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|  | |  | | --- | | **Simulation of suporte\_lub\_perna**  **Date: 12 de junho de 2023 Designer: Solidworks**  **Study name: Análise Estrutural**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc137482014)  [Assumptions 2](#_Toc137482015)  [Model Information 2](#_Toc137482016)  [Study Properties 3](#_Toc137482017)  [Units 3](#_Toc137482018)  [Material Properties 4](#_Toc137482019)  [Loads and Fixtures 5](#_Toc137482020)  [Connector Definitions 5](#_Toc137482021)  [Interaction Information 6](#_Toc137482022)  [Mesh information 6](#_Toc137482023)  [Sensor Details 6](#_Toc137482024)  [Resultant Forces 7](#_Toc137482025)  [Beams 7](#_Toc137482026)  [Study Results 8](#_Toc137482027)  [Conclusion 9](#_Toc137482028) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** suporte\_lub\_perna**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Boss-Extrude9** | **Solid Body** | ****Mass:1,03214 kg****  ****Volume:0,000382272 m^3****  ****Density:2 700 kg/m^3****  ****Weight:10,1149 N**** | ****C:\Users\Tiago Costa\Desktop\3º ano 2223\2 Semestre\PESTEM\Conjuntos\Lubrificação\suporte\_lub\_perna.SLDPRT****  **Jun 12 15:49:10 2023** | |

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| Study Properties  |  |  | | --- | --- | | Study name | Análise Estrutural | | 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\Tiago Costa\Desktop\3º ano 2223\2 Semestre\PESTEM\Conjuntos\Lubrificação) | |

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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:**** | **6061 Alloy** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Unknown** | | ****Yield strength:**** | **5,51485e+07 N/m^2** | | ****Tensile strength:**** | **1,24084e+08 N/m^2** | | ****Elastic modulus:**** | **6,9e+10 N/m^2** | | ****Poisson's ratio:**** | **0,33** | | ****Mass density:**** | **2 700 kg/m^3** | | ****Shear modulus:**** | **2,6e+10 N/m^2** | | ****Thermal expansion coefficient:**** | **2,4e-05 /Kelvin** | | **SolidBody 1(Boss-Extrude9)(suporte\_lub\_perna)** | | **Curve Data:N/A** | | | |

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| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixed-1** |  | |  |  | | --- | --- | | Entities: | **4 face(s)** | | Type: | **Fixed Geometry** | | | ****Resultant Forces****   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Components** | **X** | **Y** | **Z** | **Resultant** | | **Reaction force(N)** | **-35,3** | **48,58** | **-4,35114e-06** | **60,0509** | | **Reaction Moment(N.m)** | **0** | **0** | **0** | **0** | | | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Force-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Apply normal force** | | Value: | **35,3 N** | | | **Force-2** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Apply normal force** | | Value: | **48,58 N** | | |

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| Connector Definitions No Data |

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| Interaction Information No Data |

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| Mesh information  |  |  | | --- | --- | | Mesh type | Solid Mesh | | Mesher Used: | Blended curvature-based mesh | | Jacobian points for High quality mesh | 16 Points | | Maximum element size | 14,5189 mm | | Minimum element size | 1,91342 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 9448 | | Total Elements | 4927 | | Maximum Aspect Ratio | 12,188 | | % of elements with Aspect Ratio < 3 | 93,5 | | Percentage of elements with Aspect Ratio > 10 | 0,0812 | | Percentage of distorted elements | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:04 | | Computer name: |  | |

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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 | -35,3 | 48,58 | -4,35114e-06 | 60,0509 |  Reaction Moments  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N.m | 0 | 0 | 0 | 0 | |
| Free body forces  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N | -7,30157e-06 | 4,76837e-07 | -6,67572e-06 | 9,90482e-06 |  Free body moments  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N.m | 0 | 0 | 0 | 1e-33 | |

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| Beams No Data |

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| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Concentração de Tensões | VON: von Mises Stress | 0,01N/mm^2 (MPa)  Node: 5415 | 22,72N/mm^2 (MPa)  Node: 8557 | | **suporte\_lub\_perna-Análise Estrutural-Stress-Concentração de Tensões** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Flecha | UX: X Displacement | -0,00mm  Node: 1139 | 0,19mm  Node: 56 | | **suporte\_lub\_perna-Análise Estrutural-Displacement-Flecha** | | | | |

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| Conclusion |