General

Fuel is pumped to the carburetors by a diaphragm pump which is mounted on the engine block. The fuel pump is operated by the distributor shaft eccentric over an actuating plunger. The quantity of fuel delivered by the pump is metered automatically in direct proportion to the amount of fuel dispensed by the carburetors.

The fuel pump consists of an upper and lower assembly. The upper assembly accomodates an inlet and outlet valve, and a fuel filter. The lower assembly contains an actuating plunger. Located between both assemblies is a diaphragm spring. The diaphragm is built up of several layers of a fuel-proof material, and is sandwiched between two supporting discs which are riveted to the plunger coupling.

Operation

The eccentric on the distributor shaft presses against the diaphragm plunger. The plunger transmits the pressure to the diaphragm coupling against the plunger spring but with the support of the diaphragm spring. As a result, the sucked-in fuel is forced to the carburetors through the outlet valve and the fuel line. When the actuating plunger moves back, a vacuum is created above the diaphragm, thus sucking the fuel into the pump, through the inlet valve. This process repeats itself with every revolution of the eccentric (once every two revolutions of the crankshaft).

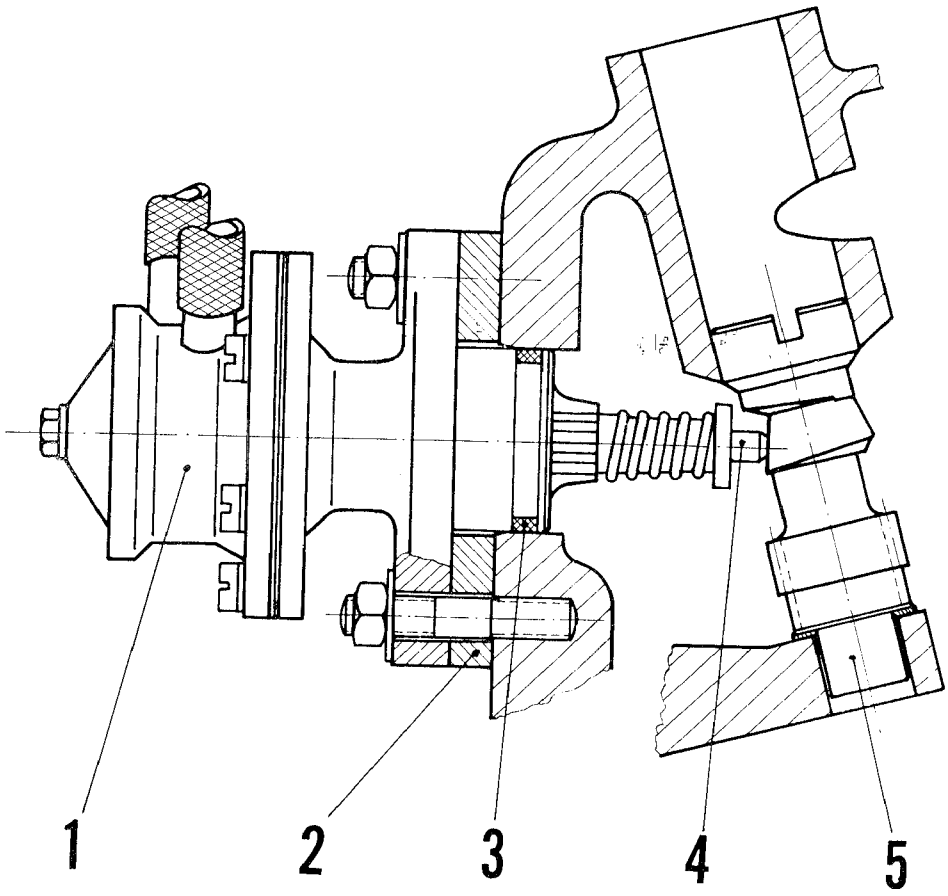

Fig. 2

1 Fuel pump
2 Pump insulating flange
3 O-ring
4 Actuating plunger
5 Distributor shaft

Fuel pump components

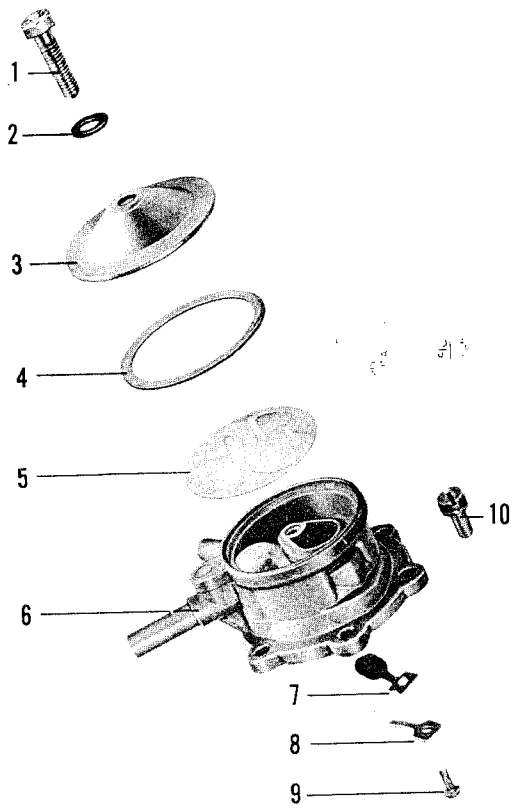

Fig. 3

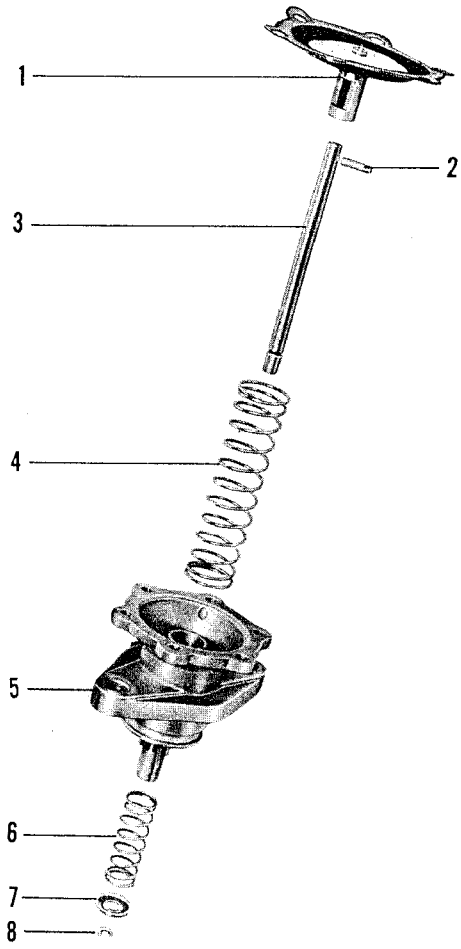

Fig. 4

1 Hex-head bolt
2 Gasket
3 Cover
4 Gasket
5 Fuel screen
6 Pump, upper assembly
7 Leaf spring
8 Valve stop
