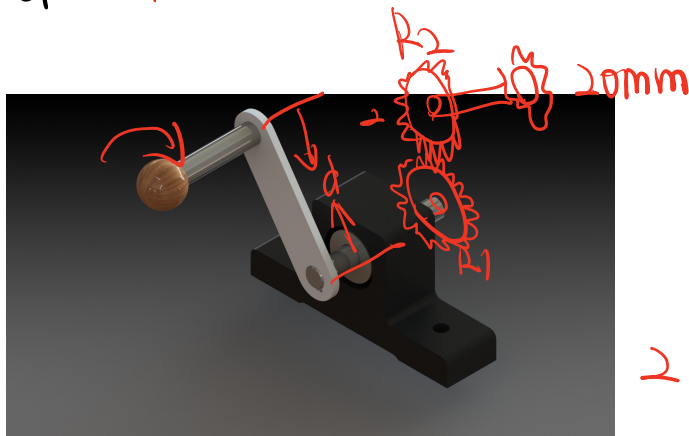


$$\frac{830 \text{ in. lb} \times 1.356}{12} = 93.79 \text{ Nm} \quad \text{Torque need}$$

$$F_{\max} = 400 \text{ N}$$

$$T_{\max} = F \cdot d = 400 d \text{ N}\cdot\text{m}$$



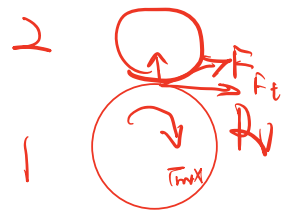
$$\text{Assume } d = 10 \text{ cm} = 0.1 \text{ m}$$

$$T_{\max} = 40 \text{ N}\cdot\text{m} = F_t \cdot R_1$$

$$F_t = \frac{T_{\max}}{R_1}$$

$$T_2 = F_t \cdot R_2 = T_{\max} \cdot \frac{R_2}{R_1} = 40 \times 3 = \underline{\underline{120 \text{ N}\cdot\text{m}}} > 93 \text{ N}\cdot\text{m}$$

↓
Total torque on
bigger gear



R_1

<https://www.khkgears.us/catalog/product/MSG1-18>

R_2

<https://www.khkgears.us/catalog/product/MSG1-55>

$$\frac{R_2}{R_1} = \frac{55}{18}$$