

{2.3절}

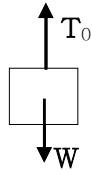
2.62 [질점의 평형 문제]

$W = 800 \text{ N}, P = 200 \text{ N}, d = 600 \text{ mm}, h = ?$

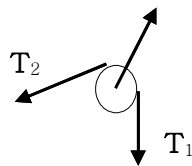
S; (전략)

M; 자유물체도 (F.B.D.)

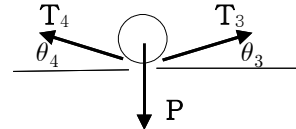
오른쪽 추에서



오른쪽 도르래에서



중앙 도르래에서



장력 $T_0 = T_1 = T_2 = T_3 = T_4 = T$

A; 평형 방정식

오른쪽 추에서 $T - W = 0 \Rightarrow T = W$

중앙 도르래에서 $T_3 = T_4 \Rightarrow \theta_1 = \theta_2 = \theta$

$$2T \sin\theta - P = 0$$

$$\Rightarrow \sin\theta = \frac{P}{2T} = \frac{P}{2W} = \frac{200 \text{ N}}{2(800 \text{ N})} = 0.1250$$

$$\Rightarrow \theta = \sin^{-1}(0.1250) = 7.181^\circ$$

$$\frac{h}{d} = \tan\theta$$

$$h = d \tan\theta = (600 \text{ mm}) \tan(7.181^\circ) = 75.59 \text{ mm} \Rightarrow h = 75.6 \text{ mm}$$

R; (과정의 타당성)

T; (결과 검토)