

Stretching Springs

Transcript

Springs are a commonly used item. But not all springs stretch equally. Why is this?

For example the spring in a supermarket weighing scale stretches more easily than the spring in a car's suspension. This is because different springs have different spring constants.

You will need a table like this.

Use the set square to ensure that the metre rule is vertical and at 90 degrees to the bench. Using the set square, carefully and accurately measure the position of the top of the spring. Do not include the hook or loop at the end. Then using the set square carefully and accurately measure the position at the bottom of the spring. Once again do not include the hook or loop.

Record this value in your table for a load of 0 newtons. Carefully measure this distance so you have 3 readings. Hang the object with unknown mass from the spring and carefully measure the position of the bottom of the spring.

Remove and replace the mass, and re-measure the position so you have three measurements
Add the slotted mass hanger and carefully measure the position of the bottom of the spring. Record this in your table. Remove and replace the mass, and re-measure the position so you have three measurements
Carefully add one of the slotted masses to the hanger and repeat the measurement.

Remove and replace the mass, and re-measure the position so you have three measurements
Repeat until you have used all of the slotted masses
Remove the slotted masses and hanger
Use the top pan balance to find the mass of the object with unknown mass

Calculate the extension of the spring for each weight. This can be found by subtracting the length at 0 newtons from each of the different lengths. Be sure to subtract the same number each time - that is the number for zero newtons

Plot a graph with weight on the y axis and extension on the x axis