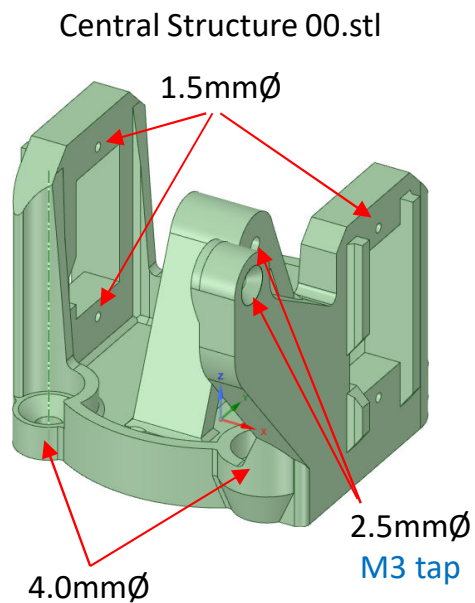
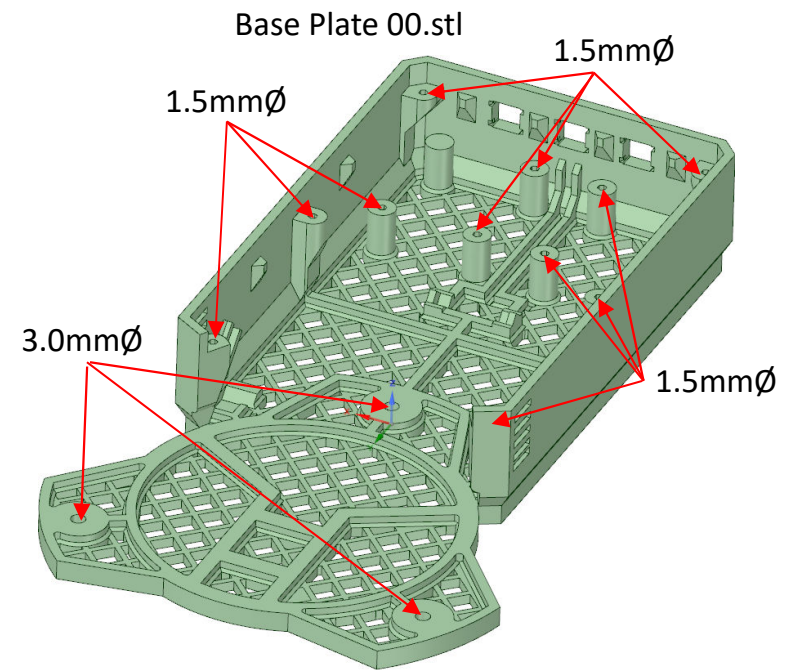
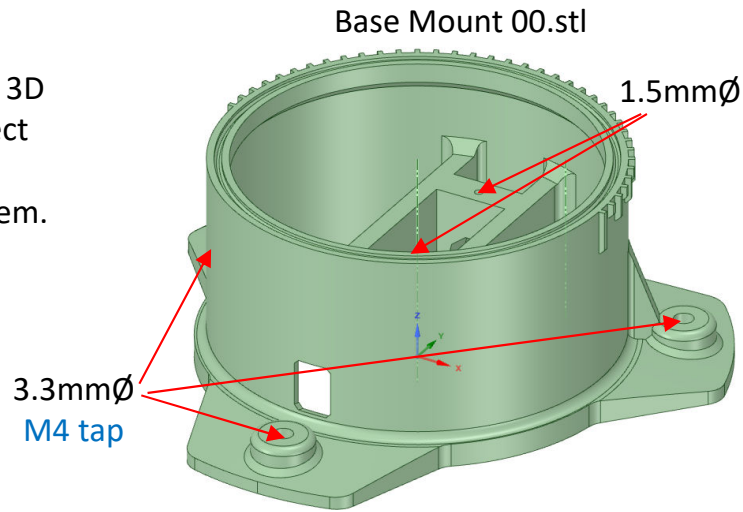
Side cutters



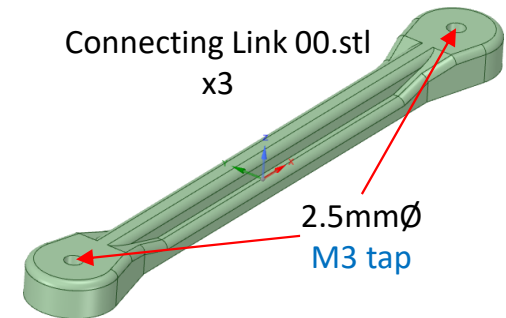
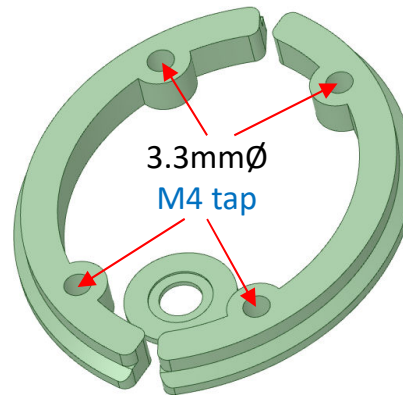
Note:  
A 3D printer is great for making handles for small  
drills and taps.

# Pilot holes

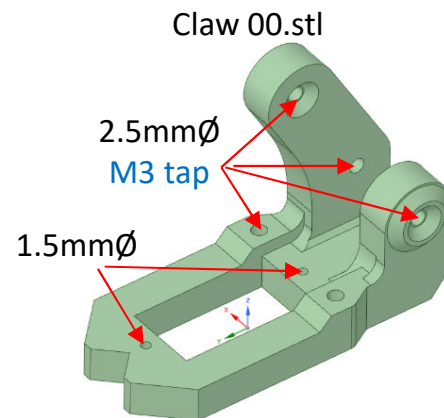
Ensure that the holes in your 3D printed parts are of the correct diameter, by running the assigned drill size through them. Tap later where specified.



