Four-Stroke Engine Basics

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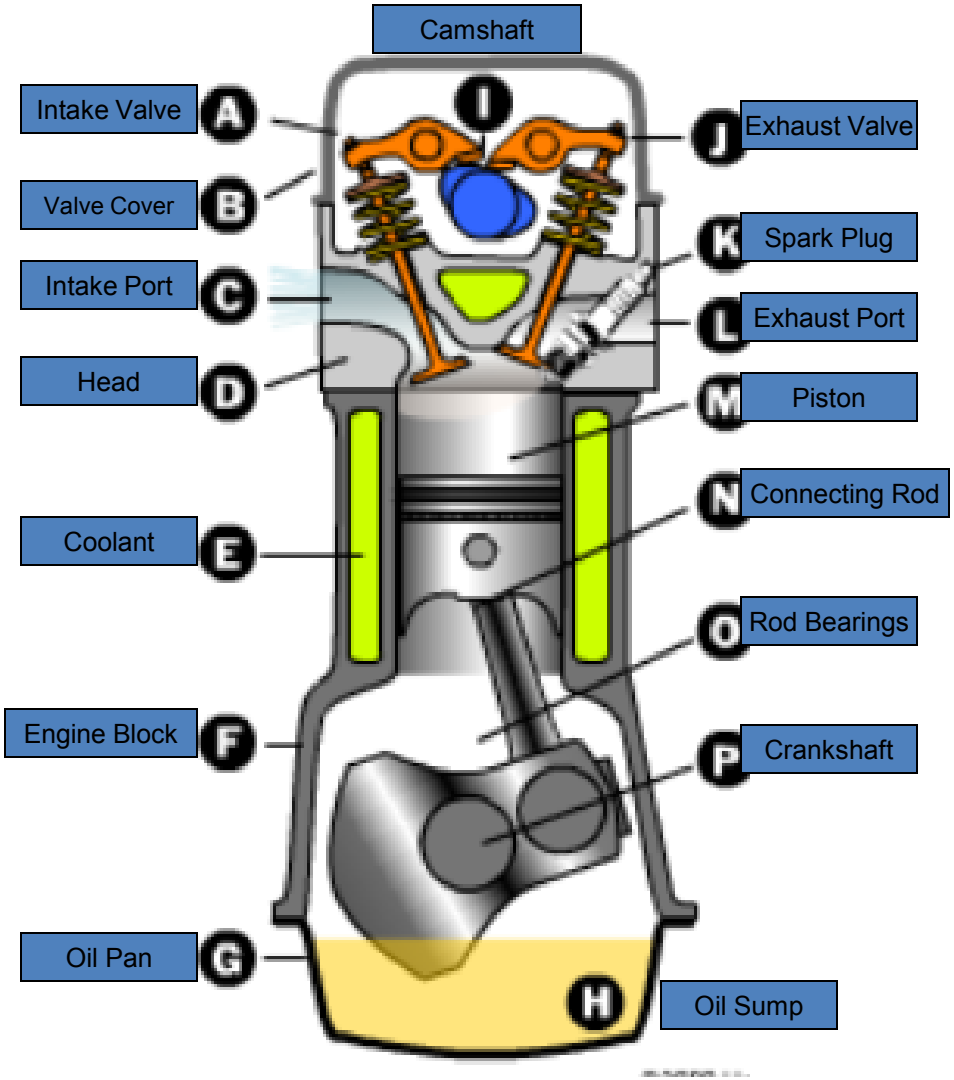
The Basics

- A four-stroke engine:
  - Is an internal combustion engine
  - Converts gasoline into motion
  - Is the most common car engine type
  - Is relatively efficient
  - Is relatively inexpensive

Other Engine Types

- Two-stroke engines
- Diesel engines
- Rotary engines
- Turbine engines
- Steam engines

Basic Components of Four-Stroke Engines



- A. Intake Valve- opens at the proper time to let in air and fuel.

