

Shaft Component Generator (Version: 2021 (Build 250183000, 183))

10/02/2022

Project Info**Calculation****Material**

Material	Aluminum, alloy
Modulus of Elasticity E	73000 MPa
Modulus of Rigidity G	26000 MPa
Density	ρ 2700 kg/m ³

Calculation Properties

Include		
Yes	Density	ρ 2700 kg/m ³
Yes	Shear Displacement Ratio β	1,188 ul
	Number of Divisions	1000 ul
	Mode of reduced stress	HMH

Loads

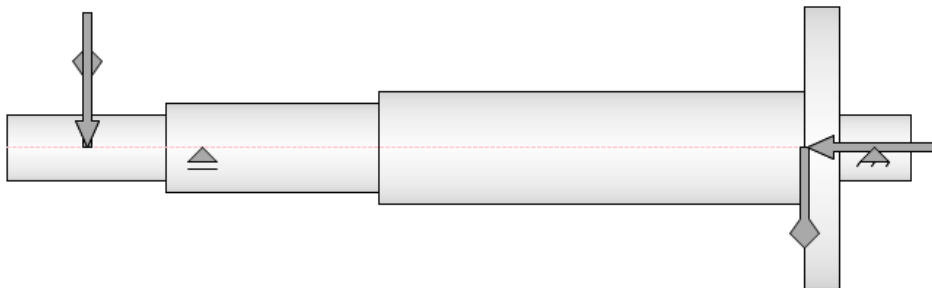
Index	Location	Radial Force				Bending Moment				Continuous Load					Axial Force	Torque	Deflection				Deflection Angle
		Y	X	Size	Direction	Y	X	Size	Direction	Y	X	Size	Direction	Length			Y	X	Size	Direction	
1	22,5 mm															8,400 N m	-7,511 microm	5,349 microm	9,221 microm	144,54 deg	0,02 deg
2	22,5 mm	70,632 N		70,632 N													-7,511 microm	5,349 microm	9,221 microm	144,54 deg	0,02 deg
3	22,5 mm	73,988 N	-102,237 N	126,201 N	305,89 deg												-7,511 microm	5,349 microm	9,221 microm	144,54 deg	0,02 deg
4	225 mm															-8,400 N m	0,978 microm	-0,720 microm	1,214 microm	323,65 deg	0,00 deg
5	226 mm														-155,560 N		0,931 microm	-0,685 microm	1,156 microm	323,65 deg	0,00 deg

Supports

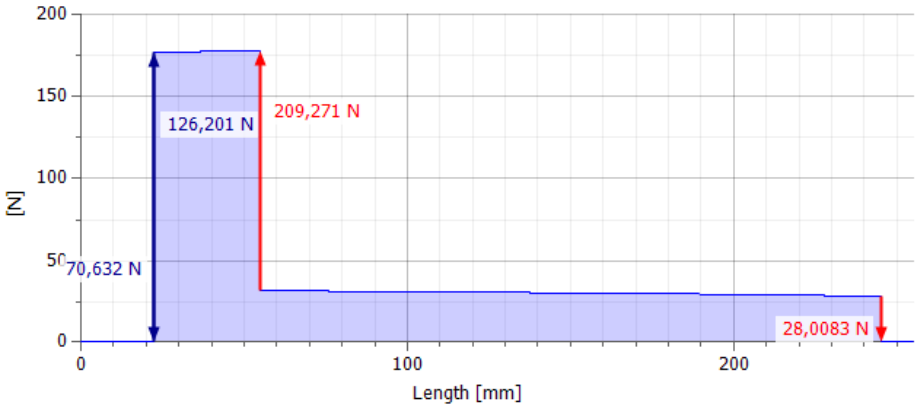
Index	Type	Location	Reaction Force					Yielding	Type	Deflection				Deflection Angle
			Y	X	Size	Direction	Axial Force			Y	X	Size	Direction	
1	Free	55 mm	171,640 N	-119,725 N	209,271 N	325,10 deg			User	0,000 microm	-0,000 microm	0,000 microm	296,51 deg	0,01 deg
2	Fixed	245 mm	-21,878 N	17,488 N	28,008 N	141,36 deg	-155,560 N		User	-0,000 microm	-0,000 microm	0,000 microm	208,82 deg	0,00 deg

