



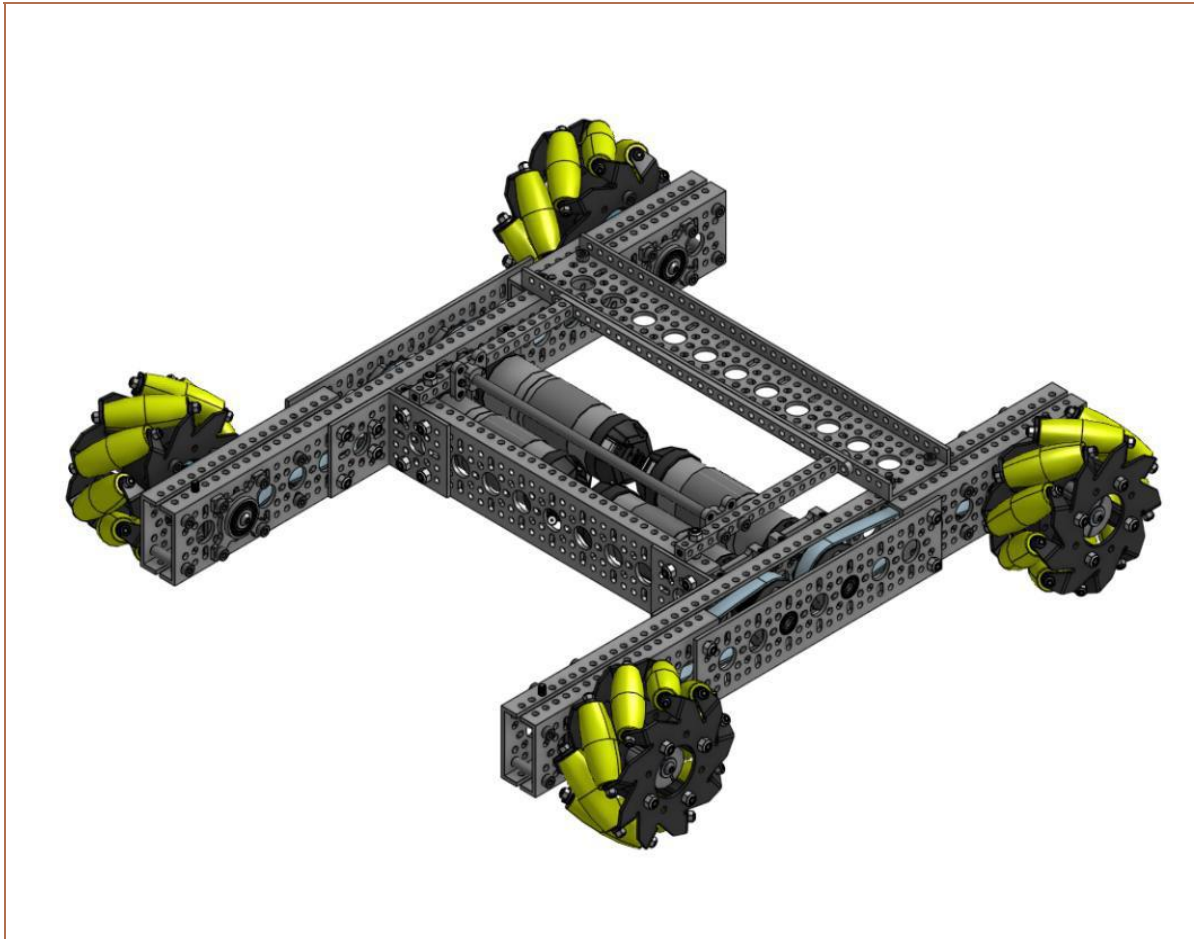
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Team 7842 Engineering Notebook



CAD Files

Drive Train

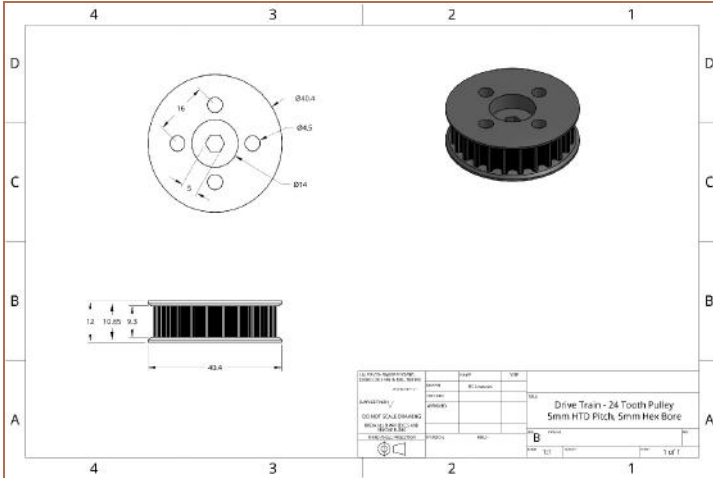


CAD Rendering of Drive Train with mecanum wheels



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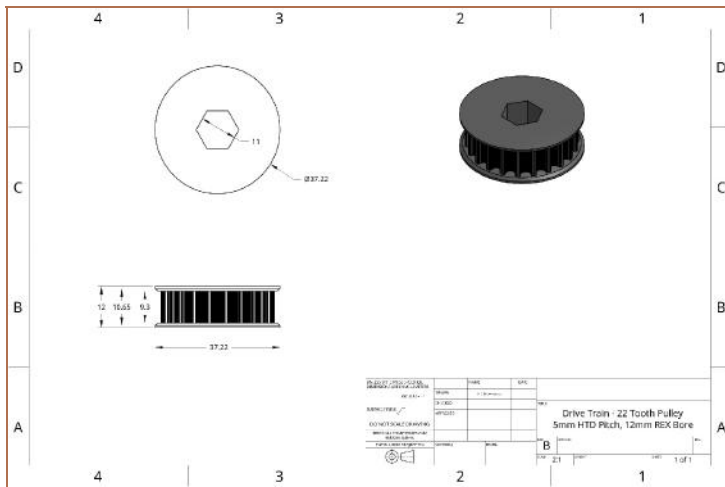
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5mm HTD Pulley-5mm Hex Bore-24 Tooth

3D printed with black PLA

This pulley accepts a 5mm HTD pitch timing belt. It fits on the shaft of the Drive Train motors.



