ENGINE FUEL

CONTENTS OF THIS SECTION

CARBURETOR AIR CLEANER AND SILENCER

An oiled polyurethane filter element is standard equipment on the 215 6 cyl. and 326 H.O. V-8 engines and is heavy duty equipment on the 326 V-8.

An oiled aluminum mesh filter element is standard equipment on the 326 V-8.

For servicing filter elements see "General Lubrication", Section 2.

HEAT CONTROL VALVE (Fig. 6B-1 & 6B-2)

A thermostatically controlled valve in the outlet of the exhaust manifold on the 6 cyl. and V-8 engines directs the passage of exhaust gases to the intake manifold when the engine is cold.

In the 6 cyl. engine, exhaust gases will then pass through the hollow rectangular housing beneath the intake manifold to warm the incoming fuel mixture.

In the V-8 engine, exhaust gases will pass through the intake manifold crossover passage beneath the carburetor and heat the fuel mixture. From the intake manifold the exhaust gases pass through the left exhaust pipe and out of the system.

As the engine warms up, the thermostatic heat control valve opens allowing all gases to be exhausted without heating the intake manifold.

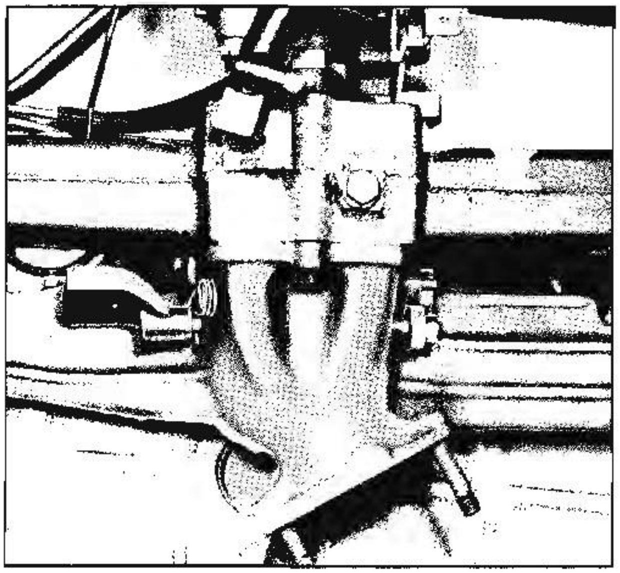

Fig. 6B-1 Heat Control Valve 6 Cyl.

THROTTLE RETURN CHECK *(Fig. 6B-3)*

The throttle return check is mounted on the carburetor and is designed to open the throttle valves to increase engine speed slightly and prevent stalling when engine vacuum drops. It also acts to retard throttle when the driver suddenly takes his foot off the accelerator pedal. The throttle return check is standard on Tempest V-8 engines with automatic transmissions.

THROTTLE RETURN CHECK ADJUSTMENT (AUTOMATIC TRANS.)

1. Set hot idle and mixture adjustment to specifications.

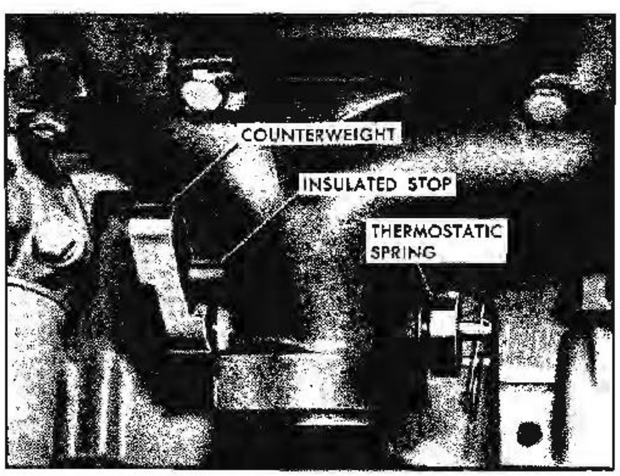

Fig. 6B-2 Heat Control Valve V-8

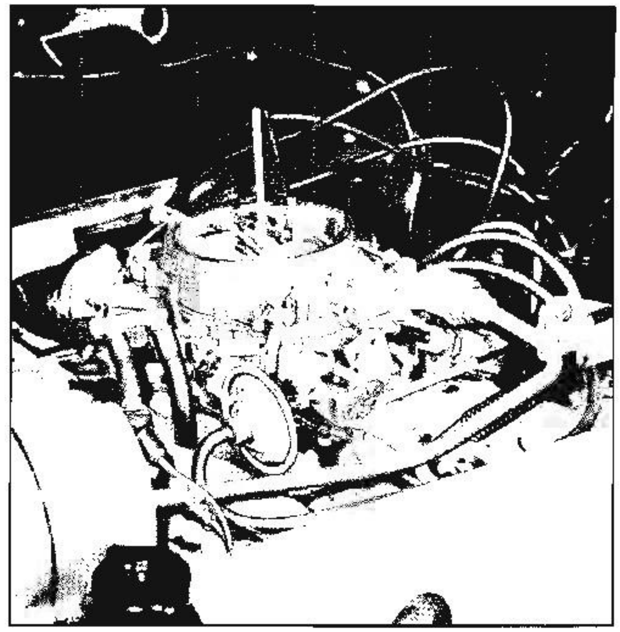

Fig. 6B-3 Throttle Return Check

2. Place transmission in neutral.

3. With engine running, disconnect vacuum hose from throttle return check and plug open end of vacuum hose.

4. Adjust the contact screw of the throttle return check to obtain speed of 1030-1080 rpm.

CAUTION: Hold sleeve next to diaphragm from turning while adjusting contact screw.

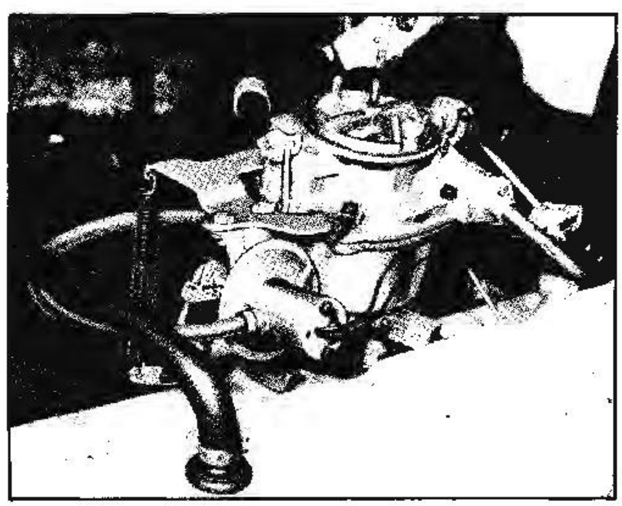

Fig. 6B-4 Idle Speed Up Device

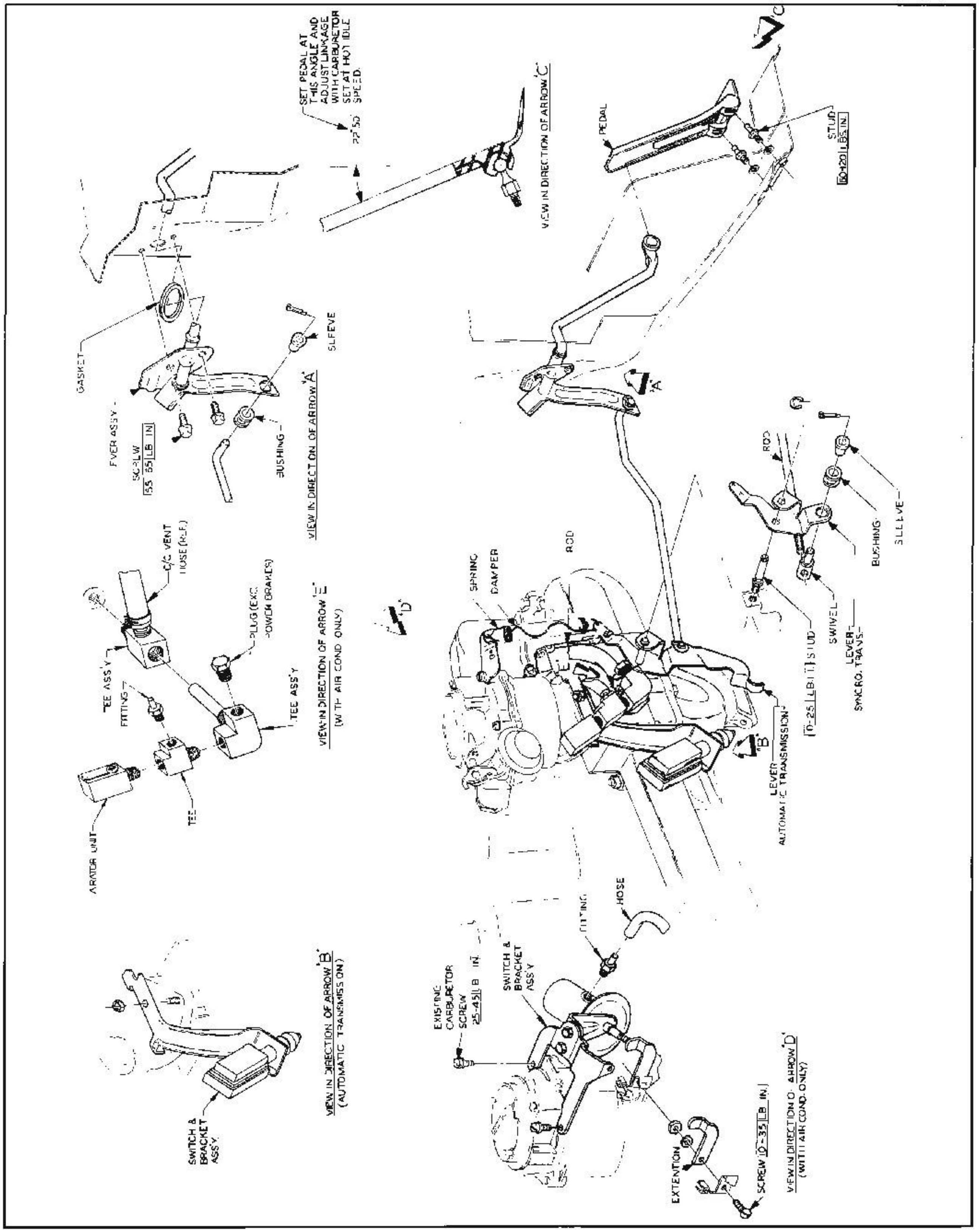

Fig. 6B-5 Accelerator Linkage 6 Cyl.

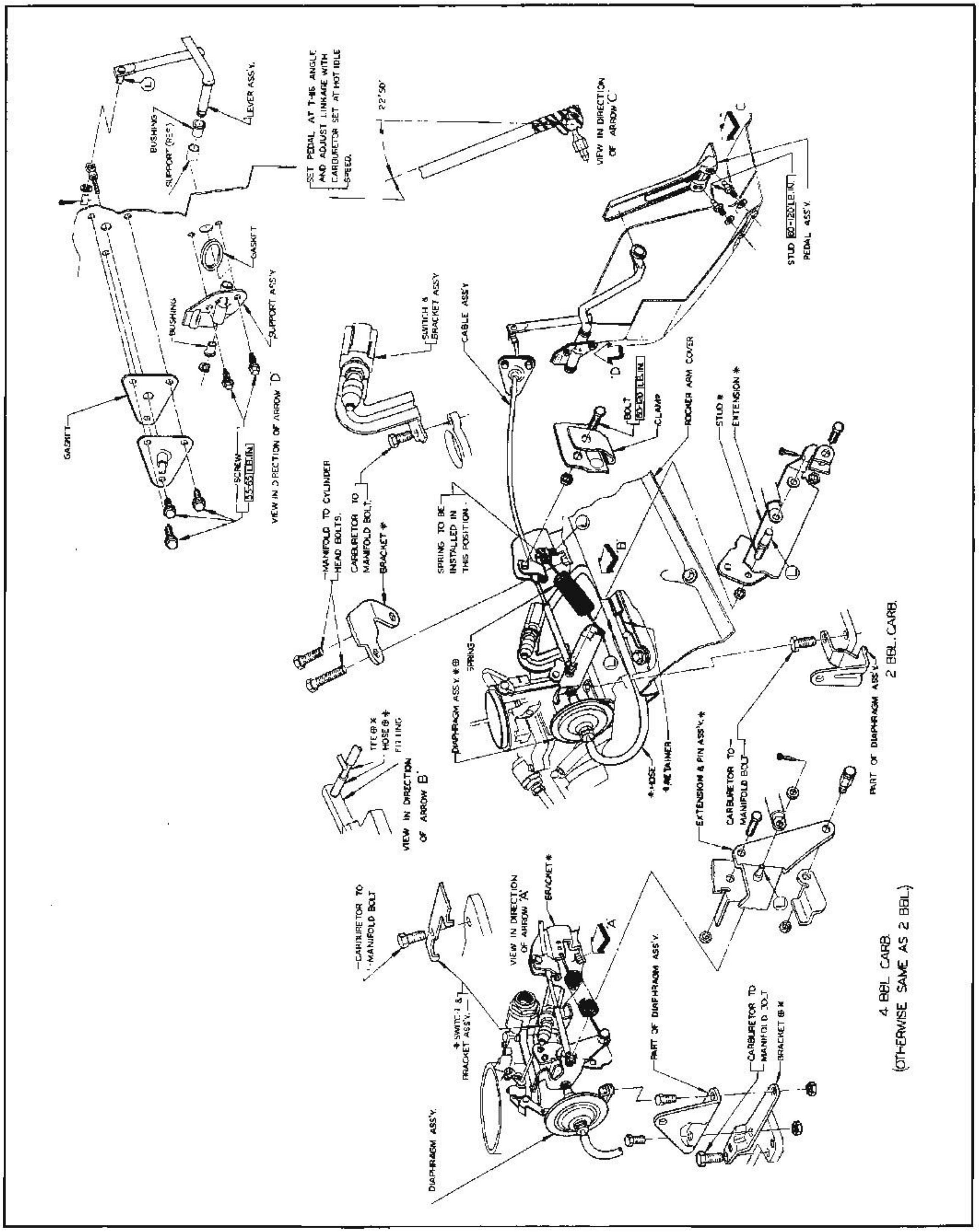

Fig. 6B-6 Accelerator Linkage V-8

IDLE SPEED-UP DEVICE

The idle speed-up device (Fig. 6B-4) is standard on 6 cyl. engines with air conditioning. It consists of a solenoid (connected by two wires to the air conditioning compressor) and a vacuum diaphragm similar to a throttle return check diaphragm. The mechanism increases idle speed when air conditioning is on and acts as a throttle return check when the air conditioning is off. When the air conditioning compressor is operating, the solenoid opens a release valve, decreasing diaphragm vacuum, thus causing the diaphragm plunger to partially open the carburetor throttle valve. The solenoid is inoperative when the air conditioning is off.

IDLE SPEED-UP DEVICE ADJUSTMENT

Set hot idle speed and mixture to specification and leave automatic transmission in drive and synchromesh transmission in neutral. Turn on air conditioning for maximum cooling and adjust diaphragm screw to obtain engine speed as follows:

Automatic in Drive, air conditioning on, hot idle compensator closed - 480-500 rpm.

Synchromesh in Neutral, air conditioning on, hot idle compensator closed - 580-600 rpm.

CAUTION: Hold sleeve next to diaphragm from turning while adjusting screw.

HOT IDLE COMPENSATOR

The hot idle compensator used on six cylinder engines with air conditioning is attached to the tee fitting in the intake manifold. It consists of a bi-metal strip, a valve and housing. It functions as follows:

As engine and underhood temperatures rise to a predetermined value, the bi-mteal strip lifts the valve off its seat. This allows fresh air to enter the manifold below the throttle valves and off-set rich mixtures, due to fuel vapors, which can cause rough idle and stalling.

When underhood temperatures return to normal, the bi-metal strip will lower and the compensator valve will close and normal idle operation will resume.

NOTE: No adjustments are necessary on the idle compensator. The compensator valve must be closed while adjusting engine idle.

ACCELERATOR LINKAGE ADJUSTMENT

1. Check accelerator pedal height. If necessary, adjust linkage (Fig. 6B-5-6) to obtain correct height.

2. Depress accelerator to floor and check to see that carburetor throttle valves are wide open.

ROCHESTER BV CARBURETORS

6 CYL. ENGINE
(1 9/16 Throttle Bore)

GENERAL DESCRIPTION

The Rochester Model BV carburetor is a single barrel, downdraft model with provision for automatic choke mounted on the exhaust manifold, and is used on the 1964 Tempest, 215 cu. in. engine, for both automatic transmission and synchromesh applications (Fig. 6B-7).

Carburetor No.	Used On
7024164	6 cyl. Synchromesh Transmission
7024166	6 cyl. Automatic Transmission

The Model BV carburetor incorporates several distinct features. It has a concentric float bowl, which completely surrounds the main bore of the carburetor. The design of the float bowl, in conjunction with the centrally located discharge nozzle, prevents fuel loss on inclined roads. Regardless of the angle the car assumes, the fuel level is below the nozzle spill point at all times.

Another feature of the carburetor is the unique design of the main well assembly. This assembly contains the main metering jet and power valve. It is attached to the carburetor air horn and is suspended in the float bowl. Engine heat cannot be directly transmitted from the float bowl into the main well area.

On the Model BV carburetor the choke thermostatic coil is located on the exhaust manifold and is connected directly to the choke valve shaft by a connecting rod (Fig. 6B-8). The exhaust mounted choke coil provides excellent choke response to supply the correct fuel mixtures to the engine during the warm-up period. A vacuum diaphragm unit mounted on the carburetor air horn opens the choke valve, just after starting, to a point where the cold engine will run without loading or stalling (Fig. 6B-8).

The Model BV carburetor incorporates the six systems of carburetion: Float, Idle, Main Metering, Power, Pump and Choke.

FLOAT SYSTEM (Fig. 6B-9)

The Model BV carburetor has the conventional needle and seat to control fuel level in the float bowl. With the concentric float bowl design, dual floats

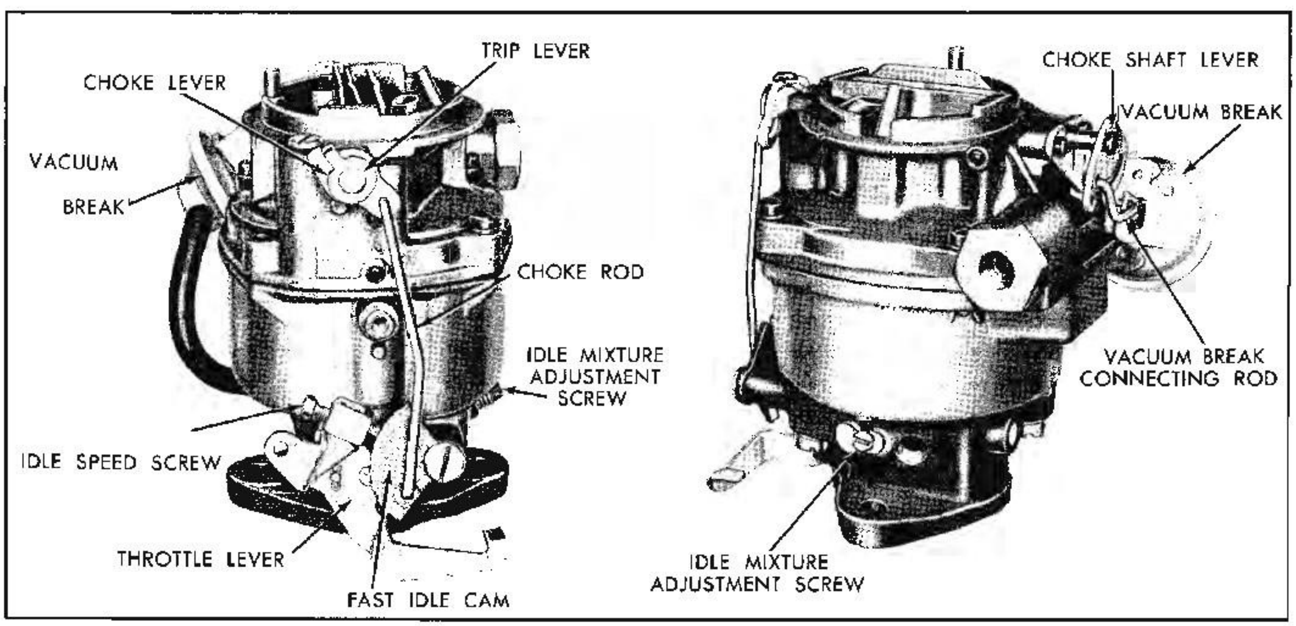

Fig. 6B-7 Rochester BV Carburetors

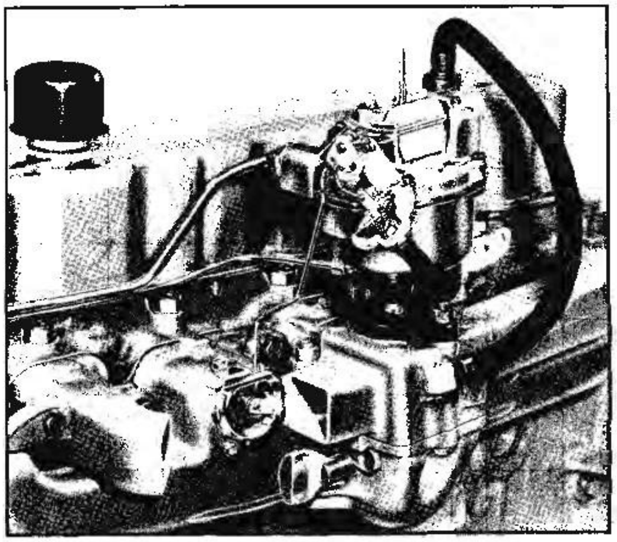

Fig. 6B-8 Thermostatic Coil and Connecting Rod

are used to maintain a constant fuel level at all times. This is important because fuel level directly affects the air/fuel ratio by determining the distance the fuel must rise to enter the nozzle bar for the idle and main discharge systems. A low fuel level will produce too lean a mixture, while a high fuel level will produce a richer mixture and possibly cause flooding. The float bowl is designed so that the fuel is centrally located around the main well, so that efficient carburetor metering can be maintained under all engine operating conditions.

As shown, components of the float system are the inlet fitting and gasket, fuel filter and gasket, pressure relief spring, needle valve and seat, and the

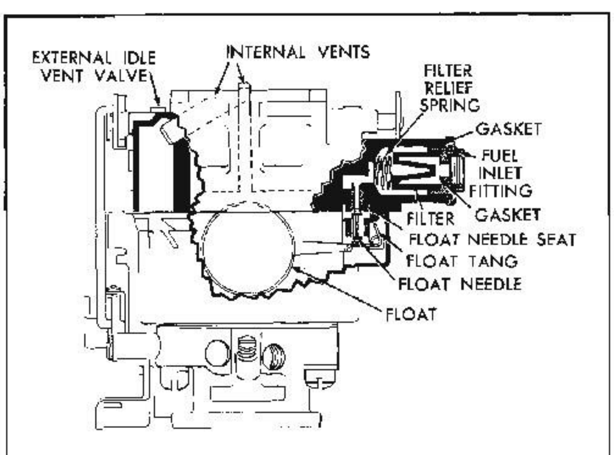

Fig. 6B-9 Float System

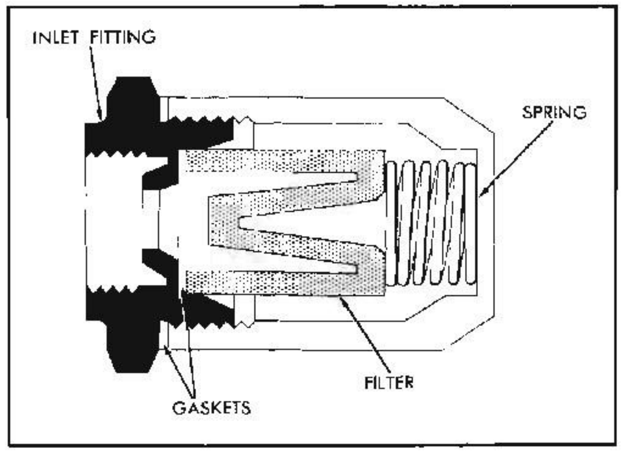

Fig. 6B-10 Fuel Inlet Components

float. It should be noted that the fuel filter at the fuel line connection, behind the fuel inlet nut, is spring loaded (Fig. 6B-10). This provides a pressure relief feature so that in the event the filter should plug, the restriction would cause fuel pump pressure to overcome the spring and allow fuel to by-pass the filter.

When the float bowl fuel level is low, the float drops downward and allows the needle to come off its seat. This allows fuel to flow into the float bowl from the engine fuel pump supply. The fuel intake continues until the fuel level reaches the correct height set by the float level adjustment.

At this point, the needle again seats and fuel intake ceases. While the engine is running the float needle is continuously unseating an amount proportional to the rate of fuel consumption by the engine. The float drop tang at the rear of the float hanger prevents the float needle from dropping out of the seat during disassembly and assembly operations.

The carburetor is internally vented by three vent tubes located inside the air horn bore just beneath the air cleaner. The air vents balance the air pressure from beneath the air cleaner to the fuel in the float bowl. The amount of fuel metered by the carburetor is dependent upon the air pressure in the float bowl causing fuel to flow. By locating the vents below the air cleaner, or internally, the carburetor automatically compensates for air cleaner restriction, since the same pressure causing air to flow will also be causing fuel to flow.

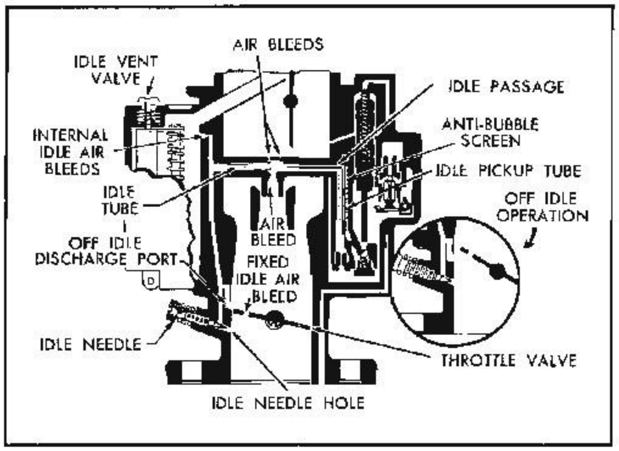

Fig. 6B-11 Idle System

IDLE SYSTEM (Fig. 6B-11)

At idle speeds, the throttle valve is nearly closed so there is not enough air flow through the venturi to lift fuel from the float bowl. Therefore, to supply enough fuel for idle and off idle requirements, a separate system is used called the idle system. To make fuel flow, manifold vacuum is applied directly to the fuel in the bowl from the idle needle hole and off idle port as the throttle valve is gradually opened. The idle system consists of the idle pick up tube, idle tube, idle passages, idle air bleed, idle mixture adjustment needle, idle discharge holes, and an idle speed adjustment screw.

A fixed air bleed drilled through the throttle valve acts as a deterrent to stalling due to gum formation at the throttle valve. The fixed idle air bleed maintains a constant idle air flow for part of the idle air requirements, while the idle speed adjusting screw regulates the remainder of the idle air. The engine idle speed can be adjusted by the idle speed adjusting screw.

The idle mixture needle hole is in the high vacuum area below the throttle valve while the fuel bowl is vented to atmospheric pressure. Vacuum can be called lack of pressure, so a high vacuum area can be spoken of as an area of low pressure. There is considerable pressure difference between the normal atmospheric pressure on the fuel in the bowl and the low pressure (or high vacuum) at the idle mixture needle hole. The air/fuel mixture will be forced by atmospheric pressure to occupy any low pressure area. Due to the difference in pressure, the fuel will flow from the fuel bowl to the engine manifold.

Atmospheric pressure acting on the fuel in the float bowl, forces fuel through the main metering jet into the main well. The fuel then passes through an anti-bubble screen in the main well which removes any vapor bubbles that might form during hot engine idle to disrupt carburetor metering. The fuel then travels up through the idle pick up tube and then through the cross bar channel in the air horn. Air is then bled into the idle fuel at the center of the cross bar through the two top bleeds and nozzle hole. The air/fuel mixture then is picked up by the horizontal idle tube in the cross bar and metered through a calibrated restriction, then passes on into the vertical down channel where it is further bled with air by an internal idle air bleed in the vertical channel in the top of the float chamber. The fuel then travels downward, past the off idle discharge port where more air is picked up to mix with the fuel mixture and it then passes out the idle needle port below the throttle valve. Here the fuel mixture mixes with air coming past the slightly open throttle valves and passes on into the engine as a combustible idle mixture.

