

Module 07 Student Workshop: Analysis Settings, Loads, and Supports

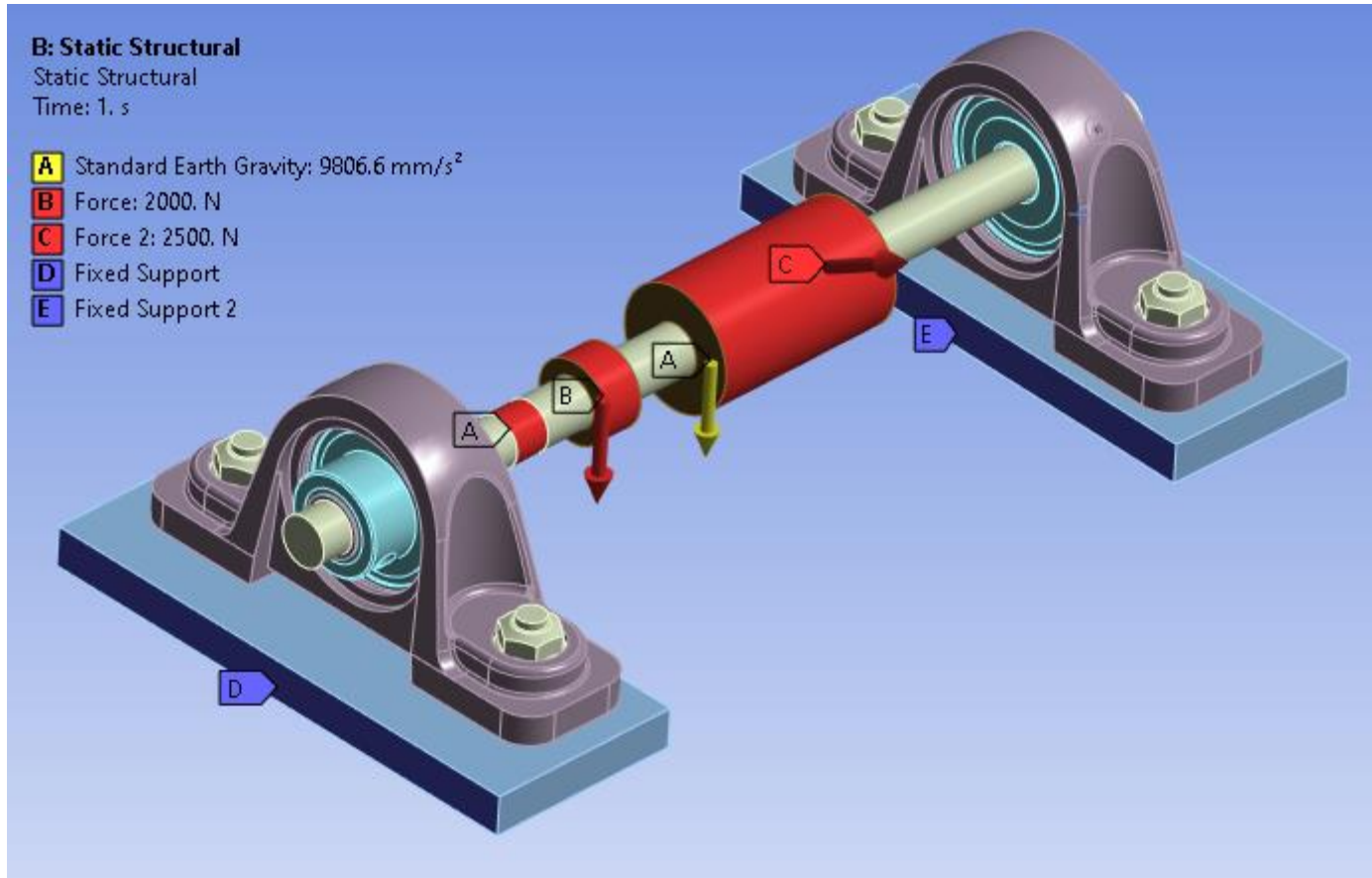
Please note:

- These training materials were developed and tested in Ansys Release 2023 R1. Although they are expected to behave similarly in later releases, this has not been tested and is not guaranteed.
- The screen images included with these training materials may vary from the visual appearance of a local software session.
- Although some workshop files may open successfully in previous releases, backward compatibility is somewhat unlikely and is not guaranteed.



