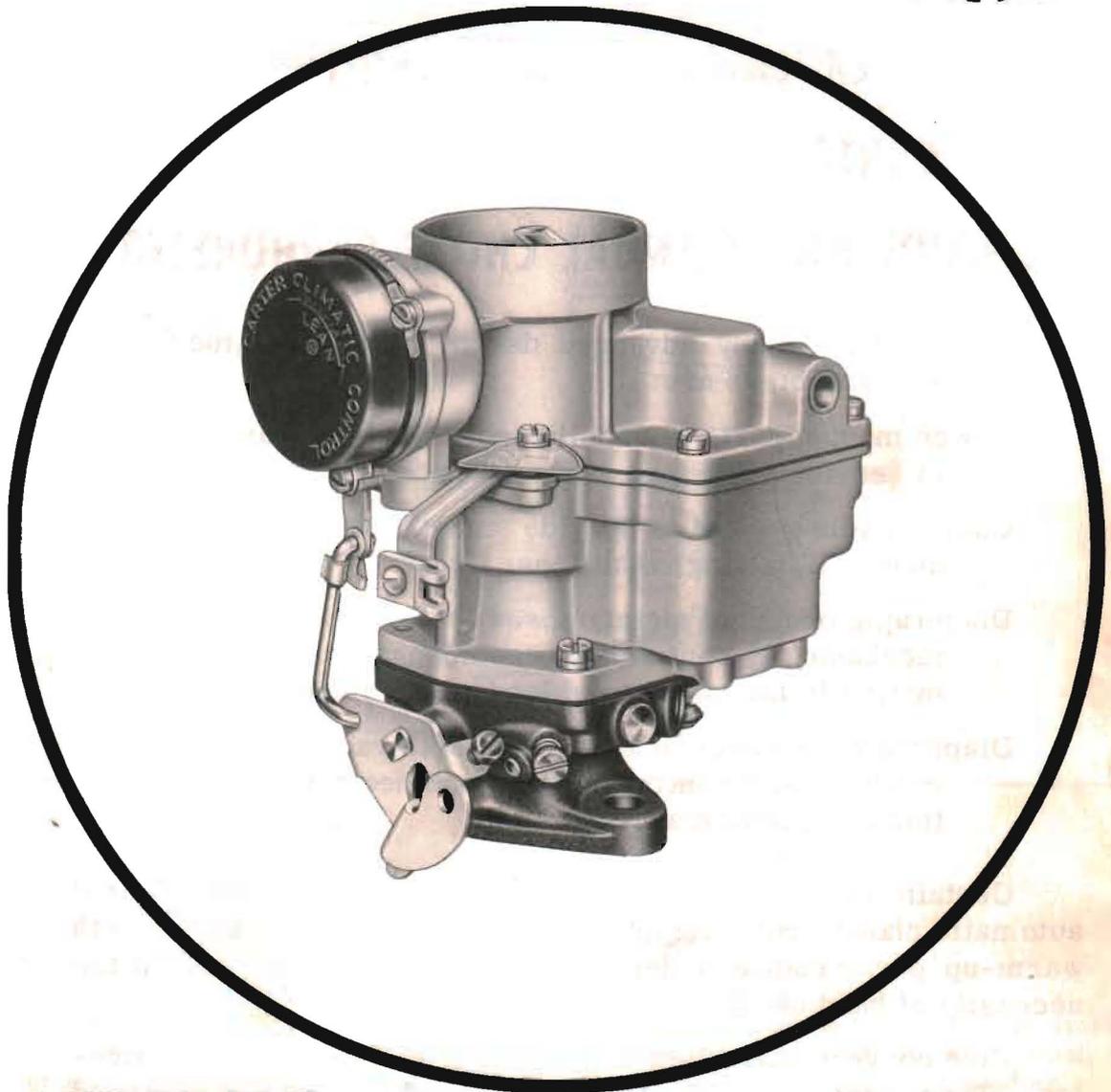


CARTER



YF TYPE

CARBURETOR

CARTER CARBURETOR CORPORATION, ST. LOUIS, MO., U. S. A.

EXPLANATION OF CIRCUITS

CARTER YF DOWNDRAFT CLIMATIC

CONTROL AND MANUAL CHOKE CARBURETERS

A few of the many advanced design features of the Carter YF series Carbureters are:

Fewer moving parts — readily accessible and easy to service.

