

### Intro Screen

Explore the relationships between applied force, spring force, displacement and equilibrium.

**DRAG** the pincer to control the applied force

**VIEW** force and displacement vectors

**DISPLAY** magnitude of the vectors

**COMPARE** two springs simultaneously

### Systems Screen

Investigate how the applied force, spring force, and effective spring constant change when two springs are connected in series or parallel.

**SEE** the spring thickness change as spring const. is adjusted

**ADJUST** the stiffness of the springs

**COMPARE** total and component spring forces

**INVESTIGATE** springs in series and parallel

## Energy Screen

Explore how the applied force, displacement, and spring constant affect the potential energy stored in the spring.

**TRACK** the displacement

**SEE** the amount of potential energy stored in the spring

**PLOT** the Energy or Force in the system

**SHOW** the equilibrium position

**CONTROL** the displacement

Spring Constant: 300 N/m

Displacement: -0.715 m

Hooke's Law

PhET

## Model Simplifications

- The thickness of the spring is used to indicate the spring constant. The springs on the Systems screen have fewer coils due to space constraints (which would reduce the spring constant). To maintain consistency, springs with the same spring constant have the same thickness, regardless of the number of coils.
- The pincer will release when the applied force (or displacement) is set to zero. However, the pincer remains closed while being dragged through the equilibrium position.



## Suggestions for Use

### Sample Challenge Prompts

- Explain how the spring force and applied force are related to one another.
- Predict what happens to the displacement when the spring constant is doubled while the applied force is kept constant.
- Compare and contrast the component spring forces for the series and parallel systems.
- Explain how the spring constant affects the shape of the Energy and Force plots.

See all published activities for Hooke's Law [here](#).

For more tips on using PhET sims with your students, see [Tips for Using PhET](#).