Pressure Vessel - Physics Setup

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Physics Setup

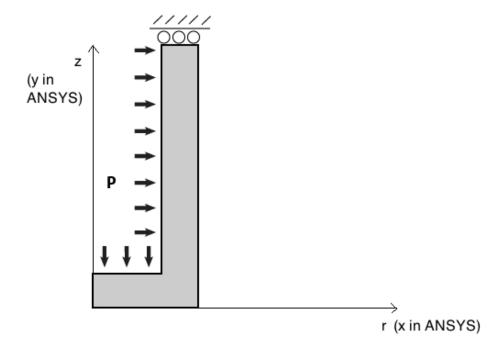Here are the boundary conditions we will impose on the model:

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

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