Results

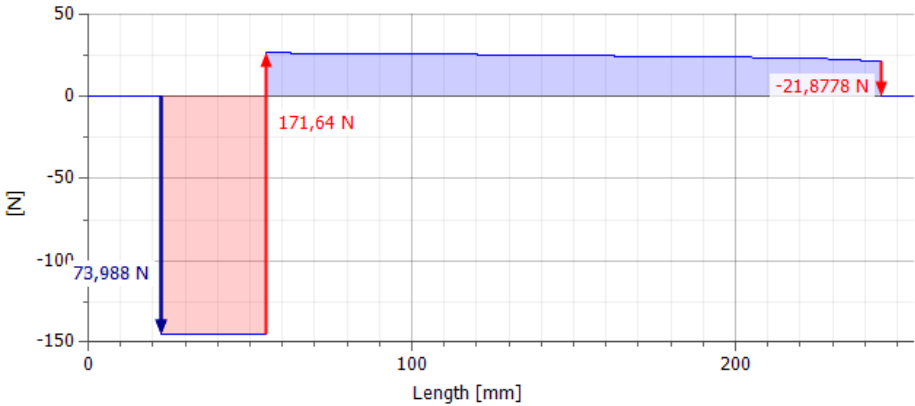
Length	L	255,000 mm
Mass	Mass	0,524 kg
Maximal Bending Stress	σ_B	5,880 MPa
Maximal Shear Stress	τ_S	0,622 MPa
Maximal Torsional Stress	τ	6,188 MPa
Maximal Tension Stress	σ_T	0,546 MPa
Maximal Reduced Stress	σ_{red}	12,273 MPa
Maximal Deflection	f_{max}	16,312 microm
Angle of Twist	φ	0,08 deg

