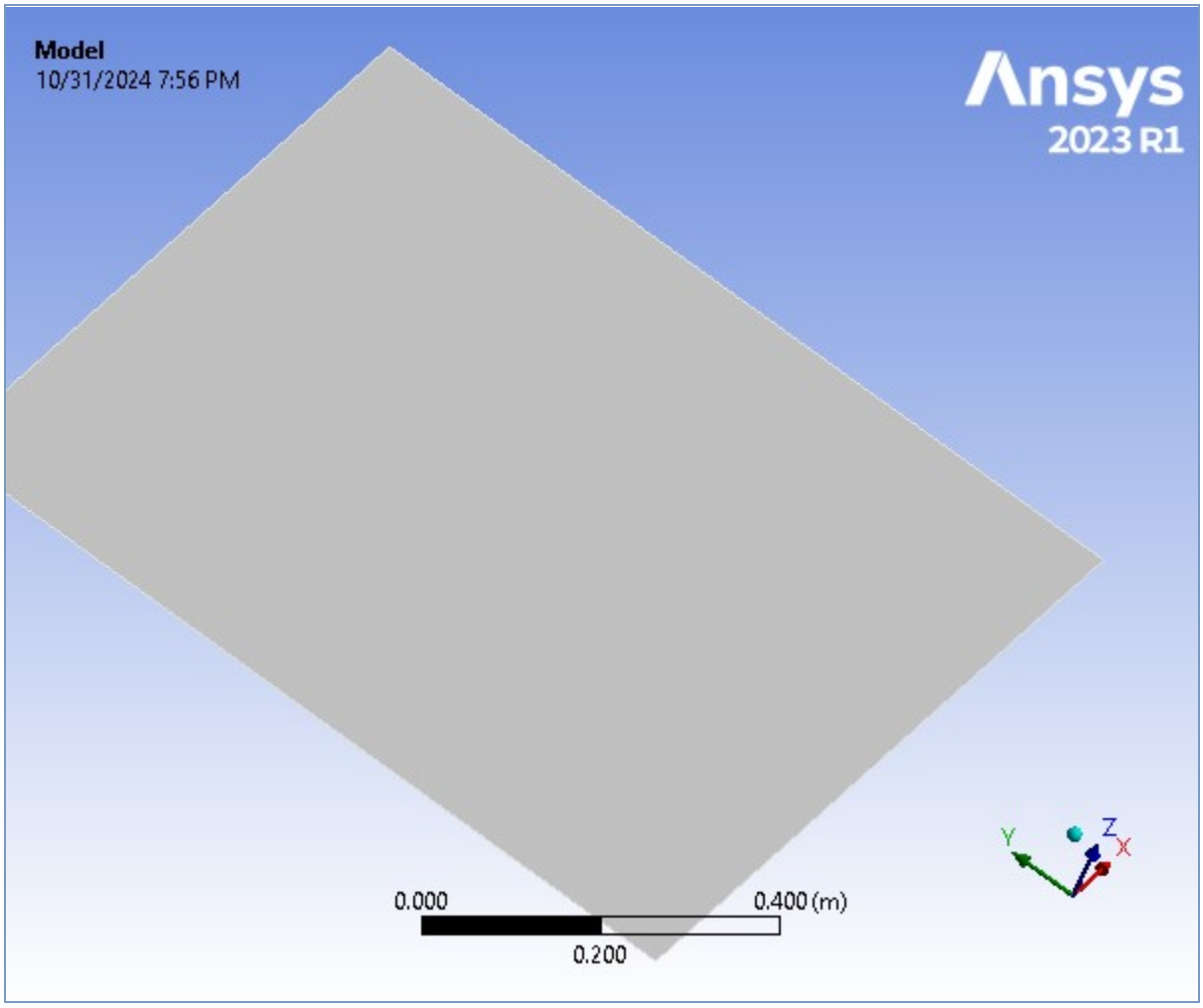
Project

First Saved	Monday, May 2, 2022
Last Saved	Tuesday, May 17, 2022
Product Version	2022 R1
Save Project Before Solution	No
Save Project After Solution	No



Contents

Report Not Finalized

Not all objects described below are in a finalized state. As a result, data may be incomplete, obsolete or in error. View first state problem. To finalize this report, edit objects as needed and solve the analyses.

Units

TABLE 1

Unit System	Metric (m, kg, N, s, V, A) Degrees rad/s Celsius
Angle	Degrees
Rotational Velocity	rad/s
Temperature	Celsius

Model (A4)

TABLE 2
Model (A4) > Geometry Imports

Object Name	*Geometry Imports*
State	Solved

TABLE 3
Model (A4) > Geometry Imports > Geometry Import (A3)

Object Name	*Geometry Import (A3)*
State	Solved
Definition	
Source	D:\Ansys Practicals\samarth malgave\CAE EXP 03 TEMEC21359 \Exp03_Samarth_Malgave_TEMEC21359_files\dp0\SYS\DM\SYS.agdb

Type	DesignModeler
Basic Geometry Options	
Parameters	Independent
Parameter Key	
Advanced Geometry Options	
Compare Parts On Update	No
Analysis Type	3-D

