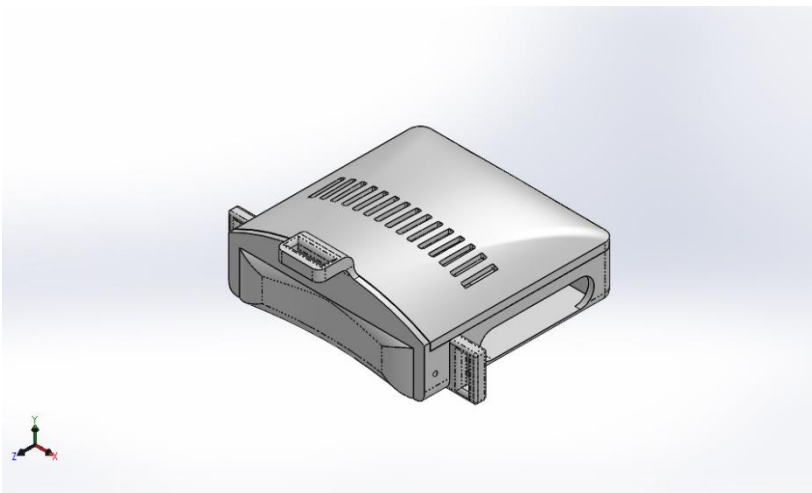


Simulation of Assembly V5

Date: Tuesday, March 20, 2018
Designer: Solidworks
Study name: Drop Test 1
Analysis type: Drop Test

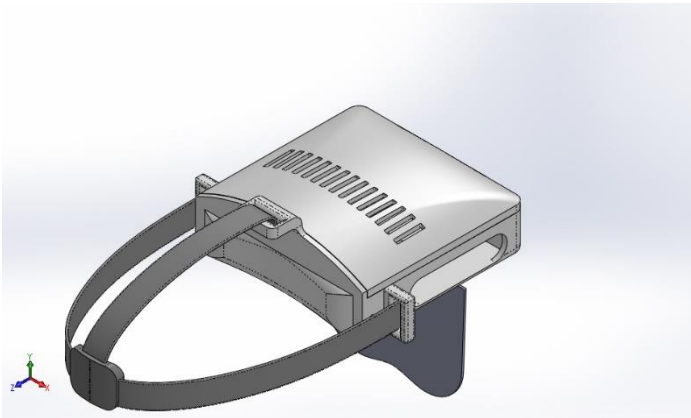
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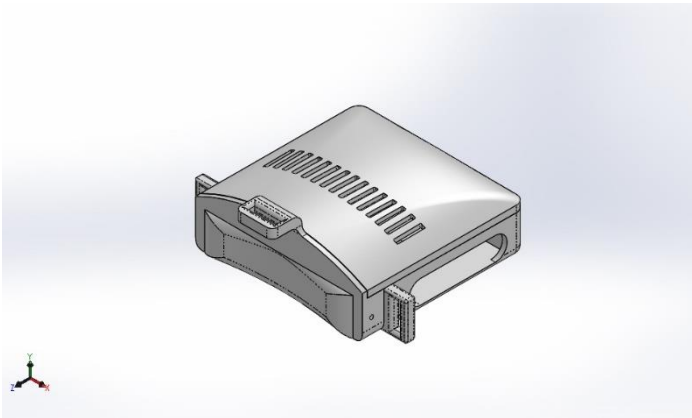


