FUEL—CARBURETION

FUEL SYSTEM

GENERAL

For 1977, three carburetors have been added. The Model BBD 2V carburetor is standard equipment on Cherokee and Truck six-cylinder engines. Altitude compensated carburetors are used on engines in vehicles sold for use at altitudes above 4000 feet. The six-cylinder altitude carburetor is a variation of the Model YF 1V. The eight-cylinder altitude carburetor is the Model 2150, which is a derivative of the standard Model 2100.

Proper adjustment settings for all carburetors are accompanied by a tolerance range which may be used when adjusting a carburetor not functioning in an acceptable manner.

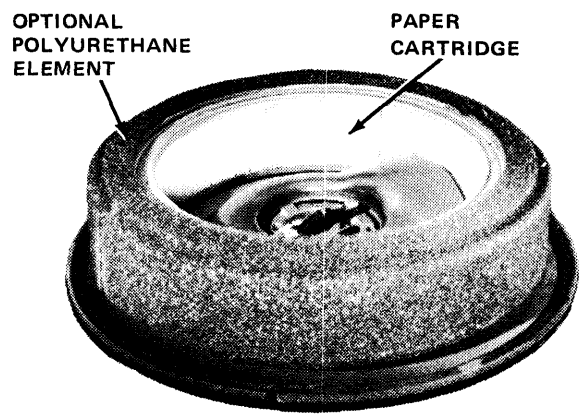

Fig. 4-1 Air Cleaner with Optional Polyurethane Wrap

AIR CLEANER

The air cleaner element assembly consists of a paper cartridge. A polyurethane wrap is available for the paper element for heavy-duty use (fig. 4-1).

In order for the air cleaner to function properly, it must be serviced periodically. A dirty element will restrict airflow to the carburetor and can create an overly rich mixture. It will also cause excessive fuel consumption.

The air cleaner should be inspected regularly and cleaned when necessary. Replace the element every 15,000 miles on Cherokee, Wagoneer, and Truck models and every 30,000 miles on CJ models. If the vehicle is operated under dusty conditions, check the condition of the air cleaner element assembly more frequently and service if dirty.

To clean the polyurethane element, first carefully remove it from the paper cartridge and wash it in solvent. Wrap the element in a clean, dry cloth and squeeze to remove all possible solvent. Do not wring the element as it may tear.

To clean the paper cartridge, first shake out accumulated dirt—DO NOT WASH. Use compressed air and carefully blow through the element in the reverse direction of normal airflow.

After cleaning, oil the polyurethane element liberally with engine oil (SAE 10W 30) and squeeze to evenly distribute the oil through the element and to remove excess oil. The element should be slightly dampened with oil. Install the polyurethane element on the paper cartridge with the edges of the polyurethane element over the plastic end plates of the paper cartridge.

Replace the air cleaner paper cartridge more frequently if there is any apparent damage or evidence of

plugging. At the same time, inspect the polyurethane element and replace it if torn or otherwise damaged.

FUEL FILTERS

All carburetors are protected against the entry of dirt and other foreign matter through the fuel inlet by a replaceable 15-micron, pleated paper filter which is located in the carburetor fuel inlet line and is secured by two short rubber hoses and clamps. The filter should be replaced every 16,000 miles.

All models have a fuel return system which requires an extra nipple on the fuel filter to route excess vapor back to the fuel tank. Refer to Fuel Return System section.

All vehicles use a woven Saran sleeve-type filter which is attached to the end of the fuel outlet tube inside the fuel tank. This filter is rated at 65 microns and repels water. Under normal conditions it requires no maintenance or service.

FUEL TANK

The fuel tank on Cherokee, Wagoneer, and Truck models is suspended from the frame by a single steel strap and front and rear brackets. On CJ-5 and CJ-7 Models the fuel tank is attached to the frame by brackets and bolts. The brackets are attached to the tank at the seam flange. The various fuel tank and venting arrangements used on California vehicles are illustrated in figures 4-2, 4-3, and 4-4. 49-state vehicles, except California vehicles, use the same tank design without vapor vent lines or liquid check valve.

The fuel tank is an external expansion type. Fuel tank venting for CJ models and all California vehicles is accomplished by vapor lines which lead to a liquid check valve. The vapor lines are located so that during any inclination of the vehicle at least one line will be open. Venting for all other vehicles is through the fuel tank filler cap.

Fuel Tank Capacities (Gallons)

CJ Models	15.5
Wagoneer, Cherokee	22
Truck	19

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Fuel Tank Sending Unit

This assembly utilizes a float pivoted to an electrical contact that rides on a wire resistance element to electrically signal the fuel gauge, indicating the level of fuel in the fuel tank.

Fuel pickup and fuel return system nipples, and the sending wire connection are mounted on the sending unit mounting cover which is secured to the fuel tank with a locking ring.

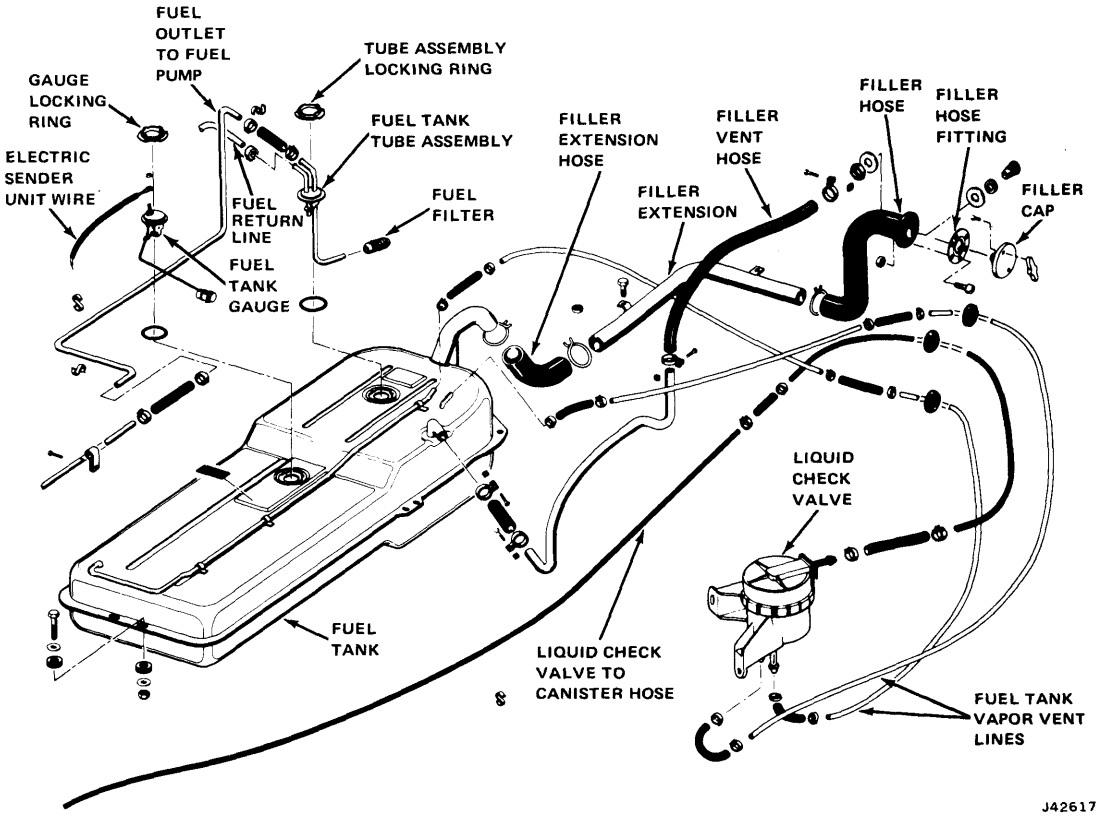

Fig. 4-2 Fuel Tank and Vent Lines—Cherokee and Wagoneer—California Shown

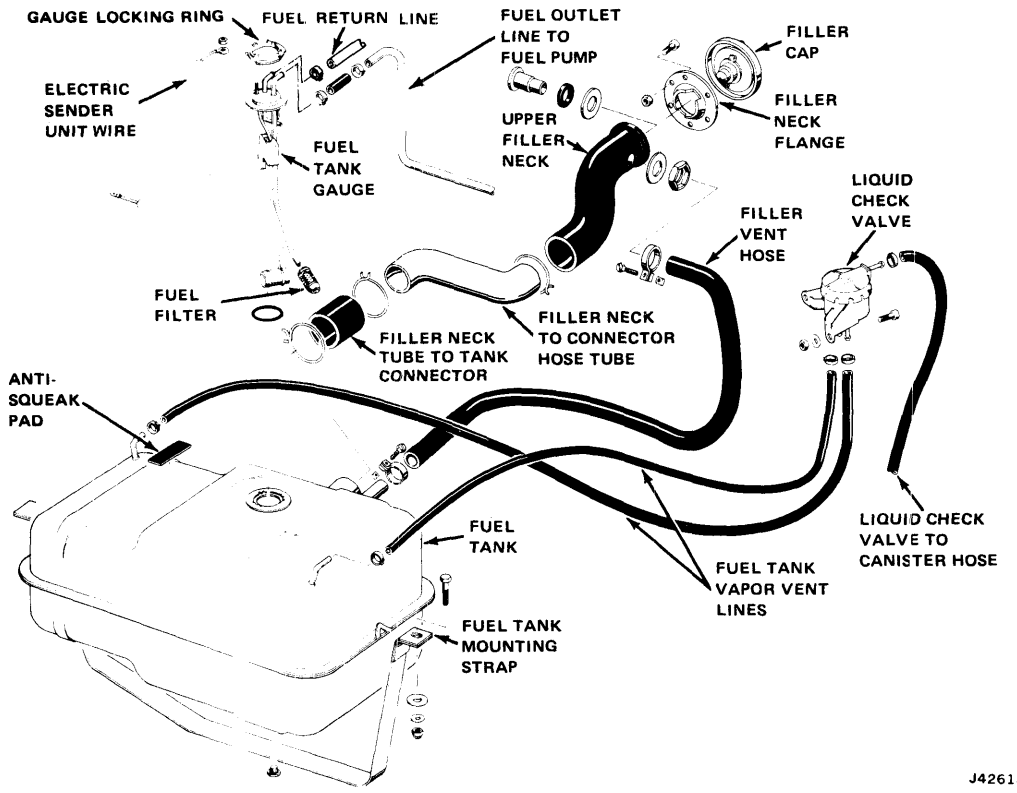

Fig. 4-3 Fuel Tank and Vent Lines—Truck—California Shown

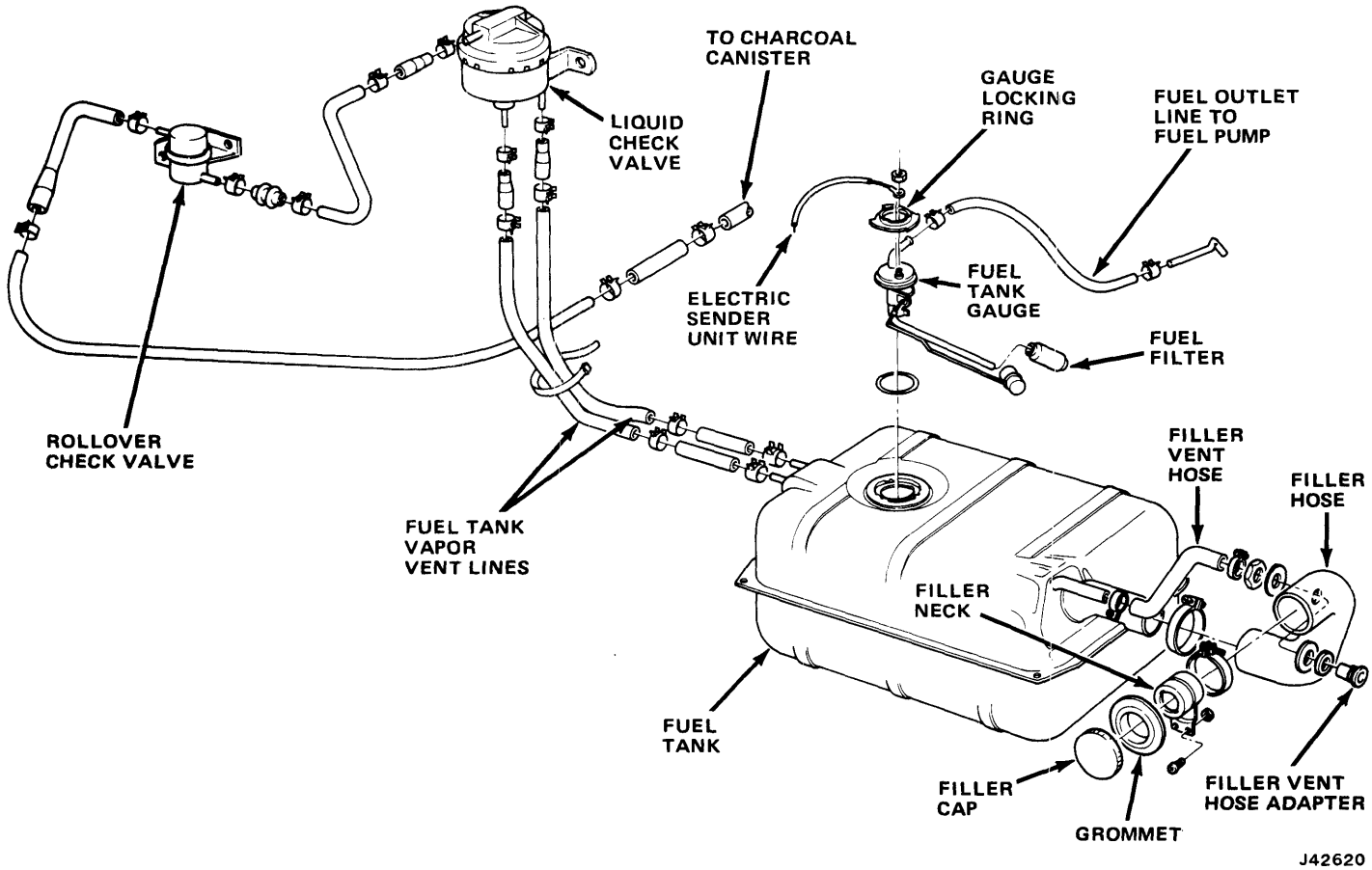

Fig. 4-4 Fuel Tank and Vent Lines—CJ-5 and CJ-7

To replace the fuel sending unit, the fuel tank must be removed.

Fuel Tank Filler Tube

The filler neck Nationwide CJ models and all California Cherokee, Wagoneer and Truck models incorporates a restrictor to prevent entry of nozzles used on leaded fuel gasoline station pumps. The restrictor reduces the size of the filler neck to a small opening which is covered by a trap door (fig. 4-5). The small diameter unleaded fuel pump nozzle can pass through the restrictor opening and push open the restrictor trap door, allowing the fuel tank to be refilled. In this way, the catalytic converter is protected from contamination by leaded fuel.

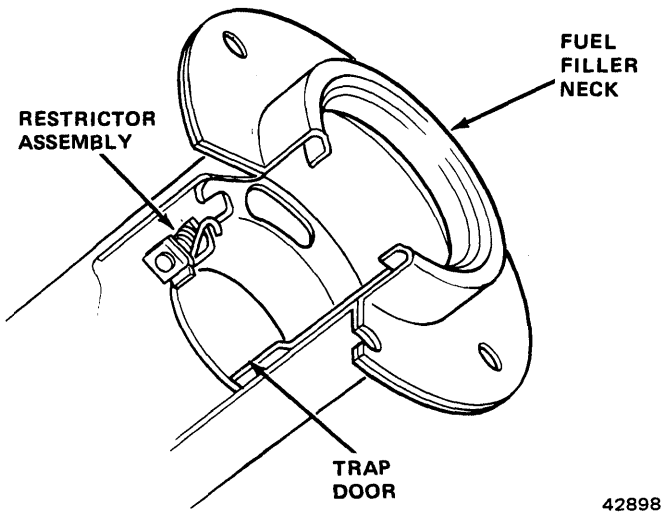

Fig. 4-5 Filler Neck Restrictor

All CJ models are designed to use unleaded fuel even though only some CJ models have catalytic converters.

The filler tube opening is located at the right rear body panel on CJ-5 and CJ-7 models. On Cherokee and Wagoneer models, the filler tube opening is located at the left rear quarter panel. On Truck models, it is located at the left side of the pickup box.

The filler tube is connected to the fuel tank inlet by a rubber hose and secured with clamps.

All fuel tanks are equipped with a filler tube vent hose which extends from the filler tube to a fitting at the top of the tank. The purpose of this vent is to provide easier filling by relieving the air displaced as the tank is filled.

Fuel Tank Filler Cap

California Cherokee, Wagoneer, Truck, and All CJ Models

The filler cap incorporates a two-way relief valve which is closed to atmosphere under normal operating conditions. The relief valve is calibrated to open only when a pressure of 0.75 to 1.5 psi or a vacuum of 1.1 to 1.8 inches of Hg occurs within the tank. When the pressure or vacuum is relieved, the valve returns to the normally closed position.

Fuel Tank Filler Cap

49-State, Except CJ Models

This filler cap is vented externally since these vehicles do not have a closed fuel tank vent system.

It is normal to occasionally encounter an air pressure release when removing the filler cap.

Fuel Tank Vent—California Cherokee, Wagoneer, Truck and All CJ Models

A closed fuel tank vent system prevents raw fuel vapor from entering the atmosphere. Fuel vapor from the tank is routed through the vent lines at the top of the tank to a liquid check valve (fig. 4-6).

The liquid check valve incorporates a float and Viton needle assembly. In the event that liquid fuel enters the check valve, the float will rise and force the needle upward to close the vent passage and prevent fuel flow through the valve.

After passing through the check valve, the fuel vapor is routed forward through a vent line to a charcoal canister in the engine compartment.

The fuel vapors are then drawn into the air cleaner snorkel and burned along with the fuel-air mixture.

On CJ models, a rollover check valve is mounted adjacent to the liquid check valve (fig. 4-4). The rollover check valve contains a stainless steel ball loose within guides, which drops to seat a plunger when the unit is inverted (fig. 4-7). The bottom of the unit is conical.

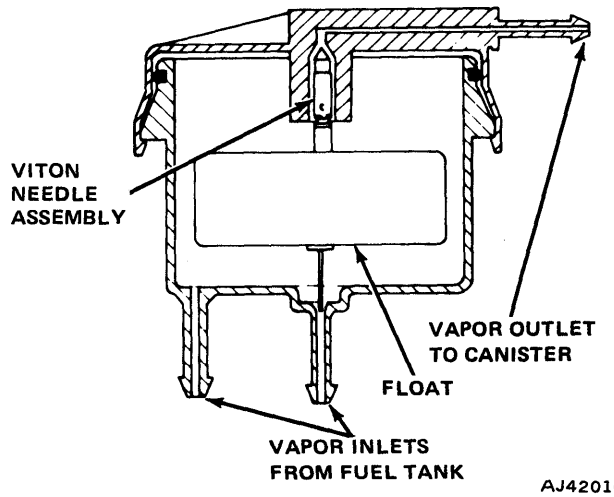

Fig. 4-6 Liquid Check Valve

FUEL RETURN SYSTEM

All models use a fuel return system to reduce the possibility of high temperature fuel vapor problems. The fuel return system consists of a special fuel filter and a return line to the fuel tank (fig. 4-8).

The special fuel filter has an extra outlet nipple connected to the fuel return line. The fuel return line is

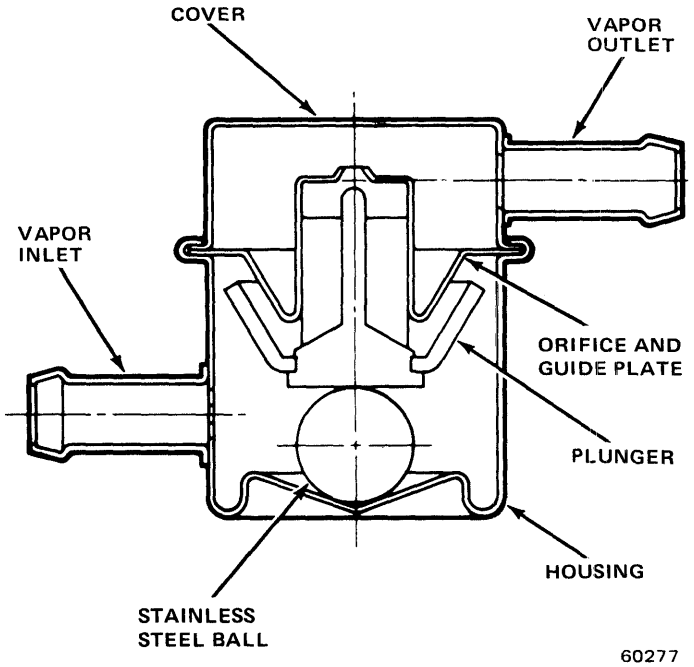

Fig. 4-7 Rollover Check Valve—Open

routed back to the fuel tank, where it attaches to an extra nipple on the fuel tank sending unit. During normal operation, a small portion of fuel is returned to the tank. During periods of high underhood temperatures, vaporized fuel is returned to the tank and not passed through the carburetor.

The extra nipple on the special fuel filter should be positioned upward to ensure proper fuel system operation.

FUEL PUMP

A single-action, stamped fuel pump is used for all engine applications.

The fuel pump rocker arm is activated by an eccentric on the engine camshaft and provides a steady supply of fuel at a constant pressure to the carburetor.

When the carburetor fuel inlet needle closes, accumulation of fuel in the pump extends the diaphragm, compressing the diaphragm spring. This action causes the rocker arm linkage to become inoperative until the pressure on the diaphragm and spring is reduced. The fuel pump discharge pressure is thus controlled by the diaphragm spring.

