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|  | |  | | --- | | **Simulation of Chrankshaft**  **Date: Wednesday, September 18, 2019 Designer: Solidworks**  **Study name: SimulationXpress Study**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc19705003)  [Assumptions 2](#_Toc19705004)  [Model Information 2](#_Toc19705005)  [Material Properties 3](#_Toc19705006)  [Loads and Fixtures 4](#_Toc19705007)  [Mesh information 5](#_Toc19705008)  [Study Results 7](#_Toc19705009)  [Conclusion 10](#_Toc19705010) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** Chrankshaft**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Mirror2** | **Solid Body** | ****Mass:1.93114 lb****  ****Volume:6.94204 in^3****  ****Density:0.27818 lb/in^3****  ****Weight:1.92983 lbf**** | ****E:\Week 4B\Chrankshaft.SLDPRT****  **Sep 18 12:54:46 2019** | |

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| Material Properties  |  |  |  | | --- | --- | --- | | ****Model Reference**** | ****Properties**** | ****Components**** | |  | |  |  | | --- | --- | | ****Name:**** | **Alloy Steel** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Max von Mises Stress** | | ****Yield strength:**** | **89,984.6 psi** | | ****Tensile strength:**** | **104,982 psi** | | **SolidBody 1(Mirror2)(Crank Shaft)** | |

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| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixed-1** |  | |  |  | | --- | --- | | Entities: | **2 face(s)** | | Type: | **Fixed Geometry** | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Force-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s), 1 plane(s)** | | Reference: | **Top** | | Type: | **Apply force** | | Values: | **---, ---, 1,000 lbf** | | |

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| Mesh information  |  |  | | --- | --- | | Mesh type | Solid Mesh | | Mesher Used: | Standard mesh | | Automatic Transition: | Off | | Include Mesh Auto Loops: | On | | Jacobian points | 4 Points | | Element Size | 0.19082 in | | Tolerance | 0.0095411 in | | Mesh Quality Plot | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 13326 | | Total Elements | 7837 | | Maximum Aspect Ratio | 6.1775 | | % of elements with Aspect Ratio < 3 | 97.9 | | % of elements with Aspect Ratio > 10 | 0 | | % of distorted elements(Jacobian) | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:01 | | Computer name: |  | |  | | |

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| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Stress | VON: von Mises Stress | 9.624e-01 psi  Node: 12511 | 2.890e+04 psi  Node: 1349 | | **Chrankshaft-SimulationXpress Study-Stress-Stress** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Displacement | URES: Resultant Displacement | 0.000e+00 in  Node: 121 | 5.240e-03 in  Node: 10681 | | **Chrankshaft-SimulationXpress Study-Displacement-Displacement** | | | |  | Name | Type | | --- | --- | | Deformation | Deformed shape | | **Chrankshaft-SimulationXpress Study-Displacement-Deformation** | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Factor of Safety | Max von Mises Stress | 3.114e+00  Node: 1349 | 9.350e+04  Node: 12511 | | **Chrankshaft-SimulationXpress Study-Factor of Safety-Factor of Safety** | | | | |

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| Conclusion |