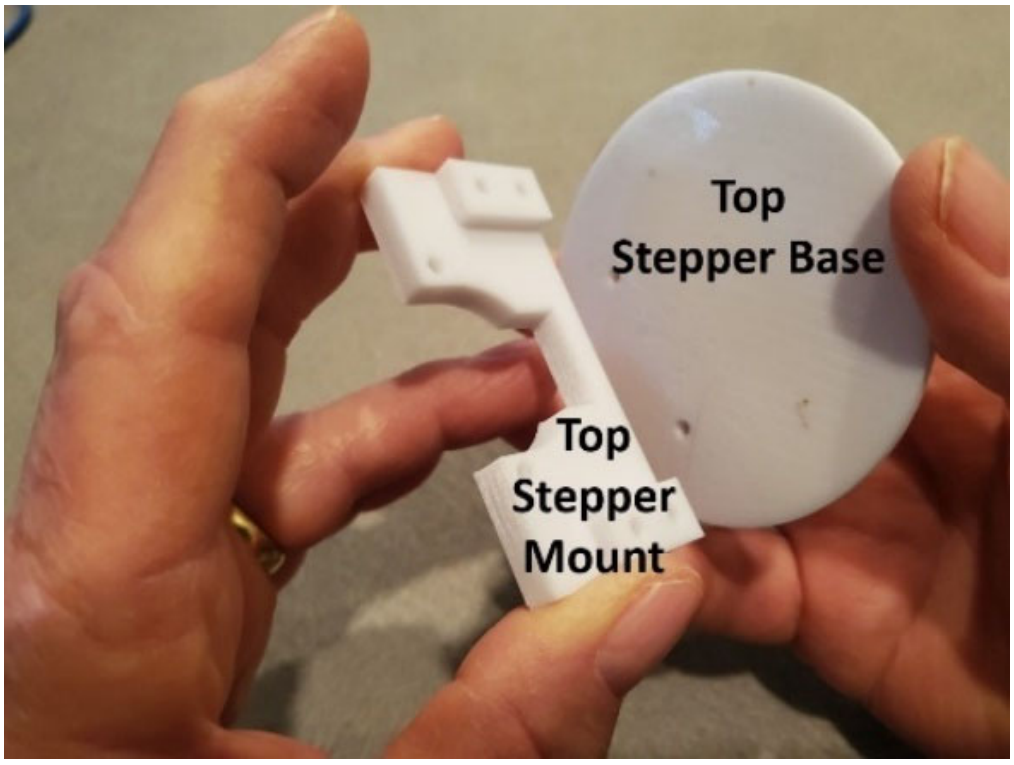
Rover Camera Mount Assembly
Jackson State University MARRS STEM Workshop
February 27, 2021

Objective: Complete the Camera Mount assembly and process successfully.

