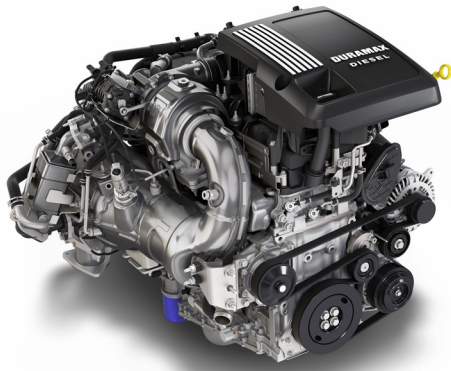


Petrol vs diesel

■ The ignition

Petrol and diesel engines operate on the same four-stroke cycle, but where petrol and diesel engines differ is in how they ignite the mixture of air and fuel in the cylinder: the petrol engine needs a spark plug for ignition whereas the diesel engine does not. In a diesel engine, the air-fuel mixture ignites purely due to compression and without the use of a spark plug (the self-ignition temperature): based on the principal that the greater the compression, the higher the temperature. This is why diesel engines have higher compression ratios than petrol engines: diesel engines are between 14:1 and 25:1, whereas petrol engines are between 8:1 and 12:1 •. The longer stroke pressure of a diesel engine also allows it to produce more **torque** at a lower rpm than a petrol engine, meaning that less fuel is needed to move the car. Diesel is in fact made of longer chains of hydrocarbons, which simply means that it has more energy than petrol.



Chevrolet turbo diesel engine

to achieve: *raggiungere*

to lift off: *lasciare*

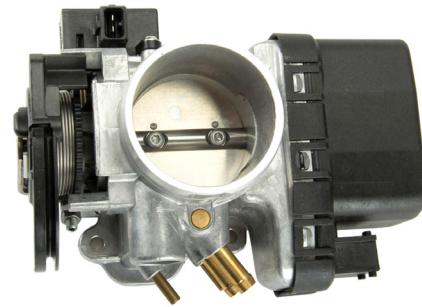
to lift up: *sollevare*

throttle body: *corpo farfallato*

torque: *coppia*

■ Throttle body

Another significant difference between the two engines is that a diesel engine does not have a throttle body, which means that when you press the accelerator pedal, the fuel injectors simply supply diesel to create more power. Petrol engines, on the other hand, require a throttle body: when you press the accelerator pedal you open up the throttle and allow more air to flow into the engine. More air means the injectors send in more fuel and more fuel means more power, so when you accelerate with a petrol engine you consume more fuel than that required when accelerating with a diesel engine.



Fuel injection throttle body

■ Engine brake

Where petrol and diesel engines differ again is in how they are able to engine brake. When you **lift** your foot **off** the accelerator to slow the car down in a petrol engine braking is **achieved** because as you lift up the pedal the throttle body closes, creating a vacuum between the throttle body and the cylinders. In a diesel vehicle, engine braking occurs during the compression stroke, when the exhaust valve is open to allow pressurised air to escape.

It is the ratio of the maximum to minimum volume in the cylinder.

1 Answer the questions.

1. How does the petrol engine ignite the mixture of air and fuel in the cylinder?
2. What is the self-ignition temperature in the diesel engine?
3. Why does a diesel vehicle need less fuel to move the car?
4. What happens in a diesel engine when you press the accelerator pedal?
5. What happens in a petrol engine when you press the accelerator pedal?
6. In which of the four strokes does diesel engine braking occur?

2 Decide if these characteristics belong to the diesel (D) or the petrol (P) engine.

1. It has a higher compression ratio.
2. It has a higher torque at a lower rpm.
3. It has a throttle body.
4. The injectors supply more fuel to create more power when pressing the accelerator pedal.
5. The throttle body closes creating a vacuum when braking.
6. Engine braking occurs during the compression stroke.

D	P
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
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3 Read the text and decide if the statements are true or false. Correct the false statements.

I've Put the Wrong Fuel in my Car!

What happens if I've put the wrong fuel in my car? Well, it happens, don't panic. Lots of people make the same mistake every year and solutions are out there. Have you turned the ignition yet? If not, don't! The most serious damage from misfuelling occurs after turning on the ignition. So, if you realise you've put the wrong fuel into your car before starting your engine, you're lucky. Here's what you should do. First of all, leave your engine switched off and avoid putting your key in the ignition, then immediately inform the staff at the petrol station about what's happened. They will help you push the car to a safe place and call assistance to drain and flush your fuel system. Things get worse if you've started your engine after filling up with the wrong fuel. In that case, turn off the engine immediately, if it's safe to do so, then put the vehicle in neutral and call for assistance. The wrong-fuel recovery service drains the tank and fuel system of contaminated fuel and provides you with enough clean fuel to start moving again. In both cases, call your insurance provider as soon as possible.

1. It is better to turn the ignition on if you realise that you've put the wrong fuel in.
2. Don't even put the keys in the ignition if you put the wrong fuel in.
3. Call the petrol station staff to help you move your car to a safe place.
4. The wrong fuel cannot be drained from the system.
5. If you've already turned the ignition on, it causes less damage if you leave it on.
6. In any case, call the insurance provider as soon as possible.

T	F
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
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