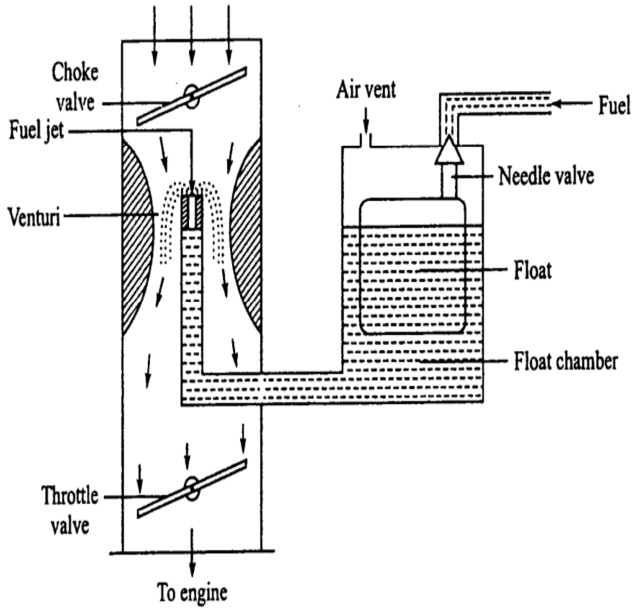
ESSENTIAL PARTS OF A MODERN CARBURETTOR

Choke

Its purpose is to restrict the flow of air, thereby enriching the fuel-air mixture while starting the engine. It is a butterfly type valve.



Facilitates cold starting

When a cold engine is started, especially at low ambient temperatures, the starting motor cranks the engine slowly (70 to 150 rpm). This produces low manifold vacuum, which draws less fuel from the jet causing the too lean fuel to ignite.

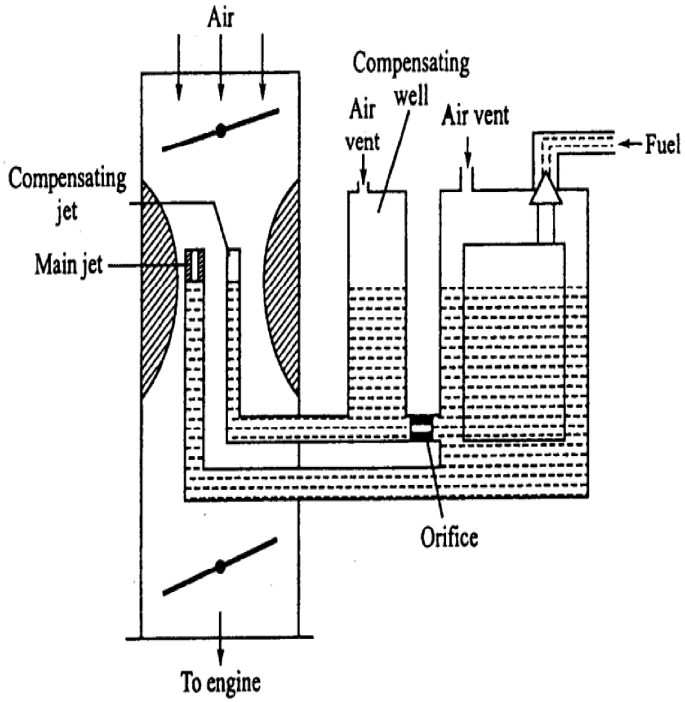
For starting the engine from cold is to shut off most of the main air supply to the main jets and thus produce rich mixture necessary for cold starting. The choke valve is held in a partially closed position by the thermostat when the engine is being started, and is opened automatically as the engine warms up, thus gradually supplying the leaner mixture.

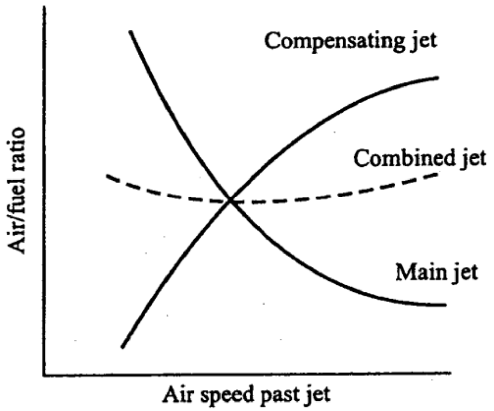
ESSENTIAL PARTS OF A MODERN CARBURETTOR

Compensating jet

At very small throttle opening, the petrol in the Well is level with that in the float chamber and there is no flow through the compensating jet, as the fuel level in the Well and float chamber are equal and open to atmosphere.

