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# ENGINE COMPONENTS



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Internal combustion engine consists of a number of parts which are given below

### **Cylinder:**

It is a part of the engine which confines the expanding gases and forms the combustion space. It is the basic part of the engine.

It provides space in which piston operates to suck the air or air-fuel mixture. The piston compresses the charge and the gas is allowed to expand in the cylinder, transmitting power for useful work.

Cylinders are usually made of high grade cast iron.

### **ii) Cylinder block:**

It is the solid casting body which includes the cylinder and waterjackets (cooling fins in the air cooled engines).



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## Cylinder head:

It is a detachable portion of an engine which covers the cylinder and includes the combustion chamber, spark plugs or injector and valves.

## Cylinder liner or sleeve:

It is a cylindrical lining either wet or dry type which is inserted in the cylinder block in which the piston slides.



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**Piston:**

- It is a cylindrical part closed at one end which maintains a close sliding fit in the engine cylinder. It is connected to the connecting rod by a piston pin.
- The force of the expanding gases against the closed end of the piston, forces the piston down in the cylinder.
- This causes the connecting rod to rotate the crankshaft  
Cast iron is chosen due to its high compressive strength. Aluminium and its alloys preferred mainly due to its lightness.



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**Piston ring:** It is a split expansion ring, placed in the groove of the piston. They are usually made of cast iron or pressed steel alloy

The function of the ring are as follows :

- a) It forms a gas tight combustion chamber for all positions of piston.
- b) It controls the cylinder lubrication.
- c) It transmits the heat away from the piston to the cylinder walls.

Piston rings are of two types: (1) Compression ring and (2) Oil ring



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**Connecting rod:** It is special type of rod, one end of which is attached to the piston and the other end to the crankshaft. It transmits the power of combustion to the crankshaft and makes it rotate continuously. It is usually made of drop forged steel.

**Crankshaft:** It is the main shaft of an engine which converts the reciprocating motion of the piston into rotary motion of the flywheel. Usually the crankshaft is made of drop forged steel or cast steel.



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**Flywheel:** Flywheel is made of cast iron. Its main functions are as follows : It stores energy during power stroke and returns back the energy during the idle strokes, providing a uniform rotary motion of flywheel.

**Crankcase:** The crankcase is that part of the engine which supports and encloses the crankshaft and camshaft. It provides a reservoir for the lubricating oil. It also serves as a mounting unit for such accessories as the oil pump, oil filter, starting motor and ignition components.



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- Camshaft:** It is a shaft which raises and lowers the inlet and exhaust valves at proper times. Camshaft is driven by crankshaft by means of gears
- **Inlet manifold:** It is that part of the engine through which air or air-fuel mixture enters into the engine cylinder. It is fitted by the side of the cylinder head.
  - **Exhaust manifold:** It is that part of the engine through which exhaust gases go out of the engine cylinder. It is capable of withstanding high temperature of burnt gases.