

Pressure Vessel - Physics Setup

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[Problem Specification](#)

[1. Pre-Analysis & Start-Up](#)

[2. Geometry](#)

[3. Mesh](#)

[4. Physics Setup](#)

[5. Numerical Solution](#)

[6. Numerical Results](#)

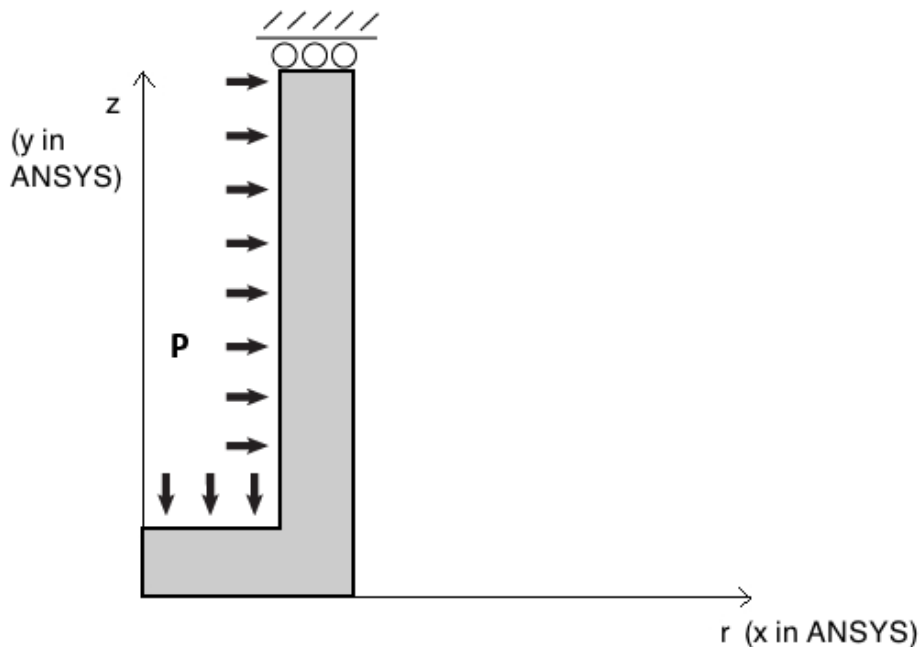
[7. Verification & Validation](#)

[Exercises](#)

[Comments](#)

Physics Setup

Here are the boundary conditions we will impose on the model:



Symmetry boundary condition at the top edge implies zero displacement in the axial (y) direction. The top edge represents a plane of symmetry since it is located at the mid-length of the cylinder and we are modeling only half the length. In ANSYS, we impose this symmetry boundary condition using a "Frictionless support".

In an axisymmetric model, no displacement constraints are necessary in the radial direction to prevent rigid body motion in that direction. This is because radial displacement represents expansion/contraction of the structure which is resisted structurally.

The following video shows how to specify the physics of the problem: axisymmetric analysis, material properties (Young's modulus and Poisson ratio) and boundary conditions. These settings get fed into the element formulation when obtaining the numerical solution later.

Note: We perform an axisymmetric analysis by clicking on **Geometry**, expanding **Definition**, and selecting **Axisymmetric** for the 2D behavior.

[Go to Step 5: Numerical Solution](#)

[Go to all ANSYS Learning Modules](#)