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ROCHESTER 4-JET CARBURETOR SERVICE INFORMATION

POWER PACKAGE AVAILABLE WITH CARTER OR ROCHESTER CARBURETOR

In the near future the Rochester 4GC (4-Jet) Carburetor will be used in mixed production with the Carter WGD (4-Barrel) Carburetor in the Pontiac Power Package. Replacing the standard carburetion unit, this package provides power, acceleration and performance that will please the most avid power enthusiast.

With the improvement in volumetric efficiency, "breathing ability", which is ensured by the Carter WGD or Rochester 4GC, maximum horsepower is raised to 200 at 4600 R.P.M. and maximum torque reaches 278 at 2800 R.P.M.

Following is complete service information on the Rochester 4GC Carburetor. The Carter WGD Carburetor was covered in the February Service Craftsman News.

GENERAL DESCRIPTION ROCHESTER 4GC CARBURETOR

The Rochester 4GC Carburetor for the 1955 Pontiac V-8 is essentially two 2-Jet carburetors in a single casting. The "Primary Side" contains all six carburetor systems - FLOAT, IDLE, PART THROTTLE, POWER, PUMP, AND CHOKE; the "Secondary Side" supplements the "Primary Side" with separate FLOAT and POWER SYSTEMS.

The new carburetor uses the Rochester Calibrated Cluster Design, which places in a removable assembly the main well tubes, idle tubes, mixture passages, air bleeds, and the pump jets.

When the cluster is removed for service purposes, all of these vital parts can be readily seen, cleaned and examined because the main well tubes and idle tubes are permanently installed in the cluster body by means of a precision pressed fit.

The cluster fits on a platform provided in the body casting of the carburetor so that the main well and idle tubes are suspended in the fuel. A gasket is used between the cluster casting and the body platform.

This method of design and assembly serves to insulate the main well tubes and idle tubes from engine heat thus preventing heat expansion and percolation spill-over during hot idle periods of operation and during the time the hot engine is not operating.

The following material describes and illustrates the details and operation of the six "Systems" of FLOAT, IDLE, PART THROTTLE, POWER, PUMP AND CHOKE, as used in the Rochester 4GC.

FLOAT SYSTEM (Fig. 1)

The float system controls the fuel level in the carburetor bowls under all conditions of operation.

Both sides of the Rochester 4GC incorporate individual float systems for maintaining the proper fuel level in each float bowl. All fuel enters the carburetor through a common inlet located at the front of the bowl cover.

As the fuel level on the primary side drops, the twin floats also drop pulling the inlet needle off its seat. Pressure from the fuel pump will then force

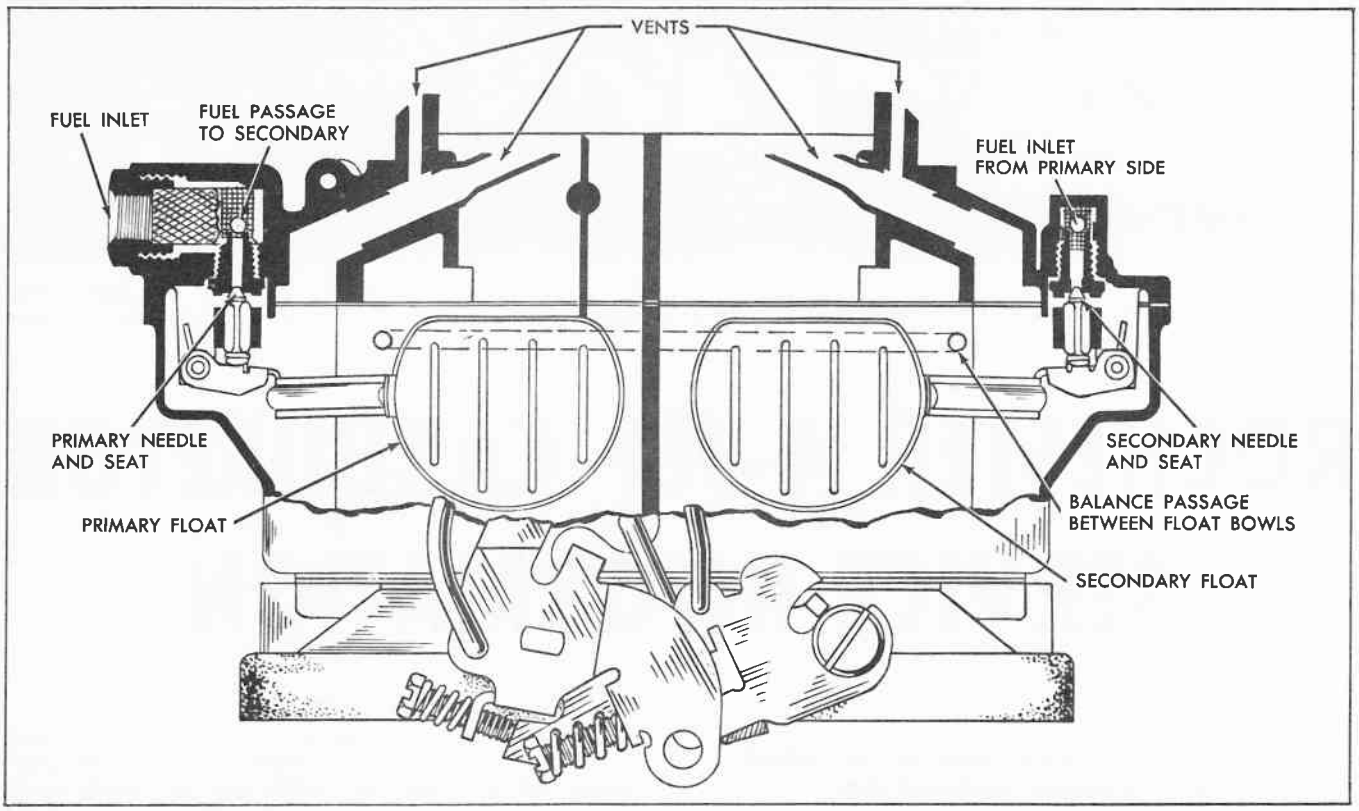

Fig. 1 Float System

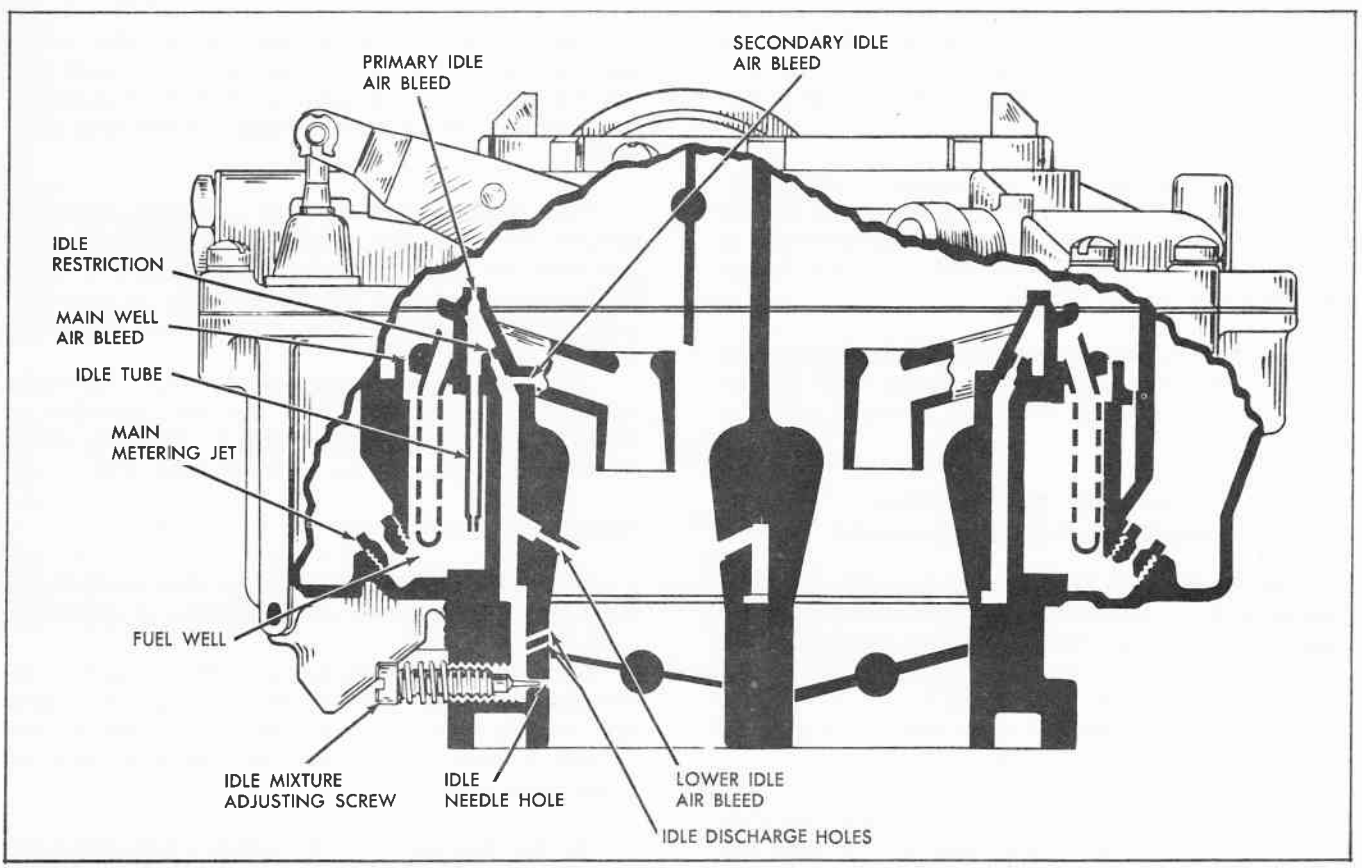

Fig. 2 Idle System

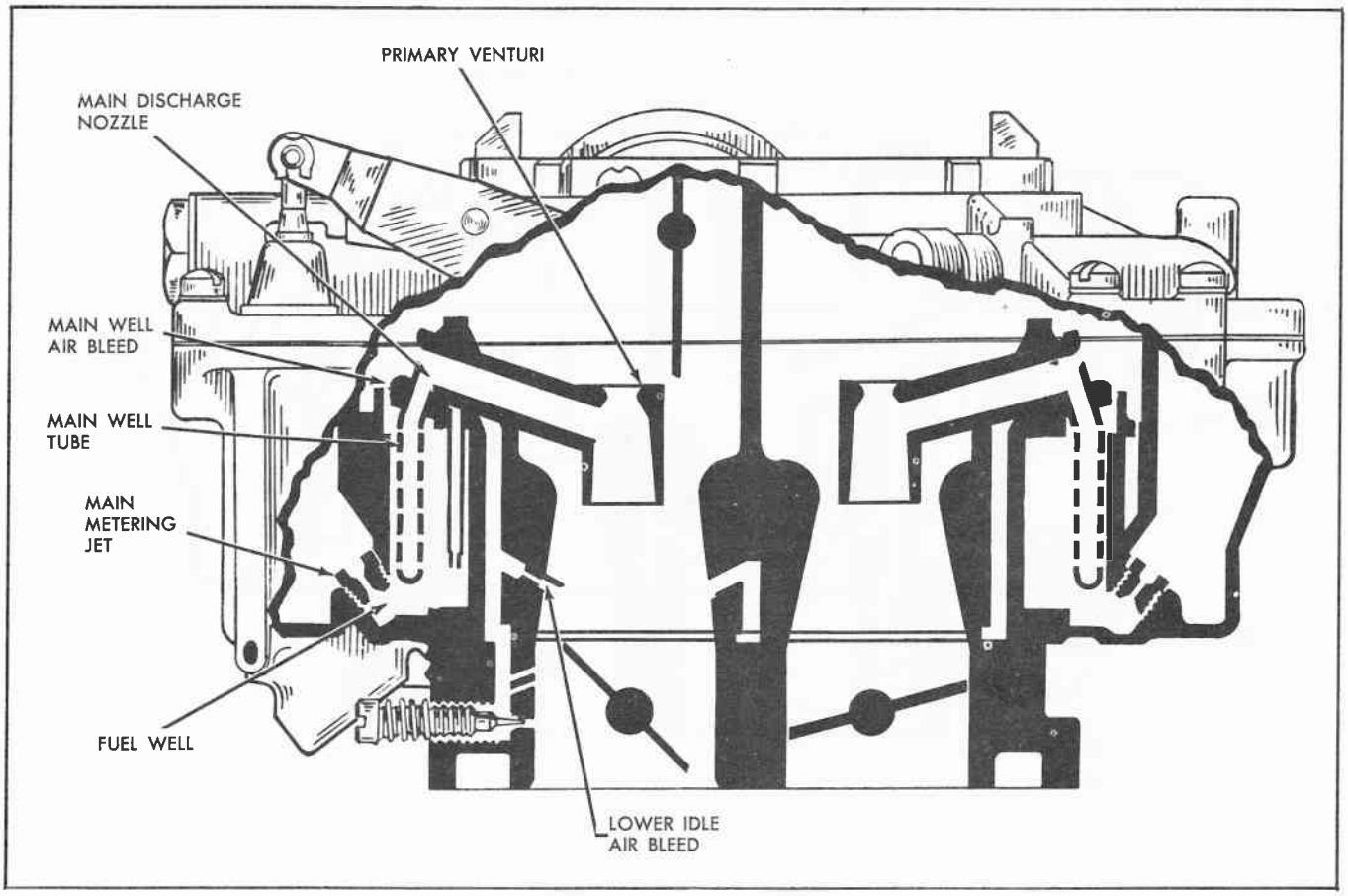

Fig. 3 Part Throttle System

fuel through the filter screen into the inlet passage, then through the small cylindrical filter screen and past the needle and seat into the float bowl. As the fuel level in the bowl rises the floats also rise seating the float needle and shutting off the flow of fuel.

Float action on the secondary side is identical with that of the primary side. As the secondary floats drop and the needle is pulled from its seat fuel is forced from the fuel inlet on the primary side through a channel cored in the air horn to the inlet passage on the secondary side.

A passage in the float bowl slightly above the normal fuel level connects the primary and secondary float bowls. In this way any abnormal rise in level on one side will be absorbed by the other without disrupting engine operation.

Both sides of the carburetor are externally and internally vented to allow even pressure of fuel and air at all times and to allow the escape of fuel vapors during hot idle operation.

IDLE SYSTEM (Fig. 2)

At small throttle openings the vacuum created by the main venturi is not sufficient to cause fuel to flow from the nozzles. Therefore, another system is provided to furnish the proper mixture ratios required throughout the low speed range.

An adjustable idle system is provided on the primary side of the carburetor only. Idle passages will be observed in some areas on the secondary side of the carburetor but in all instances they are blocked by gaskets and are not operational.