Description
No Data

Assumptions

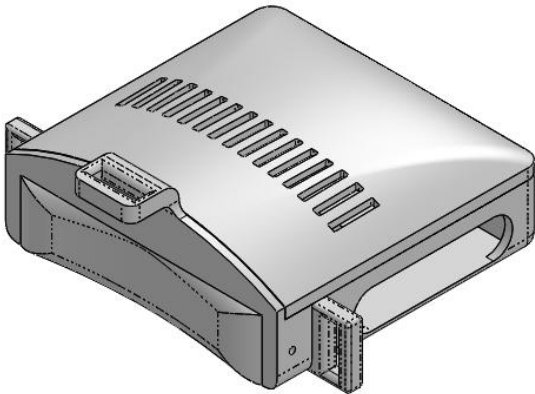


Original Model



Model Analyzed

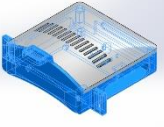
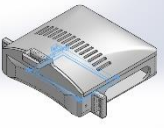
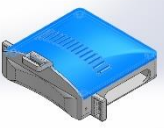
Model Information



Model name: Assembly V5
Current Configuration: Default

Solid Bodies

Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
-----------------------------	------------	-----------------------	-----------------------------

Fillet42 	Solid Body	Mass:0.0930418 kg Volume:0.000297734 m³ Density:312.5 kg/m³ Weight:0.91181 N	C:\Users\Amir Shawwa\Desktop\W18\ME CH 490\MECH 490\ARHeadset\CADS\AR V5\Headset V5.SLDPRT Mar 20 19:58:34 2018
Boss-Extrude7 	Solid Body	Mass:0.183091 kg Volume:7.85796e-005 m³ Density:2330 kg/m³ Weight:1.79429 N	C:\Users\Amir Shawwa\Desktop\W18\ME CH 490\MECH 490\ARHeadset\CADS\AR V4\Screen V4.SLDPRT Mar 17 00:05:53 2018
Cut-Extrude3 	Solid Body	Mass:0.0413043 kg Volume:0.000132173 m³ Density:312.501 kg/m³ Weight:0.404782 N	C:\Users\Amir Shawwa\Desktop\W18\ME CH 490\MECH 490\ARHeadset\CADS\AR V5\Top Cover V5.SLDPRT Mar 20 00:49:03 2018



Study Properties

Study name	Drop Test 1
Analysis type	Drop Test
Mesh type	Solid Mesh
Large displacement	On
Result folder	SOLIDWORKS document (C:\Users\Amir Shawwa\Desktop\W18\MECH 490\MECH 490\ARHeadset\CADS\AR V5\FEA)

Setup Information

Type	Drop height
Drop Height from Centroid	1 m
Gravity	9.81 m/s ²
Gravity Reference	Top Plane
Friction Coefficient	0
Target Stiffness	Rigid target
Critical Damping Ratio	0

Result Options

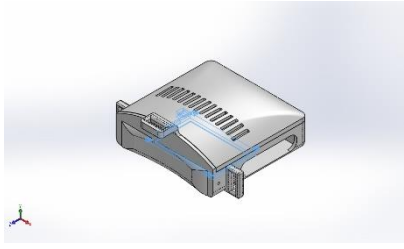
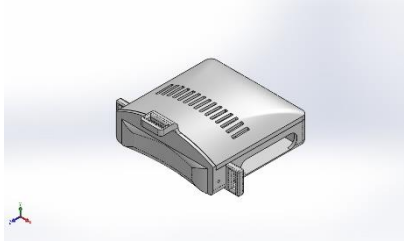
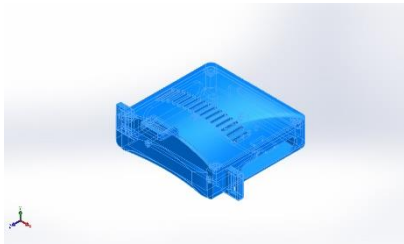
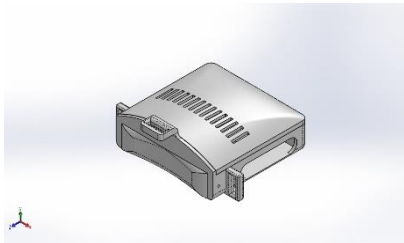
Solution Time After Impact	296.3 microsec
Save Results Starting From	0 microsec
No. of Plots	25
No. of Graph Steps Per Plot	20
Number of vertex	0

