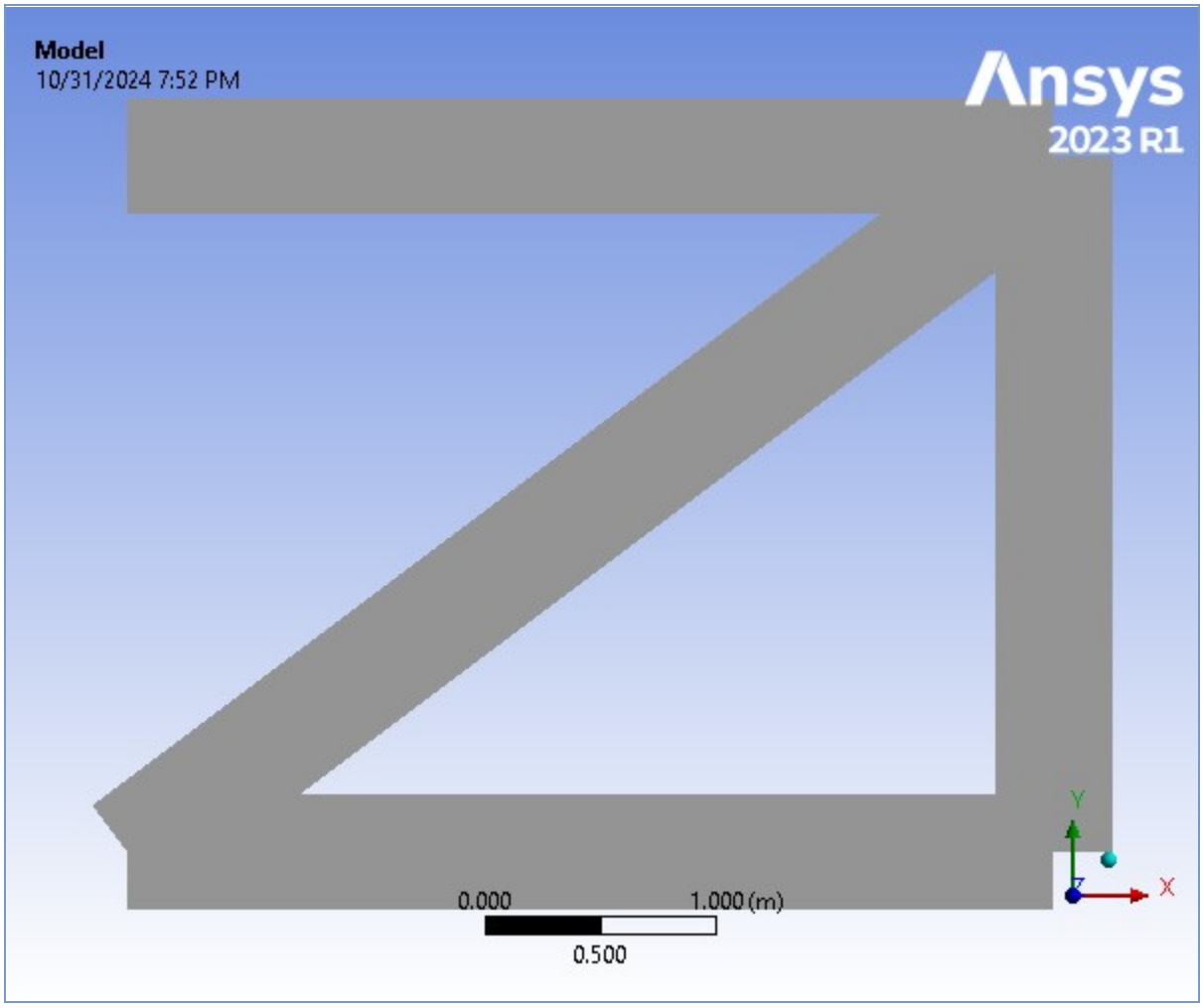
Project

First Saved	Monday, April 4, 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 02 TEMEC21359 \Exp02_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 02 TEMEC21359 \Exp02_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	4. m
Length Y	3. m
Length Z	0. m
Properties	
Volume	1.6 m³
Mass	0. kg
Scale Factor Value	1.
Statistics	
Bodies	1
Active Bodies	1
Nodes	136
Elements	68
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	*Line Body*
State	Meshed
Graphics Properties	
Visible	Yes
Transparency	1
Definition	
Suppressed	No
Model Type	Beam
Stiffness Behavior	Flexible
Coordinate System	Default Coordinate System
Reference Temperature	By Environment
Cross Section	Rect2
Offset Mode	Refresh on Update
Offset Type	Centroid
Treatment	None
Material	
Assignment	mat1
Nonlinear Effects	Yes
Thermal Strain Effects	Yes
Bounding Box	
Length X	4. m
Length Y	3. m
Length Z	0. m
Properties	
Volume	1.6 m³
Mass	0. kg
Length	16. m
Cross Section Area	0.1 m²
Cross Section IYY	3.3333e-004 m²·m²
Cross Section IZZ	2.0833e-003 m²·m²
Statistics	

Nodes	136
Elements	68
Mesh Metric	None

TABLE 6
Model (A4) > Materials

Object Name	*Materials*
State	Fully Defined
Statistics	
Materials	2
Material Assignments	0

TABLE 7
Model (A4) > Cross Sections

Object Name	*Cross Sections*
State	Fully Defined
Statistics	
Cross Sections	1

TABLE 8
Model (A4) > Cross Sections > Rect2

Object Name	*Rect2*
State	Fully Defined
Definition	
Type	RECT
Import Type	Imported
Dimensions	
B	0.5 m
H	0.2 m
Physical Properties	
Beam Section	Rect2
A	0.1 m²
Iyy	3.3333e-004 m²·m²
Izz	2.0833e-003 m²·m²

Coordinate Systems

TABLE 9
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 10
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
Sizing	
Use Adaptive Sizing	Yes
Resolution	2
Mesh Defeaturing	Yes
Defeature Size	Default
Transition	Fast
Span Angle Center	Coarse
Initial Size Seed	Assembly
Bounding Box Diagonal	5.0 m
Average Surface Area	0.0 m²
Minimum Edge Length	3.0 m
Quality	
Check Mesh Quality	Yes, Errors
Error Limits	Standard 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	5
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	No
Pinch Tolerance	Please Define
Generate Pinch on Refresh	No
Statistics	
Nodes	136
Elements	68
Show Detailed Statistics	No

Static Structural (A5)

TABLE 11
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 12
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	Program Controlled
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	Yes
Strain	Yes

