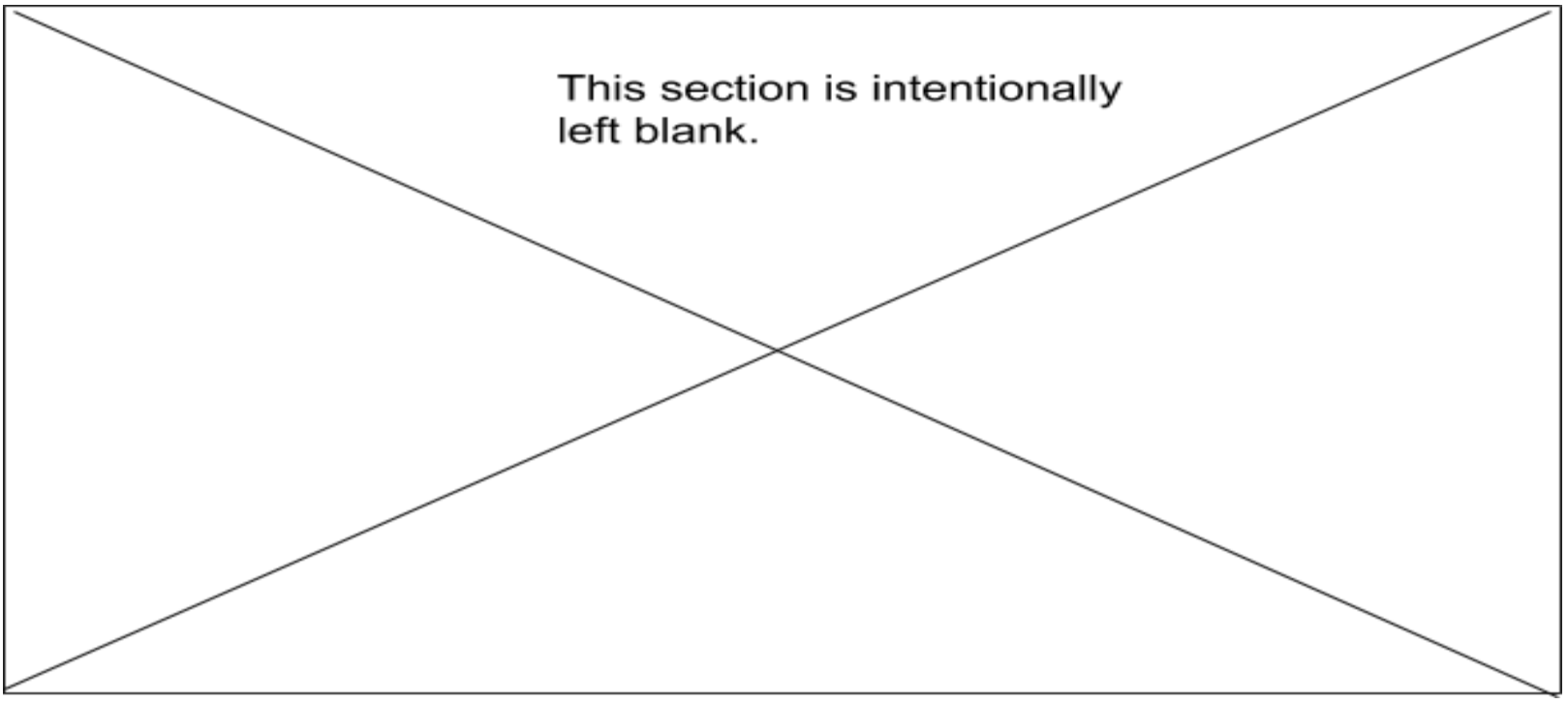
7.0 How to build the Lifter

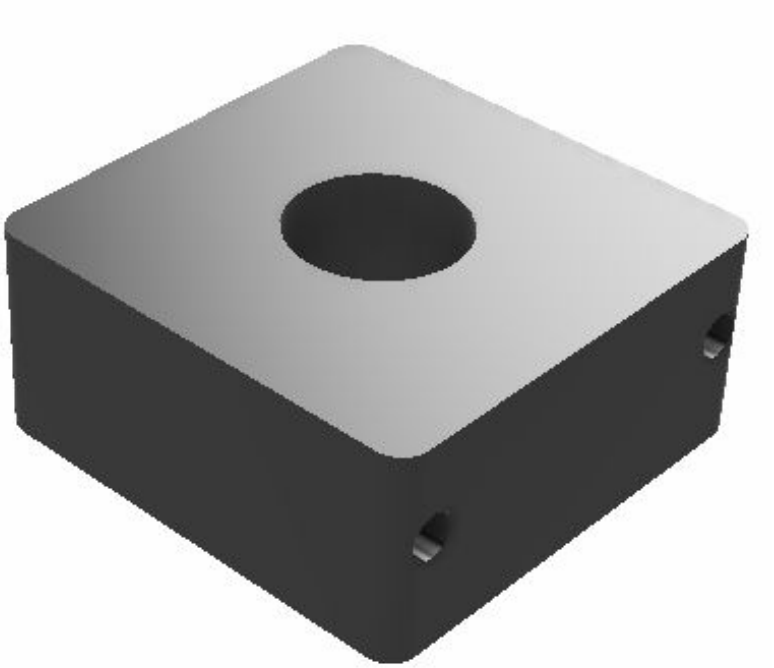
Step 1 Buy the parts listed below:

Quantity	***Item***	***Price***
2	32 Pitch, 48 Tooth (.50” Bore) Aluminium Hub Gear (615190)	12.99
2	ServoCity 6mm D Clamping D-Hub	8.89
1	Actobotics 10.50” X-rail (5201-0002-0026)	4.69
1	ServoCity Lead Screw (3501-0804-0300)	7.59
2	3504 ServoCity 8mm Lead Screw Nut 0.770” Pattern	5.98
1	9in Tetrix Channel	16.95
2	Thrust Bearings 0.25” (6655K13)	8.80
2	Actobotics 8mm ID x 12mm OD Flanged Ball Bearing (53522)	6.99
1	5202 Series Yellow Jacket Planetary Gear Motor (19.2:1 Ratio, 312 RPM, 3.3-5V Encoder)	29.99
12	6/32 bolts	
1	Tetrix 90 degree angle	4.95
	Total cost	$107.82

