SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.

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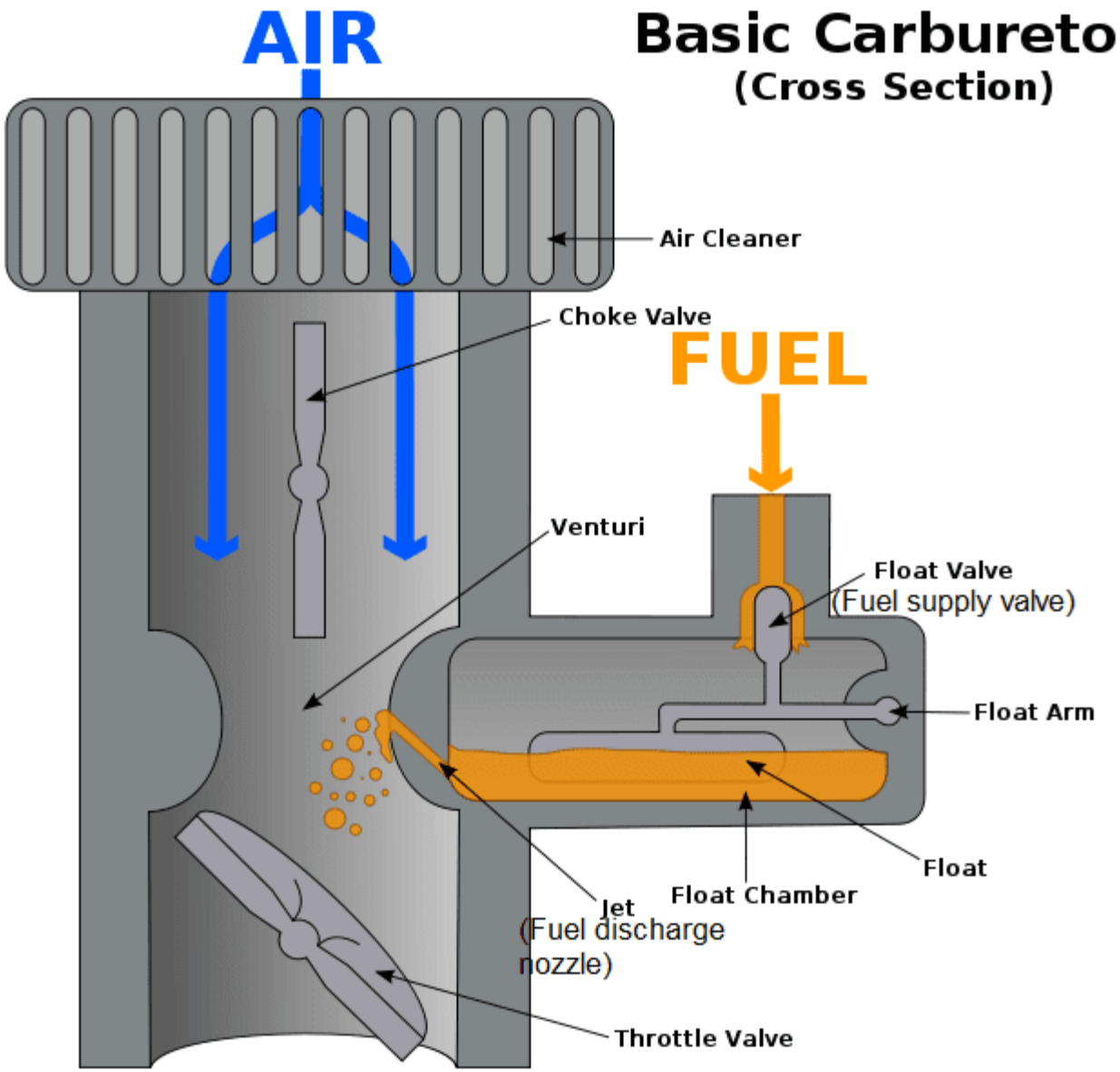
DEPARTMENT OF AUTOMOBILE ENGINEERING