Preview

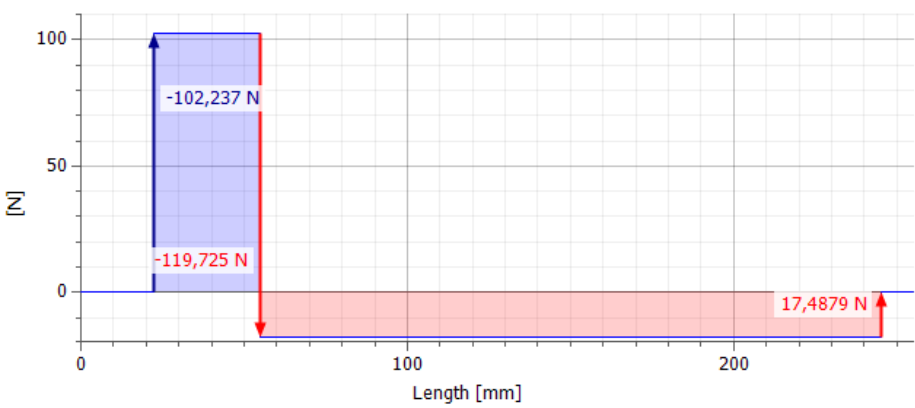
Shear Force



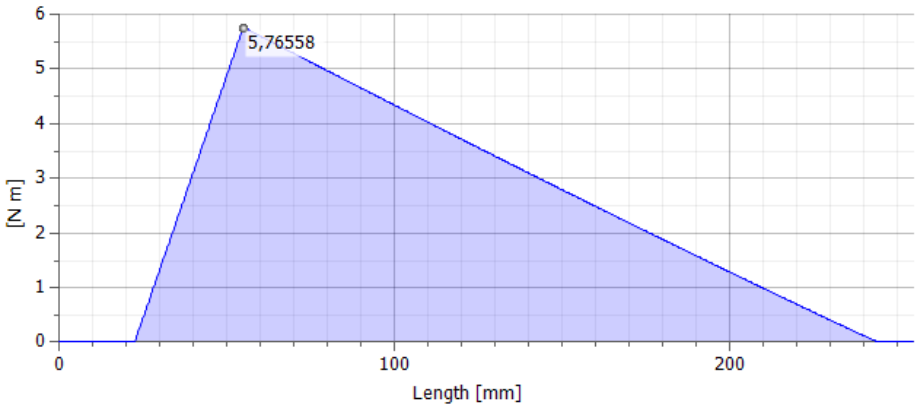
Shear Force, YZ Plane



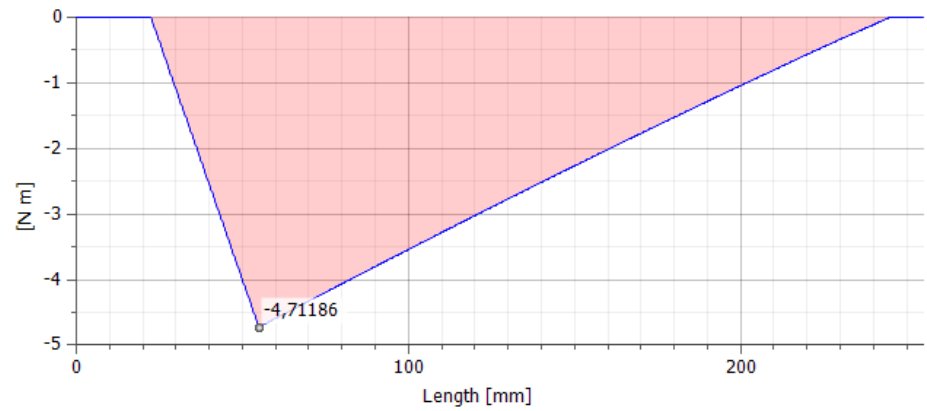
Shear Force, XZ Plane



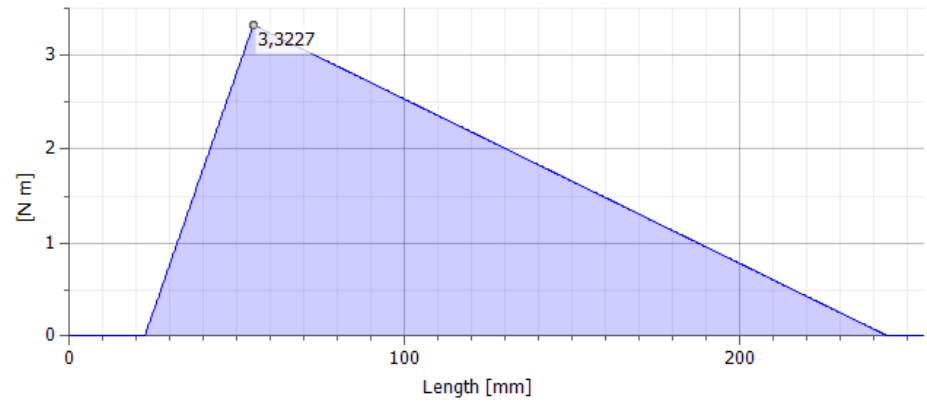