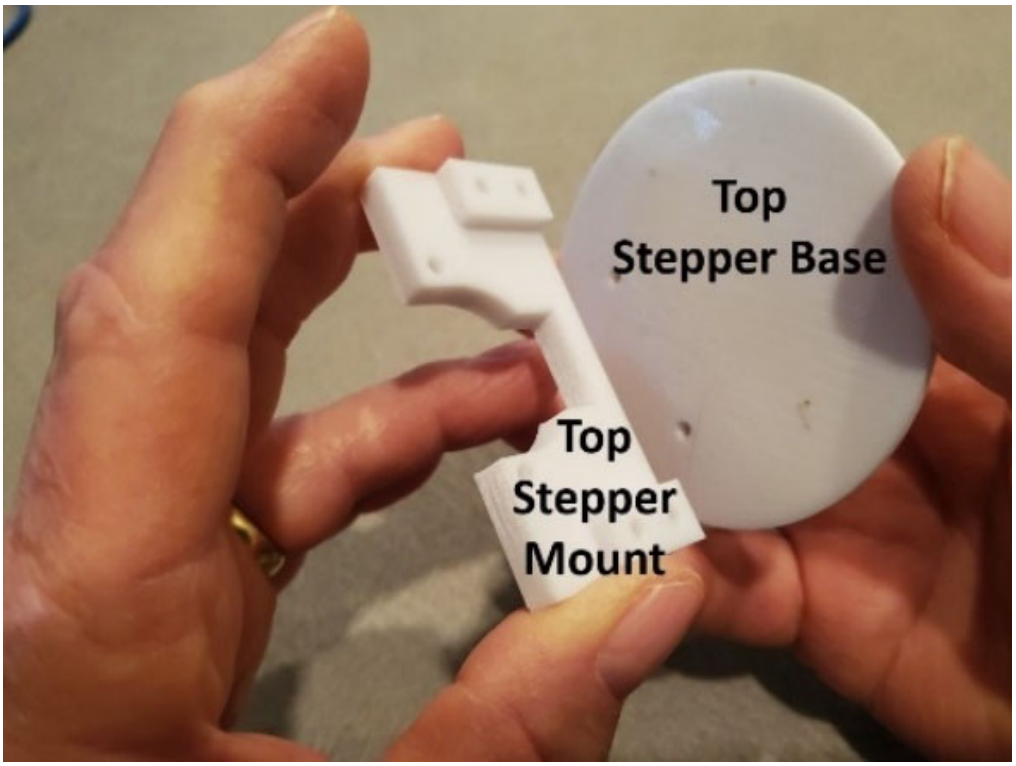
Tools and materials: Needle nose pliers, Phillip's screwdriver, camera parts kit.

3. Camera Base Driver Board Assembly

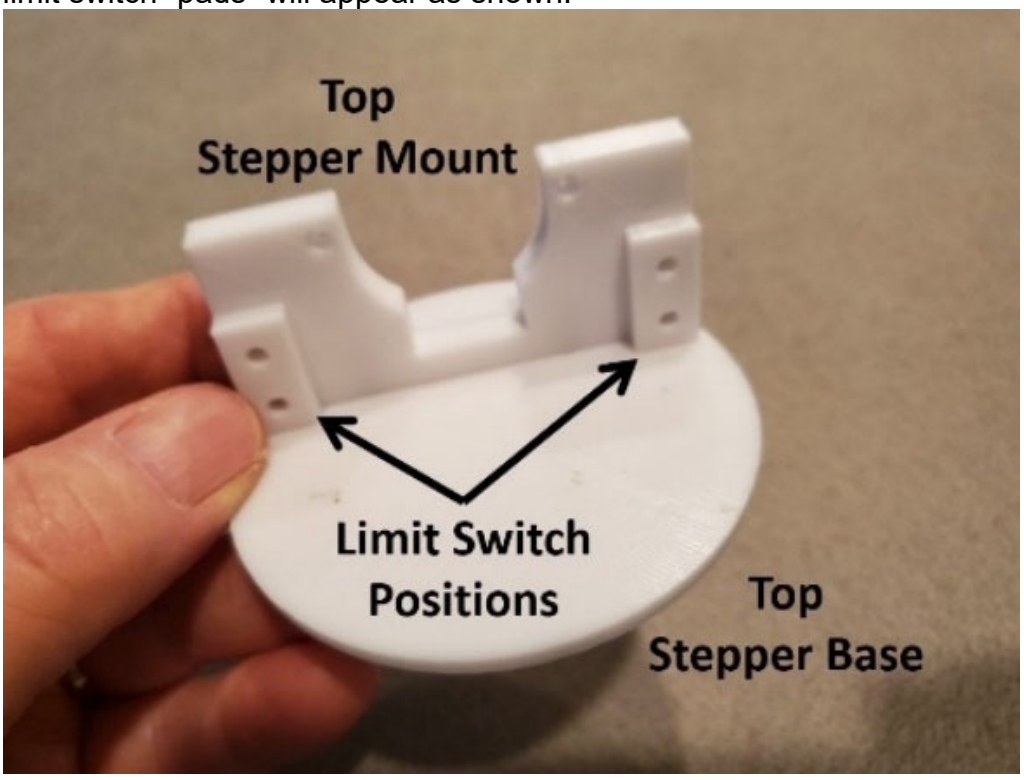
(1) The holes for the top camera mount are pre-drilled. Observe the orientation to the top stepper mount and the top stepper base.



