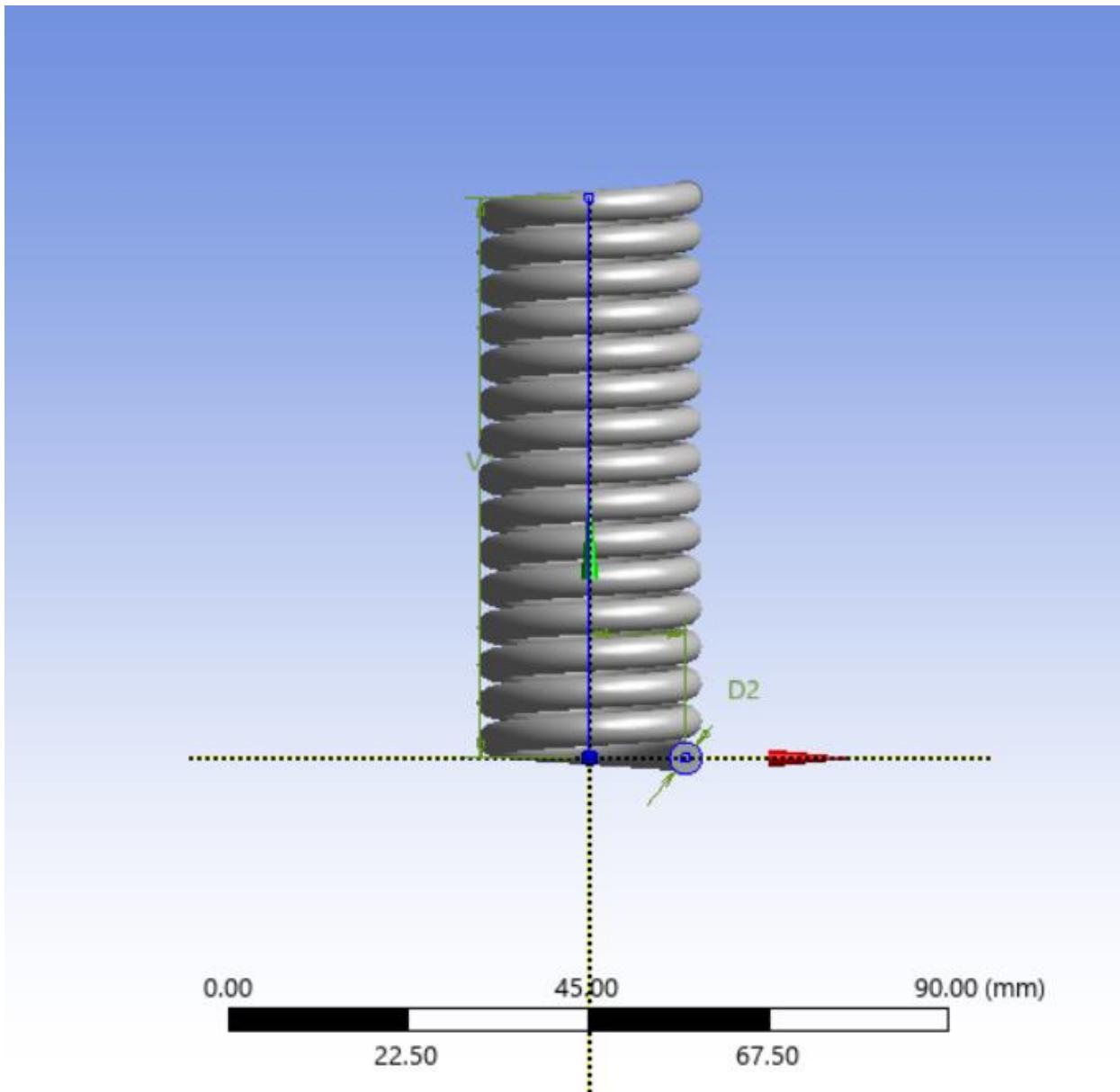


Project 26: ANSYS Static Structural: Deformation of a helical spring

Problem Statement: Calculate the deformation for a helical spring.

