

USE of the SLIDE RULE

OF ASSOCIATED SPRING CORPORATION

for EXTENSION, COMPRESSION AND TORSION SPRINGS

This slide rule has been designed to facilitate the use of the formulas most commonly used for ordinary compression, extension and torsion springs, these being as follows:

For Compression and Extension Springs

$$P = \frac{fGd^4}{8ND^3} \quad \text{and} \quad P = \frac{\pi Sd^3}{8D} \quad \text{for round wire}$$

$$P = \frac{fGd^4}{5.58ND^3} \quad \text{and} \quad P = \frac{Sd^3}{2.4D} \quad \text{for square wire}$$

For Torsion Springs

$$M = \frac{Ed^4T}{10.8ND} \quad \text{and} \quad M = \frac{\pi Sd^3}{32} \quad \text{for round wire}$$

$$M = \frac{Ed^4T}{6.8ND} \quad \text{and} \quad M = \frac{Sd^3}{6} \quad \text{for square wire}$$

in which,

P = Load in pounds

G = Torsional Modulus

S = Stress in lbs. per sq. inch

D = Mean diameter of coil in inches

d = Diameter of round (or side of square) wire in inches

f = Deflection in inches

N = Number of active coils

M = Moment or torque in inch pounds

E = Modulus of elasticity

T = Number of turns spring can give