

*A PRESENTATION ON
2STROKE & 4STROKE
ENGINE*

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- 2Stroke and 4Stroke engine
- Basic parts of 2S engine
- Working of 2S engine
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- Working of 4S engine
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WHAT IS STROKE ?

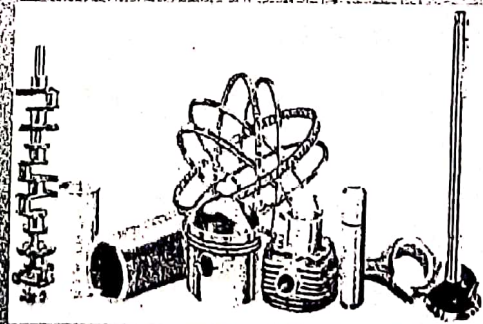
- Reciprocating motion
- Opposite motion
- To and forth

WHAT IS 2S & 4S ?

- ▷ A two-stroke petrol engine
- ▷ Internal combustion engine
- ▷ 2Strokes
- ▷ One revolution
- ▷ A four stroke diesel engine
- ▷ Internal combustion engine
- ▷ 4Strokes
- ▷ Two revolutions

Basic Parts of the 2 stroke engine

- ▷ Cylinder block
- ▷ Piston
- ▷ Piston ring
- ▷ Spark plug
- ▷ Connecting rod
- ▷ Crankshaft



- ① cylinder block
- ② Piston
- ③ Piston Rings
- ④ Spark Plug
- ⑤ connecting Rod.
- ⑥ Crankshaft

Spark Plug



- Electric match used to begin the combustion process. Ignition is started.

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Connecting Rod

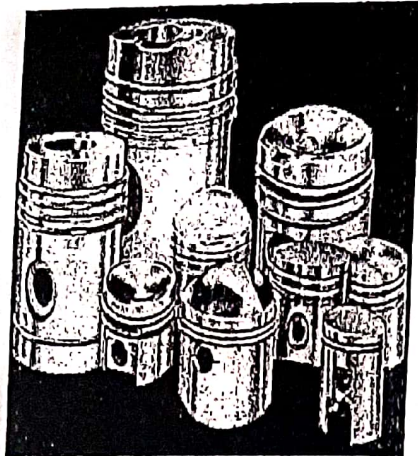
- Connects the piston and piston pin to the crankshaft.



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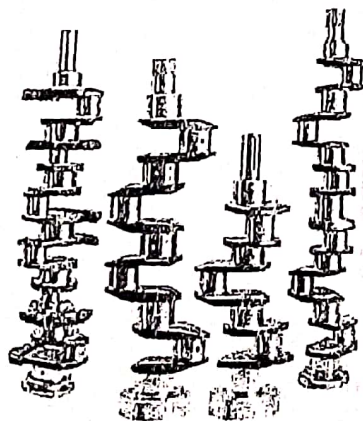
Piston



A sliding plug that harnesses the force of the burning gases in the cylinder.

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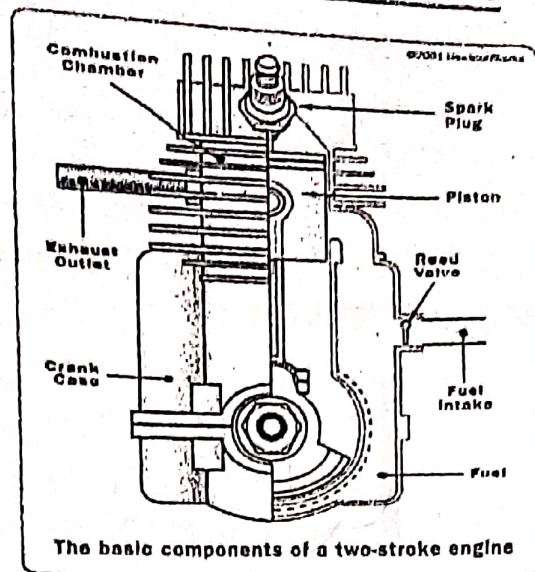
Crankshaft



It converts the up and down motion (reciprocating) of the engine to spinning (rotary) motion.

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2Stroke engine components



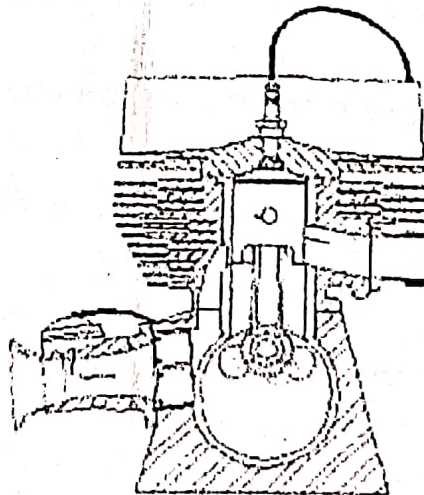
Working Principle of 2S

1. Suction and exhaust strokes are eliminated.
2. Fresh charge enters= exhaust gases drives out.
3. Intake & exhaust are controlled by movement of piston.
4. The fresh charge enters due to difference of pressure.