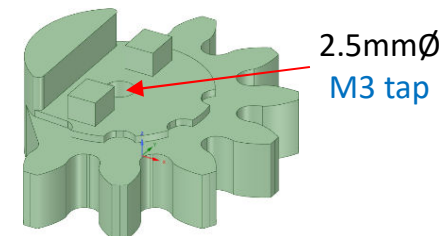
Clamp Plates 00.stl



Models are not to scale.  
Not all holes are visible here.



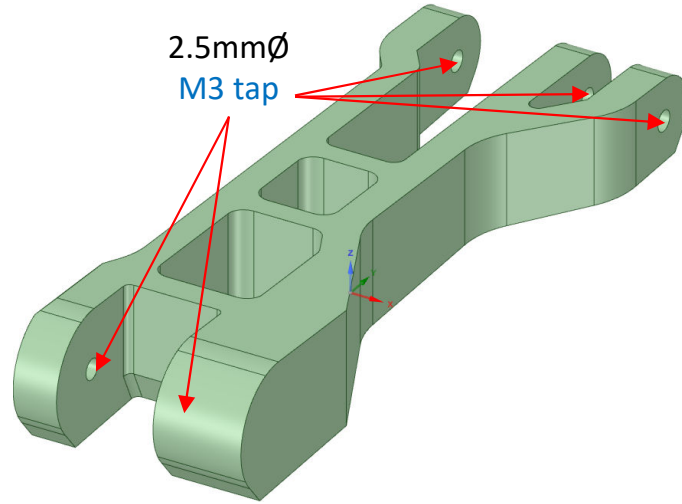
Driven Gear 00.stl



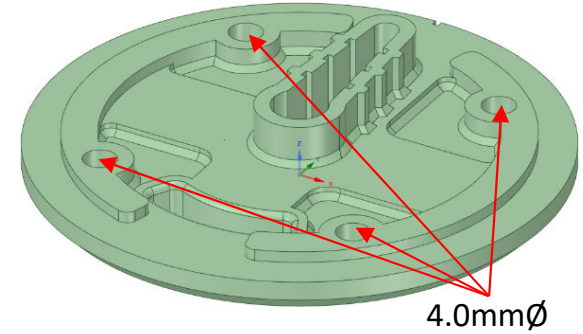
# Pilot holes

Ensure that the holes in your 3D printed parts are of the correct diameter, by running the assigned drill size through them. Tap later where specified.

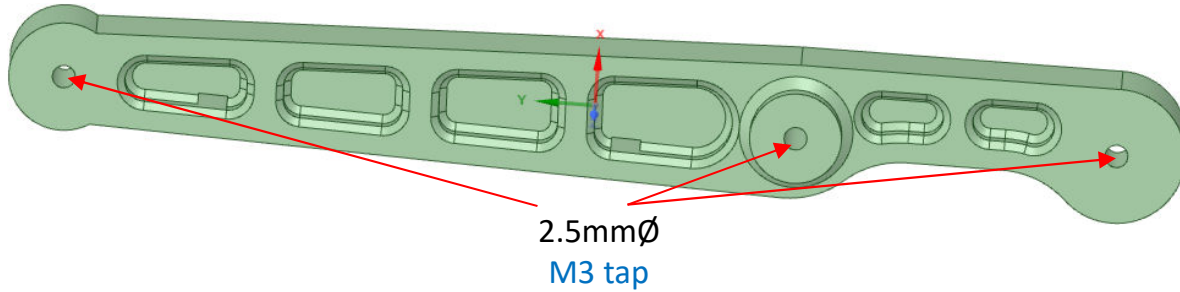
Forward Drive Arm 00.stl



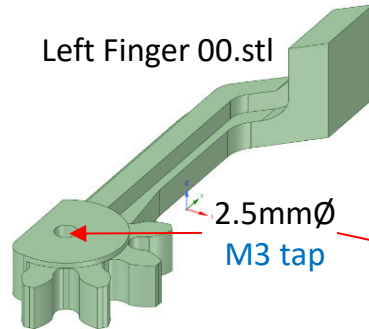
Round Plate 00.stl



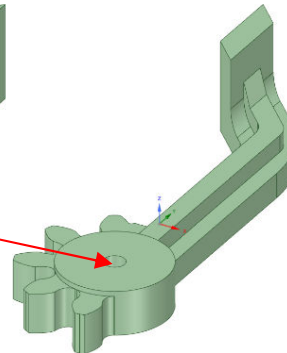
Horizontal Arm 00.stl



Left Finger 00.stl



Right Finger 00.stl

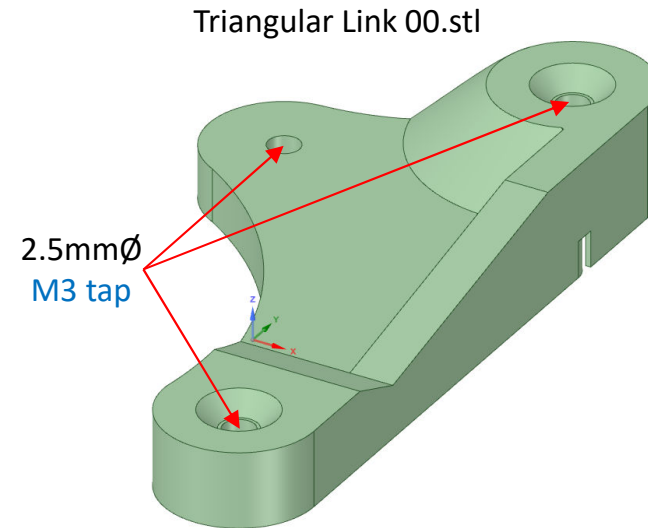
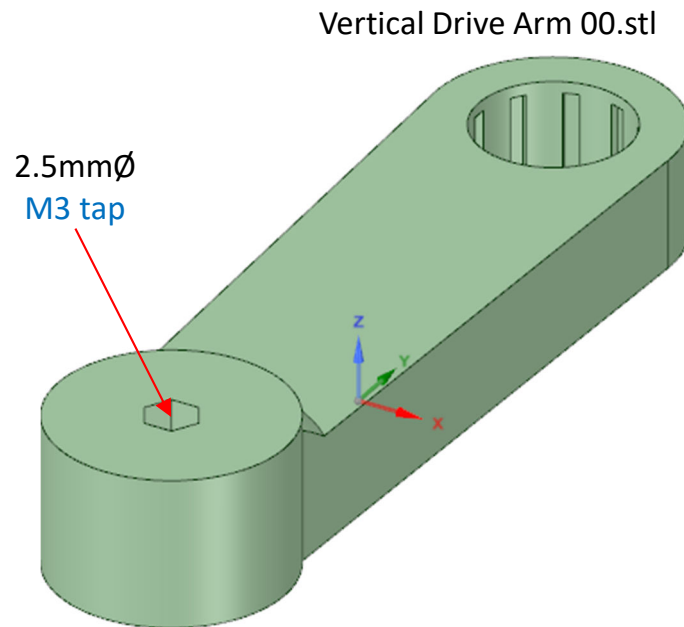


