

C O N T E N T S

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GENERAL DESCRIPTION

The fuel system consists of the fuel tank, fuel lines, fuel pump, carburetor, air cleaner and the accelerator pedal and linkage (Figs. 104 and 105). The fuel is drawn from the fuel tank through the fuel lines to the inlet side of the fuel pump. The fuel is then pumped through a screened bowl to the carburetor.

The fuel tank is provided with a fuel gauge tank unit which electrically actuates the fuel gauge in the instrument panel to indicate the amount of fuel in the fuel tank. A detent at the top edge of the fuel tank filler neck provides a vent to avoid a "vacuum lock" in the fuel tank.

Two types of fuel pumps are used. A dual diaphragm type pump is used on Kaiser and Frazer models equipped with vacuum type windshield wipers. The single diaphragm pump is used on Kaiser cars equipped with electric windshield wipers. Three different carburetors are used on Kaiser and Frazer automobiles. All three carburetors are of the dual downdraft type.

An oil bath type carburetor air cleaner is used on all models to prevent dirt, dust and other abrasive particles from entering the engine through the carburetor.

MAINTENANCE AND ADJUSTMENT

At regular intervals remove and clean the air cleaner and the fuel pump sediment bowl if equipped with one. All later production Kaiser cars are equipped with a fuel filter. The filter, located

on the left side of the frame at the rear of the front crossmember, should be checked and the filter bowl wiped clean at 2,000 mile intervals or more often as required. The element should be replaced when it becomes impregnated with foreign matter, which can readily be seen when examining the element.

Adjust the accelerator pedal linkage whenever operation of the pedal indicates need for adjustment. Adjust engine idle speed and fuel mixture at the carburetor whenever necessary to assure proper engine operation. Adjustment of fuel pump should be checked and changed as necessary when fuel consumption is excessive or engine cuts out at high speeds. These maintenance and adjustment operations are covered in detail under separate headings in this Section.

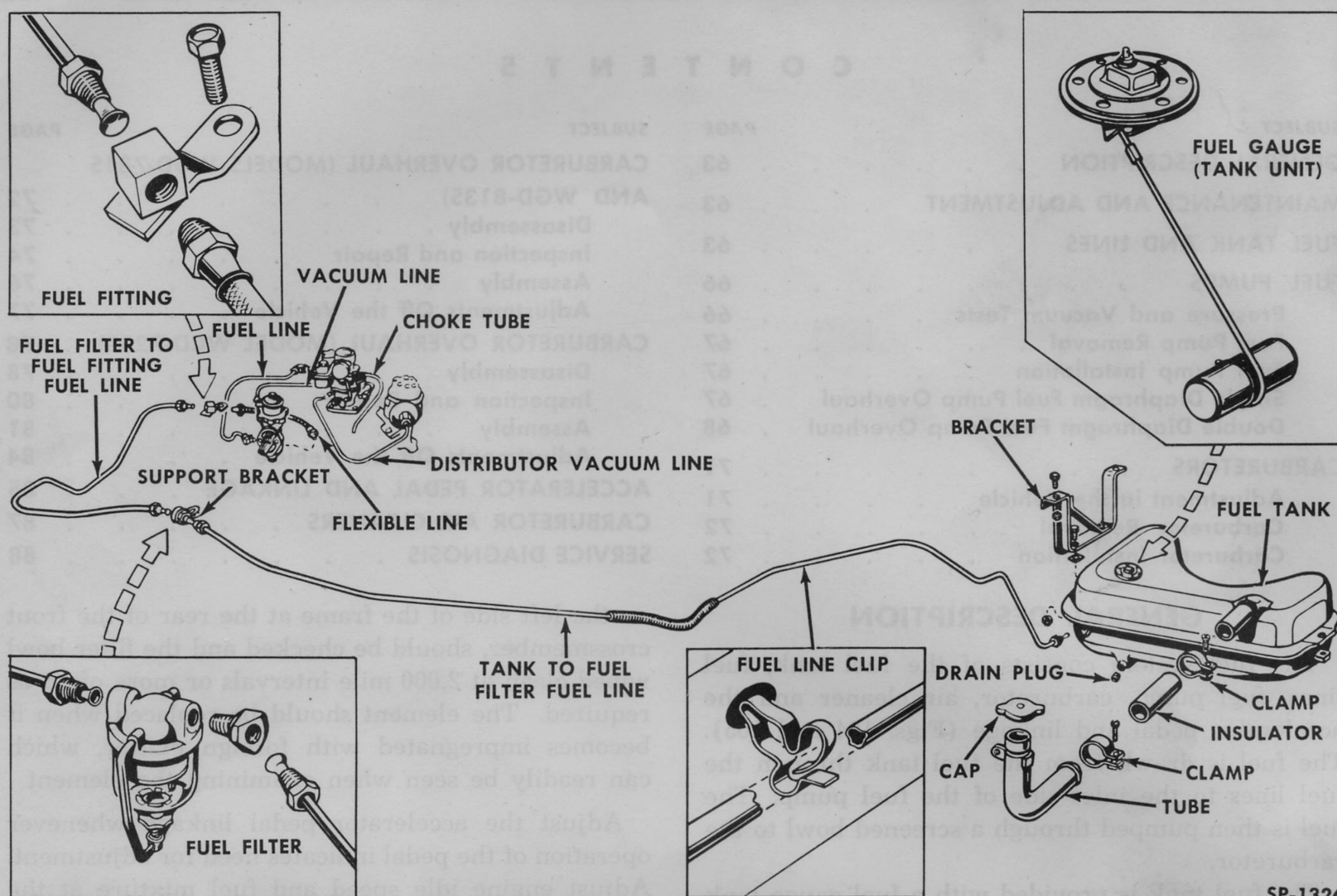
FUEL TANK AND LINES

a. FUEL TANK. A 17-gallon sump type fuel tank is used on Kaiser and a 21-gallon tank on Frazer automobiles. The fuel tank is cushion mounted between the two crossmembers at the rear of the frame.

1. Fuel Tank Removal (Figs. 106 and 107). On a Kaiser model, the fuel gauge wire must be disconnected after the fuel tank has been lowered. Drain the fuel from the fuel tank. Disconnect the fuel line and filler neck from the fuel tank. Support the fuel tank and remove the three self-locking nuts or bolts that hold the tank to the frame and/or bracket. Lower the fuel tank.

On a Frazer model, lift the floor mat in the trunk

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Fig. 104—Kaiser Fuel System

compartment to gain access to the fuel gauge (tank unit) inspection cover. Remove the inspection cover and disconnect the wire from the tank unit. Then proceed with the draining and removal.

2. Fuel Tank Installation (Figs. 106 and 107).

On a Kaiser model (Fig. 106), connect the fuel gauge wire to the tank unit. Check the adequacy of the anti-squeak. Position the fuel tank on the frame and install the three self-locking nuts or bolts. Connect the fuel line and filler tube to the fuel tank.

On a Frazer model (Fig. 107), make sure that the three rubber cushions are in place on the frame. Install tank. Connect the fuel gauge wire to the fuel gauge (tank unit) and install the inspection cover. Lay the floor mat in place in the trunk compartment.

b. FUEL LINES (Figs. 104 and 105). There are four different fuel lines used in the fuel system. One line (metal) is routed from the fuel tank along the frame to union or filter (center line). The second

fuel line is from the union or filter to the fuel line fitting mounted on the right side of the frame. A flexible line connects the fuel line fitting and fuel pump. The fourth line is a metal line that connects the fuel pump and carburetor.

1. Fuel Tank to Fuel Filter or Union Line Replacement. To replace the fuel line, place a drain pan under the fuel tank drain plug. Remove the drain plug and allow the fuel to drain. Dip the drain plug in red lead or equivalent and reinstall the drain plug.

Disconnect the fuel line at the tank and at the union or filter. Run the new fuel line along the frame, bending the new line to match the contour of the old line. Connect the new fuel line to the fuel tank and to the fuel filter or union. Remove the clips and old fuel line from the frame. Attach the new fuel line to the frame with the fuel line clips.

2. Filter to Fuel Fitting Line Replacement. This line is serviced formed to fit. To replace the line

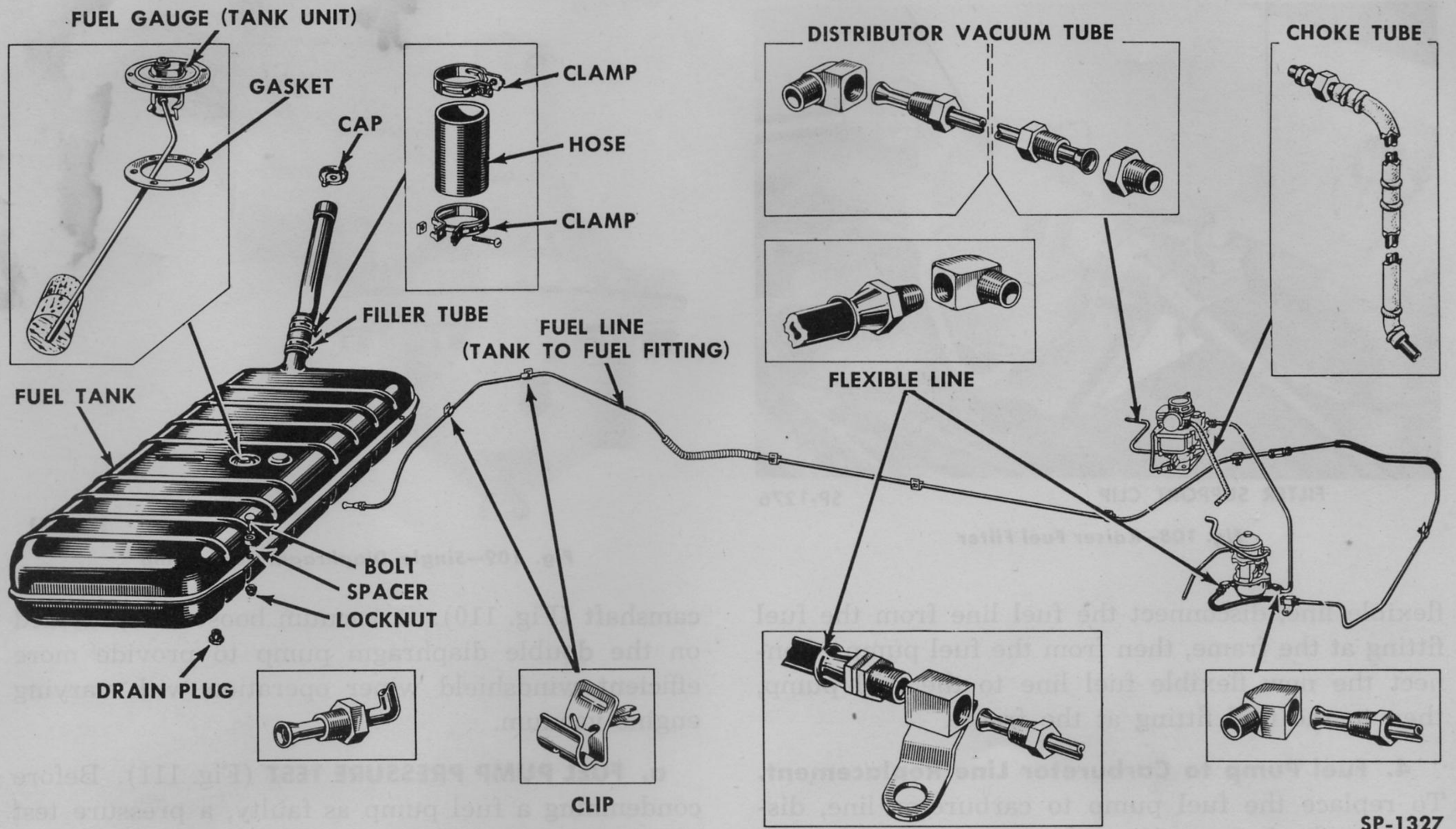
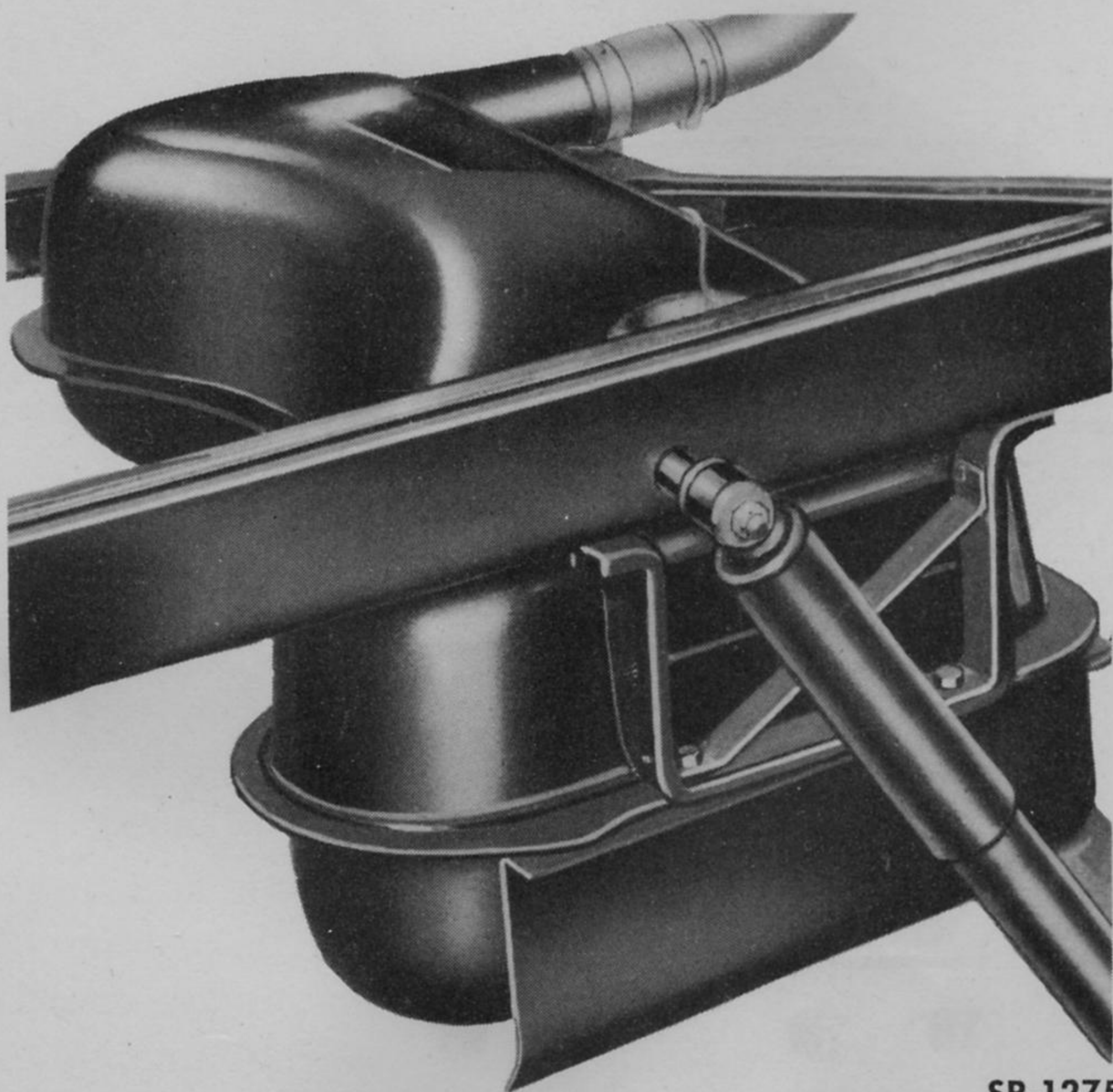


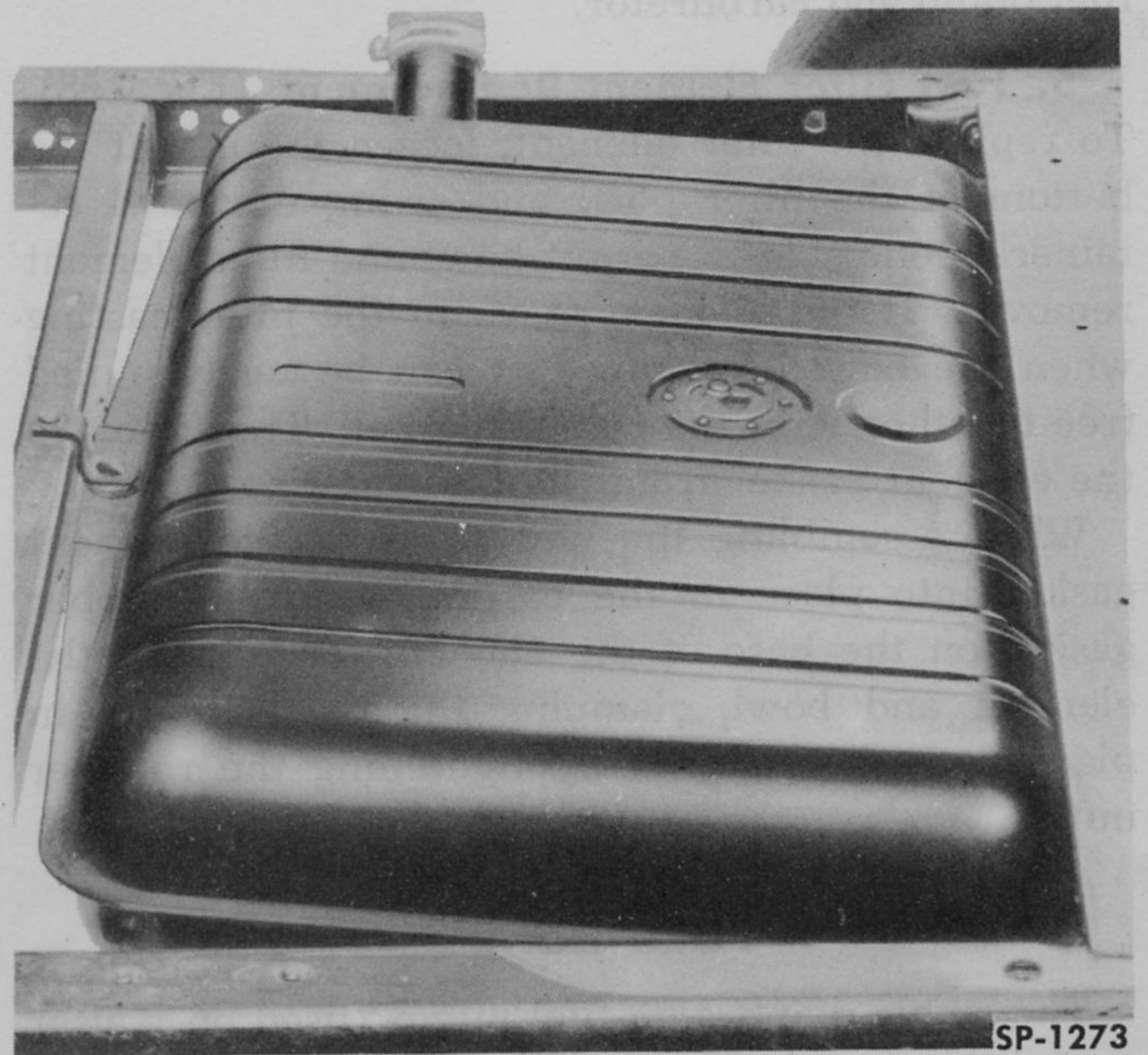
Fig. 105—Frazer Fuel System

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Fig. 106—Kaiser Fuel Tank Installation



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Fig. 107—Frazer Fuel Tank Installation

remove the fuel line clips, disconnect the line at the fuel filter or union and at the fitting on the right side of the frame, and remove the old line. Fit the

new line in place, connect at both ends and install the clips.

3. Flexible Line Replacement. To replace the

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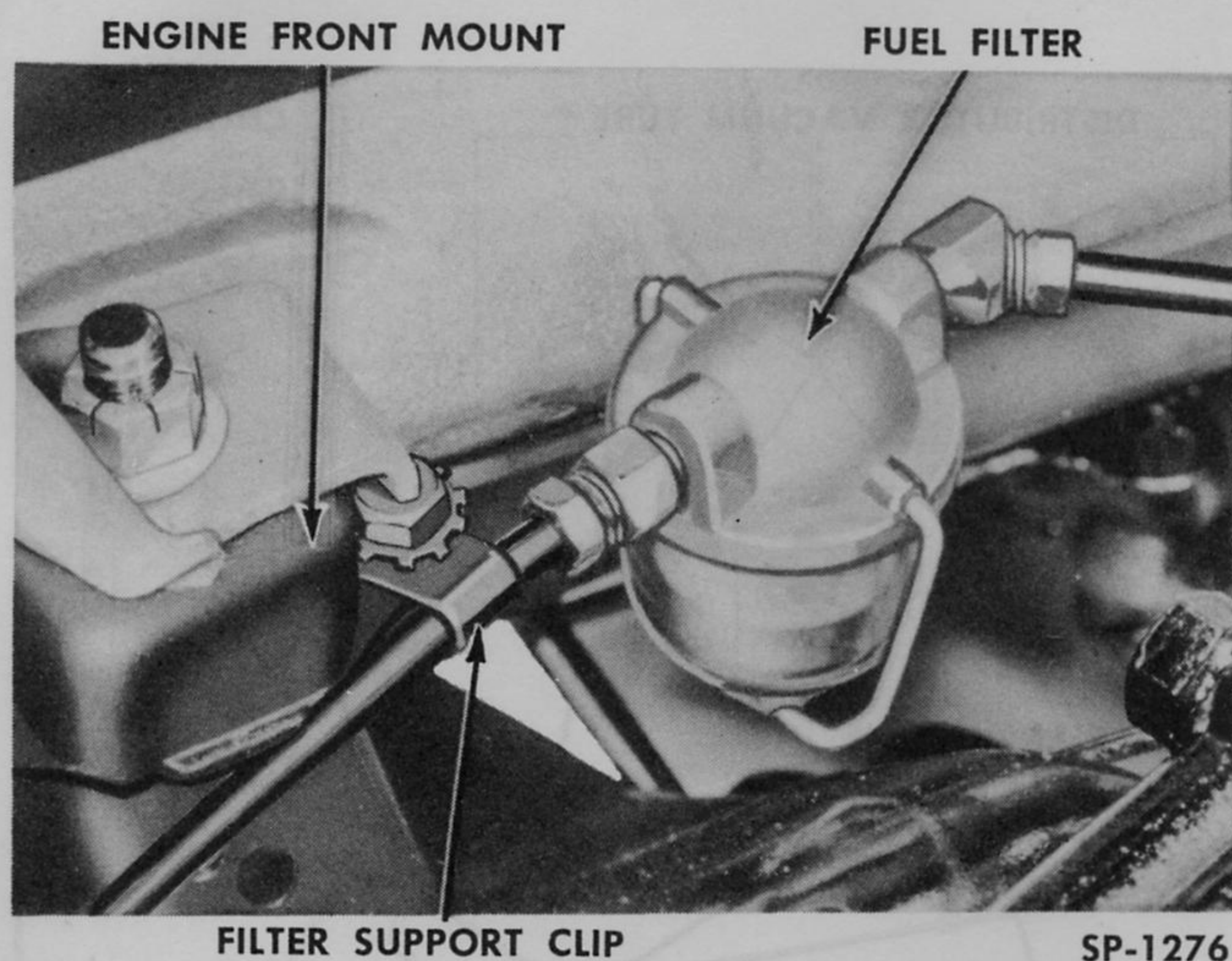


Fig. 108—Kaiser Fuel Filter

flexible line, disconnect the fuel line from the fuel fitting at the frame, then from the fuel pump. Connect the new flexible fuel line to the fuel pump, then to the fuel fitting at the frame.

4. Fuel Pump to Carburetor Line Replacement.

To replace the fuel pump to carburetor line, disconnect the line at the carburetor and fuel pump and remove the line. Connect the new line to the fuel pump and carburetor.

5. Fuel Filter Element Replacement (Fig. 108).

To replace the filter element, loosen the nut at the bottom of the filter bowl and swing the bowl retainer to one side to permit bowl and filter element removal. If the element stays in the filter casting when the bowl is removed, it can be easily pulled free together with the rubber gasket. Then remove the element gasket from the filter casting.

When assembling the new parts fit the element gasket into place in the casting, seat the rubber gasket on the base of the element, and install the element and bowl, clamping the bowl tightly in place with the retainer by tightening the retainer nut.

