V2 250N STATIC LOAD

Study Report

Analyzed File	V2 v6
Version	Autodesk Fusion 360 (2.0.3803)
Creation Date	2018-03-18, 21:17:37
Author	

⊟ Simulation Model 1:1

⊟ Study 1 - (250N) Static Stress

⊟ Study Properties

Study Type	Static Stress
Last Modification Date	2018-03-18, 21:11:20

⊟ Settings

⊟ General

Contact Tolerance	0.1 mm
Remove Rigid Body Modes	No

⊟ Mesh

Average Element Size (% of model size)	
Solids	10
Scale Mesh Size Per Part	No
Average Element Size (absolute value)	-
Element Order	Parabolic
Create Curved Mesh Elements	Yes
Max. Turn Angle on Curves (Deg.)	60
Max. Adjacent Mesh Size Ratio	1.5
Max. Aspect Ratio	10
Minimum Element Size (% of average size)	20

Adaptive Mesh Refinement

Number of Refinement Steps	0
Results Convergence Tolerance (%)	20
Portion of Elements to Refine (%)	10
Results for Baseline Accuracy	Von Mises Stress

Materials

Component	Material	Safety Factor
Headset V2 v3:1	PLA (3D Printed)	Yield Strength
Back Cover V2 v1:1	PLA (3D Printed)	Yield Strength
Top Cover V2 v1:1	PLA (3D Printed)	Yield Strength

PLA (3D Printed)

Density	3.75E-07 kg / mm^3
Young's Modulus	3400 MPa
Poisson's Ratio	0.38
Yield Strength	13 MPa
Ultimate Tensile Strength	15 MPa
Thermal Conductivity	1.6E-04 W / (mm C)
Thermal Expansion Coefficient	8.57E-05 / C
Specific Heat	1500 J / (kg C)

Contacts

Bonded

Name
[S] Bonded1 [Top Cover V2 v1:1||Back Cover V2 v1:1]
[S] Bonded2 [Top Cover V2 v1:1||Back Cover V2 v1:1]
[S] Bonded3 [Headset V2 v3:1||Back Cover V2 v1:1]
[S] Bonded4 [Headset V2 v3:1||Back Cover V2 v1:1]
[S] Bonded5 [Headset V2 v3:1||Top Cover V2 v1:1]
[S] Bonded6 [Headset V2 v3:1||Top Cover V2 v1:1]
[S] Bonded7 [Headset V2 v3:1||Top Cover V2 v1:1]
[S] Bonded8 [Headset V2 v3:1||Top Cover V2 v1:1]
[S] Bonded9 [Headset V2 v3:1||Top Cover V2 v1:1]

Mesh

Type	Nodes	Elements
Solids	32344	15916

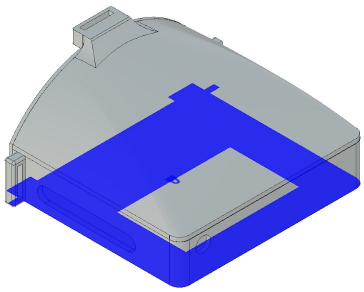
Load Case1

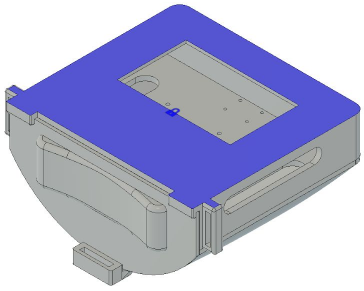
Constraints

Fixed1

Type	Fixed
Ux	Yes
Uy	Yes
Uz	Yes

Selected Entities



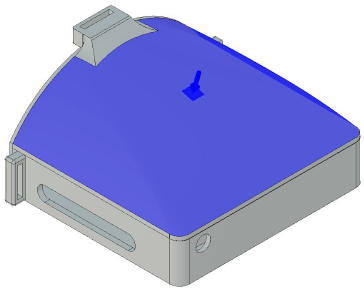


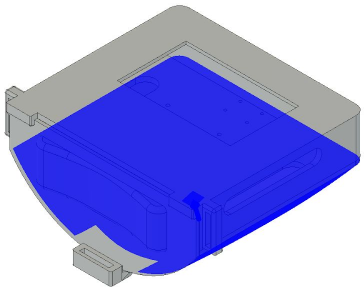
Loads

Pressure1

Type	Pressure
Magnitude	0.006757 MPa

Selected Entities





Results

Result Summary

Name	Minimum	Maximum
Safety Factor		
Per Body	10.82	15
Stress		
Von Mises	1.235E-08 MPa	1.202 MPa
1st Principal	-0.5208 MPa	0.8706 MPa
3rd Principal	-1.566 MPa	0.4062 MPa