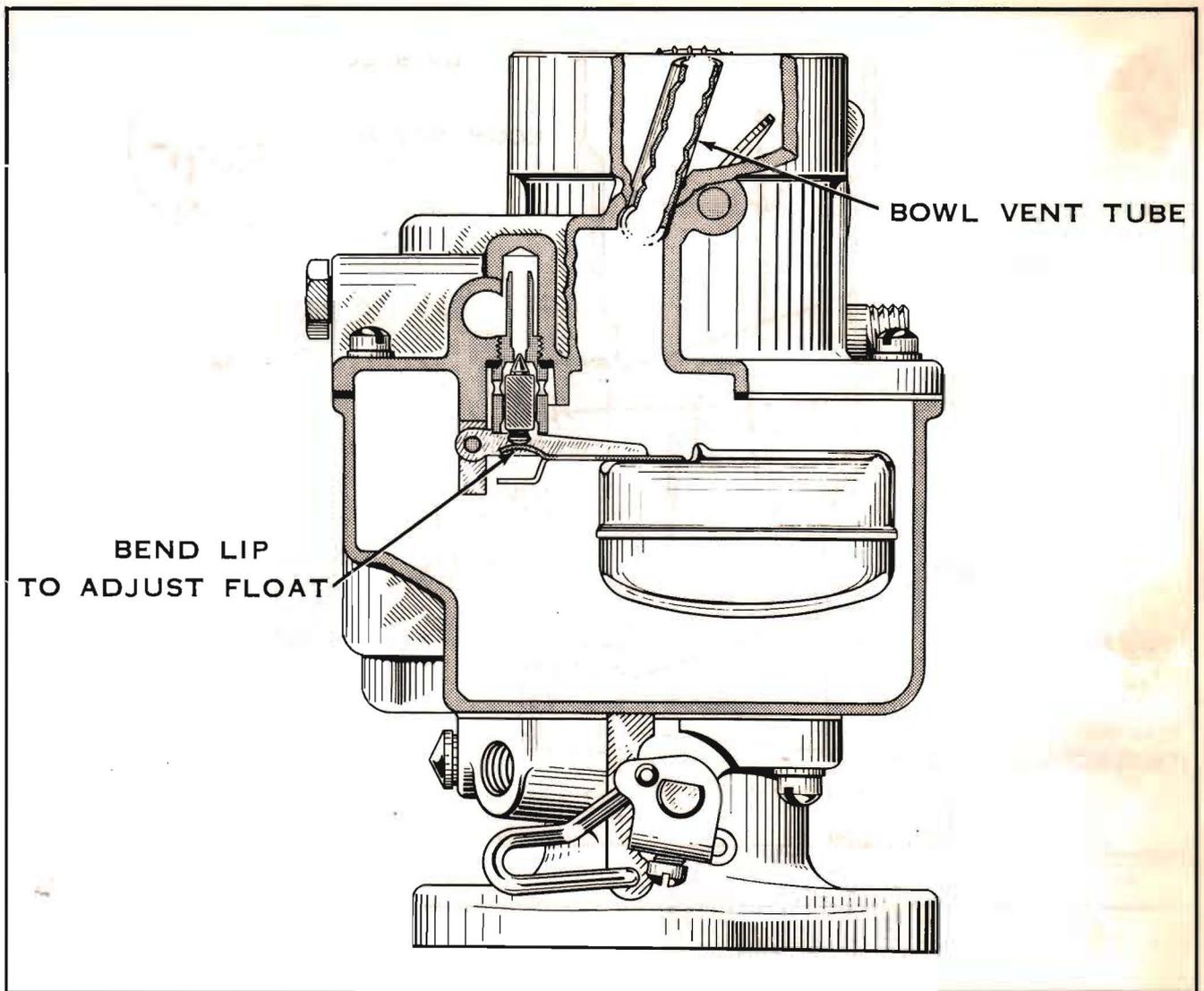
Compact idle system to provide smooth engine idle under all driving conditions.

Diaphragm operated metering rod, both vacuum and mechanically controlled — compensates automatically for added road load requirements.

Diaphragm type accelerating pump both vacuum and mechanically controlled for smoother acceleration and performance.

Certain models also feature the Carter climatic control automatic choke, providing quick cold-engine starting and smooth warm-up performance under all climatic conditions without the necessity of hand choking.

Five conventional circuits are used in this series carbureter. They are: Float Circuit, Low-Speed Circuit, High-Speed Circuit, Accelerating Pump Circuit, and Climatic Control or Choke Circuit.



