

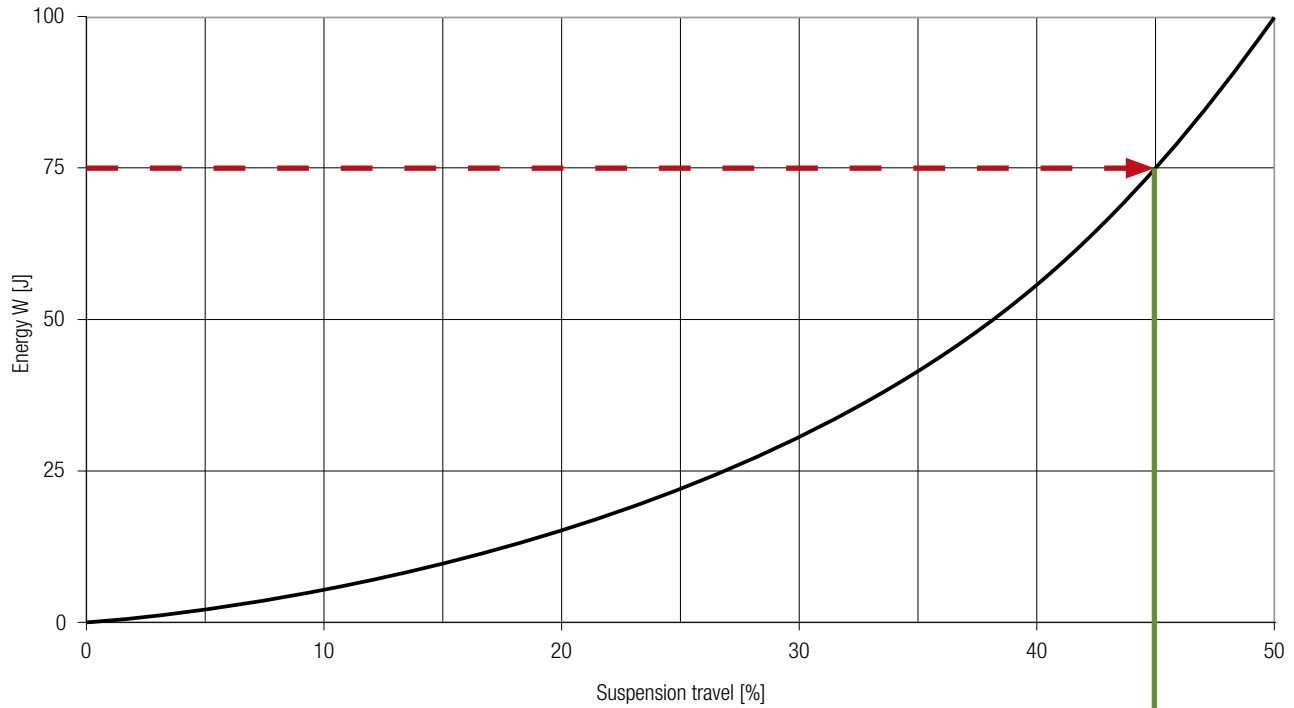
Load Diagrams

Program 0170 Rubber Bumpers

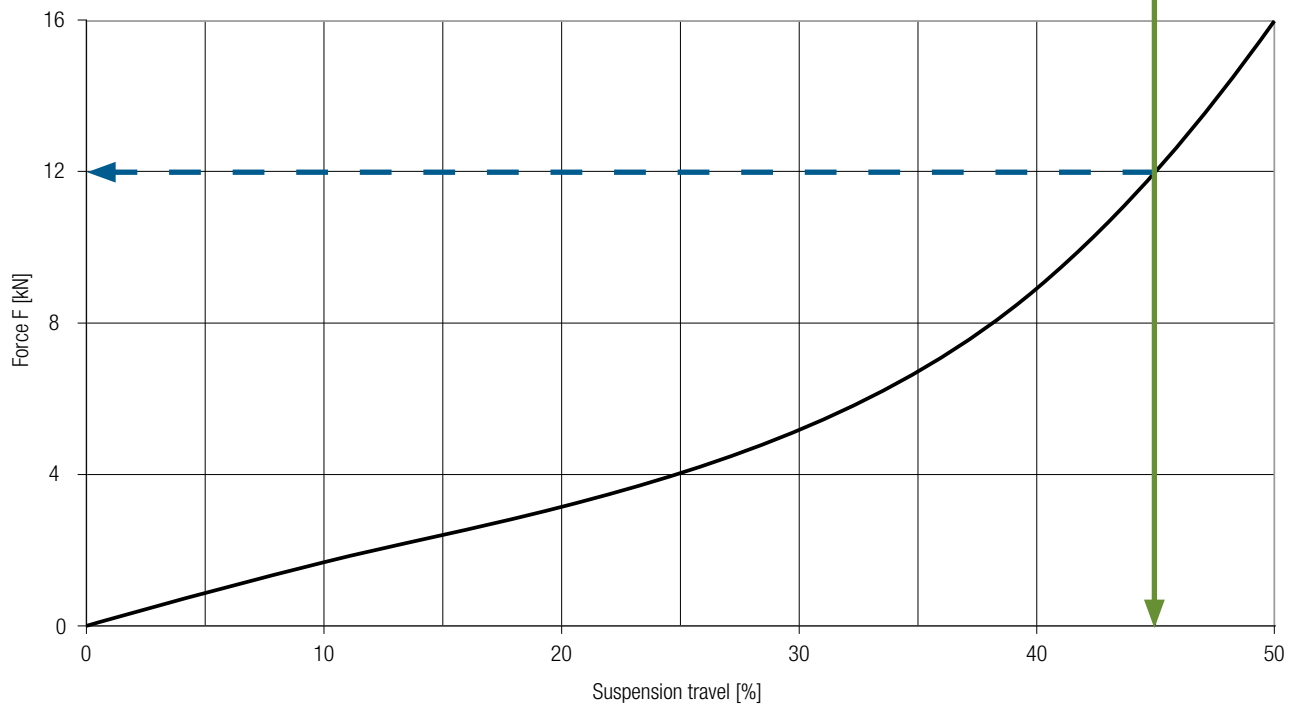


Calculation Example

Energy-Travel-Diagram Ø 50



Force-Travel-Diagram Ø 50

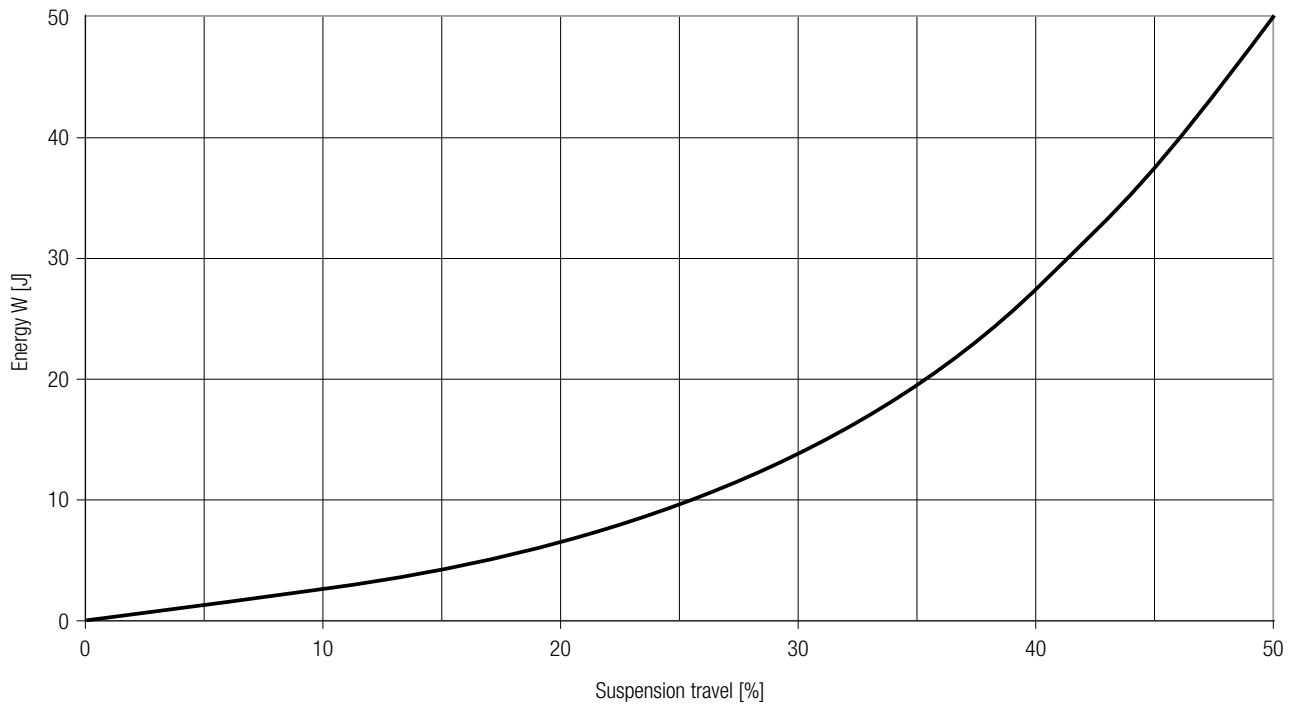


1. Calculation of energy per bumper: $W = \frac{1}{2} m \times v^2$
2. Readout compression length from the diagram
3. Readout final load of the bumper from the table
4. Result and verification
 - $s < 0,5 \times h$
 - $F < F_{max}$ of the crane structure
 - $a = v^2/2s < a_{max}$

