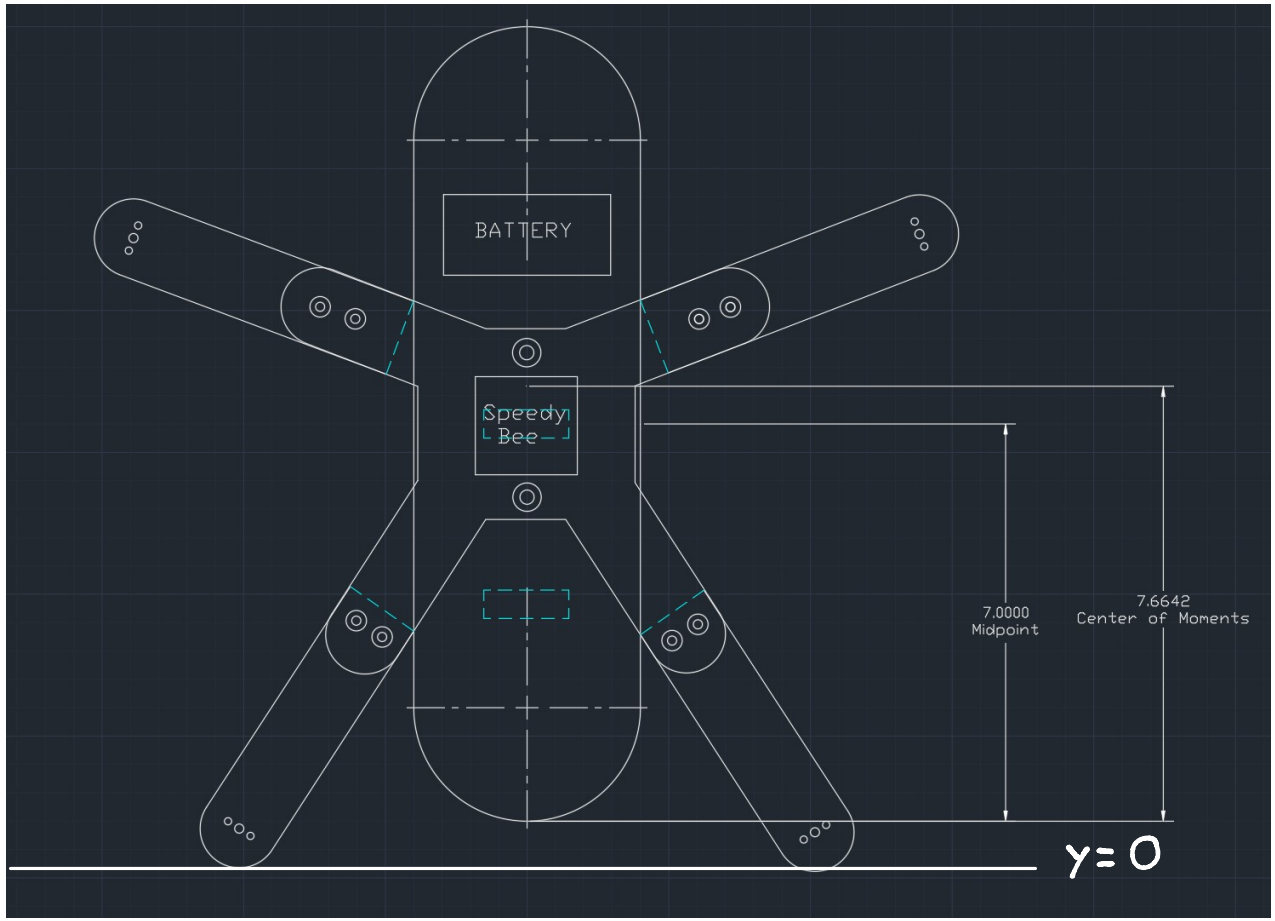
Centroid:

Names and dimensions from .dwg file in media folder: units: inches

- this is an approximation that doesn't take into account the holes and treats the arms as rectangles.