Models are not to scale.  
Not all holes are visible here.



# Pilot holes

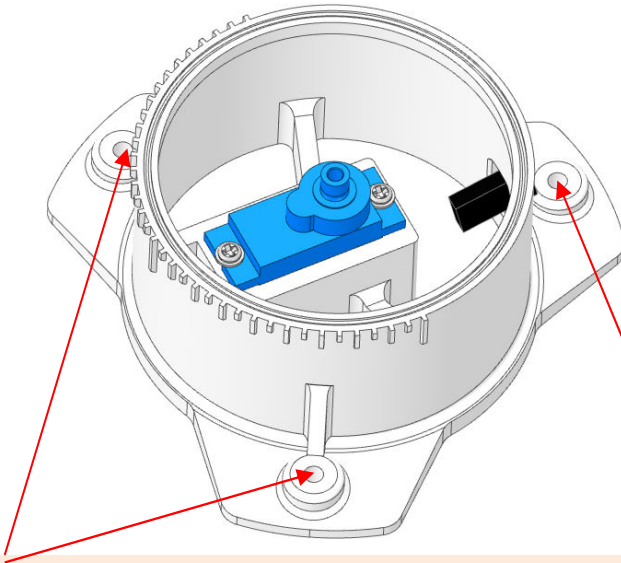
Ensure that the holes in your 3D printed parts are of the correct diameter, by running the assigned drill size through them. Tap later where specified.



Models are not to scale.  
Not all holes are visible here.

# Assembly Notes

01

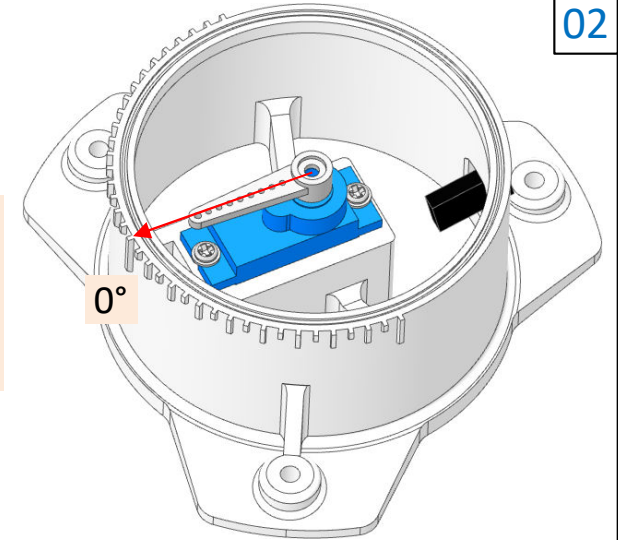


Tap the 3 x M4 holes in the Base Mount and attach servo

02



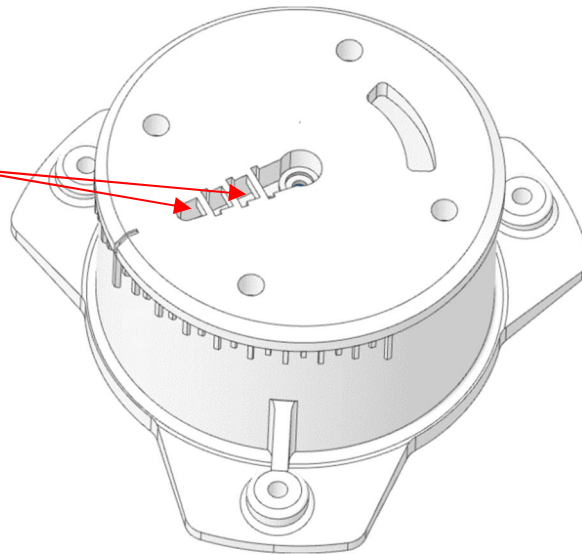
Refer to calibration notes about servo arm adjustment using a test box.