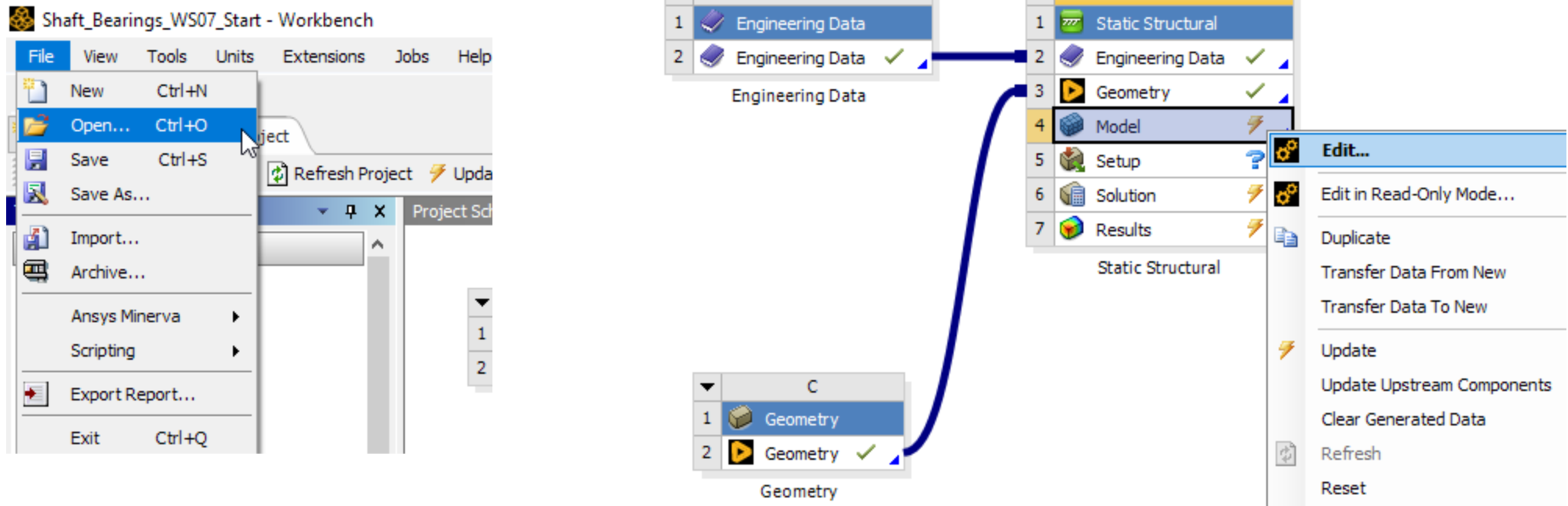
Workshop 07: Analysis Settings, Loads, and Supports

- Use this guide to work on the Journal Bearing model.



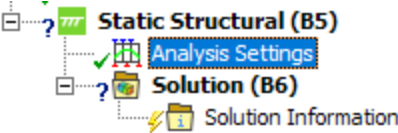
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- Open archive file “Shaft_Bearings_WS07_Start.wbpz” or continue with the project as it was after Module 06 completion.
- Open Mechanical



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- Verify the Analysis Settings.
- Check the Analysis contains 1 step.



Static Structural (B5)

Analysis Settings

Solution (B6)