Idle fuel is drawn from the float bowl through the main metering jets into the fuel well at the bottom of the float bowl. It then passes through the calibrated idle tube restrictions and idle tubes. Air joins the fuel at the primary idle air bleeds. This mixture then passes through the idle restrictions which tend to mix thoroughly the fuel and air. More air enters the mixture at the secondary idle air bleeds. The mixture then passes down the vertical idle channel. At the lower end of the channel additional air is bled into the mixture through the lower idle air bleeds and idle discharge holes. The resultant mixture is then discharged into the throttle bore from the idle needle holes.

As the throttle valves are opened, the bleed effect of the idle discharge holes gradually diminishes. When these holes become exposed to manifold vacuum

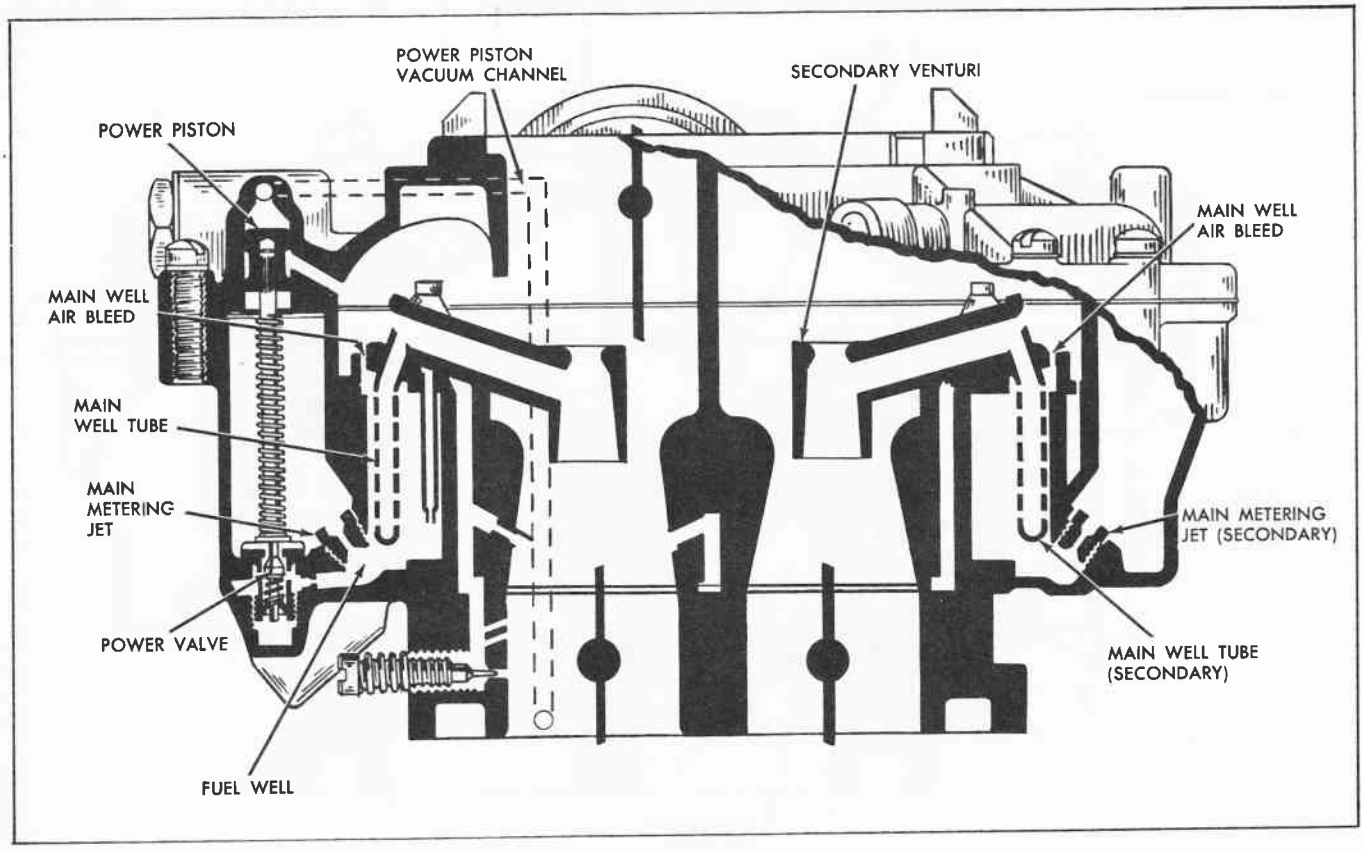

Fig. 4 Power System

they become fuel discharge holes to meet the increased fuel demand. Further opening of the throttle valves increases the air velocity striking the extended lower idle air bleed causing the pressure differential to discharge fuel from this tube which continues during part and wide open throttle operation.

The idle mixture adjusting screws govern the amount of fuel-air mixture admitted to the carburetor bore at idle.

PART THROTTLE SYSTEM (Fig. 3)

As the throttle valves are opened to a greater degree and more air is drawn through the carburetor, it is necessary to provide more fuel than is available from the idle system. As the primary side operates alone up to approximately 40° of primary throttle opening all fuel used during part throttle operation originates from the primary side.

The increased air flow through the venturi during part throttle operation lowers the pressure at the tip of the main discharge nozzles. This differential in pressure forces fuel from the float bowl, through the main metering jets and into the air bled main well tubes. After passing through the main well tubes the mixture passes from the tip of the nozzle through the mixture passage to the venturi and on into the intake manifold. As the throttle opening is increased and more fuel is drawn through the main well tubes the fuel level in the main well drops. More holes in the main well tubes are then exposed to the air in the upper well area and become air bleeds. This maintains the proper fuel-air mixture to the engine throughout the part throttle range.

As covered under the idle system the lower idle air bleeds act as fuel discharge nozzles during part throttle operation.

POWER SYSTEM (Fig. 4)

As the primary throttle valves are opened past 40°, mechanical linkage between the primary and secondary throttle valves starts to open the secondary valves. The ratio of motion is such that by the time the primary valves have reached wide open, the secondary valves are also wide open. With both the primary and secondary throttle valves open, the venturi systems in both sides feed fuel-air mixture through their respective main metering systems.

In addition, fuel flow is supplemented through a vacuum-controlled power valve on the primary side.

The power piston vacuum channel is exposed to manifold vacuum beneath the throttle valves. This vacuum is sufficient to hold the power piston in its extreme up position during part throttle operation. However, as the throttle valves are progressively opened manifold vacuum decreases to the point that the spring beneath the piston forces the piston down.

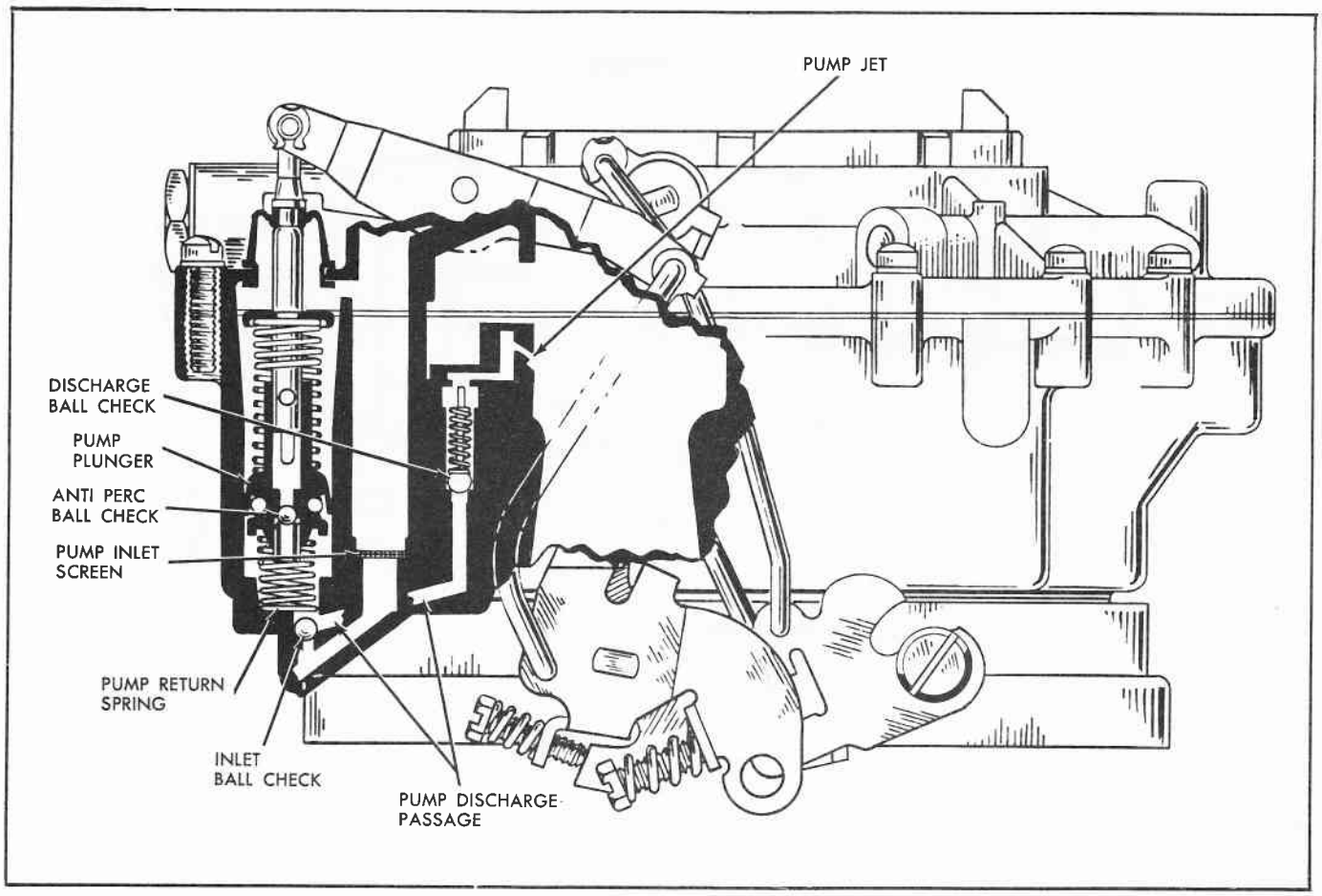

Fig. 5 Pump System

This occurs only at very high speeds or during rapid acceleration. When the piston is forced down it unseats the spring loaded power valve allowing additional fuel to flow into the main well. This raises the level in the main well and by covering some of the openings in the main well tubes supplies a considerably richer mixture than normal part throttle mixtures.

PUMP SYSTEM (Fig. 5)

Rapid opening of the throttle valves for acceleration causes an almost instantaneous increase in air velocity. The fuel, however, is much heavier than the air and requires a short time to "catch up" with the air flow. To avoid leanness during this momentary lag, the accelerator pump furnishes a quantity of liquid fuel, sprayed into the air stream to mix with incoming air and maintain the proper fuel-air mixture.

Since the secondary throttle valves remain closed during part throttle operation, only the primary side needs the extra boost; hence the primary side only contains the pump system.

Extra fuel for smooth, quick acceleration is supplied by a double spring pump plunger. The combination of the top and bottom springs is calibrated to move the plunger in such a manner that a smooth, sustained charge of fuel is delivered for acceleration.

The fuel passes from the bowl through the pump screen to remove any dirt, then is drawn past the inlet ball check into the pump well on the intake stroke of the plunger. When the plunger is pushed downward for acceleration, the force of the stroke seats the inlet ball check to prevent flow to the fuel bowl, and the fuel is forced up the pump discharge passage.

The pressure of the fuel lifts the pump outlet ball check from its seat and the fuel passes on through the pump jets in the cluster, where it is sprayed into the venturi and delivered to the engine.

The pump plunger head embodies a unique ball check and seat, designed to eliminate fuel percolation in the pump system. When the engine is idling or not operating, excessive fuel vapors in the pump well rise through the plunger head and by-pass the ball, then circulate into the fuel bowl, which is vented to the atmosphere.

Without this feature, vapor pressure in the pump system might force fuel from the pump well into the engine, causing hard hot starting because of excess fuel in the manifold or poor initial acceleration due to lack of the proper amount of fuel in the pump system.

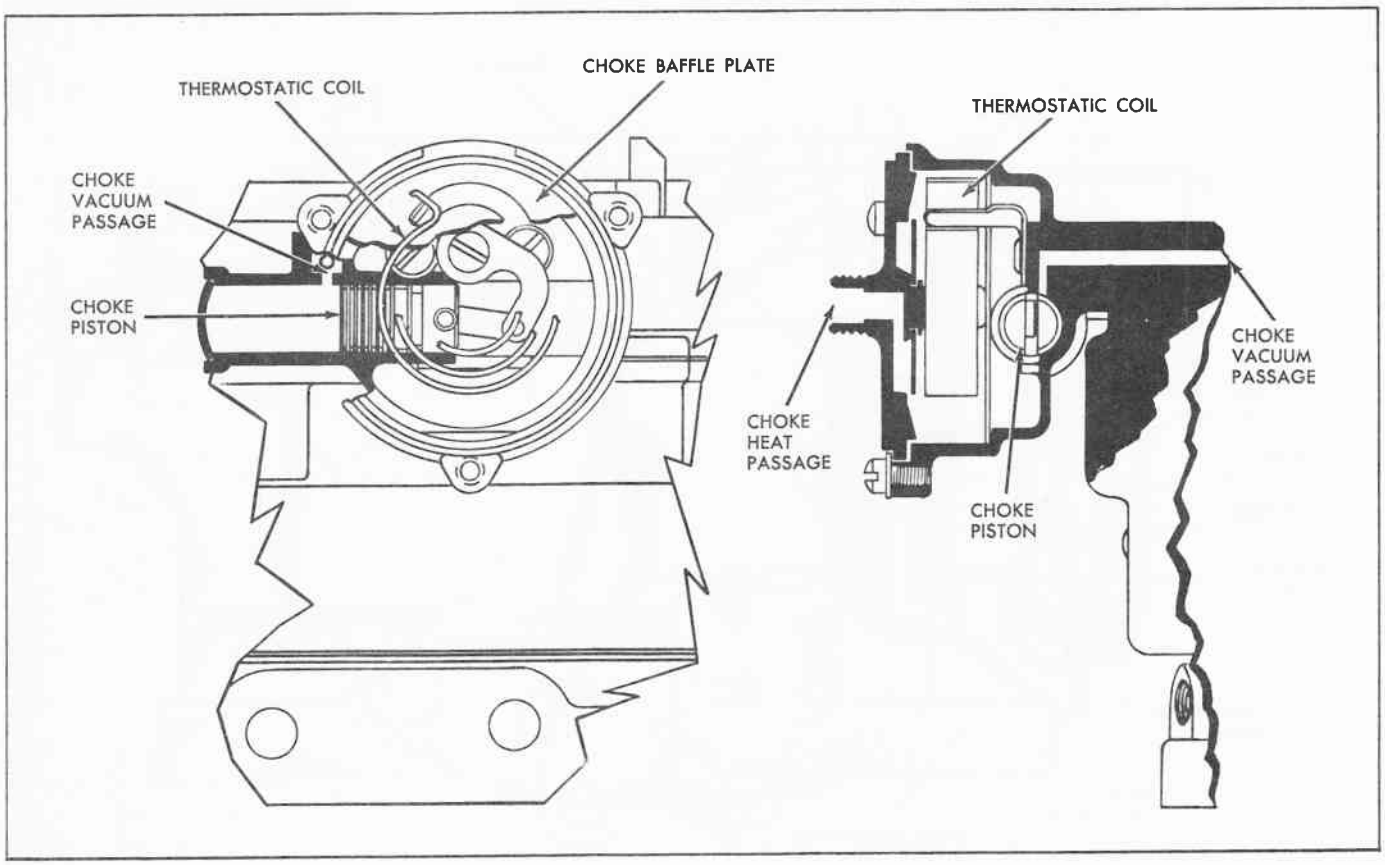

Fig. 6 Choke System

CHOKE SYSTEM (Fig. 6)

For cold engine operation, a rich mixture at the carburetor is required, so that a combustible mixture remains to be drawn into the cylinder after condensation of much of the fuel vapor on the cold engine parts. The function of the choke system is to subject all fuel outlets in the bore of the carburetor to manifold vacuum while restricting the intake of air, thus drawing into the engine the required rich mixture.

