Sketches and part details

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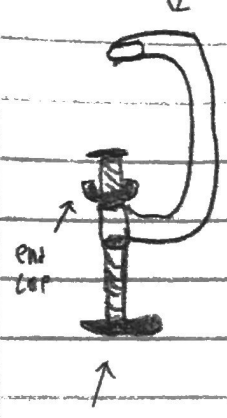

material ⇒ 304 stainless steel μ_s .5–.8 μ_k = .42

Screw

3/8" - 16 18" Length Part#: 98980A977

acme threads

(Rod) Tensile strength: 72,000 psi

Travel distance / turn .03 inches

material

(cap) steel

inside diam: 3/8"

Outside diam: 7/8" Part #: 2207N12

width: 3/8"

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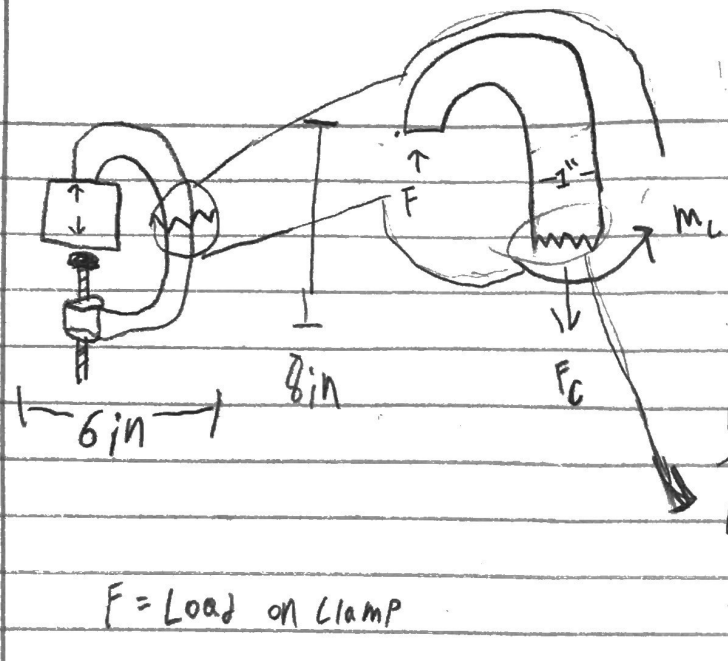
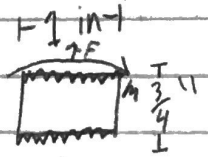


3/4" depth



$A = \frac{3}{4}\ in^2$

F = Load on clamp

Yield Tensile Strength of Steel = 50800 PSi

Shear modulus = 77×10^6 PSi

$$I_x = \frac{6(8)^3 - 6^3(6-1)}{12} = 166\ in^4$$

$$I_y = \frac{2(1)(6^3) + (6)(1)^3}{3} - \left((2)(6)(1)+6(1)\right)\left(\frac{2(6^2)(1)+6(1^2)}{2(6)(8)-2(6)(5)}\right) = 106\ in^4$$

$$I = 272 = I_x + I_y$$

Centroid $\approx (4, \frac{13}{6})$ $\qquad \frac{13}{6}\left(\frac{3}{4}\right) = \boxed{\frac{13}{8} = \int_A y\,dA} = Q \qquad b = \frac{3}{4}\ in^2$

$$\tau = \frac{f\,Q}{I\,b}$$

max Load would be dependent on clamp itself. C-clamp body would fail before screw did