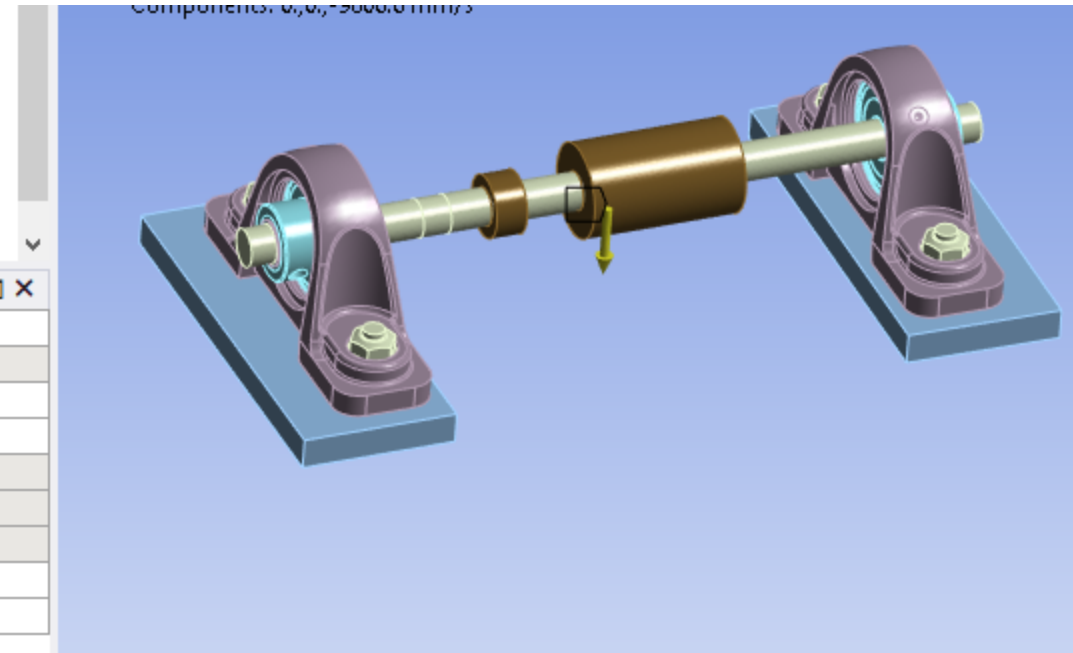
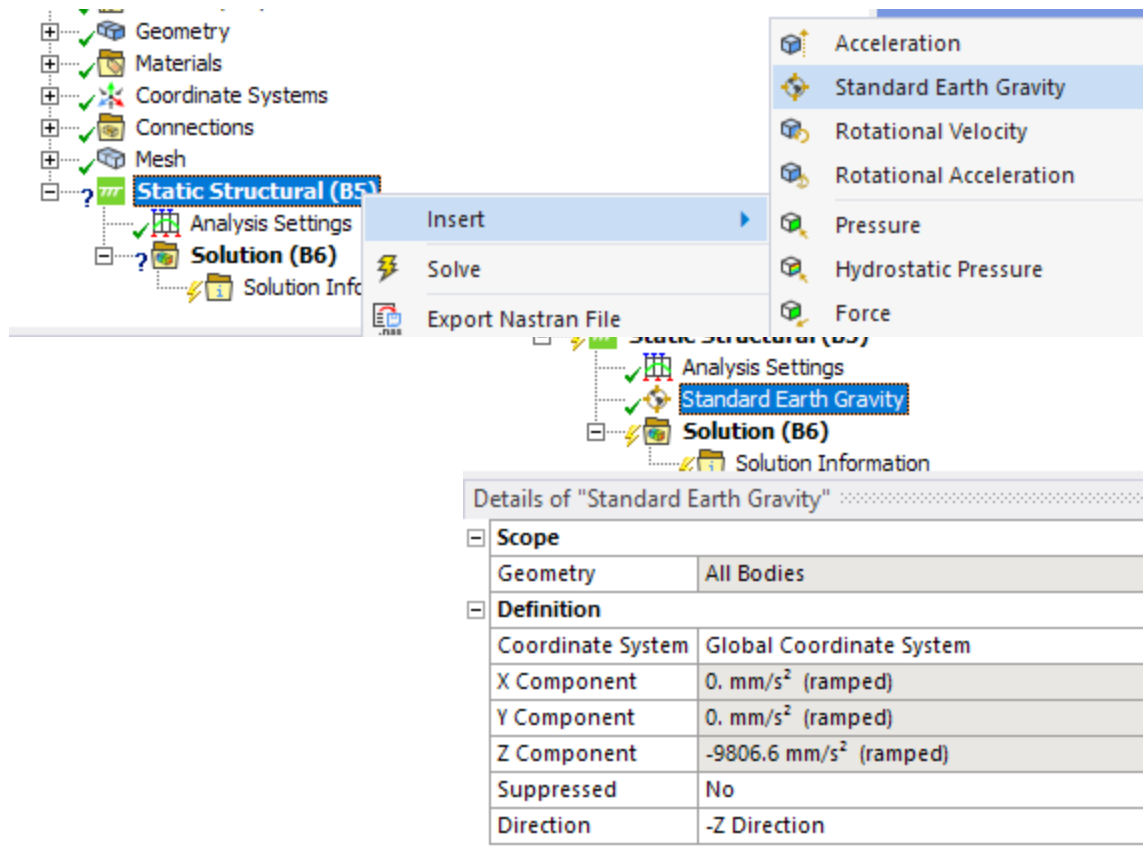
Solution Information