5mm HTD Pulley-12mm REX Bore-22 Tooth

3D printed with black PLA

This pulley accepts a 5mm HTD pitch timing belt. It is designed to fit on the 12mm REX axles that support the Mecanum wheels.



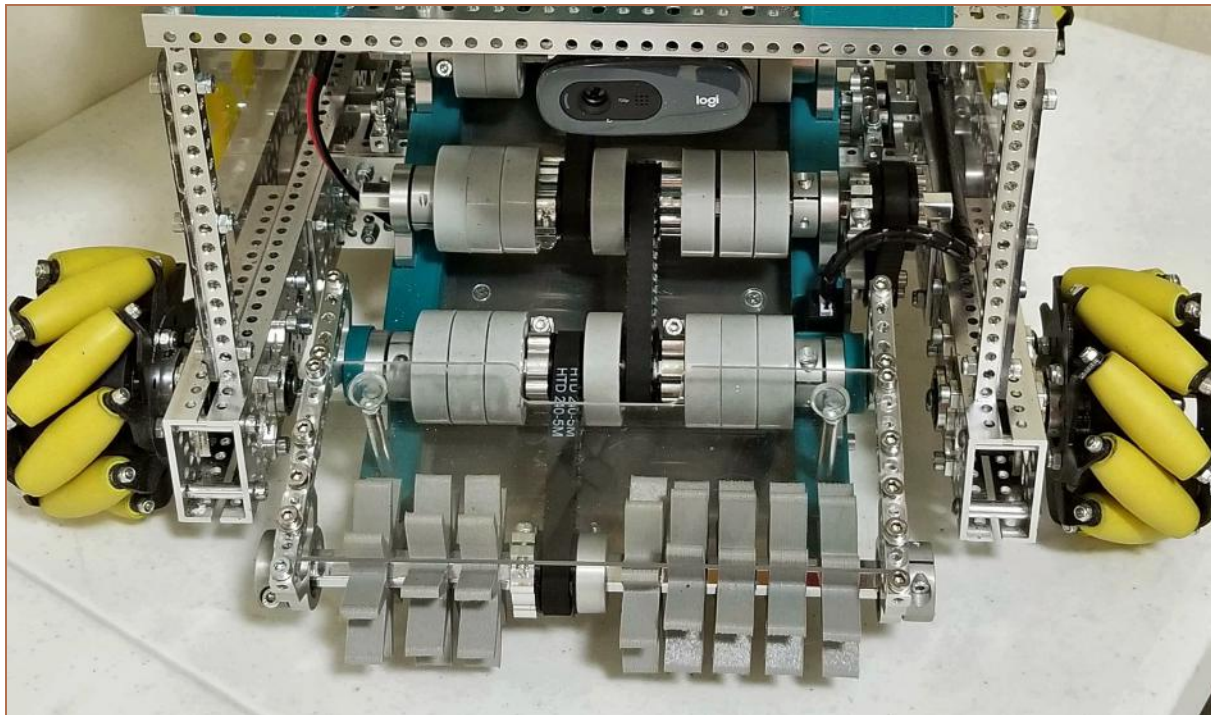
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CAD Files

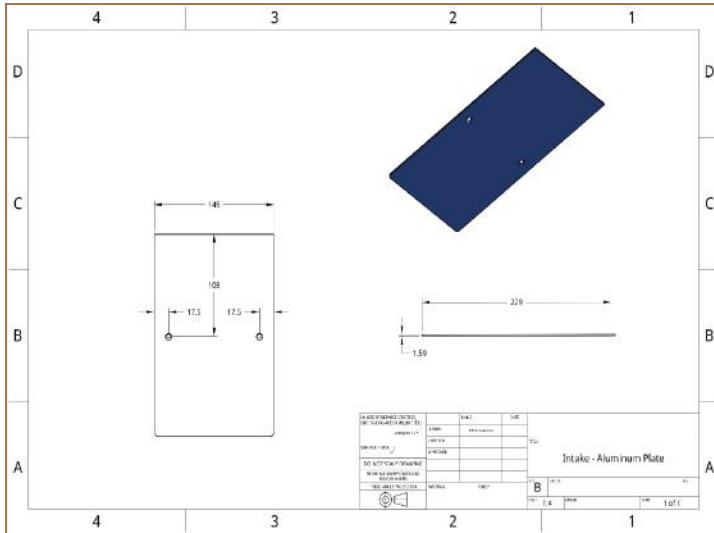
Intake Sub-System





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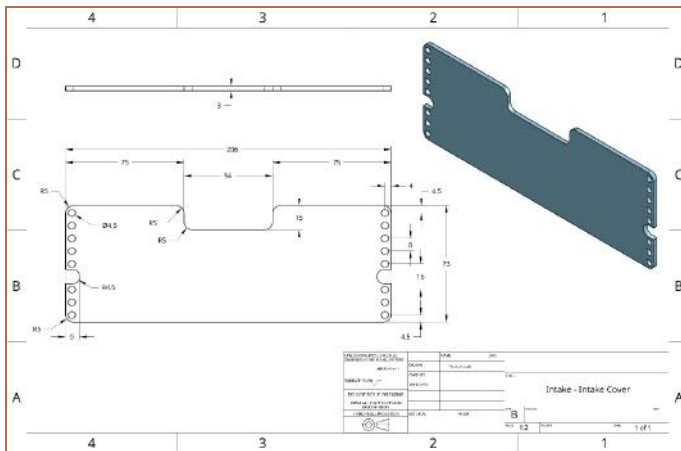
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Intake Aluminum Plate

Machined from 1/16" (1.59mm) thick aluminum plate

This aluminum plate provides a flat, low-friction surface for the rings to be pulled up on the intake.



