

located venturi contains two venturi vacuum boosters and the main discharge passage. The accelerator pump well, passages, check ball and weight, main metering jet, enrichment valve, idle tube and hot idle compensator (HIC) valve are all contained in the main body assembly. Venturi vacuum pickup tube (green), manifold vacuum, and EGR port vacuum pickup tubes (silver) are incorporated in the main body (Figs. 2 and 3), while the spark vacuum port pickup tube (gold) is located near the mounting flange in the throttle body assembly.

The THROTTLE BODY regulates air flow through the carburetor and provides a suitable mounting flange for attachment of the carburetor to the intake manifold. The throttle plate, shaft lever and return spring assemblies regulate air flow. Also found in the throttle body are the spark vacuum port, EGR vacuum port, idle transfer slot, curb idle discharge port, and the idle mixture adjusting screw (Fig. 11).

Other features of the Model 1946 include a throttle solenoid (TSP) to help prevent "dieseling" by permitting a lower (solenoid OFF) idle speed when the ignition switch is turned off. Altitude compensation for vehicles sold in high altitude areas is achieved through carburetor calibration.

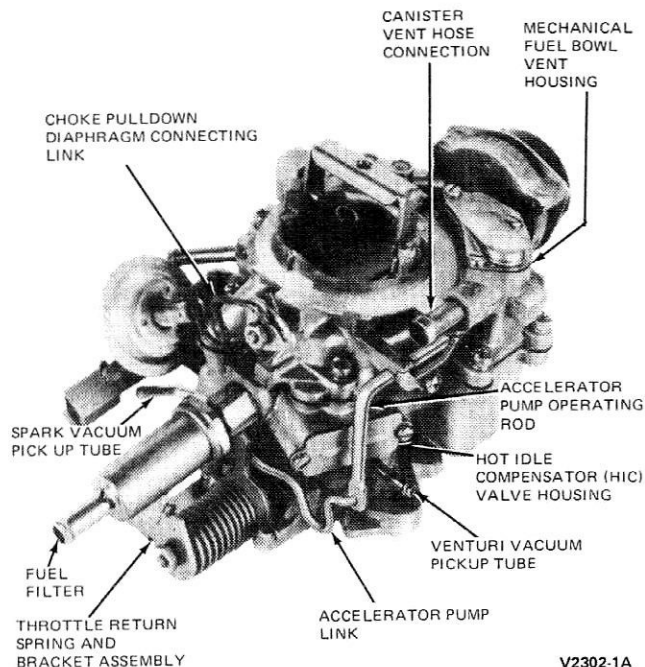


FIG. 3 Holley Model 1946 Carburetor—Elevated View

OPERATION

FUEL INLET SYSTEM

The fuel inlet system (Fig. 4) maintains the fuel level in the carburetor bowl so the basic fuel metering systems can deliver the proper mixture to the engine. As the fuel level in the bowl drops, the float also drops, permitting additional fuel to enter the bowl through the fuel inlet fitting located in the main body. Only enough fuel is admitted to replace the amount used.

A dual-pontoon float made of non-porous material monitors and maintains the proper fuel level in the fuel bowl. The Viton-tipped inlet needle seats directly in the fuel inlet fitting, and is permanently retained by a cap assembled to the fitting. The fuel inlet fitting and inlet needle are serviced as an assembly. Fuel flows past the needle and seat and enters the bowl through four holes in the valve seat body. Because the valve seat body extends only a short distance into the fuel bowl, the discharging fuel is shrouded by the main body casting and the inlet does not require a separate fuel baffle.

IDLE SYSTEM

During idle and low speed operation (Fig. 5), air flow through the carburetor is not sufficient to cause fuel to be discharged through the main discharge passage. For this reason, a separate idle system is part of the construction of the model 1946 1-V. The idle system is capable of fine adjustment, and can supply the engine with an appropriate air/fuel mixture at idle and can supplement the main metering system during critical off-idle (part throttle) operation.