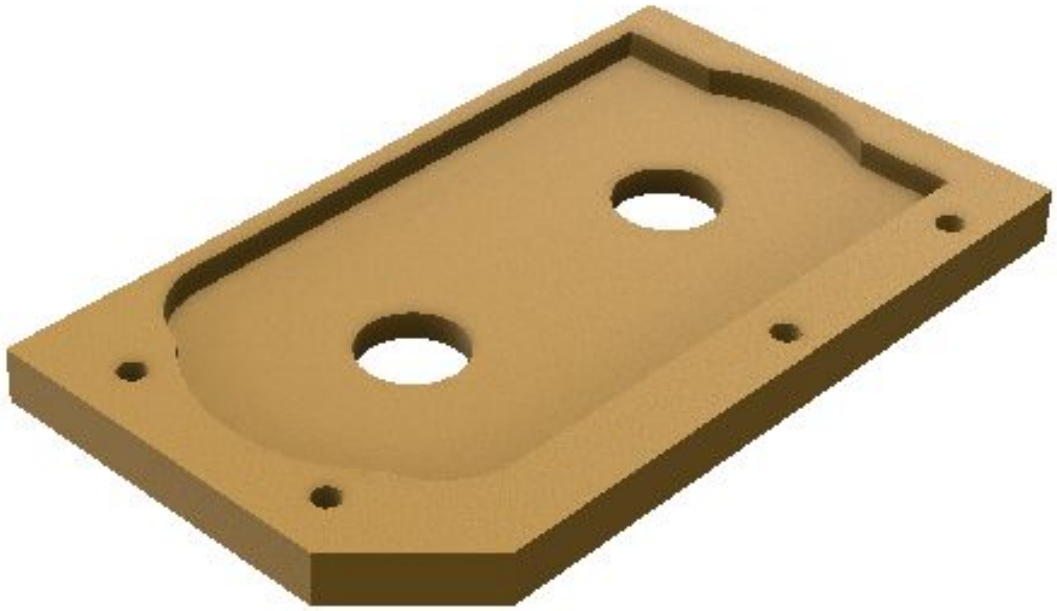


Step 2 Manufacture the parts shown below.

3D print one square bracket per drawing: Lifter.1.M

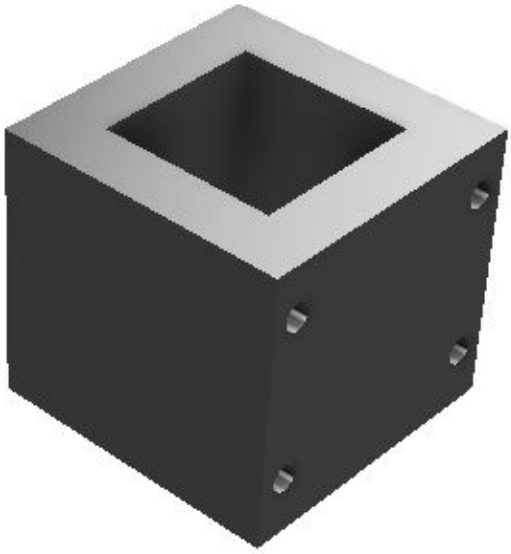


3D print the bottom cover/ baseplate per drawing: Lifter.2.M



3D print the main mounting piece per drawing: Lifter.3.M

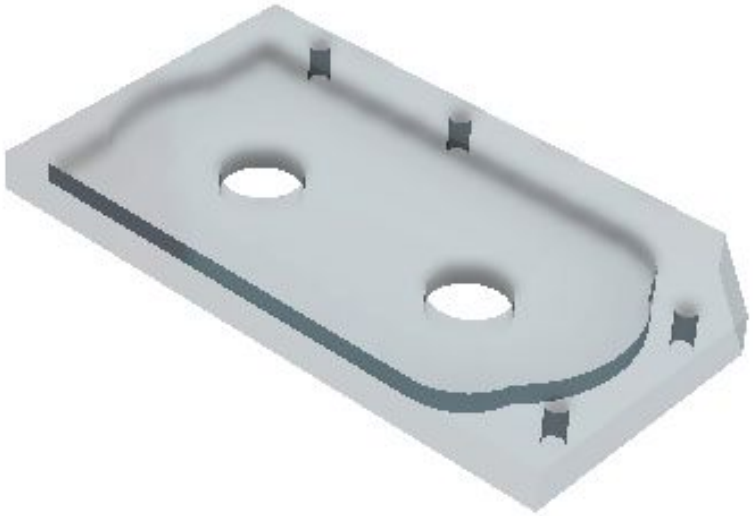
3D print the spacing bracket per drawing: Lifter.4.M



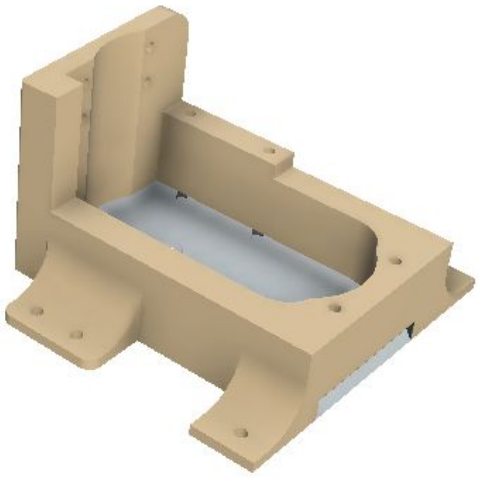
Out of Onyx, 3d print the hook per drawing: Lifter.5.M