Intake Cover

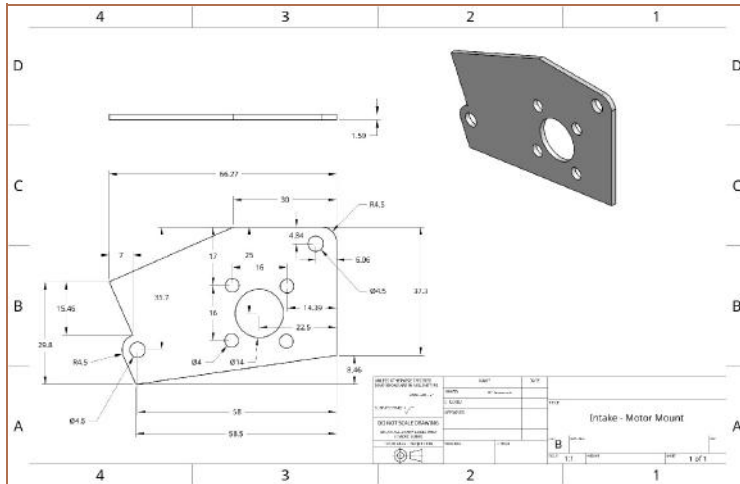
Machined from 3mm (approximately 1/8") Lexan

This plate reinforces and supports the beams that carry the intake's first axle and the star wheels.



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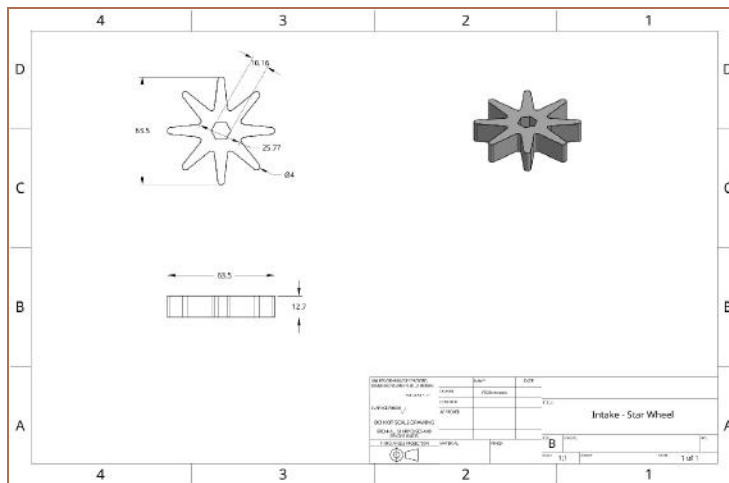
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Motor Mount

Machined from 1/16" (1.59mm) thick aluminum plate

The intake motor is attached to this plate with screws. In turn, the plate is bolted to the wedge left and body pieces.



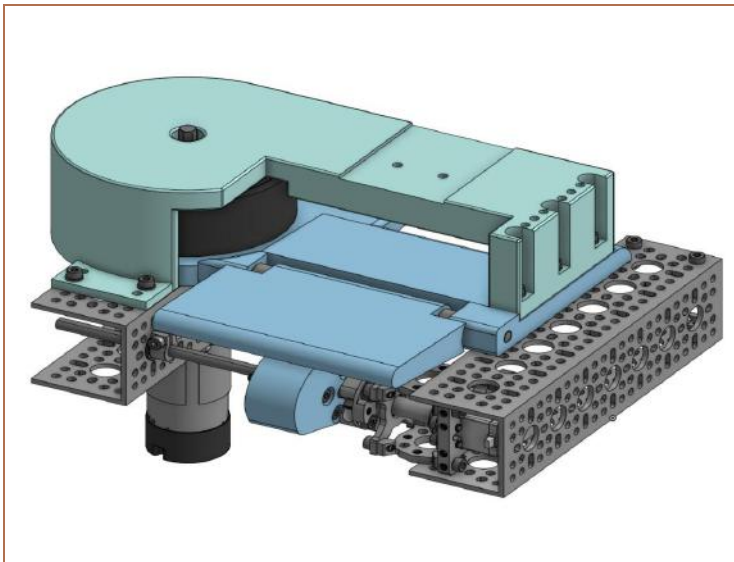
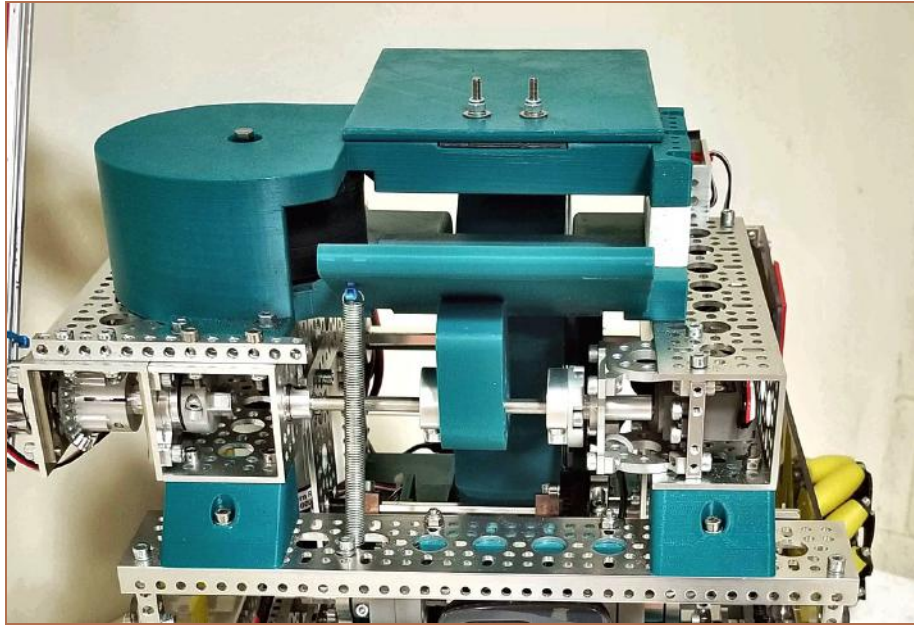
Star Wheel