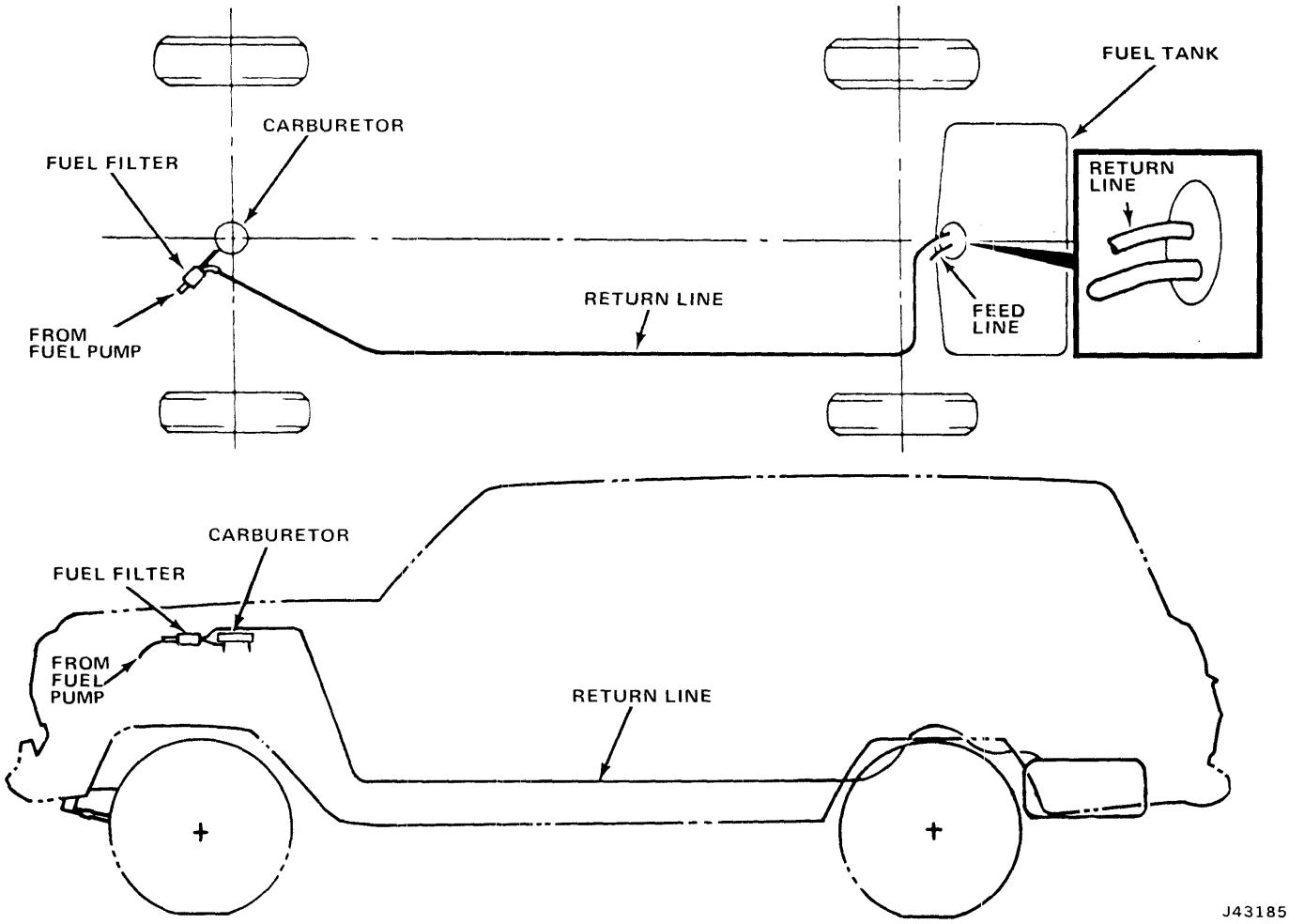

Fig. 4-8 Fuel Vapor Return System—Typical

NOTE: *Fuel pumps are not to be overhauled. Prior to replacement of a fuel pump assembly suspected to be defective, test for specific requirements as outlined in the following test procedures.*

Fuel Pump Testing

Be sure the in-line fuel filter is not clogged before making tests. The following tests will determine if the fuel pump requires replacement.

Pressure Test

(1) Remove air cleaner assembly.

(2) Disconnect fuel inlet line or fuel filter at the carburetor.

(3) Disconnect fuel return line at fuel filter and plug nipple on filter.

NOTE: *Use care to prevent combustion due to fuel spillage.*

(4) Connect pressure gauge, restrictor, and flexible hose (fig. 4-9) between fuel filter and carburetor.

(5) Position flexible hose and restrictor so fuel can be discharged into suitable graduated container.

(6) Before taking pressure reading, operate engine at curb idle rpm and vent the system into the container by momentarily opening hose restrictor.

(7) Close hose restrictor, allow pressure to stabilize, and note gauge reading. Gauge should indicate 4 to 5 psi for six-cylinder engines, and 5 to 6.5 psi for eight-cylinder engines.

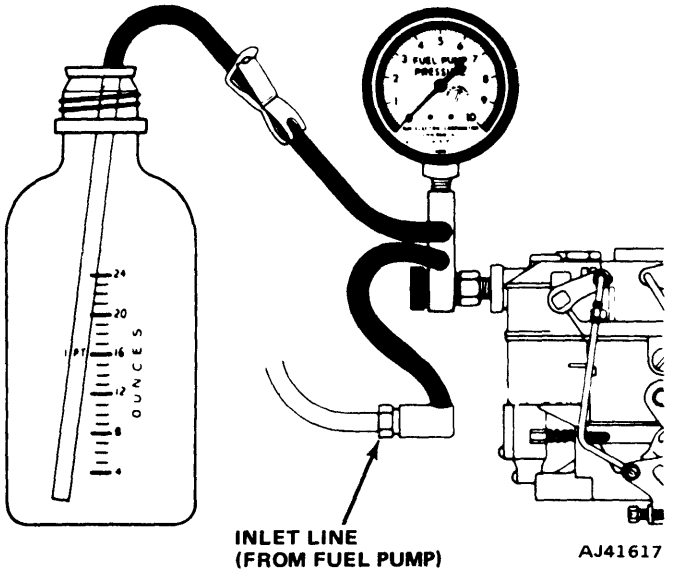

Fig. 4-9 Fuel Pump Testing

NOTE: *If the pump pressure is not within specification and the fuel lines and filter are in satisfactory condition, the pump is defective and should be replaced. If the pump pressure is within specifications, perform the capacity and vacuum tests.*

Capacity (Volume) Test

If fuel pump pressure is within specification, test the capacity (volume) as follows:

(1) Operate engine at curb idle rpm.

(2) Open hose restrictor and allow fuel to discharge into graduated container for 30 seconds, then close restrictor.

NOTE: *At least one pint of fuel should have been discharged. If pump volume is less than one pint, repeat test using an auxiliary fuel supply and a new fuel filter. If the pump volume meets specification while using the auxiliary fuel supply, check for a restriction in the fuel supply from the tank and for proper tank venting.*

Vacuum Tests

Two vacuum tests may be performed on the fuel pump. In the direct connection test, the fuel pump inlet is blocked by the vacuum test gauge. This tests the pump's ability to create a suction. In the indirect connection test, a vacuum gauge is connected into the pump inlet. This test checks for obstruction in the fuel line or the in-tank fuel filter.

Direct Connection Test

(1) Disconnect fuel inlet line at fuel pump.

(2) Connect vacuum gauge to fuel pump inlet.

(3) Operate engine at curb idle rpm and note vacuum gauge reading. Gauge should indicate ten inches of mercury (10 Hg). If the pump vacuum reading is not within specification, the pump is defective and should be replaced.

NOTE: *Vacuum gauge will not register a reading until fuel in carburetor float bowl has been used and pump begins to operate at full capacity.*

Indirect Connection Test

(1) Disconnect fuel inlet line at fuel pump.

(2) Install T-fitting between disconnected line and fuel pump. Attach vacuum gauge to T-fitting.

(3) Operate engine at 1500 rpm for 30 seconds. Vacuum should not exceed 2 inches of mercury.

(4) If vacuum exceeds 2 inches of mercury, check fuel line for blockage. A partially clogged in-tank fuel filter may also be the cause.

NOTE: *Vacuum gauge will not register a reading until fuel in carburetor float bowl has been used and pump begins to operate at full capacity.*

Fuel Pump Specifications

Volume	1 quart of fuel in 1 minute or less
Vacuum	10 inches of mercury (min)
Pressure	Six-Cylinder: 4 to 5 psi V-8 : 5 to 6.5 psi

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CARBURETOR MODEL YF—1 VENTURI

GENERAL

For 1977, some YF carburetors are equipped with a thermostatic pump bleed within the fuel bowl which bleeds off excess accelerator pump discharge during high temperature operation. Refer to Pump Circuit for a complete description.

An altitude-compensated Model YF carburetor is installed on vehicles sold for operation at altitudes over 4000 feet. This carburetor is discussed under its own heading immediately following the standard Model YF.

Identification

The carburetor is identified by a code number and build date which is stamped on the identification tag. Each carburetor build month is coded alphabetically beginning with the letter A in January and ending with the letter M in December (the letter I is not used). The tag is attached to the carburetor and must remain with the carburetor to assure proper identification (fig. 4-10).

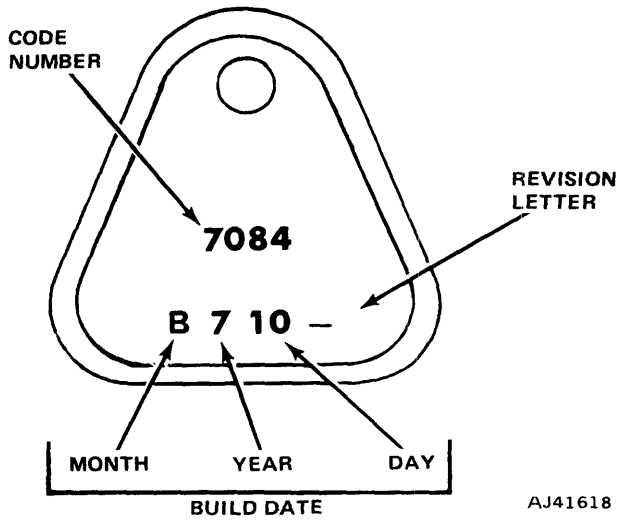


Fig. 4-10 Identification Tag

The Model YF carburetor consists of three main assemblies: air horn, main body and throttle body (fig. 4-11).

The air horn assembly also serves as the fuel bowl cover and contains the automatic choke assembly, choke valve, fuel bowl vents, fuel inlet fitting, float assembly, needle and seat assembly, and solenoid assembly, if equipped.

The main body assembly contains the metering rod and jet, accelerator pump assembly, pump discharge jet, ball and weight, low speed jet, antiperc bleed, economizer, and main discharge nozzle.

The throttle body assembly contains the throttle shaft and lever assembly with coded return spring, curb idle adjusting screw, idle mixture adjusting screw, idle limiter cap, distributor vacuum fitting, and EGR vacuum fitting.

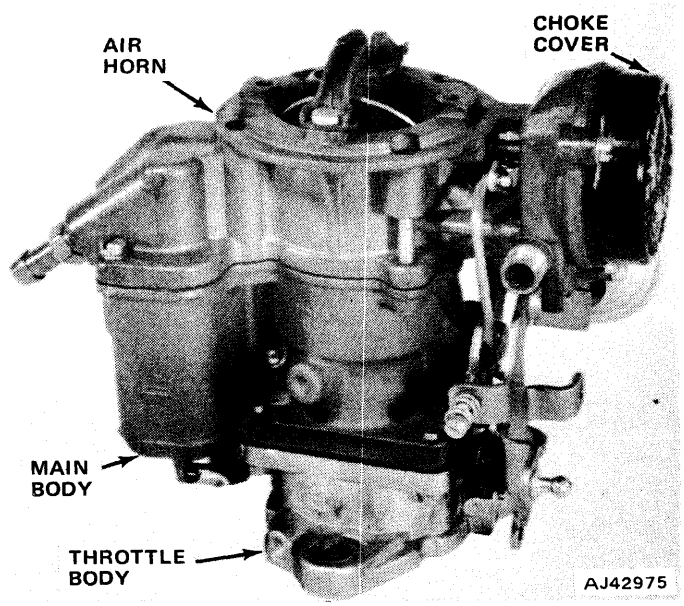


Fig. 4-11 Model YF Carburetor Assembly

CARBURETOR CIRCUITS

Five conventional circuits are used: Float (Fuel Inlet) Circuit, Idle (Low Speed) Circuit, Main Metering (High Speed) Circuit, Pump Circuit, and Choke Circuit.

Float (Fuel Inlet) Circuit

The float circuit maintains the specified fuel level in the bowl to provide an adequate fuel supply to the meter-ing circuits for all engine operating conditions.

A spring-loaded, two-piece needle is used to prevent float vibration from affecting the fuel level. The needle also incorporates a flared tip which is capable of digesting small foreign particles, resulting in minimum fuel leakage or flooding under extreme dirt conditions. The

flared tip needle also reduces wear to extend the normal life of the needle and seat assembly. Special precautions must be taken when adjusting the float level (refer to Float Level Adjustment).

Fuel enters the carburetor through the needle and seat assembly. When the fuel in the bowl reaches a specified level, the float lever pushes the needle toward its seat and restricts the incoming fuel flow to admit only enough fuel to replace that being used (fig. 4-12).

The bowl is vented internally by a tube and a drilled passage, located inside the air horn, to assure correct air pressure above the fuel for all engine operating conditions. The vent automatically compensates for any air cleaner restriction by balancing pressure between the fuel bowl and the incoming air.

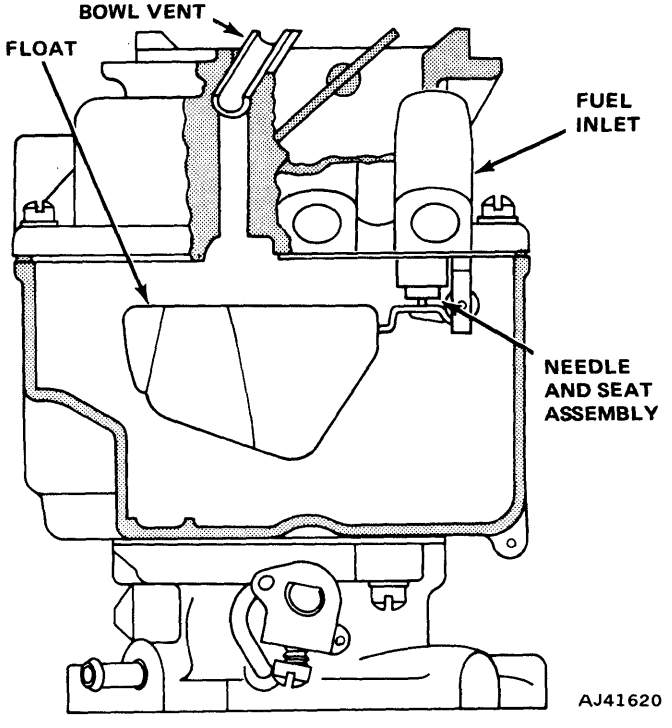


Fig. 4-12 Float Circuit

All YF carburetors have an external fuel bowl pressure vent. Excess bowl pressure is vented from the carburetor to the fuel vapor storage canister. An aluminum wafer, located inside the air horn, is normally seated. When pressure within the fuel bowl becomes excessive, the wafer unseats and pressure is vented through a passage in the air horn. A hose connected to the air horn vent passage sends the excess pressure and fuel vapor to the fuel vapor storage canister (fig. 4-13).

Idle (Low Speed) Circuit

Fuel for idle and early part-throttle operation is metered through the idle circuit. The low speed jet is threaded into the low speed well and may be removed for cleaning.

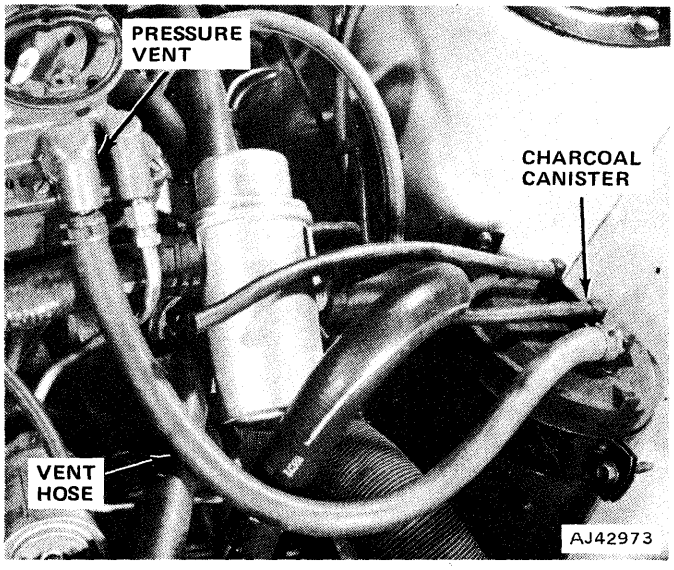


Fig. 4-13 External Fuel Bowl Pressure Vent

Fuel is metered as it enters the lower end of the low speed jet and flows up through the tube. The fuel is then mixed with air which is metered through the bypass. The fuel-air mixture then travels downward through the economizer and past the idle bleed where additional metered air is introduced. The fuel-air mixture continues downward and is discharged below the throttle valve at the idle port opening and the idle mixture adjustment screw port (fig. 4-14).

The idle mixture adjustment screw controls the amount of mixture discharged into the manifold. Turning the screw inward (clockwise) decreases the amount of fuel-air mixture supplied for idle. The idle limiter cap is designed to regulate the adjustment range of the idle mixture adjusting screw, effectively controlling the exhaust emission level at idle speeds to comply with Federal Motor Vehicle Emission Standards.

The idle port is slotted and, as the throttle valve is opened, more of the port is exposed to manifold vacuum to allow an increased discharge of the fuel-air mixture for early part-throttle operation.

Main Metering (High Speed) Circuit

Fuel for most part-throttle and full-throttle operation is supplied through the main metering circuit (fig. 4-15).

The position of the metering rod in the metering rod jet regulates the amount of fuel admitted to the main discharge nozzle. The lower end of the metering rod is calibrated in steps to meter accurately the fuel required. As the metering rod is raised or lowered in the jet, the opening is varied in size to provide the correct amount of fuel proportions to the engine required for part-throttle and full-throttle operations. The metering rod is actuated by mechanical linkage and also by changing manifold vacuum.

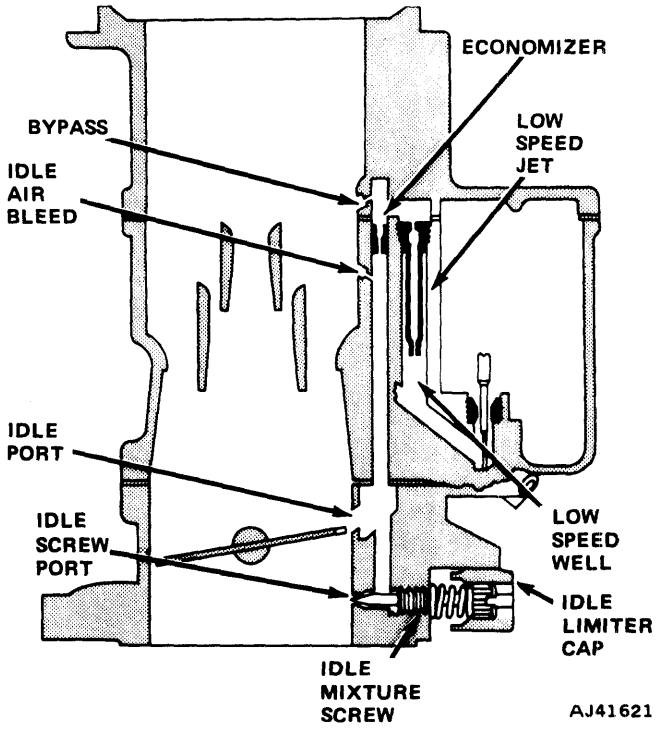


Fig. 4-14 Idle Circuit

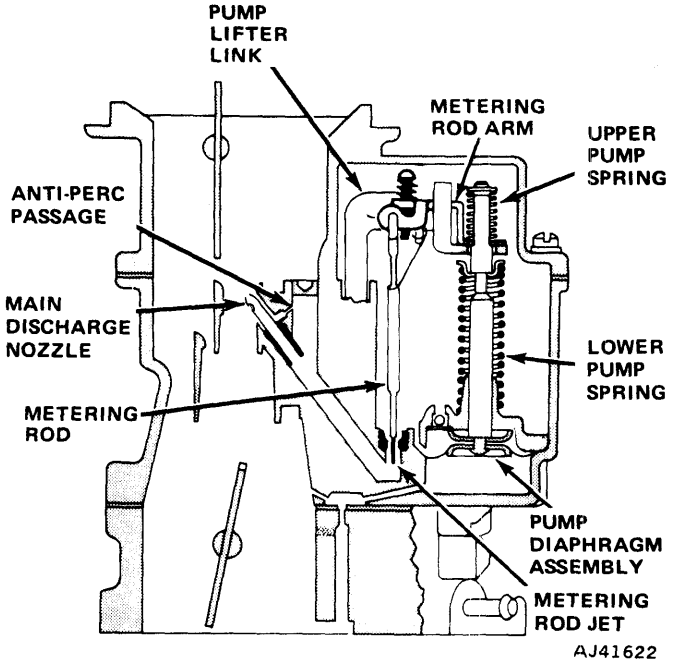


Fig. 4-15 Main Metering Circuit

The restriction and air bleeds within the vacuum passage leading to the pump diaphragm vacuum chamber provide a lower and more uniform vacuum.

To prevent percolation in the low speed well or main discharge nozzle, which may occur during hot engine idle or shutdown, an antiperc passage is used. Its purpose is to vent vapors and relieve pressure to prevent fuel from being forced out of the nozzle and into the intake manifold.

The main discharge nozzle and the antiperc bushing are permanently installed and are not to be removed.

Mechanical Action

During part-throttle operation, manifold vacuum pulls the pump diaphgram assembly downward, holding the metering rod arm against the pump lifter link which is connected by linkage to the throttle shaft. Therefore, the metering rod is mechanically controlled as long as manifold vacuum is strong enough to overcome the tension of the lower pump diaphragm spring. The upper spring assists the lower pump spring on acceleration.

Vacuum Action

Under any engine operating condition in which the tension of the lower pump diaphragm spring is sufficient to overcome the manifold vacuum applied to the pump diaphragm assembly, the metering rod will move upward toward the wide-open or power enrichment position.

Pump Circuit

The pump circuit provides the increased amount of fuel required during acceleration at lower vehicle speeds to assure satisfactory engine performance (fig. 4-16).

