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Method of ignition as :

- (1) Spark Ignition engine (Mixture of air and fuel is ignited by electric spark)
- (2) Compression Ignition engines (The fuel is ignited as it comes in contact with hot Compressed air)

Method of Cooling as :

- (1) Air cooled engines
- (2) Water cooled engines

Speed of the engines as :

- (1) Low speed engines
- (2) Medium speed engines
- (3) High speed engines



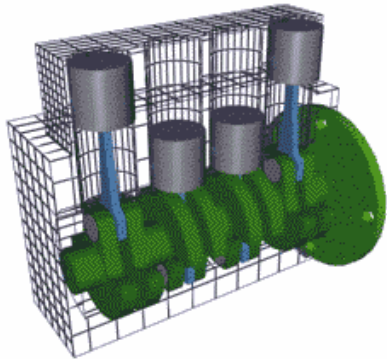
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Number of cylinder as :

- (1) Single cylinder engines
- (2) Multi cylinder engines

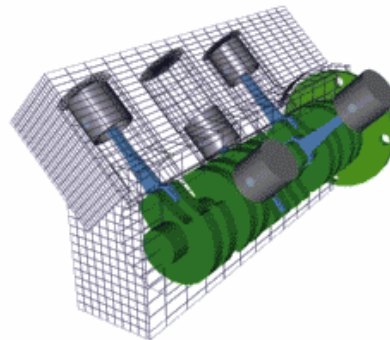
Position of the cylinder as :