Body: $V_1 = 10 \cdot 4 \cdot 0.5 + \pi(2)^2 \cdot 0.5 = 26.3\ in^3$

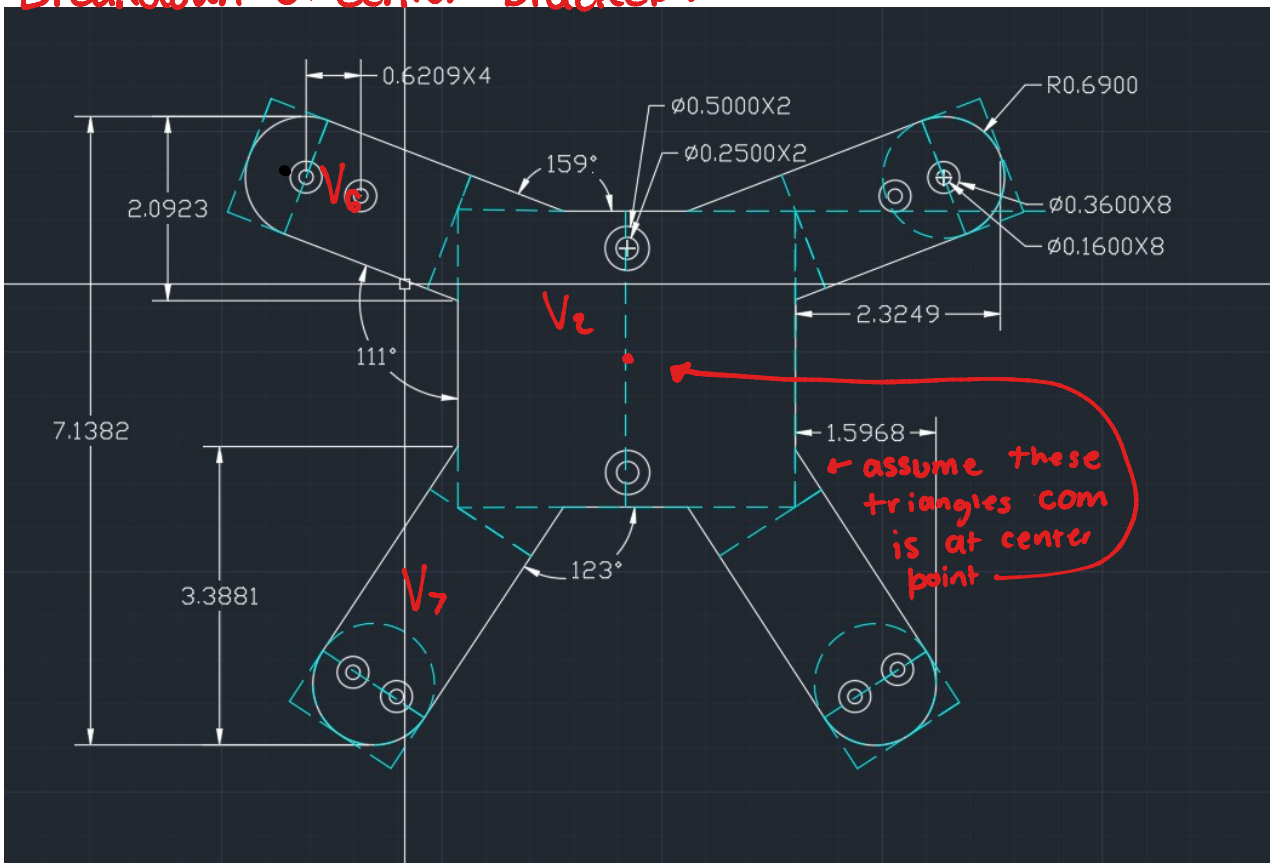
position: $y = 7.88\ in$

Battery: $V_3 = 2.95 \cdot 1.42 \cdot 2.2 = 9.22\ in^3$ position: 11.2in

Speedy bee: $V_4 = 1.73 \cdot 1.8 \cdot 031 = 0.97\ in^3$ position: 7.88in

motor: $V_5 = \pi \left(1.38/2\right)^2 \cdot 0.72 = 1.08\ in^3$ position: 11.2in

Breakdown of center bracket:



Center bracket:

$V_2 = 3.83 \cdot 3.36 \cdot 0.25 + (0.66 \cdot 1.02 + 0.38 \cdot 0.58 + 1.14 \times 0.44 + 0.94 \times 0.36)\, 0.25 = 3.65\ in^3$ position: 7.88in

$V_C = 2 \times 2.43 \cdot 1.38 \times 0.25 = 1.68 in^3$ position: 9.77in

$V_7 = 2 \times 2.89 \times 1.38 \times 0.25 = 1.99 in^3$ position: 4.74in

Arm 1: $1.38 \cdot 5.7 \cdot 0.25 = 1.97\,in^3$ position: 10.34 in

Arm 2 : $5.29 \cdot 1.38 \cdot 0.25 = 1.83 in^3$ position: 2.34 in

$$\text{centroid} = \frac{\Sigma V \cdot pos}{\Sigma V} = \frac{26.3 \cdot 7.88 + 9.22 \times 11.2 + 0.97 \times 7.88 + 1.08 \times 11.2 + 3.65 \times 7.88 + 1.68 \times 9.77 + 1.99 \times 4.74 + 1.97 \times 10.34 + 1.83 \times 2.34}{26.3 + 9.22 + 0.97 + 1.08 + 3.65 + 1.68 + 1.98 + 1.97 + 1.83}$$

centroid: $y = 8.41$ in