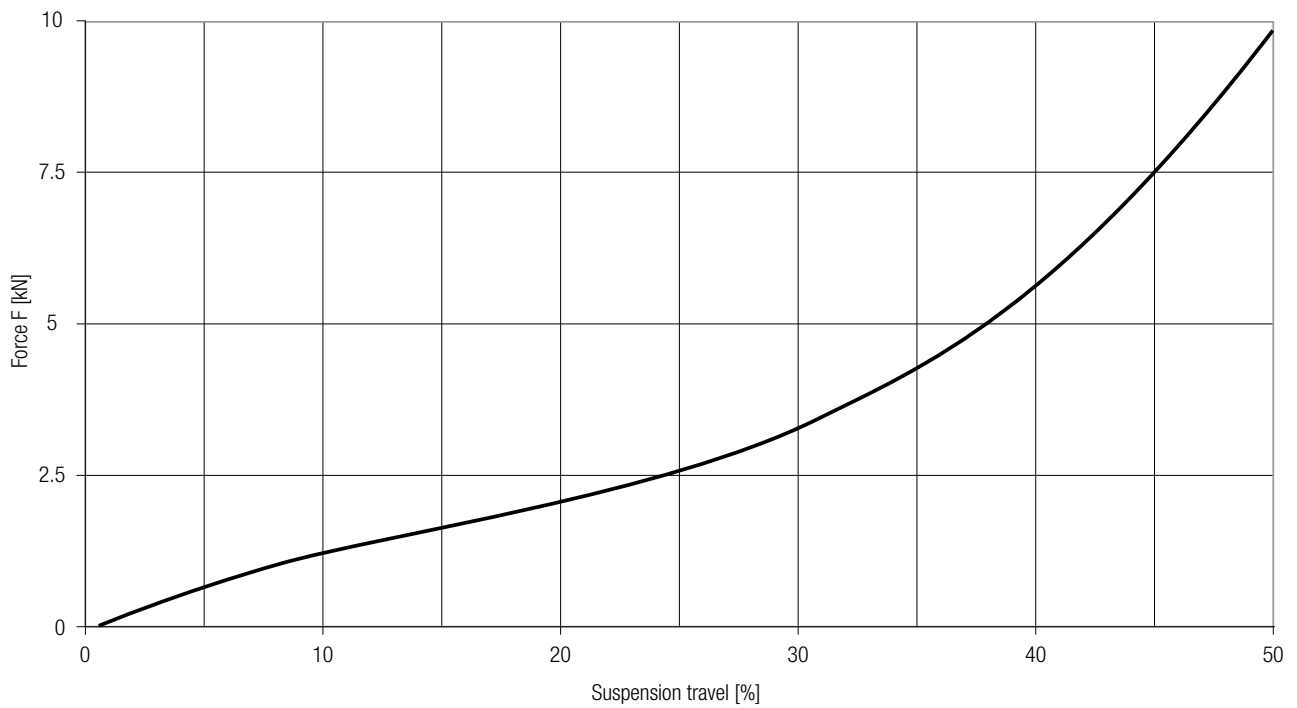
W = Energy Absorption [J]
s = Travel [mm]
F = Force [kN]
v = Velocity [m/s]
m = Mass [kg]
h = Bumper height
a = deceleration

- Max. deflection = 50%
- Valid for solid-rubber bumpers with $h = 0,8 \times d_1$