Fuel entering the idle system flows from the fuel bowl through the main metering jet into the main well. An angular idle well connects with the main well, and an idle tube is pressed into this well. Fuel flows up through the idle tube where it is mixed with air entering through the idle air bleeds located in the air horn. With the throttle plate at curb idle, the fuel and air mixture flows down the idle channel where additional air is introduced through the portion of the transfer slot which is above the throttle plate. The air/fuel mixture is then discharged below the throttle plate at the curb idle discharge port. Idle fuel mixture is regulated by the adjustment of the idle mixture screw. Maximum fuel flow at idle is limited by the size of the restriction in the idle tube.

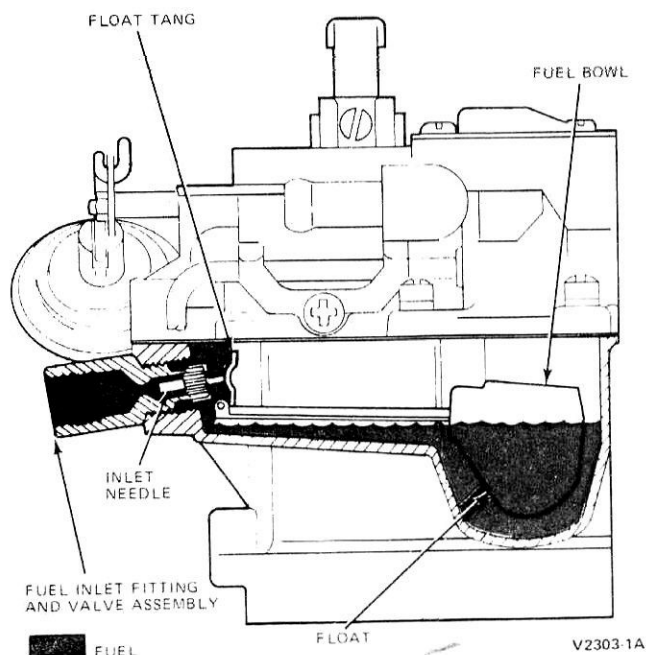


FIG. 4 Fuel Inlet System

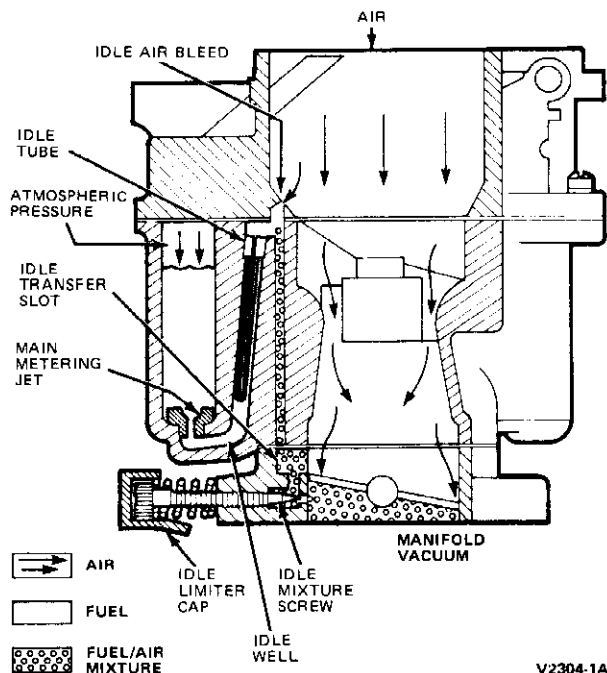


FIG. 5 Idle System

During low speed operation, as the throttle plate opens, it begins to expose the idle transfer slot to manifold vacuum. As the throttle is opened further, and engine speed increases, the air flow through the carburetor also increases. The increased air flow creates a low pressure in the venturi, and the main metering system begins to discharge fuel.