Details of "Analysis Settings"

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
Large Deflection	Off
Inertia Relief	Off
Quasi-Static Solution	Off
Rotordynamics Controls	
Restart Controls	
Nonlinear Controls	
Advanced	
Output Controls	
Analysis Data Management	

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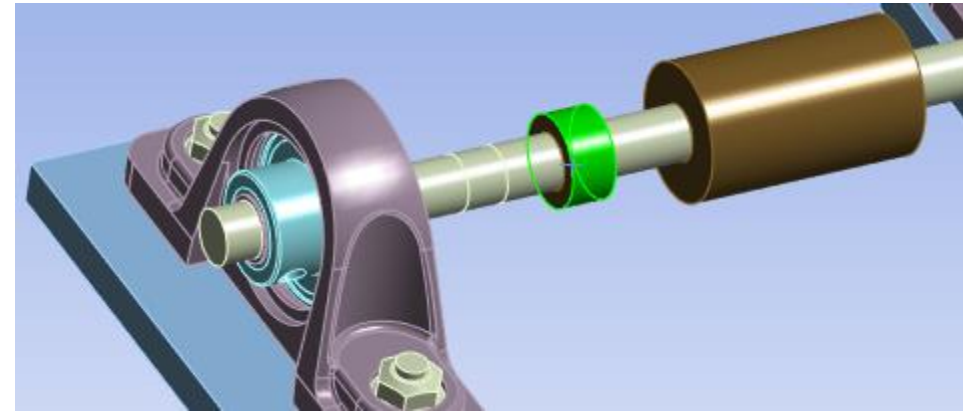
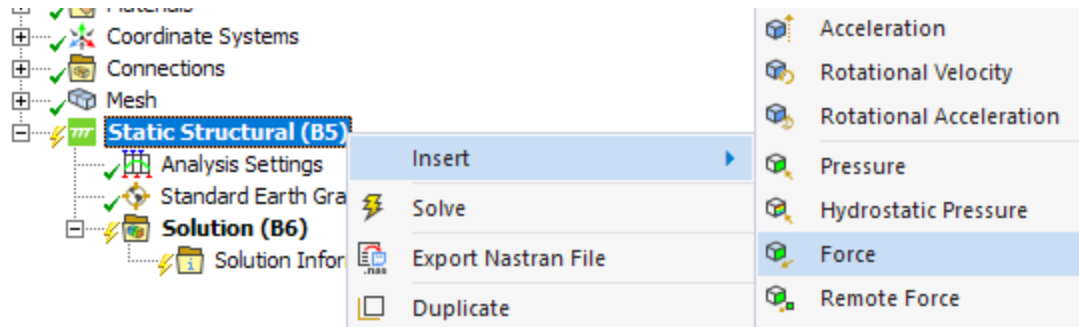
- Define the loads:
 - Insert a Standard Earth Gravity load (RMB on Static Structural Branch), and orient it in -Z direction of the Global Coordinate System.



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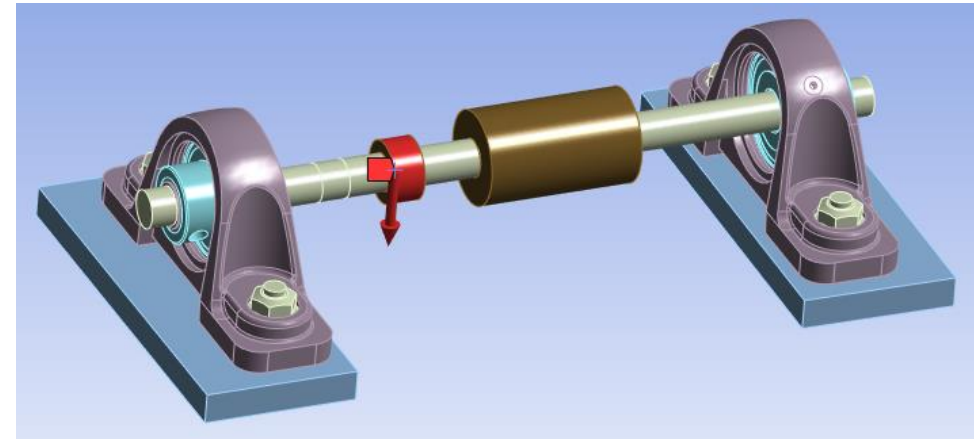
- Define the loads:

- Insert a Force load (RMB on Static Structural Branch), scope it to the external face of Pulley A (the smallest one) and Apply the selection.