FUEL PUMPS

The single diaphragm fuel pump (used on Kaiser models having electric windshield wipers) is mounted at the front of the engine with the rocker arm positioned below the camshaft (Fig. 109). The double diaphragm fuel pump (used with a vacuum type windshield wiper) is mounted at the front of the engine with the rocker arm positioned below the

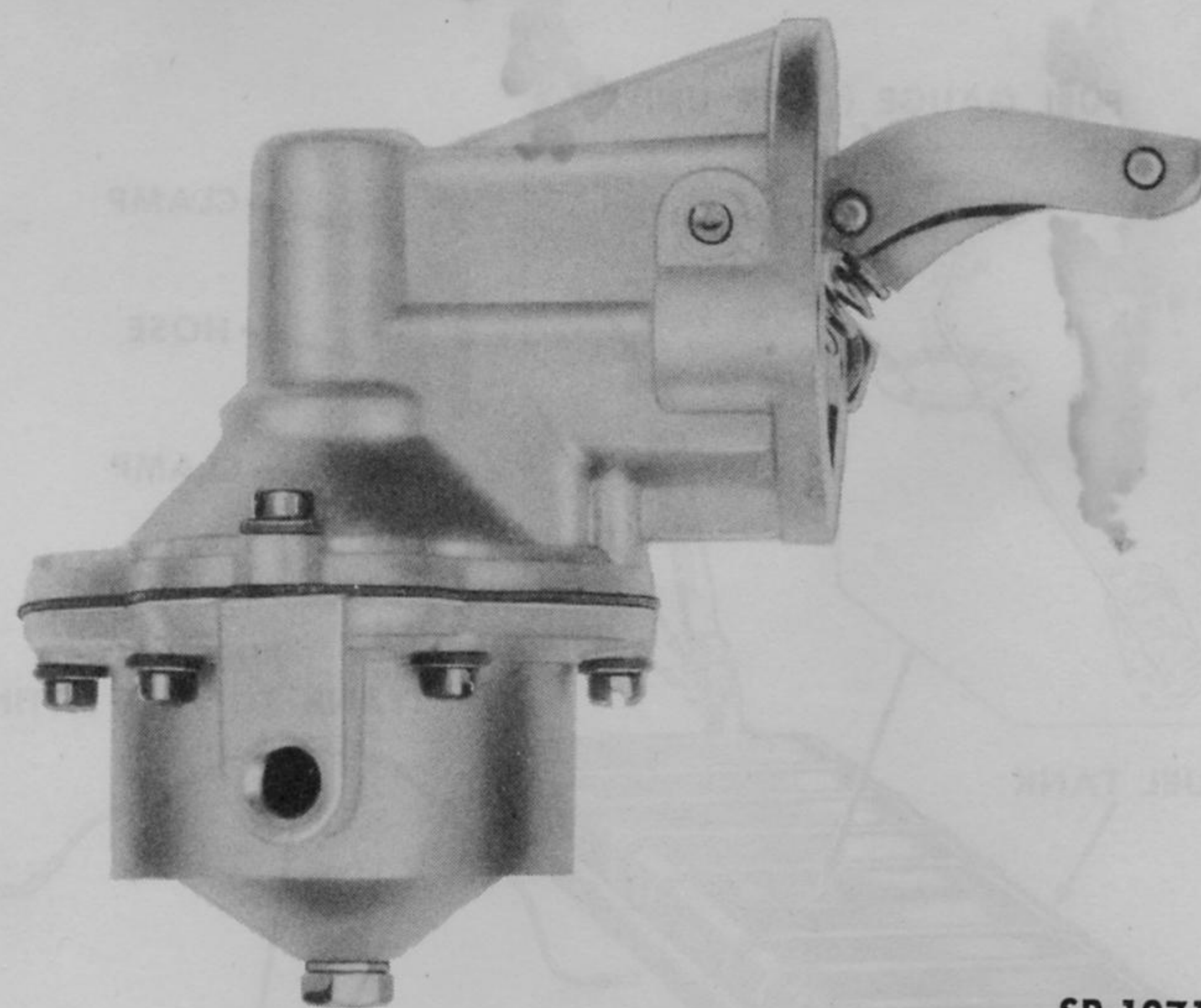


Fig. 109—Single Diaphragm Fuel Pump

camshaft (Fig. 110). A vacuum booster is provided on the double diaphragm pump to provide more efficient windshield wiper operation with varying engine vacuum.

a. FUEL PUMP PRESSURE TEST (Fig. 111). Before condemning a fuel pump as faulty, a pressure test should be made. To check the fuel pump pressure, connect a pressure gauge at the carburetor or outlet

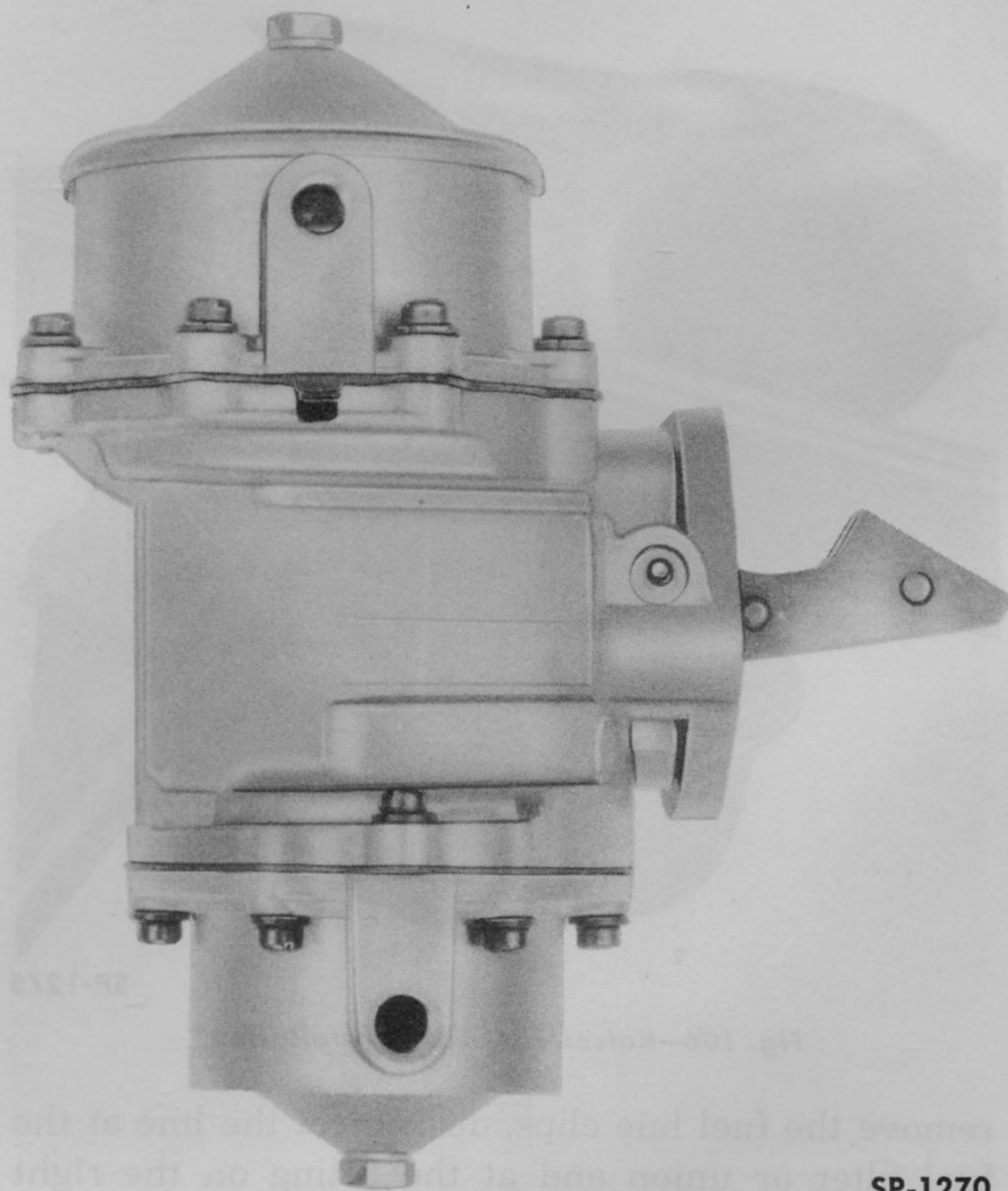


Fig. 110—Double Diaphragm Fuel Pump

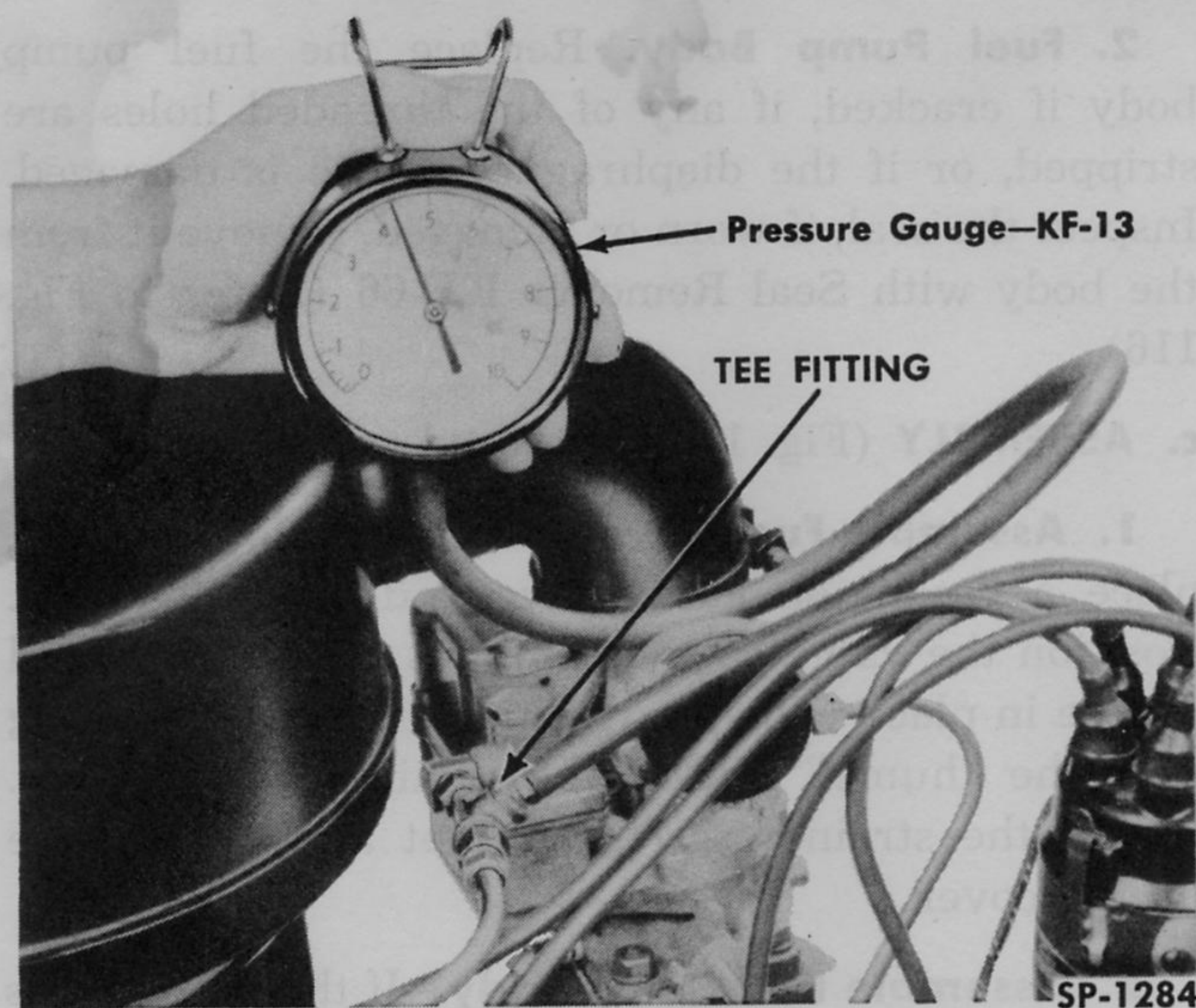
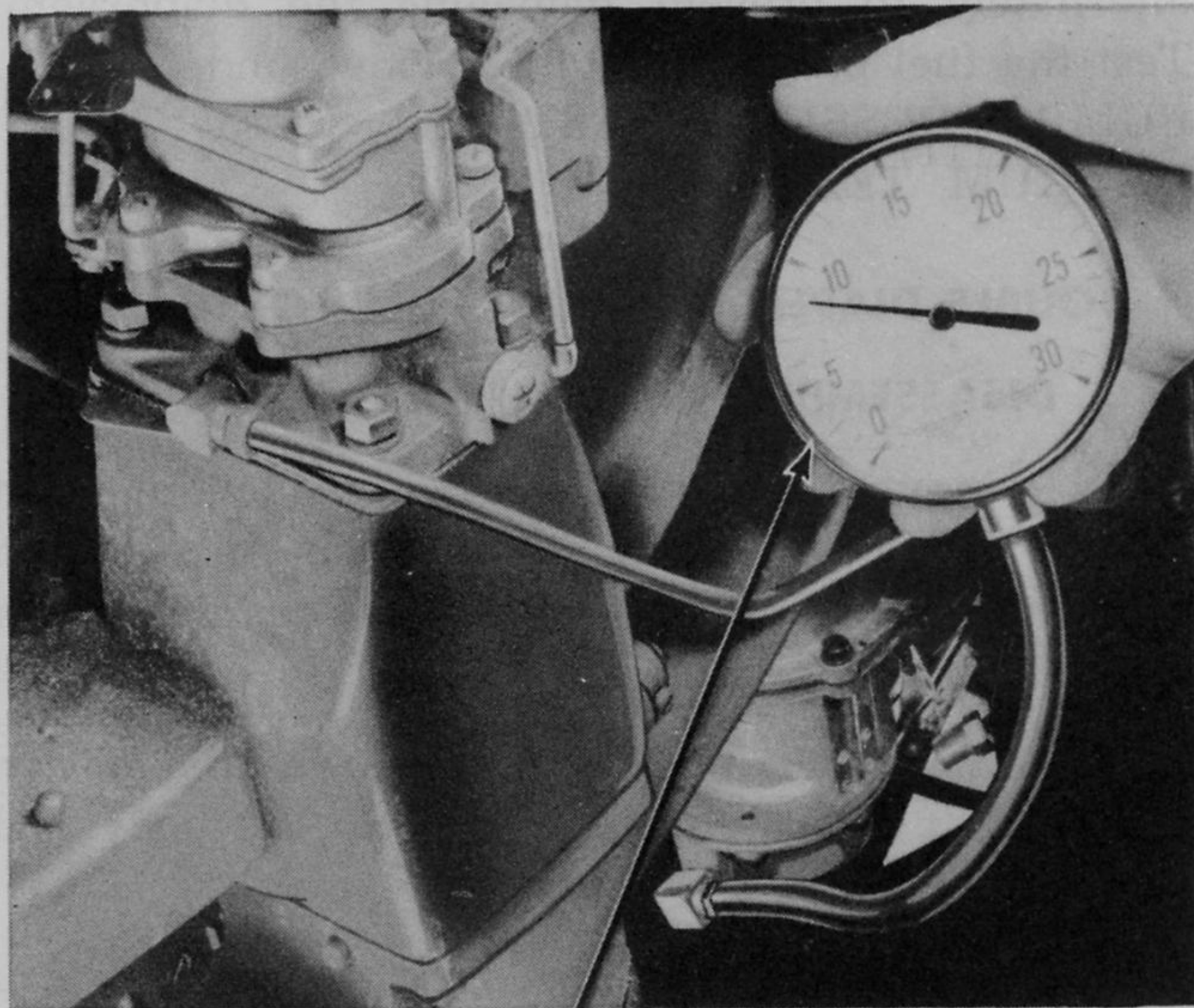


Fig. 111—Checking Fuel Pump Pressure

side of the fuel pump. Start the engine and run at approximately 1000 RPM. If the pressure is below normal as detailed below, the pump should be repaired or replaced. If the pressure is more than $4\frac{1}{2}$ lbs. on any type pump, an adjustment should be made.

To adjust the pressure, remove the pump as detailed below. Add gaskets between the cylinder block and pump to decrease the rocker arm travel, which will reduce the pressure. Remove gaskets to increase the rocker arm travel and increase the pressure. Install the pump as detailed below. Repeat



Vacuum Gauge—C-425

SP-1288

Fig. 112—Checking Fuel Pump Vacuum

this procedure until a fuel pump pressure of $3\frac{1}{2}$ to $4\frac{1}{2}$ lbs. is established.

b. FUEL PUMP VACUUM TEST (Fig. 112). Before condemning a fuel pump as faulty, a fuel pump vacuum test should be made. To make a vacuum test disconnect the fuel line at the inlet and outlet sides of the fuel pump. Connect a vacuum gauge to the inlet side of the fuel pump. Start the engine and observe the vacuum reading. If the reading is less than 6 inches of vacuum, the fuel pump should be repaired or replaced.

If the fuel pump is equipped with a vacuum booster, connect a vacuum gauge to the inlet side of the booster. Start the engine and observe the reading. If the reading is less than 8 inches of vacuum at 120 fuel pump RPM or $10\frac{1}{2}$ inches at 1800 RPM the fuel pump should be repaired.

c. FUEL PUMP REMOVAL. Disconnect the metal and flexible lines at the fuel pump. For a double diaphragm pump, disconnect both vacuum lines at the fuel pump booster. Remove the two nuts and lock washers that attach the fuel pump to the cylinder block and remove the fuel pump and gasket.

d. FUEL PUMP INSTALLATION. Place a fuel pump gasket on the fuel pump studs in the cylinder block. Hold the fuel pump in place on the cylinder block. Make sure the fuel pump rocker arm is positioned below the camshaft. Install the two lock washers and nuts. Connect the flexible line to the inlet side of the fuel pump and the metal line to the outlet side of the fuel pump. For a double diaphragm fuel pump, connect the two vacuum lines to the fuel pump booster.

SINGLE DIAPHRAGM FUEL PUMP OVERHAUL

a. DISASSEMBLY (Fig. 113). Proceed as follows:

1. Remove Fuel Cover. Remove the seven screws and washers that attach the fuel cover to the body. Separate the cover from the body.

2. Disassemble Fuel Cover. To disassemble the cover, remove the cap screw that secures the cover plate to the cover and remove the cover plate, gasket and strainer. Remove the valve retainer screw and retainer. Lift the inlet and outlet valve cage assemblies from the cover.

3. Disassemble Fuel Pump Body. To disassemble the body, file the peened end of the rocker

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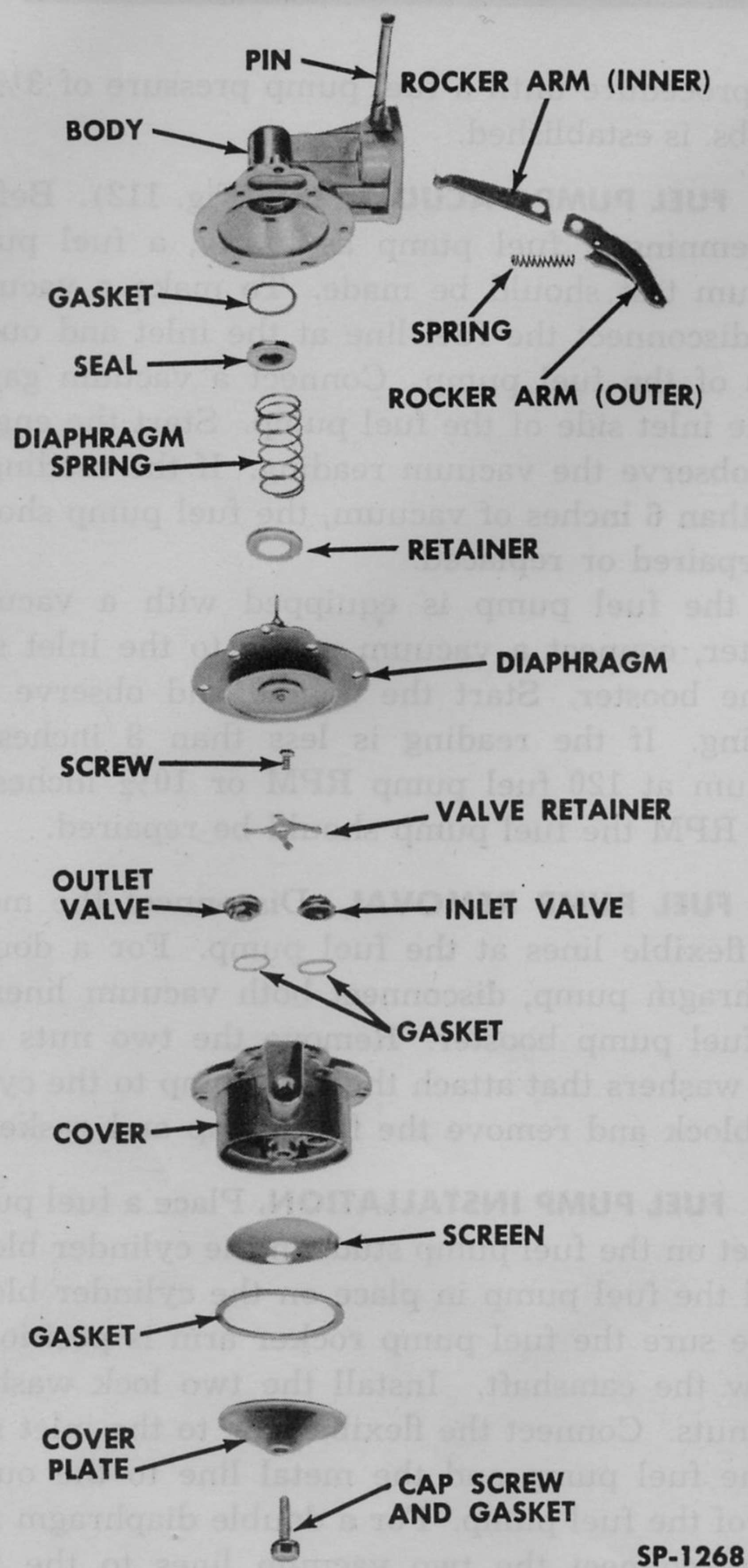


Fig. 113—Single Diaphragm Fuel Pump—Exploded View

arm pin until flush with the flat washer. Drive the rocker arm pin out of the body with a punch. Lift the outer rocker arm and spring from the body. Compress the diaphragm and disconnect and remove the inner rocker arm from the diaphragm. Lift the diaphragm, spring retainer, and spring from the body.

b. INSPECTION. (Fig. 113). It is recommended that Fuel Pump Repair Kit No. 212671 be used when repairing the fuel pump. Clean all parts that are not supplied in the fuel pump kit with a suitable cleaning solvent that will remove all carbon, gum and varnish.

1. Fuel Cover. Replace the cover if cracked or if any of the threaded passages or holes are stripped.

2. Fuel Pump Body. Replace the fuel pump body if cracked, if any of the threaded holes are stripped, or if the diaphragm surface is damaged. Inspect the seal, if worn or damaged, remove it from the body with Seal Remover KF-66 (Refer to Fig. 116).

c. ASSEMBLY (Fig. 113). Proceed as follows:

1. Assemble Fuel Cover. To assemble the cover, place a gasket on each valve and cage assembly. Position the valve cage assemblies in the cover and secure in place with the retainer and screw, making sure the "hump" side of the retainer is facing up. Install the strainer screen, gasket and cover plate on the cover.

2. Assemble Fuel Pump Body. If the oil seal was removed, position the oil seal gasket and oil seal with the metal side facing up. Drive the seal into the body with Seal Installing Tool KF-66 (Refer to Fig. 117). Stake the seal in place with a punch. Compress the diaphragm spring retainer and spring in the body, then connect the inner rocker arm to the diaphragm shaft. Position the outer rocker arm in the body. Align the rocker arm pin holes with the pin hole in the body, then install the rocker arm pin. Place the small flat washer on the rocker arm pin, then stake or peen the end of the pin. Install the rocker arm spring.

3. Assemble Fuel Cover to Body. Position the cover on the body and install but do not tighten the screws and lock washers. Tighten the screws alternately to prevent damaging the diaphragm. Test the fuel pump as detailed above under FUEL PUMP PRESSURE TEST and FUEL PUMP VACUUM TEST.

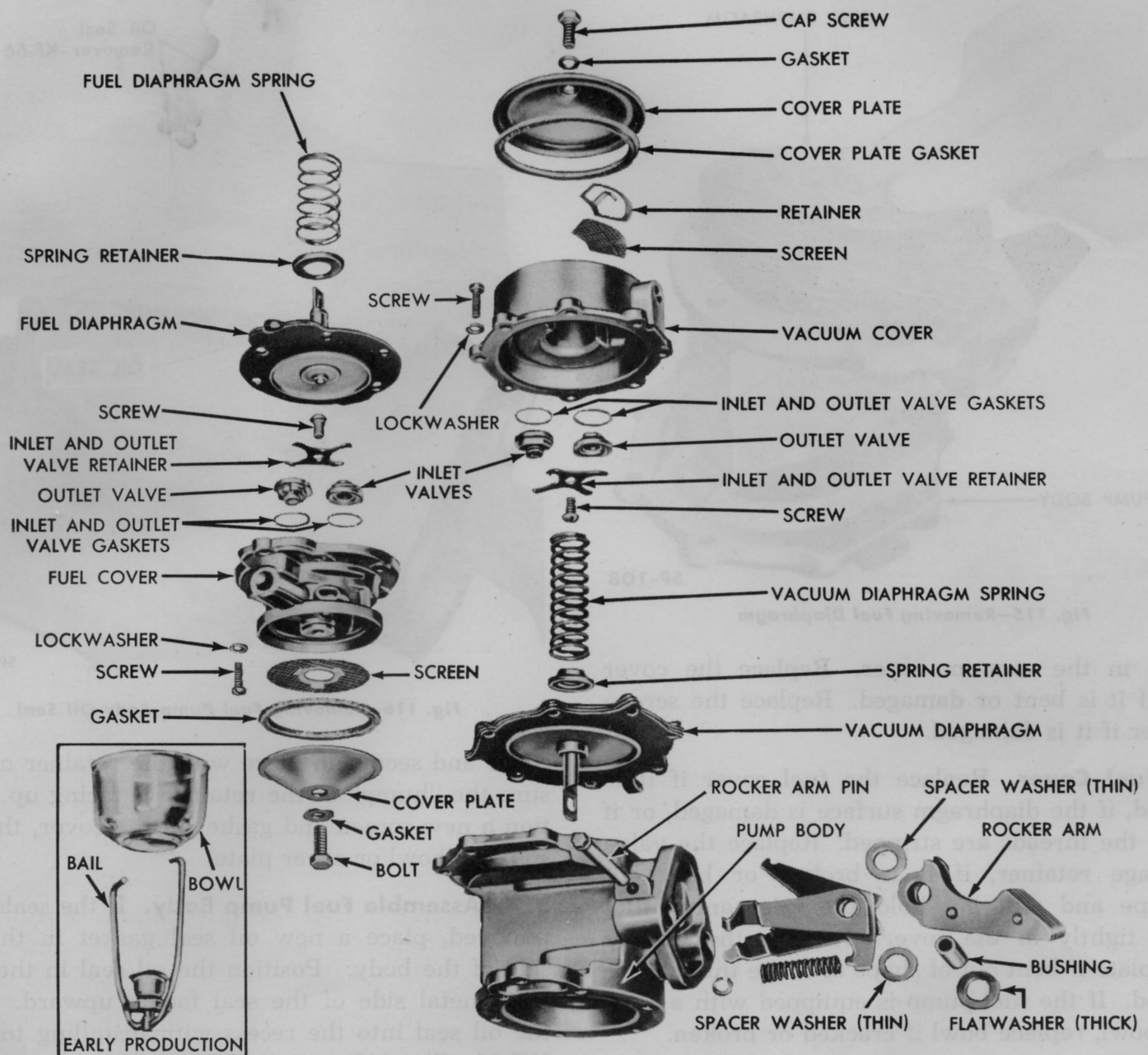
DOUBLE DIAPHRAGM FUEL PUMP OVERHAUL

a. DISASSEMBLY (Fig. 114). Proceed as follows:

1. Remove Vacuum Cover. Remove the eight screws and lock washers that attach the vacuum cover to the body. Remove the cover, diaphragm spring and retainer.