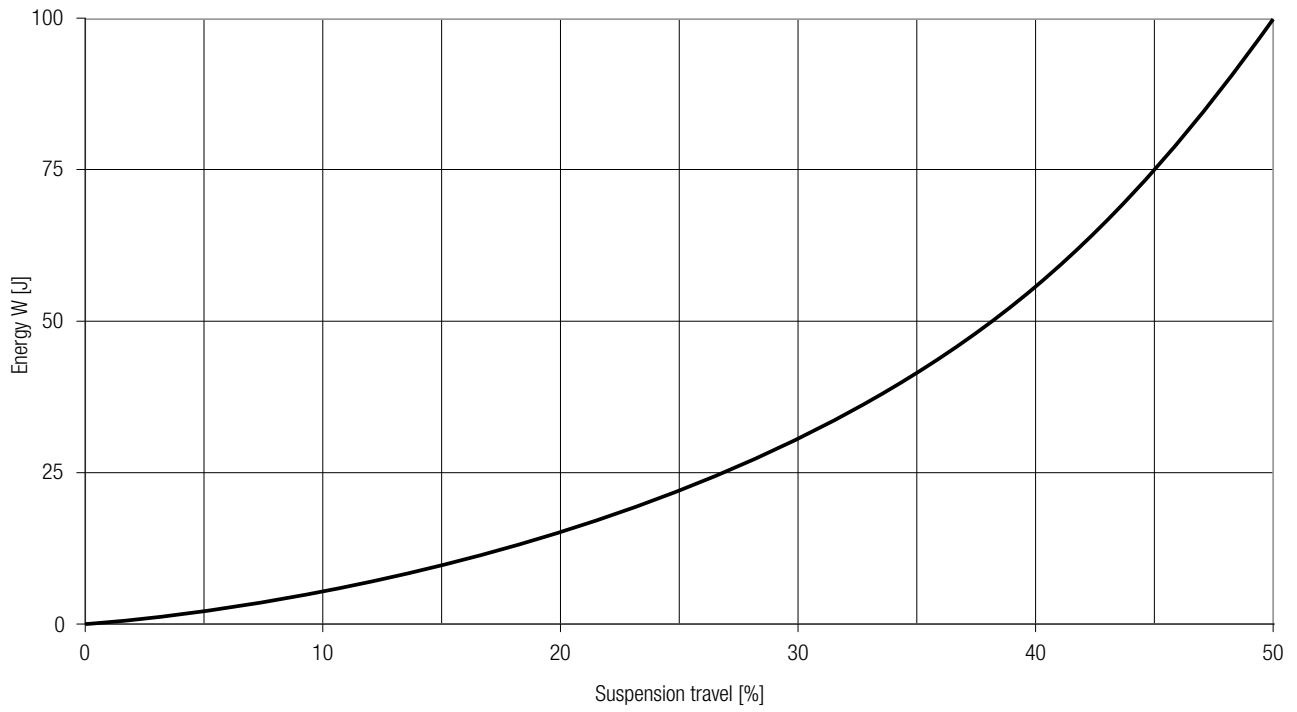
Energy-Travel Ø 40



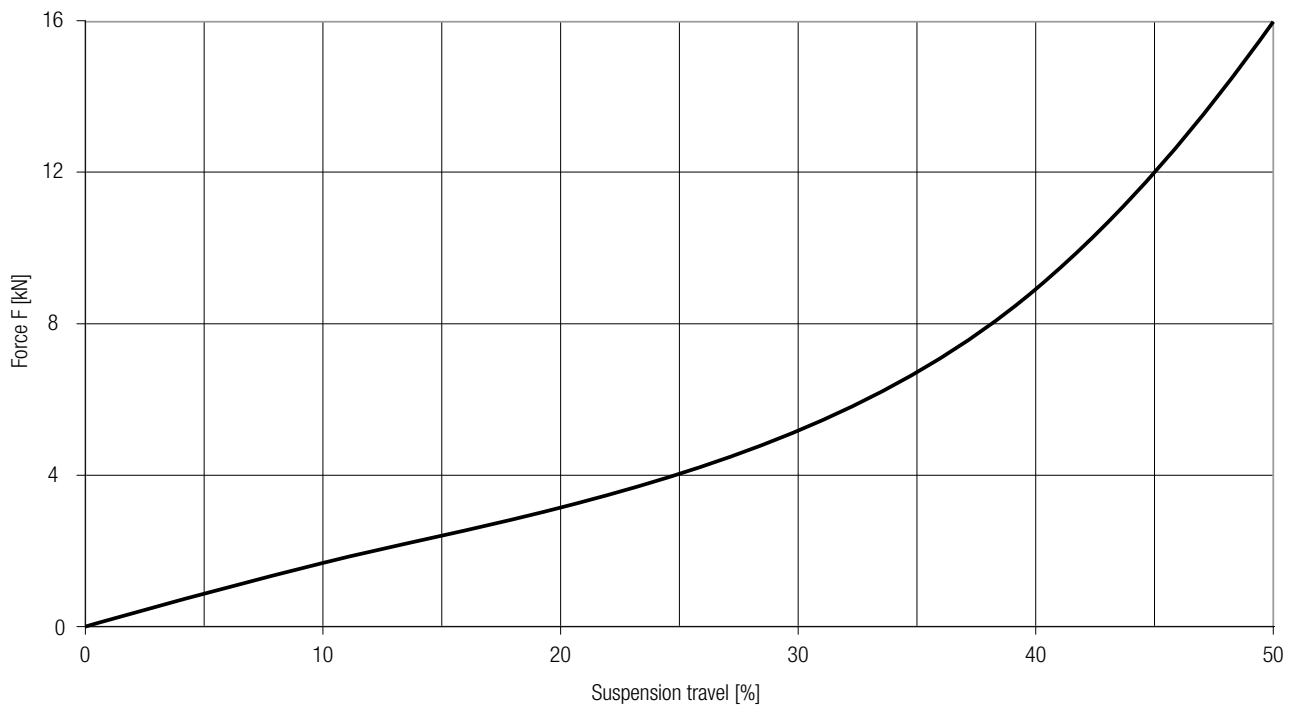
Force-Travel Ø 40



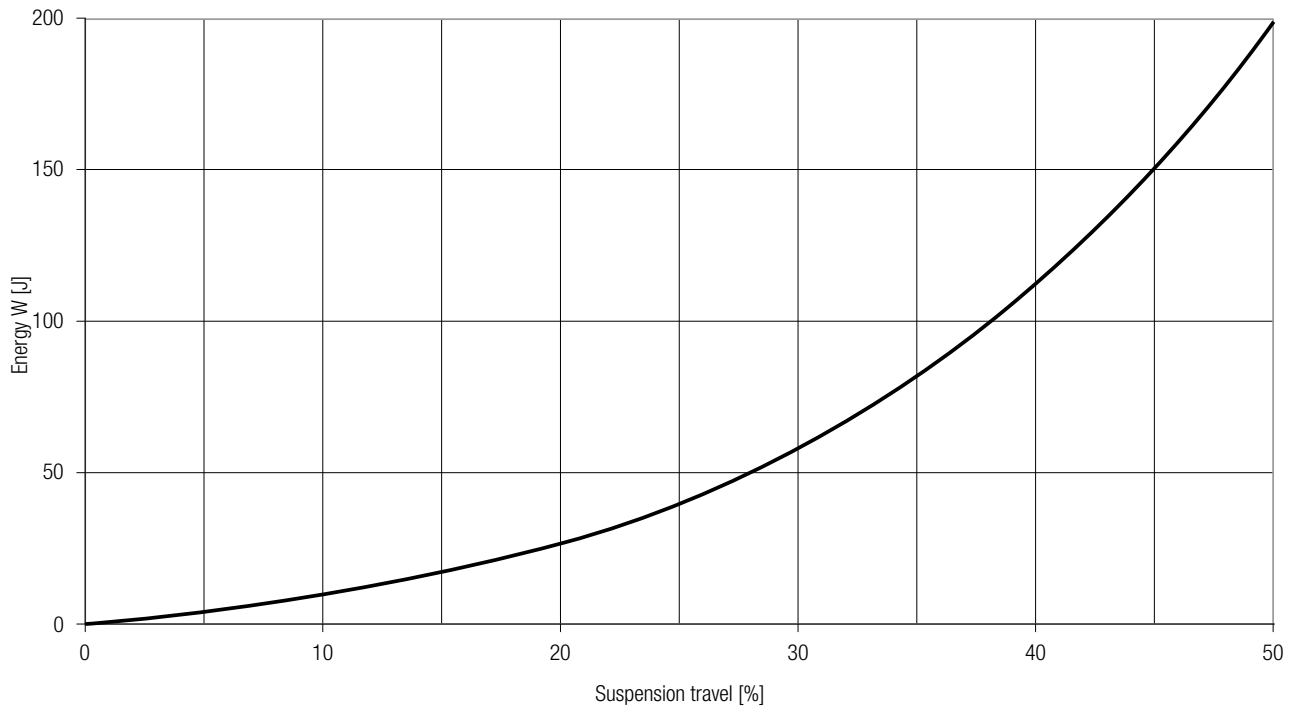
Energy-Travel Ø 50



