GASOLINE SYSTEM

A single-barrel downdraft carburetor (Carter Model WE-2108-S) is used on the Champion and Flighthawk models. A double-barrel downdrift carburetor (Stromberg WW-6-117) is used on the Commander, President W, F, D and Powerhawk models. Four-barrel downdraft carburetors, (Carter Model WCFB-2219-S) [AD] or WCFB 2219-SA [Std. or O.D.] are used on the President Y, and Skyhawk models and Carter Model No. WCFB-2394-S is used on the Goldenhawk models. Dry type replaceable element or oil bath type carburetortor air cleaners are used and should be serviced regularly in accordance with the conditions in which the car is operated.

Delayed-action, single-wire, electric gasoline gages are used on all models. When the ignition switch key is turned to the ON position, a short interval of time elapses before the gage needle registers the amount of fuel in the gasoline tank: This delayed action stabilizes the gage needle during rough-road operations.

SPECIFICATIONS

	CHAMPION FLIGHTHAWK	POWERHAWK COMMANDER PRESIDENT W, F, D	SKYHAWK PRESIDENT Y	GOLDENHAWK
Gasoline tank capacity	18 U.S. Gal. 15 Imp. Gal. 68,1 Liters	18 U.S. Gal. 15 Imp. Gal. 68,1 Liters	18 U.S. Gal. 15 Imp. Gal. 68,1 Liters	18 U.S. Gal. 15 Imp. Gal. 68,1 Liters
Fuel pump—make	A.C.	Carter	Carter	Carter
—pressure	3½ - 5 p.s.i (0,25 - 0,35 kg. per. sq. cm.)	3½ - 5 p.s.i (0,25 - 0,35 kg. per sq. cm.)	3½ - 5 p.s.i. (0,25 - 0,35 kg. per sq. cm.)	3½ - 5 p.s.i. (0,25 - 0,35 kg. per sq. cm.)
Carburetor—make	Carter	Stromberg	Carter	Carter
—model	WE-2108-S	WW-6-117	WCFB-2219-S WCFB-2219-SA	WCFB-2394-S
—size	1¼" (31,75 mm.)	Dual 1-3/16" (30,1 mm.)	Quad. 1⅛" (25,58 mm.)	Quad. 1¼" (31,8 mm.)

GASOLINE CONSUMPTION

When diagnosing excessive gasoline consumption, first make a mileage test with an accredited mileage tester. When possible, the test should be made with the owner of the car present. Assuming that the mechanical units affecting gasoline consumption are in good condition, conduct the test on a level road in both directions and at a constant speed.

Some of the conditions under which the average car is driven include periods of idling, stop and go operation, short trips resulting in insufficient warm-up, and rapid acceleration. These operating conditions have a definite effect on gasoline consumption and the car owner should not expect to duplicate mileage figures obtained on the test as a general average.

GASOLINE GAGE AND TANK

A delayed-action, single-wire electric gasoline gage is used on all models. A removable plate provided in the trunk compartment floor facilitates the inspection and removal of the gasoline gage tank unit.

TANK UNIT

Removal—All Models

The gasoline gage tank unit can be removed through the opening provided in the floor of the luggage compartment. Remove the cover. Disconnect the wire from the gage and remove the retaining screws. Lift the unit and gasket off the tank, then turn as required and thread the float out through the opening.

Installation—All Models

Insert the float of the gage through the opening and position the unit and gasket on the tank. The mounting holes of the unit are staggered; therefore, the unit can be installed in only one position. Install the retaining screws and connect the wire to the gage. Install the cover and screws. It will be necessary to cement the cover to the floor pan or use a service plate and screws.

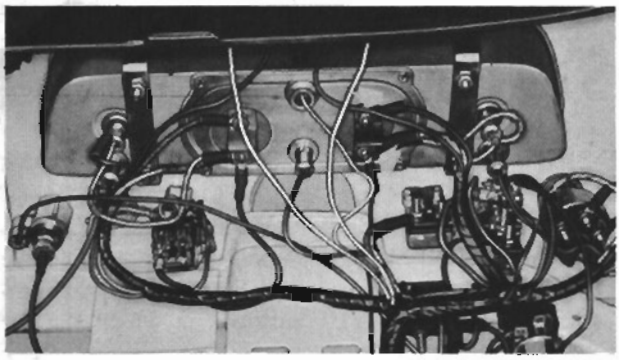


FIG. 1

DASH UNIT

Removal—All Models

Disconnect the battery ground cable. Disconnect the wires from the terminals of the instrument (see Fig. 1). Remove the dash light socket assemblies. Remove the screws holding the mounting plate to the instrument panel and carefully withdraw the mounting plate and gages. Remove the gasoline gage dash unit from the plate.

Installation—All Models

Install the gasoline gage dash unit on the plate. Carefully insert the plate and gages into the instrument panel, install and tighten the screws which retain the plate to the panel. Connect the wires previously disconnected to the proper terminals. Install the dash light socket assemblies. Connect the battery ground cable.

Testing—All Models

Check all wiring connections, being sure that they are clean and properly connected. Make sure that the wire connecting the tank unit and gasoline gage is not grounded.

To check the gage-to-tank unit wire, disconnect it from the tank unit. With the ignition switch on, the gage should register "Empty." If the gage does not register "Empty," disconnect the other end of the wire from the gage. If the gage now registers "Empty," the wire should be repaired or replaced. If the gage still does not show "Empty," replace the gage (dash unit).

To check the wire for an open circuit, disconnect the wire from the tank unit. Turn on the ignition switch and ground the wire. A "Full" reading should register on the gage. If the gage does not register "Full," ground the terminal post to which the wire leading from the tank unit to the gage is attached. If the gage now registers "Full," repair or replace the wire. If the gage still does not register "Full," replace the gage (dash unit).

Use a master tank unit which is known to be accurate to check the tank unit. Disconnect the tank unit and connect the master unit to the wire which leads to the gasoline gage (dash unit). Then connect a ground wire from the master unit to the frame. This grounding operation is important.

Raise the float slowly, allowing time for the gage to register. If the gage registers correctly, the old tank unit is at fault and should be repaired or replaced.

Note.—If the test indicates that the trouble is in the tank unit, determine whether or not the unit is operating freely with no binding action at any point of its travel. If there is interference, correct this condition by bending the unit arm or wire slightly. Then recheck the unit and, if the gage registers correctly, reinstall the unit in the tank. The gasoline gage should register "Empty" with a one-or-two-gallon reserve in the tank. Obtain the proper setting by bending the float arm.

GASOLINE TANK

The gasoline tank, which is supported at the rear of the frame by three mountings, has a capacity of 18 gallons (15 Imp. gals.; 68,1 liters).

Any water or foreign matter which may have collected in the tank can be drained by removing the small plug located at the bottom of the tank.

Removal—All Models

Disconnect the wire from the gasoline gage tank unit. Drain the gasoline from the tank and disconnect the fuel pipe at the tank. Remove the filler neck support bracket retaining screws and loosen the support bracket clamp. On the sedan models, remove the tail pipe hanger bracket-to-crossmember bolts and move the tail pipe out from under the edge of the tank. Remove the bolt, insulating shim, and spring from the right hanger. Then remove the bolts which hold the tank to the hangers on the left side, and remove the tank. To remove the filler neck from the tank, loosen the clamps at the filler neck-to-tank hose and slip the filler neck out of the hose and remove the hose from the tank.

Installation—All Models

Install the filler neck and hose on the tank. Turn the tank as required to place the filler neck above the frame side rail, then position the tank at the mounting brackets and install the retaining bolts. Install the insulating shim and spring at the hanger on the right side. Install the filler neck support bracket retaining screw and tighten the support clamp screw. Connect the fuel pipe to the tank and the wire to the gasoline gage.

On the sedan models, move the tail pipe and position the hanger bracket at the crossmember and install the bracket-to-crossmember bolts.

CARBURETOR AIR CLEANER

Dust particles are highly abrasive and tend to score and cut the smooth glasslike surfaces of working parts in an engine. The installation, therefore, of the proper type of air cleaner will decrease frictional wear, improve operating efficiency, and increase engine life.

Certain states have been universally designated by the industry as dusty areas. Since all engines should be adequately protected, all passenger cars shipped to dealers in these areas are equipped with an oil bath air cleaner (see Fig. 2).

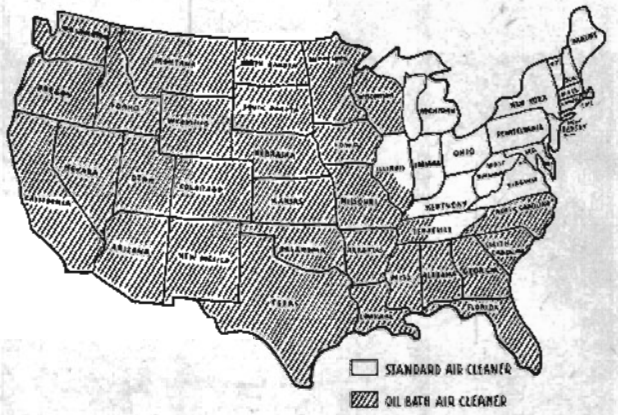


FIG. 2

OIL BATH TYPE

The oil bath type air cleaner is used mostly in territories where dust conditions are severe, so it will require frequent servicing. Once a week will usually be sufficient, but under dust storm conditions the cleaner should be serviced daily and in some cases more frequently.

Servicing—All Models

Remove the air cleaner and filtering element assembly. Wash the element in solvent and drain thoroughly.

Clean out the lower oil base or reservoir and fill up to indicated level mark on the inside of the reservoir. The capacity of the cleaner is 1 pint (0,8 Imp. pt.; 0,47 liters). Use S.A.E. No. 40 engine oil for temperatures above 32°F. (0°C.) and S.A.E. No. 20 engine oil for temperatures below 32°F. (0°C.). Do not use an oil lighter than S.A.E. No. 20.

Install the dried filtering element and air cleaner assembly.

DRY FILTER TYPE

The type of roads over which the car is operated and the service to which it is subjected, will determine how often it will be necessary to clean the element.

For cars operated on paved roads only and where dust conditions are not prevalent, the cleaner should be serviced at 1000 mile (1,609 km.) intervals. Under severe dust conditions, however, it should be serviced daily and in some cases more frequently. It should be changed every six months or 10,000 miles (16,09 km.), whichever occurs first.

Servicing—All Models

Remove the air cleaner cover. Remove the filtering element and *shake off* the dust. *Caution.—Do not use compressed air or any solvent cleaners on this element.* Install the element and air cleaner cover.

FUEL PUMP

The 56G model uses an inverted A. C. model fuel pump located at the front on the right side of the block (see Fig. 3).

The 56B and 56H models are equipped with a Carter inverted type fuel pump. Model No. M2211-S, mounted on the upper left portion of the timing gear cover (see Fig. 4). The 56J model is equipped with a Carter Model No. M-2198-S fuel pump, mounted on a pad of the timing chain cover (see Fig. 5).

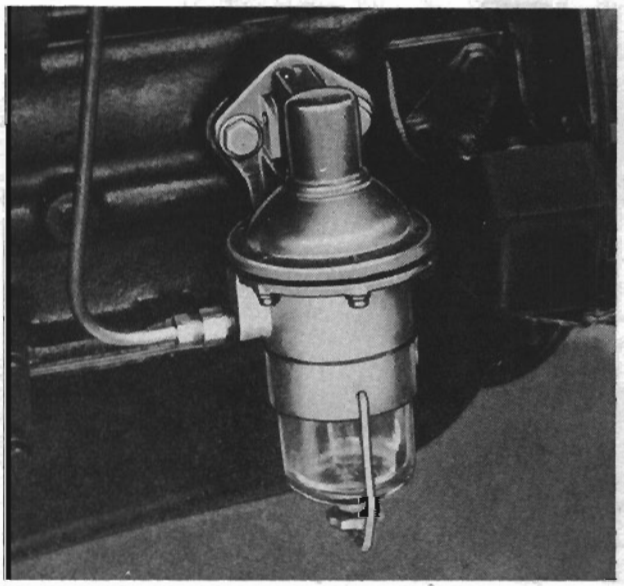


FIG. 3
56G Fuel Pump

Removal—All Models

Disconnect the fuel pump inlet and outlet pipe connections. Remove the fuel pump attaching cap screws and lock washers, then remove the pump assembly and gasket.

On Powerhawk, Skyhawk, and Goldenhawk models equipped with power steering, disconnect the battery ground cable. On the Commander and President models, remove the battery. The power steering pump unit should be partially removed. Loosen two adjust-

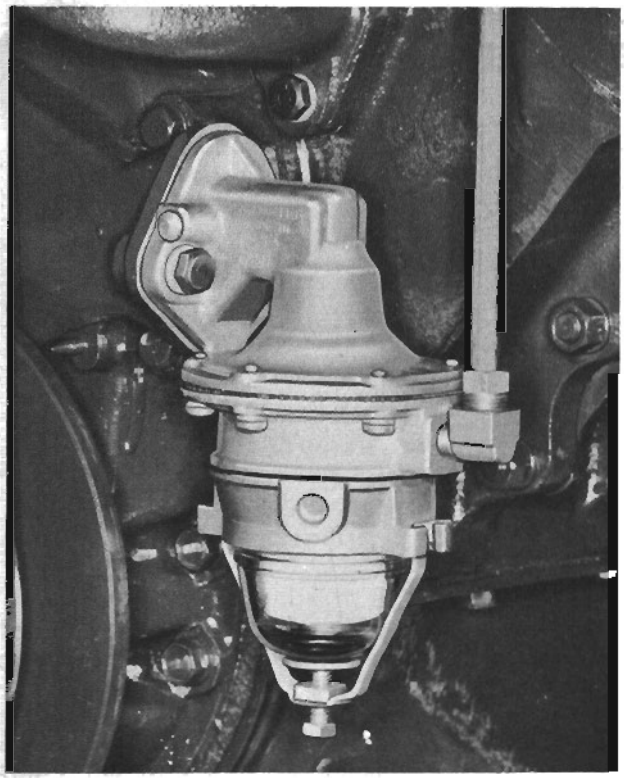


FIG. 4
56B and 56H Fuel Pump

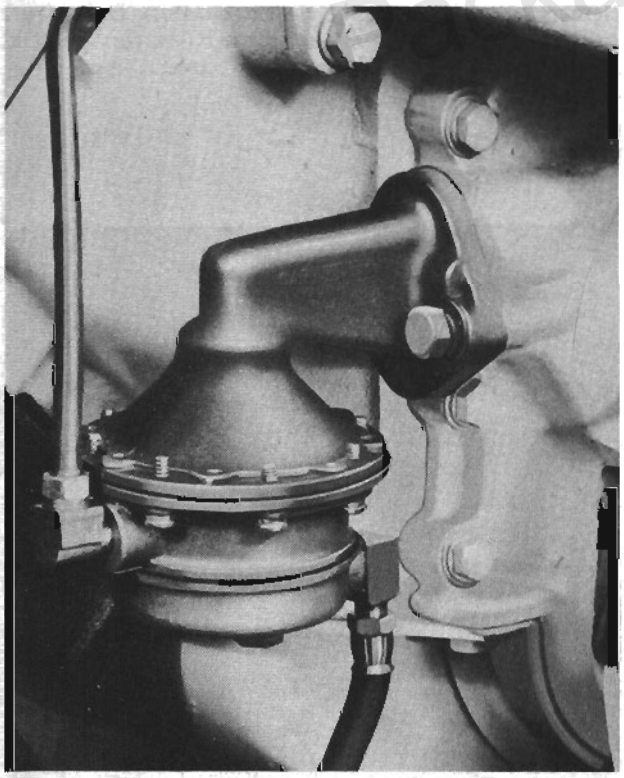


FIG. 5
56J Fuel Pump

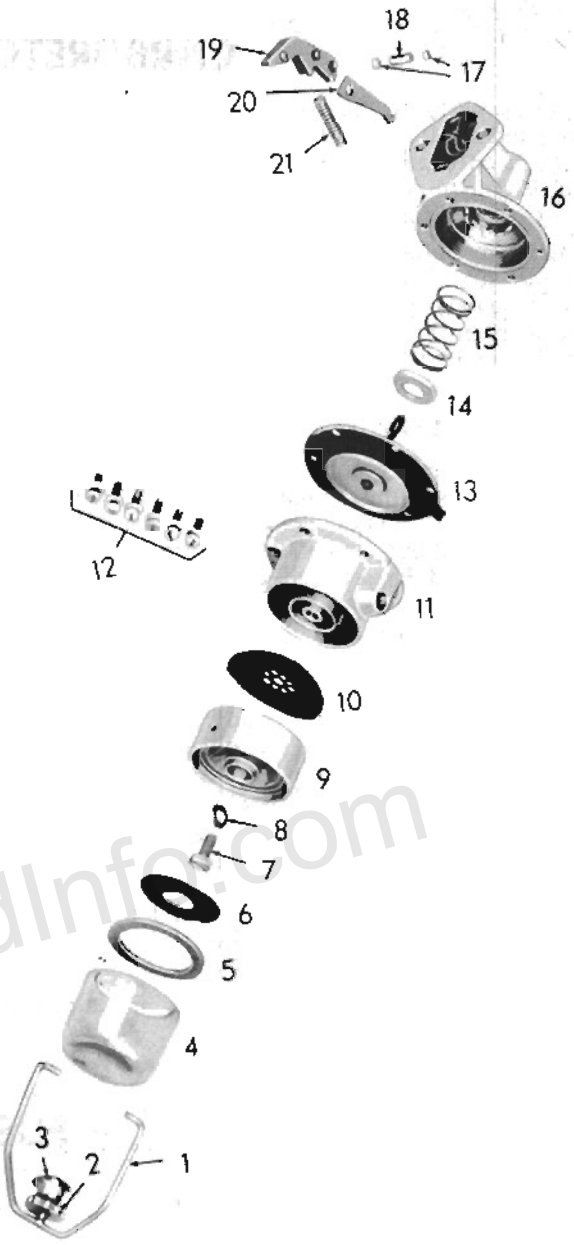


FIG. 6

1. Bail
2. Bail nut
3. Bowl seat
4. Filter bowl
5. Gasket
6. Filter screen
7. Screw
8. Washer
9. Inlet body
10. Gasket
11. Valve body
12. Screws and lock washers
13. Diaphragm
14. Spring seat
15. Spring
16. Pump body
17. Plug seals
18. Pin
19. Rocker arm
20. Rocker arm link
21. Rocker arm spring

ing bracket screws and allow the belt to slacken. Remove the pump pulley nut and washer and move the pulley as far forward as it will go. Turn the pulley as required to remove two cap screws and washers to adjusting bracket. Move the pump unit until the pulley and belt are disengaged. Lift the pump unit up and backward out of the way.

Installation—All Models

Install the new flange gasket to the fuel pump flange, then position the fuel pump properly on the mounting pad. Install attaching cap screws with lock washers and tighten securely. (Inspect the flexible fuel line coupling to determine its condition.) Connect the inlet and outlet pipe connections. Operate the engine to confirm proper performance and tightness of fuel line connections.

On the Powerhawk, Skyhawk, and Goldenhawk models equipped with power steering, reinstall the power steering pump unit. Make sure that the mounting bracket is tight on the cylinder head. Hold the pump in position, engage the drive pulley with the belt, and start the pulley on the pump shaft. Install and tighten the cap screws and washers to the pump flange through the adjusting bracket slots. Completely seat the pulley on the shaft and install and secure the pulley, washer, and nut. Adjust the belt properly. Install and/or connect the battery.

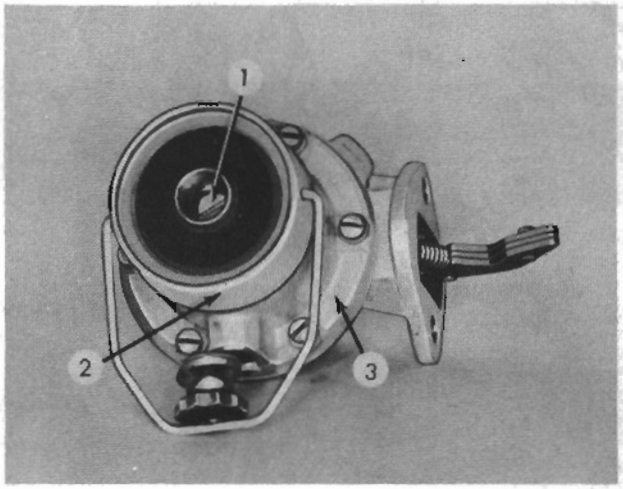


FIG. 7

1. Screw 2. Inlet body 3. Valve body

Disassembly—A.C.

File a locating mark on the edges of the valve housing and pump body.

