



Difference between Petrol and Diesel Engine

PETROL ENGINE	DIESEL ENGINE
Works on Otto cycle .	Works on Diesel Cycle .
Petrol is used as fuel .	Diesel is used as fuel .
Air and fuel mixture enters in cylinder during suction stroke .	Only Air is drawn during the suction stroke .
Low compression ratio ranging from 5to 8 .	High compression ratio ranging from14 to 22 .
The compressed charge is ignited by the spark plug.	The fuel injector is used in Diesel engine.
High engine speed of about 3000 RPM .	Low to medium engine speed ranging from 500 to 1500 RPM.
The Thermal efficiency is lower due to lower Compression ratio .	The Thermal efficiency is higher due to high Compression ratio .
Lighter in weight because maximum pressure and Temperature is less .	Heavier in Weight because maximum pressure and temperature is high .
Less Costlier .	More Costlier .
Maintenance cost is Less .	Maintenance cost is Slightly higher .
Easier starting even in cold weather .	Difficult to start in cold weather .
Running cost Higher because petrol is Costlier .	Running cost is Less because diesel is Cheaper .



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

Difference between 4 stroke & 2 stroke

Principle	4 stroke	2 stroke
1.Stroke per cycle	Four piston stroke	Only two piston stroke
2.Crank rotation per cycle	Two crank rotation	Only one crank rotation
3.Power stroke per cycle	Half of speed of crankshaft	Equal to speed of crankshaft
4.Power	In every alternate revolution	In every revolution
5.Fly wheel	Heavy flywheel	Lighter flywheel
6.Size of engine	Heavier , larger and more space	Lighter , more compact and less space
7.Admission of charge	Directly into cylinder	First admitted into crankcase, then transfer to engine
8.Valves	Inlet and exhaust valves	In place of valves, ports are there
9.Crankcase	It is not hermetically sealed	Hermetically sealed
10.Direction of rotation the crankshaft	In one direction	In both directions
11.Lubricant oil consumption	Less	More
12.Thermal efficiency	Higher	Less
13.Mechanical efficiency	Low	High
14.uses	Cars, tractors, buses	Mopeds, scooter, motor, cycle



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

Advantages of Petrol engine

- High engine speeds of about 3000 rpm.
- Lighter in a weight because maximum pressure and temperature is less.
- Less initial cost.
- Less maintenance cost.

Disadvantages of Petrol engine

- low compression ratio ranging from 6 to 10.
- The thermal efficiency is lower due to lower compression ratio.
- Running cost higher because petrol is costlier.



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

Two Stroke Cycle Engines

As the name itself implies, all the processes in two stroke cycle engine are completed in two strokes.

In four stroke engine cycle Two complete revolutions of crank shaft is required for completing one cycle .In two stroke Engine cycle Operations Suction , Compression , Expansion and Exhaust are completed in One Complete revolution of the crank shaft in two stroke Engines.



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

These engines have one Power stroke per revolution of the crank shaft.

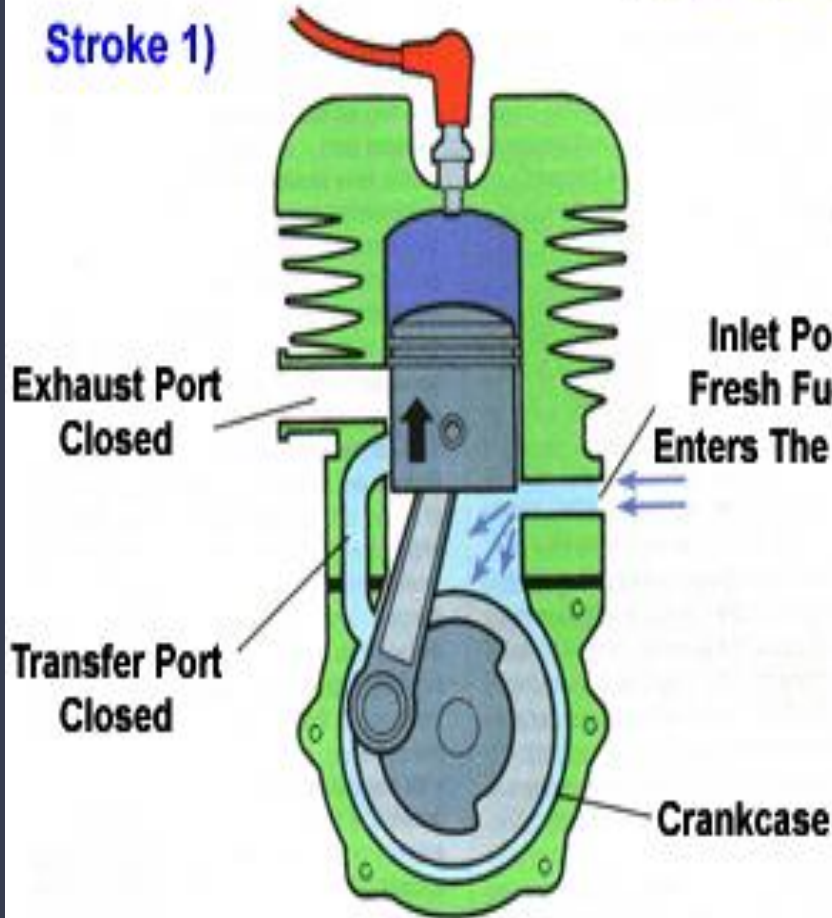
In two stroke engines there is two openings called PORTS are provided in place of valves of four stroke engines. One port is known as INLET PORT and another port is known as EXHAUST PORT .