The idle air bleed passage in top of the float chamber serves a dual purpose. When the engine is idling or first stopped, the fuel in the carburetor is heated by warm air rising from engine and tends to form vapor in the idle system. A bleed to the float chamber permits the idle system to vent, thereby, preventing hard hot starting and rough idling due to vapor build-up in the idle system. The air bleed also assists in removing fuel vapors from the fuel bowl by utilizing these vapors during hot engine idle.

An external idle vent valve located on top of the air horn is operated by the pump plunger rod and vents fuel vapors from the float bowl during hot engine idle and hot "soak". This feature greatly improves hot engine idle and starting. The idle vent automatically closes after the throttle valve has moved from idle position into the part throttle range, at which point the carburetor returns to an internal balance.

Except for the idle mixture adjustment needle, the idle system is specifically calibrated for low engine speeds.

OFF-IDLE OPERATION (see inset Fig. 6B-11)

As the throttle valve is opened slightly and engine speed increases, extra fuel is needed to combine with the additional air going by the throttle valve. This fuel is supplied by the off-idle discharge port.

This supplies additional fuel to the engine until air velocity is high enough in the venturi area to obtain efficient metering from the main metering system.

Further opening of the throttle valve causes increased air flow through the carburetor bore which causes pressure drop in the small venturi sufficient to cause fuel delivery from the main nozzle. It should be remembered, however, that idle port discharge does not cease at this transfer point, but rather diminishes as main nozzle discharge increases. Thus, the two systems interact and produce a smooth air/fuel flow at all engine speeds.

MAIN METERING SYSTEM (Fig. 6B-12)

As mentioned, once air flow is sufficient to create enough pressure differential in the small venturi for fuel flow to start from the main nozzle, the transfer point has been reached and the carburetor starts metering from the main metering system.

Since the low pressure point is now in the small venturi area, fuel will be forced from the fuel bowl through the main metering system into the venturi, as follows:

The fuel passes through the main metering jet into the main well where it rises in the main well tube. The fuel continues up the main well tube to the horizontal cross bar in the air horn and through the cross bar to the main discharge nozzle. At this point, air is bled into the fuel by the two air bleeds in the top of the cross bar channel. The mixture is then discharged through the main discharge nozzle into the small venturi. Here, the air/fuel mixture mixes with additional air and moves on to the bore of the carburetor and into the intake manifold.

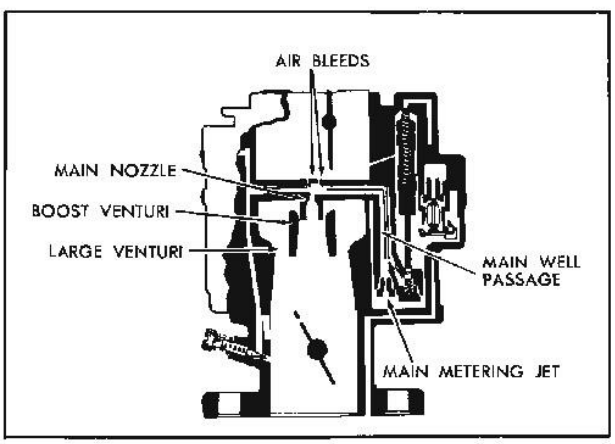

Fig. 6B-12 Main Metering System

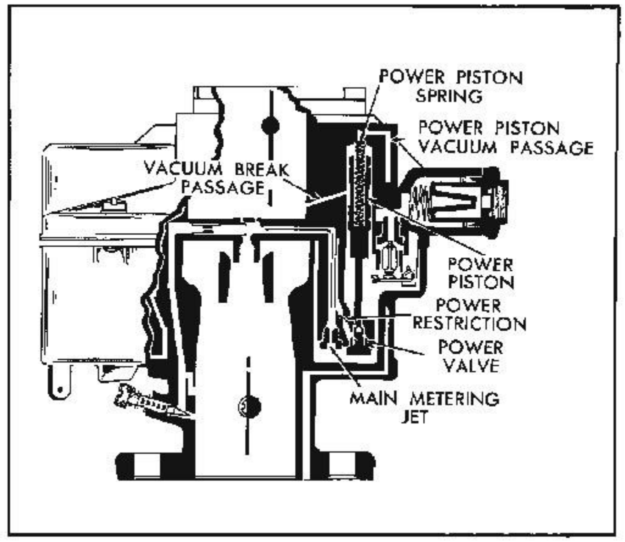

Fig. 6B-13 Power System

The calibration of the main metering jet and air bleeds in the cross bar maintain economical air/fuel ratios throughout the main metering or cruising range. Therefore, no adjustments are necessary in the main metering system.

POWER SYSTEM (Fig. 6B-13)

A vacuum operated power system is used in the carburetor to provide additional fuel for sustained high speed operation or increased road load power. A direct manifold vacuum passage within the carburetor to the engine intake manifold connects to the power piston. Under heavy engine load the manifold vacuum drops, thereby, decreasing the vacuum pull on the power piston and the piston is forced downward by a spring above the power piston. The power piston spring is specifically calibrated to force the power piston downward at a given manifold vacuum.

The downward motion of the power piston unseats the spring loaded ball in the power valve assembly. Fuel passes around the ball in the base of the main well support. The calibrated power restriction meters the fuel prior to joining the fuel from the main metering jet. Conversely, as the manifold vacuum rises above a specific point, the power piston is drawn up immediately to the up position and the spring loaded ball of the power valve closes, returning the carburetor to the economical part throttle mixture. There is no adjustment required for the power system.

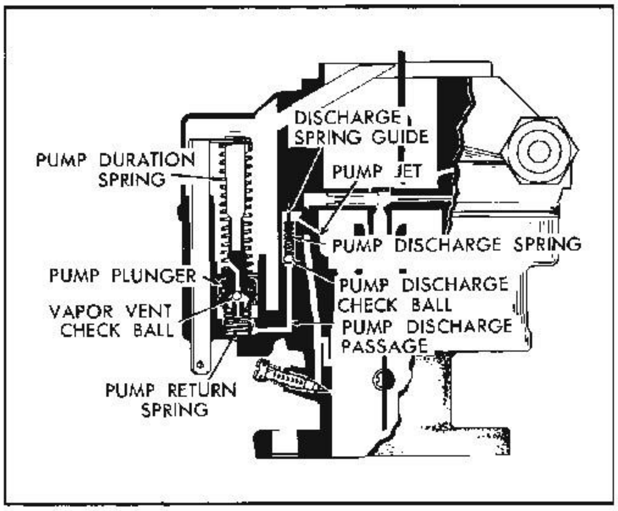

Fig. 6B-14 Pump System

The relief passage which is drilled from the bore of the air horn to the power piston chamber serves to relieve any vacuum build-up around the piston diameter. This vacuum, if unrelieved, will draw fuel vapors from the float bowl past the piston and down the vacuum passage into the manifold, resulting in an overly rich mixture.

PUMP SYSTEM (Fig. 6B-14)

Extra fuel for smooth, quick acceleration is supplied by a double spring pump plunger. Rapid opening of the throttle valve, as in the case where accelerating from low speed, causes an immediate increase in air velocity in the carburetor venturi and bore area. Since fuel is heavier than air, it requires a short period of time to "catch up" with the air flow. To avoid a leanness during this momentary lag, the accelerator pump furnishes a quantity of liquid fuel sprayed into the air stream to mix with the incoming air and maintain the proper air/fuel mixture.

The pump is operated by the combined action of two springs which are calibrated to move the plunger in such a manner that a sustained charge of fuel is delivered for smooth acceleration. The pump is attached by linkage to the throttle lever. When the throttle valves are closed, the pump plunger moves upward in its cylinder allowing fuel to flow from the float bowl through a slot in the side of the pump well, into the pump well, past the plunger head, through the vapor check ball and on into the bottom of the pump well. The pump discharge ball is seated at this time to prevent fuel and air from draining into the pump well from the pump discharge passage.

When the pump plunger is moved downward for acceleration, the force of the stroke seats the vapor check ball in the pump plunger head to prevent fuel flow back into the float bowl. Downward motion of the pump plunger forces fuel up through the discharge passage and lifts the pump discharge check ball from its seat and then passes on through the pump jets into the venturi area where it strikes the side of the boost venturi atomizing the fuel with the air and is delivered to the engine.

The check ball, inside the pump plunger head, vents any vapors which might form in the pump well during periods of "hot idle" or "hot soak". The check ball is designed so that it can move up and down in its passage. When the pump plunger is not in operation, the vapor vent check ball drops off its seat and vents any vapors which might form in the pump well below the pump plunger head, out through the hole in the pump plunger into the fuel bowl area and out the air horn vents.

CHOKE SYSTEM (Fig. 6B-15)

The purpose of the choke system is to provide a richer mixture for cold engine starting and operation. Mixture enrichment is necessary because fuel vapor has a tendency to condense on cold engine

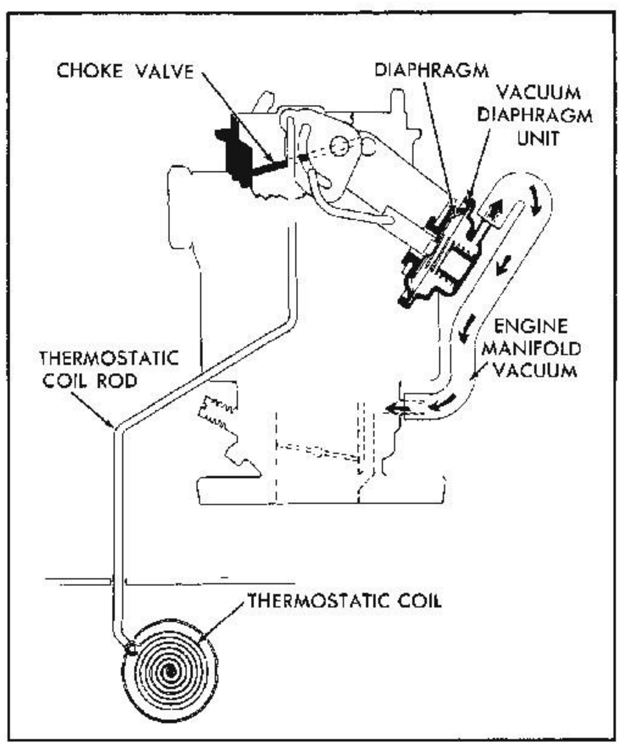

Fig. 6B-15 Choke System

parts, such as the inside area of the intake manifold and cylinder head, thereby, decreasing the amount of combustible mixture available in the engine cylinder.

The choke system consists of a choke valve located in the carburetor air horn, a vacuum break diaphragm unit, fast idle cam, choke linkage and a thermostatic coil which will be located on the engine exhaust manifold. The thermostatic coil is connected to the choke valve by a rod. The choke operation is controlled by a combination of intake manifold vacuum, the offset choke valve, atmospheric temperature and exhaust manifold heat.

The thermostatic coil located on the engine manifold is calibrated to hold the choke valve closed when the engine is cold. When starting the engine, air velocity against the offset choke valve causes the valve to open slightly, against the torque of the thermostatic coil. When the engine is started and running, intake manifold vacuum applied to the vacuum diaphragm unit mounted on the carburetor air horn will open the choke valve to a point where the engine will continue to run without loading or stalling. The choke valve will remain in this position until the engine begins to warm up and the heat from the engine manifold warms up the thermostatic coil to relax its tension and allows the choke valve to gradually open. Opening of the choke valve is controlled directly by air flow through the carburetor air horn past the offset choke valve and manifold heat acting upon the thermostatic coil.

During warm-up it is necessary to provide a faster idle to prevent engine stalling. This is accomplished by fast idle cam which is connected by a link to the choke shaft. During cold engine starting, the idle screw will rest on the highest step of the fast idle cam. When started and the choke valve is partially open the idle screw drops to the second highest step and so on, until the engine is fully warm and the choke valve is wide open. At this point the idle screw will be on the lowest step of the fast idle cam where normal curb idle is obtained.

If the engine becomes flooded during the starting period, the choke valve can be partially opened manually to allow increased air flow to the carburetor. This is accomplished by depressing the accelerator pedal to the floor. The unloader projection on the throttle lever contacts the edge of the fast idle cam and, in turn, partially opens the choke valve.

ADJUSTMENTS ON CAR

All Rochester BV adjustments can be performed on the car. With the exception of the idle speed and mixture adjustment, all adjustments are included in the "Overhaul and Adjustments" procedure. Following are the idle speed and mixture adjustments.

IDLE SPEED AND MIXTURE ADJUSTMENT

With the engine at operating temperature, adjust idle speed to the following specifications:

Synchromesh . . . . 580-600 rpm

Automatic (In Drive) . . . . 480-500 rpm

Air Conditioned:
(Automatic Drive Position -
Air Conditioning off
Hot Idle Compensator Closed). . 480-500 rpm

(S/M Neutral -
Air Conditioning off
Hot Idle Compensator Closed). . 580-600 rpm

1. As a preliminary setting, turn idle mixture screw out 1-1/2 turns from lightly seated position and speed screw in 1/2 to one turn from throttle closed position.

2. Set hand brake securely, place transmission in neutral and connect tachometer to engine.

3. Start engine and warm up thoroughly. Be sure choke is fully open and carburetor is completely off fast idle.

4. Place automatic in "drive" and adjust idle speed screw to obtain specified idle speed.

5. Turn mixture screw to best quality (highest rpm) idle.

6. Reset idle speed screw to specified idle speed if mixture adjustment changed setting.

7. Recheck mixture adjustment to insure smoothest possible idle.

NOTE: Always recheck idle mixture setting after making idle rpm adjustment with idle speed screw.

8. Adjust idle speed-up device on 6 cyl. A/C cars as follows:

Set hot idle speed and mixture as above and on automatic transmissions leave transmission in drive. Turn air conditioning on for maximum cooling and adjust diaphragm plunger screw to obtain the following engine speeds.

A. Automatic transmission	480-500
B. Synchromesh transmission	580-600

CAUTION: The idle speed-up diaphragm plunger must be restrained from turning while adjusting plunger screw to prevent injury to diaphragm.

OVERHAUL AND ADJUSTMENT

DISASSEMBLY OF CHOKE

1. Disconnect choke vacuum break hose at diaphragm unit and from pipe in throttle body.

2. Remove choke shaft lever screw (diaphragm side), remove two diaphragm bracket screws and remove vacuum break diaphragm assembly.

3. Remove fast idle cam attaching screw. Then the fast idle cam and choke rod can be removed from upper choke lever by carefully rotating assembly upward and sliding end of rod out of upper choke lever. The choke rod can now be removed from the fast idle cam by rotating cam over end of rod.

4. To remove choke valve, remove stake on the end of choke valve screws. Then remove the two choke valve attaching screws from the choke shaft and pull upward on choke valve to remove from shaft. Choke shaft and lever assembly can now be removed from air horn.

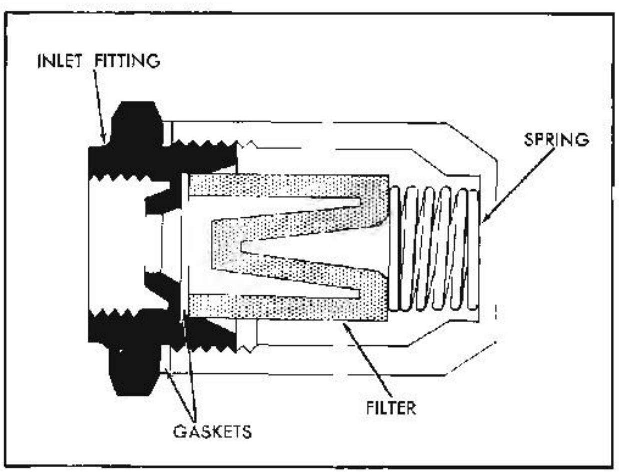

Fig. 6B-16 Fuel Inlet Components

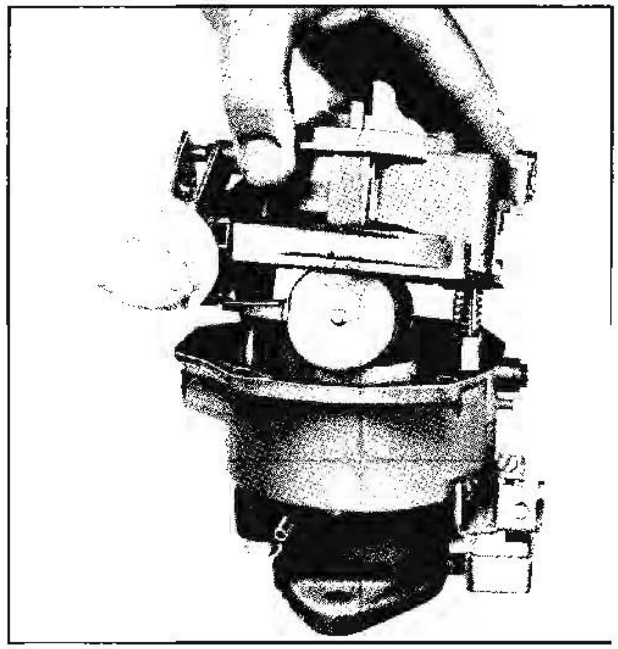

Fig. 6B-17 Removing Air Horn

Note position of choke trip lever in relation to upper choke lever tang for ease in reassembly.

DISASSEMBLY OF AIR HORN

1. Remove fuel filter inlet nut and gasket with 1" wrench. Then remove filter, filter spring and gasket between filter element and back side of inlet nut (Fig. 6B-16).

NOTE: Large open end of filter element always faces the fuel inlet nut.

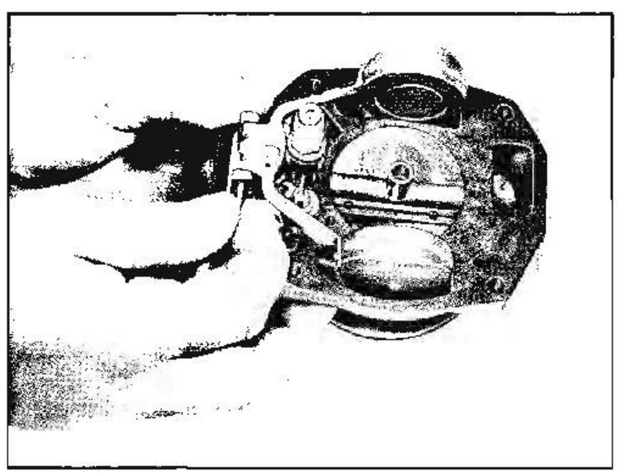

Fig. 6B-18 Removing Float Hinge Pin

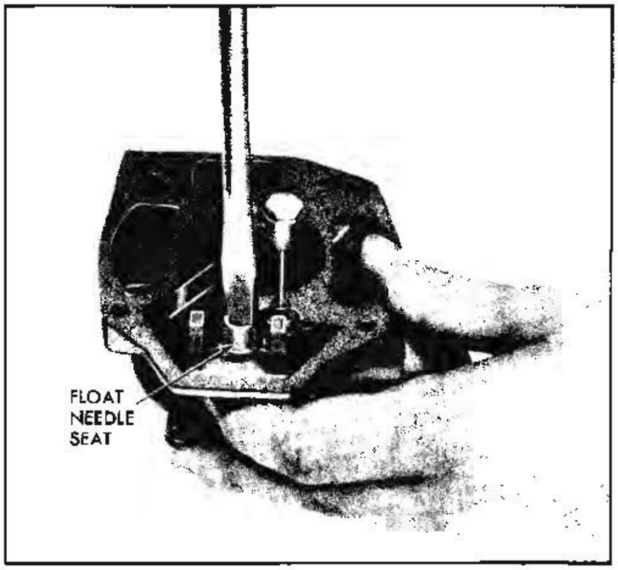

Fig. 6B-19 Removing Float Needle Seat

2. Remove four air horn attaching screws. Lift air horn straight up from bowl so as not to damage float (Fig. 6B-17). Place air horn, inverted, on a flat surface.

3. Remove float hinge pin and lift float assembly from air horn (Fig. 6B-18). Float needle may now be removed.

4. Remove float needle seat and gasket with 1/2" bit screwdriver or special needle seat removing tool (Fig. 6B-19).

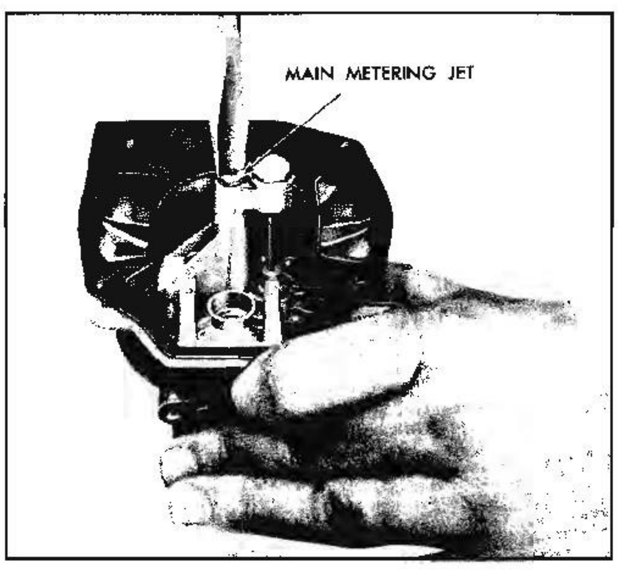

Fig. 6B-20 Removing Main Metering Jet

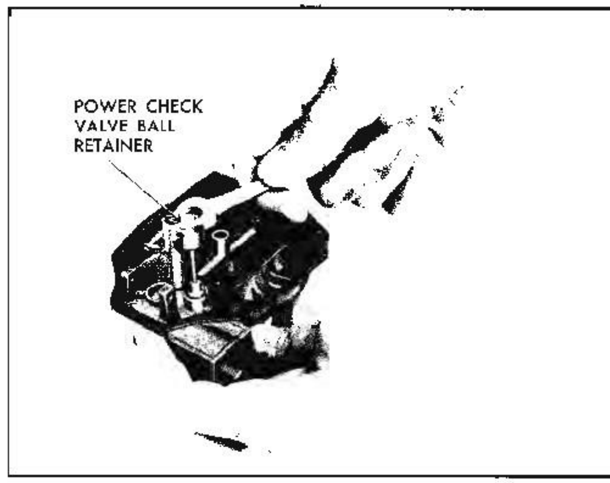

Fig. 6B-21 Removing Power Check Valve Ball Retainer

5. Remove main metering jet from bottom of main well support (Fig. 6B-20).

6. Remove hex head power valve check ball retainer from bottom of support, then remove power valve spring and ball (Fig. 6B-21).

NOTE: Use care when removing power valve so as not to lose small spring and ball.

7. Remove screw at base of main well support, then remove the main well support from air horn.

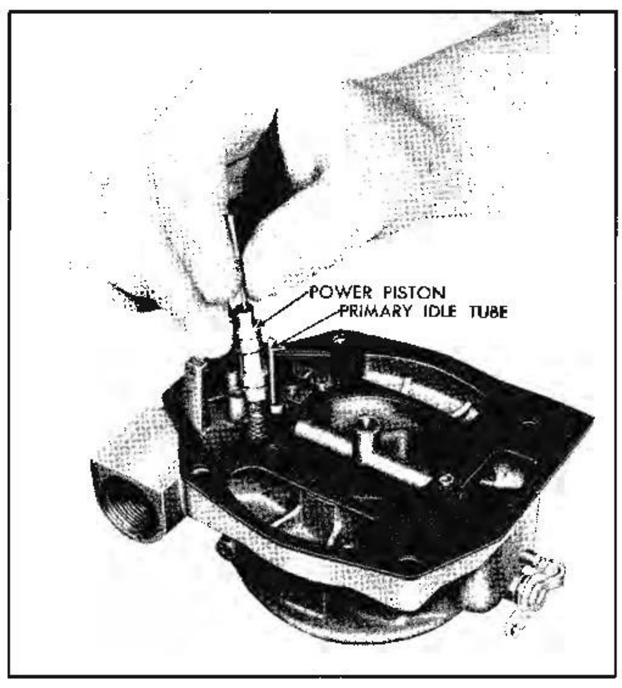

Fig. 6B-22 Removing Power Piston

8. Remove power piston and power piston spring from air horn (Fig. 6B-22).

NOTE: Do not remove idle pick up tube from air horn as it is pressed in place. The anti-bubble screen located inside the main well should not be removed. Clean and blow out dry with compressed air only.

9. Remove air horn gasket.

DISASSEMBLY OF FLOAT BOWL

1. Using a pair of long nosed pliers, remove pump discharge guide (Fig. 6B-23). Pump discharge spring and ball may now be removed by inverting bowl and shaking into palm of hand.

2. Remove two hair pin clips from pump link and then remove pump link from throttle lever and pump plunger rod.

3. Remove the pump plunger from the float bowl by pulling straight upward (Fig. 6B-24).

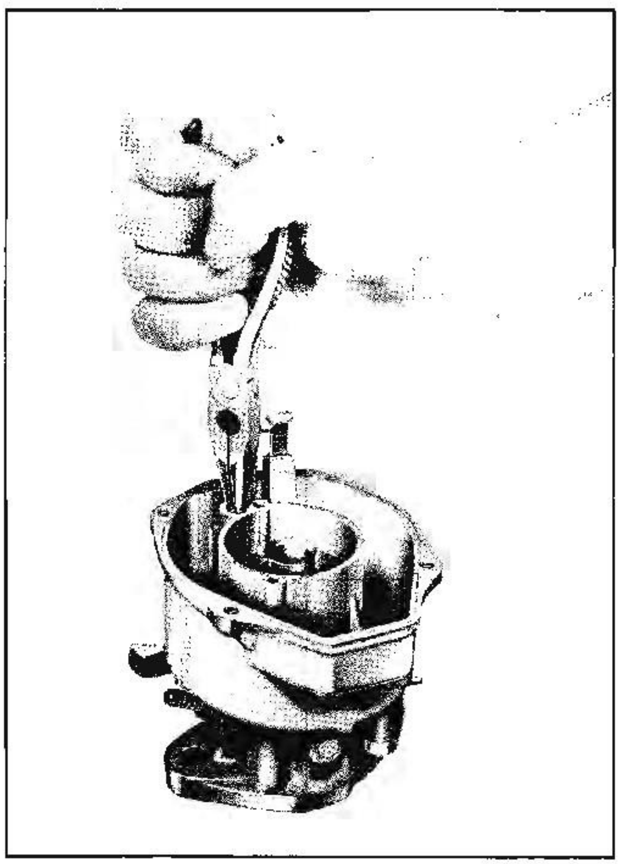

Fig. 6B-23 Removing Pump Discharge Guide

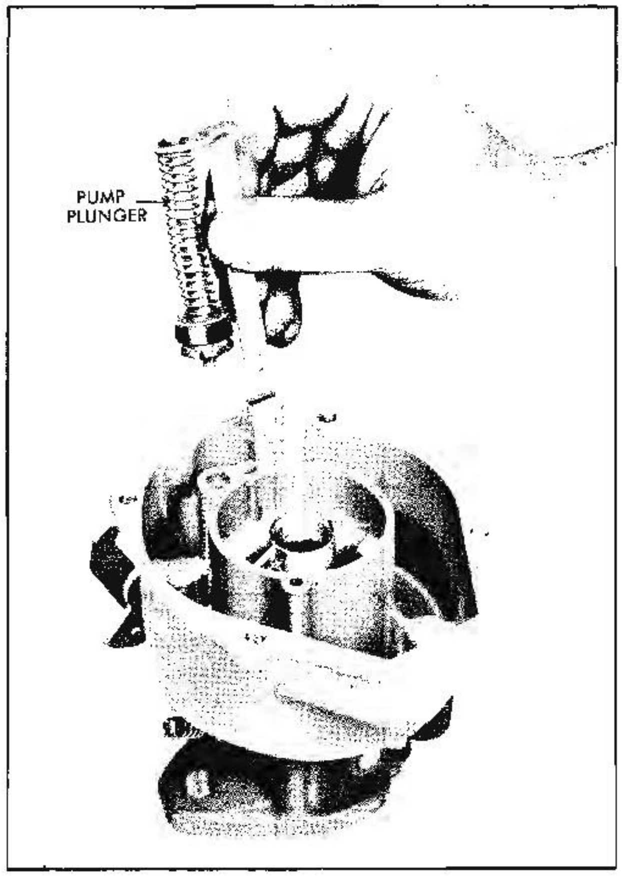

Fig. 6B-24 Removing Pump Plunger

4. Remove pump return spring from bottom of pump well (Fig. 6B-25).

NOTE: Do not remove vacuum break suction tube from throttle body.