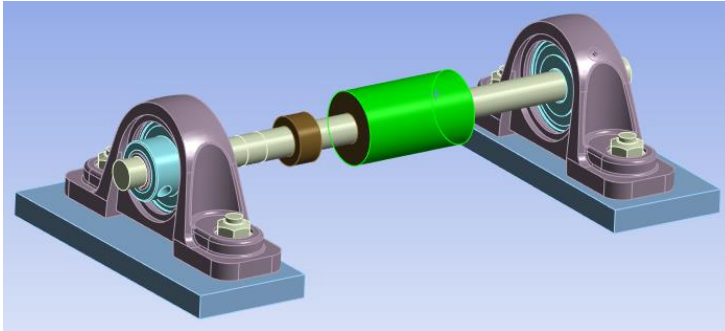
- Change the 'Define By' setting to Components and define a -2000 N magnitude in the Global Coordinate System Z direction

Details of "Force"	
Scope	
Scoping Method	Geometry Selection
Geometry	1 Face
Definition	
Type	Force
Define By	Components
Applied By	Surface Effect
Coordinate System	Global Coordinate System
<input type="checkbox"/> X Component	0. N (ramped)
<input type="checkbox"/> Y Component	0. N (ramped)
<input checked="" type="checkbox"/> Z Component	-2000. N (ramped)
Suppressed	No



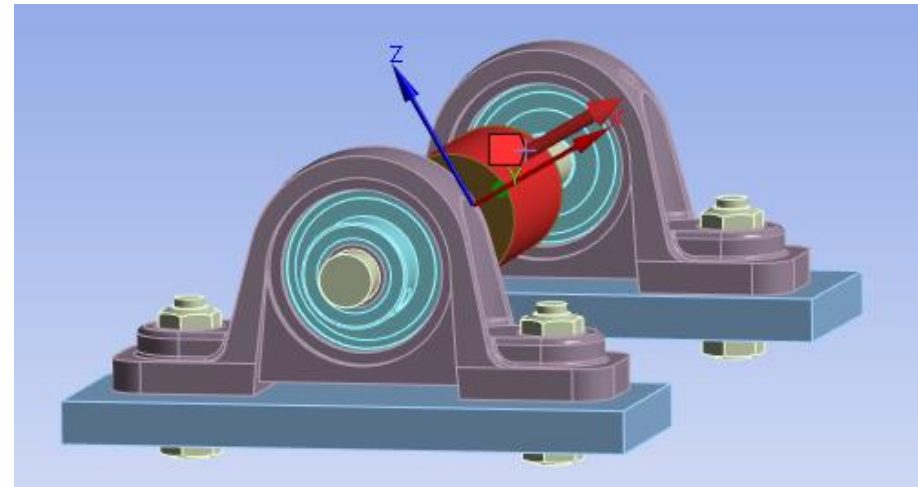
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- Define the loads:
 - Insert another Force load, scope it to the external face of the pulley B (the biggest one) and Apply the selection.



