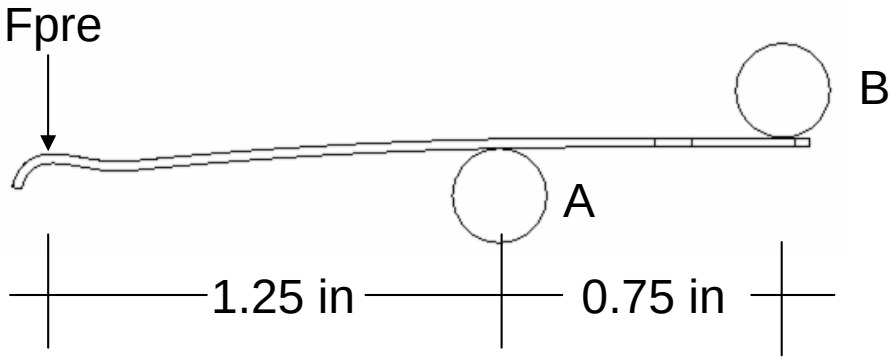
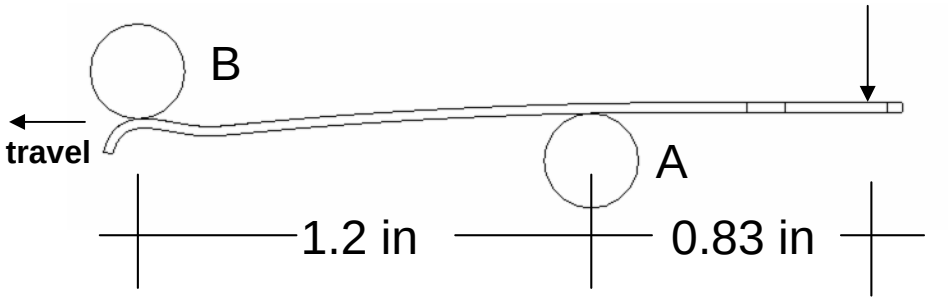
Spring Analysis 9/20/08

Hello DesertFox
I'm trying to model a spring that is used in one of our products. I visualized the free body diagram as a simply supported beam. I wanted to verify my experimental results with ANSYS and analytical results. Depending on what method gave me the best results as compared to the experimental results, I would then use that method for analyzing the spring in the product. My test setup used two dowel pins that supported the spring at preload and then when the handle is pressed. A Chatillion force gauge and dial indicator were used to measure the resulting force and deflection.

PRELOAD EXPERIMENTAL



TRIGGER EXPERIMENTAL Ftrig



Material:AISI 1095 Steel, oil quenched from 800°C (1475°F), tempered at 480°C (900°F) (Approximate Blue Tempered)
Spring Dimensions:
2.125"Lx0.34"Dx0.025"H

Spring in product:
The force required to deflect the spring to it's preloaded deflection of 0.625" is 3.5 lbf.
The force required to deflect the handle/trigger 0.700" is 15 lbf.
NOTE: As the handle/trigger is compressed the spring travels in the "-x" direction approximately 0.25" along a fairly frictionless path.
Dowel pin A actual Diameter is 0.883"
Dowel pin B is actually a flat surface.