Geometry

TABLE 4
Model (A4) > Geometry

Object Name	*Geometry*
State	Fully Defined
Definition	
Source	D:\Ansys Practicals\samarth malgave\CAE EXP 03 TEMEC21359 \Exp03_Samarth_Malgave_TEMEC21359_files\dp0\SYS\DM\SYS.agdb
Type	DesignModeler
Length Unit	Meters
Element Control	Program Controlled
Display Style	Body Color
Bounding Box	
Length X	1. m
Length Y	1. m
Length Z	0. m
Properties	
Volume	6.e-003 m³
Mass	47.1 kg
Surface Area(approx.)	1. m²
Scale Factor Value	1.
2D Tolerance	Default (1.e-005)
Statistics	
Bodies	1
Active Bodies	1
Nodes	441
Elements	400
Mesh Metric	None
Update Options	
Assign Default Material	No
Basic Geometry Options	
Parameters	Independent
Parameter Key	
Attributes	Yes
Attribute Key	
Named Selections	Yes
Named Selection Key	
Material Properties	Yes
Advanced Geometry Options	
Use Associativity	Yes
Coordinate Systems	Yes
Coordinate System	

Key	
Reader Mode Saves Updated File	No
Use Instances	Yes
Smart CAD Update	Yes
Compare Parts On Update	No
Analysis Type	3-D
Import Facet Quality	Source
Clean Bodies On Import	No
Stitch Surfaces On Import	None
Decompose Disjoint Geometry	Yes
Enclosure and Symmetry Processing	Yes

TABLE 5
Model (A4) > Geometry > Parts

Object Name	*Surface Body*
State	Meshed
Graphics Properties	
Visible	Yes
Transparency	1
Definition	
Suppressed	No
Dimension	3D
Model Type	Shell
Stiffness Behavior	Flexible
Stiffness Option	Membrane and Bending
Coordinate System	Default Coordinate System
Reference Temperature	By Environment
Thickness	6.e-003 m
Thickness Mode	Refresh on Update
Offset Type	Middle
Treatment	None
Material	
Assignment	Structural Steel
Nonlinear Effects	Yes
Thermal Strain Effects	Yes
Bounding Box	
Length X	1. m
Length Y	1. m
Length Z	0. m
Properties	
Volume	6.e-003 m³
Mass	47.1 kg
Centroid X	0.5 m
Centroid Y	0.5 m
Centroid Z	0. m
Moment of Inertia Ip1	3.925 kg·m²
Moment of Inertia Ip2	3.925 kg·m²

Moment of Inertia Ip3	7.85 kg·m²
Surface Area(approx.)	1. m²
Statistics	
Nodes	441
Elements	400
Mesh Metric	None

TABLE 6
Model (A4) > Materials

Object Name	*Materials*
State	Fully Defined
Statistics	
Materials	1
Material Assignments	0

Coordinate Systems

TABLE 7
Model (A4) > Coordinate Systems > Coordinate System

Object Name	*Global Coordinate System*
State	Fully Defined
Definition	
Type	Cartesian
Coordinate System ID	0.
Origin	
Origin X	0. m
Origin Y	0. m
Origin Z	0. m
Directional Vectors	
X Axis Data	[1. 0. 0.]
Y Axis Data	[0. 1. 0.]
Z Axis Data	[0. 0. 1.]

Mesh

TABLE 8
Model (A4) > Mesh

Object Name	*Mesh*
State	Solved
Display	
Display Style	Use Geometry Setting
Defaults	
Physics Preference	Mechanical
Element Order	Program Controlled
Element Size	Default (0.125 m)
Sizing	
Use Adaptive Sizing	No
Growth Rate	Default (1.2)
Mesh Defeaturing	Yes
Defeature Size	Default (6.25e-004 m)
Capture Curvature	Yes
Curvature Min Size	Default (1.25e-003 m)

Curvature Normal Angle	Default (30.0°)
Capture Proximity	No
Bounding Box Diagonal	1.4142 m
Average Surface Area	1.0 m²
Minimum Edge Length	1.0 m
Quality	
Check Mesh Quality	Yes, Errors
Error Limits	Aggressive Mechanical
Target Element Quality	Default (5.e-002)
Smoothing	Medium
Mesh Metric	None
Inflation	
Use Automatic Inflation	None
Inflation Option	Smooth Transition
Transition Ratio	0.272
Maximum Layers	2
Growth Rate	1.2
Inflation Algorithm	Pre
View Advanced Options	No
Batch Connections	
Mesh Based Connection	No
Advanced	
Number of CPUs for Parallel Part Meshing	Program Controlled
Straight Sided Elements	No
Rigid Body Behavior	Dimensionally Reduced
Triangle Surface Mesher	Program Controlled
Topology Checking	Yes
Use Sheet Thickness for Pinch	No
Pinch Tolerance	Default (1.125e-003 m)
Generate Pinch on Refresh	No
Sheet Loop Removal	No
Statistics	
Nodes	441
Elements	400
Show Detailed Statistics	No

TABLE 9
Model (A4) > Mesh > Mesh Controls

Object Name	*Face Sizing*
State	Fully Defined
Scope	
Scoping Method	Geometry Selection
Geometry	1 Face
Definition	
Suppressed	No
Type	Element Size
Element Size	5.e-002 m
Advanced	
Defeature Size	Default (6.25e-004 m)
Behavior	Soft
Growth Rate	Default (1.2)
Capture Curvature	No
Capture Proximity	No

Static Structural (A5)

TABLE 10
Model (A4) > Analysis

Object Name	*Static Structural (A5)*
State	License Conflict
Definition	
Physics Type	Structural
Analysis Type	Static Structural
Solver Target	Mechanical APDL
Options	
Environment Temperature	22. °C
Generate Input Only	No