In conjunction with the idle system, an internal hot idle compensator (HIC) is used to improve idle quality. The HIC is temperature sensitive and opens during hot engine condition to admit additional air, which helps reduce idle fuel richness (Fig. 6).

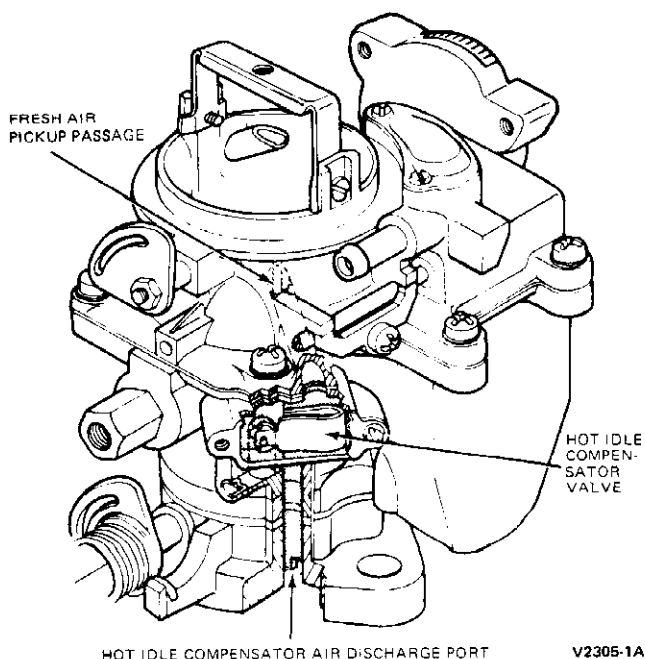


FIG. 6 Hot Idle Compensator (HIC) System

MAIN METERING SYSTEM

As engine speed increases, air flow through the carburetor increases, causing lower pressure in the venturi (Fig. 7). Near atmospheric pressure, present in the fuel bowl above the fuel, causes the fuel to flow to the lower pressure created at the venturi. This venturi action is increased by the use of dual venturi boosters. This stronger venturi effect in turn provides more precise response to changes in air flow through the carburetor.

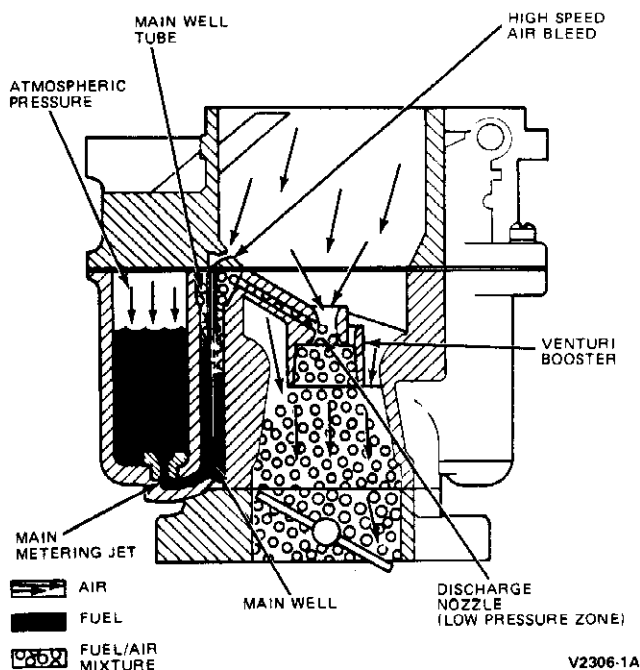


FIG. 7 Main Metering System

Fuel flows from the fuel bowl through the main jet into the main well. A small amount of air is admitted by the high speed bleed. This air is carried down the main well tube to a series of small holes where it escapes and mixes with fuel in the main well. The resultant mixture of fuel and air—being lighter than solid fuel—responds faster to changes in pressure in the venturi and is more readily vaporized when discharged into the air stream.

The main metering system is calibrated to deliver a lean mixture for improved part-throttle economy and exhaust emissions. When additional power is required, a vacuum-operated power system enriches the air/fuel mixture.