Loosen the bail nut (2, Fig. 6) at the bottom of the filter bowl, turn the bail (1) to one side, and remove the filter bowl (4) and bowl seat (3). Remove the gasket (5) and filter screen (6). Remove the screw (1, Fig. 7) and washer from the inlet body (2), thereby separating the inlet body from the valve body (3). Remove the gasket (10, Fig. 6). Remove six screws (12) and separate the valve body from the pump body (16). Remove the rocker arm pin (18).

Select a pin punch of suitable size to use as a dummy pin. Drive the plug (17) inward enough to remove the plug on the opposite side. Place the punch against the rocker arm pin (18) where the plug has been removed, then drive the pin and plug out of the fuel pump body. Remove the rocker arm (19), rocker arm link (20), and rocker arm spring (21). Remove the diaphragm (13), spring seat (14), and spring (15).

Inspection—A.C.

Clean all parts in gasoline or solvent and dry them with compressed air. Replace all worn or damaged parts. The inlet and outlet valves (see Fig. 8) are not serviced separately and are replaced as an assembly with the valve body.

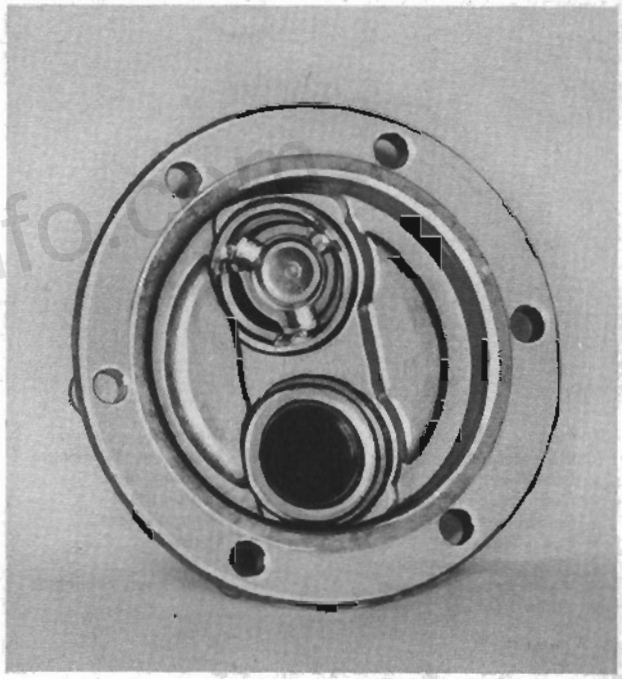


FIG. 8

Reassembly—A.C.

Place the pump body in a vise or suitable fixture.

Assemble the spring (15, Fig. 6) and seat (14) into the pump body (16). Insert the diaphragm (13) into the pump body. Assemble the rocker arm (19) and rocker arm link (20) into the pump body and temporarily retain these parts in position with a pin punch or dummy pin of approximately the same diameter as the rocker arm pin. Install the rocker arm pin (18) so that the pin is centered in the pump body, then install the new plug seals. Install the rocker arm spring (21). Align the locating marks and assemble the valve body (11) on the pump body (16). Install the screws (12) and set them until the heads engage the lock washers. Hold the rocker arm in its maximum stroke position, then tighten the screws securely. Install the gasket (10) on the valve body, then place the inlet body (9) in the proper position. Install the washer (8) and screw (7), then tighten securely. Install the filter screen (6) and gasket (5) properly in the inlet body. Install the filter bowl (4), bail (1), and bowl seat (3), and tighten the bail nut (2) securely.

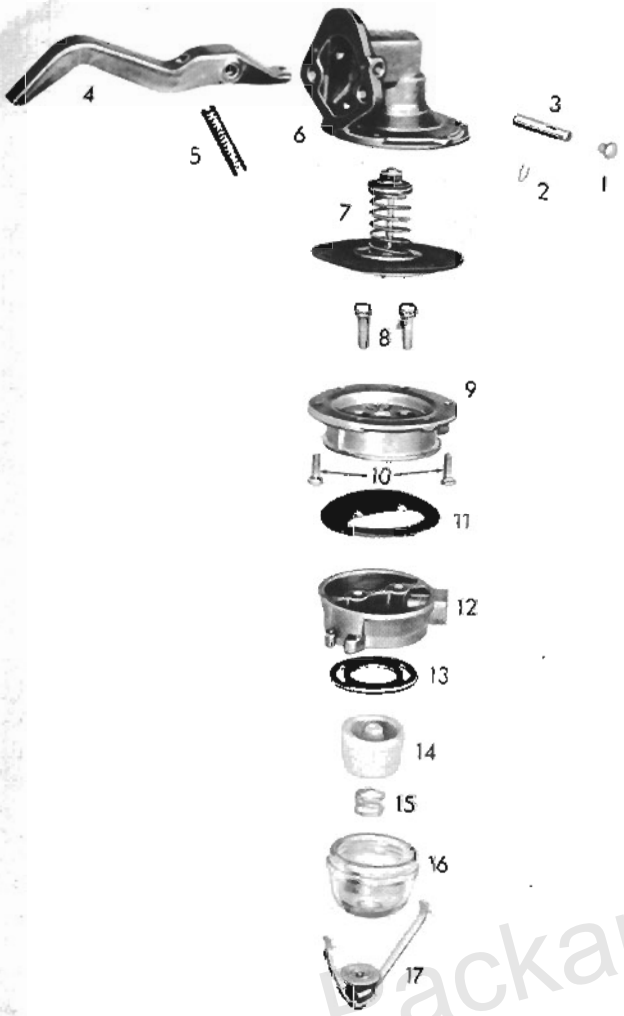


FIG. 9

1. Plug
2. Pin retainer
3. Cam lever pin
4. Cam lever
5. Return spring
6. Pump body
7. Diaphragm assembly
8. Valve housing screws
9. Valve housing
10. Diaphragm screws
11. Air dome diaphragm
12. Housing cover
13. Bowl gasket
14. Filter element
15. Spring
16. Bowl
17. Filter bowl retainer

Disassembly—Carter M-2211-S

File a locating mark on the edges of the valve housing (9, Fig. 9) and pump body (6). Remove the diaphragm attaching screws (10).

Remove the filter bowl retainer (17), bowl (16), spring (15), and filter element (14). Remove the bowl gasket (13) from the casting.

Remove the two screws (8) in the valve housing (9) and separate the valve housing cover (12) and air dome diaphragm (11) (note position of air dome diaphragm).

Remove the cam lever pin plug. Remove the cam lever return spring (3, Fig. 10), pin retainer (2), cam lever pin (1), and cam lever (4). Remove the diaphragm assembly from the pump body (see Fig. 11).

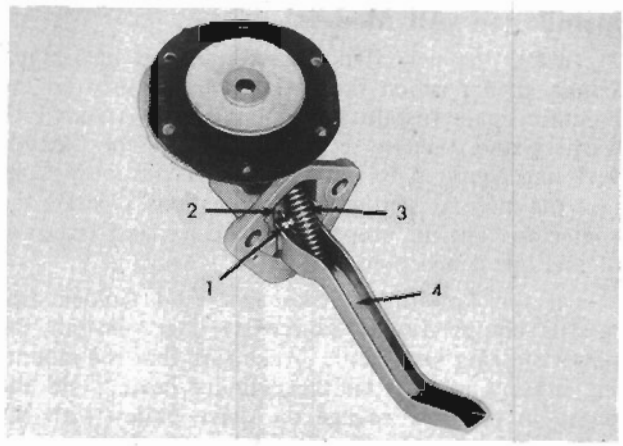


FIG. 10

1. Cam lever pin
2. Pin retainer
3. Return spring
4. Cam lever

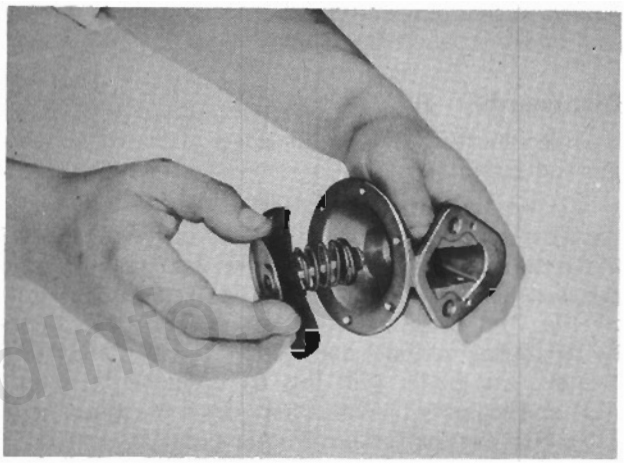


FIG. 11

Inspection—Carter M-2211-S

Clean all parts in gasoline or solvent and dry them with compressed air. Replace all worn or damaged parts. Install a new filter element, bowl gasket, air dome diaphragm, and fuel diaphragm when reassembling.

Carter mechanical fuel pumps are serviced with repair kits. Individual service parts are also available. The inlet and outlet valves are not replaceable but are serviced as part of the complete valve housing section. Do not immerse valves, diaphragm, or oil seals in chemical parts cleaner.

Reassembly—Carter M-2211-S

Install the new diaphragm assembly (11, Fig. 9) into the pump body (6). Insert the cam lever (4) and hook the shaft of the diaphragm assembly (7). Install the cam lever pin (3), plug (1), and pin retainer (2). Install the cam lever return spring (5).

Install the air dome diaphragm (1, Fig. 12) on the valve housing (2) (with the opening over the inlet section of the valve housing). Place the valve housing cover in correct position, then install two screws and tighten securely.

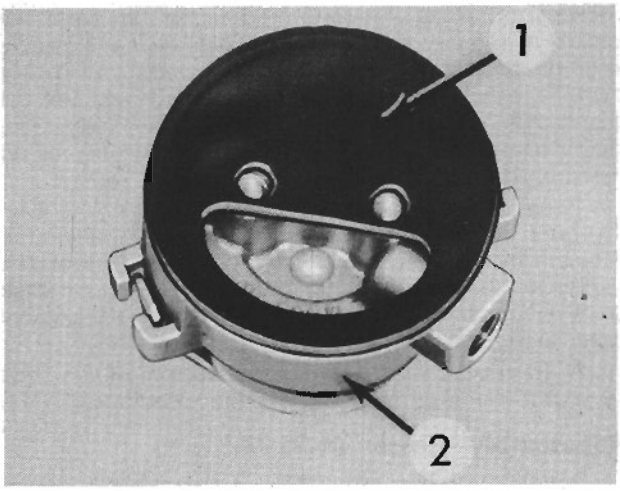


FIG. 12

1. Air dome housing
2. Valve housing

Position the bowl gasket in the casting. Install the filter element, spring, bowl, and retainer.

Align the identification file marks and install the valve body-to-pump body attaching screws loosely. Hold the cam lever in its maximum stroke position, then tighten the attaching screws securely.

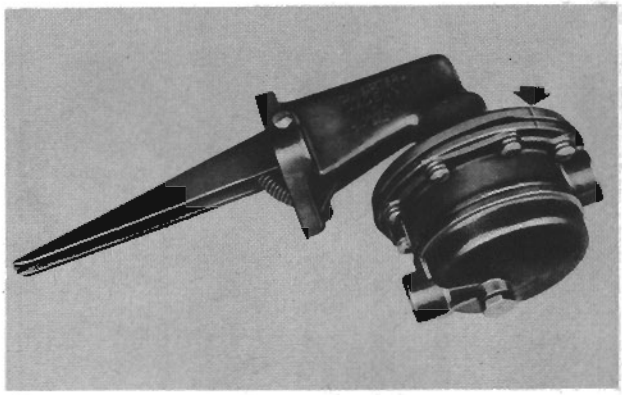
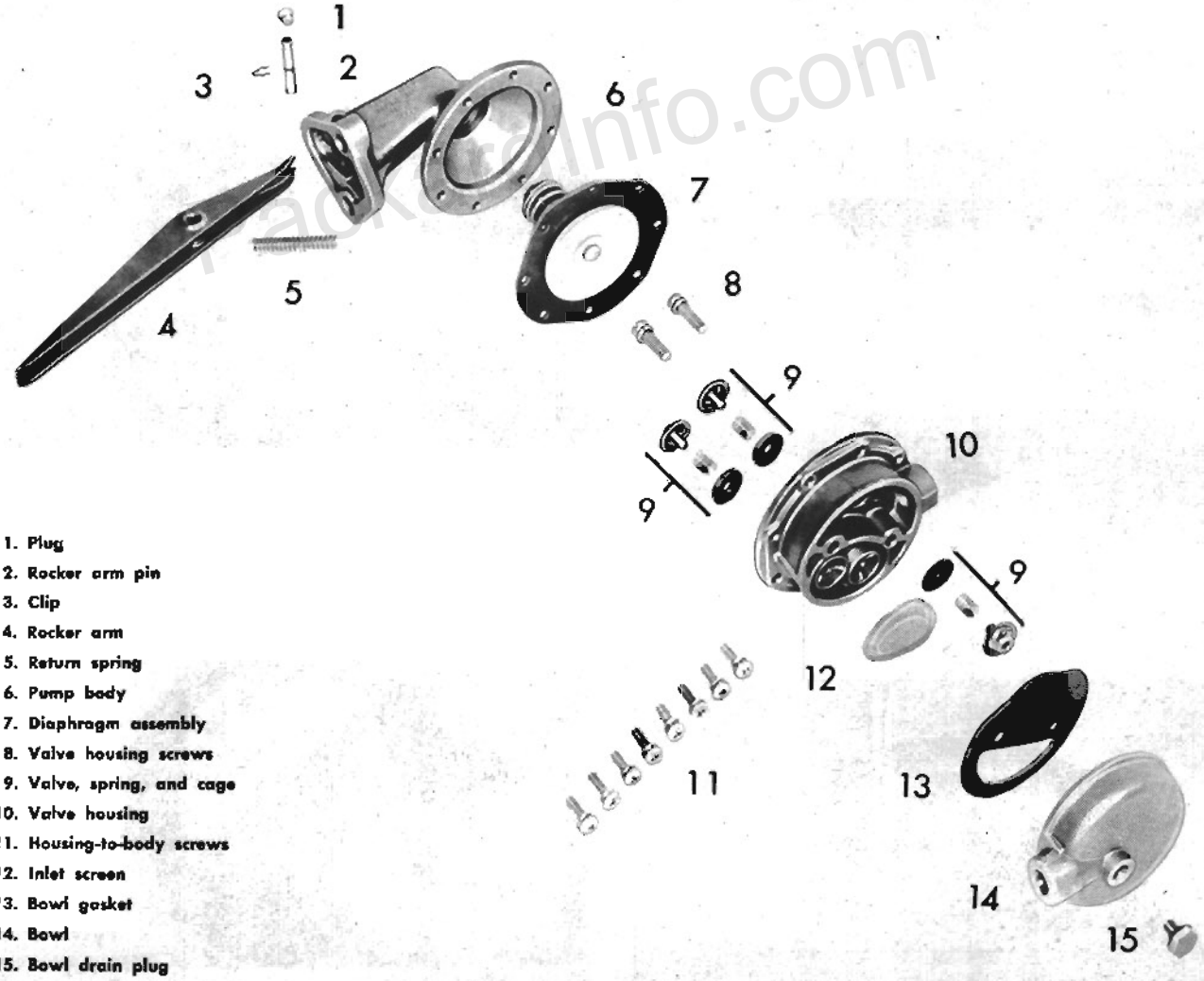


FIG. 14

Disassembly—Carter M-2198-S

File locating marks on the edges of the valve housing and the pump body (see Fig. 14). Remove the valve housing-to-body screws and separate the parts. It may be necessary to tap one of the parts lightly to obtain separation.

To remove the diaphragm, the rocker arm must first be removed. Remove the rivet plug. Remove the



1. Plug
2. Rocker arm pin
3. Clip
4. Rocker arm
5. Return spring
6. Pump body
7. Diaphragm assembly
8. Valve housing screws
9. Valve, spring, and cage
10. Valve housing
11. Housing-to-body screws
12. Inlet screen
13. Bowl gasket
14. Bowl
15. Bowl drain plug

FIG. 13

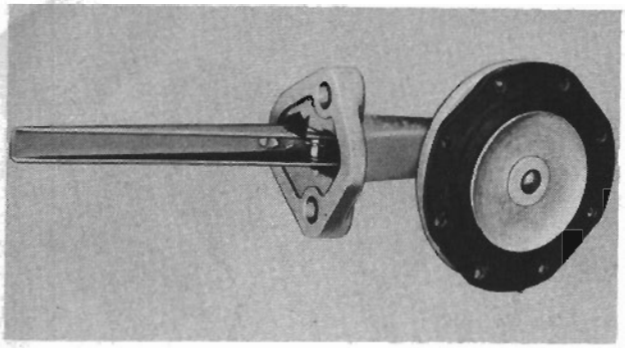


FIG. 15

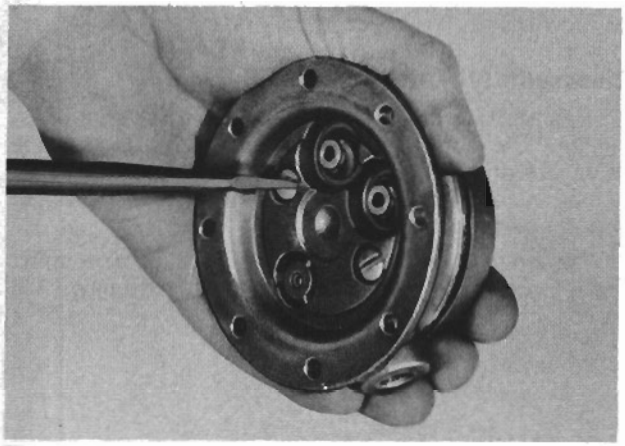


FIG. 16

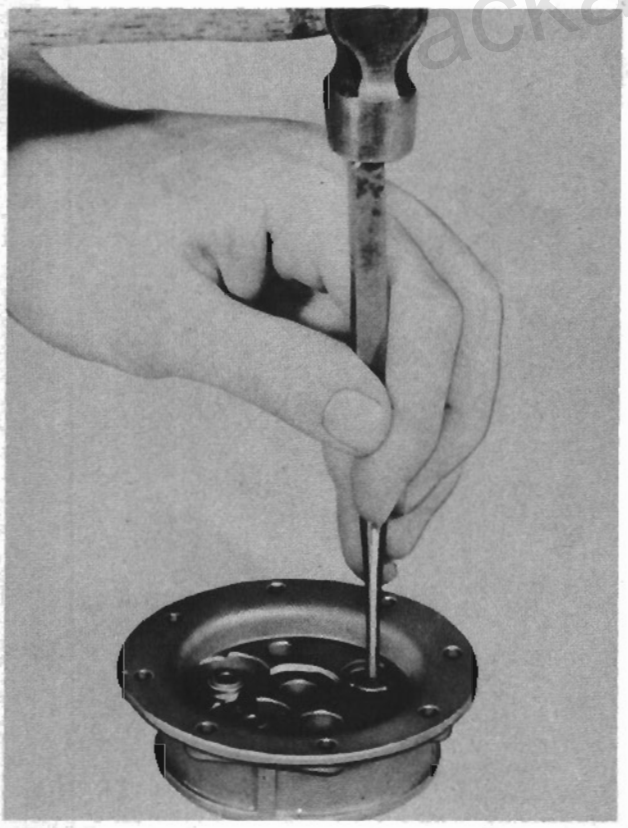


FIG. 17

rocker arm spring. Remove the hairpin clip from the rocker arm pin (see Fig. 15). Then, using a needle nose pliers, work the pin out of the body and rocker arm. Slip the rocker arm out of the body and lift the diaphragm and seal assembly out of the body. The diaphragm and seal assembly are serviced only as an assembly.

Remove the valve body-to-bowl screws (see Fig. 16) and remove the bowl and gasket. Remove the screen which covers the inlet valves. To remove the valves, use a small pin punch and tap the valve cage stem out of the body (see Fig. 17). Remove the valve cage, spring, and valves.

A drain plug is provided in the bottom of the bowl to permit draining the pump to remove sediment.

Reassembly—Carter M-2198-S

Install the valve assemblies in the valve body by first placing the valve on the body and aligning the holes. Slip the spring over the valve cage stem. Then tap the cage into position in the body so that the end of the stem is flush with the outer surface. The cage must not be seated against the valve. Place the inlet screen over the valves (see Fig. 18).

Make sure that the drain plug is tight in the bowl. Then position the gasket on the bowl as shown in Fig. 19. The opening must be on the inlet side of the pump.

Assemble the valve body and bowl and install the two retaining screws.

