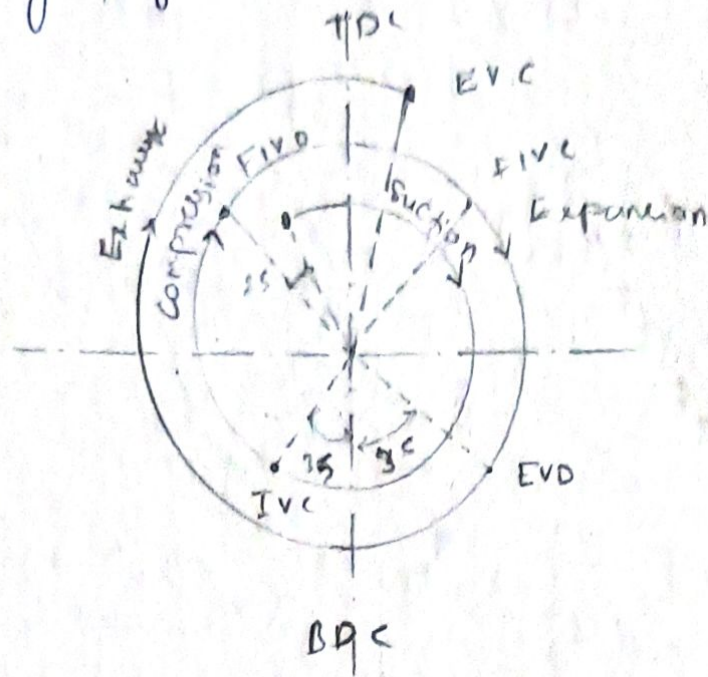


Valve Timing Diagram for Four Stroke Cycle petrol engine



IVO - 10° to 20° Before TDC - At end of Exhaust stroke before suction stroke

IVC - 30° to 40° After BDC TDC to BDC \rightarrow suction

Compression - both valves closed

Spark produced - 30 to 40° before TDC to give time for fuel ignition

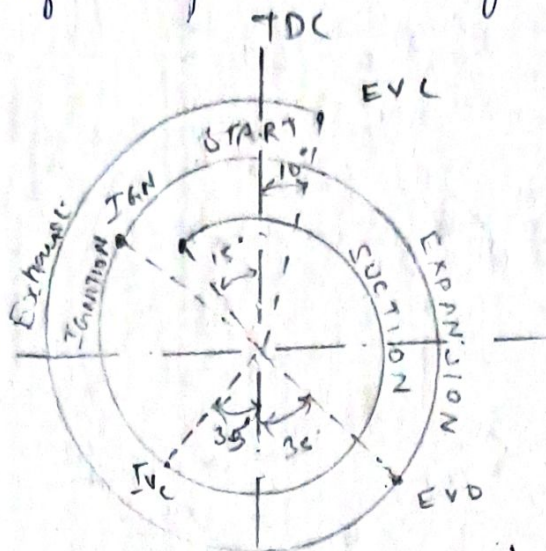
Expansion stroke EVO before BDC 30° to 50°

Exhaust stroke - EV remains opened $8-10^{\circ}$ past TDC

At fraction of time Both Inlet and Exhaust valve are open

Angle \rightarrow position of the crank at the inlet valve opening and exhaust valve closing is called angle of valve overlap

Value Timing Diagram - 4 Stroke Diesel engine

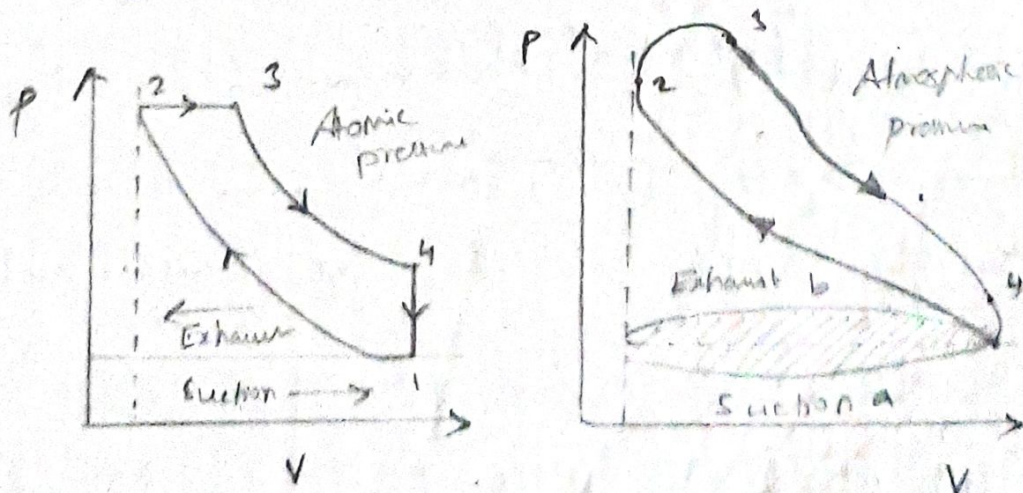


Inlet valve opens (IVO) at 10° to 25° before TDC position and Inlet valve closes (IVC) after BDC position.

Fuel Injection valve opens at 5° to 10° before TDC position and fuel Injection valve closes (FIVC) at 15° to 25° after TDC position.

Exhaust valve opens (EVO) at -30° to 50° before BDC position and exhaust valve closes (EVC) at 10° to 15° after TDC position.

Port timing Diagram



Transfer port closes when crank angle is at 50° after BDC (suction stroke is accomplished during 120° of crank rotation i.e. the angle between "transfer port opens" and Transfer port closes is 120°).

Exhaust port closes when angle is at 60° after BDC. A little time transfer port closes.

As soon as exhaust port closes, the compression starts. The inlet port opens at 50° before TDC. The crank angle between Inlet port opens and Inlet port closes is 140° .

At the end of compression stroke, the spark plug produces spark. Due to combustion of air-fuel mixture a large force is acted upon piston.

Inlet port closed 50° after TDC

Exhaust port opened 80° before BDC

Angle between Exhaust port opens and Exhaust port closes is 140° .

Angle between Exhaust port opens and transfer port opens/closes is 120° . Transfer port opens 70° before BDC.