

SOLIDWORKS Student Edition - Academic Use Only

lab 3 part 1

Search files and models

Offset Entities, Convert Entities, Mirror Entities, Extruded Boss/Base, Extruded Cut, Fillet, Linear Pattern, Mirror, Draft, Shell, Reference Geometry, Measure, Mass Properties

Preparation

Mass Properties

lab 3 part 1

Options...

Override Mass Properties... Recalculate

☒ Include hidden bodies/components  
☐ Create Center of Mass feature  
☐ Show weld bead mass

Report coordinate values relative to: -- default --

Mass properties of lab 3 part 1  
Configuration: Default  
Coordinate system: -- default --

Density = 0.00 grams per cubic millimeter

Mass = 0.12 grams

Volume = 123.72 cubic millimeters

Surface area = 496.52 square millimeters

Center of mass: ( millimeters )  
X = 0.00  
Y = -3.09  
Z = 12.33

Principal axes of inertia and principal moments of inertia: ( grams \* square millimeters )  
Taken at the center of mass.  
I<sub>x</sub> = ( 0.00, 0.01, 1.00 ) Px = 0.79  
I<sub>y</sub> = ( 0.00, -1.00, 0.01 ) Py = 19.83  
I<sub>z</sub> = ( 1.00, 0.00, 0.00 ) Pz = 20.60

Moments of inertia: ( grams \* square millimeters )  
Taken at the center of mass and aligned with the output coordinate system. (Using positive tensor notation.)  
L<sub>xx</sub> = 20.60 L<sub>xy</sub> = 0.00 L<sub>xz</sub> = 0.00  
L<sub>yx</sub> = 0.00 L<sub>yy</sub> = 19.83 L<sub>yz</sub> = 0.21  
L<sub>zx</sub> = 0.00 L<sub>zy</sub> = 0.21 L<sub>zz</sub> = 0.79

Moments of inertia: ( grams \* square millimeters )  
Taken at the output coordinate system. (Using positive tensor notation.)  
I<sub>xx</sub> = 40.59 I<sub>xy</sub> = 0.00 I<sub>xz</sub> = 0.00  
I<sub>yx</sub> = 0.00 I<sub>yy</sub> = 38.64 I<sub>yz</sub> = -4.50  
I<sub>zx</sub> = 0.00 I<sub>zy</sub> = -4.50 I<sub>zz</sub> = 1.97

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Simplified Interface MMGS



**SOLIDWORKS** lab 3 part 3 Search Commands

Sketch Line Corner Rectangle Circle Polygon Centerpoint Arc Spline Smart Dimension Add Relation Sketch Fillet Trim Linear Sketch Pattern Offset Entities Convert Entities Mirror Extruded Boss/Base Extruded Cut Fillet Linear Pattern Mirror Draft Shell Reference Geometry Measure Mass Properties

Basic Modeling Tools SOLIDWORKS CAM SOLIDWORKS CAM TBM Simulation Analysis Preparation

**lab 3 part 3**

- Solid Bodies(1)
- Equations
- Material <not specified>
- Front Plane
- Top Plane
- Right Plane
- Origin
- Sweep1
- Sweep2
- Cut-Extrude1
- Dome1
- Revolve1

**Mass Properties**

lab 3 part 3 Options...

Override Mass Properties... Recalculate

☒ Include hidden bodies/components

☐ Create Center of Mass feature

☐ Show weld bead mass

Report coordinate values relative to: -- default --

Mass properties of lab 3 part 3  
Configuration: Default  
Coordinate system: -- default --

Density = 0.04 pounds per cubic inch

Mass = 0.14 pounds

Volume = 3.80 cubic inches

Surface area = 24.19 square inches

Center of mass: ( inches )  
X = 0.00  
Y = 4.48  
Z = 0.81

Principal axes of inertia and principal moments of inertia: ( pounds \* square inches )  
Taken at the center of mass.

$I_x = ( 0.00, 0.99, 0.15 )$	$P_x = 0.06$
$I_y = ( 0.00, -0.15, 0.99 )$	$P_y = 0.86$
$I_z = ( 1.00, 0.00, 0.00 )$	$P_z = 0.91$

Moments of inertia: ( pounds \* square inches )  
Taken at the center of mass and aligned with the output coordinate system. (Using positive tensor notation.)

$L_{xx} = 0.91$	$L_{xy} = 0.00$	$L_{xz} = 0.00$
$L_{yx} = 0.00$	$L_{yy} = 0.08$	$L_{yz} = 0.12$
$L_{zx} = 0.00$	$L_{zy} = 0.12$	$L_{zz} = 0.84$

Moments of inertia: ( pounds \* square inches )  
Taken at the output coordinate system. (Using positive tensor notation.)

$I_{xx} = 3.75$	$I_{xy} = 0.00$	$I_{xz} = 0.00$
$I_{yx} = 0.00$	$I_{yy} = 0.17$	$I_{yz} = 0.62$
$I_{zx} = 0.00$	$I_{zy} = 0.62$	$I_{zz} = 3.59$

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Let's get started

Model Motion Study 1

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Simplified Interface IPS