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|  | |  | | --- | | **Simulation of Assem**  **Date: Wednesday, December 21, 2022 Designer: Solidworks**  **Study name: Static 1**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc122533392)  [Assumptions 2](#_Toc122533393)  [Model Information 3](#_Toc122533394)  [Study Properties 9](#_Toc122533395)  [Units 9](#_Toc122533396)  [Material Properties 10](#_Toc122533397)  [Loads and Fixtures 11](#_Toc122533398)  [Connector Definitions 11](#_Toc122533399)  [Contact Information 11](#_Toc122533400)  [Mesh information 12](#_Toc122533401)  [Sensor Details 13](#_Toc122533402)  [Resultant Forces 13](#_Toc122533403)  [Beams 14](#_Toc122533404)  [Study Results 14](#_Toc122533405)  [Conclusion 14](#_Toc122533406) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** Assem**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Sweep-Thin1** | **Solid Body** | ****Mass:13.5642 kg****  ****Volume:0.001739 m^3****  ****Density:7,800 kg/m^3****  ****Weight:132.929 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part3.SLDPRT****  **Aug 9 20:43:40 2022** | | **Sweep-Thin1** | **Solid Body** | ****Mass:13.5642 kg****  ****Volume:0.001739 m^3****  ****Density:7,800 kg/m^3****  ****Weight:132.929 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part3.SLDPRT****  **Aug 9 20:43:40 2022** | | **Fillet1** | **Solid Body** | ****Mass:11.3096 kg****  ****Volume:0.00144995 m^3****  ****Density:7,800 kg/m^3****  ****Weight:110.834 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part4.SLDPRT****  **Aug 9 20:50:30 2022** | | **Fillet1** | **Solid Body** | ****Mass:11.3096 kg****  ****Volume:0.00144995 m^3****  ****Density:7,800 kg/m^3****  ****Weight:110.834 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part4.SLDPRT****  **Aug 9 20:50:30 2022** | | **Mirror4** | **Solid Body** | ****Mass:35.0645 kg****  ****Volume:0.00449545 m^3****  ****Density:7,800 kg/m^3****  ****Weight:343.632 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part5.SLDPRT****  **Aug 9 20:59:36 2022** | | **Extrude-Thin1** | **Solid Body** | ****Mass:187.2 kg****  ****Volume:0.024 m^3****  ****Density:7,800 kg/m^3****  ****Weight:1,834.56 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part6.SLDPRT****  **Aug 9 21:01:52 2022** | | **Cut-Extrude2** | **Solid Body** | ****Mass:3.61492 kg****  ****Volume:0.000463451 m^3****  ****Density:7,800 kg/m^3****  ****Weight:35.4262 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part7.SLDPRT****  **Aug 9 21:08:38 2022** | | **Cut-Extrude2** | **Solid Body** | ****Mass:3.61492 kg****  ****Volume:0.000463451 m^3****  ****Density:7,800 kg/m^3****  ****Weight:35.4262 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part7.SLDPRT****  **Aug 9 21:08:38 2022** | | **Boss-Extrude1** | **Solid Body** | ****Mass:0.392071 kg****  ****Volume:5.02655e-05 m^3****  ****Density:7,800 kg/m^3****  ****Weight:3.84229 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part8.SLDPRT****  **Aug 9 21:10:20 2022** | | **Boss-Extrude1** | **Solid Body** | ****Mass:0.392071 kg****  ****Volume:5.02655e-05 m^3****  ****Density:7,800 kg/m^3****  ****Weight:3.84229 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part8.SLDPRT****  **Aug 9 21:10:20 2022** | | **Boss-Extrude1** | **Solid Body** | ****Mass:0.392071 kg****  ****Volume:5.02655e-05 m^3****  ****Density:7,800 kg/m^3****  ****Weight:3.84229 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part8.SLDPRT****  **Aug 9 21:10:20 2022** | | **Boss-Extrude1** | **Solid Body** | **Mass:0.392071 kg**  **Volume:5.02655e-05 m^3**  **Density:7,800 kg/m^3**  **Weight:3.84229 N** | **C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part8.SLDPRT**  **Aug 9 21:10:20 2022** | | **Boss-Extrude1** | **Solid Body** | **Mass:0.392071 kg**  **Volume:5.02655e-05 m^3**  **Density:7,800 kg/m^3**  **Weight:3.84229 N** | **C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part8.SLDPRT**  **Aug 9 21:10:20 2022** | | **Boss-Extrude1** | **Solid Body** | **Mass:0.392071 kg**  **Volume:5.02655e-05 m^3**  **Density:7,800 kg/m^3**  **Weight:3.84229 N** | **C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part8.SLDPRT**  **Aug 9 21:10:20 2022** | | **Boss-Extrude1** | **Solid Body** | **Mass:0.392071 kg**  **Volume:5.02655e-05 m^3**  **Density:7,800 kg/m^3**  **Weight:3.84229 N** | **C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part8.SLDPRT**  **Aug 9 21:10:20 2022** | | **Boss-Extrude1** | **Solid Body** | **Mass:0.392071 kg**  **Volume:5.02655e-05 m^3**  **Density:7,800 kg/m^3**  **Weight:3.84229 N** | **C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part8.SLDPRT**  **Aug 9 21:10:20 2022** | | **Boss-Extrude1** | **Solid Body** | **Mass:0.392071 kg**  **Volume:5.02655e-05 m^3**  **Density:7,800 kg/m^3**  **Weight:3.84229 N** | **C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\Part8.SLDPRT**  **Aug 9 21:10:20 2022** | | **Cut-Extrude2** | **Solid Body** | **Mass:21.3141 kg**  **Volume:0.00273257 m^3**  **Density:7,800.02 kg/m^3**  **Weight:208.878 N** | **C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\part 2.SLDPRT**  **Aug 9 20:41:02 2022** | | **Cut-Extrude2** | **Solid Body** | **Mass:21.3141 kg**  **Volume:0.00273257 m^3**  **Density:7,800.02 kg/m^3**  **Weight:208.878 N** | **C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\part 2.SLDPRT**  **Aug 9 20:41:02 2022** | | **Fillet1** | **Solid Body** | **Mass:46.4003 kg**  **Volume:0.00594875 m^3**  **Density:7,800 kg/m^3**  **Weight:454.723 N** | **C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\tyre.SLDPRT**  **Aug 9 20:24:32 2022** | | **Fillet1** | **Solid Body** | ****Mass:46.4003 kg****  ****Volume:0.00594875 m^3****  ****Density:7,800 kg/m^3****  ****Weight:454.723 N**** | ****C:\Users\User\OneDrive\Desktop\solidworks projects\Wheel Chair\tyre.SLDPRT****  **Aug 9 20:24:32 2022** | |