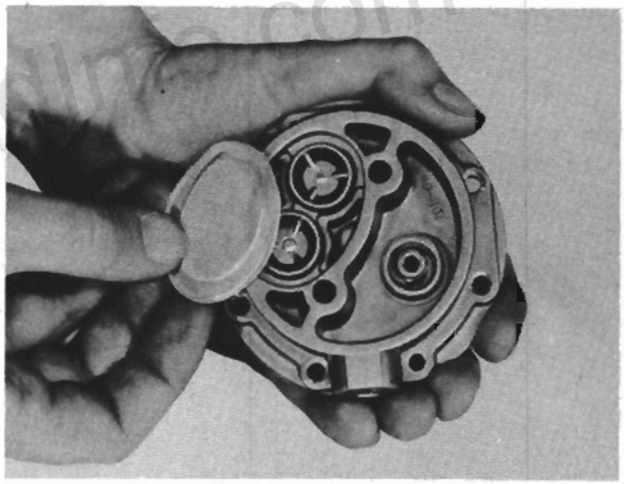


FIG. 18

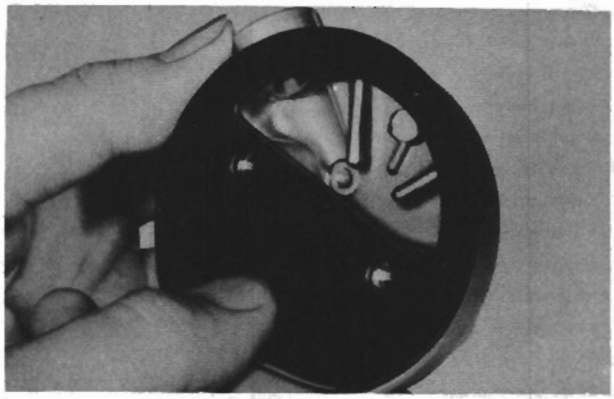


FIG. 19

Soak the diaphragm in clean kerosene. Fuel oil may be used, but do not use shellac or sealing compounds. Insert the diaphragm assembly in the valve body (see Fig. 20), making sure that the seal is fully and squarely seated in the body.

Insert the rocker arm into the body so that the end of the arm straddles the diaphragm push rod. Align the rocker arm and body and tap the rocker arm pin into position. Install the hairpin clip. Install the rivet plug in the body.

Place the pump body on the valve body and align the marks made at disassembly. By means of the rocker arm, hold the diaphragm flat across the body flange and install the retaining screws until the heads of the screws just contact the lock washers. Flex the diaphragm to make sure that it operates freely. Then move the rocker arm through its full stroke and, while holding it in this position, tighten all the screws securely.

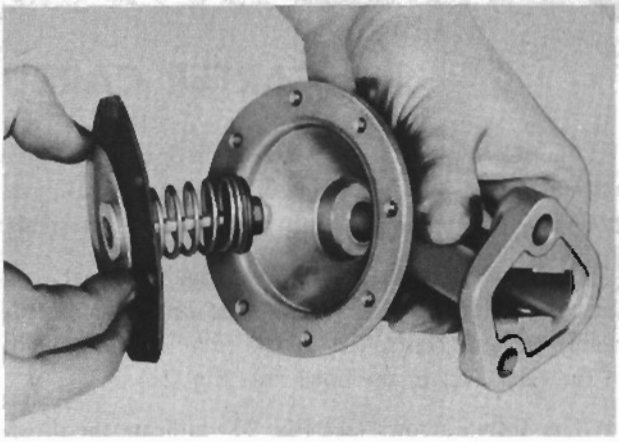


FIG. 20

Testing—All Models

To check the fuel flow of the pump, disconnect the fuel pump outlet pipe and, with the ignition switch off and by means of the starter, turn the engine over a few times. With every revolution of the camshaft, a full strong spurt of fuel should flow from the pump outlet. If the flow is weak, connect the outlet pipe and disconnect the pump inlet hose, then install a vacuum gage in the fuel pump inlet and check the pump suction. Run the engine until approximately half of the fuel in the bowl is used, then check the gage reading. The gage should show approximately 10" of vacuum. A vacuum reading which is within the limits would indicate that the weak fuel flow is caused by restriction in the fuel line or at the tank outlet. See Diagnosis of this section. If a low vacuum reading is obtained, remove and service the pump.

To make pump pressure test, install a pressure gage in the fuel pump outlet. Run the engine at approximately 30 mph (48,3 km.p.h.), using the fuel remaining in the carburetor, and check the pressure reading. The fuel pump pressure should be 3½ to 5 pounds (0,25 - 0,35 kg.) on all models. If the pressure is low, check the pump suction to determine whether the lack of pressure is caused by the pump or restriction in the fuel line. A pressure above 5 pounds (0,35 kg.) would indicate a diaphragm that is too tight, a diaphragm spring that is too strong, or fuel between the layers of the diaphragm material which causes bulging of the diaphragm.

CARBURETORS

A single-barrel downdraft carburetor, Carter Model WE-2108-S, is used on the Champion and Flighthawk and a double-barrel downdraft carburetor, Stromberg Model WW-6-117, is used on Commander, Powerhawk and President W, F, D models. A four-barrel downdraft carburetor, Carter WCFB-2214-S, is used on the Skyhawk and President Y models with automatic transmissions. Carter Model WCFB-2219-S is used on these models when equipped with standard or overdrive transmissions. The Goldenhawk model is equipped with a four-barrel downdraft carburetor, Carter Model WCFB-2394-S.

Whenever a report of excessive fuel consumption is made, other factors, such as inoperative heat control valve or incorrect ignition timing, in addition to the carburetor, should receive attention. Driving habits and operating conditions should also be considered.

On the Champion and Flighthawk, holes are provided in the carburetor throttle body and intake manifold (see Fig. 21) to transmit hot exhaust gases from the exhaust manifold when the manifold heater valve is closed. The circulating hot gases warm the throttle body and thereby reduce the possibility of ice formation at the throttle valve during the warm-up period. As the manifold heater valve opens, the warm-up action of the throttle body is gradually eliminated.

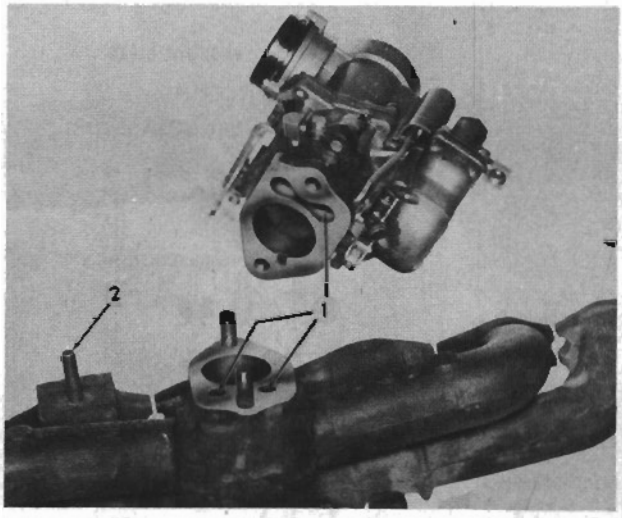


FIG. 21

1. Heater holes 2. Choke stove

CARTER CARBURETOR—WE-2108-S

The Carter carburetor WE-2108-S employs five systems during the full range of its operation. Figures 22 through 26 name and fully illustrate these systems.

Gasoline enters the fuel bowl through the fuel bowl strainer and the needle valve. The operation of the needle valve is controlled by the float and the height of the fuel level in the bowl (see Fig. 22).

The dotted arrows (see Fig. 23) indicate the direction of the flow of fuel through the parts and passages of the low speed system.

Two idle air bleeds—one located above the choke valve, the other below—provide the proper fuel mixture when the engine is idling. The upper by-pass air bleed also aids in balancing the atmospheric pressure in the low speed system when the choke valve is closed.

The dotted arrows (see Fig. 24) indicate the direction of the flow of fuel through the parts and passages of the high speed system.

The dotted arrows (see Fig. 25) indicate the direction of the flow of fuel through the accelerating pump system.

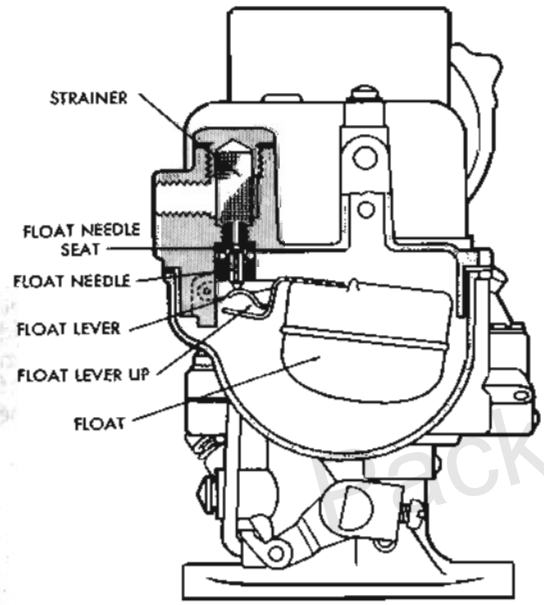


FIG. 22 FLOAT SYSTEM

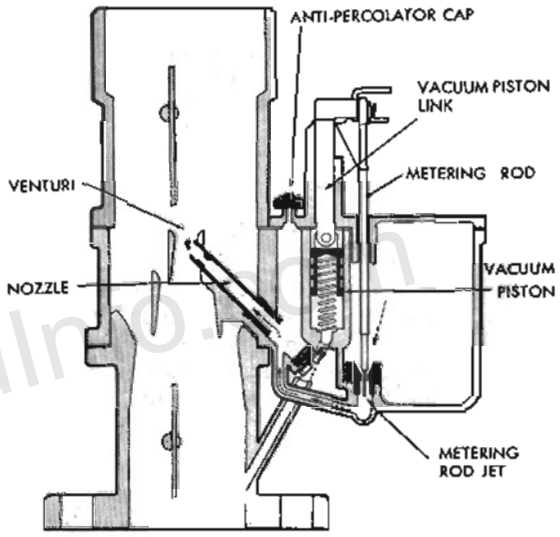


FIG. 24 HIGH SPEED SYSTEM

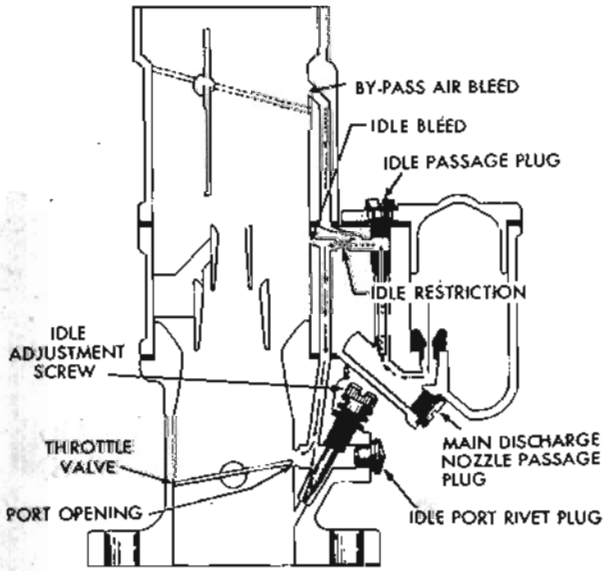


FIG. 23 LOW SPEED SYSTEM

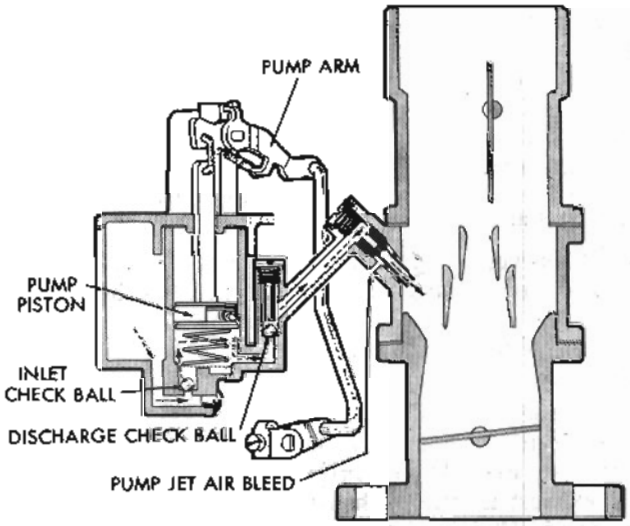


FIG. 25 ACCELERATING PUMP SYSTEM

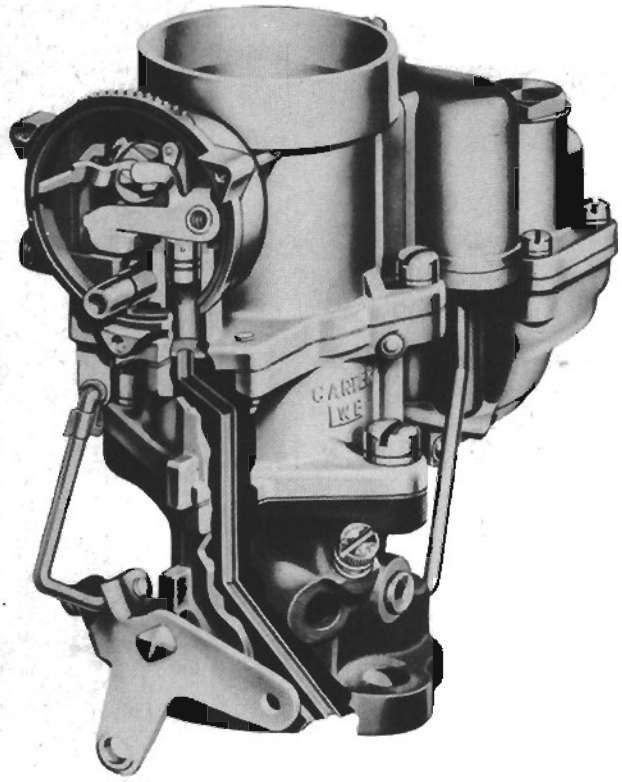


FIG. 26 CHOKE SYSTEM

Figure 26 illustrates the choke mechanism with a cutaway view of the vacuum passage. The fast idle cam and link, choke trip lever, and choke piston are located in the climatic control body. In this way these parts are protected from dirt and other foreign matter.

Disassembly—WE-2108-S

Remove the dust cover (4, Fig. 27) from the bowl cover assembly (3). Then disconnect the choke connector rod (14) from the fast idle link by unhooking the retainer clip, and remove the choke connector rod. Next remove the idle adjustment screw (10) and spring (11) from the throttle body. Remove the screws (15) holding the air horn and climatic control assembly (1) to the main body (2) and remove the assembly. Remove the air horn gasket.

To disconnect the throttle connector rod (6), unhook the retainer clip (7) at the lower end of the rod, remove the hairpin clip from the upper end, and remove the connector rod. Then take out the four bowl cover screws (9) and the idle passage screw plug and gasket (8). Remove the bowl cover assembly (3).

Climatic Control—Remove the climatic control housing (13, Fig. 28) with thermostat and gasket (10). Remove the screw (9) which holds the baffle plate to the housing and remove the baffle plate (8), choke trip lever (7), and fast idle link (14).

Remove the choke valve (2) from the choke shaft (5). Unhook the fast idle cam spring from the lip on the choke shaft. This allows the cam to move freely on the hub. Turn the shaft and lever counterclockwise to remove the choke piston (6) from the cylinder. Then pull the shaft (5) out of the climatic control body and remove the fast idle cam (4) from the hub on the body.

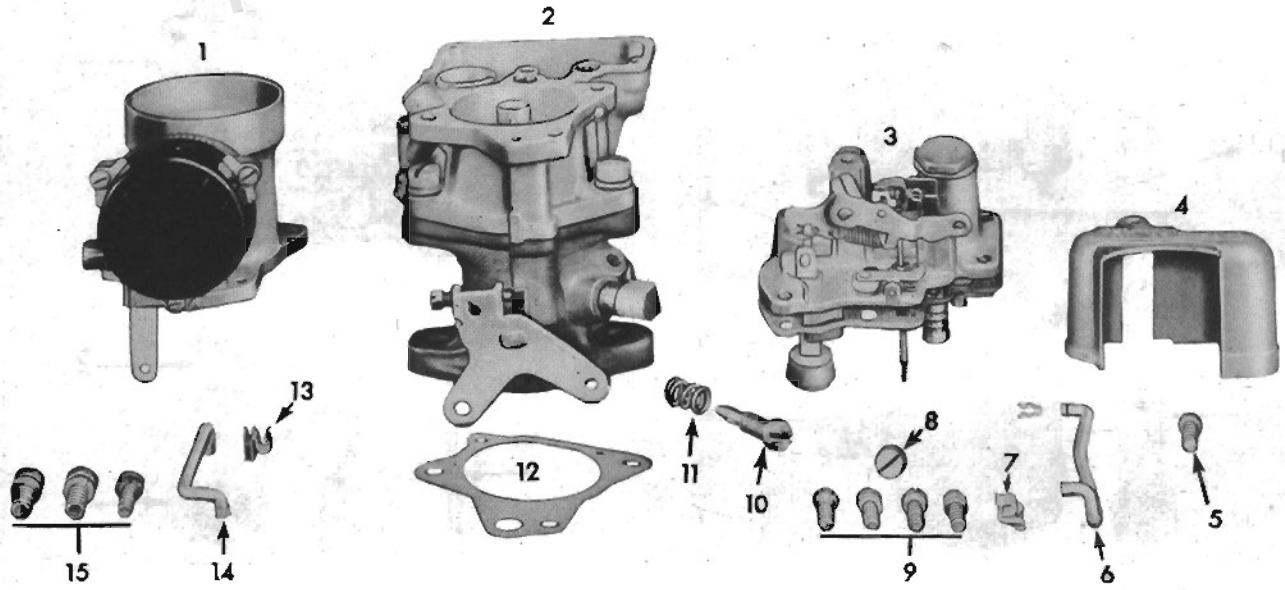


FIG. 27

1. Air horn and climatic control assembly
2. Main body
3. Bowl cover assembly
4. Dust cover
5. Dust cover screw
6. Throttle connector rod
7. Retainer clip
8. Idle passage screw plug and gasket
9. Bowl cover screws
10. Idle adjustment screw
11. Spring
12. Air horn gasket
13. Clip
14. Choke connector rod
15. Screws

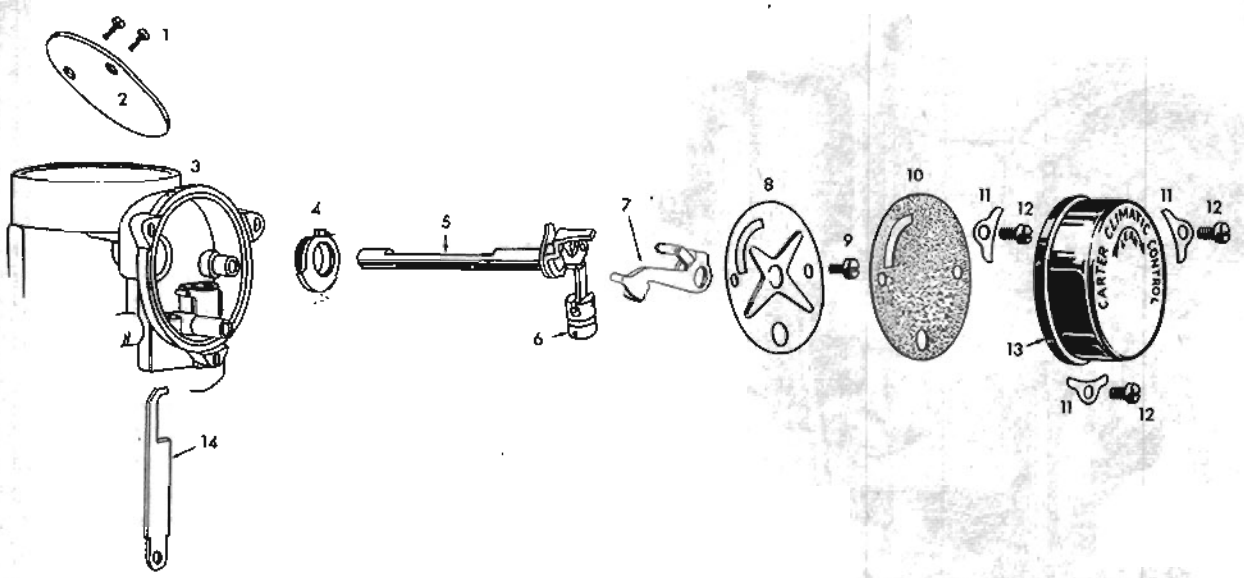


FIG. 28

1. Valve screws
2. Choke valve
3. Air horn
4. Fast idle cam
5. Shaft
6. Choke piston
7. Choke trip lever
8. Baffle
9. Baffle screw
10. Gasket
11. Clamp
12. Screw
13. Climatic control housing
14. Fast idle link

Bowl Cover Assembly—To remove the bowl cover gasket (11, Fig. 29), first remove the hairpin clip (12) and the pump connector link (1); then remove the accelerating pump plunger and rod assembly (10).