9 Self-threading screw M 3x8
10 Cheese-head screw w/washer

1 Diaphragm assembly
2 Coupling pin
3 Plunger
4 Diaphragm spring
5 Pump, lower assembly
6 Plunger spring
7 Spring retainer
8 Lock ring

Testing pump pressure

General

The pump pressure is governed by the degree of spring compression on intake stroke. The spring tension is so calibrated that it allows the fuel to enter the carburetor only as long as the float needle valve is open. When the buoyancy of the float forces the float needle valve to shut, pressure builds up in the fuel line and pump housing causing a decrease in pump stroke. In normal operation, the diaphragm stroke amounts to only a few tenths of a milimeter.

The lower assembly is vented through two orifices in the casting. Also, should fuel leak into this part of the pump, it can drain out through the venting holes.

Testing

The pump pressure should be 0.20 to 0.24 atmospheres (ATÜ) when the float needle valve is closed and the engine running at 1,000 to 3,000 rpm. Minimum fuel delivery should be 30 liters per hour, which equals 500 cc per minute, at 4,500 rpm.

The simplest way to check the fuel pump pressure is with the aid of a pressure gauge, by inserting a T-joint into the fuel line between the pump and the carburetor. A fuel valve is built into the fuel line behind the pressure gauge.

Essential to proper pump pressure is correct spring tension and serviceable condition of diaphragm and valves.

Excessive pump pressure results in carburetor flooding and, in almost all cases, leads to oil dilution. A too low pressure results in lean mixture and, thus, a rough running engine, misfiring at high rpm, and loss of power.