Contact Data	Yes
Nonlinear Data	Yes
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 02 TEMEC21359 \Exp02_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 13
Model (A4) > Static Structural (A5) > Loads

Object Name	*Fixed Support at A*	*Fixed Support at B*	*Displacement*	*Force*	*Force 2*
State	Fully Defined				
Scope					
Scoping Method	Geometry Selection				
Geometry	1 Vertex				
Definition					
Type	Fixed Support		Displacement	Force	
Suppressed	No				
Define By			Components		
Coordinate System			Global Coordinate System		
X Component			Free	0. N (ramped)	2000. N (ramped)
Y Component			0. m (ramped)	-2500. N (ramped)	0. N (ramped)
Z Component			0. m (ramped)	0. N (ramped)	

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

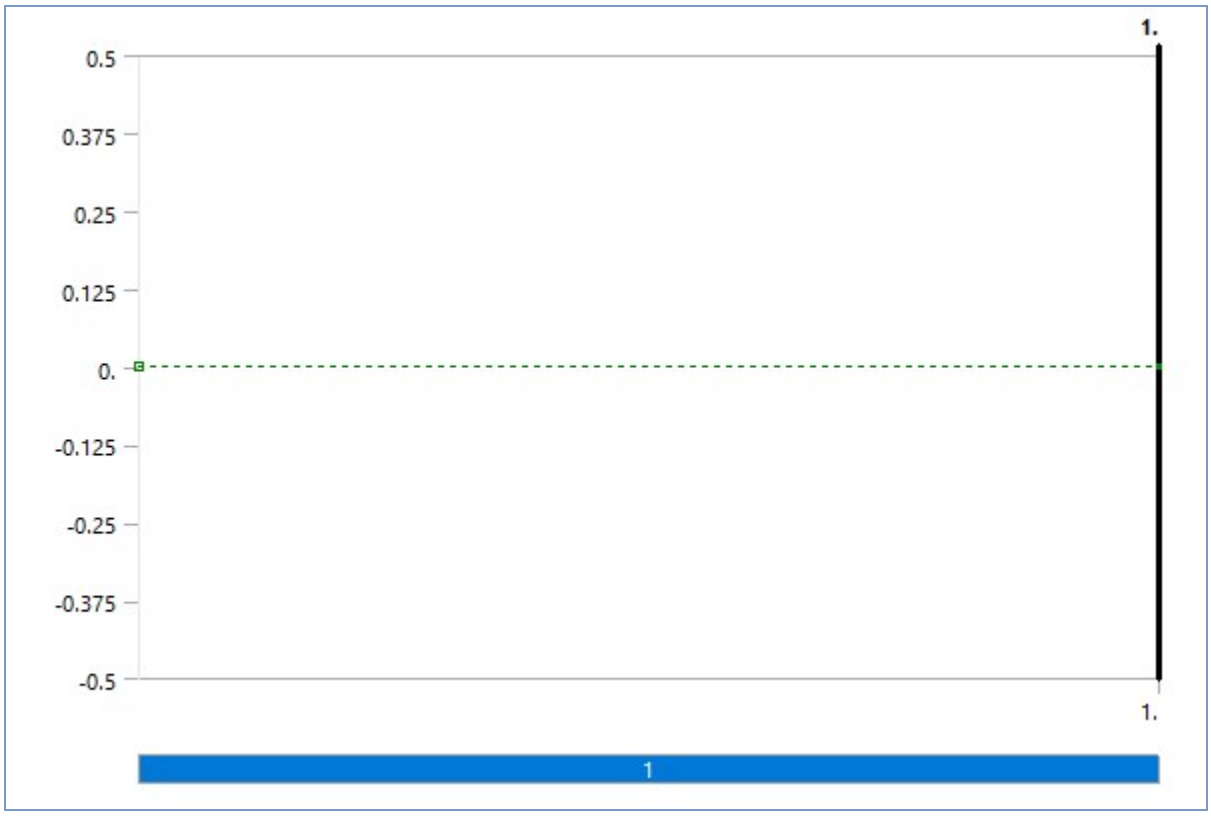


FIGURE 2
Model (A4) > Static Structural (A5) > Force

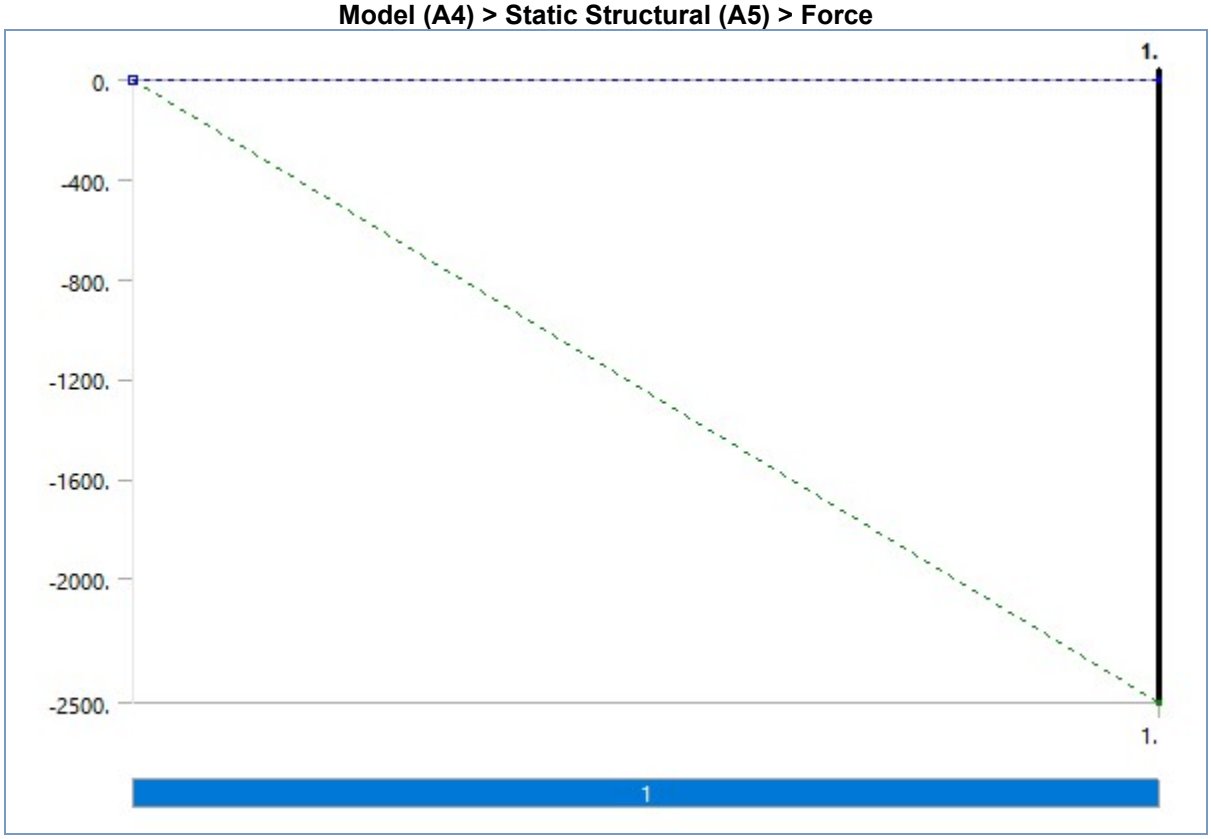
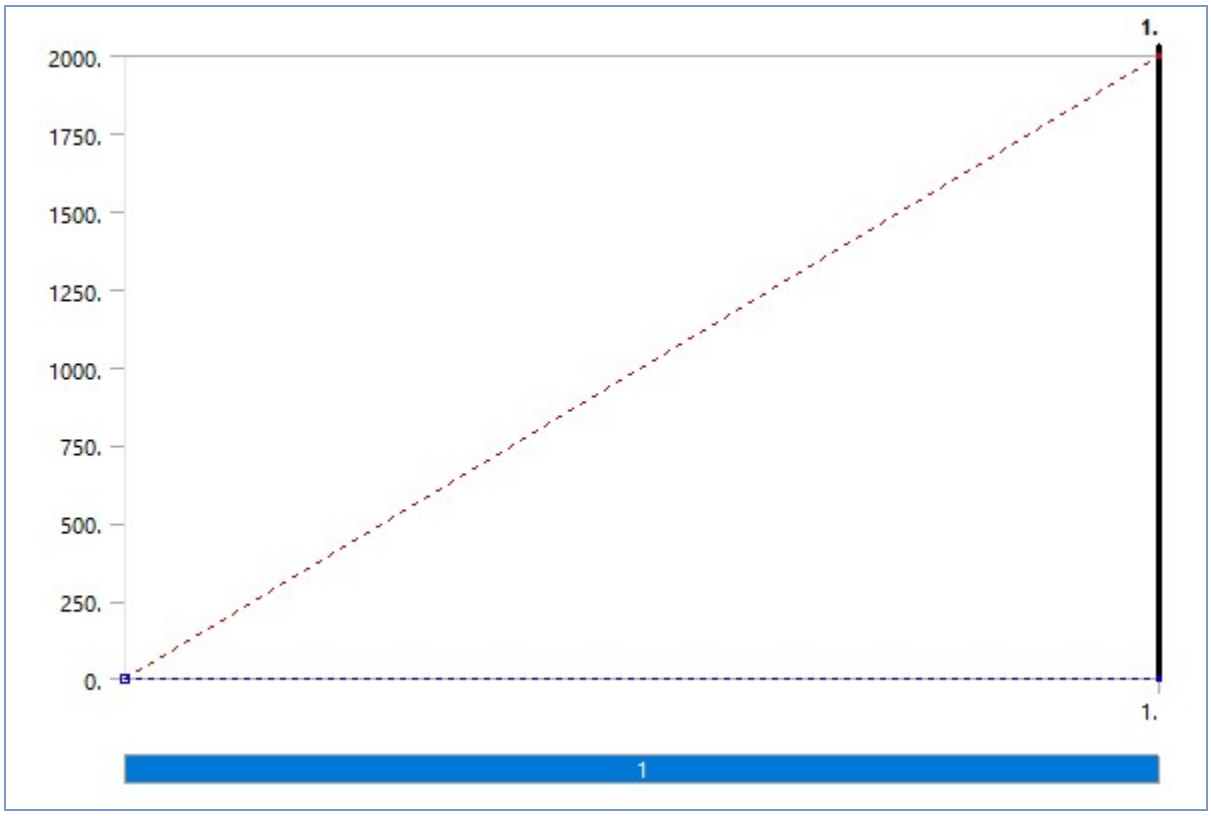


FIGURE 3
Model (A4) > Static Structural (A5) > Force 2



Solution (A6)

TABLE 14
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	3. s
MAPDL Memory Used	86. MB
MAPDL Result File Size	448. KB
Post Processing	
Beam Section Results	No
On Demand Stress/Strain	No

TABLE 15
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 16
Model (A4) > Static Structural (A5) > Solution (A6) > Results

Object Name	*Axial Force*
State	Solved
Scope	
Scoping Method	Geometry Selection
Geometry	All Line Bodies
Definition	
Type	Directional Axial Force
By	Time
Display Time	Last
Separate Data by Entity	No
Coordinate System	Solution Coordinate System
Calculate Time History	Yes
Identifier	
Suppressed	No
Integration Point Results	
Display Option	Unaveraged
Results	
Minimum	-2167.5 N
Maximum	1966. N
Minimum Occurs On	Line Body
Maximum Occurs On	Line Body
Information	
Time	1. s
Load Step	1
Substep	1
Iteration Number	1