FLOAT CIRCUIT

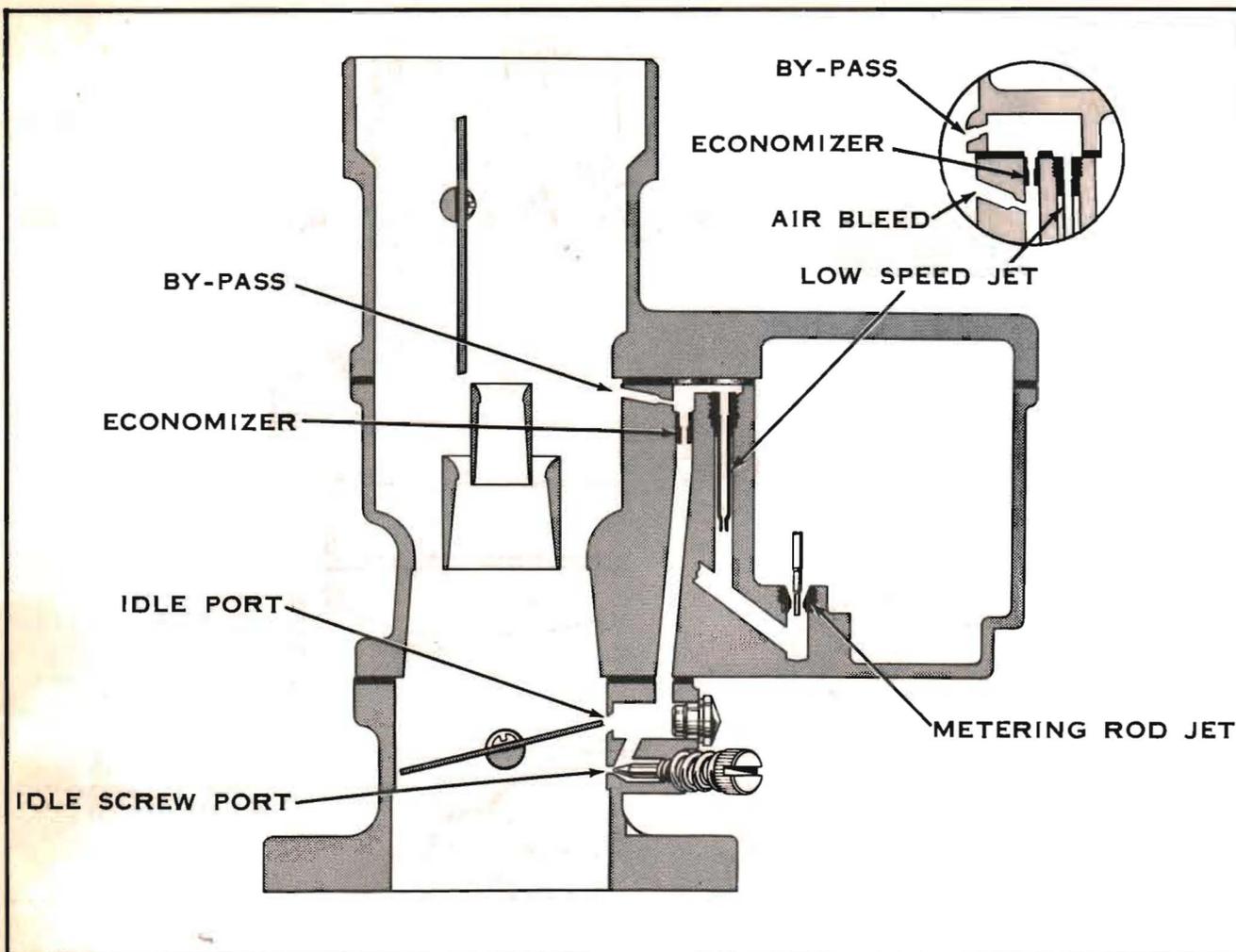
The purpose of the float circuit is to maintain an adequate supply of fuel at the proper level in the bowl for use by the low-speed, high-speed, pump and choke circuits.

Setting the float to specifications assures an adequate supply of fuel in the bowl for all operating conditions. Float adjustment must be made with the bowl cover gasket removed and the bowl cover held inverted and level at eye height with the free weight of the float resting on the intake needle. An incorrect float setting will result, particularly on models using a spring loaded intake needle, if the bowl cover is not held level, or the float is depressed when gauging the float setting. The float is adjusted by bend-

ing the lip on the float arm. To avoid placing unnecessary strain on the float, do not grasp the float shell when bending.