POWER ENRICHMENT SYSTEM

A vacuum-operated enrichment system is used to provide the fuel mixture enrichment necessary for wide open throttle (WOT) operation. The enrichment system consists of an enrichment valve assembly containing a needle, installed in the floor of the fuel bowl near the center of the main body, and a vacuum piston installed in the air horn (Fig. 8).

A vacuum passage leads from the top of the piston bore to the carburetor mounting flange. When the manifold vacuum is high, the vacuum piston is raised to the top of its cylinder and the spring above the piston

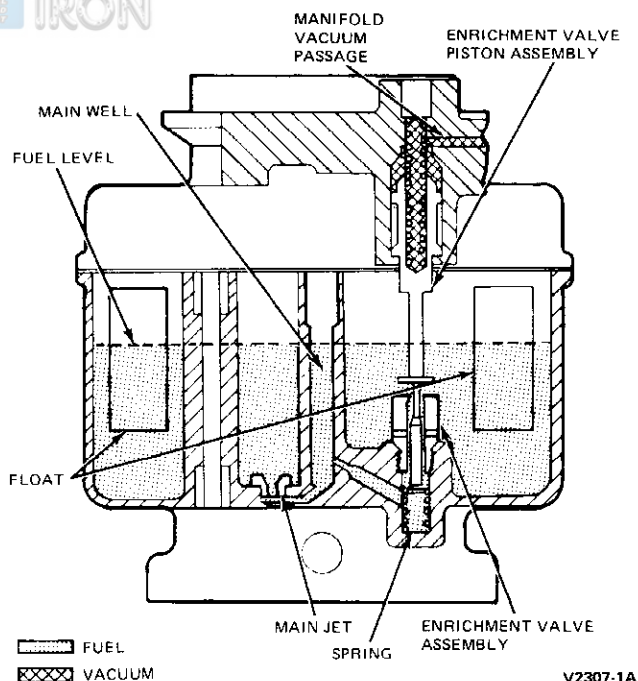


FIG. 8 Power Enrichment System

is compressed. When manifold vacuum drops to a predetermined level, the spring overcomes the vacuum and pushes the piston down, permitting fuel to pass by the needle, through the calibrated enrichment valve channel restriction and into the main well. This fuel supplements the fuel being discharged through the main metering system jet.

ACCELERATOR PUMP SYSTEM

When the throttle plate is opened suddenly, the air flow through the carburetor increases almost immediately, but there is a brief lag before the fuel begins to flow enough to provide the desired air/fuel ratio. The accelerator pump system (Fig. 9) operates as the throttle is opened, supplying the fuel necessary to maintain the correct mixture until the main metering system can "catch up" to the air flow.

The fuel level is above the normal raised position of the pump piston, causing fuel to enter the pump cylinder through the pump cup stem clearance hole when the pump is lifted to a refill position (throttle released). As the throttle is again opened, the pump link—operated through a system of levers and a drive spring—pushes the pump piston down, seating the pump cup against the face of the stem. Fuel is forced through a passage, around a check ball and weight, and through the pump discharge jet which is drilled in the main body.

When the pump is not in operation, vapors or bubbles forming in the pump cylinder can escape through the stem clearance hole of the floating piston cup and past the pump stem into the fuel bowl.

EXTERNAL FUEL BOWL VENT SYSTEM

The Holley model 1946 1-V carburetor has a mechanical external fuel bowl vent operated by linkage