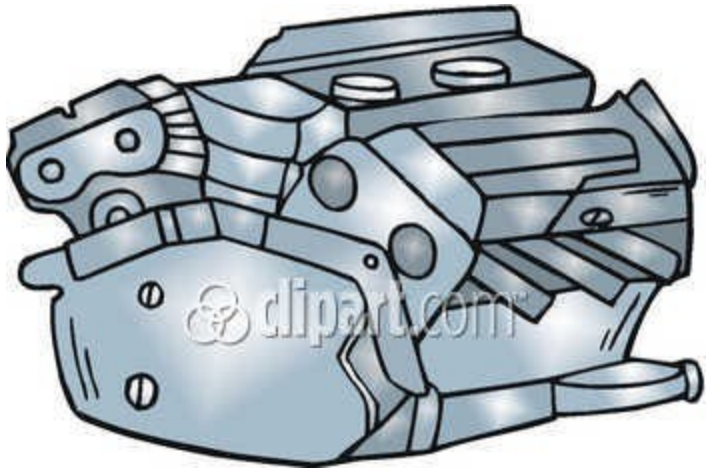
- B. Valve Cover- Protects the valves and the valve springs. Keeps dirt out and lubricating oil in.

- C. Intake Port- the passageway in a cylinder head for the fuel and air to pass through.

- D. Head- a platform containing most of the parts of the combustion chamber.

- E. Coolant- circulating water and antifreeze to keep the temperature regulated.

- F. Engine Block- cast in one piece. The basis for most of the parts of the engine.



- G. <u>Oil Pan</u>- where the oil is collected and recirculated.

- H. Oil Sump- the collected oil primarily for lubricating the crankshaft and rod bearing

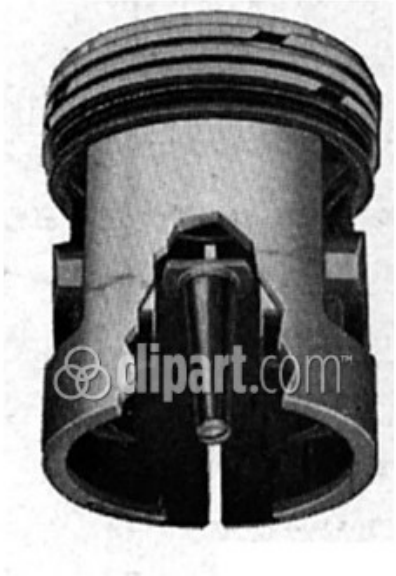
- I. Camshaft- a round shaft with lobes, that rotates to open and close the fuel and exhaust valves.

- J. Exhaust Valve- open at the proper time to release the exhaust

- K. Spark Plug- a device, inserted into the combustion chamber for firing an electrical spark to ignite air-fuel mixture

- L. Exhaust Port- the passageway in a cylinder head, for the exhaust to pass through

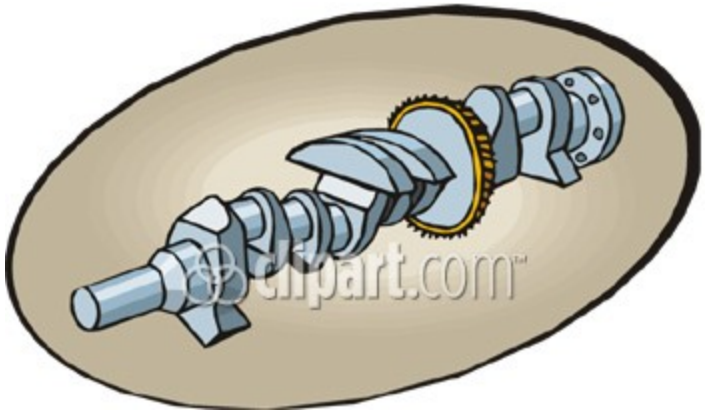
- M. Piston- the part of the engine that moves up and down in the cylinder converting the gasoline into motion



- N. Connecting Rod- links the piston to the crankshaft.