(2) Insert one of the self-tapping sheet metal screws through the bottom of the top stepper base. Don't fully tighten the first screw. Adjust the two parts so the second self-tapping sheet metal screw can be inserted through the top stepper base. Gently tighten both of the screws so that the two parts are stable. Over-tightening may damage the top stepper mount.

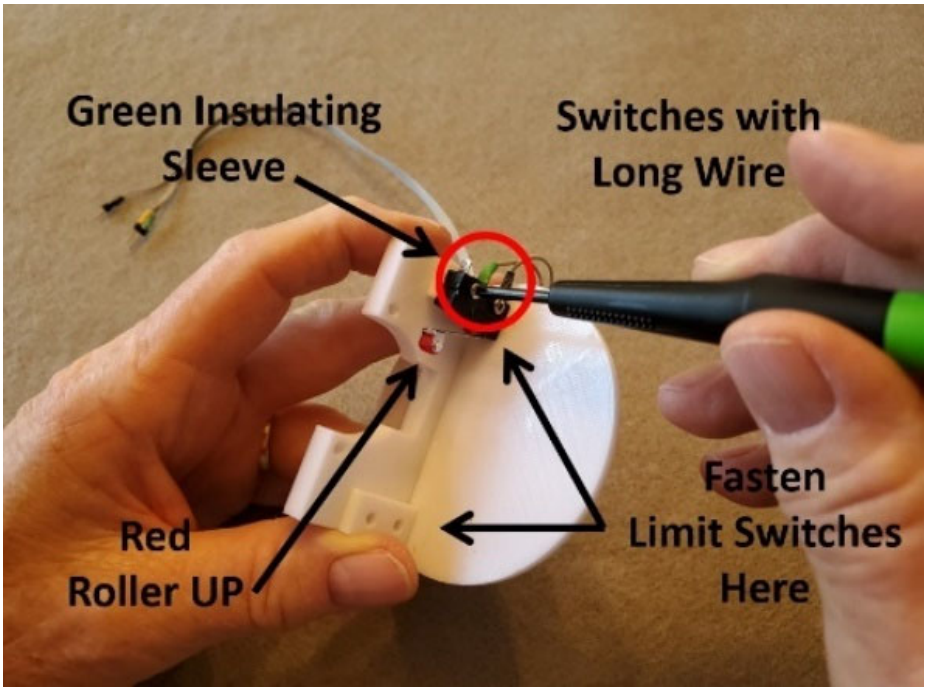


(3) When the top stepper mount and stepper based are assembled correctly the limit switch “pads” will appear as shown.

