

Solid Edge Engineering Reference  
Design And Calculation Report

Compression Spring

GENERAL INFORMATION

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STRENGTH VALIDATION: Pass

Standard: ISO

INPUT DESIGN CONDITIONS

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DESIGN INPUT PARAMETERS

SPRING DIMENSIONS

(d) Wire Diameter: 1.60 mm  
Active Coils: 4  
(Do) Outside Diameter: 17.00 mm  
(Lo) Unloaded Length: 32.00 mm  
(Lp) Length at Preload: 28.00 mm  
(Df) Required Deflection: 15.00 mm

SPRING PARAMETERS

Select Assembly Dimensions Input: Length at Preload  
Safety Factor: 1  
Coil Direction: Left  
Coiling Process: Cold Coiled  
Spring Ends: Closed and Ground

MATERIAL PROPERTIES USED FOR CALCULATIONS

Material: Stainless Steel Wire - Grade 3  
Modulus of Rigidity: 71000 MPa  
Density: 7800 Kg/m<sup>3</sup>

MATERIAL PROPERTIES APPLIED TO THE MODEL

DESIGN INPUT OPTIONS

Loading Type: Based on Static Loading  
Buckle check for Guided Mounting: Yes  
Design Criteria: Find Loads for given Spring Parameters  
Diameter Selection: Specify Outer Diameter  
Spring Dimensions: Find Spring Index based on Wire and Spring Diameter  
Dimension Limits: Not applicable  
Diameter Constraints: Not applicable

Deflection Constraints: Not applicable

#### CALCULATE RESULTS

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##### OUTPUT DESIGN PARAMETERS

Spring Index: 9.625  
(Dm) Mean Diameter: 15.40 mm  
(Di) Inside Diameter: 13.80 mm  
(Lf) Length at Applied Load: 13.00 mm  
(Fp) Preload: 15925.245 mN  
(Ff) Applied Load: 75644.915 mN

##### STRENGTH VALIDATION

(P) Pitch of Unloaded Spring: 7.60 mm  
Deflection at Preload: 4.00 mm  
Total Deflection: 19.00 mm  
Spring Constant: 3.981  
Wahl's Stress Factor: 1.151  
Shear Stress at Preload: 175471.557 kPa  
Shear Stress at Applied Load: 833489.896 kPa  
Tensile Strength: 1720000.000 kPa  
Permissible Shear Stress: 860000.000 kPa  
(Ls) Solid Length: 12.43 mm  
Space between Active Coils: 6.00 mm  
Buckle Check - Guide Required?: No

END OF REPORT