

Andreas Efraim

Professor Voisard

Writing for engineers

March 21st, 2019

How Does a Car Engine Work? (first draft)

What is a car engine?

A car engine is what helps the car move, it is where the car generates all the power. The first engine was created during the mid 1800s by a man named Karl Benz, he was the founder of Mercedes Benz and although he created the car engine way back during the 1800s his patent remained one of the greatest technological advancements of all time. In today's world everyone's has a car and if it wasn't for the car engine created way back in the 1800s we wouldn't have the internal combustion engine. "The engine is the heart of your car. It is a complex machine built to convert heat from burning gas into the force that turns the road wheels. The chain of reactions which achieve that objective is set in motion by a spark, which ignites a mixture of petrol vapour and compressed air inside a momentarily sealed cylinder and causes it to burn rapidly. That is why the machine is called an internal combustion engine. As the mixture burns it expands, providing power to drive the car."

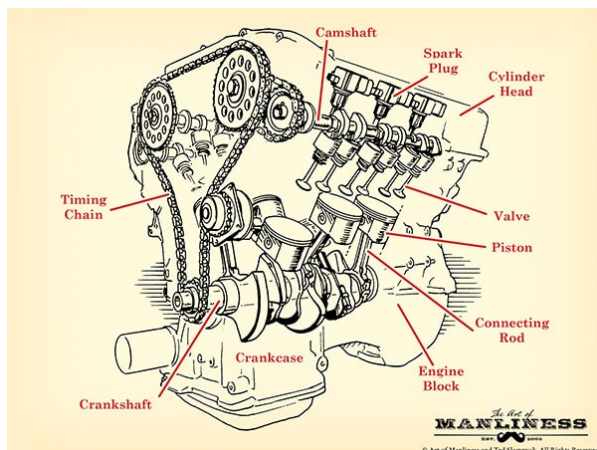


Figure 1

Different types of engines

When dealing with cars there are a few things that are always talked about when talking about engines, that is whether or not the car is a v6 or a v8 etc. the concept of this is that the number along with the letter are supposed to stand for the amount of cylinders that an engine has if for example the car is a v6 engine it has 6 cylinders.

“In four-cylinder engines, the cylinders are typically mounted in a straight line above the crankshaft. This engine layout is called an *inline engine*. Another four-cylinder layout is called the “flat four.” Here the cylinders are laid horizontally in two banks, with the crankshaft going down the middle. When an engine has more than four cylinders, they are divided into two-cylinder banks — three cylinders (or more) per side. The division of cylinders into two banks makes the engine look like a “V.” A V-shaped engine with six cylinders = V6 engine. A V-shaped engine with eight cylinders = V8 — four in each cylinder bank.” (2)