Bending Moment



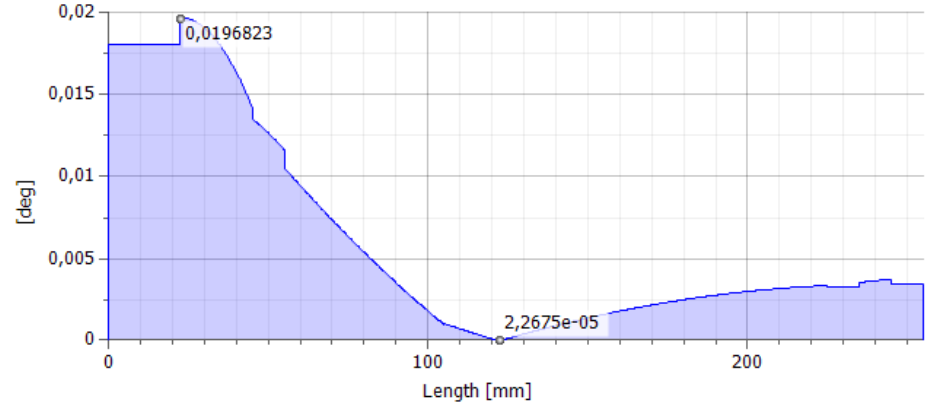
Bending Moment, YZ Plane



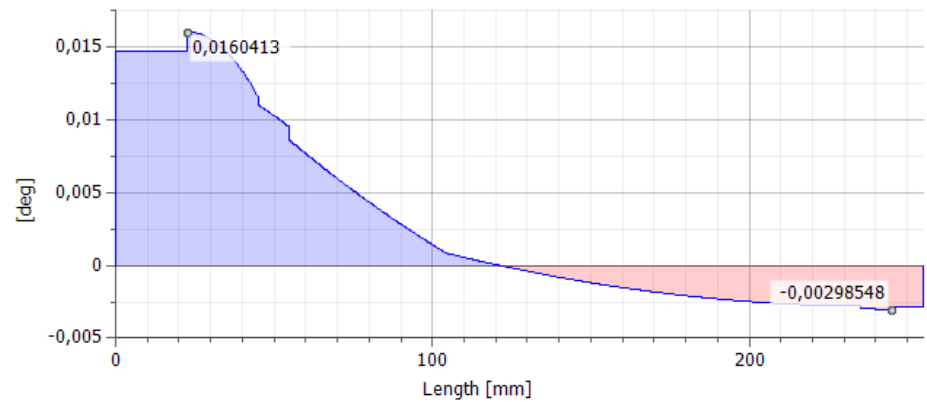
Bending Moment, XZ Plane



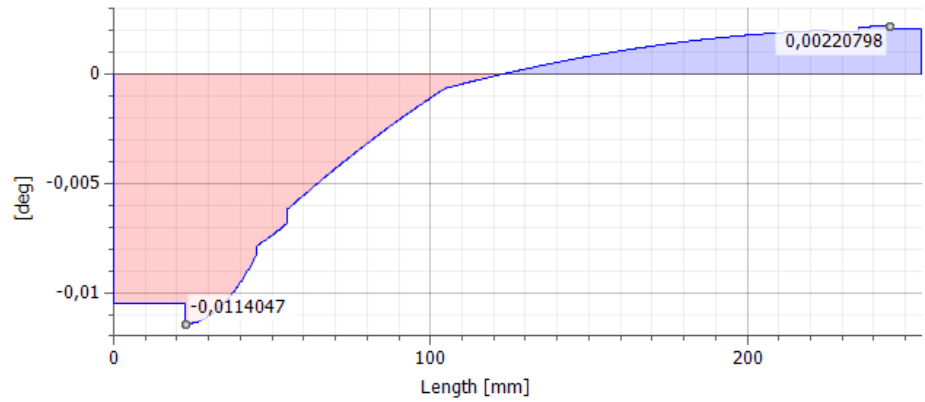
Deflection Angle