As the throttle is opened and increasing suction in the choke causes petrol to flow from both the float chamber and Well, the level in the Well falls, due to the orifice restriction, and the delivery by Compensating jet is reduced such that the overall mixture, entering the engine, is prevented from becoming too rich.





Acceleration Requirement

Under steady-running conditions, there is a tendency for some non-vaporized liquid droplets to form a thin liquid film and move along the inner wall of the intake manifold to the cylinders. The air and evaporated fuel mixture take much less time than the liquid streams along the wall to reach the cylinder from the carburettor.

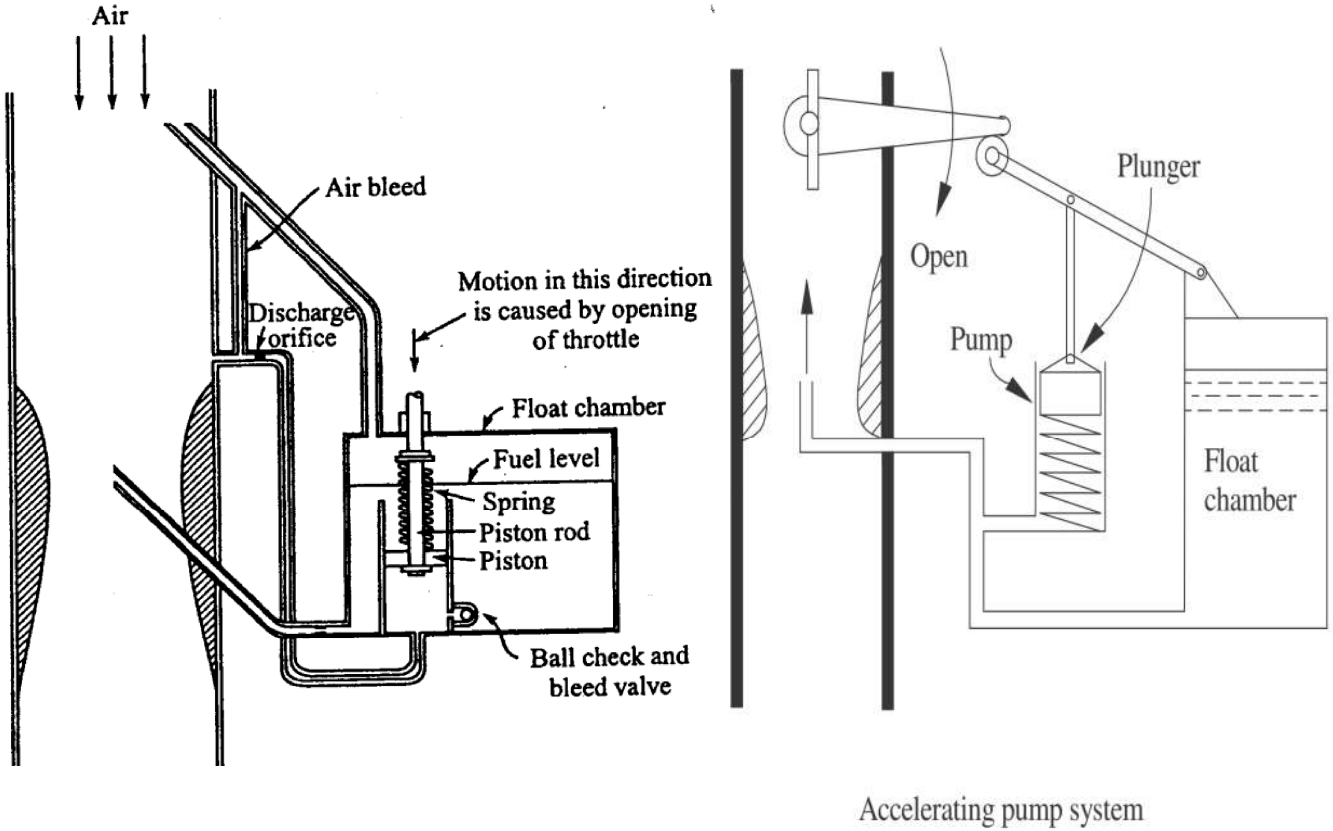
When a sudden acceleration is required - , the gaseous charge of air and fuel moves rapidly into the cylinders. The liquid film, due to its greater inertia lags behind. It causes lean mixture to move to the engine cylinder for a short time. This temporary lean mixture prevents the engine from developing full power just at the time when it is required the most.

