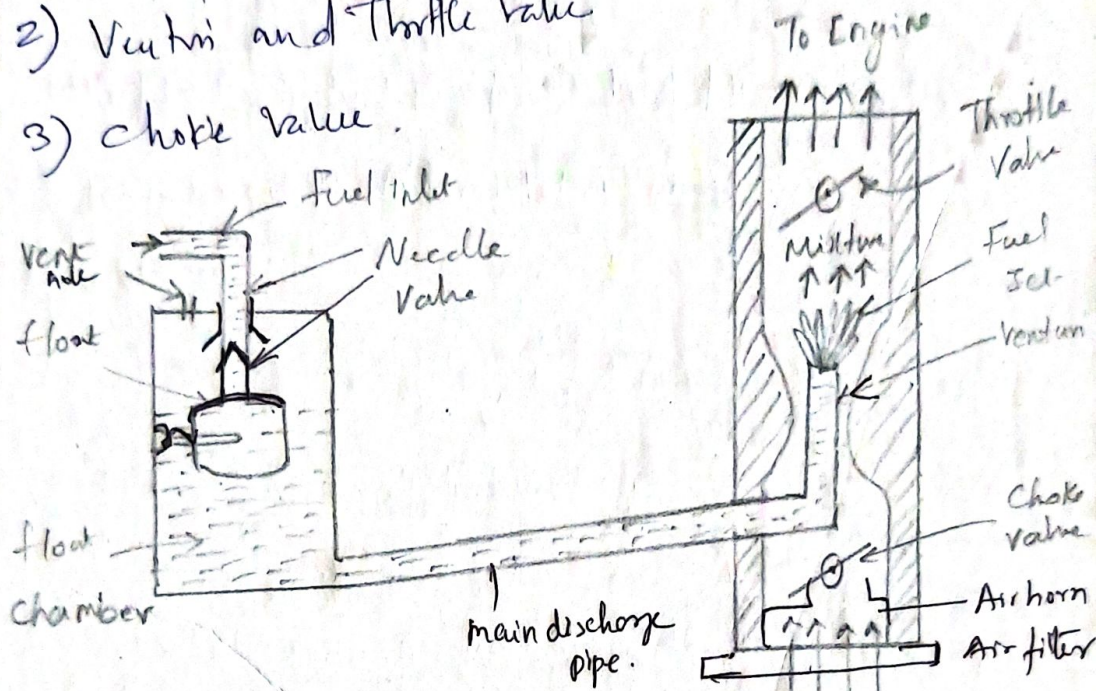


# Simple Carburettor

Carburettor is a device which is used for atomizing and vaporizing the petrol and mixing it with air.

Atomization of fuel and Vaporization of fuel.

- 1) float and Float Chamber
- 2) Venturi and Throttle valve
- 3) choke valve.



Air fuel ratio oxygen is very much necessary to burn the fuel.

Complete Combustion Air fuel ratio 15:1 by weight

15:1 → Stoichiometric air fuel ratio.

Air fuel ratio → 20:1 to 8:1 (normal range)

Starting conditions → 10:1 (very rich)

Idling speed (low speed) 12:1 (rich mixture)

Normal running conditions → 15:1 (rich or lean mixture)

17:1 (medium load) Economic mixture  
12:1 (rich mixture)

### Various Compensation

- 1) Auxiliary or Extra air valve Compensation
- 2) Restricted air bleed Compensation
- 3) Compensation jet Compensation.
- 4) Economiser needle in metering jet

1) To supply, extra air valve is provided to  
more air. Air fuel ratio is maintained constant

2) Starting and slow speed, more fuel flows into  
venturi to give rich mixture. Air bubble starts bleeding  
through jet hole and make mixture lean

### Types of carburettor

- 1) Jetted carburettor
- 2) Solex carburettor
- 3) Annular carburettor

## Calculations

$$\text{Air fuel ratio} = \frac{m_a}{m_f}$$

$m_f$  mass of fuel in kg/sec

$$\text{Air fuel ratio} = \frac{m_a}{m_f} = \frac{\rho_a C_a}{\rho_f C_f} \sqrt{\frac{\rho_a \Delta P_a}{\rho_f (\Delta P_a - \Delta P_f)}}$$

$$V_f = C_a \sqrt{\frac{2 \pi \times 9.81 \rho_f}{\rho_a}}$$

20 lit/hr

$$V_f = \frac{20}{1000 \times 3600} \text{ m}^3/\text{sec}$$

$$\Delta P_{\text{pressure}} = \frac{750}{760} \times 1.01325 = \underline{\underline{0.99992 \text{ bar}}} \Rightarrow 0.99 \times 10^5 \text{ N/m}^2$$

$$Re = 287$$

$$C_a = 0.85$$

$$\text{Area of jet} = \rho_f C_f \sqrt{2 \rho_f (\Delta P_a - \Delta P_f)}$$