- O. Rod Bearing- used to reduce friction to the rod and crankshaft

- P. Crankshaft- converts the up and down motion of the piston into a turning, or rotating motion

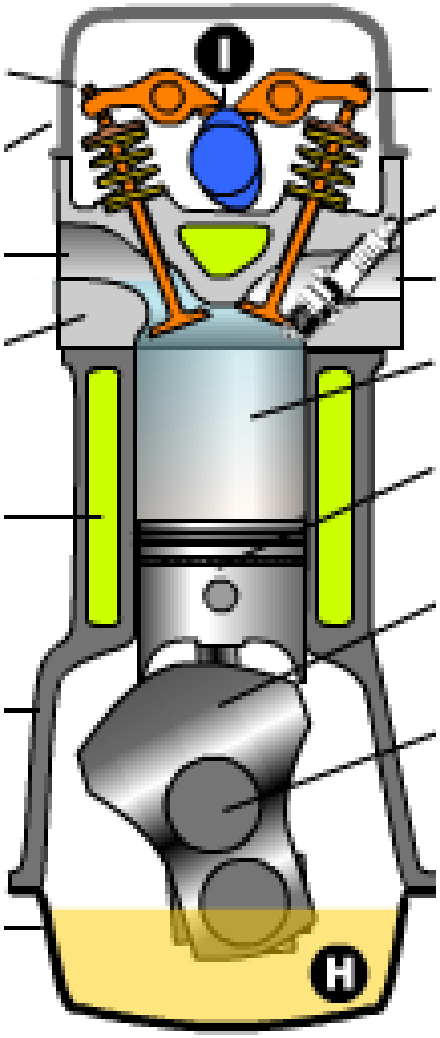


The 4-Stroke Cycle

- 1. Intake
- 2. Compression
- 3. Combustion
- 4. Exhaust

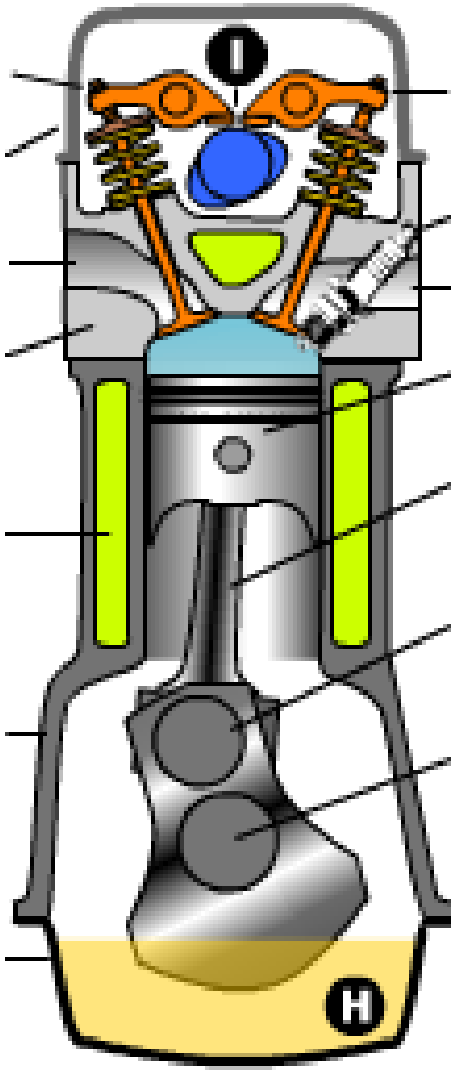
I- Stroke

- **<u>Intake</u>-** process of filling the cylinder with the proper air-fuel mixture through the intake valve.