To complete the disassembly of the bowl cover assembly, turn the vacuum piston (4, Fig. 29) 90° counterclockwise and unhook it from the vacuum piston link (3). Remove the vacuum piston link (5, Fig. 30) with metering rod spring and the metering rod (6) and disc (7) from the bowl cover (1). Remove the disc from the metering rod, unhook the metering spring, and remove the rod from the vacuum piston link. Then remove the strainer nut (4), gasket (3), and strainer (2).

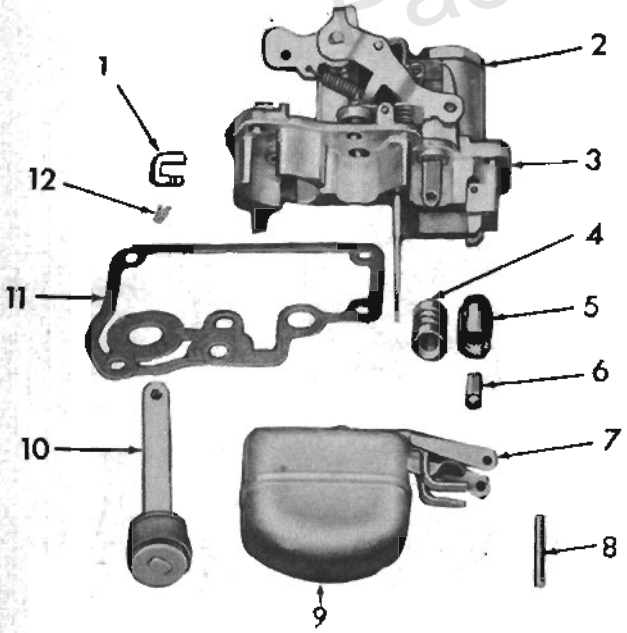


FIG. 29

1. Pump connector link
2. Cover assembly
3. Piston link
4. Vacuum piston
5. Needle seat and gasket
6. Float needle
7. Float lever
8. Float lever pin
9. Float assembly
10. Pump plunger and rod assembly
11. Gasket
12. Hairpin clip

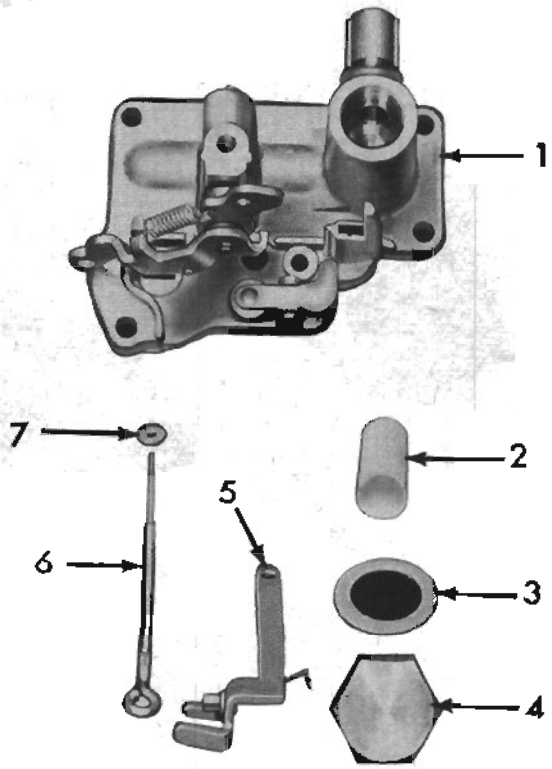


FIG. 30

1. Bowl cover
2. Strainer
3. Gasket
4. Strainer nut
5. Vacuum piston link
6. Metering rod
7. Disc

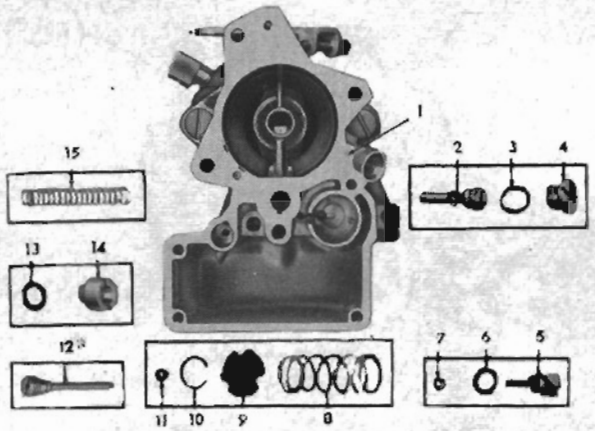


FIG. 31

1. Main body
2. Pump discharge jet
3. Gasket
4. Pump discharge plug
5. Retainer screw plug
6. Gasket
7. Discharge check ball
8. Pump spring
9. Strainer
10. Retainer ring
11. Inlet check ball
12. Low speed jet
13. Gasket
14. Metering rod jet
15. Vacuum piston spring

Removal of the float lever pin (8, Fig. 29) will permit the removal of the float and lever assembly (9) and the float needle (6). Then, using Jet Wrench J-816-6, remove the float needle seat and gasket (5).

Main Body—To disassemble the main carburetor body (1, Fig. 31), remove the vacuum piston spring (15) and accelerating pump spring (8). Then remove the accelerating pump strainer (9) and, using Retainer Ring Remover J-1306, remove the accelerating pump inlet check ball retainer ring (10). Turn the carburetor body upside down to remove the inlet check ball (11).

Using Jet Wrench J-816-1, remove the low speed jet (12). Then, using Jet Wrench J-816-6, remove the pump discharge passage plug (4) and gasket (3). Remove the pump discharge jet (2), using Jet Wrench J-816-2. Again using Jet Wrench J-816-6, remove the pump discharge check ball retainer screw plug (5) and gasket (6). Then tilt the body to remove the check ball (7). Next, using Jet Wrench J-816-6, remove the metering rod jet (14) and gasket (13).

Throttle Body—Remove the two screws (7, Fig. 32) which hold the main carburetor body (2) to the throttle body (1) and separate the two pieces. Remove the throttle body gasket (8). Using Jet Wrench J-816-6, remove the main discharge nozzle passage plug (3). Remove the main discharge nozzle retainer plug (4) using Jet Wrench J-816-2. To remove the main discharge nozzle (5), use Jet Extractor J-508. Be sure to remove the small copper gasket (6) which fits around the seat of the nozzle.

Cleaning and Inspection—WE-2108-S

All carburetor parts and passages should be cleaned thoroughly with Bendix Metalclene AC-1328 or equivalent, rinsed with solvent, and blown out with compressed air before the carburetor is reassembled.

Caution.—When blowing out the climatic control housing with compressed air, support the thermostat coil with a thumb or finger to prevent the distortion of the thermostat.

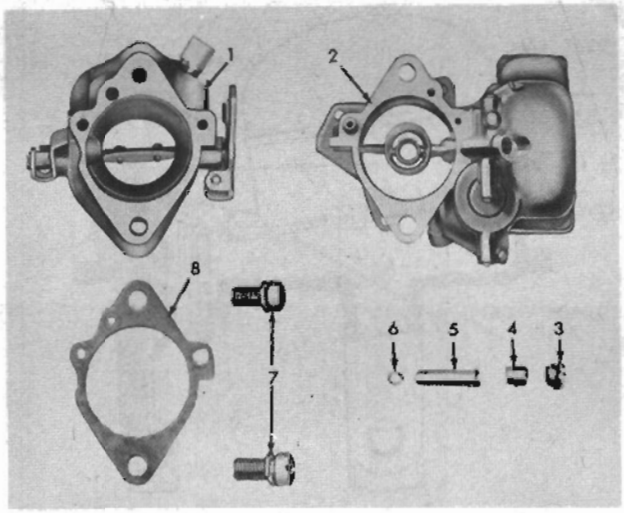


FIG. 32

1. Throttle body
2. Main body
3. Discharge nozzle passage plug
4. Discharge nozzle retainer plug
5. Main discharge nozzle
6. Copper gasket
7. Throttle body screws
8. Gasket

Inspect all parts for wear or damage. When reassembling the carburetor, always use new gaskets.

Remove the carbon deposits from the heater holes in the throttle body and manifold. Scrape the openings and blow them clean with compressed air.

Reassembly—WE-2108-S

Throttle Body—Place a new copper gasket (6, Fig. 32) on the main discharge nozzle (5) and install the nozzle with the flat at the end of the nozzle up. Using Jet Wrench J-816-2, install the main discharge retainer plug (4). The main discharge nozzle passage plug (3) can then be installed with Jet Wrench J-816-6. After installing a new gasket (8), attach the main carburetor body (2) to the throttle body (1) with the two screws and lock washers (7). Next, install the idle adjusting screw and spring in the throttle body.

Main Body—Using Jet Wrench J-816-6, install the metering rod jet (14, Fig. 31) and new gasket (13); and using Jet Wrench J-816-1, install the low speed jet (12).

Install the pump discharge check ball (7) and, using Jet Wrench J-816-6, install the pump check ball retainer screw plug (5) and new gasket (6). With Jet Wrench J-816-1, install the pump jet (2). Again using Jet Wrench J-816-6, install the pump discharge jet passage plug (4) and new gasket (3).

Drop the accelerating pump inlet check ball (11) in place. Using Retainer Ring Installing Tool J-1407, install the check ball retainer ring (10). Then install the accelerating pump strainer (9) and spring (8). The vacuum piston spring (15) should also be placed in its well at this time.

Bowl Cover Assembly—Before assembling the float bowl cover assembly, lubricate the pump operating countershaft with No. 3 graphite grease. Install the fuel bowl strainer, new gasket, and nut. Using Jet Wrench J-816-6, install the float needle seat (5, Fig. 29) with a new gasket. Then install the float needle

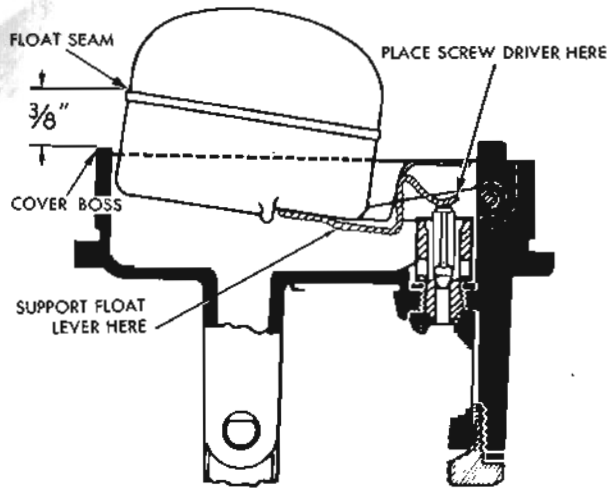


FIG. 33

(6) and, holding the float and lever assembly (7) in position, insert the float lever pin (8).

The float maintains the proper level of the fuel in the bowl of the carburetor. To check the float level (see Fig. 33), turn the bowl cover upside down, allowing the weight of the float to be supported by the float arm lip resting on the needle valve. There should be 3/8" (9,53 mm.) between the boss on the bowl cover and the far edge of the float seam. Tool No. KMO-269-S-5 of the tool kit, which is 3/8" (9,53 mm.) wide, can be conveniently used as a gage to check the float level.

If an adjustment is necessary, support the float by placing a finger under the float lever; then, by exerting a slight pressure with a screw driver against the tip of the float lever lip, bend the lip as necessary to raise or lower the float level.

Install a new bowl cover gasket on the bowl cover. To install the accelerator pump plunger and rod assembly, insert the rod in its hole in the bowl cover and attach it to the pump arm with the connector link and hairpin spring. Then insert the vacuum piston link in the hole provided in the bowl cover and install the vacuum piston on the link. Do not install the metering rod until the metering rod adjustment has been made as outlined under Adjustments.

After reassembling the bowl cover assembly, loosely attach the cover to the float bowl with the four screws and lock washers. Then install the idle passage screw plug and new gasket and tighten all screws securely.

Install the retaining clip on the throttle valve shaft lever. Then install the throttle connector rod and hook the retaining clip and install the hairpin clip at the upper end of the rod.

Install the metering rod and disc, being sure that the metering rod spring is hooked around the rod. If it is not, side movement of the metering rod in the jet may prevent the correct metering of fuel.

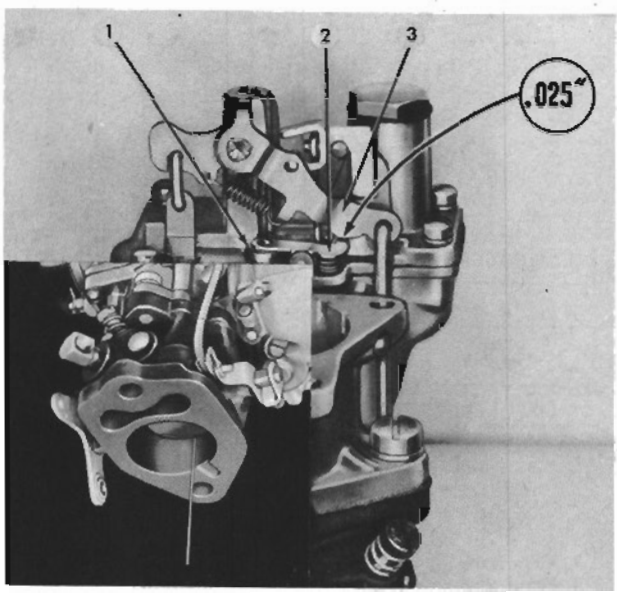


FIG. 34

1. Anti-percolator cap 2. Anti-percolator rocker arm
3. Pump operating lever

Anti-Percolator- To check the seating of the anti-percolator cap (1, Fig. 34), insert a .030" (0,76 mm.) wire, Gage No. J-1388, in the throttle body opposite the idle port (see inset). With the throttle closed on the wire, there should be .025" (0,64 mm.) clearance between the anti-percolator rocker arm (2) and the pump operating lever (3). If an adjustment is necessary, bend the anti-percolator rocker arm to obtain the proper clearance.

Climatic Control- Slide the fast idle cam assembly on the hub in the choke body of the air horn. Insert the choke shaft in the air horn, revolve the shaft and lever with the piston attached into the cylinder. Then lock the fast idle cam spring around the lip of the choke lever shaft. Install the choke valve with the trade-mark up, seating the valve before tightening the screws. The valve must not bind in any position but fall free of its own weight.

Install the air horn, new gasket, and dust cover on the main carburetor body. Install the fast idle link and choke trip lever. Attach the lower end of the choke connector rod to the throttle shaft lever and, after placing the retaining clip on the fast idle link, attach the choke connector rod, and hook the retainer clip securely.

Install the baffle plate with the attaching screw and install the climatic control housing gasket. Holding the choke in the open position, place the climatic control housing against the climatic control body with the notch one-quarter turn clockwise from the center index mark on the control body. Then revolve the housing counterclockwise to align the reference marks one notch lean in relation to the center index mark, and lock the housing in place with the screws and retainers.

Note.—Be careful not to hook the thermostat spring on the hot air tube.

CARTER WE-2108-S ADJUSTMENTS

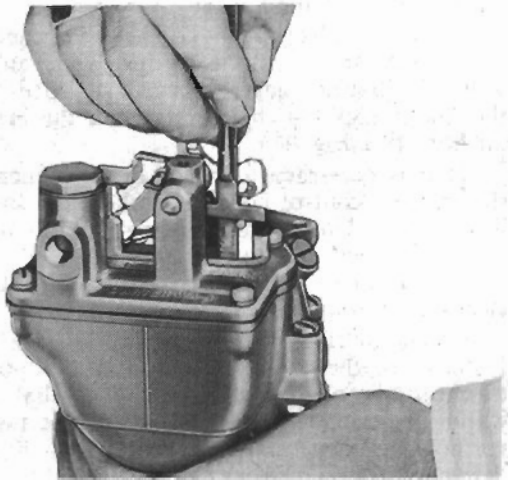


FIG. 35

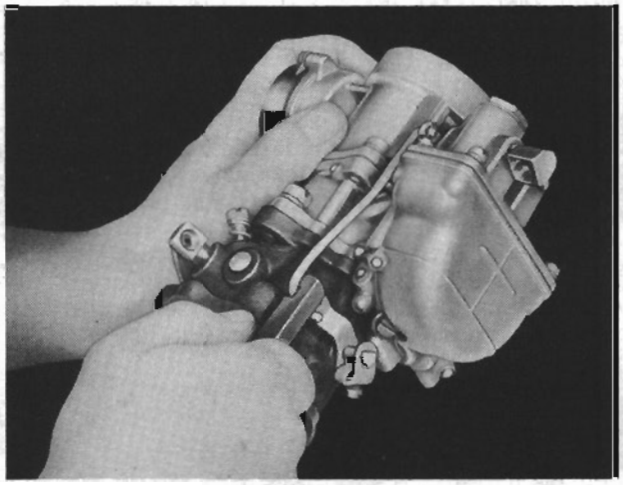


FIG. 36

Float—Remove the bowl cover assembly from the main body. To check the float level, turn the bowl cover upside down, allowing the weight of the float to be supported by the float arm lip resting on the needle valve. There should be 3/8" (9,53 mm.) clearance between the boss on the bowl cover and the far edge of the float seam. Tool No. KMO-269-S-5, which is 3/8" (9,53 mm.) wide, can be conveniently used as a gage to check the float level. If an adjustment is necessary, support the float by placing a finger under the float lever; then, by exerting a slight pressure with a screw driver against the tip of the float lever lip, bend the lip as necessary to raise or lower the float level.

Accelerating Pump—Back off the idle speed adjusting screw to permit a fully closed throttle position. Set the throttle in the wide open position and measure from the top of the lower end of the accelerating pump connector link to the top of the bowl cover. Then set the throttle in the fully closed position and repeat the measurement. The difference between the measurements, which should be 7/32" (5,56 mm.), is the travel of the accelerating pump plunger (see Fig. 35).

If the travel of the accelerating pump plunger is incorrect, adjust the travel by bending the throttle connector rod with Bending Tool J-1137 at the point shown in Fig. 36. The rod must be disconnected from the throttle arm when making the adjustment.

Metering Rod—Insert Metering Rod Gage J-1265 in place of the metering rod (see Fig. 37), seating the tapered end of the gage in the metering rod jet. With the throttle valve closed (be sure the idle speed adjusting screw permits the throttle valve to close completely), press down lightly on the vacuum piston link. There should be less than .005" (0,13 mm.) clearance between the metering rod pin and the shoulder in the notch of the gage. The gage must not contact the pin.

If an adjustment is necessary, using Adjusting Tool J-1389 (1, Fig. 38), bend the top finger of the vacuum piston link (2) to obtain the proper clearance.

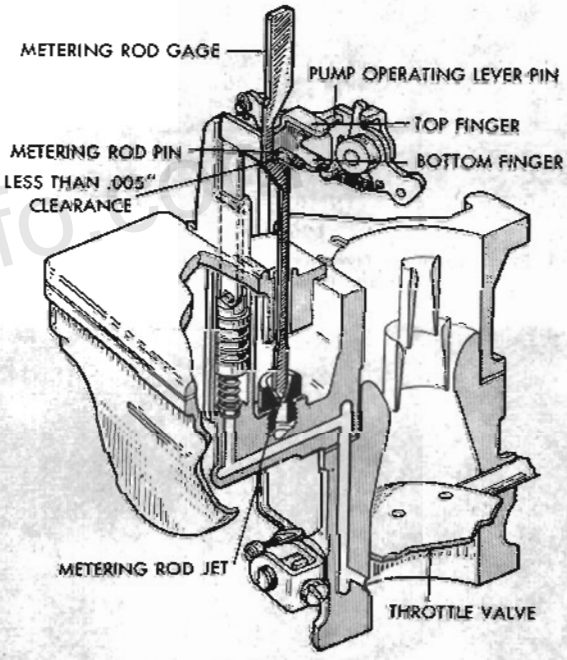


FIG. 37

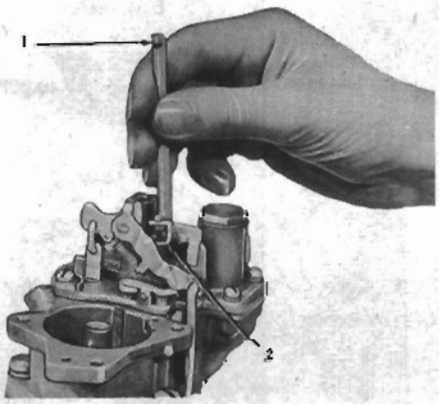


FIG. 38

1. Adjusting Tool J-1389 2. Vacuum piston link

After adjusting the top finger of the vacuum piston link, remove the metering rod gage, check the clearance between the bottom of the pump operating lever pin (1, Fig. 39) and the bottom finger of the vacuum piston link (2), using a 3/16" (4,76 mm.) gage (3) (Float Gage J-818-3). If an adjustment is necessary, using Adjusting Tool J-1389, bend the lower finger of the vacuum piston link to obtain the proper clearance.

