

150 cm

weight

pin

actuator

Bar

pin

50 cm

IMA55

calculations :

$$x_{joint} = \sqrt{\left(\frac{150cm}{2}\right)^2 - \left(\frac{y_{joint}}{2}\right)^2}$$

$$L_{beam} = \sqrt{x_{joint}^2 + y_{joint}^2}$$

$$L_{act} = \sqrt{(150cm - x_{joint})^2 + y_{joint}^2}$$

$$\sin \theta = \frac{y_{joint}}{L_{act}}$$

$$L_{ratio} = \frac{L_{beam}}{y_{joint}}$$

$$W_{max} = 8050N \times \frac{L_{ratio}}{\sin \theta} = 8050N \times \frac{L_{beam}}{y_{joint} \sin \theta}$$

$$h_{norm} = \frac{y_{joint} - y_{min}}{y_{max} - y_{min}}$$

$$w_{norm} = \frac{W_{max} - W_{min}}{W_{max} - W_{min}}$$