2. Remove Fuel Cover. Remove the seven screws that attach the fuel cover to the body and remove the cover.

3. Disassemble Vacuum Cover. Remove the cap screw that attaches the cover plate to the vacuum cover. Remove the cover plate and gasket. Lift



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Fig. 114—Double Diaphragm Fuel Pump—Exploded View

the retainer and screen from the cover. Remove the retainer screw, retainer and valves from the cover.

4. Disassemble Fuel Cover. Loosen the thumb nut on the bail and remove the glass bowl. If no bowl is provided, remove the cap screw and cover plate. Lift the screen and gasket from the cover. Remove the retainer screw, retainer and valves from the cover.

5. Disassemble Fuel Pump Body. Depress the fuel diaphragm as shown in Fig. 115 to push the lower end forward and disconnect it from the fuel link. Lift the fuel diaphragm, spring retainer and spring from the body. Remove the vacuum dia-

phragm in the same manner. Remove the rocker arm pin washer from the rocker arm pin. With a small punch, drive the pin out of the body. Remove the rocker arm assembly from the body.

b. INSPECTION (Fig. 114). It is recommended that Fuel Pump Repair Kit No. 208659 or 202319 whichever applies, be used when repairing the fuel pump.

1. Vacuum Cover. Replace the vacuum cover if it is cracked, if the diaphragm surface is damaged, or if any of the threads are stripped. Replace the valve and cage retainer if it is broken or bent out of shape and will not hold the inlet and outlet valves

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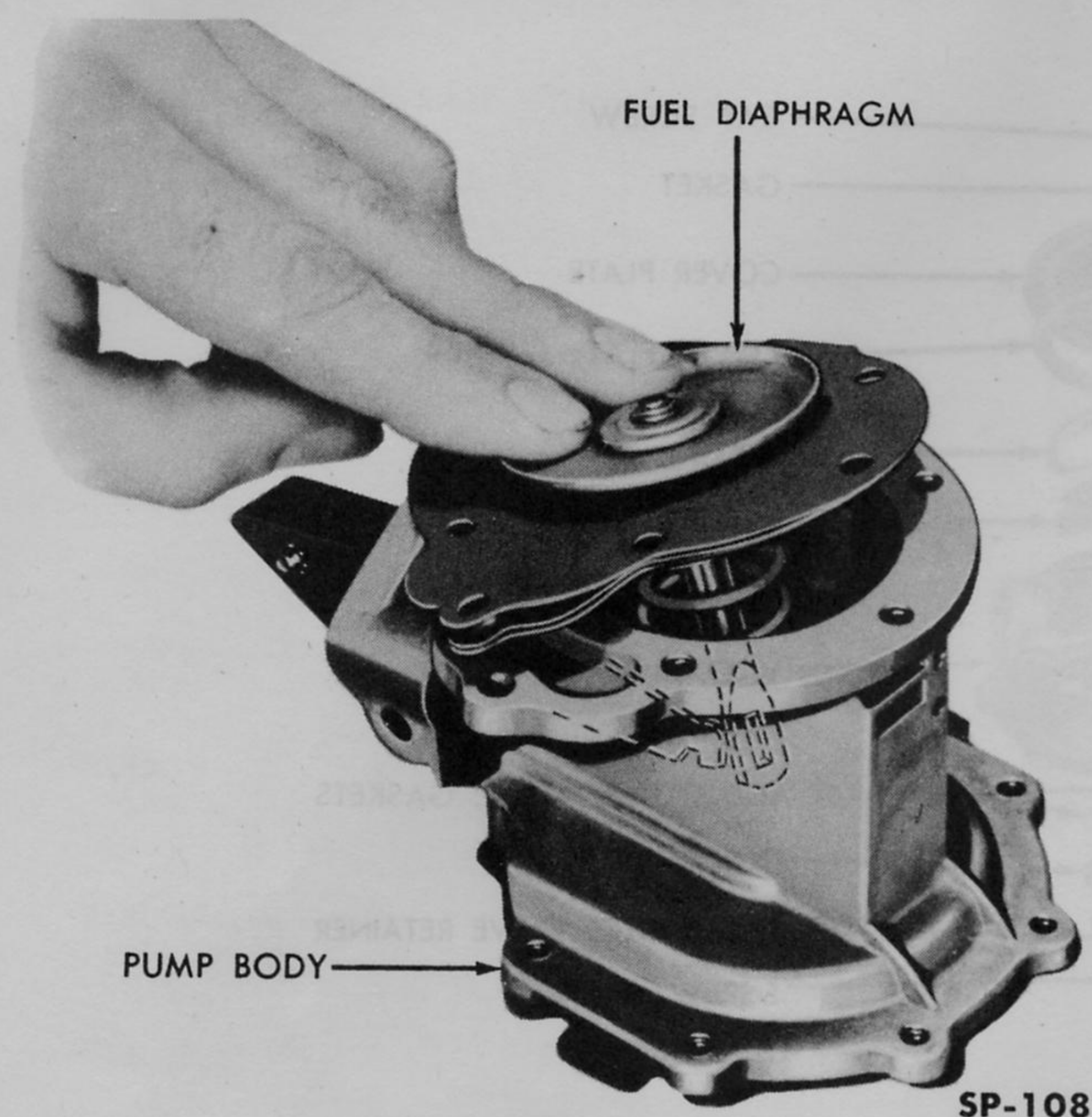


Fig. 115—Removing Fuel Diaphragm

tightly in the vacuum cover. Replace the cover plate if it is bent or damaged. Replace the screen retainer if it is damaged.

2. Fuel Cover. Replace the fuel cover if it is cracked, if the diaphragm surface is damaged, or if any of the threads are stripped. Replace the valve and cage retainer, if it is broken or bent out of shape and will not hold the inlet and outlet valves tightly in the cover. Replace the bail or cover plate if bent out of shape or if the threads are stripped. If the fuel pump is equipped with a sediment bowl, replace bowl if cracked or broken.

3. Fuel Pump Body. Replace the fuel pump body if it is cracked, the diaphragm surfaces are damaged, or the threads are stripped. If the oil seals are worn or damaged, remove them from the body with Seal Remover KF-66 (Fig. 116).

c. ASSEMBLY. (Fig. 114). Proceed as follows:

1. Assemble Vacuum Cover. Place a gasket on each valve. Place the inlet and outlet valves in the cover and secure in place with the retainer, making sure the "hump" in the retainer is facing up. Install the screen and retainer in the cover. Place a new cover plate gasket on the vacuum cover and install the cover plate.

2. Assemble Fuel Cover. Place a gasket on each valve. Place the inlet valve and outlet valves in the

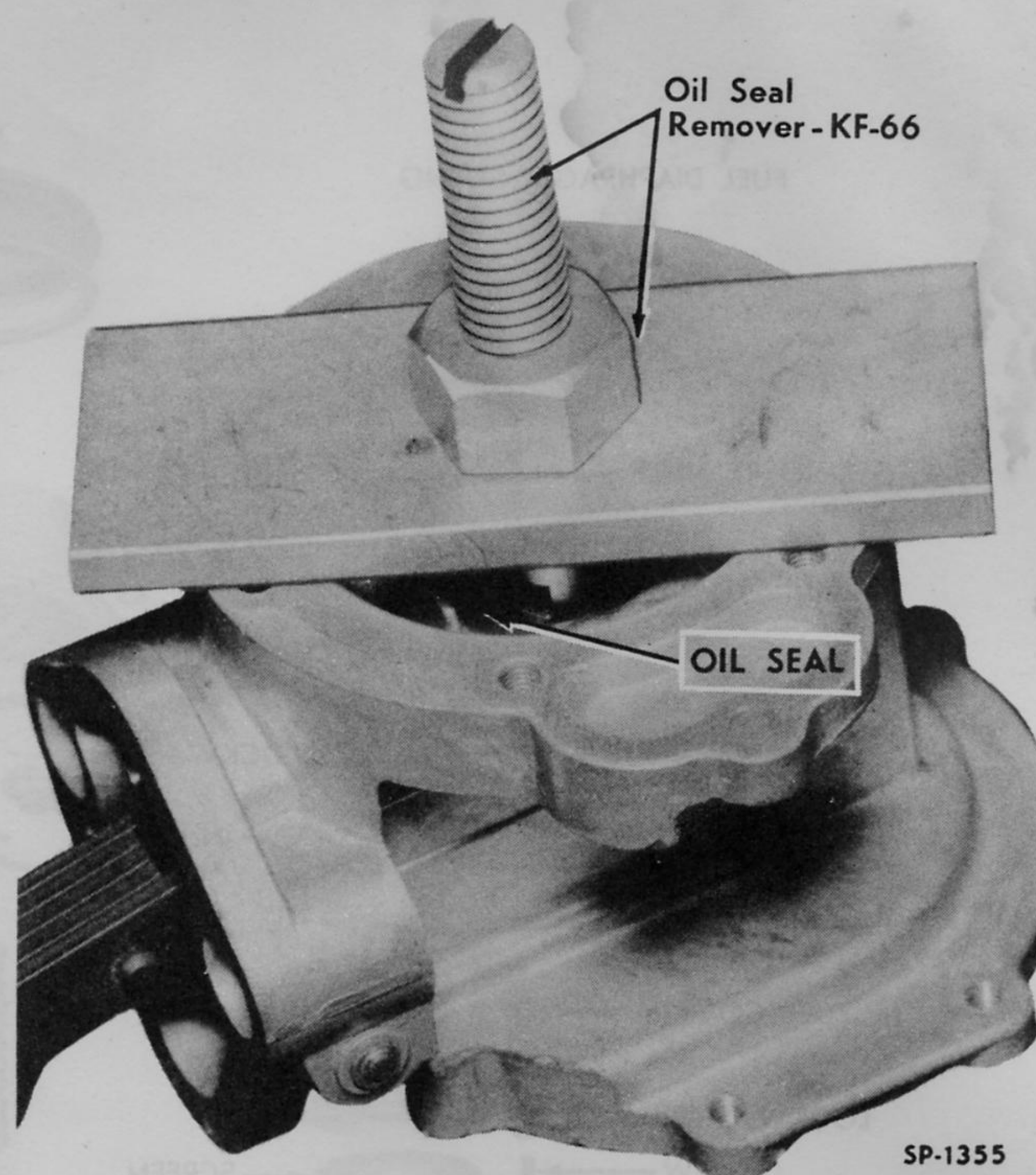


Fig. 116—Removing Fuel Pump Body Oil Seal

cover and secure in place with the retainer making sure the "hump" in the retainer is facing up. Position a new screen and gasket in the cover, then install the bowl or cover plate.

3. Assemble Fuel Pump Body. If the seals were removed, place a new oil seal gasket in the fuel side of the body. Position the oil seal in the body with metal side of the seal facing upward. Drive the oil seal into the recess with installing tool No. KF-66 (Fig. 117). Stake the seal in place with a punch. Install the second oil seal in the same manner with the rubber side of the seal facing toward the inner side of the body. Assemble the rocker arm and linkage as shown in Fig. 118. Hold the rocker arm in place in the fuel pump body and install the rocker arm pin. Position the small washer on the pin and peen the end of the rocker arm pin. Position the spring retainer and spring on the fuel diaphragm. Carefully push the fuel diaphragm pull rod through the oil seal, then press on one side of the diaphragm to tilt the pull rod and hook it on fuel link. Install the vacuum diaphragm in the same manner.

4. Assemble Fuel and Vacuum Covers to Body. Place a new gasket on the fuel cover flange. Position the fuel cover and gasket on the diaphragm.

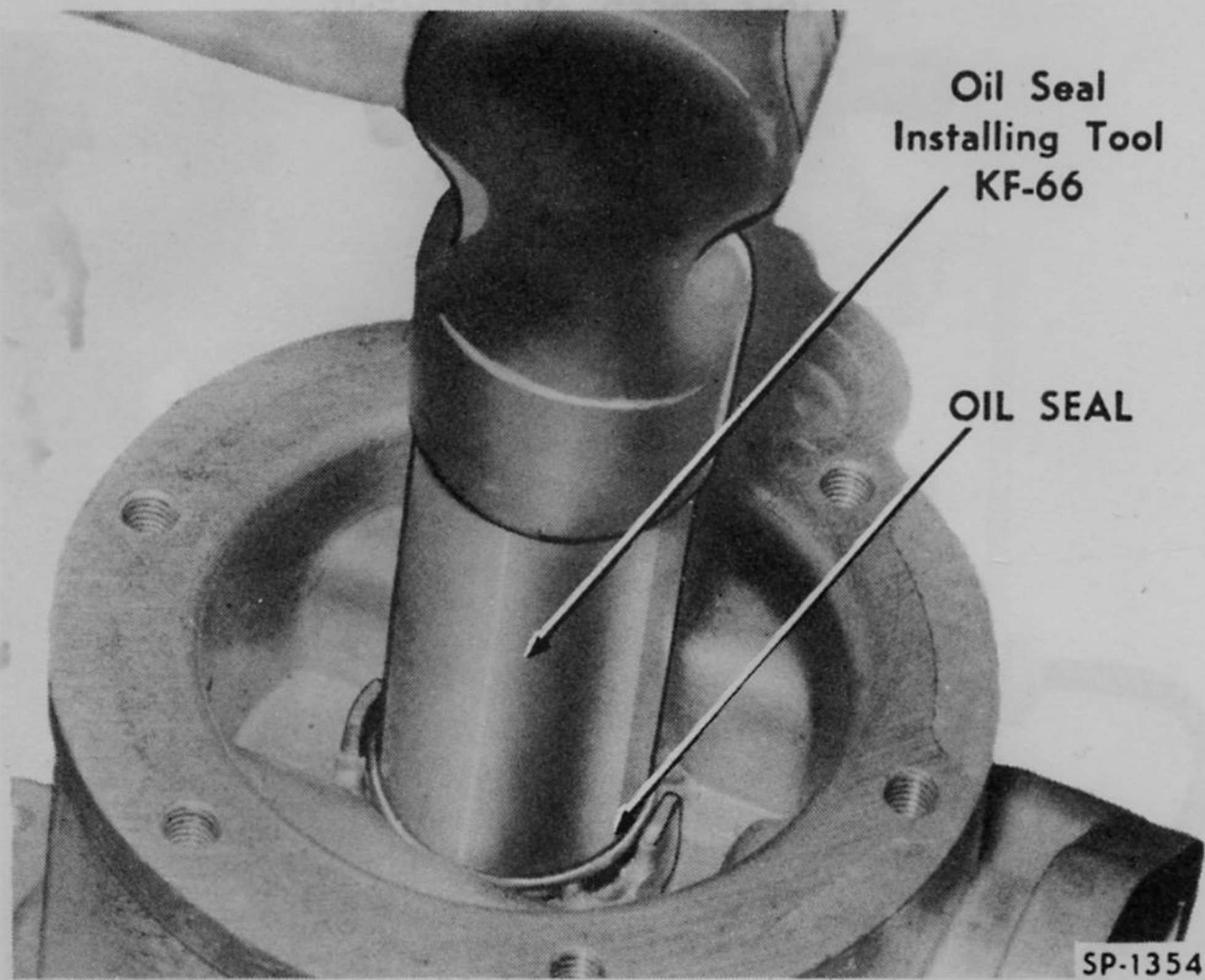


Fig. 117—Installing Fuel Pump Body Oil Seal

Install, but do not tighten the seven screws and lock washers. Tighten the seven screws alternately to prevent damage to the diaphragm. Place Diaphragm Flexing Tool KF-65 between the rocker arm and rocker arm stop to hold the vacuum diaphragm even with the flange while installing the vacuum cover (Fig. 119). Place the spring retainer and vacuum

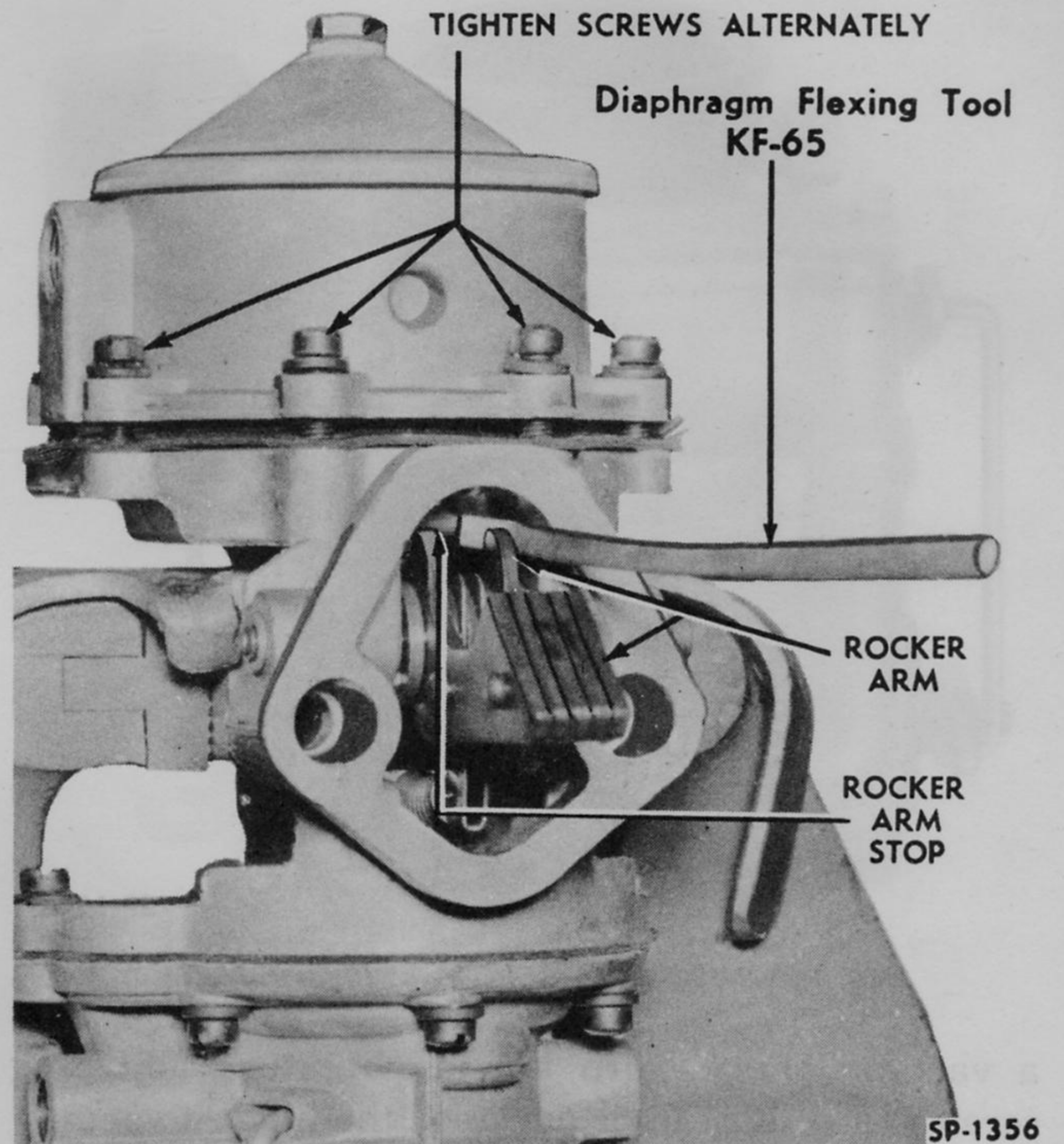


Fig. 119—Using Flexing Tool to Install Vacuum Cover

diaphragm spring on the diaphragm. Install the vacuum cover and gasket on the body. Tighten the screws alternately to prevent damage to the diaphragm. Remove the Flexing Tool KF-65 from behind the rocker arm. Test the fuel pump as detailed under FUEL PUMP PRESSURE TEST and FUEL PUMP VACUUM TEST.

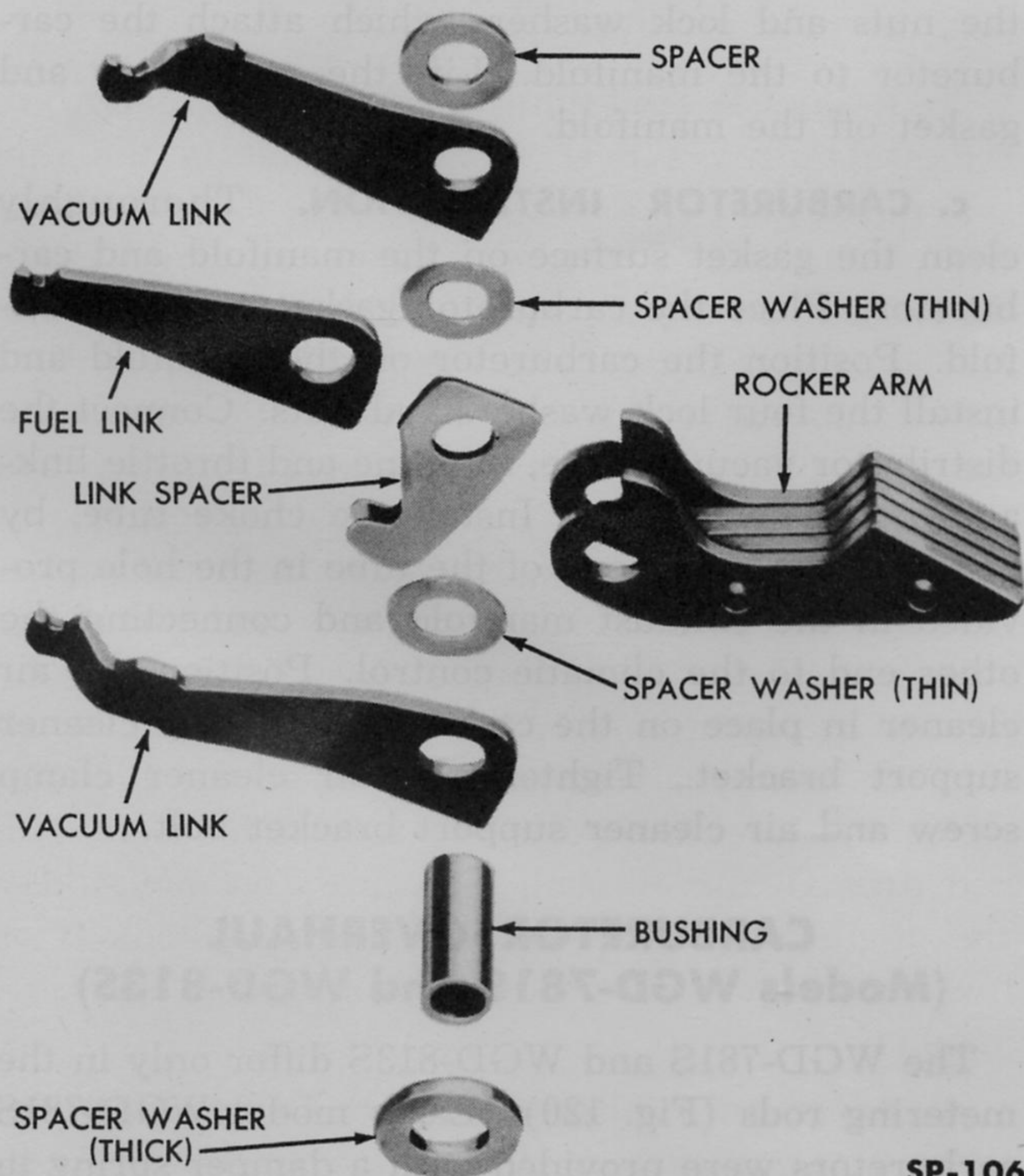


Fig. 118—Rocker Arm Linkage—Exploded View

CARBURETORS

Three different model carburetors are used on Kaiser and Frazer automobiles, Carburetor model WGD-781S, WGD-813S and WCD-723S (Figs. 120 and 121). Model WGD-781S carburetor is used on all Kaiser models. Model WCD-723S was used on early production Frazer models; model WGD-813S is used on later production models. When overhauling a carburetor as detailed below, it is recommended that only a Kaiser-Frazer carburetor repair kit be used.

a. CARBURETOR ADJUSTMENT IN THE VEHICLE. Before attempting to adjust the carburetor, make sure the engine is at normal operating temperature. Adjust the carburetor using a vacuum gauge or combustion analyzer. If adjusting the carburetor using

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Fig. 120—WGD-781S or WGD-813S Carburetor

a vacuum gauge, turn the idle mixture adjusting screws (Fig. 122) in or out until the highest vacuum reading is obtained. Connect a tachometer to the engine, then turn the idle speed adjusting screw in or out until a speed of 550 RPM is established (425 to 450 RPM on Hydra-Matic equipped cars).