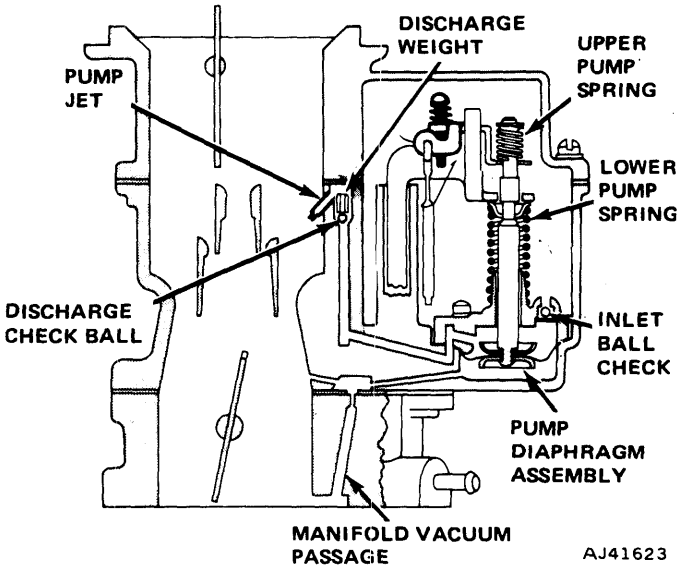


Fig. 4-16 Pump Circuit

The accelerator pump is actuated in the same manner as the metering rod. When the throttle closes, the pump diaphragm moves downward, both by mechanical linkage and by increased manifold vacuum supplied to the underside of the diaphragm. During the downward movement of the diaphragm, fuel is drawn into the chamber above the diaphragm through the inlet check ball. The discharge check ball is seated during the intake stroke to prevent air entering the pump chamber. When

the throttle is opened, manifold vacuum decreases at the underside of the diaphragm and tension of the lower pump diaphragm spring moves the diaphragm upward. The upward movement of the diaphragm is mechanically assisted by the pump lifter link which is connected by linkage to the throttle shaft. During the upward movement of the diaphragm, fuel under pressure is forced through the pump discharge passage, unseats the discharge check ball, and is discharged through the pump jet. The inlet check ball is seated during the discharge stroke to prevent fuel leakage back into the bowl. If the throttle is opened suddenly, the upper pump spring is compressed, resulting in a smooth pump discharge.

A pump relief bushing, located near the top of the pump discharge passage, allows fuel bowl air pressure to enter the passage. The pump relief serves two purposes. One is to prevent fuel from being drawn out of the pump circuit during high speed constant throttle operation. The other is to bleed off a calibrated portion of the pump discharge back to the fuel bowl, thereby regulating the amount of discharge through the pump jet.

A thermostatic pump bleed has been added to the pump circuit of some YF carburetors for 1977. Refer to Specifications. This bleed automatically returns excess fuel to the fuel bowl at underhood temperatures above 67°F. This bleed valve is located inside the carburetor fuel bowl adjacent to the pump discharge check ball and weight (fig. 4-17).

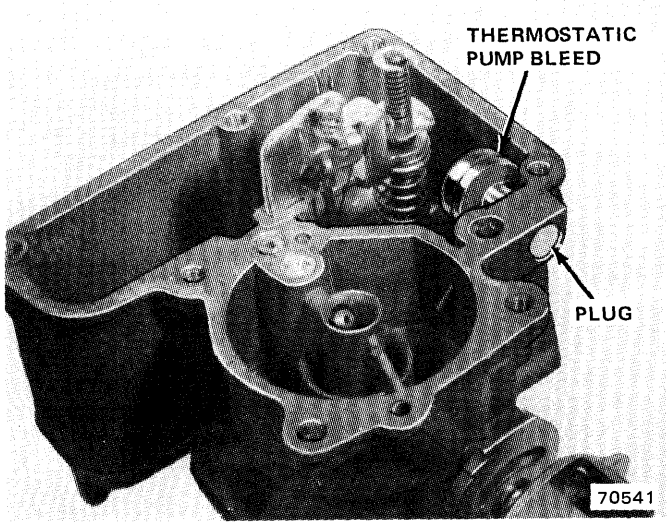


Fig. 4-17 Thermostatic Pump Bleed

Choke Circuit

The automatic choke provides a richer mixture that is necessary for quick cold engine starting and proper warmup performance (fig. 4-18). When the engine is cold, thermostatic coil tension holds the choke valve closed. As the engine is cranked, air pressure against the offset choke valve causes the valve to open slightly against the thermostatic coil tension. Intake manifold vacuum, applied to the choke piston, also tends to pull the choke valve open. When the engine starts, the choke valve assumes a partially open position where thermostatic coil tension is balanced by the pull of vacuum on the piston and force of the air stream against the offset choke valve. This choke valve opening is known as the initial choke valve clearance.

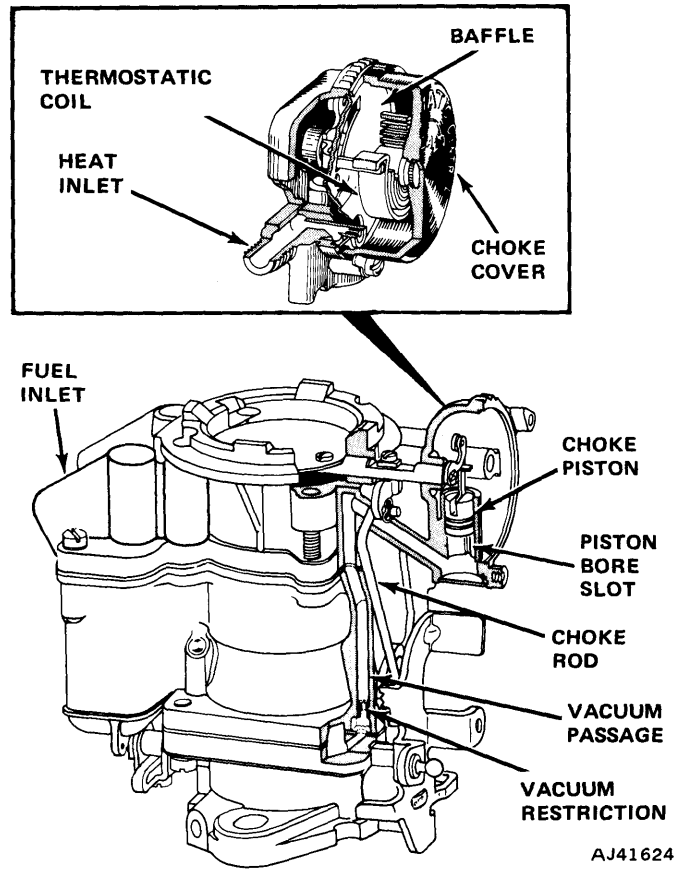


Fig. 4-18 Choke Circuit

As the choke piston moves down in the cylinder, it exposes slots located in the sides of the cylinder. This allows intake manifold vacuum to draw warm air, heated by the exhaust manifold, through the thermostatic coil housing. This warm air causes the thermostatic spring to lose its tension gradually until the choke valve is in a wide-open position.

If the engine is accelerated during the warmup period, the corresponding drop in manifold vacuum allows the thermostatic coil to momentarily close the choke valve to provide a richer mixture.

To prevent stalling during the warmup period, it is necessary to provide a faster idle speed. The fast idle cam, actuated by the choke shaft through connecting linkage, rotates into position against the fast idle screw. The cam is progressively stepped to provide the correct speed in proportion to the choke valve opening. When the choke valve reaches the fully open position, the fast

idle cam rotates free of the fast idle screw, allowing the throttle lever to return to curb idle position.

If the engine floods during starting, the choke valve may be opened manually to clean out excessive fuel in the intake manifold. This is accomplished by depressing the accelerator pedal to the floor and cranking the engine. With the accelerator linkage in this position, a tang on the throttle lever contacts the fast idle cam, causing the choke rod to move upward and open the choke valve a predetermined amount.

All YF carburetors have a choke clean air tube to prevent dust or other contaminants from being brought into the choke housing. The choke clean air tube is fitted through the air horn into the throttle bore above the choke valve. From the air horn, the clean air tube passes under the exhaust manifold where it slips into the choke heater tube (fig. 4-19). In this manner air, filtered by the air cleaner assembly, is pulled into the choke clean air tube, passes through the choke heater tube, and eventually enters the choke housing.

When normal engine operating temperature is reached, the thermostatic coil exerts sufficient pressure against the choke piston lever to hold the choke fully open. Since the choke piston is in the full downward position, enough heated air bypasses through the slots of the piston passage to keep the thermostatic coil heated and the choke valve fully open during continued engine operation.

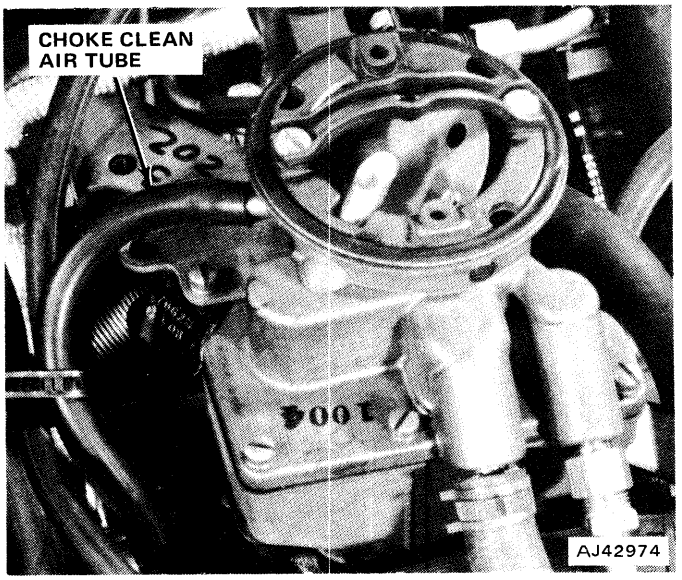


Fig. 4-19 Choke Clean Air Tube

CARBURETOR OVERHAUL

The following procedure applies to complete overhaul, with the carburetor removed from the engine. A complete disassembly is not necessary when performing adjustments. In most cases, service adjustments of individual systems may be completed without removing the carburetor from the engine (refer to Service Adjustment Procedures).

A complete carburetor overhaul includes disassembly, thorough cleaning, inspection and replacement of gaskets and worn or damaged parts. Refer to figure 4-20 for parts identification.

NOTE: *When using an overhaul kit, use all parts included in kit.*

Removal

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

(1) Remove air cleaner.

(2) Remove control shaft from throttle lever and disconnect distributor vacuum line, in-line fuel filter, choke clean air tube, vacuum hoses, pullback spring, and the choke heat tube at the carburetor.

(3) Remove carburetor retaining nuts and remove carburetor.

(4) Remove carburetor mounting gasket, spacer (if equipped), and lower gasket from the intake manifold.

Installation

(1) Clean gasket mounting surfaces of spacer and carburetor. Place spacer between two replacement gaskets and position the spacer and gasket on the intake manifold. Position carburetor on the spacer and gasket and secure it with retaining nuts. To prevent leakage, distortion, or damage to the carburetor body flange, first snug the nuts and then tighten to 12 to 15 foot-pounds torque.

(2) Connect in-line fuel filter, control shaft, choke heat tube, pullback spring, vacuum hoses, choke clean air tube, and distributor vacuum line.

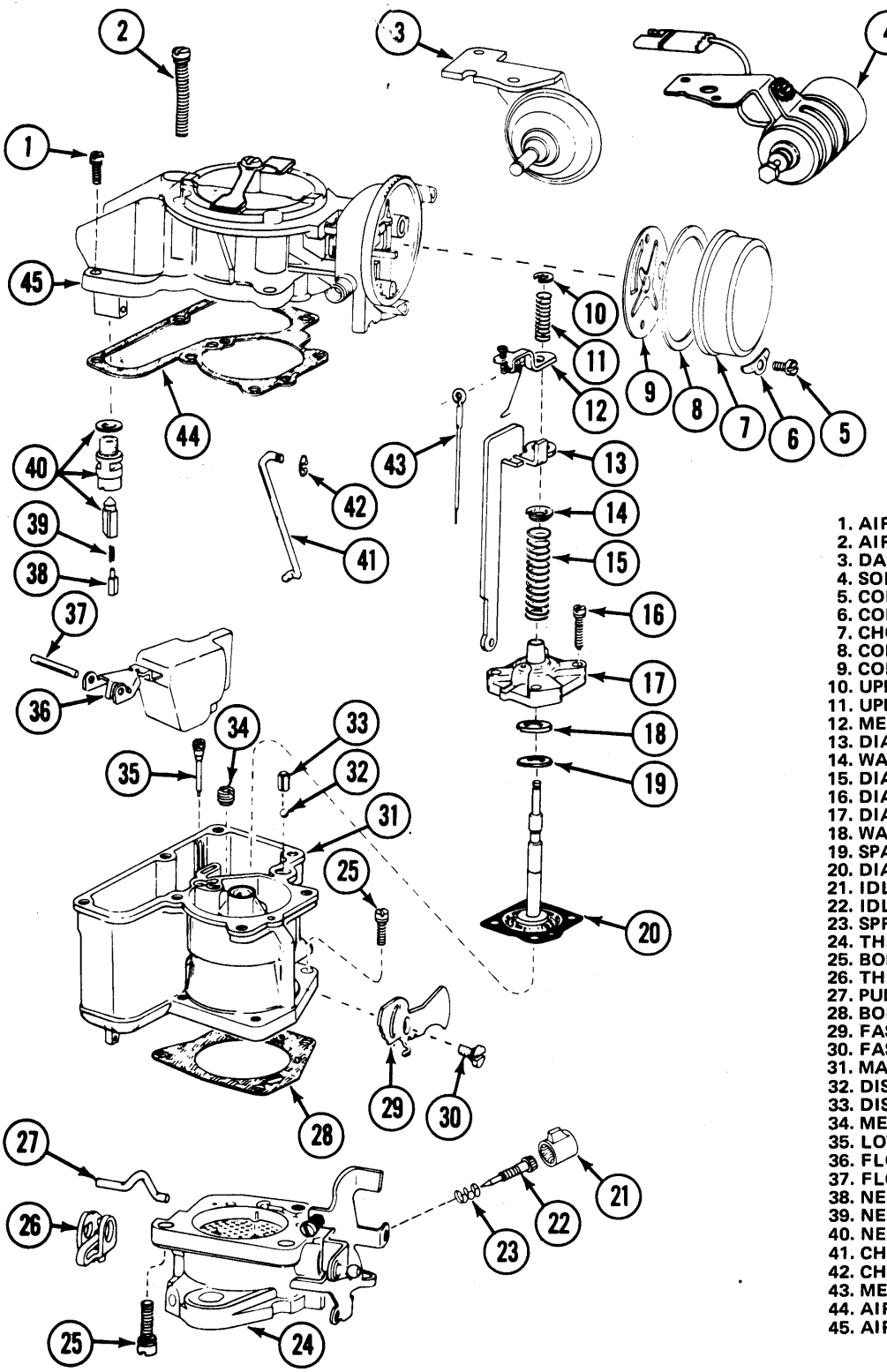
Disassembly

(1) Remove choke cover attaching screws, solenoid bracket assembly, air horn assembly, and air horn gasket (fig. 4-20).

(2) Hold air horn assembly bottom side up, and remove float pin, and float lever and lever assembly. Turn the air horn assembly over and catch the needle pin, spring, an needle.

(3) Remove needle seat and gasket (fig. 4-21).

(4) Remove air cleaner bracket. If choke plate attaching screws are staked, file staked ends and remove screws. Use replacement screws at assembly. Remove choke plate from air horn assembly, choke link lever, and attaching screw. Rotate choke shaft and piston assembly counterclockwise until choke piston is out of choke piston cylinder (fig. 4-22). Remove assembly from air horn. Remove piston pin and piston from choke piston lever and link assembly.



1. AIR HORN SCREW (SHORT)
2. AIR HORN SCREW (LONG)
3. DASHPOT AND BRACKET
4. SOLENOID AND BRACKET
5. COIL HOUSING SCREW
6. COIL HOUSING RETAINER
7. CHOKE COVER
8. COIL HOUSING GASKET
9. COIL HOUSING BAFFLE PLATE
10. UPPER PUMP SPRING RETAINER
11. UPPER PUMP SPRING
12. METERING ROD ARM
13. DIAPHRAGM LIFTER LINK
14. WASHER
15. DIAPHRAGM SPRING
16. DIAPHRAGM HOUSING SCREW (4)
17. DIAPHRAGM HOUSING
18. WASHER
19. SPACER
20. DIAPHRAGM
21. IDLE SCREW LIMITER CAP
22. IDLE MIXTURE SCREW
23. SPRING
24. THROTTLE BODY
25. BODY FLANGE SCREW (3)
26. THROTTLE SHAFT ARM
27. PUMP CONNECTOR LINK
28. BODY GASKET
29. FAST IDLE CAM
30. FAST IDLE CAM SCREW
31. MAIN BODY
32. DISCHARGE BALL
33. DISCHARGE BALL WEIGHT
34. METERING JET
35. LOW SPEED JET
36. FLOAT
37. FLOAT PIN
38. NEEDLE PIN
39. NEEDLE SPRING
40. NEEDLE, NEEDLE SEAT, GASKET
41. CHOKE CONNECTOR ROD
42. CHOKE CONNECTOR ROD RETAINER
43. METERING ROD
44. AIR HORN GASKET
45. AIR HORN

AJ41625

Fig. 4-20 Model YF Carburetor—Exploded View

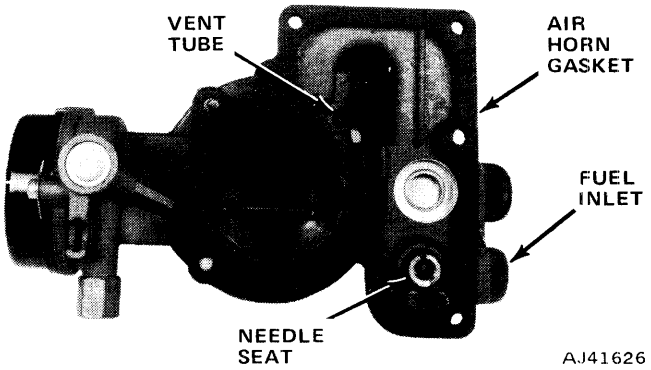


Fig. 4-21 Interior View of Air Horn

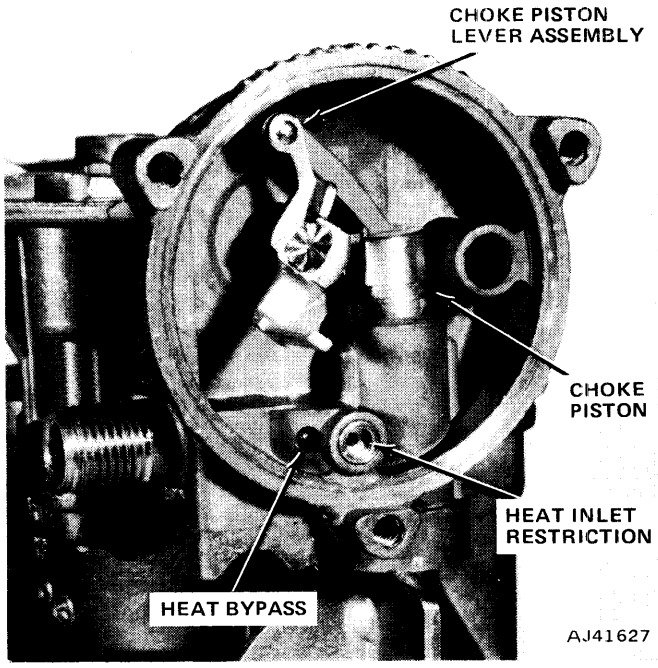


Fig. 4-22 Choke Piston and Lever Assembly

(5) Turn pump main body casting upside down and catch accelerating pump discharge check ball and weight.

(6) Loosen throttle shaft arm screw and remove arm and pump connector link (fig. 4-23).

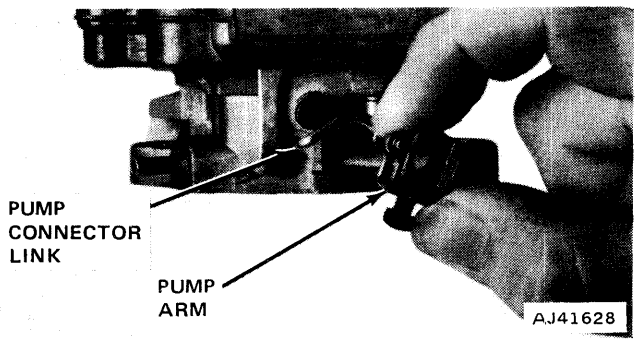


Fig. 4-23 Pump Arm and Link

(7) Remove fast idle cam and shoulder screw.

(8) Remove accelerating pump diaphragm housing screws. Lift out the pump diaphragm assembly, pump lifter link, and metering rod as a unit (fig. 4-24).

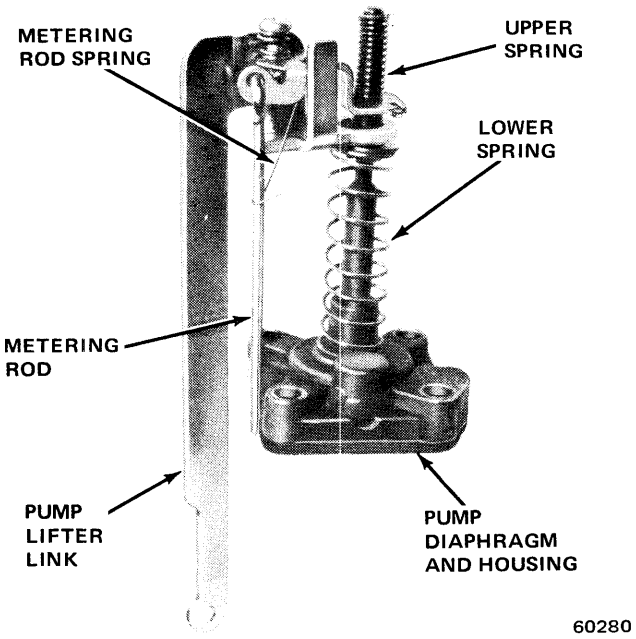


Fig. 4-24 Accelerator Pump and Metering Rod Assembly

(9) Disengage metering rod arm spring from metering rod, and remove metering rod from metering rod arm assembly. Note the location of any washers shimming either spring for proper assembly. Compress upper pump spring and remove spring retainer. Remove upper spring, metering rod arm assembly, and pump lifter link from pump diaphragm shaft. Compress pump diaphragm spring and remove pump diaphragm spring retainer, spring, and pump diaphram assembly from pump diaphram housing assembly.

(10) Remove metering rod jet and lower speed jet.

(11) Remove retaining screws and separate throttle body flange assembly from main body casting. Remove body flange gasket.

(12) Note position of idle mixture limiter cap. Remove limiter cap. Count number of turns to lightly seat needle. This information will be used in assembly. Remove idle mixture screw.