Geometry:



## Material Properties:

Structural Steel

Fatigue Data at zero mean stress comes from 1998 ASME BPV Code, Section 8, Div 2, Table 5-110.1

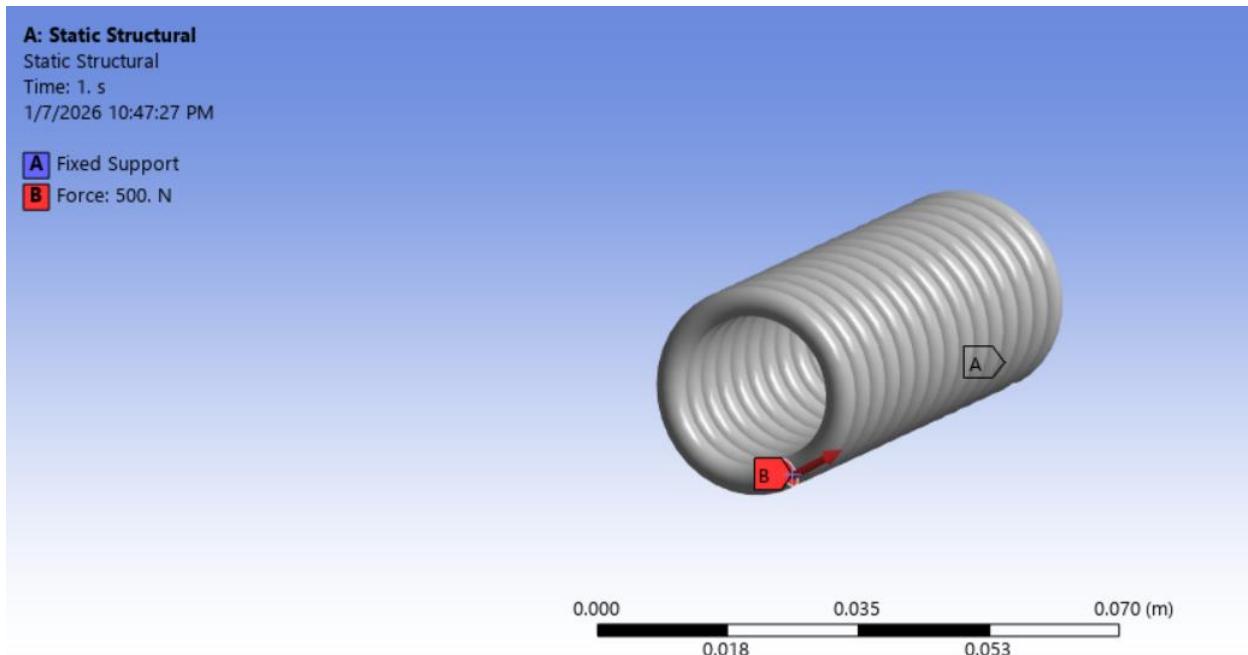
Click here to add a new material

Properties of Outline Row 3: Structural Steel

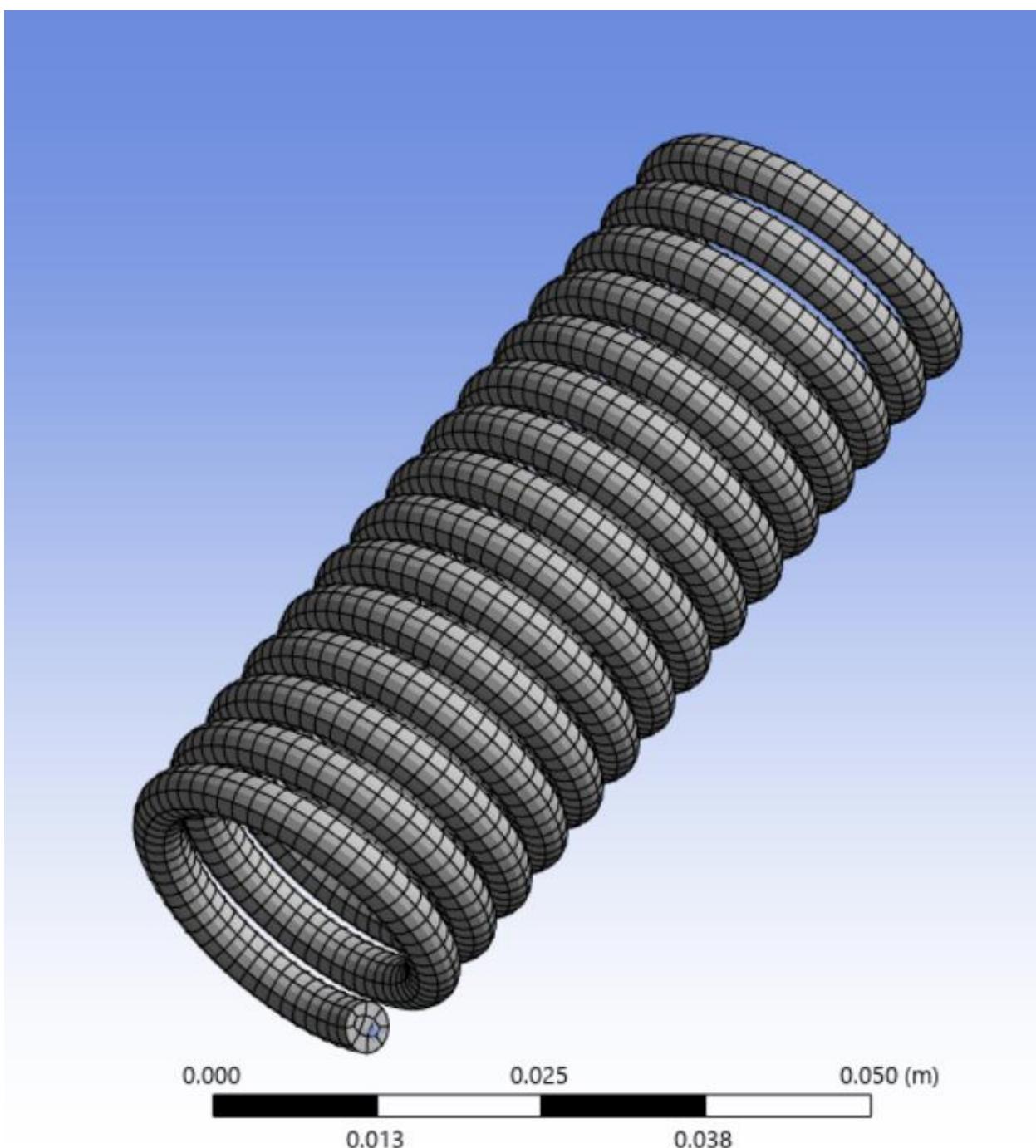
	A	B	C	D	E
1	Property	Value	Unit	X	Y
3	Density	7850	kg m^-3		
4	Isotropic Secant Coefficient of Thermal Expansion				
6	Isotropic Elasticity				
7	Derive from	Young's Modulus a...			
8	Young's Modulus	2E+11	Pa		
9	Poisson's Ratio	0.3			
10	Bulk Modulus	1.6667E+11	Pa		
11	Shear Modulus	7.6923E+10	Pa		
12	Strain-Life Parameters				
20	S-N Curve	Tabular			
24	Tensile Yield Strength	2.5E+08	Pa		
25	Compressive Yield Strength	2.5E+08	Pa		
26	Tensile Ultimate Strength	4.6E+08	Pa		
27	Compressive Ultimate Strength	0	Pa		

Boundary Conditions:

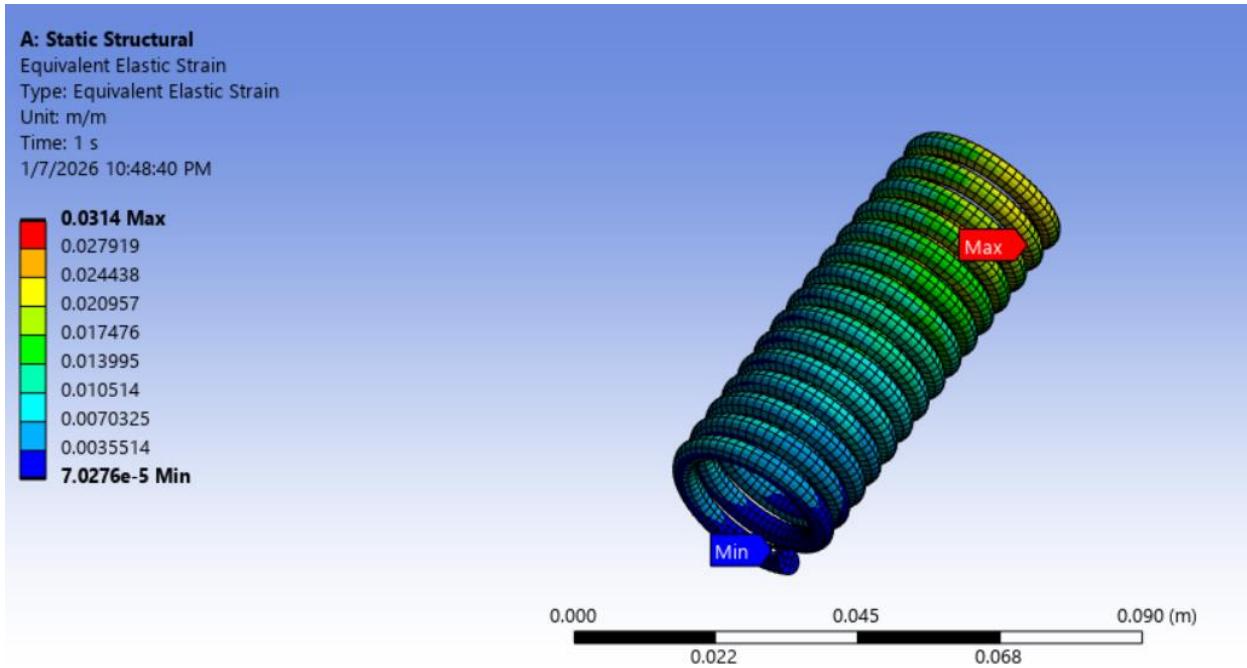
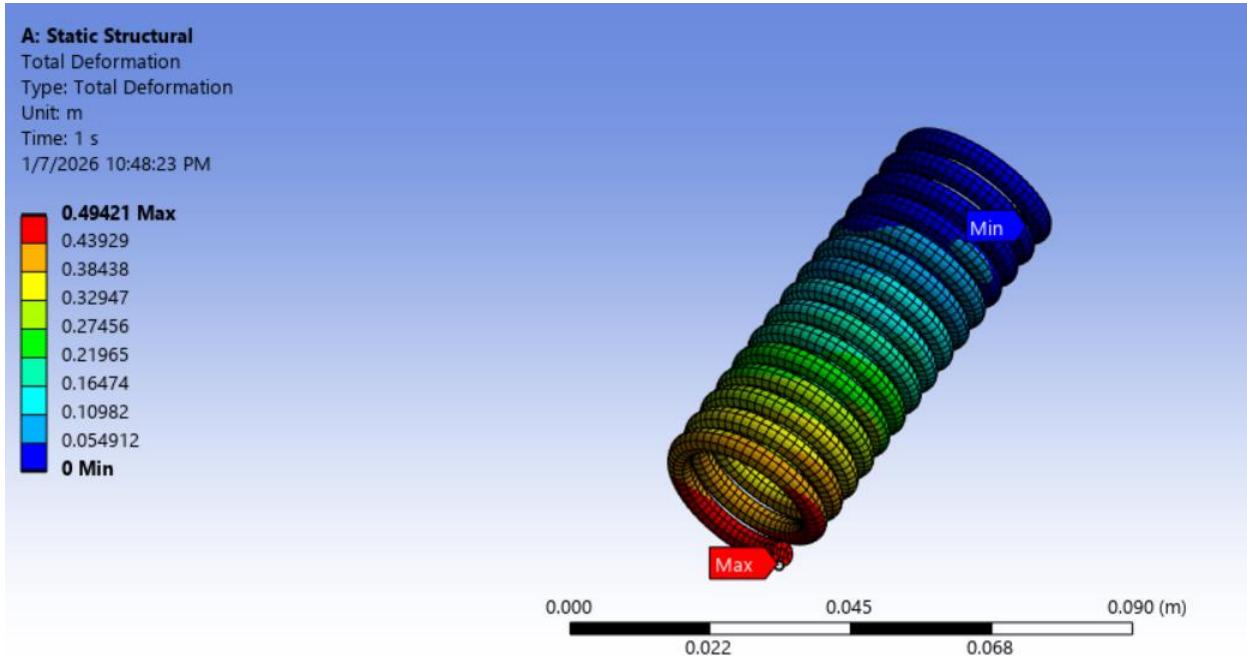
Bottom end surface is fixed. Top end surface has a force of 500N applied.



Mesh:



## Results: Deformation, stress, strain.



**A: Static Structural**

Equivalent Stress

Type: Equivalent (von-Mises) Stress

Unit: Pa

Time: 1 s

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**6.2523e9 Max**

5.5588e9

4.8653e9

4.1718e9

3.4783e9

2.7848e9

2.0913e9

1.3978e9

7.0429e8

**1.0787e7 Min**