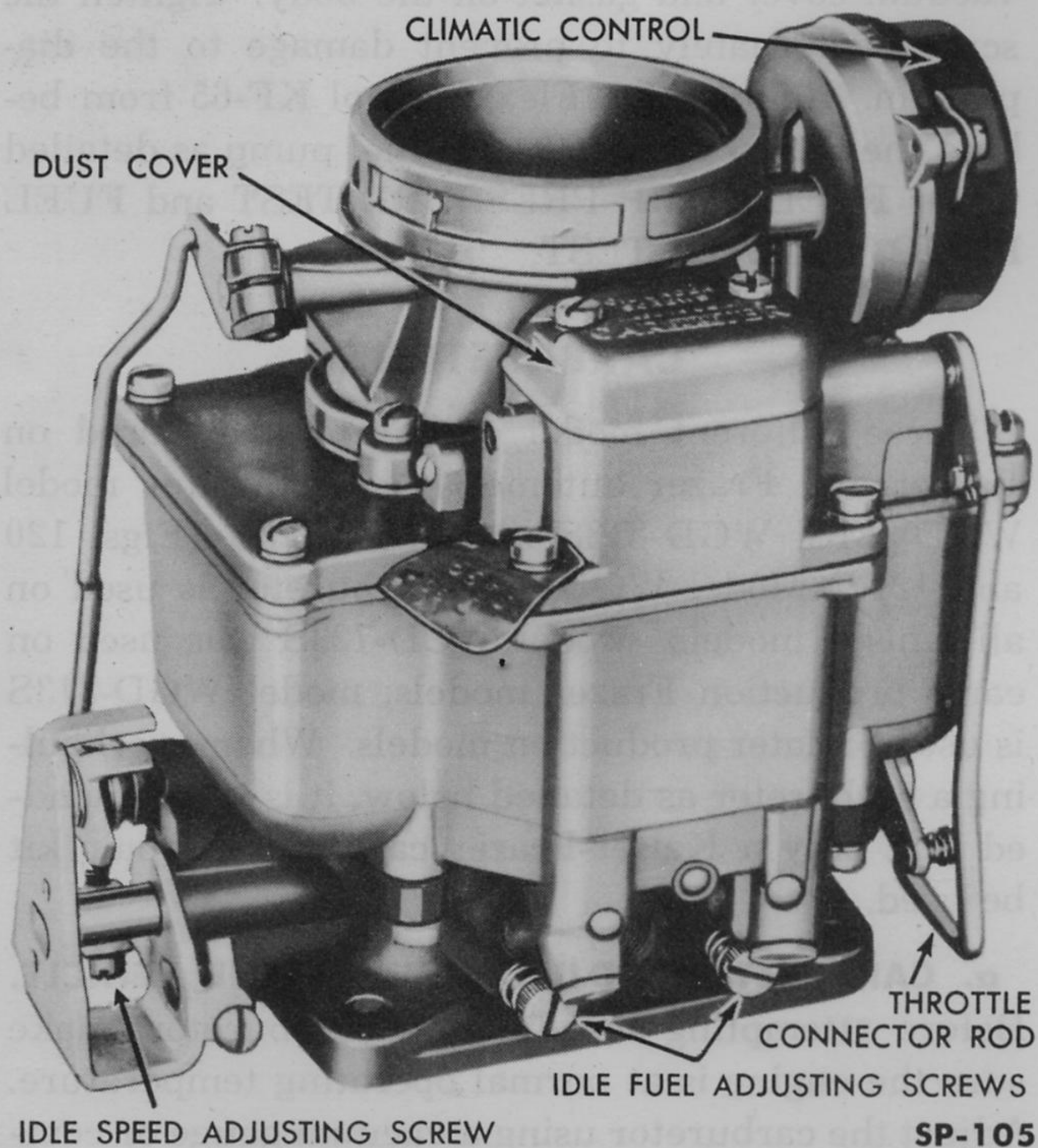


Fig. 121—WCD-723S Carburetor

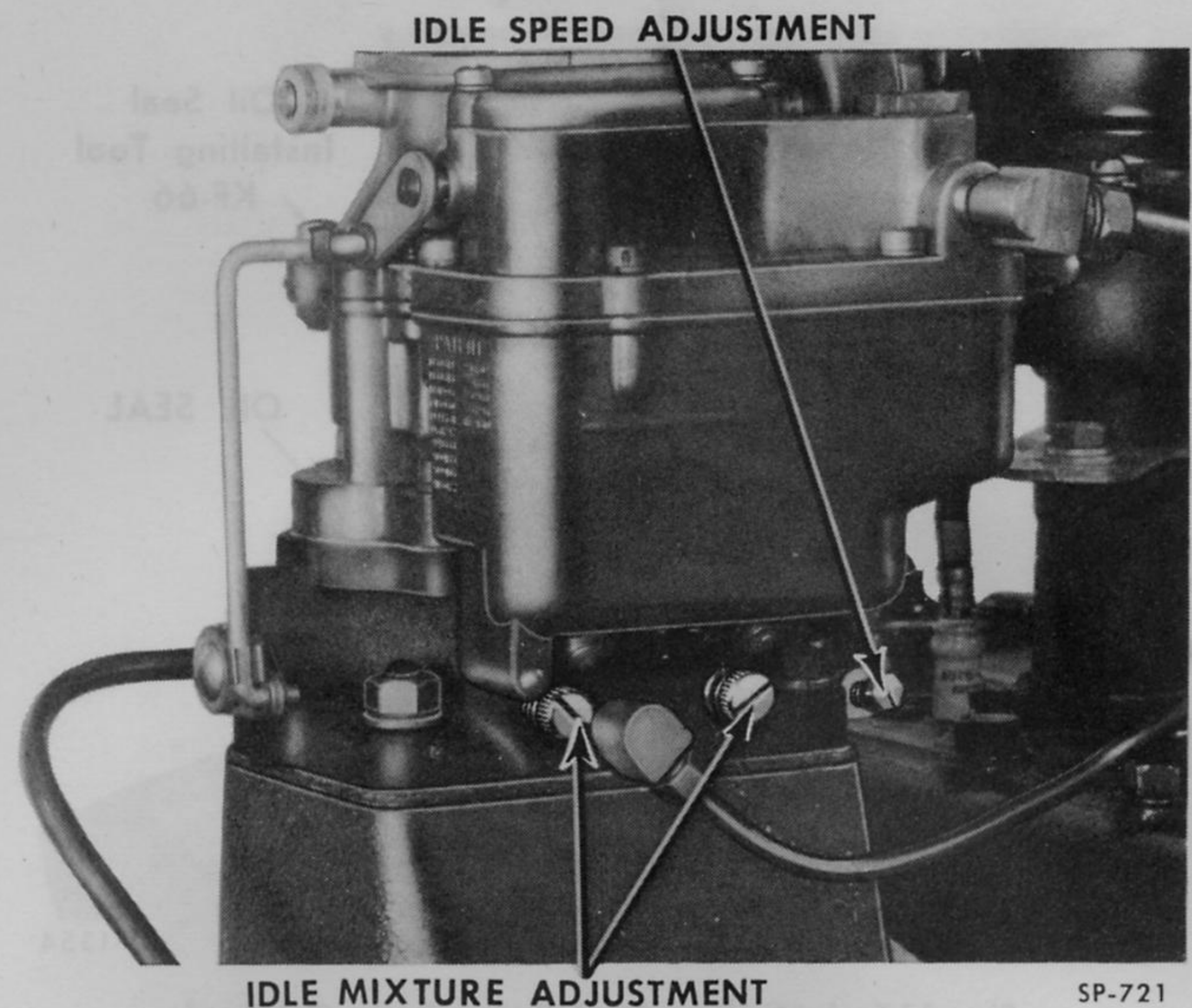


Fig. 122—Carburetor Idle Speed and Mixture Adjustments WGD-781S and 813S

b. CARBURETOR REMOVAL. Loosen the air cleaner clamp screw at the carburetor. Loosen the air cleaner support bolt and carefully remove the air cleaner. Disconnect the choke tube at the carburetor and lift the tube from the manifold. Disconnect the distributor vacuum tube and the fuel line and throttle linkage at the carburetor. Remove the nuts and lock washers which attach the carburetor to the manifold. Lift the carburetor and gasket off the manifold.

c. CARBURETOR INSTALLATION. Thoroughly clean the gasket surface on the manifold and carburetor. Place the carburetor gasket on the manifold. Position the carburetor on the manifold and install the four lock washers and nuts. Connect the distributor vacuum tube, fuel line and throttle linkage to the carburetor. Install the choke tube, by inserting the lower end of the tube in the hole provided in the exhaust manifold and connecting the other end to the climatic control. Position the air cleaner in place on the carburetor and air cleaner support bracket. Tighten the air cleaner clamp screw and air cleaner support bracket bolt.

CARBURETOR OVERHAUL (Models WGD-781S and WGD-813S)

The WGD-781S and WGD-813S differ only in the metering rods (Fig. 120). Early model WGD-781S carburetors were provided with a damper spring in the needle valve. With this type of needle valve the

float setting should be maintained at $\frac{7}{64}$ to $\frac{1}{8}$ inch. A solid push-pull type needle valve is used on later model WGD-781S carburetors. When this type of needle valve is used the float level should be increased to $\frac{1}{4}$ inch.

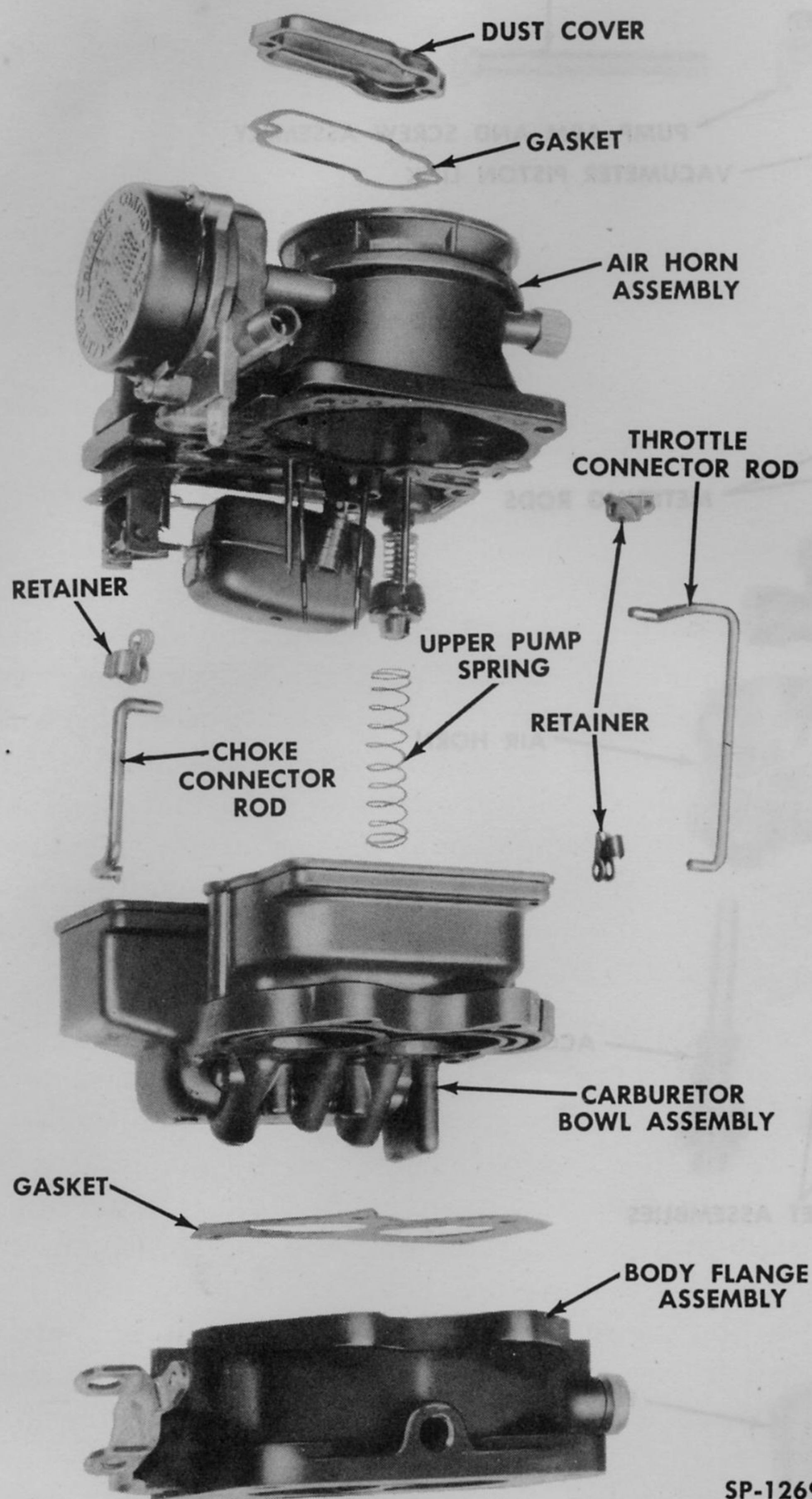


Fig. 123—WGD-781S and 813S Carburetor—Exploded View

a. **DISASSEMBLY.** (Fig. 123). Proceed as follows:

1. Remove Air Horn. Remove the choke connector rod retainer from the upper end of the connector rod. Turn the rod approximately $\frac{1}{4}$ turn and remove the rod from the throttle lever. Remove the retainers from each end of the throttle connec-

tor rod and remove the rod. Remove the eight screws and lock washers that attach the air horn to the carburetor bowl. Carefully lift the air horn from the bowl.

2. Remove Carburetor Bowl (Fig. 123). Remove the four screws and lock washers that attach the carburetor bowl to the body flange. Lift the bowl from the body flange.

3. Disassemble Air Horn (Fig. 124). Remove the float lever pin, float and needle valve. Remove the needle valve seat and gasket from the cover, with a screwdriver that is wide enough to contact both slots in the needle valve seat. Remove the vacuum piston and pin from the vacuum piston link. Remove the air horn gasket. Remove the dust cover and gasket.

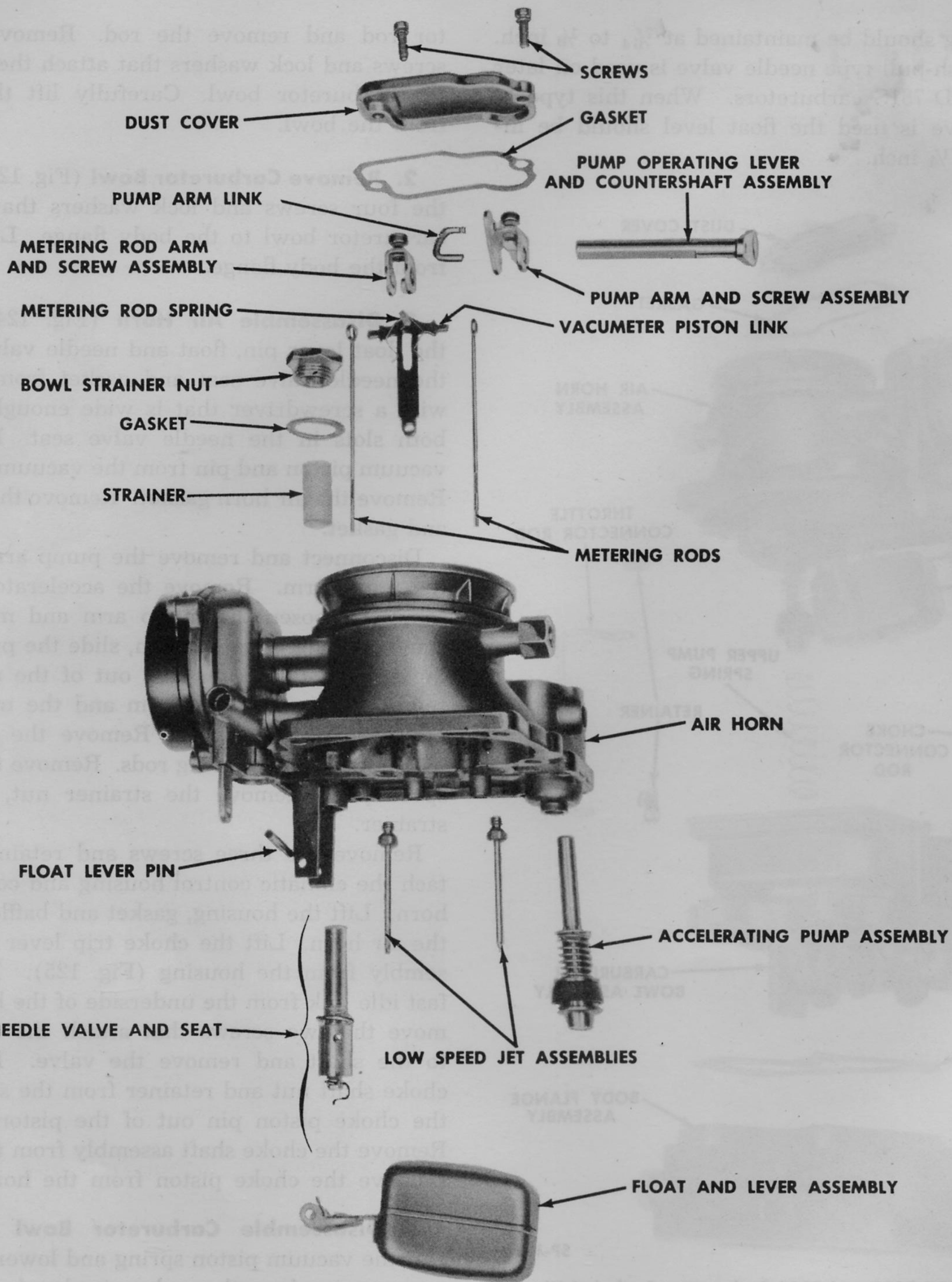
Disconnect and remove the pump arm link from the pump arm. Remove the accelerator pump assembly. Loosen the pump arm and metering rod arm retaining screws. Then, slide the pump operating lever and countershaft out of the air horn assembly. Lift the pump arm and the metering rod arm from the air horn. Remove the vacuum piston link and metering rods. Remove the two low-speed jets. Remove the strainer nut, gasket and strainer.

Remove the three screws and retainers that attach the climatic control housing and coil to the air horn. Lift the housing, gasket and baffle plate from the air horn. Lift the choke trip lever and pin assembly from the housing (Fig. 125). Remove the fast idle link from the underside of the housing. Remove the two screws that attach the choke valve to the shaft and remove the valve. Remove the choke shaft nut and retainer from the shaft. Shake the choke piston pin out of the piston and lever. Remove the choke shaft assembly from the air horn. Remove the choke piston from the housing.

4. Disassemble Carburetor Bowl (Fig. 126). Lift the vacuum piston spring and lower accelerator pump spring from the carburetor bowl. Remove the two metering rod jets with a screwdriver that is wide enough to contact both slots in the jets. Remove the pump jet and housing assembly. Remove the pump jet needle. Remove the bowl cover strainer.

5. Disassemble Body Flange (Fig. 127). Remove the screw, throttle shaft dog washer and throt-

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Fig. 124—Air Horn—Exploded View (WGD-7815 and 813S)

tle lever dog from the throttle shaft. Remove the throttle shaft retaining ring from the throttle shaft. Remove the two screws from each throttle valve and remove the valves. Remove the throttle shaft and lever assembly from the body flange. Remove the

two idle fuel adjusting screws and springs.

b. INSPECTION AND REPAIR. Clean all parts thoroughly in a suitable cleaning solvent that will dissolve carbon, varnish and gum. Remove the four

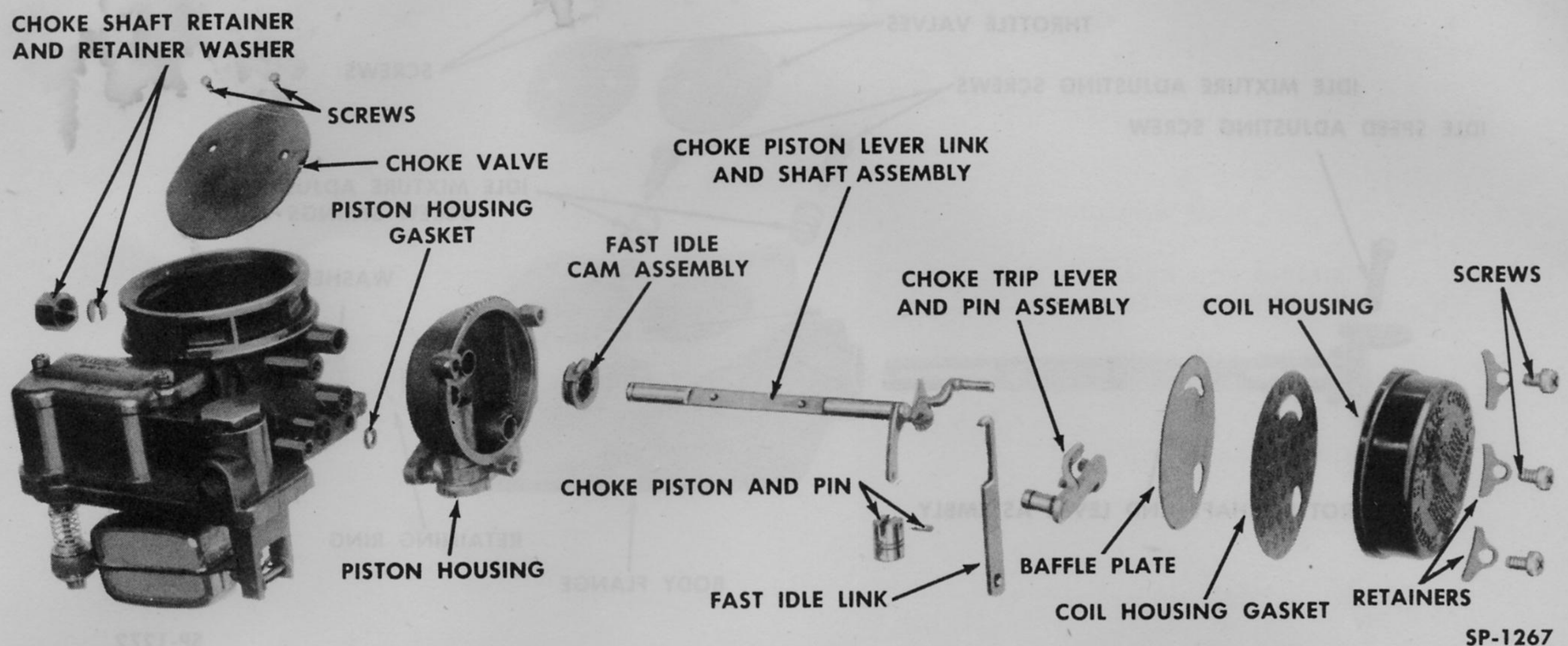


Fig. 125—Choke Assembly—Exploded View (WGD-781S and 813S)

large rivet plugs (Fig. 128) with the rivet plug remover No. T109-43. Blow out all drilled passages with compressed air. Scrape all gasket surfaces clean. Tap new rivet plugs into place with a hammer after the passages have been thoroughly cleaned.

1. **Air Horn.** Inspect the components as follows:

(a) **Air Horn and Shaft Assembly.** Insert the choke piston link and shaft assembly in the air horn.

Replace the air horn or shaft, whichever is at fault, if there is excessive clearance between the air horn and shaft. Replace the air horn if it is damaged. Replace the choke piston link and shaft assembly if it is bent or if the threaded holes in the shaft are damaged.

(b) **Choke Assembly** (Fig. 125). Replace the choke valve if it is bent or damaged in any way. Replace the climatic control housing and coil if bent or damaged or if the thermostatic coil is broken. Replace the choke piston if scored, worn or broken. Replace the choke trip lever or the fast idle link if worn or damaged.

(c) **Float and Lever** (Fig. 124). Replace the float and lever assembly if bent out of shape, if the lever is cracked, or if the float leaks.

(d) **Vacuum Piston Link and Piston** (Fig. 124). Replace the vacuum piston and pin if worn, broken, scored or if the pin on the piston is worn. Replace the vacuum piston link if it is bent out of shape or if the piston pin hole is worn (elongated) vertically.

(e) **Pump Operating Lever and Countershaft Assembly** (Fig. 124). Replace the pump operating lever and countershaft assembly if worn or damaged. Replace the pump arm and screw assembly or the metering rod arm and screw assembly if worn or bent.