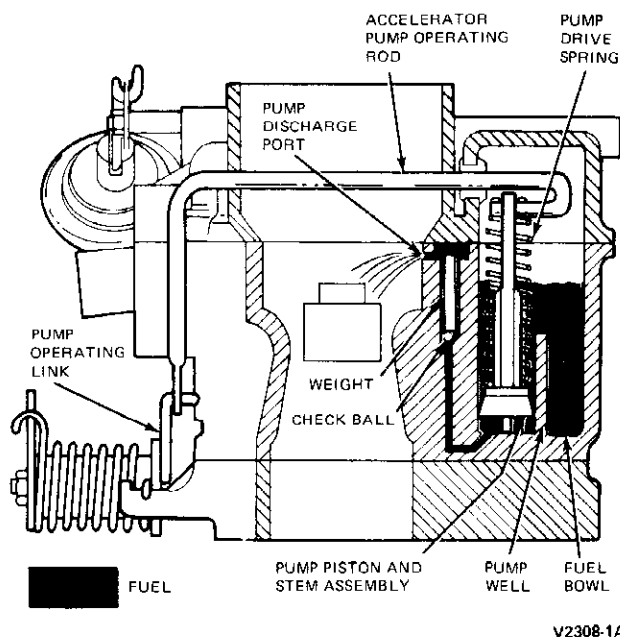


FIG. 9 Accelerator Pump System

from the throttle lever (Fig. 10). The system permits fuel bowl vapors to flow to the carbon canister when the engine is OFF. At any position except idle, the valve closes and the bowl vents through the internal vent tube to the carburetor air horn and into the engine intake.

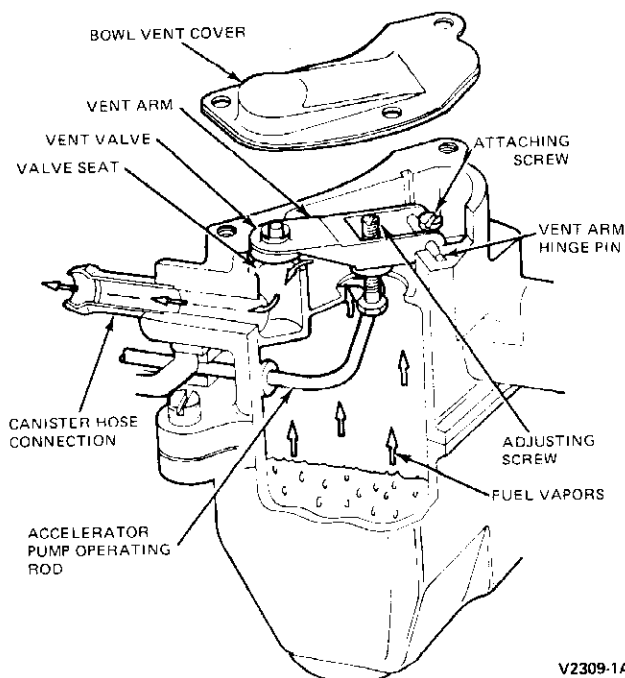


FIG. 10 Fuel Bowl Vent System

Unlike other carburetors used on Ford passenger vehicles, the fuel bowl vent can be serviced without removing the carburetor from the vehicle. The vent valve and arm are located on the top of the carburetor air horn, under a special vent valve cover.

AUTOMATIC CHOKE SYSTEM

The automatic choke system (Fig. 11) provides the richer air/fuel mixture required for starting and operating a cold engine.