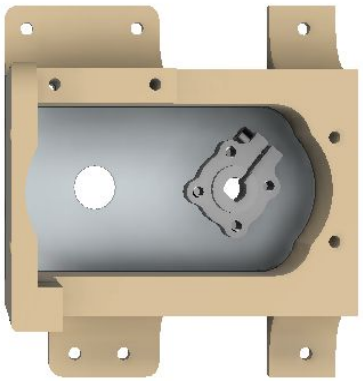
Step 3 Assemble the parts as shown below.

Using four 6-32 x ½ in bolts, Attach the bottom plate to the base box piece.

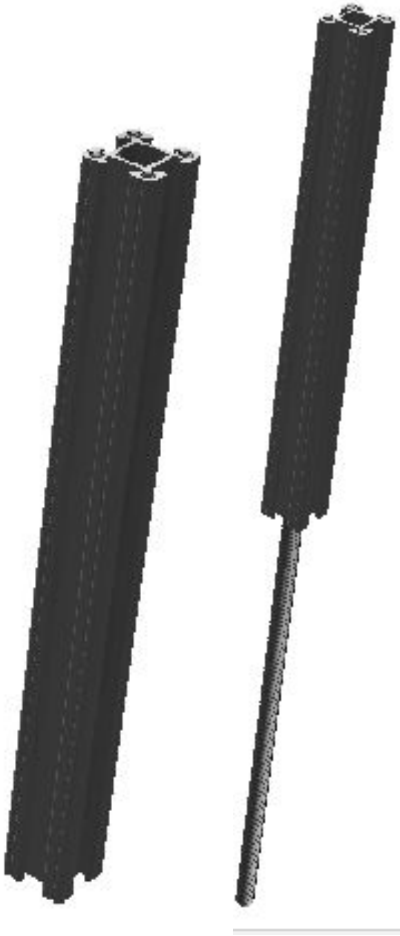


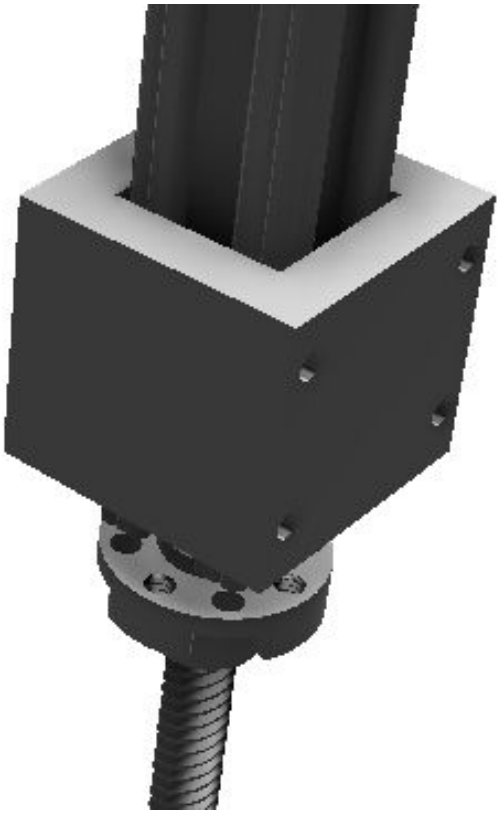
Once attached, attach the 6mm D Clamping Hub to the base as pictured to the right.



