

SECTION B

FUEL PUMP

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DIVISION II

DESCRIPTION AND OPERATION

64-9 DESCRIPTION AND OPERATION OF FUEL PUMP

a. Description of Pump

An AC fuel pump is used on all engines. The pump assembly is mounted on the timing chain cover in an inverted position, and the pump rocker arm is actuated by an eccentric mounted on front side of the camshaft sprocket.

The fuel pump is a diaphragm type pump and is actuated by the rocker arm through a link and a pull rod. See Figure 64-12.

b. Operation of Fuel Pump

The fuel pump draws gasoline from the tank and supplies it to the carburetor in sufficient quantity to meet engine requirements

under all operating conditions. The principle parts of the fuel section are shown in Figure 64-12.

The rocker arm spring holds the rocker arm in constant contact with the eccentric on the engine camshaft sprocket so that the rocker arm swings up and down as the camshaft rotates. As the arm swings downward, it bears against a shoulder on the link which is pivoted on the rocker arm pin. The link swings upwards, thereby pulling the fuel diaphragm upward by means of the connecting pull rod.

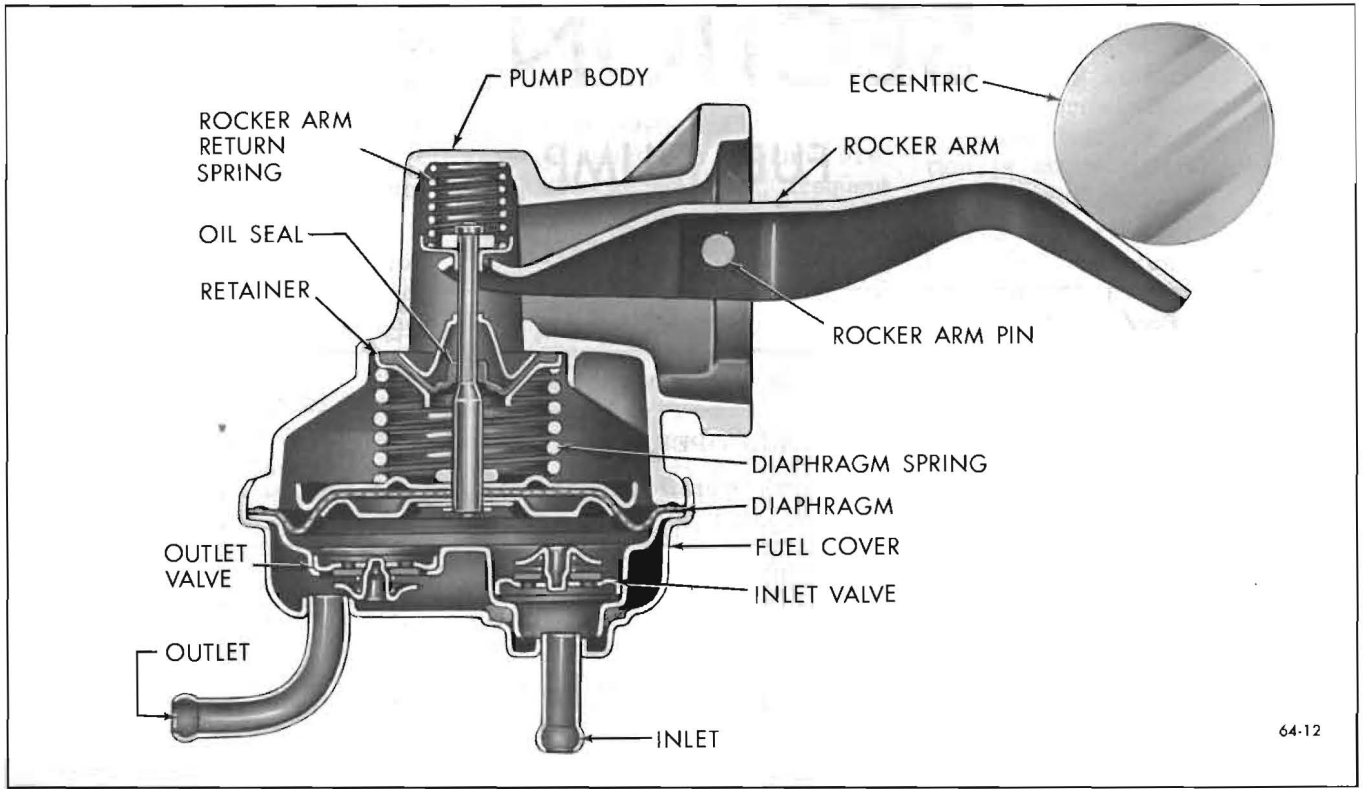
Upward movement of the fuel diaphragm compresses the diaphragm spring and also creates a vacuum in the fuel chamber under the diaphragm. The vacuum causes the outlet valve to close and causes fuel from the gasoline tank to enter the fuel chamber through the inlet valve.

