

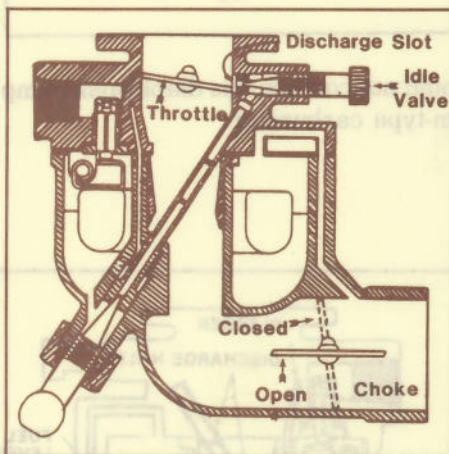
Small Engines

Carburetor Adjustment on Small Engines

James B. Wills, Jr., Professor, Agricultural Engineering

Purpose of the Carburetor

1. It breaks up the fuel into a fine spray and mixes it with air.
2. It regulates the ratio of air to fuel to provide economical and smooth engine operation.
3. It regulates the amount of air-fuel mixture going into the combustion chamber.



Gravity Feed Carburetor

In the gravity feed system, the fuel tank is above the carburetor. The fuel flows into the carburetor by gravity. Notice an air vent hole in the tank cap so air can flow in as fuel flows out. Note the vent hole in the carburetor bowl so the air can flow out as fuel flows in. If one or both of these holes were plugged, the flow of fuel would cease and stop the engine.

Carburetor Adjustments — Load Valve

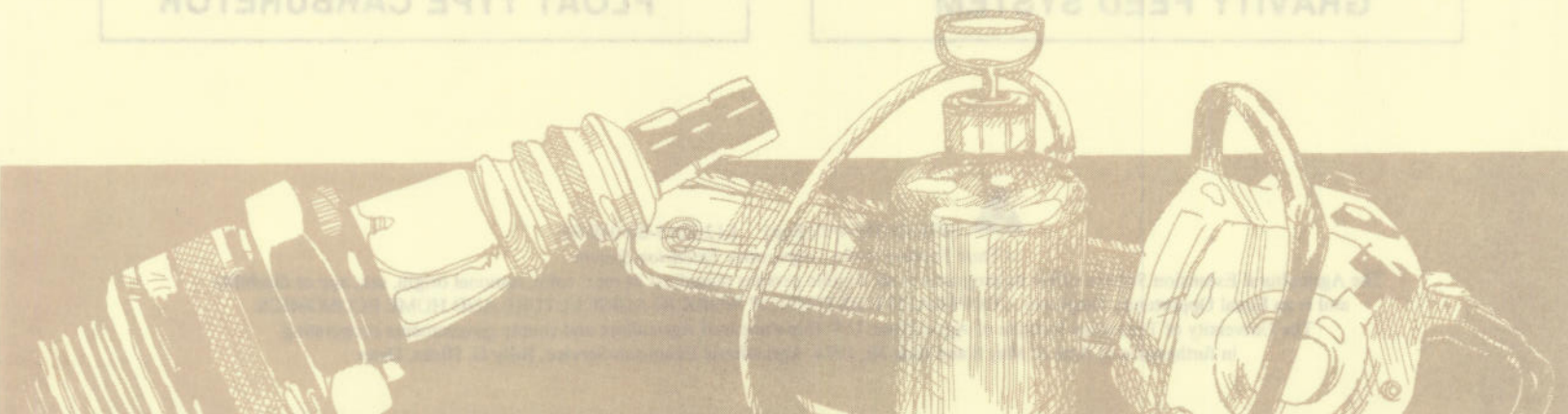
To adjust the carburetor for maximum power, run the engine at the desired operating speed. Turn in the needle valve until the engine slows down, which indicates a lean mixture. Note the position of the needle valve. Turn out the needle valve until the engine gives off black smoke from the exhaust and slows down, which indicates a rich mixture. Turn the needle valve to midway between the lean and rich position.

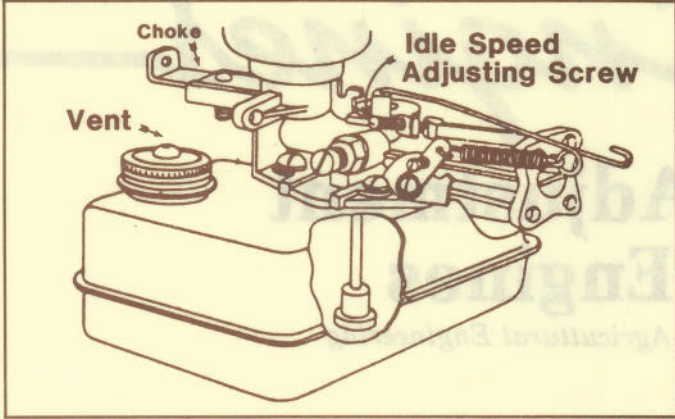
Idle Valve Adjustments

Turn the idle speed adjusting screw (located to act as a bumper on the throttle shaft) until the desired idle speed is obtained and hold throttle closed. Turn the idle valve in until speed decreases, then out until speed increases and again decreases. Then turn the idle valve to a point midway between these two settings.