Cleaning and Inspection

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

The cleaning and inspection of only those parts not included in the carburetor overhaul repair kit are covered here. All gaskets and parts included in the repair kit should be installed when the carburetor is assembled

and the old gaskets and parts should be discarded.

Wash all the carburetor parts except the accelerating pump diaphragm in clean commercial carburetor cleaning solvent. If a commercial cleaner is not available, lacquer thinner or denatured alcohol may be used.

If commercial cleaner is used, rinse all parts in hot water to remove all traces of cleaning solvent, then dry them with comressed air. Wipe all parts that cannot be immersed in solvent with clean, soft, dry cloth. Be sure all dirt, gum, carbon, and other foreign matter are removed from all parts.

Force compressed air through all passages of the carburetor.

CAUTION: *Do not use a wire brush to clean any parts of a drill or wire to clean out any openings or passages in the carburetor. A drill or wire may enlarge the hole or passage, changing the calibration of the carburetor.*

Check the choke shaft for grooves, wear, and excessive looseness or binding. Inspect the choke plate for nicked edges and for ease of operation. Make sure all carbon and foreign material have been removed from the automatic choke housing and the piston. Check the operation of the choke piston in the choke housing to be sure it has free movement. Check the throttle shaft in the bore for excessive looseness or binding and check the throttle plates for burrs which prevent proper closure. Check position of throttle plate on shaft to be sure notch in plate is aligned with slotted port in the throttle body flange (fig. 4-25). Inspect the main body, throttle body, air horn, choke housing, and thermostatic spring housing for cracks.

Replace the float if the arm needle contact surface is grooved. If the float is serviceable, polish the needle contact surface of the arm with crocus cloth or steel wool. Replace the float pin if worn. Replace all screws and nuts that have stripped threads. Replace all distorted or broken springs. Inspect all gasket mating surfaces for nicks and burrs. Repair or replace any parts that have a damaged gasket surface.

Assembly

(1) Position replacement body flange gasket and main body casting on throttle body flange. Install attaching screws and tighten evenly.

(2) Install low speed jet and metering rod jet (fig. 4-26).

(3) Install pump diaphragm in pump diaphragm housing.

(a) Position pump diaphgram spring on diaphragm shaft and housing assembly.

(b) Install spring shim washers.

(c) Install spring retainer, pump lifter link, metering rod arm and spring assembly, and upper pump spring on diaphragm shaft.

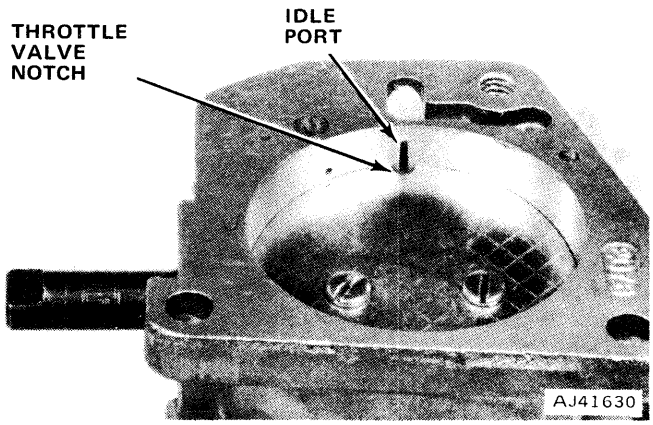


Fig. 4-25 Throttle Valve Alignment

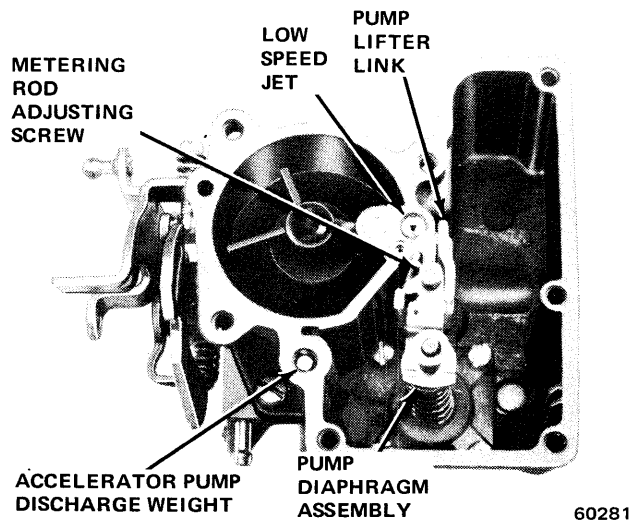


Fig. 4-26 Interior View of Fuel Bowl

(d) Depress spring and install upper pump spring retainer.

(4) Install metering rod on the metering rod arm and place looped end of metering arm spring on metering rod (fig. 4-24).

(5) Align pump diaphragm with diaphragm housing (make sure the holes are aligned) and install housing attaching screws.

(6) Align pump housing, pump lifter link, and metering rod with main body casting.

(7) Install assembly in main body casting, being careful to engage pump lifter link with main body and to insert metering rod in metering rod jet.

(8) Install pump housing attaching screws but do not tighten. Push down on diaphragm shaft to compress diaphragm and tighten attaching screws.

(9) Adjust metering rod, following procedure under Metering Rod Adjustment.

(10) Install fast idle cam and shoulder screw. Install throttle shaft arm and pump connector link or throttle shaft and pump lifter link. Tighten lock screw.

(11) Assemble choke piston and pin to choke piston lever and link assembly. Install choke shaft assembly in the air horn and position piston (fig. 4-20).

(12) Align piston with cylinder and rotate shaft assembly clockwise until piston pin is inside piston cylinder.

(13) Position choke plate on choke shaft and install screws. Do not tighten screws.

(a) Check choke plate movement to be sure it does not bind.

(b) Tighten and stake (or peen) screws to prevent loosening.

(c) Install choke link lever and tighten attaching screw.

(14) Install needle seat and gasket in air horn. With air horn inverted, install needle, pin spring, needle pin, float and lever assembly, and float pin. Adjust float level to specifications.

(15) Place pump check ball and weight in main body casting.

(a) Position new air horn gasket, air horn assembly, and solenoid bracket on main body.

(b) Install and tighten attaching screws.

(16) Install thermostatic coil housing, gasket and baffle plate, identification mark facing outward, with gasket between baffle and coil housing.

NOTE: *Be sure thermostatic spring engages choke lever tang.*

(17) Install retainers and housing screws. Set coil housing index 1/4-turn rich and tighten one screw.

(18) Adjust fast idle cam clearance. Refer to Service Adjustment Procedures.

(19) Loosen choke coil housing screw and set index mark to specification. Tighten all housing screws.

(20) Install air cleaner bracket and attaching screws.

(21) Install choke connector rod and retainer.

(22) Install idle mixture screw. Lightly turn to seat assembly. Do not install limiter at this time.

(23) Adjust choke unloader to specifications. Refer to Service Adjustment Procedures.

SERVICE ADJUSTMENT PROCEDURES

Float Level Adjustment

(1) Remove carburetor air horn and gasket from carburetor.

(2) Invert air horn assembly, and check clearance from top of float to bottom of air horn with float level gauge (fig. 4-27). Hold air horn at eye level when gauging float level. The float arm (lever) should be resting on the needle pin.

CAUTION: *Do not load the needle when adjusting the float. Bend float arm as necessary to adjust the float level (refer to Carburetor Service Specifications for proper clearance).*

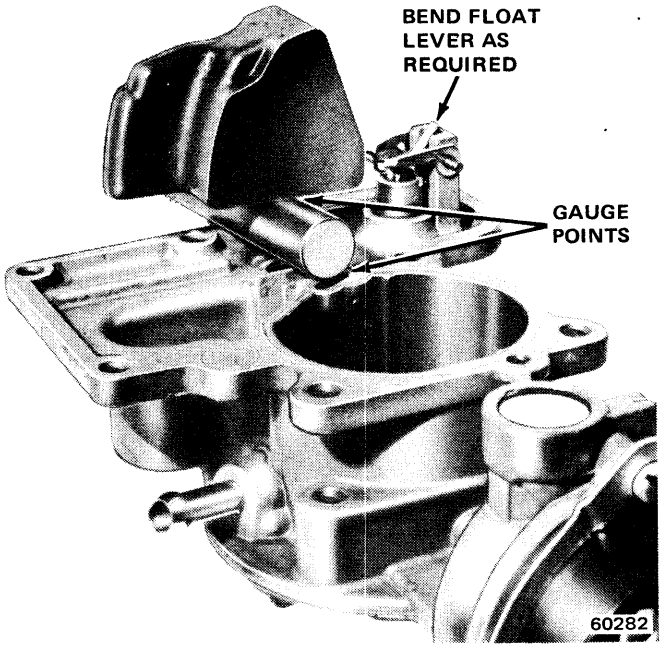


Fig. 4-27 Float Level Adjustment

NOTE: *Do not bend the tab at the end of the float arm. It prevents the float from striking the bottom of the fuel bowl when empty.*

(3) Install carburetor air horn and a new gasket on the carburetor.

Float Drop Adjustment

(1) Remove carburetor air horn and gasket from carburetor.

(2) Hold air horn upright and float hang free. Measure the maximum clearance from top of float to bottom of air horn with gauge. Refer to Carburetor Service Specifications for proper clearance. Hold air horn at eye level when gauging dimension (fig. 4-28).

(3) Bend tab at end of float arm to obtain specified setting.

(4) Install carburetor air horn and new gasket on carburetor.

Metering Rod Adjustment

(1) Remove carburetor air horn and gasket from carburetor.

(2) Back out idle speed adjusting screw until throttle plate is closed tight in throttle bore.

(3) Press down on end of pump diaphragm shaft until assembly bottoms.

(4) While holding diaphragm assembly, turn rod adjustment screw until metering rod just bottoms in body casting (fig. 4-29).

NOTE: *It may be helpful to scribe a line on the metering rod so that you can accurately determine when the rod is bottomed.*

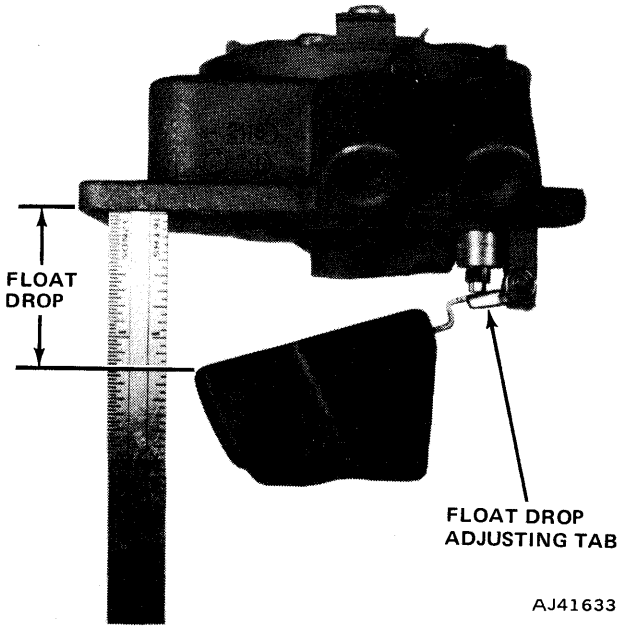


Fig. 4-28 Float Drop Adjustment

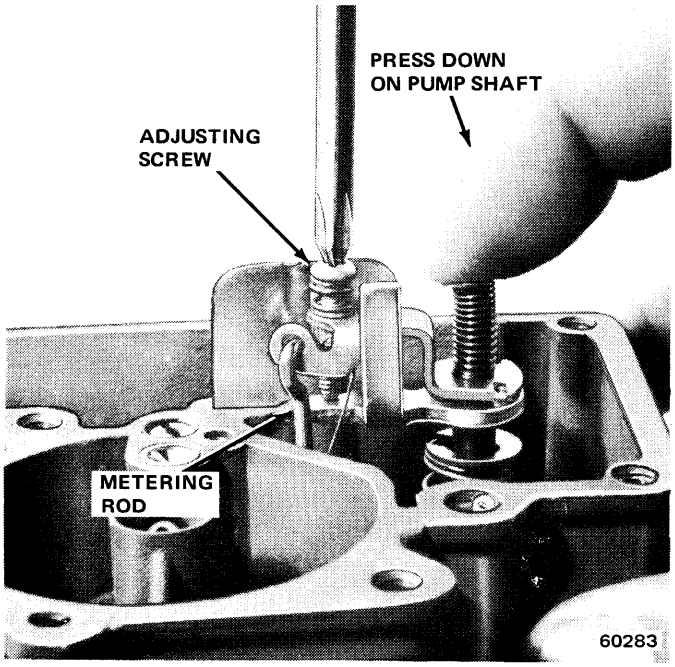


Fig. 4-29 Metering Rod Adjustment

(5) Turn metering rod adjustment screw clockwise one turn for final adjustment.

(6) Install carburetor air horn and replacement gasket on carburetor.

Initial Choke Valve Clearance Adjustment

(1) Bend a 0.025-inch wire gauge at a 90° angle approximately 1/8 inch from end. Partially open throttle and close choke valve to position choke piston at top of its bore.

(2) Holding choke valve fully closed, release throttle and insert wire gauge into piston slot and against outboard side (right side of choke shaft) of piston bore. Push piston downward with gauge until bent end of gauge enters slot in piston bore. With gauge in place, push on choke shaft bimetal lever in counterclockwise direction to move piston upward, locking gauge in place (fig. 4-30).

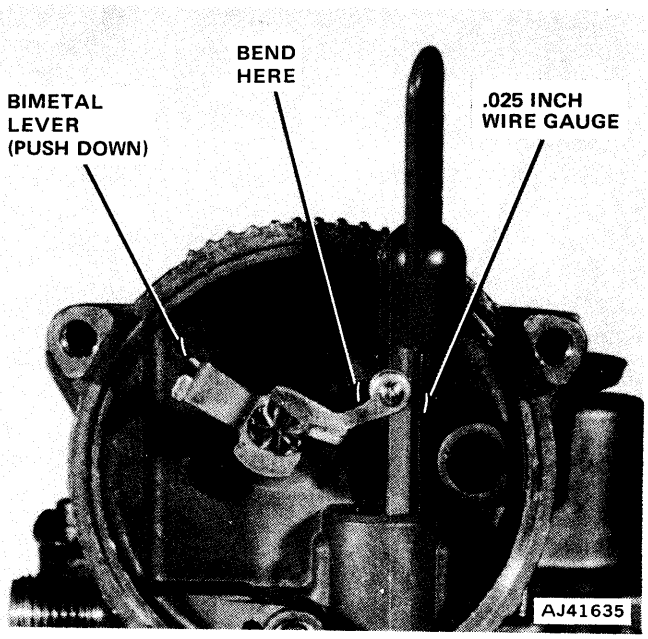


Fig. 4-30 Initial Choke Valve Clearance Adjustment

(3) Measure clearance between lower edge of choke valve and air horn wall. Refer to Carburetor Service Specifications for the correct setting.

NOTE: *It is not necessary to remove air cleaner bracket when measuring clearance between choke valve and air horn wall. Simply position gauge next to bracket.*

(4) Adjust clearance by carefully bending choke piston lever with a pair of needlenose pliers.

NOTE: *Decrease clearance by bending toward piston and increase clearance by bending away from piston.*

(5) Install choke baffle plate (embossed cross outward), coil housing gasket, and coil housing. Be sure that the thermostatic coil properly engages the bimetal lever.

(6) Install coil housing retainers and retaining screws, but do not tighten. Adjust choke as outlined under Automatic Choke Adjustment.

Fast Idle Cam Linkage Adjustment (On or Off Vehicle)

(1) Position fast idle screw on second step of fast idle cam against shoulder of high step (fig. 4-31).

(2) Adjust by bending choke plate connecting rod to obtain specified clearance between lower edge of choke plate and air horn wall. Refer to Carburetor Service Specifications for proper clearance.

NOTE: *It is not necessary to remove air cleaner bracket when measuring clearance between choke valve and air horn wall. Simply position gauge next to bracket.*

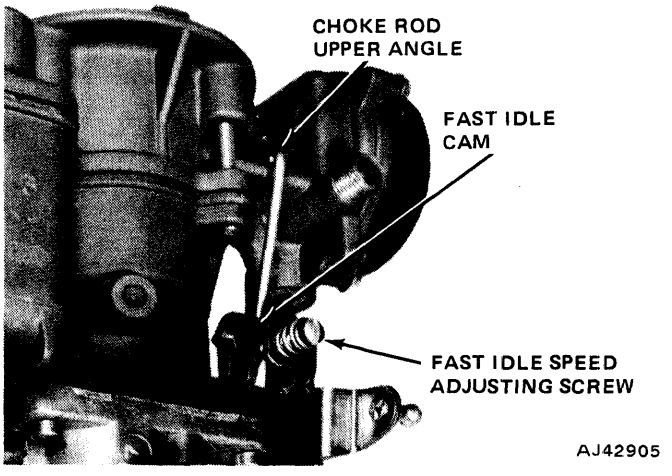


Fig. 4-31 Fast Idle Cam Linkage Adjustment

Choke Unloader Adjustment (On or Off Vehicle)

(1) Hold throttle fully open and apply pressure on choke valve toward closed position.

(2) Measure clearance between lower edge of choke valve and air horn wall. Refer to Carburetor Service Specifications for correct setting.

NOTE: *It is not necessary to remove air cleaner bracket when measuring clearance between choke valve and air horn wall. Simply position gauge next to bracket.*

(3) Adjust by bending unloader tang which contacts the fast idle cam as shown in figure 4-32.

NOTE: *Bend toward cam to increase clearance and away from cam to decrease clearance.*

CAUTION: *Do not bend the unloader tang downward from a horizontal plane. After making the adjustment, be sure that the unloader tang has at least 0.070-inch clearance from the main body flange when the throttle is fully open (fig. 4-33).*

(4) Operate throttle and check unloader tang to be sure it does not bind, contact, or stick on any part of carburetor casting or linkage. After carburetor installation, check for full throttle opening when throttle is operated from inside the vehicle.

NOTE: *If full throttle opening is not obtainable, it may be necessary to remove excess padding under floormat or reposition throttle cable bracket located on the engine.*

Automatic Choke Adjustment (On or Off Vehicle)

The automatic choke setting is made by loosening coil housing retaining screws and rotating housing in the desired direction as indicated by an arrow on the face of the housing. Refer to Carburetor Service Specifications for the correct setting. The specified setting will be satisfactory for most driving conditions. In the event that stumbles or stall occur on acceleration during engine warmup, the choke may be set richer or leaner, using the tolerance provided, to meet individual engine requirements.

Idle Speed and Mixture Adjustment (On Vehicle)

Refer to Engine Idle Setting Procedures in the Emission Control section.

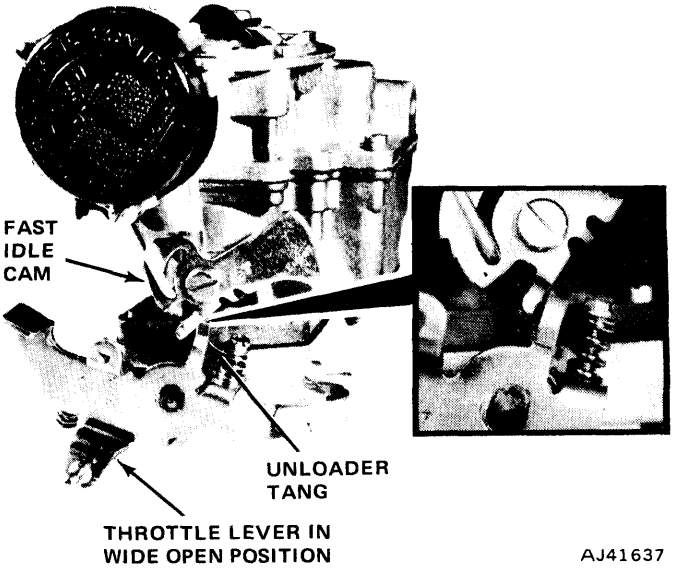


Fig. 4-32 Choke Unloader Adjustment

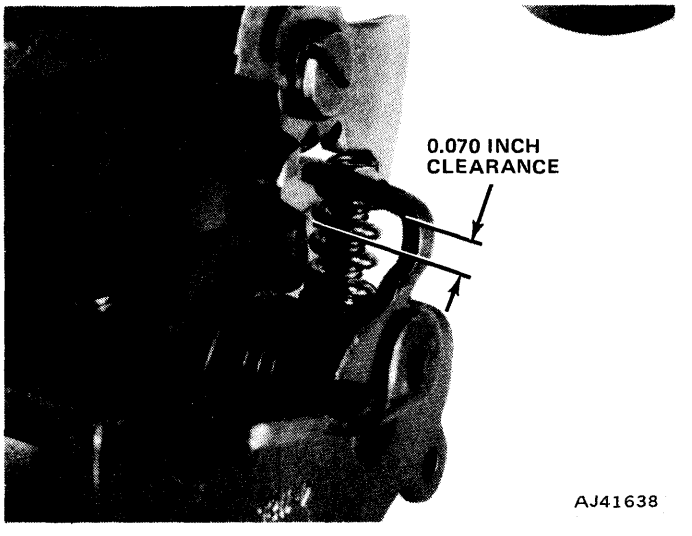


Fig. 4-33 Unloader-to-Body Clearance

Fast Idle Speed Adjustment (On Vehicle)

Set the fast idle speed with the engine at operating temperature and the fast idle adjusting screw in contact with the second step and against the shoulder of the high step of the fast idle cam (refer to Carburetor Service Specifications for the correct setting). Adjust by turning the fast idle adjustment screw.

NOTE: *When adjusting fast idle speed, plug spark port and EGR port at carburetor.*

CHOKE MECHANISM SERVICE

The choke mechanism may be serviced without removing the carburetor from the engine. If the choke binds, sticks, or does not operate smoothly, perform the following.

(1) Disconnect bowl vent tube, fuel line and choke fresh air tube.

(2) Disconnect choke rod and remove air horn.

(3) Remove float, float pin and needle.

(4) Remove air cleaner bracket. Remove choke link lever and attaching screw.

(5) Remove choke housing cover.

(6) Remove choke valve and attaching screws. It may be necessary to file screws before removing.

(7) Rotate choke shaft to pull piston out of bore. Remove piston pin, piston and choke shaft.

(8) Knock out piston bore plug.

(9) Clean choke shaft and piston, using carburetor-cleaner if necessary. Polish shaft, piston and piston bore with crocus cloth. Dry all parts.

(10) Install choke shaft, pin and piston.

(11) Install replacement piston bore plug.

(12) Install choke link lever and screw.