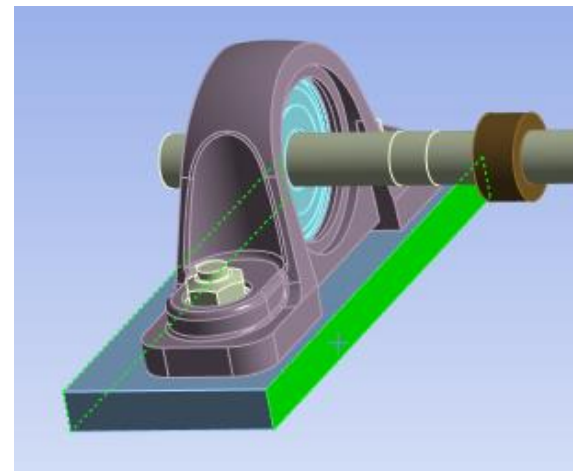
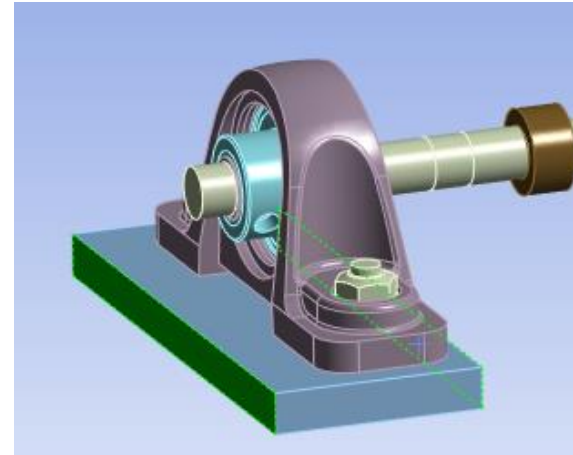
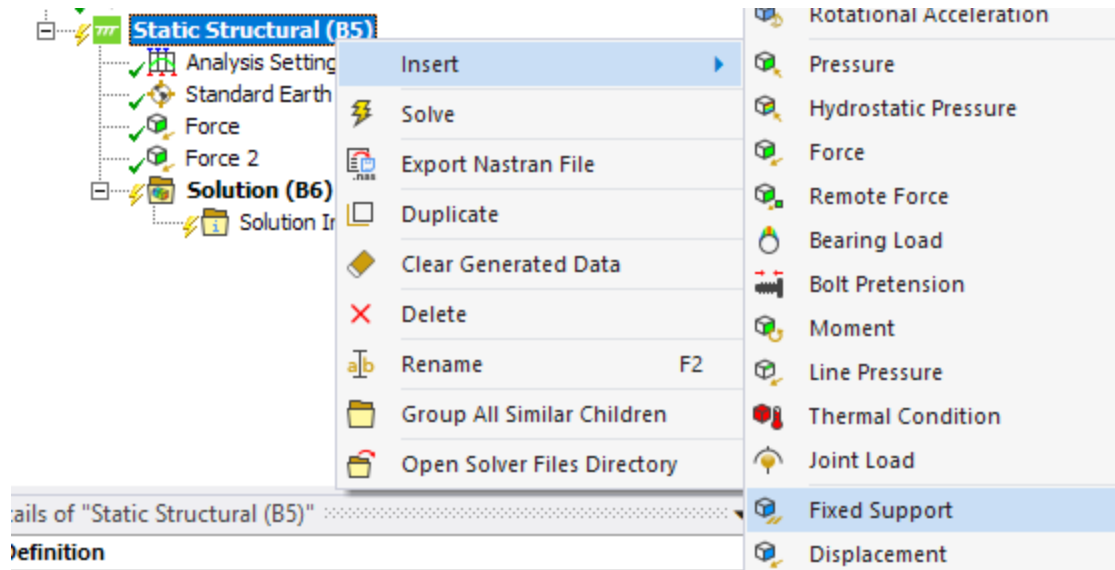
- Change the 'Define By' setting to Components and define a 2500 N magnitude in the 'Coordinate System' X direction (be sure to use the defined local coordinate system and not the default global system).

Details of "Force 2"	
[-] Scope	
Scoping Method	Geometry Selection
Geometry	1 Face
[-] Definition	
Type	Force
Define By	Components
Applied By	Surface Effect
Coordinate System	Coordinate System
<input checked="" type="checkbox"/> X Component	2500. N (ramped)
<input type="checkbox"/> Y Component	0. N (ramped)
<input type="checkbox"/> Z Component	0. N (ramped)
Suppressed	No



