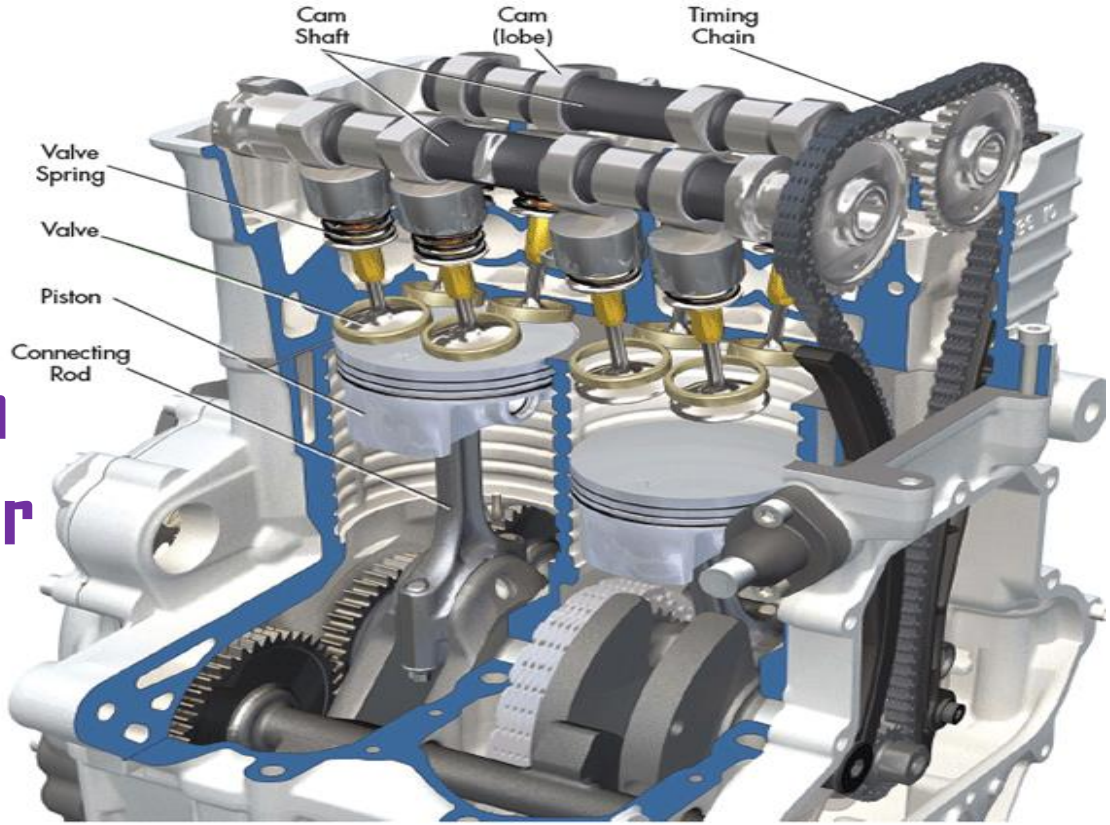
I C Engine, Steam & Nuclear Power



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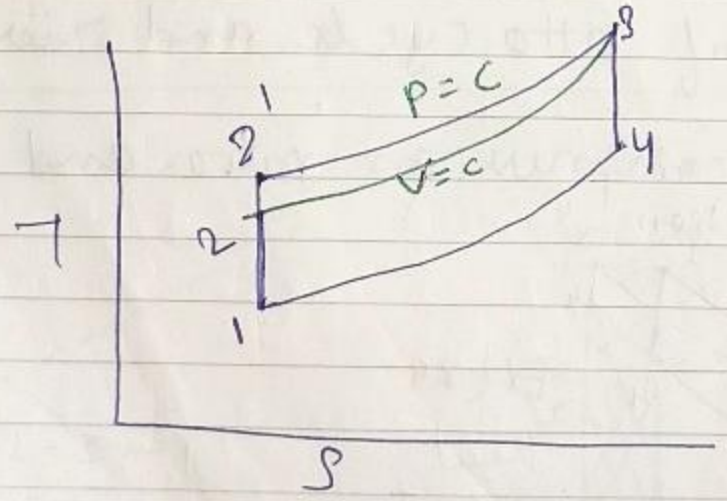
Case-3 Same max temp and heat rejection



1-2-3-4- Otto cycle

1 2' 3 4 Diesel cycle

For same max Temp and heat rejection heat addition is more in Diesel cycle and hence its η is more.

Difference b/w 2-S & 4-S Engine

Four stroke engine	Two stroke engine
1. One power stroke for every two revolutions of the crankshaft.	One power stroke for each revolution of the crankshaft.
2. There are inlet and exhaust valves in the engine.	There are inlet and exhaust ports instead of valves.
3. Crankcase is not fully closed and air tight.	Crankcase is fully closed and air tight.
4. Top of the piston compresses the charge.	Both sides of the piston compress the charge.
5. Size of the flywheel is comparatively larger.	Size of the flywheel is comparatively smaller.
6. Fuel is fully consumed.	Fuel is not fully consumed.
7. Weight of engine per hp is high.	Weight of engine per hp is comparatively low.
8. Thermal efficiency is high.	Thermal efficiency is comparatively low.
9. Removal or exhaust gases easy.	Removal of exhaust gases comparatively difficult.
10. Torque produced is even.	Torque produced is less even.
11. For a given weight, engine would give only half the power of two stroke	For same weight, two stroke engine gives twice the power that of four stroke engine.