5. Place carburetor bowl with suction tube projected over edge of flat surface and remove two throttle body attaching screws. Throttle body and gasket may now be removed.

DISASSEMBLY OF THROTTLE BODY

1. Remove idle mixture adjusting needle and spring.

2. Remove idle stop screw from throttle lever if necessary to replace.

NOTE: Due to close tolerance fit of the throttle valve in the bore of the throttle body, do not remove the throttle valve or shaft from the throttle body.

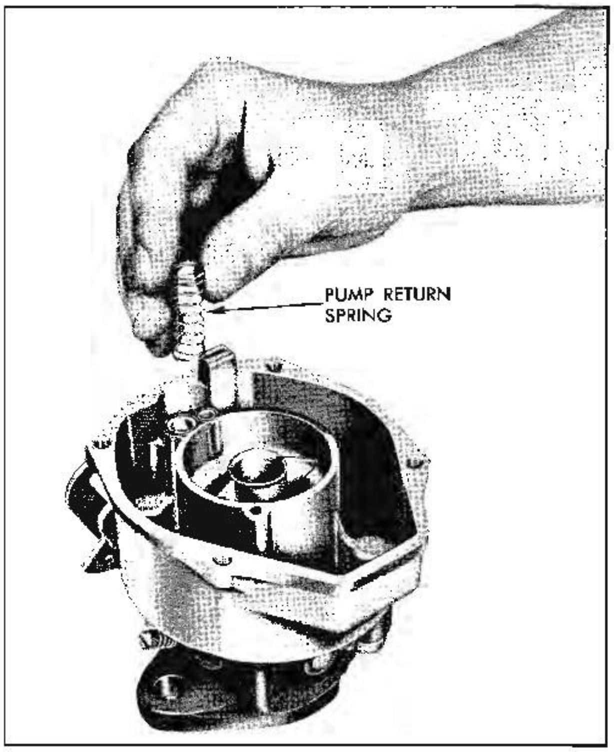

Fig. 6B-25 Removing Pump Return Spring

CLEANING AND INSPECTION

1. Thoroughly clean carburetor castings and metal parts in carburetor cleaning solvent.

CAUTION: Pump plunger and any synthetic or plastic parts should not be immersed in commercial carburetor cleaner. Clean in clean solvasol or equivalent. Plastic vacuum break diaphragm unit should not be immersed in any cleaner.

2. After cleaning, blow all passages and castings with compressed air and blow out all parts until dry.

CAUTION: Do not pass drills or wires through calibrated jets or orifices as this may enlarge orifice and seriously affect carburetor calibration.

3. Check all parts for wear. If wear is noted, defective part must be replaced.

NOTE: Especially the following:

a. Check float needle and seat for wear.

b. Check tank on float arm above float needle for wear and floats for dents. Check floats for leaks by shaking.

c. Check throttle and choke shaft bores in throttle body and air horn castings for wear or out of round.

d. Check idle mixture needles for burrs or ridges.

e. If wear is noted on the steps of the fast idle cam, it should be replaced as it may upset engine idle during the engine warm-up period.

f. Inspect pump plunger. Replace plunger if leather or synthetic rubber is scored, hardened or damaged.

g. Check pump plunger vent ball to make sure it is free inside pump plunger head. This may be done by shaking, ball should rattle freely.

h. Inspect for burrs on the power piston or a distorted power piston stem or spring.

4. Always use new gaskets in reassembly.

5. Clean all dirt or lint out of the fuel inlet filter. If filter remains plugged, replace it. Check relief spring for distortion, replace it if necessary.

6. Thoroughly clean anti-bubble screen in main well. If screen remains plugged, replace main well support.

THROTTLE BODY ASSEMBLY

1. Install idle stop screw in throttle lever, if removed.

2. Screw idle mixture adjusting needle and spring into throttle body until it is finger tight. Back needle out 1-1/2 turns as a temporary idle mixture adjustment.

3. Using a new gasket, attach throttle body to bowl using two screws and lockwashers. Tighten screws evenly and securely.

NOTE: If needed, a new vacuum seal will be installed after carburetor is completely assembled.

FLOAT BOWL ASSEMBLY

1. Install 3/16" steel ball into pump discharge cavity. Carefully insert pump discharge spring and guide on top of ball. Tap the discharge guide lightly to seat flush with the float bowl casting.

NOTE: The pump discharge guide is installed correctly when it is at right angles with the pump discharge jet.

2. Place pump return spring in pump well and bottom spring in well by forcing downward with index finger.

3. Install pump plunger assembly in bowl, making sure not to curl rubber during installation.

4. Attach pump link to pump plunger rod and throttle lever using two hair pin clips.

NOTE: Dog leg in pump link will face away from throttle shaft when installed correctly. Ends of link will protrude outward away from throttle body.

AIR HORN ASSEMBLY

1. Install float needle seat and new gasket using special tool or screwdriver with 1/2" bit.

2. Place new air horn gasket on top air horn, check to be sure that all air horn and gasket holes are in line.

3. Install power piston spring and power piston in vacuum cavity.

NOTE: Piston should ride free in cavity.

4. Install power valve ball (small steel ball), power valve spring, and retainer in main well support. Tighten retainer securely.

5. Attach main well support to air horn assembly and tighten attaching screw securely.

NOTE: Check for free motion of power piston.

6. Install main metering jet in main well support.

7. Place float needle in float needle seat.

8. Place float carefully in position with drop tang pointing downward towards air horn and install float hinge pin.

FLOAT LEVEL ADJUSTMENT (Fig. 6B-26)

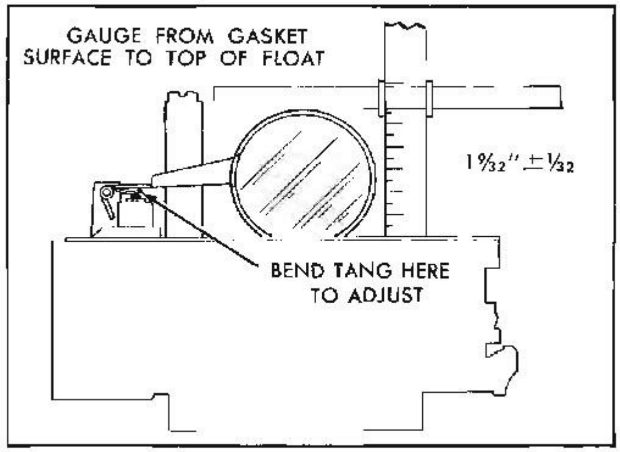

Fig. 6B-26 Float Level Adjustment

With the air horn inverted and gasket in place, measure the distance from the air horn gasket to the bottom of each float, as shown. Bend the adjustment tang on float arm which contacts float needle, as necessary, to obtain the specified dimension of 1-9/32" ± 1/32".

Align floats by making sure they are parallel and centered in the air horn gasket cut out. Recheck float level adjustment if float alignment is necessary.

FLOAT DROP ADJUSTMENT (Fig. 6B-27)

Bend the float tang at the rear of the float arm, next to the needle seat, as necessary to obtain a distance of 1-3/4" from the gasket surface to the bottom of the float with the air horn held in the upright position and the float hanging free. Measure with a scale.

9. Install air horn to bowl assembly being careful to lower the air horn straight down so that the floats will not be bent during installation.

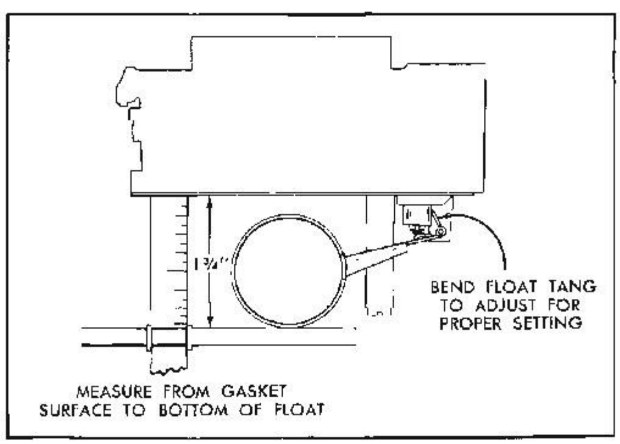

Fig. 6B-27 Float Drop Adjustment

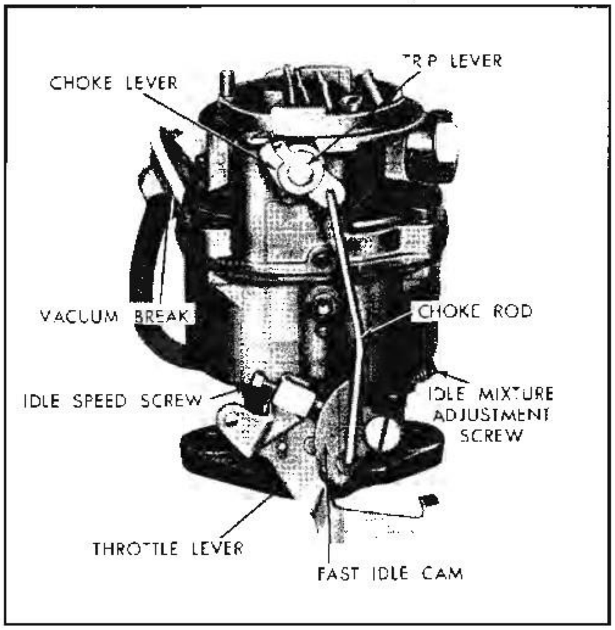

Fig. 6B-28 Trip Lever and Choke Rod Lever

10. Install four air horn to float bowl attaching screws and tighten evenly and securely.

11. Install filter gasket inside fuel inlet nut, filter relief spring, filter element retaining in place with the fuel inlet nut and gasket.

CHOKE ASSEMBLY

1. Install upper choke rod lever on choke shaft. Tang on the choke lever should point towards air horn casting.

2. Assemble choke shaft into air horn from the throttle lever side. Tang on the trip lever should be above the tang on the choke lever. See Fig. 6B-28.

3. Install choke valve into the slot in the choke shaft. RP trade mark should face upward. Install two choke valve attaching screws.

4. To insure proper end clearance between the choke trip lever and choke rod lever, move the choke shaft horizontally to obtain .020 clearance between the two levers (Fig. 6B-29). Then tighten the two choke valve attaching screws securely and stake in place.

5. Install vacuum diaphragm unit and bracket to side of air horn, retaining with two attaching screws. Tighten securely.

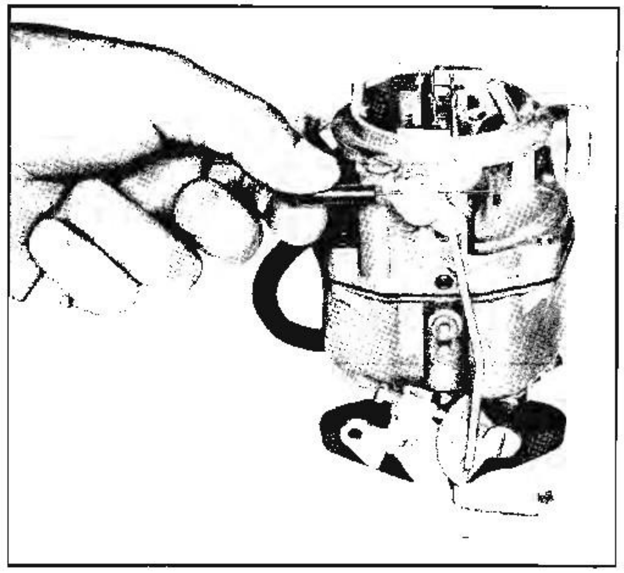

Fig. 6B-29 Trip Lever and Choke Rod Lever Clearance

6. Install choke shaft lever to end of choke shaft (diaphragm side) aligning flats on lever with flats on choke shaft. Large side of lever will hang downward and part no. identification faces outward (Fig. 6B-30). Install retaining screw in end of choke shaft and tighten securely.

7. Install connecting rod to vacuum break diaphragm plunger by rotating end of rod so squirt on

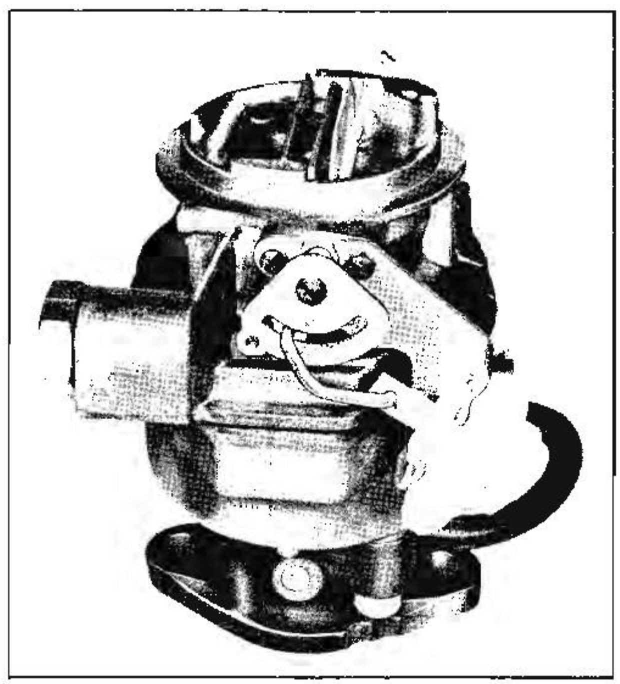

Fig. 6B-30 Choke Shaft Lever Installed

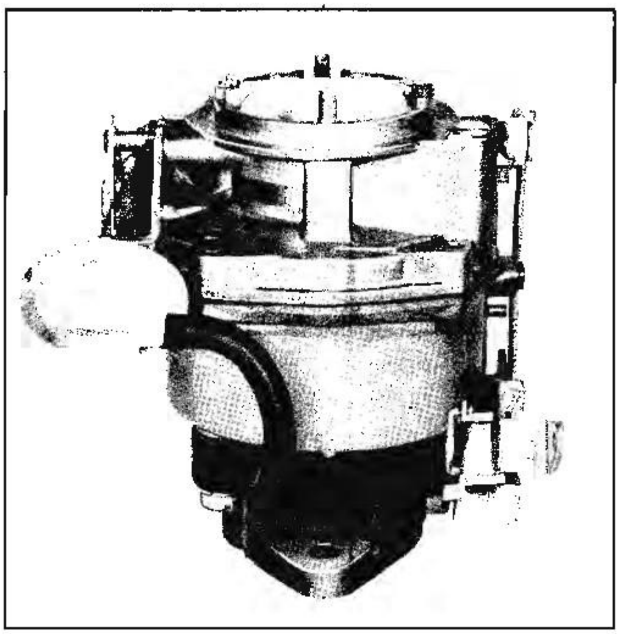

Fig. 6B-31 Vacuum Break Diaphragm Installed

rod enters notch in plunger, ends of rod face inward (Fig. 6B-31). Install other end of rod into slot in choke lever. Install horseshoe clip in groove in rod end and pinch together.

8. Install the choke rod to the fast idle cam as shown, then carefully insert the upper end of the choke rod into the upper choke lever (Fig. 6B-32). The dog leg of rod must face towards the idle mixture adjusting needle.

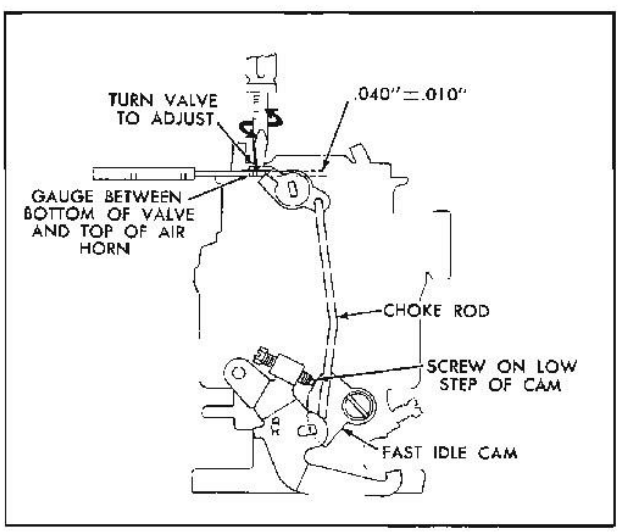

Fig. 6B-32 Idle Vent Adjustment

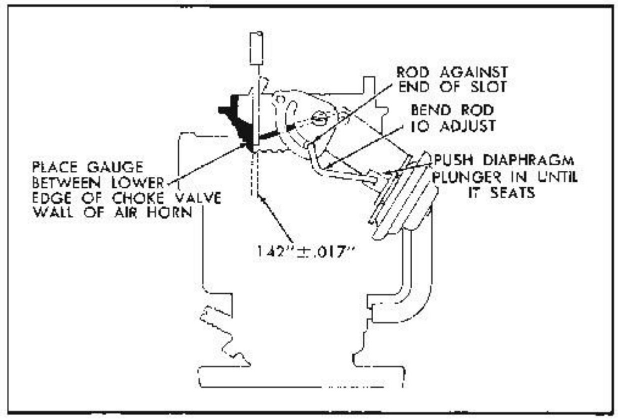

Fig. 6B-33 Vacuum Break Adjustment

9. Attach the fast idle cam to the throttle body assembly with the fast idle cam screw and tighten securely. The steps on the fast idle cam should face towards the idle speed screw (Fig. 6B-32).

IDLE VENT ADJUSTMENT (Fig. 6B-32)

With idle RPM set to specification, and screw on low step of cam, the idle vent valve should be open .040" ± .010" as specified. Adjust by turning valve on top of air horn, as needed.

VACUUM BREAK ADJUSTMENT (Fig. 6B-33)

To insure correct initial choke valve opening, just after engine starting, adjust vacuum break as follows.

Push the vacuum break diaphragm plunger in until seated, make sure the choke valve is held toward the

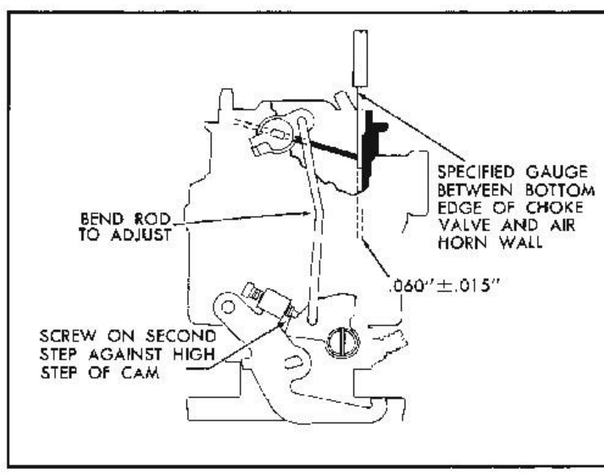

Fig. 6B-34 Choke Rod Adjustment

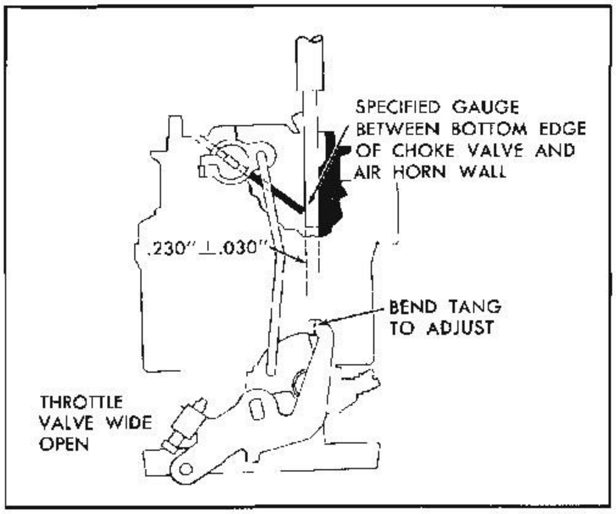

Fig. 6B-35 Unloader Adjustment

closed position so that the connecting rod is at end of the slot. In this position, adjust rod so that .142" ± .017" gauge will fit between lower edge of choke valve and inside of air horn casting.

To adjust, bend the connecting rod at the point shown.

CHOKE ROD ADJUSTMENT (Fig. 6B-34)

With the idle screw resting on the second step of the fast idle cam and against the shoulder of the high step, bend the choke rod as shown to obtain sufficient clearance to allow the insertion of a .060" ± .015" gauge between the lower edge of the choke valve and the dividing wall of the air horn.

UNLOADER ADJUSTMENT (Fig. 6B-35)

Bend the unloader tang on the throttle lever as necessary to allow the insertion of a .230" ± .030" gauge between the lower edge of the choke valve and the dividing wall of the air horn, with the throttle valves held wide open.

CAUTION: Make sure unloader arm does not interfere with fast idle cam screw after this adjustment.

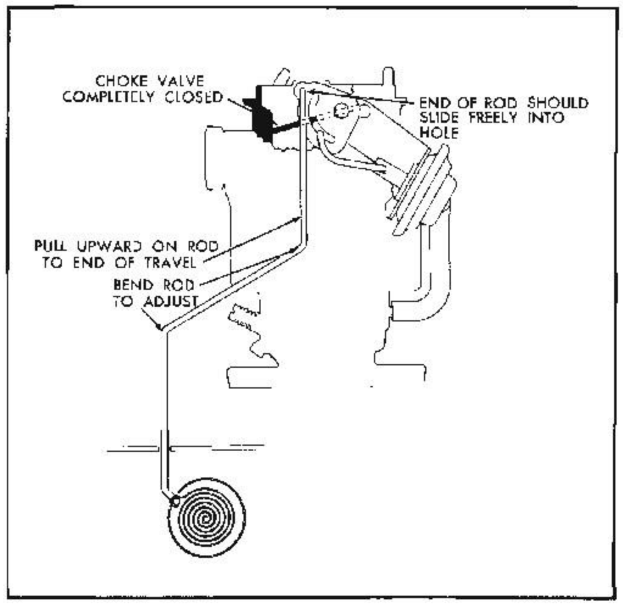

Fig. 6B-36 Automatic Choke Adjustment

AUTOMATIC CHOKE ADJUSTMENT (Fig. 6B-36)

Disconnect upper end of choke thermostatic coil rod from choke lever. Hold the choke valve completely closed and pull up on thermostatic coil rod to the limit of its travel. The lower edge of the rod should be even with the top edge of the hole in choke shaft lever for maximum rod length while the rod should just line up with the hole for minimum rod length.

To adjust, bend rod as shown.

ROCHESTER 2GC CARBURETOR

V-8 ENGINE
(1 1/16" Throttle Bore)

Carburetor Model Number	Used On
7024062	V-8 Automatic
7023071	V-8 Synchromesh

The Rochester 2GC carburetor used on Tempest V-8 engine incorporates 1-11/16" throttle bores and has the choke housing located on the throttle flange. This model is used as standard equipment on all automatic and synchromesh transmission Tempest V-8s. Rochester 2GC carburetor number 7023071 is used with the synchromesh transmission and number 7024062 is used with the automatic transmission.

GENERAL DESCRIPTION

The cluster casting is the heart of the carburetor; it embodies the small or secondary venturi, the high speed passages, the main well tubes and nozzles, the idle tubes, and the calibrated air bleeds for both the low and high speed metering system, as well as the accelerating pump jets.

When the cluster is removed, 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 custer body by means of a precision press 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.

An external idle vent valve is located on the bowl cover which vents any fuel vapors which may form in the fuel bowl during periods of "hot" idle to the atmosphere. The fuel bowl is also internally vented to give a completely balanced carburetor.

The model 2GC carburetor is of side bowl construction. It is designed, however, with fuel supply jets and passages submerged below the liquid level to provide efficient engine operation under all driving conditions.

A carburetor choke housing is located on the throttle body assembly and is connected to the choke valve through an intermediate choke rod.

A center stud mounting provides for secure attachment of the carburetor air cleaner assembly.

Six "systems" are utilized in the Rochester 2GC carburetor. They are: Float System, Idle System, Part Throttle System, Power System, Pump System, and Choke System.

These systems are described and illustrated schematically in the following text.

FLOAT SYSTEM (Fig. 6B-37)

The float system controls the level of fuel in the carburetor bowl.

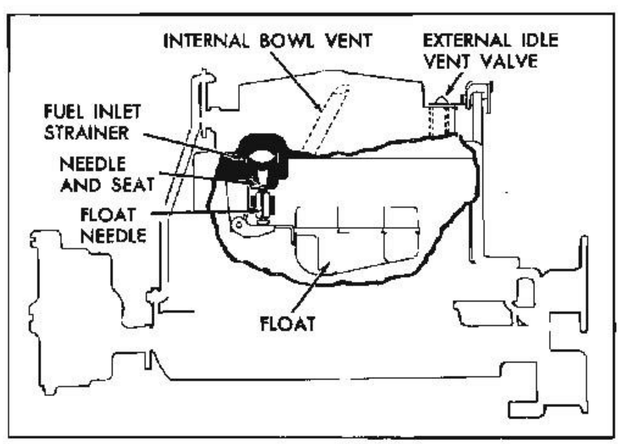

Fig. 6B-37 Float System

Entering fuel first travels through the inlet strainer to remove particles which might block jets or passages. Then the fuel passes through the needle and seat into the carburetor bowl; flow continues until the rising liquid level raises the float to a position where the valve is closed. Thus the fuel level can be regulated by setting the float to close the valve when the proper level is reached.

A tang located at the rear of the float hanger prevents the float from traveling too far downward.

The carburetor is internally vented. The vent transmits the air pressure from beneath the air cleaner to the fuel in the float bowl. The amount of fuel metered by the carburetor is dependent upon the pressure in the float bowl causing fuel to flow. By locating the vents below the air cleaner, or internally, the carburetor automatically compensates for air cleaner restriction, since the same pressure causing air to flow will also be causing fuel to flow.

An external idle vent, located in the top of the float bowl, vents the bowl to atmosphere during idle operation. In this way any fuel vapors which may form in the bowl during hot idle or when parked will be vented to the outside. The idle vent automatically closes after the throttle valve has moved from the idle position into the part throttle range, returning the carburetor to internal balance.

IDLE SYSTEM (Fig. 6B-38)

The idle system consists of the idle tubes, idle passages, idle air bleeds, idle mixture adjustment needles, idle discharge slot and an idle air adjustment screw.

In the curb idle speed position, the throttle valves are held open by the speed adjusting screw.

In order to obtain sufficient idle air for stable idle speed adjustment, a fixed air bleed is necessary; this is accomplished by a drilled hole in each throttle valve. The fixed idle air bleeds maintain a constant idle air flow for part of the idle air requirements, while the idle speed adjustment screw regulates the remainder of the idle air. Thus, the engine idle speed can be adjusted by the idle speed adjustment screw.

The idle mixture needle hole is in the high vacuum area below the throttle valve while the fuel bowl is vented to atmospheric pressure. Vacuum can be called a lack of pressure, so a high vacuum area

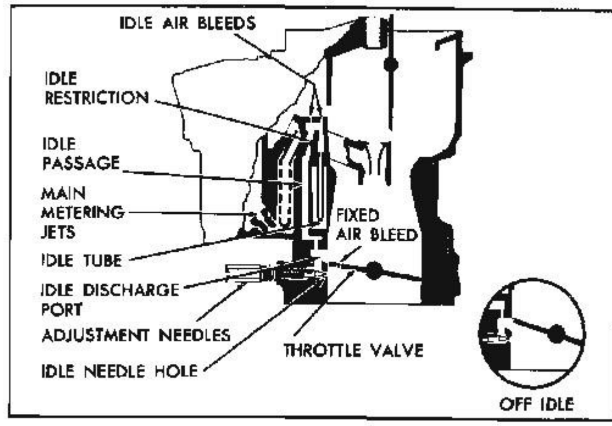

Fig. 6B-38 Idle System

can be spoken of as an area of low pressure. Thus it can be said that there is considerable pressure difference between the normal atmospheric pressure on the fuel in the bowl and the low pressure (or high vacuum) at the idle mixture needle hole.