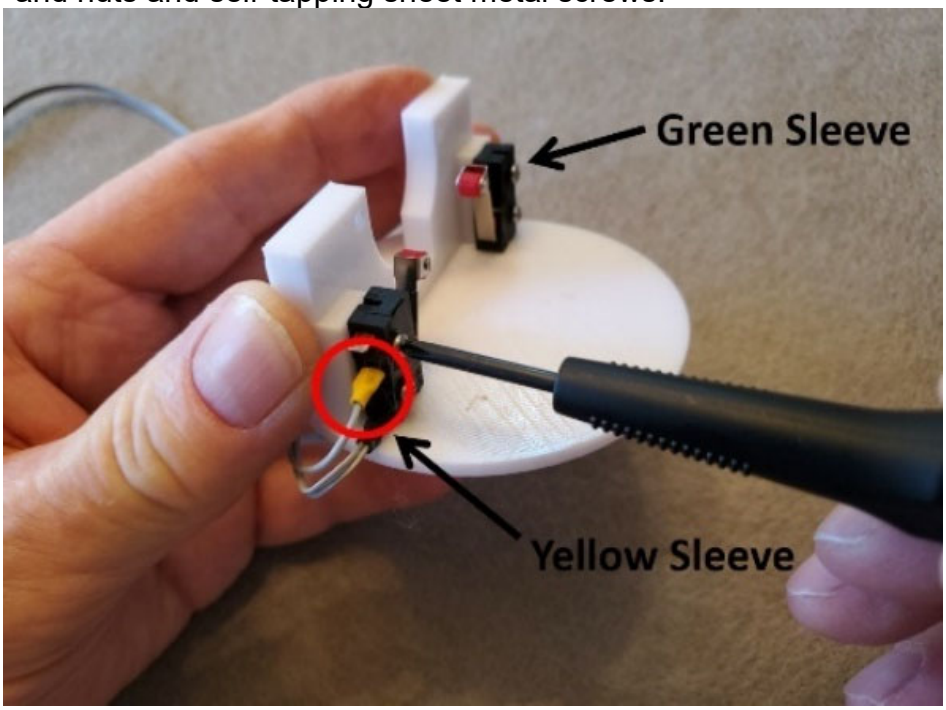


(4) Attach the limit switches to the top stepper mount. Note that this is the switch with the green sleeve. There are two sets of limit switches. The pair of switches with the long wire is placed on the top stepper mount.

Note: The RED rollers on the switches faces upward as shown. Two self-tapping sheet metal screws are used to attach each switch to the stepper mount.

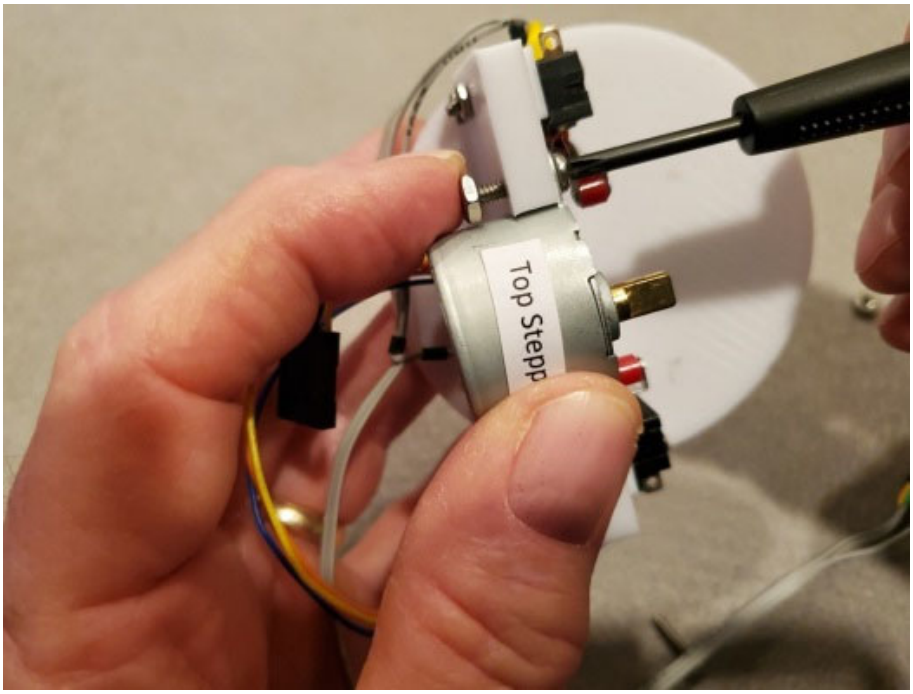


(5) Fasteners used in the assembly of the camera mount are machine screws and nuts and self-tapping sheet metal screws.

