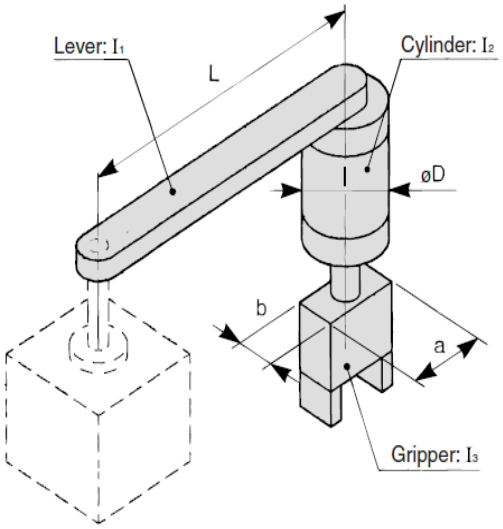
Electrical Rotary Sizing

Angle of rotation:
Single Stroke Time:
Acceleration/Deceleration:
Load weight:
Physical size of load:
Orientation of all components to the center of rotation:
Coefficient of friction between load and sliding surface:
Please provide a diagram of the load. The following formats in order of preference
1) Solidworks
2) Autocad
3) Hand drawn sketch with all dimensions

3 If a lever is attached to the shaft and a cylinder and a gripper are mounted to the tip of the lever:



Example: ① Obtain the lever's moment of inertia:

$$I_1 = m_1 \cdot \frac{L^2}{3}$$

② Obtain the cylinder's moment of inertia:

$$I_2 = m_2 \cdot \frac{(D/2)^2}{2} + m_2 \cdot L^2$$

③ Obtain the gripper's moment of inertia:

$$I_3 = m_3 \cdot \frac{a^2+b^2}{12} + m_3 \cdot L^2$$

④ Obtain the actual moment of inertia:

$$I = I_1 + I_2 + I_3$$

(m_1: mass of lever
m_2: mass of cylinder
m_3: mass of gripper)

Calculation Example

$L = 0.2$ m, $\varnothing D = 0.06$ m, $a = 0.06$ m, $b = 0.03$ m, $m_1 = 0.5$ kg, $m_2 = 0.4$ kg, $m_3 = 0.2$ kg

$$I_1 = 0.5 \times \frac{0.2^2}{3} = 0.67 \times 10^{-2} \quad \text{kg·m}^2$$

$$I_2 = 0.4 \times \frac{(0.06/2)^2}{8} + 0.4 \times 0.2^2 = 1.62 \times 10^{-2} \quad \text{kg·m}^2$$

$$I_3 = 0.2 \times \frac{0.06^2 + 0.03^2}{12} + 0.2 \times 0.2^2 = 0.81 \times 10^{-2} \quad \text{kg·m}^2$$

$$I = (0.67 + 1.62 + 0.81) \times 10^{-2} = 3.1 \times 10^{-2} \quad \text{kg·m}^2$$