When the engine is cold, the thermostatic coil is calibrated to hold the choke valve closed. As the engine is started, air velocity against the offset choke valve causes the valve to open slightly, against the torque of the thermostatic coil. In addition, intake manifold vacuum is applied to the choke piston, through the vacuum channel, which also tends to open the choke. As the engine warms up, heated air is drawn into the choke housing through the choke heat tube, by vacuum through the passage hole in the choke piston bore. As the engine temperature increases, causing the coil to relax its tension, the choke valve is moved gradually to the full open position.

During warm-up the choke piston serves to modify the choking action to compensate for varying engine loads or acceleration. Any acceleration decreases the vacuum on the choke piston and allows the choke valve to momentarily move towards the closed position to provide the richer mixture needed.

To prevent stalling during warm-up it is necessary to run the engine at a higher than normal engine speed. This is accomplished by the fast idle screw which rests on the steps of the fast idle cam. The fast idle cam is in turn linked to the choke valve shaft by the choke rod, choke trip lever and choke lever assembly. This linkage holds the throttle valves open sufficiently to give the necessary increased idle RPM until the choke valve moves to the full open position.

The choke system is also provided with an "unloader". Wide opening of the primary throttle valves would lower the vacuum pull on the choke piston, allowing the choke to partially close, which would cause extreme richness. To prevent this, the throttle lever at wide open strikes a tang on the fast idle cam, forcing the choke partly open to allow a "dechoking" action. This feature is also useful in starting a flooded engine, when choking would only aggravate the trouble; the mechanical opening of the choke valve allows enough air flow to mix with the excess gas in the manifold and the engine can be started.

Since the secondary throttle valves remain closed, only the primary side requires a choke system. When the choke is closed, the fast idle cam is raised; the raised position of the fast idle cam "locks out" any opening of the secondary throttle valve by means of a lockout lever, which is free to move only when the cam is fully lowered.

ADJUSTMENTS ON CAR — ROCHESTER 4GC CARBURETOR

All adjustments with the exception of the on car fast idle adjustment and the idle speed and mixture adjustment are included in "Overhaul and Adjustment" procedure and can be done on the car. Following are the fast idle adjustment and the idle speed and mixture adjustment.

Fast Idle Adjustment

1. Start engine and run until engine reaches normal temperature.
2. Move fast idle cam so that highest step is under end of fast idle screw.
3. Observing tachometer adjust fast idle screw to give an engine speed of 1800 R.P.M.

Idle Speed and Mixture Adjustment.

With the engine at operating temperature (choke entirely off) adjust idle speed to 390-410 R.P.M.

The idle mixture adjustment should be adjusted to give a smooth idle at the specified idle speed. Missing is a sign of too lean an idle mixture, while "rolling" or "loping" indicates too rich a mixture. Turning in the idle mixture adjusting screw leans out the idle mixture. One and one-half turns out from the lightly seated position may be used as a preliminary setting of the idle mixture adjusting screw before making the final setting.

OVERHAUL AND ADJUSTMENTS ROCHESTER MODEL 4GC CARBURETOR

Disassembly of Air Horn

1. Mount carburetor on holding fixture J-5923. Remove gasoline inlet fitting, screen and gasket assembly (Fig. 7).

2. Remove three choke cover attaching screws and retainers and remove choke cover (Fig. 8).

3. Using a small screwdriver carefully lift the choke baffle plate from the choke housing.

4. Remove clip from upper end of pump rod (Fig. 7). It is not necessary to remove rod at lower end.

5. Remove trip lever retaining screw at end of choke shaft and remove trip lever (Fig. 7).

6. Remove fast idle cam attaching screw and remove choke counterweight rod and fast idle cam as an assembly (Fig. 7).

   NOTE: It will usually be unnecessary to separate counterweight rod from fast idle cam.

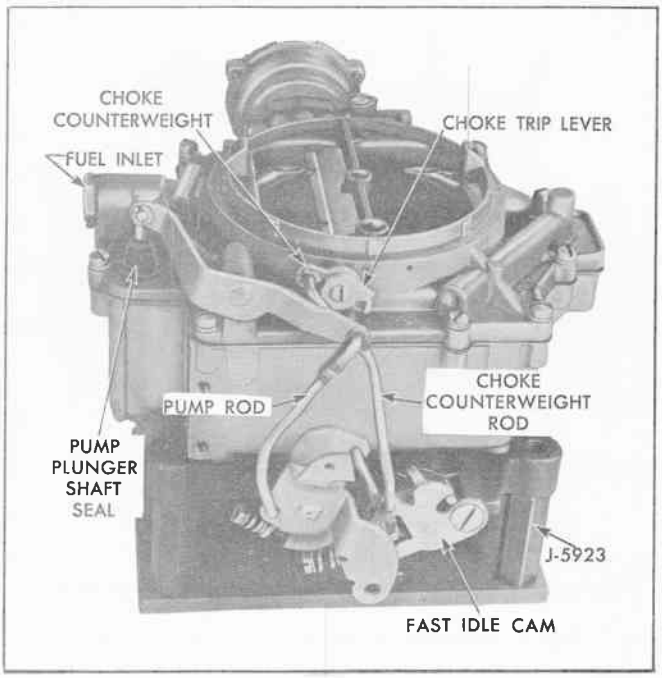

Fig. 7 Rochester 4GC 4 Jet Carburetor

7. Remove two choke valve retaining screws and slide choke valve from slot in choke shaft.

8. Rotate choke shaft counterclockwise to free choke piston from housing, then remove piston and choke shaft from air horn.

9. Remove two choke housing attaching screws, and remove choke housing and gasket from air horn (Fig. 8).

10. Remove 13 air horn attaching screws (Fig. 9).

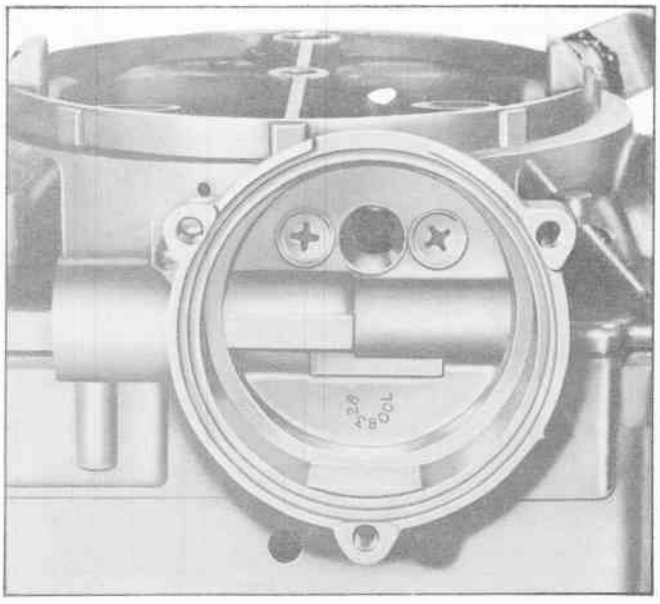

Fig. 8 Location of Choke Housing Attaching Screws

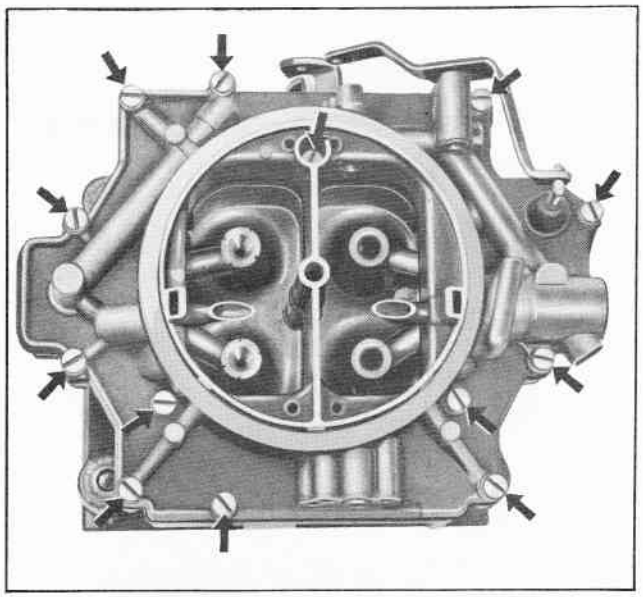

Fig. 9 Location of Air Horn Attaching Screws

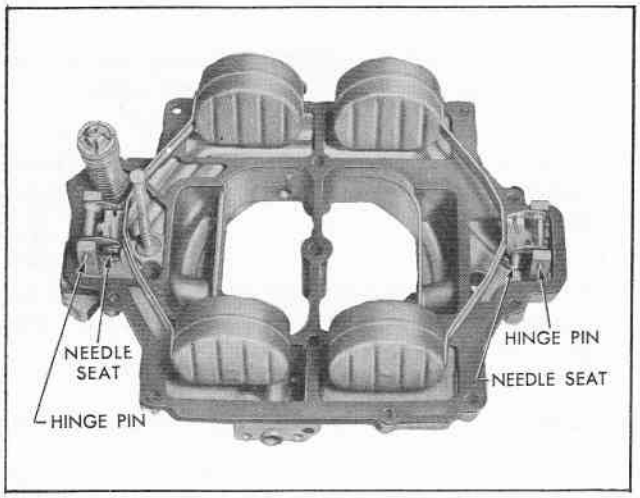

Fig. 10 Removing Air Horn Assembly

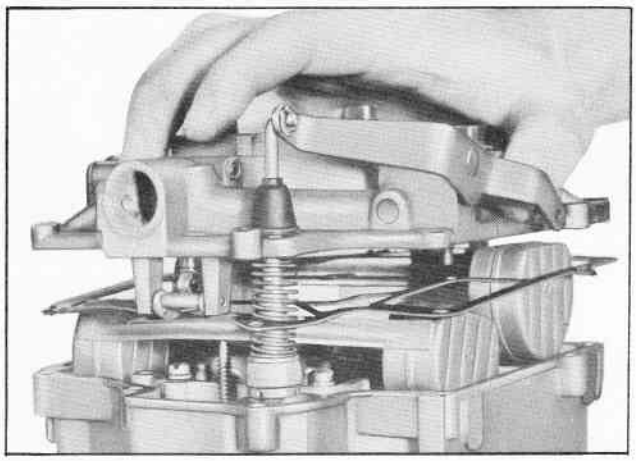

Fig. 11 Air Horn Assembly

11. Carefully remove air horn by lifting straight up until all parts are clear of carburetor body (Fig. 10).

12. Remove hinge pin and float assembly on primary side (Fig. 11).

13. Remove float needle seat, gasket and strainer screen from primary side (Fig. 11).

    CAUTION: Group and keep together float, float needle, needle seat, and gasket as units. Never mix parts from primary and secondary sides.

14. Remove and group hinge pin, float, float needle, needle seat, gasket and strainer screen from secondary side.

15. Remove horseshoe retainer from pump plunger shaft and remove rubber seal and pump plunger assembly from air horn (Fig. 7).

16. Remove power piston assembly from air horn by depressing piston stem and allowing it to snap free or by holding stem and tapping lightly on air horn with a non metallic object (Fig. 12).

17. Remove air horn gasket.

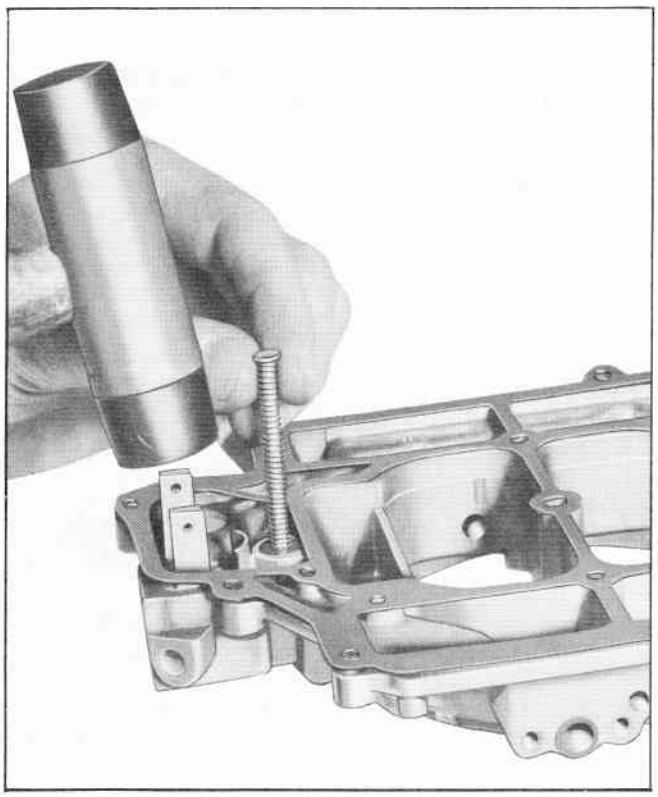

Fig. 12 Removing Power Piston Assembly

Disassembly of Carburetor Body

1. Remove three attaching screws and lockwashers from venturi cluster on primary side and carefully remove cluster and gasket (Fig. 13).

   NOTE: The primary venturi cluster contains the pump discharge nozzles and idle tube in addition to main well tubes, and must always be installed on primary side. The venturi clusters are serviced as an assembly.