The intake needle, seat and float assembly should be inspected for wear. The carburetor bowl and the intake strainer screen, if used, should be clean and free of dirt, gum or other foreign matter.

The bowl is vented to the inside of the air horn and on certain models also to atmosphere. The bowl vents are calibrated to provide proper air pressure above the fuel at all times. To assure a positive seal, a new bowl cover gasket should be used when reassembling. An air leak at this point can result in a mileage complaint.



LOW - SPEED CIRCUIT

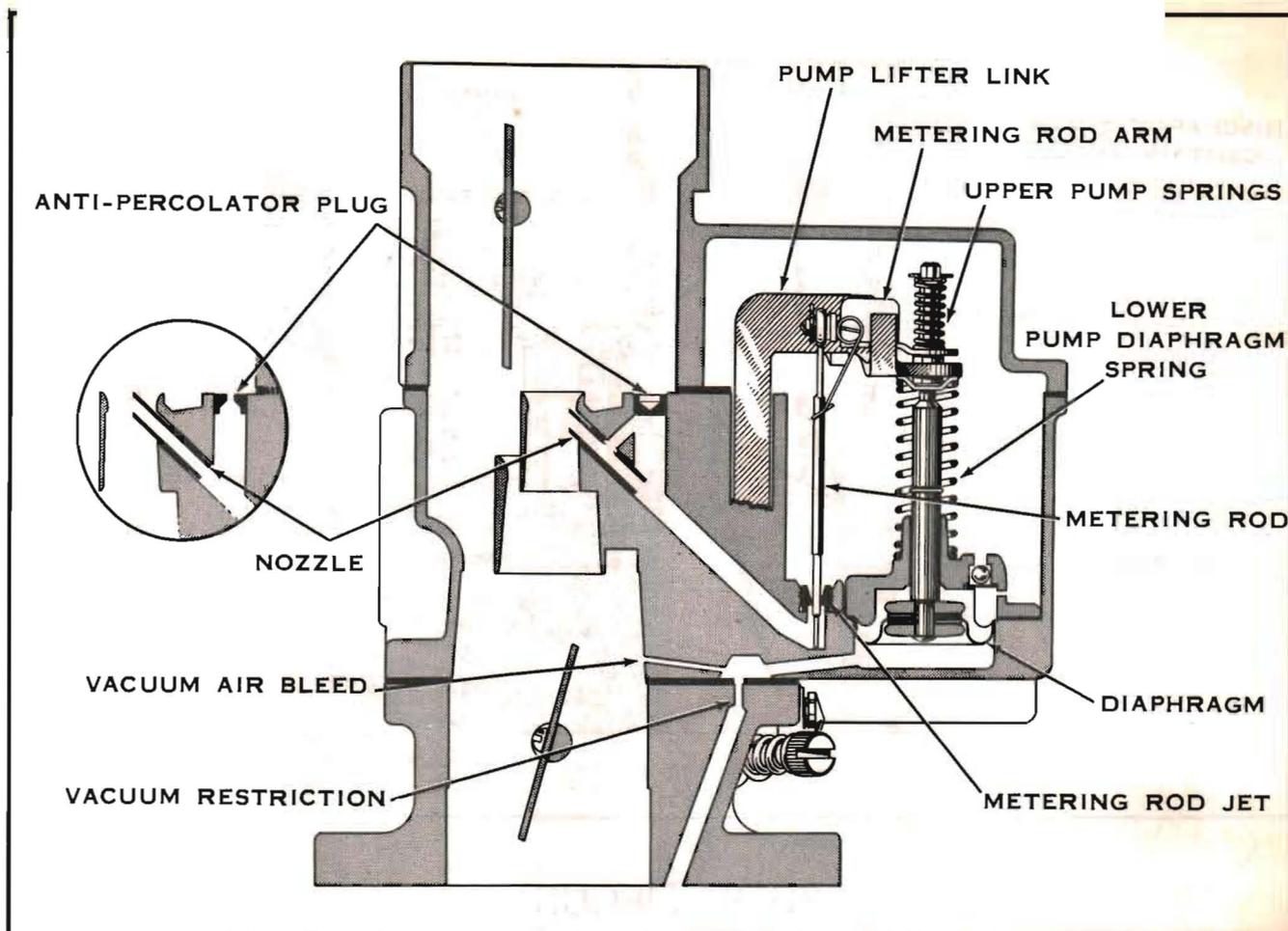
Fuel for idle and early part throttle operation is metered through the low-speed circuit.