(13) Install choke valve, using replacement screws if required. Center valve before tightening.

(14) Install air cleaner bracket.

(15) Install needle, float and pin.

(16) Install air horn. Connect choke rod.

(17) Install choke housing cover and set to specification.

(18) Install bowl vent tube, fuel line and choke fresh air tube.

Model YF Carburetor Calibrations

	7151	7153	7154
Throttle Bore Size	1.6870	1.6870	1.6870
Main Venturi Size	1.3120	1.3120	1.3120
Fuel Inlet Diameter	0.0935	0.0935	0.0935
Low Speed Jet	0.0350	0.0350	0.0310
Bypass Air Bleed	0.0465	0.0465	0.0465
Economizer	0.0550	0.0550	0.0490
Idle Air Bleed	0.0465	0.0465	0.0465
Metering Rod Jet Number	120-401	120-401	120-401
Metering Rod Jet Size	0.1010	0.1010	0.1010
Metering Rod Number	75-1990	75-2214	75-2147
Step Up Limiter Shim	None	0.1400	0.0800
Nozzle Bleed	0.6350	0.6350	0.6350
Anti-Perc Bleed	0.0280	0.0280	0.0280
Pump Discharge Nozzle (Jet)	0.0280	0.0280	0.0280
Vacuum Spark Port	0.0520	0.0520	0.0520
Spark Port Location Above Closed Throttle	0.0220	0.0220	0.0220
Choke Heat Inlet (Brass Restriction)	0.0630	0.0730	0.0730
Choke Vacuum Restriction	0.089	0.089	0.089
Thermostatic Pump Bleed	None	None	0.024

70551

CARBURETOR MODEL YF—1 VENTURI WITH ALTITUDE COMPENSATION

GENERAL

The Model YF carburetor with altitude compensation is installed on six-cylinder engines in vehicles sold for use at elevations of 4000 feet or more (fig. 4-34). This carburetor features a compensation circuit which mixes a metered amount of additional air with the fuel to prevent a too-rich condition at higher altitudes. A manually operated override is provided for operation at lower altitudes. In the low-altitude mode, the carburetor performs like a conventional Model YF.

The Model YF carburetor with altitude compensation is serviced the same as the conventional Model YF, except for the compensation device.

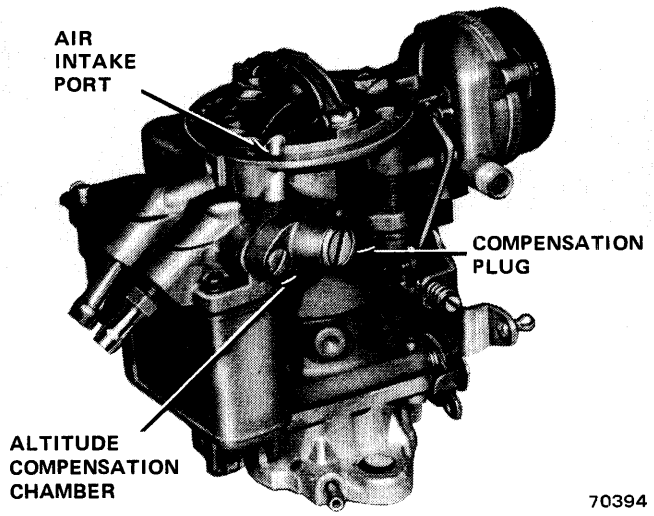


Fig. 4-34 Model YF Carburetor with Altitude Compensation

Because the altitude compensated Model YF is essentially a variation of the conventional Model YF, this section covers only operational differences and provides procedures necessary to service the compensation device. All other information is covered in the previous section, Model YF Carburetor—1 Venturi.

CARBURETOR CIRCUITS

Altitude Compensation Circuit

This circuit provides the leaner mixture required for high-altitude operation. The components are: chamber assembly, gasket and screws (fig. 4-35).

The chamber assembly contains a threaded plug. When turned counterclockwise to its outer seat, the plug opens the compensation circuit (fig. 4-36). When the plug is turned clockwise to its inner seat (about 2 1/2 turns), the compensation circuit is blocked.

Air that is admitted past the moveable plug flows through the chamber and into the air horn. Here, the airflow is channeled into two circuits, idle and main. Each circuit contains a pressed-in restrictor calibrated for the particular carburetor application.

Idle (Low Speed) Circuit

Air flows from the chamber, through the restrictor and into the compensation passage (fig. 4-37). Fuel flowing from the float bowl is metered as it passes through the low-speed jet. The fuel is mixed with air which is metered through the bypass. The fuel-air mixture continues downward through the economizer. Below the economizer, the compensation circuit bleeds additional air into the mixture. Air is introduced at the idle port as in the conventional Model YF carburetor. The mixture is discharged below the throttle valve at the idle port opening and the idle mixture adjustment screw port.

The remainder of the idle circuit and transition to early part-throttle operation is identical to the conventional Model YF.

Main Metering (High Speed) Circuit

Fuel for most part-throttle and full-throttle operation is supplied through the main metering circuit (fig. 4-38).

As in the conventional Model YF, a metering rod is used to regulate the amount of fuel admitted to the main discharge nozzle. Mechanical and vacuum operation of the metering rod is not changed in any way. The altitude compensation circuit admits a metered amount of air bleed to the fuel as it flows from the metering rod jet up to the main discharge nozzle.

CARBURETOR OVERHAUL

In addition to the conventional Model YF overhaul procedures, perform the following:

Disassembly

(1) Remove compensation chamber attaching screws.

(2) Remove chamber and gasket.

NOTE: *The restrictors are pressed into the air horn. Do not attempt to remove. The moveable plug is permanently installed in the chamber. Do not attempt to remove.*

Assembly

(1) Position chamber to air horn, using replacement gasket.

(2) Install attaching screws.

(3) Adjust moveable plug. Refer to Compensation Plug Adjustment.

SERVICE ADJUSTMENT PROCEDURES

In addition to the conventional Model YF adjustments, perform the following:

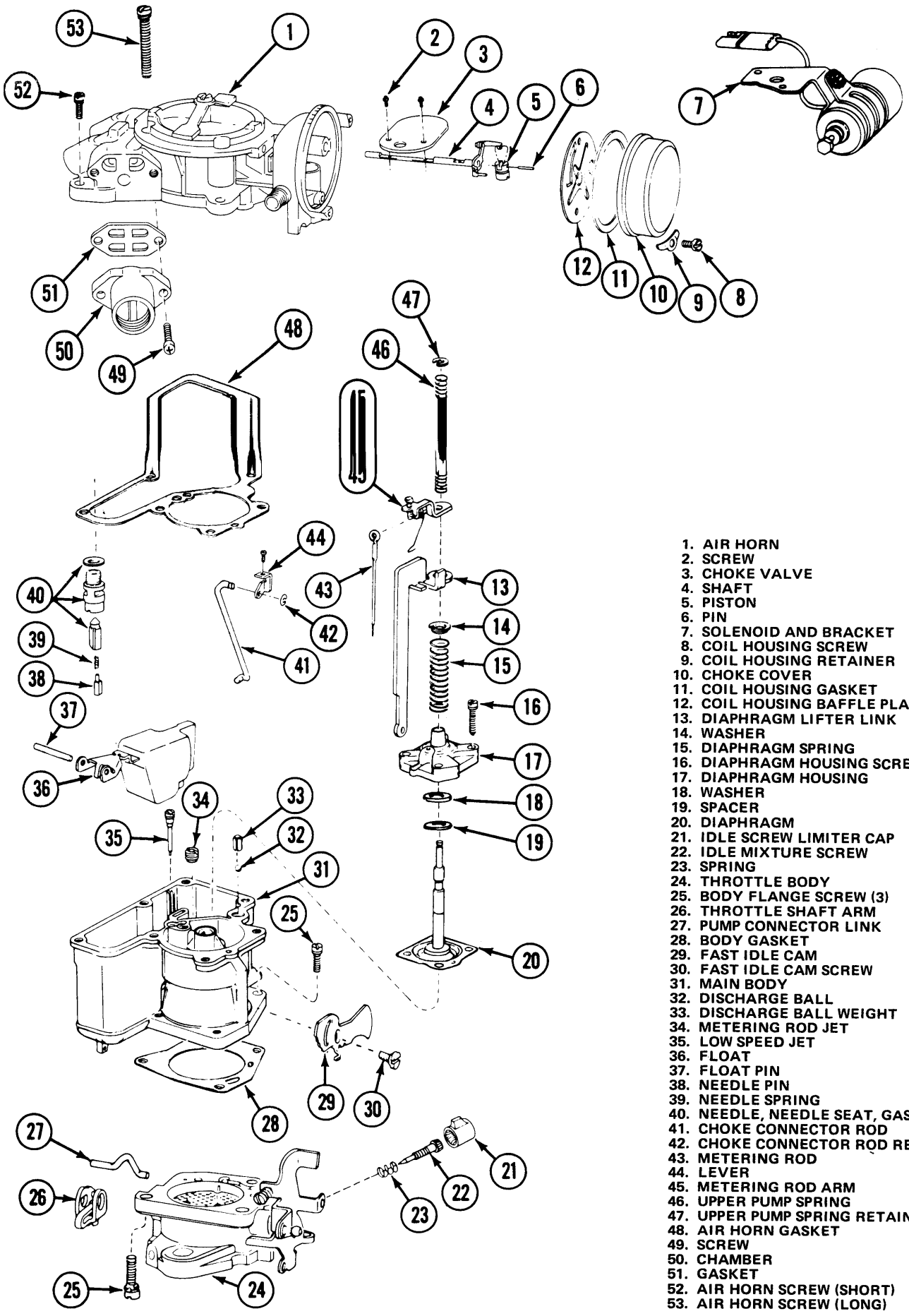
Compensation Plug Adjustment

The compensation plug has two positions, outer seat and inner seat.

- Turn the plug **counterclockwise** to the outer seat for operation at altutudes above 4000 feet (fig. 4-39).
- Turn the plug **clockwise** to the inner seat for operation at altitudes below 4000 feet.

Total travel from outer seat to inner seat is approximately 2 1/2 turns.

CAUTION: *On six-cylinder engines equipped with altiude compensation carburetor, the ignition timing must be changed whenever the compensator mode is changed. Refer to Tune-Up Specifications—On Vehicle in Section 4A—Emission Controls.*



1. AIR HORN
2. SCREW
3. CHOKE VALVE
4. SHAFT
5. PISTON
6. PIN
7. SOLENOID AND BRACKET
8. COIL HOUSING SCREW
9. COIL HOUSING RETAINER
10. CHOKE COVER
11. COIL HOUSING GASKET
12. COIL HOUSING BAFFLE PLATE
13. DIAPHRAGM LIFTER LINK
14. WASHER
15. DIAPHRAGM SPRING
16. DIAPHRAGM HOUSING SCREW (4)
17. DIAPHRAGM HOUSING
18. WASHER
19. SPACER
20. DIAPHRAGM
21. IDLE SCREW LIMITER CAP
22. IDLE MIXTURE SCREW
23. SPRING
24. THROTTLE BODY
25. BODY FLANGE SCREW (3)
26. THROTTLE SHAFT ARM
27. PUMP CONNECTOR LINK
28. BODY GASKET
29. FAST IDLE CAM
30. FAST IDLE CAM SCREW
31. MAIN BODY
32. DISCHARGE BALL
33. DISCHARGE BALL WEIGHT
34. METERING ROD JET
35. LOW SPEED JET
36. FLOAT
37. FLOAT PIN
38. NEEDLE PIN
39. NEEDLE SPRING
40. NEEDLE, NEEDLE SEAT, GASKET
41. CHOKE CONNECTOR ROD
42. CHOKE CONNECTOR ROD RETAINER
43. METERING ROD
44. LEVER
45. METERING ROD ARM
46. UPPER PUMP SPRING
47. UPPER PUMP SPRING RETAINER
48. AIR HORN GASKET
49. SCREW
50. CHAMBER
51. GASKET
52. AIR HORN SCREW (SHORT)
53. AIR HORN SCREW (LONG)

70395

Fig. 4-35 Parts Identification

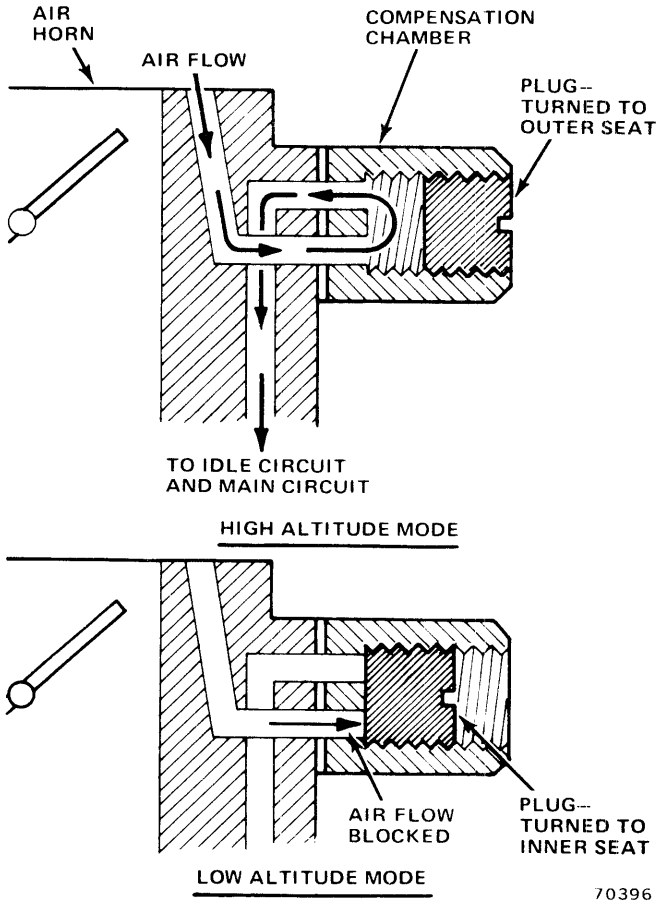


Fig. 4-36 Compensator Plug Operation

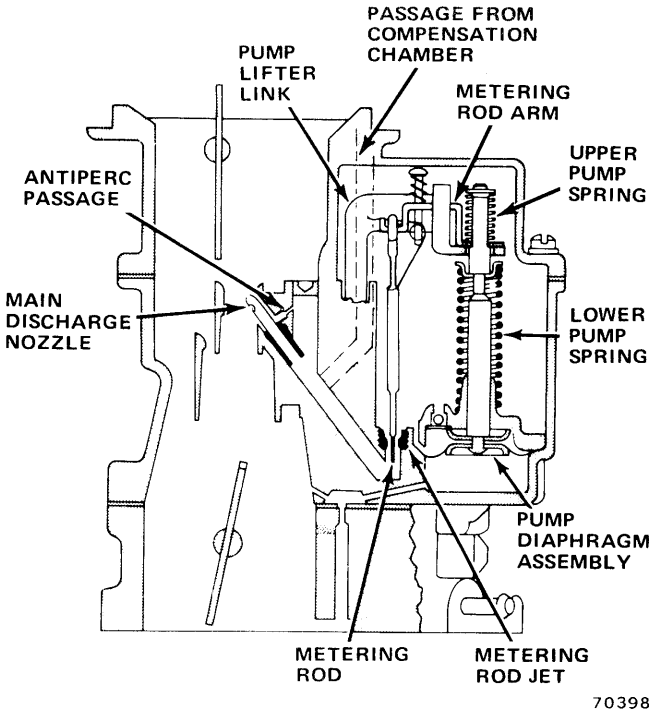


Fig. 4-38 Compensation Circuit—Main Metering

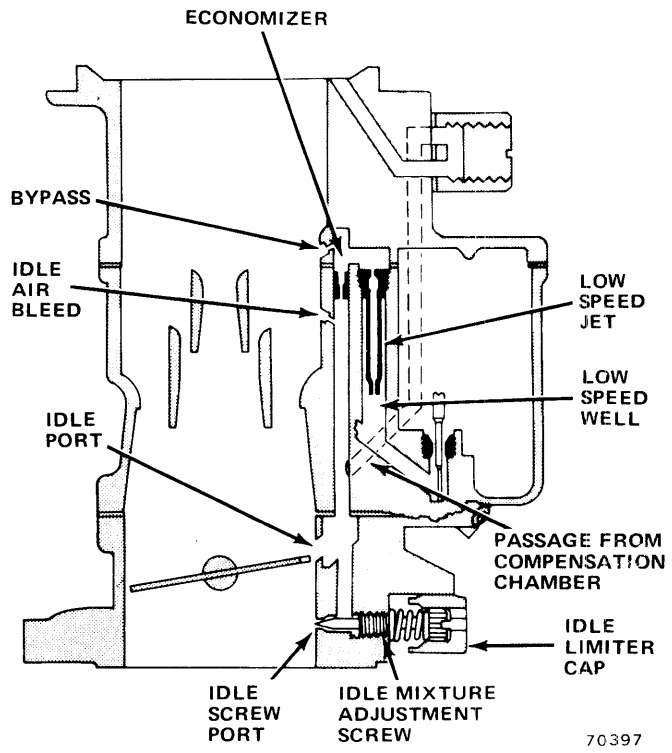


Fig. 4-37 Compensation Circuit—Idle

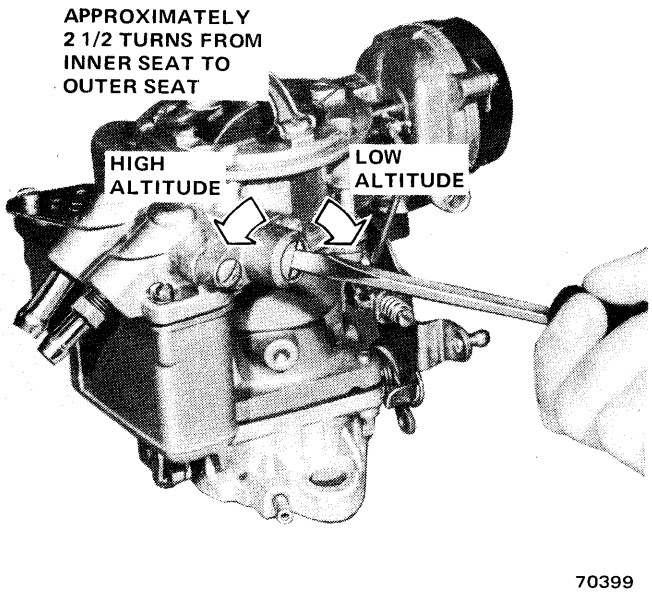


Fig. 4-39 Compensator Adjustment

Model YF Carburetor with Altitude Compensation—Calibrations (Inches)

	7110	7111		7110	7111
Throttle Bore Size	1.6870	1.6870	Metering Rod Number	75-2175	75-2175
Main Venturi Size	1.3120	1.3120	Step Up Limiter Shim	None	None
Fuel Inlet Diameter	0.0935	0.0935	Nozzle Bleed	0.0635	0.0635
Low Speed Jet	0.0330	0.0330	Anti-Perc Bleed	0.0280	0.0280
Bypass Air Bleed	0.0465	0.0465	Pump Discharge Nozzle (Jet)	0.0220	0.0220
Economizer	0.0630	0.0630	Vacuum Spark Port	0.0520	0.0520
Idle Air Bleed	0.0465	0.0465	Spark Port Location Above Closed Throttle	0.0220	0.0220
Metering Rod Jet Number	120-398	120-398	Choke Heat Inlet (Brass Restriction)	0.0780	0.0780
Metering Rod Jet Size	0.0980	0.0980	Choke Vacuum Restriction	0.0890	0.0890

70552

CARBURETOR MODEL BBD—2 VENTURI

GENERAL

The Carter BBD 2-venturi carburetor (fig. 4-40) is optionally available on 258 CID six-cylinder engines. This carburetor has three basic fuel metering systems: the idle (low speed) circuit provides a mixture for idle and low speed performance, the pump circuit makes extra fuel available during acceleration and the main metering (high speed) circuit provides an economical mixture for cruising speeds.

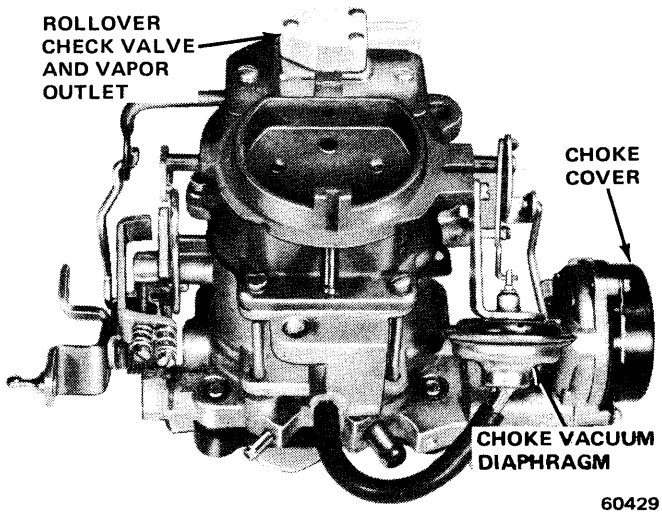


Fig. 4-40 Model BBD Carburetor Assembly

In addition to the three basic systems, there is a float (fuel inlet) system to constantly feed fuel to metering systems, and a choke system to enrich the fuel-air mixture to aid in starting and running a cold engine.

Identification

The carburetor is identified by a code number and build date which is stamped on the identification tag. Each carburetor build month is coded alphabetically beginning with the letter A in January and ending with the letter M in December (the letter I is not used). The tag is attached to the carburetor and must remain with the carburetor to assure proper identification (fig. 4-41).

CARBURETOR CIRCUITS

Float (Fuel Inlet) Circuit

The float circuit maintains the specified fuel level in the bowl to provide sufficient fuel to metering circuits for all engine operating conditions (fig. 4-42).

Fuel flows into the bowl through a seat and needle assembly controlled directly by dual floats hinged to the float fulcrum pin.

As fuel in the bowl reaches the specified level, the float lever pushes the needle toward its seat and restricts incoming fuel, admitting only enough to replace that being used.