Working Principle of 2S

- ▷ 5. Charge compresses due to pumping of piston.
- ▷ 6. Piston moves upward=exhaust and intake port is closed.
- ▷ 7. Spark created= Charge ignited

Working of 2S Engine



Advantages and Disadvantages of 2S

- | | |
|------------------------|---------------------------------|
| ↳ Twice power. | ↳ Fresh charge lost. |
| ↳ Power is saved. | ↳ More use of lubricating oil. |
| ↳ Low in weight. | ↳ Do not live long. |
| ↳ Simple construction. | ↳ Create more pollution. |
| ↳ Costs less. | ↳ Fuel is not used efficiently. |

Advantages

Disadvantages

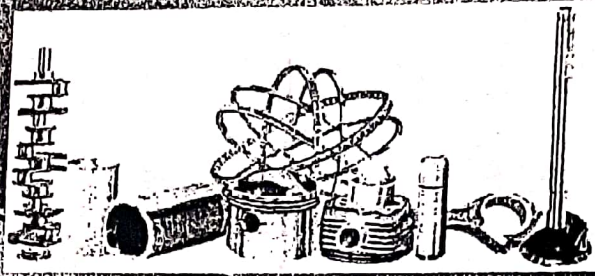
4Stroke

- ↳ A four stroke diesel engine
- ↳ Internal combustion engine
- ↳ 4Strokes
- ↳ Two revolutions

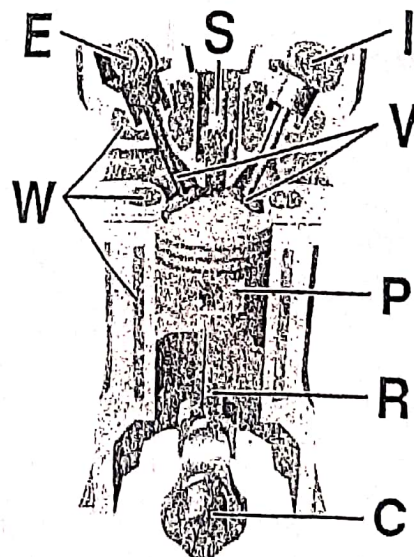
- 1- Cylinder block
- 2- Piston
- 3- Piston Pin
- 4- Connecting Rod
- 5- Crankshaft
- 6- Cylinder head
- 7- Intake Valve
- 8- Exhaust valve
- 9- Camshaft
- 10- Fuel injector

Parts of the 4Stroke Engine

- 1- Cylinder block
- 2- Piston
- 3- Piston Pin
- 4- Connecting rod
- 5- Crankshaft