Units

Unit system:	SI (MKS)
Length/Displacement	mm
Temperature	Kelvin
Angular velocity	Rad/sec
Pressure/Stress	N/m ²

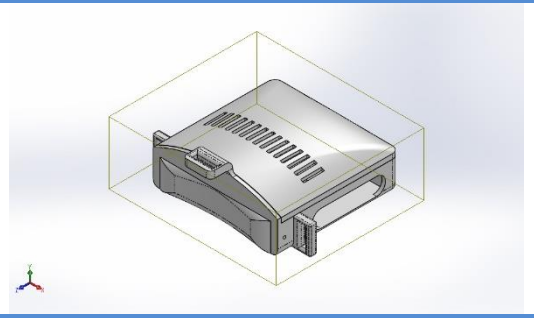


Material Properties

Model Reference	Properties	Components
	Name: Silicon Model type: Linear Elastic Isotropic Default failure criterion: Unknown Yield strength: 1.2e+008 N/m ² Elastic modulus: 1.124e+011 N/m ² Poisson's ratio: 0.28 Mass density: 2330 kg/m ³ Shear modulus: 4.9e+010 N/m ²	SolidBody 1(Boss-Extrude7)(Screen V4-1)
Curve Data:N/A		
	Name: Acrylic (Medium-high impact) Model type: Linear Elastic Isotropic Default failure criterion: Unknown Yield strength: 4.5e+007 N/m ² Tensile strength: 7.3e+007 N/m ² Elastic modulus: 3e+009 N/m ² Poisson's ratio: 0.35 Mass density: 1200 kg/m ³ Shear modulus: 8.9e+008 N/m ² Thermal expansion coefficient: 5.2e-005 /Kelvin	SolidBody 1(Fillet42)(Headset V5-1), SolidBody 1(Cut-Extrude3)(Top Cover V5-2)
Curve Data:N/A		
	Name: PLA (3D Printed) Model type: Linear Elastic Isotropic Default failure criterion: Unknown Yield strength: 1.3e+007 N/m ² Tensile strength: 1.5e+007 N/m ² Elastic modulus: 3.4e+009 N/m ² Poisson's ratio: 0.38 Mass density: 312.5 kg/m ³	<Material_ComponentList1/>
Curve Data:N/A		
	Name: ABS Model type: Linear Elastic Isotropic Default failure criterion: Unknown Tensile strength: 3e+007 N/m ² Elastic modulus: 2e+009 N/m ² Poisson's ratio: 0.394 Mass density: 1020 kg/m ³ Shear modulus: 3.189e+008 N/m ²	<Material_ComponentList1/>
Curve Data:N/A		



Contact Information

Contact	Contact Image	Contact Properties
Global Contact		Type: Bonded Components: 1 component(s) Options: Compatible mesh

Mesh information

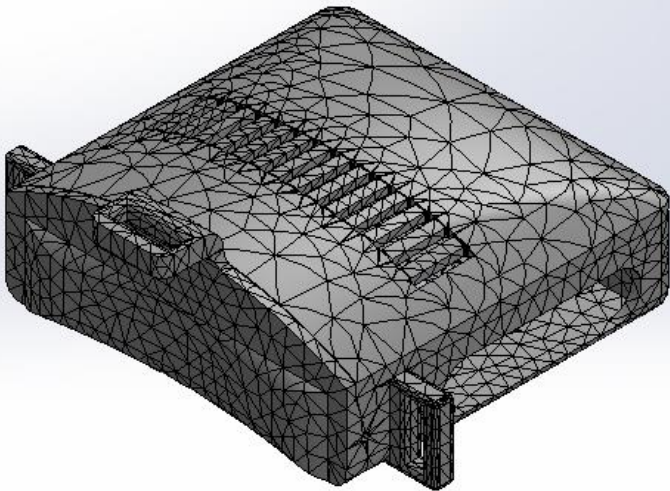
Mesh type	Solid Mesh
Mesher Used:	Curvature-based mesh
Jacobian points	4 Points
Maximum element size	36.5991 mm
Minimum element size	7.31982 mm
Mesh Quality	High
Remesh failed parts with incompatible mesh	Off