2. Remove both main metering jets from primary side of carburetor body (Fig. 13).

3. Remove power valve and gasket (Fig. 13).

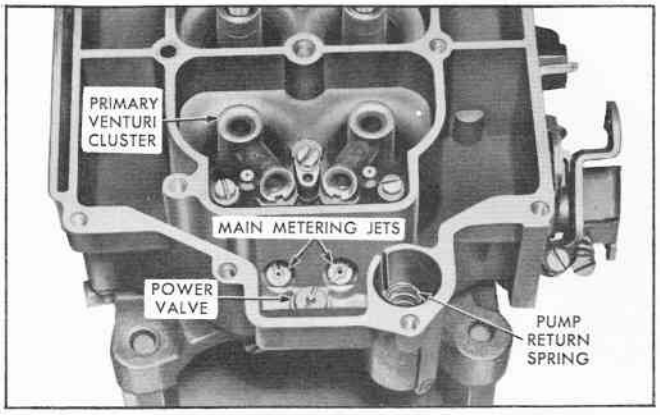

Fig. 13 Carburetor Body Assembly

4. Remove three screws from secondary venturi cluster and remove cluster and gasket.

5. Remove both main metering jets from secondary side of carburetor body. Keep separate from primary metering jets.

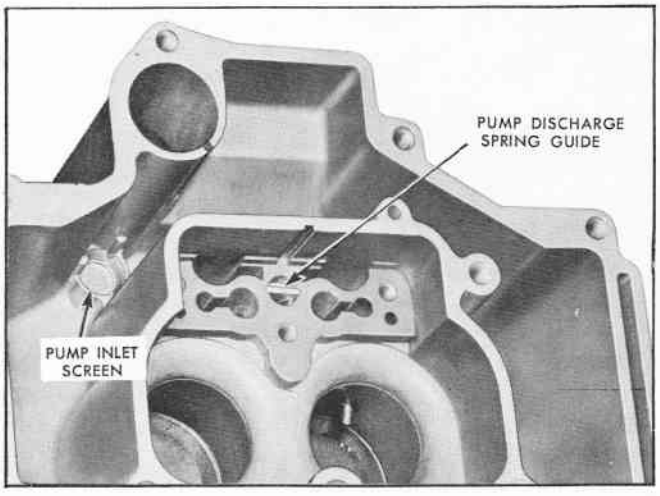

Fig. 14 Pump Discharge Spring Guide and Pump Inlet Screen

6. Remove pump return spring from pump well (Fig. 13). Carefully invert carburetor body to remove aluminum pump inlet ball.

7. Using needle nose pliers remove pump discharge spring guide, spring and steel ball (Fig. 14).

8. If required pump inlet screen may be removed for cleaning by prying up retaining ring with a pointed tool (Fig. 14).

Disassembly of Throttle Flange

1. Remove four throttle flange attaching screws and lockwashers and remove throttle flange (Fig. 15).

2. Remove throttle flange gasket.

3. Remove idle mixture adjusting screws.

   NOTE: The throttle flange and levers are serviced as a unit. No further disassembly of throttle flange should be attempted as it may be impossible to again reassemble throttle valves correctly in relation to vacuum and idle discharge orifices.

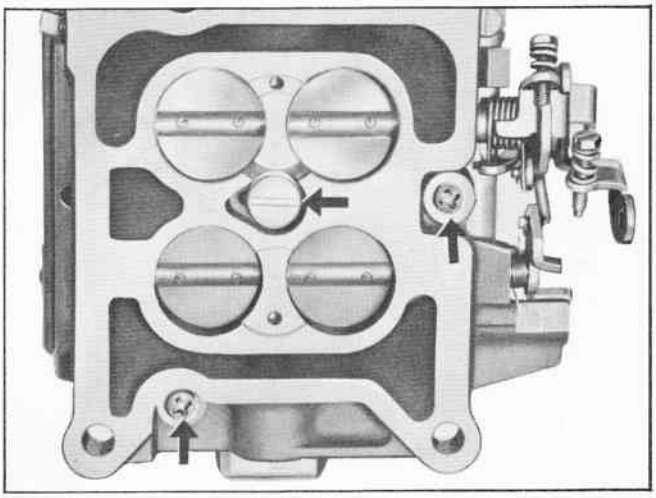

Fig. 15 Throttle Flange Attaching Screws

CLEANING AND INSPECTION OF PARTS

Dirt, gum, water or carbon contamination in the carburetor or on the exterior moving parts of a carburetor are often responsible for unsatisfactory performance. For this reason, efficient carburetion depends upon careful cleaning and inspection while servicing.

1. Thoroughly clean carburetor castings and all metal parts in clean carburetor cleaning solution. CAUTION: Composition and plastic parts such as pump plunger and gaskets should not be immersed in cleaner.

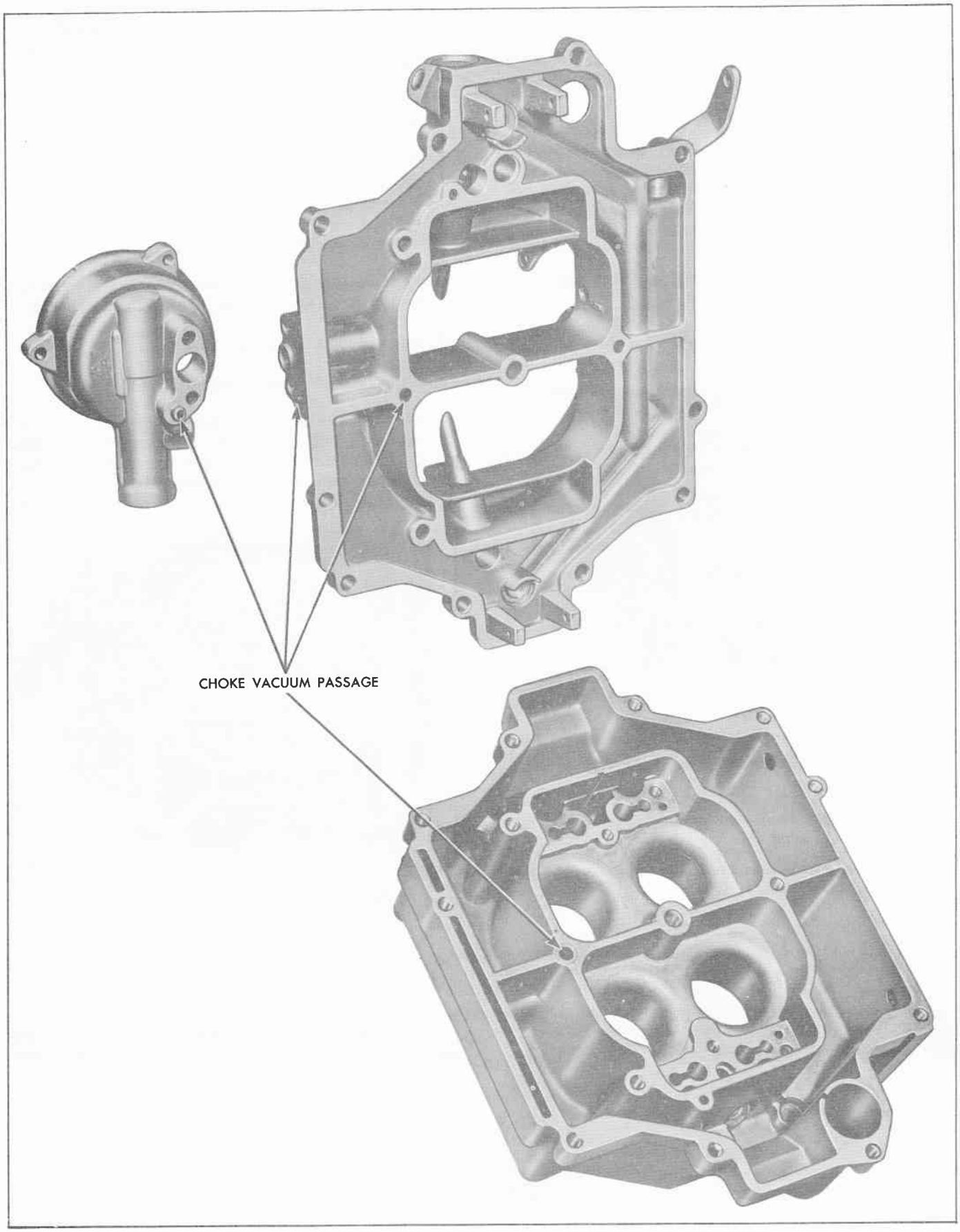

Fig. 16 Passage Identification (Body-Air Horn-Choke Housing)

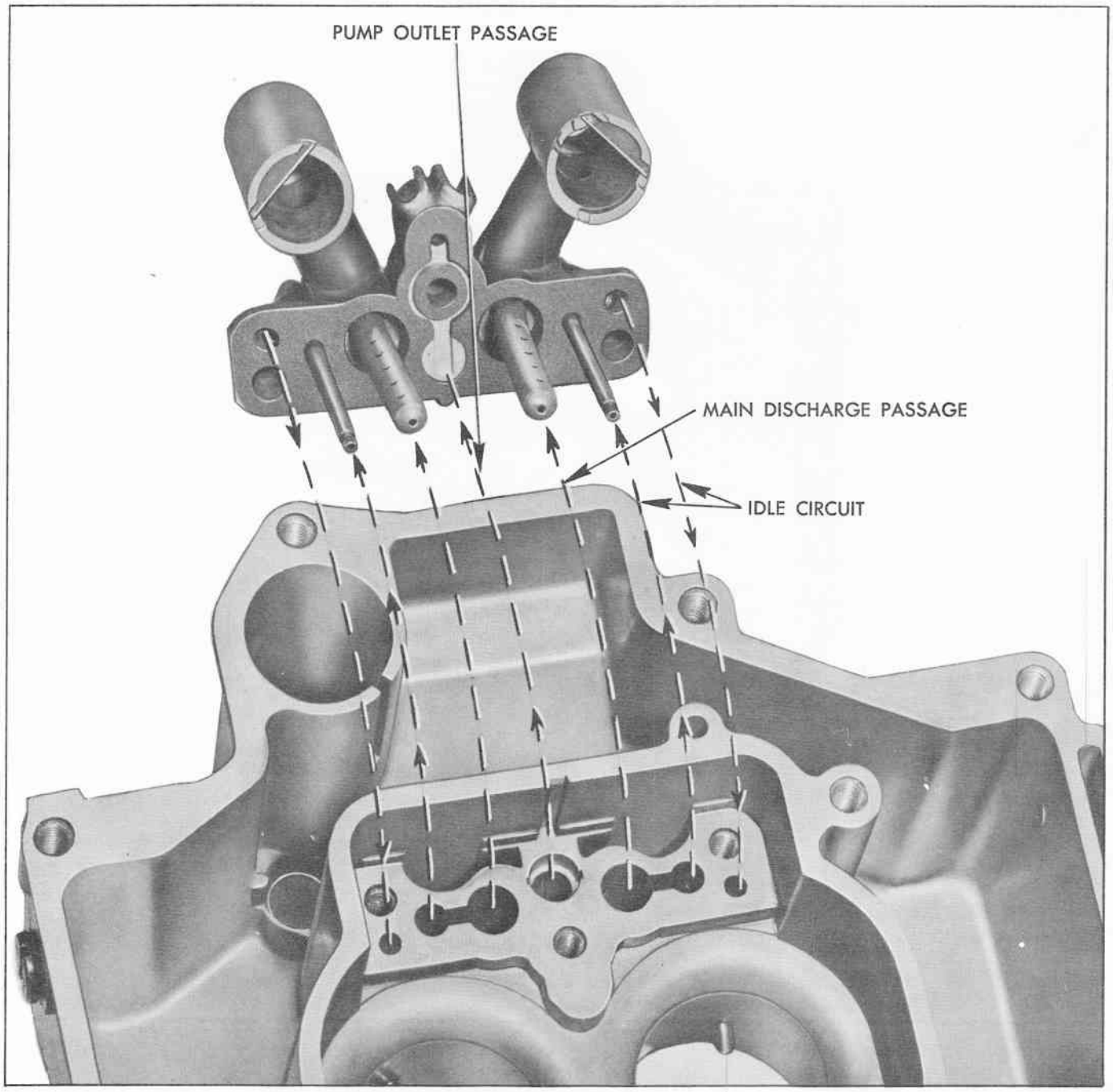

Fig. 17 Passage Identification (Cluster-Body)

2. Blow out all passages (Figs. 16 thru 20) in casting with compressed air and blow off all parts so they are free of cleaner (be sure to follow instructions furnished with cleaning solution). CAUTION: Do not use drills or wire to clean out jets or ports as this may enlarge the opening and affect carburetor operation.

3. Carefully inspect parts for wear and replace those which are worn. Check the following specific points:

   a. Inspect choke piston and choke piston housing for carbon. If necessary to clean choke piston housing, remove Welch plug in the bottom of housing. Plug can be removed by piercing center with a small pointed instrument and prying outward. Care should be exercised so that damage will not result to the casting when removing this plug. Before installing new plug, carbon present in piston cylinder slots should be removed and the Welch plug seat should be carefully cleaned.

   b. Remove carbon from bores of throttle flange with sandpaper; never use emery cloth.

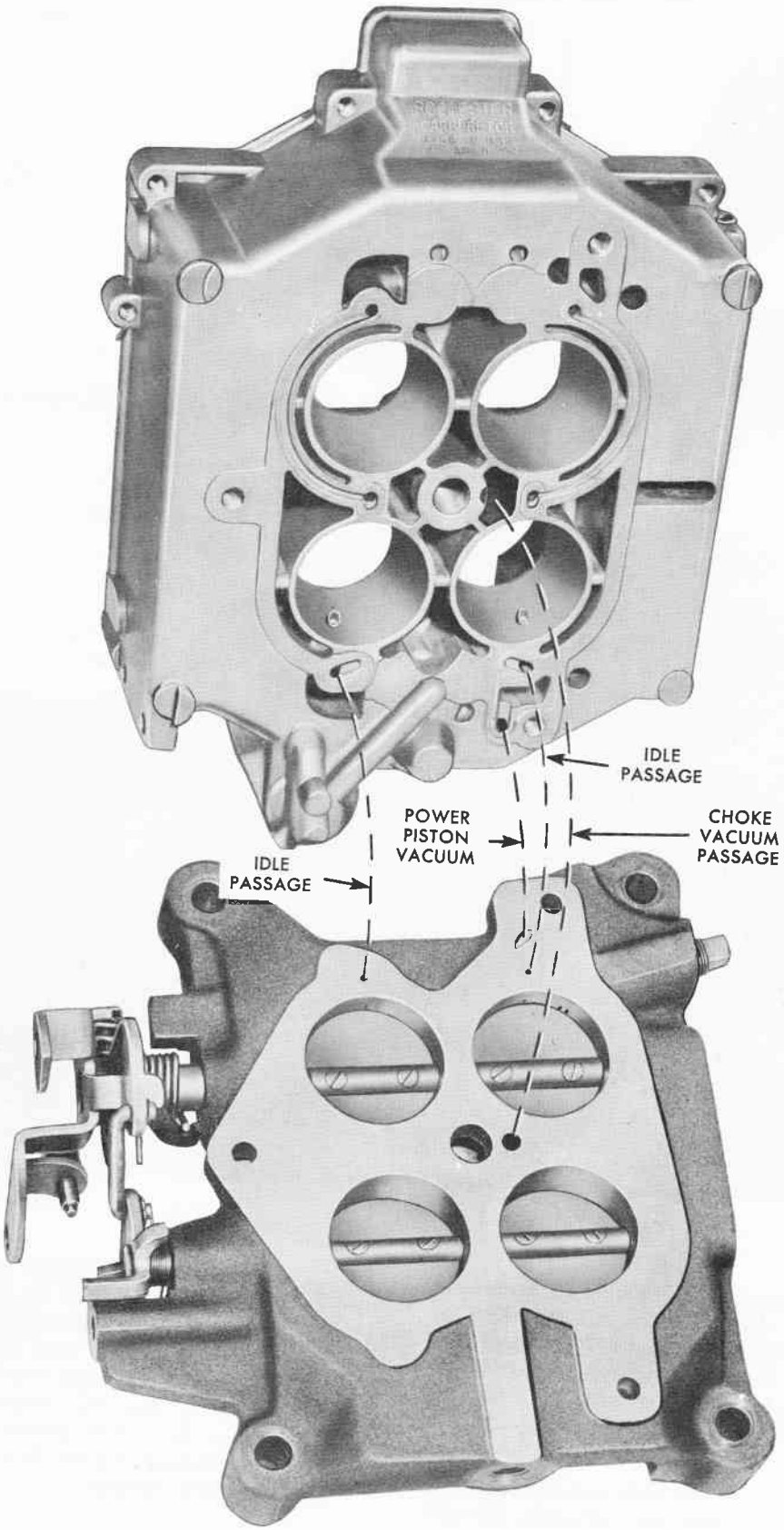

Fig. 18 Passage Identification (Body-Flange)