Set the servo PWM angle to 1500 and attach arm at 0°

03

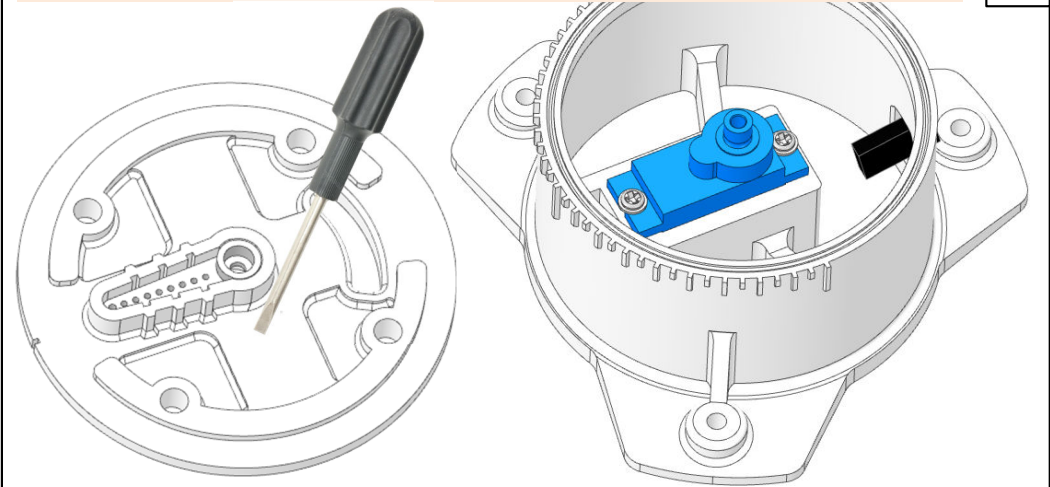
2-part epoxy quick set glue fed in through top plate. Avoid servo arm centre screw.



Place the round Plate on the base and glue arm position

04

Remove centre screw, and round plate once glue has set

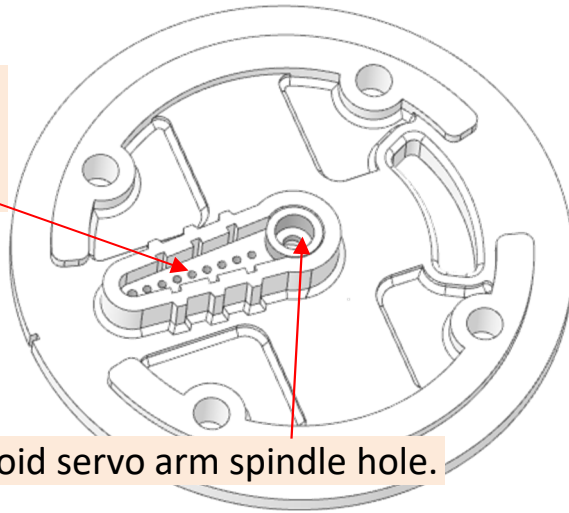


Use a screwdriver from below to push the round plate off.

## Assembly Notes

05

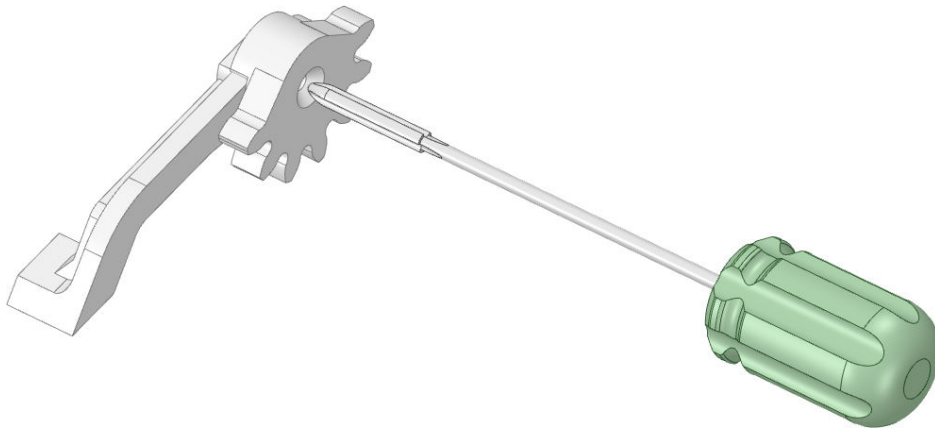
More 2-part epoxy quick set glue applied to arm area in round plate.



Avoid servo arm spindle hole.

Now apply more glue to the servo arm to strengthen fix

07



Hold the Left Finger against the Driven Gear and tap both parts together. Leave the tap within the two parts.

06

Once tapped, insert M3 nylon screw, tighten and crop.

Closed

Hold the Right Finger against the Claw in the closed position. Then M3 tap both parts together.

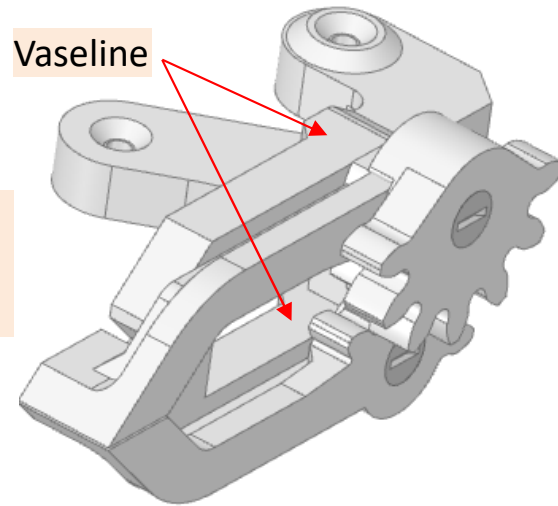
08

Once tapped, insert M3 nylon screw, tighten and crop.

Hold the Left Finger against the Claw in the open position. Then tap parts together.