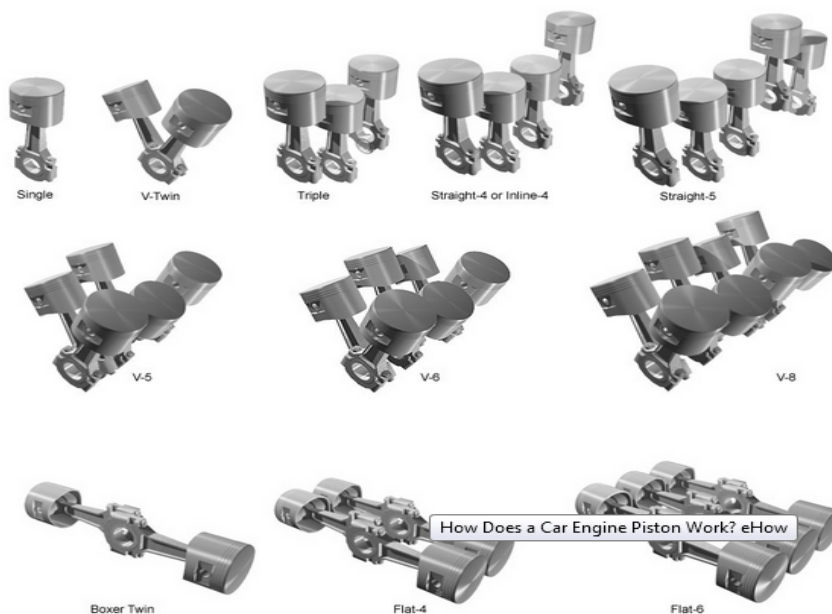


Figure 2: we see the different types of cylinders

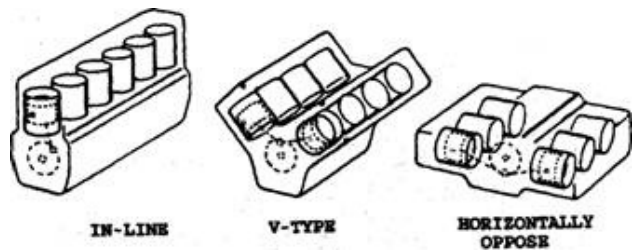


Figure 3: ways in which the cylinders are aligned

Components of a car engine

The components of a car engine are as such, we first start off with the engine block, what this piece does is it's the base for the engine in sense holding the engine into place. "The engine block is also referred to as the cylinder block because of the big hole or tubes called cylinders that are cast into the integrated structure. The cylinder is where the engine's pistons slide up and down. The more cylinders an engine has the more powerful it is. In addition to the cylinders, other ducts and passageways are built into the block that allow for oil and coolant to flow to different parts of the engine." (2)



Figure 4: what an engine block is supposed to look like

Then move on to the combustion chamber. "It's where fuel, air, pressure, and electricity come together to create the small explosion that moves the car's pistons up and down, thus

creating the power to move the vehicle. The combustion chamber is made up of the cylinder, piston, and cylinder head. The cylinder acts as the wall of the combustion chamber, the top of the piston acts as the floor of the combustion chamber, and the cylinder head serves as the ceiling of the combustion chamber.”(2) Along with the cylinder heads which is a small plate that’s sits over the engines cylinders

Following is the piston, the piston moves up and down in the cylinder. We then have the crankshaft which “converts the up and down motion of the pistons into a rotational motion that allows the car to move.” (2). Along with the crankshaft we have the camshaft which is basically what helps everything else function. “The camshaft is the brain of the engine. It works in conjunction with the crankshaft via a timing belt to make sure intake and outtake valves open and close at just the right time for optimal engine performance. The camshaft uses egg-shaped lobes that extend across it to control the timing of the opening and closing of the valves.”. (2)

The timing system keeps both the camshaft as well as the crankshaft in the same sequence and keeps them working together if one is not working without the other, the timing will be off thus making it so the engine doesn’t work.

Valves which are separated between intake and outtake valves, the intake valve mixes the air and fuel to create the power for the engine while the outtake valve let the exhaust out. They help the car in a sense breathe and it helps for performance. Finally “Above each cylinder is a sparkplug. When it sparks, it ignites the compressed fuel and air, causing the mini-explosion that pushes the piston down.”

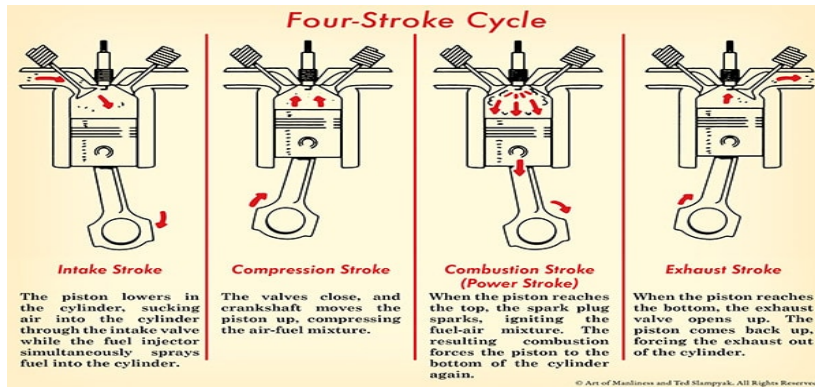


Figure 5

Works cited

1. The engine. (n.d.). Retrieved from <https://www.howacarworks.com/basics/the-engine>
2. Brett. (2019, January 01). How a Car Engine Works. Retrieved from <https://www.artofmanliness.com/articles/how-a-cars-engine-works/>