Mesh information - Details

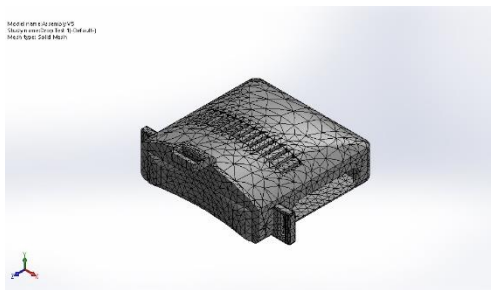
Total Nodes	24823
Total Elements	28336
Maximum Aspect Ratio	40.277
% of elements with Aspect Ratio < 3	66.5
% of elements with Aspect Ratio > 10	2.71
% of distorted elements(Jacobian)	0
Time to complete mesh(hh:mm:ss):	00:00:04
Computer name:	LENOVO-PC



Model name: Assembly V5
Study name: Drop Test 1(-Default-)
Mesh type: Solid Mesh

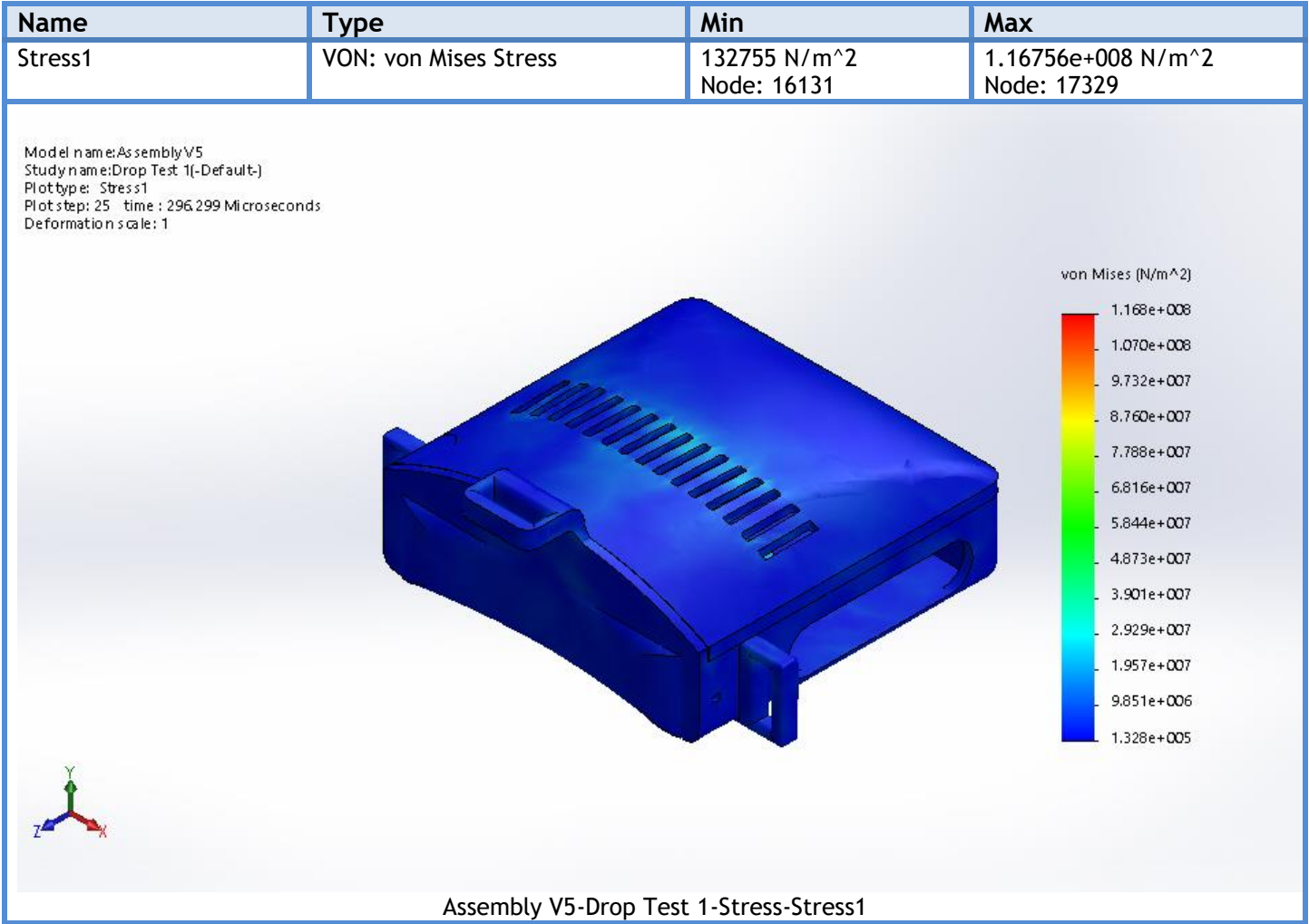


Mesh Control Information:

Mesh Control Name	Mesh Control Image	Mesh Control Details
Control-1		Entities: 1 Solid Body (s) Units: mm Size: 6.67924 Ratio: 1.5

