

SECTION B

FUEL PUMP CONTENTS

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DIVISION II

DESCRIPTION AND OPERATION

64-9 DESCRIPTION AND OPERATION OF FUEL PUMPS

a. Description of Mechanical 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 end of the camshaft.

The fuel pump is a diaphragm type pump and is actuated by the rocker arm through a link and a pull rod. See Figure 64-6.

b. Operation of Mechanical Fuel Pump

The fuel pump draws gasoline from the tank and supplies it to the carburetor in sufficient quan-

tity to meet engine requirements under all operating conditions. The principal parts of the fuel pump are shown in Figure 64-6.

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 downward. 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. The 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.

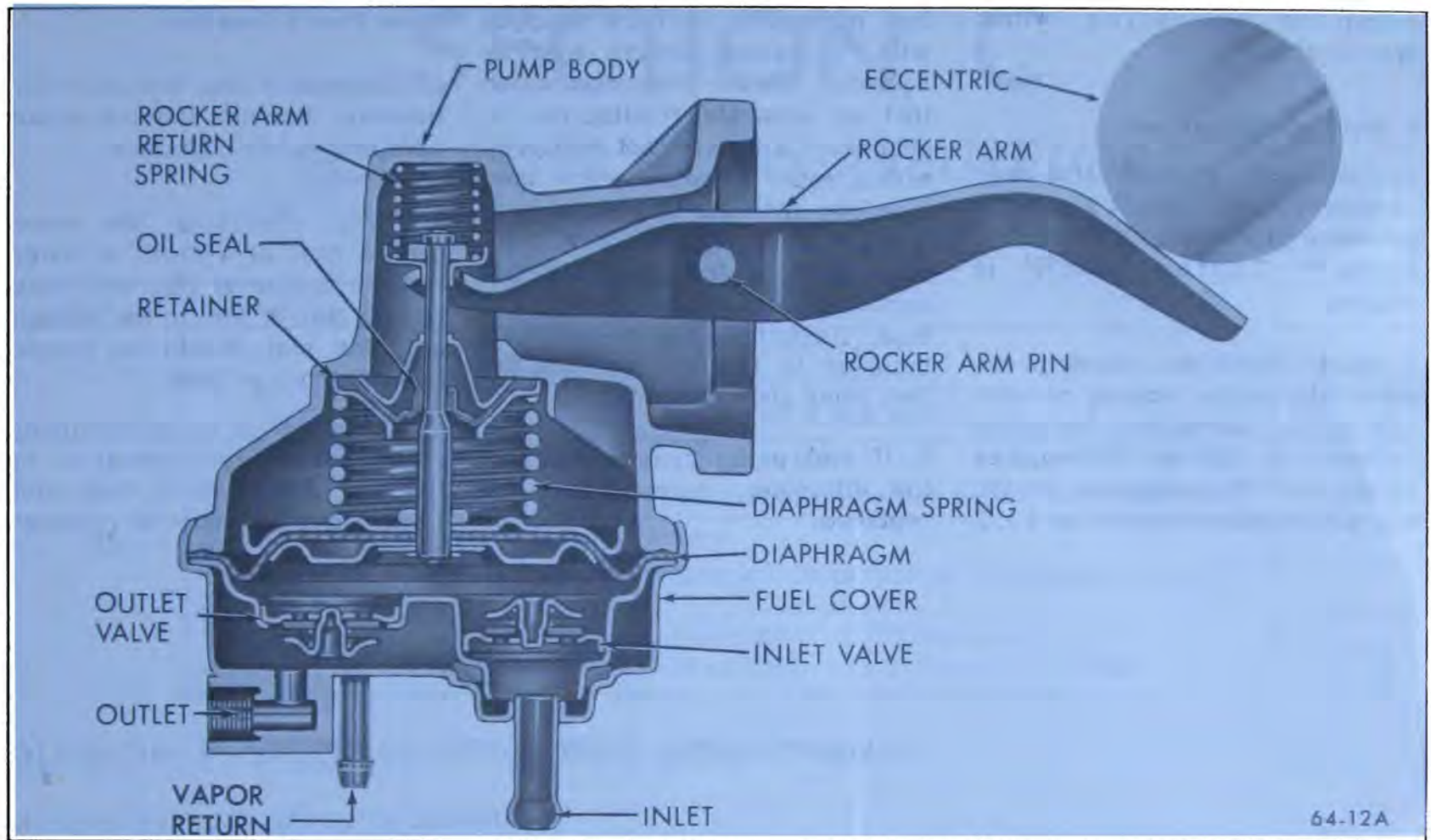


Figure 64-6—Fuel Pump

The air space in the bottom of fuel pump provides 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 pocket minimizes flow variation experienced with two-cycle pump stroke and increases the pump output.

64-10 FUEL PUMP REPAIRS

Because fuel pump covers for both mechanical 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 in the car, as follows:

a. Inspection of Fuel System

1. Make certain that there is gasoline in the tank.
2. With engine running, inspect for leaks at all gasoline feed hose connections from fuel tank to 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 mechanical fuel pump will seriously affect pump output.

3. Inspect for leaks at fuel pump diaphragm flange.

4. Disconnect feed pipe near 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 and blow through them with air hose to make sure that they are clear.

5. 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 and volume tests to make certain that fuel

pump is operating within specifications.

b. Fuel Pump Pressure Test

1. Disconnect gasoline line near carburetor and connect a suitable pressure gage (such as Pressure-Leakdown Tester J-22109) in series.

2. Start engine and check pressure with engine running at slow idle speed. Mechanical fuel pump pressure on 250 and 350 engines should be 3 lbs. minimum; on 400 and 430 engines it should be 4 1/2

lbs. minimum. On cars equipped with a vapor return system, squeeze off the return hose so that an accurate reading can be obtained. All cars not equipped with a vapor return system have leakdown orifices located in both check valves. This leakdown feature reduces the possibility of carburetor flooding under hot soak conditions, due to pressure build-up in the line between the fuel pump and carburetor.

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

c. Fuel Pump Volume Test

1. Disconnect fuel line from carburetor. Run fuel line into a suitable measuring container.

2. While observing the sweep second hand of a clock or watch, run the engine at idle until there is one pint of fuel in the container. One pint should be pumped in 30 seconds or less.

3. If volume is below minimum, check for a restriction in the line. If line is clear, fuel pump is defective and must be replaced.