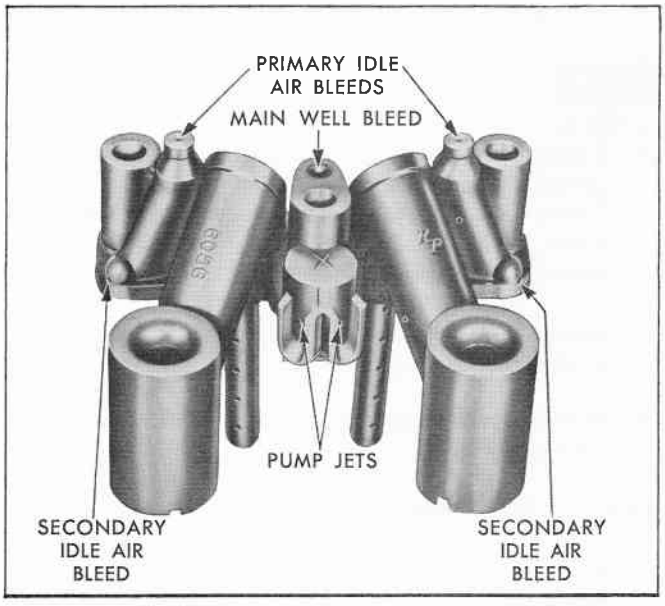

Fig. 19 Passage Identification (Cluster Casting)

c. Inspect float needles and seats for wear; if worn, both needle and seat must be replaced.

d. Inspect float pins for excessive wear.

e. Inspect floats for dents and excessive wear on lip. Check for fluid inside floats by shaking. Replace float if any of above are present.

f. Inspect throttle shafts for excessive wear (looseness or rattle in body flange casting).

g. Inspect idle mixture adjusting screws for burrs. Replace if burred.

h. Inspect pump plunger assembly. If leather is not in good condition, replace plunger.

i. Inspect gasketed surfaces between body and air horn, and between body and flange. Small nicks or burrs should be smoothed down to eliminate air or fuel leakage. Be especially particular when inspecting choke vacuum passages and the top surface of the inner wall of the bowl.

j. Inspect holes in pump rocker arm, fast idle cam and throttle shaft lever. If holes are worn excessively or out of round to the extent of causing improper carburetor operation, the part should be replaced.

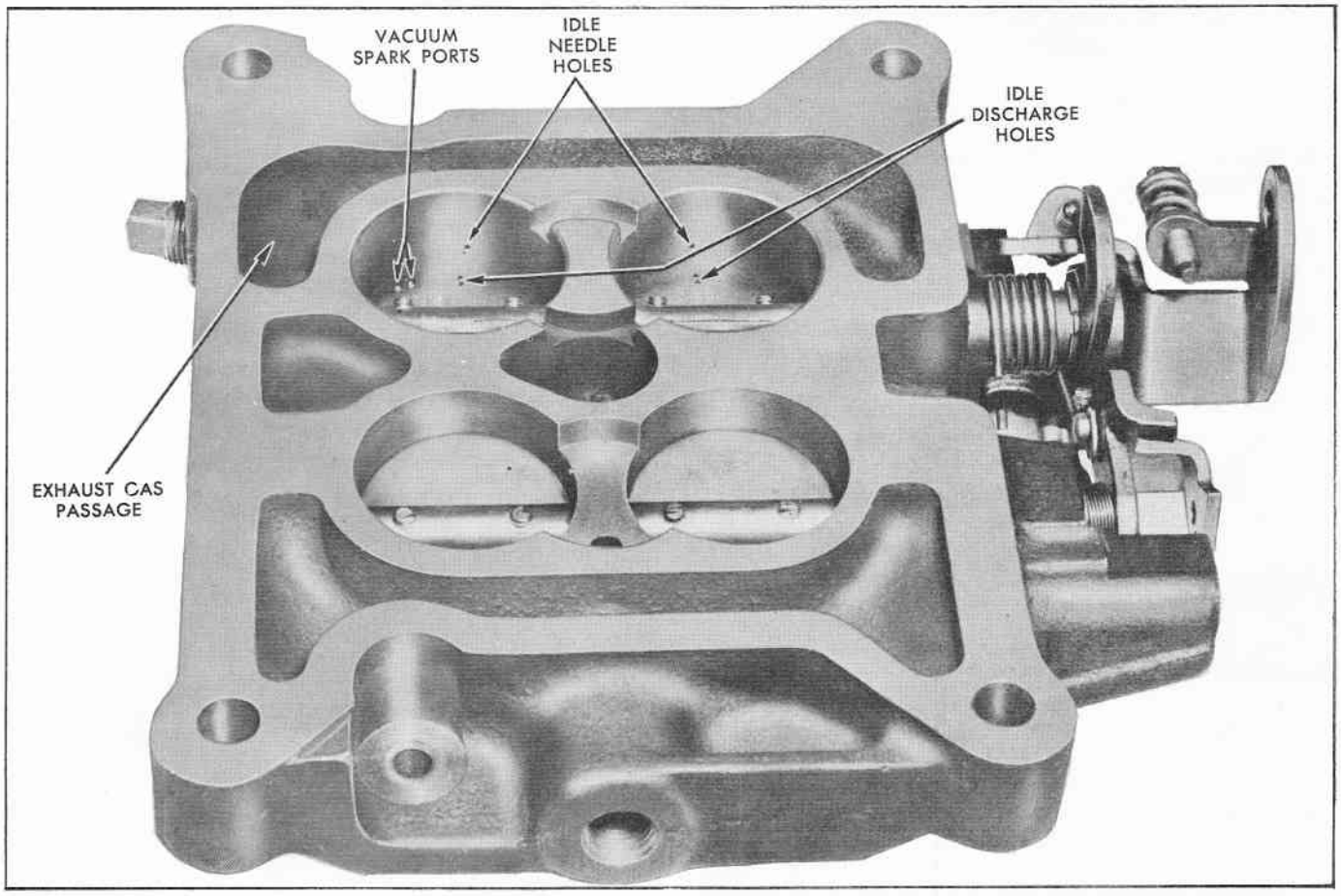

Fig. 20 Passage Identification (Throttle Flange)

k. If excessive wear is noted on fast idle cam, it should be replaced to ensure proper engine operation during warm up.

l. Check all filter screens for lint or dirt. Clean or replace as necessary.

m. Check venturi clusters for loose or damaged parts. If damage or looseness exists, replace cluster assembly.

Assembly of Throttle Flange

1. With carburetor body inverted, position throttle flange gasket on bowl making sure all holes are properly aligned.

2. Place throttle flange on carburetor body and install four attaching screws. Tighten screws securely.

3. Install idle mixture adjusting screw assemblies, tighten finger tight and back off 1-1/2 turns for approximate adjustment.

Assembly of Carburetor Body

1. Place throttle flange assembly and carburetor on holding fixture J-5293 and install steel pump outlet ball, discharge spring and guide, aluminum inlet ball and pump return spring. NOTE: The aluminum inlet ball is 5/32" in diameter. The steel outlet ball is 3/16" in diameter.

2. Replace the pump inlet screen if it was removed in disassembly.

3. Install primary and secondary side main metering jets.

4. Install secondary venturi cluster and gasket using three attaching screws and lockwashers.

   NOTE: The secondary venturi cluster does not have pump discharge nozzles or idle tubes.

5. Install power valve assembly and gasket in primary side of carburetor body.

6. Install primary venturi cluster and gasket using three attaching screws and lockwashers.

Assembly of Air Horn

1. Install power piston into air horn and stake lightly to retain piston during assembly.

2. Assemble rubber seal on pump plunger shaft.

3. Assemble pump plunger assembly into air horn making certain that the seal is properly located in air horn.

4. Assemble pump plunger shaft into operating lever and install horse shoe retainer.

5. Position gasket on air horn.

6. Install primary and secondary float needle seats, gaskets and inlet screens in air horn. CAUTION: Needle seats must be installed on the same sides from which they were removed to match their respective float needles.

7. Install float and needle assembly and hinge pin on primary side.

8. Install float and needle assembly and hinge pin on secondary side.

Float Level Adjustment

1. With air horn gasket in place, position float level gauge J-6179 over floats so that gauge is located against the curvature in bore of the carburetor air horn (Fig. 21).

2. Bend float arms at center as shown in Fig. 21 so floats just contact gauge. The vertical height should be 1 19/32".

3. If necessary, bend float arms horizontally until each float pontoon is centered between gauge legs.

4. Repeat same adjustment on the opposite float assembly.

Float Drop Adjustment

1. Check distance between air horn and bottom of float with air horn held in upright position (Fig. 22). Float drop is correct when distance between air horn, with gasket installed, and float is 2-1/4".

2. If adjustment is necessary, bend float tang toward float needle seat to lessen drop and away from seat to increase drop (Fig. 21).

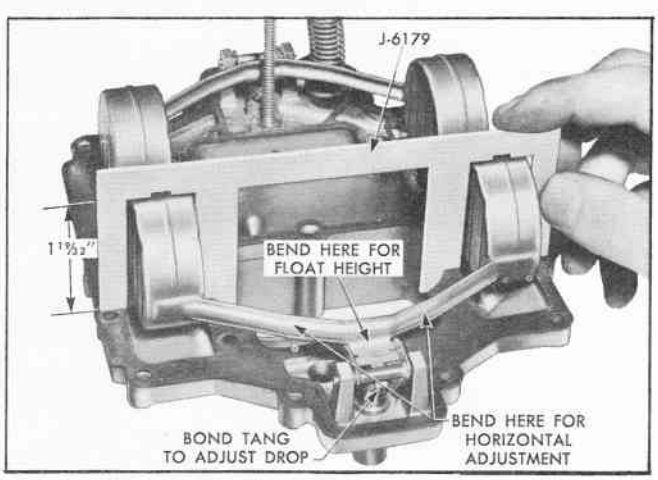

Fig. 21 Checking Float Level

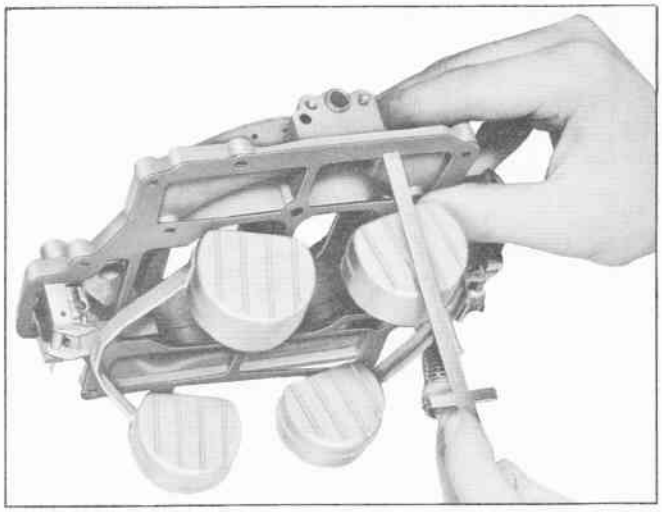

Fig. 22 Checking Float Drop

Completion of Carburetor Assembly

1. Install air horn assembly on body being careful to guide pump plunger into well. Check to see that floats are lined up correctly so that they will not bend.
2. Align air horn and gasket to screw holes in body.
3. Start 13 air horn attaching screws.
4. Tighten evenly and securely all inner attaching screws, then tighten outer screws.
5. Install choke housing and gasket to air horn.
6. Install choke shaft, fitting piston into choke piston housing. Rotate clockwise to check for free fit of piston in bore.
7. Slide choke valve through shaft so letters "R.P." are facing up when choke valve is closed.
8. Just start, but do not tighten, choke valve attaching screws.
9. Install choke counterweight, trip lever and fast idle cam (Fig. 23).
10. To provide correct fit of choke valve in air horn push lightly on choke shaft to obtain a minimum clearance of .020" between trip lever and counterweight (Fig. 24). While holding in this position, tighten choke valve retaining screws.
11. Place baffle plate in position in choke housing.
12. Install thermostat cover, coil assembly, gasket, retaining screws and retainers. Leave screws loose.
13. Rotate cover counterclockwise until the coil picks up the tang, set choke at "Index". Tighten retaining screws.

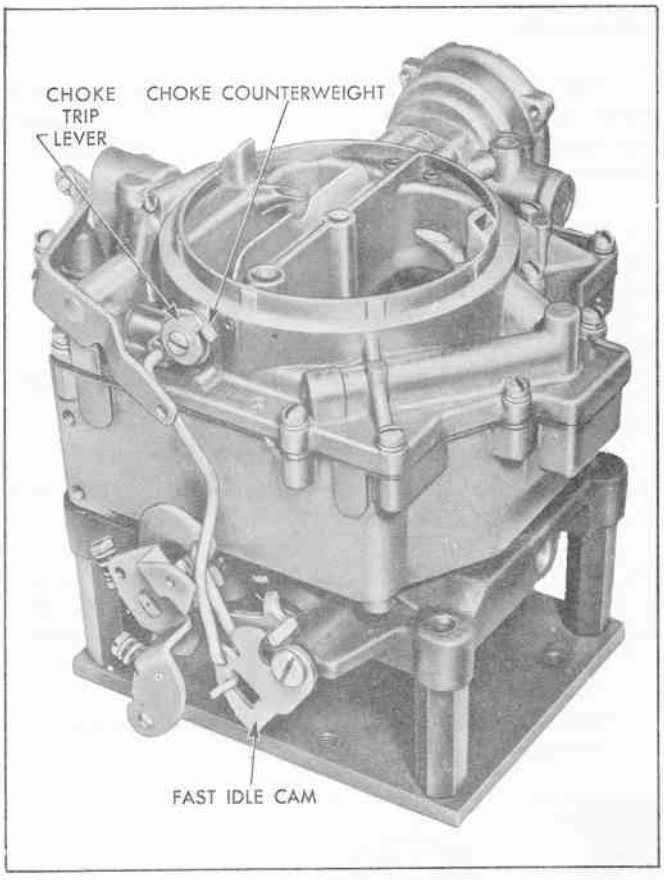

Fig. 23 Counterweight, Trip Lever and Fast Idle Cam Installed

14. Install pump rod to pump rocker arm and throttle lever with clip and horse shoe retainer.
15. Install fuel inlet fitting, screen, and gasket.