TABLE 11
Model (A4) > Static Structural (A5) > Analysis Settings

Object Name	*Analysis Settings*
State	Fully Defined
Step Controls	
Number Of Steps	1.
Current Step Number	1.
Step End Time	1. s
Auto Time Stepping	Program Controlled
Solver Controls	
Solver Type	Program Controlled
Weak Springs	Off
Solver Pivot Checking	Program Controlled
Inertia Relief	Off
Quasi-Static Solution	Off
Restart Controls	
Generate Restart Points	Program Controlled
Retain Files After Full Solve	No
Combine Restart Files	Program Controlled
Nonlinear Controls	
Force Convergence	Program Controlled
Moment Convergence	Program Controlled
Displacement Convergence	Program Controlled
Rotation Convergence	Program Controlled
Line Search	Program Controlled
Advanced	
Inverse Option	No
Contact Split (DMP)	Off
Output Controls	
Stress	Yes
Back Stress	No
Strain	Yes

Contact Data	Yes
Nonlinear Data	No
Nodal Forces	No
Volume and Energy	Yes
Euler Angles	Yes
General Miscellaneous	No
Contact Miscellaneous	No
Store Results At	All Time Points
Result File Compression	Program Controlled
Analysis Data Management	
Solver Files Directory	D:\Ansys Practicals\samarth malgave\CAE EXP 03 TEMEC21359 \Exp03_Samarth_Malgave_TEMEC21359_files\dp0\SYS\MECH\
Future Analysis	None
Scratch Solver Files Directory	
Save MAPDL db	No
Contact Summary	Program Controlled
Delete Unneeded Files	Yes
Nonlinear Solution	No
Solver Units	Active System
Solver Unit System	mks

TABLE 12
Model (A4) > Static Structural (A5) > Loads

Object Name	*Displacement*	*Displacement 2*	*Displacement 4*	*Pressure*
State	Fully Defined			
Scope				
Scoping Method	Geometry Selection			
Geometry	4 Edges	2 Vertices	1 Vertex	1 Face
Definition				
Type	Displacement			Pressure
Define By	Components			Normal To
Coordinate System	Global Coordinate System			
X Component	Free		0. m (ramped)	
Y Component	Free	0. m (ramped)	Free	
Z Component	0. m (ramped)	Free		
Suppressed	No			
Applied By				Surface Effect
Loaded Area				Deformed
Magnitude				1.e-002 Pa (ramped)