- (1) Inline engines
- (2) V-engines
- (3) Radial engines



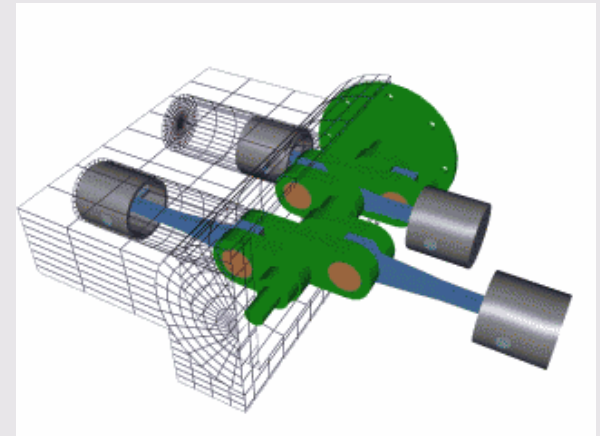
Inline Engine

D



V- Engine

S

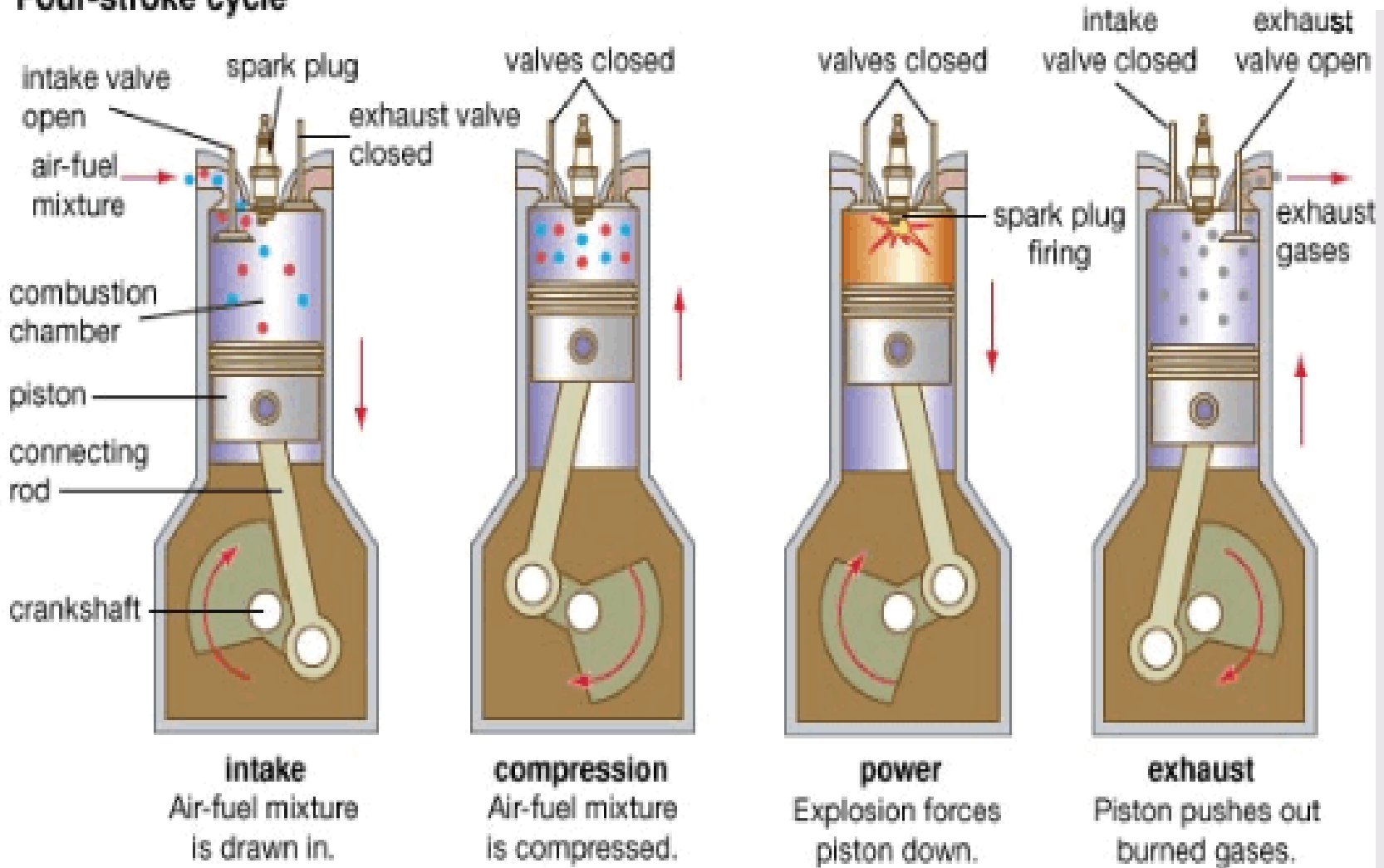


Opposed Piston Engine



Four stroke Petrol Engine

Four-stroke cycle





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A 4 stroke petrol engine shown in figure .

The valve operating the inlet is called **inlet valve** and the valve operating the exhaust is called **exhaust valve**. The **spark plug fitted at the top of cylinder** head initiates the ignition of the air fuel mixture.

The piston performs four stroke to complete one working cycle. The four different strokes are;

- 1) Suction stroke
- 2) Compression stroke
- 3) Power stroke
- 4) Exhaust stroke



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SUCTION STROKE

- During this stroke, **inlet valve opens** and **exhaust valve closed**, the pressure in the cylinder will be atmosphere .
- As the piston moves from the **TDC To BDC** , the volume in the cylinder increase , while simultaneously pressure decreases.
- This create a **pressure difference** between the atmosphere and inside of the cylinder. Due to this pressure difference **the petrol and air mixture will enter into the cylinder** through carburettor.
- The crankshaft has now made **half rotation** i.e. 180 degree of crank angle. **At the end** of this stroke, the cylinder will filled completely with petrol and air mixture called charge and **inlet valve is closed**.



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COMPRESSION STROKE

- During this stroke both the **inlet valve and exhaust valve are closed**, the piston moves from **BDC to TDC** .
- As this stroke being performed ,**the petrol and air mixture contained in the cylinder will be compressed** , so pressure and temperature of mixture increases. The process of compression is shown in fig.
- Near the end of this stroke , **the petrol and air mixture is ignited by the electric spark** given out by the spark plug.
- The combustion of petrol releases the hot gases which will increases the pressure **at the constant volume**.



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POWER STROKE

- During this stroke both the inlet valve and exhaust valve are closed, the piston moves from TDC to BDC.
- The high pressure and high temperature burnt gases force the piston to perform this stroke, called power stroke. This stroke is also known as expansion or working stroke.
- The engine produces mechanical work or power during this stroke. As the piston moves from TDC to BDC , the pressure of hot gases gradually decreases and volume increases.
- Near the end of this stroke, the exhaust valve opens which will release the burnt gases to the atmosphere.

This will suddenly bring the cylinder pressure to the atmospheric pressure.



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EXHAUST STROKE

During this stroke, the exhaust valve opens and the inlet valve is closed .

The piston moves from BDC to TDC and during this motion piston pushes the exhaust gases (combustion product) out of the cylinder at constant pressure.

again the inlet valve open and the new cycle starts.



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As the name itself implies, all the processes in the two stroke cycle engine are completed in two strokes. These engine have 1 power stroke per revolution of the crankshaft.

In the two stroke engine there is a two opening called ports are provided in place of valve of four stroke engines.

These ports are opened and closed by reciprocating motion of the piston in the cylinder.

One port known as a inlet port and another port is known as a exhaust port.

Two stroke engine consist of a cylinder with one end fitted with a cylinder head and other end fitted with a crankcase which enables it to function as a pump in conjunction with the piston.



Two Stroke Diesel Engine