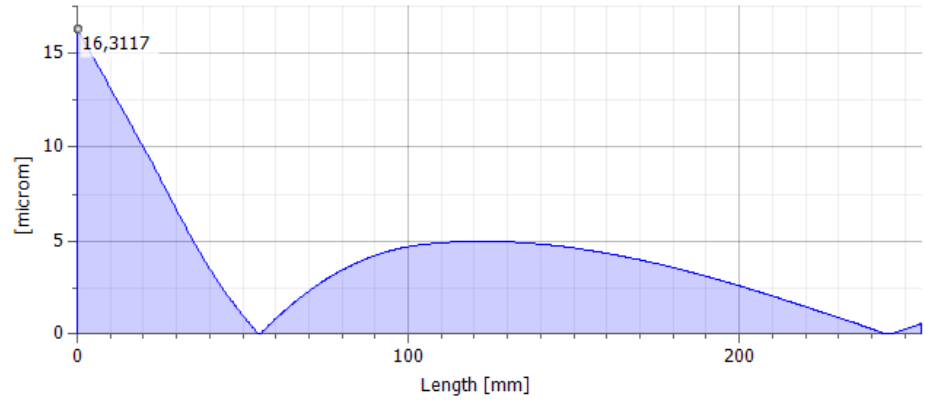
Deflection Angle, YZ Plane



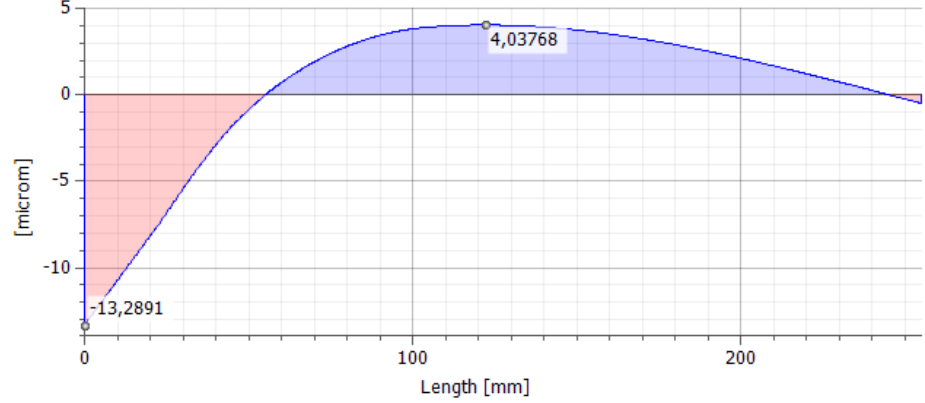
Deflection Angle, XZ Plane



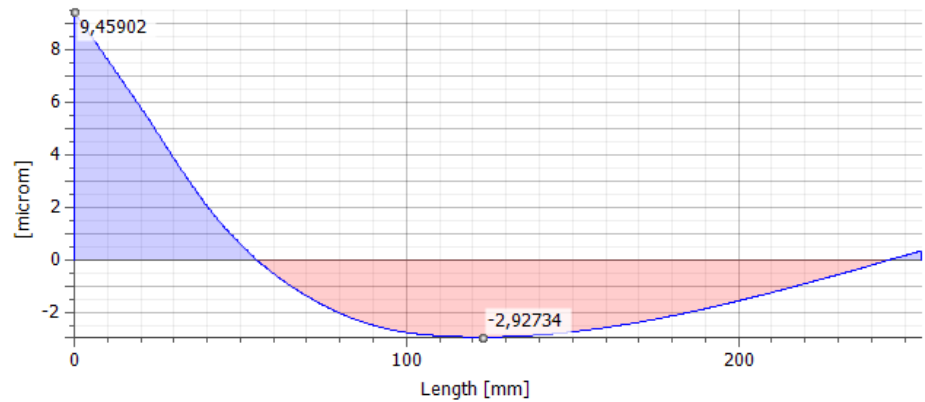
Deflection



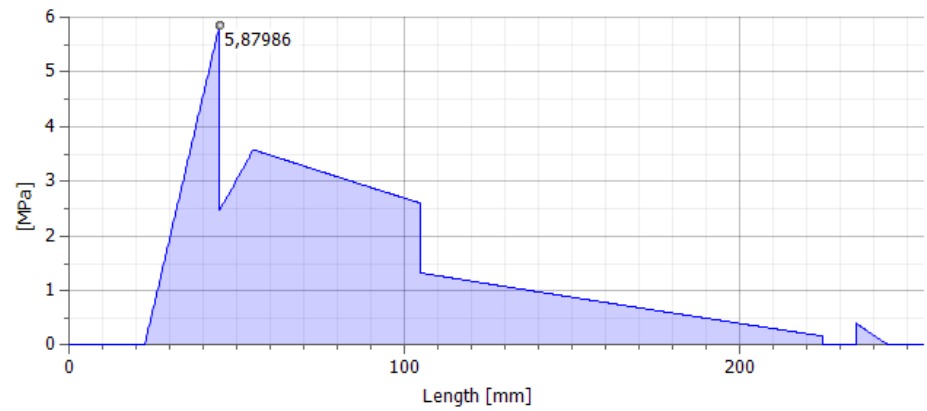