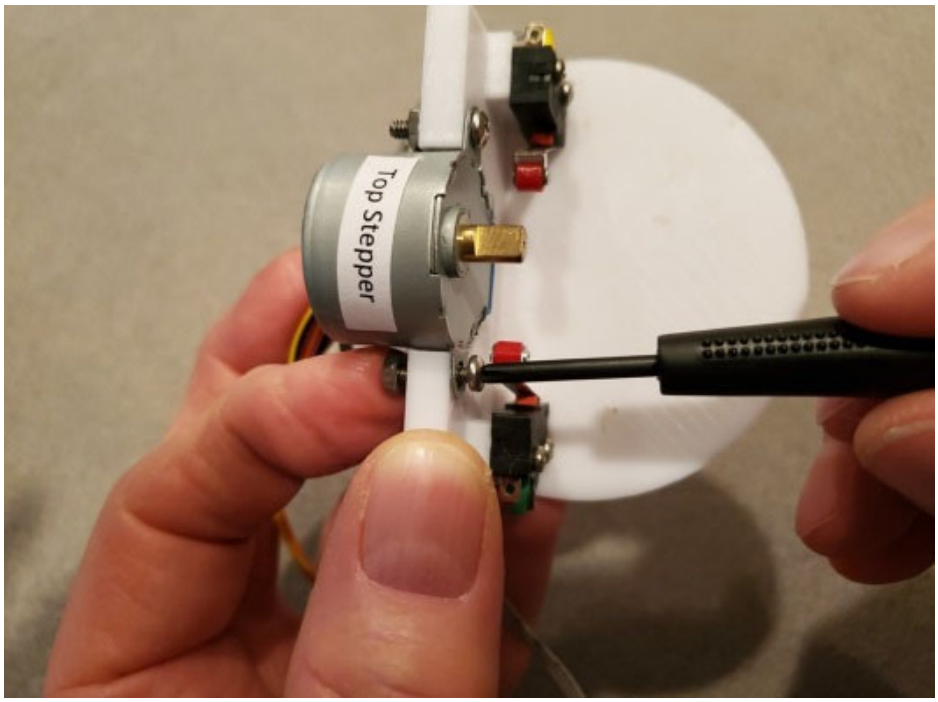


(6) Attach the top stepper motor to the top stepper mount. The stepper motor wires are oriented downward. Use two long screws and nuts to attach the stepper motor.

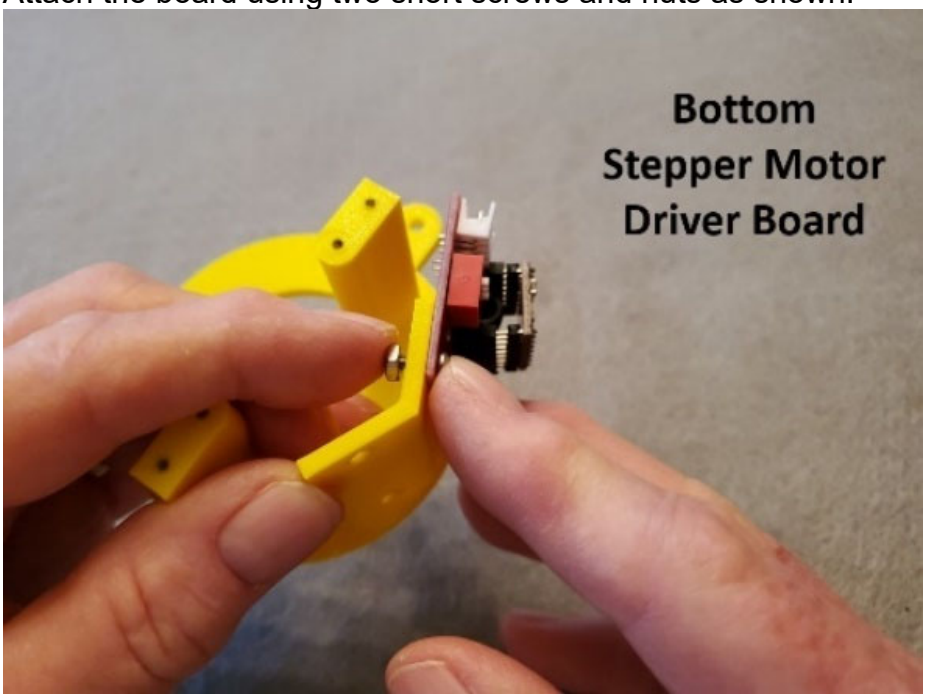
Note: A stepper motor is a special type of motor that rotates in steps rather than freely rotating. The number of steps can be controlled using electrical control circuits.