Gasoline enters the idle well through the metering rod jet. The low-speed jet measures the amount of fuel for idle and early part throttle operation. The air by-pass, economizer, and idle air bleed are carefully calibrated and serve to break up the liquid fuel and mix it with air as it moves through the passage to the idle port and idle adjustment screw port. Turning the idle adjustment screw toward its seat reduces the quantity of fuel mixture supplied by the

idle circuit.

The idle port is slot shaped. As the throttle valve is opened, more of the idle port is uncovered allowing a greater quantity of gasoline and air mixture to enter the carbureter bore.

The by-pass, economizer, idle port, idle adjustment screw port, as well as the bore of the carbureter flange must be clean and free of carbon. Obstructions will cause poor low-speed engine operation. A worn or damaged idle adjustment screw or low-speed jet, should be replaced.



HIGH - SPEED CIRCUIT

Fuel for part throttle and full throttle operation is supplied through the high-speed circuit.

The position of the metering rod in the metering rod jet controls the amount of fuel admitted to the high-speed nozzle. The position of the metering rod is dual controlled, mechanically, by movement of the throttle and by manifold vacuum applied to the diaphragm.

MECHANICAL METERING ROD ACTION

During part throttle operation manifold vacuum pulls the diaphragm assembly down holding the metering rod arm against the pump lifter link. Movement of the metering rod will then be controlled by the pump lifter link, which is connected to the throttle shaft. This is true at all times that the vacuum under the diaphragm is strong enough to overcome the tension of the lower pump diaphragm spring. The upper pump spring serves as a bumper upon deceleration and a delayed action spring on acceleration.

