SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.

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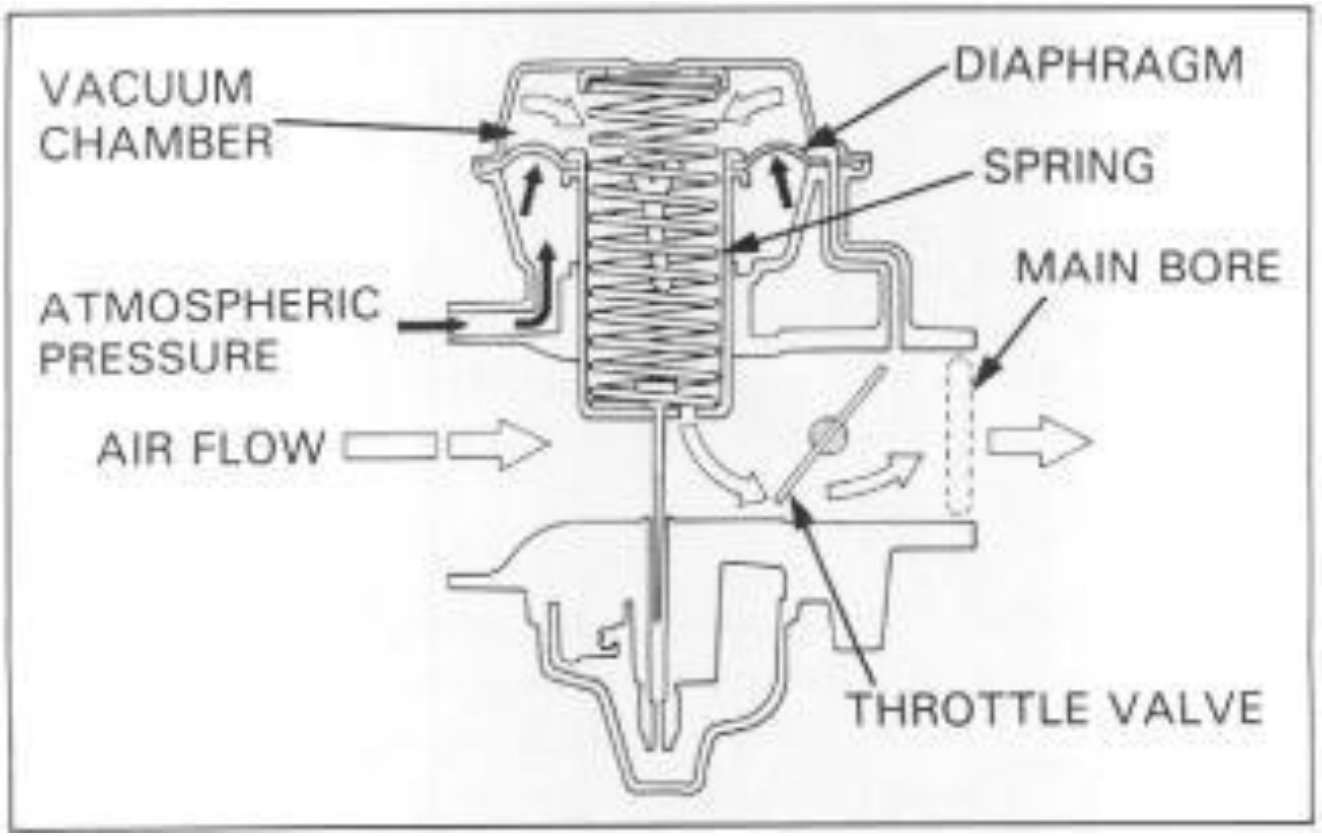
DEPARTMENT OF AUTOMOBILE ENGINEERING

23AUT202 – AUTOMOTIVE ENGINES AND EMISSION CONTROL

II YEAR / III SEMESTER

Topic – Constant Vacuum Carburettor


VACUUM CHAMBER
DIAPHRAGM
SPRING
MAIN BORE
ATMOSPHERIC PRESSURE
AIR FLOW
THROTTLE VALVE

Introduction

- A constant vacuum carburetor, also known as a variable venturi carburetor, is designed to maintain a constant pressure (vacuum) in the venturi throat, providing a more consistent air-fuel mixture across various engine speeds and loads.
- A diaphragm arranged in an upper end portion of said vacuum actuated valve for defining an atmospheric pressure chamber and a pressure receiving chamber, the inner peripheral portion of said diaphragm being clamped between a flange portion on the upper end of said vacuum actuated valve and a diaphragm plate.
- A vacuum actuated valve return spring disposed within said pressure receiving chamber in compressed fashion;

- A spring seat arranged in opposition to said pressure receiving chamber and including an inner jet needle supporting cylindrical portion inserted into said first guide hole of said vacuum actuated valve.
- An outer spring engaging flange portion engaging with a lower end of said vacuum actuated valve return spring, said jet needle supporting cylindrical portion of said spring seat being inserted within said first guide hole of said vacuum actuated valve

- A jet needle movement in the longitudinal direction being restricted by said jet needle engaging step portion and the end portion of said jet needle supporting cylinder portion.

- **Constant Vacuum**: The primary feature of this carburetor is the maintenance of a constant vacuum in the venturi, providing a stable air-fuel ratio.
- **Variable Venturi**: The venturi size changes based on engine demand, unlike the fixed venturi in simple carburetors.
- **Responsive Fuel Control**: The needle and jet system adjusts fuel flow dynamically, offering better fuel economy and performance.

Advantages

- More consistent air-fuel mixture across varying engine speeds and loads.
- Better fuel efficiency and performance compared to fixed venturi carburetors.
- Reduced emissions due to more precise control over the air-fuel mixture.

Disadvantages

- More complex design with additional moving parts, leading to potential maintenance issues.
- Higher cost compared to simple fixed venturi carburetors.
- Susceptible to wear and tear, particularly in the piston/slide and diaphragm components.

Applications

- Widely used in motorcycles and some small engines.
- Preferred in applications where consistent performance and fuel efficiency are critical.

Thank You !