

Extension Spring Check

Sample document with complete example values. It shows the report the purchased export produces for YOUR input - it is not itself a report for any part.

Project: Sample project

Part/Position: no real part

Prepared by: Sample, not released

Cylindrical helical extension spring made of round wire

Overall assessment: OK (stress check satisfied).

Geometry and material

Wire diameter d	2 mm
Coil diameter Dm / De / Di	20 / 22 / 18 mm
Spring index w = Dm/d	10
Stress correction factor k	1.1351 (Bergsträsser)
Active coils n	10
Spring rate R	2.038 N/mm
Shear modulus G	81,500 N/mm ²
Initial tension F0	0 N

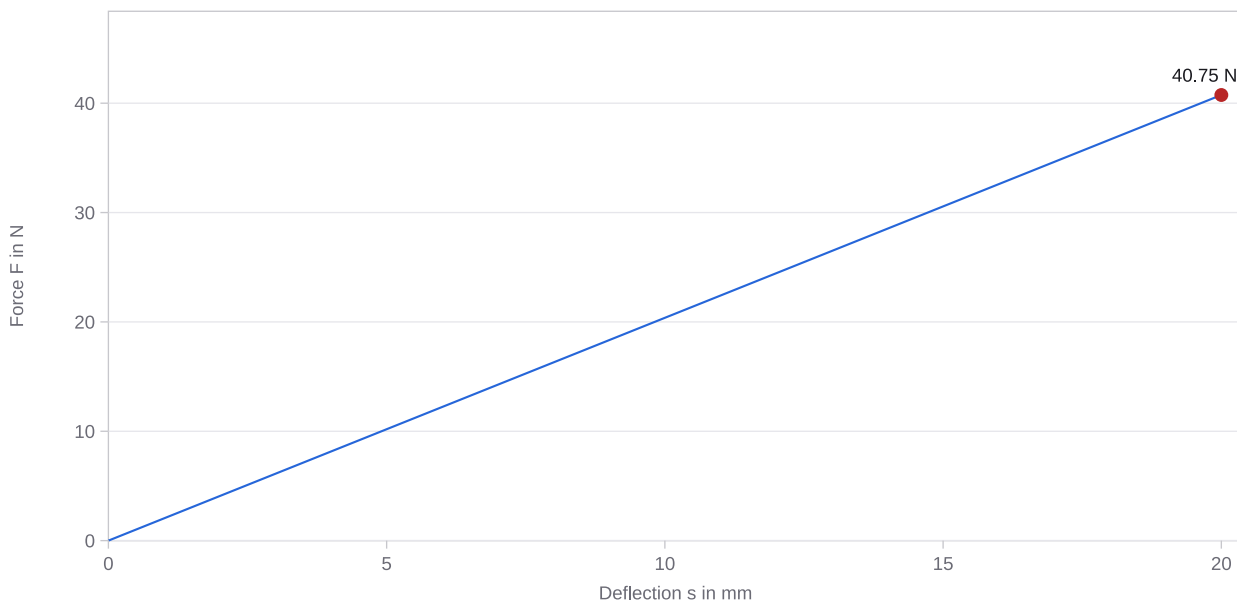
Operating point

Deflection s	20 mm
Useful force R·s	40.75 N
Total force F = F0 + R·s	40.75 N
Shear stress τ (uncorrected)	259.42 N/mm ²
Shear stress τ_k (with curvature correction)	294.48 N/mm ²
Stress from initial tension τ_0	0 N/mm ²

Assessment criterion

Criterion	Value	Limit	Status
Shear stress $\tau_k \leq \tau_{allow}$	294.48 N/mm ²	600 N/mm ²	● OK

Spring characteristic F(s) with operating point (starts at F0)



Calculation basis

Calculation per DIN EN 13906-2 for cylindrical helical extension springs made of round wire: spring rate $R = G \cdot d^4 / (8 \cdot D m^3 \cdot n)$, force $F = F_0 + R \cdot s$ with initial tension F_0 , shear stress $\tau = 8 \cdot F \cdot D m / (\pi \cdot d^3)$ and curvature correction k (Bergsträsser or user-defined). The static check compares the corrected shear stress τ_k with the allowable shear stress. Allowable values depend on the material and wire (cf. Rm of EN 10270). Under cyclic loading a fatigue strength check is required; the hooks (end loops) require a separate check due to additional bending and notch stress and are not covered here.

About this sample

All values on these pages come from a freely chosen example calculation and belong to no real part. The purchased export contains the same sections with your input, your header data (project, part, prepared by) and as searchable text. Pricing and scope: maschinenbaurechner.de/en/pricing

Note: The results are design and orientation aids. They do not replace independent verification, calculation and approval by a qualified person. The terms of use at maschinenbaurechner.de apply.