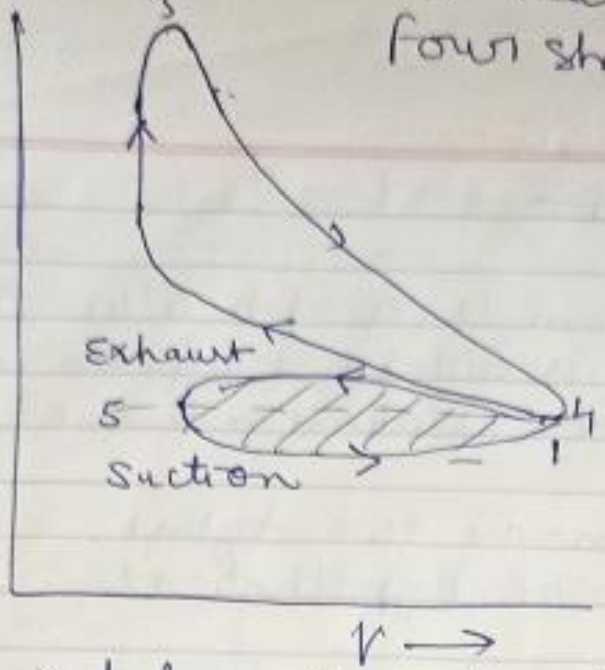
Indicator Diagram →

An indicated diagram is graph b/w Pressure and Volume. This is obtained by an instrument Known as indicator. (Electrical instrument)

Indicated diagrams are two types
(1) ~~the~~ theoretical or hypothetical
(2) Actual.

The ~~actual~~ theoretical or hypothetical indicator diagram is always greater in size as compare to the actual one. Since In the former losses are neglected.
The ratio of the area of the actual indicator diagram to theoretical is called diagram factor.

actual - PV diagram of four stroke otto cycle Engine.

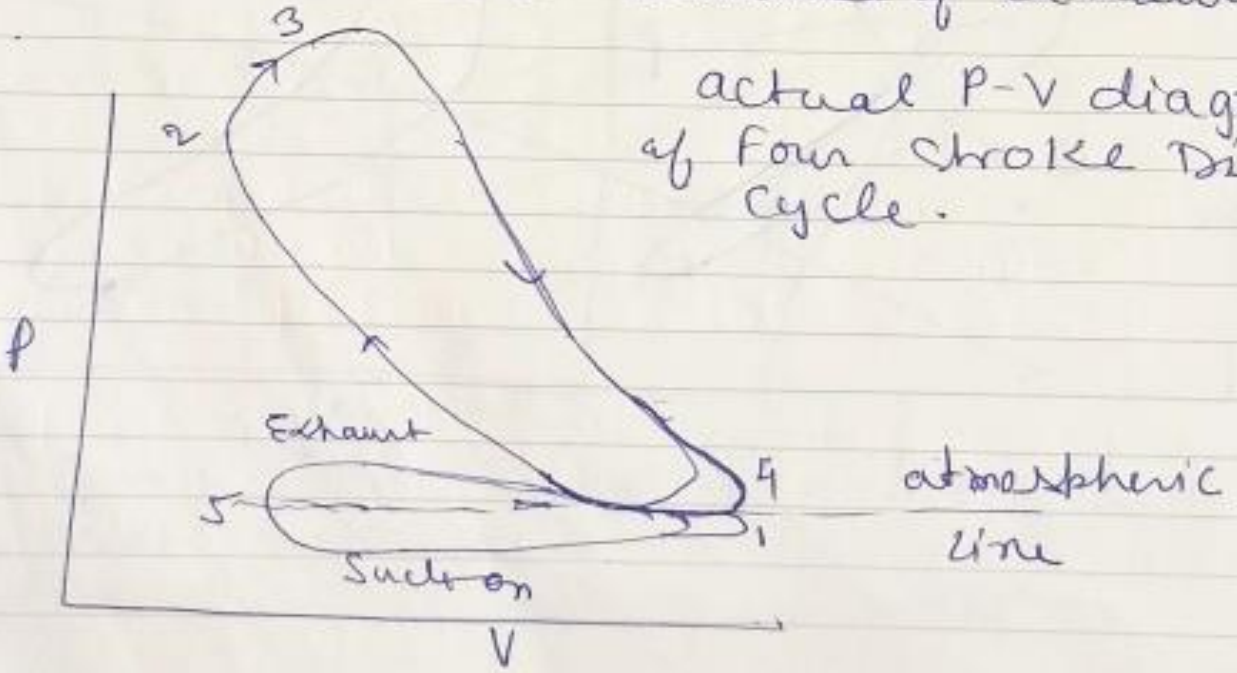


Line 5-1 is below the atmospheric pressure line. This is due to air fuel mixture Entering into the cylinder.

4-5 is Slightly above the atmospheric pressure line. This is due to restricted Exhaust passages which do not allow the Exhaust gases leave the Engine-Cylinder quickly.

4-5 is slightly above the atmospheric pressure line. This is due to restricted Exhaust passages which do not allow the Exhaust gases leave the Engine-Cylinder quickly.

4-5 -1 negative loop. It gives the Pumping loss due to admission of fuel air mixture and removal of Exhaust gases.



actual P-V diagram of Four Stroke Diesel Cycle.