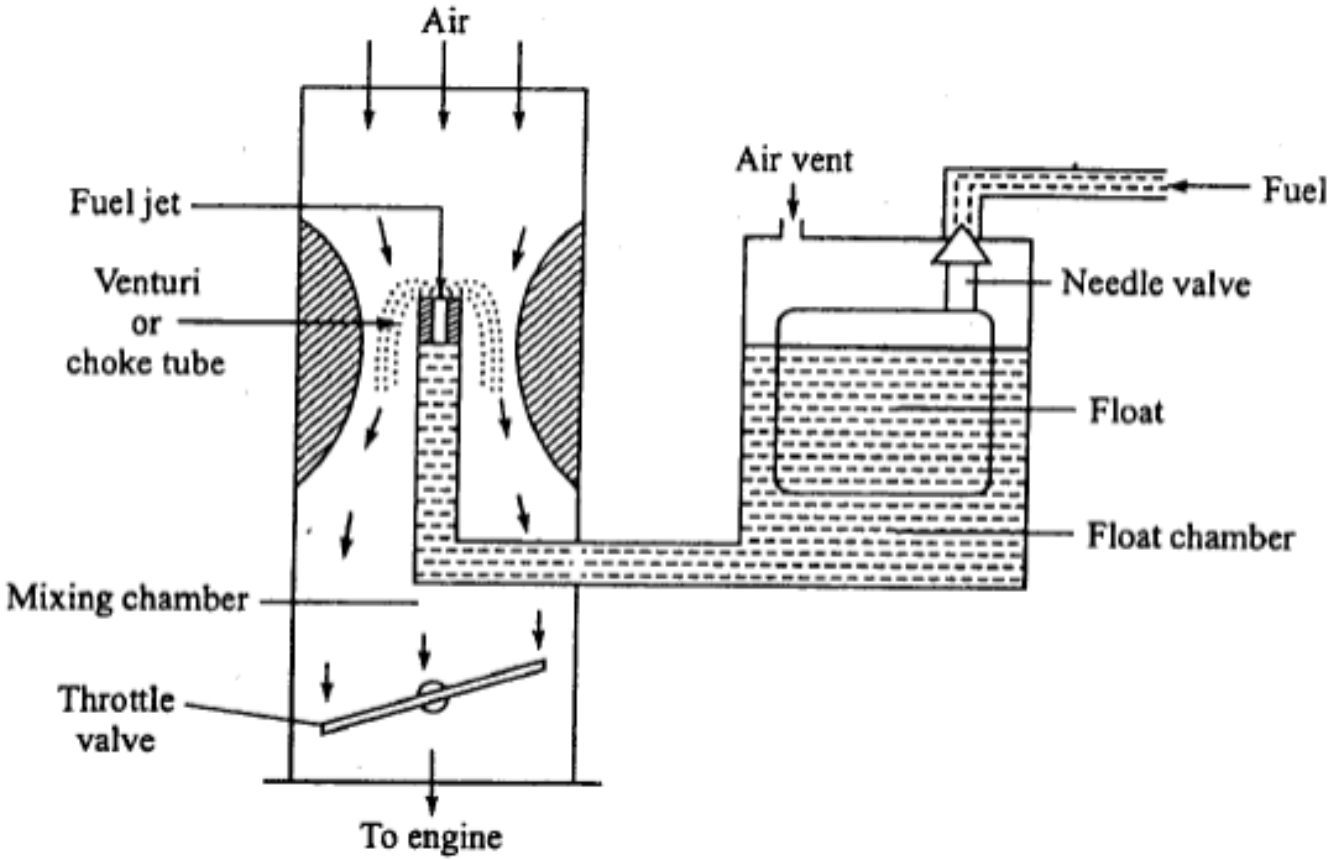
23AUT202 – AUTOMOTIVE ENGINES AND EMISSION CONTROL

II YEAR / III SEMESTER

Topic – Simple Fixed Venture Carburettor

Basic Carburetor
(Cross Section)




Air
Air vent
Fuel
Fuel jet
Needle valve
Venturi
or
choke tube
Float
Float chamber
Mixing chamber
Throttle
valve
To engine

Introduction

- The process of preparing a combustible fuel-air mixture outside engine cylinder is known as carburetion.
- It consists of a fuel jet of small diameter placed in a constricted tube called venture or choke tube. The fuel pump delivers fuel from the fuel tank to the float chamber.
- When sufficient fuel enters the float chamber, the float is lifted due to buoyancy and the conical needle valve engages and thus shuts off the fuel supply.
- If the fuel level tends to fall the float drops and thereby opens needle valve thus admitting more fuel.
- The float chamber vented to atmosphere a small hole, so that the pressure on the surface of the fuel remains constant and equal to that of atmosphere

- At the throat of the venturi tube, area of the cross section is minimum where the fuel discharge jet is situated.
- Air thus inducted increases its velocity from inlet and becomes maximum at the throat whereas pressure at the throat is below atmospheric.
- Due to the pressure difference fuel the fuel is forced out of the jet where it mixes with high velocity air and atomized and finally passed through the engine via throttle valve.

Components

- The main Components of Simple Carburetor are : Float Chamber, float, nozzle, venturi, throttle valve, inlet valve, and metering jet .
- In the float chamber, a constant level of petrol is maintained by the float and a needle valve.
- The float chamber is ventilated to atmosphere. This is used to maintain atmospheric pressure inside the chamber.
- The float which is normally a metallic hollow cylinder rises and closes the inlet valve as the fuel level in the float chamber increases to certain level.

- The mixing chamber contains venturi, nozzle and throttle valve. The venturi tube is fitted with the inlet manifold.
- This tube has a narrow opening called venturi. A nozzle is provided just below the centre of this venturi.
- The nozzle keeps the same level of petrol as that of the level in the float chamber. The mixing chamber has two butterfly valves.
- One is to allow air into the mixing chamber known as choke valve. The other is to allow air -fuel mixture to the engine known as throttle valve.

Working

- During the suction stroke, vacuum is created inside the cylinder. This causes pressure difference between the cylinder and outside the carburetor.
- Due to this, the atmosphere air enters into the carburetor. The air flows through venturi. The venturi increases the velocity of air and reduces the pressure.
- This produces the partial vacuum at the tip of the nozzle. Because of this vacuum, The fuel comes out from the nozzle in the form of fine spray.
- These fine fuel particles mix with the incoming air to form air-fuel mixture. Thus, it gives a homogenous mixture of air fuel to the engine.

Drawbacks of Simple Carburettor

- At low loads throttle valve is partially open, so the mixture is lean where as engine requires rich mixture at low loads.
- At high load throttle valve is fully open that leads to maximum air flow. However engine requires the rich mixture at high load.
- The simple carburettor cannot enrich the mixture during engine start and warm-up.
- The simple carburettor cannot adjust to change in altitude

Thank You !