## Crank

$$\Sigma F_x = F_{cx} = F_{Ax} = 8.9 \, lb$$
$$\Sigma F_y = F_{cy} - F_{Ay} = 0$$

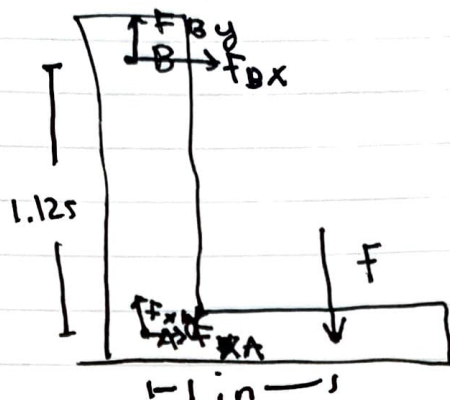$$\Sigma M_c = \tau - F_{Ax} \cdot .99 - F_{Ay} \cdot 1 = 0$$

$$F_{cy} = F_{Ay}$$

$$F_{Ax} = F_{cx} = 8.9 \, lb$$

$$\tau = -8.8 \, lb \cdot ft - F_{Ay} \, alb$$

.99ft

1ft

$F_{cy}$
$F_{cx}$
$\tau$

$F_{Ay}$
$F_{Ax}$

Forklift Link ⟶

Coupler



$\Sigma F_x = F_{xA} + F_{xB} = 0$

$\Sigma F_y = F_{yA} + F_{yB} - F = 0$

$\Sigma M_A = F_{Bx} \cdot 1.125 + f \cdot 1 = 0$

$F_{Bx} \cdot 1.125 = - F$

$F_{Bx} = - \dfrac{F}{1.125}$

$F_{Bx} = - 8.9 \, lb$

$F_{Ax} = - F_{Bx} = 8.9 \, lb$

$F = 10 \, lb$

Follower



$F_{Bx}$
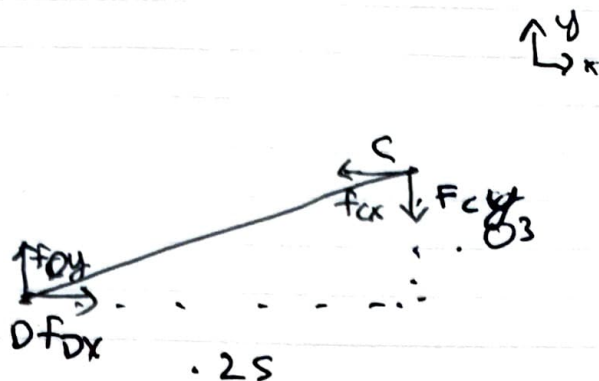
$y$

$x$

$F_{By}$

.130

$D$

$f_{Dx}$ $F_{Dy}$ 1.25
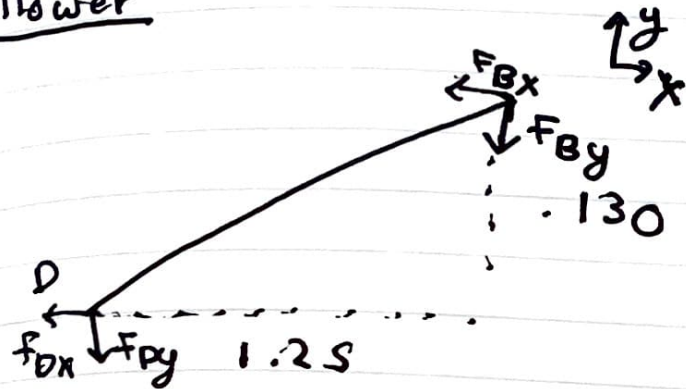
$$\Sigma F_x = f_{Bx} + F_{Dx} = 0$$
$$\Sigma f_y = f_{Dy} + F_{By} = 0$$

$$\Sigma M_B = -.13 \cdot F_{Dx} + 1.25 \cdot F_{Dy}$$

$$\sum f_x = f_{Dx} - F_{cx} = 0$$

$$\sum F_y = F_{Dy} - F_{Dx} = 0$$

$$\sum M_D = .03 \cdot F_{cx} - .25 F_{cy} = 0$$

$$\downarrow$$

## Tieing it All together

$$F_{cx} = \frac{.03}{.25} \cdot \frac{.25}{.03} F_{cy}$$

$$F_{Ax} = F_{cx} = f_{Dx} = -f_{Bx} = 8.9$$

$$F_{cy} = f_{Ay} = \frac{.03}{.25} F_{cx} = \frac{.03}{.25} F_{Ay}$$

$$\tau = F_{Ax} \cdot .99 - F_{Ay}$$

$$\tau = F_{Ax} \cdot .99 - \frac{.03}{.25} F_{Ax}$$

$$\tau = 8.9 \cdot .99 - \frac{.03}{.25} \cdot 8.9$$

$$\tau = 8.811 - 1.068$$

$$\tau = 7.743 \ ft \cdot lb$$