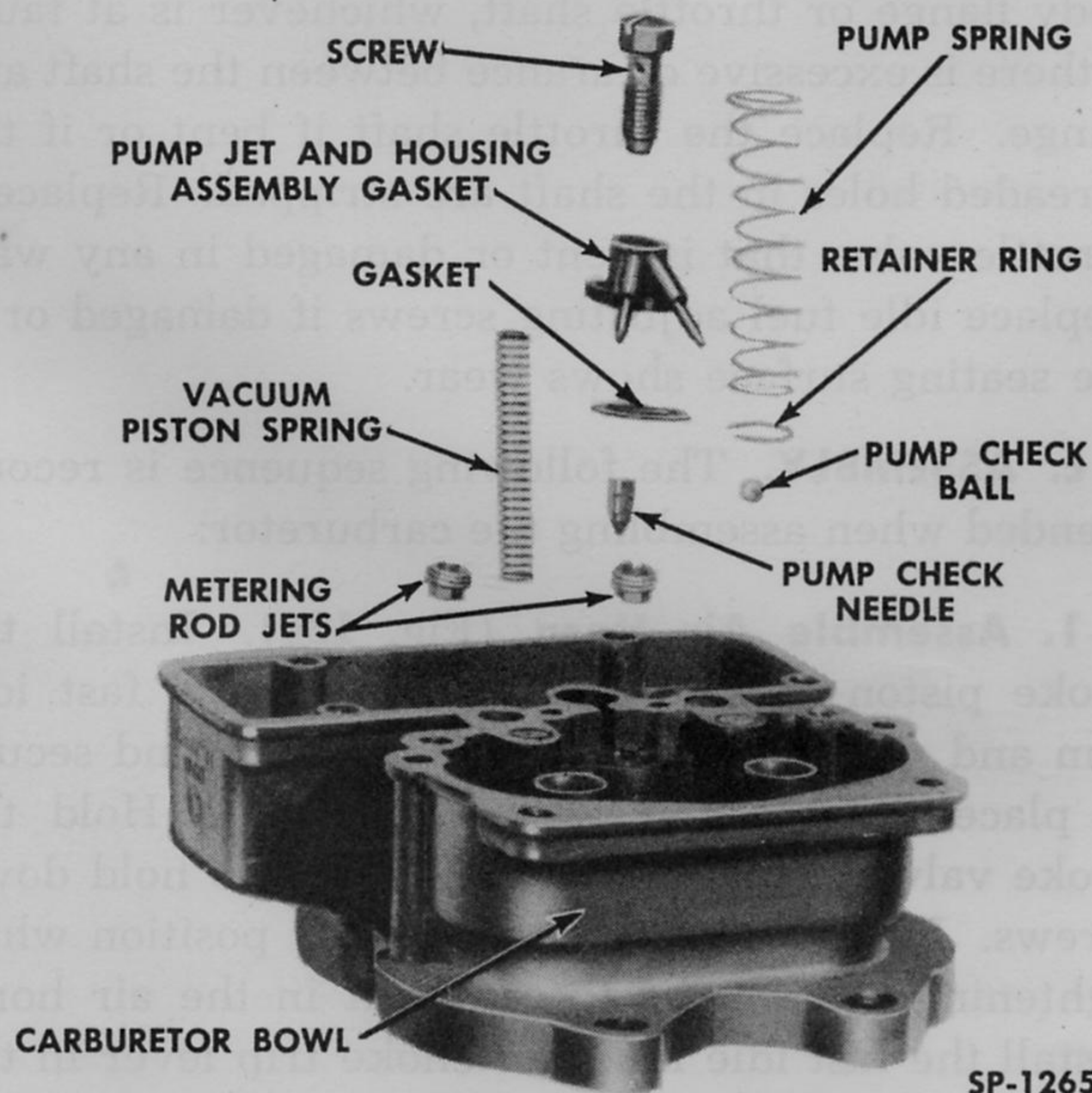
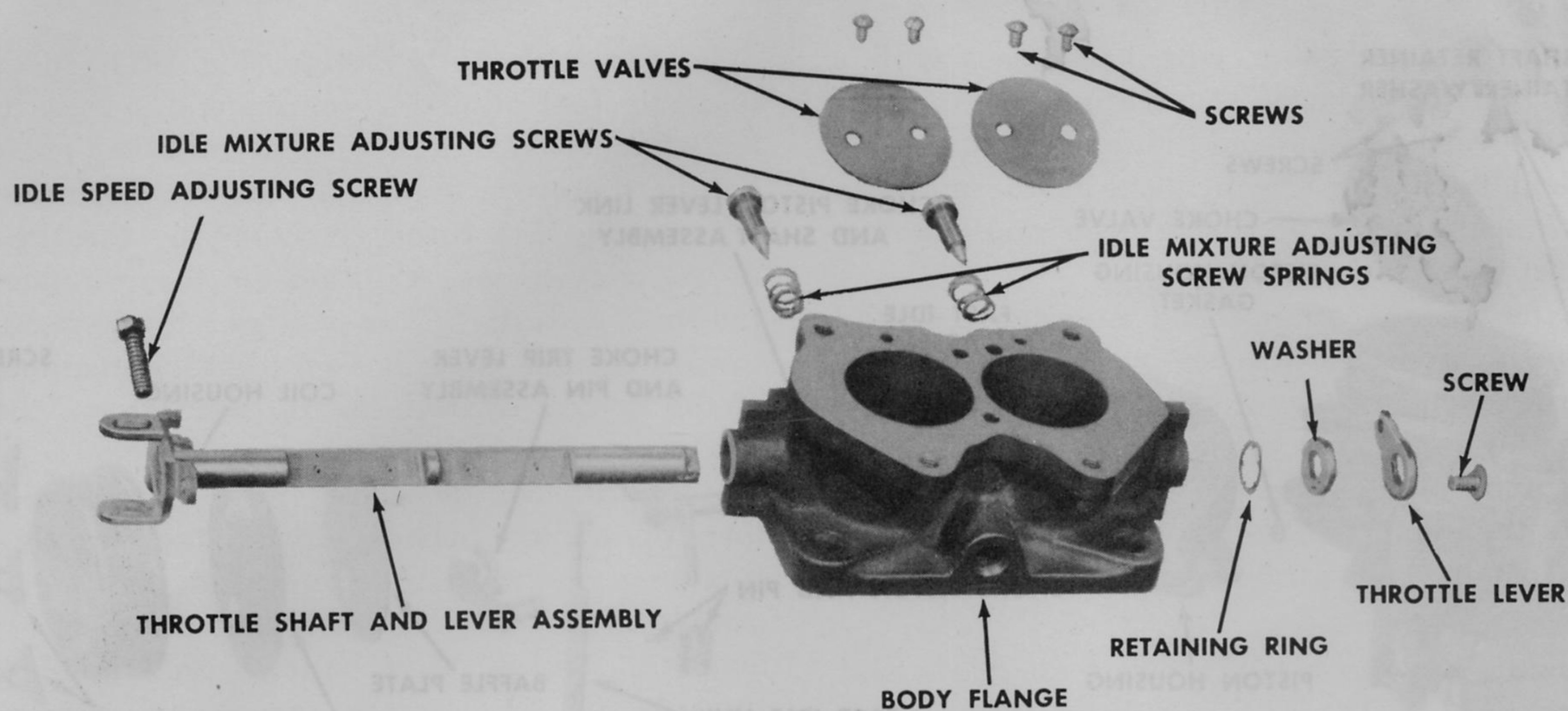


Fig 126—Carburetor Bowl—Exploded View (WGD-781S and 813S)

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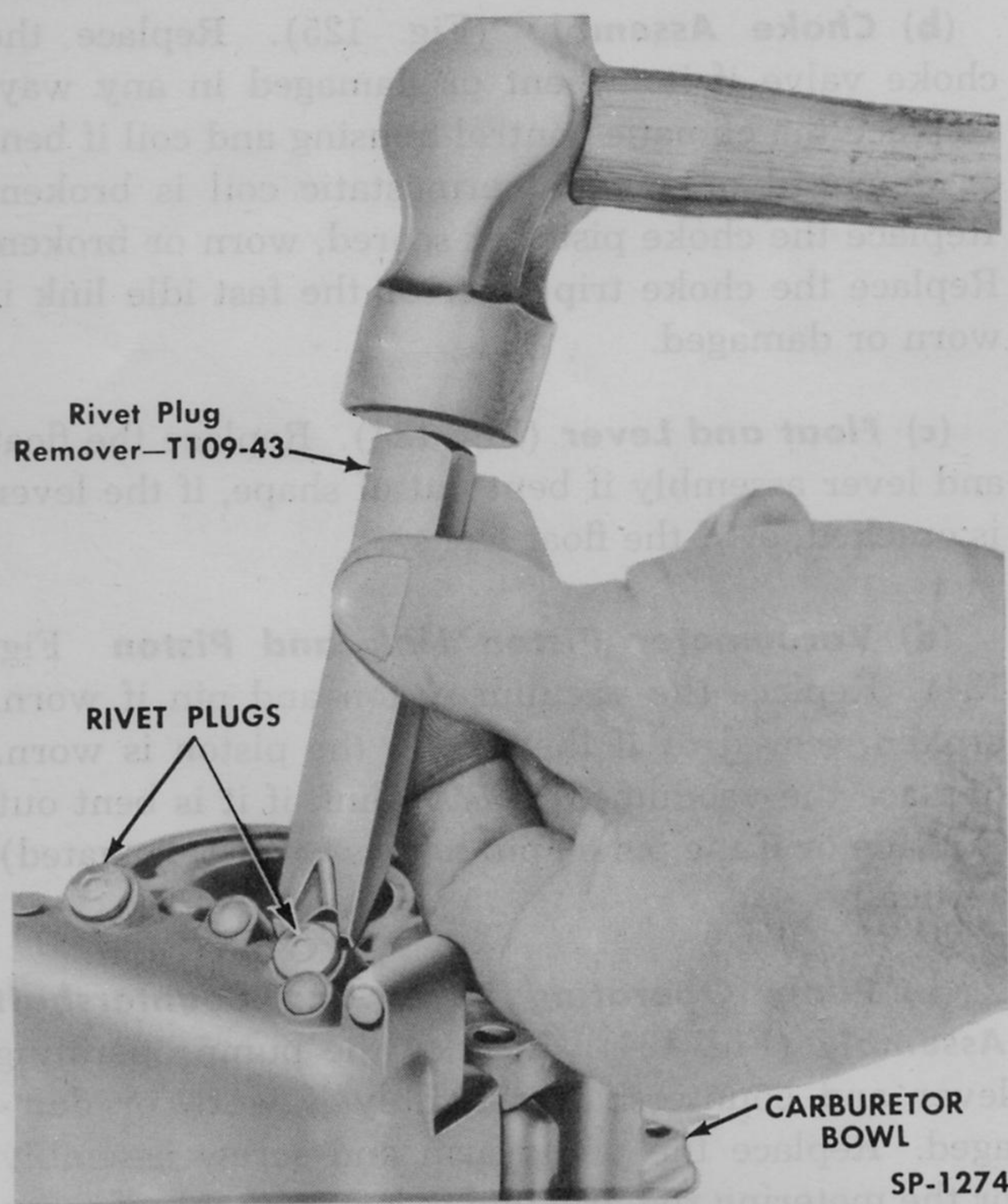


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Fig. 127—Body Flange—Exploded View (WGD-781S and 813S)

2. Carburetor Bowl (Fig. 126). Inspect as follows:

(a) Carburetor Bowl. (Fig. 126). Replace the carburetor bowl if the gasket surface is damaged or if any of the threaded passages are stripped. If



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Fig. 128—Removing Rivet Plugs (WGD-781S Shown)

a venturi is broken, or if the accelerating pump or vacuum piston bores show signs of wear, the carburetor bowl must be replaced.

(b) Pump Jet and Housing Assembly (Fig. 126). Replace the pump jet and housing if the discharge nozzles are bent, damaged or obstructed and cannot be cleaned out with a piece of wire.

3. Body Flange Assembly (Fig. 127). Replace the body flange if it is cracked or damaged. Insert the throttle shaft in the body flange. Replace the body flange or throttle shaft, whichever is at fault, if there is excessive clearance between the shaft and flange. Replace the throttle shaft if bent or if the threaded holes in the shaft are stripped. Replace a throttle valve that is bent or damaged in any way. Replace idle fuel adjusting screws if damaged or if the seating surface shows wear.

c. ASSEMBLY. The following sequence is recommended when assembling the carburetor:

1. Assemble Air Horn (Fig. 124). Install the choke piston in the housing. Install the fast idle cam and shaft assembly in the air horn and secure in place the retainer washer and nut. Hold the choke valve in place and install the two hold down screws. Hold the valve in the closed position while tightening the screws to center it in the air horn. Install the fast idle link and choke trip lever in the housing (Fig. 125).

Install the new type needle valve seat with a screwdriver that is wide enough to contact both slots in the valve. Install and tighten both low speed jets. Hold the pump arm in place in the air horn then install the pump operating lever and countershaft part way in the air horn.

Hold the vacuum meter link and metering rods and the metering rod arm in place and slide the pump operating lever and countershaft all the way in. Tighten the pump arm screw. Install a new accelerating pump plunger assembly in the air horn and attach to the pump arm with the pump link and retainer. Install a new strainer and gasket in the air horn.

Install the new push-pull type needle valve and the float. **CAUTION: Needle valve and seats are supplied in matched sets and must not be interchanged.** Set the float level to $\frac{1}{4}$ inch if using a push-pull type needle valve (Fig. 129) by bending the tab on the float. If using the early type damper spring needle valve, set the float level in the same manner to $\frac{7}{64}$ to $\frac{1}{8}$ inch. Remove the float after the correct level has been established.

Position the air horn gasket in place, then install the vacuum piston on the vacuum meter link. Reinstall the float, being careful not to change the float level.

3. Assemble Body Flange (Fig. 127). Install the two idle fuel adjusting screws and springs in the body flange. Turn the screws in until they are seated lightly, then turn them out (counter-clockwise) approximately $1\frac{1}{4}$ turns. Position the throttle shaft in the body flange. Position the throttle valves on the shaft with the "C" marking on the valves facing toward the idle ports as seen from the manifold side of the flange. Install, but do not tighten, the two screws in each valve.

Hold the throttle valves in the closed position then tighten the screws. Install the throttle shaft retaining ring with the prongs on the ring facing away from the body flange. Place the throttle lever dog with the throttle connector rod hole toward the idle fuel adjusting screws. Install the throttle shaft dog washer and screw.

4. Assemble Carburetor Bowl to Body Flange (Fig. 123). Position a new gasket on the body flange. Attach the carburetor bowl to the body flange with four screws and lock washers.

5. Assemble Air Horn to Carburetor Bowl (Fig. 123). Carefully position the air horn on the bowl, making sure the metering rods enter the metering rod jets in the bowl. Install and tighten the eight

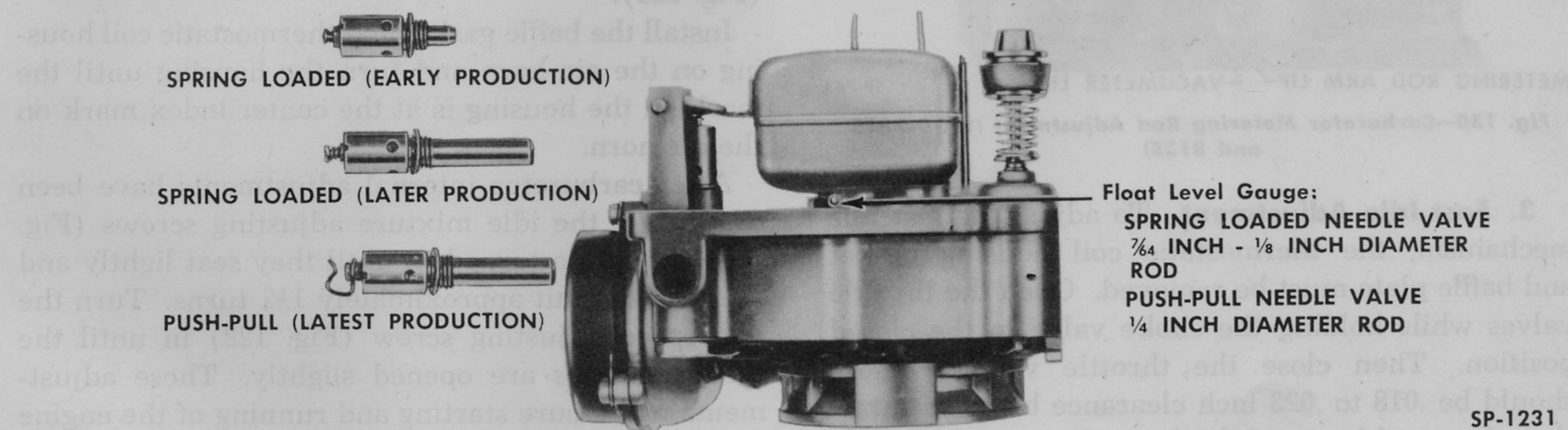


Fig. 129—Float Level Adjustment on WGD-7815 and 8135 Carburetors

2. Assemble Carburetor Bowl (Fig. 126). Install the new metering rod jets in the bowl. Place the new pump check needle with the point facing downward in the bowl, then install the new gasket and the pump jet and housing assembly. Install the new pump intake check ball and retainer in the bowl. Install the new strainer in the bowl. Position vacuum piston spring and the accelerating pump lower spring in the bowl.

screws. Install the new throttle connector rod and retainers. Install choke connector rod. The carburetor is now ready for adjustment as detailed below.

d. CARBURETOR ADJUSTMENTS OFF THE VEHICLE. The following adjustments are performed best with the carburetor off the vehicle.

1. Accelerating Pump Stroke. The accelerating pump requires no adjustment, since the pump stroke

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is predetermined at the time of manufacture. Therefore, no attempt should be made to bend the throttle connector rod to change the pump stroke.

2. Metering Rod Adjustment. To adjust the metering rods remove the dust cover from the air horn. Loosen the metering rod arm set screw (Fig. 130). With the idle speed adjusting screw backed out to allow the throttle valves to seat in the bores of the body flange, press the vacuumer link until the metering rods bottom. With the rods held in this position revolve the metering rod arm until the link contacts the vacuumer link. Being careful not to move the metering rod arm, tighten the metering rod arm set screw. Install the dust cover on the air horn.

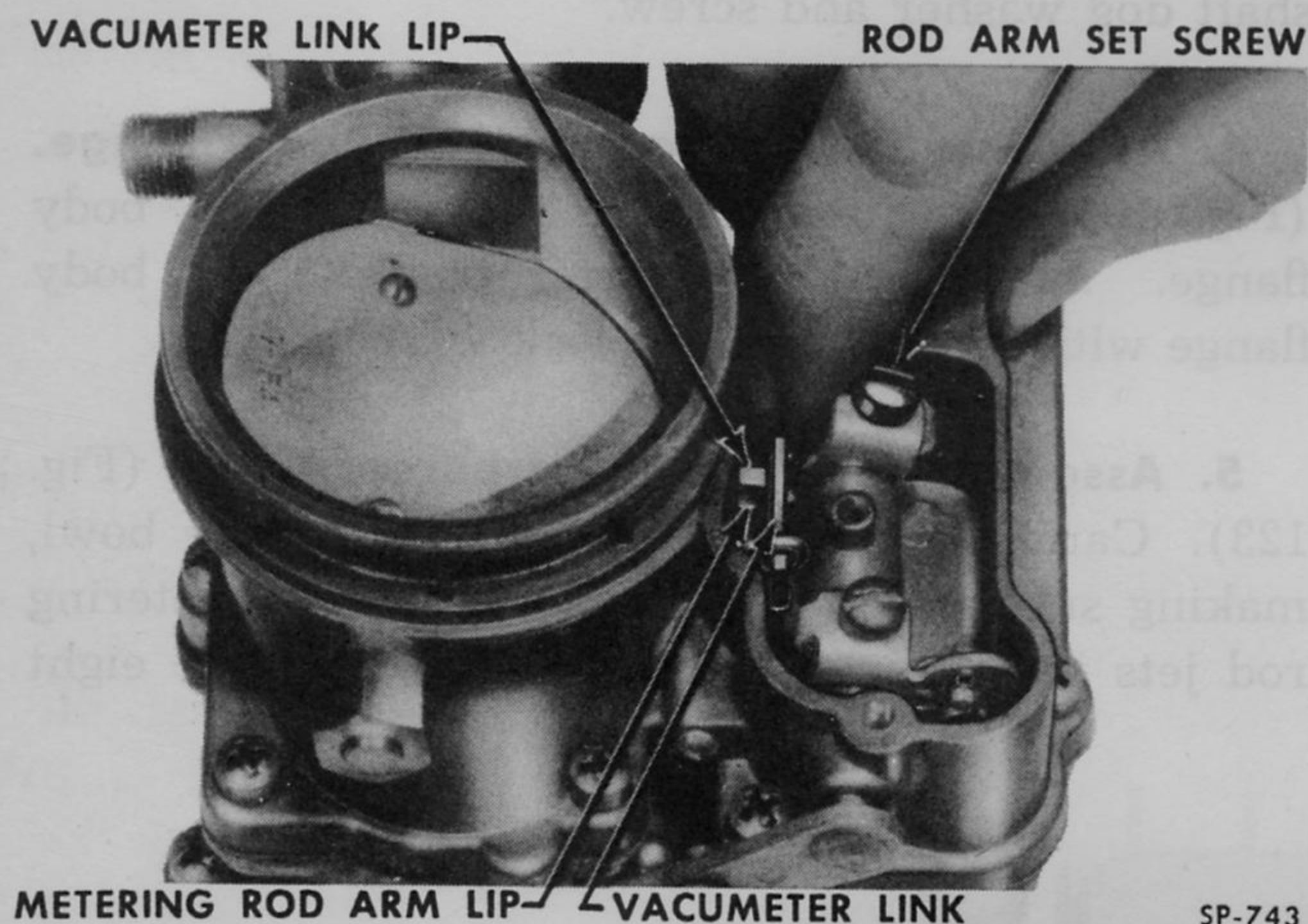
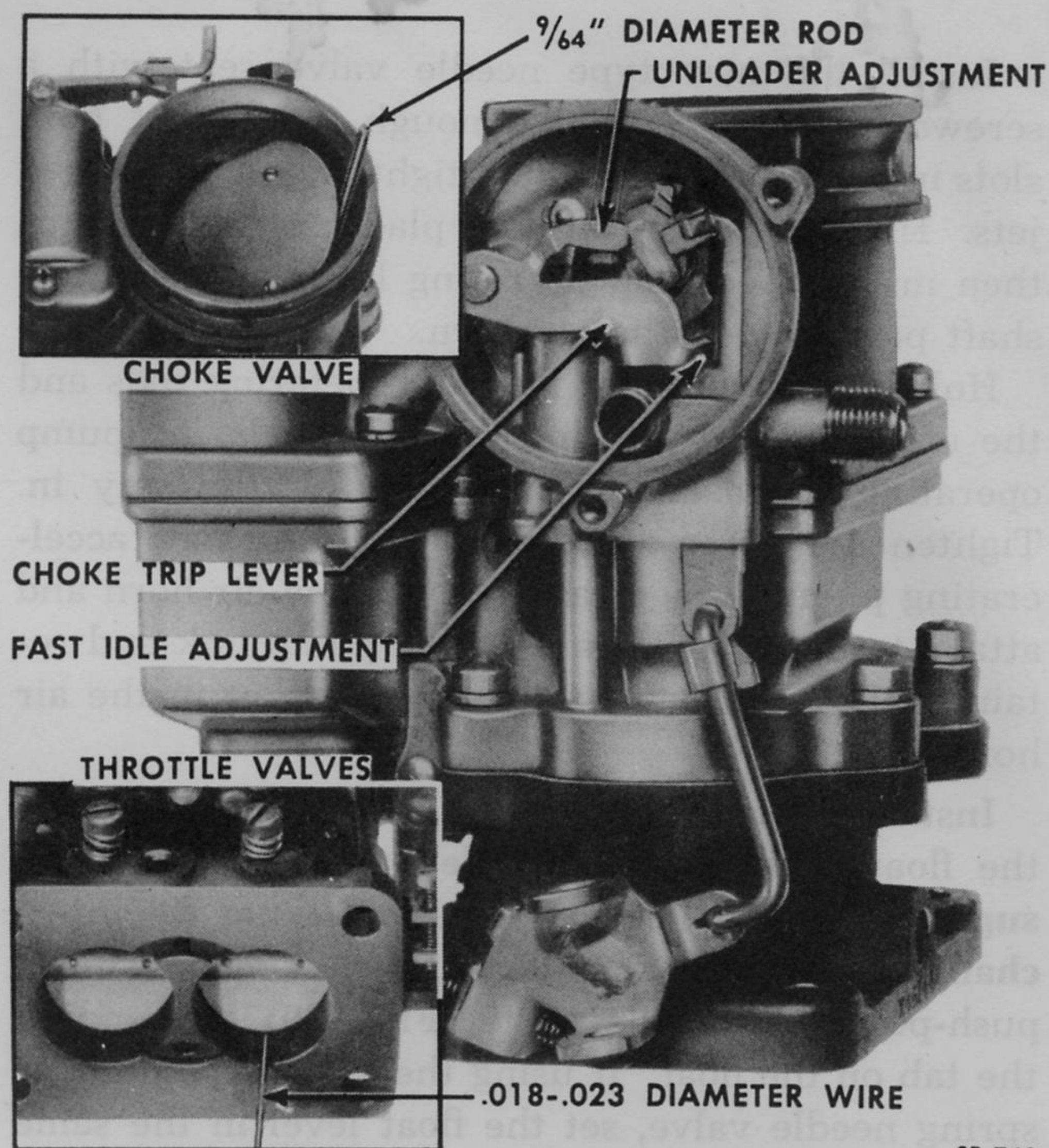


Fig. 130—Carburetor Metering Rod Adjustment (WGD-7815 and 813S)

3. Fast Idle Adjustment. To adjust the fast idle mechanism, the thermostatic coil housing gasket and baffle plate must be removed. Open the throttle valves while holding the choke valve in the closed position. Then close the throttle valves. There should be .018 to .023 inch clearance between throttle valves and bores of the body flange opposite the idle ports. This distance should be measured with a wire type feeler gauge. Adjust this distance by bending the arm on the choke trip lever (Fig. 131).

4. Unloader Adjustment. To adjust the unloader, hold the throttle valves in the fully open position and close the choke valve as far as possible without forcing. There should be a clearance of $\frac{9}{64}$ inch plus or minus $\frac{1}{64}$ inch, between the upper edge of the choke valve and the inner wall of the air horn



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Fig. 131—Carburetor Fast Idle and Unloader Adjustment (WGD-7815 and 813S)

(Fig. 131), while the throttle valves and choke valves are held in this position. Adjustment should be made by bending the arm on the choke trip lever (Fig. 131).

Install the baffle gasket and thermostatic coil housing on the air horn and turn the housing until the mark on the housing is at the center index mark on the air horn.

After carburetor internal adjustments have been completed, the idle mixture adjusting screws (Fig. 122) should be turned in until they seat lightly and then backed out approximately $1\frac{1}{4}$ turns. Turn the idle speed adjusting screw (Fig. 122) in until the throttle valves are opened slightly. These adjustments will assure starting and running of the engine until adjustments can be made in the vehicle.

CARBURETOR OVERHAUL—Model WCD-723S

a. DISASSEMBLY. Proceed as follows:

1. Remove Air Horn. (Fig. 132). Remove the fast idle connector rod retainer from the lower end of the fast idle connector rod. Turn the rod approximately $\frac{1}{4}$ turn and remove the rod from the choke lever. Remove the retainer from the upper end of the throttle connector rod.

Remove the retaining washer and spring from the lower end of the throttle rod and remove the rod. Remove the four screws and lock washers that attach the air horn to the carburetor bowl cover. Lift the air horn from the cover.