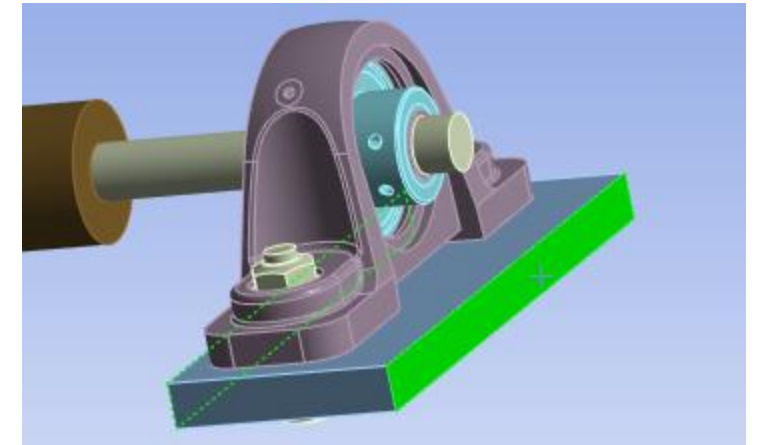
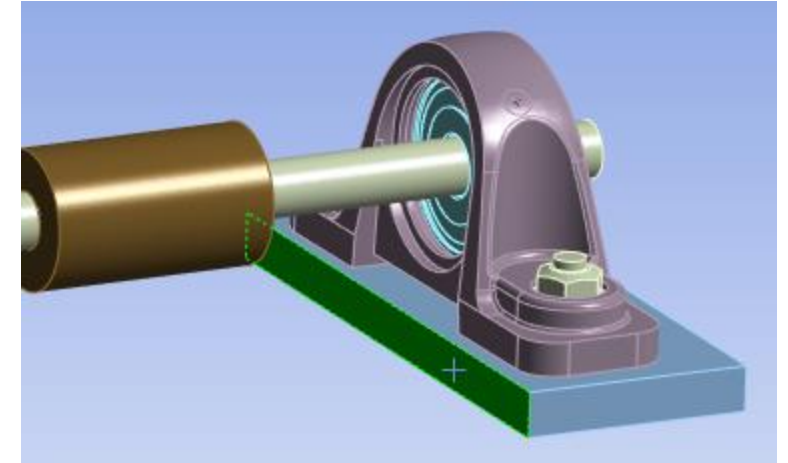
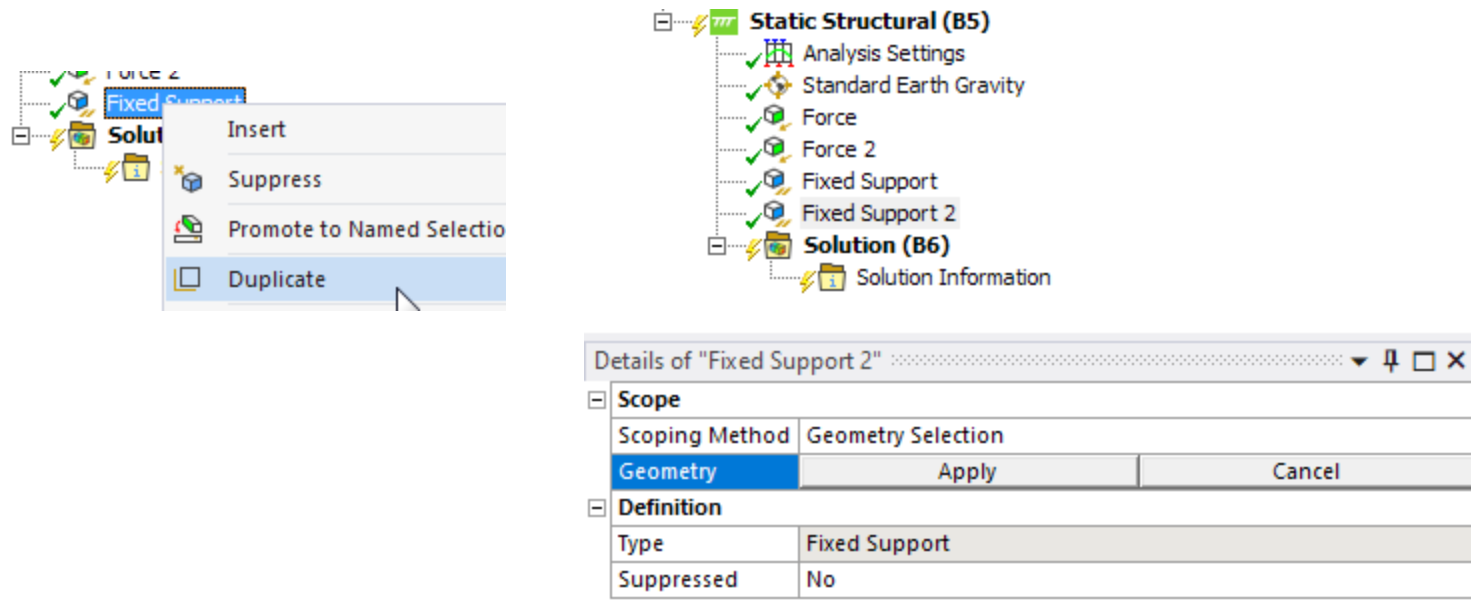
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- Next, define the supports:
 - Insert a Fixed Support and scope it to the 2 long side faces of one of the Ground bodies.