Fast Idle—To check the fast idle adjustment, open the throttle and close the choke valve. Doing this permits the cam to drop into its fast idle position. Then, with the choke valve still closed, close the throttle so that the choke trip lever contacts the fast idle cam; and using the .045" (1,14 mm.) Wire Gage KMO-480-A, check the clearance between the throttle valve and the bore on the side opposite the idle port (see Fig. 40).

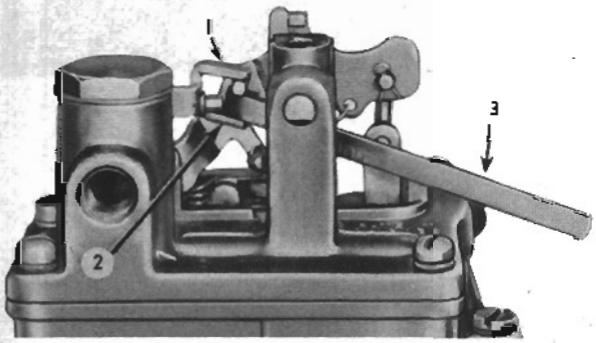


FIG. 39

1. Pump operating lever pin 2. Vacuum piston link
3. Gage (Float Gage J-818-3)

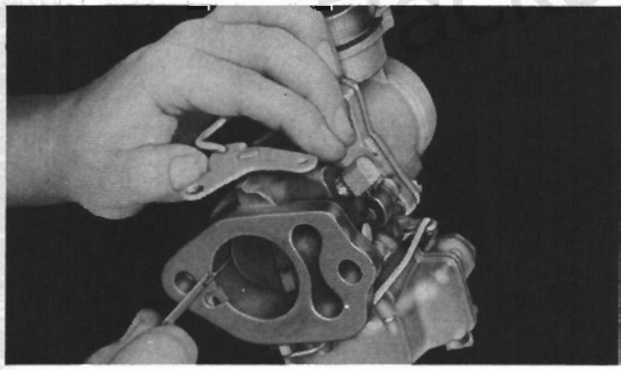


FIG. 40

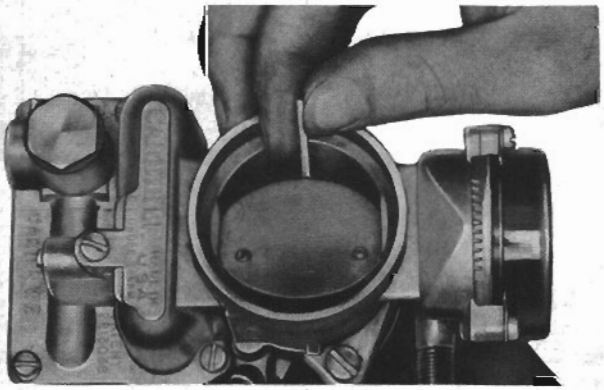


FIG. 41

If an adjustment is necessary, bend the choke connector rod using Bending Iron J-1137 or pliers at the lower end of the rod. Adjust the rod to obtain the correct clearance of the throttle valve. The choke mechanism must not bind in any position.

Unloader (Dechoke)—To check the choke unloading mechanism, open the throttle wide and insert a 3/16" (4,76 mm.) gage (Float Gage J-818-3) between the low side of the choke valve and the inside of the air horn (see Fig. 41).

If it is necessary to make an adjustment, remove the climatic control housing, gasket, and baffle plate. Then, using Unloader Adjusting Tool KMO-478 (1, Fig. 42), bend the upper finger on the choke trip lever (2) up or down as required until the correct clearance is obtained.

Choke Setting—Before attempting the final adjustment of the climatic control, it is important first to check thoroughly all other items that affect the warm-up period. Set the control so that the notch of the housing is one mark clockwise from the center index mark (one notch lean). See Fig. 43.

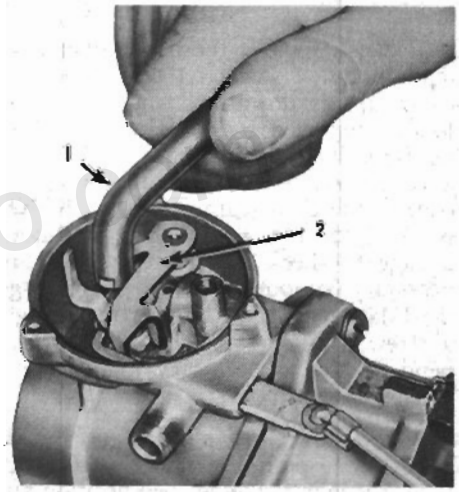


FIG. 42

1. Unloader Adjusting Tool KMO-478 2. Choke trip lever

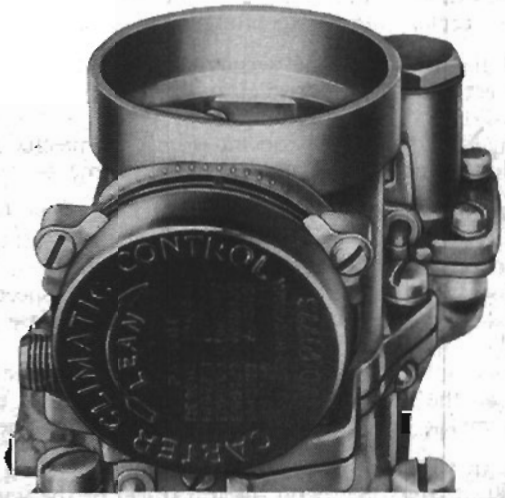


FIG 43

Idle Mixture—Adjust the idle mixture by turning the idle adjustment screw clockwise for a lean mixture or counterclockwise for a rich mixture. The correct adjustment should be between ½ and 1½ turns out from the closed position. Idle adjustment should be made with the carburetor air cleaner installed and with the engine running at normal operating temperature. The idle speed of the engine should be set at a speed equivalent to 8 to 10 miles (12,9 to 16,1 km.) per hour in high gear (550 to 600 rpm).

STROMBERG CARBURETOR—WW-6-117

The Stromberg carburetor WW-6-117 employs six systems during the full range of operation. The six systems are: the float system, idle (low speed) system, main metering system, power system, accelerating system, and the automatic choke system.

Air is supplied to both barrels through one air horn which contains the choke valve. Fuel is supplied to both barrels from one float chamber. The float chamber contains one float assembly having a single pontoon. The float actuates one needle valve. The accelerating pump discharge nozzles, one in each barrel, are supplied with fuel from one pump located in the float chamber. The power system for both barrels is controlled by one vacuum power piston.

Each barrel contains an idle system with an adjustable needle valve, a main metering system, an accelerating pump discharge nozzle, primary and auxiliary venturi tubes, and a throttle valve. The throttle valves of both barrels are mounted in line on one shaft.

Figure 44 illustrates the mixture flow through the intake manifold.

Float System—In the float system (see Fig. 45), fuel flows past the needle valve into the float chamber where the fuel is maintained at a definite level by the float. The float chamber is vented internally by a vent tube located in the air horn and externally by a small hole located just above the gasoline inlet.

Idle System—In the idle system, the fuel flows from the float chamber through the main metering jet up through the idle tube which meters the fuel. It then flows through a passage where air is allowed to enter the system and is mixed with the fuel. The mixture then flows down to the two discharge ports (see Fig. 46). Additional air is also picked up through another air bleed located just above the discharge ports (see Fig. 46). The air bleed just above the discharge ports also has another function. With the tube extending slightly into the air stream, a very small quantity of fuel flows through the tube when operating in the high speed range. This means that in this range there is a continuous flow of fuel through the idle system down to this air bleed, thereby making immediately available a supply of fuel to discharge from the idle discharge holes as soon as the throttle is closed and preventing any time lag.

During the closed throttle operation, the fuel and air mixture is discharged through the lower discharge port only. As the throttle is opened, additional fuel is supplied through the upper discharge port also. See Fig. 46. Further gradual opening of the throttle causes some fuel to be drawn through the main metering sys-

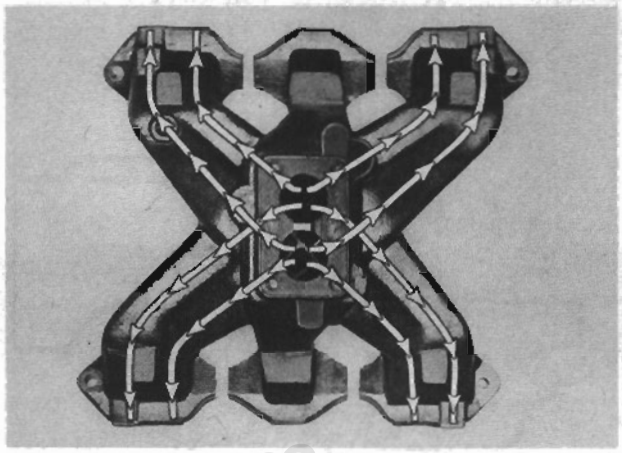


FIG. 44 MIXTURE FLOW THROUGH INTAKE MANIFOLD

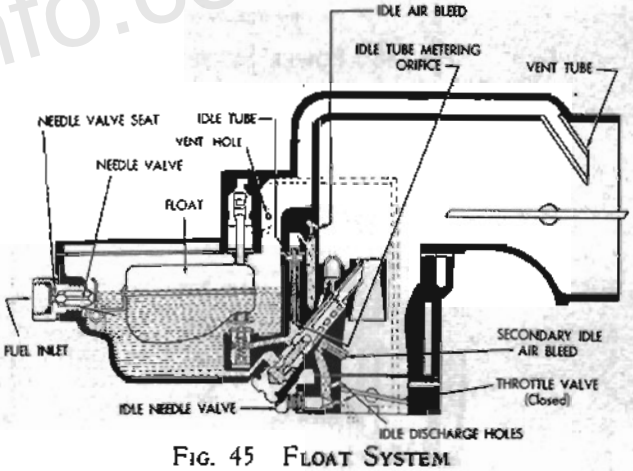


FIG. 45 FLOAT SYSTEM

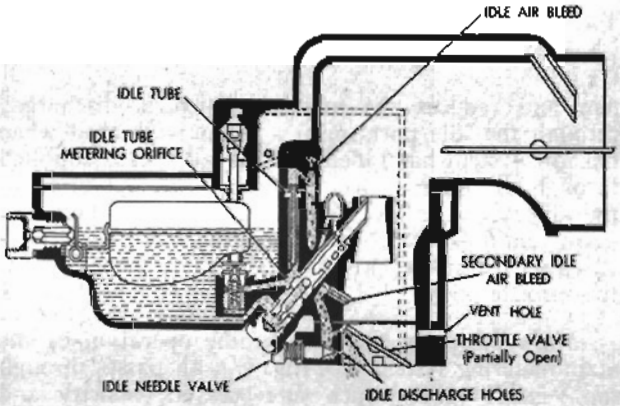


FIG. 46 IDLE SYSTEM

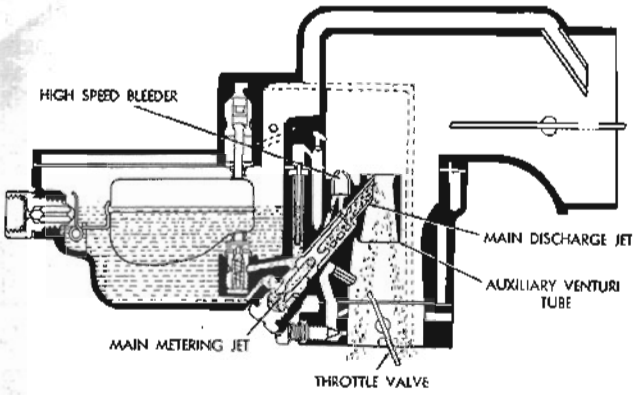


FIG. 47 MAIN METERING SYSTEM

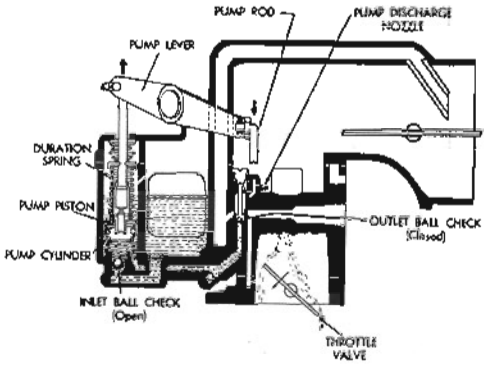


FIG. 50 ACCELERATING SYSTEM—RETURN STROKE

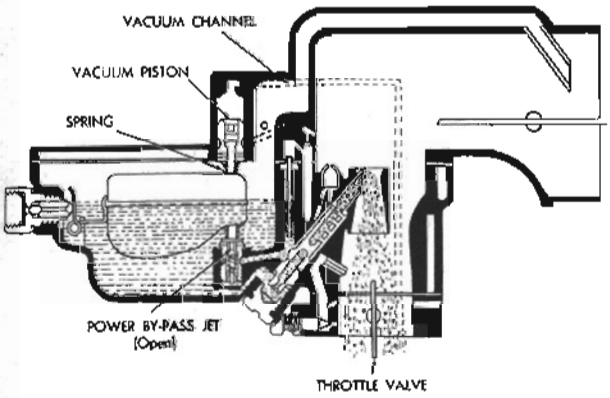


FIG. 48 POWER SYSTEM

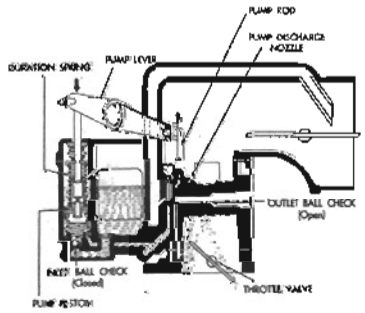


FIG. 49 ACCELERATING SYSTEM—DISCHARGE STROKE

tem and reduces the amount which is discharged through the idle ports until a point is reached when the idle system has faded out and all fuel is supplied through the main metering system. The operation of the idle system is the same in each barrel. There is a small vent hole located in each barrel above the throttle valve on the side opposite the discharge holes to vent the throttle body.

Main Metering System—In the operation of the main metering system (see Fig. 47), air passes through the venturi tubes which increases its velocity and creates a suction at the main discharge jet. This suction causes fuel to flow from the float chamber, through the main metering jet and main discharge jet. Air is drawn through the high speed bleeder into the main discharge jet so that a mixture of fuel and air is discharged from the jet into the air stream. The main discharge jet is designed so that if any vapor bubbles are formed in the hot gasoline, the vapors follow the outside channel around the jet instead of passing through the jet tube. These vapor bubbles collect in the dome-shaped high speed bleeder and are vaporized at that point, thus preventing percolation.

Power System—The power system (see Fig. 48) supplies a richer mixture for maximum power or high speed operation. During part throttle operation, the vacuum of the manifold acting on the power piston cylinder is sufficient to hold the piston in the up position against the tension of the spring. If more fuel is required than can be supplied through the main metering jet, the opening of the throttle at this point decreases the manifold vacuum enough to allow the piston spring to move the piston down and open the by-pass jet. Opening of the by-pass jet then allows additional fuel to flow through the by-pass passage to the main discharge jet.

Accelerating System—The accelerating system supplies momentarily an extra quantity of fuel which is necessary for smooth and rapid acceleration when the throttle is suddenly opened. When the throttle valve is opened (see Fig. 49), the piston moves down exerting a pressure on the fuel which closes the inlet check ball and lifts the outlet ball off its seat. The fuel then flows past the outlet check ball, is metered through small orifices, and discharged at the nozzles. This occurs only momentarily. The pump duration spring provides a follow-up action so that the discharge carries out over a period of time. As the throttle is closed (see Fig. 50), the pump piston moves up creating a suction in the passage causing the outlet ball to seat and lifting the inlet ball off its seat. Opening of the inlet draws a new supply of fuel from the float chamber into the pump cylinder. The outlet check ball prevents air from being drawn into the pump cylinder on the upward stroke of the piston.

Automatic Choke—The automatic choke control is of the hot air type and is mounted at the side of the carburetor on the air horn assembly. Filtered air is conducted through a flexible hose to a shroud-and-tube assembly which projects into the exhaust cross-

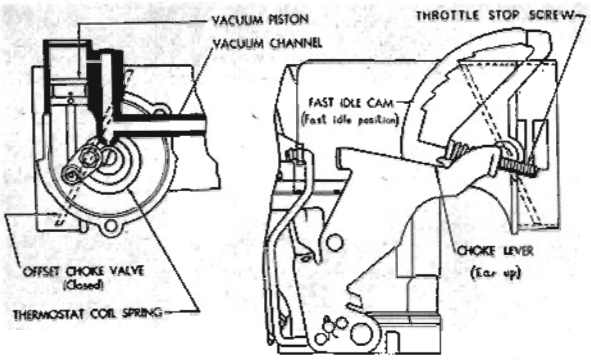


FIG. 51 AUTOMATIC CHOKE—ENGINE COLD

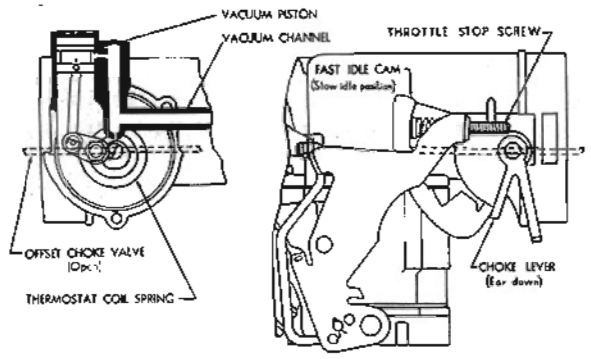


FIG. 52 AUTOMATIC CHOKE—ENGINE HOT

over in the intake manifold. The hot exhaust gasses surrounding the tube heat the filtered air, and it is then transmitted through the choke stove to the thermostat chamber. This heated air governs the tension of the thermostat spring. A fast idle cam operating in conjunction with the automatic choke provides proper throttle opening for a cold engine and prevents the engine from stalling during the warm-up period.

When the engine becomes cold, the thermostat also cools and gradually gains tension. The thermostat is unable to close the choke valve until the throttle is opened. It is therefore necessary to depress the accelerator pedal slightly and then allow it to return to normal position before making a start. Opening the throttle permits the throttle stop screw to be moved away from the fast idle cam. This allows the choke valve to close in accordance with the thermostat tension. The throttle stop screw then comes to rest on a higher step of the fast idle cam shown in Fig. 51. This provides the proper throttle opening for the prevailing engine temperature. The choke valve is held in the closed position during the cranking period by the tension of the thermostat.

When the engine begins to fire, the manifold vacuum thus created pulls the vacuum piston, opening the choke valve against the tension of the thermostat. Sufficient air is thereby admitted to give a satisfactory running mixture. When the engine continues to run, it is necessary to open the throttle slightly, procedure which ordinarily occurs when driving the car away. If the car is permitted to stand and idle while warming the engine, the throttle should be opened slightly and then allowed to return to a slower idle position. As the choke valve opening is increased, the fast idle cam is allowed to revolve so that the throttle stop screw comes to rest on a lower step when the throttle is opened and then permitted to close.

While the engine continues to run, the amount that the choke valve is opened against the tension of the thermostat spring is governed by the quantity of inrushing air past the off-center choke valve and the force exerted by the vacuum piston.

Heated air is transmitted into the thermostat chamber where the thermostat spring gradually absorbs sufficient heat until it does not offer any further resistance to the choke valve opening. At the same time, the fast idle cam rotates until the throttle stop screw is at a normal idle position. See Fig. 52.

Removal and Installation—Stromberg WW-6-117

Disconnect and remove the carburetor air cleaner. Unhook the throttle return spring and the throttle actuating spring. Disconnect the spark modifier pipe and the fuel pipe at the carburetor. Disconnect the automatic choke-to-manifold pipe and slip the flexible hose off the filtered air intake tube on the carburetor. Remove the nuts and shakeproof washers and lift the carburetor off the manifold studs. Discard the manifold-to-carburetor gasket.

Using a new gasket, mount the carburetor on the manifold studs, tightening the mounting nuts alternately. Connect the spark modifier and fuel pipes. Connect the automatic choke-to-manifold pipe and slip the flexible hose over the filtered air intake tube. Hook the throttle return and the throttle actuating spring.

Set idle speed and adjust the idle mixture.