The BBD carburetor vents externally to the charcoal canister through a plastic fitting mounted on the cover

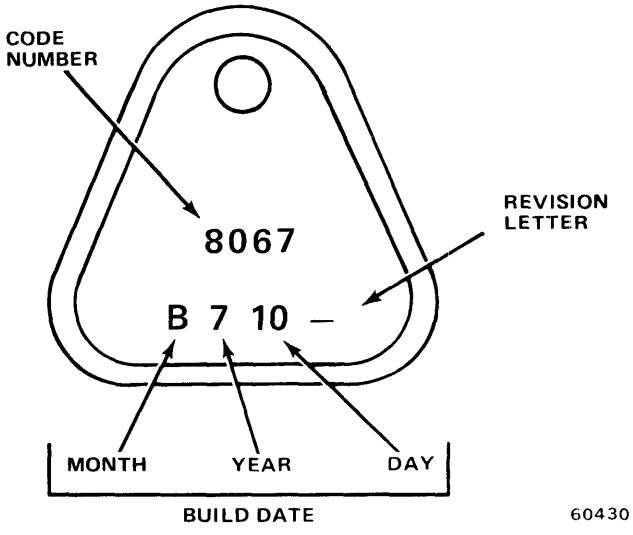


Fig. 4-41 Identification Tag

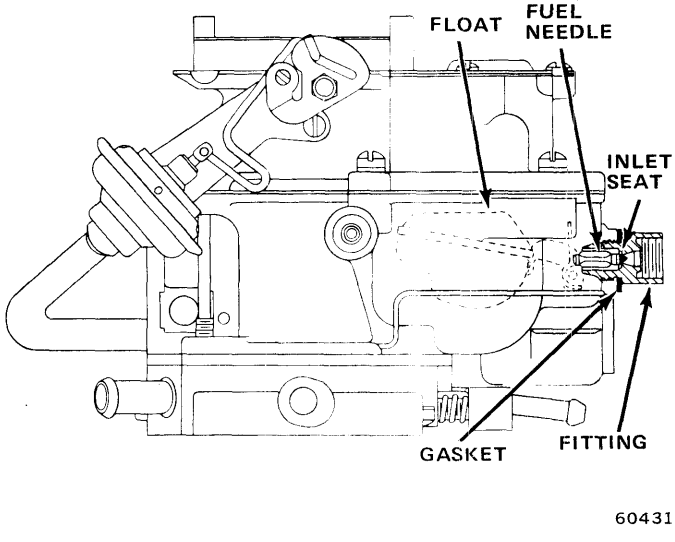


Fig. 4-42 Float Circuit

plate. The plastic fitting also includes a rollover check valve to close the vapor vent line in case of a rollover accident.

Idle (Low Speed) Circuit

Fuel for idle and early part-throttle operation is metered through the idle circuit.

Fuel flows through main metering jets into the main wells and continues through the idle fuel pickup tube where fuel mixes with air entering through idle air bleeds located in the venturi cluster screws (fig. 4-43).

At curb idle, this fuel-air mixture flows down the idle channel and is further mixed with air entering the idle channel through the transfer slot which is above the position of the throttle valve at curb idle. The mixture then passes the idle mixture adjustment screw which controls the volume of mixture discharged below the throttle valve.

During low speed operation, the throttle valve moves to expose the transfer slot as well as the idle port. This increased airflow creates a vacuum in the venturi and the main metering system begins to discharge fuel.

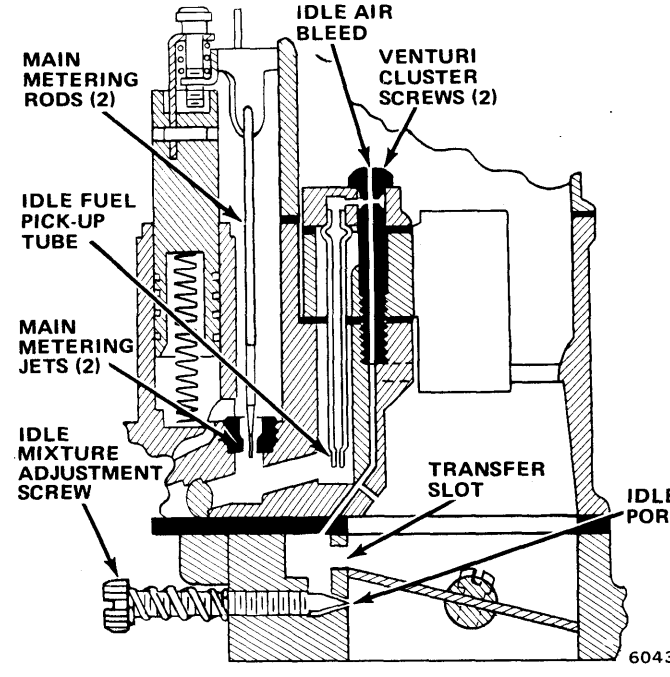


Fig. 4-43 Idle Circuit

Main (High Speed) Metering Circuit

At part throttle and cruising speed, increased airflow through the venturi creates a low pressure area in the venturi. Since air above the fuel level in the bowl is at normal pressure, fuel flows to the lower pressure area created by the venturi and magnified by the booster venturi.

The fuel flow moves through the main jets to the main well. Air enters through the main well air bleeds. The resulting mixture of fuel and air is lighter than raw fuel, responds more quickly to changes in venturi vacuum, and is more readily vaporized when discharged into the venturi (fig. 4-44).

Power Enrichment Circuit

During heavy road load or high speed operation, the fuel-air ratio must be enriched to provide increased engine power.

Power enrichment is accomplished by means of two calibrated metering rods yoked to a single manifold vacuum actuated piston (fig. 4-44). The metering rod piston rides on a calibrated spring which attempts to keep the piston at the top of its cylinder. This allows the smallest diameter of the tapered metering rods to extend into the main metering jets and permits maximum fuel flow through the jets to the main well cavities.

At idle, part throttle or cruise conditions when manifold vacuum is high, the piston is drawn down into the

vacuum cylinder against calibrated spring tension and the larger diameters of the metering rods extend into the main metering jets, restricting the fuel flow to the main well cavities. An additional control is provided by the rod lifter on the accelerator pump rod. This provides a direct relationship between metering rod position and throttle plate opening.

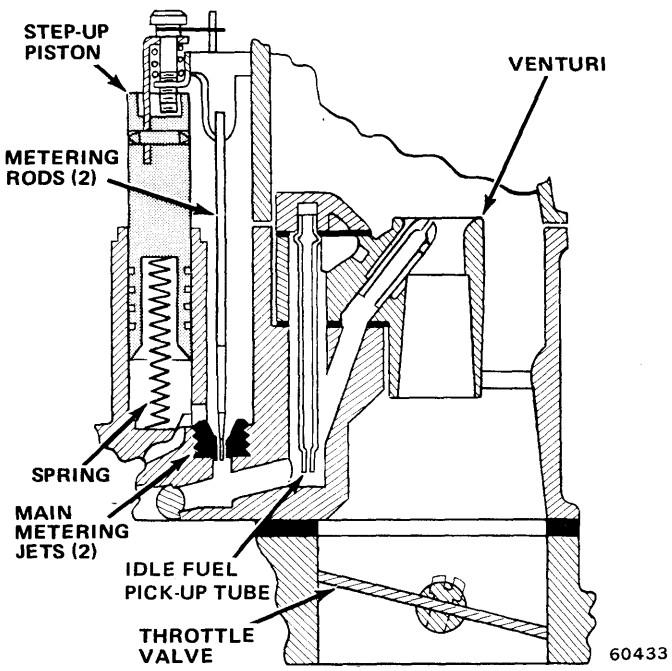


Fig. 4-44 Main Metering Circuit

Pump Circuit

When the throttle is opened suddenly, airflow response through the carburetor is almost immediate. There is a brief time lag before fuel inertia can be overcome. This lag causes the desired fuel-air ratio to lean out.

A piston-type accelerating pump system mechanically supplies the fuel necessary to overcome this deficiency (fig. 4-45).

Fuel is drawn into the pump cylinder from the fuel bowl through a port and check ball in the bottom of the pump well below the pump piston. When the engine is turned off, fuel vapors in the pump cylinder vent through the area between the pump rod and pump piston.

As the throttle lever is moved, the pump link, operating through a system of levers and assisted by the pump drive spring, pushes the pump piston down. Fuel is forced through a passage, past the pump discharge check ball, and out the pump discharge jets in the venturi cluster.

Choke Circuit

The choke valve, located in the air horn assembly, provides a high vacuum both above and below the throttle valves when closed. During cranking, vacuum above the throttle valve causes fuel to flow from the main metering and idle circuits and provides the richer fuel-air ratio needed for cold engine starting (fig. 4-46).

The choke shaft is connected by linkage to a thermostatic coil within the choke cover, which winds up when cold and unwinds when heated. When the engine is cold, the tension of the thermostatic coil holds the choke valve closed. When the engine starts, manifold vacuum is applied to the diaphragm assembly to open the choke valve slightly. This is called the initial choke valve clearance.

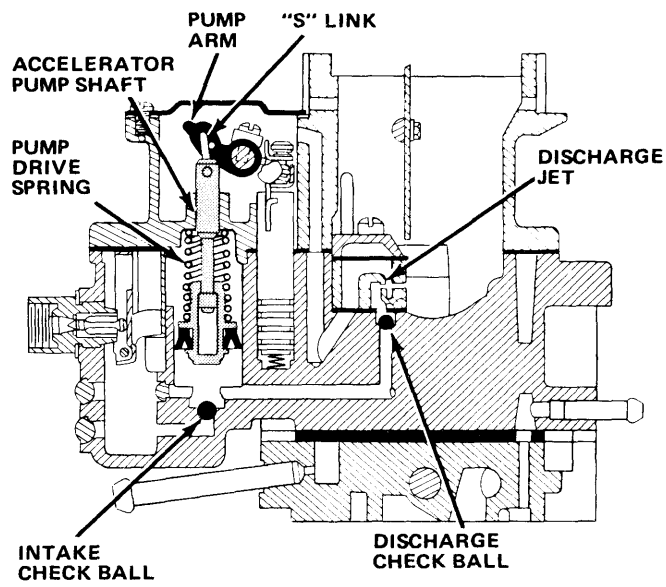


Fig. 4-45 Pump Circuit

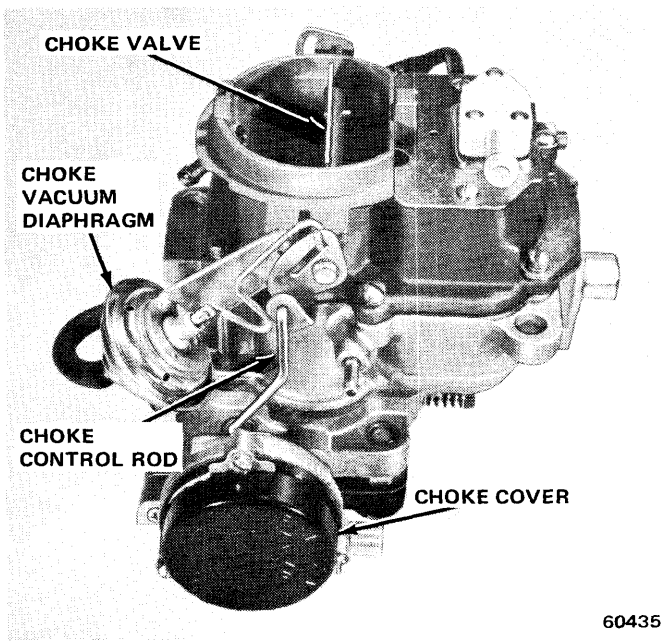


Fig. 4-46 Choke Components

As the thermostatic coil is warmed by air rising through the heat tube from the exhaust manifold, the coil expands and exerts pressure to further open the choke valve, keeping it fully open at operating temperature.

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

To prevent stalling during warm-up, a faster idle speed is provided. The fast idle cam, actuated by the choke shaft through connecting linkage, rotates into position against the fast idle screw. The cam is progressively stepped to provide correct idle setting in proportion to the choke valve opening. When the choke valve reaches its fully open position, the cam rotates free of the fast idle screw, allowing the throttle lever to return to curb idle position when released.

If the engine floods during starting, the choke valve may be opened to vent excess fuel by depressing the accelerator pedal to the floor and cranking the engine. With the accelerator linkage in this position, a tang on the throttle lever contacts the fast idle cam, causing the choke rod to move upward to open the choke valve a predetermined distance.

CARBURETOR REPLACEMENT

Removal

In many cases, flooding, stumble on acceleration, and other performance problems are caused by dirt, water or other foreign matter in the carburetor. To aid in diagnosing the problem, remove the carburetor from the engine without removing fuel from the bowl. Examine the contents of the bowl for contamination as the carburetor is disassembled.

(1) Remove air cleaner.

(2) Remove accelerator cable from accelerator lever and disconnect distributor vacuum hose, other vacuum hoses, return spring, choke clean air tube, PCV hose, fuel line, choke heat tube and solenoid wire, if equipped.

(3) Remove carburetor retaining nuts. Remove carburetor. Remove gaskets and spacer from intake manifold.

Installation

(1) Clean gasket mounting surfaces. Place spacer between two replacement gaskets and position spacer and gaskets on the intake manifold. Position carburetor on spacer and gasket and install nuts. To prevent leakage, distortion or damage to the carburetor body flange, loosely tighten nuts. Then alternately tighten in a criss-cross pattern to 13 foot-pounds torque.

(2) Connect fuel line, throttle cable, choke heat tube, PCV hose, return spring, choke clean air tube, all vacuum hoses and solenoid wire, if equipped.

(3) Adjust engine idle speed, idle fuel mixture and solenoid. Refer to Emission Control section.

(4) Install air cleaner.

CARBURETOR OVERHAUL PROCEDURES

The following procedures apply to complete overhaul with the carburetor removed from the engine.

A complete disassembly is not necessary when performing adjustments. In most cases, service adjustments of individual systems may be completed without removing the carburetor from the engine (refer to Service Adjustment procedures).

A complete carburetor overhaul includes disassembly, thorough cleaning, inspection, and replacement of all gaskets and worn or damaged parts. It also includes idle adjustment, mixture adjustment and fast idle adjustment after the carburetor is installed. Refer to figure 4-47 for parts identification.

NOTE: *When using an overhaul kit, use all parts included in the kit.*

Carburetor Disassembly

(1) Place carburetor on repair stand to protect throttle valves from damage and to provide a stable work base.

(2) Remove retaining clip from accelerator pump arm link and remove link (fig. 4-48).

(3) Remove dust cover and gasket from top of air horn.

(4) Remove screws and locks from accelerator pump arm and vacuum piston rod lifter. Slide pump lever out of air horn. Vacuum piston and metering rods can now be lifted straight up and and out of the air horn as an assembly. Remove vacuum piston spring (fig. 4-49).

(5) Disconnect clips and remove link from choke housing lever and choke lever.

(6) Remove screw and lever from choke shaft.

(7) Remove vacuum hose between carburetor main body and choke vacuum diaphragm. Remove choke diaphragm, linkage, and bracket assembly, and place diaphragm aside to be cleaned as a separate unit.

(8) Remove fast idle cam retaining screw. Remove fast idle cam, linkage and clip.

(9) Remove choke housing cover, retainers and screws. Remove gasket and baffle.

(10) Remove choke housing from throttle body.

(11) Remove air horn retaining screws and lift air horn straight up away from main body. Discard gasket (fig. 4-50).

(12) Invert air horn and compress accelerator pump drive spring. Remove S-link from pump shaft. Remove pump assembly.

(13) Remove fuel inlet needle valve, seat, and gasket from main body.

(14) Lift out float fulcrum pin retainer and baffle. Lift out floats and fulcrum pin (fig. 4-51).

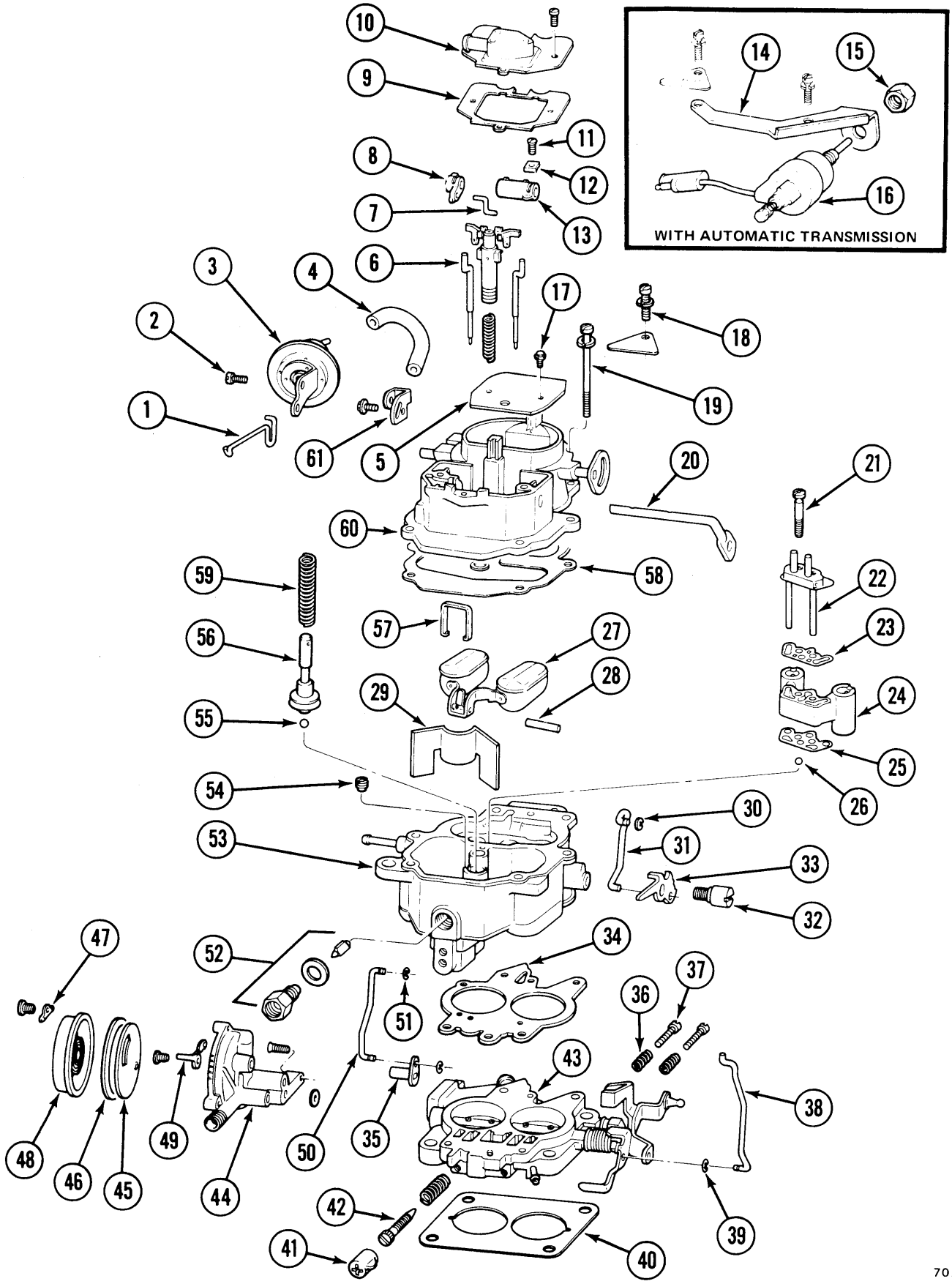


Fig. 4-47 Parts Identification—Model BBD

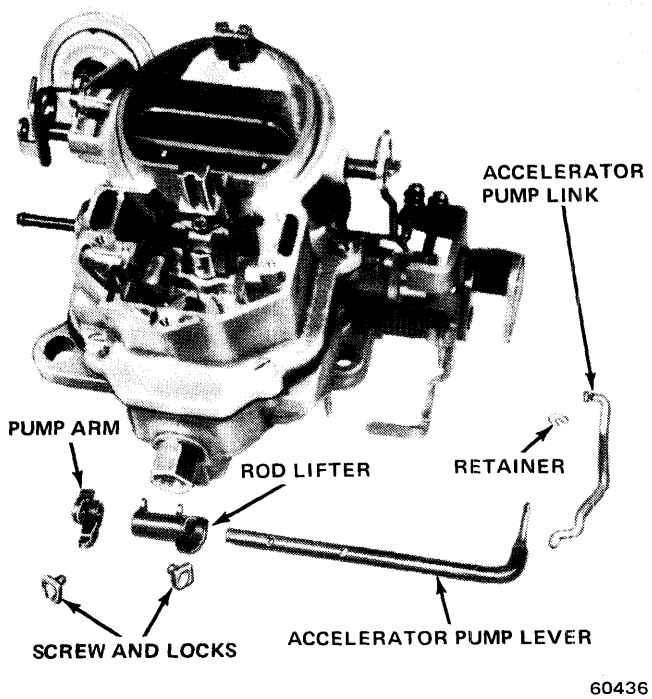


Fig. 4-48 Accelerator Pump and Lever

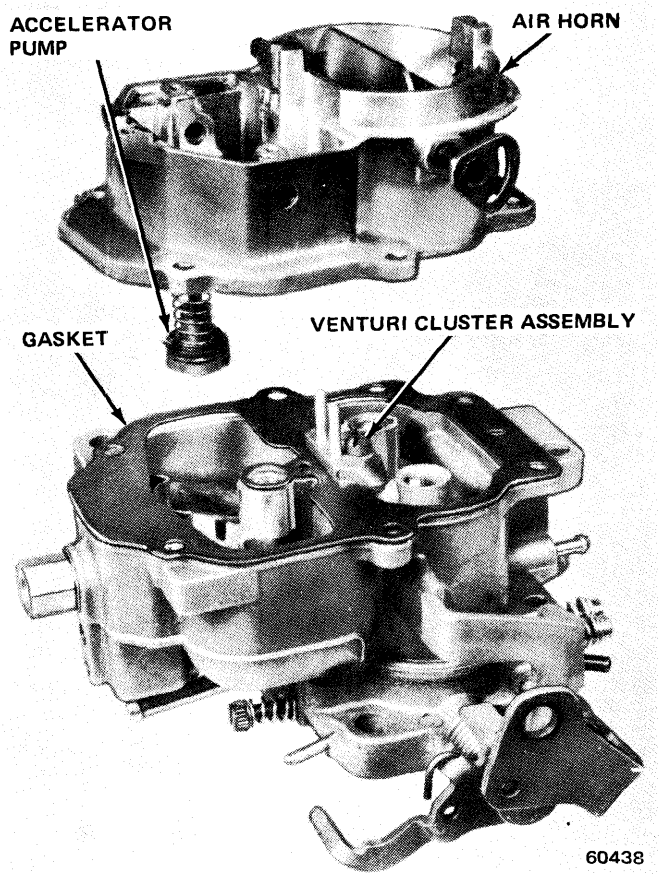


Fig. 4-50 Removing Air Horn

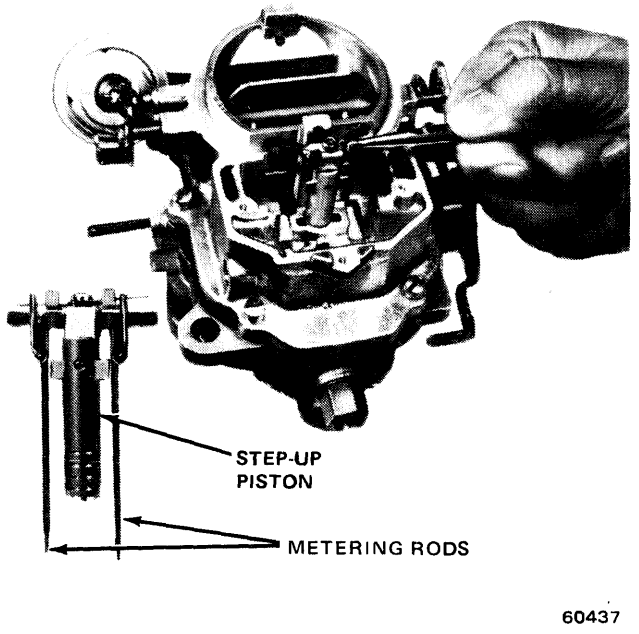


Fig. 4-49 Removing Piston and Metering Rods

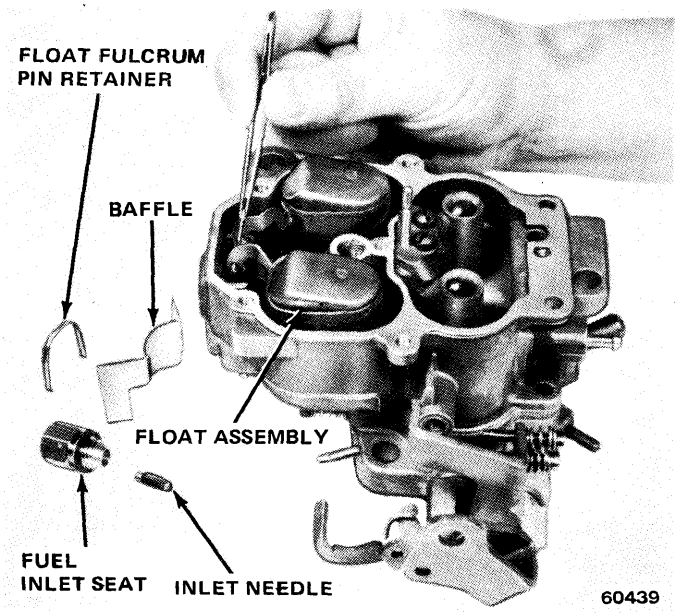


Fig. 4-51 Float Assembly

(15) Remove main metering jets (fig. 4-52).