FIGURE 1
Model (A4) > Static Structural (A5) > Displacement

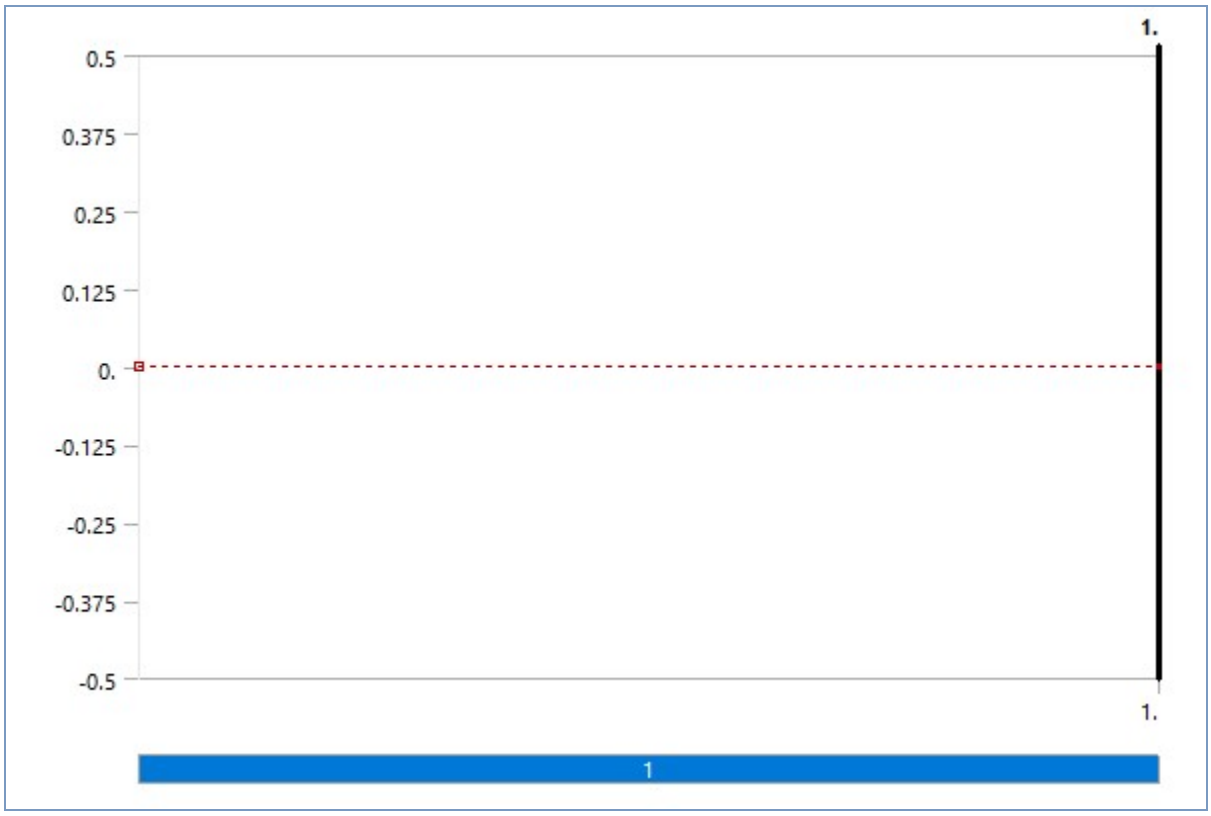


FIGURE 2
Model (A4) > Static Structural (A5) > Displacement 2

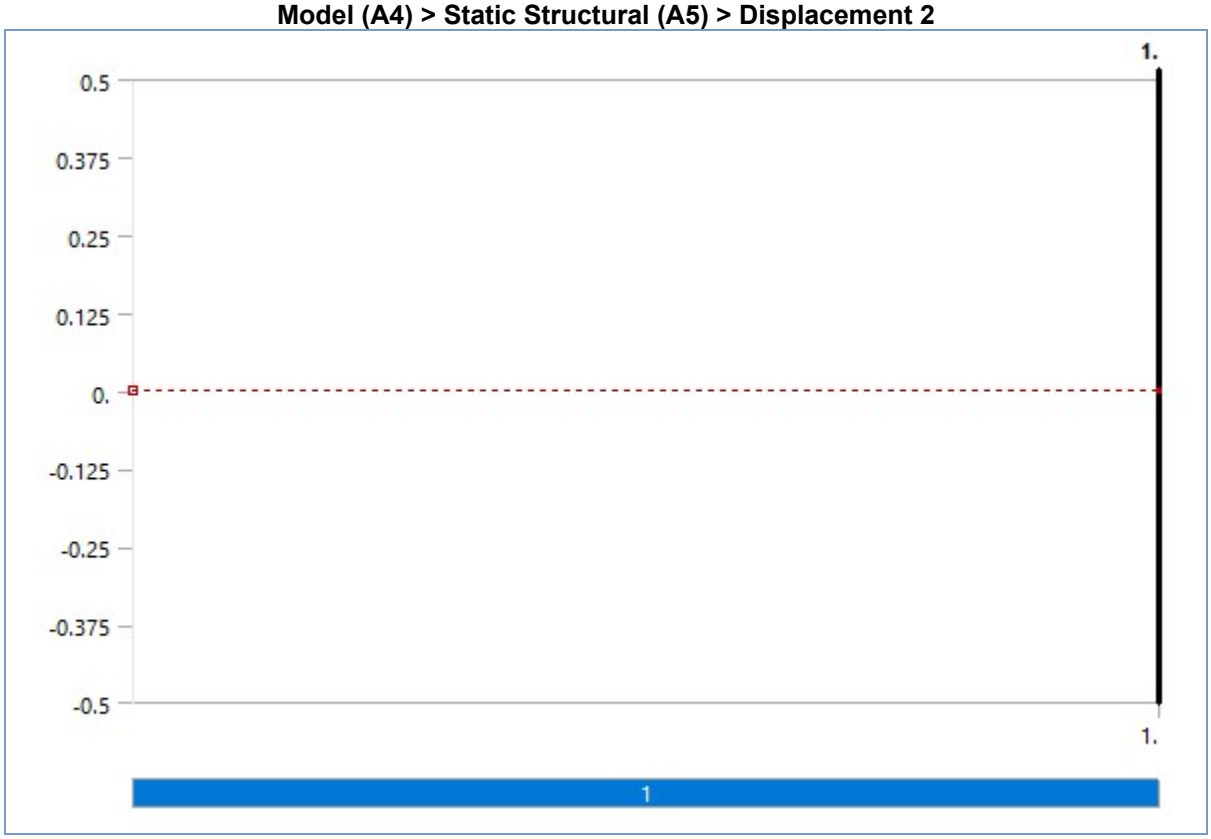


FIGURE 3
Model (A4) > Static Structural (A5) > Displacement 4

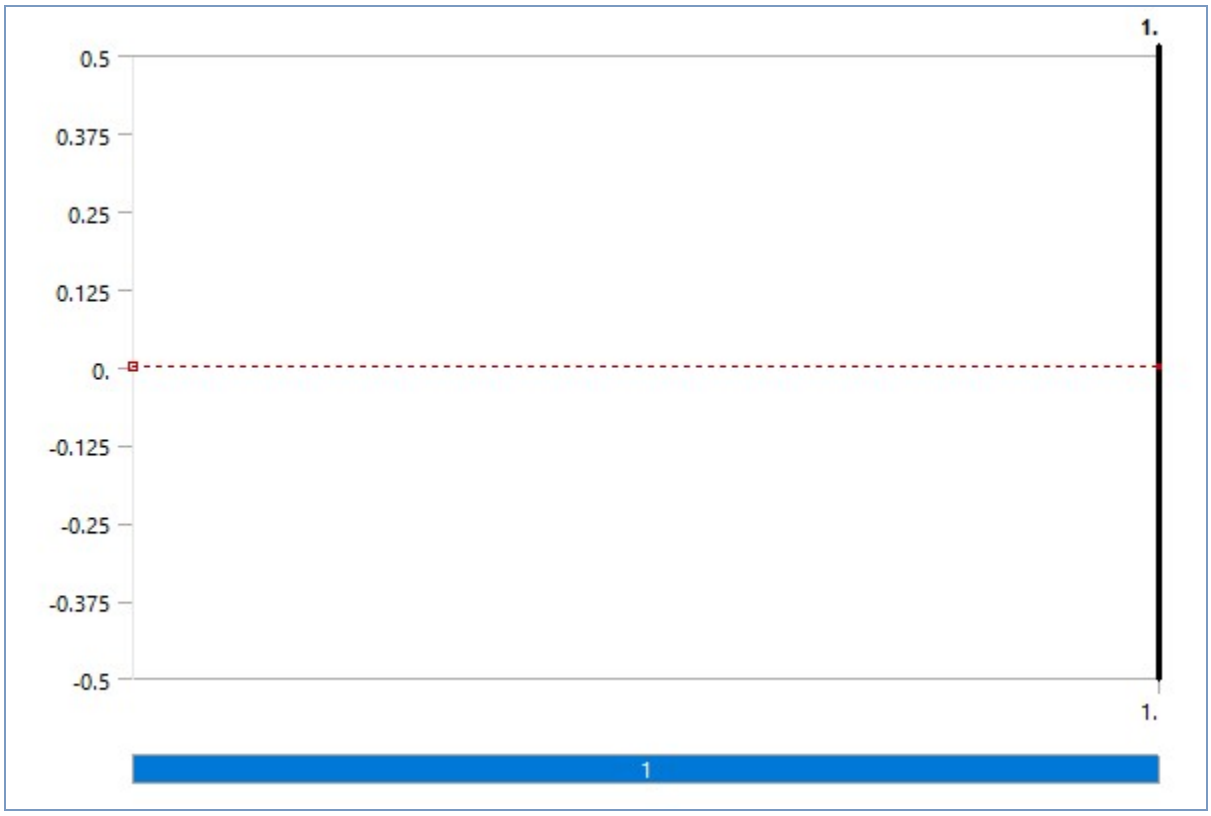
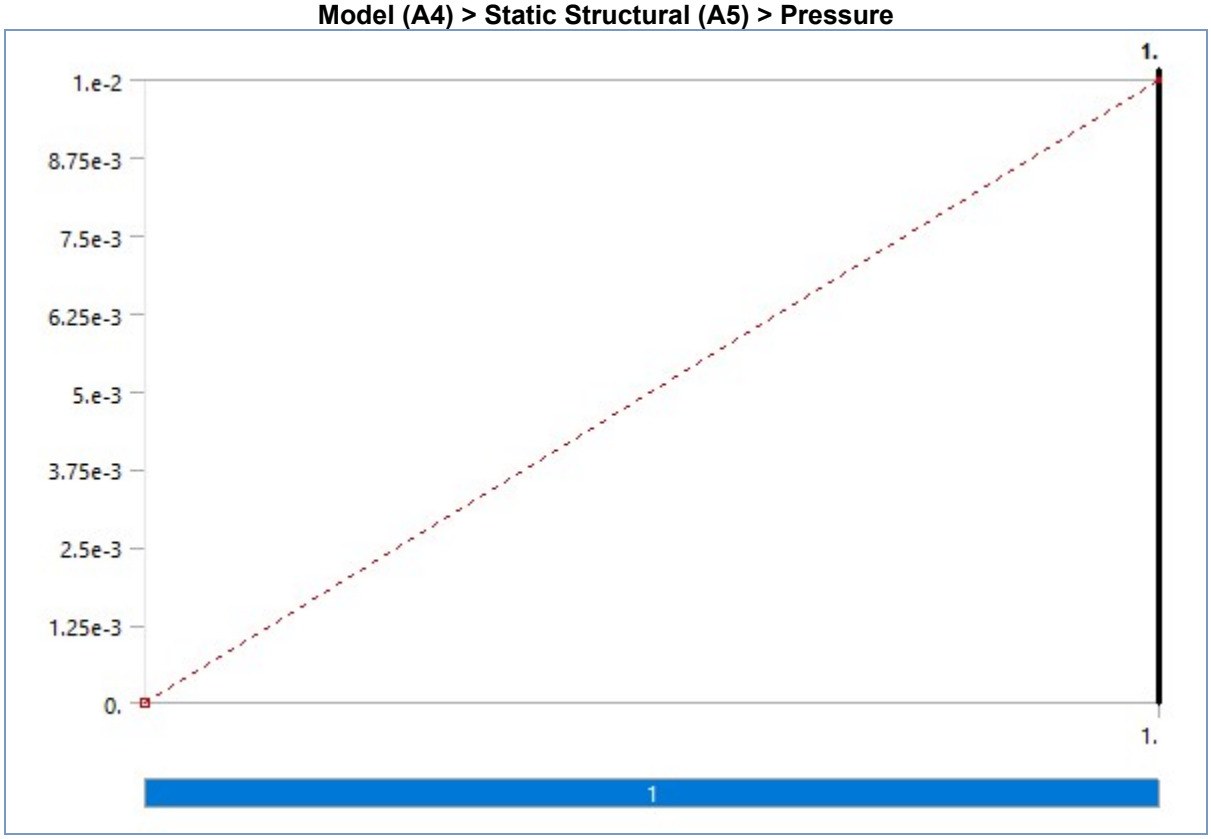


FIGURE 4
Model (A4) > Static Structural (A5) > Pressure



Solution (A6)

TABLE 13
Model (A4) > Static Structural (A5) > Solution

Object Name	*Solution (A6)*
State	Solved
Adaptive Mesh Refinement	
Max Refinement Loops	1.
Refinement Depth	2.
Information	
Status	Done
MAPDL Elapsed Time	18. s
MAPDL Memory Used	86. MB
MAPDL Result File Size	768. KB
Post Processing	
Beam Section Results	No
On Demand Stress/Strain	No

TABLE 14
Model (A4) > Static Structural (A5) > Solution (A6) > Solution Information

Object Name	*Solution Information*
State	Solved
Solution Information	
Solution Output	Solver Output
Newton-Raphson Residuals	0
Identify Element Violations	0
Update Interval	2.5 s
Display Points	All
FE Connection Visibility	
Activate Visibility	Yes
Display	All FE Connectors
Draw Connections Attached To	All Nodes
Line Color	Connection Type
Visible on Results	No
Line Thickness	Single
Display Type	Lines

TABLE 15
Model (A4) > Static Structural (A5) > Solution (A6) > Results

Object Name	*Total Deformation*	*Equivalent Stress*	*Normal Stress*	*Normal Stress 2*
State	Solved			
Scope				
Scoping Method	Geometry Selection			
Geometry	All Bodies			
Position		Top/Bottom		
Definition				
Type	Total Deformation	Equivalent (von-Mises) Stress	Normal Stress	
By	Time			
Display Time	Last			
Separate Data by Entity	No			
Calculate Time History	Yes			
Identifier				
Suppressed	No			
Orientation			X Axis	Y Axis
Coordinate System			Global Coordinate System	