# Assembly Notes

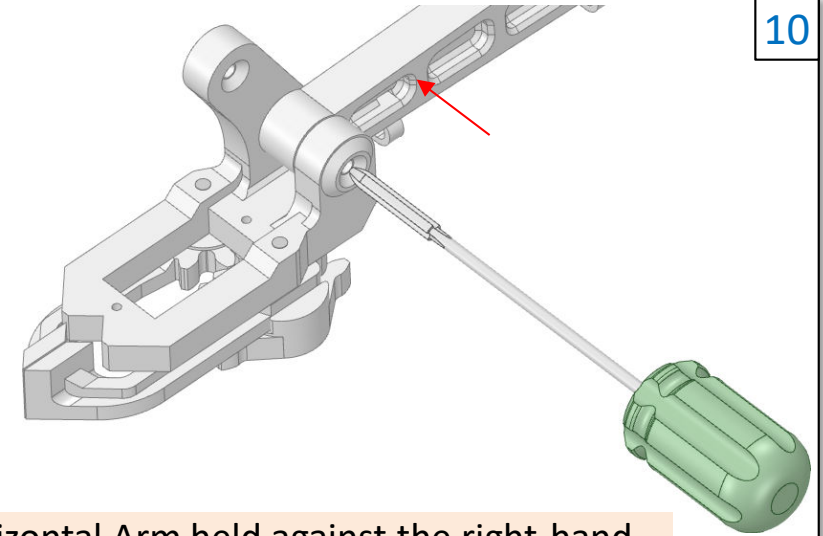
09



Apply Vaseline to the Claw threads, but **not** the Finger threads.

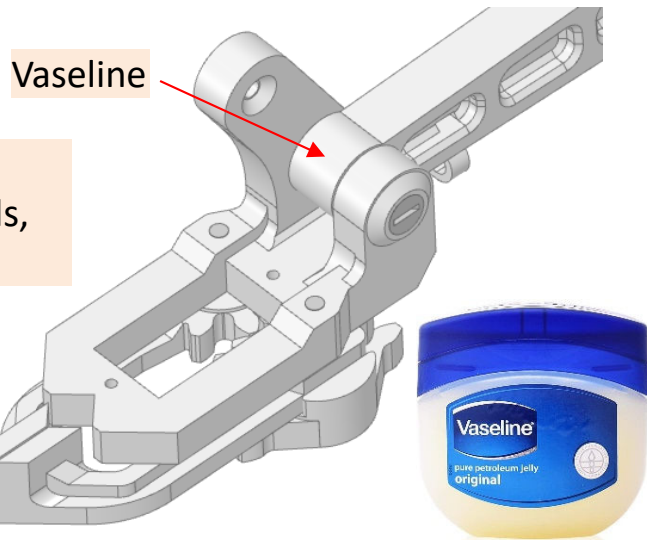
Ensure that the fingers and gears move freely. Apply a small amount of Vaseline to the Claw threads only.

10



With the Horizontal Arm held against the right-hand side of the Claw, run the M3 tap through both parts.

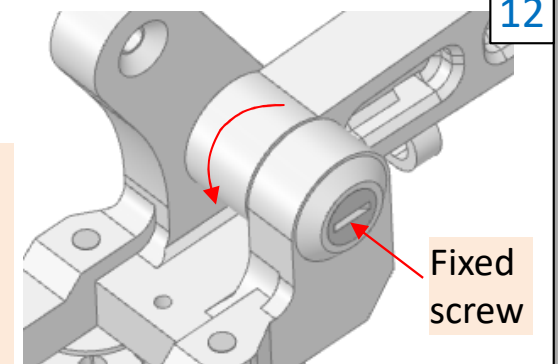
11



Apply Vaseline to Horizontal Arm threads, but **not** Claw threads.

Once tapped, insert M3 nylon screw, tighten and crop.

12



Think of these joints as a being like a nut and a bolt.

The nylon screw is anchored into the Claw, and fixed, where as the arm will rotate on the screw. It also tightens towards the fixed part, so we must allow some clearance.

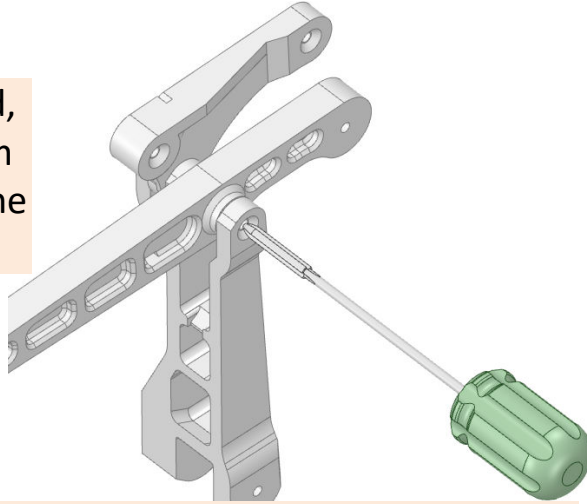
This is why we lubricate the rotating parts with Vaseline to reduce friction and wear.



## Assembly Notes

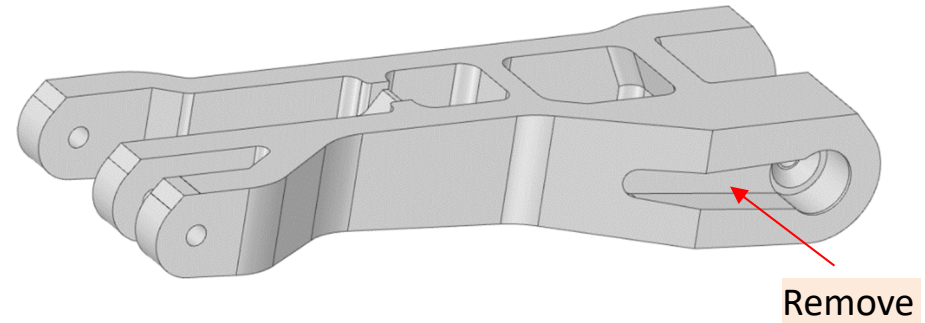
13

Continue with this method, tapping the Horizontal Arm and Triangular Link onto the Forward Arm.



Angle the pieces whilst tapping such that they don't tighten and lock up when turned.