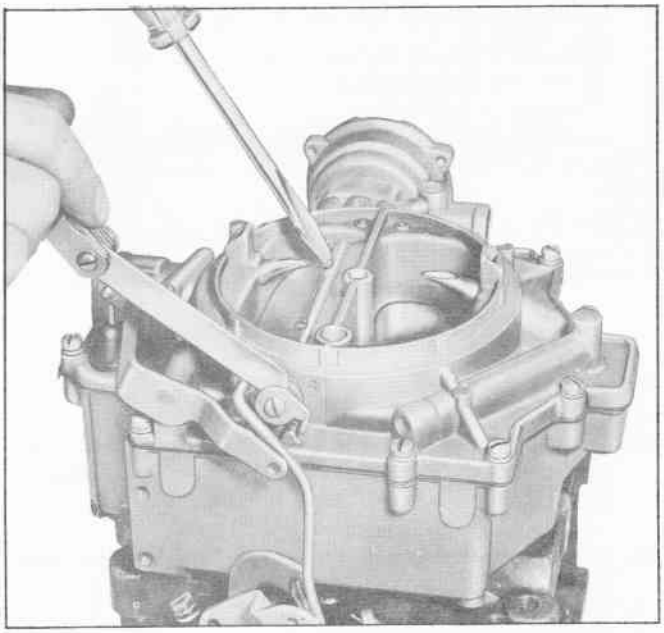

Fig. 24 Spacing the Choke Valve

Adjustments

The float adjustments have been described and made during assembly of the air horn. The remaining adjustments should be made in the following sequence:

1. Pump Rod Adjustment
2. Choke Rod Adjustment
3. Choke Unloader Adjustment
4. Fast Idle Adjustment
5. Secondary Throttle Lockout Adjustment
6. Secondary Throttle Contour Clearance Adjustment.

Pump Rod Adjustment

1. Back off fast idle screw so that throttle valves are completely closed.

2. Hold throttle closed and measure from top of air horn casting to top of pump plunger rod (Fig. 25). Distance should be 1-1/16". Bend pump rod where shown to correct.

3. Operate pump shaft several times to assure free movement.

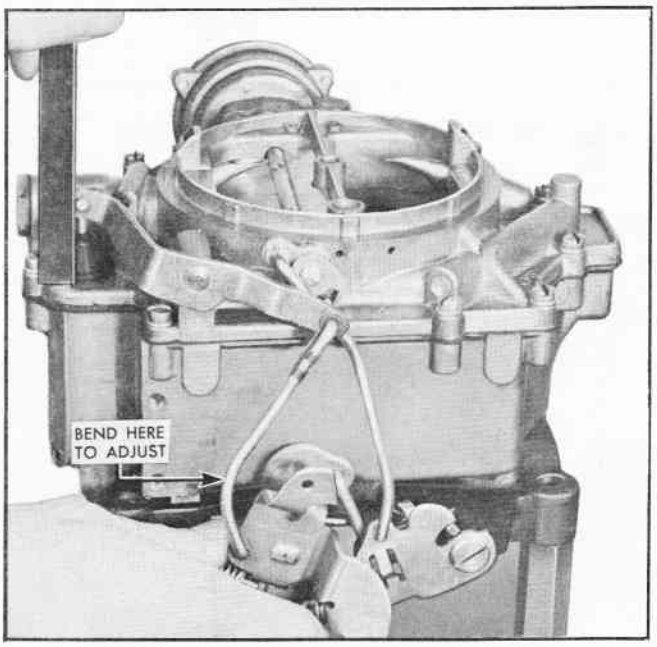

Fig. 25 Checking Pump Rod Adjustment

Choke Rod Adjustment

1. Turn fast idle screw in until it just contacts second step and is against shoulder of high step of fast idle cam.

2. Be certain that choke trip lever is in contact with choke counterweight lever.

3. There should be .054" clearance (gauge KMO 480-A) between top edge of choke valve and dividing wall in the air horn (Fig. 26). Bend choke rod at lower angle if necessary to adjust.

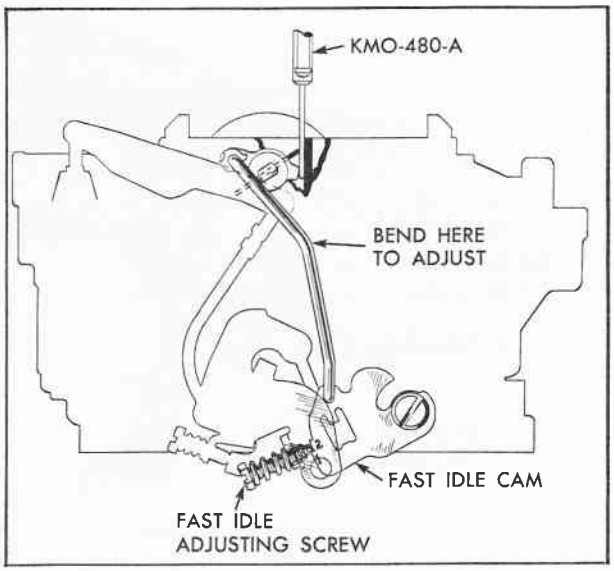

Fig. 26 Checking Choke Rod Adjustment

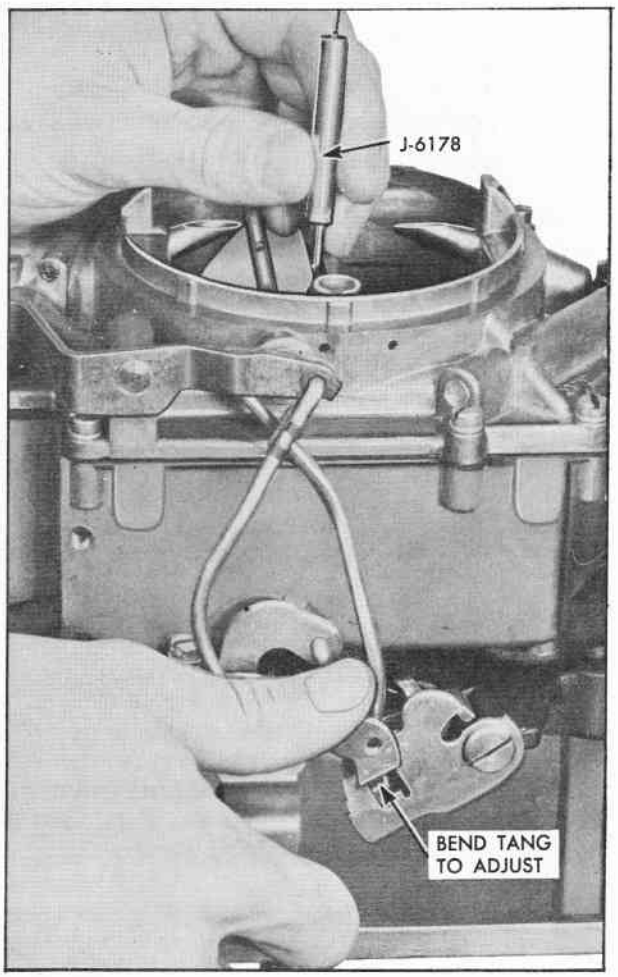

Fig. 27 Checking Unloader Adjustment

Choke Unloader Adjustment

1. With choke trip lever contacting choke counterweight lever, hold throttle valve in the wide open position.

2. There should now be a clearance of .115" (gauge J-6178) between top of choke valve and the dividing wall of the air horn (Fig. 27). Bend tang on the fast idle cam to adjust as necessary.

Fast Idle Adjustment (Off Car)

1. With choke valve fully closed there should be .033" clearance (J-6178) between primary throttle valve and wall of throttle flange opposite the idle adjusting needles (Fig. 28).

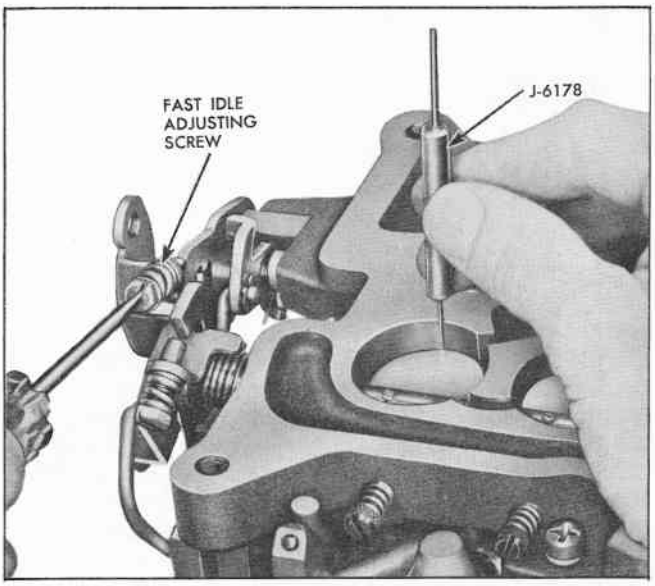

Fig. 28 Checking Fast Idle Adjustment

2. Adjust fast idle screw against high step of fast idle cam to correct.

Secondary Throttle Lockout Adjustment

1. With the choke valve closed so that secondary lockout tang is in the fast idle cam slot, check clearance between fast idle cam and tang (Fig. 29). The clearance should be .015".

2. Bend tang horizontally to adjust.

Secondary Throttle Contour Clearance Adjustment

1. With choke valve held wide open and the fast idle cam and secondary lockout lever positioned as shown in Fig. 30 there should be a clearance of .015" between the cam and the tang.

2. Bend tang vertically to adjust.

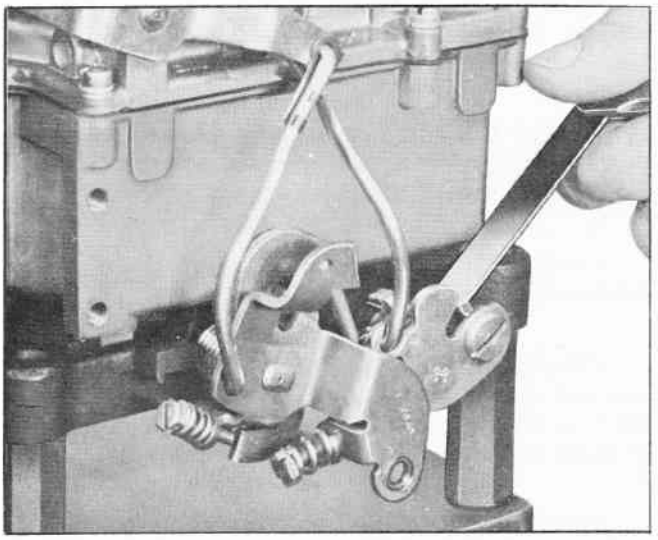

Fig. 29 Checking Secondary Throttle Lockout Adjustment

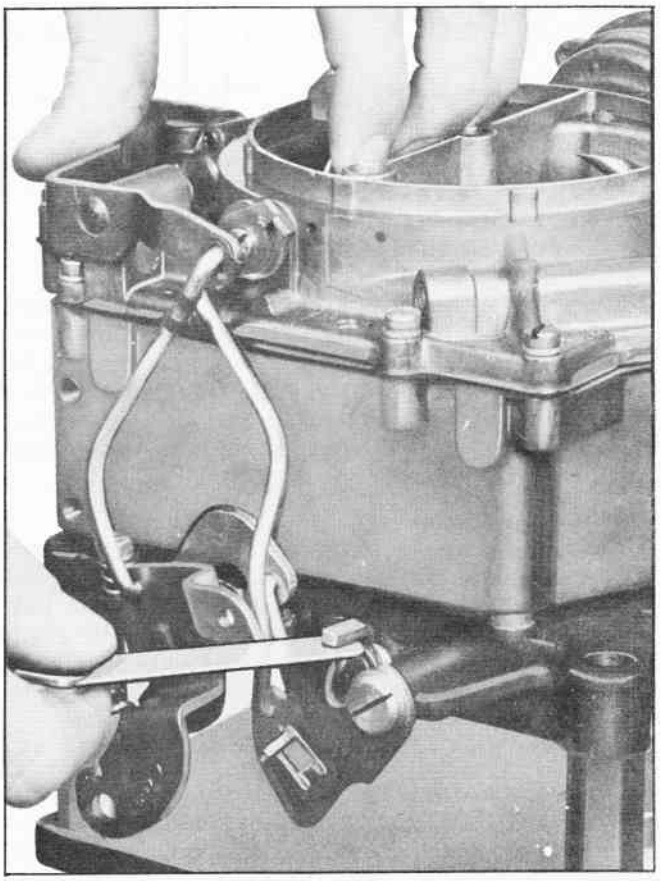

Fig. 30 Checking Secondary Throttle Contour Clearance

ROCHESTER 4GC 4 JET CARBURETOR ADJUSTMENT SPECIFICATIONS

FLOAT LEVEL ADJUSTMENT - Vertical distance between surface of air horn and center of float is 1-19/32" (J-6179) for both primary and secondary.

FLOAT DROP - With air horn in operating position distance between air horn and bottom of float is 2-1/4". No special gauge necessary, use scale.

PUMP ROD - Distance between air horn casting and top of pump plunger 1-1/16".

CHOKE ROD - With fast idle screw on second step and against shoulder of high step of fast idle cam there is .054" clearance (KMO-480A) between top edge of choke valve and dividing wall in air horn.

UNLOADER - Distance between upper edge of choke valve and dividing wall in air horn is .115" (J-6178).

FAST IDLE - Clearance between primary throttle valves and throttle flange is .033" (J-6178)

FAST IDLE SPEED . . . . . 1800 RPM
HOT IDLE SPEED . . . . . 390-410 RPM

CHOKE - Butterfly Type - Primary Side Only - Set on Index

CORRECTION OF FRONT MAIN BEARING NOISE— POWER STEERING EQUIPPED CARS

In some cases on power steering equipped cars where front main bearing clearances are near the allowable maximum, the front main bearing may be noisy at idle. This noise is only noticeable if the engine is thoroughly warmed up and when the power steering pump belt tension is adjusted to the high limit.

Diagnosis can be made by lowering the belt tension below the specified lb. ft. reading, using tool J-5574 (specifications: new belt, 58-65 lb. ft.; belt that has been in service, 51-53 lb. ft.). The belt should not be left loose. A loose belt will cause slippage on the pump pulley and steering wheel "kick" in extreme turn positions.

If belt adjustment at the minimum specified does not eliminate the bearing noise, decrease the clearance between the crankshaft and main bearing shells on the front main. Use the plastigage method and select undersize bearing shells to give .001" to .002" shaft to bearing clearance.