Results			
Minimum	0. m	7.3002 Pa	-79.854 Pa
Maximum	1.0269e-008 m	91.379 Pa	79.854 Pa
Average	3.8838e-009 m	58.288 Pa	0. Pa
Minimum Occurs On	Surface Body		
Maximum Occurs On	Surface Body		
Information			
Time	1. s		
Load Step	1		
Substep	1		
Iteration Number	1		
Integration Point Results			
Display Option		Averaged	
Average Across Bodies		No	

FIGURE 5
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation

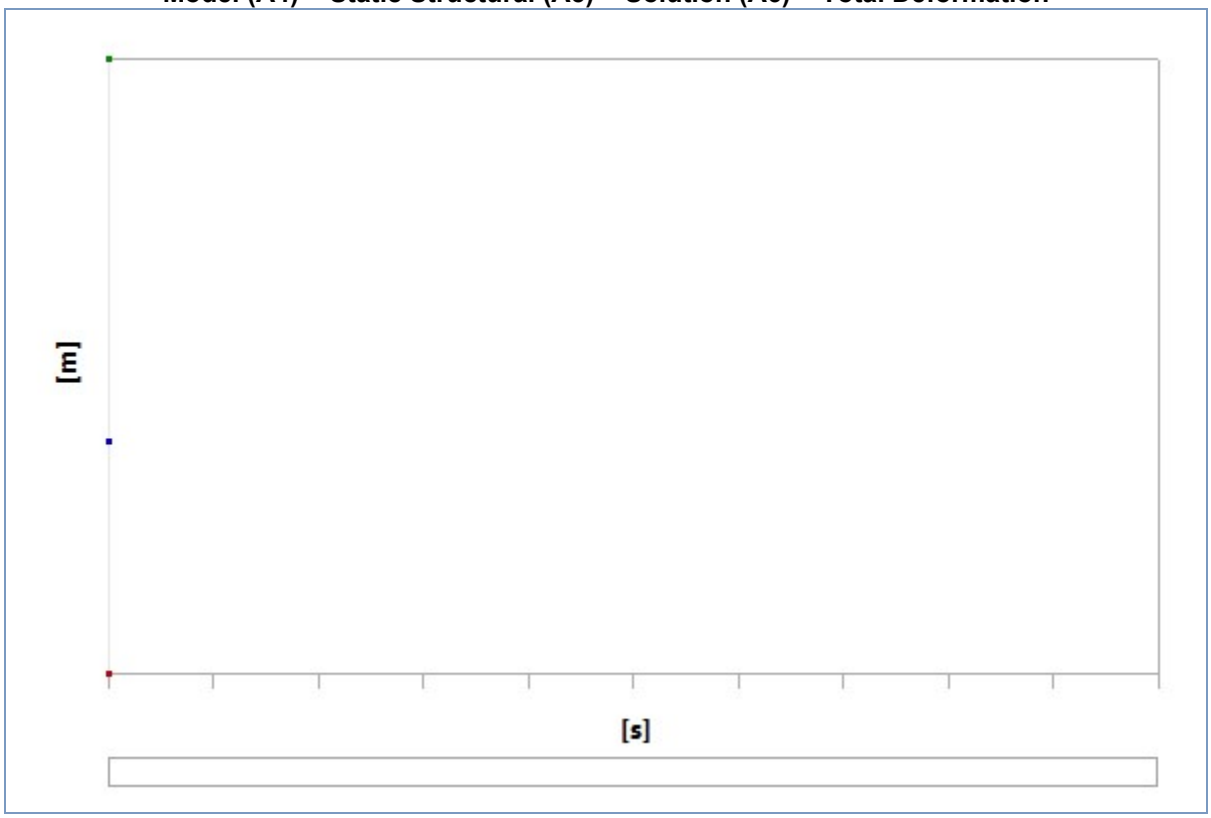


TABLE 16
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation

Time [s]	Minimum [m]	Maximum [m]	Average [m]