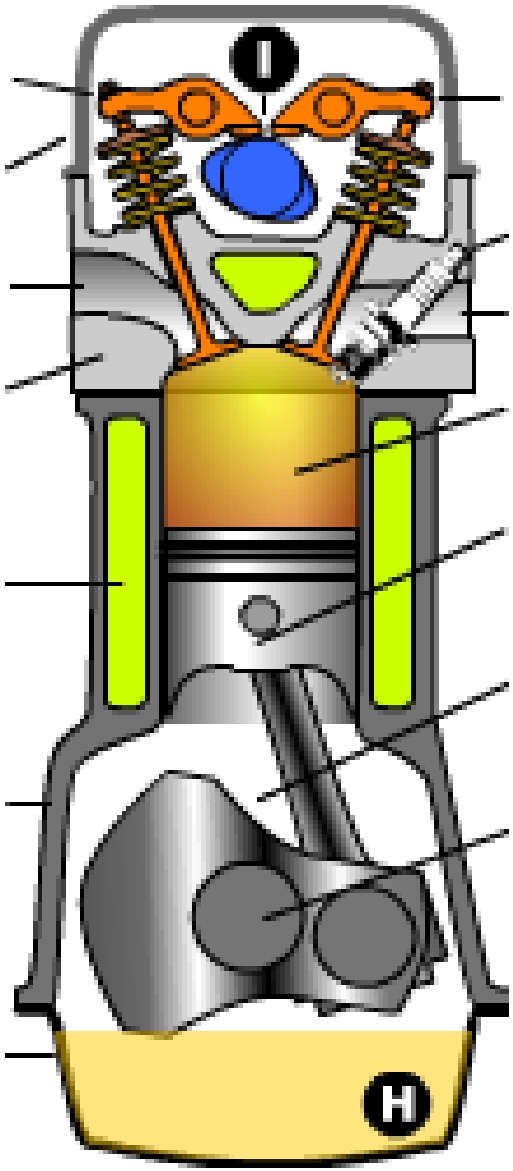
II- Stroke

- **<u>Compression</u>**- the process of compressing the air-fuel mixture in the cylinder to make it more combustible



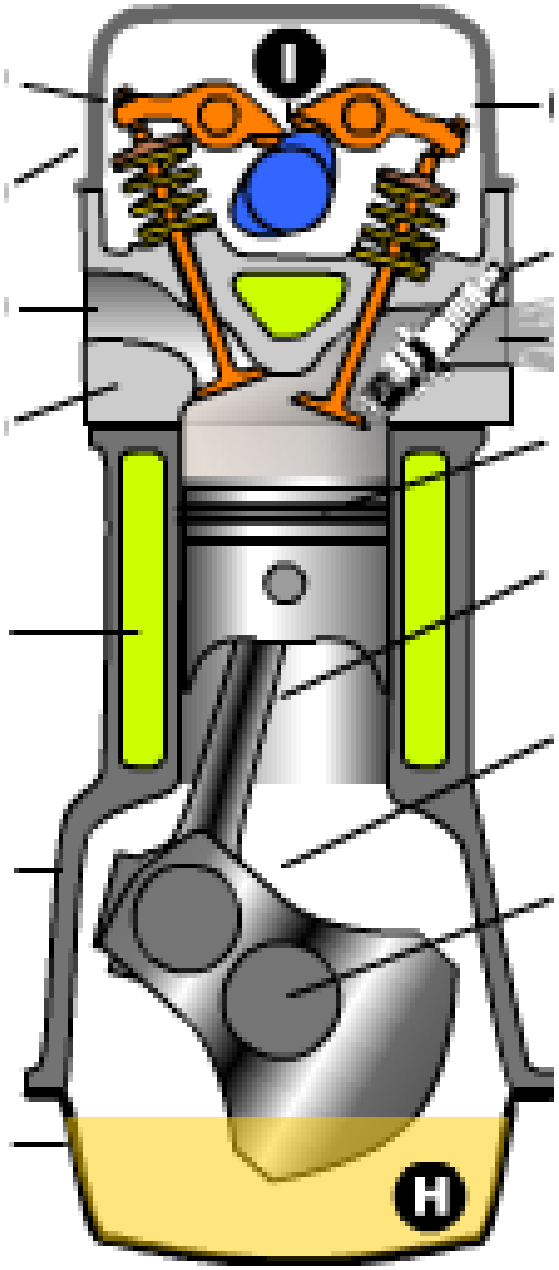
III- Stroke

- **<u>Combustion</u>**-the process of igniting the compressed air-fuel mixture to create motion and the over all power of the engine.



IV- Stroke

- **<u>Exhaust</u>**- the process of releasing the exhaust out of the cylinder through the exhaust valve.



Application

- On the understanding of basics of four-stroke engines, use this information in answering the following questions?