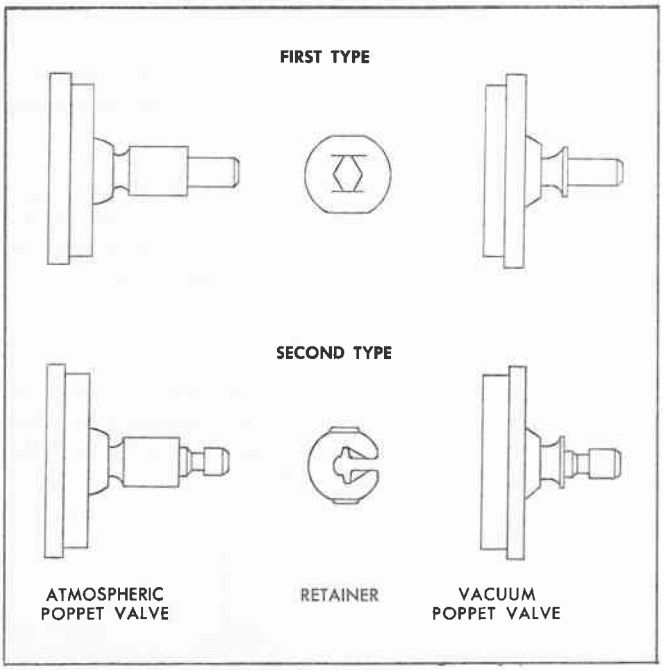

Fig. 31 Comparison of First and Second Type Poppet Valves and Retainers

NEW BENDIX BRAKE POPPET VALVES USED IN PRODUCTION

Bendix brake units with new type atmospheric and vacuum poppet valves are now in production. In conjunction with the new valves a new type retaining ring has been released. Fig. 31 shows a comparison of the first and second type valves and retainers. When servicing any power brake unit with the second type poppet valves, use only the second type retaining ring. This ring is released under part number 522072.

REMOVAL OF PLASTIC WRAP FROM HYDRAULIC VALVE LIFTERS

The plastic "wrap" on all hydraulic lifters to protect them during storage and shipment is applied in molten form. In some cases molten plastic will flow into the hole in the push rod seat.

When the plastic is removed the portion which entered the hole is not always pulled out, but tears off and remains in the hole. This, of course, would shut off oil to the push rod and rocker arm.

Before the new lifter is placed in the engine it is of utmost importance that the service man examine lifters for presence of plastic in the hole in the push rod seat and remove any found, using care that particles of plastic do not enter the valve lifter.

As a reminder, all new hydraulic valve lifters should be checked for proper leakdown rate before installing in the engine.

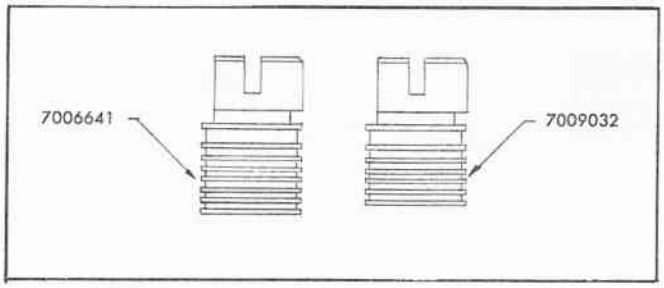

Fig. 32 Comparison of First and Second Type Rochester Choke Pistons

NEW CHOKE PISTON USED ON 2-JET ROCHESTER

A new choke piston is now being used in production on the Rochester 2-Jet carburetor and has been released for service under part number 7009032. The new piston is .041" shorter than the 7006641 piston previously used and has 5 grooves instead of six. Fig. 32 shows a comparison of the two pistons.

The new piston provides a greater initial choke opening after starting and should be installed in case of loading complaints on carburetors equipped with the older type.

THREE TYPES GENERATORS USED ON 1955 AIR CONDITIONING EQUIPPED CARS

Three generators having slightly different constructional features have been used on 1955 air conditioning equipped cars.

First	-- Part Number	1105944
Second	-- " "	1102027
Third	-- " "	1102039

When trouble is experienced with these generators, repairs and handling of replaced parts should be carried out as follows:

1. Where trouble is experienced with the 1105944 generator and the replacement of the armature only is needed, install a new armature, part number 1932900.

2. Where trouble is experienced with the 1102027 generator, it should be replaced by the third assembly 1102039.

3. Where trouble is experienced with the 1102039 generator, repair in accordance with established standard procedures.

Return the defective armatures (part number 1930814) and generators (part number 1102027) to the Warranty Material Inspector, Salvage Department, Pontiac, Michigan.

ADDITIONAL INFORMATION ON THREE TYPES VALVE LIFTERS

Three different appearing hydraulic valve lifters were illustrated on page 43 of the April Service Craftsman News. In the paragraph describing these lifters it was stated that "These three types are interchangeable in all respects and are serviced under the same part number."

Several orders have been received specifying the latest type lifter.

As a reassurance that the lifters are interchangeable, following are the reasons for the changes: The first type may be called an "Intermittent Feed" type because the narrow groove, passing the oil feed as the lifter operates, shuts off the supply hole in the cylinder block during part of the travel. This intermittent feed is entirely satisfactory for all phases of lifter operation except that in production it took more time to purge the oil system of air.

A change was made to the second type with the wide groove. This could be called the "Continuous Feed" type because during the travel of the lifter the wide groove leaves the supply hole in the cylinder block open during the complete travel of the lifter. This reduces the running time to purge the system of air to a point where it is in keeping with production requirements.

Removal of the undercut on the third type was done to simplify machining operations and does not in any way affect the operation of the lifter.

Since the lifters are interchangeable they need not be used in "sets". Replace only those lifters that are found to be unacceptable after being diagnosed, cleaned, and tested in accordance with the Shop Manual. Do not replace in sets.

Therefore, in view of this information, orders for valve lifters will be filled with the type lifter that is in stock at the time the order is received.

PREVENTION OF ROAD TAR CAUSED PAINT DISCOLORATION

Owners should be warned of the possibility of paint discoloration caused by the oil and tars commonly used in road repairs. If these materials are not removed shortly after contact with the paint, yellow stains and paint deterioration will result. This condition is usually most noticeable along the lower sections of the body, especially below the body lower molding in the rear quarter area.

Prep-Sol No. 3980 can be used for the removal of road tar. Several other commercial preparations are available for the purpose and may be used on the responsibility of the supplier.

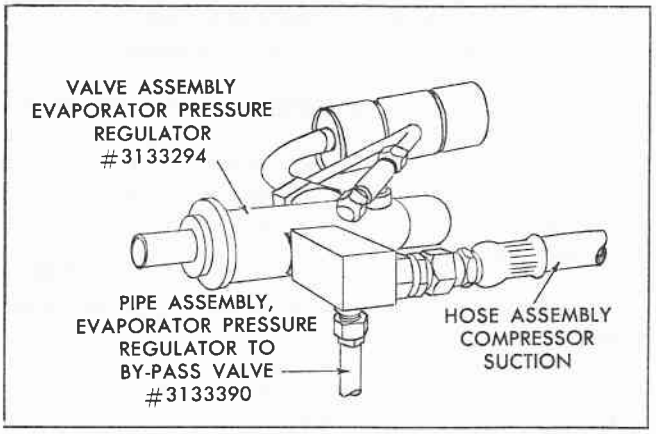

Fig. 33 First Type Evaporator Pressure Regulator Valve Assembly

THREE DIFFERENT EVAPORATOR PRESSURE REGULATOR ASSEMBLIES USED IN PRODUCTION

Three different Evaporator Pressure Regulator Valve assemblies have been used in production. Only those parts used in current production will be stocked. To facilitate parts identification and ordering, Figs. 33, 34 and 35 have been prepared describing the construction of each different assembly with part numbers called out.

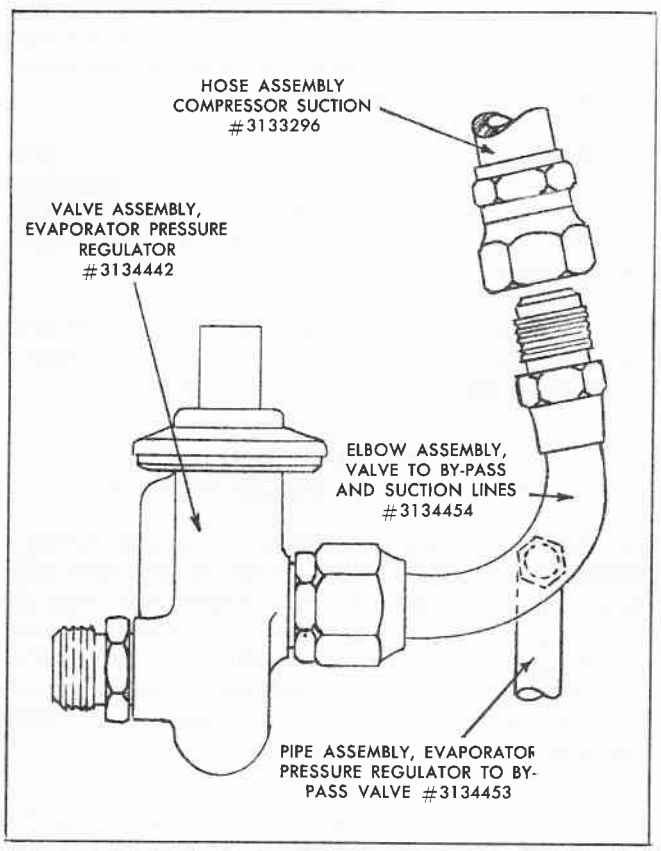

Fig. 34 Second Type Evaporator Pressure Regulator Valve Assembly

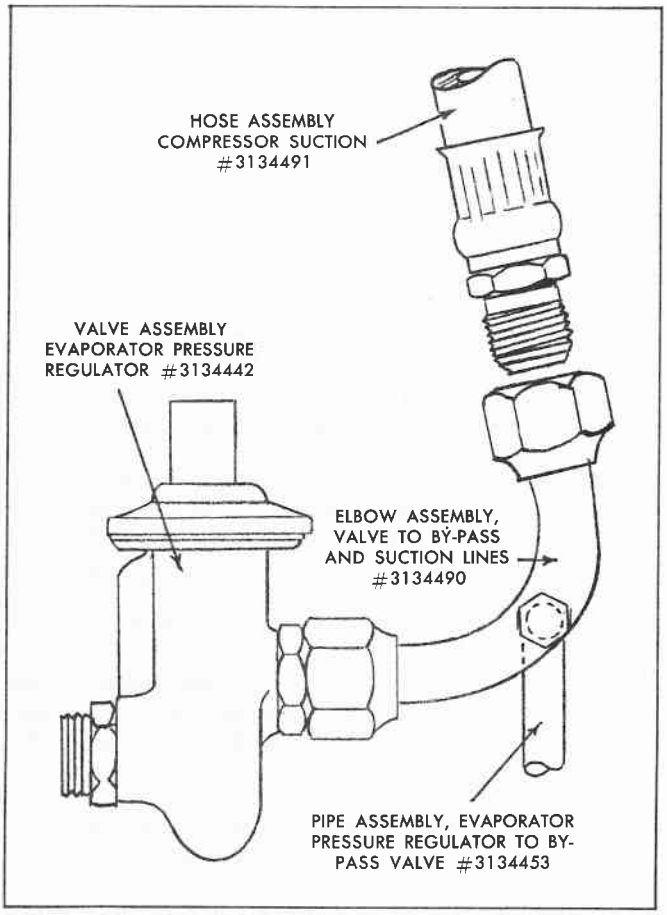

Fig. 35 Third Type Evaporator Pressure Regulator Valve

The assembly shown in Fig. 33 was used on the first 200 cars. It consists of the following:

#3133294	Valve Assembly, Evaporator Pressure Regulator
#3133296	Hose Assembly, Compressor Suction
#3133390	Pipe Assembly, Evaporator Pressure Regulator to By Pass Valve

The assembly shown in Fig. 34 was used on the second series production and concerns 562 cars. It consists of the following:

#3134442	Valve Assembly, Evaporator Pressure Regulator
#3134454	Elbow Assembly, Valve to By Pass and Suction Lines
#3133296	Hose Assembly, Compressor Suction
#3134453	Pipe Assembly, Evaporator Pressure Regulator to By Pass Valve

The assembly shown in Fig. 35 is the third type that has been used and is currently being used in production. It consists of the following:

#3134442	Valve Assembly, Evaporator Pressure Regulator

#3134490 Elbow Assembly, Valve to By Pass and Suction Lines
#3134491 Hose Assembly, Compressor Suction
#3134453 Pipe Assembly, Evaporator Pressure Regulator to By Pass Valve

Only parts now being used in production or the third series will be serviced. It will be necessary to carefully check interchangeability whenever making repair or replacement.

CORRECTION OF ENGINE OIL LEAKS — — REAR MAIN BEARING CAP SEALING APPROVED

Tests conducted by the Engineering and Inspection Departments have indicated that oil leakage past the rear main bearing can come through:

1. Packing type oil seal (which is malformed or cut too short).
2. Parting line, bearing cap to cylinder block (rough or dirty).
3. Oil pan cork rear gasket (porous, not sealed to bearing cap, or short).
4. Oil pan rear to side gasket joint (short or oil pan deformed).

Oil will not leak by the crankshaft oil seal packing if there is no open gap due to short packing at the parting line and if the packing lock groove cast in the cap is properly filled with packing. Replace the packing when either one or both the above irregularities are present.

Clearance of the rear bearing to the crankshaft within the normal manufacturing limits of .0008-.0033 in no way contributes to rear bearing crankshaft seal leakage.

One of the most important items to clear up when working on rear main bearing oil leakage is the seal between the bearing cap and the cylinder block. The mating surfaces of the cap and block must be smooth and clean. They must not include scratches which might form a path for oil to escape toward the rear. Before installation a bead of sealer, Hydra-Matic flywheel to crankshaft sealer (Group 0.665) or Permatex #2 should be laid on the cap extending from the packing seal groove outward to the groove for the oil pan cork rear gasket (see Fig. 36). Diameter of this bead should measure between 3/64" and 1/16". It should not exceed 1/16". It is of utmost importance that the parting line faces on the cap and in the cylinder block be absolutely free of dirt and oiliness before the sealer is applied and the cap reinstalled. Oiliness should be removed with volatile type cleaner.

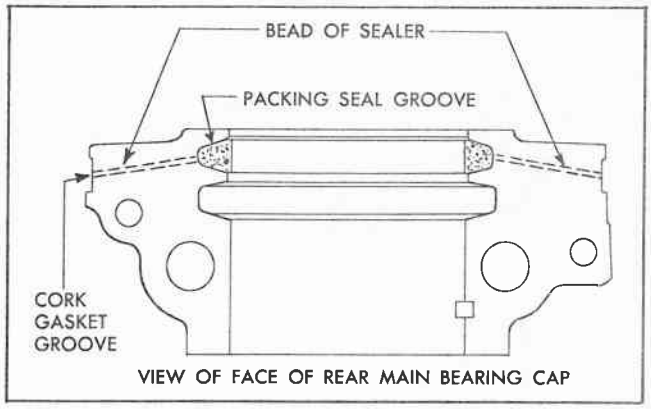

Fig. 36 Rear Main Bearing Cap

The curved oil pan rear gasket in some cases has been found to be porous, or improperly sealed in the groove in the main bearing cap, or to be short. Any one of these might allow oil to leak past the gasket. If it is suspected that the gasket is porous it should be treated with shellac, Hydra-Matic flywheel to crankshaft sealer or Permatex #2 before installation. This gasket should be cemented to the cap.