Deflection, YZ Plane



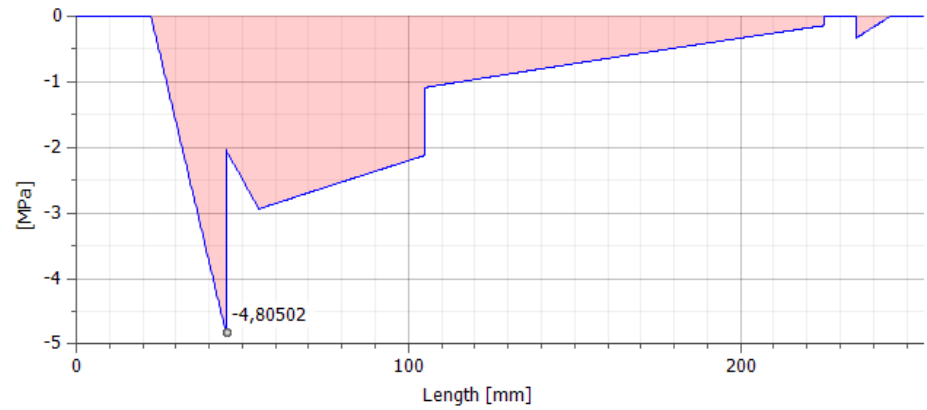
Deflection, XZ Plane



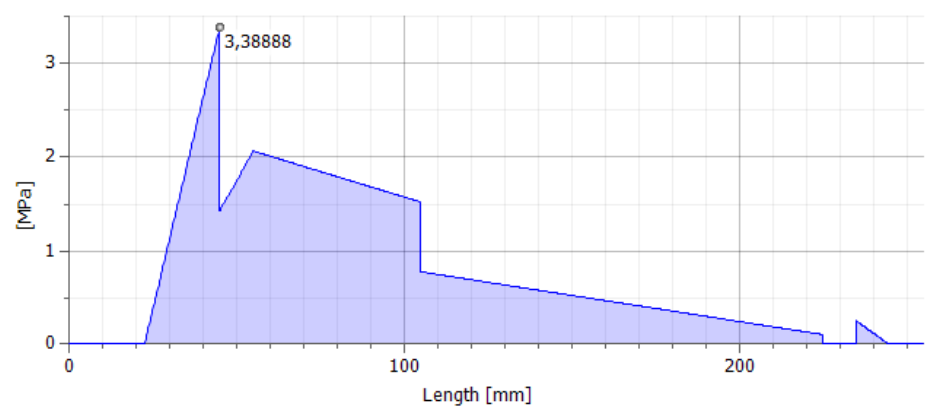
Bending Stress



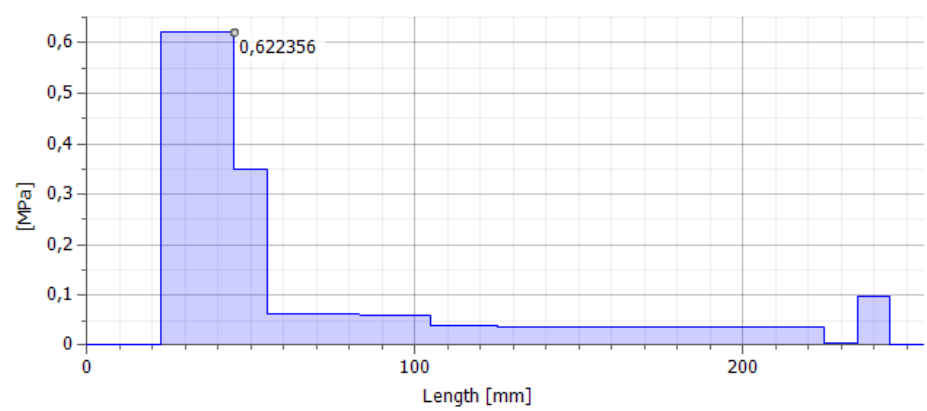
Bending Stress, YZ Plane