Two Stroke Petrol Engine

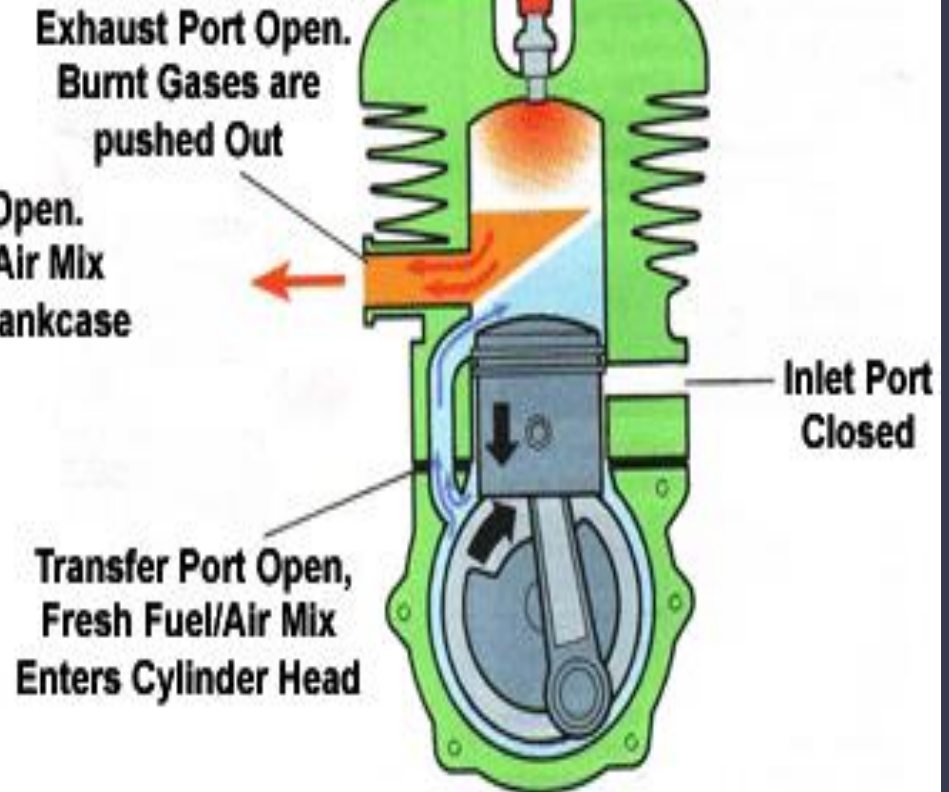
The 2 Stroke Cycle

Stroke 1)



Induction &
Compression

Stroke 2)



Ignition &
Exhaust



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

In two stroke engine (suction and compression stroke)occurs together and (expansion and exhaust strokes) occurs together.

when the piston is at its bottom dead centre then fuel comes in the cylinder through the port, when piston moves upward the fuel get compressed and thus we obtain high pressure and temperature.