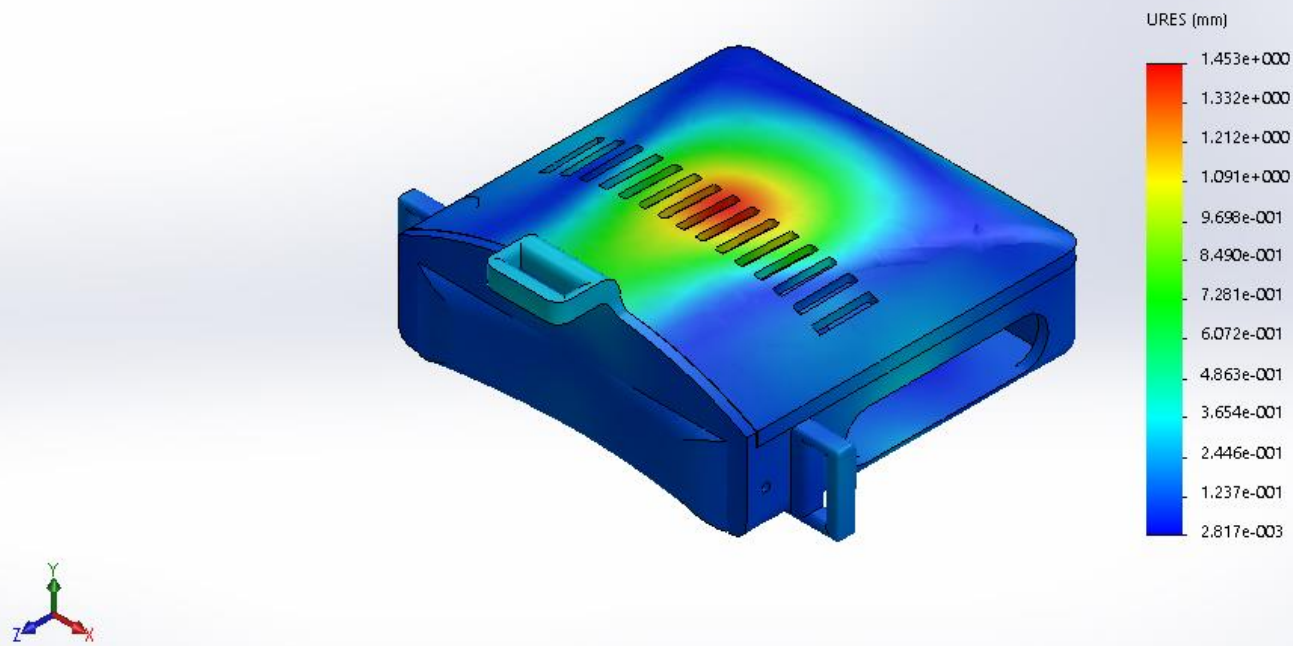


Study Results



Name	Type	Min	Max
Displacement1	URES: Resultant Displacement	0.00281657 mm Node: 17792	1.45334 mm Node: 20353

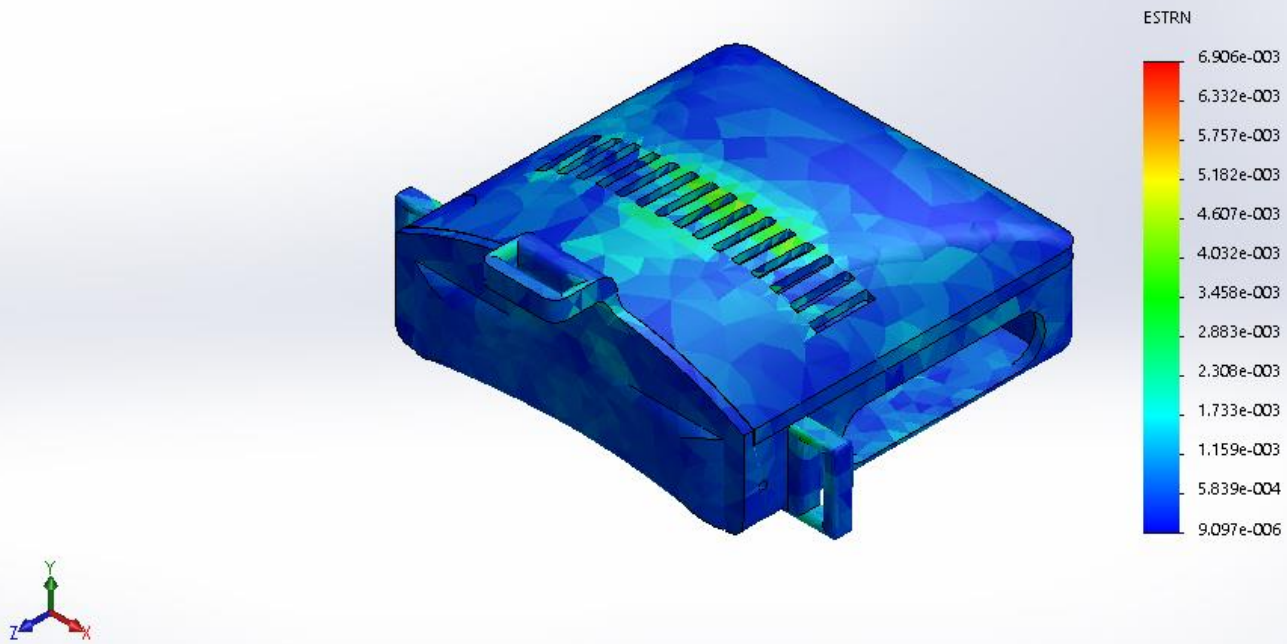
Model name: Assembly V5
Study name: Drop Test 1(-Default-)
Plot type: Displacement1
Plot step: 25 time : 296.299 Microseconds
Deformation scale: 1



Assembly V5-Drop Test 1-Displacement-Displacement1

Name	Type	Min	Max
Strain1	ESTRN: Equivalent Strain	9.0974e-006 Element: 9277	0.00690635 Element: 4481

Model name: Assembly V5
Study name: Drop Test 1(-Default-)
Plot type: Strain1
Plot step: 25 time : 296.299 Microseconds
Deformation scale: 1



Conclusion