

SPEED WITH POLE BREAK FORCE (BREAK FRACTURE ENERGY)

Find an energy equivalent speed loss with the force necessary to partially or fully break a wooden utility pole.

CASE NUMBER: A Sample Recon Case

3/9/2019

$$BFE = (1.4 \times 10^{-2}) \times C^{4.38}$$

$$BFE = (1.4 \times 10^{-2}) \times 28.000^{4.38}$$

$$BFE = (1.4 \times 0.01) \times 2180480.350$$

$$BFE = 0.014 \times 2180480.350$$

$$BFE = 30526.724$$

*BFE = The Pole Break Fracture Energy.
C = The Pole Circumference in inches.
1.4, 10 = Constants.*

$$S = \sqrt{\frac{30 \times KE}{W}}$$

$$S = \sqrt{\frac{30 \times 30526.724}{3680.000}}$$

$$S = \sqrt{\frac{915801.720}{3680.000}}$$

$$S = \sqrt{248.859}$$

$$S = 15.775$$

*KE = The Kinetic Energy in ft-lbs or Joules.
W = The Weight in Pounds.
S = The Speed in MPH/KPH.
30 = A Constant.*

Formula Inputs:

Pole Circumference: 28.000
The Weight in Pounds is: 3680.000
This is a full break calculation.

Formula Results:

The Pole BFE in ft-lbs is: 30526.724
The Speed in MPH is: 15.775
The Velocity in FPS is: 23.136

Incrementation Results

<u>Circum</u>	<u>Speed</u>	<u>Circum</u>	<u>Speed</u>	<u>Circum</u>	<u>Speed</u>
27.000	14.567	27.700	15.407	28.400	16.272
27.100	14.685	27.800	15.529	28.500	16.398
27.200	14.804	27.900	15.652	28.600	16.525
27.300	14.924	28.000	15.775	28.700	16.651
27.400	15.044	28.100	15.898	28.800	16.779
27.500	15.164	28.200	16.023	28.900	16.907
27.600	15.285	28.300	16.147		