Disassembly—Stromberg WW-6-117

Disconnect the accelerating pump rod (2, Fig. 53) from the accelerating pump lever (1). Remove the air horn attaching screws and lock washers and lift

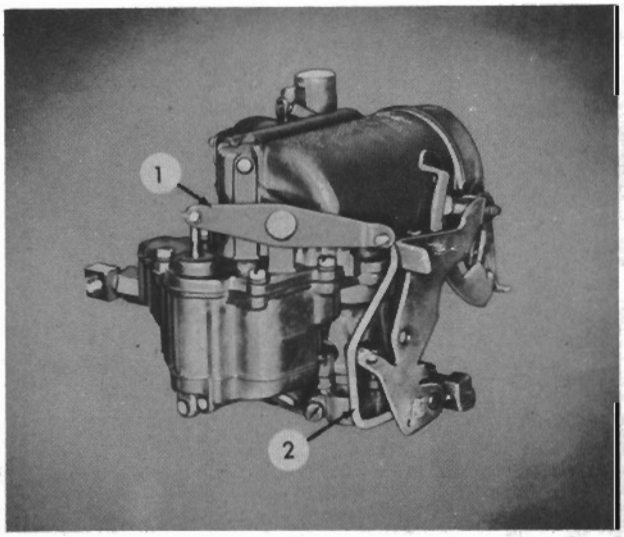


FIG. 53

1. Accelerator pump lever 2. Accelerator pump rod

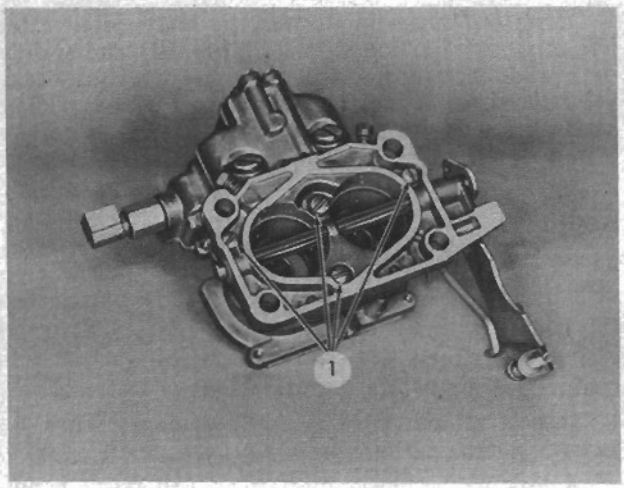


FIG. 57

1. Throttle body retaining screws

from the main body. Tip the main body and remove the inlet check ball from the accelerating pump well. Invert the assembly and remove the throttle body retaining screws (1, Fig. 57) and lock washers. Separate the main body from the throttle body and remove the gasket.

Remove the main metering jet plugs and gasket (19, Fig. 58). Then, using Tool No. J-1561, remove the main metering jets (see Fig. 59). With Tool No. KMO-269-S-4, remove the main discharge jets (see Fig. 60). Remove the pump discharge nozzle screw (1, Fig. 61) and gasket (2). Remove the discharge nozzle (3) and gasket (4). Place the hand on top of the main body, invert the body, and catch the pump outlet check ball (5).

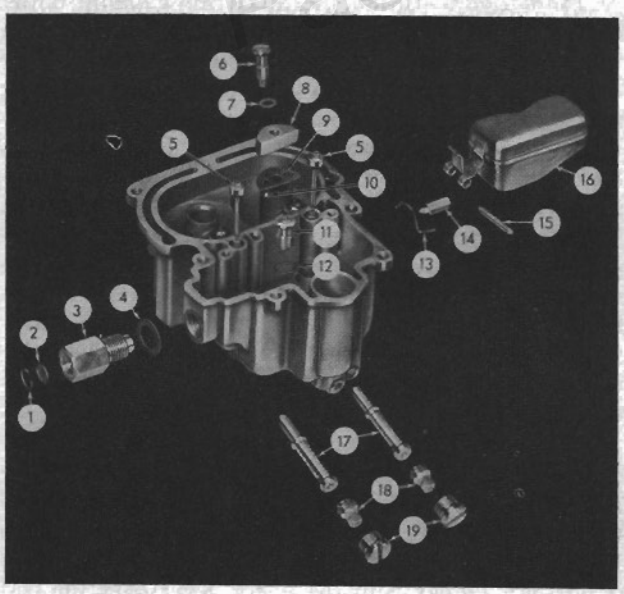


FIG. 58

1. Screen clip
2. Screen
3. Needle valve seat
4. Gasket
5. Idle tube
6. Pump discharge nozzle screw
7. Gasket
8. Pump discharge nozzle
9. Gasket
10. Outlet ball check
11. Power jet
12. Gasket
13. Float pin clip
14. Float needle
15. Float pin
16. Float
17. Main discharge jets
18. Main metering jets
19. Metering jet plugs

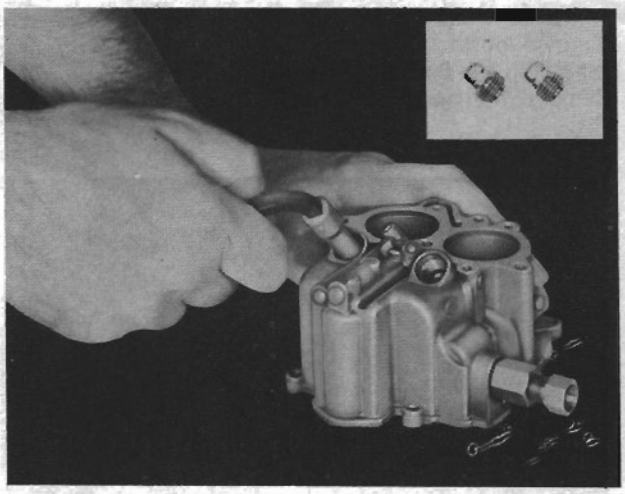


FIG. 59

Unscrew the inlet pipe fitting on the main body and, using the end of the Plunger Tool No. J-4498, remove the strainer screen retainer. Be careful not to damage the screen with the tool. Then remove the screen.

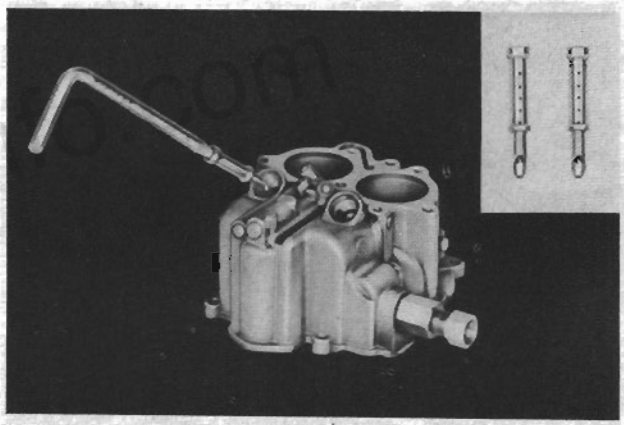


FIG. 60

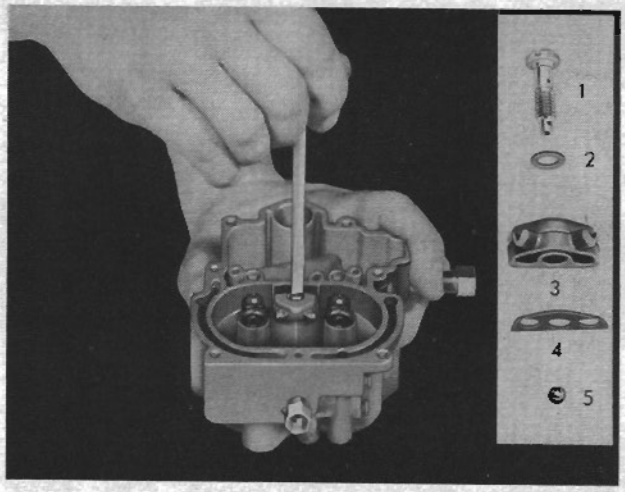


FIG. 61

1. Pump discharge nozzle screw
2. Gasket
3. Pump discharge nozzle
4. Gasket
5. Pump outlet ball check

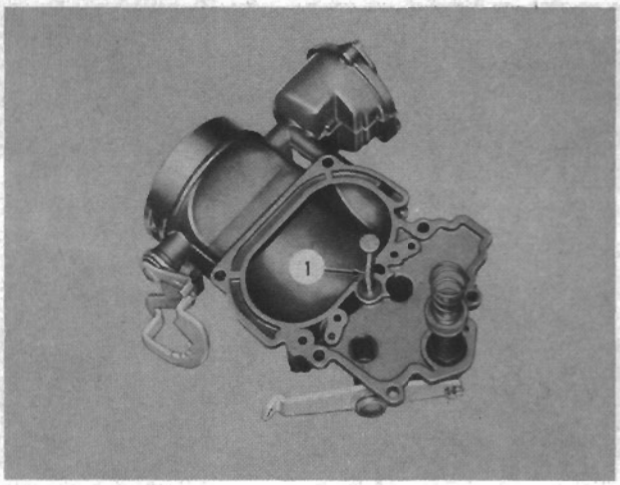


FIG. 65
1. Vacuum piston

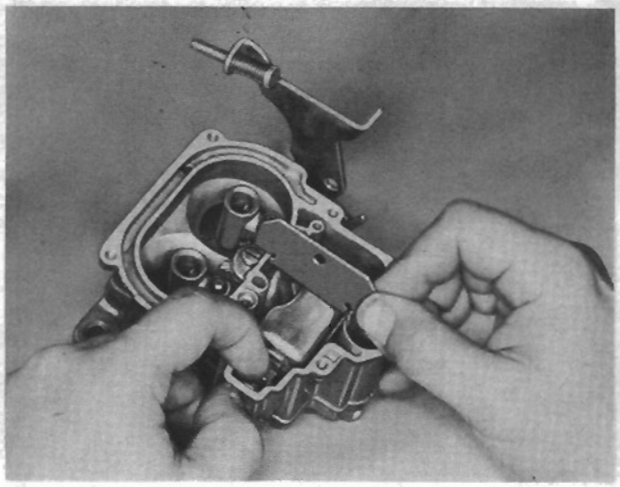


FIG. 66

Air Horn—Install the vacuum piston in the air horn and stake-in the retaining washer in two places (see Fig. 65). Install the accelerating pump duration spring and washer on the piston rod. Compress the spring and install the retainer in the groove of the rod. Slip the retainer spring down over the piston rod and then install the plain washer and felt washer. Place the gasket on the air horn. Insert the end of the piston rod through the flange of the air horn. Install the end of the piston rod in the pump lever and install a new cotter key.

Check the float level setting. Place the Float Level Gage J-5475 on the main body across the center of the float while holding the float lip firmly against the needle valve (see Fig. 66). To make an adjustment, use Tool No. KMO-269-S-5 and bend the float lip next to the float pin.

Place the accelerating pump spring on the end of the pump plunger. Invert the assembly, align the air horn gasket with the air horn, and guide the pump piston into the pump cylinder. Position the air horn on the main body and install the retaining screws.

Install the accelerating pump rod. The accelerating pump rod should be installed in the center hole of the throttle lever for normal operating conditions.

It may be necessary to lengthen or shorten the pump stroke to increase or decrease the fuel requirements during acceleration. Place the pump rod in the lower hole of the throttle lever to lengthen the stroke and in the upper hole to shorten the stroke.

STROMBERG WW-6-117 ADJUSTMENTS

Float—Remove the air horn assembly from the main body. Place the Float Level Gage J-5475 on the main body across the center of the float while holding the float lip firmly against the needle valve (see Fig. 66). To make an adjustment, use Tool No. KMO-269-S-5 and bend the float lip next to the float pin.

Choke—Loosen the cover screws. Set the arrow on the cover one notch lean from the boss on the choke housing (see Fig. 67). Tighten the cover screws.

Fast Idle—With the choke valve fully closed and the fast idle cam in the fast idle position, one-half the diameter of the button at the end of the throttle stop screw should rest against the step of the fast idle cam

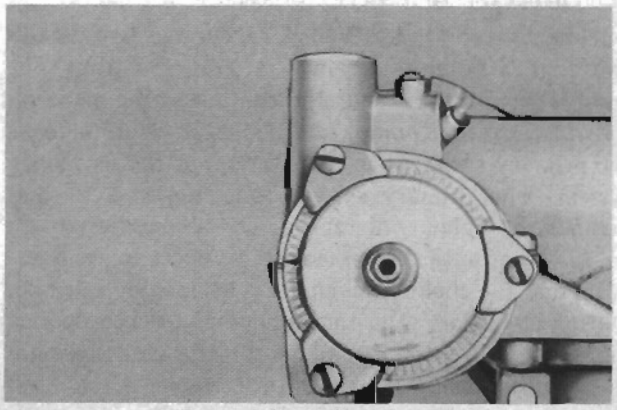


FIG. 67

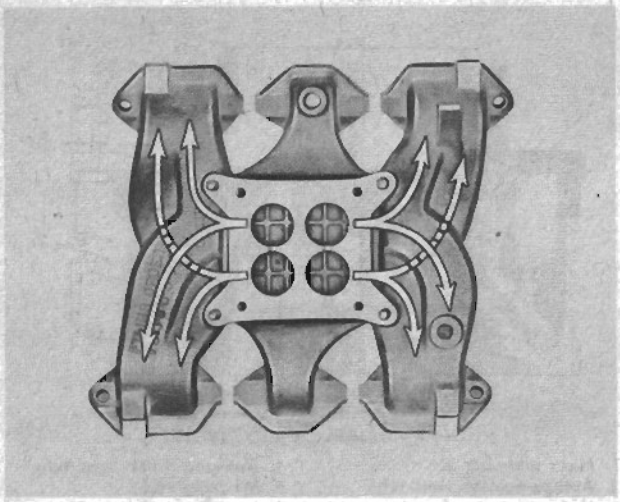


FIG. 70 MIXTURE FLOW THROUGH INTAKE MANIFOLD OF PRESIDENT Y AND SKYHAWK MODELS

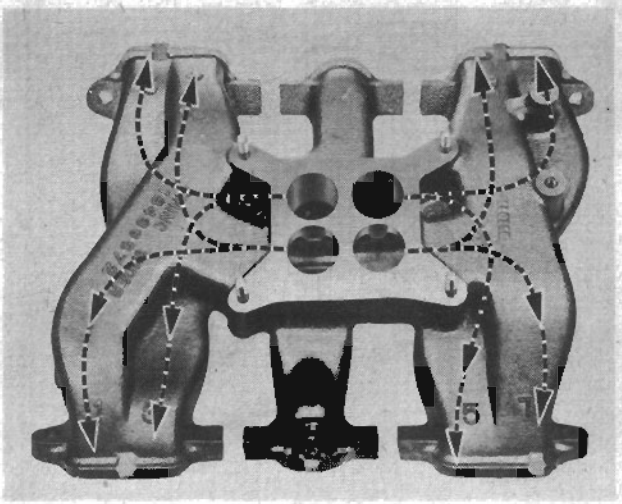


FIG. 71 MIXTURE FLOW THROUGH INTAKE MANIFOLD OF GOLDENHAWK MODEL

Figures 70 and 71 illustrate the mixture flow through the intake manifolds on President Y and Skyhawk, and Goldenhawk models respectively.

The carburetor has five systems, as follows: float systems, low speed system, high speed systems, pump system, and choke system.

Float Systems—The purpose of the float systems is to maintain an adequate supply of fuel at the proper level in the fuel bowls. The fuel bowls are separated by a partition in the body casting in order to control the fuel movement, but they are connected by a passage (3, Fig. 72) formed in the body casting which effects a balance of the fuel levels and air pressures between the two bowls. The fuel pipe connection is on the primary section of the carburetor. Fuel is supplied to the primary and secondary intake needles and seats through a passage in the bowl cover. There are three fine mesh strainer screens in the bowl cover, one at the fuel inlet and one at each float needle seat.

Setting the floats accurately to specifications assures an adequate supply of fuel in the bowls for all operating conditions. Float adjustments must be made with the bowl gasket removed. The floats must be checked vertically for the specified distance between the bowl cover and top of the floats. The floats must be adjusted laterally so that the sides of the floats are parallel to but just clear the sides of the gage. Accurate float adjustments are most important in order to obtain proper performance.

The fuel bowls are vented to the inside of the air horn by vertical vent tubes and to the atmosphere by drilled passages in the air horn. Bowl vents are calibrated to provide proper air pressure above the fuel at all times.

Low Speed System—Fuel for idle speeds and early part throttle operation is provided for by the low speed system. Figure 73 shows the low speed system of a Skyhawk and President Y carburetor which is typical of the Goldenhawk carburetor. Fuel enters the idle wells through the metering rod jets in the primary system of the carburetor. The secondary system does not have a low speed system.

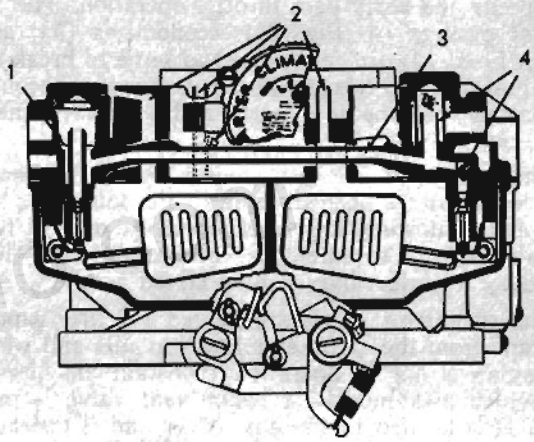


FIG. 72 FLOAT SYSTEM

1. Strainer
2. Bowl vents
3. Fuel passage
4. Strainers

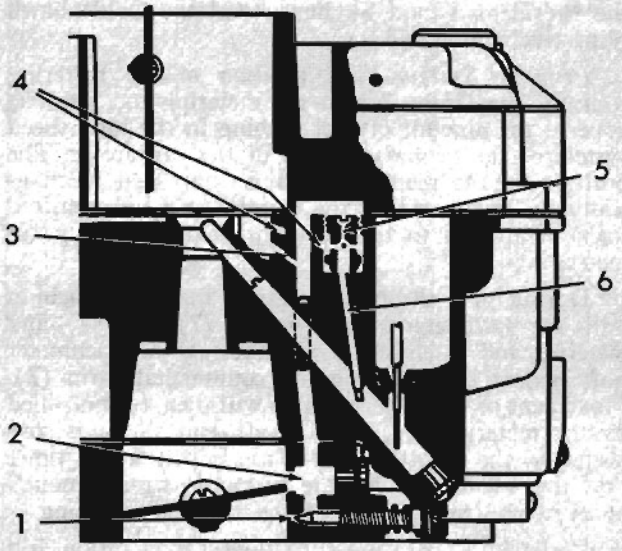


FIG. 73 LOW SPEED SYSTEM

1. Idle mixture adjusting screw port
2. Idle port
3. Air bleed
4. By-pass passage
5. Economizer
6. Low speed jet tube

ing jets. Metering rods are not used. Throttle valves of the secondary system remain closed until the primary throttle valves have been opened a predetermined amount (about 40° of the primary throttle lever travel). Beyond this point the secondary throttle is engaged and both sets of throttle valves arrive at wide open throttle position at the same time.

On the Goldenhawk model carburetor, the auxiliary valves (2, Fig. 76) are held closed by weight of the counterbalance with outer end of the shaft. The valves cannot open until the secondary throttle valves are open and even then will not open until the engine speeds reaches approximately 2400 RPM. In this way, fuel discharged into the secondary side is more closely regulated.

The secondary throttle valves are locked closed, regardless of the primary throttle valve position, during choke operation to facilitate cold engine starting.

Anti-Percolator—To prevent vapor bubbles in the nozzle passages and low speed wells from forcing fuel out of the nozzles, anti-percolator passages and calibrated plugs are used. They vent the vapors and relieve the pressure before it is sufficient to force the fuel out of the nozzles and into the engine intake manifold.

Pump System—The accelerating pump system is contained only in the primary section. This system provides the measured amount of fuel necessary to provide smooth engine performance during acceleration.

When the throttle is closed, the pump plunger moves upward in its cylinder and fuel is drawn into the pump cylinder through the inlet passage past the intake ball check (2, Fig. 78). The discharge needle (4) is seated at this time to prevent air from being drawn into the cylinder. When the throttle is opened, the pump plunger moves downward, forcing fuel out through the discharge passage, past the discharge needle, and out the pump jets. During this function, the inlet valve is closed to prevent the fuel from being forced back into the bowl. When the throttle is suddenly opened, the plunger shaft will telescope, and the pump spring will be temporarily compressed, causing a smoother pump discharge of longer duration as the spring returns.

At higher speeds, the accelerating pump discharge is no longer necessary to insure smooth performance. When the throttle valves have been opened a predetermined amount, the pump plunger bottoms in the pump cylinder, thereby eliminating pump discharge.

