

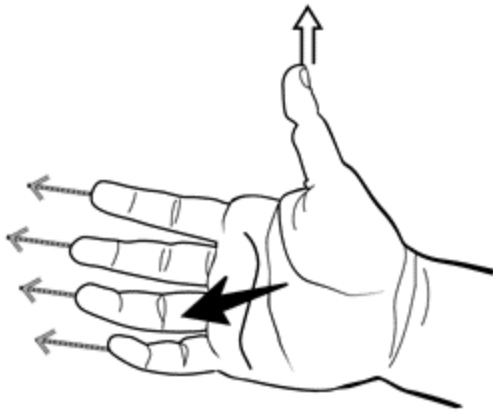
The Motor Principle

What Happens

When a current carrying conductor is placed (or located) in an external magnetic field, the conductor experiences a force that is perpendicular to both itself and the external magnetic field.

RHR for Motor Principle

We use the right hand palm rule to determine the direction of the force on the wire.



When the electricity is turned on, current flows through the wire; the wire will experience a force causing it to move in a direction perpendicular to the magnetic field.

Fingers:

Palm:

Thumb:

Note: the wire carrying the current must be inside of a magnetic field in order for it to experience a force.

Why

Consider the situations below. There is an **external magnetic field** and a **current carrying conductor** in the middle of it. The current is flowing out into the page. Draw in the magnetic fields from the external permanent magnets and the magnetic field produced around the current carrying wire.



In this next example the current is going into the page. Follow the same procedure as above.



Explanation