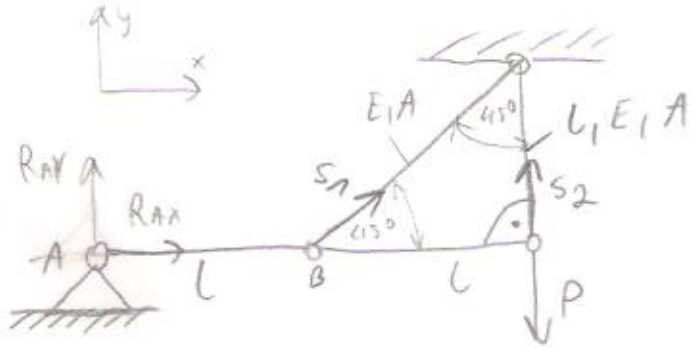


Known:

Find:



P, L, E, A, k_v

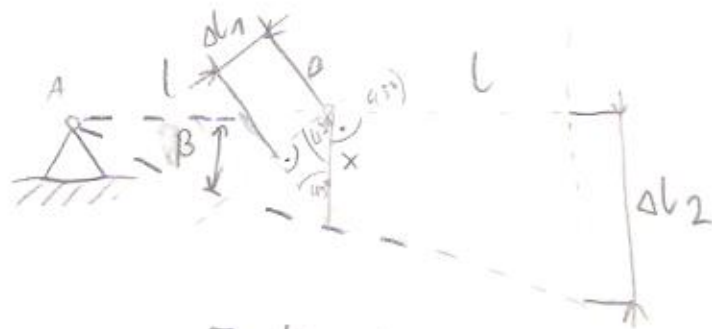
$A = ?$

$\sin 45^\circ = \frac{1}{\sqrt{2}}$
 $\cos 45^\circ = \frac{1}{\sqrt{2}}$

$\Delta l_1 = \frac{S_1 \cdot \sqrt{2} \cdot L}{E \cdot A}$

$\Delta l_2 = \frac{S_2 \cdot L}{E \cdot A}$

$\sum F_{ix} = 0 \quad R_{Ax} + S_1 \cdot \cos 45^\circ = 0$
 $\sum F_{iy} = 0 \quad R_{Ay} + S_1 \cdot \sin 45^\circ + S_2 - P = 0$
 $\sum M_{iA} = 0 \quad -S_1 \cdot \sin 45^\circ \cdot L - S_2 \cdot 2L + P \cdot 2L = 0$



$\frac{\Delta l_1}{x} = \sin 45^\circ$
 $\frac{\Delta l_1}{x} = \frac{1}{\sqrt{2}}$
 $\Delta l_1 = \frac{x}{\sqrt{2}}$
 $x = \Delta l_1 \cdot \sqrt{2}$

$\frac{\Delta l_2}{2L} = \frac{\sqrt{2} \cdot \Delta l_1}{L} \quad /: L$

$\frac{1}{2} \Delta l_2 = \sqrt{2} \cdot \Delta l_1$

$\frac{S_2 \cdot L}{2 \cdot E \cdot A} = \frac{\sqrt{2} \cdot \sqrt{2} \cdot S_1 \cdot L}{E \cdot A} \quad /: (E \cdot A)$

$\frac{1}{2} S_2 \cdot L = 2 S_1 \cdot L \quad /: 2$

$S_2 \cdot L = 4 S_1 \cdot L \quad /: L$

$S_2 = 4 S_1$

$-S_1 \cdot \sin 45^\circ \cdot L - 4 S_1 \cdot 2L + P \cdot 2L = 0$

$S_1 \cdot \sin 45^\circ \cdot L + 4 S_1 \cdot 2L = 2 P \cdot L$

$S_1 \cdot (\sin 45^\circ \cdot L + 8 \cdot L) = 2 P \cdot L$

$S_1 \cdot L (\sin 45^\circ + 8) = 2 P \cdot L \quad /: L$

$S_1 \cdot \left(\frac{1}{\sqrt{2}} + 8\right) = 2 P \quad /: \left(\frac{1}{\sqrt{2}} + 8\right)$

$S_1 = \frac{2 P}{\frac{1}{\sqrt{2}} + 8} \quad S_1 = \frac{2 P}{\left(\frac{1}{\sqrt{2}} + 8\right)}$

$\sigma = \frac{P}{A} \leq k_v$

$\sigma = \frac{S_1}{A} \leq k_v$

$\frac{2 P}{\left(\frac{1}{\sqrt{2}} + 8\right)} \cdot \frac{1}{A} \leq k_v$

$A \geq \frac{2 P}{k_v \left(\frac{1}{\sqrt{2}} + 8\right)}$