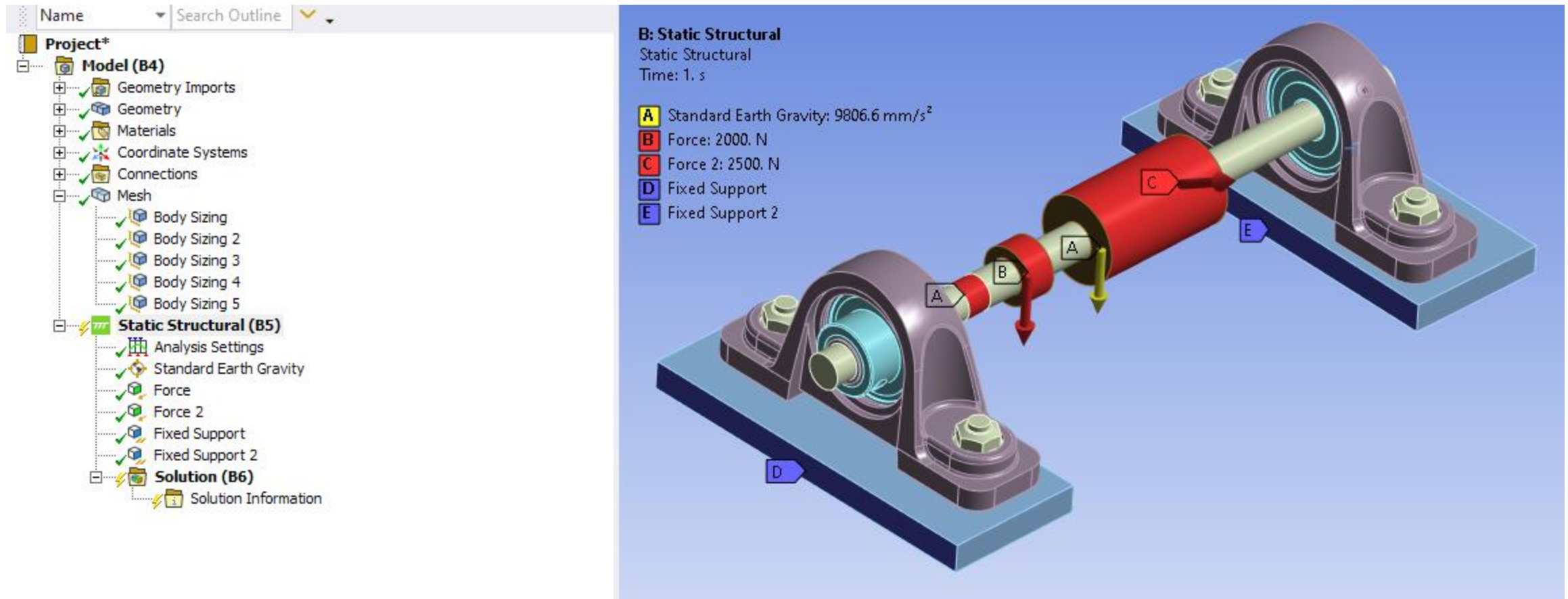
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- Define supports:
 - Duplicate the Fixed Support (RMB → Duplicate)
 - Edit the Geometry scoping by clicking in the 2 Faces field.
 - The Apply and Cancel buttons appear.
 - Select the 2 long side faces of the other Ground body and Apply selection.



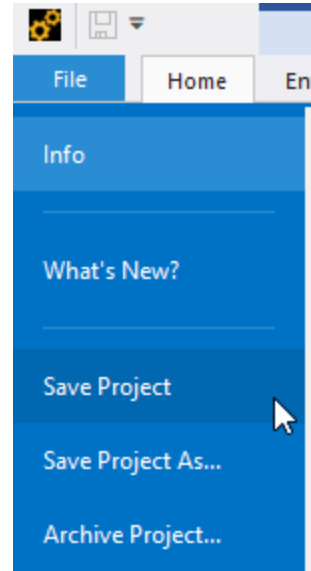
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- Click on the Static Structural branch, and review the Graphics window to see that all loads and supports are correctly defined.



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- Save Project for use later if desired.





End of presentation