14

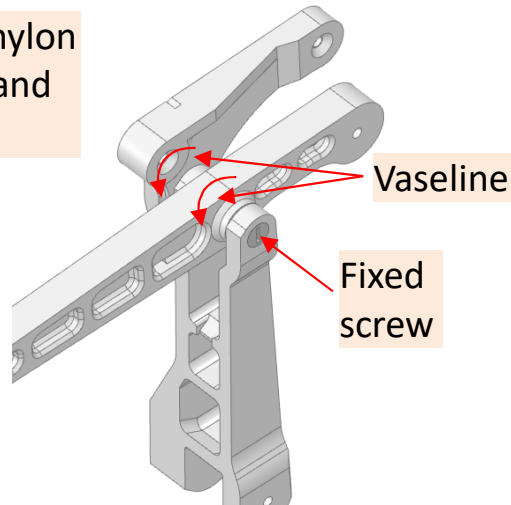


Using a craft knife, carefully remove the skin of the hidden pocket in the Forward Arm, revealing the centre hole.

15

Once tapped, insert M3 nylon screw, lubricate, tighten and crop.

The Horizontal Arm and Triangular Link are the moving parts.

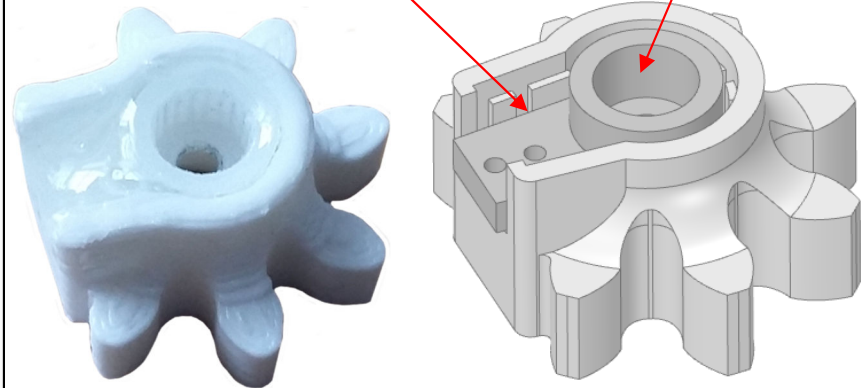


Angle the pieces whilst tapping such that they don't tighten and lock up when turned.

16

2-part epoxy quick set glue applied to the edges.

Avoid servo drive hole area.



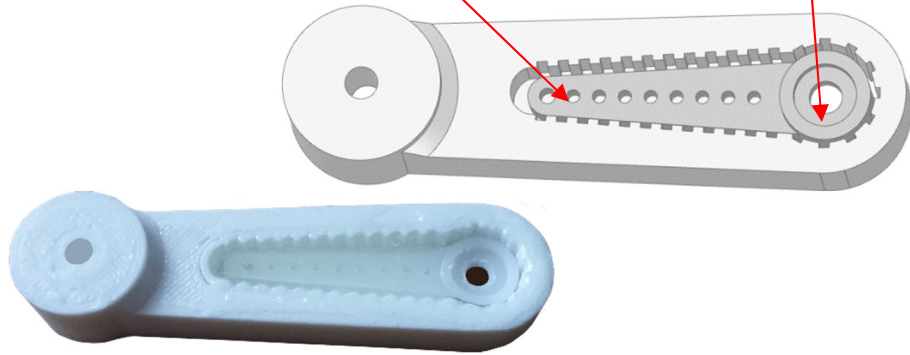
Using a craft knife, carefully remove the skin of the hidden Crop the servo arm for the Claw and locate in Drive Gear.

## Assembly Notes

17

2-part epoxy quick set glue applied to the edges.

Avoid servo drive hole area.

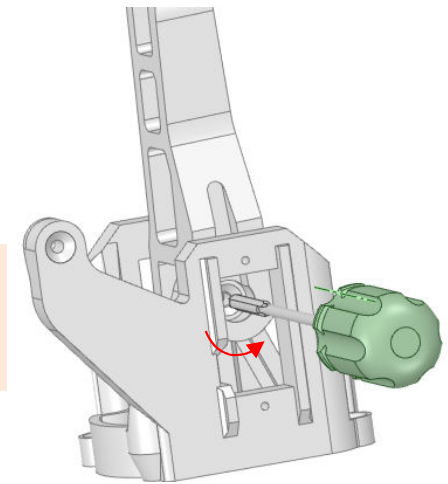


Place a servo arm lever into the Vertical Drive Arm and glue into place using 2-part epoxy as shown.

18

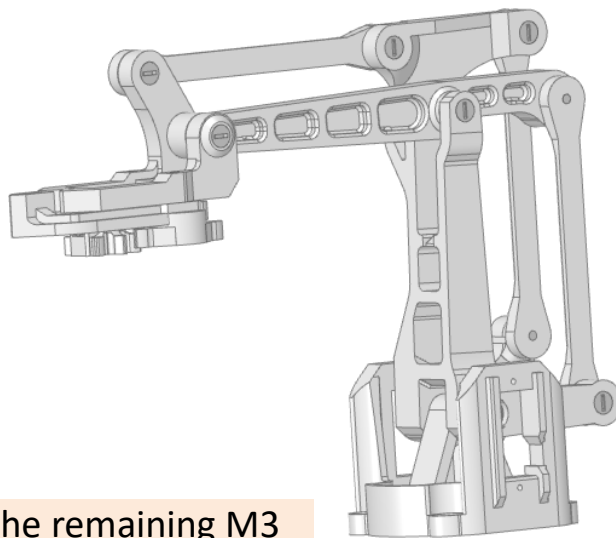
Once tapped, insert M3 nylon screw, lubricate, tighten and crop the screw.

Consider the Central Structure as the moving part, whose threads need lubrication.