The fuel and fuel/air mixture will be forced by atmospheric pressure to occupy any low pressure area. It will flow from the fuel bowl to the manifold in the following manner:

The atmospheric pressure acting on the fuel in the bowl forces fuel through the main metering jets into the main well. It is metered by the idle fuel metering orifice at the lower tip of the idle tube and travels up the idle tube. When the fuel reaches the top of the idle tube, it mixes with air entering through the primary idle air bleed. The mixture moves through the horizontal idle passage where more air is added at a second idle air bleed and then down through a restriction in the vertical passage which serves to further break up the fuel. More air is picked up at a third idle air bleed just below the idle restriction.

The fuel/air mixture next moves down the vertical idle passage to the idle discharge slot located just above the throttle valve. Through this slot further air is added to the mixture, which then passes through the idle mixture needle hole.

In addition to this mixture of fuel and air, there is air entering the carburetor bore through the fixed idle air bleeds. For smooth operation, the air from the idle needle hole must combine to form the correct final mixture for curb idle engine speed.

The position of the idle adjustment needle governs the amount of fuel/air mixture admitted to the carburetor bore.

Except for this variable at the idle adjustment needle, the idle system is specifically calibrated for low engine speeds.

A hot idle compensator is incorporated in all carburetors on cars equipped with automatic transmission. The function of the idle compensator is to prevent rough idle and stalling during prolonged hot idle conditions.

It consists of a bi-metal strip, a valve and mounting bracket. The idle compensator is mounted between the venturi on the large bore carburetors and on the back of the carburetor on the bowl casting on small bore carburetors. Below the compensator is a passage leading to manifold vacuum below the throttle blades.

As engine and underhood temperatures rise to a predetermined value, the bi-metal strip lifts the valve off its seat. This allows fresh air to enter the manifold below the throttle valves and off-set rich mixtures due to fuel vapors that are causing the rough idle and stalling.

When underhood temperatures return to normal, the bi-metal strip will lower and the compensator valve will close and normal idle operation will resume.

NOTE: No adjustments are necessary on the idle compensator. The compensator valve must be closed while adjusting engine idle.

There is no distributor vacuum advance at idle with this carburetor installation on the Tempest V-8 with synchromesh transmission.

PART THROTTLE SYSTEM (Fig. 6B-39)

As the throttle valve is opened, there is a change in pressure differential points.

Opening of the valve progressively exposes the idle discharge slot to manifold vacuum and the air stream with the result that they deliver additional fuel/air mixture for fast idle engine requirements.

Further opening of the throttle valve increases the speed of the air stream passing through the venturi, thus lowering the pressure (or raising the vacuum) in the small venturi area of the carburetor bore. At the same time, the edge of the throttle valve is moved away from the wall of the bore, progressively reducing the vacuum and thus the mixture flow at the idle discharge slot.

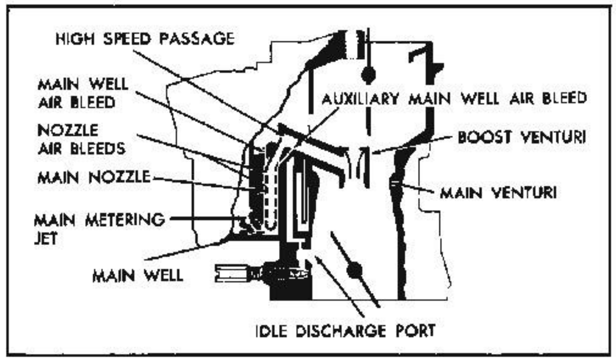

Fig. 6B-39 Part Throttle System

Since the low pressure point is now in the small venturi area, fuel and fuel/air mixture will be forced from the fuel bowl through the main metering system to the venturi as follows:

The fuel passes through the main metering jet into the main well, where it rises in the main well tube. Air entering through the main well air bleeds in the cluster is mixed with the fuel through the main well tube vents. The mixture continues up the main well tube through the nozzle, where more air is added. The mixture flows through the high speed passage to the small venturi, mixes with additional air and moves on to the bore of the carburetor, through the intake manifold, and into the cylinder as a final mixture for part throttle operation.

A second high speed bleed is incorporated in the cluster of large bore 2GC carburetors only. This bleed is drilled from the main well to the high speed passage and serves two purposes. It transmits low pressure from the secondary venturi and high speed passage to the main well, thereby, helping to raise fuel level. This raising of the level assists the initial feeding of fuel at low speed and also helps control the mixture during high speed operation.

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.

Permanent jets and air bleeds calibrate the main metering system for efficient part throttle operation.

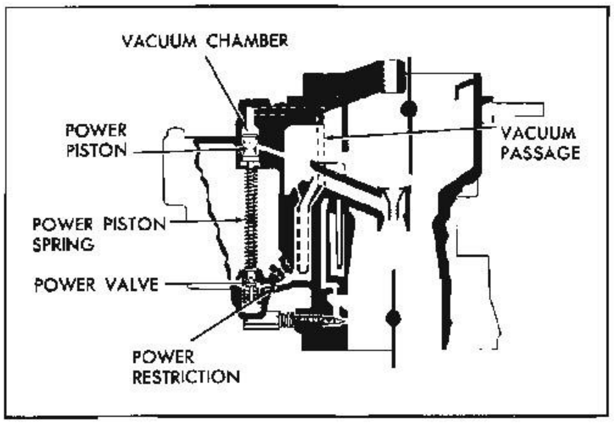

Fig. 6B-40 Power System

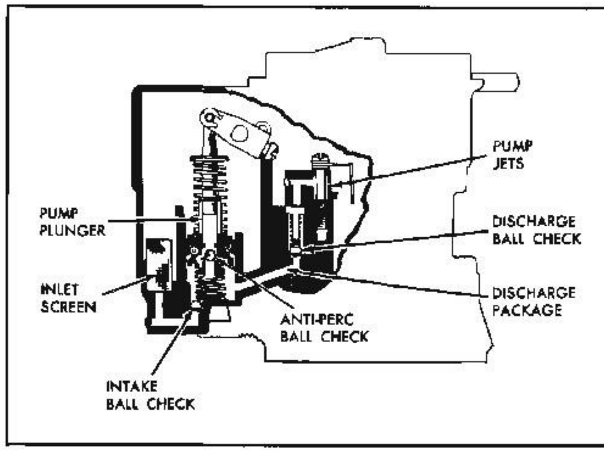

Fig. 6B-41 Pump System

POWER SYSTEM (Fig. 6B-40)

As was pointed out under part throttle operation, the fuel level in the main well area drops as the throttle valves are opened. This is due to the fact that more fuel is drawn through the main well tubes, but the supply to the main well is held constant by the opening in the main metering jet. For high speed and/or heavy load conditions an additional source of fuel for the main well area is required. The power system accomplishes this purpose.

A spring loaded power piston, controlled by vacuum, regulates the power valve to supply the additional fuel.

The power piston vacuum channel is open to manifold vacuum in the carburetor bore beneath the throttle valves; thus the vacuum in the channel rises and falls with manifold vacuum.

During idle and part throttle operation, manifold vacuum in the channel is high. Therefore, air pressure in the passage beneath the power piston holds the piston in the fully raised position against the tension of the spring. As the load or speed is increased the throttle valves open wider and manifold vacuum drops. The calibrated spring forces the power piston down against the power valve to open it and allow fuel to flow through the power restrictions into the main wells. The amount of fuel is controlled by the main metering jet and the power restriction.

A two-step valve allows a gradual increase in fuel flow as the power valve is opened; at full throttle position, the power valve is fully opened to permit maximum calibrated fuel flow from the power system.

When the load is decreased the throttle valves close and manifold vacuum is increased. Therefore, air pressure below the power piston gradually overcomes the piston spring tension and forces the piston upward to its original position with the power valve fully closed.

PUMP SYSTEM (Fig. 6B-41)

Extra fuel for smooth, quick acceleration is supplied by a double spring pump plunger. A rapid opening of the throttle valves, as is the case when accelerating from low speeds, causes an immediate increase in air velocity. Since fuel is heavier than air it requires a short period of time for it to "catch" up with the air flow. To avoid a 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.

The pump is operated by the combined action of two springs which are calibrated to move the plunger in such a manner that a sustained charge of fuel is delivered for smooth acceleration.

The pump is attached by linkage to the accelerator so that when the throttle valves are closed the pump plunger moves upward in its cylinder creating a low pressure area (partial vacuum) in the cylinder below the plunger. Atmospheric pressure acting on the fuel in the bowl forces fuel into the cylinder through the intake ball check. The discharge ball is seated at this time to prevent air being forced into the cylinder.

When the plunger is moved downward for acceleration, the force of the stroke seats the intake ball

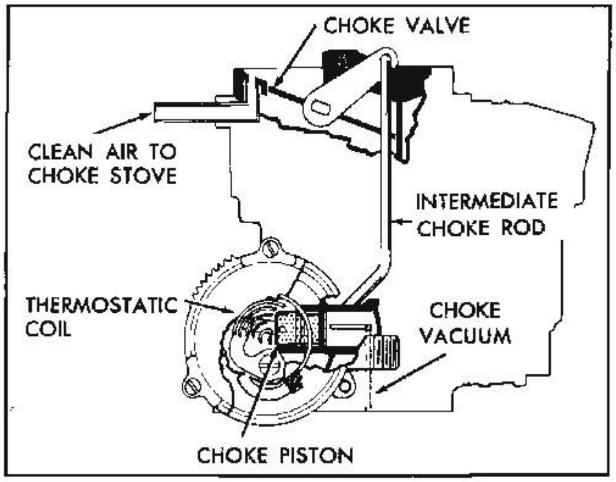

Fig. 6B-42 Choke System

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.

At higher speeds pump discharge is no longer necessary to insure smooth acceleration. When the throttle valves are opened, a predetermined amount the pump plunger bottoms in the cylinder eliminating pump discharge.

An "anti-percolator" check valve, contained inside the plunger, provides relief for any vapors which might form during hot idle or when a hot engine is not operating. The ball check is designed so that it can move up and down in its passage. Throughout the above periods it is seated by gravity and vapors in the pump well rise and by-pass the ball check through small holes in the plunger head.

The "anti-perc" ball check also acts as an extra inlet during the upstroke of the pump plunger, but is seated by fuel when the plunger moves downward.

CHOKE SYSTEM (Fig. 6B-42)

The purpose of the choke system is to provide a rich mixture for cold engine operation. It is necessary to have an extra rich mixture because fuel vapor has a tendency to condense on the cold engine parts; thus decreasing the amount of combustible mixture available at the combustion chamber.

The choke system subjects all fuel outlets in the bore of the carburetor to manifold vacuum while restricting the intake of air.

The choke system includes a thermostatic coil, housing, choke piston, choke valve, and fast idle cam and linkage. It is controlled by a combination of manifold vacuum, air velocity against the offset choke valve, and tension of the thermostatic spring.

When the engine is cold, tension of the thermostatic coil holds the choke valve closed. Starting the engine causes air velocity to strike the offset choke valve. This tends to open it along with the action of intake manifold vacuum on the choke piston. After a slight opening of the choke valve, the tension of the thermostatic coil spring balances the force of air on the valve and the pull of vacuum at the piston.

As the engine warms up manifold vacuum exists in the choke housing. Clean hot air from the choke stove is forced into this low pressure area through a passage in the side of the choke housing to heat the thermostatic coil.

The clean air is supplied to the choke stove in the manifold from the air horn, above the choke valve (just below the air cleaner). Here filtered air from the air cleaner is picked up and carried to the stove by a metal pipe.

A secondary baffle plate serves to distribute the heat from its entering point at the side of the coil throughout the choke housing, to prevent a "hot spot" in the coil center, which would cause a rapid opening of the choke valve. The choke baffle is designed in some models with a hole or holes drilled in it. These holes are used to further control heat to the choke coil and, thereby, finely tailors the choke to the particular engine model. The thermostatic coil "relaxes" gradually until the choke is fully open.

If the engine is accelerated during warm-up, the corresponding drop in manifold vacuum on the choke piston allows the thermostatic coil to momentarily close the choke, providing a richer mixture.

During warm-up it is necessary to provide a fast idle to prevent engine stalling. This is accomplished by a fast idle cam connected to the choke shaft. The idle speed screw on the throttle lever contacts the fast idle cam and prevents the throttle valves from returning to the idle position until the choke valve is fully open.

If the engine becomes flooded during the starting period, the choke valve can be partially opened manually to allow increased air flow through the carburetor. This is accomplished by depressing the accelerator pedal to the floor. The unloader projection on the throttle lever contacts the unloader lug on the fast idle cam and in turn partially opens the choke valve.

ADJUSTMENTS ON CAR

All Rochester 2GC adjustments can be performed on the car. With the exception of the idle speed and mixture adjustment all adjustments are included in the OVERHAUL AND ADJUSTMENTS procedure. Following are the idle speed and mixture adjustments.

Whenever idle speed screw is turned, the throttle should be opened slightly then closed to seal screw properly on cam.

IDLE SPEED AND MIXTURE ADJUSTMENT

With the engine at operating temperature adjust idle speed to the following specifications.

Synchromesh, exc. Air Conditioning . . 580-600 rpm
Automatic, exc. Air Conditioning. . . . 480-500 rpm (in drive range)
Air Conditioning
(Automatic drive range, air conditioning off) . . . . 540-560 rpm
(S/M neutral, air conditioning off) . . . . 640-660 rpm

The idle mixture 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 the idle mixture screw in, leans out the mixture; one and one-half turns out from the lightly seated position may be used as a preliminary setting of the mixture screws.

NOTE: All two barrel carburetors used on Tempest V-8 engines with automatic transmission have a hot idle compensator. During idle adjustment make sure the hot idle compensator is closed by depressing the spring loaded button.

PERIODIC SERVICE

There are no periodic services required on the Rochester 2GC carburetor; however, choke linkage, choke valve and levers and pump linkage should be kept free of dirt and gum so that they will operate freely. DO NOT OIL LINKAGE.

OVERHAUL AND ADJUSTMENT

Flooding, stumble on acceleration and other performance complaints are, in many instances, caused by the presence of dirt, water or other foreign matter in the carburetor. To aid in diagnosing the cause of the complaint, the carburetor should be carefully removed from the engine without draining the fuel from the bowl. The contents of the fuel bowl may then be examined for contamination as the carburetor is disassembled.

The following is a step-by-step sequence by which the Rochester 2GC carburetor may be completely disassembled and reassembled. Adjustments may be made and various parts of the carburetor may be serviced without completely disassembling the entire unit.

DISASSEMBLY OF BOWL COVER

1. Remove fuel inlet filter retainer nut and gasket and remove the filter.

2. Disconnect the pump link (Fig. 6B-44) from the pump lever by removing spring clip. Remove lower end of pump rod from throttle lever by removing clip.

3. Detach choke intermediate rod (Fig. 6B-43) at lower end by removing clip, then detach choke intermediate rod from choke shaft by rotating until the tang on rod clears the slot in lever.

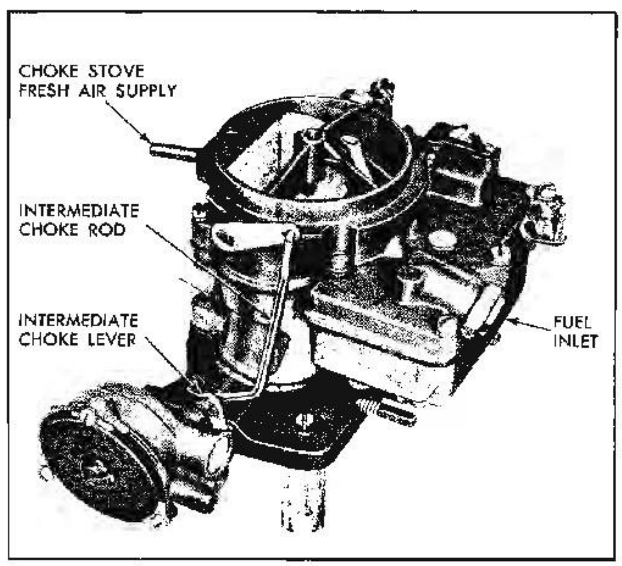

Fig. 6B-43 Rochester 2GC Carburetor

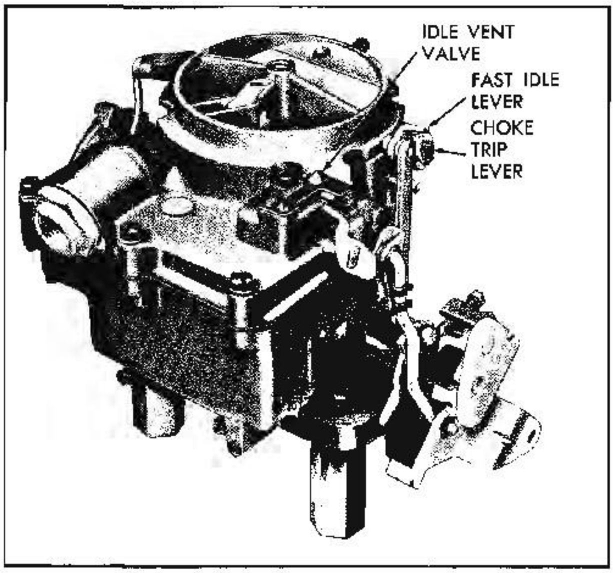

Fig. 6B-44 Rochester 2GC Carburetor

4. Remove retaining screw at the end of the choke shaft and remove choke trip lever and fast idle link and lever (Fig. 6B-44). Lever can be removed from link by turning until slot in lever will pass over tang on link. The link and fast idle cam are retained by a Truarc washer. Disassembly of these pieces will destroy the Truarc washer.

5. Remove eight cover screws (Fig. 6B-45) and lift cover from bowl (Fig. 6B-46).

6. Place upended cover on flat surface. Remove float hinge pin and lift float assembly from cover (Fig. 6B-46). Float needle may now be removed from seat.

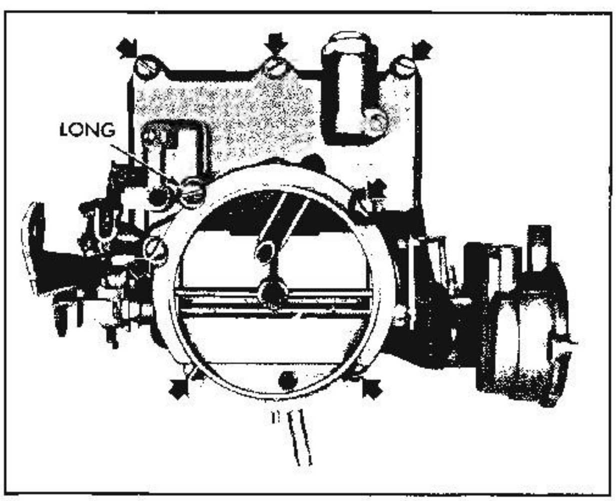

Fig. 6B-45 Location of Cover Attaching Screws

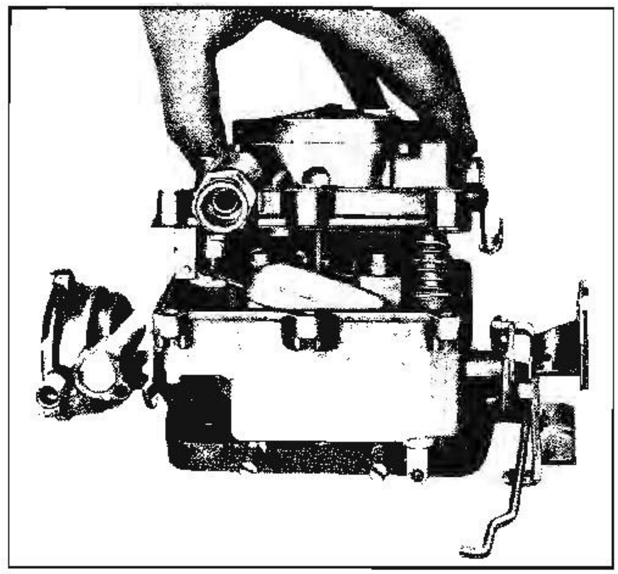

Fig. 6B-46 Removing Bowl Cover Assembly

7. Remove float needle seat, screen (Fig. 6B-47) and gasket with wide blade screwdriver.

8. Remove power piston (Fig. 6B-47) 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. Use care not to bend piston stem.

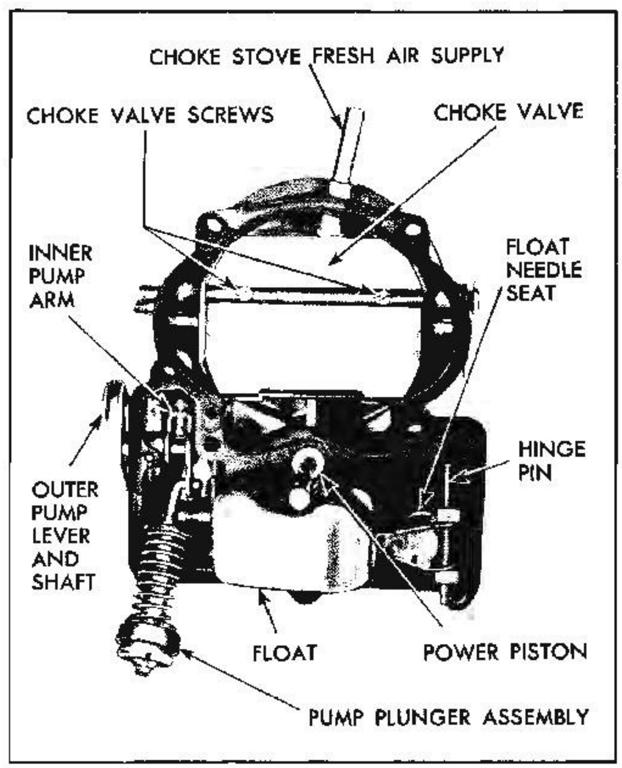

Fig. 6B-47 Bowl Cover Attaching Parts

9. Remove retainer on pump plunger shaft, remove plunger assembly from pump arm (Fig. 6B-47). The pump lever and shaft may be removed by loosening set screw on inner arm and removing outer lever and shaft.

10. The cover gasket may now be removed.

11. Remove idle vent valve.

12. Remove two choke valve attaching screws, then remove choke valve.

13. Remove choke valve shaft from bowl cover.

DISASSEMBLY OF BOWL

1. Remove pump inlet filter screen and pump plunger return spring, and remove aluminum check ball from bottom pump well (Fig. 6B-48).

2. Remove main metering jets and power valve (Fig. 6B-45).

3. Remove three screws holding cluster to bowl and remove cluster and gasket. Remove deflector also (Synchromesh).

4. Using a pair of long nose pliers, remove the pump discharge spring retainer (Fig. 6B-49). Then the spring and check ball may also be removed.

5. Invert carburetor and remove three large bowl to throttle body attaching screws. Throttle body and gasket may now be removed.

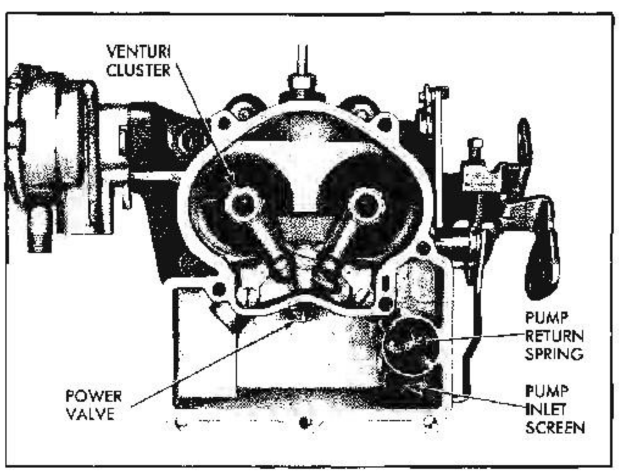

Fig. 6B-48 Carburetor Body Assembly Details

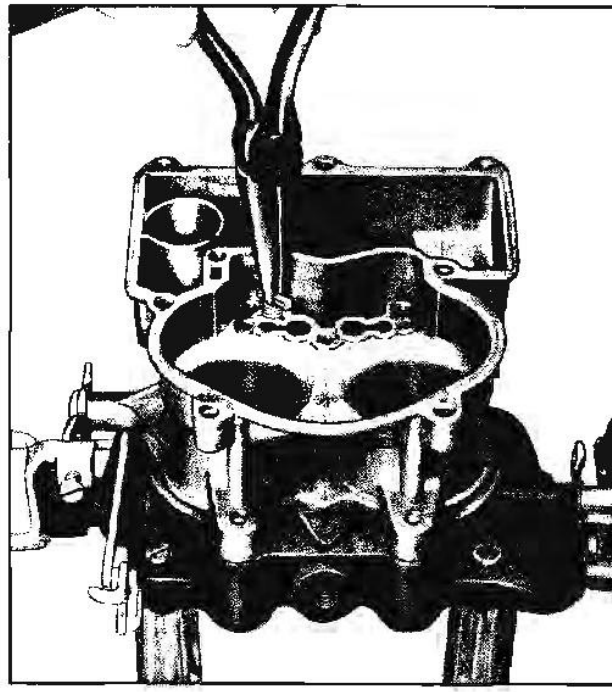

Fig. 6B-49 Removing Pump Discharge Spring Retainer

6. Remove fast idle cam and fast idle link as an assembly. DO NOT disassemble.

7. Remove idle compensator bracket and compensator if present.

DISASSEMBLY OF THROTTLE BODY

1. Remove idle adjusting needles and springs.

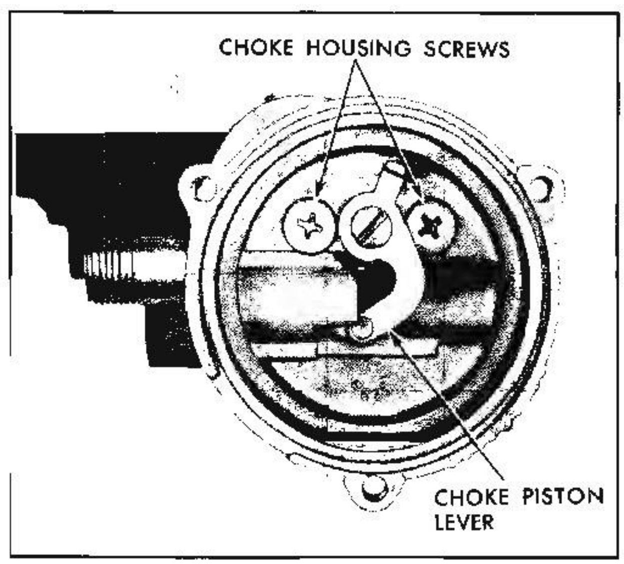

Fig. 6B-50 Choke Housing Screws

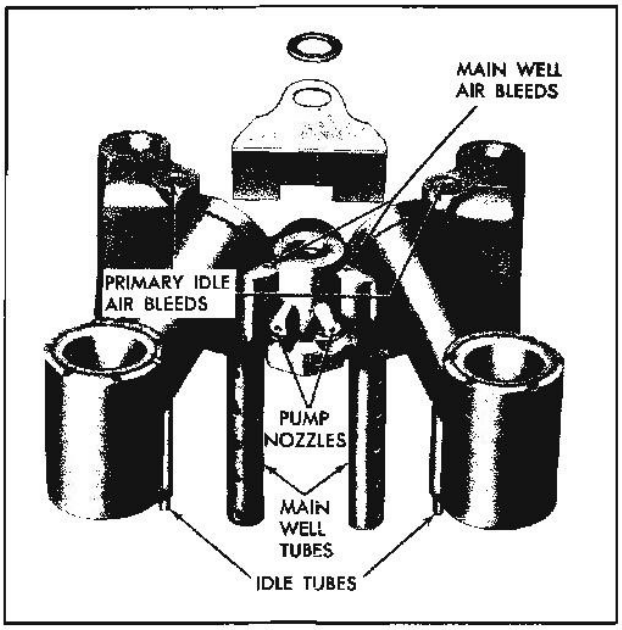

Fig. 6B-51 Passage Identification - Venturi Cluster

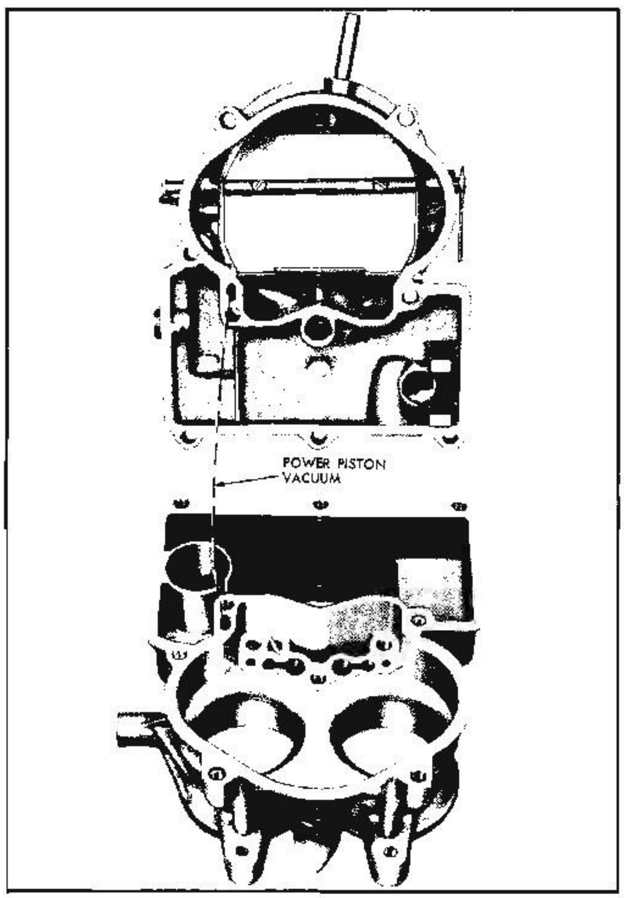

Fig. 6B-52 Passage Identification - Body to Bowl Cover

2. Remove fast idle screw from throttle lever if necessary to replace.

3. Remove the three choke cover attaching screws and retainers, then remove choke cover and coil assembly from choke housing.