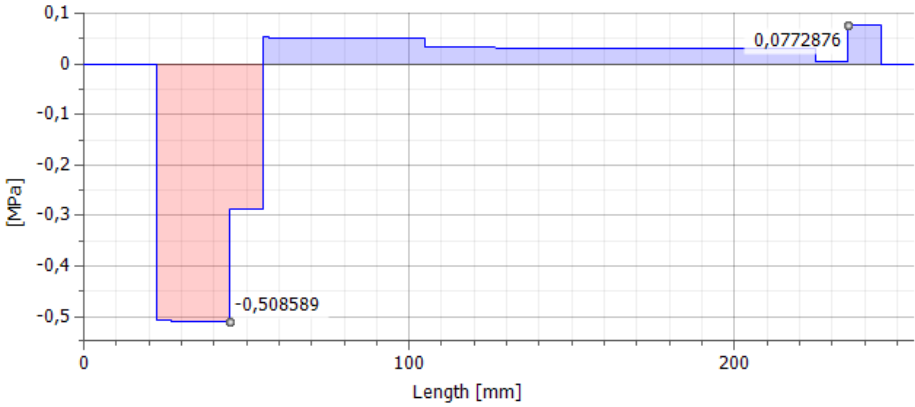
Bending Stress, XZ Plane



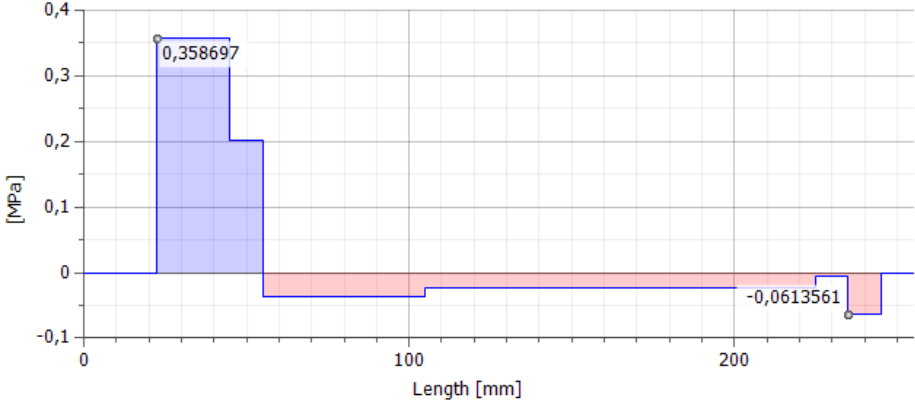
Shear Stress



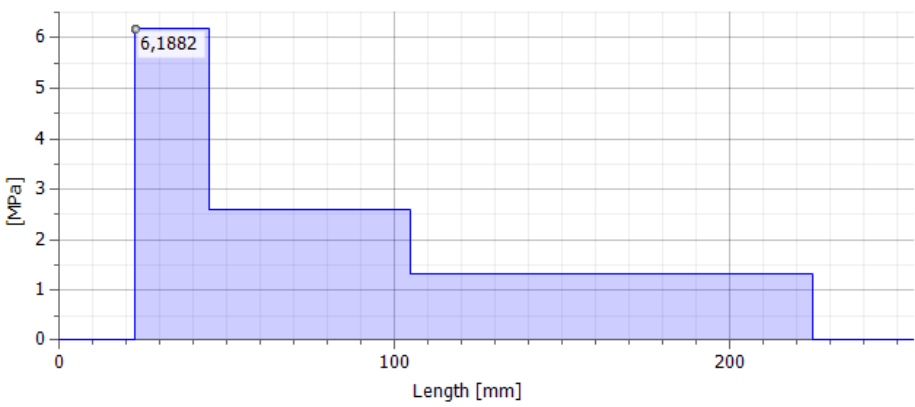
Shear Stress, YZ Plane



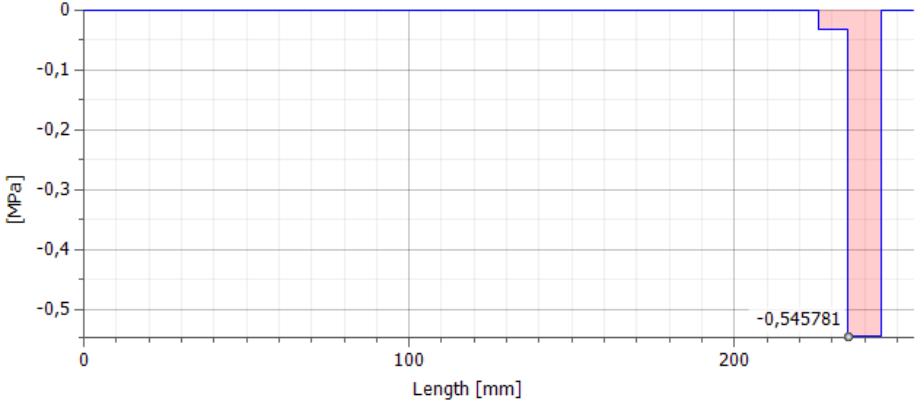