FIGURE 4
Model (A4) > Static Structural (A5) > Solution (A6) > Axial Force

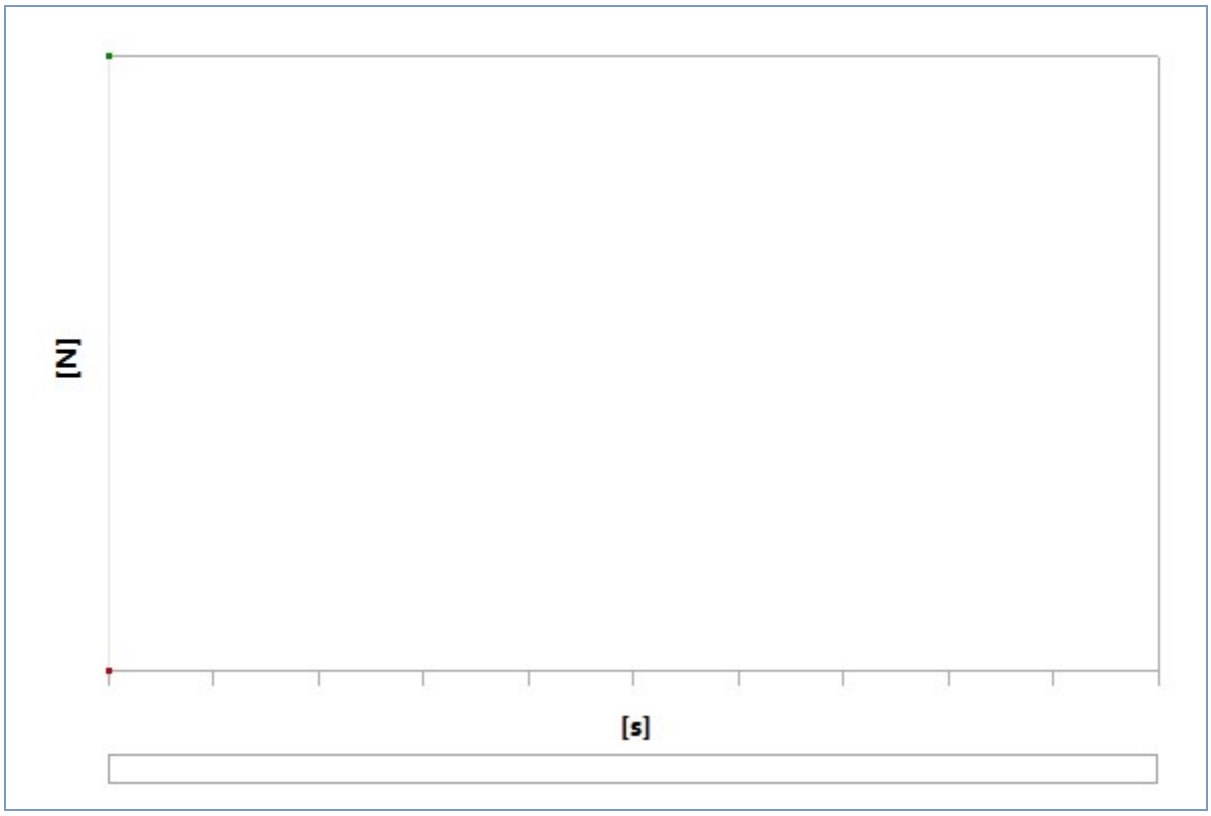


TABLE 17
Model (A4) > Static Structural (A5) > Solution (A6) > Axial Force

Time [s]	Minimum [N]	Maximum [N]
1.	-2167.5	1966.

TABLE 18
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool

Object Name	*Beam Tool*
State	Solved
Scope	
Geometry	All Line Bodies

TABLE 19
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Results

Object Name	*Direct Stress*	*Minimum Combined Stress*	*Maximum Combined Stress*	*Directional Deformation at X axis*	*Directional Deformation at Y axis*
State	Solved				
Definition					
Type	Direct Stress	Minimum Combined Stress	Maximum Combined Stress	Directional Deformation	
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	
Integration Point Results					
Display Option	Averaged				
Results					
Minimum	-21675 Pa	-28635 Pa	-21298 Pa	-4.703e-009 m	-3.0964e-007 m
Maximum	19660 Pa	19483 Pa	23608 Pa	3.7448e-007 m	0. m
Average	378.47 Pa	-1844.2 Pa	2601.1 Pa	1.0665e-007 m	-1.178e-007 m
Minimum Occurs On	Line Body				
Maximum Occurs On	Line Body				
Information					
Time	1. s				
Load Step	1				
Substep	1				
Iteration Number	1				

FIGURE 5
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Direct Stress

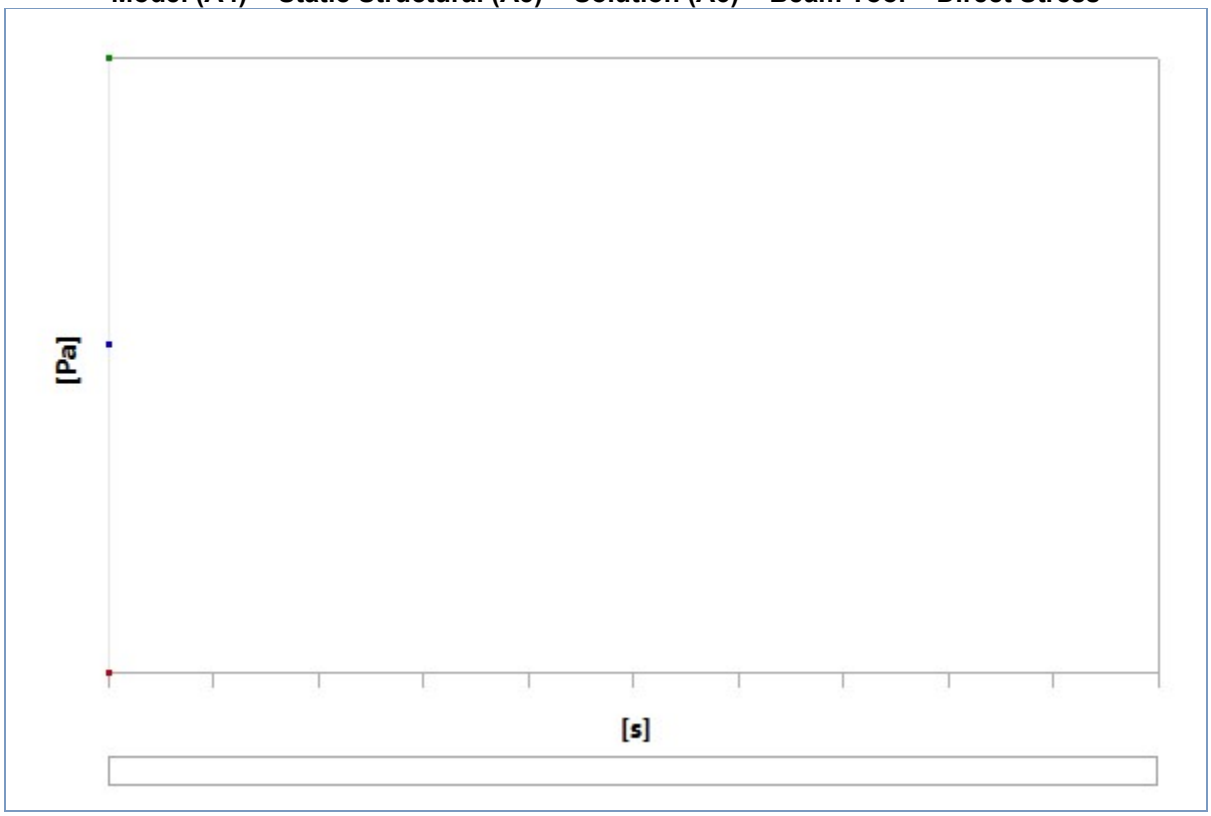


TABLE 20
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Direct Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-21675	19660	378.47

