



Gyroscope - What does a gyroscope do?

Fact

- The heart of a gyroscope is something that spins very fast – a toy spinning top for example.
- Once a gyroscope is spinning round its “spin axis” (the point it’s spinning around) it resists any attempt to change the direction of that axis. This is called gyroscopic Inertia. It’s what causes a spinning frisbee to remain stable as it spins through the air or a spinning yoyo to move smoothly along its string.
- Gyroscopes are also used in aircraft in a device called an “artificial horizon”. This allows a pilot to fly the plane when there is poor visibility and they can’t see the horizon to make sure they are flying level. The pilot can watch the artificial horizon to make sure the plane stays level and on course.

Do you know

- The gyroscope was invented about 150 years ago
- The Russian MIR Space Station uses 11 Gyroscopes to keep its orientation to the sun.

Experiments you can do

Experiment with a spinning top to see how gyroscopes work. You can make a spinning top by sticking a tooth pick through the centre of a circle of cardboard. Set the spinning top spinning and watch how it spins on its “Spin Axis” that’s the line the tooth pick makes from the point that it’s spinning on up along the toothpick. When the top is spinning really fast the toothpick is in a vertical line (that’s straight up and down). As the spinning top slows down the toothpick will start to tilt to one side and eventually it will fall over.

Set the top spinning again and this time touch it with your finger on one side. Does it continue to spin? You will have knocked it off its spin axis – what happens?

Other Investigations

It’s not going to be easy to get a bicycle wheel set up like we did in the programme – your school may have one but if they don’t see if you can find an old vinyl record that no one wants to play anymore.

If a pencil will fit through the hole use that to hold on to or perhaps a knitting needle or wooden kebab stick. Hold the pencil, kebab stick or whatever will fit through the hole with a hand on either side of the record and get someone to help you to spin the record really fast. Watch how easily it spins. Then tilt the stick so it slopes down to one side. You will have knocked it off its spin axis – what happens?

Jokes