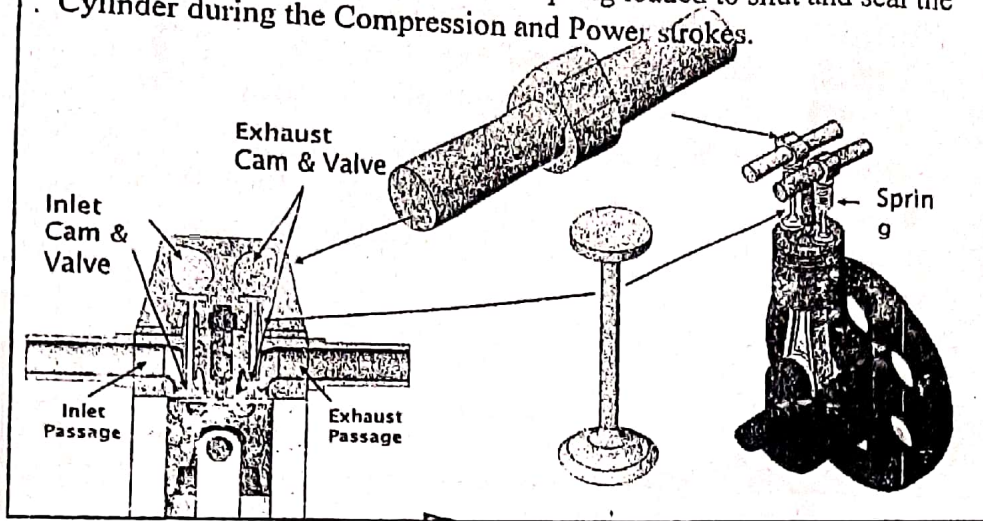


4Stroke engine components



Valves

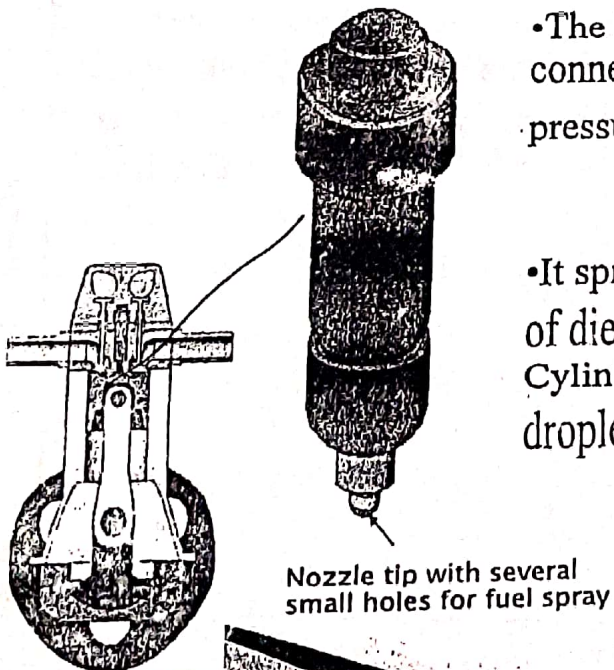
One set of a Cam and a Valve controls the Inlet flow of fresh air into the Cylinder. The other set controls the burnt Exhaust Gases out of the Cylinder. Both these Valves are spring loaded to shut and seal the Cylinder during the Compression and Power strokes.



Injector

- The Fuel Injector is connected to a high pressure pump.

- It sprays a small amount of diesel fuel into the Cylinder and form mist droplets.



Working Principle of 4S Engine

1st Cycle

- ▷ **Intake:** This stroke of the piston begins at top dead center. The piston descends from the top of the cylinder to the bottom of the cylinder, increasing the volume of the cylinder. A mixture of fuel and air is forced by atmospheric (or greater by some form of air pump) pressure into the cylinder through the intake port.

2nd Cycle

- ▷ **Compression:** With both intake and exhaust valves closed, the piston returns to the top of the cylinder compressing the air or fuel-air mixture into the cylinder head.

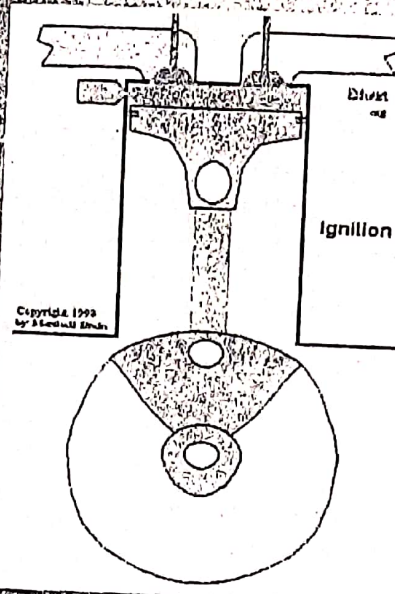
3rd Cycle

- 1. **Power:** Second revolution starts. Piston is close to TDC, the compressed fresh charge is ignited, by a spark plug in, or which ignites. The resulting pressure from the combustion of the compressed fresh charge forces the piston back down toward BDC.

4th Cycle

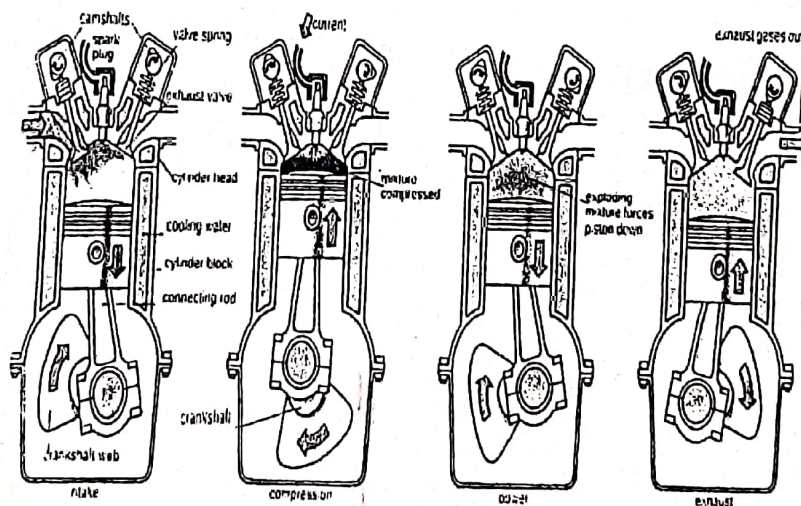
- 2. **Exhaust:** During the exhaust stroke, the piston once again returns to TDC while the exhaust valve is open. This action expels the spent fresh charge through the exhaust valve.

Working of 4Stroke engine



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Working of 4Stroke engine



Comparison of 4S-2S cycle engine

- | | |
|--|---|
| <ul style="list-style-type: none"> › Cycle completed in four strokes of piston & in two revolutions. › Heavier flywheel is needed. › Power produced for same size of engine is less. › Efficiency is more. | <ul style="list-style-type: none"> › Cycle is completed in two strokes of piston & in one revolution of crankshaft. › Lighter flywheel can be used. › Power produced for same size of engine is twice. › Efficiency is low. |
|--|---|

Four stroke engine

Two stroke engine

Examples

- › 2S engine:
 - Chainsaws
 - Lawnmowers
- › 4S engine:
 - Cars
 - Trucks

Thank You...

