

1/a) Volumetric efficiency:-

Volumetric efficiency is measure of the success with ~~the~~ ^{which} the air supply and ~~thus the~~ ^{induced} change is induced to the engine cylinder.

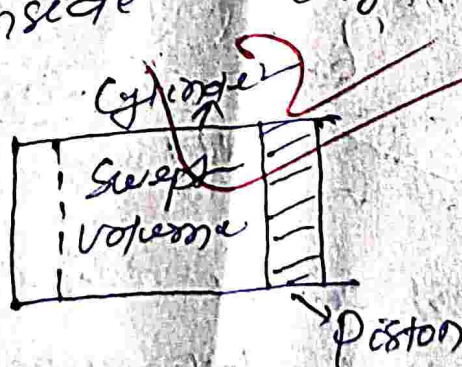
$$\eta_{vol} = \frac{\text{Volume of the suction stroke}}{\text{Swept volume}}$$

b) Brake thermal efficiency

It may be defined as heat equivalent to brake power to the heat engine ~~supply~~ ^{supplied} by the fuel in specified period of time.

c) Swept volume

Swept volume is the total volume covered by the piston inside engine cylinder.



① Boiler mountings

These are the fittings which are mounting on the boiler for its proper and safe functioning.

There are many types of boiler mountings. they are:-

- ① Water level indicator
- ② Safety valve
- ③ pressure gauge
- ④ feed check valve
- ⑤ Steam stop valve
- ⑥ Blow off cock
- ⑦ Fusible plug

② Dryness of fraction:-

It is the ratio of mass of the actual dry steam to the mass of the same quantity of wet steam.

mathematically

$$\frac{m_{dg}}{m_{dg} + m_f} = \frac{m_{dg}}{m}$$

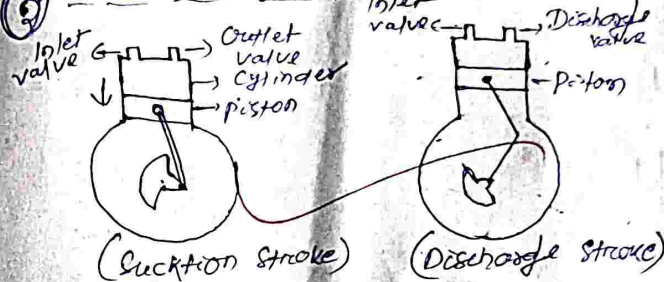
Where

m_{dg} = mass of the actual dry steam

m_f = mass of the water in suspension

m = mass of the wet steam,

③ Single stage reciprocating air compressor.



- In the single stage reciprocating air compressor, it consists of a piston, cylinder, inlet & outlet valve.
- When the piston moves downwards, the air in the cylinder falls below the atmospheric pressure.
- This pressure difference causes the inlet valve to open, and the air goes into the engine cylinder.
- When the piston moves upwards, the air in the engine cylinder is at high pressure. Due to this high pressure, the outlet valve opens, and the compressed air is delivered to the container or storage.
- Due to this continuous cycle, it creates high pressure & delivers it to the storage tank or container.