FIGURE 6

Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Minimum Combined Stress

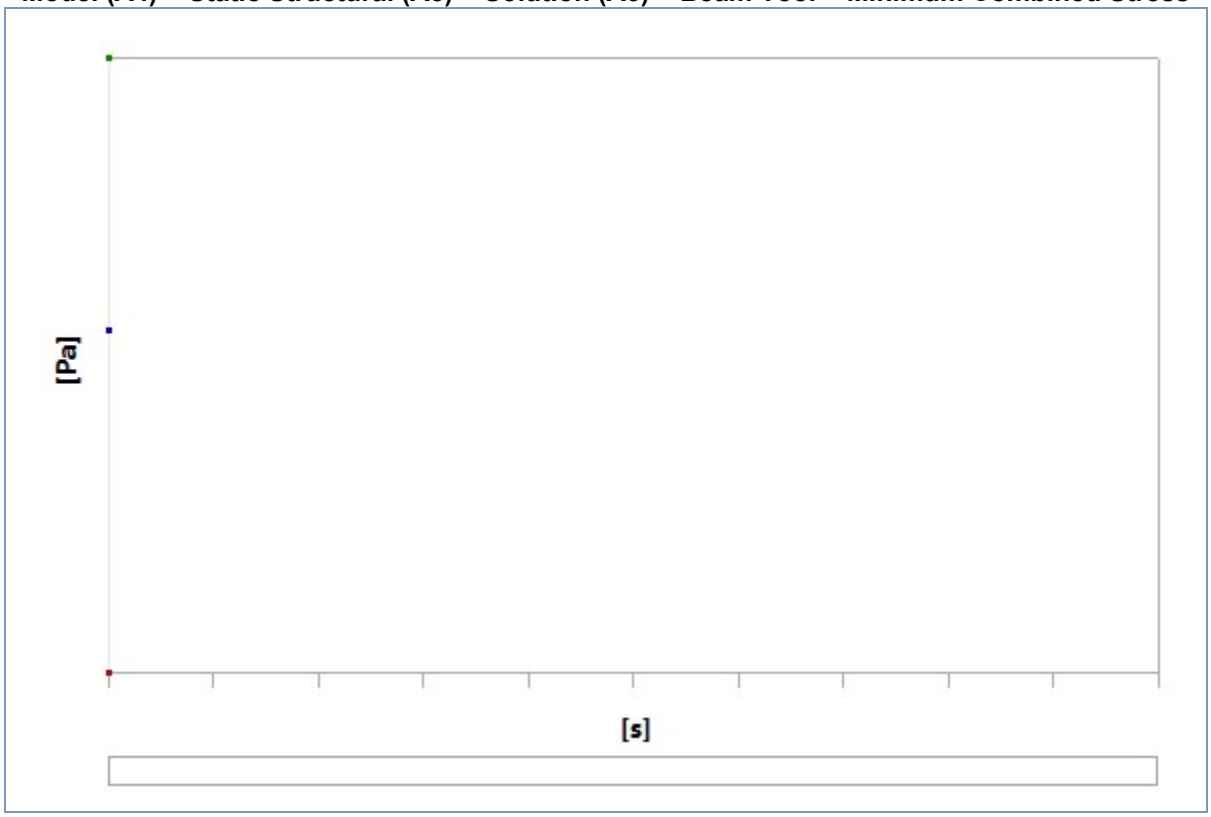


TABLE 21
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Minimum Combined Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-28635	19483	-1844.2

FIGURE 7
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Maximum Combined Stress

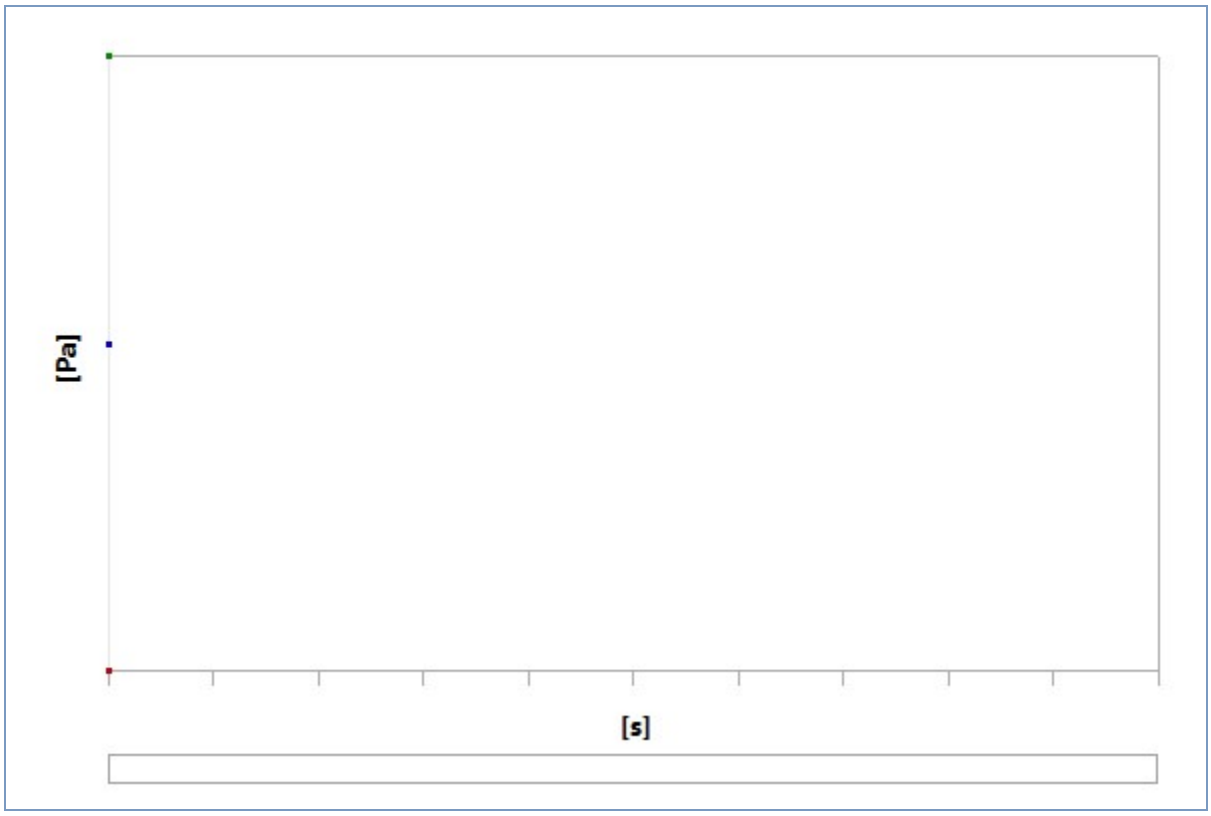


TABLE 22
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Maximum Combined Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	-21298	23608	2601.1