Suction Feed Carburetor

Look at the suction feed system. Here the fuel tank is below the carburetor. Obviously the fuel will not flow by means of gravity. Therefore, the force of atmospheric pressure must be used.





Suction Feed Carburetor

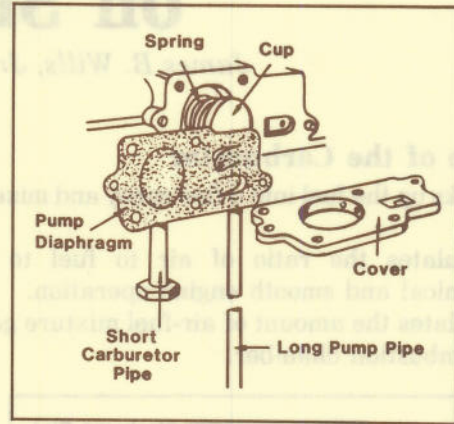
The amount of fuel at operating speed is metered by the needle valve and seat. Turning the needle valve in or out changes the setting until the proper mixture is obtained. This adjustment must always be done while the engine is running at operating speed, not at idle speed and with tank half-full of fuel. While the needle valve may look like an idle valve due to its position, it is a true high speed mixture adjusting valve.

Adjustment of the load or high speed needle valve is made in a similar manner to the gravity feed system. For

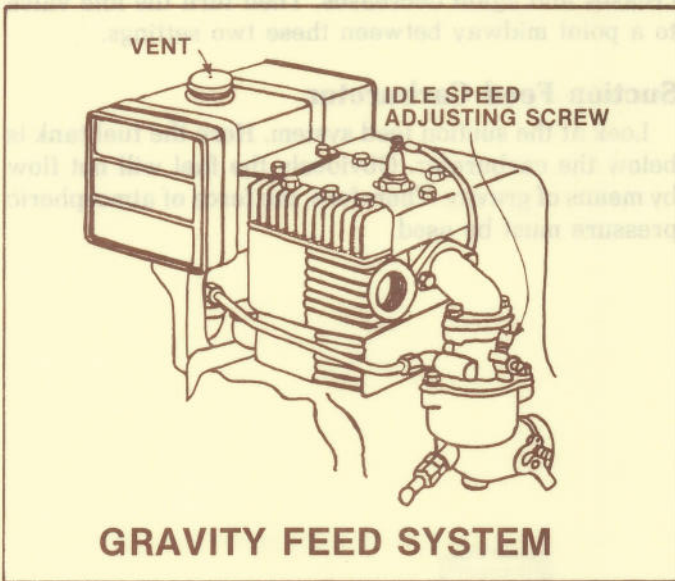
good acceleration, a slightly rich mixture is needed.

There is no idle valve, but an idle speed adjusting screw is present for adjusting idle speed of the engine. Idle speed mixtures are controlled by design of the carburetor throat and throttle. Examine the choke for its design and operation.

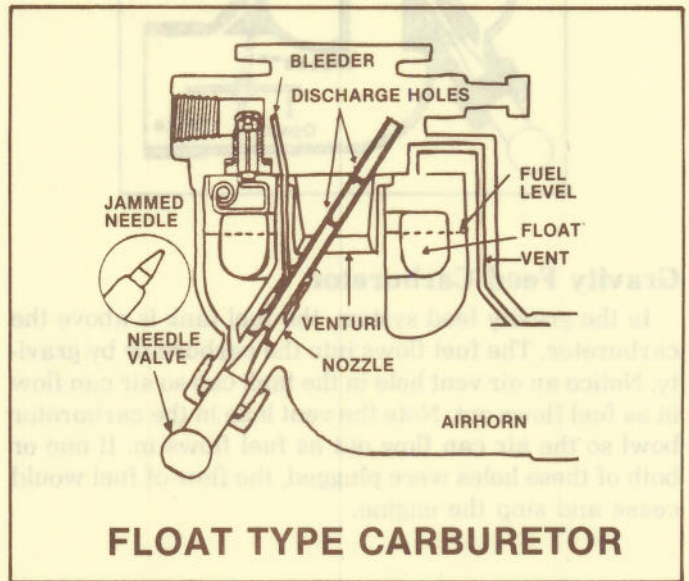
Some suction lift carburetors include a diaphragm fuel pump which fills an auxiliary fuel reservoir.



You should not confuse this diaphragm pump with the diaphragm-type carburetor.



GRAVITY FEED SYSTEM



FLOAT TYPE CARBURETOR