1.	0.	1.0269e-008	3.8838e-009

FIGURE 6
Model (A4) > Static Structural (A5) > Solution (A6) > Equivalent Stress

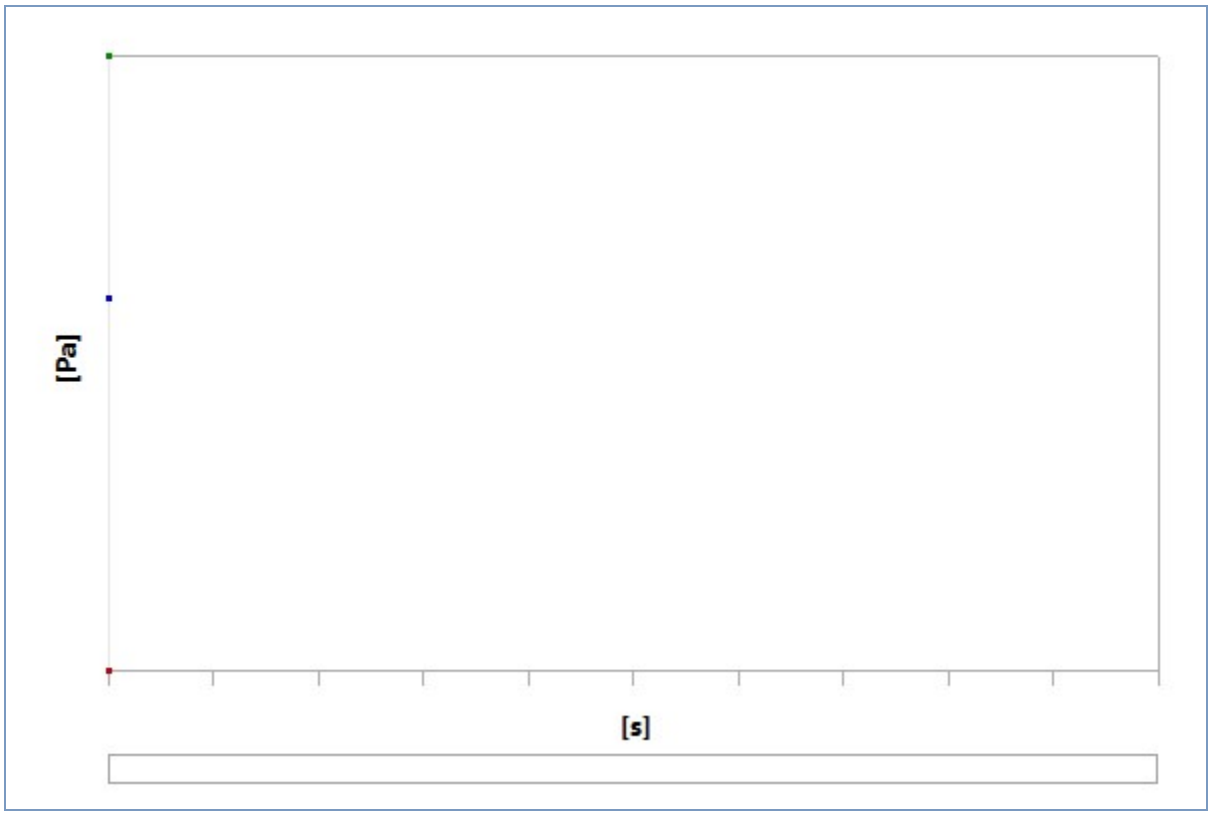


TABLE 17
Model (A4) > Static Structural (A5) > Solution (A6) > Equivalent Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	7.3002	91.379	58.288

FIGURE 7
Model (A4) > Static Structural (A5) > Solution (A6) > Normal Stress

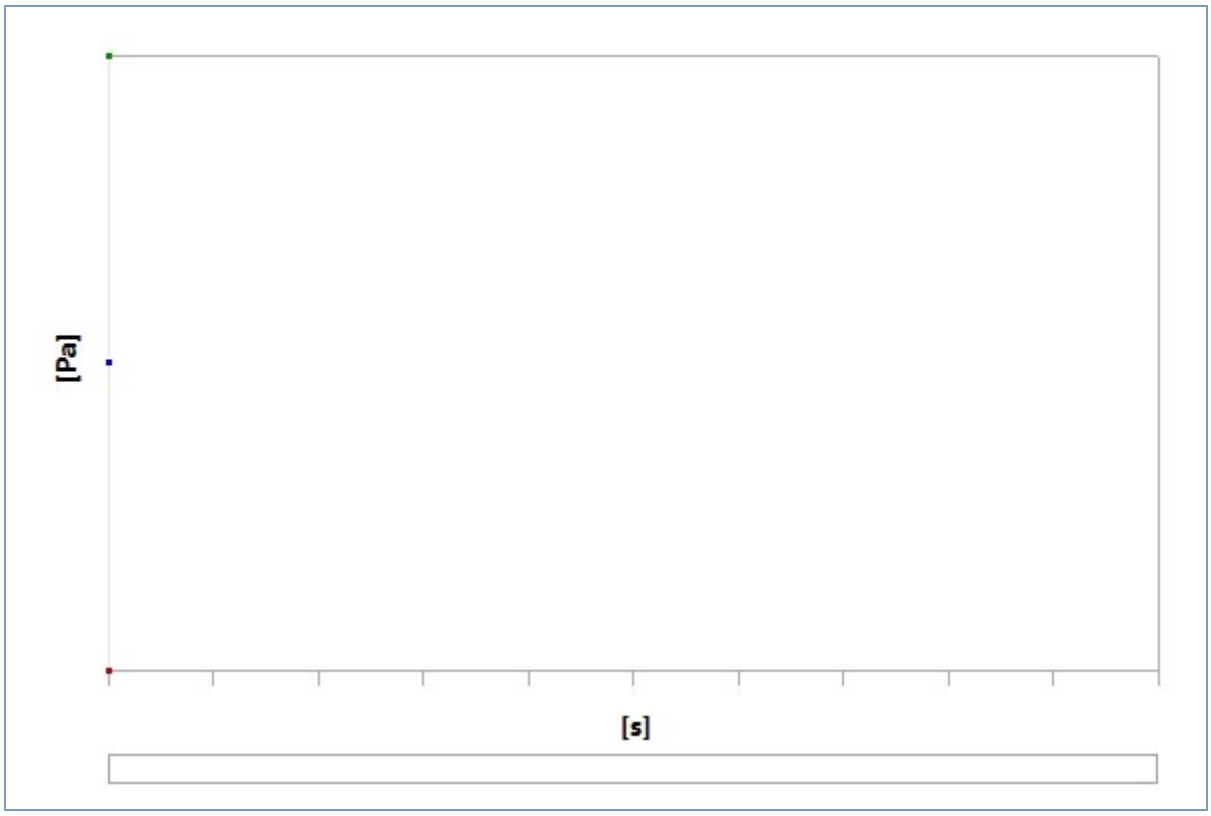


TABLE 18
Model (A4) > Static Structural (A5) > Solution (A6) > Normal Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-79.854	79.854	0.