Oil pan gaskets should be carefully installed to eliminate the possibility of oil passing either of the joints between the rear and side gaskets. Oil pan gaskets should be cemented to pan and should overlap rear gasket when pan is installed. Tighten carefully so that the overlap between these joints does not contribute to an oil leak.

Whenever oil pan is down for leaks add the oil pump to block gasket part #522103.

PRECAUTIONS WHEN LIFTING ENGINE WHEN IN CHASSIS

It is important that the ground strap be disconnected at the battery before lifting an engine in the chassis for any reason such as replacing cylinder block half of rear main bearing oil seal packing or removing Hydra-Matic transmission. Cases have occurred where the engine moved toward the steering gear sufficiently that contact was made between the "battery" and "solenoid winding terminals" of the solenoid and the steering gear mast jacket causing the starter to crank the engine. This could be very dangerous. If a man happened to be working on the flywheel, torus cover, or any other moving part he might be injured seriously. The car, or tools and equipment may also be damaged.

RETURN OF HARMONIC BALANCERS NO LONGER NECESSARY

It is no longer necessary to return defective Harmonic Balancer assemblies to the Salvage Department at Pontiac. A sufficient quantity of these parts have been received to evaluate failures.

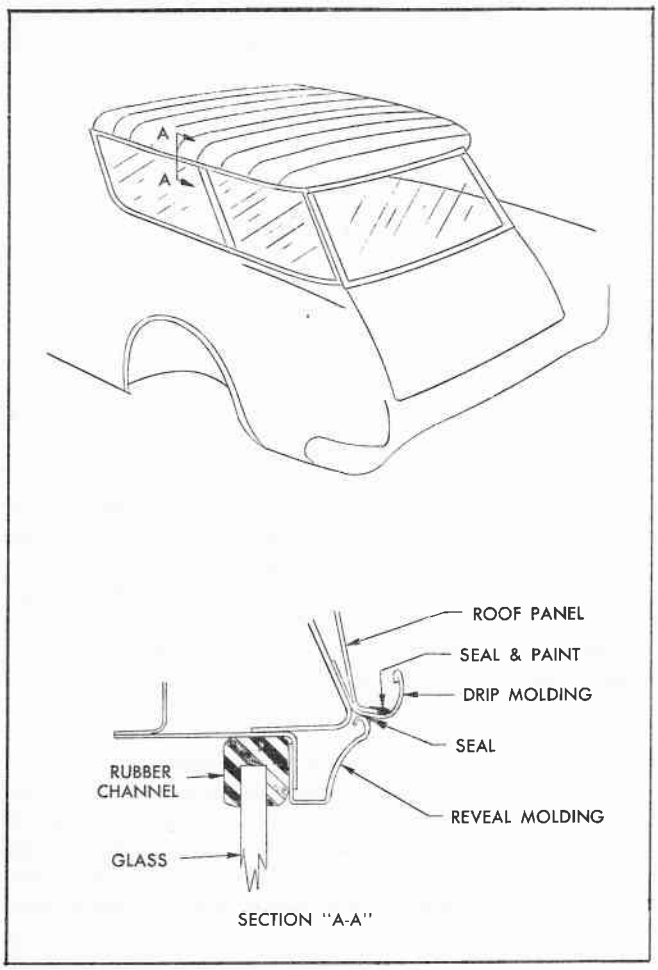

Fig. 37 Rear Quarter Window Area - 1955 Safari

PROCEDURE FOR CORRECTING WATERLEAKS AT REAR QUARTER WINDOW AREA 1955 SAFARI

If a waterleak is encountered at the rear quarter window area of the body, the water may be entering at the joint of the roof panel and drip molding and/or at the joint of the rear quarter window upper reveal moldings and drip molding. To prevent water from entering the body through the above joint(s), perform the steps outlined below:

1. Carefully inspect sealer along length of roof panel and drip molding joint for gaps.

2. Apply a good grade of body caulking compound to any sealer gaps noted in roof panel and drip molding joint as indicated in Section "A-A" Fig. 37. Clean off excess compound.

3. Apply thin bead of caulking compound to joint at drip molding and rear quarter window upper reveal moldings, as shown in Section "A-A", Fig. 37 along entire length of moldings. Work compound into joint to effect a good seal and clean off excess compound.

4. Paint caulking compound applied to roof panel and drip molding joint with body color.

5. Watertest body along rear quarter windows and roof drip molding.

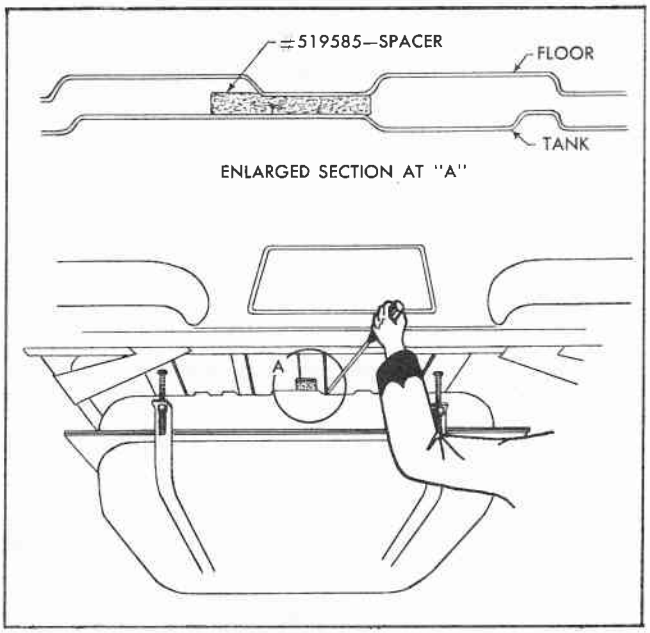

Fig. 38 Inserting 519585 Spacer

ELIMINATION OF NOISE BETWEEN REAR COMPARTMENT FLOOR PAN AND FUEL TANK

Several cases of noise have been reported as caused by contact between the fuel tank and the rear compartment floor pan. This can be corrected by increasing the opening between the tank and the pan with a large screwdriver, tire iron or tapered pry bar and inserting spacer 519585 as shown in Fig. 38.

AIR CONDITIONING COMPRESSOR PART NUMBERS

Some early production compressors may be found with the part number 1132995 stamped on the serial number plate. This compressor is exactly the same as those stamped 5911926.

When ordering replacement compressors, do not use the number on the serial number plate. Always refer to the Master Parts Catalog for the proper part number.

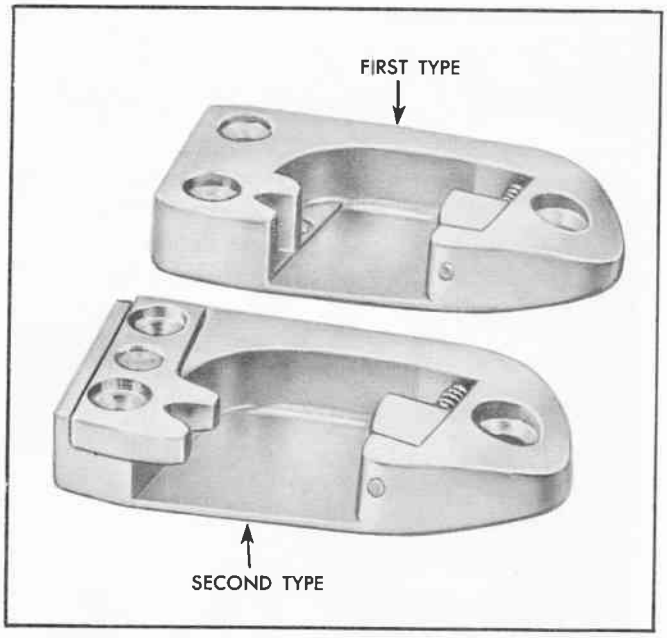

Fig. 39 Comparison of First and Second Type Door Lock Striker Assemblies

FIRST AND SECOND TYPE DOOR LOCK STRIKERS USED ON 1955 MODELS

Fig. 39 shows the differences between the first and second type door lock strikers used on 1955 models. Note that the die-cast teeth on the striker extend from the face down to the bottom of the depression on the first type. The teeth on the second type are cut in a steel plate and do not extend down to the bottom of the depression. This change in design will, at a later date, be accompanied by a change in the lock bolt housing so that part of the housing will extend in back of the teeth on the second type striker. This change is being made to improve the safety features of the lock.

Breakage of the first tooth away from the second, was experienced in the plant on a few of the early plates of the second type. Production was immediately stopped and corrective steps taken. Striker plates made after the change will be identified by a dot of black paint approximately 1/4" in diameter on both the front and back faces of the striker assembly (See Fig. 40).

All second type striker plates not having the black dot are to be replaced. Use the second type with black dot if available from G.M.P.D. Warehouses. (Do not remove dot as this identification must be left visible.) If not available, use the first type having the die-cast teeth. It is important that this change be made because if the first tooth breaks off, the safety catch feature of the lock is lost.

All replaced strikers are to be properly tagged with car serial and body number and returned to the Warranty Material Inspector, Salvage Building, Pontiac Motor Division, Pontiac, Michigan.

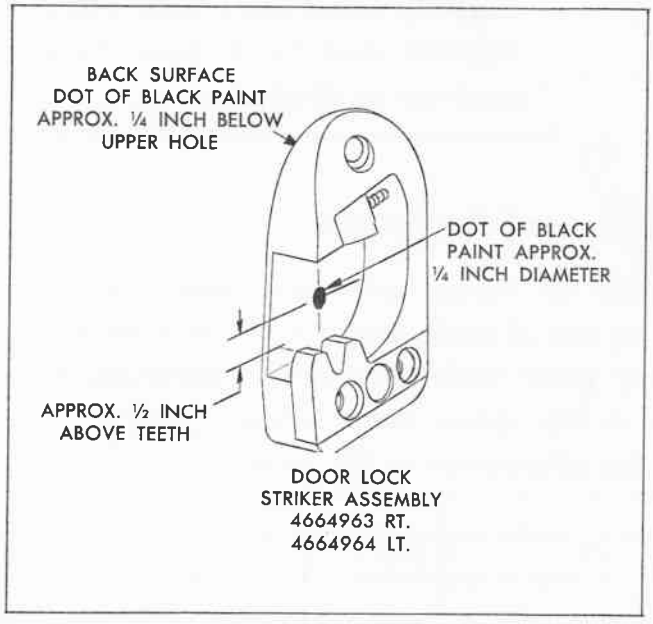

Fig. 40 Door Lock Striker Assembly

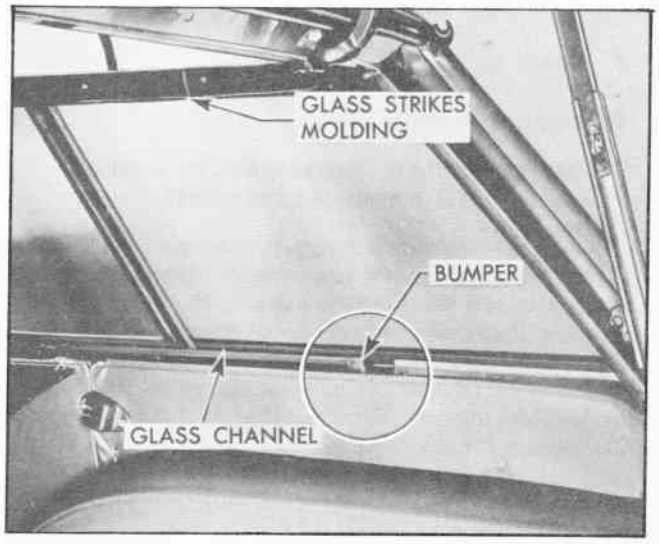

Fig. 41 Rear Quarter Sliding Window Bumper

RELOCATING REAR QUARTER SLIDING WINDOW BUMPER — 1955 SAFARI

If the upper rear corner of a rear quarter sliding window strikes the front edge of the rear quarter window upper rear garnish molding, the condition can be corrected by relocating the sliding window bumper forward as follows:

1. Remove rear quarter window lower front and rear garnish moldings.

2. With rear quarter sliding window in forward position, remove bumper as shown in Fig. 41.

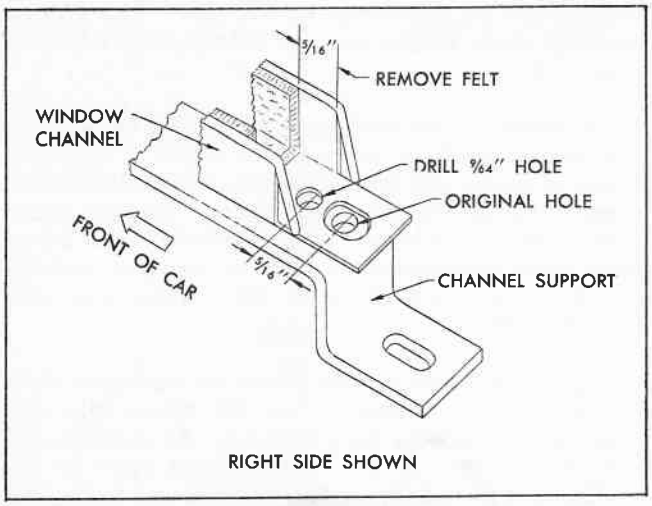

Fig. 42 Location of Sliding Window Bumper

3. Using a sharp tool, remove 5/16 inch length of felt from bottom and sides of rear end of rear quarter sliding window glass lower channel. See Fig. 42.

4. Drill a 9/64 inch hole 5/16 inch directly forward of original bumper attaching hole. See Fig. 42.

5. Install bumper at new location.

6. Install garnish moldings.

MORE SPECIFIC INFORMATION NEEDED ON PAINT P.I. REPORTS

In many instances Product Information Reports on paint irregularities are received from which it is difficult to tell the specific area of the paint defects. In order that these reports be of maximum aid to the inspection department in improving product quality, it is requested that the area of the paint involved be marked on the car illustrations on the back of the P.I. Report form.

Charlie Craftsman Says-

Make sure all the wires in the distributor cap are pushed in completely. I've seen several cars that have missed due to a poor connection in that area.

SERVICE MANAGER—IMPORTANT

This News contains important service information on Pontiac cars. Each subject should be cross-referenced in the space provided at the end of each section in the Shop Manual or its Supplement. ***Be sure and cover every point with your entire organization.*** Each service man should sign in the space below after he has read and understands the information in this issue.