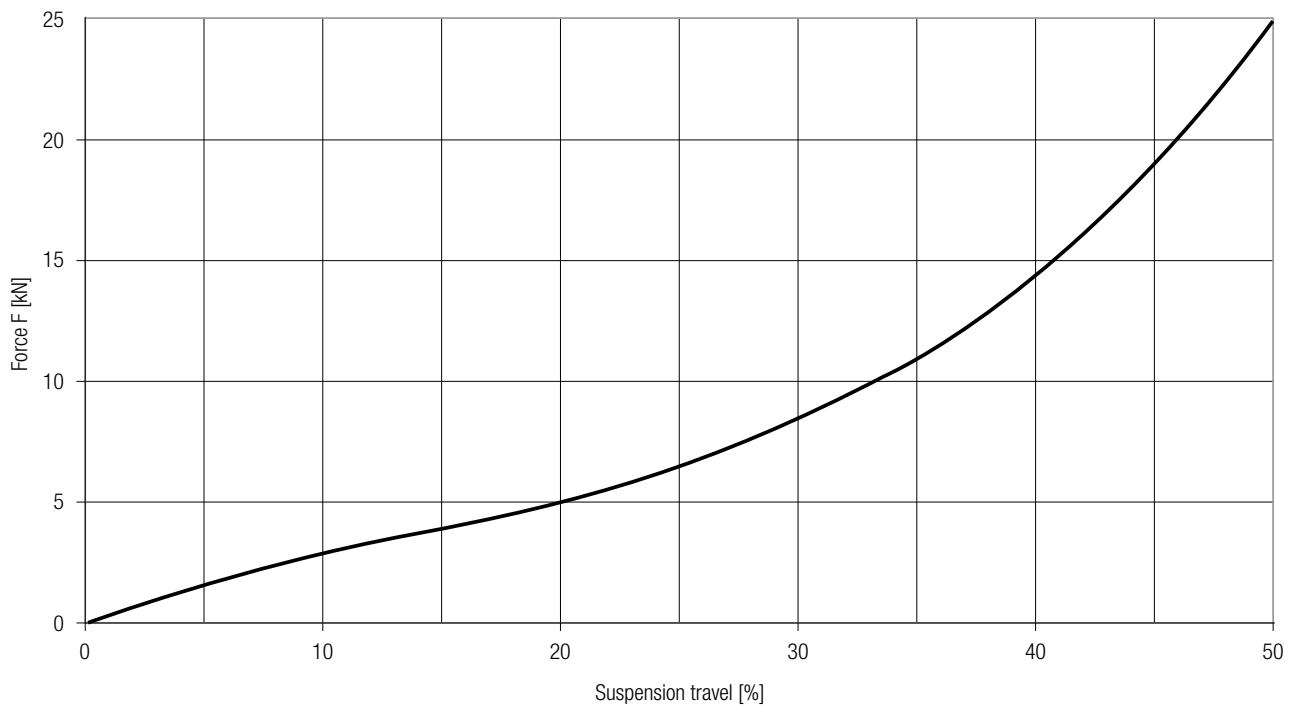
Force-Travel Ø 50



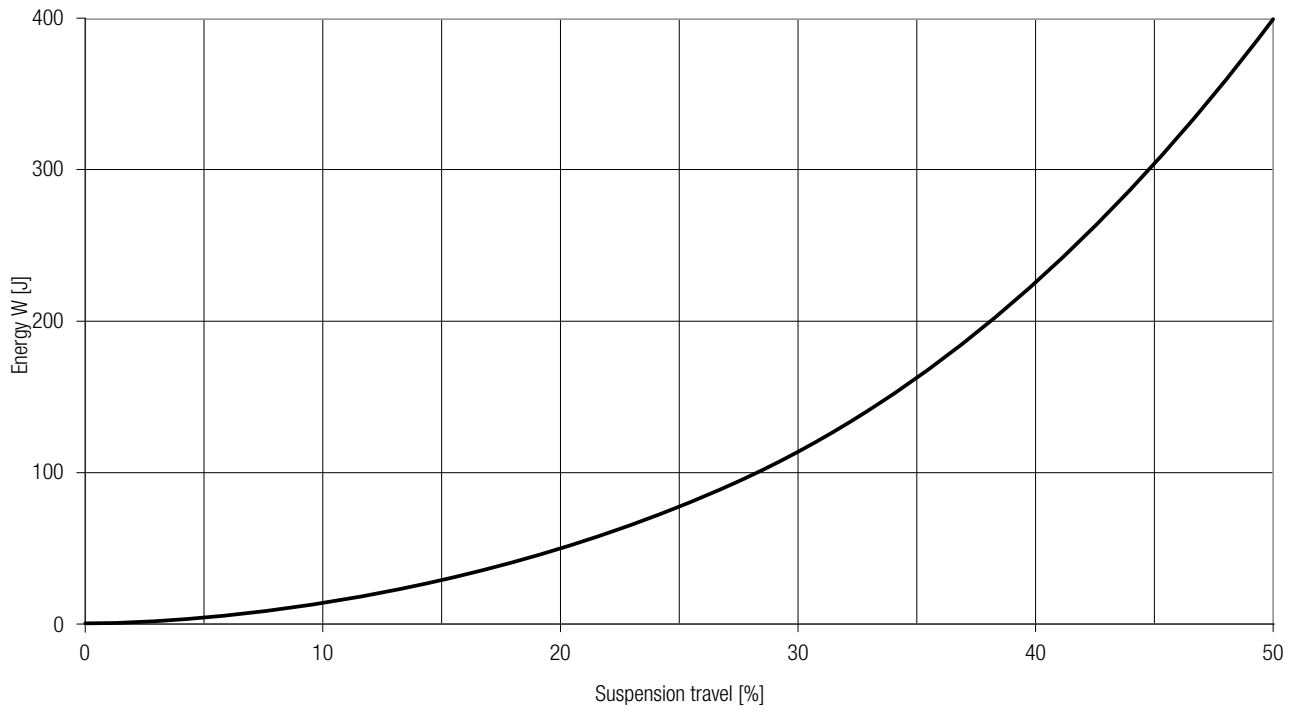
Energy-Travel Ø 63



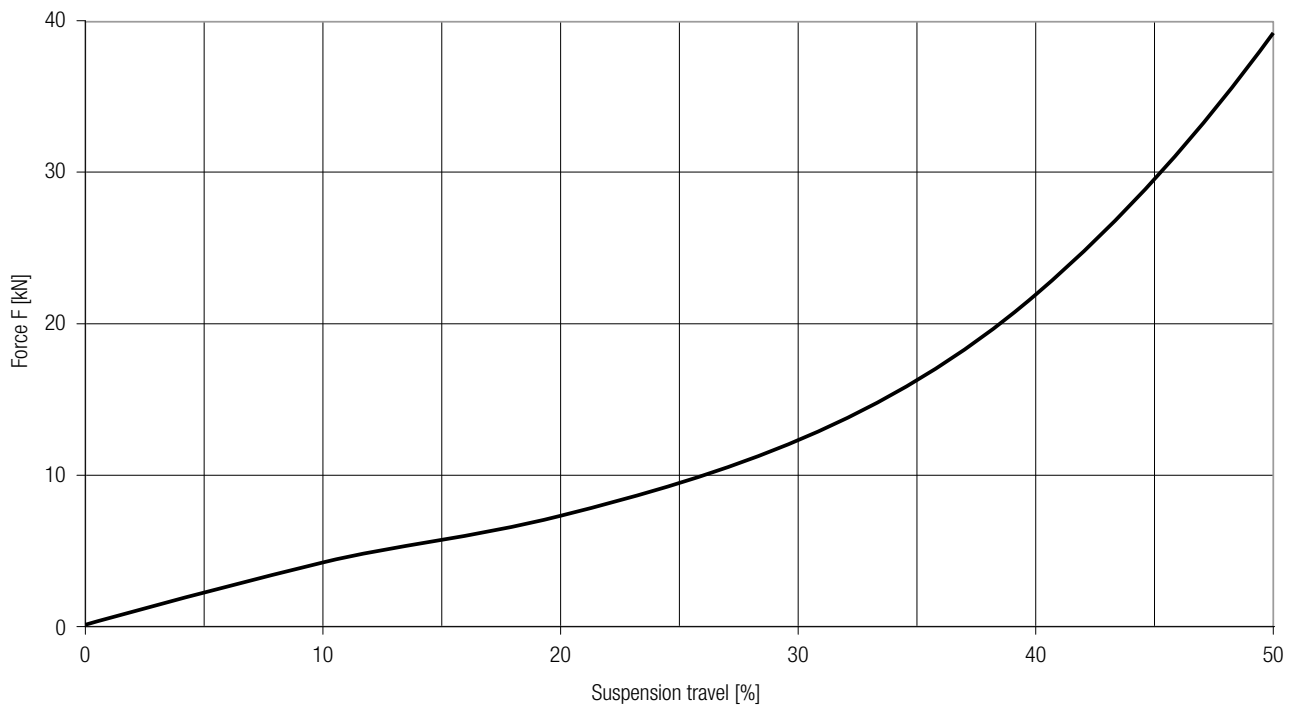
Force-Travel Ø 63



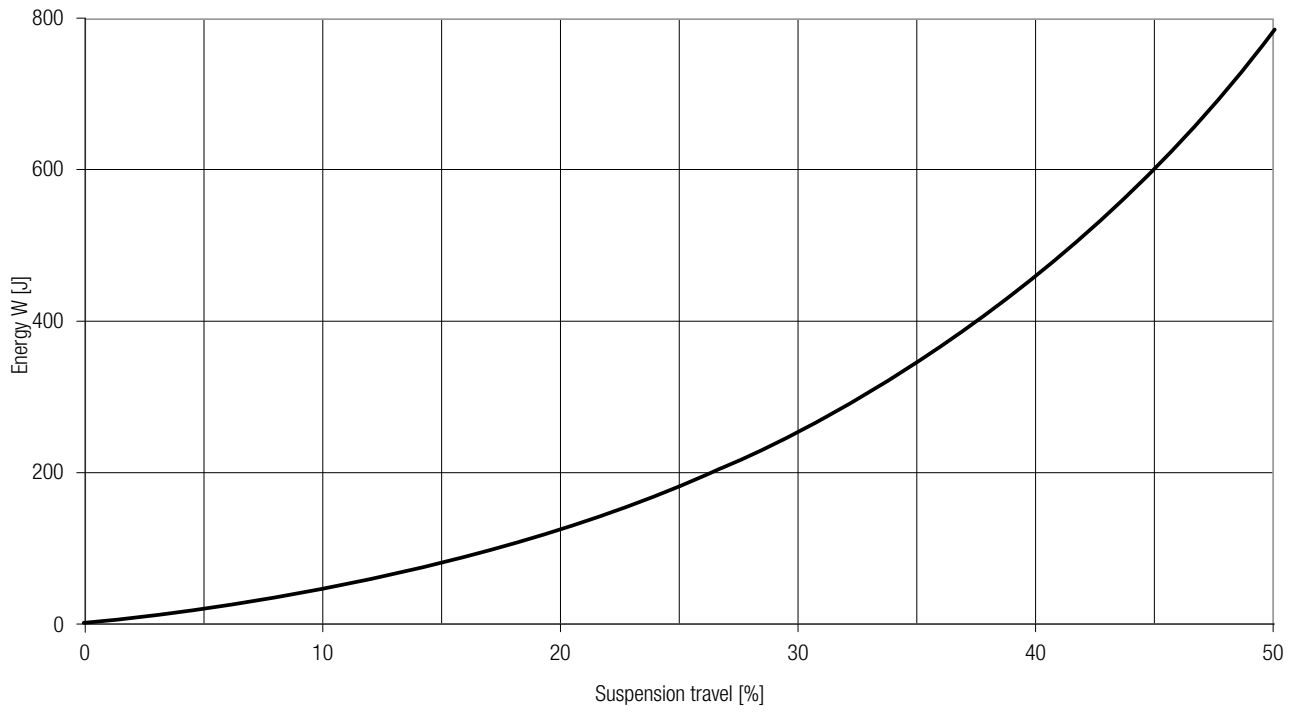