During high speed operation, a vacuum exists at the pump jets. To prevent fuel from being drawn through the pump circuit, the passage to the pump jets is vented by a cross passage to the carburetor bowl above the fuel level. This permits air instead of fuel to be drawn from the pump jets.

After the engine is stopped, the fuel in the accelerating pump well warms up and expands. On the Goldenhawk carburetor, to prevent the fuel from being forced past the discharge needle, a metal disc type valve is used with the plug (3) and permits the fuel to enter the float chamber. The valve is closed during operation.

Choke System—The automatic choke system (see Fig. 79) provides a correct mixture necessary for quick cold engine starting and warm-up.

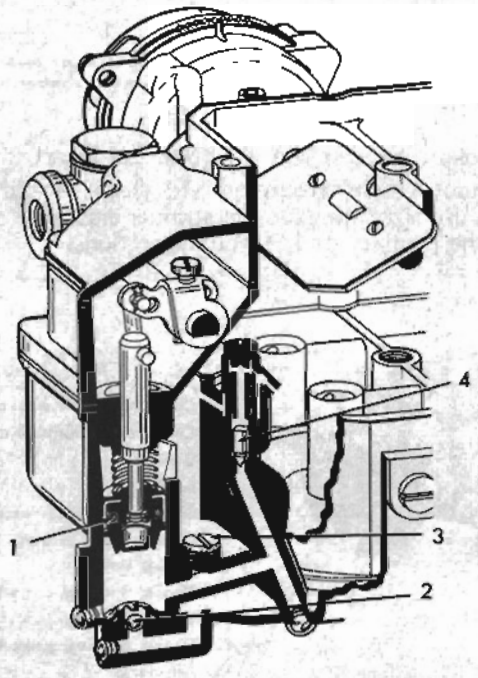


FIG. 78 PUMP SYSTEM

1. Pump plunger
2. Inlet ball check
3. Plug
4. Pump discharge needle

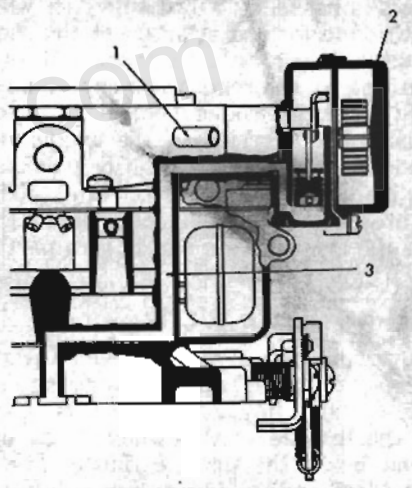


FIG. 79 CHOKE SYSTEM

1. Choke air supply tube
2. Choke coil housing
3. Vacuum passage to manifold

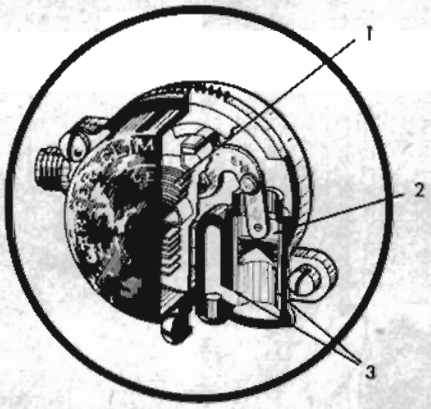


FIG. 80 CROSS SECTION OF CHOKE HOUSING

1. Thermostatic coil
2. Piston
3. Choke piston cylinder slots

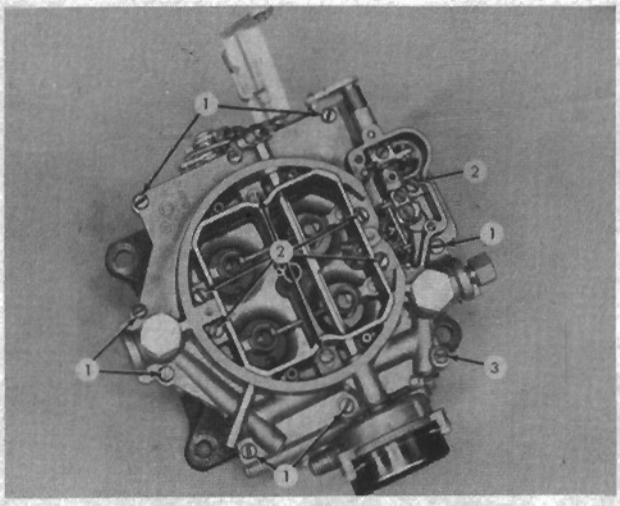


FIG. 84

1. Short air horn retaining screws
2. Long air horn retaining screws
3. Medium air horn retaining screws

Climatic Control—Loosen the screw and slide the choke lever (12, Fig. 83) off the shaft. File off the staked ends of the choke valve screws (6). Remove the screws and lift the choke valve (7) off the shaft. Remove three automatic choke coil housing screws and retainers (1). Remove the automatic choke coil housing (2), gasket (3), and baffle plate (4). Rotate the choke shaft counterclockwise to slip the piston out of the housing bore; then remove the shaft and piston assembly (5). Remove three choke piston housing attaching screws (8) and remove the housing (9) and gasket (10).

Air Horn—Remove the dust cover screws and washers, and remove the cover and gasket. Remove 16 air horn attaching screws. Note there are three different lengths: eight short screws (1, Fig. 84), seven long screws (2), and one medium length screw (3). They must be installed in their proper locations as shown in Fig. 84. *Note.—On cars equipped with a dash pot, the mounting bracket screws will be longer than screws (1) in proportion to the thickness of the mounting bracket.* Carefully lift the air horn assembly straight upward from the carburetor body assembly (see Fig. 85).

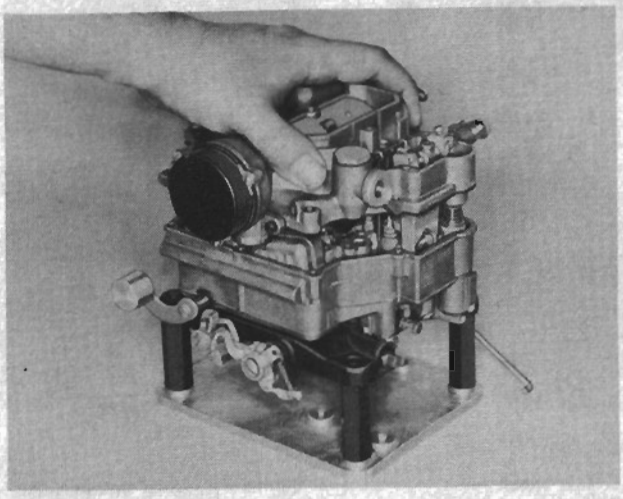


FIG. 85

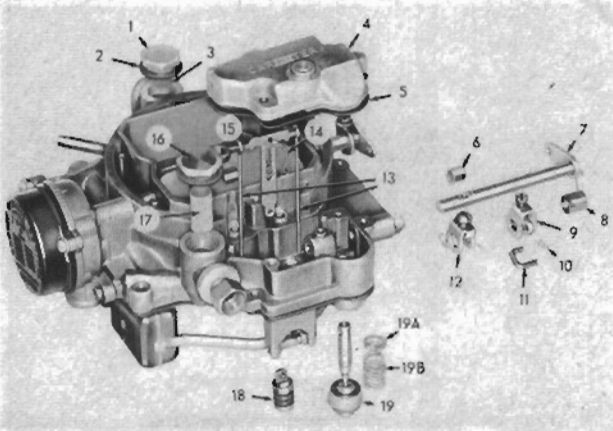


FIG. 86

1. Strainer nut
2. Gasket
3. Strainer
4. Dust cover
5. Cover gasket
6. Spacer collar (56H)
7. Countershaft
8. Throttle return spring
9. Pump arm
10. Hairpin
11 Link
12. Metering rod arm
13. Metering rod
14. Metering rod spring
15. Vacumeter piston
16. Strainer nut
17. Strainer
18. Vacuum piston
19. Pump plunger
19A. Spring retainer
19B. Spring

Remove the pin spring (10, Fig. 86) from the pump connector link (11), slip the link out of the pump shaft and arm, and remove the pump plunger (19), spring (19B), and retainer (19A) as an assembly. Loosen but do not remove the screw holding the pump arm (9) to the pump operating lever and countershaft (7). Loosen but do not remove the screw from the metering rod arm (12). On Goldenhawk models, remove the vent arm (3, Fig. 87) and screw. Using a tag wire, unwind the throttle return spring (8, Fig. 86). Withdraw the pump operating lever and countershaft assembly (7) from the air horn and slip the metering rod arm (12), spacer (6), and pump arm (9) off the shaft. Unhook the metering rod spring (14) from the rods and remove both metering rods (13) (by rotating them off the link).

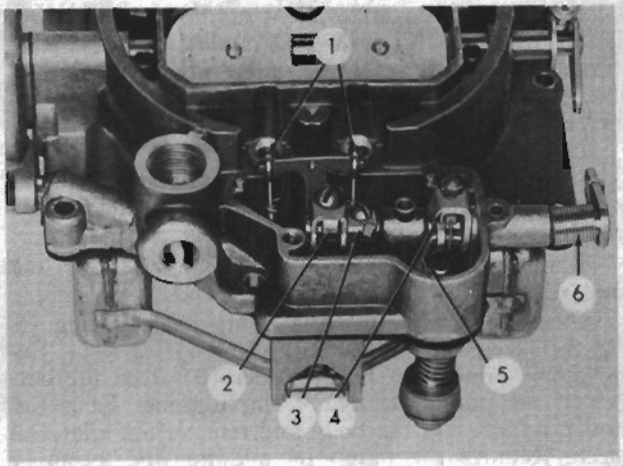


FIG. 87

1. Metering rods
2. Metering rod arm
3. Vent arm
4. Pump arm
5. Pump arm link
6. Throttle return spring

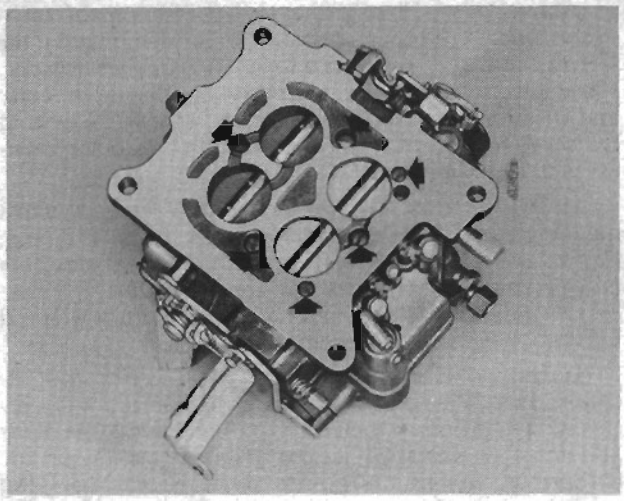


FIG. 91

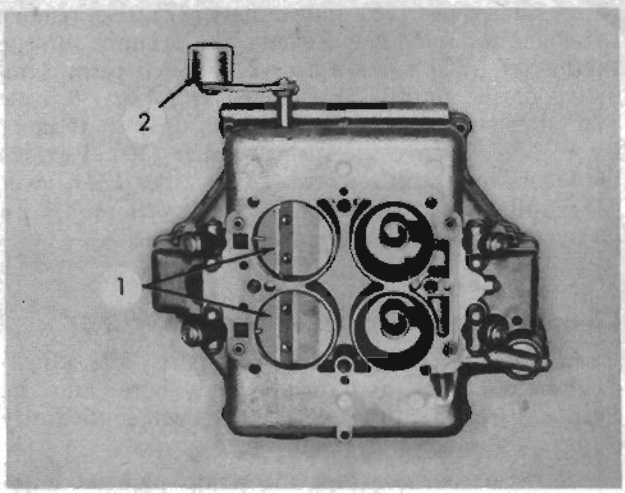


FIG. 92

1. Auxiliary throttle valves 2. Counterweight

(2) and main discharge nozzles (3) are pressed into place and should not be removed. Note that the secondary system anti-percolator plugs (4) are not drilled. Two drilled passages perform the anti-percolator function at the secondary main discharge nozzles instead.

Remove the throttle body-to-main body attaching screws indicated by arrows in Fig. 91. Separate the throttle body and gasket from the main body. The two screws at the outer corners of the primary section of the carburetor are smaller diameter and longer than the other screws. The two screws at the centerline between the primary and secondary sections and the one between the idle passages at the primary section are the same thread size but slightly longer than the screw on the secondary side.

On the Goldenhawk carburetor, the auxiliary throttle valves (1, Fig. 92), may be removed if necessary by removing the attaching screws. If valves are to be removed, make sure they are marked so that they will be reinstalled in the original position.

Throttle Body—Remove the idle adjustment screws and springs (14, Fig. 93). Remove the fast idle cam screw (5) and remove the fast idle cam assembly, which consists of the secondary lockout lever (8), cam trip lever (7), and fast idle cam and spring assembly (6). Remove the primary and secondary throttle con-

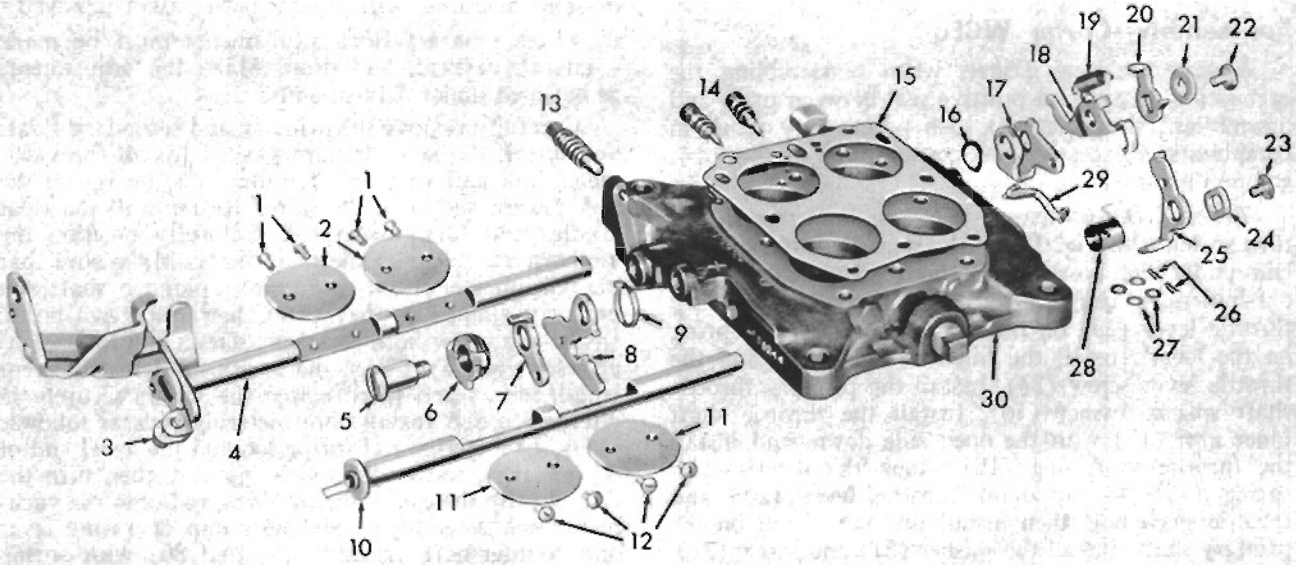


FIG. 93

1. Throttle valve screws
2. Throttle valves
3. Fast idle screw
4. Primary throttle shaft
5. Fast idle cam screw
6. Fast idle cam and spring assembly
7. Dechoke lever
8. Secondary lockout lever
9. Secondary lockout lever spring
10. Secondary throttle shaft
11. Throttle valves
12. Screws
13. Low idle screw
14. Idle mixture screws
15. Gasket
16. Spring washer
17. Throttle shaft inner arm
18. Primary throttle inner lever
19. Spring
20. Primary throttle outer lever
21. Washer
22. Primary throttle shaft screw
23. Secondary throttle shaft screw
24. Washer
25. Lever
26. Throttle connector pin springs
27. Washers
28. Return spring
29. Connector rod
30. Throttle body

Climatic Control — Install the automatic choke housing and gasket with screws and lock washers. Slip the choke shaft and piston assembly through the air horn, turn the shaft, and guide the piston into the cylinder. Place the choke valve in position on the choke shaft with the "C" (in the circle) on the valve as seen from the top of the carburetor. Center the choke valve and install the new screws securely. Position the choke baffle plate on the housing and install the choke coil housing and new gasket on the piston housing with the index mark at the bottom. Rotate the coil housing counterclockwise until the index mark on the coil housing is one mark counterclockwise from the index mark on the choke housing (one mark rich) on the President and Skyhawk models and set on the index mark for the Goldenhawk. Install the choke connector rod in the choke operating lever and choke lower lever. Install the spring pins. Install the strainer plug gasket and strainer in the primary section, then install the strainer plug and gasket in the secondary section.

CARTER WCFB ADJUSTMENTS

Note.—It is important that the following adjustments be made in the exact sequence given.

Float—Remove the air horn assembly as outlined in Carburetor—Disassembly under Air Horn. Remove the float assemblies to permit removal of the air horn gasket, then reinstall the floats. The float adjustments must be checked with the air horn gasket removed.

Float Gage J-5458 is used for both floats on the President Y and Skyhawk models. Float Gage J-5458 is used for the secondary float, and Float Gage J-5457 is used for the primary float on the Goldenhawk.

Three separate float adjustments must be made —lateral, vertical, and drop. To make the lateral and vertical adjustments, invert the air horn assembly so that the float rests on the seated needle. Place the correct float gage under the float with the notched end of the gage fitted over the edge of the casting (see Fig. 94 and 95). With proper lateral adjustment, the sides of the floats should just clear the upright of the float gage. Adjustment should be made by bending the arms of the float. Check the vertical adjustment with the float gage in the same position. The floats should just clear the horizontal portion of the gage (see Fig. 94 and 95). Adjust by bending at the center of the float arms. Support the air horn in the upright position to check the float drop. On President Y and Skyhawk models, there should be 11/16" (17,46 mm.) between the center of the floats and the machined surface of the air horn, as shown in Fig. 96. On Golden-

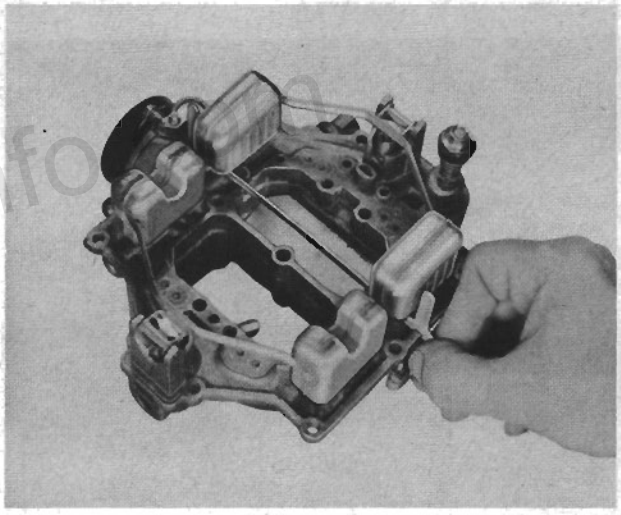


FIG. 95

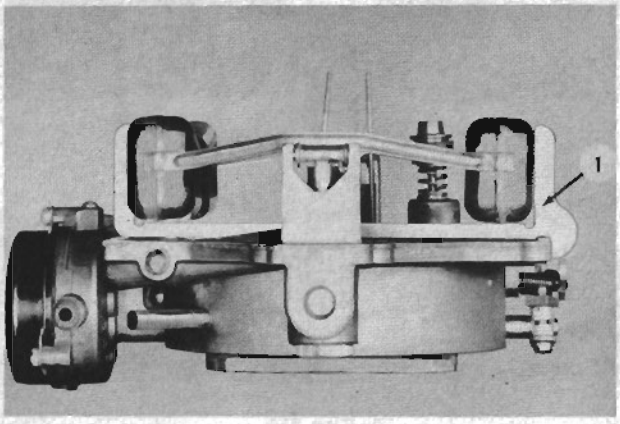


FIG. 94
1. Float gage

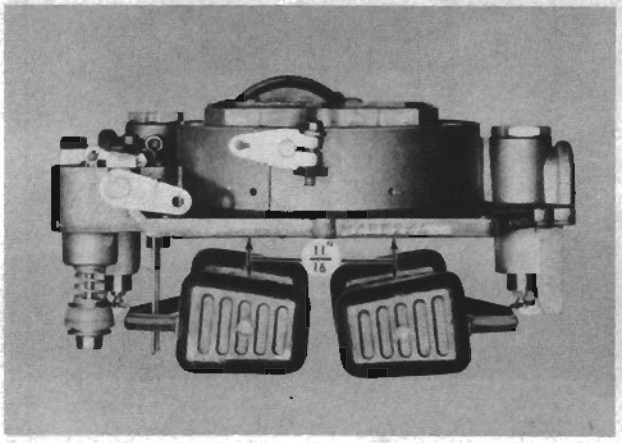


FIG. 96

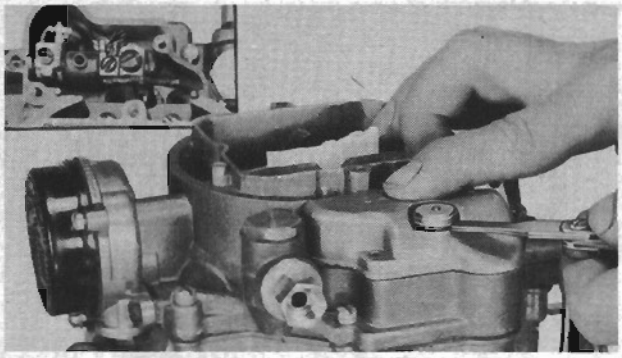


FIG. 102

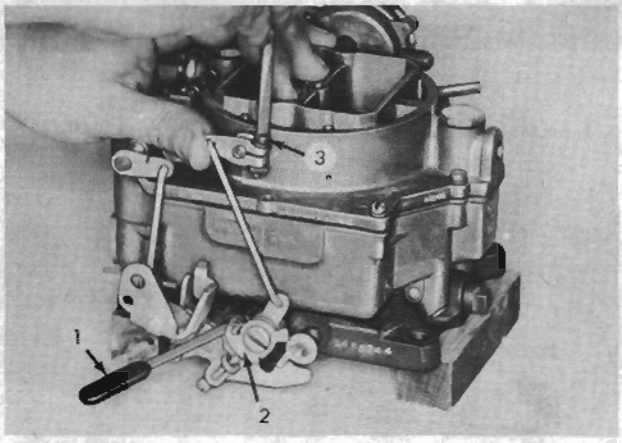


FIG. 103

1. Feeler Gage
2. Fast idle cam
3. Clamp screw

adjustment, hold the vacumeter link and rods at their bottomed position and open the throttle. There should be no lost motion before the link and rods start to move upward when the throttle lever is moved from its closed position. Install the dust cover and new gasket.