As the rotating eccentric permits the rocker arm to swing upward, the arm releases the fuel link; it cannot move the link down-

ward. The compressed diaphragm spring then exerts pressure on the diaphragm and the fuel in the chamber below diaphragm. This pressure closes the inlet valve and forces fuel out through the outlet valve to the carburetor.

Since the fuel diaphragm is moved downward only by the diaphragm spring, the pump delivers fuel to the carburetor only when the pressure in the outlet line is less than the pressure maintained by the diaphragm spring. This condition arises when the carburetor float needle valve is not seated and the fuel passage from the pump into the carburetor float chamber is open. When the needle valve is closed and held in place by the pressure of the fuel on the float, the pump builds up pressure in fuel chamber until it overcomes the pressure of the diaphragm spring. This pressure results in almost complete stoppage of diaphragm movement until more fuel is needed.

The air dome with diaphragm in the bottom of fuel pump provides



64-12

Figure 64-12—Fuel Pump

a pocket in which fuel under pressure can compress a certain volume of air. When the pressure is relieved (pump on suction stroke) the pocket of compressed air pushes the fuel on to its destination. The air dome minimizes flow variations experienced with two-cycle pump stroke and increases the pump output.

64-10 FUEL PUMP REPAIRS

Because fuel pump covers for both pumps are crimped onto the pump body at the factory, it is not possible to disassemble the pump for any repairs. If a fuel pump fails to pass the following tests and the failure is found to be the fault of the pump, the fuel pump must be replaced with a new one.

DIVISION IV TROUBLE DIAGNOSIS

64-11 FUEL PUMP INSPECTION AND TEST

If the fuel system is suspected of delivering an improper amount

of fuel to the carburetor, it should be inspected and tested on the engine, as follows:

a. Inspection of Fuel System

1. Make certain that there is gasoline in the tank.
2. Make certain the gasoline filter is clean.
3. With engine running, inspect for leaks at all gasoline feed hose connections at gasoline tank, fuel pump, and carburetor. Tighten any loose connections. Inspect all hoses for flattening or kinks which would restrict the flow of fuel. Air leaks or restrictions on suction side of fuel pump will seriously affect pump output.
4. Inspect for leaks at fuel pump diaphragm flange.
5. Disconnect feed pipe at carburetor. Ground distributor terminal of coil with jumper wire so that engine can be cranked without

firing. Place suitable container at end of pipe and crank engine a few revolutions. If no gasoline, or only a little flows from pipe, the feed line is clogged or fuel pump is inoperative. Before condemning the fuel pump, disconnect feed lines at pump and blow through them with air hose to make sure that they are clear.

6. If gasoline flows in good volume from pipe at carburetor it may be assumed that the fuel pump and feed line are okay; however, it is advisable to make the following pressure test to make certain that fuel pump is operating with sufficient pressure.

b. Fuel Pump Pressure Test

1. Disconnect gasoline hose at carburetor and connect a suitable pressure gage (such as Pressure-Leakdown Tester J-22109) in series between the hose and the carburetor.

2. Start engine and check pressure with engine running at slow idle speed. Fuel pump pressure on 225-300-340 engines should be 3 3/4 lbs. minimum; on 400-401-425 engines it should be 5 lbs. minimum. On air conditioner equipped cars, squeeze off the

vapor by-pass hose so that an accurate reading can be obtained. To test for leakdown of fuel pump check valves or diaphragm, shut off engine and observe gauge; pressure should not leakdown more than 1/2 lb. in 20 seconds. If excessive leakdown is detected,

shut off tester valve to determine whether leakage is in carburetor or fuel pump.

3. If fuel pump pressure is below minimum, pump must be replaced.