FIGURE 8
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Directional Deformation at X axis

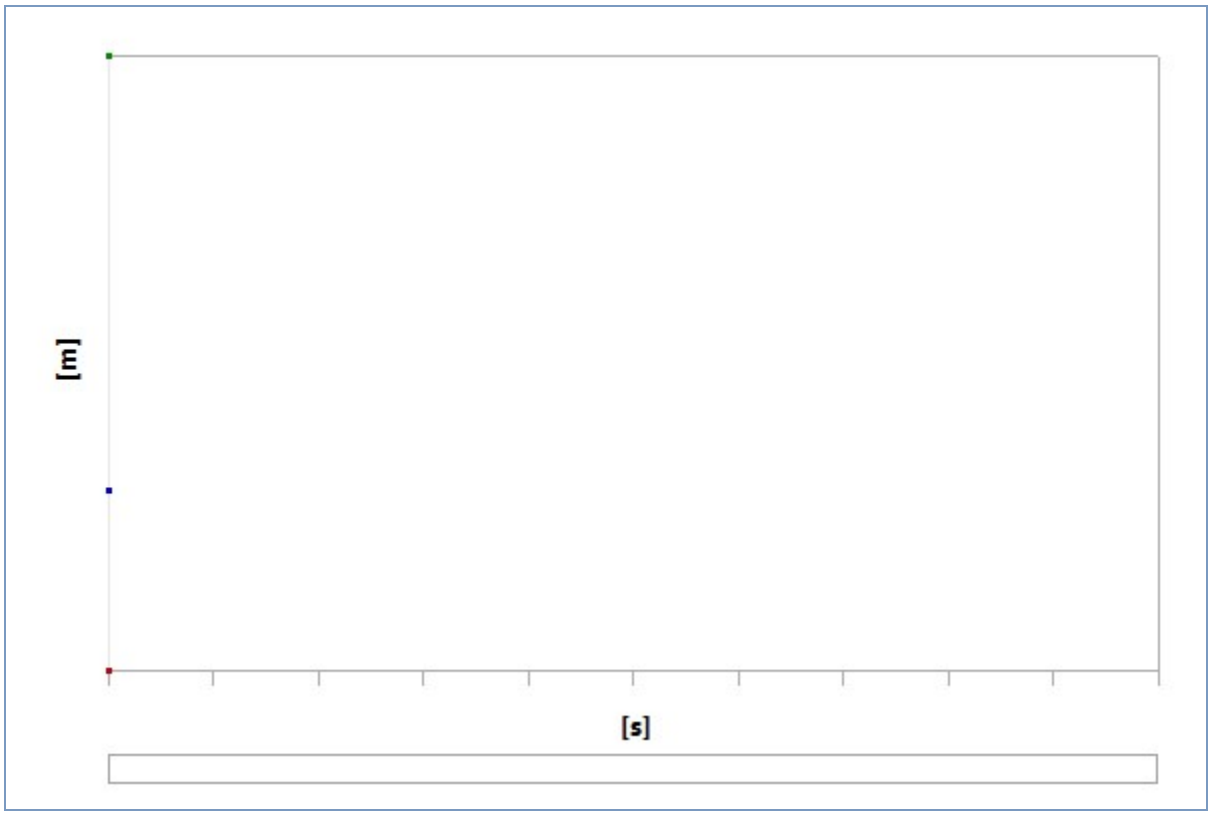


TABLE 23
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Directional Deformation at X axis

Time [s]	Minimum [m]	Maximum [m]	Average [m]
1.	-4.703e-009	3.7448e-007	1.0665e-007

FIGURE 9
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Directional Deformation at Y axis

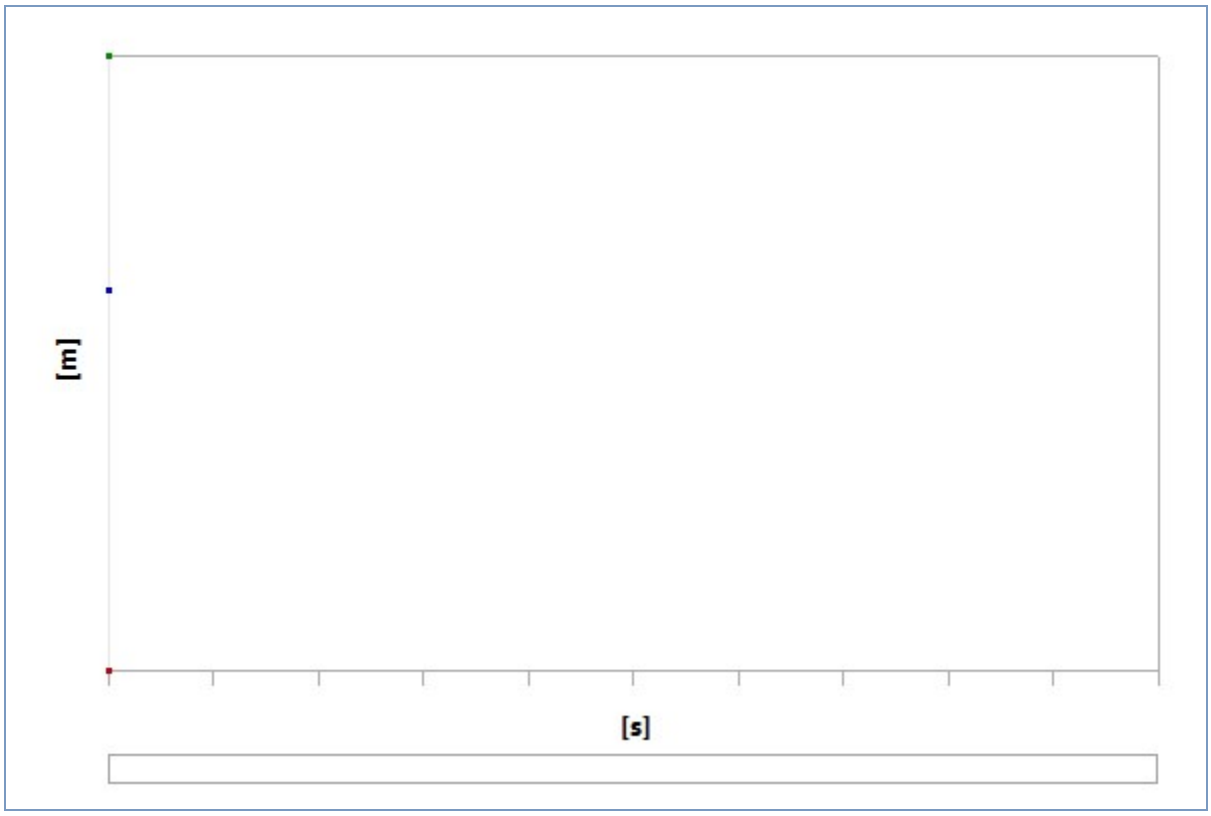


TABLE 24
Model (A4) > Static Structural (A5) > Solution (A6) > Beam Tool > Directional Deformation at Y axis