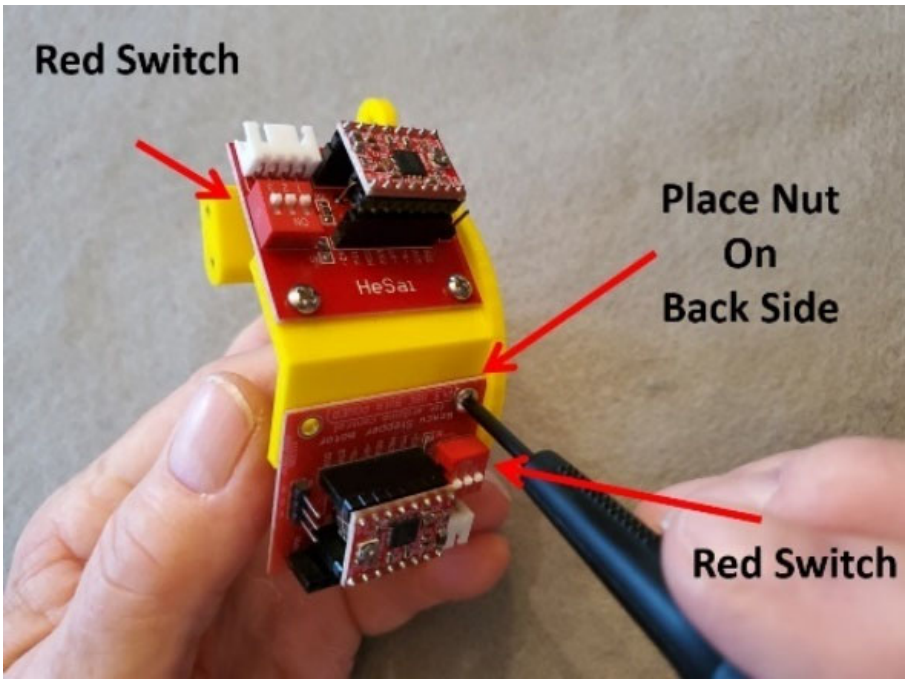
(7) Fit the second screw and nut to secure the other side of the stepper motor. Note that the stepper motor is mounted on the same side as the limit switches.



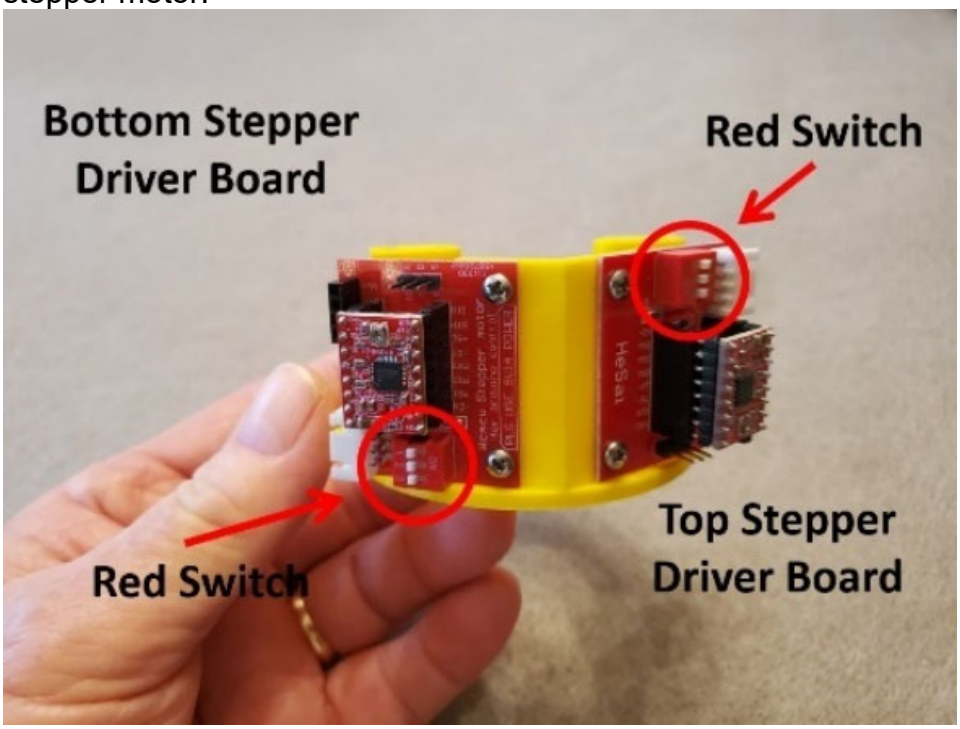
(8) There are two stepper motor driver boards that are mounted on the camera base. Position the driver board with the red switch block in the UP position. Attach the board using two short screws and nuts as shown.