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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 | Automatic | | 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\User\OneDrive\Desktop\solidworks projects\Wheel Chair) | |

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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:**** | **Cast Carbon Steel** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Max von Mises Stress** | | ****Yield strength:**** | **2.48168e+08 N/m^2** | | ****Tensile strength:**** | **4.82549e+08 N/m^2** | | ****Elastic modulus:**** | **2e+11 N/m^2** | | ****Poisson's ratio:**** | **0.32** | | ****Mass density:**** | **7,800 kg/m^3** | | ****Shear modulus:**** | **7.6e+10 N/m^2** | | ****Thermal expansion coefficient:**** | **1.2e-05 /Kelvin** | | **SolidBody 1(Sweep-Thin1)(Part3-1),**  **SolidBody 1(Sweep-Thin1)(Part3-2),**  **SolidBody 1(Fillet1)(Part4-1),**  **SolidBody 1(Fillet1)(Part4-2),**  **SolidBody 1(Mirror4)(Part5-1),**  **SolidBody 1(Extrude-Thin1)(Part6-2),**  **SolidBody 1(Cut-Extrude2)(Part7-1),**  **SolidBody 1(Cut-Extrude2)(Part7-2),**  **SolidBody 1(Boss-Extrude1)(Part8-1),**  **SolidBody 1(Boss-Extrude1)(Part8-10),**  **SolidBody 1(Boss-Extrude1)(Part8-2),**  **SolidBody 1(Boss-Extrude1)(Part8-3),**  **SolidBody 1(Boss-Extrude1)(Part8-5),**  **SolidBody 1(Boss-Extrude1)(Part8-6),**  **SolidBody 1(Boss-Extrude1)(Part8-7),**  **SolidBody 1(Boss-Extrude1)(Part8-8),**  **SolidBody 1(Boss-Extrude1)(Part8-9),**  **SolidBody 1(Cut-Extrude2)(part 2-1),**  **SolidBody 1(Cut-Extrude2)(part 2-2),**  **SolidBody 1(Fillet1)(tyre-1),**  **SolidBody 1(Fillet1)(tyre-2)** | | **Curve Data:N/A** | | | |

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| **Loads and Fixtures**  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Force-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Apply normal force** | | Value: | **1 N** | | |

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| Connector Definitions No Data |

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| Contact Information  | Contact | Contact Image | Contact Properties | | --- | --- | --- | | Global Interaction |  | |  |  | | --- | --- | | Type: | **Bonded** | | Components: | **1 component(s)** | | Options: | **Independent mesh** | | |

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| Mesh information  |  |  | | --- | --- | | Mesh type | Solid Mesh | | Mesher Used: | Curvature-based mesh | | Jacobian points for High quality mesh | 16 Points | | Maximum element size | 50.857 mm | | Minimum element size | 2.54285 mm | | Mesh Quality | High | | Remesh failed parts independently | Off |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 45873 | | Total Elements | 22307 | | Maximum Aspect Ratio | 30.232 | | % of elements with Aspect Ratio < 3 | 67.2 | | Percentage of elements with Aspect Ratio > 10 | 1.4 | | Percentage of distorted elements | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:03 | | Computer name: |  | |  | | |

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| Sensor Details No Data |

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| Resultant Forces No Data |
| No Data |

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| Beams No Data |

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| Study Results No Data |

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| Conclusion |