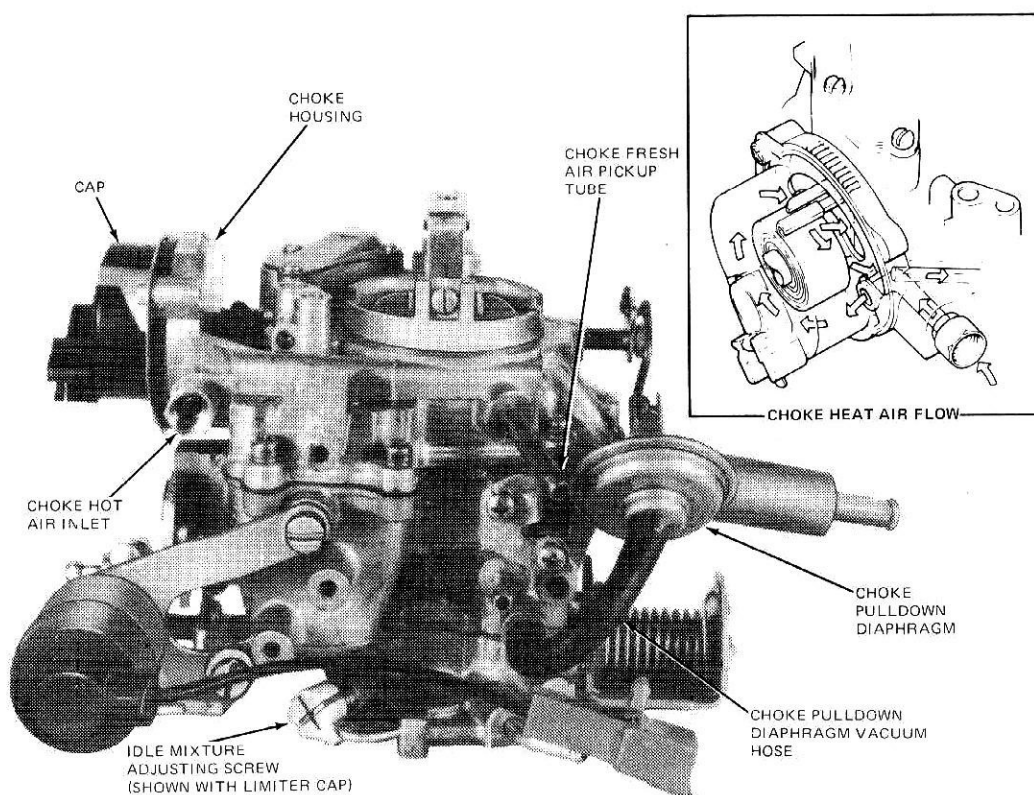
A bimetal spring inside the choke housing, which is part of the air horn assembly, begins to exert closing pressure on the choke valve at temperatures below approximately 75°F. As the temperature drops, closing pressure on the choke plate increases. As the engine warms up, manifold heat transmitted by hot air to the choke housing relaxes the pressure from the bimetal spring.

When the engine starts, two auxiliary systems also act to open the choke plate against the pressure of the bimetal spring. First, manifold vacuum is applied to a modulated choke diaphragm assembly through an externally-routed manifold vacuum hose. A link connected to the diaphragm pulls the choke open a

sufficient amount to let the engine run without flooding out. The amount of choke opening depends on the temperature of the bimetal spring, since the closing force of the bimetal is opposed by a "modulating" spring within the pulldown motor. This type of system is thus called a 'modulated choke pulldown' system.

In addition to choke pulldown, choke opening is assisted by air rushing into the carburetor and acting against the choke plate, which is offset on the shaft.

To aid in the warm-up of the bimetal spring, the choke housing is equipped with a thermostatically-controlled Positive Temperature Coefficient (PTC) heater which is activated above about 60°F when the engine is running. Below this temperature, the heater is not activated and the desired pulldown is achieved through the vacuum pulldown motor acting against the bimetal spring.



V2310-2A

FIG. 11 Automatic Choke System

ADJUSTMENTS

Most carburetor adjustments are factory set to meet engine emission, performance and economy requirements. If it becomes necessary to check or adjust:

- Automatic Choke
- Idle Speeds
- Idle Fuel Mixture
- Idle CO

refer to Engine Emission Control Systems, Part 29-02 or Part 50-29 of this Manual. Choke cover setting and

idle speed specifications are provided on the Engine Emission Decal on each vehicle.

CURB IDLE SPEED (TSP ON)

Curb idle speed is achieved through the use of a Throttle Stop Positioner (TSP) mounted to the carburetor body and an adjusting screw on the throttle lever. Use the curb idle adjusting screw (Fig. 1), which contacts the plunger of the TSP, to adjust curb idle speed. The curb idle adjusting screw has a 5/16 inch hex head on the