Chapter 15 Problem 42 [†]

Given
$l = 50\ cm = 0.50\ m$
$w = 90\ cm = 0.90\ m$
$P_{in} = 0.75\ atm$
$P_{out} = 0.25\ atm$

Solution
Find the force required to pull the window inward.

The forces acting on the window are the outside pressure and the inside pressure.

$$F = F_{in} - F_{out} = AP_{in} - AP_{out}$$

$$F = A(P_{in} - P_{out}) = lw(P_{in} - P_{out})$$

Substitute in the known values gives

$$F = (0.50\ m)(0.90\ m)(.75\ atm - .25\ atm)$$

$$F = 0.225\ atm \cdot m^2$$

Convert the atmospheres into Pascal's gives

$$F = 0.225\ atm \cdot m^2 \left(\frac{1.013 \times 10^5\ N/m^2}{1atm} \right)$$

$$F = 2.28 \times 10^4\ N$$

The passenger will not be able to exert this kind of force.

[†]Problem from Essential University Physics, Wolfson