CARBURETTOR

- Carburettor is a device for atomizing and vaporizing the fuel and mixing it with the air in varying proportions to suit the entire operating range of SI engines.
- The process of breaking up and mixing the fuel with the air is called carburetion.

Functions

- ✓ It must run the engine smoothly by supplying a correct mixture strength.
- ✓ It must atomize, vaporize and mix the fuel homogeneously with air.
- ✓ It must supply correct amount of air-fuel mixture in correct proportion under all load conditions and speed

Carburettor Requirements

Requirements for an ideal carburettor:

1. It should provide easy starting of the engine from the cold.
2. Provide properly atomized fuel with the correct fuel-air mixture at each speed corresponding to the throttle position.
3. Provide the correct fuel-air mixture at each throttle opening under different loads and speeds.
4. Enable the engine to run slowly during idling without hunting or mis-firing the engine and thus eliminating undue wastage of fuel.
5. Generate maximum acceleration when the throttle is suddenly or slowly opened.
6. There should not be any flat spots (hesitation to pick up speed) throughout the throttle opening range.
7. It should be so designed that when the throttle is fully opened the maximum quantity of the correct mixture flows into the engine. Sudden bends and restrictions must be avoided.
8. Function correctly under different climatic conditions, such as temperature, barometric or altitude and atmospheric moisture changes.

Factors affecting Carburetion

- the quality of the fuel supplied
- the time available for mixture preparation
- the temperature of the incoming air
- the engine speed
- the design of the carburetor

Remark

- For high speed engines (3000 rpm), the time available for mixture preparation is very small (0.02 sec).
- The temperature affects the vaporization of fuel. High temperature leads to high rate of vaporization. This is achieved by heating the induction manifold in some cases. However, this causes a reduction in the power output because of decrease in mass flow rate.
- The design of carburetor, as such, is very complicated because the optimum air-fuel ratio varies over its operating range.