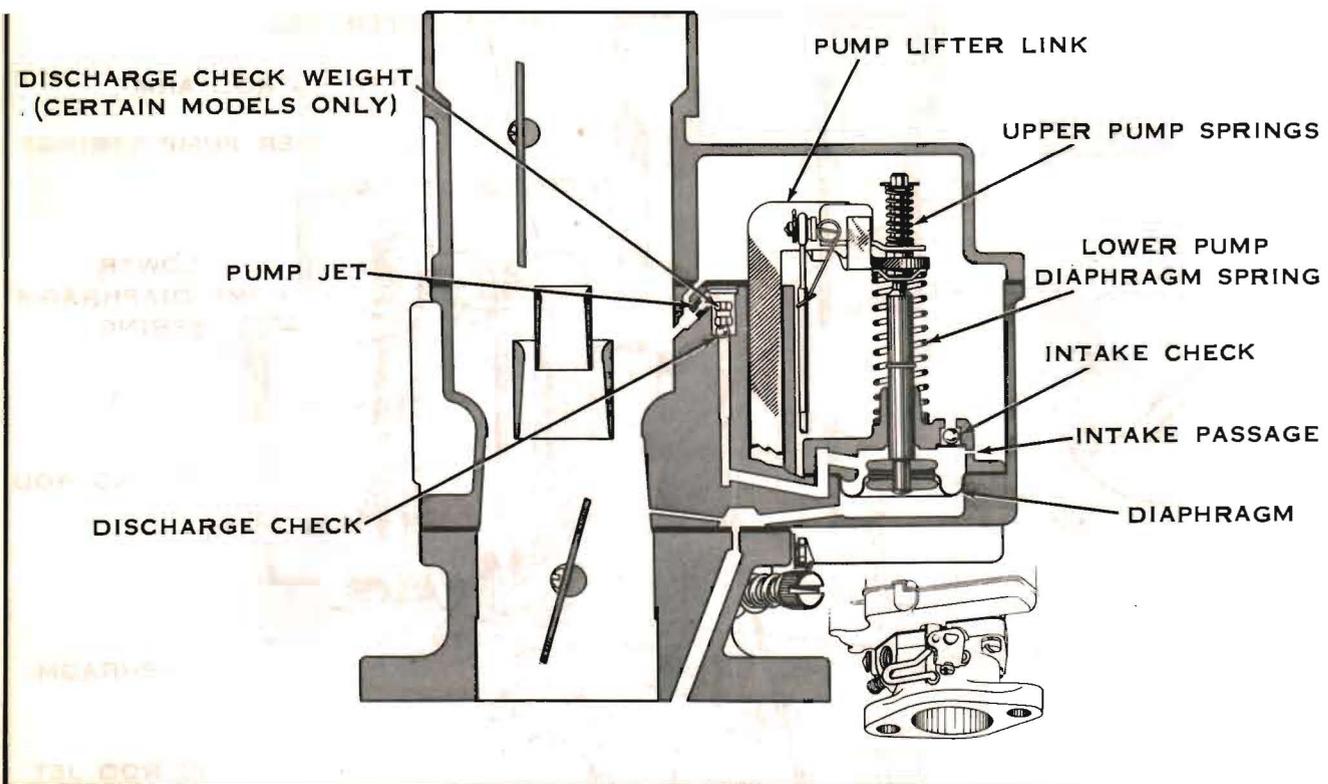
VACUUM METERING ROD ACTION

Under any operating condition, when the tension of the lower pump diaphragm spring overcomes the pull of vacuum under the diaphragm, the metering rod will move toward the wide open throttle or power position.

The restriction and air bleed in the vacuum passage provide a lower and more uniform vacuum condition in the chamber below the diaphragm.

ANTI-PERCOLATOR

To prevent vapor bubbles in the nozzle passage and low-speed well caused by heat from forcing fuel out of the nozzle, anti-percolator passages, and calibrated plugs or bushings are used. Their purpose is to vent the vapors and relieve the pressure before it is sufficient to push the fuel out of the nozzle and into the intake manifold. Anti-percolator plugs, bushings, and the main nozzle are permanently installed and must not be removed in service.



PUMP CIRCUIT

The accelerating pump circuit provides a measured amount of fuel, which is necessary to insure smooth engine operation for acceleration at speeds below approximately 30 MPH.

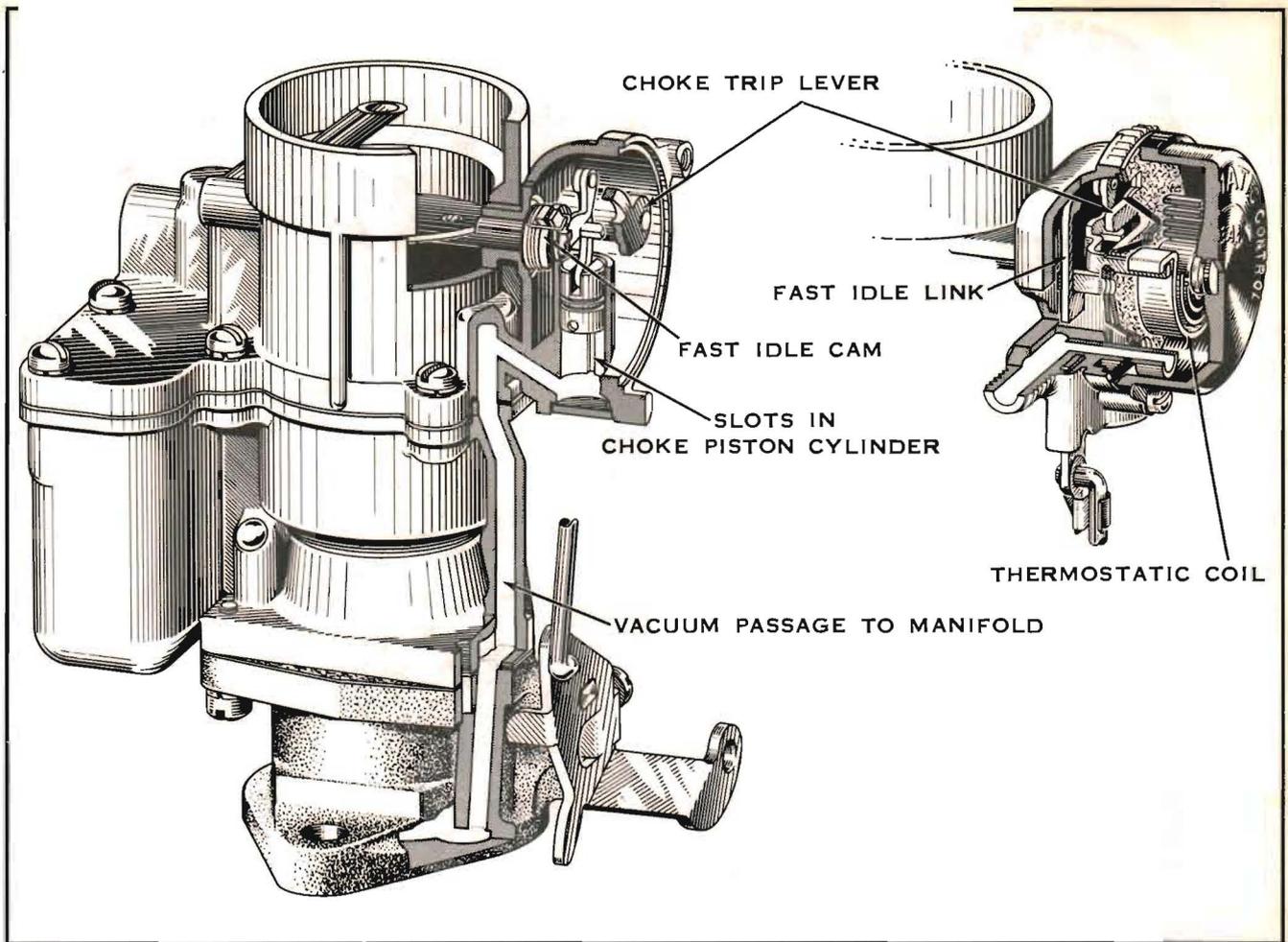
Accelerating pump action is controlled both mechanically and by manifold vacuum in the same manner as the metering rod. When the throttle is closed, the diaphragm moves downward and fuel is drawn into the pump fuel chamber. There are three types of intake systems used on YF carburetors: (1) Intake passage. (2) Intake check valve. (3) Intake passage plus an intake check valve. When the diaphragm moves downward, the discharge check is seated. When the throttle is opened, the diaphragm moves upward forcing fuel out through the discharge passage, past the discharge check, and out of the pump jet. The pump discharges through the main nozzle on models where no pump jet is used. On models with an intake passage, a measured amount of fuel is returned