3D printed with Flexible Filament

These wheels are used on the intake first axle. Their shape grabs and sweeps rings into the intake.

CAD Files

Launcher Sub-System

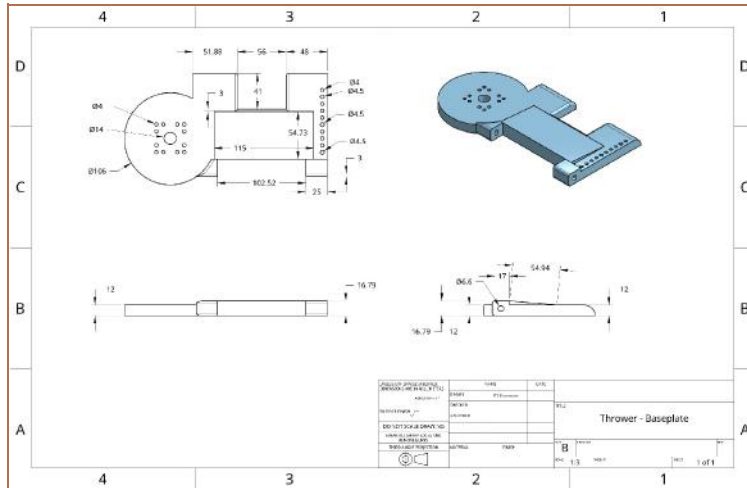


*CAD rendering of
Launcher subsystem*



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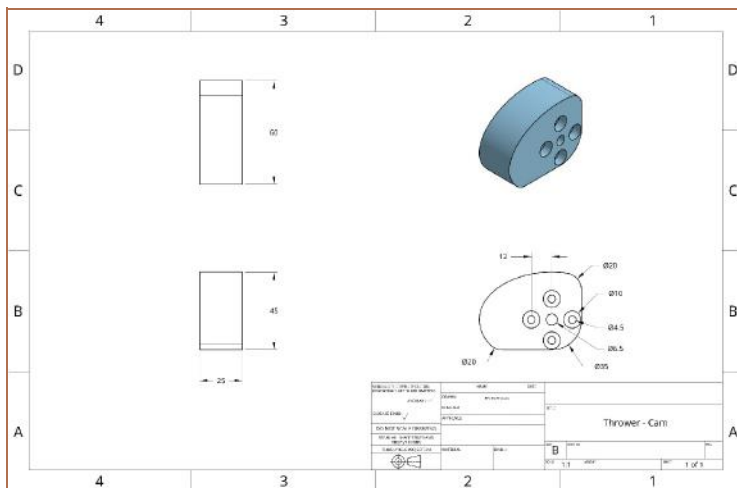
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Baseplate

3D printed with teal PLA

The baseplate forms the floor of the Launcher Subsystem and is what all of the other parts of the subsystem are attached to.



Cam

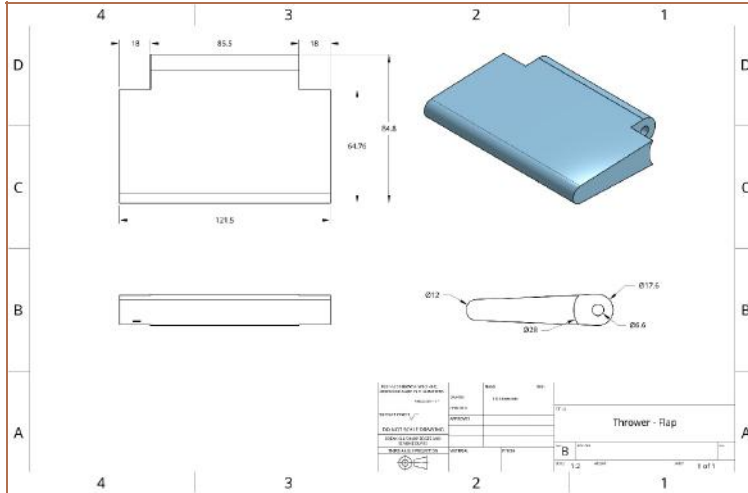
3D printed with teal PLA

This part is turned by a servo and raises and lowers the Flap.



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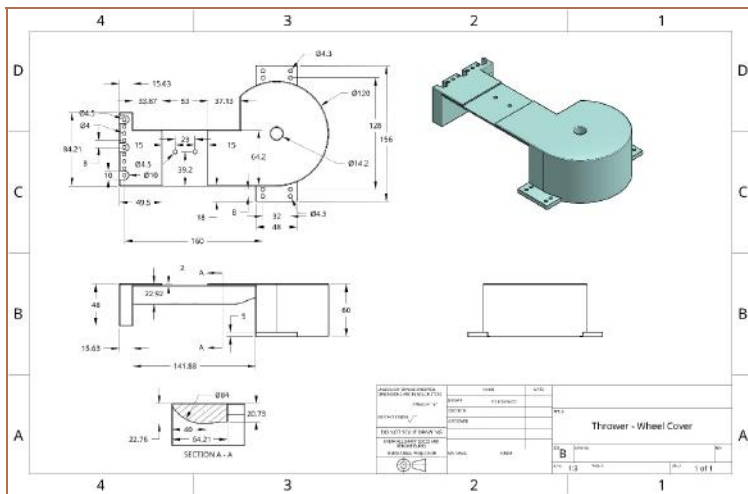
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Flap

3D printed with teal PLA

The Flap is used to loft the flight path of the rings as they leave the launcher.