(16) Remove venturi cluster screws. Lift venturi cluster and gaskets away from main body. Discard gaskets. Do not remove idle orifice tubes or main vent tubes from cluster. Clean tubes in solvent and dry with compressed air.

(17) Invert carburetor main body and drop out accelerator pump discharge and intake check balls (fig. 4-53).

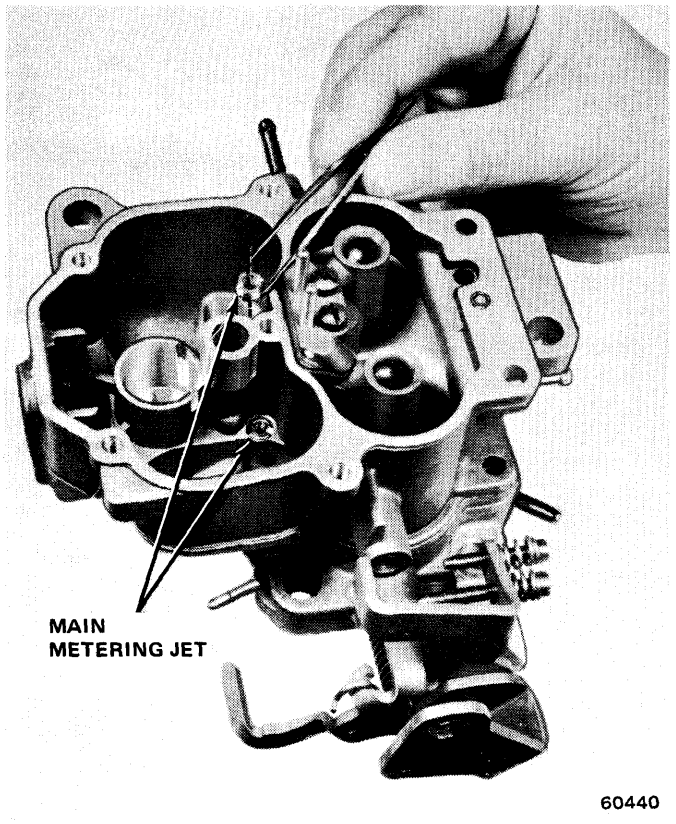


Fig. 4-52 Main Metering Jets

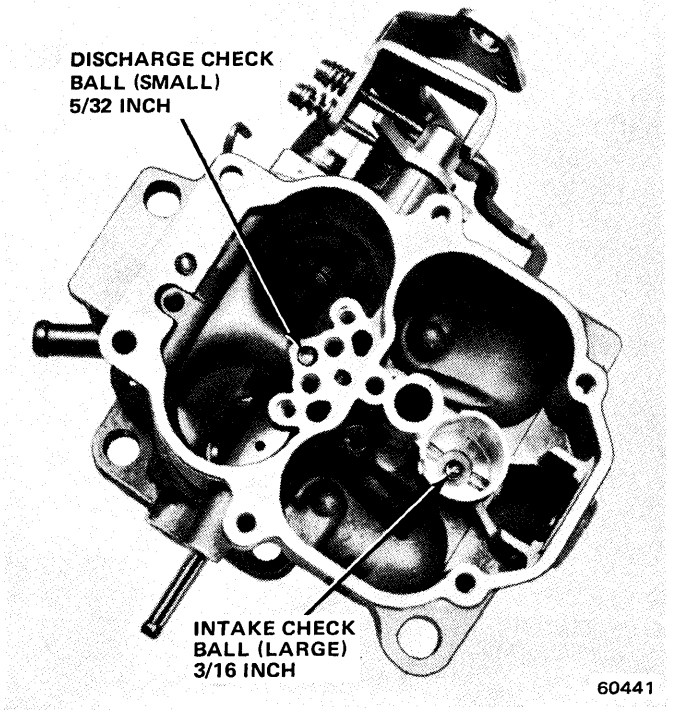


Fig. 4-53 Check Ball Location

(18) Turn idle limiter caps to stop. Remove plastic limiter caps from idle air mixture screws by carefully turning a No. 10 sheet metal screw into center of cap. Alternately, cut through limiters with soldering gun and pry off. Count number of turns required to seat each screw and make a note. During assembly, back off each screw the same number of turns. Remove screws and springs from throttle body.

(19) Remove screws attaching throttle body to main body and separate bodies. Discard gasket.

(20) Check choke mechanism in air horn. Choke shaft must float freely to operate correctly. If choke shaft sticks in its bearings or appears gummed, clean thoroughly.

Cleaning and Inspection

Dirt, gum, water, or carbon contamination in the caburetor or on exterior moving parts is often responsible for unsatisfactory performance. Careful cleaning and inspection is extremely important. This procedure covers only cleaning and inspection of those parts not included in the carburetor overhaul repair kit. Use all parts in the kit, and discard replaced parts.

Wash all parts, except vacuum diaphragm, in a clean commercial carburetor cleaning solvent. If a commercial solvent is not available, mineral spirits, lacquer thinner or denatured alcohol may be used. Rinse the cleaned parts in hot water if commercial solvent is used and blow dry with compressed air. Wipe the parts that cannot be immersed in solvent with a clean, soft, dry cloth.

Use compressed air to blow clean all carburetor passages.

CAUTION: *Do not use a wire brush to clean any part, or a drill or wire to clean out openings or passages. This may enlarge the passages and change the calibration of the carburetor.*

Check the choke shaft for grooves, wear, or excessive looseness or binding. Inspect the choke valve for nicked edges and for ease of operation. Check the throttle shaft in its bore for excessive looseness or binding. Check throttle valve for burrs or nicks which might prevent proper closing. Inspect the main body, throttle body, air horn, venturi assemblies, choke housing, and choke cover for cracks.

Replace the float if the arm needle-contact surface is grooved. If the float is serviceable, polish the needle contact surface of the arm with crocus cloth or steel wool. Replace float shaft if worn. Replace all damaged screws and nuts and all distorted or broken springs. Inspect all gasket mating surfaces for nicks or burrs. Replace any parts that have damaged gasket surfaces.

Assembly

(1) Install idle mixture screws and springs in body. Do not use a screwdriver. Turn screws lightly against their seats with fingers. Back off the number of turns counted at disassembly. Do not install plastic caps at this time.

(2) Invert main body, place throttle body on main body, and align. Install screws and tighten securely.

(3) Install accelerator pump discharge check ball (5/32-inch diameter) in discharge passage and accelerator pump intake check ball (3/16-inch diameter) into bottom of pump cylinder.

(4) Check the accelerator pump system. Pour clean gasoline into carburetor bowl 1/2 inch deep. Insert pump piston into pump cylinder, work piston up and down gently to expel air from pump passage. With a suitable clean brass rod, hold discharge check valve firmly against its seat. Raise piston and press down—no fuel should be emitted from either intake or discharge passages (fig. 4-54).

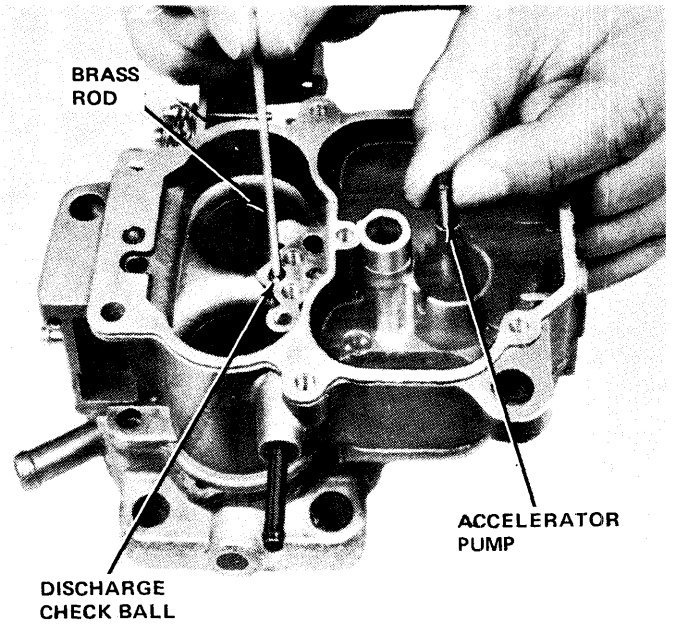


Fig. 4-54 Accelerator Pump Check

(5) Clean passages and ball seats if leakage is evident. If leakage persists, replace main body.

(6) Install replacement gaskets on venturi cluster, install cluster screws and tighten securely.

(7) Install main metering jets.

(8) Install floats with fulcrum pin and pin retainer in main body. Install needle, seat and gasket and tighten securely. Adjust float level. Refer to Service Adjustment Procedures. Install baffle plate.

(9) Place accelerator pump drive spring on pump plunger shaft and insert shaft into air horn. Compress spring and insert S-link.

(10) Place vacuum piston spring in vacuum piston bore. Position replacement gasket on main body and install air horn. Tighten retaining screws alternately a little at a time to compress the gasket evenly.

(11) Check vacuum piston gap. Refer to Service Adjustment Procedures and fig. 4-55. Carefully install step-up piston and metering rod assembly into its bore in the air horn. Be sure metering rods are in main metering jets. Be sure metering rod springs are installed properly. See figure 4-55.

(12) Place two lifting tangs of the plastic rod lifter under piston yoke. Slide shaft of accelerator pump lever through rod lifter and pump arm. Install two locks and adjusting screws, but do not tighten.

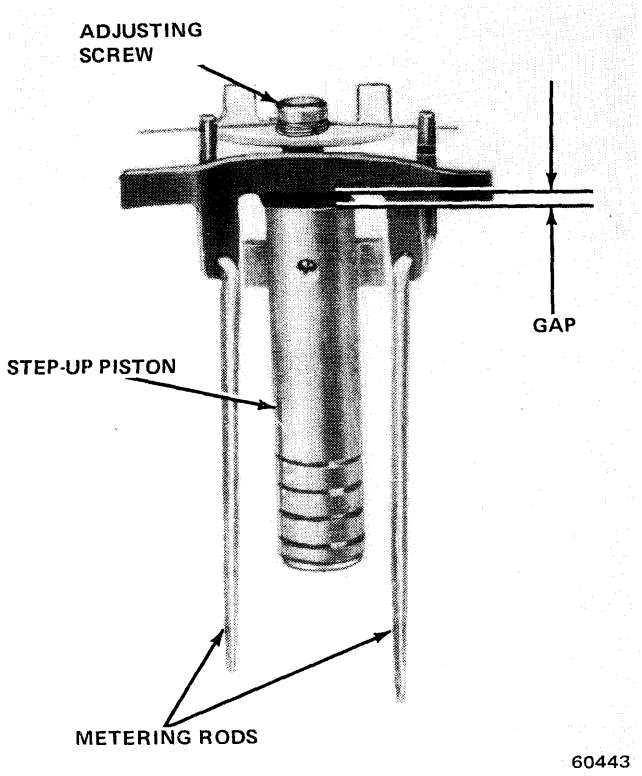


Fig. 4-55 Vacuum Piston and Metering Rod Assembly

(13) Install fast idle cam and linkage. Tighten retaining screw securely.

(14) Connect accelerator pump linkage to pump lever and throttle lever. Install retaining clip.

(15) Adjust vacuum piston and accelerator pump. Refer to Service Adjustment Procedures.

(16) Install rollover check valve, using replacement gasket.

(17) Install diaphragm assembly and secure with attaching screws. Do not connect vacuum hose to diaphragm fitting until initial choke valve clearance has been set. Refer to Service Adjustment Procedures.

(18) Engage diaphragm link with slot in choke lever. Install choke lever and screw to choke shaft.

(19) Install choke housing to throttle body.

(20) Install baffle, gasket and cover on housing. Turn cover 1/4 turn rich (clockwise) and tighten one screw.

(21) If choke valve requires centering, loosen choke valve attaching screws slightly. Hold choke closed and tap valve lightly with screwdriver handle to seat valve in its bore. Tighten screws and stake by squeezing with pliers.

(22) Install link and retainer between choke lever and choke housing lever.

(23) Install link and retainer to fast idle cam and choke lever.

(24) Adjust initial choke valve clearance. Refer to Service Adjustment Procedures.

(25) Adjust fast idle cam clearance. Refer to Service Adjustment Procedures.

(26) Adjust choke unloader clearance. Refer to Service Adjustment Procedures.

(27) Loosen choke cover screw and set cover index to specification. Tighten all cover screws.

SERVICE ADJUSTMENT PROCEDURES

It is very important that the following adjustments be made on a rebuilt carburetor and in the sequence listed.

Float Level Adjustment

(1) Remove air horn.

(2) Hold float lip **gently** against needle to raise float (fig. 4-56).

(3) Place straightedge across float bowl to measure float level. Level should be 0.250 inch with an OK range of 0.218 to 0.282 inch.

(4) If adjustment is necessary, release floats and bend float lip.

CAUTION: *Never bend float lip while it is resting against needle. Pressure may damage synthetic tip and cause a false setting.*

(5) Install air horn.

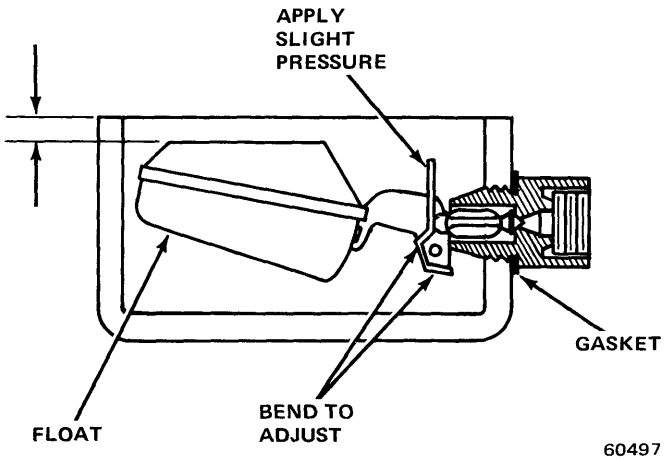


Fig. 4-56 Float Level Adjustment

Vacuum Piston Gap Adjustment

The vacuum piston gap is a critical adjustment (fig. 4-55). Turning the adjusting screw clockwise makes the fuel mixture richer. Turning the adjusting screw counterclockwise makes the fuel mixture leaner. Adjustment must be within the OK range specifications. Refer to Carburetor Service Specifications.

Vacuum Piston Adjustment

(1) Adjust gap in vacuum piston to specifications as described above.

(2) Back off curb idle adjustment until throttle valves are completely closed. Count number of turns so screw can be returned to original position. Turn idle screw in one full turn.

(3) Fully depress vacuum piston while holding moderate pressure on rod lifter tab. While in this position, tighten rod lifter lock screw (fig. 4-57).

(4) Release piston and rod lifter.

(5) Adjust accelerator pump as outlined below.

(6) Return curb idle screw to its original position.

(7) Install dust cover.

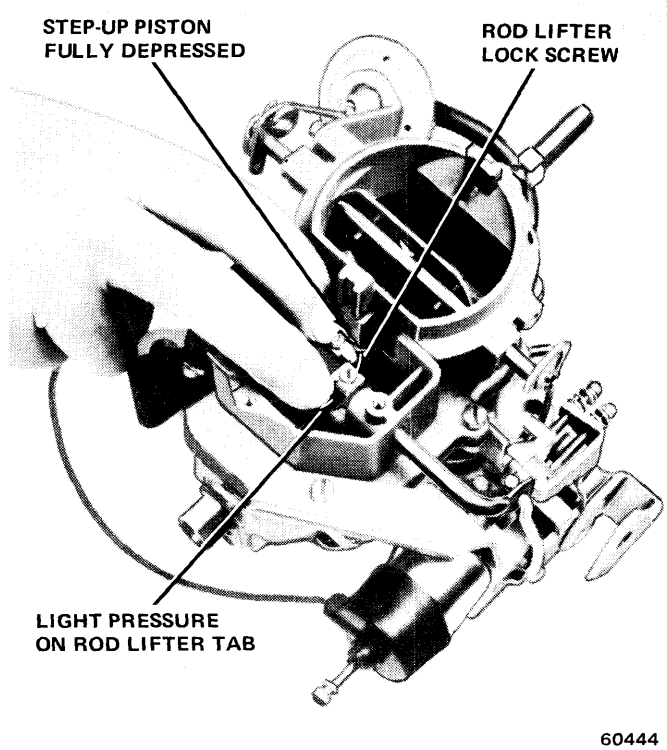


Fig. 4-57 Vacuum Piston Adjustment

Accelerator Pump Adjustment

(1) Remove dust cover.

(2) Back off curb idle speed adjusting screw to completely close throttle valve. Open choke valve so fast idle cam allows throttle valves to seat in bores.

(3) Turn curb idle adjusting screw clockwise until it just contacts stop. Then continue two complete turns.

(4) Measure distance between surface of air horn and top of accelerator pump shaft (fig. 4-58). Refer to Specifications for correct dimension.

(5) Loosen pump arm adjusting lock screw and rotate sleeve to adjust pump travel to proper measurement. Tighten lock screw.

(6) Install dust cover.

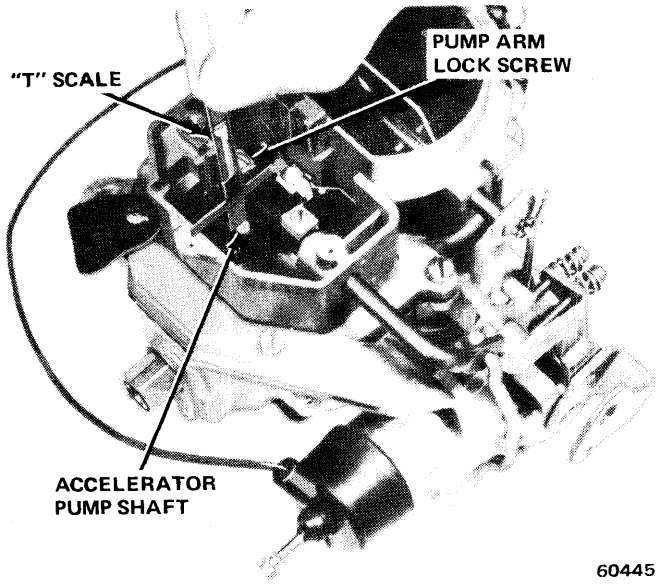


Fig. 4-58 Accelerator Pump Adjustment

Initial Choke Valve Clearance Adjustment

(1) Turn choke cover 1/4 turn rich.

(2) Use Tool J-23738 or any vacuum source which holds at least 19 inches of mercury (Hg) to pull in diaphragm against stop.

(3) Open throttle valve slightly to place fast idle screw on high step of cam.

(4) With choke coil tang held toward closed position, measure clearance between choke plate and air horn wall. Refer to Carburetor Service Specifications.

(5) Adjust clearance by bending diaphragm connector link (fig. 4-59).

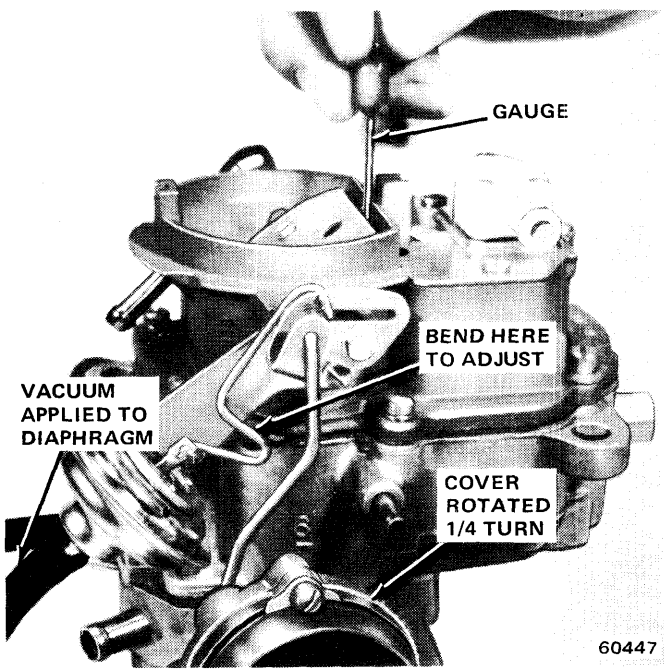


Fig. 4-59 Initial Choke Valve Clearance

Fast Idle Cam Position Adjustment

(1) Loosen choke housing cover and turn 1/4 turn rich. Tighten one retaining screw.