Time [s]	Minimum [m]	Maximum [m]	Average [m]
1.	-3.0964e-007	0.	-1.178e-007

TABLE 25
Model (A4) > Static Structural (A5) > Solution (A6) > Probes

Object Name	*Force Reaction at A*	*Force Reaction at B*	*Force Reaction at displacement*
State	Solved		
Definition			
Type	Force Reaction		
Location Method	Boundary Condition		
Boundary Condition	Fixed Support at A	Fixed Support at B	Displacement
Orientation	Global Coordinate System		
Suppressed	No		
Options			
Result Selection	All		
Display Time	End Time		
Results			
X Axis	-431.2 N	-1568.8 N	0. N
Y Axis	21.596 N	324.26 N	2154.1 N
Z Axis	1.4593e-009 N	-1.3947e-009 N	-6.1824e-011 N
Total	431.74 N	1602. N	2154.1 N
Maximum Value Over Time			
X Axis	-431.2 N	-1568.8 N	0. N
Y Axis	21.596 N	324.26 N	2154.1 N
Z Axis	1.4593e-009 N	-1.3947e-009 N	-6.1824e-011 N
Total	431.74 N	1602. N	2154.1 N

Minimum Value Over Time			
X Axis	-431.2 N	-1568.8 N	0. N
Y Axis	21.596 N	324.26 N	2154.1 N
Z Axis	1.4593e-009 N	-1.3947e-009 N	-6.1824e-011 N
Total	431.74 N	1602. N	2154.1 N
Information			
Time	1. s		
Load Step	1		
Substep	1		
Iteration Number	1		

FIGURE 10
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction at A

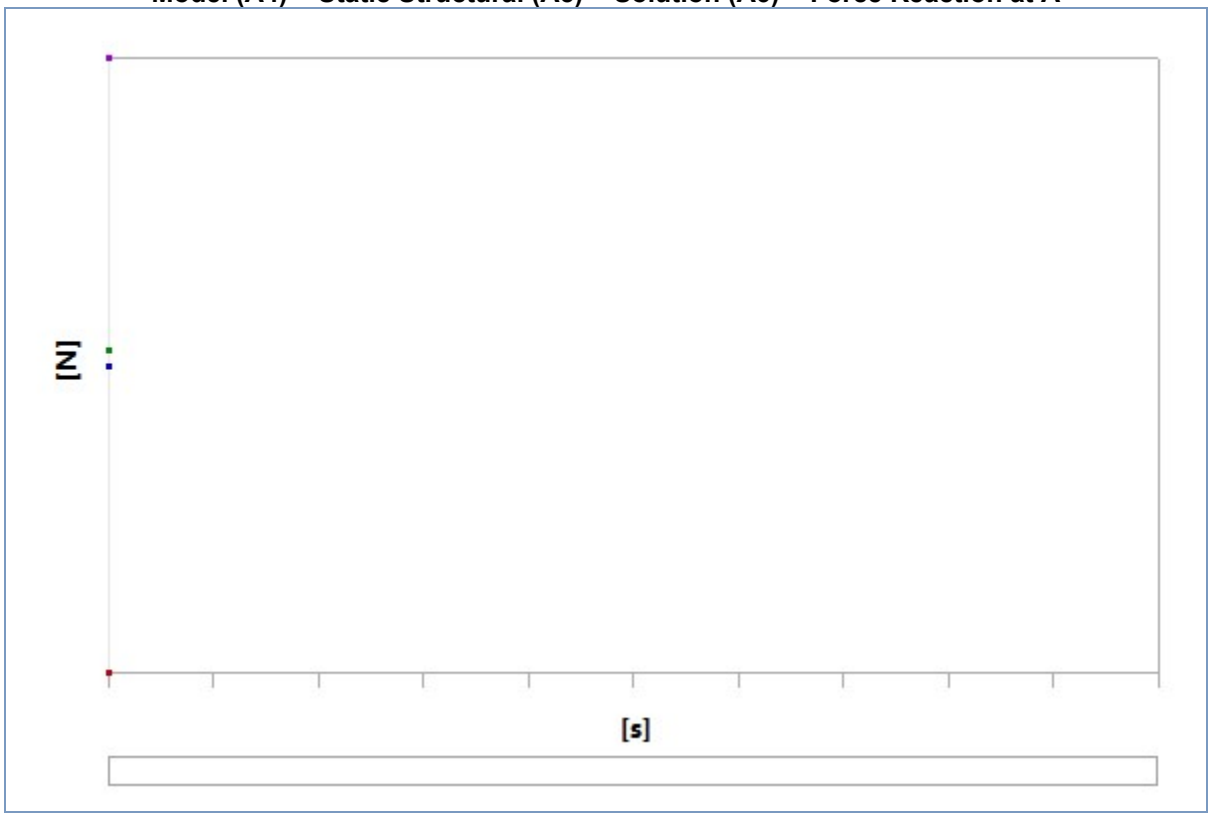


TABLE 26
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction at A

Time [s]	Force Reaction at A (X) [N]	Force Reaction at A (Y) [N]	Force Reaction at A (Z) [N]	Force Reaction at A (Total) [N]
1.	-431.2	21.596	1.4593e-009	431.74