Energy-Travel Ø 80



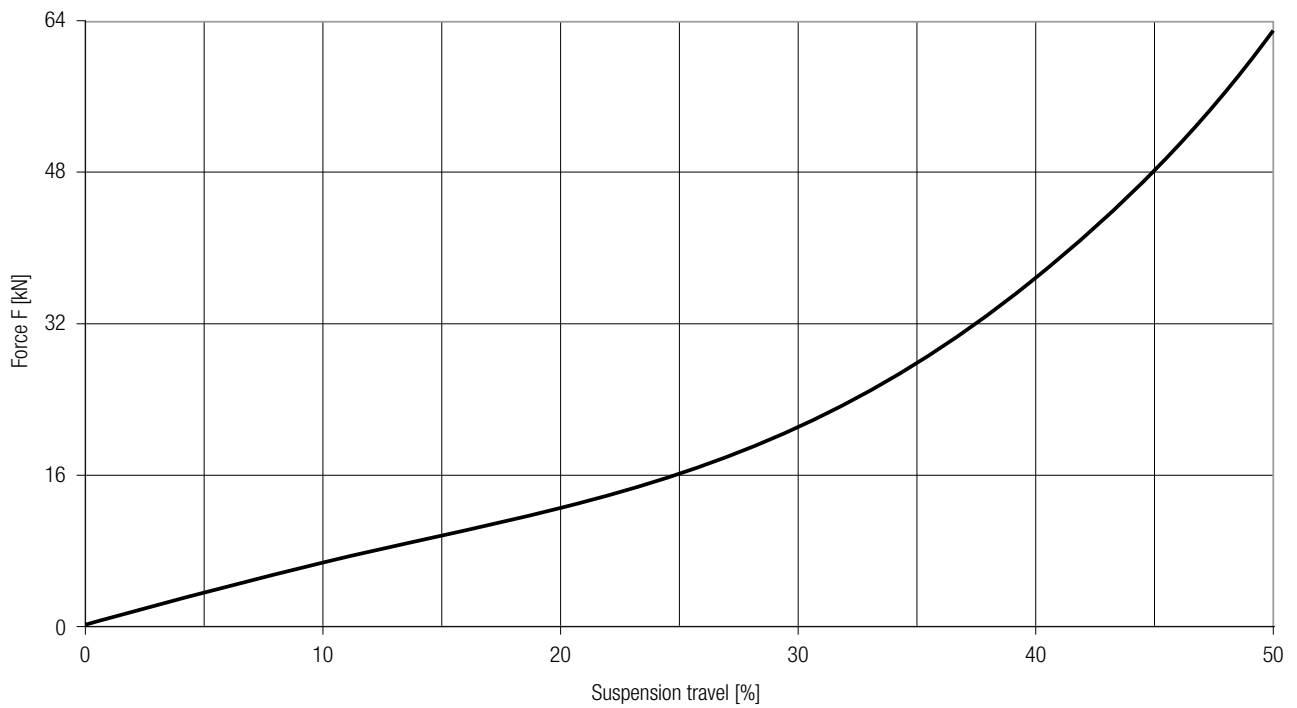
Force-Travel Ø 80



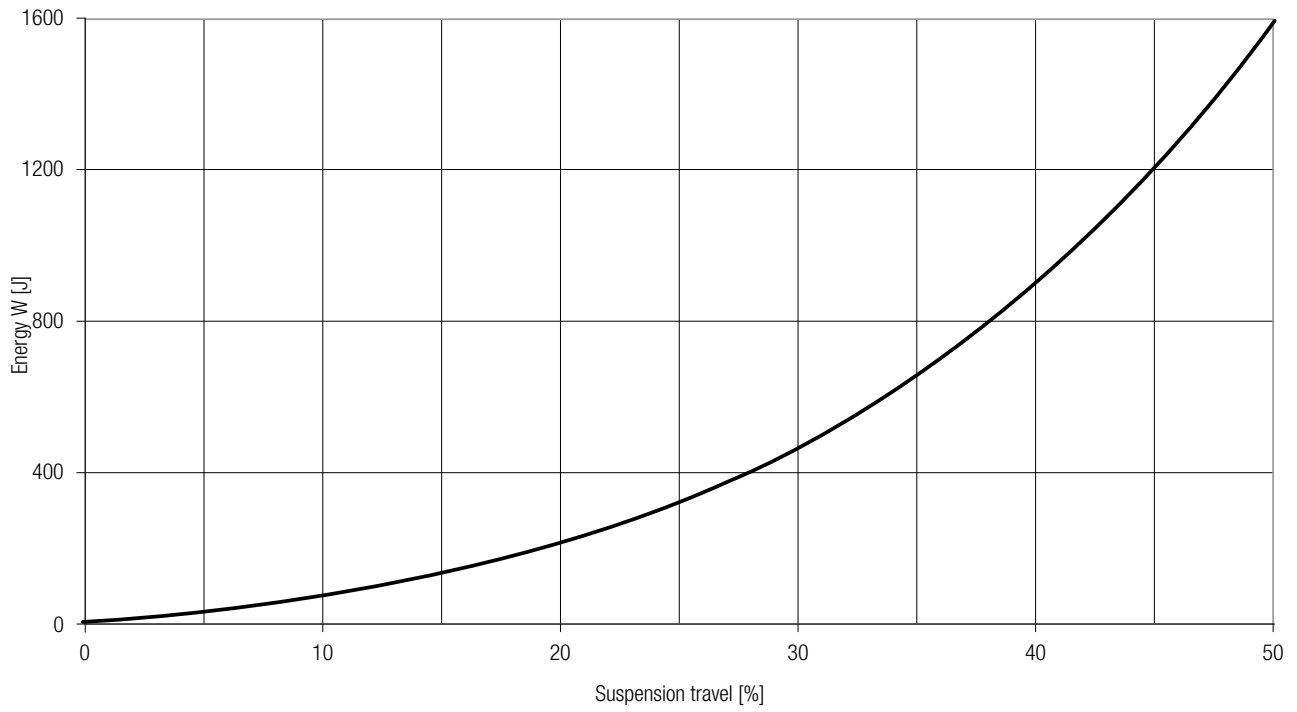
Energy-Travel Ø 100



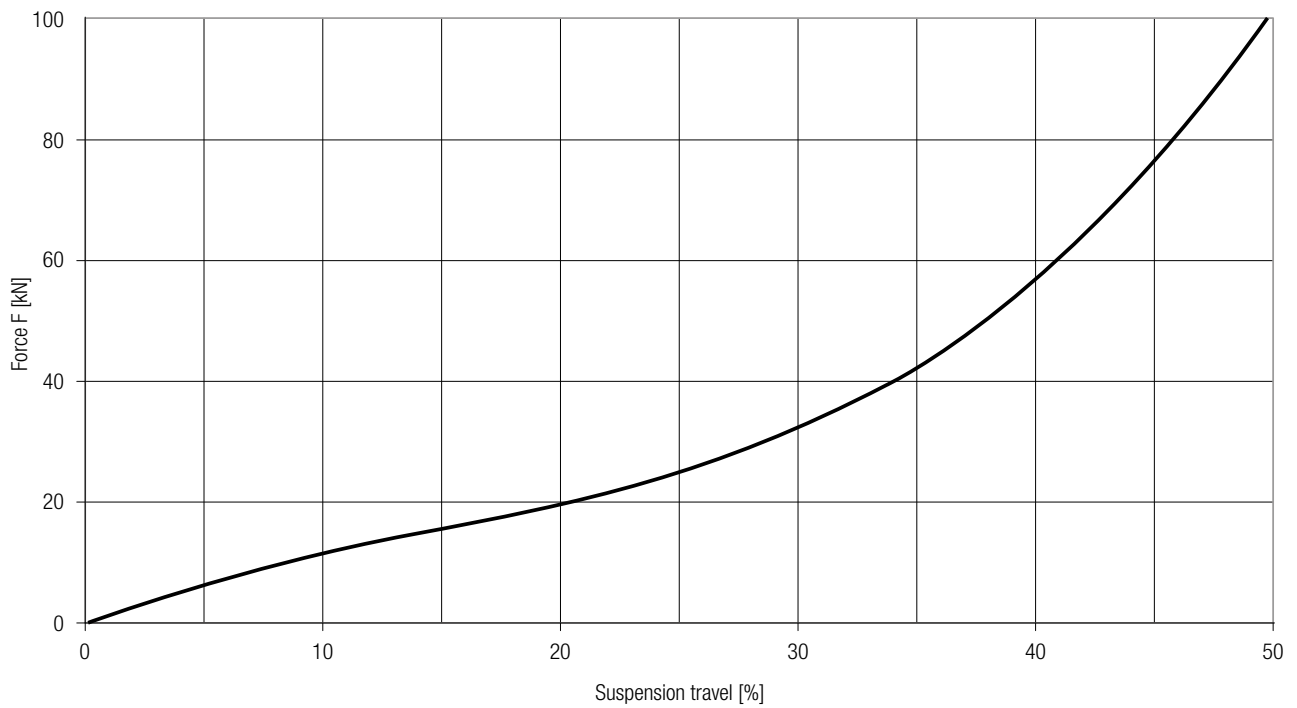
Force-Travel Ø 100