FIGURE 8
Model (A4) > Static Structural (A5) > Solution (A6) > Normal Stress 2

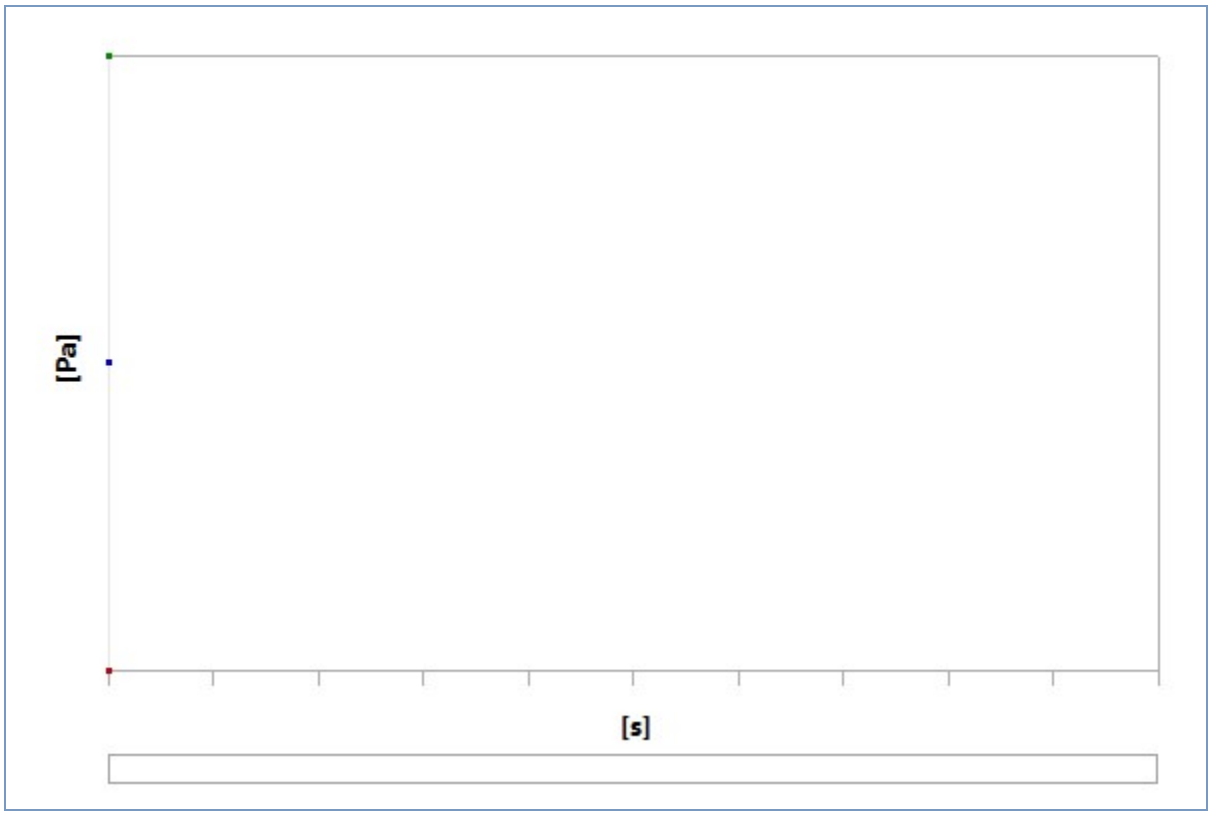


TABLE 19
Model (A4) > Static Structural (A5) > Solution (A6) > Normal Stress 2

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-79.854	79.854	0.

Material Data

Structural Steel

TABLE 20
Structural Steel > Constants

Density	7850 kg m^-3
Coefficient of Thermal Expansion	1.2e-005 C^-1
Specific Heat	434 J kg^-1 C^-1
Thermal Conductivity	60.5 W m^-1 C^-1
Resistivity	1.7e-007 ohm m

TABLE 21
Structural Steel > Color

Red	Green	Blue
132	139	179

TABLE 22
Structural Steel > Compressive Ultimate Strength

Compressive Ultimate Strength Pa
0

TABLE 23

Structural Steel > Compressive Yield Strength

Compressive Yield Strength Pa
2.5e+008

TABLE 24
Structural Steel > Tensile Yield Strength

Tensile Yield Strength Pa
2.5e+008

TABLE 25
Structural Steel > Tensile Ultimate Strength

Tensile Ultimate Strength Pa
4.6e+008

TABLE 26
Structural Steel > Isotropic Secant Coefficient of Thermal Expansion

Zero-Thermal-Strain Reference Temperature C
22

TABLE 27
Structural Steel > S-N Curve

Alternating Stress Pa	Cycles	Mean Stress Pa
3.999e+009	10	0
2.827e+009	20	0
1.896e+009	50	0
1.413e+009	100	0
1.069e+009	200	0
4.41e+008	2000	0
2.62e+008	10000	0
2.14e+008	20000	0
1.38e+008	1.e+005	0
1.14e+008	2.e+005	0
8.62e+007	1.e+006	0

TABLE 28
Structural Steel > Strain-Life Parameters

Strength Coefficient Pa	Strength Exponent	Ductility Coefficient	Ductility Exponent	Cyclic Strength Coefficient Pa	Cyclic Strain Hardening Exponent
9.2e+008	-0.106	0.213	-0.47	1.e+009	0.2

TABLE 29
Structural Steel > Isotropic Elasticity

Young's Modulus Pa	Poisson's Ratio	Bulk Modulus Pa	Shear Modulus Pa	Temperature C
2.e+011	0.3	1.6667e+011	7.6923e+010	

TABLE 30
Structural Steel > Isotropic Relative Permeability

Relative Permeability
10000