4. Remove choke cover gasket and baffle plate.

5. Remove choke piston lever attaching screw (Fig. 6B-50).

6. Remove piston link and lever assembly from carburetor.

NOTE: Piston can be removed from link by dropping out piston pin.

7. Remove the two choke housing attaching screws and detach choke housing from throttle body.

8. Remove intermediate choke shaft and lever from choke housing.

CLEANING AND INSPECTION

Dirt, gum, water or carbon contamination in 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 metal parts in clean cleaning solvent.

CAUTION: Choke cover and coil, idle compensator, rubber vent valve, gaskets, and pump plunger should not be immersed in solvent. Clean pump plunger in clean gasoline only.

To avoid damage to gasket between choke housing and throttle body do not soak the throttle body assembly in cleaner or solvent if choke piston housing has not been removed.

2. Blow all passages in castings (Figs. 6B-51 through 6B-55) dry with compressed air and blow off all parts until they are dry.

CAUTION: Do not pass drills or wires through calibrated jets or passages as they may enlarge orifices and seriously affect carburetor calibration.

3. Check all parts for wear. If wear is noted, defective parts must be replaced. Note expecially the following:

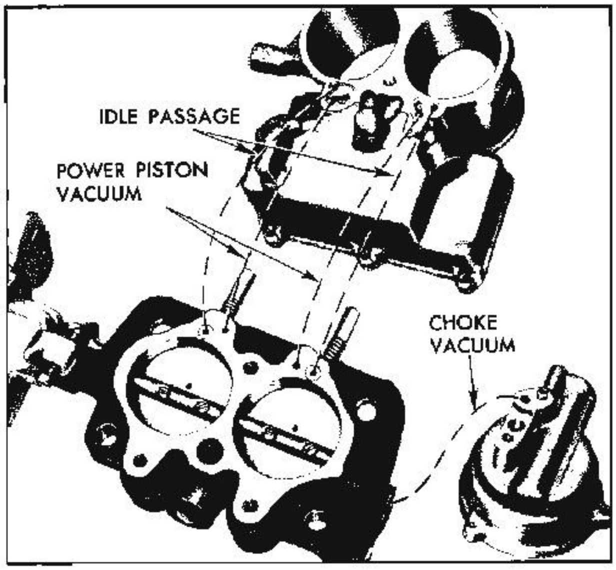

Fig. 6B-53 Passage Identification -

a. Check float needle and seat for wear. If wear is noted the assembly must be replaced.

b. Check float lip for wear and float for dents. Check floats for gasoline leaks by shaking.

c. Check throttle and choke shaft bores in throttle body and cover castings for wear or out of round.

d. Inspect idle adjusting needle for burrs or ridges. Such a condition requires replacement.

e. Inspect fast idle cam—if wear is noted on steps of cam it should be replaced as it may upset engine idle speed during the warm-up period.

f. Inspect pump plunger cup. Replace plunger if cup is damaged.

g. Inspect power piston and spring for burrs or distortion. Replace if necessary.

4. Check all filter screens for dirt or lint. Clean and if they are distorted or plugged, replace with new parts.

5. Inspect cluster casting. If any parts in castings are loose or damaged, cluster assembly must be replaced.

6. Use new gaskets in reassembly.

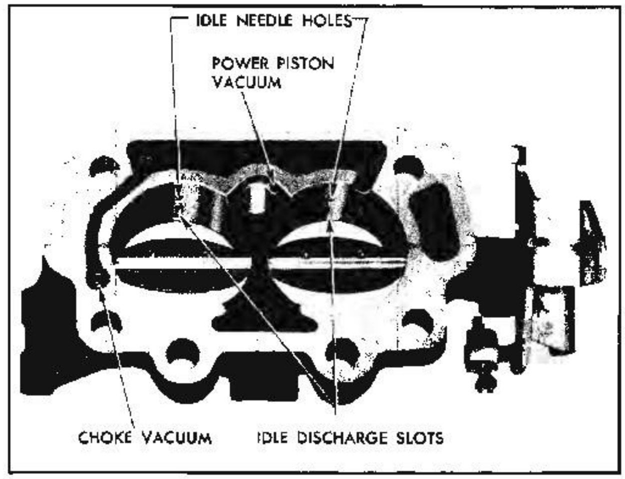

Fig. 6B-54 Passage Identification - Throttle Flange

ASSEMBLY OF THROTTLE BODY

1. Install fast idle screw in throttle lever if removed.

2. Screw idle mixture and adjusting needles and springs into throttle body until finger tight. Back out screw 1-1/2 turns as a preliminary idle adjustment.

3. Upend bowl, place new throttle body gasket in position and attach throttle body. Tighten screws evenly and securely.

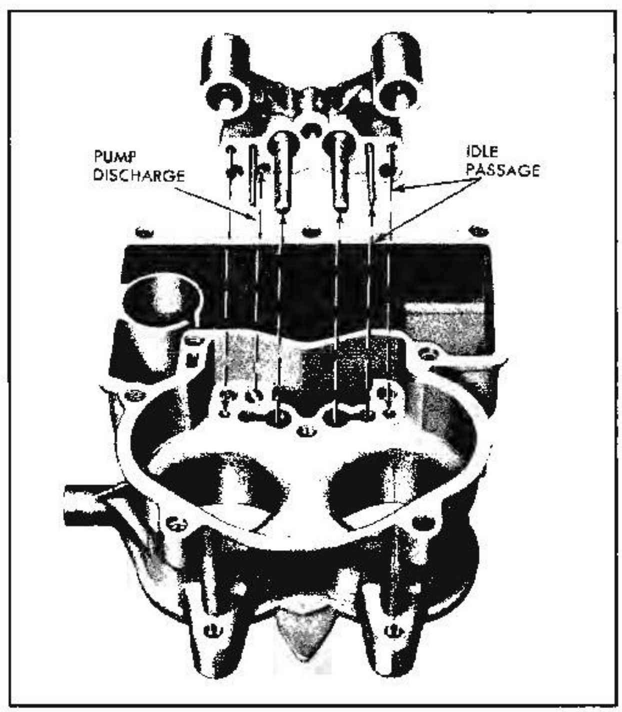

Fig. 6B-55 Passage Identification - Body to Cluster

NOTE: Choke housing should be reassembled to throttle body after installing air horn.

ASSEMBLY OF BOWL

1. Install hot idle compensator on bowl section between venturi.

2. Drop steel pump discharge check ball into pump discharge hole. Ball is 3/16" diameter (do not confuse with aluminum intake ball). Install pump discharge spring and retainer.

3. Replace deflector (synchromesh), cluster and gasket, tighten screws evenly and securely. Make certain center screw is fitted with gasket to prevent pump discharge leakage.

4. Replace main metering jets and power valve.

5. Drop aluminum pump intake ball check into hole in pump well. Install pump return spring, pressing with finger to center it in pump well.

6. Replace pump inlet strainer, pressing carefully into position.

ASSEMBLY OF BOWL COVER

1. Install choke shaft in air horn, then install choke valve on choke shaft using two attaching screws. Letters RP on choke valve should face towards top of air horn (Fig. 6B-56). Center choke valve before tightening screws, by installing the fast idle lever and choke trip lever. Maintain approximately .020" clearance between the fast idle lever and air horn casting. Then tighten choke valve screws and "stake" lightly. Then install choke trip lever and fast idle lever. Choke valve should move freely in housing.

2. Replace pump outer lever and shaft assembly and inner lever, tighten retaining screw on inner lever (Fig. 6B-57).

3. Install small fuel screen on needle seat.

4. Install float needle seat screen and gasket, using wide blade screwdriver.

5. Drop aluminum pump intake ball check into shaft end pointing inward towards center of air horn casting.

6. Install cover gasket.

7. Insert needle in seat, carefully position float and insert hinge pin.

8. Adjust float.

FLOAT LEVEL ADJUSTMENT

With air horn inverted and gasket in place and needle seated, there should be 5/8" ± 1/16" clearance between the lower edge of float seam (sharp edge) at the toe end and air horn gasket (Fig. 6B-58).

Use gauge set J-8556. To adjust, bend float arm at rear of float. Visually check float alignment after adjusting float.

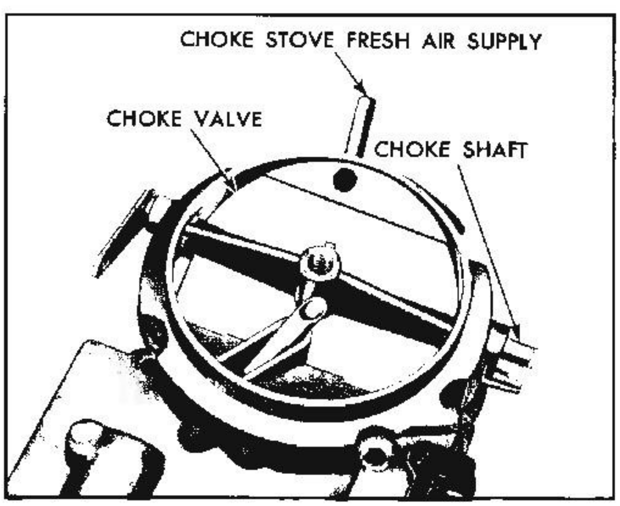

Fig. 6B-56 Choke Valve and Shaft Installed

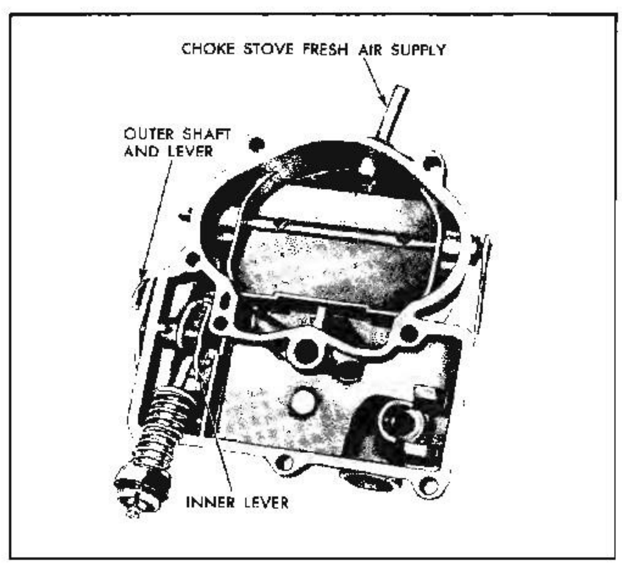

Fig. 6B-57 Pump Plunger Installed on Bowl Cover

FLOAT DROP ADJUSTMENT (Fig. 6B-59)

With air horn right side up so that float can hang free, the distance from the gasket surface to the lowest point of the float should be a minimum of 1-3/4" (Fig. 6B-59). Maximum drop can be any amount that will retain needle for installation. Needle must not wedge at maximum drop. To adjust, bend tang at rear of float towards needle seat to decrease float drop and away from needle seat to increase float drop.

9. Install power piston in vacuum cavity; piston should travel freely in cavity. Stake vacuum piston retainer washer.

10. Place cover on bowl, making certain that accelerator pump plunger is correctly positioned and will move freely.

11. Install and tighten eight cover screws evenly and securely.

12. Install filter with closed end toward air horn.

13. Install pump link and retainer.

14. Install idle vent valve.

PUMP ROD ADJUSTMENT

Place tool on top of cleaner mounting ring as shown in Fig. 6B-60. Then with throttle valves fully closed the top surface of the pump rod should just touch the end of the gauge. Measurement should be 1-21/64" ± 1/32". Bend pump rod to adjust.

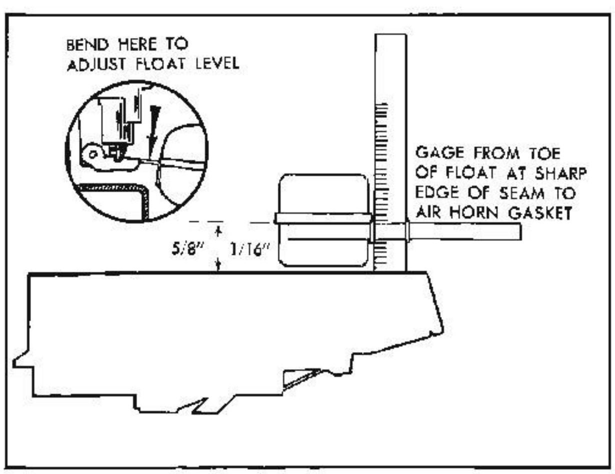

Fig. 6B-58 Float Level Adjustment

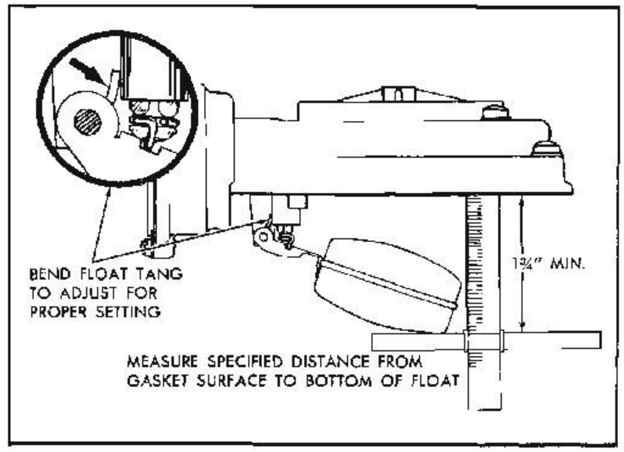

Fig. 6B-59 Float Drop Adjustment

16. Install fast idle link and fast idle cam as an assembly and install fast idle lever on other end of fast idle link. Place fast idle lever on choke shaft with the tank facing outward and toward the pump lever. Install trip lever so that tang of trip lever is under tang of choke lever, and install retaining screw (Figs. 6B-61 and 6B-62).

17. Assemble intermediate choke shaft and lever and new gasket to choke housing. Attach to throttle body with two attaching screws.

18. Assemble choke piston and linkage to choke housing and attach to intermediate choke shaft. Insert intermediate choke rod into lever on air horn and attach to intermediate choke lever with clip.

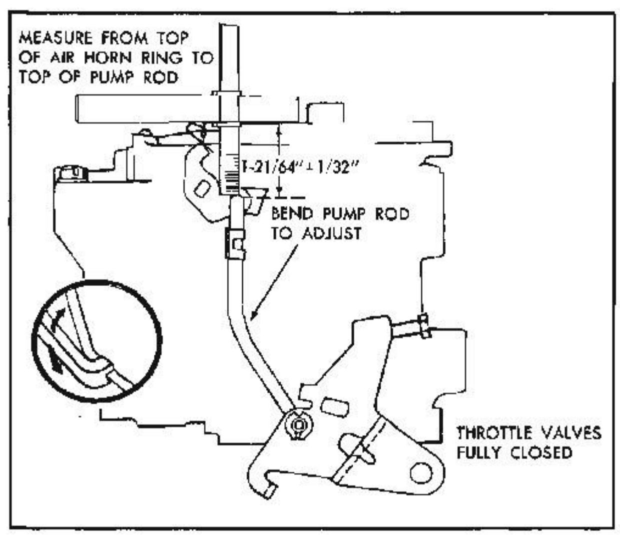

Fig. 6B-60 Pump Link Adjustment

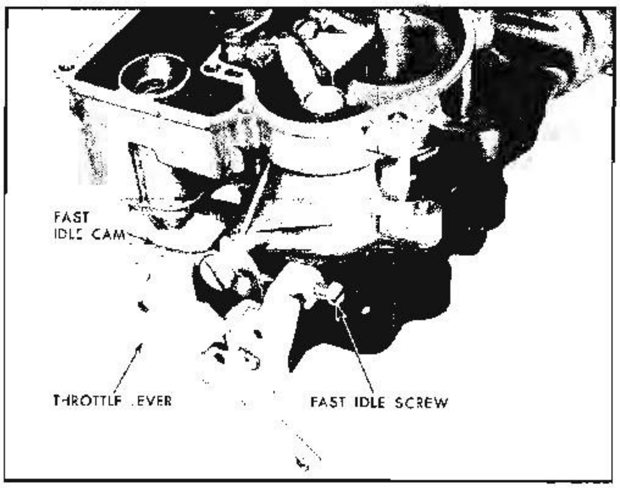

Fig. 6B-61 Fast Idle Cam Installed

19. Hold choke valve completely closed and adjust intermediate choke rod as necessary so that choke piston is flush with end of choke housing bore.

20. Install choke baffle plate.

21. Install choke coil and cover and rotate cover counterclockwise until the index marks on cover and housing are aligned. Attach the three retainers and screws to choke housing, tighten securely.

NOTE: Choke valve should be lightly closed at room temperature (75°F.) when index marks on cover and housing are aligned.

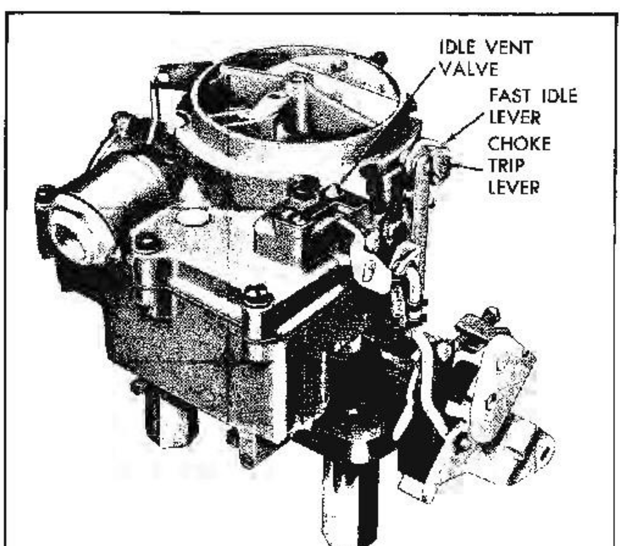

Fig. 6B-62 Carburetor Linkage Installed

CHOKE ROD ADJUSTMENT

1. With the thermostat cover set at index and the choke trip lever in contact with the fast idle lever, locate the fast idle screw on the second step of the fast idle cam, next to the shoulder of the high step.

2. Bend the tang on the fast idle lever so that the end of wire gauge or drill (.070" ± .010" automatic, .080" ± .010" synchromesh) just fits between the inner side of the air horn and the upper edge of the choke valve (Fig. 6B-63).

IDLE VENT ADJUSTMENT

NOTE: Pump rod setting must always be made before making the idle vent adjustment.

With the idle vent valve just closed, bend the tang on the pump lever as necessary to obtain a dimension of 1-17/64" ± 1/64" between top of pump rod and top of air cleaner ring (Fig. 6B-64).

UNLOADER ADJUSTMENT (Fig. 6B-65)

NOTE: Unloader adjustment cannot be made correctly unless linkage is properly adjusted.

1. Remove carburetor air cleaner assembly.

2. Depress accelerator pedal forcibly to floor. This should be done by person sitting in driver's seat of car to simulate driving conditions.) Check

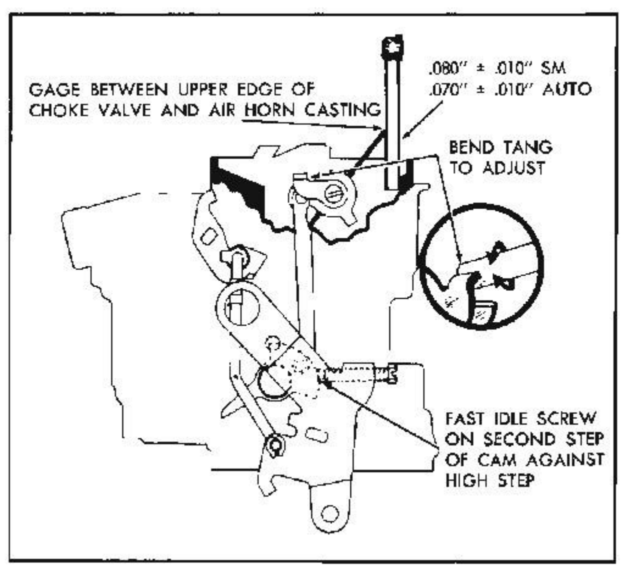

Fig. 6B-63 Choke Rod Adjustment

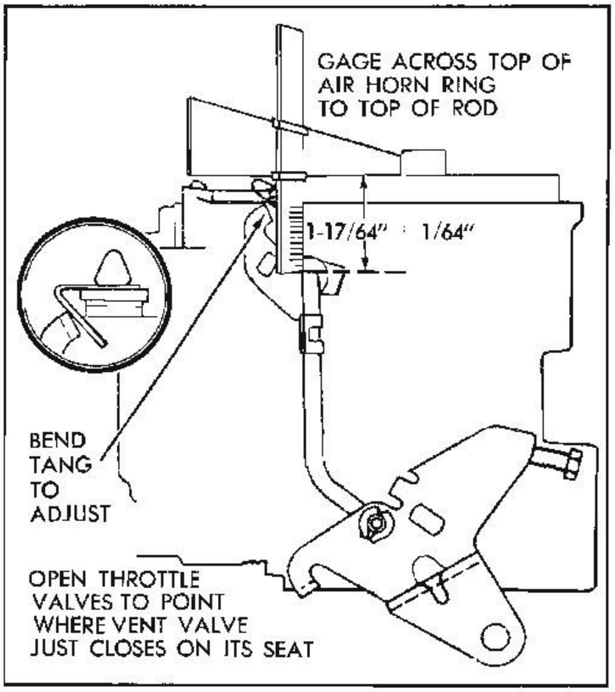

Fig. 6B-64 Idle Vent Valve Adjustment

to see that accelerator pedal is not hitting "hump" over transmission.

3. With accelerator pedal depressed as in Step 2, bend tang on throttle lever to give a clearance of

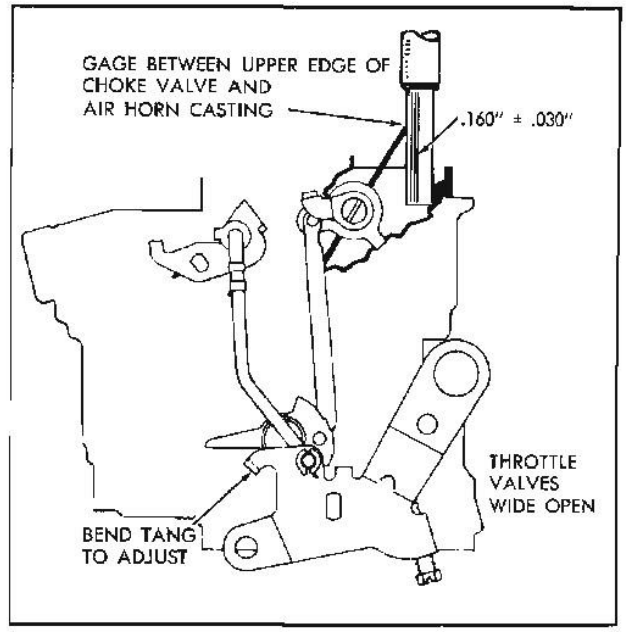

Fig. 6B-65 Unloader Adjustment

.160" ± .030" between the top of the choke valve and the inside of the air horn.

4. Replace air cleaner assembly.

The above procedure will eliminate variance in linkage, floor mat, pedal location, etc., and should ensure correct unloader action.

CARTER AFB FOUR BARREL CARBURETOR

Carburetor Model Number	Used On
3687SA	Automatic Transmission V-326 H.O. Engine
3686S	Synchromesh Transmission V-326 H.O. Engine

GENERAL DESCRIPTION

The Carter AFB (aluminum four barrel) carburetor used on V-326 H.O. engines is composed of two major assemblies, an air horn assembly and a combined throttle body and bowl called the body assembly. The air horn and body are made of cast aluminum.

The carburetor is basically two dual carburetors in one assembly. The half of the carburetor containing the step up rods, pump assembly and idle system is called the primary side of the carburetor. The other half is called the secondary side.

The carburetor contains the conventional carburetor circuits:

Float Circuits
Low Speed Circuits
High Speed Circuits
Pump Circuit
Choke Circuit

FLOAT CIRCUIT (Fig. 6B-66)

The purpose of the float circuit is to maintain the correct fuel level in the carburetor bowl at all times. The Carter AFB carburetor has two separate float circuits. Each float operates in its own float bowl and each bowl supplies fuel to a primary low speed circuit and to a primary and secondary high speed circuit. The two circuits operate identically.

When the fuel level in the bowl drops the float also drops allowing the needle to fall away from its seat.

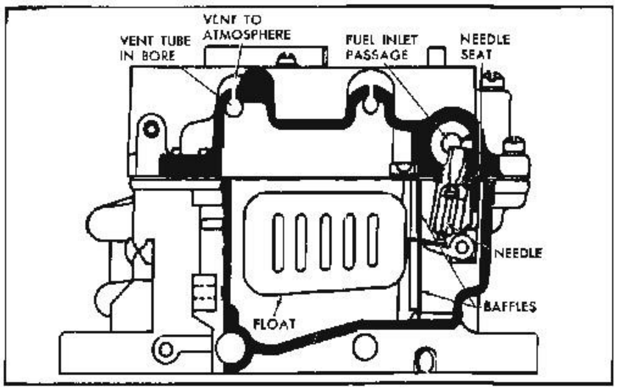

Fig. 6B-66 Float Circuit

Fuel at the fuel inlet under fuel pump pressure will then enter through the fuel filter past the needle and seat and into the float bowl. As the fuel level rises in the bowl the needle valve is seated cutting off the flow of fuel.

The intake needle seats are installed at an angle to give positive seating action of the intake needles. Intake needles and seats are carefully matched in manufacture and tested to ensure against fuel leakage. They should therefore always be used in pairs and not intermixed.

The bowl areas are vented to the inside of the air horn and to each other to ensure equal pressure on the surface of the fuel at all times and to allow the escape of fuel vapors. Baffles are used in the bowl area to minimize fuel turbulence.

LOW SPEED CIRCUITS (Fig. 6B-67)

Fuel for idle and early part throttle operation is metered through the low speed circuits on the primary side of the carburetor. With the throttle valves closed, manifold vacuum exists at the idle needle port and idle discharge port. Atmospheric pressure will then force fuel through the primary metering jet and up through the low speed jet. The fuel picks up air at the bypass and is metered and broken up in the economizer passage. The fuel mixture then passes by another air bleed, down the idle passage and is discharged at the idle discharge port and the idle needle port.

The idle ports are slot-shaped. As the throttle valves are opened, more of the idle ports are uncovered allowing a greater quantity of fuel mixture to enter the carburetor bores. The secondary throttle valves remain closed at idle.

To aid in hot starting, vapor vents are provided in the throttle bores.

During hot idle the throttle valves are completely closed with the by-pass type carburetor. Idle air is directed around the throttle valves through the passage shown in Fig. 6B-68. The amount of air going through the passage is controlled by the air adjusting screw, thereby also controlling idle speed.