Wheel Cover

3D printed with teal PLA

This part serves as a safety cover for the flywheel and provides a stationary, horizontal wall that the rings are braced against as the flywheel accelerates them.



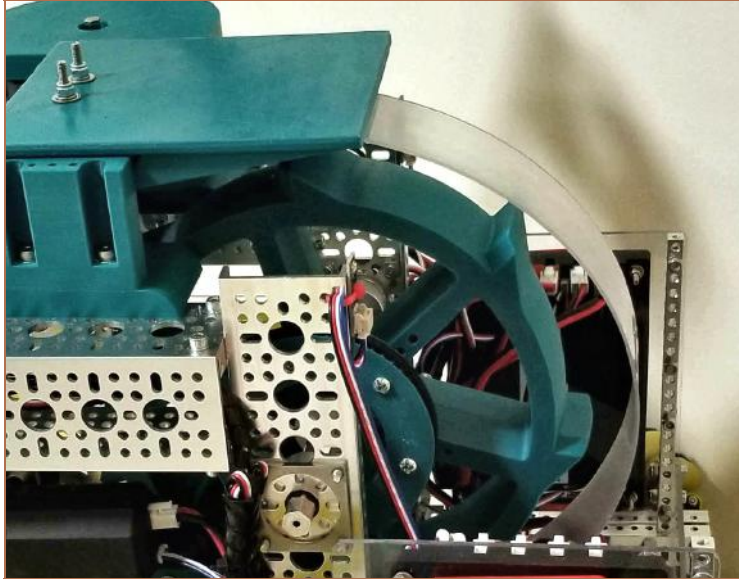
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CAD Files

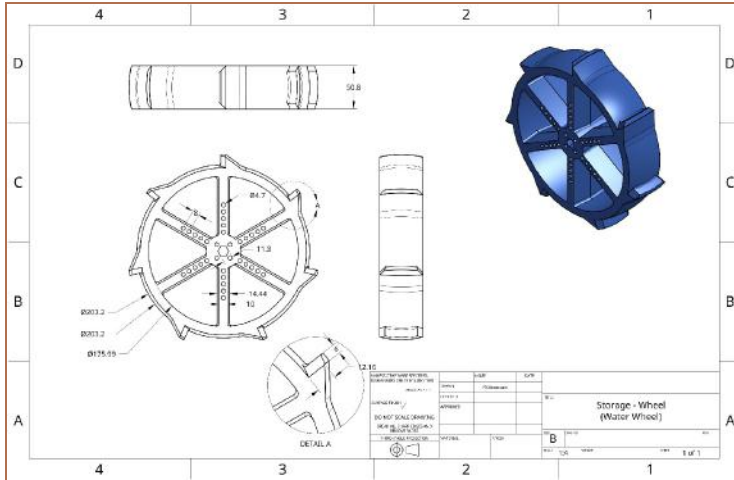
Storage Sub-System





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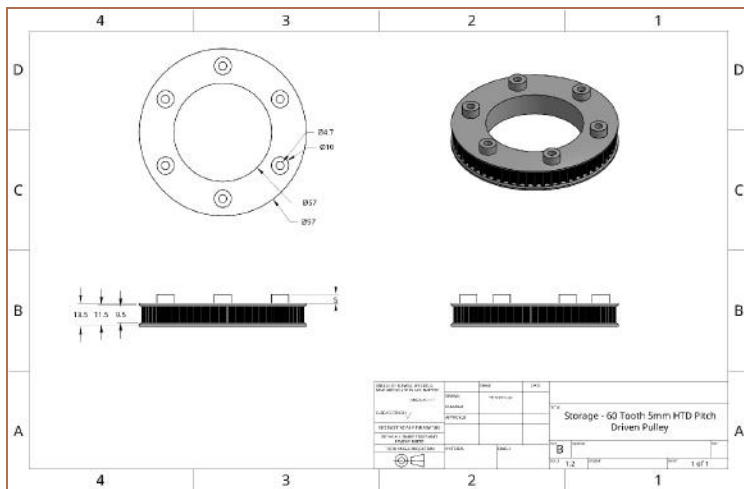
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7t Water Wheel

3D printed with teal PLA

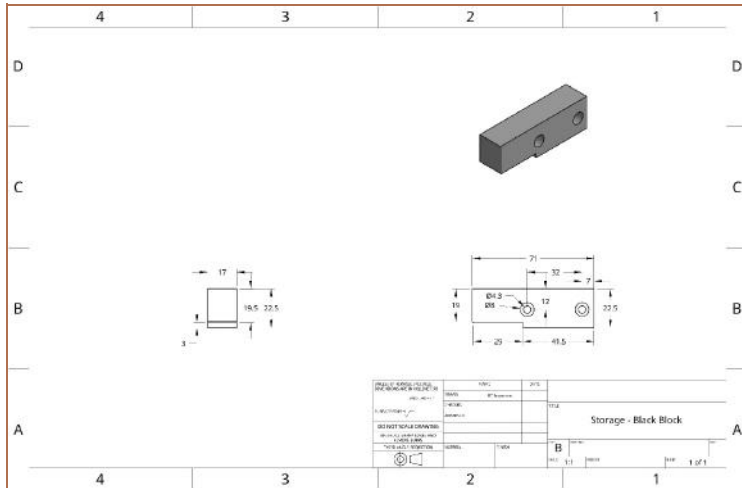
The Water Wheel is the heart of the Storage Subsystem. It can store up to three rings on its surface while transporting them from the Intake to the Launcher.



