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|  | **Simulation of Part1**  **Date:** Tuesday, March 05, 2019 **Designer: Nicholas Mark**  **Study name:** Static 1  **Analysis type:** Static  Table of Contents  [Description](#bookmark) 1  [Assumptions](#bookmark1) 2  [Model Information](#bookmark2) 2  [Study Properties](#bookmark3) 3  [Units](#bookmark4) 3  [Material Properties](#bookmark5) 4  [Loads and Fixtures](#bookmark6) 5  [Connector Definitions](#bookmark7) 5  [Mesh information](#bookmark8) 6  [Sensor Details](#bookmark9) 7  [Resultant Forces](#bookmark10) 7  [Beams](#bookmark11) 7  [Study Results](#bookmark12) 8  [Conclusion](#bookmark13) 9 |
| Description The maximum force that could be applied and yet have a displacement of less than 0.2 mm was 6.5 lbf |

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| Assumptions |

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| Model Information   **Model name: Part1**  **Current Configuration: Default**  **Solid Bodies**  **Document Name and Reference Treated As Volumetric Properties Document Path/Date Modified**  **Cut-Extrude1**  **Solid Body Mass:0.179852 kg**  **Volume:6.66132e-05 m^3**  **Density:2699.95 kg/m^3**  **Weight:1.76255 N**  **C:\Users\Student\Desktop\Part1.SLDPRT**  **Mar 5 09:02:04 2019** |

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| Study Properties Study name Static 1  Analysis type Static  Mesh type Solid Mesh  Thermal Effect: On  Thermal option Include temperature loads  Zero strain temperature 298 Kelvin  Include fluid pressure effects from SOLIDWORKS Flow Simulation Off  Solver type FFEPlus  Inplane Effect: Off  Soft Spring: Off  Inertial Relief: Off  Incompatible bonding options Automatic  Large displacement Off  Compute free body forces On  Friction Off  Use Adaptive Method: Off  Result folder SOLIDWORKS document (c:\users\student\appdata\local\temp) |

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

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| Material Properties **Model Reference Properties Components**  **Name:** 1345 Alloy  **Model type:** Linear Elastic Isotropic  **Default failure criterion:** Unknown  **Yield strength:** 2.75742e+07 N/m^2  **Tensile strength:** 8.27227e+07 N/m^2  **Elastic modulus:** 6.9e+10 N/m^2  **Poisson's ratio:** 0.33  **Mass density:** 2700 kg/m^3  **Shear modulus:** 2.7e+10 N/m^2  **Thermal expansion coefficient:** 2.4e-05 /Kelvin  SolidBody 1(Cut-Extrude1)(Part1)  **Curve Data:N/A** |

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| **Loads and Fixtures** **Fixture name Fixture Image Fixture Details**  **Fixed-1**  Entities: 1 face(s)  Type: Fixed Geometry  **Resultant Forces**  **Components X Y Z Resultant**  **Reaction force(N)** -5.98133e-05 -29.4998 0.000803709 29.4998  **Reaction Moment(N.m)** 0 0 0 0    **Load name Load Image Load Details**  **Force-1**  Entities: 1 face(s)  Reference: Edge< 1 >  Type: Apply force  Values: ---, ---, -29.5 N |

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| Connector Definitions No Data |

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| Contact Information No Data |

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| Mesh information Mesh type Solid Mesh  Mesher Used: Standard mesh  Automatic Transition: Off  Include Mesh Auto Loops: Off  Jacobian points 4 Points  Element Size 0.159645 in  Tolerance 0.00798226 in  Mesh Quality Plot High Mesh information - Details Total Nodes 14293  Total Elements 8192  Maximum Aspect Ratio 3.7958  % of elements with Aspect Ratio < 3 99.8  % of elements with Aspect Ratio > 10 0  % of distorted elements(Jacobian) 0  Time to complete mesh(hh;mm;ss): 00:00:01  Computer name: T3610-PC |

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| Sensor Details No Data |

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| Resultant ForcesReaction forces Selection set Units Sum X Sum Y Sum Z Resultant  Entire Model N -5.98133e-05 -29.4998 0.000803709 29.4998 Reaction Moments Selection set Units Sum X Sum Y Sum Z Resultant  Entire Model N.m 0 0 0 0 |
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| Beams No Data |

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| Study Results Name Type Min Max  Stress1 VON: von Mises Stress 1.607e+03 N/m^2  Node: 5712 6.137e+06 N/m^2  Node: 12562    **Part1-Static 1-Stress-Stress1**  Name Type Min Max  Displacement1 URES: Resultant Displacement 0.000e+00 mm  Node: 32 1.994e-01 mm  Node: 9416    **Part1-Static 1-Displacement-Displacement1**  Name Type Min Max  Strain1 ESTRN: Equivalent Strain 5.167e-08  Element: 6153 6.289e-05  Element: 2814    **Part1-Static 1-Strain-Strain1** |

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| Conclusion |