During long periods of idling with an extremely hot engine the fuel in the carburetor bowl becomes hot enough to form vapors. These vapors enter the carburetor bores by way of the inside bowl vents. The vapors mix with the idle air and are drawn into the engine causing an excessively rich mixture and

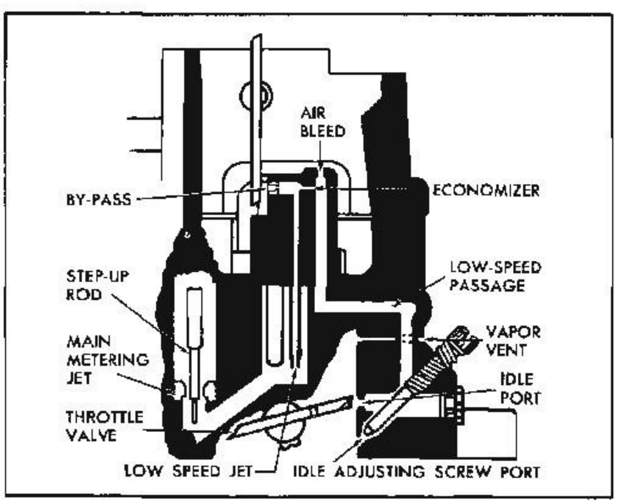

Fig. 6B-67 Low Speed Circuit

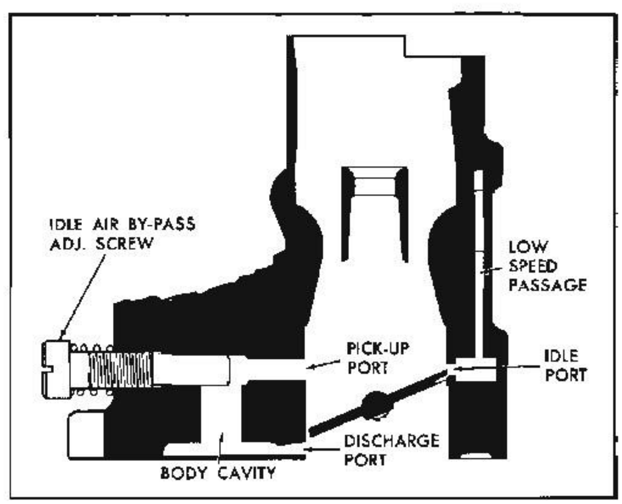

Fig. 6B-68 Idle Air By-Pass Circuit

a loss in rpm or engine stalling. Also, the decrease in the density of the air caused by extreme high under-hood temperatures reduces the idle speed.

The hot idle compensator (Fig. 6B-69) is calibrated to open under these temperature conditions, permitting additional air to enter the manifold below the secondary throttle valves (Fig. 6B-70) and mix with the fuel vapors providing a more combustible mixture. The engine rpm may still vary slightly, however, extreme rough idle operation and engine stalling are avoided.

The device is especially beneficial during traffic operation in very hot weather when the car is allowed to idle for a long period of time, particularly on air condition equipped automobiles. One of the other more common driving conditions that will bring the thermostatic valve into operation is when the car has been driven at highway speeds during a very hot day and then a line of traffic causes a delay where the engine must be run at idle speed, moving the car only a few feet at a time.

The valve is calibrated to open when the air temperature in the bore of the carburetor is between 128 and 140 degrees Fahrenheit with 15" vacuum applied to the valve seat. The operation of this valve cannot be checked accurately in field service, because of the difficulty of obtaining and measuring an accurate air temperature in the bore of the carburetor and the specified 15" of vacuum at the seat of the valve. In service, if any doubt exists concerning the operation of the valve, it should be replaced.

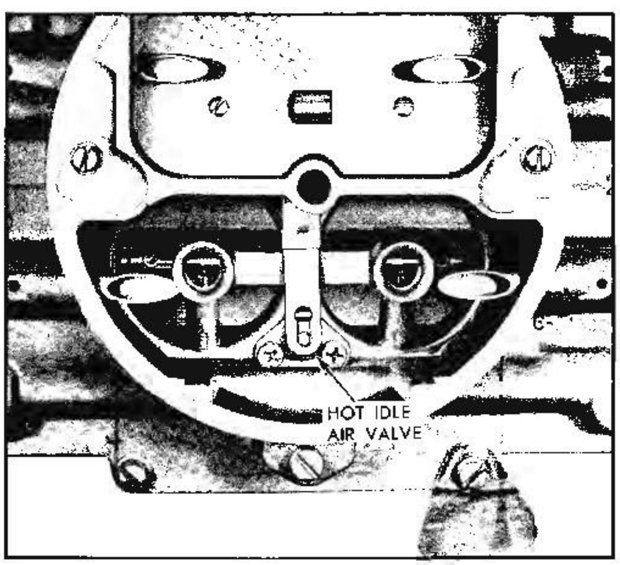

Fig. 6B-69 Hot Idle Air Valve

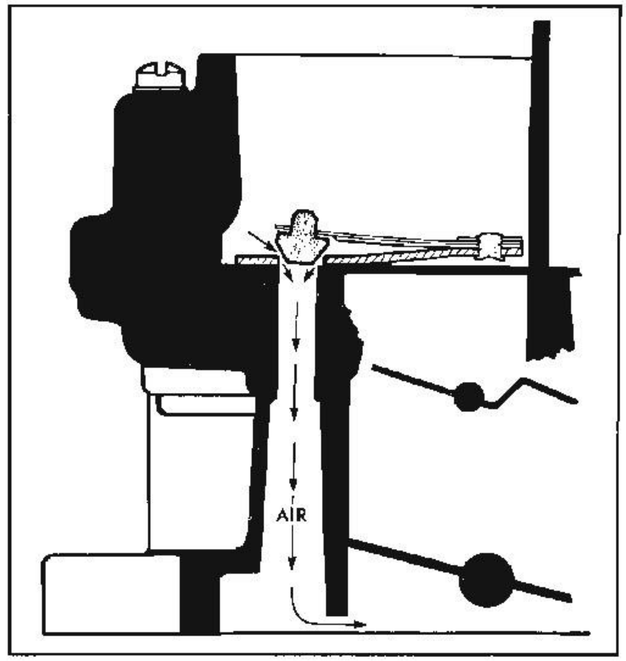

Fig. 6B-70 Hot Idle Air Valve Air Passage

A small hole through each primary throttle valve supplies idle air to supplement the air supplied through the by-pass idle air circuit. These supplementary air supply holes provide better adjustability and increase the idle air volume to provide sufficient idle speed on new engines.

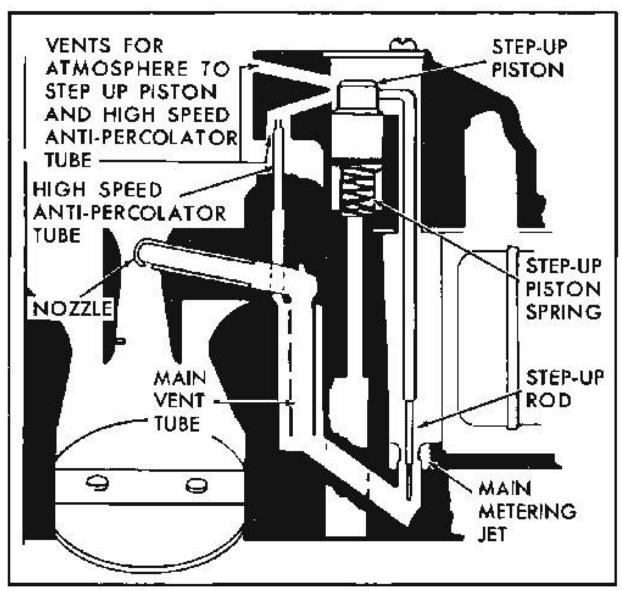

Fig. 6B-71 High Speed Circuit - Primary Side

HIGH SPEED CIRCUIT—PRIMARY SIDE (Fig. 6B-71)

Fuel for late part throttle and full throttle operation is supplied through the high speed circuit.

As the throttle valves are opened air flow through the carburetor increases to the point that fuel is picked up at the discharge nozzles located in the main venturi. The pressure differential caused by the rapid flow of air through the venturi forces fuel through the primary metering jet up through the main vent tube. After picking up air at the air bleed the mixture is forced out through the main discharge nozzle. The air bleed in the high speed circuit also serves as an anti-percolator passage.

The amount of fuel delivered through the primary high speed circuit is dependent upon aid flow or throttle valve opening and by the position of the step-up rods in the primary main metering jets. The step-up rods are controlled entirely by manifold vacuum. When manifold vacuum is high the step-up rod piston and step-up rod are held downward, restricting the flow of fuel through the primary main metering jet. Under any operating condition that reduces manifold vacuum such as acceleration or hill-climbing the step-up rod piston spring raises the step-up rod positioning the smaller diameter or power step in the jet. This allows additional fuel to be metered through the jet. The step-up rods are not adjustable.

HIGH SPEED CIRCUIT—SECONDARY SIDE (Fig. 6B-72)

The throttle valves in the secondary side remain closed until the primary throttle valves open a predetermined amount (approximately 55° of throttle opening). They arrive at the wide open position at the same time as the primary throttle valves.

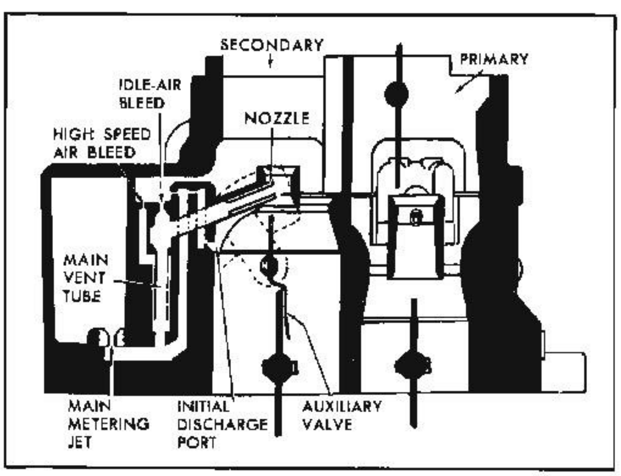

Fig. 6B-72 High Speed Circuit - Secondary Side

Mounted above the secondary throttle valves are the auxiliary throttle valves. These valves are opened by air flow and closed by counterweights. When the secondary throttle valves open, only the primary high speed circuit will function until there is sufficient air velocity to open the auxiliary throttle valves. When the auxiliary valves open, fuel will be supplied through the secondary high speed circuit.

Fuel for the secondary side is metered through the secondary main metering jets. No step-up rods are used.

To supplement the starting of the secondary high speed circuit an initial discharge system is used. Initial discharge ports are located next to the venturi struts. When the auxiliary valves start to open, a low pressure area results at these ports and atmospheric pressure forces fuel into the initial discharge passage. Air is picked up at the air bleed and the mixture enters the air stream at the initial discharge ports. As the auxiliary valves continue to open and the secondary nozzles begin to function, pressure increases at the discharge ports and their operation diminishes. An acceleration tube is used to smooth the transition from two to four barrel operation on acceleration.

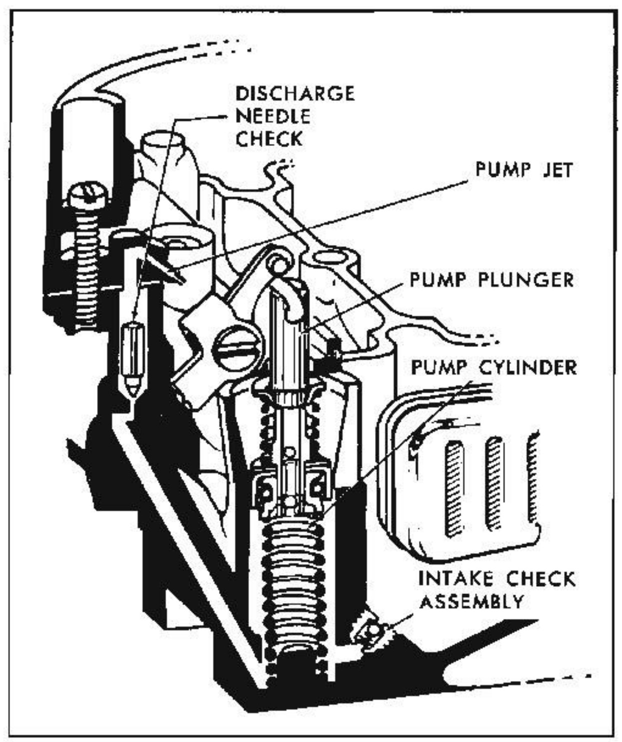

Fig. 6B-73 Pump Circuit

PUMP CIRCUIT (Fig. 6B-73)

The accelerating pump circuit located in the primary side provides for a measured amount of fuel to be discharged into the carburetor throat during acceleration from low car speeds. A rapid opening of the throttle valves, as is the case when accelerating from low speeds, causes an immediate increase in air velocity. Since fuel is heavier than air it requires a short period of time for it to "catch up" with the air flow. To avoid a leanness during this momentary lag, the accelerator pump furnishes a quantity of liquid fuel, sprayed into the air stream to mix incoming air and maintain the proper fuel-air mixture. The pump is operated by the combined action of two springs which are calibrated to move the plunger in such a manner that a sustained charge of fuel is delivered for smooth acceleration.

The pump is attached by linkage to the accelerator so that when the throttle valves are closed the pump plunger moves upward in its cylinder creating a low pressure area (partial vacuum) in the cylinder below the plunger. Atmospheric pressure acting on the fuel in the bowl forces fuel into this cylinder through the intake ball check. The discharge needle is seated at this time to prevent air being drawn into the cylinder.

When the throttle is opened, the friction of the plunger in the cylinder and the tension of the lower plunger spring resists the downward movement of the pump plunger causing the plunger shaft to telescope. This compresses the upper spring. The upper spring then overcomes the resistance and pushes the plunger down. However, the speed of the plunger is retarded by the lower spring so that a sustained charge of fuel is released into the system. The movement of the plunger exerts a pressure in the cylinder which seats the intake ball check preventing fuel from being forced back into the bowl. The same pressure also forces fuel up the discharge passage, unseating the pump discharge needle, and on through the pump jets in the cluster where it is sprayed into the carburetor throat.

At higher speeds, pump discharge is no longer necessary to insure smooth acceleration. When the throttle valves are opened a predetermined amount, the pump plunger bottoms in the cylinder eliminating pump discharge.

During high speed operation, a vacuum exists at the pump discharge ports. To prevent atmospheric pressure from forcing fuel to these ports and into the system, the pump jets are vented. This allows air instead of fuel to be forced through the discharge ports.

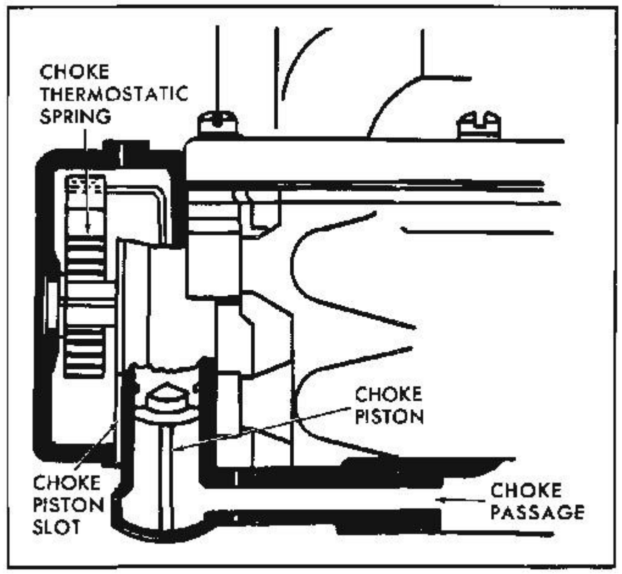

Fig. 6B-74 Choke Circuit

An "anti-percolator" check valve, contained inside the plunger, provides relief for any vapors which might form during hot idle or when a hot engine is not operating. The ball check is designed so that it can move up and down in its passage. Throughout the above periods it is unseated by gravity and vapors in the pump well rise and by-pass the ball check through small holes in the plunger head.

The "anti-perc" ball check also acts as an extra inlet during the upstroke of the plunger, but is seated by fuel when the plunger moves down.

CHOKE CIRCUIT (Fig. 6B-74)

The purpose of the choke system is to provide a very rich mixture for cold engine operation.

The choke system subjects all fuel outlets in the bore of the carburetor to manifold vacuum while restricting the intake of air.

The choke system includes a thermostatic coil, housing, choke piston, choke valve, source of fresh air supply to the choke stove, and fast idle cam and linkage. It is controlled by a combination of intake manifold vacuum, air velocity against the offset choke valve, atmospheric temperature and hot air from the intake manifold.

When the engine is cold, tension of the thermostatic coil holds the choke valve closed. Starting the engine causes air velocity to strike the offset choke valve. This tends to open it along with the action of intake manifold vacuum on the choke piston. Thus, after a slight opening of the choke valve, the tension of the thermostatic coil spring balances the force of air on the valve and the pull of vacuum at the piston.

At the cold idle position, slots located in the sides of the choke piston cylinder are uncovered, exposing them to intake manifold vacuum. Air, heated in a tube running through the exhaust cross-over passage in the intake manifold, then fills this low pressure area in the choke housing. The flow of warm air heats the thermostatic coil and causes it to lose its tension until full choke valve opening is accomplished. The clean air is supplied to the choke in the manifold from the air horn, just below the air cleaner. Here filtered air from the air cleaner is picked up and carried to the choke by a metal pipe.

A secondary baffle plate is located in the choke housing to distribute the warm air evenly over the thermostatic coil thereby insuring gradual relaxation of the coil. The baffle revolves with the choke valve and prevents the warm air from striking the thermostatic coil until the choke valve opens a predetermined amount. This delays choke opening.

If the engine is accelerated during the warm-up period, the corresponding drop in manifold vacuum allows the thermostatic coil to momentarily close the choke, providing a richer mixture.

To combat engine stalling during warm-up on cool, humid days, caused by "carburetor icing", heated air from the choke housing is circulated through a passage in the base of the carburetor flange.

During the warm-up period, it is necessary to provide a fast idle to prevent engine stalling. This is accomplished by a fast idle cam connected to the choke shaft. The fast idle adjusting screw on the throttle lever contacts the fast idle cam and prevents th[illegible] v[illegible]es from returning to a normal warm engine idle position until the choke is open.

If during the starting period, the engine becomes flooded the choke valve can be partially opened manually to allow increased air flow through the carburetor. This is accomplished by depressing the accelerator pedal forcibly to the floor and engaging the starter. The unloader projection on the throttle lever contacts the unloader lug on the fast idle cam and in turn partially opens the choke valve.

ADJUSTMENTS ON CAR

All Carter adjustments can be performed on the car. All adjustments are included in the "Overhaul and Adjustments" procedure, with the exception of the idle speed and mixture adjustment, fast idle adjustment, and the unloader adjustment. Following are the idle speed, mixture, and the unloader adjustments.

IDLE SPEED AND MIXTURE ADJUSTMENT

1. As a preliminary setting turn air screw out 1-1/2 turns from lightly seated position and mixture screws out 1 turn.

2. Set hand brake securely, place transmission in neutral and connect tachometer to engine.

3. Start engine and warm up thoroughly. Make sure choke is fully open and carburetor is completely off fast idle.

CAUTION: When adjusting idle make sure hot idle compensator is held manually closed during adjustment.

4. Adjust the air screw to obtain correct idle rpm. (Use drive range on automatic transmission equipped cars.)

5. Turn mixture screws to best quality (highest rpm) idle.

6. Reset air screw to correct rpm if mixture adjustment changed setting.

7. Recheck mixture adjustment to insure smoothest possible idle.

NOTE: Always recheck idle mixture setting after making idle rpm adjustment with air screw.

IDLE SPECIFICATIONS

Synchromesh, exc. air conditioning .	580-600 rpm
Automatic, exc. air conditioning . . .	480-500 rpm in drive range
Air Conditioning Equipped	
Automatic - Drive-range, A/C off .	540-560 rpm
S/M - Neutral, A/C off	640-660 rpm

FAST IDLE ADJUSTMENT

The fast idle setting must be made after the idle speed and mixture adjustment has been made. With the engine completely warmed up and the fast idle screw on highest step of fast idle cam, set fast idle screw to give an engine speed of 2500 rpm.

UNLOADER ADJUSTMENT

1. Remove carburetor air cleaner assembly.

2. Depress accelerator pedal forcibly to floor. (This should be done by person sitting in driver's seat of car to simulate driving conditions.)

3. With accelerator pedal depressed as in step 2, bend tang on throttle lever to give a clearance of 5/32" ± 1/32" between the top of the choke valve and the inside of the air horn.

4. Replace air cleaner assembly.

The above procedure will eliminate variance in linkage, floor mat, pedal location, etc. and should ensure correct unloader action.

OVERHAUL AND ADJUSTMENT

DISASSEMBLY OF AIR HORN

1. Place carburetor on stand J-5923 or J-8328 and remove inlet nut, gasket and filter.

2. Remove throttle connector rod and anti-rattle spring.

3. Remove fast idle connector rod at upper end (Fig. 6B-75).

4. Remove choke connector rod (Fig. 6B-76).

5. Remove two step-up piston cover plate attaching screws and cover plates (Fig. 6B-76).

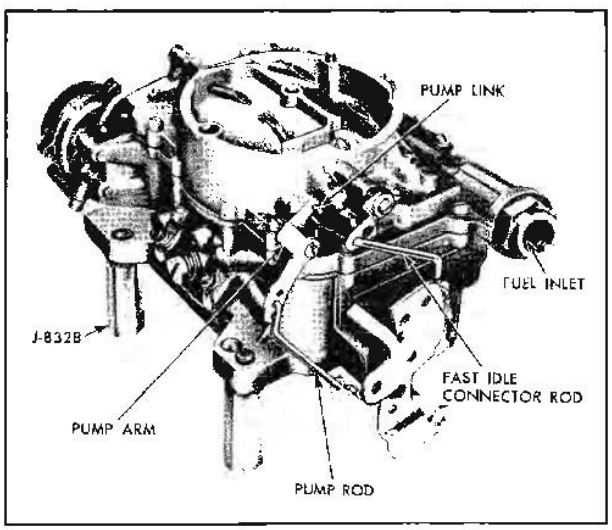

Fig. 6B-75 Carter AFB Carburetor

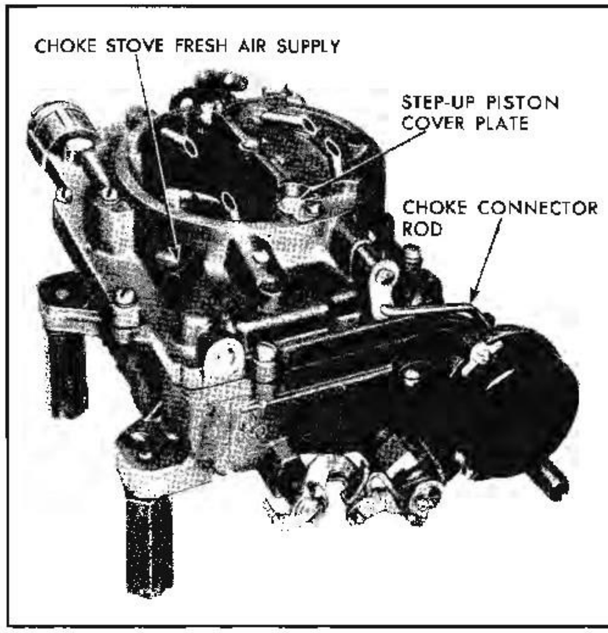

Fig. 6B-76 Carter AFB Carburetor

6. Remove two step-up rods and step-up pistons. If desired, step-up rod may be separated from piston by unhooking step-up rod retaining spring from end of rod (Fig. 6B-77). Remove two step-up rod piston springs.

7. Remove choke shaft lever retainer screw, choke shaft lever and washer from end of choke shaft.

8. Remove two choke valve attaching screws and choke valve.

9. Remove ten air horn attaching screws and lift off air horn assembly.

10. Slide choke shaft from air horn.

11. Remove pump arm and link and pump plunger assembly.

12. Remove float hinge pin, float and float needle assembly on inlet side of carburetor (Fig. 6B-78).

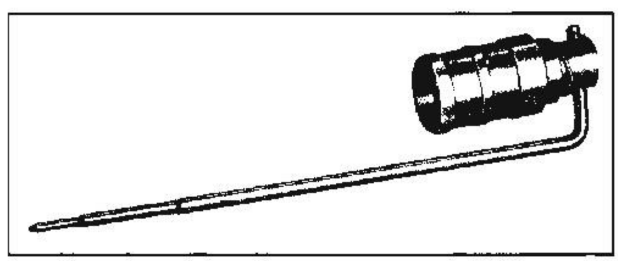

Fig. 6B-77 Step Up Rod and Piston Assembly

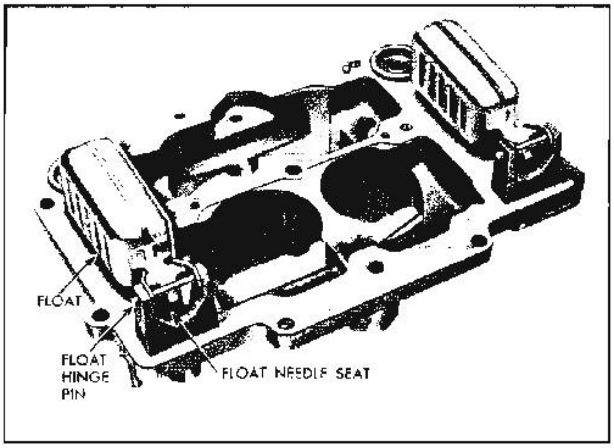

Fig. 6B-78 Air Horn Assembly

13. Remove float needle seat and gasket using wide blade screwdriver.

NOTE: Keep individual float parts grouped so the same needle and seat are used together.

14. Remove remaining float hinge pin, float, float needle, float needle seat and gasket.

15. Remove air horn gasket.

DISASSEMBLY OF THROTTLE BODY

1. Remove three choke coil housing attaching screws and choke coil housing and thermostatic coil.

2. Remove coil housing gasket and baffle plate.

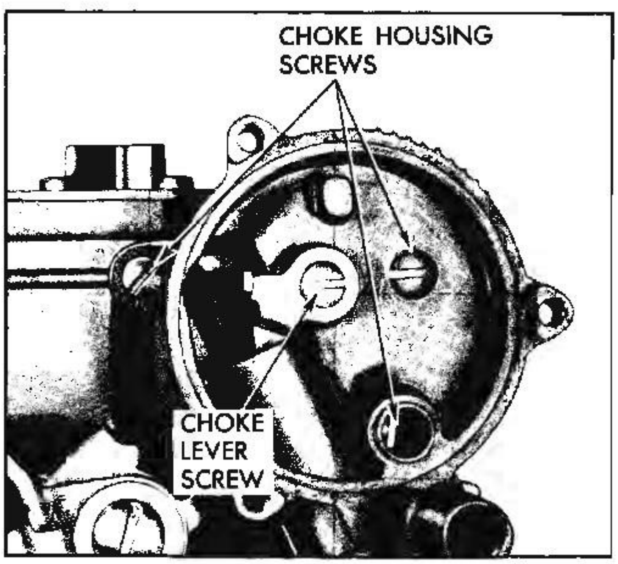

Fig. 6B-79 Location of Choke Housing Screws

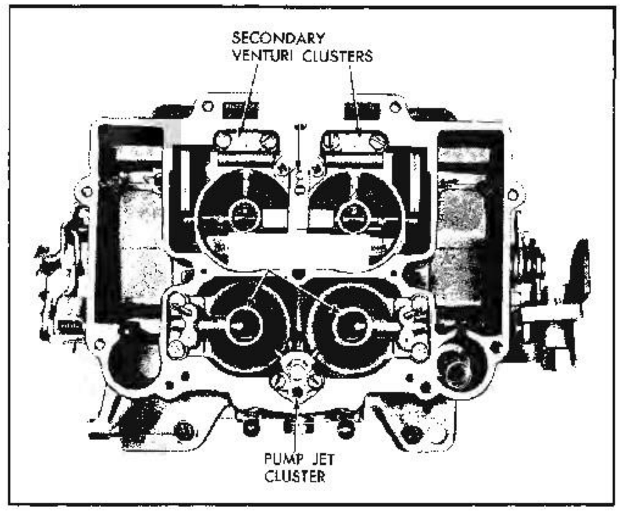

Fig. 6B-80 Top View of Carburetor Body Assembly

3. Remove choke lever attaching screw. (Fig. 6B-79). Remove choke piston, lever and link assembly by rotating piston from bore.