60t Driven Pulley

3D printed with teal PLA

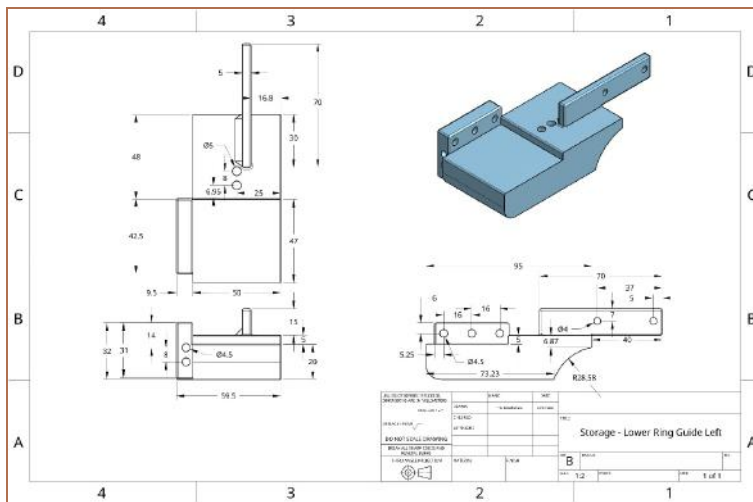
This pulley accepts a 5mm HTD pitch timing belt. It bolts to the side of the Water Wheel and turns it.



Black Block

3D printed with black PLA

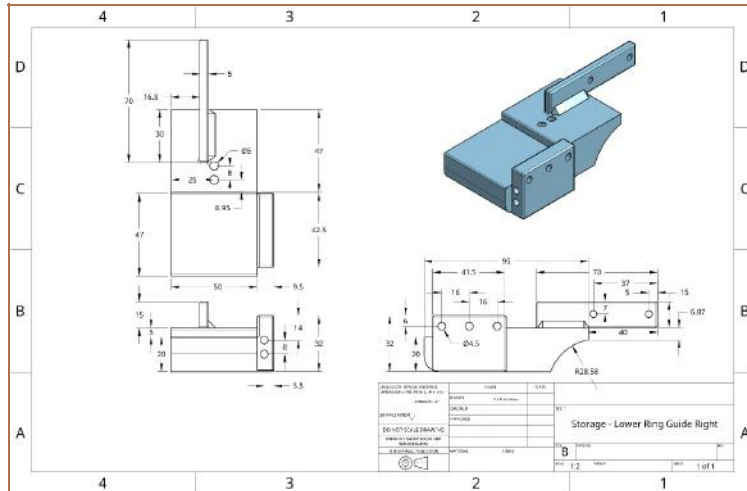
This part is intended to be mounted opposite the Water Wheel color sensor. It provides for a contrasting color target that will be detected whenever a Water Wheel tooth cannot be seen.



Lower Ring Guide Left

3D printed with teal PLA

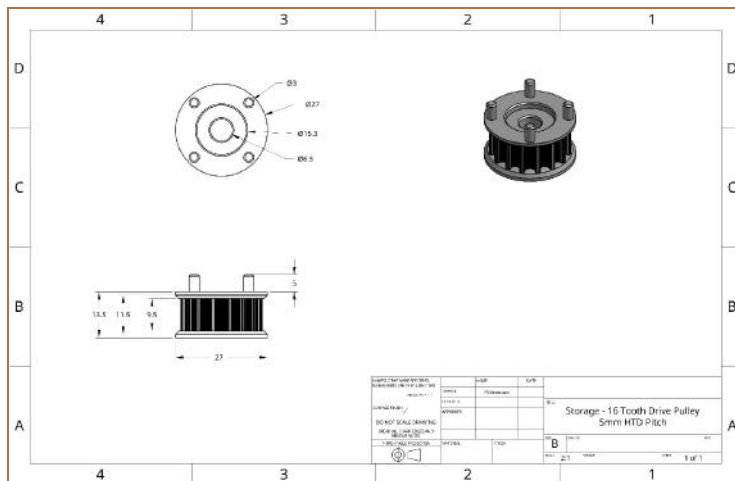
This part helps to guide the rings from the Intake to the Water Wheel. It also provides a mount for the Black Block.



Lower Ring Guide Right

3D printed with teal PLA

This part helps guide the rings from the Intake to the Water Wheel. It also provides a mount for a color sensor which is used to detect the position of the teeth on the Water Wheel.



Storage Drive Pulley

3D printed with black PLA

This pulley accepts a 5mm HTD pitch timing belt. It is used to transmit power from the Storage motor to the Water Wheel. It is too small to support the thru-holes required to screw it to a sonic hub, so it instead was designed with plastic pins that are inserted into a sonic hub that nestles into the side of the pulley.



