

## 42.4: The Vertical Spring

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If a horizontal mass on a spring is turned to a vertical position, then the spring is stretched by an amount  $x_0 = mg/k$ , giving it a new equilibrium position. For the vertical spring, the potential energy is still given by  $U = \frac{1}{2}kx^2$ , but  $x$  in this case refers to the distance from the original (horizontal) equilibrium position.

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