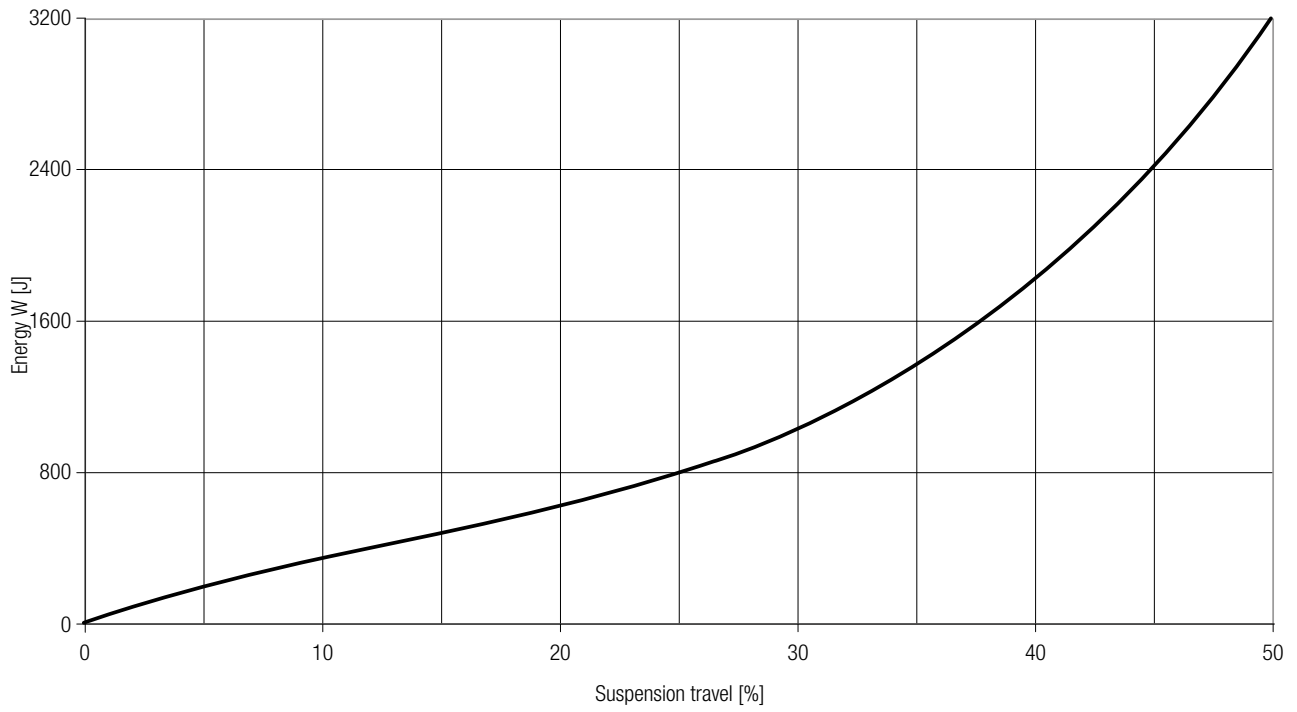
Energy-Travel Ø 125



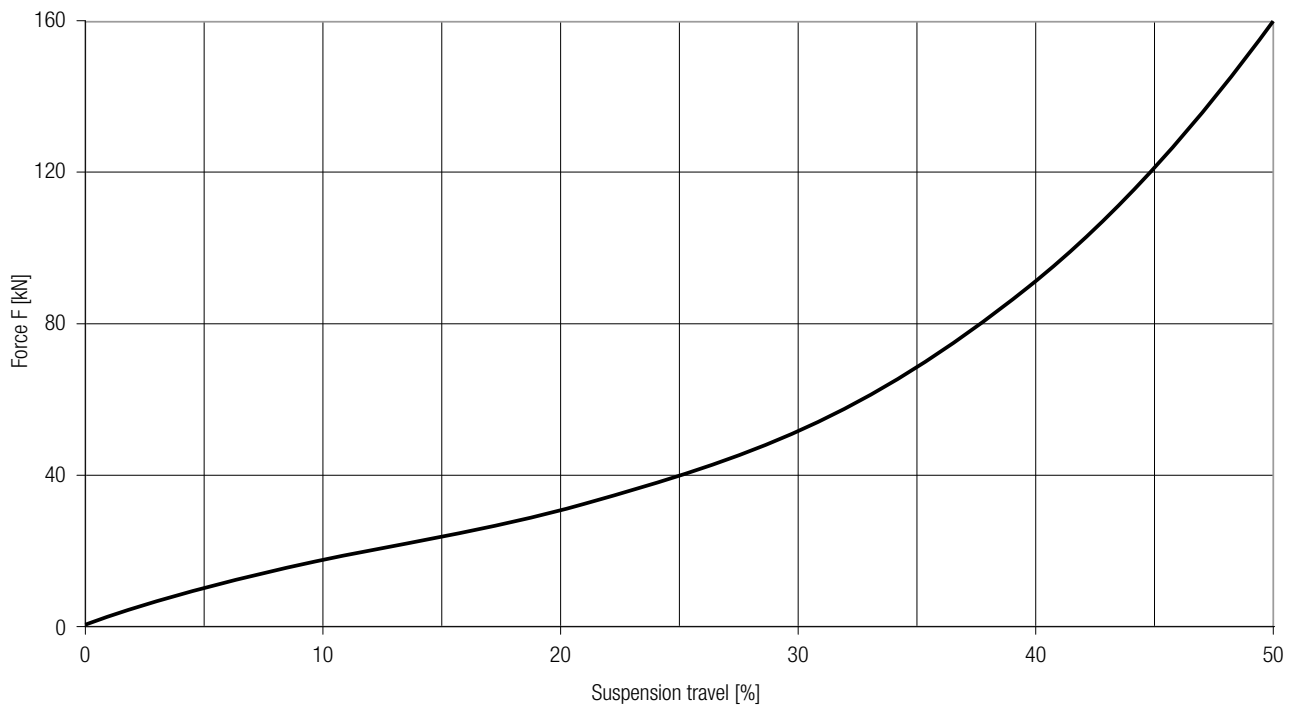
Force-Travel Ø 125



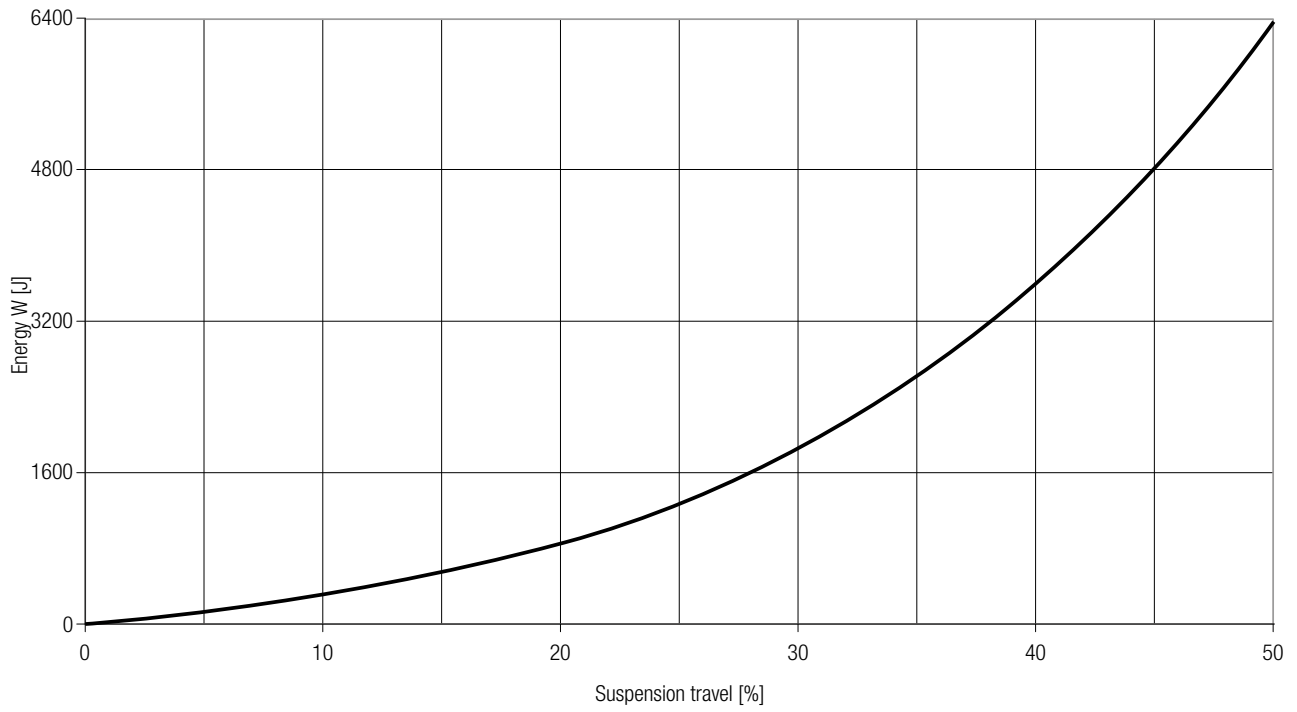
Energy-Travel Ø 160