In order to compensate for this tendency, during acceleration, to fail momentarily to supply a sufficiently rich mixture, a mechanical accelerating device is provided, which is directly connected to the throttle mechanism.

ESSENTIAL PARTS OF A MODERN CARBURETTOR

Accelerating pump system

During sudden acceleration of an engine i.e rapid opening of the throttle will be immediate followed by an increases air flow, but the inertia of the liquid fuel will cause at least momentarily lean mixture just when richness is desired for power.



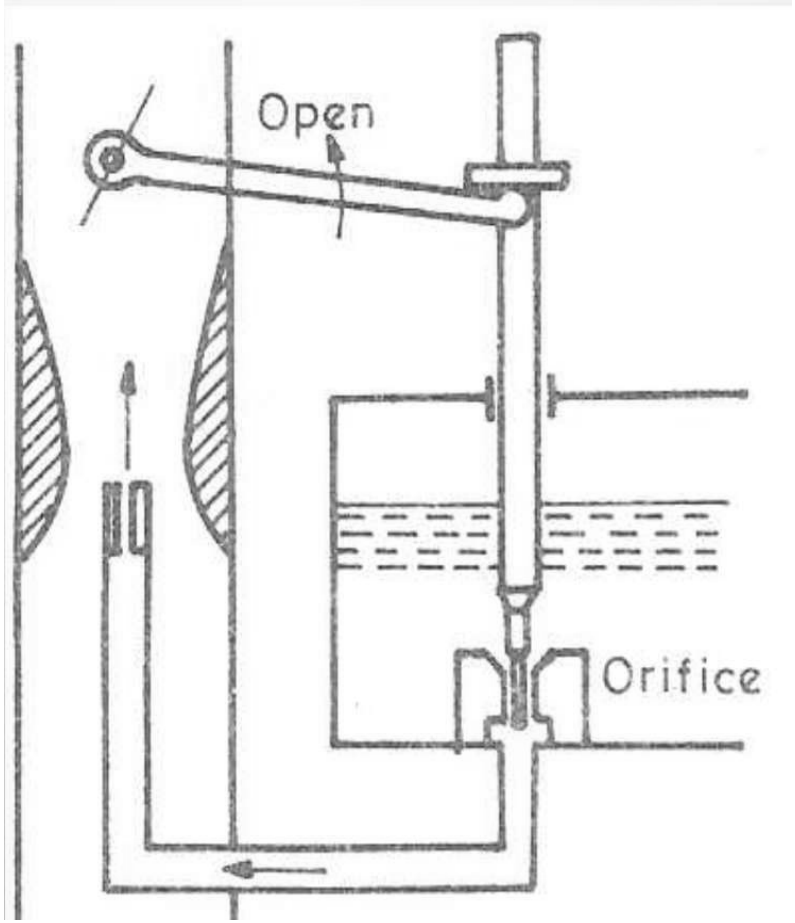
Accelerating pump system

ESSENTIAL PARTS OF A MODERN CARBURETTOR

Power enrichment system / Economizer

Provides a rich uneconomical mixture at maximum power range of operation (75%-100%) without interfering with economical operation in the normal power range.

Remains closed at normal cruise operation and gets open to supply rich mixture at full throttle operation.