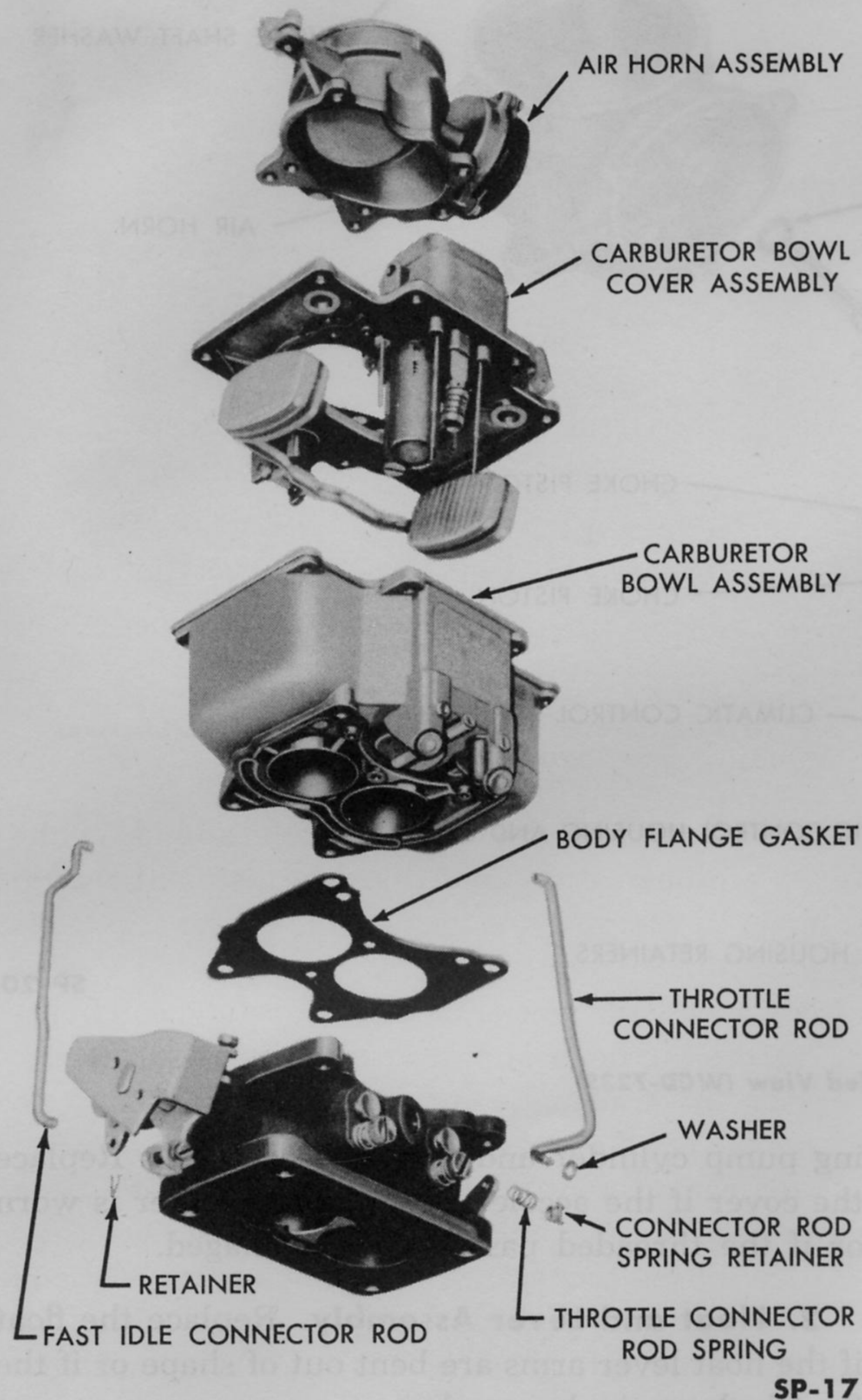


Fig. 132—WCD-723S Carburetor—Exploded View

2. Remove Carburetor Bowl Cover (Fig. 132). Remove the two screws and lock washers that attach the dust cover to the carburetor bowl cover. Remove the dust cover. Remove the six screws and lock washers that attach the bowl cover to the bowl. Lift the cover from the carburetor bowl.

3. Remove Carburetor Bowl (Fig. 132). Remove the four screws and lock washers that attach the carburetor bowl to the body flange. Lift the bowl from the body flange.

4. Disassemble Air Horn (Fig. 133). Remove the four screws and lock washers that attach the climatic control housing and coil to the air horn. Lift the housing, gasket and baffle plate from the air horn. Remove the two screws that attach the choke valve to the shaft and remove the valve. Remove the choke lever and screw assembly and fibre washer from the shaft. Lift the choke piston out of the cylinder. Remove the choke piston link and shaft assembly from the air horn.

5. Disassemble Carburetor Bowl Cover. (Fig. 134). Remove the accelerating pump link retainer from the pump link and remove the link. Remove the float lever pin, float and needle valve from the carburetor bowl cover. Remove the needle valve seat and gasket from the cover with a screwdriver that is wide enough to contact both slots in the needle valve seat. Loosen the screw on the pump and metering rod arm assembly. Slide the pump operating lever and countershaft assembly from the cover. Remove the vacuum piston and pin from the vacuum piston link.

Lift the link and metering rods from the cover. Remove the two low speed jets from the cover. Remove the pump discharge plug and gasket from the cover. Remove the pump discharge check plug and needle from the cover. Remove the screw that attaches the pump plunger guide to the cover. Lift the accelerating pump assembly and guide from the cover. Remove pump strainer and the intake disc check assembly at the lower end of the accelerating pump cylinder.

Remove the two screws and washers that attach the pump jet and housing assembly to the cover. Remove the pump jet and housing assembly and gasket. Remove the strainer nut, gasket and screen from the cover.

6. Disassemble Carburetor Bowl (Fig. 135). Lift the vacuum piston spring and lower accelerator pump spring from the carburetor bowl. Remove the two metering rod jets and gaskets with a screwdriver that is wide enough to contact both slots in the jets.

7. Disassemble Body Flange (Fig. 136). Remove the screw, throttle shaft dog washer and lever dog from the throttle shaft. Remove the throttle shaft retaining ring from the throttle shaft. Remove the two screws from each throttle valve

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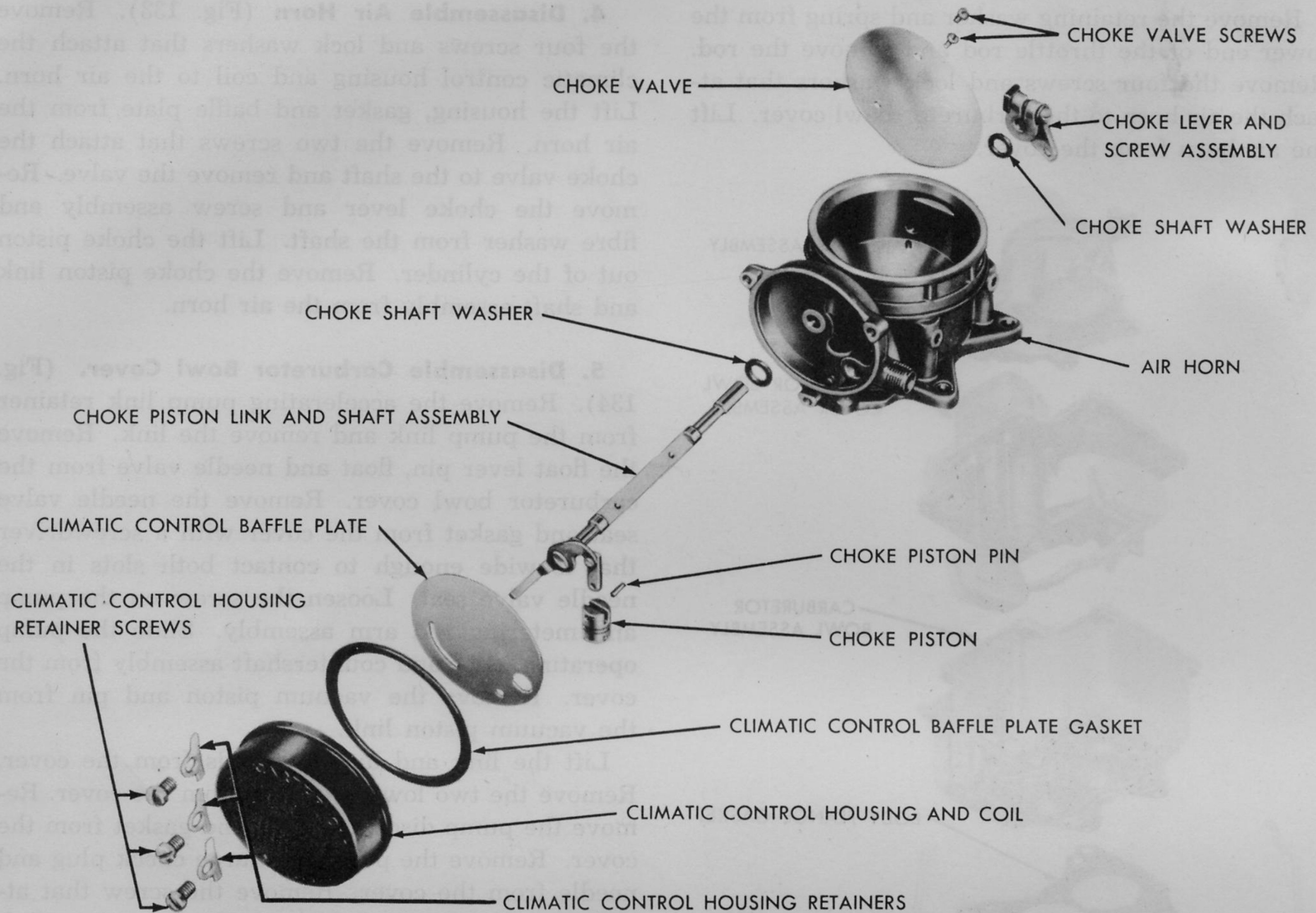


Fig. 133—Air Horn—Exploded View (WCD-723S)

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and remove the valves. Remove the throttle shaft and lever assembly from the body flange. Remove the two idle fuel adjusting screws and springs.

b. INSPECTION AND REPAIR. The inspection and repair procedure for the WCD-723S carburetor is the same as for WGD-781S and 813S carburetors, except for the carburetor float bowl cover. Refer to INSPECTION AND REPAIR (Models WGD-781S and WGD-813S), for all inspection and repair of WCD-723S carburetors, except inspection and repair of the float bowl cover which is accomplished as described hereafter. Clean the carburetor bowl cover in a suitable cleaning solvent that will remove carbon, gum and varnish before inspecting.

1. Carburetor Bowl Cover. Replace the carburetor bowl cover if it is cracked, broken or if the gasket surface is damaged. Check the accelerat-

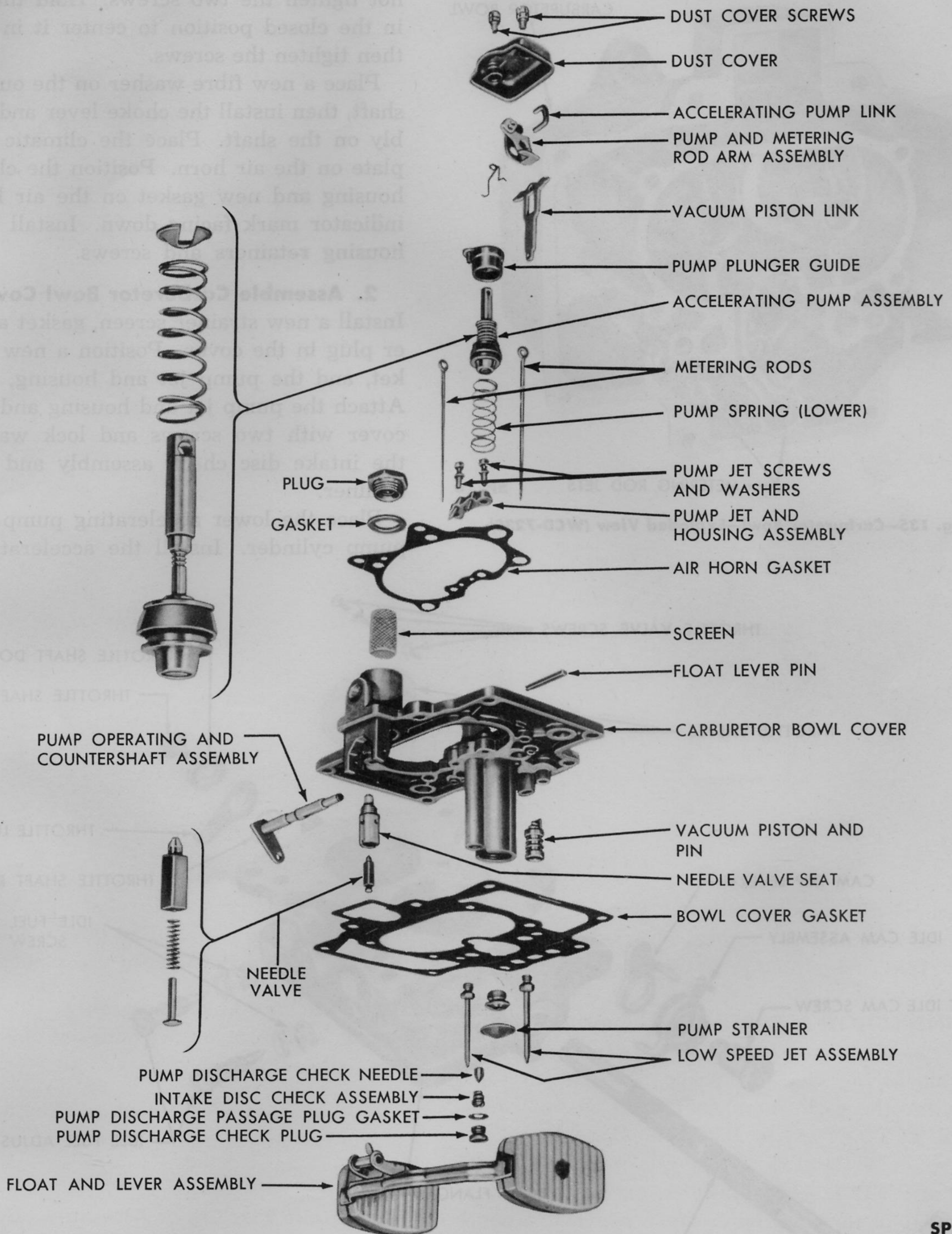
ing pump cylinder and threaded passages. Replace the cover if the accelerating pump cylinder is worn or if the threaded passages are damaged.

2. Float and Lever Assembly. Replace the float if the float lever arms are bent out of shape or if the float leaks or is damaged.

3. Pump Jet and Housing. Replace the pump jet and housing if damaged or plugged up and cannot be cleaned out with a wire.

4. Intake Disc Check Assembly. Replace the intake disc check if either the disc or the seat show any signs of wear.

5. Vacuum Piston, Pin and Link. Replace the vacuum piston and pin if worn, broken, scored or if the pin on the piston is worn. Replace the vacuum piston link if it is bent out of shape or if the piston



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Fig. 134—Carburetor Bowl Cover—Exploded View (WCD-7235)

pin hole is worn (elongated).

c. **ASSEMBLY.** Proceed as follows:

1. **Assemble Air Horn** (Fig. 133). Place a new

fiber washer on the choke piston link and shaft assembly. Install the choke piston link and shaft assembly and the choke piston in the air horn. Position the choke valve on the shaft and install but do

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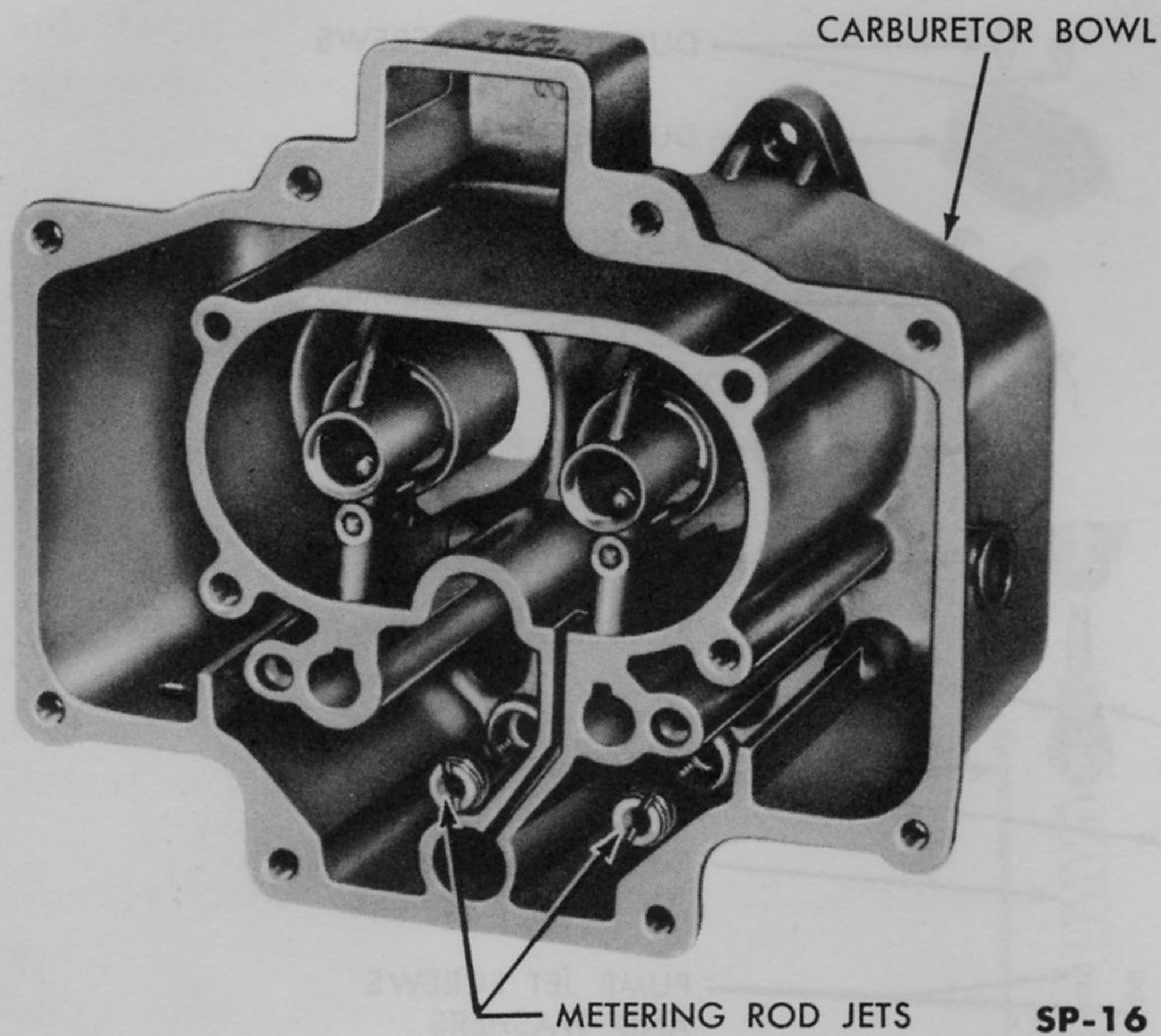


Fig. 135—Carburetor Bowl—Exploded View (WCD-7235)

not tighten the two screws. Hold the choke valve in the closed position to center it in the air horn, then tighten the screws.

Place a new fibre washer on the outer end of the shaft, then install the choke lever and screw assembly on the shaft. Place the climatic control baffle plate on the air horn. Position the climatic control housing and new gasket on the air horn with the indicator mark facing down. Install the three coil housing retainers and screws.

2. Assemble Carburetor Bowl Cover (Fig. 134). Install a new strainer screen, gasket and the strainer plug in the cover. Position a new air horn gasket, and the pump jet and housing, on the cover. Attach the pump jet and housing and gasket to the cover with two screws and lock washers. Install the intake disc check assembly and a new pump strainer.

Place the lower accelerating pump spring in the pump cylinder. Install the accelerating pump as-

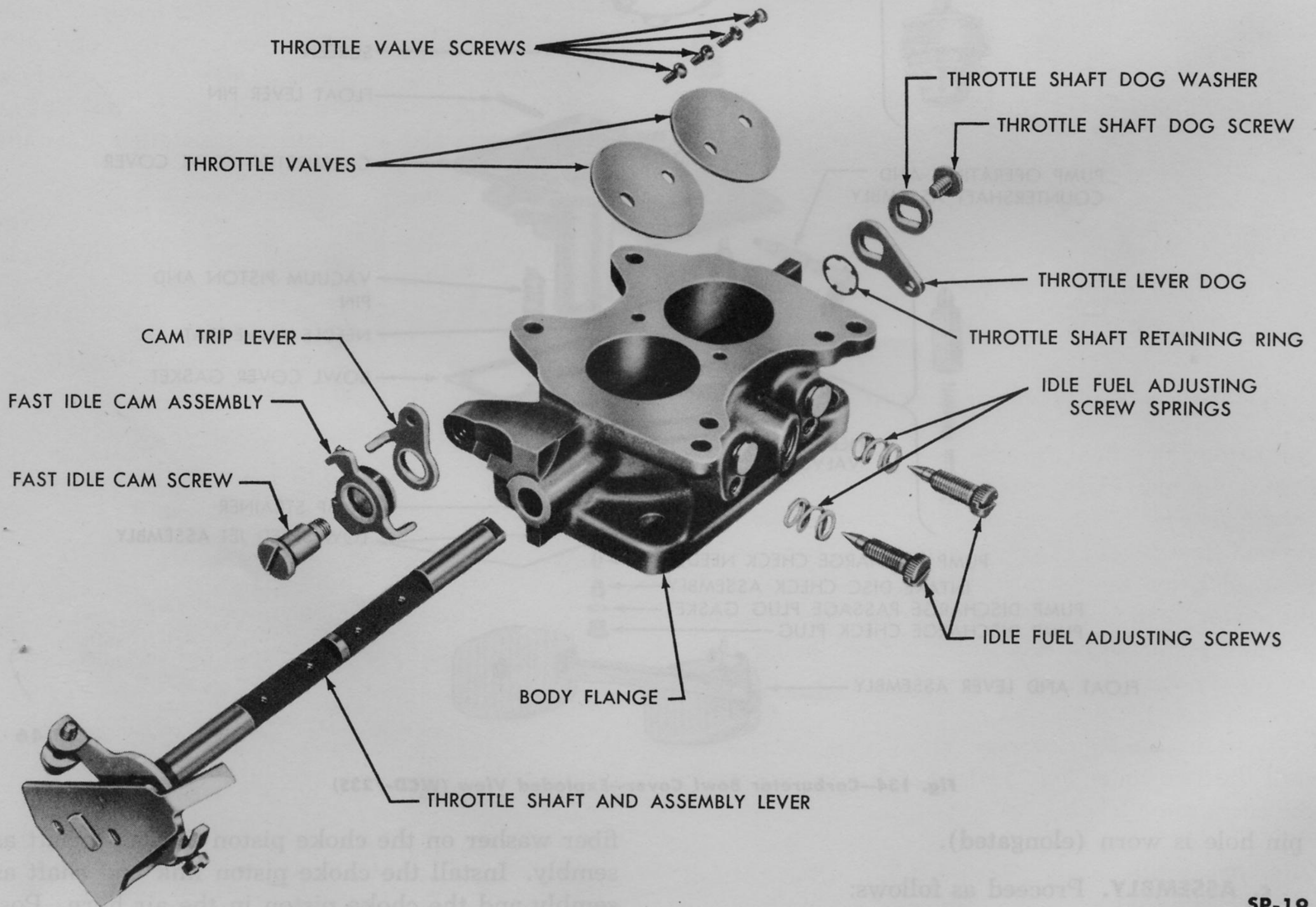


Fig. 136—Body Flange—Exploded View (WCD-7235)

sembly and guide in the cylinder and attach in place with the accelerating pump guide retaining screw. Place the pump discharge check needle in the cover with the point facing down as viewed from the top of the cover.

Install the pump discharge check plug and new gasket. Install the two low speed jets. Install the vacuum piston link in the cover with lip facing toward the rear of the cover.

Hold the pump and metering rod arm assembly in place and install the pump operating lever and countershaft assembly. Tighten the screw on the pump operating lever and countershaft assembly. Install the needle valve seat and new gasket with a screwdriver that is wide enough to contact both slots in the needle valve seat. Place the needle valve assembly in the needle valve seat.

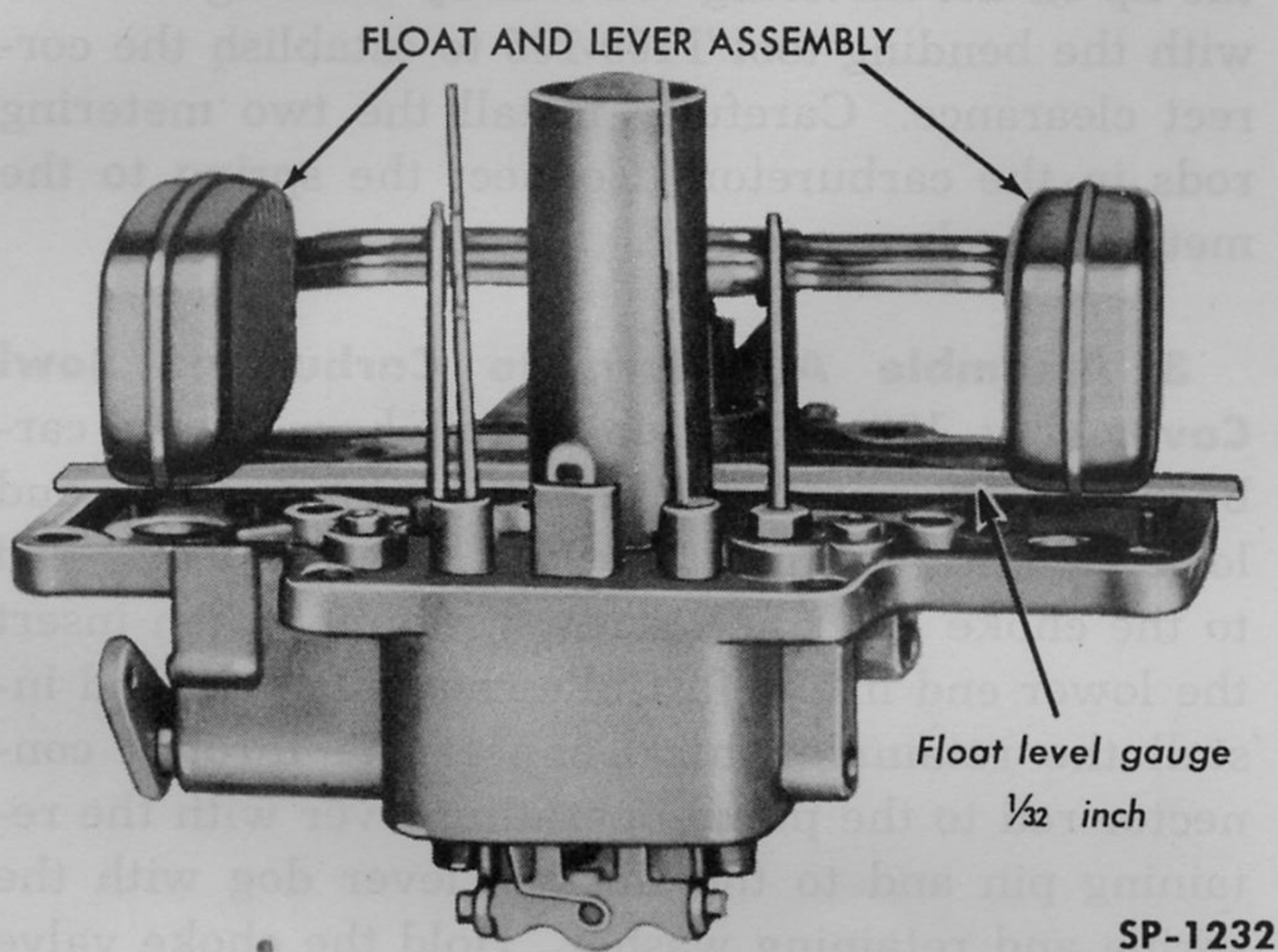


Fig. 137—Float Level Adjustment on WCD-723S Carburetor

Position the float on the cover and install the float lever pin. Use a piece of $\frac{1}{32}$ inch stock as shown in Fig. 137 to set the float level. When the correct float level has been established, remove the float. Position the carburetor bowl cover gasket on the cover then connect the vacuum piston to the vacuum piston link. Reinstall the float, being careful not to disturb the float level setting.