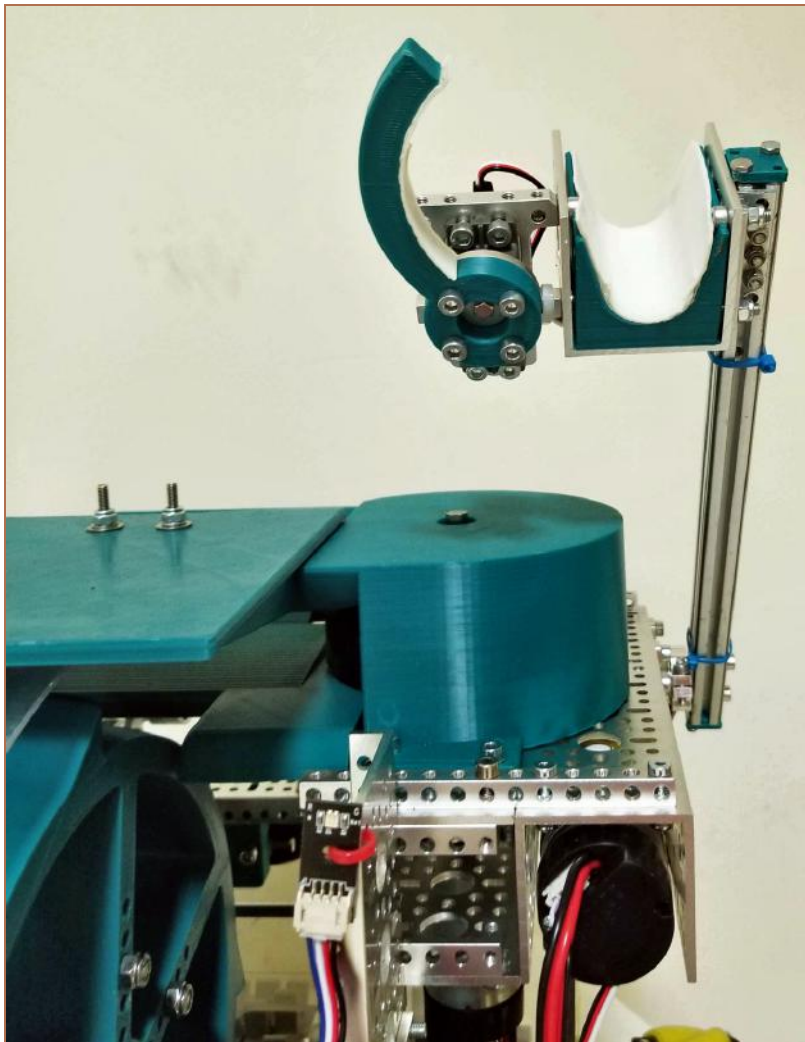
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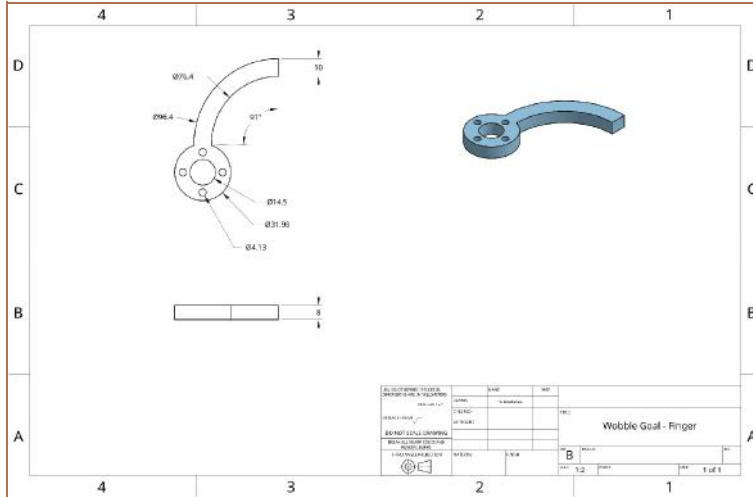
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CAD Files

Wobble Goal Sub-System

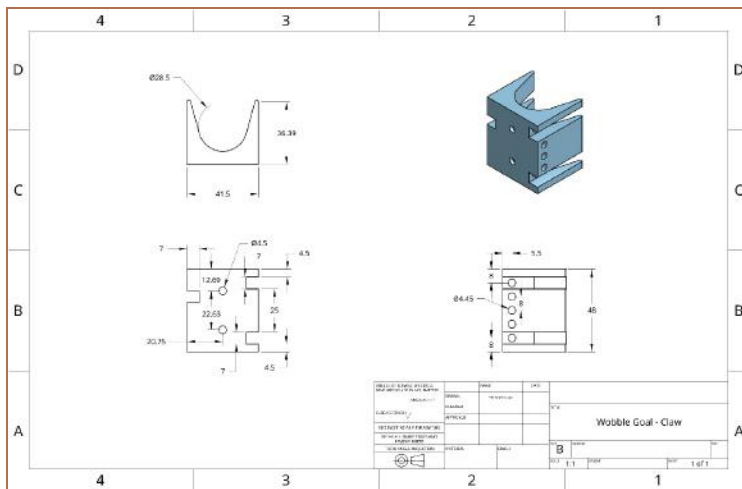




Finger

3D printed with teal PLA

This servo-driven finger clamps the mast of the Wobble Goal into the Wobble Goal Claw.



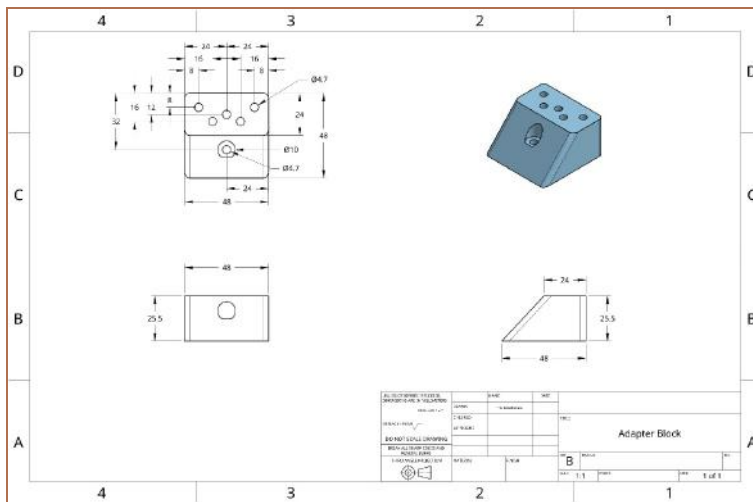
Wobble Goal Claw

3D printed with teal PLA

This part is designed to sit inside of a short length of goBILDA u-channel but will firmly hold the mast of a Wobble Goal.