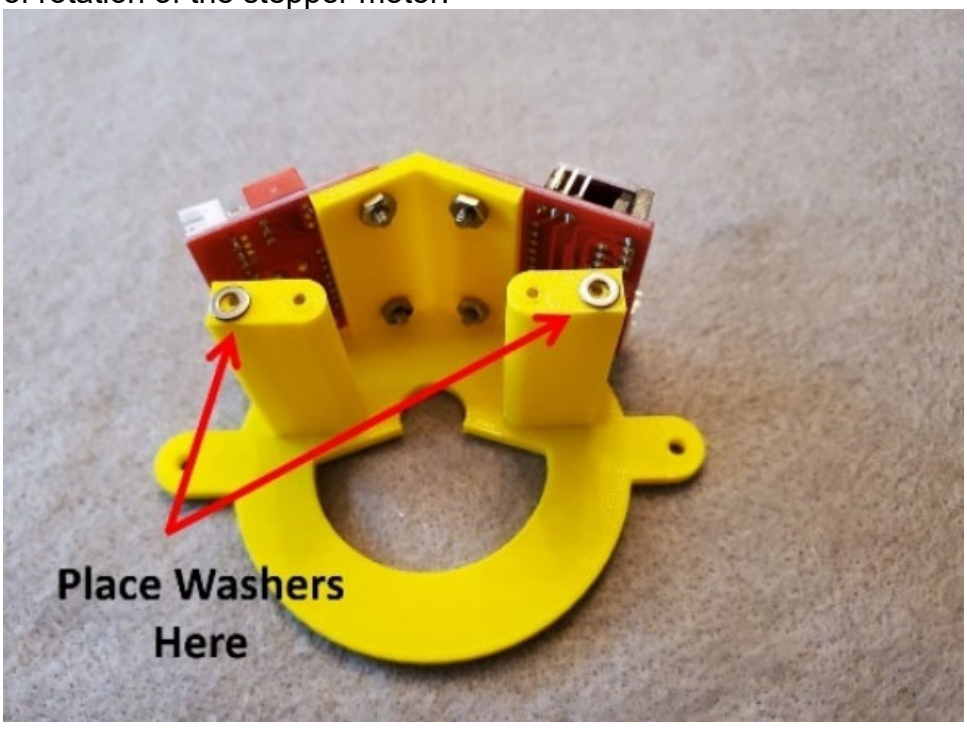
(9) Hold the camera base and driver board with the red switch block facing as shown. Hold the nut in place with your finger on the screw holding the assembly in place. Carefully place a nut on the screw turning the screw in a clockwise. Install the second screw. Gently tighten both screws to complete the assembly. Attach the second stepper driver board using two short screws as shown.



(10)The camera base with both driver boards should appear as shown. The left board controls the bottom stepper motor, and the right board controls the top stepper motor.



(11) Prepare to install the two bottom limit switches by placing a washer over the outside mounting holes for attaching the switches. The washers are used as spacers for mounting the stepper motors. The limit switches “limit” the amount of rotation of the stepper motor.



(12) Place a stepper motor on the camera base as shown. The motor wires are routed behind the motor. Both stepper motors are the same.
Note: The placement of the washers.