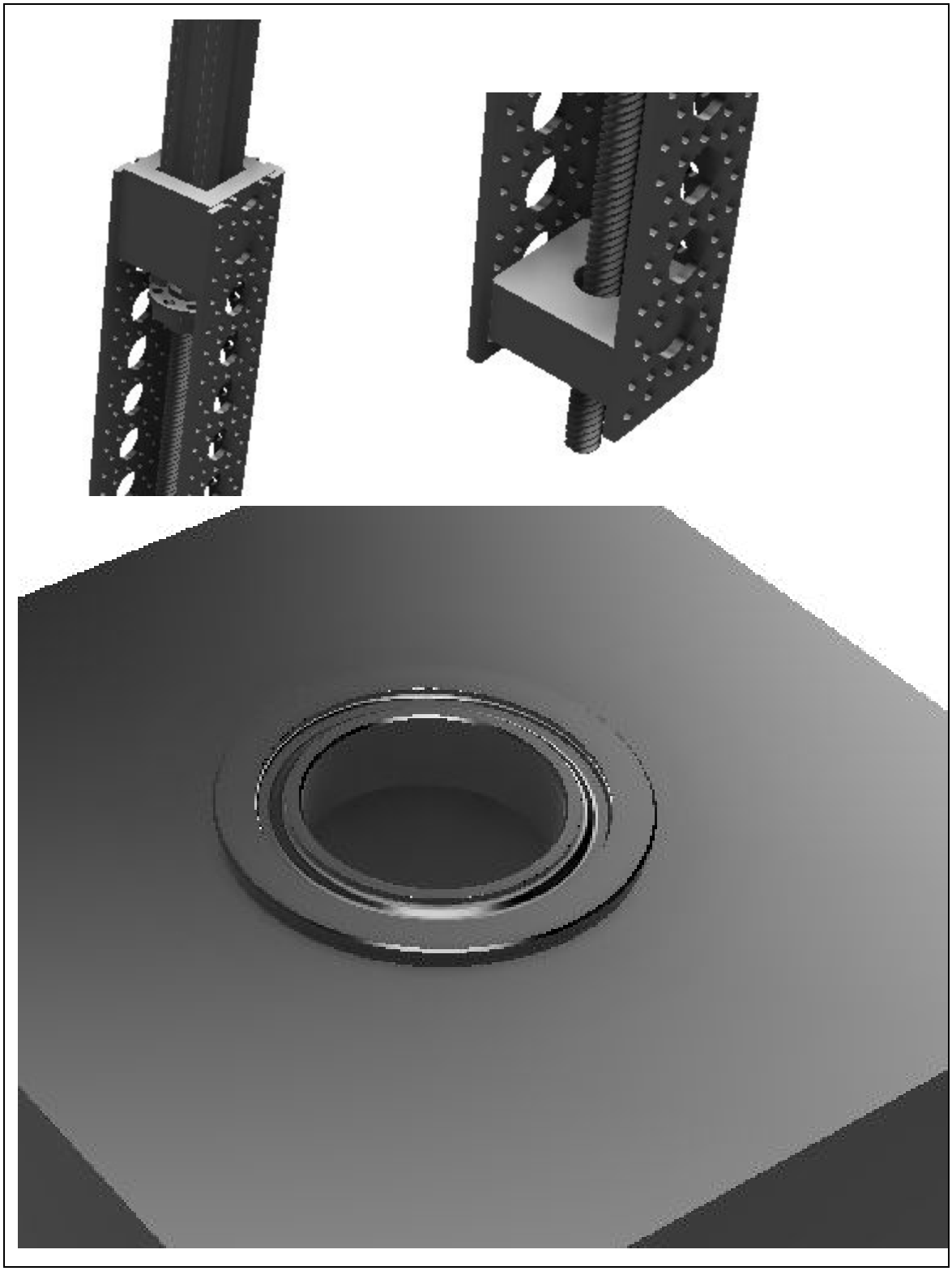


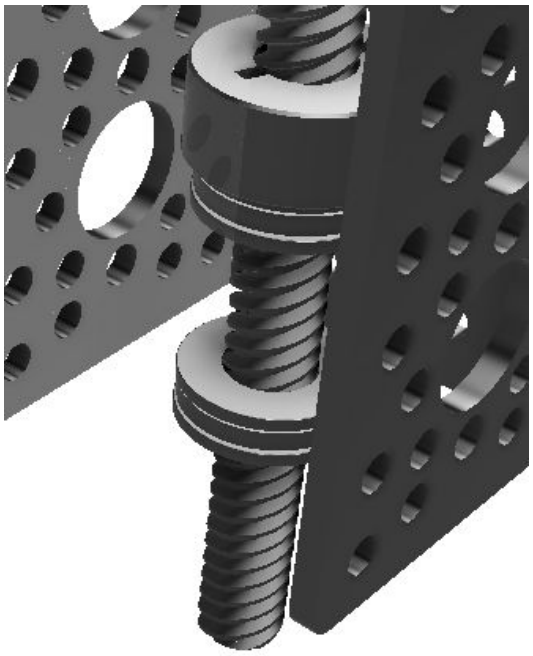
Insert the lead screw into the x-rail. Next slide the custom made square bracket piece, then attach the Lead Screw Nut.

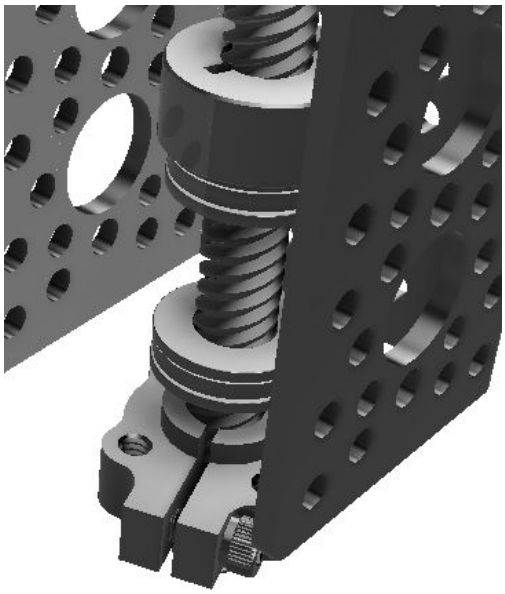




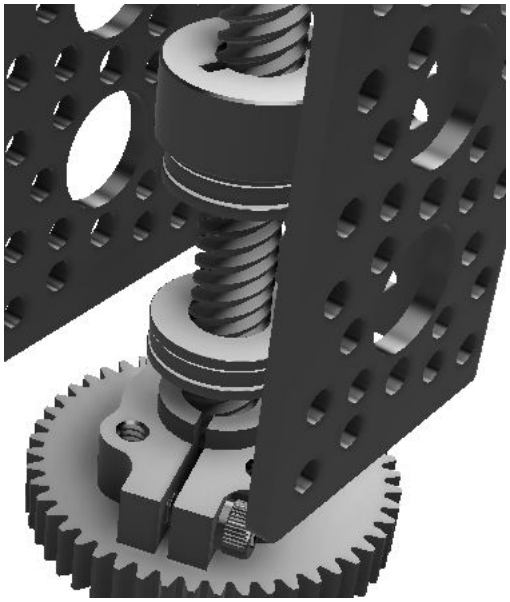
Attach the Tetrix channel to the current assembly. Then slide up the custom made bottom square bracket. As depicted by the third picture down, be sure to insert the Actobotics Flanged Ball Bearing.