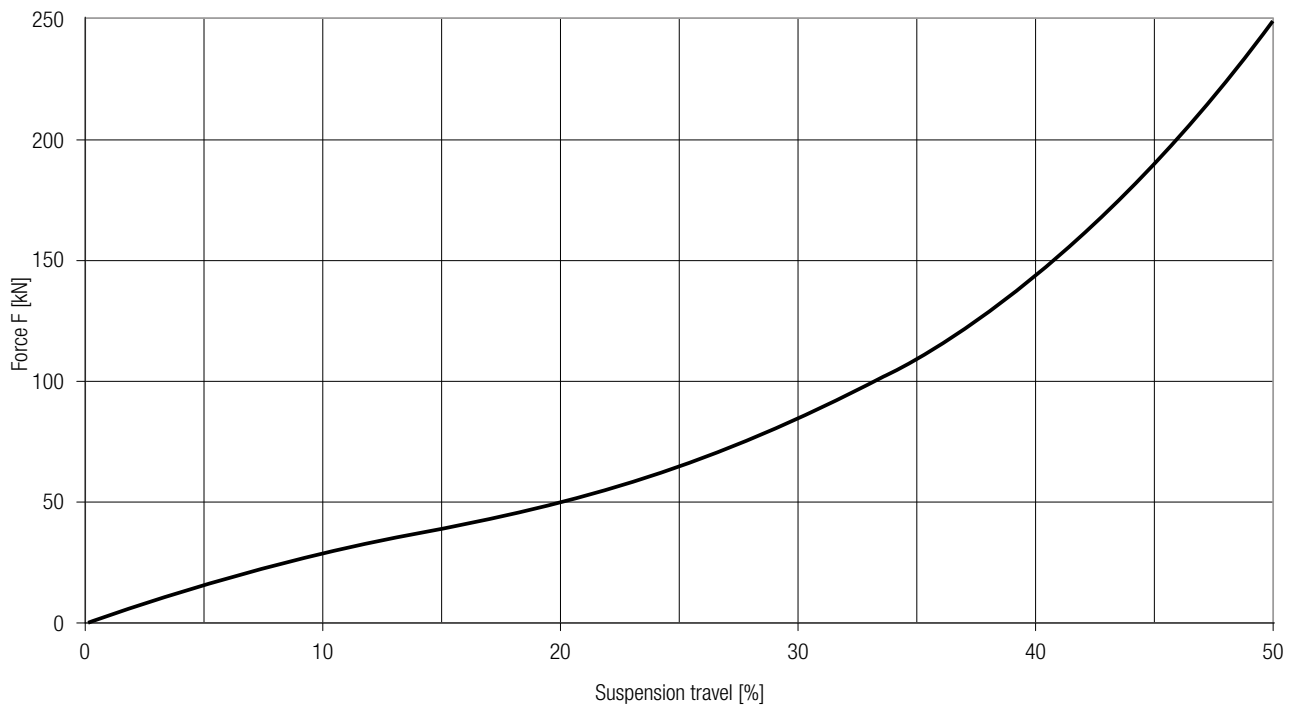
Force-Travel Ø 160



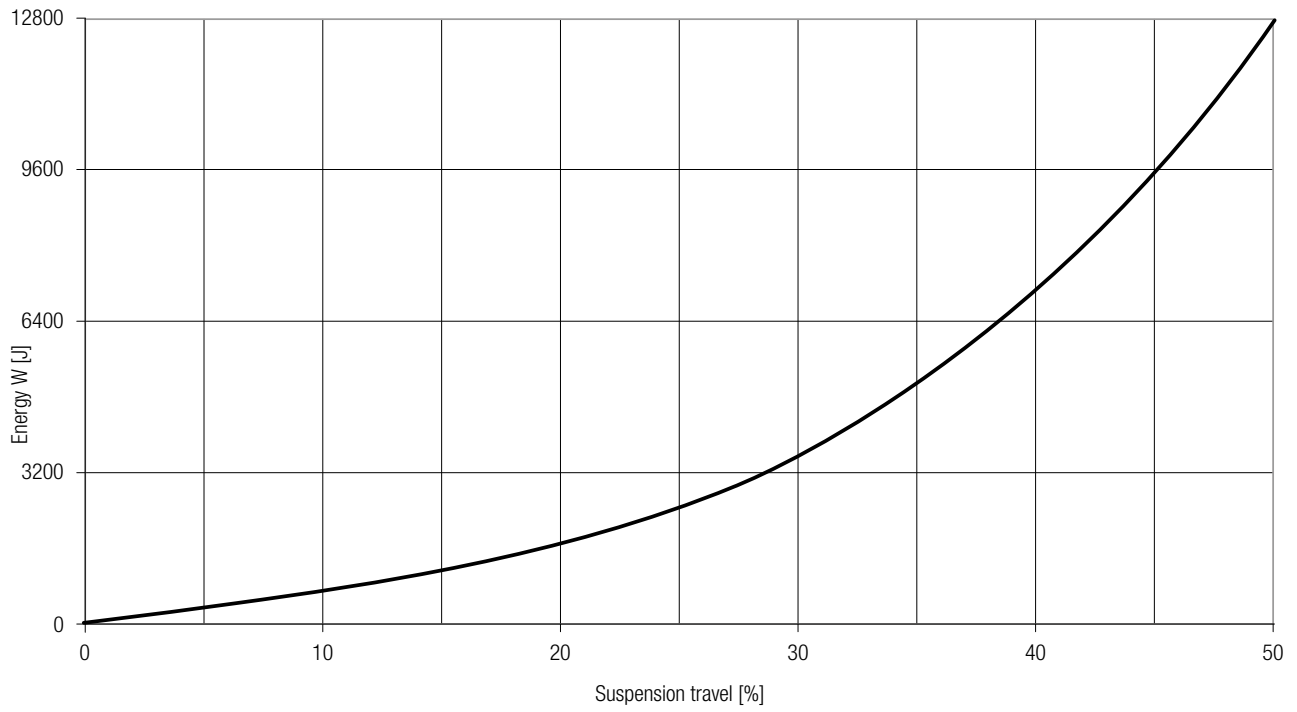
Energy-Travel Ø 200



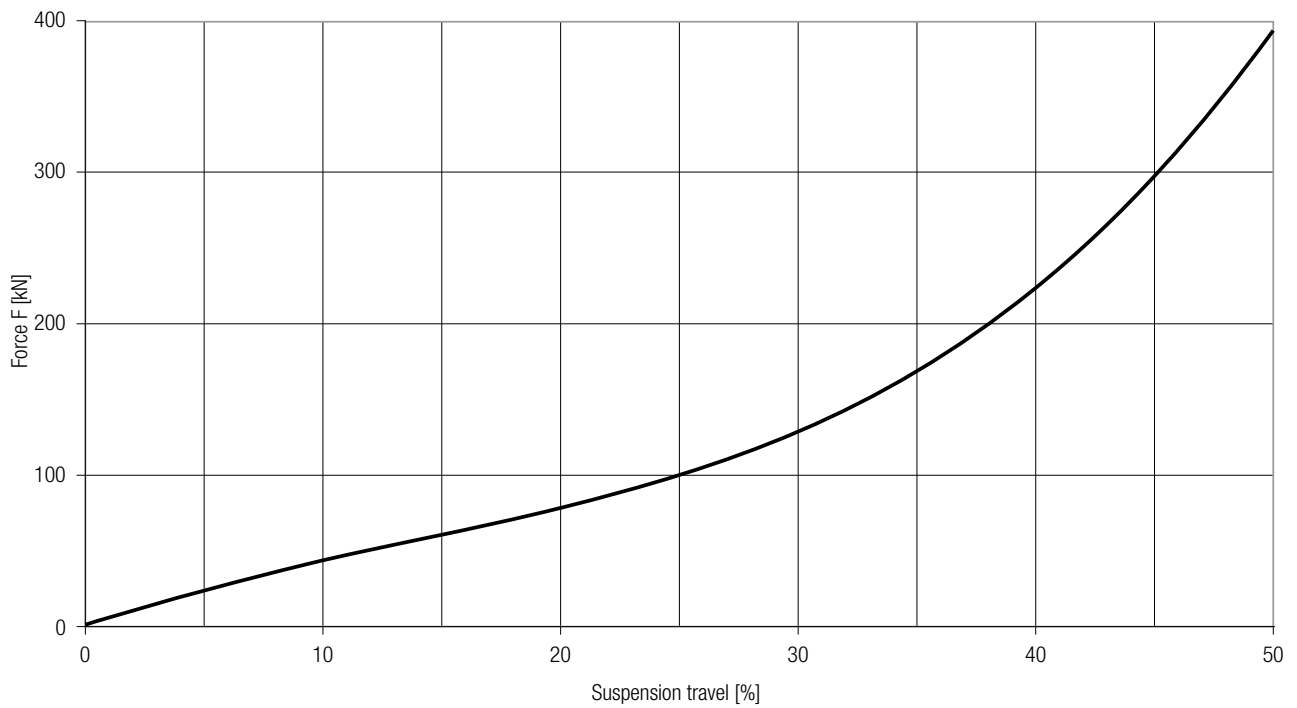
Force-Travel Ø 200