to the bowl through this passage. Carburetors, which have only an intake check valve, do not discharge fuel back to the bowl. When the diaphragm moves upward, the intake check, where used, must seat.

If the throttle is opened suddenly, the upper pump spring will be compressed resulting in a smoother pump discharge of longer duration.

Manifold vacuum is applied to the underside of the diaphragm at all times the engine is in operation. When manifold vacuum decreases to the point where the lower pump diaphragm spring overcomes the pull of vacuum, the diaphragm moves upward and a pump discharge results.

The pump jet is pressed into the casting during manufacture and must not be removed in service. Be sure the diaphragm is in good condition and the intake and discharge checks are free of lint, gum or other foreign matter.



CLIMATIC CONTROL (CHOKE) CIRCUIT

The climatic control circuit provides a correct mixture necessary for quick cold engine starting and warm-up.

When the engine is cold, tension of the thermostatic coil holds the choke valve closed. When the engine is started, air velocity against the offset choke valve causes the valve to open slightly against the thermostatic coil tension. Intake manifold vacuum applied to the choke piston also tends to pull the choke valve open. The choke valve assumes a position where tension of the thermostatic coil is balanced by the pull of vacuum on the piston and force of air velocity on the offset valve.

When the engine starts, slots located in the sides of the choke piston cylinder are uncovered allowing intake manifold vacuum to draw warm air heated by the exhaust manifold, through the climatic control housing. The flow of warm air in turn heats the thermostatic coil and causes it to lose some of its tension. The thermostatic coil loses its tension gradually until the choke valve reaches full-open position.

If the engine is accelerated during the

warm-up period, the corresponding drop in manifold vacuum allows the thermostatic coil to momentarily close the choke, providing a richer mixture.

During the warm-up period it is necessary to provide a fast idle speed to prevent engine stalling. This is accomplished by a fast idle cam connected to the choke shaft. The choke-trip lever contacts the fast idle cam. The fast idle link attached to the throttle lever contacts the choke-trip lever, and prevents the throttle valve from returning to a normal warm engine idle position while the climatic control is in operation.

If during the starting period the engine becomes flooded, the choke valve may be opened manually to clean out any excessive fuel in the intake manifold. This may be accomplished by depressing the accelerator pedal to the floor mat and engaging the starter. The unloader projection on the fast idle link will contact the unloader lug on the choke-trip lever and in turn partially open the choke valve.