4. Remove three choke housing to body attaching screws (Fig. 6B-79) and remove choke housing and gasket.

5. Remove lower choke lever and shaft from choke housing.

6. Remove pump jet cluster and gasket. (Fig. 6B-80).

7. Remove two screws and primary venturi and gasket on pump side (Fig. 6B-80).

8. Remove two screws and primary venturi and gasket on choke side.

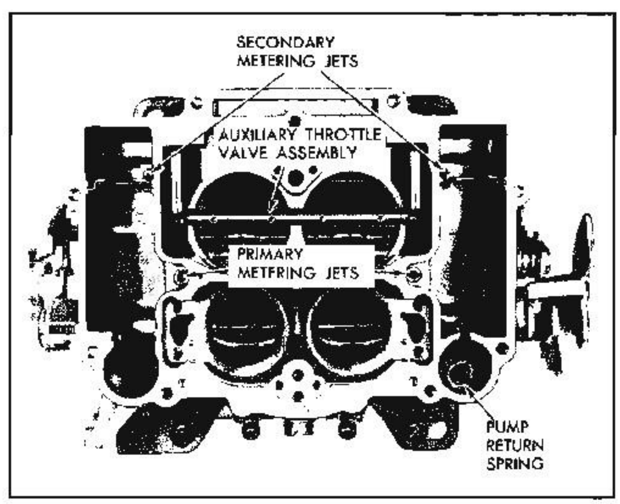

Fig. 6B-81 Body Assembly with Cluster Removed

NOTE: The venturi assemblies are not interchangeable.

9. Remove hot idle air valve and gasket.

10. Remove secondary venturi on pump and choke sides (Fig. 6B-80).

11. Lift out auxiliary throttle valve, shaft and weight assembly (Fig. 6B-81).

12. Remove two primary metering jets.

13. Remove two secondary metering jets.

14. Remove pump return spring.

15. Remove pump intake check.

16. Remove idle mixture screws.

17. Remove air screw.

18. Carefully invert carburetor body and remove pump discharge check needle.

19. Remove throttle lever adjusting screw and spring.

20. Remove fast idle cam attaching screw, fast idle cam, trip lever and lockout lever (Fig. 6B-82).

21. Remove primary to secondary throttle operating rod (Fig. 6B-83).

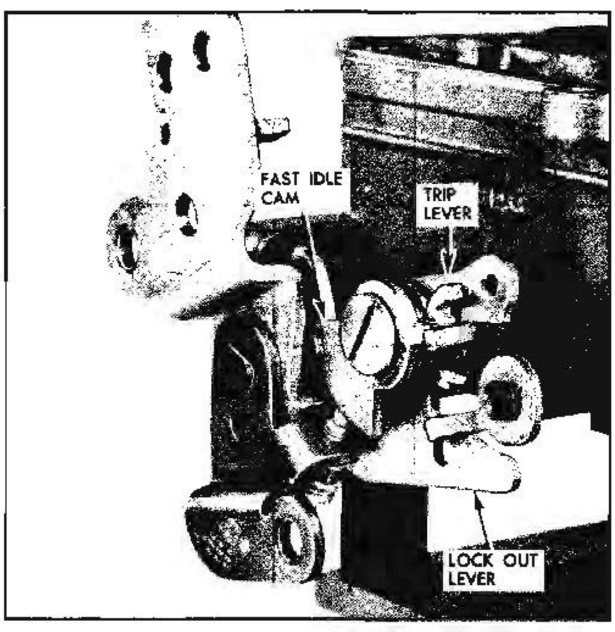

Fig. 6B-82 Location of Fast Idle Cam and Lockout Lever

22. Remove screw, secondary throttle shaft washer and secondary throttle operating lever and spring.

23. Unhook throttle flex spring from primary outer throttle shaft arm.

24. Remove primary throttle shaft lever attaching screw and washer from primary throttle shaft.

25. Remove outer throttle shaft arm and throttle shaft dog (Fig. 6B-83).

26. Remove inner throttle shaft arm and flex spring.

27. If necessary to remove throttle shafts remove throttle valve attaching screws, throttle valves and slide shaft from carburetor body.

28. Remove fast idle adjusting screw if necessary to replace.

CLEANING AND INSPECTION

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.

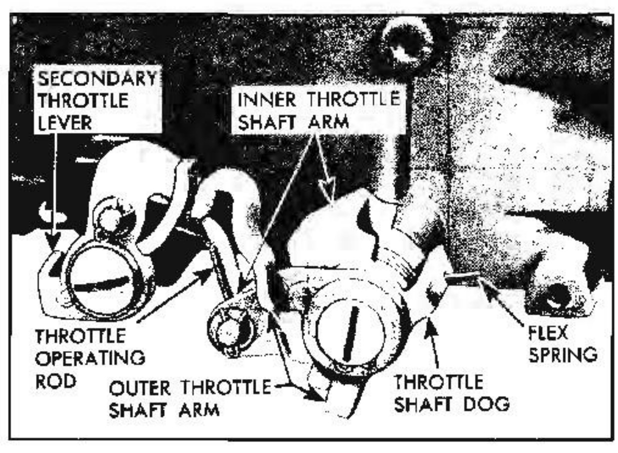

Fig. 6B-83 Primary and Secondary Throttle Linkage

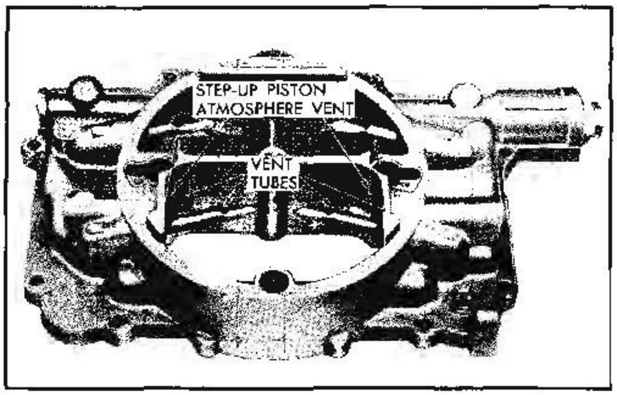

Fig. 6B-84 Passage Identification - Air Horn

2. Blow out all passages (Figs. 6B-84, 85, 86, 87, and 89) in casting with compressed air and blow off all parts to ensure they are free of cleaner.

NOTE: Follow instruction furnished with cleaning solution container.

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, checking the following specific points:

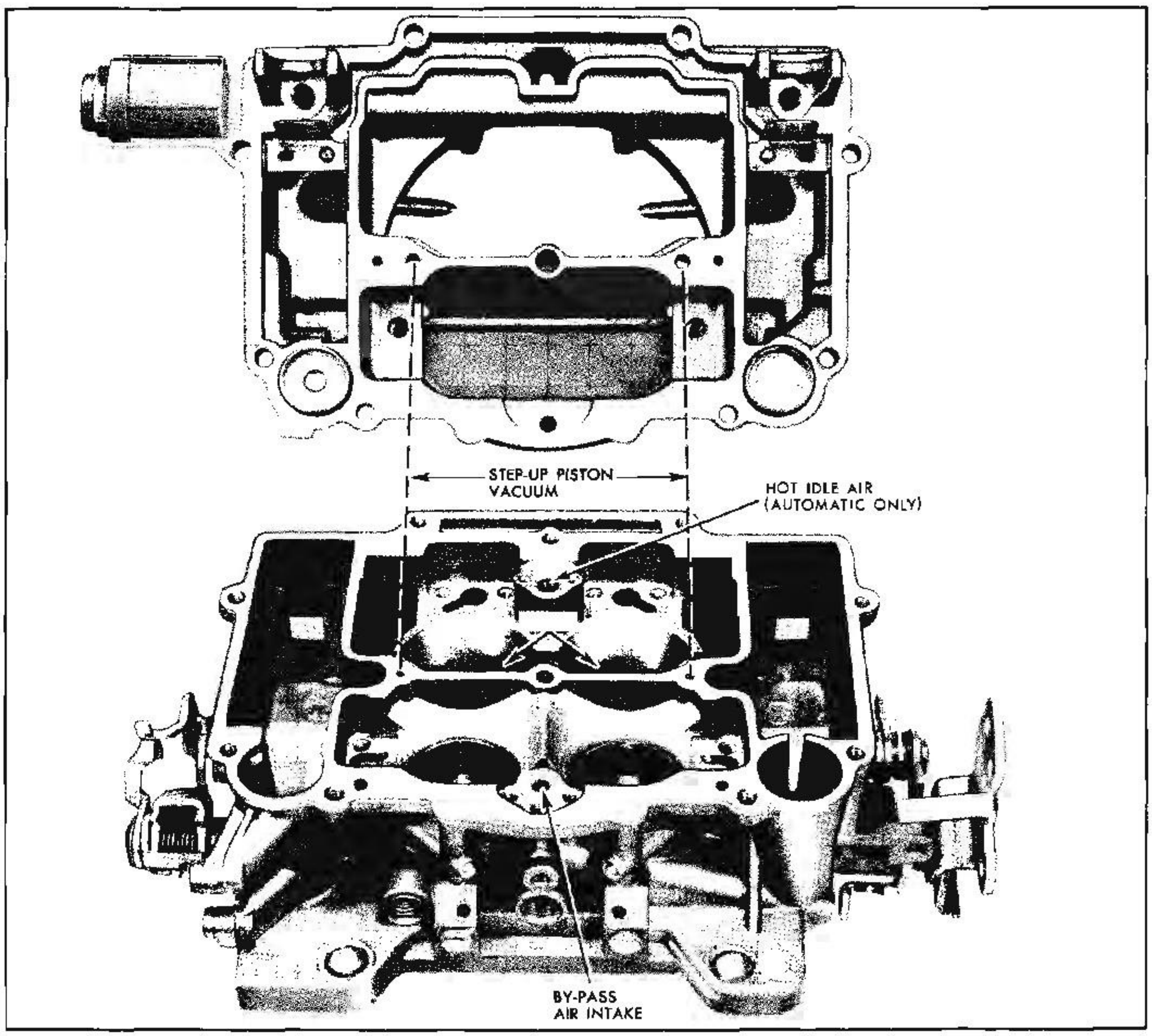

Fig. 6B-85 Passage Identification - Air Horn to Body

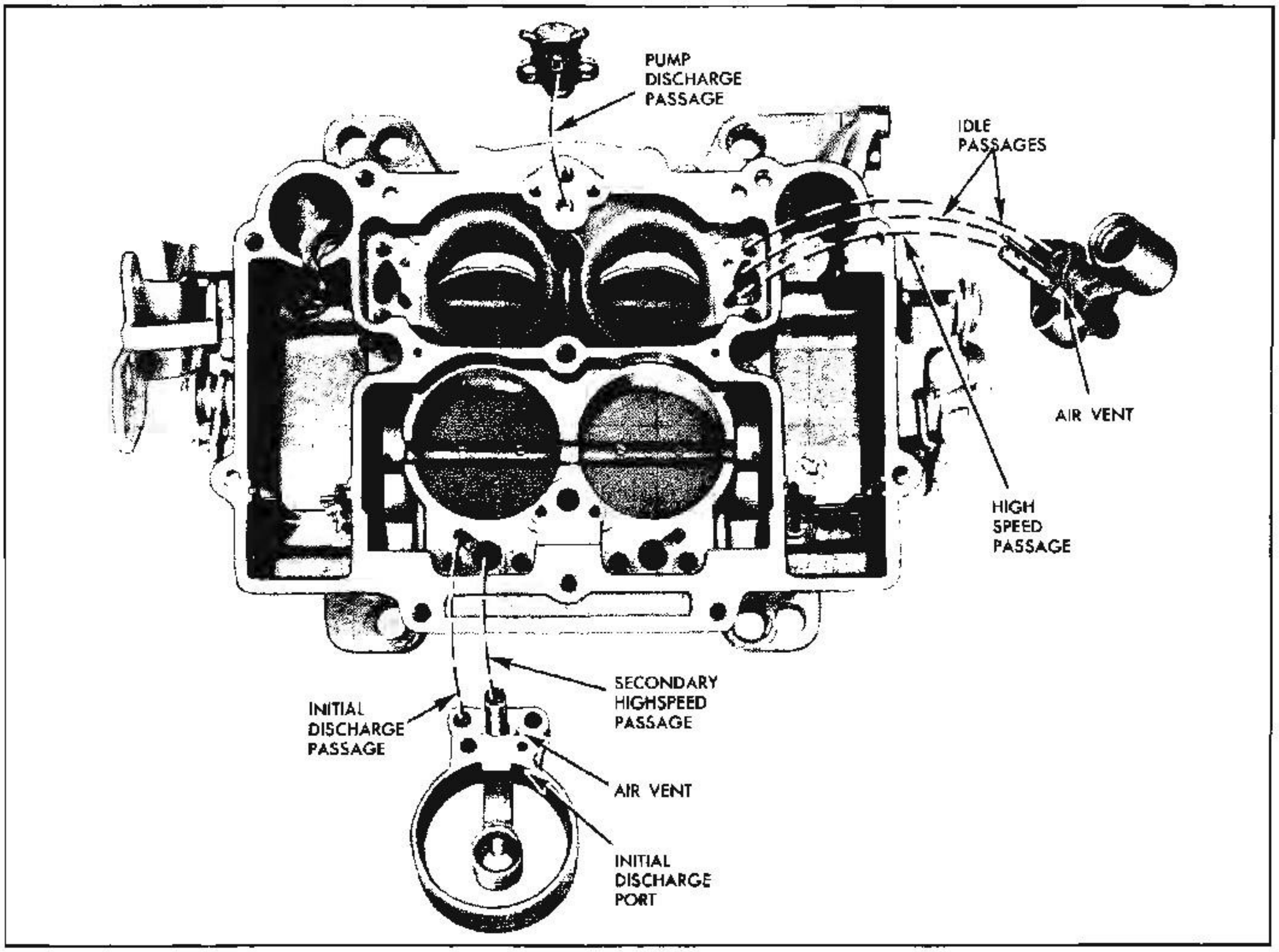

Fig. 6B-86 Passage Identification - Clusters to Body

a. Inspect choke piston and choke piston housing for carbon and gum. 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.

c. Inspect float needles, and seats for wear; if leaking, 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 or scored.

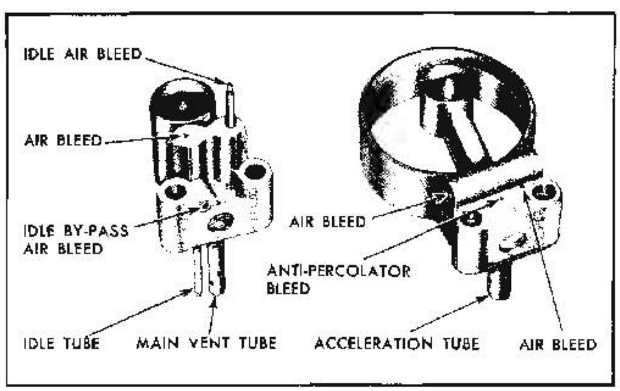

Fig. 6B-87 Passage Identification - Primary and Secondary Venturi Clusters

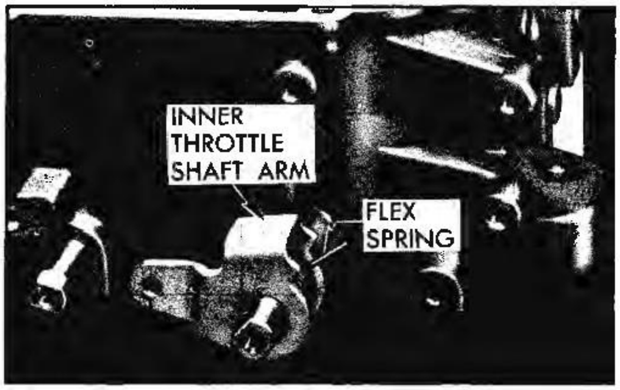

Fig. 6B-88 Inner Throttle Shaft Arm and Flex Spring Installed

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 passage 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.

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 BODY

1. If throttle shafts were removed during disassembly insert shafts through body with lever ends on pump side of body.

2. Using new screws install primary and secondary throttle valves so that trade mark (c in circle) is visible from the bottom of body with throttle valves closed.

3. Install fast idle adjusting screw.

4. Place carburetor body on stand.

5. Install pump intake check.

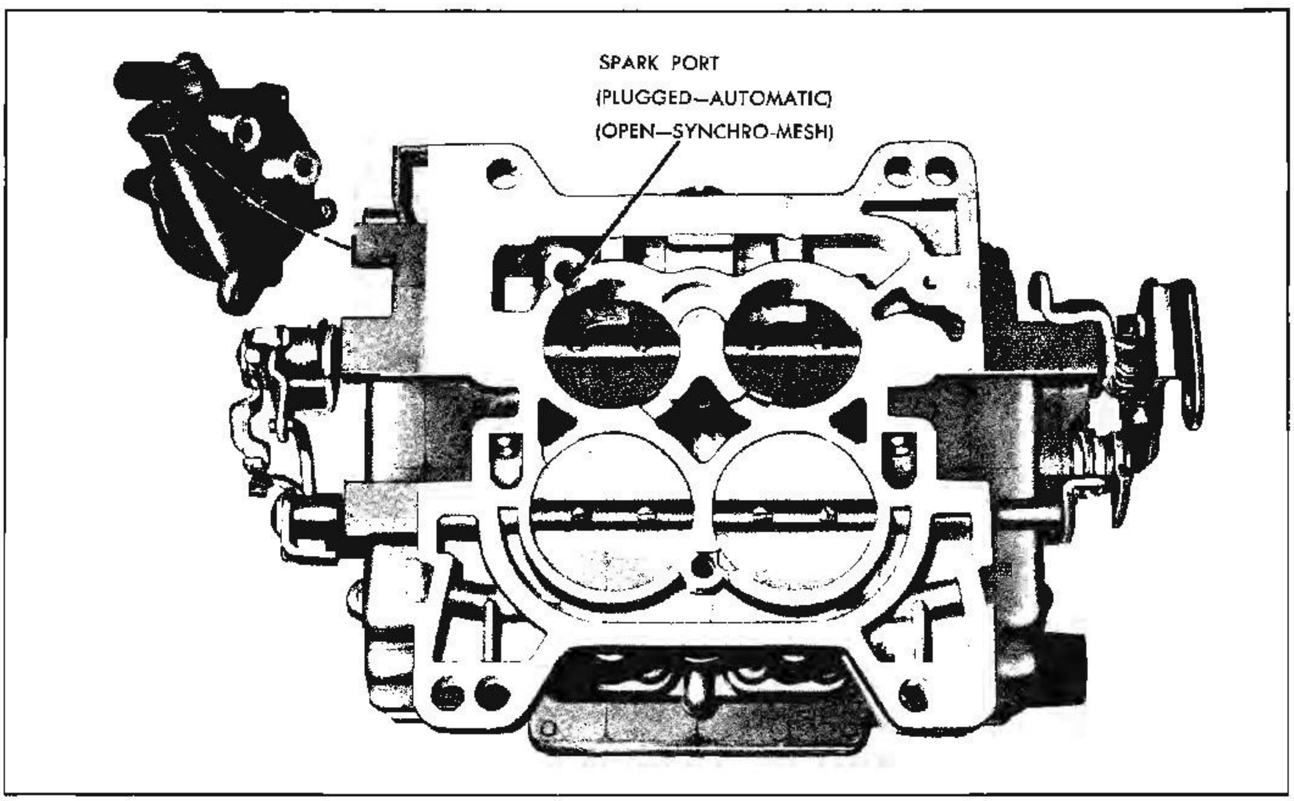

Fig. 6B-89 Passage Identification - Flange Area of Body

6. Install inner throttle shaft arm and flex spring on primary throttle shaft (Fig. 6B-88).

7. Install throttle shaft dog on primary throttle shaft (Fig. 6B-90).

8. Install outer throttle shaft arm, washer and retaining screw on primary throttle shaft (Fig. 6B-91).

9. Hook end of flex spring into notch on outer throttle shaft arm.

10. Install secondary throttle operating spring, lever, washer and screw (Fig. 6B-91). Wind spring two turns tight.

11. Install throttle operating rod, washers and spring clips.

12. Install lockout dog, trip lever, fast idle cam and screw (Fig. 6B-92).

13. Install throttle lever screw and spring.

14. Install idle mixture screws. Turn in finger tight and back out one turn for approximate adjustment.

15. Install air screw. Turn in finger tight and back out 1-1/2 turns for approximate adjustment.

16. Install primary metering jets and secondary metering jets in their respective bores.

17. Set auxiliary throttle valves in place.

18. Install secondary venturi and gaskets on choke and pump sides.

19. Install hot idle air valve and gasket.

20. Install primary venturi and gaskets on choke and pump side of carburetor (Fig. 6B-93).

21. Install pump discharge check needle, point down and pump jet cluster and gasket with two screws.

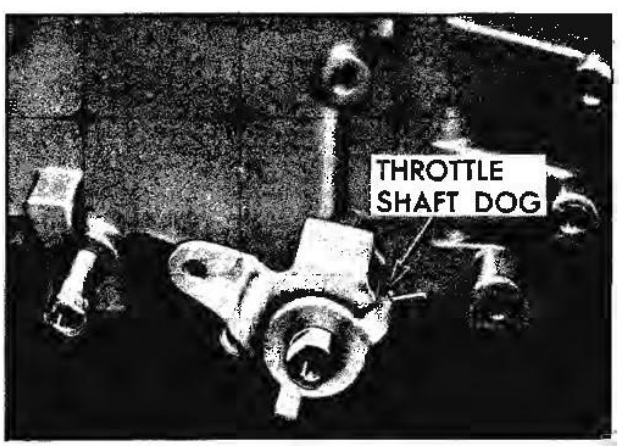

Fig. 6B-90 Throttle Shaft Dog Installed

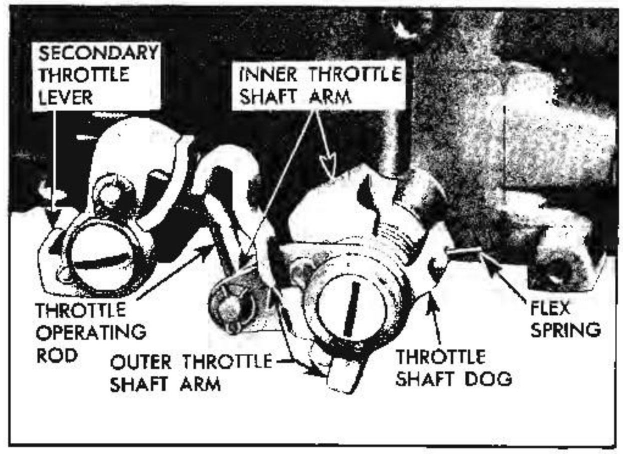

Fig. 6B-91 Primary and Secondary

22. Install pump plunger return spring in pump bore.

23. Install lower choke shaft and lever in choke housing and attach choke housing and gasket to carburetor body and three self-tapping screws.

24. Install choke piston and link assembly in choke housing.

25. Attach choke piston linkage to lower choke shaft with screw and spacer washer.

NOTE: Before proceeding with next step perform choke piston lever adjustment.

26. Install choke baffle plate, cover gasket, and choke cover and spring assembly. Set choke at one notch rich.

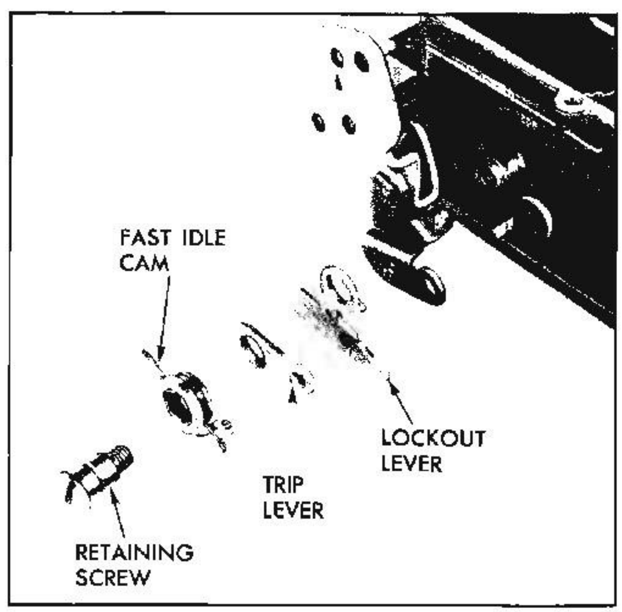

Fig. 6B-92 Lockout Lever and Fast Idle Cam

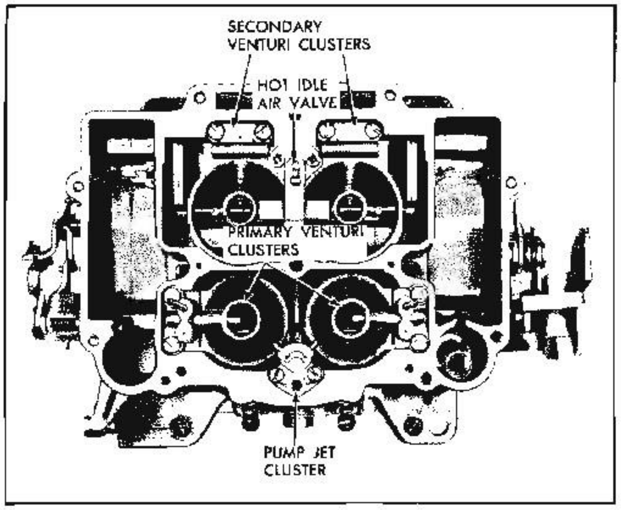

Fig. 6B-93 Venturi Clusters Installed

ASSEMBLY OF AIR HORN

1. Slide choke shaft into air horn.

2. Install air horn gasket.

3. Install float needle seat and gasket, float needle and float assembly on pump side of air horn.

4. Install float needle seat and gasket, float needle, and float assembly on choke side of air horn.

5. Adjust float:

A. ADJUST FLOAT ALIGNMENT

1. Sight down the side of the float shell to determine if the side of the float is parallel to the outer edge of the air horn casting. Adjust by bending float lever by applying pressure to the end of the float shell with the fingers while supporting the float lever with the thumb.

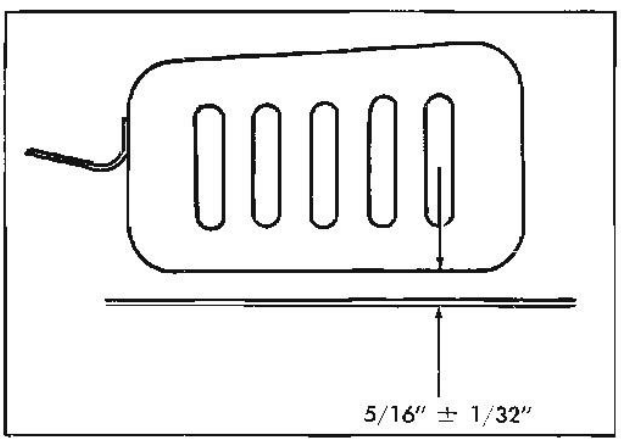

Fig. 6B-94 Float Level Check

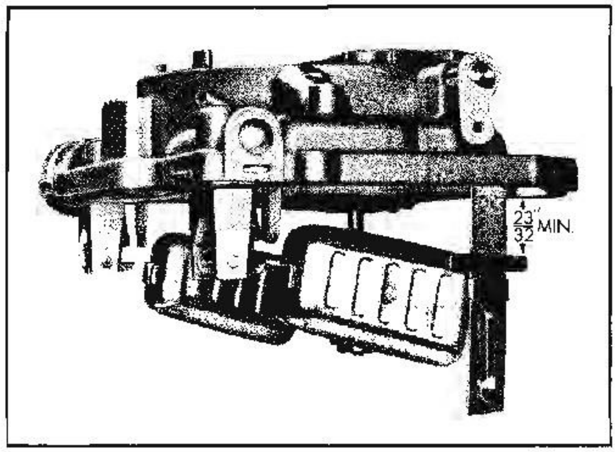

Fig. 6B-95 Checking Float Drop

CAUTION: To avoid damaging the float, apply only enough pressure to bend float lever.

2. After aligning float remove as much clearance as possible between arms of float lever and lugs on air horn by bending the float lever. Arms of float lever should be parallel to the inner surfaces of lugs on air horn as possible. Floats must operate freely without excess clearance on hinge pin.

