

MSET - SERIES / PARALLEL RESISTANCE

Purpose

Evaluate the effects of configuring springs in series and parallel. Predict and measure both arrangements to show their effects on applied forces.

Springs

Springs are used in many physics & engineering applications. As an example; automobiles, bicycles, clocks, and a large number of other mechanical devices use springs.



This bicycle seat uses a number of springs configured in series and parallel to resist forces

Theory

The force, "F" of a single stretched spring is related to its elongation (Δx) and its stiffness (k) as follows:

$$F = k\Delta x$$

When two springs are connected in series the equivalent resistance K is equated as:

$$K = \frac{K_1 K_2}{(K_1 + K_2)}$$

When two springs are connected in parallel the equivalent resistance K is equated as

$$K = K_1 + K_2$$

Setup



Results