3. Assemble Carburetor Bowl (Fig. 135). Install the two metering rod jets and new gaskets in the carburetor bowl.

4. Assemble Body Flange (Fig. 136). Install the two idle fuel adjusting screws and springs in the body flange. Position the throttle valves on the shaft

cam assembly. Position the throttle shaft in the body flange. Turn the screws in until they are seated lightly, then turn them out (counter-clockwise) approximately $1\frac{1}{4}$ turns. Install the pin and with the "C" marking on the valves facing toward the idle ports as seen from the manifold side of the flange.

Install, but do not tighten, the two new screws in each valve. Hold the throttle valves in the closed position then tighten the screws. Install the throttle shaft retaining ring with the prongs on the ring facing away from the body flange. Place the throttle lever dog with the throttle connector rod hole toward the idle fuel adjusting screws. Install throttle shaft dog washer and screw.

5. Assemble Carburetor Bowl to Body Flange (Fig. 132). Position a new gasket on the body flange. Attach the carburetor bowl to the body flange with four screws and lock washers.

6. Assemble Carburetor Bowl Center Cover to Bowl (Fig. 132). Carefully place the cover in position on the bowl. Secure the cover to the bowl with six screws and lock washers. The carburetor is now ready for adjustment as detailed below. **NOTE:** The metering rods and air horns are installed after the

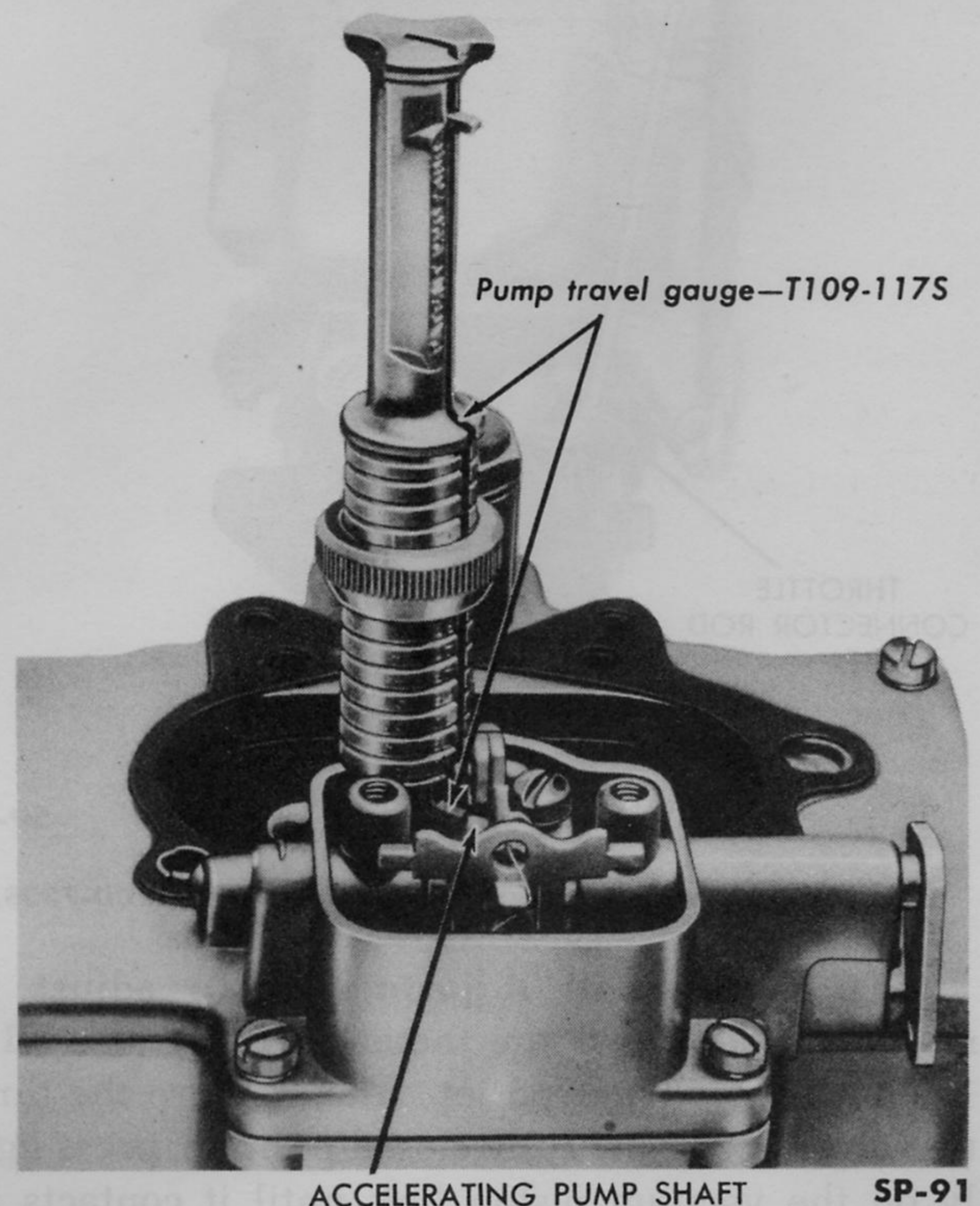


Fig. 138—Checking Accelerating Pump Travel (WCD-723S)

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necessary adjustments have been made as outlined in the following paragraphs.

d. ADJUSTMENTS OFF THE VEHICLE. The following adjustments are performed best with the carburetor off the vehicle.

1. Accelerator Pump Adjustment. The accelerating pump link **must** be connected to the lower hole (short stroke) while adjusting the pump. Back out the idle speed adjusting screw until the throttle valves are in the fully closed position. Place the base of the pump travel gauge on the edge of the dust cover boss (Fig. 138), making sure the throttle valves are in the fully closed position.

Turn the knurled nut on the gauge until the finger on the gauge just contacts the top of the accelerating pump shaft. The reading on the gauge should be "29." To adjust the pump stroke, bend the lower end of the throttle connector rod with bending tool T109-41 as shown in Fig. 139.

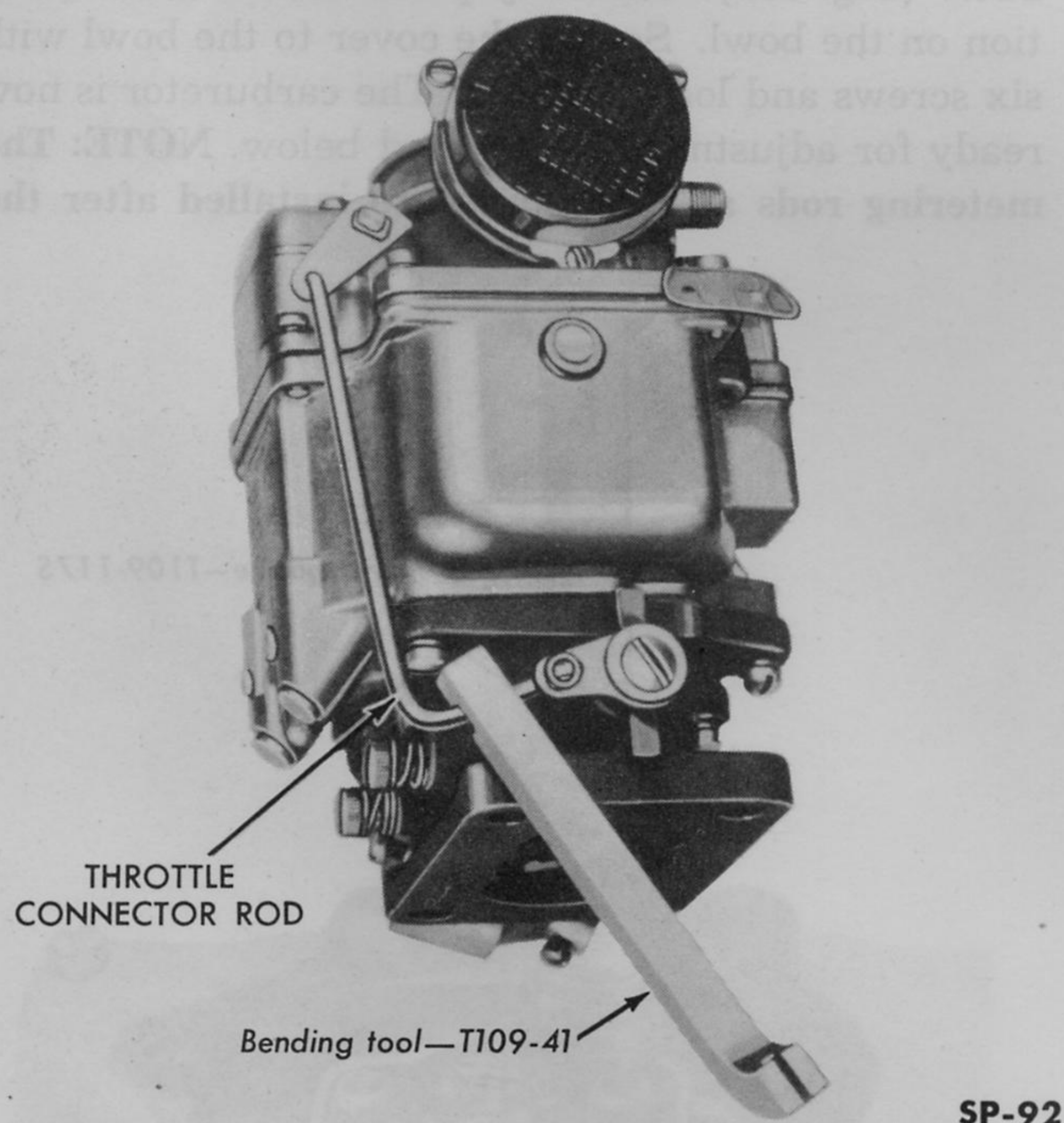


Fig. 139—Adjusting Accelerating Pump Travel (WCD-723S)

2. Metering Rod Adjustment. To adjust the metering rod, insert the metering rod gauge T109-163 in the metering rod jet. Making sure the throttle valves are in the fully closed position, press lightly on the vacuum piston link until it contacts the lip of the metering rod arm. There should be less

Metering rod gauge T109-163

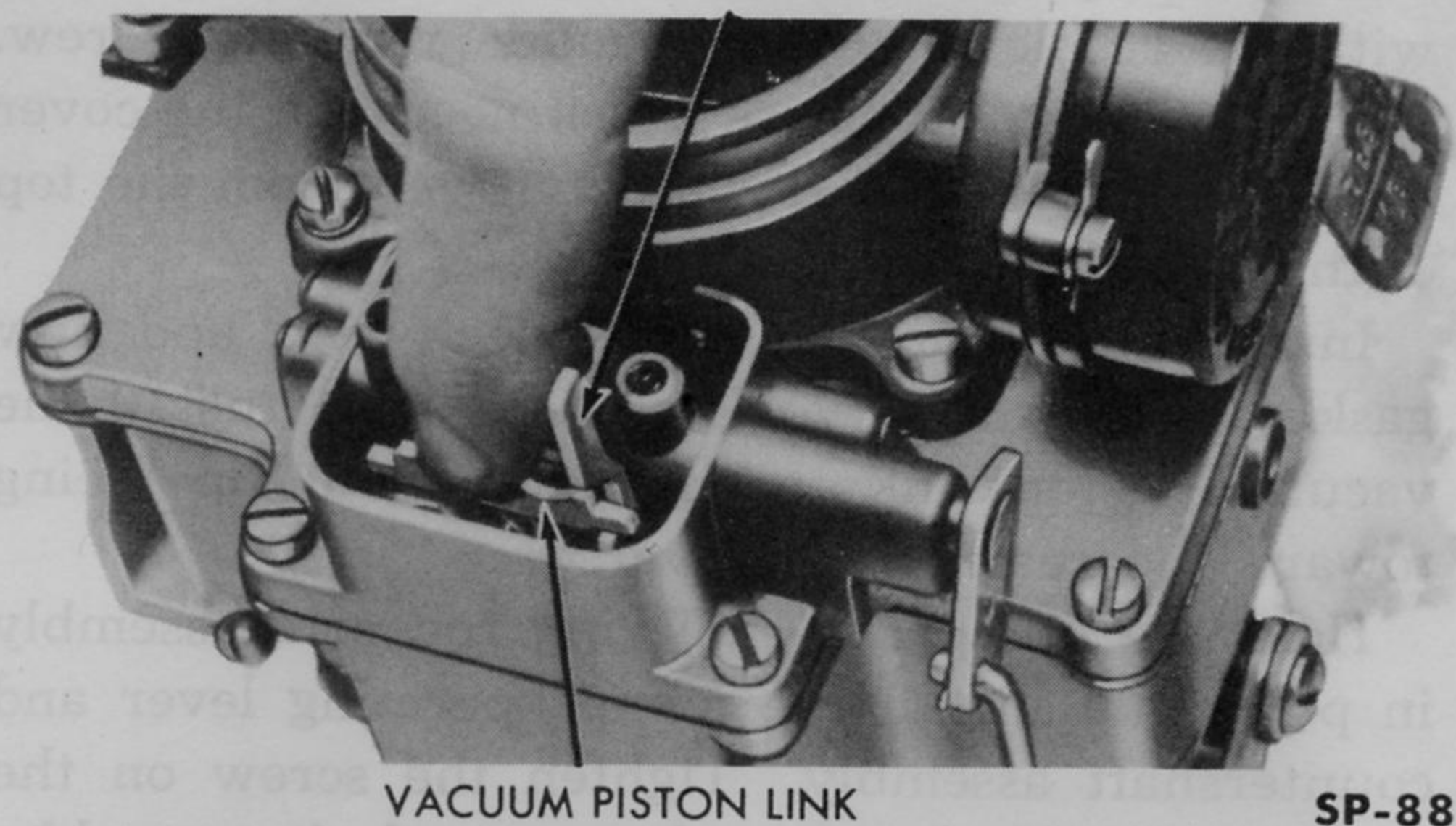


Fig. 140—Checking Metering Rod Adjustment (WCD-723S)

than .005 inch between the pump link and the shoulder on the metering rod gauge (Fig. 140). Adjust the lip on the metering rod arm by bending the arm with the bending tool T109-105 to establish the correct clearance. Carefully install the two metering rods in the carburetor. Connect the spring to the metering rods.

3. Assemble Air Horn to Carburetor Bowl Cover (Fig. 132). Position the air horn on the carburetor bowl cover and install the four screws and lock washers. Connect the fast idle connector rod to the choke lever and screw assembly, then insert the lower end in the fast idle cam assembly and install the retaining pin. Connect the throttle connector rod to the pump operating lever with the retaining pin and to the throttle lever dog with the spring and retaining washer. Hold the choke valve in the closed position, making sure the throttle lever set screw is backed out. Adjust the fast idle set screw until it just contacts the high spot on the fast idle cam (Fig. 141). Place a .018 inch wire gauge between the throttle valve and bore, opposite the idle port. Turn the fast idle screw in again until it just contacts the fast idle cam.

4. Unloader Adjustment. Loosen the screw on the choke lever. Hold the choke valve in the fully closed position and insert a .010 inch flat feeler gauge (Fig. 142) between the lip on the fast idle cam and the base on the flange casting, then tighten the choke lever screw. With the throttle valve in the fully open position, bend the unloader lip on the throttle lever cam with bending tool T109-41 (Fig. 143) until a clearance of $\frac{1}{8}$ inch is established between the upper edge of choke valve and air horn.

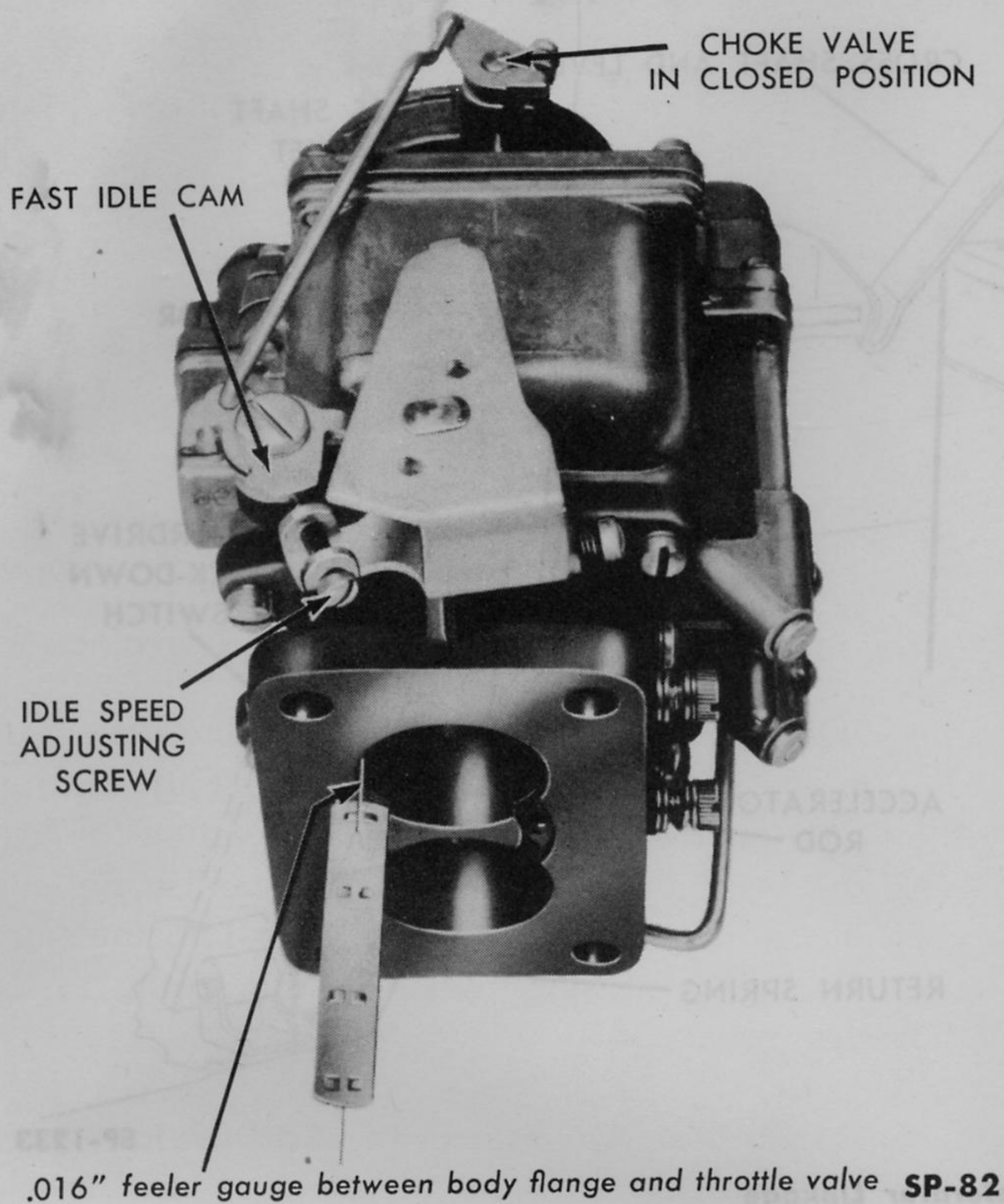


Fig. 141—Fast Idle Adjustment (WCD-723S)

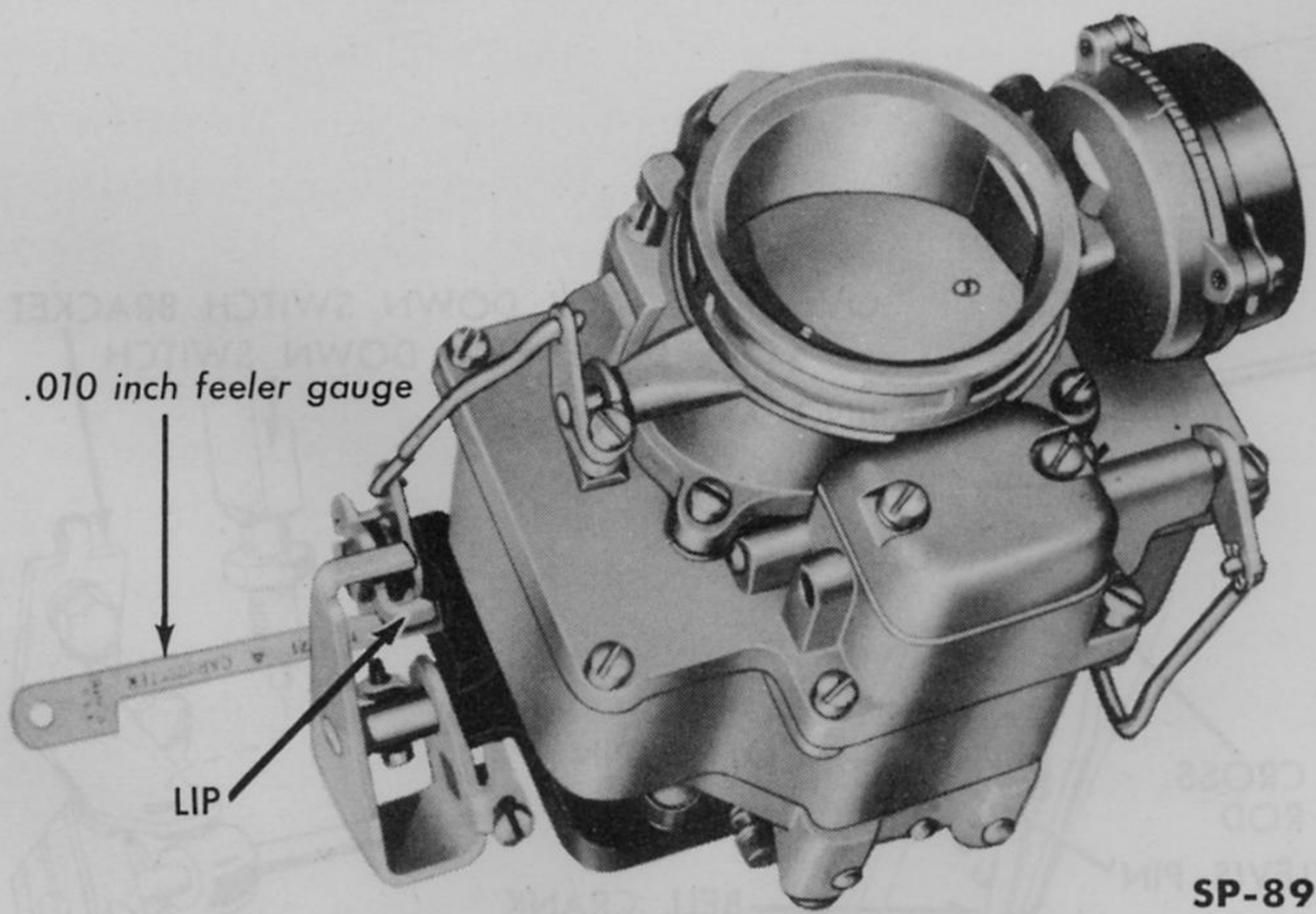


Fig. 142—Adjusting Choke Valve (WCD-723S)

ACCELERATOR PEDAL AND LINKAGE

Carburetor throttle control is by the accelerator pedal and the linkage connecting it with the arm or lever on the carburetor throttle shaft. The Kaiser accelerator pedal and linkage are illustrated in Fig. 144, the Frazer in Figs. 145 and 146. Such addi-

tional throttle control linkage as is required for vehicles with Hydra-Matic drive is illustrated and described in the Hydra-Matic Shop Manual.

a. KAISER LINKAGE ADJUSTMENT. Refer to Fig. 144. To adjust the throttle linkage, loosen and back off two lock nuts on adjusting rod that connects the cross shaft lever with lever on the throttle extension shaft.

Turn adjuster until carburetor throttle arm reaches position for full throttle opening just before accelerator pedal touches floor mat or contacts overdrive kickdown switch. Tighten the lock nuts and check accelerator and linkage action to assure that throttle arm reaches full closed position against idle speed adjusting screw when pressure is removed from accelerator pedal.