FIGURE 11
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction at B

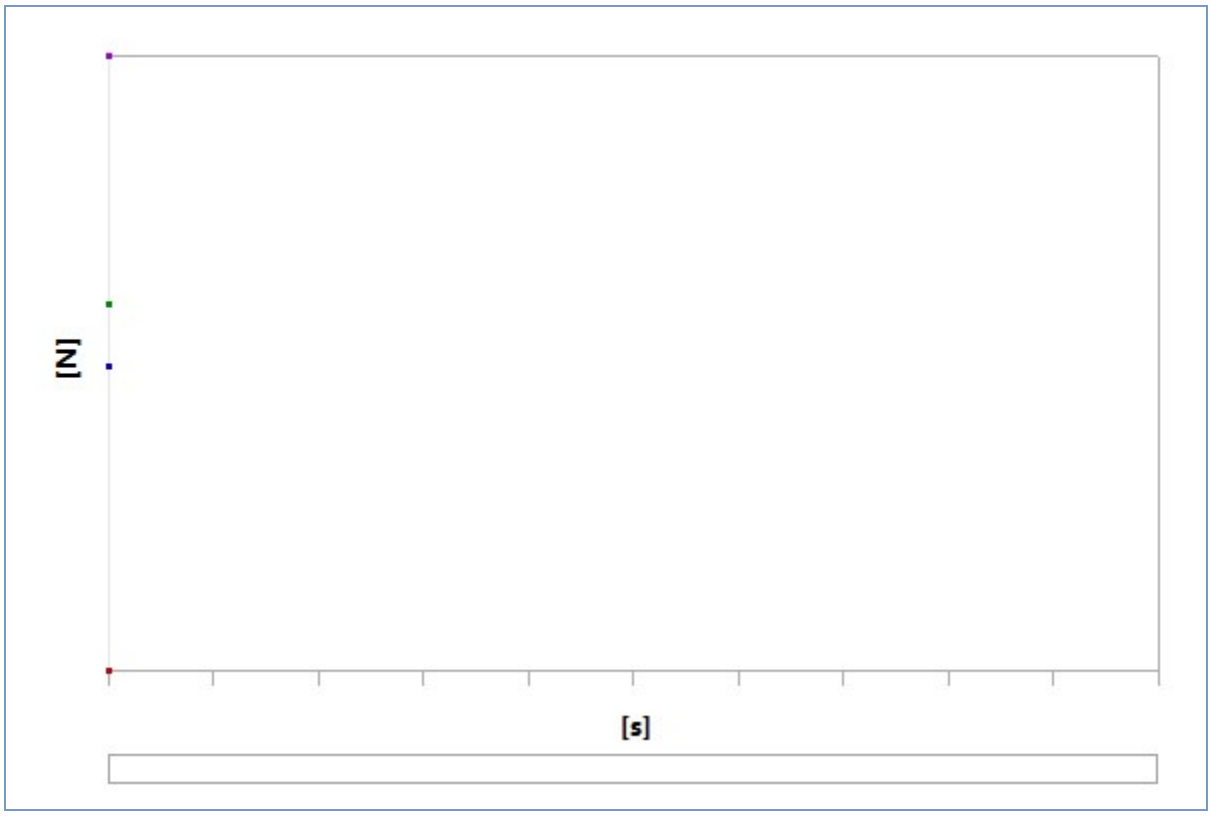


TABLE 27
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction at B

Time [s]	Force Reaction at B (X) [N]	Force Reaction at B (Y) [N]	Force Reaction at B (Z) [N]	Force Reaction at B (Total) [N]
1.	-1568.8	324.26	-1.3947e-009	1602.

FIGURE 12
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction at displacement

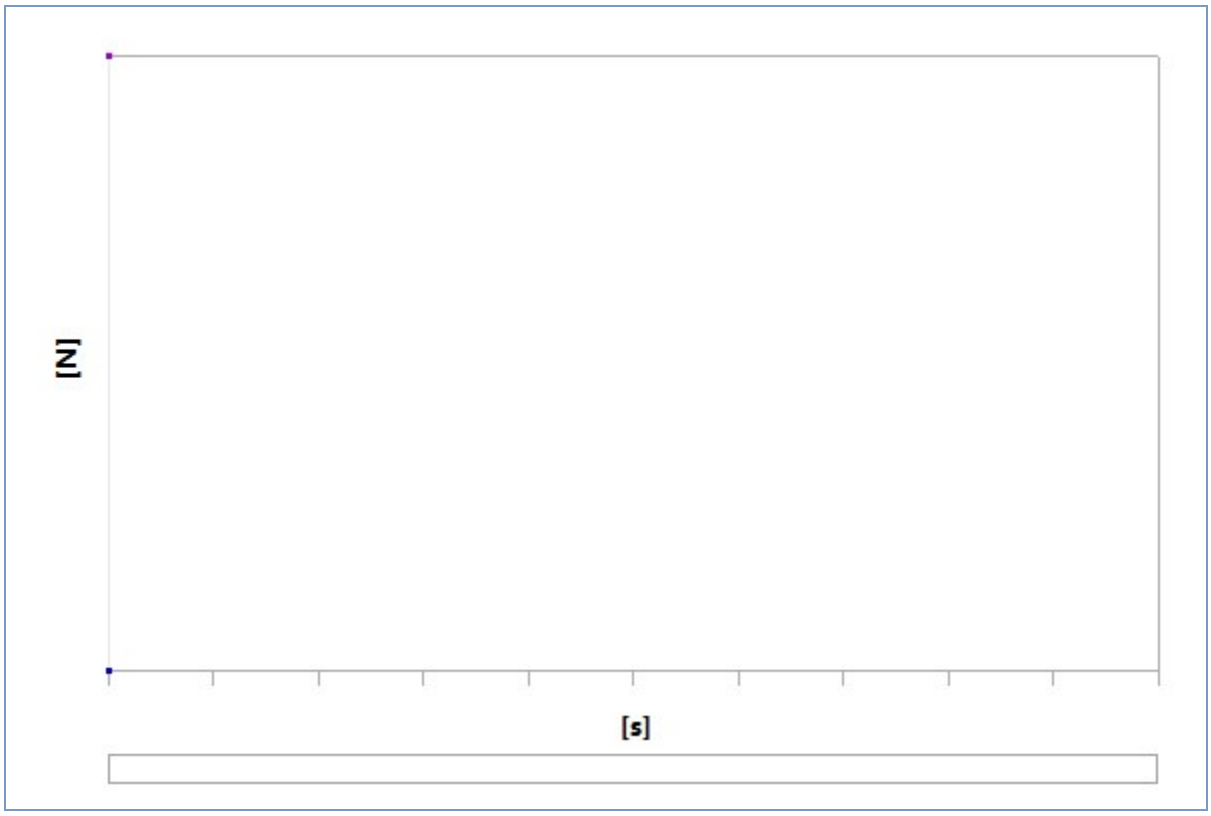


TABLE 28
Model (A4) > Static Structural (A5) > Solution (A6) > Force Reaction at displacement

Time [s]	Force Reaction at displacement (X) [N]	Force Reaction at displacement (Y) [N]	Force Reaction at displacement (Z) [N]	Force Reaction at displacement (Total) [N]
1.	0.	2154.1	-6.1824e-011	2154.1

Material Data

mat1

TABLE 29
mat1 > Isotropic Elasticity

Young's Modulus Pa	Poisson's Ratio	Bulk Modulus Pa	Shear Modulus Pa	Temperature C
2.1e+011	0.3	1.75e+011	8.0769e+010	