Vapor Vent (Goldenhawk only)—With the throttle valves closed and the choke blocked open, the vapor vent should open 1/16" (1,59 mm.). Using a feeler gage, measure between the metering rod dust cover and the lower edge of the vent cover (see Fig. 102). Adjustment of the vent valve is made by bending the tang on the vapor vent arm (see inset in Fig. 102).

Fast Idle—Loosen the choke lever clamp screw (3, Fig. 103) on the choke shaft. Insert a feeler gage (1) between the lip of the fast idle cam (2) and the boss of the flange casting. Use a .020" (0,51 mm.) gage for President Y and Skyhawk and .025" (0,65 mm.) for the Goldenhawk. Hold the choke valve closed and take the slack out of the linkage by pressing the choke lever toward the closed position. Hold in place and tighten the clamp screw (3).

With the choke valve closed tightly, adjust the fast idle adjusting screw (1, Fig. 104) until the proper clearance is obtained between the primary throttle valve and the throttle bore on the side opposite the idle port. On President Y and Skyhawk models there should be .024" (0,61 mm.) and on Goldenhawk models there should be .023" (0,58 mm.) clearance. Adjust the fast idle adjusting screw (1) so that it just contacts the high step of the cam.

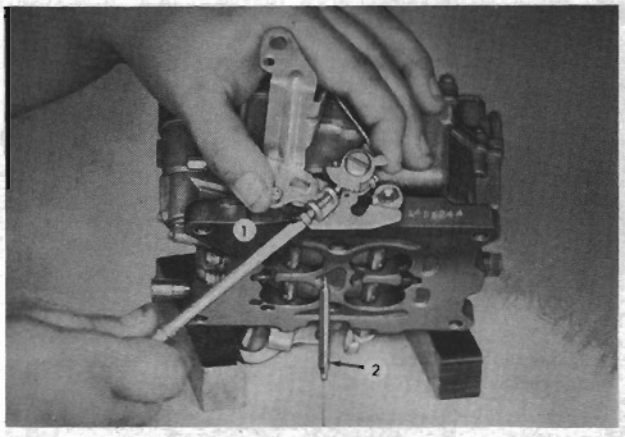


FIG. 104

1. Fast idle adjusting screw
2. Wire gage

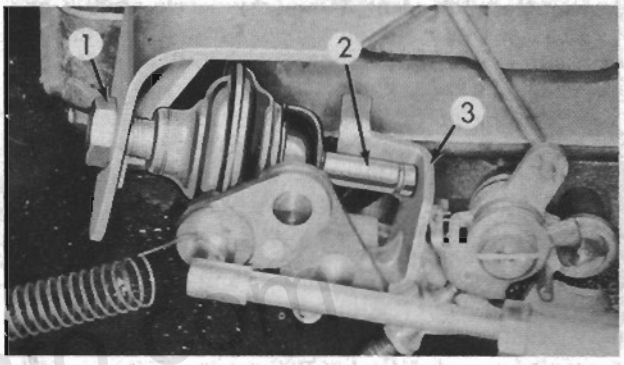


FIG. 105

1. Lock nut
2. Plunger
3. Throttle arm

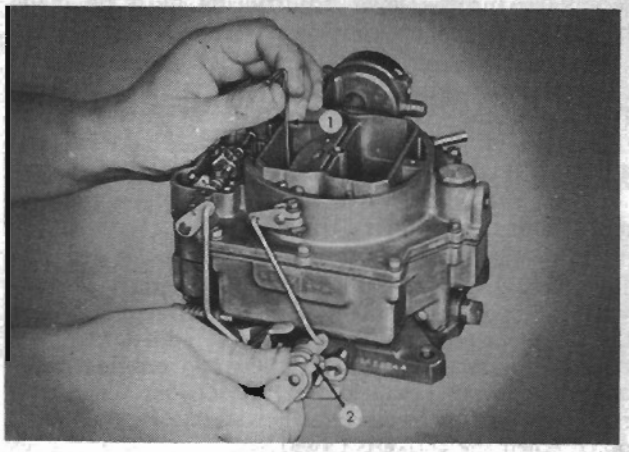


FIG. 106

1. Gage
2. Unloader lip

Throttle Return Check(Dash Pot)—On President Y and Skyhawk models with automatic transmission, after completing the fast idle adjustment and with the throttle closed against the high idle step of the cam, adjust the dash pot to provide 1/16" (1,59 mm.) clearance between the end of the dash pot plunger (3, Fig. 105) and the lip of the throttle arm. Tighten the lock nut (1) securely.

Unloader (Dechoke)—First, hold the choke valve wide open; then push the throttle wide open (see Fig. 106) and release the choke so it will close. While hold-

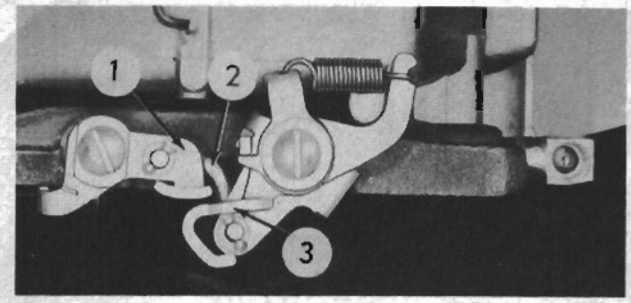


FIG. 107

1. Secondary throttle lever
2. Connecting link
3. Primary throttle lever

ing the throttle wide open, check the clearance between the lower edge of the choke valve and the wall of the air horn (see Fig. 106). There should be 1/8" (3,18 mm.) clearance on President Y and Skyhawk models and 9/32" (7,1 mm.) on the Goldenhawk. Bend the unloader lip (2), using Bending Tool J-1137, to obtain the proper choke valve clearance.

Secondary Throttle Lever—Primary and secondary throttle valves should reach the wide open position at the same time. To adjust, use Bending Tool J-5496 to bend the throttle operating rod (2, Fig. 107) at the upper angle. With primary and secondary throttle valves in a tightly closed position there should be .017" - .022" (0,43 - 0,56 mm.) clearance throttle lever shoes (1 and 3). To adjust bend the shoes of the primary lever.

Secondary Throttle Lockout—The secondary lockout is provided to prevent the possibility of opening the secondary throttle valves with the choke closed or partially closed with a cold engine. The fast idle and secondary throttle lever adjustments must be made before checking the secondary throttle lockout.

Crack the throttle valves and hold the choke valve closed tightly. Then close the throttle. The tang (1, Fig. 108 on the secondary throttle lever should engage the notch of the lockout lever (2). If necessary to adjust, bend the tang on the secondary throttle lever.

Hold the choke valve in the wide open position and operate the primary throttle valves.

With the choke open, the lockout lever (1, Fig. 109) should fall free, allowing the secondary throttle valves to open before the primary throttle valves reach the full open position. If necessary to adjust, bend the tang on the secondary throttle lever to provide clearance for proper operation of the lockout lever, and recheck for proper engagement with the lockout lever notch when the choke is closed.

Choke Setting—The control housing should be set so that the index mark of the coil housing is one notch counterclockwise from the center index mark on the choke housing (one notch rich) on the President and Skyhawk, and set on the index mark on the Goldenhawk.

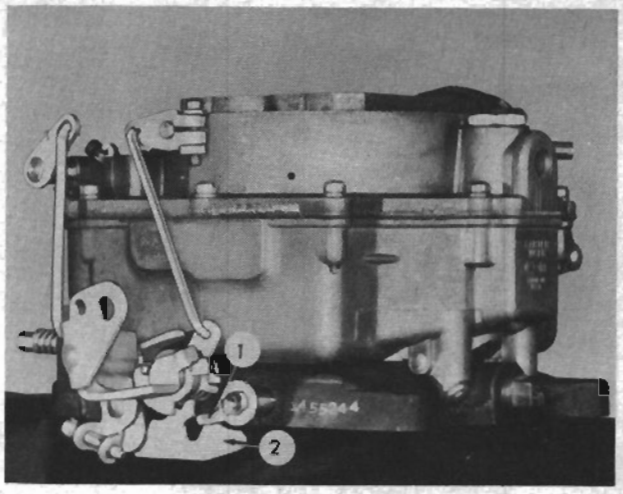


FIG. 108

1. Secondary throttle lever tang
2. Lockout lever

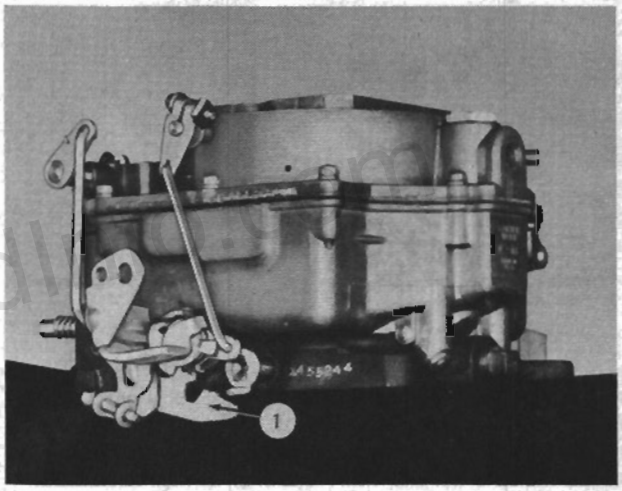


FIG 109

1. Lockout lever

Idle Adjustment—With the engine and transmission warm, adjust the throttle stop screw to obtain 550 to 600 engine rpm at normal idle. Turn the engine idle mixture adjustment screws as required to stabilize engine idle; then open the adjustment screws until the engine speed shows a slight drop.

METERING RODS AND JETS — HIGH ALTITUDE OPERATION

Metering rods and jets to provide the proper fuel-air ratio at different altitudes are available for all carburetors. Refer to the Parts Catalog to determine the size required.

CARBURETOR TOOLS

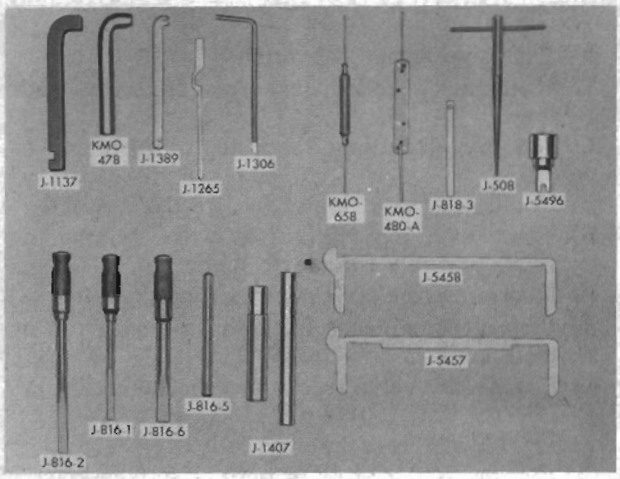


FIG. 110

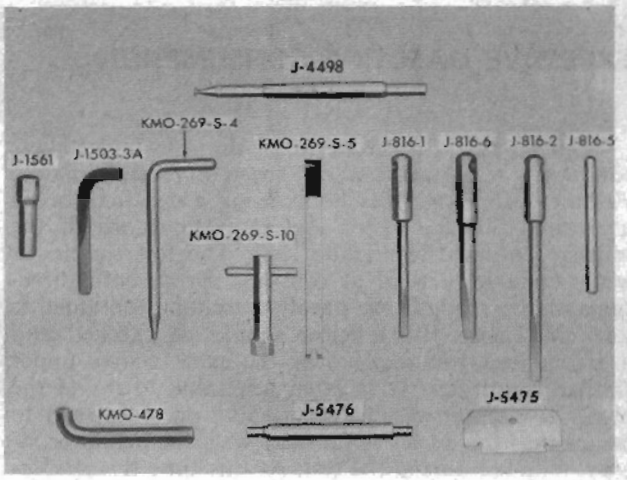


FIG. 111

The tools illustrated in Fig. 110 are required to service the Carter carburetors and those illustrated in Fig. 111 are required for the Stromberg carburetors. These tools are included in the Carburetor Tool Kit No. J-3261-C. A carburetor stand, No. J-5923A, is recommended as a holding fixture to facilitate disassembly and assembly and also to prevent damaging the throttle valves and linkage, which extend below the throttle body.

Kent-Moore Orig. Tool No.	Tool Name
J-1389	Adjusting Tool
J-818-3	Float Level Gage (3/16")
J-508	Jet Extractor
J-816-1	Jet Wrench (Screw Driver Bit 3/16" Blade)
J-816-2	Jet Wrench (Screw Driver Bit ¼" Blade)
J-816-6	Jet Wrench (Screw Driver Bit 5/16" Blade)
J-816-5	Jet Wrench Handle
J-1265	Metering Rod Gage 2.468
J-1306	Retainer Ring Remover
KMO-480-A	Wire Gage
J-5496	Bending Tool
KMO-478	Unloader Adjusting Tool
J-1137	Bending Iron
J-1407	Retainer Ring Installing Tool
J-4498	Inlet Screen Retainer Ring Installing Tool
J-1561	Metering Jet Wrench
J-1503-3A	Jet Wrench Handle
KMO-269-S-4	Main Discharge Jet Remover
KMO-269-S-10	Socket Wrench
KMO-269-S-5	Float Level Bending Tool and Vacuum Piston Wrench
J-5475	Float Level Gage
KMO-658	High Idle Cam Adjusting Gage
J-5458	Float Gage (3/16")
J-5457	Float Gage (⅛")

DIAGNOSIS

EXCESSIVE GASOLINE CONSUMPTION

DESCRIPTION

Before any corrective measures are undertaken, conduct a test run at a car speed of approximately 30 miles (48,3 km.) per hour, using a test tank or an accredited mileage tester. An accurate record of the mileage obtained should be kept. The test should be made on a level road at constant speed, both directions of the road. If the gasoline economy obtained is low, the causes listed below should be checked and a second test run made over the same course under similar conditions. It is often advisable to invite the owner to accompany the serviceman on a test run to insure that the owner is familiar with the actual economy obtained during the test. At this time the serviceman can explain that the type of operation has a material effect upon gasoline economy.

CAUSES

1. Caused by type of operation.
   a) Numerous starts and stops in congested traffic.
   b) Car operated on short trips only.
   c) Sustained high speed.
   d) Long periods of idle operation.
   e) Abnormally fast engine idle speed.
   f) Failure to use engine warming devices such as engine cooling system thermostat, radiator covers, etc., in cold weather.
2. Caused by units other than the carburetor.
   a) Faulty ignition due to:
      (1) Defective or incorrectly spaced spark plugs.
      (2) Incorrect timing (especially, late ignition).
      (3) Improperly spaced distributor points.
      (4) Incorrect distributor automatic or vacuum advance.
      (5) Weak ignition condenser.
      (6) Weak ignition coil.
      (7) Cracked or chafed wiring insulation.
   b) Restricted or partially clogged carburetor air cleaner.
   c) Leaks at gas tank or lines.
   d) Fuel pump diaphragm leakage.
   e) Excessive fuel pump pressure.
   f) Poor engine compression.
   g) Abnormal rolling resistance due to:
      (1) Dragging brakes.
      (2) Tight wheel bearings.
      (3) Excessive front wheel toe-in or toe-out.
      (4) Excessive friction in power transmitting units.
      (5) Underinflated tires.
   h) Partially clogged or restricted exhaust pipe, muffler, or tail pipe.
   i) Preignition.
   j) Engine clutch slippage.
   k) Defective torque converter.
   l) Speedometer (odometer) total mileage reads low.
3. Caused by carburetor improper adjustment or defect.
   a) Choke valve sticking or incorrectly adjusted.
   b) Float level too high, float valve leaking, or floats partially filled with fuel.
   c) Incorrect accelerator pump setting.
   d) Incorrectly adjusted or wrong metering rod or metering rod jet (Carter).
   e) Economizer valve stuck open or leaking.
   f) Internal leakage due to:
      (1) Cracks in carburetor body.
      (2) Jets not screwed in tight or bad gaskets.
      (3) Air bleeds plugged with dirt or carbon.
      (4) Pump discharge valve not seating properly.
   g) External leaks, e.g. main jet plugs or carburetor bowl gasket.
   h) Idle speed set too high.

MANIFOLD LEAKS—INTAKE AND EXHAUST

CAUSES

1. Loose manifold connections or leaks occurring in vacuum lines (intake manifold) or at carburetor flange.
2. Loose manifold nuts.
3. Insufficient threads on manifold attaching studs permitting nuts to bottom.
4. Distortion or misalignment existing at gasket surfaces on:
   a) Intake manifold.
   b) Exhaust manifold.
   c) Carburetor attaching flange.
5. Damaged or improperly installed gaskets.
6. Restriction in exhaust pipe, muffler, or tail pipe (excessive back pressure).

FUEL PUMP LEAKAGE AND INSUFFICIENT FUEL DELIVERY

CAUSES

1. Restricted gasoline tank cap vent.
2. Restricted or partially clogged gasoline tank-to-fuel pump line.
3. Air leak occurring at connections or in gasoline tank-to-fuel pump lines.
4. Restricted or partially clogged gasoline tank outlet pipe assembly.
5. Air leak occurring above fuel level in gasoline tank outlet pipe assembly.
6. Restricted or partially clogged fuel pump screen.
7. Fuel pump sediment bowl loose.
8. Damaged or improperly installed pump bowl gasket.

9. Punctured or worn-out diaphragm.
10. Leak around diaphragm shaft or pull rod.
11. Loose valve and cage assemblies in fuel pump.
12. Fuel pump valves not seating in cage assemblies (replace).
13. Sticking fuel pump valves.
14. Rocker arm shaft (pin) out of position.
15. Broken rocker arm.
16. Vapor in line between tank and pump (vapor lock).

FUEL PUMP NOISE

DESCRIPTION

Although fuel pump noise is generally lighter than tappet noise, the two sounds are very similar. Like tappet noise, a fuel pump noise is encountered at camshaft speed.

TEST

Allow the engine to idle and check for noise with a sounding rod against the fuel pump body. In some instances, fuel pump noise can be detected by tightly gripping the pump body with a hand and noting if a "bump" or vibration is felt.

CAUSES

1. Weak or broken rocker arm contact spring.
2. Worn rocker arm or rocker arm pin.
3. Fuel pump body loose on engine.
4. Scored operating lever or camshaft eccentric.
5. Interference of fuel pump lever with inner surface of crankcase.

SERVICE BULLETIN REFERENCE

NUMBER	PAGE	SUBJECT

ADDITIONAL NOTES