Shear Stress, XZ Plane



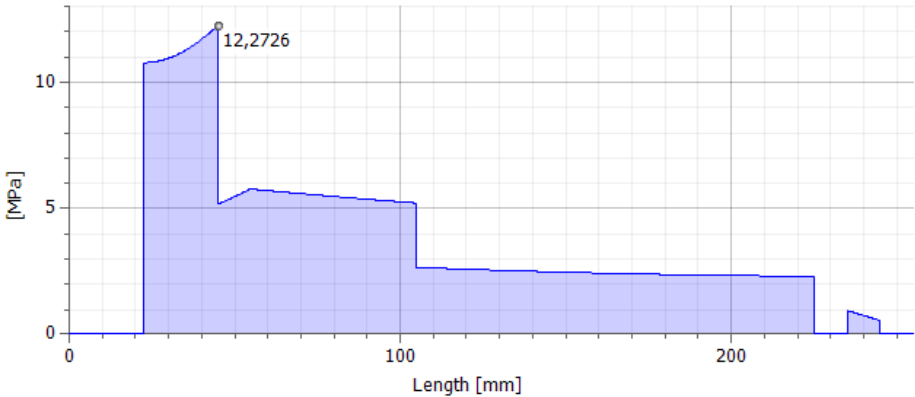
Torsional Stress



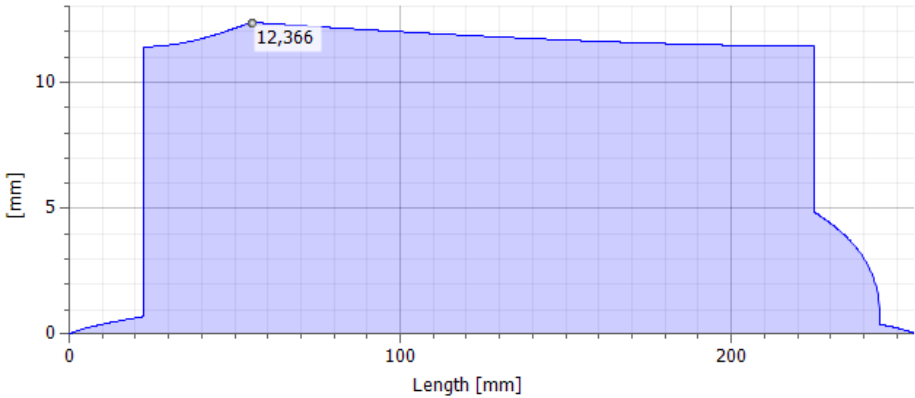
Tension Stress



Reduced Stress



Ideal Diameter



Summary of Messages

11:17:47 p. m. Calculation: Calculated.