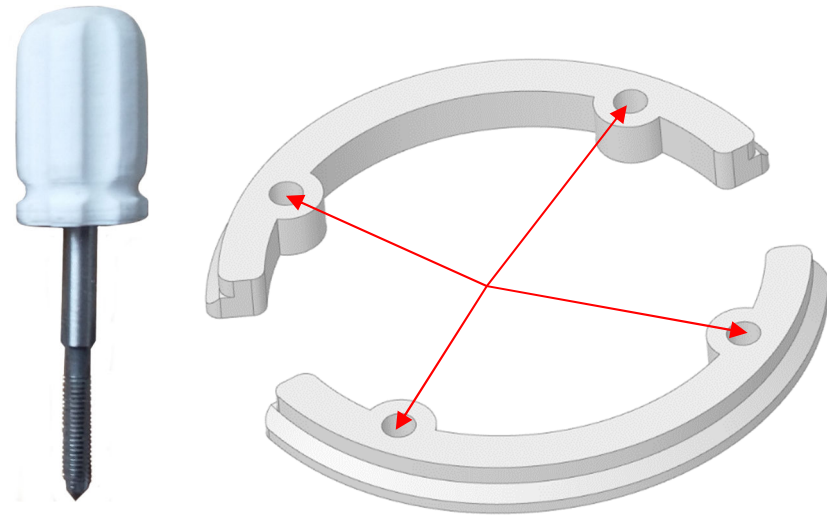
Place the Forward Arm within the Central Structure and tap the two parts whilst holding them together.

19



Continue with tapping the remaining M3 joints to complete the main assembly.

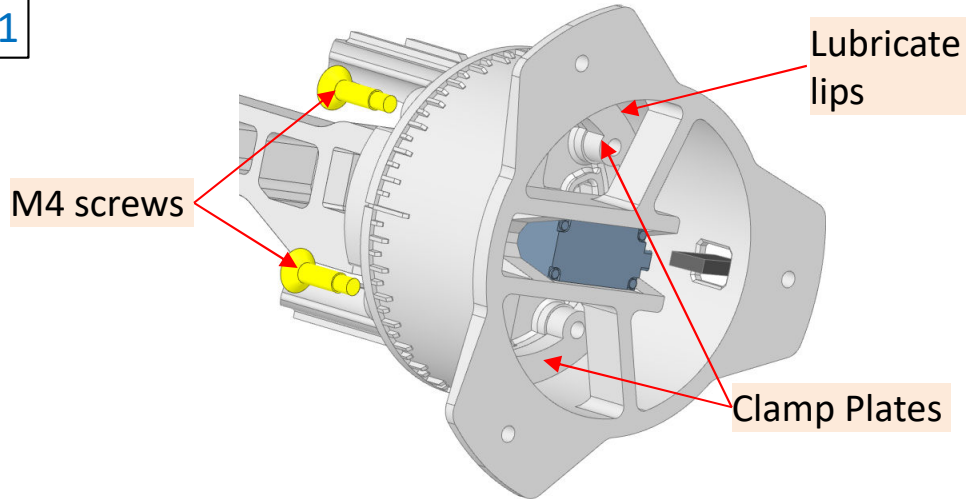
20



Tap the 4 holes in the Clamp Plates with an M4 tap.

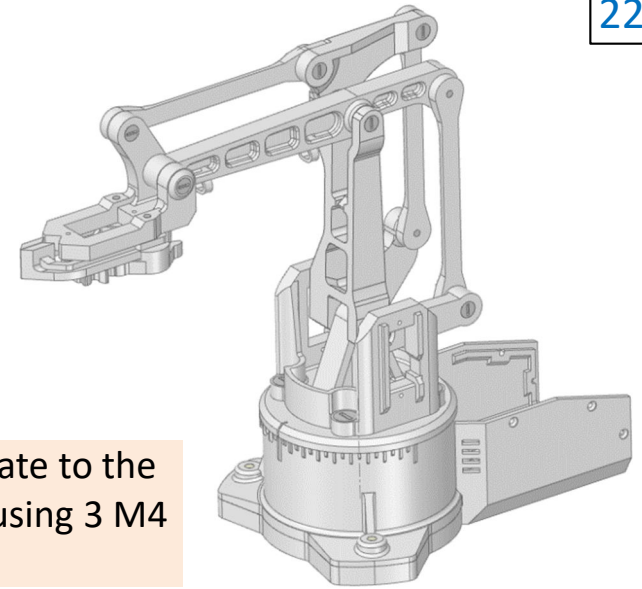
## Assembly Notes

21



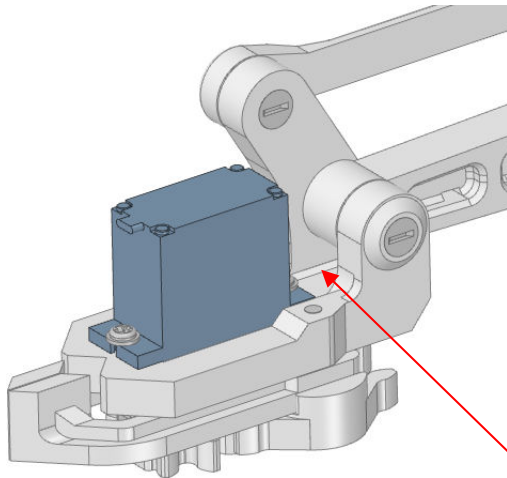
Using the 2 Clamp Plates and 4 x M4 nylon screws, attach the Central Structure to the Base.

22



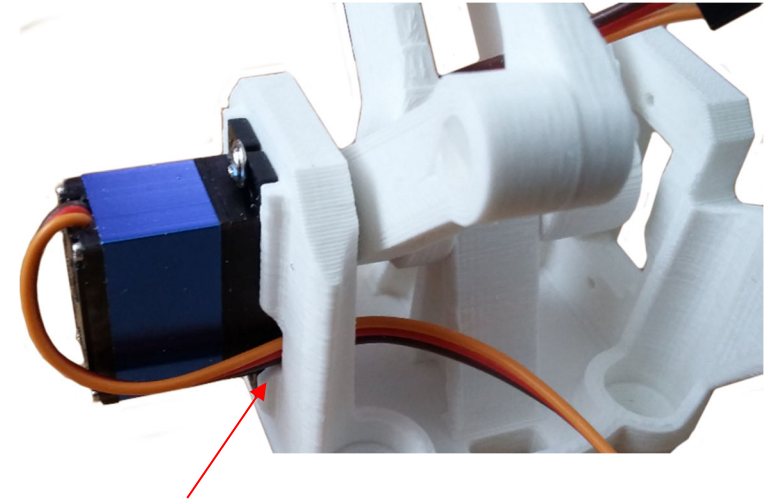
Now attach the Base Plate to the Base Mount assembly using 3 M4 screws.