Removing and installing fuel pump

Removal

1. Pull fuel hoses off at pump.

2. Remove pump shield.

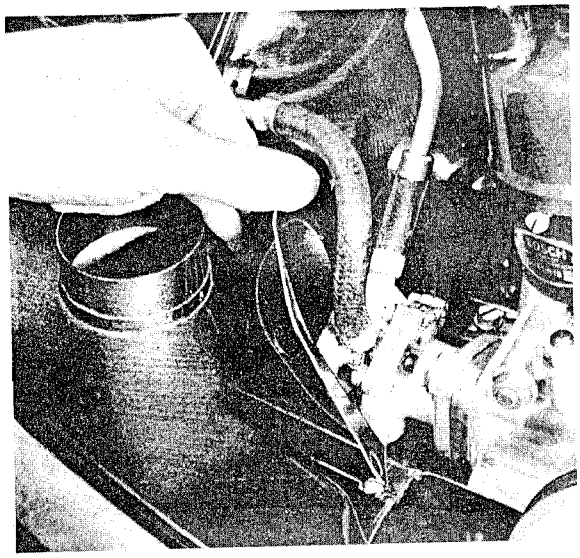

Fig. 5

3. Remove pump attaching nuts at flange.

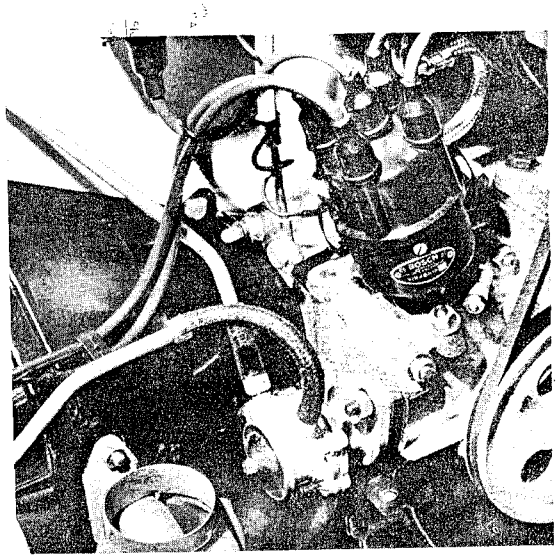

Fig. 6

4. Remove pump and insulating spacer.

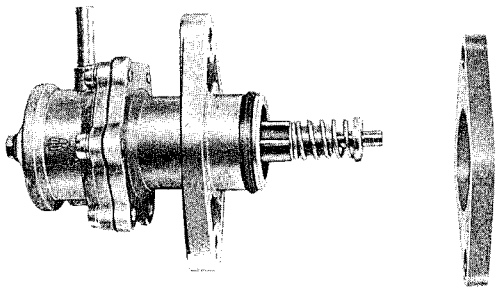

Fig. 7

Installation

Installation is accomplished in reversed order. It should be ascertained that the O-ring is in good condition, otherwise it should be replaced.

Reconditioning fuel pump

Disassembly

1. Remove hex bolt which secures cover.
2. Remove cover and fuel screen.
3. Remove six cheese-head screws securing the upper assembly, withdraw assembly.

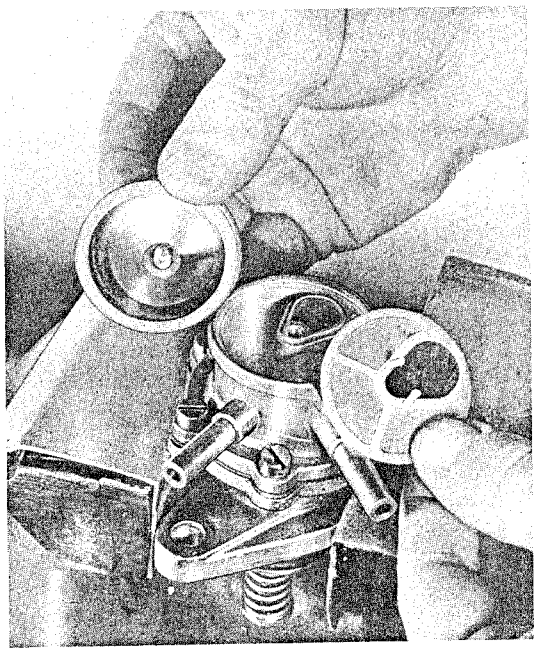

Fig. 8

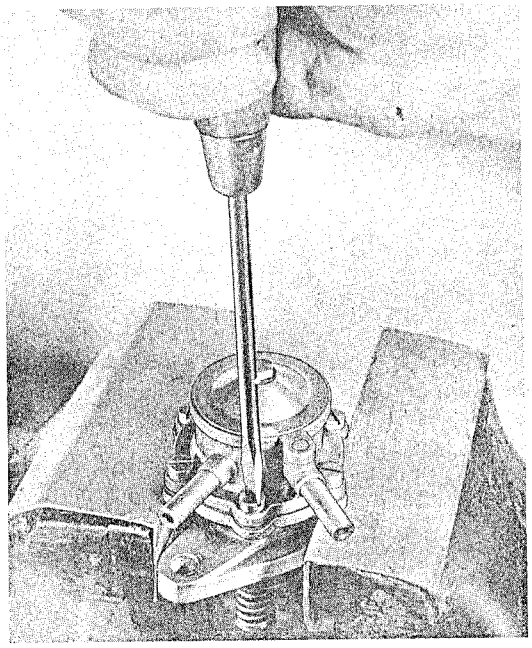

Fig. 9

4. Rest the lower assembly of pump on the diaphragm supporting disc, push spring retainer down with pliers, remove lock ring, spring retainer and spring.

