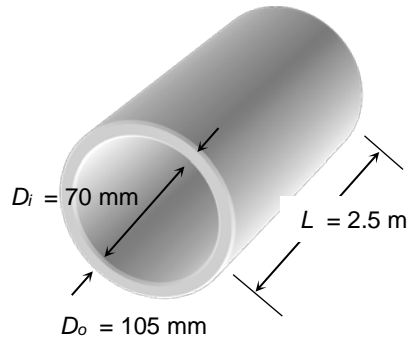

Example

A cast iron pipe has inside and outside diameters of 70 mm and 105 mm, respectively. The length of the pipe is 2.5 m and the coefficient of thermal expansion is $\alpha = 12.1 \times 10^{-6} / ^\circ\text{C}$. For a 70°C increase in temperature, find the new pipe dimensions.



Example

A steel ($E = 200 \text{ GPa}$) rod with diameter 30 mm and length 1.0 m is attached to a 2.0-m long Monel ($E = 180 \text{ GPa}$) *tube* via a rigid plate. The Monel tube has internal diameter of 40 mm and a wall thickness of 10 mm. Determine the total axial load required to stretch the total assembly 3.00 mm.

