

Question #69141, Physics / Classical Mechanics

The rotor blades of a helicopter propel 2500kg of air vertically downwards every second. The air, initially at rest, is accelerated to a speed of 15 m/s. If the helicopter starts to rise with an acceleration of 12.5 m/s, what is the mass of the helicopter?

**Solution**

$$m = \frac{F}{a};$$

$$F = \frac{\Delta p}{\Delta t} = \frac{m\Delta v}{\Delta t};$$

$$F = \frac{2500 \times 15}{1} = 37500 \text{ N}$$

$$m = \frac{37500}{12.5} = 3000 \text{ kg}$$

**Answer:** 3000 kg.

Answer provided by <https://www.AssignmentExpert.com>