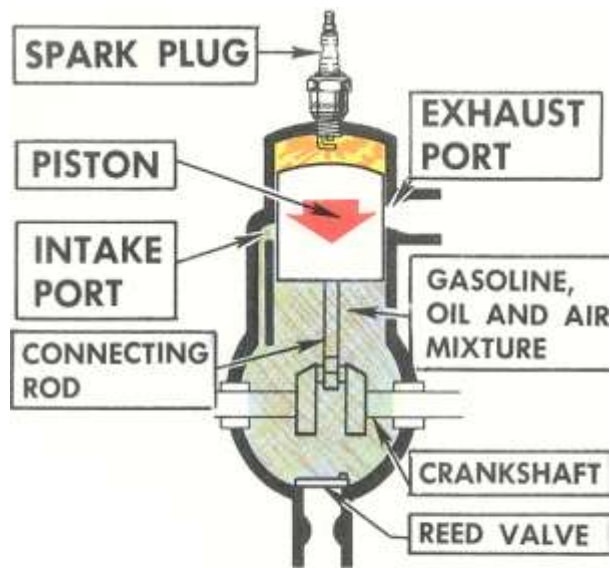


Two Stroke Cycle Engine

- The two stroke cycle engine is designed to complete the four principle events (one cycle) in one revolution of the crankshaft
- Stroke 1: **Power-exhaust-intake stroke.**
Three events occur in this stroke and they are;
 - Stroke 1a. Power
 - Stroke 1b. Exhaust
 - Stroke 1c. Intake

Two Stroke Cycle Engine

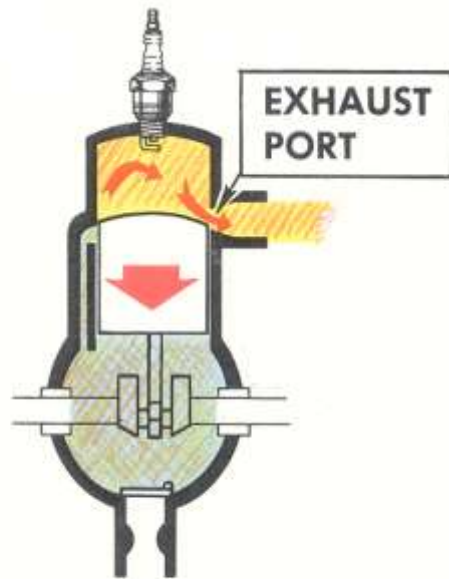


(a) STROKE I — POWER

Piston moves downward under pressure from expanding gases. Reed valve in crankcase closes. (Ignition occurred just before the downward stroke of the piston.)

- Stroke 1a. Power
- Pressure of the burning gases from combustion pushes the piston down
- Before the piston reaches the end of its downward movement, it exposes two sets of holes on opposite sides of the cylinder called ports. One is the exhaust port the other is the intake port

Two Stroke Cycle Engine

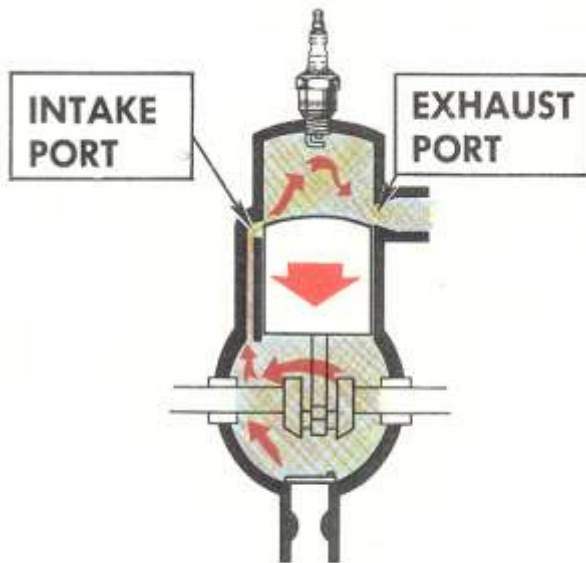


(b) STROKE I — EXHAUST

Piston continues to move downward under pressure.
Exhaust port opens.