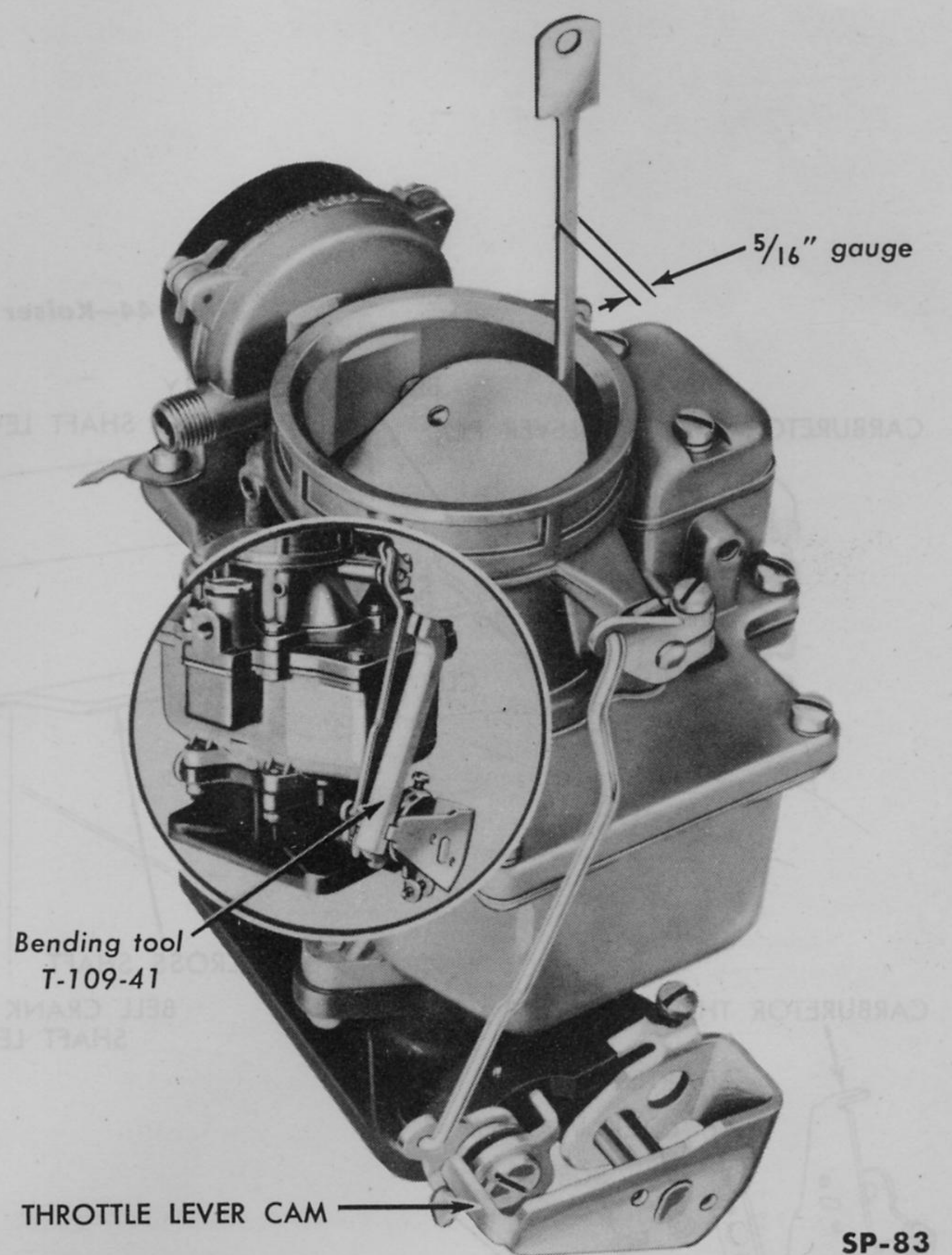


Fig. 143—Adjusting Unloader Lip (WCD-723S)

b. FRAZER LINKAGE ADJUSTMENT. Refer to Fig. 145 for linkage used with WCD-723S carburetor. Disconnect throttle rod from carburetor. With accelerator pedal in released (closed throttle) posi-

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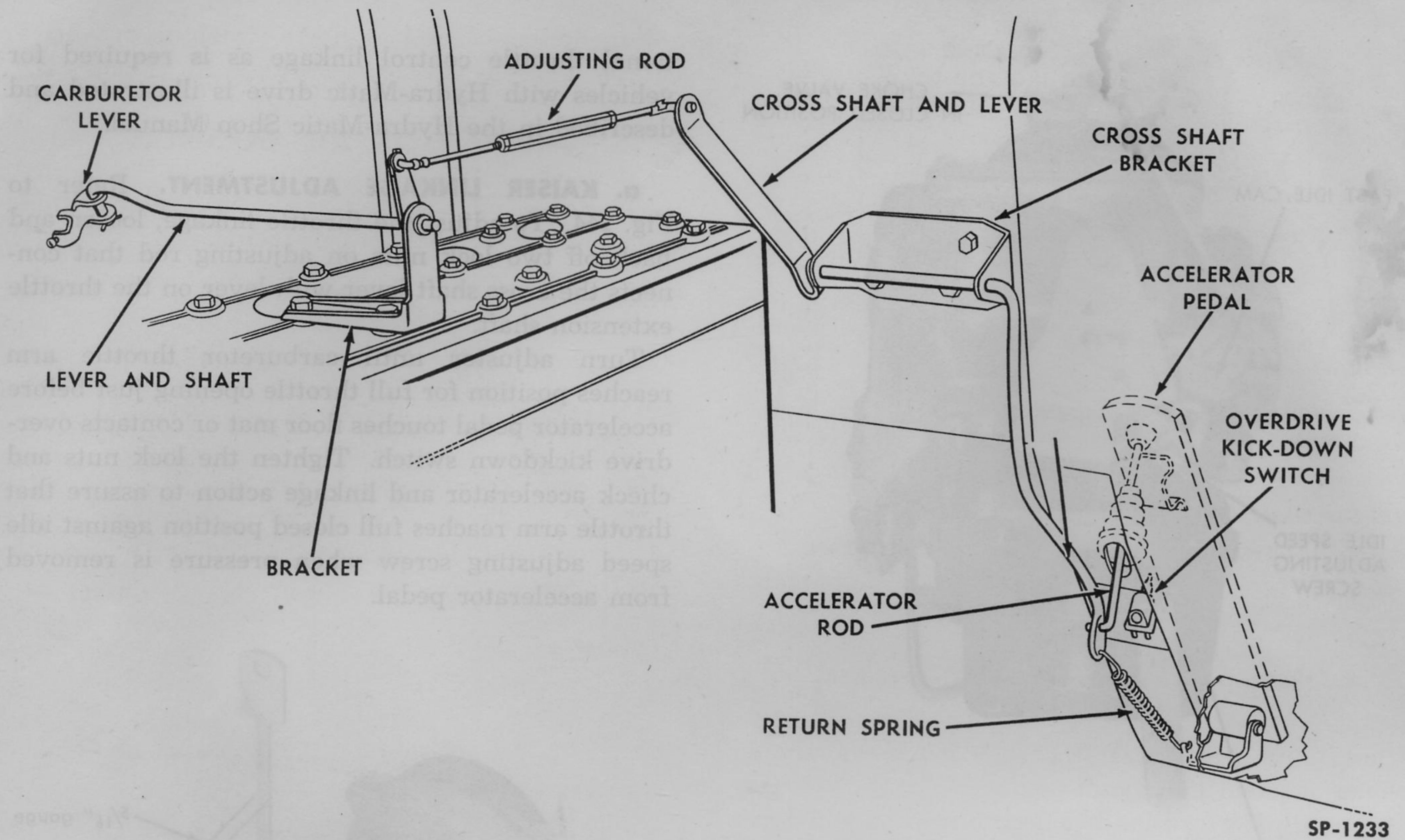


Fig. 144—Kaiser Accelerator Linkage

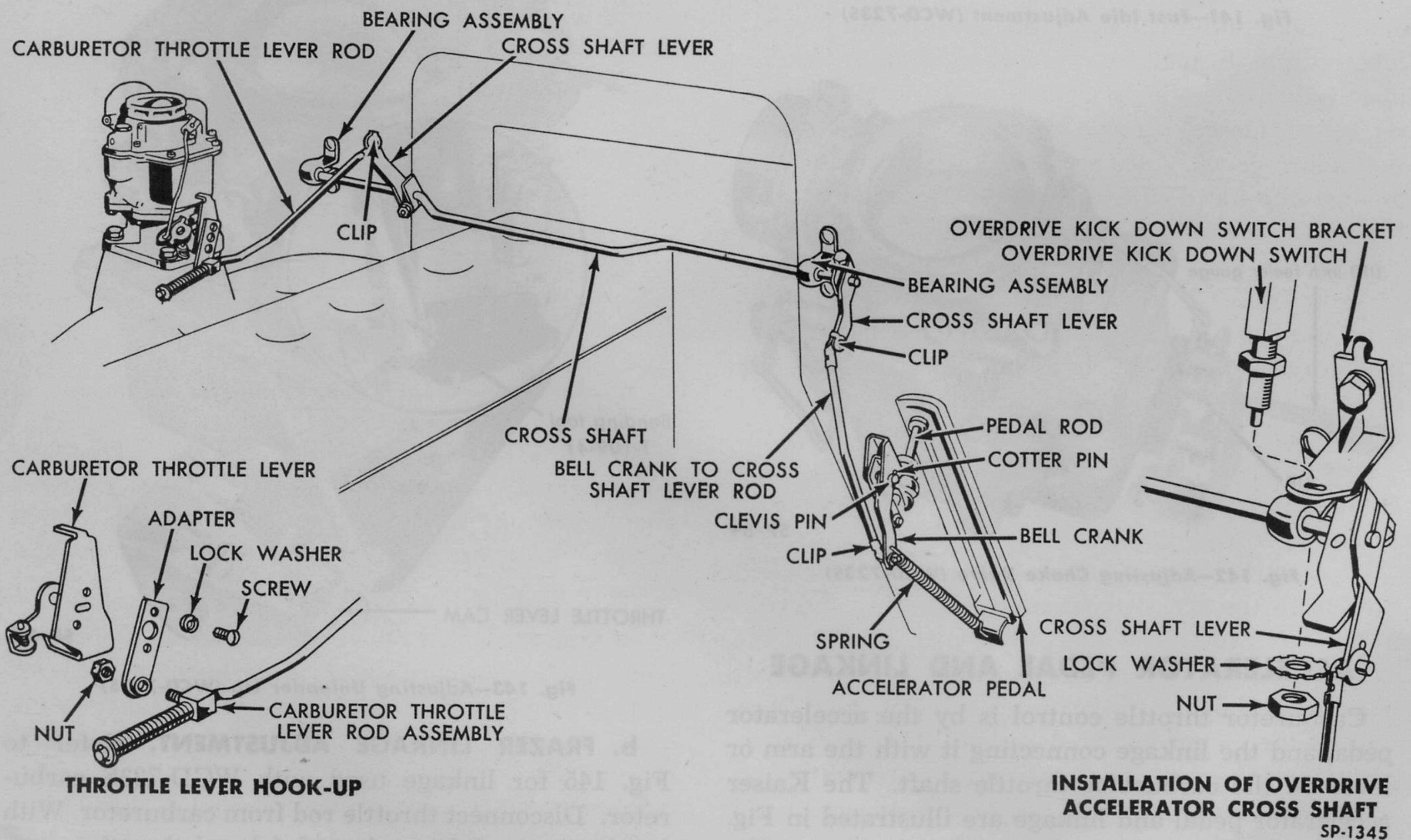


Fig. 145—Frazer Accelerator Linkage with WCD-723S Carburetor

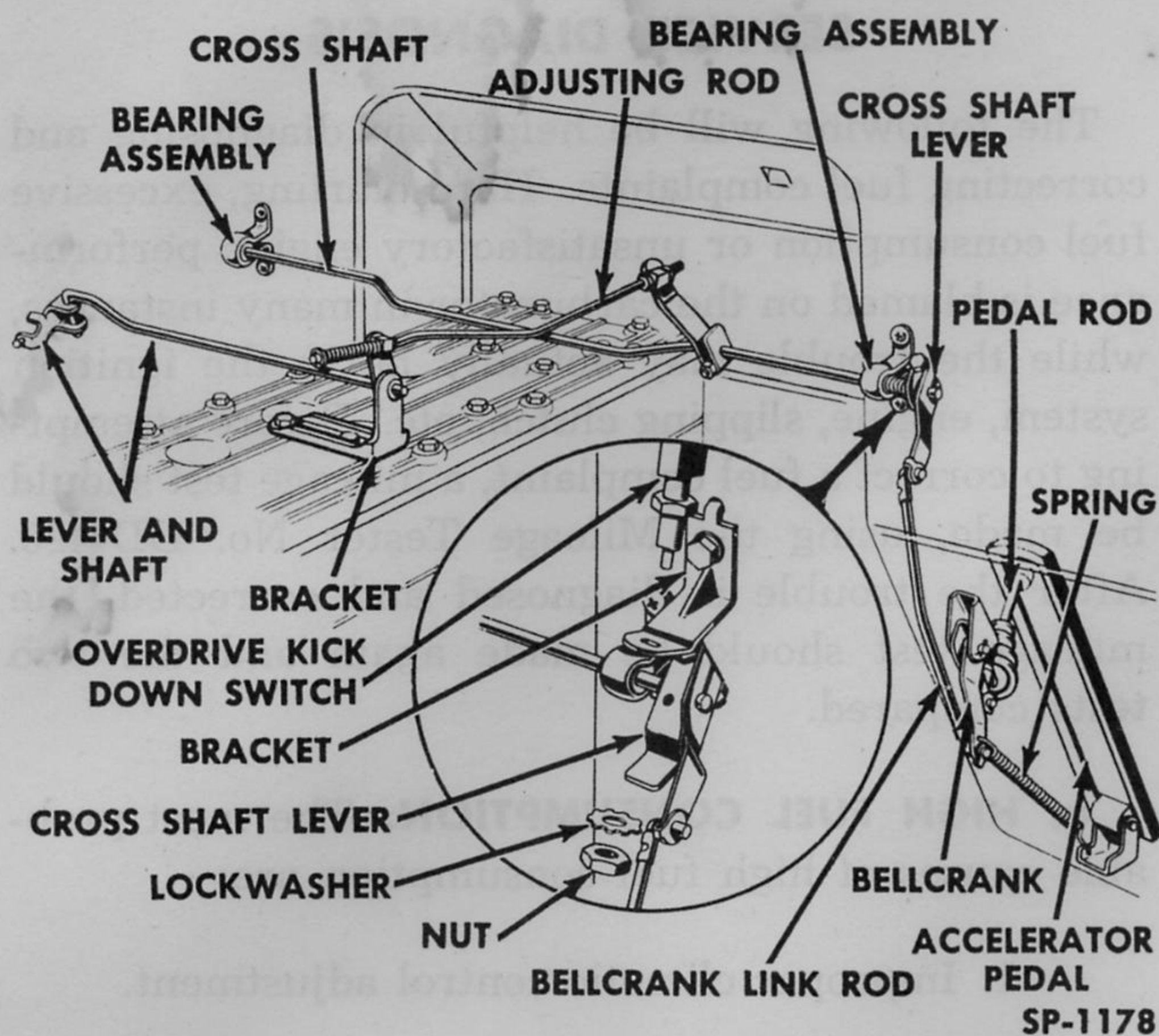


Fig. 146—Frazer Accelerator Linkage with WGD-781S or 813S Carburetor

tion, cross shaft, near front of dash panel, should have offset in horizontal plane.

To adjust cross shaft, loosen clamp bolt in lever at left end of cross shaft, turn shaft in lever and retighten bolt. To adjust throttle rod lever, loosen clamp bolt and turn lever on shaft until throttle lever stud is $\frac{1}{8}$ inch beyond mating hole in throttle arm (when throttle is closed) with accelerator in its up or closed throttle position. Tighten clamp bolt and recheck to assure complete throttle closing against idle speed adjusting screw. Reconnect throttle rod to carburetor throttle arm.

Refer to Fig. 146 for linkage used with WGD-813S or WGD-781S carburetor. Adjust the cross shaft next to the dash panel as directed in previous paragraph, if necessary, to assure horizontal position of shaft offset when accelerator pedal is in up or closed throttle position. Disconnect the fore and aft (cross shaft to extension shaft) rod from the lever at the left end of the carburetor throttle extension shaft.

Loosen the clamp bolt of the cross shaft lever and turn it on the cross shaft enough to bring the stud in the forward end of the rod $\frac{1}{8}$ inch ahead of the mating hole in the carburetor throttle cross shaft lever with the throttle arm in closed position. Retighten the clamp bolt and recheck to assure complete throttle closing against idle speed adjusting screw. Reconnect throttle rod to throttle extension shaft arm.

Functioning of the kick-down switch for overdrive equipped cars is covered in Section 15, "Electrical."

CARBURETOR AIR CLEANERS

The Kaiser oil bath carburetor air cleaner is illustrated in Fig. 147, the Frazer in Fig. 148.

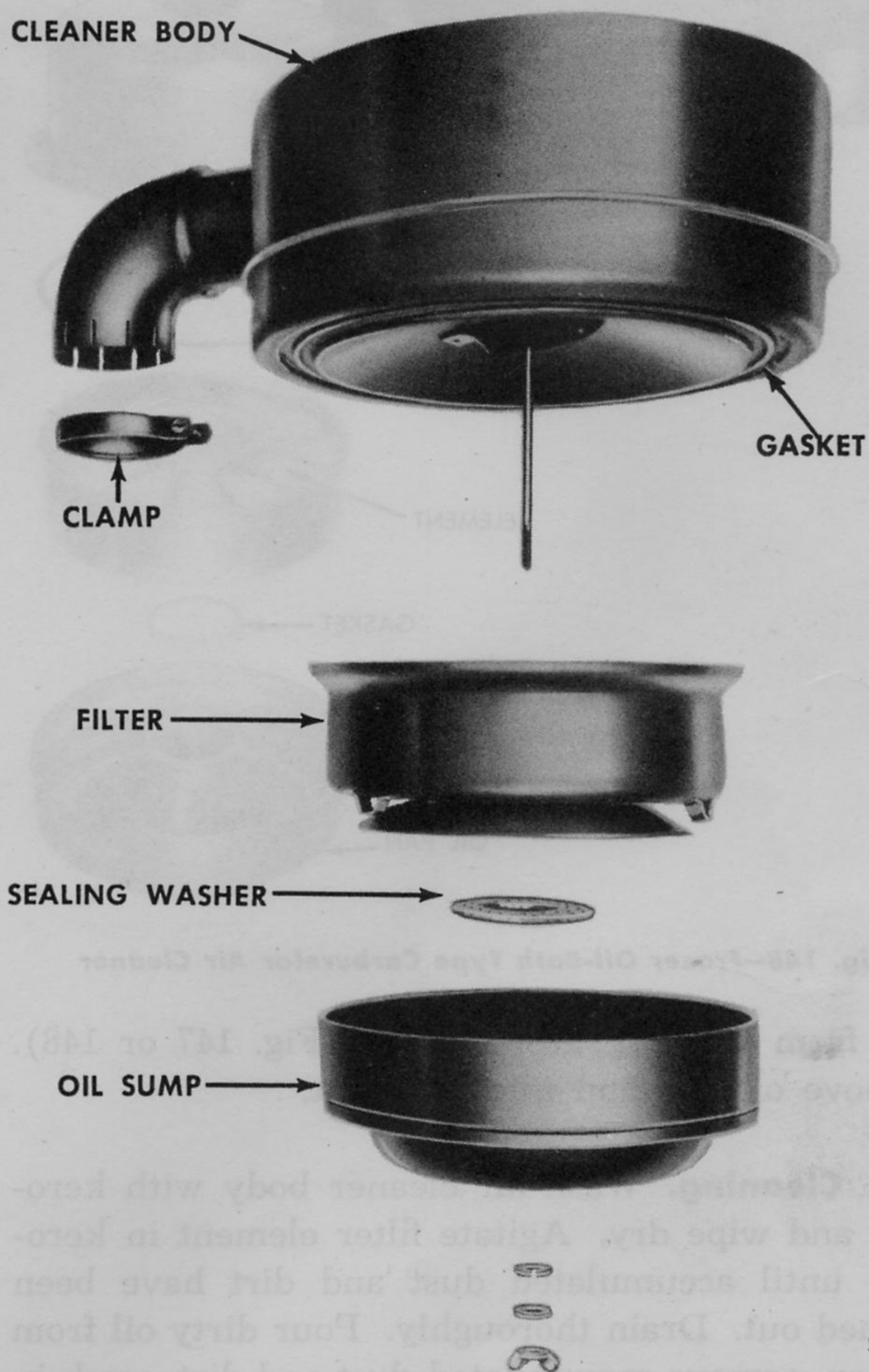


Fig. 147—Kaiser Oil-Bath Type Carburetor Air Cleaner

a. AIR CLEANER SERVICING. Every 2,000 miles during normal operation, more frequently under dusty operating conditions, remove air cleaner from engine, clean thoroughly, refill with clean oil and reinstall as follows:

1. Removal. To remove air cleaner, loosen clamp bolt which secures cleaner to carburetor air horn and remove screw or bolt that fastens cleaner to the brace or support bracket. Lift cleaner from carburetor.

Remove wing nut, lockwasher and plain washer from bottom of Kaiser cleaner, or corresponding

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SERVICE DIAGNOSIS

The following will be helpful in diagnosing and correcting fuel complaints. Hard starting, excessive fuel consumption or unsatisfactory engine performance is blamed on the carburetor in many instances, while the trouble may actually be in the ignition system, engine, slipping clutch, etc. Before attempting to correct a fuel complaint, a mileage test should be made, using the Mileage Tester No. DD-425. After the trouble is diagnosed and corrected, the mileage test should be made again and the two tests compared.

a. HIGH FUEL CONSUMPTION. The most probable causes of high fuel consumption are:

1. Improper climatic control adjustment.
2. Faulty ignition system.
3. Carburetor not adjusted properly.
4. Excessive operation of the accelerator pedal.
5. Wrong speedometer pinion gear for the axle being used.
6. Different tire size than specified.
7. Muffler, tail pipe or exhaust pipe partially restricted.
8. Brakes adjusted too tight.
9. Air cleaner restricting normal passage of air.
10. Too low tire pressure.
11. Wheel alignment (excessive toe-in).
12. Bad valves and worn piston rings.

b. ENGINE CUTS OUT AT HIGH SPEED. The most probable causes of the engine cutting out at high speed due to the fuel system are:

1. Low fuel pump pressure.
2. Low float level.
3. Carburetor jet or fuel lines restricted.

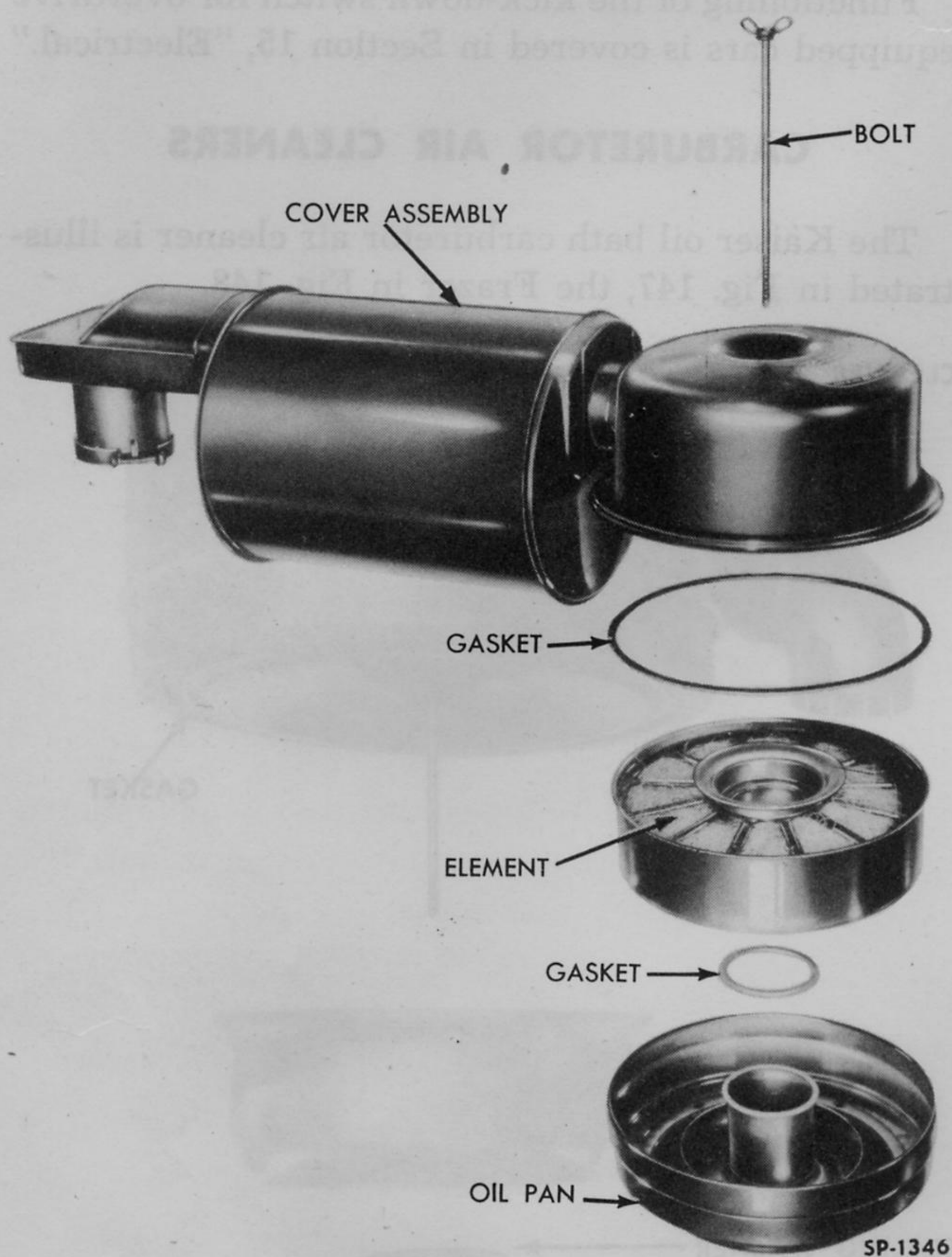


Fig. 148—Frazer Oil-Bath Type Carburetor Air Cleaner

bolt from top of Frazer cleaner (Fig. 147 or 148). Remove oil pan and filter element.

2. Cleaning. Wash air cleaner body with kerosene and wipe dry. Agitate filter element in kerosene until accumulated dust and dirt have been washed out. Drain thoroughly. Pour dirty oil from oil pan, remove accumulated dust and dirt, wash in kerosene and wipe dry. Fill oil pan to level indicated with oil of grade specified in Section 17, "Lubrication" of this manual.

3. Reassembly and Installation. Check the gasket of the Kaiser cleaner or the two gaskets of the Frazer cleaner (Figs. 147 or 148). Replace if necessary. Reassemble in reverse order of disassembly. When installing make certain that cleaner outlet elbow or tube fits down well over carburetor air horn and that clamp and brace or support are secure.