



 The Propeller Explained

24 min



 How Do Propellers Work? (Mr. Wizard)

3 min 47 se



Propellers

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by [Chris Woodford](#). Last updated: June 30, 2016.

If you want to move forward, you need to push backward; that fundamental law of physics was first described in the 18th century by Sir Isaac Newton and still holds true today. [Newton's third law of motion](#) (sometimes called "action and reaction") is not always obvious, but it's the essence of anything that moves us through the world.

When you're walking down the street, your feet push back against the sidewalk to move you forward. In a car, it's the [wheels](#) that do something similar as their tires kick back against the road. But what about [ships](#) and [planes](#) powered by propellers? They too use Newton's third law, because a propeller pulls or pushes you forward by hurling a mass of air or [water](#) behind you. How exactly does it work? Why is it such a funny shape? Let's take a

[clear look!](#)



Newton's 3rd Law

→ "for every action there is an opposite but equal reaction" Ex) Push your foot back to get to move forward

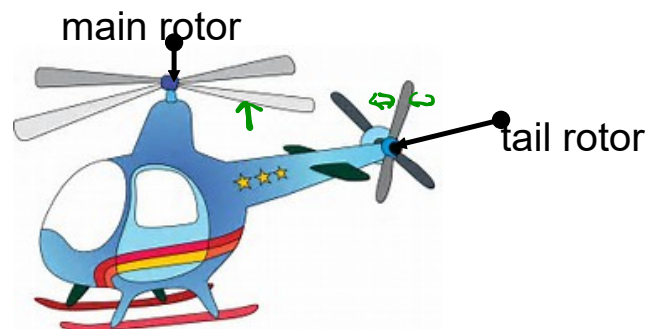
A propeller is a machine that moves you forward through a fluid (a liquid or gas) when you turn it. Though it works the same way as a screw, it looks a bit different: usually it has two, three, or four twisted blades (sometimes more) poking out at angles from a central hub spun around by an engine or motor. The twists and the angles are really important.



Helicopters



Helicopters can fly but they have no wings. Instead, a helicopter gets lift from spinning blades called "rotors" that are attached to the top of the helicopter. A second, smaller rotor called the tail rotor helps to keep the helicopter from spinning out of control.




Actually, if a person cut the rotor in half, you would see the same shape as a wing which is how the helicopter flies. (This main rotor allows a helicopter to lift straight up in the air without using a runway and to 'hover', remaining in the same place in the air without moving.)

know definition

Being able to fly slow, hover and take off from a small place has made the helicopter useful for many jobs that airplanes cannot do. These include things like reporting on traffic conditions in big cities, lifting skiers to high mountain tops, uses in the logging industry, fighting forest fires and lifting heavy objects.

Helicopter logging video 7 min



 RMR: Rick Goes Heli-Logging



Propeller Design



Each fin of a propeller has an airfoil shape that is angled. The angle is the greatest toward the center because the speed of the propeller through the air is slower close to the hub. (The bend makes up for this)