Normal XX	-0.9674 MPa	0.6095 MPa
Normal YY	-1.267 MPa	0.7641 MPa
Normal ZZ	-0.8054 MPa	0.597 MPa
Shear XY	-0.4063 MPa	0.4406 MPa
Shear YZ	-0.5675 MPa	0.3924 MPa
Shear ZX	-0.322 MPa	0.3147 MPa
Displacement		
Total	0 mm	0.07292 mm
X	-0.006354 mm	0.00657 mm
Y	-0.06801 mm	0.002268 mm
Z	-0.01252 mm	0.02651 mm
Reaction Force		
Total	0 N	3.762 N
X	-1.137 N	1.459 N
Y	-1.684 N	3.566 N
Z	-3.554 N	2.64 N
Strain		
Equivalent	5.245E-12	5.633E-04
1st Principal	2.055E-13	3.957E-04
3rd Principal	-5.752E-04	-1.006E-12
Normal XX	-1.867E-04	9.63E-05
Normal YY	-2.485E-04	1.429E-04
Normal ZZ	-1.442E-04	1.103E-04
Shear XY	-3.298E-04	3.576E-04
Shear YZ	-4.607E-04	3.185E-04
Shear ZX	-2.614E-04	2.554E-04
Contact Pressure		
Total	0 MPa	0.8256 MPa
X	-0.3559 MPa	0.2522 MPa
Y	-0.8212 MPa	0.7922 MPa
Z	-0.4391 MPa	0.3134 MPa

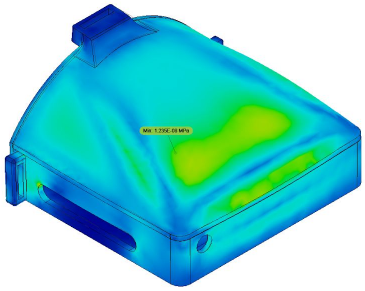
⊟ Reaction Forces

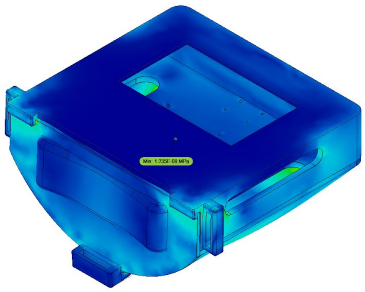
Constraint Name	Reaction Force		Reaction Moment	
	Magnitude	Component (X,Y,Z)	Magnitude	Component (X,Y,Z)
Fixed1	213.8 N	-1.354E-04 N	695.1 N mm	-695.1 N mm
		208.9 N		-1.084 N mm
		-45.41 N		1.055 N mm