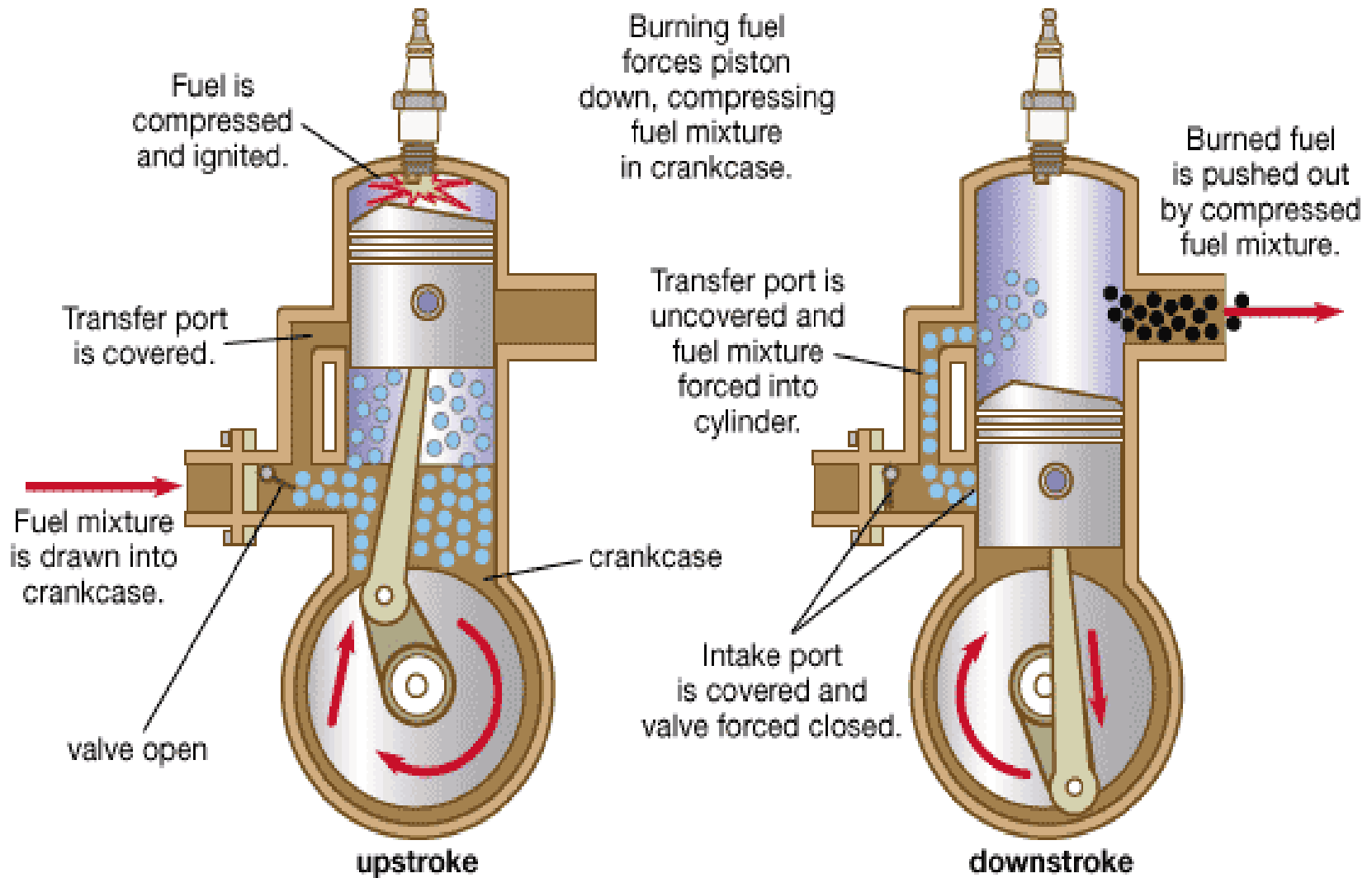
Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

After the ignition of the fuel a high pressure will occurs on the piston head and piston moves downward, this stroke is known as power stroke. With this stroke the exhaust stroke also occurs.



Two Stroke Diesel Engine





Difference Between Two Stroke and Four Stroke Engines

FOUR STROKE ENGINE

Four piston strokes require to complete one cycle .

Two complete revolutions of crank shaft is required to complete one cycle.

Equal to half of the speed of engine crank shaft . Number of power stroke/min. $n=N/2$

Power is developed in every alternate revolution of crank shaft .

The power is developed in every alternate revolution, hence heavy fly wheel is required .

These engines are Heavier, larger and required more space.

The inlet and exhaust valve are require and they are operated by valve operated by valve operating mechanism.

Lubricating oil consumption is less .

Thermal efficiency is higher .

Mechanical efficiency is Low because of more number of moving parts .

These Engines are used basically in High Power Application Where more space is available like Cars , Truck, Tractors , Buses etc .

TWO STROKE ENGINE

Only two piston strokes required to complete one cycle .

Only one complete revolution of crank shaft is required to complete one cycle .

Equal to the speed of engine crank shaft . Number of power stroke/min. $n=N$

Power is also developed in every revolution of crank shaft hence for same cylinder.

The power is developed in every revolution , hence lighter flywheel is required .

These engine are lighter more compact and require less space.

In place of valve, ports are used which opens and close by motion of piston itself.

Lubricating oil consumption is more because lubricating oil is mixed with fuel

Less Thermal efficiency.

Mechanical efficiency is High because of less number of moving parts .

These Engines are used basically in Low Power Application Where less space is available like Mopeds ,Scooters ,Motor cycle etc .