- Stroke 1b. Exhaust
- The exhaust port is uncovered first
- The hot gases still under pressure from combustion escape through the open exhaust port

Two Stroke Cycle Engine

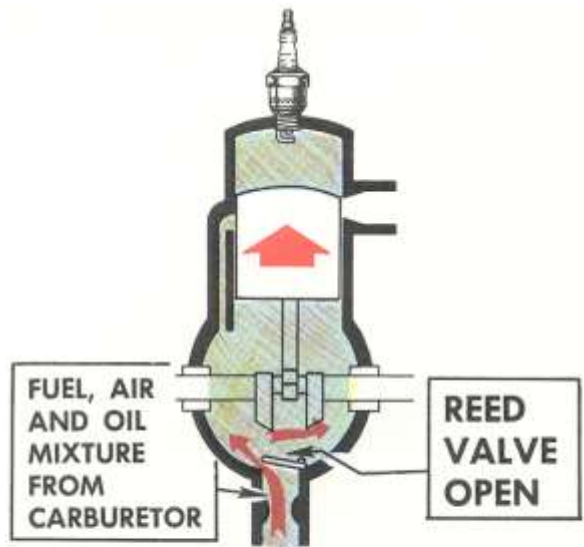


(c) STROKE I — INTAKE

Intake port opens. Fuel and oil mixture goes into cylinder.

- Stroke 1c. Intake
- As the piston continues downward the intake port now is exposed and a fresh charge of fuel-air & oil mixture enters the combustion chamber
- The downward motion creates a small pressure build up and closes the reed valve

Two Stroke Cycle Engine



(d) **STROKE II — COMPRESSION**

Piston moves upward, intake port closes. Exhaust port closes. Reed valve in crankcase opens. Fuel mixture is compressed in the cylinder.

- **Stroke 2: Compression**
- Both ports are closed (covered by piston) so the fresh fuel-air mixture can be compressed
- Just before the piston reaches the top of its upward stroke a spark from the spark plug ignites the mixture, and it starts to burn. This begins another power stroke

Two Stroke Cycle Engine

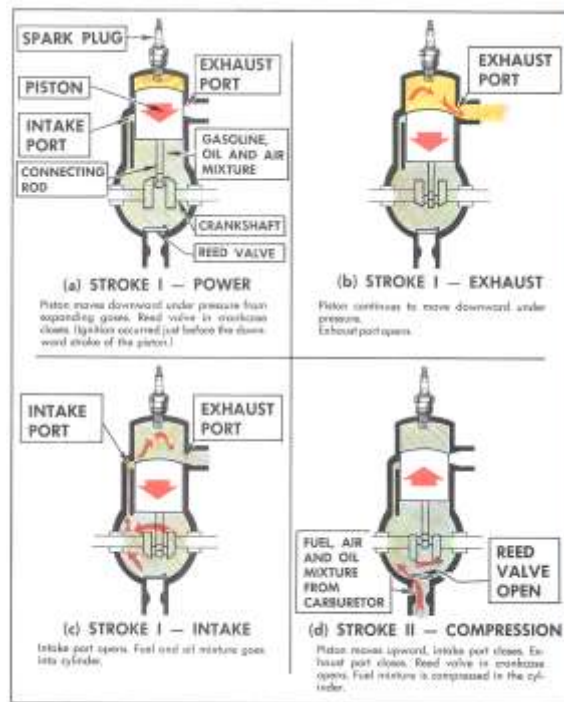


FIGURE 8. How a Two-Stroke engine operates

Two Stroke Cycle Engine

- In 2 stroke cycle engines something else happens during the compression stroke that does not happen in 4 stroke cycle engines.
- As the piston moves upward, a partial vacuum (low pressure) is created in the crankcase (below the piston)
- Atmospheric pressure opens the Reed Valve and forces a new charge of fuel and air from the carburetor into the crankcase

Comparing 4-Stroke & 2-Stroke

- The primary differences between the two engines are as follows;
- The number of power strokes per crankshaft revolution (one power stroke for every one revolution in a 2 stroke and one power stroke for every 2 revolutions in a 4 stroke)
- The method of getting the fuel-air mixture into the combustion chamber and the burned gases out (valves vs ports)
- The method of lubricating the internal moving parts (sump vs fuel/oil mix)

Comparing 4-Stroke & 2-Stroke

- Since the 2-stroke engine uses the crankcase for storing a reserve charge of fuel-oil-and-air mixture for the next stroke, the crank cannot be used as an oil compartment. Lubrication is supplied by oil that is mixed with the fuel at the time the engine is refueled

Up Next

How to tell them apart