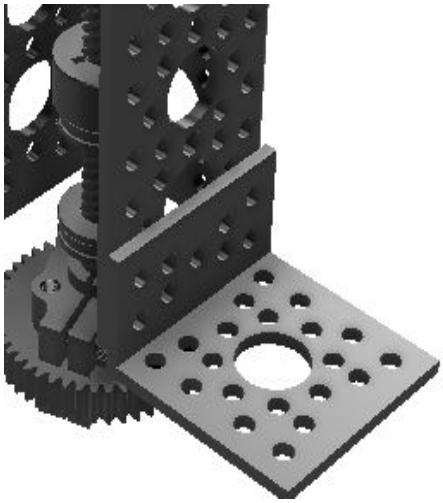


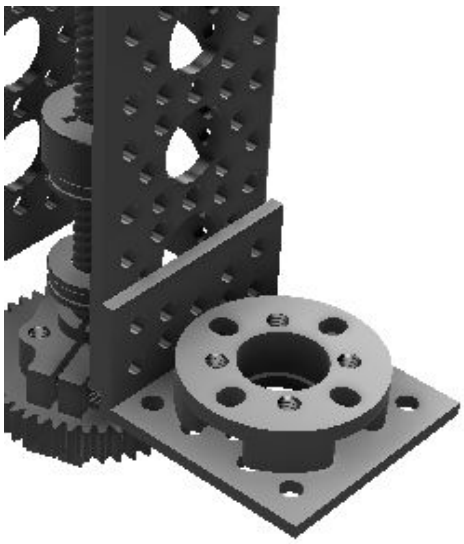


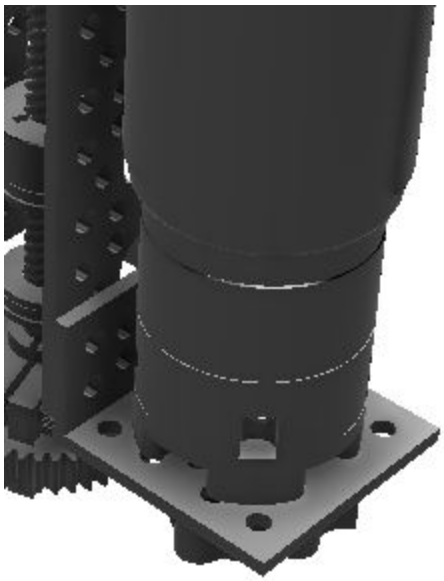
Attach the gearr using two Lead Screw Nuts.



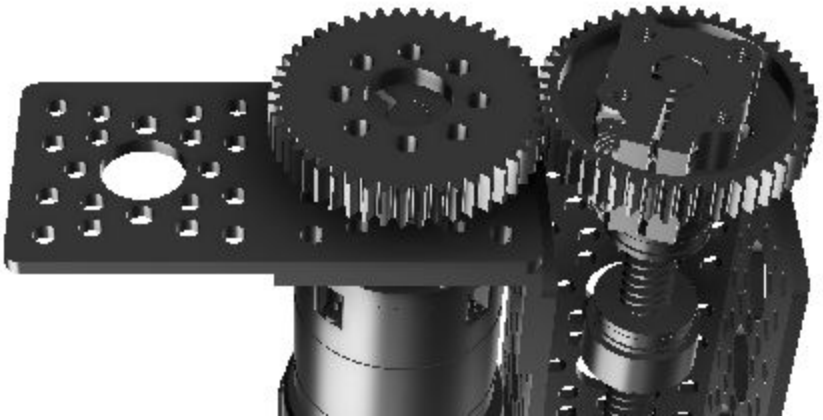
Attach Tetrix angle piece onto the side of the Tetrix Channel. Secure with 6/32 bolts.

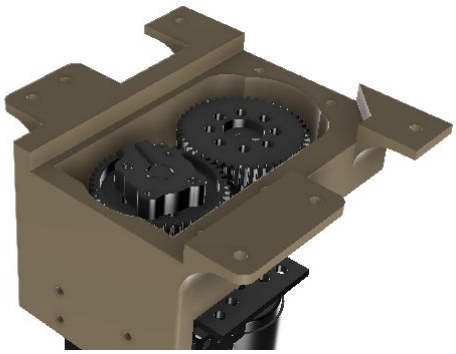






Connect the second gear then attach the entire upper assembly to the lower custom assembly. (The bottom plate of the custom box has been removed to provide a clear view into the inner gears).





Finally, attach the custom made Onyx hook using four 3mm x 1” bolts.

Attach a Rev Robotics 45 tooth gear (REV-41-1334) onto the bottom shaft. Make sure that the pegs of the hex hub fit into the holes on the gear.

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The completed Lifter Mechanism is pictured above.