23



Attach the Claw servo using the screws provided, feeding the cable through the joint aperture.

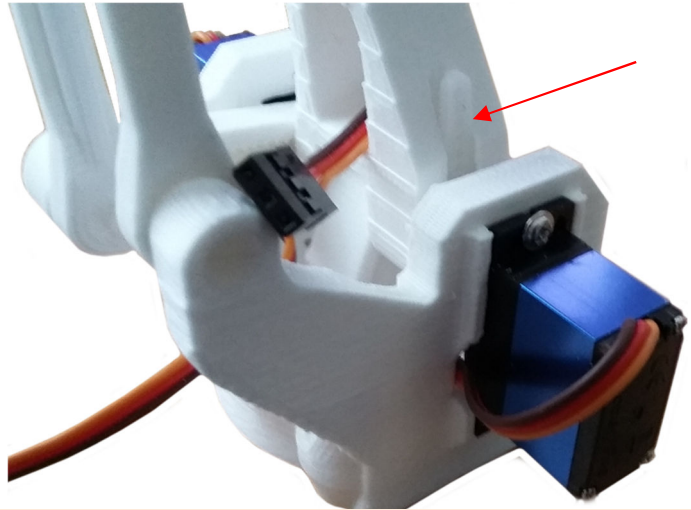
24



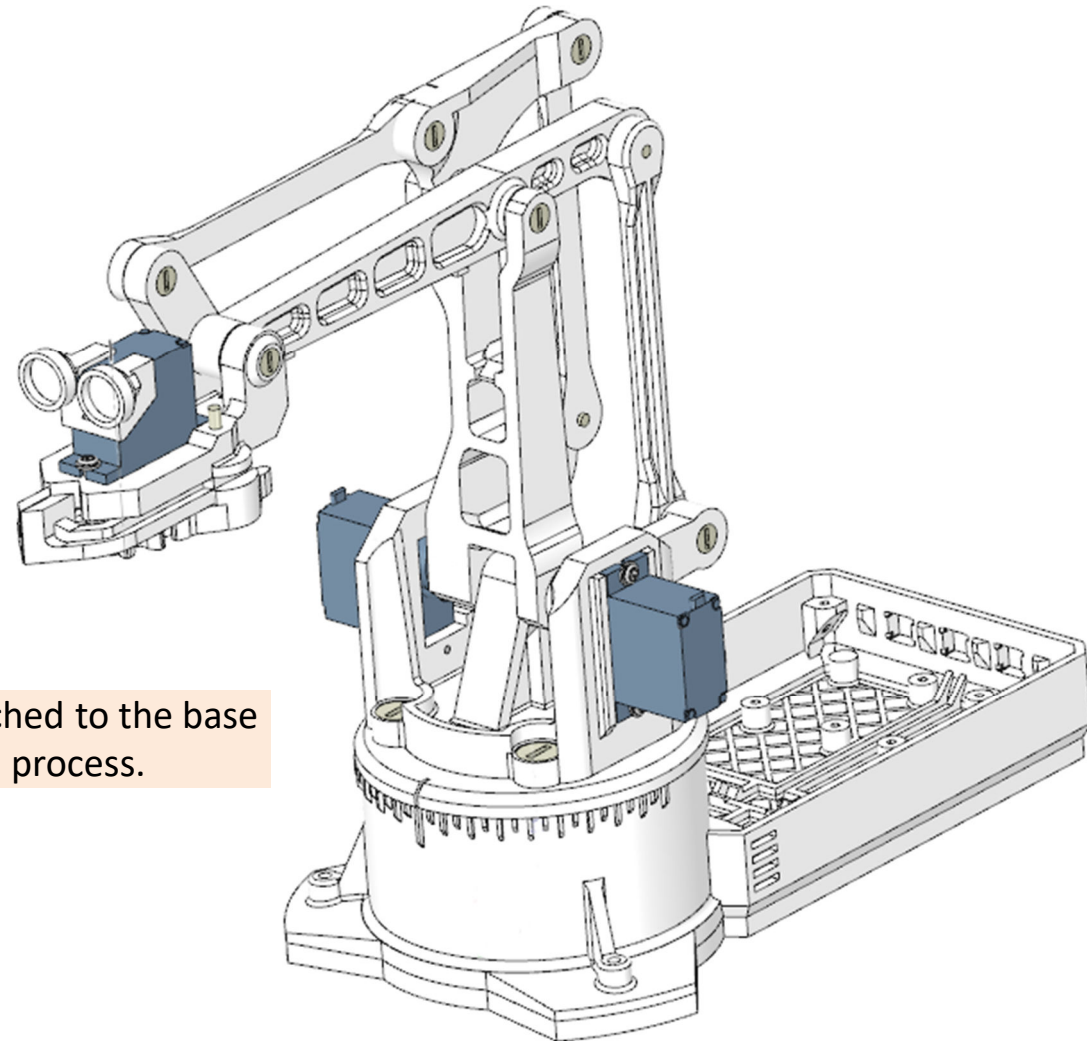
Attach the Vertical Arm servo using the screws provided, feeding the cable through the Central Structure aperture.

## Assembly Notes

25



Attach the Forward Arm servo, ensuring that the lever arm is pressed snugly into the arms recess.



The robot structure is now ready to be attached to the base plate and control box, to complete the build process.



## Assembly Notes

Exploded view of the base plate and control box components.

The joystick covers are glued into the Top plate using epoxy glue.

Button switches are pressed into the rear of the case, then glued with epoxy.