Stress

Von Mises

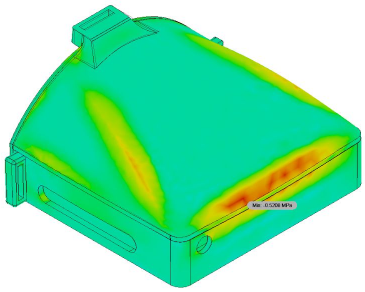
[MPa] 0 1.202

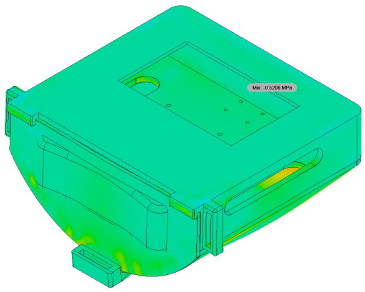




1st Principal

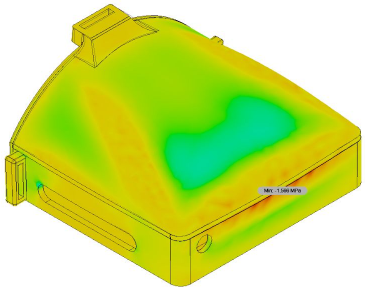
[MPa] -0.5208 0.8706

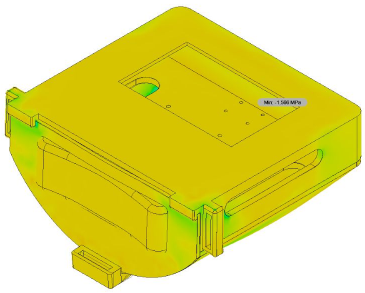




⊟ **3rd Principal**

[MPa] -1.566 0.406

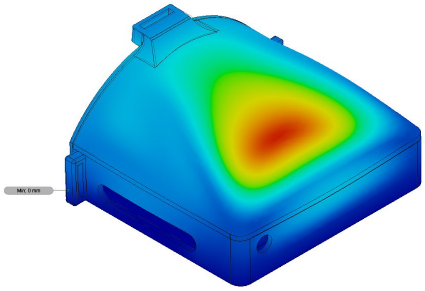


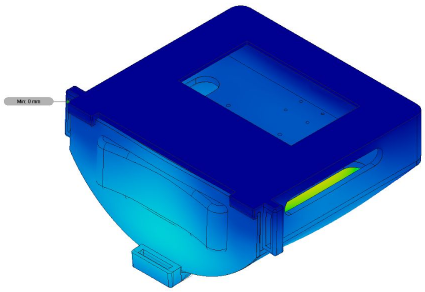


⊟ Displacement

⊟ Total

[mm] 0 0.07292

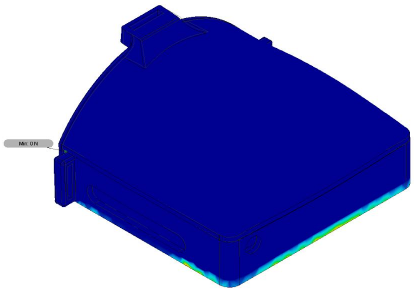


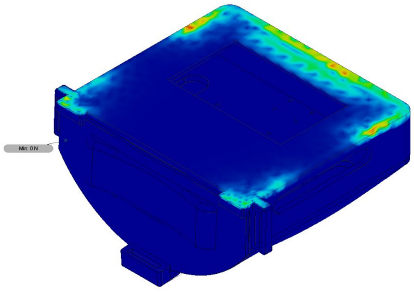


⊟ Reaction Force

⊟ **Total**

[N] 0 3.762

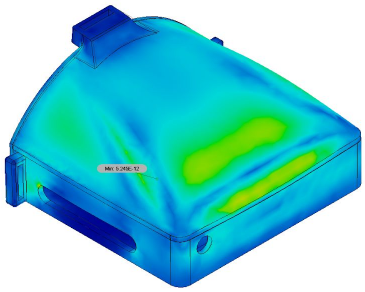


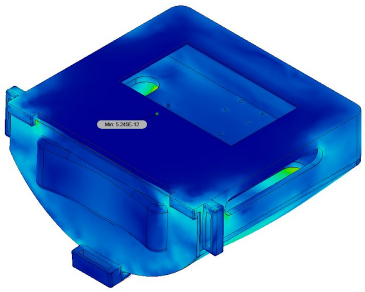


⊟ **Strain**

⊟ **Equivalent**

0  5.633E-04

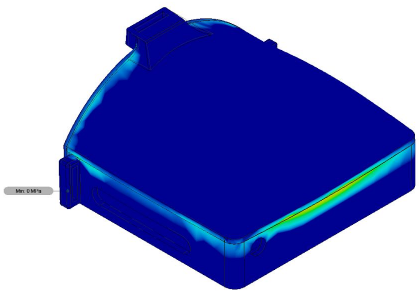


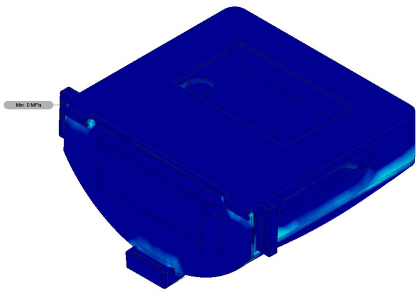


⊟ Contact Pressure

⊟ Total

[MPa] 0 0.8256




Min: 0 MPa