B. ADJUST FLOAT LEVEL (Fig. 6B-94)

With air horn inverted, gasket in place and needle seated, there should be 5/16" ± 1/32" clearance between float at point below first indention on side of float from toe end and air horn gasket. Fig. 6B-94 illustrates point where 5/16" ± 1/32" dimension should be checked. Bend float arm to adjust. Adjust both floats and recheck float alignment.

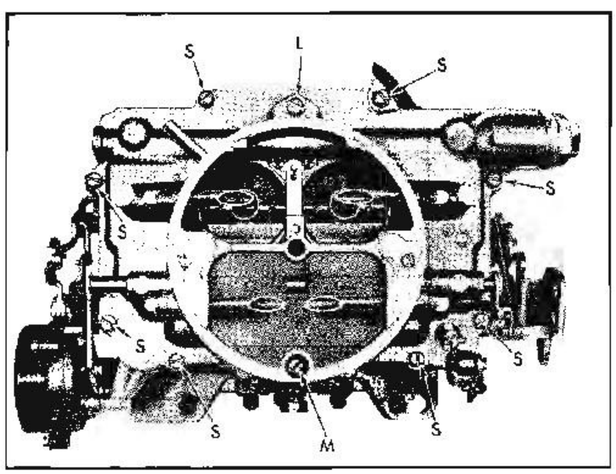

Fig. 6B-96 Location of Air Horn Attaching Screws S = Short M = Med. L = Long

C. ADJUST FLOAT DROP (Fig. 6B-95)

With bowl cover held in upright position and measuring from outer end of each float, the distance between top of floats and bowl cover gasket should be a minimum of 23/32" min. To adjust, bend stop tabs on float brackets.

NOTE: Maximum float drop can be any amount which will retain needle for installation. Needle must not wedge at maximum drop.

6. Insert pump plunger shaft through air horn and retain with pump link.

7. Install air horn attaching screws (Fig. 6B-96).

8. Install two step-up rod piston springs in their respective bores.

9. Install step-up rod and piston on pump side of carburetor.

10. Install step-up rod and piston on choke side of carburetor.

11. Install two step-up piston cover plates and screws.

12. Install pump arm lever to air horn casting and connect pump link. Link must be installed as shown in Fig. 6B-97.

13. Insert lower end of pump connector rod in hole in throttle lever. Install upper end of rod in center hole in pump arm lever, retaining with clip.

14. Install choke valve with circle c in trademark visible with the choke valve closed.

15. Install choke connector rod between upper and lower choke lever.

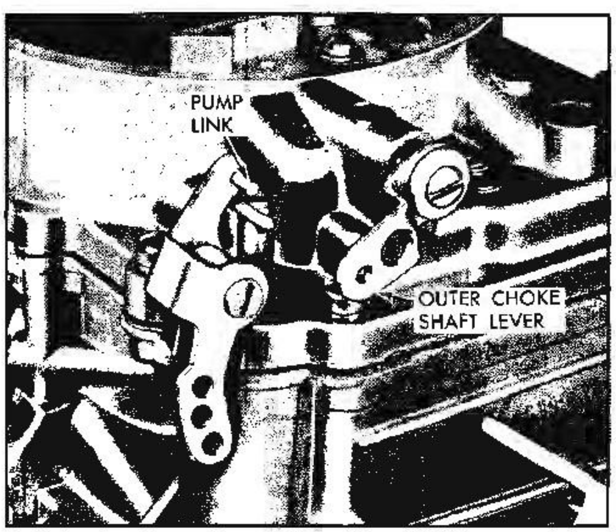

Fig. 6B-97 Pump Link Installed

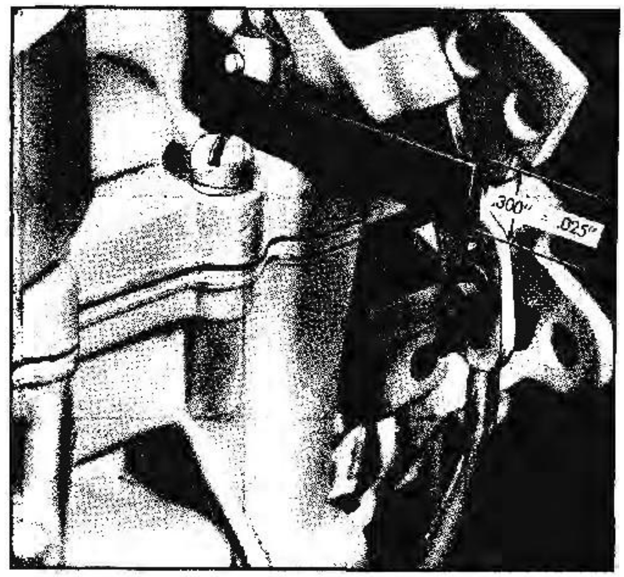

Fig. 6B-98 Checking Pump Adjustment

16. Install choke shaft lever, washer, and screw on end of choke shaft (Fig. 6B-97).

17. Install fast idle connector rod between fast idle cam and inner choke shaft lever.

18. Install throttle connector rod, and washers.

19. Install inlet screen plug and gasket.

ADJUST PUMP

1. Be sure choke is wide open so fast idle cam does not hold throttle valves open.

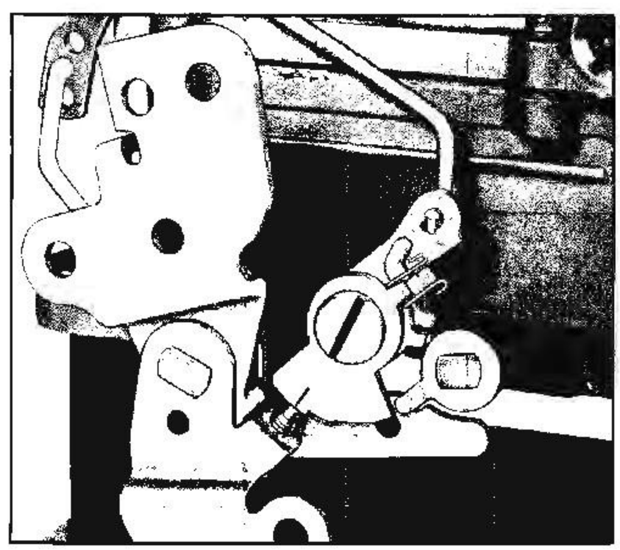

Fig. 6B-99 Checking Choke Shaft Lever

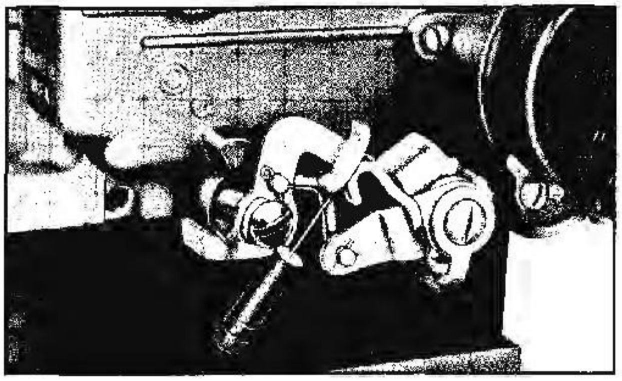

Fig. 6B-100 Checking Secondary Throttle Lever Adjustment

2. The distance from the top of the bowl cover to bottom of "S" pump link should be .300-.325" (Fig. 6B-98). Adjust pump linkage so that all play is removed at closed throttle position and full throttle lever travel is still obtainable.

3. To adjust, bend throttle connector rod at lower angle.

ADJUST CHOKE PISTON LEVER

1. Remove three choke coil housing screws and choke coil housing and thermostatic coil.

2. Remove coil housing gasket and baffle plate.

3. Completely close choke valve.

4. Choke piston should be flush to 1/64" below outer lip of cylinder.

5. To adjust, bend choke connector rod.

ADJUST CHOKE SHAFT LEVER

With choke valve fully closed and choke level and arm in contact, bend choke connector rod to align cam index mark on fast idle cam with fast idle screw (Fig. 6B-99).

ADJUST SECONDARY THROTTLE LEVER

1. Open fully both sets of throttle valves. (In this position the stop lugs on primary and secondary throttle levers should contact the boss on the flange.)

2. To adjust, bend secondary throttle operation rod at angle.

NOTE: Primary throttle valves will be a few degrees past vertical and secondary throttle valve will be a few degrees from vertical at wide open throttle.

3. Now close primary and secondary throttle valves.

4. There should be .020" clearance between positive closing shoes on primary and secondary throttle levers (Fig. 6B-100) at their closest position.

5. To adjust, bend shoe on primary lever.

ADJUST SECONDARY THROTTLE LOCKOUT

1. Crack throttle valves and manually open and close the choke valve.

2. Tang on secondary throttle lever should freely engage in notch of lockout dog.

3. If necessary to adjust, bend tang on secondary throttle lever.

Carburetor Model	Usage	Features
3687SA	Automatic	Distributor vacuum and throttle return check vacuum taken from back of carburetor. Spark port at left of idle mixture screws plugged.
3686S	Synchromesh	Timed spark advance with spark port and no throttle return check.

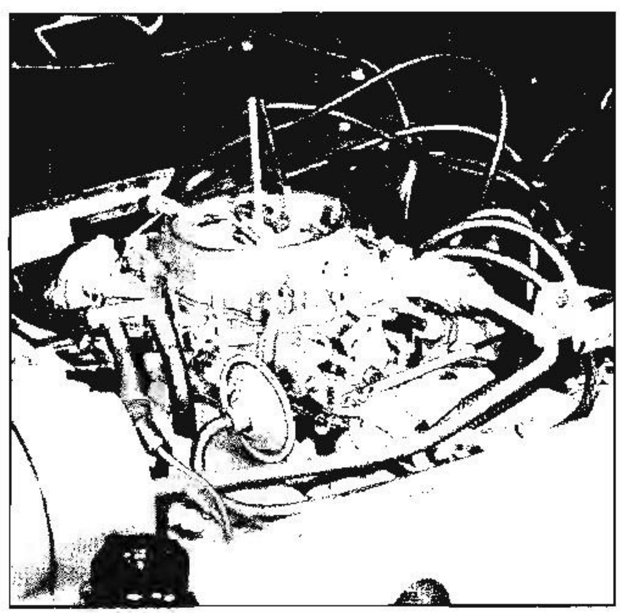

Fig. 6B-101 Throttle Return Hook-up With Automatic Transmission

CARBURETOR—GENERAL

TROUBLE DIAGNOSIS AND TESTING

When carburetor troubles are encountered they can usually be corrected by making the adjustments outlined under ADJUSTMENTS ON CAR. The following list of common troubles and their causes will frequently save considerable time in locating the cause of the difficulty.

NOTE: Before any work is performed on the carburetor, make sure trouble is not due to poor compression, or in the ignition system due to improper timing, defective spark plugs, burned ignition points, etc. Always diagnose performance trouble by using the Pontiac Tune-N-Test Guide before adjusting or repairing the carburetor.

When the cause of trouble is not located by the Tune-N-Test, check for trouble in the carburetor system as follows:

POOR FUEL ECONOMY

NOTE: Before any attempt is made to improve fuel economy the actual gasoline mileage should be determined using a tenth of a gallon tester. If the mileage obtained during this test compares favorably with that found on other normal cars, the poor mileage must be attributed to the driving conditions or driving habits of the owner. Also consider factors such as dragging brakes, soft tires, improper tire size, and improper speedometer driven gear.

1. Check automatic choke to see that it operates properly and that it is correctly indexed.

2. Inspect manifold heat valve to see that it operates freely and thermostat is installed properly.

3. Check for leaks in fuel line fittings, at fuel tank, or at fuel pump bowl.

4. Check for dirty or restricted air cleaner.

5. Test for high fuel pump pressure.

6. Disassemble carburetor and check for evidence of vacuum leaks.

7. Check float level.

SURGING CONDITION WITH HOT ENGINE

1. Lean carburetor adjustment. Check idle mixture setting.

2. Check fuel pump pressure and output.

3. Check needle and seat on leak down tester.

4. Check float adjustment.

5. Check for dirty or obstructed jets or fuel passages.

6. Check for loose cluster or jets.

FLAT SPOT OR POOR ACCELERATION

1. Check manifold heat control valve thermostat for correct operation.

2. Check accelerator pump output visually to see if operating.

3. Check accelerator pump adjustment.

4. Check accelerator pump inlet and outlet valves for leakage.

5. Check for seating of accelerator pump plunger vent ball.

6. Check accelerator pump passages for dirt or obstructions.

ROUGH IDLE

1. Check speed and mixture adjustment.

2. Check mixture screws for wear or burrs.

3. Check for manifold gasket leaks.

4. Check vacuum and choke heat connection.

5. Check operation and setting of choke system.

6. Check idle passage and throttle bore for carbon and dirt.

7. Check float adjustment.

SERVICE SPECIFICATIONS

Carburetor Model	Float Level	Float Drop	Idle Vent	Vacuum Break	Choke Rod	Unloader	Stat Setting	Pump Rod	Secondary Throttle Lever
BV									
7024164	1-9/32" ± 1/32"	1-3/4" Min.	.040" ± .010"	.142" ± .017"	.060" + .015"	.230" .030"			
7024166	1-9/32" ± 1/32"	1-3/4" Min.	.040" + .010"	.142" ± .017"	.060" + .015"	.230" ± .030"			
2GC									
7023071	5/8" ± 1/16"	1-3/4" Min.	1-17/64" ± 1/64"		.080" ± .010"	.160" ± .030"	Index	1-21/64" = 1/32"	
7024062	5/8" ± 1/16"	1-3/4" Min.	1-17/64" ± 1/64"		.070" + .010"	.160" ± .030"	Index	1-21/64" ± 1/32"	
AFB									
7023071	5-16" ± 1/32"	23/32" Min.			Choke Piston Flush To 1/64 Below Cylinder Outer Lip	.150" + .030"	One Notch Rich	In Center Hole	.020" ± .010"
7024062	5-16" + 1/32"	23/32" Min.				.150" ± .030"		.300" .030"	

8. Check for secondary throttle sticking (4 barrel).

9. Check engine compression.

10. Check spark plug gaps.

IMPROPER HIGH SPEED PERFORMANCE

1. Check spark plugs for correct gap and condition.

2. Check distributor points.

3. Check fuel pump output and pressure.

4. Check filter for restriction or plugging.

5. Check carburetor for evidence of internal vacuum leaks.

6. Check float level adjustment.

7. Check high speed passages for dirt or obstruction.

FLOODING OR LEAKING

1. Check for foreign material in needle and seat area.

2. Check needle and seat on leak down tester.

3. Check float adjustment (make sure float is not binding or rubbing).

4. Check for leaking or collapsed float.

5. Check for cracked bowl or loose passage plugs.

FUEL PUMP

6 CYL. AND V-8

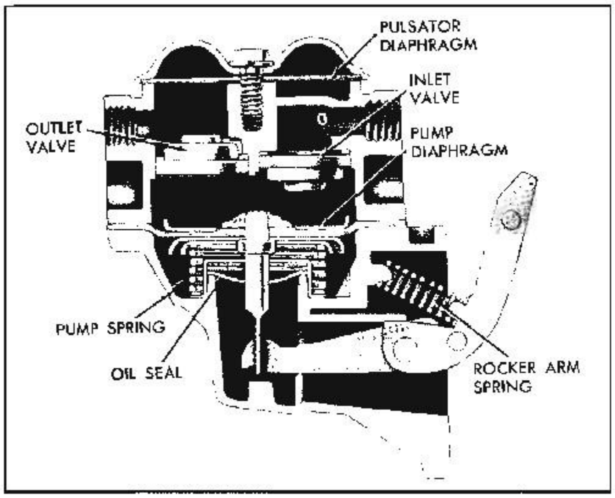

Fig. 6B-102 Schematic View of Fuel Pump 6 Cyl.

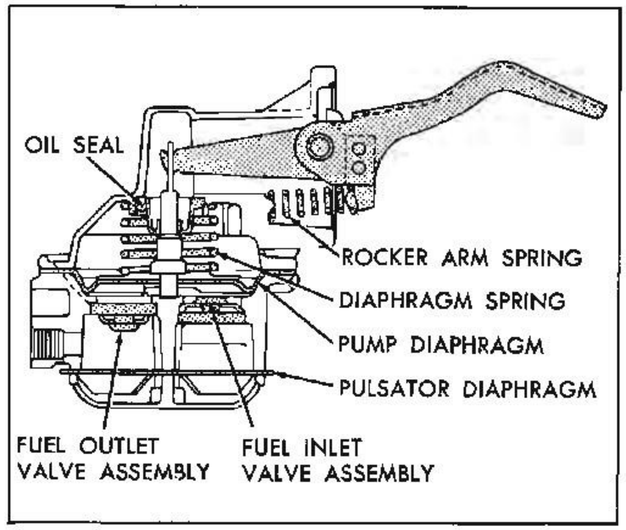

Fig. 6B-103 Schematic View of Fuel Pump V-8

DESCRIPTION (Figs. 6B-102 & 6B-103)

The rocker arm spring keeps the rocker arm in constant contact with the eccentric (behind the third lobe of the camshaft, 6 cyl.; bolted to the front of the camshaft, V-8) so that the rocker arm moves up and down as the camshaft rotates. As the 6 cyl. pump rocker arm is moved upward and V-8 pump rocker arm downward, it bears against a link which is also pivoted on the rocker arm pin. The link is hooked to the diaphragm pull rod so that the diaphragm is moved away from the fuel chamber and the diaphragm spring is compressed. The enlarging fuel chamber moves gasoline from the tank through the tubing inlet valve and into the space below the diaphragm.

As the rotating eccentric permits the rocker arm to move away from contact with the link, the compressed diaphragm spring is free to move the diaphragm upward, 6 cyl.; downward V-8 to expel the fuel through the outlet valve to the carburetor bowl.

Because the diaphragm is moved upward, 6 cyl.; downward V-8 only by the diaphragm spring, the pump delivers fuel to the carburetor only when the pressure in the outlet line is less than the pressure maintained by the diaphragm spring. Fuel is delivered to the carburetor only when the needle valve is open. When the needle valve is closed by pressure of fuel on the float, the pump builds up pressure in the space below the diaphragm and in the outlet tube until the diaphragm spring is compressed. The diaphragm then remains stationary until more fuel is required.

OVERHAUL AND ADJUSTMENT

(Fig. 6B-104)

DISASSEMBLY

1. Scratch locating marks on fuel cover and pump body so that inlets and outlets will be properly located when pump is reassembled.

2. Place pump in soft jawed vice.

3. Remove bolt and washer from pulsator cover plate. Remove pulsator cover and diaphragm from pump cover.

4. Remove pump cover screws except any two that are diametrically opposite.

5. Press down firmly on the cover to hold the diaphragm spring compressed and remove the remaining two screws. Release the cover slowly and remove cover assembly.

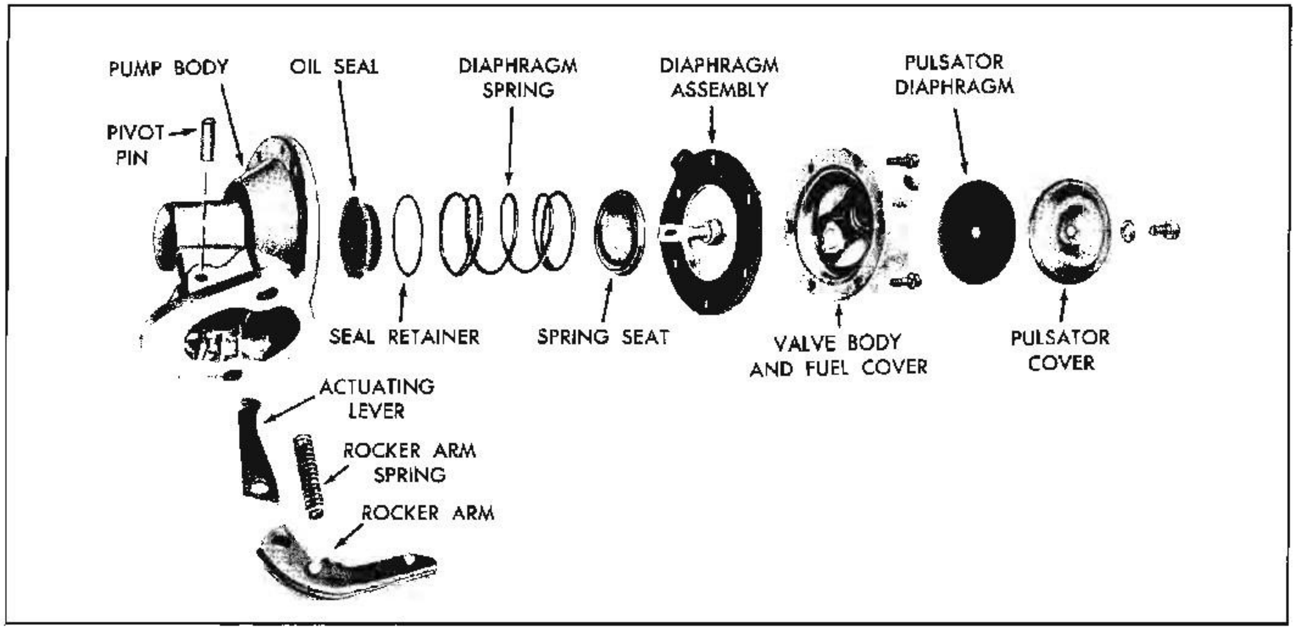

Fig. 6B-104 Typical Fuel Pump - Exploded View

6. Drive out rocker arm pin with a tapered drift after removing sufficient staked metal from the pin. Be sure to leave sufficient metal for restaking.

7. Remove rocker arm, rocker arm spring and link.

8. Remove diaphragm assembly and diaphragm spring.

9. Using a small chisel, round file or small grinding wheel, remove metal from around oil seal retainer which was displaced by staking during assembly. Pull out seal and seal retainer using a hooked shaped tool.

CAUTION: Use care not to damage oil seal seats.

10. Remove metal displaced by staking around inlet and outlet valves. Pry valves and cages out with screwdriver blade. Lift out gaskets.

CLEANING AND INSPECTION

1. Clean and rinse all metal parts in solvent. Blow out all passages with compressed air.

2. Inspect pump body, cover and pulsator cover for cracks, breakage or distorted flanges. Examine all screw holes for stripped or crossed threads. If any of these three parts are damaged, the pump should be replaced.

3. Inspect rocker arm, link and pin for wear.

ASSEMBLY

1. Install new oil seal and retainer in pump body and press firmly in place.

2. Stake die cast lip in four places to retain seals.

3. Position link and rocker arm in pump body with hook of link pointing toward top of pump.

4. Align holes and drive rocker arm pin through rocker arm.

5. Install small washer on rocker arm pin and restake pin securely.

6. Install inlet and outlet gaskets and valves in pump cover. Press valve and cage assembly against gasket and stake in position.

7. Soak pump diaphragm in clean kerosene. Fuel oil may be used, but do not use shellac or sealing compound.

8. Place pump body in soft jawed vise.

9. Place diaphragm on bench with pull rod pointing up. Position spring over pull rod.

10. Pick up diaphragm and spring as an assembly and push pull rod through oil seal into body. Be sure

diaphragm spring is seated in body. Have flat of pull rod parallel to flat of link with the diaphragm flush with the body. With palm of hand, turn the diaphragm 90°, or until flat of pull rod is perpendicular to pump link. This motion should engage the pull rod "eye" with the link hook. If not, repeat this procedure until the connection is made.

CAUTION: Extreme care should be used to avoid damaging oil seal.

11. Position rocker arm spring between projection on rocker arm and conical projection on body.

12. Install pump cover on body making sure that scratch marks on cover and body line up. Push on rocker arm until diaphragm is flat across body flange. Install cover screws and lockwashers loosely until screws just engage lockwashers. Push rocker arm through its full stroke and hold in that position while tightening cover screws securely.

NOTE: Diaphragm must be flexed before tightening cover screw or pump will deliver too much pressure.

13. Place new pulsator diaphragm on pump body. Install pulsator cover with bolt and lockwasher.

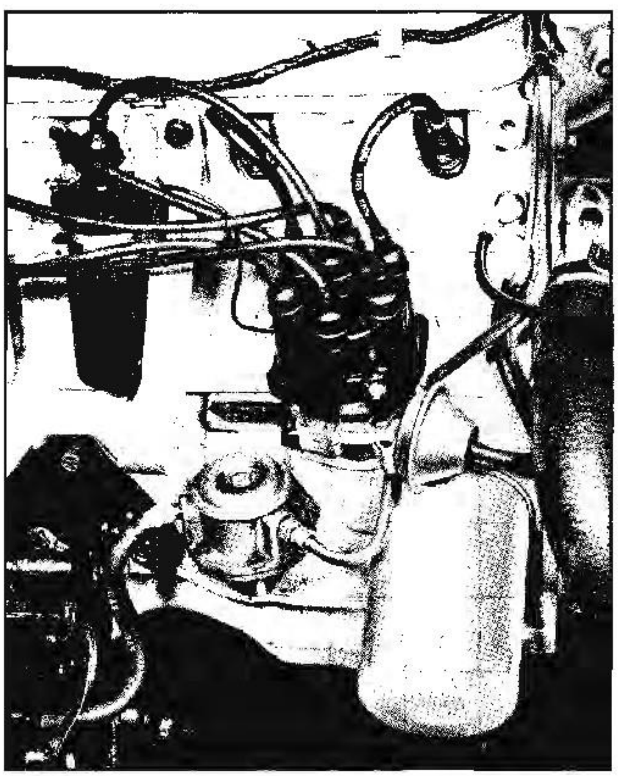

Fig. 6B-105 Fuel Pump Installed 6 Cyl.

TROUBLE DIAGNOSIS AND TESTING

Always check fuel pump while it is mounted on the engine (Figs. 6B-105, 106) and be sure there is gasoline in the tank.

The line from the tank to the pump is the suction side of the system. The line from the pump to the carburetor is the pressure side of the system. A leak on the pressure side of system would be visible because of dripping fuel. A leak on the suction side would not be apparent except for its effect of reducing the volume of fuel on the pressure side.

1. Tighten any loose line connections and look for bends or kinks in lines which could reduce the flow of fuel.

2. Tighten diaphragm flange screws.

3. Disconnect fuel pipe at carburetor. Disconnect distributor to coil primary wire so that the engine can be cranked without firing. Place suitable container at end of pipe and crank engine a few revolutions. If little or no gasoline flows from open end of pipe, then fuel pipe is clogged or pump is inoperative. Before removing pump, disconnect fuel pipe at inlet of pump and at gas tank outlet pipe and blow through them with an air hose to make sure they are clear. Reconnect pipes to pump and retest while cranking engine.

4. If fuel flows from pump in good volume from pipe at carburetor, check fuel delivery pressure to be certain that fuel pump is operating within specified limits as follows:

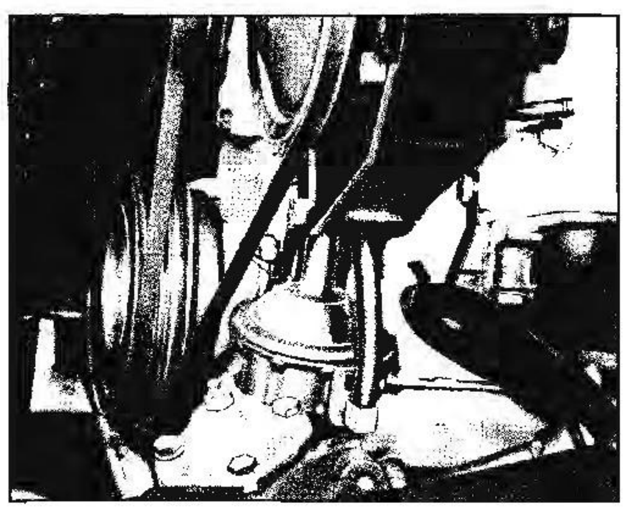

Fig. 6B-106 Fuel Pump Installed V-8

a. Attach a fuel pump pressure test gauge to disconnected end of pump to carburetor pipe.

b. Run engine at approximately 1000 rpm on gasoline in carburetor bowl and note reading on pressure gauge.

c. If pump is operating properly, the pressure will be between 3-1/2 to 4-1/2 psi at 1000 rpms on 6 cyl.; 5-1/4 to 6-3/4 at 1000 rpm on V-8. If pressure is too low or too high, or varies materially at different speeds, the pump should be removed for repair.