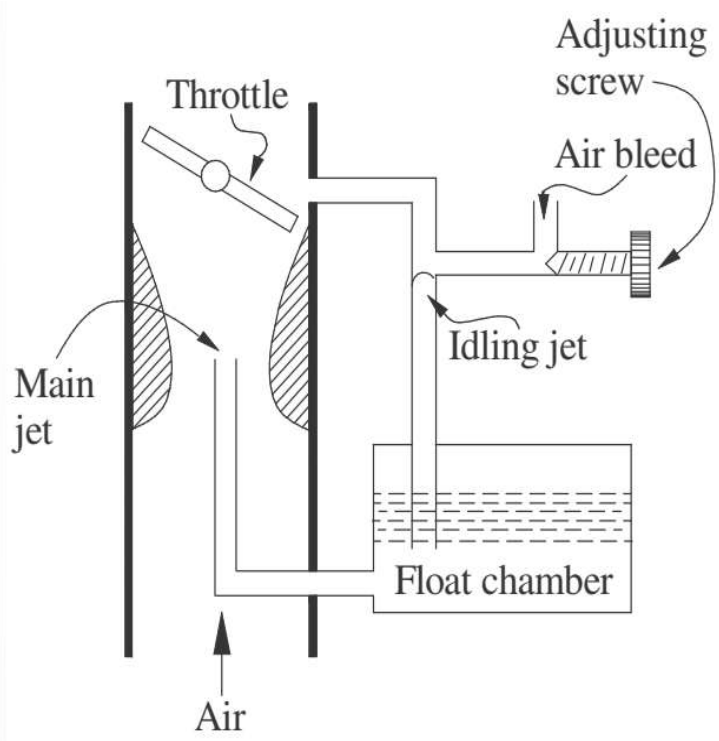
ESSENTIAL PARTS OF A MODERN CARBURETTOR

Idling system

During starting or idling, engine runs without load and the throttle valve remains in closed position. Engine produces power only to overcome friction between the parts, and a rich mixture is to be fed to the engine to sustain combustion.

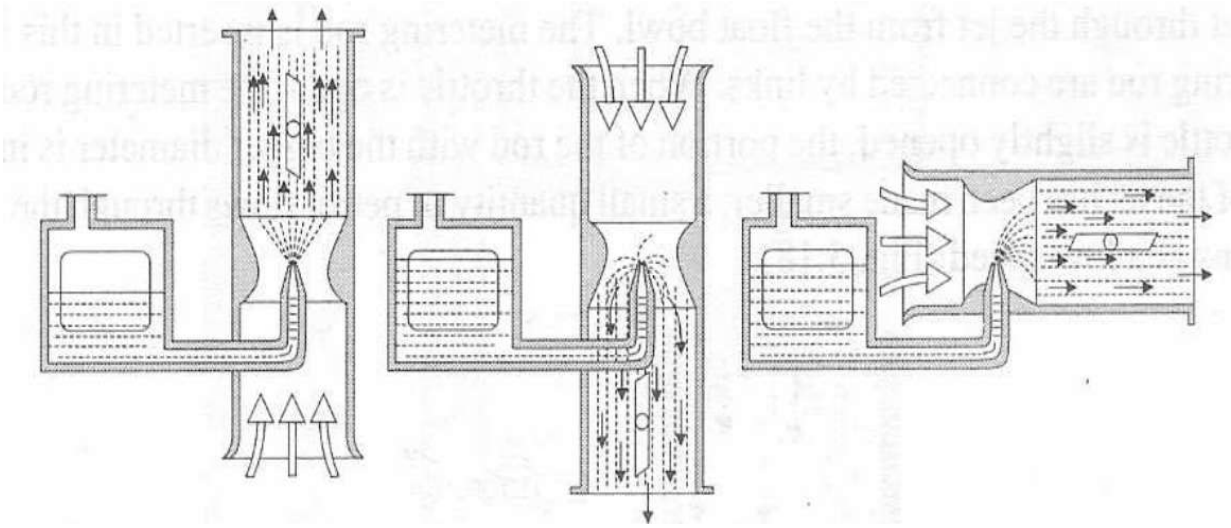
When the throttle is partially closed, a depression past the throttle allows the fuel to go into the intake through the idle tube.

The depression also draws air through the idle air bleed and mixes with fuel. The fuel flow depends on the location of the idle nozzle and the adjustment of the idle screw.



Types of Carburettor

- Up-draught (updraft) carburetor
- Down-draught (downdraft) carburetor
- Cross-draught or horizontal carburetor



The down-draught carburettor is mounted above the induction ports, in such a manner that the air for the carburettor is drawn vertically downwards past the jet. The fuel issuing from the jet is therefore assisted by gravity to enter the engine.

In the up-draught carburettor, the air flows in the upward direction and the fuel enters the intake manifold against the force of gravity. The horizontal-draught type of carburettor has a straight-through passage. Such carburettors are used on streamlined cars having low bonnets.

Among these types, the down-draught carburettor is more popular. It is because the force of gravity assists the fuel into the induction manifold. Larger chokes can be used in down-draught carburettors because the carburettor can operate satisfactorily with a lower depression, owing to the gravity effect of the weight of the fuel in entering the induction manifold. It enables a greater weight of the mixture to be passed through to the engine at full throttle and at high engine speeds. **The volumetric efficiency is therefore higher**. In addition the engine pulls better at lower speed under load as the fuel is fed by gravity.