Answer on Question 66269, Physics, Mechanics, Relativity

Question:

A hydraulic press consist of a large piston with cross-sectional area $A_1 = 200 \ cm^2$ and the small piston with cross-sectional area $A_2 = 2 \ cm^2$. If a force of $200 \ N$ is applied to the small piston, find the force on the large piston.

Solution:

By the hydraulic press formula we have:

$$\frac{F_1}{A_1} = \frac{F_2}{A_2},$$

here, A_1 is the cross-sectional area of the large piston, A_2 is the cross-sectional area of the small piston, F_1 is the force acting on the large piston, F_2 is the force acting on the small piston.

Then, from this formula we can find the force acting on the large piston:

$$F_1 = F_2 \cdot \frac{A_1}{A_2} = 200 \ N \cdot \frac{200 \ cm^2}{2 \ cm^2} = 20000 \ N.$$

Answer:

$F_1 = 20000 \ N.$