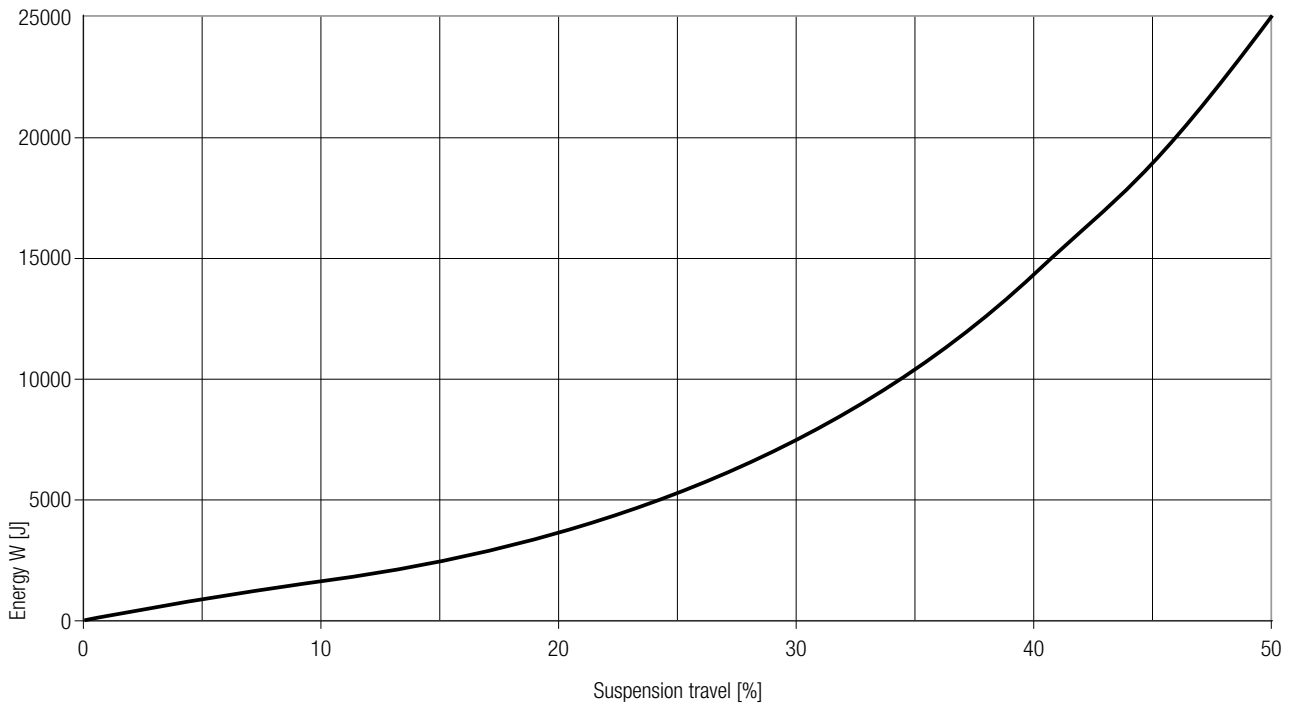
Energy-Travel Ø 250



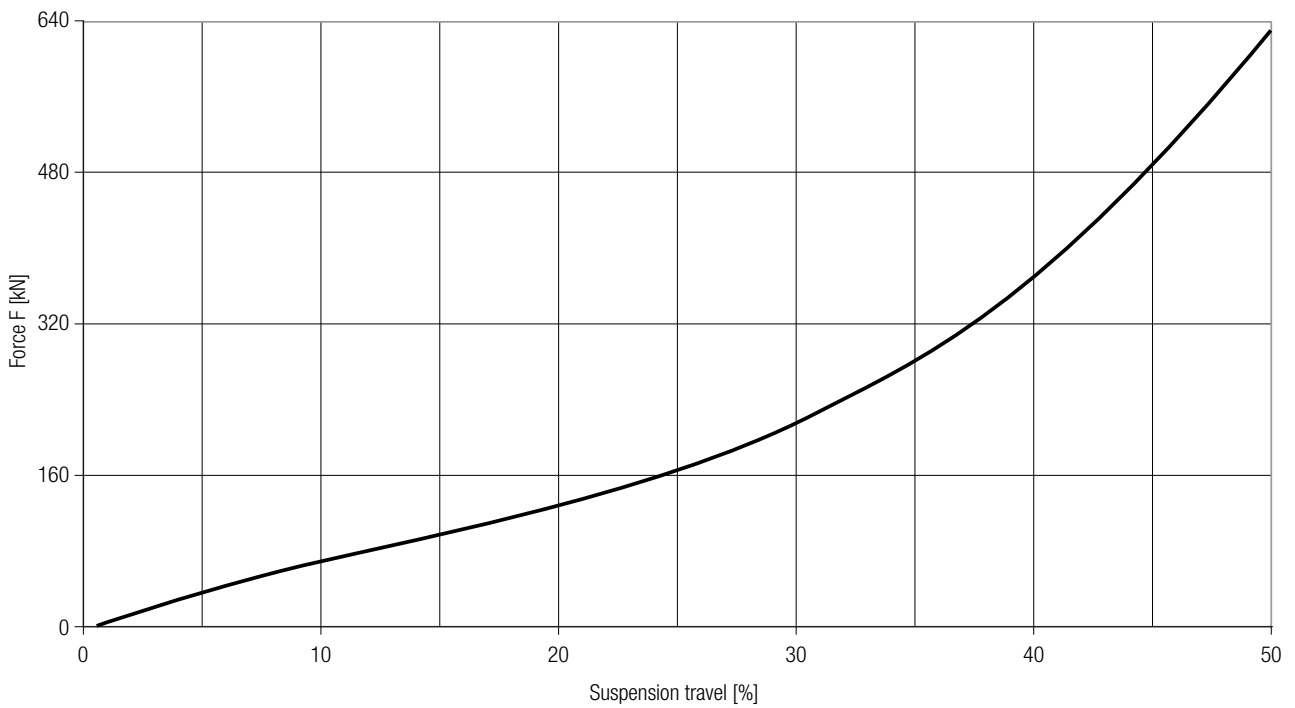
Force-Travel Ø 250



Energy-Travel Ø 315



Force-Travel Ø 315



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