CAD Files

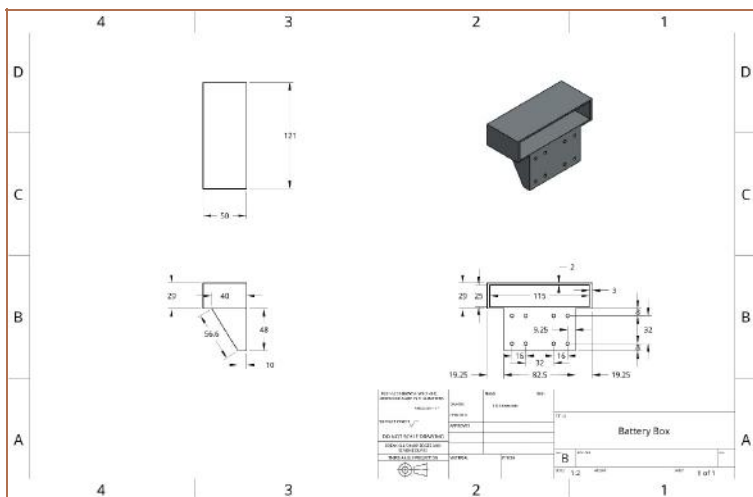
Miscellaneous



Adaptor Block

3D printed with teal PLA

This part supports the front of the Launcher Subsystem in the upper-forward robot super structure. It is specifically sized to fit where many metal goBILDA parts would be required because of some odd spacing.



Battery Box

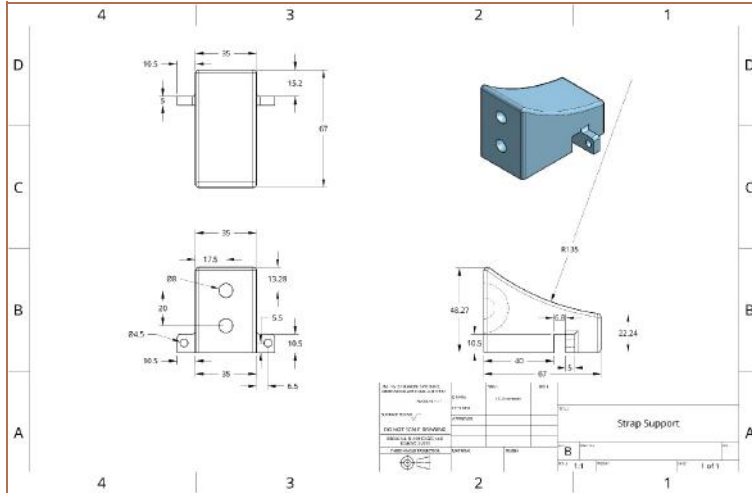
3D printed with teal PLA

This part is designed to firmly hold a REV Robotics slim battery and to bolt to a goBILDA structural component.



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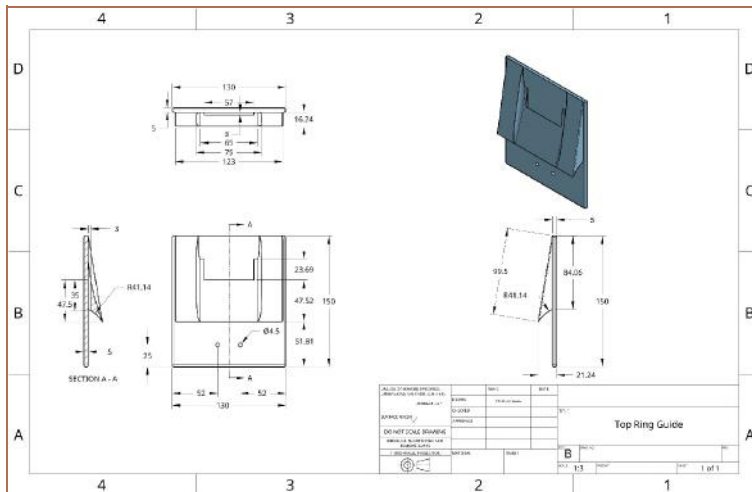
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Strap Support

3D printed with teal PLA

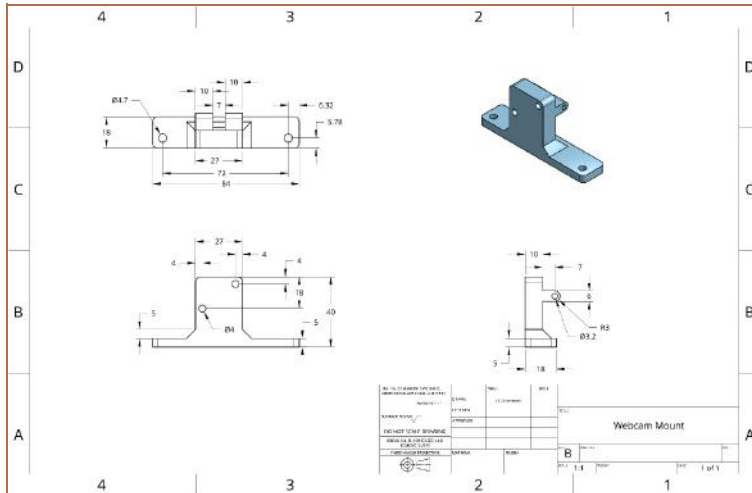
This part helps support the bottom of the Lexan strap surrounding the Water Wheel so that rings are properly loaded onto the Water Wheel from the Intake Subsystem.



Top Ring Guide

3D printed with teal PLA

This part helps to guide rings from the top of the Water Wheel into the intake of the Launcher Subsystem.



Webcam Mount

3D printed with teal PLA

This part secures the webcam onto the robot. It provides for some left-right and up-down adjustments so that the camera can be properly aimed.