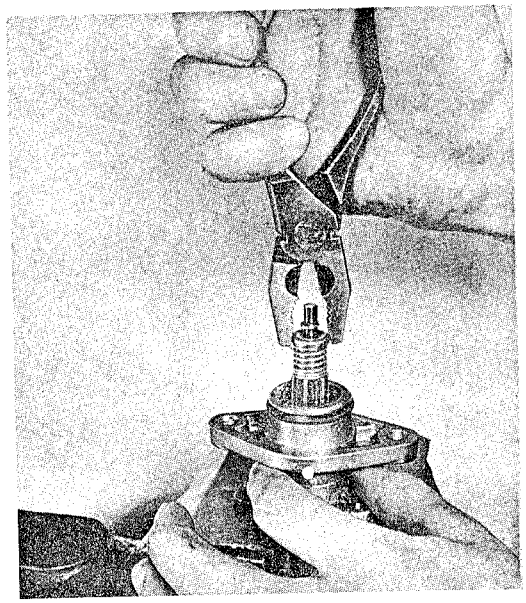

Fig. 10

5. Withdraw the diaphragm-plunger-spring assembly from lower pump casting; ascertain that there is no grit around the lock ring groove in plunger to prevent damaging the oil scraper.

6. Remove coupling pin from actuating plunger with a punch, detach diaphragm from plunger.

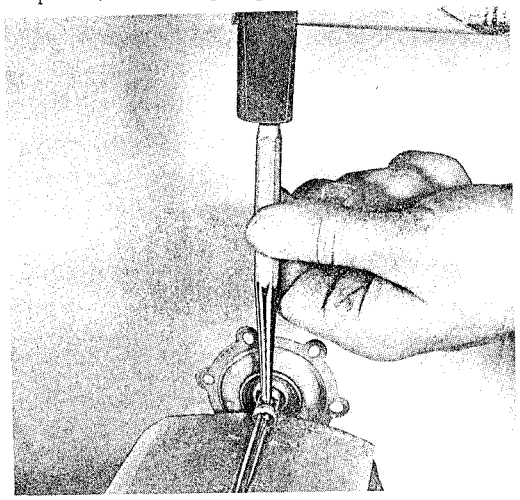

Fig. 11

7. Remove self-threading cheese-head screw at inlet valve and remove leaf spring and spring stop (outlet valve cannot be dismounted).

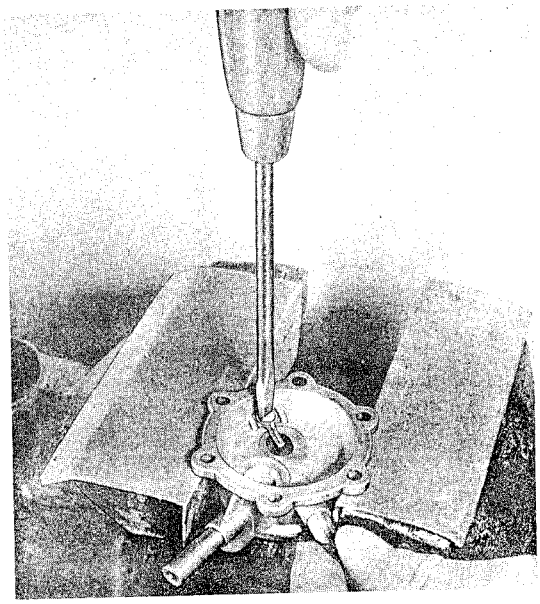

Fig. 12

8. Clean pump components with gasoline.

Reassembly

Reassembly is accomplished in reversed order of the above, noting the following points:

1. Check proper functioning of outlet valve in upper assembly.
2. Check sealing surfaces of inlet valve.
3. Install leaf spring and spring stop, check for proper operation.
4. Reconnect diaphragm and plunger with pin, check free movement of plunger in diaphragm coupling. Center coupling pin in plunger.
5. When mounting pump upper assembly, make certain that diaphragm is not creased. Evenly tighten screws in cross-sequence.
6. Check gasket at pump cover, replace if necessary.