(2) Open throttle slightly and place fast idle screw on second step of cam.

(3) Measure distance between choke plate and air horn wall (fig. 4-60). Refer to Specifications for correct dimension.

(4) Adjust by bending fast idle cam link down to increase measurement, or up to decrease measurement.

(5) Loosen housing cover screw. Set index to specifications. Tighten all housing retaining screws.

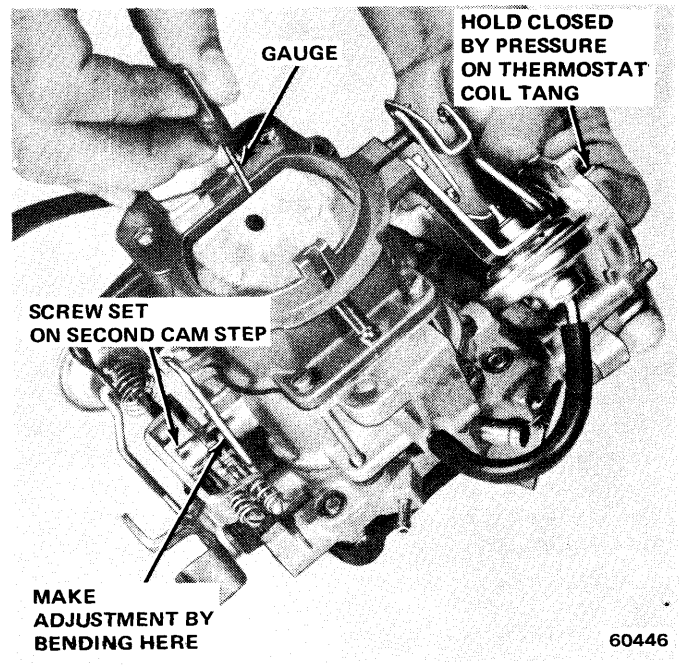


Fig. 4-60 Fast Idle Cam Adjustment

Choke Unloader Adjustment

(1) Hold throttle wide open (fig. 4-61).

(2) Insert gauge and apply light pressure to close choke plate.

(3) Measure distance between choke plate and air horn wall. Refer to Carburetor Service Specifications.

(4) Adjust by bending unloader tang. Do not bend tang so that it binds or interferes with any other part.

Automatic Choke Adjustment (On or Off Vehicle)

The automatic choke setting is made by loosening coil retaining screws and rotating coil to the specified notch on the choke housing. Refer to Carburetor Service Specifications for the correct setting. The specified setting will be satisfactory for most driving conditions. If stumble or stalls occur on acceleration during engine warm-up, the choke may be set richer or leaner to meet individual engine requirements.

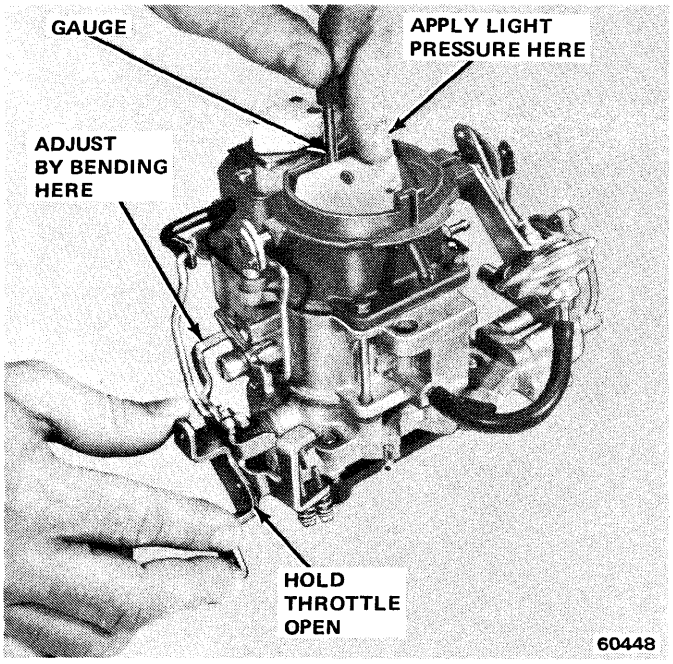


Fig. 4-61 Choke Unloader Adjustment

Fast Idle Speed Adjustment (On Vehicle)

Set the fast idle speed with the engine at operating temperature and the fast idle adjusting screw in contact with the second step and against the shoulder of the fast idle cam. Refer to Carburetor Service Specifications for the correct setting. Adjust by turning the fast idle adjustment screw.

CHOKE MECHANISM SERVICE

The choke mechanism may be serviced without removing the carburetor from the engine. If the choke binds, sticks, or does not operate smoothly, perform the following:

(1) Remove choke housing cover.

(2) Remove choke lever screw and remove choke lever.

(3) Disconnect choke control rod and remove thermostatic choke shaft from housing.

(4) Polish shaft and shaft bore in housing.

(5) Install shaft to housing. Install choke control rod.

(6) Install choke lever to shaft.

(7) Install housing cover and set to specification.

Model BBD Carburetor Calibrations (Inches)

	8107
Throttle Bore Size	1.4400
Main Venturi Size	1.1900
Fuel Inlet Diameter	0.1010
Low Speed Jet (Tube)	0.0295
Economizer	0.0550
Idle Air Bleed	1.7 mm
Main Jet Size	0.0890
Accelerator Pump Jet	0.0330
Main Metering Jet Number	120-389
Choke Heat Bypass	0.1280
Choke Heat Inlet Restriction	0.0930
Choke Vacuum Restriction	0.0785

70553

CARBURETOR MODEL 2100—2 VENTURI

GENERAL

The Model 2100 carburetor is a two-venturi carburetor which incorporates two lightweight aluminum assemblies, the air horn and the main body.

The air horn assembly serves as the main body cover and also contains the choke assembly and fuel bowl vents.

The throttle shaft assembly and all units of the fuel metering systems are contained in the main body assembly. The automatic choke assembly and the dashpot are attached to the main body (fig. 4-34).

Identification

The carburetor is identified by a code number and build date which is stamped on the identification tag. Each carburetor build month is coded alphabetically beginning with the letter A in January and ending with the letter M in December (the letter I is not used). The tag is attached to the carburetor and must remain with the carburetor to assure proper identification (fig. 4-63).

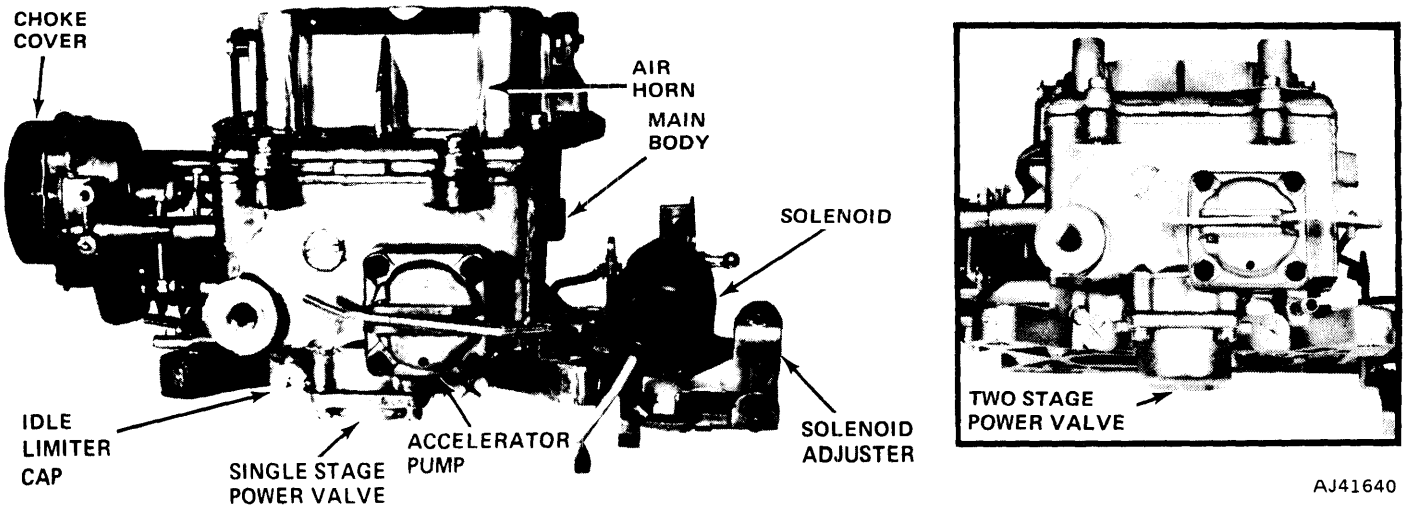


Fig. 4-62 Model 2100 Carburetor Assembly

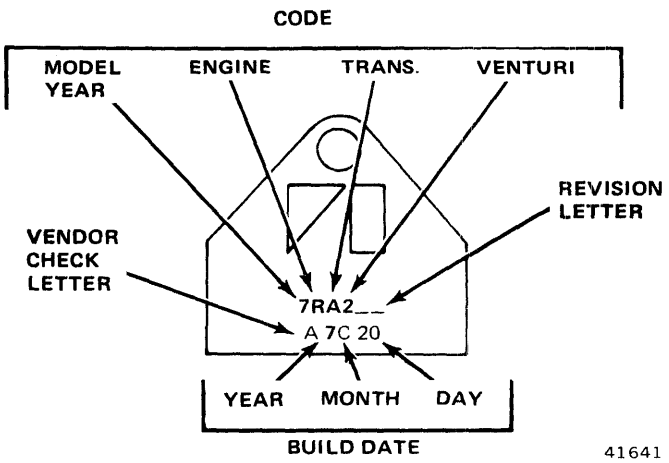


Fig. 4-63 Identification Tag

CARBURETOR CIRCUITS

The Model 2100 carburetor utilizes four basic fuel metering circuits: the idle (low speed) circuit provides a fuel-air mixture for idle and low speed performance; the main metering (high speed) circuit provides an economical mixture for normal cruising speeds; the pump circuit provides additional fuel during low speed acceleration; and the power enrichment circuit provides a rich mixture when high power output is needed.

In addition to these four basic metering circuits, the carburetor contains a float (fuel inlet) and choke circuit.

Float (Fuel Inlet) Circuit

Fuel under pressure enters the fuel bowl through the fuel inlet fitting in the main body.

The Viton-tipped fuel inlet needle is controlled by the float and lever assembly which is hinged on the float shaft. A wire retainer is hooked over grooves on opposite ends of the float shaft and into a groove behind the fuel inlet needle seat. The retainer holds the float shaft firmly in the fuel bowl guides and also centers the float assembly in the fuel bowl.

An integral retaining clip is hooked over the end of the float lever and attached to the fuel inlet needle. This assures reaction of the fuel inlet needle during downward movement of the float (fig. 4-64).

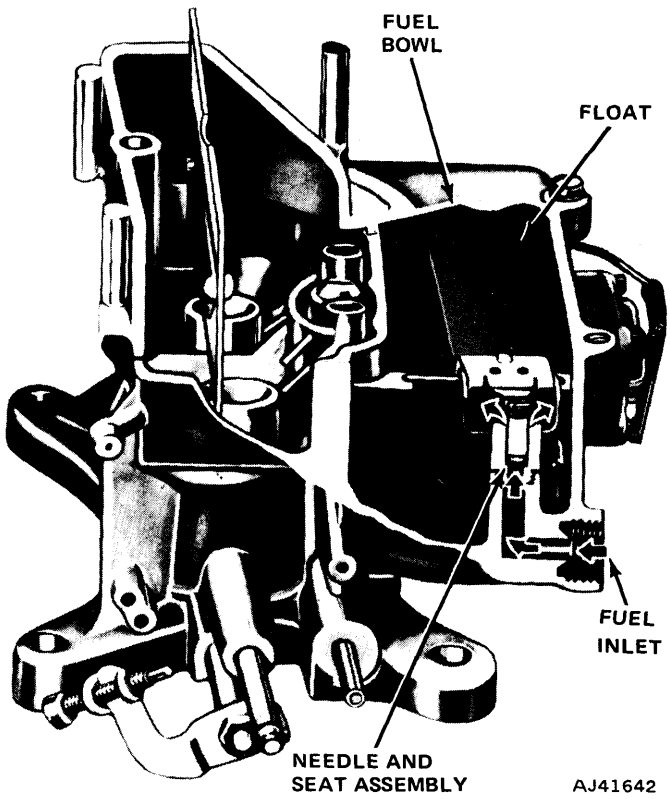


Fig. 4-64 Float Circuit

The float circuit maintains a specified fuel level in the bowl, enabling the basic fuel metering circuits to deliver the proper mixture to the engine. The amount of fuel entering the bowl is regulated by the distance the fuel inlet needle is raised off its seat. The float drops as the

fuel level drops and raises the fuel inlet needle off its seat. This permits additional fuel to enter the bowl past the fuel inlet needle. When the fuel reaches a preset level, the fuel inlet needle drops and only enough fuel is admitted to replace that being used.

Idle (Low Speed) Circuit

Fuel for idle and low speed operation flows from the fuel bowl through the main jets into the main wells. From the main wells, the fuel is metered as it passes through calibrated restrictions at the lower end of the idle tubes. After flowing through the idle tubes, the fuel enters diagonal passages above the tubes. The fuel is metered again as it flows downward through restrictions at the lower end of the diagonal passages and then enters the idle passages in the main body (fig. 4-65).

Air enters the idle system through air bleeds which are located in the main body directly below the booster venturi. The air bleeds serve as anti-siphon vents during off-idle, high speed operation, and when the engine is stopped.

The fuel-air mixture moves down the idle passages past the idle transfer slots which serve as additional air bleeds during curb idle operation. The fuel-air mixture then moves past the idle mixture adjusting screw tips which control the amount of discharge. From the adjusting screw ports, the fuel-air mixture moves through short horizontal passages and is discharged below the throttle valves.

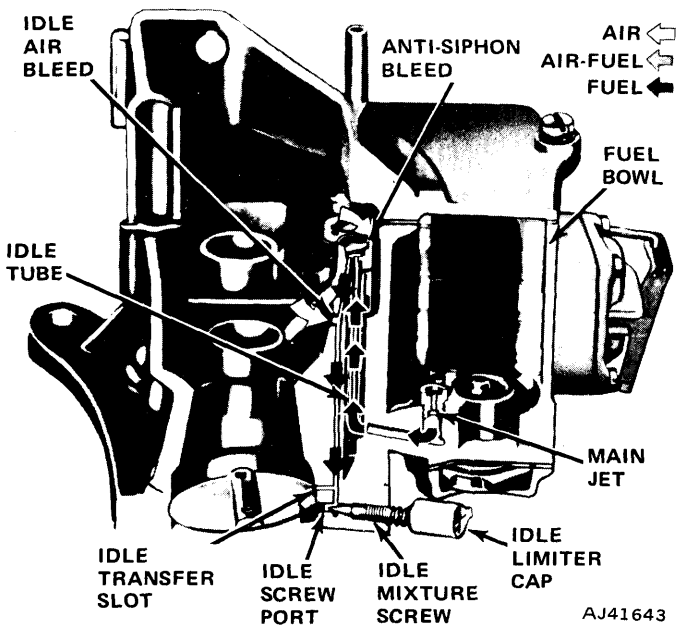


Fig. 4-65 Idle Circuit

At speeds slightly above idle, the idle transfer slots begin discharging the fuel-air mixture as the throttle valves expose them to manifold vacuum. As the throttle valves continue opening and engine speed increases, the airflow through the carburetor increases proportionately. This increased airflow creates a vacuum in the venturi and the main metering system begins discharging a fuel-air mixture. The discharge from the idle circuit tapers off as the main metering circuit begins discharging.

Main Metering (High Speed) Circuit

As engine speed increases, the air velocity through the booster venturi creates a vacuum (low pressure area). Fuel begins to flow through the main metering circuit due to atmospheric pressure in the fuel bowl and low pressure at the main discharge ports. Fuel flows from the fuel bowl, through the main jets, and into the main wells. The fuel then moves up the main well tubes where it is mixed with air. The air, supplied through the main air bleeds, mixes with the fuel through small holes in the sides of the main well tubes. The main air bleeds meter an increasing amount of air, whenever venturi vacuum increases, to maintain the proper fuel-air ratio. The mixture of fuel and air, being lighter than raw fuel, responds quickly to changes in venturi vacuum. It also atomizes more readily than raw fuel.

The fuel-air mixture moves from the main well tubes to the discharge ports and is discharged into the booster venturi (fig. 4-66).

Anti-siphon air bleeds, located near the top of the main well tubes, prevent siphoning of fuel from the main well when decelerating.

Pump Circuit

When the throttle valves are opened quickly, the airflow through the carburetor responds almost immediately. Since the flowing fuel is heavier than air, there is a brief lag in time before the fuel flow can gain sufficient speed to maintain the proper fuel-air ratio. During this lag, the pump circuit supplies the required fuel until the proper fuel-air ratio can be maintained by the other metering circuits (fig. 4-67).

When the throttle valves are closed, the diaphragm return spring exerts force against the diaphragm and pushes it against the cover. Fuel is drawn through the inlet, past the Elastomer valve, and into the pump chamber. A discharge check ball and weight prevents air from being drawn into the pump chamber.

When the throttle valves are opened, the diaphragm rod is pushed inward forcing fuel from the pump chamber into the discharge passages. The Elastomer valve seals the inlet hole during pump operation preventing fuel from returning to the fuel bowl. Fuel under pressure unseats the discharge check ball and weight and is forced through the pump discharge screw. The fuel is then sprayed into the main venturi through discharge ports.

An air bleed is provided in the pump chamber to prevent vapor accumulation and pressure buildup.

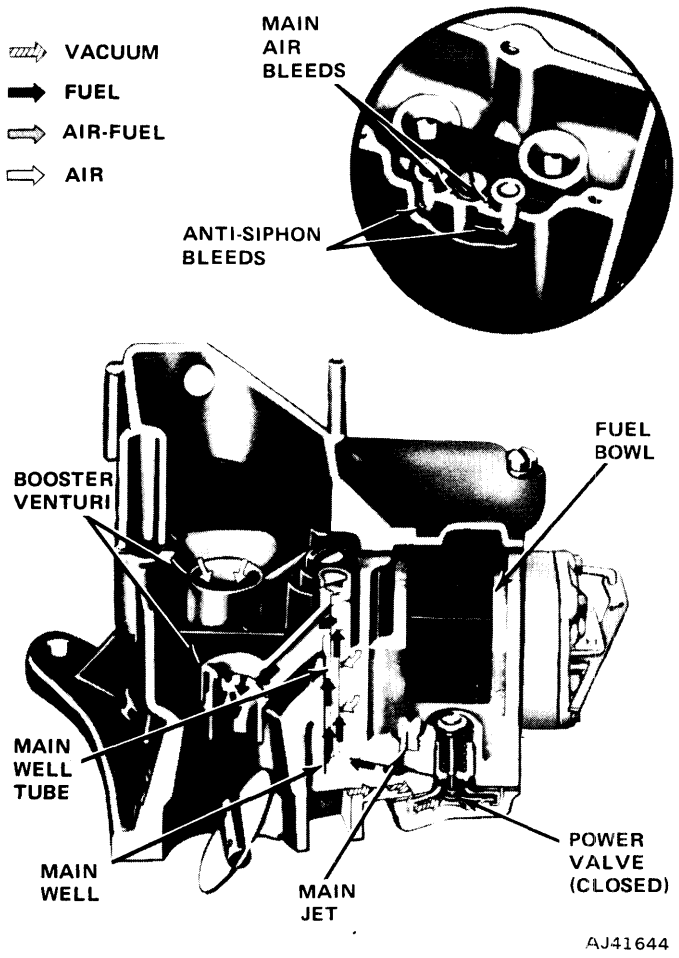


Fig. 4-66 Main Metering Circuit

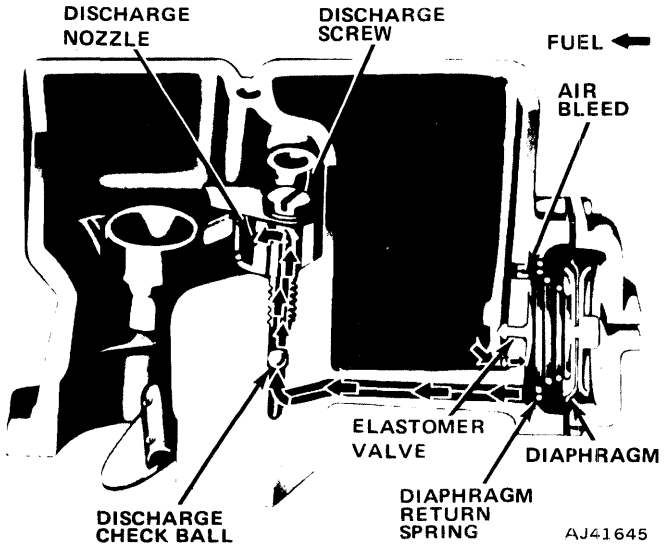


Fig. 4-67 Pump Circuit

Power Enrichment Circuit

During heavy load conditions or high speed operation, the fuel-air ratio must be increased for higher engine output. The power enrichment circuit supplies extra fuel during this period and is controlled by intake manifold vacuum (fig. 4-68).

Manifold vacuum is applied to the power valve diaphragm from an opening in the base of the main body, through a passage in the main body and power valve chamber to the power valve diaphragm. During idle and normal driving conditions, manifold vacuum is high enough to overcome the power valve spring tension and hold the valve closed. When higher engine output is required, the increased load on the engine results in decreased manifold vacuum. The power valve spring opens the first stage of the power valve when manifold vacuum drops below a predetermined value and a small amount of fuel flows through the valve.

When manifold vacuum drops to a lower value, the power valve spring opens the second stage of the power valve and allows a greater amount of fuel to flow through the valve.

The fuel which flows through the power valve is added to the fuel in the main metering circuit to enrich the mixture. As engine load requirements decrease, manifold vacuum inereases and overcomes the tension of the power valve spring, closing the power valve.

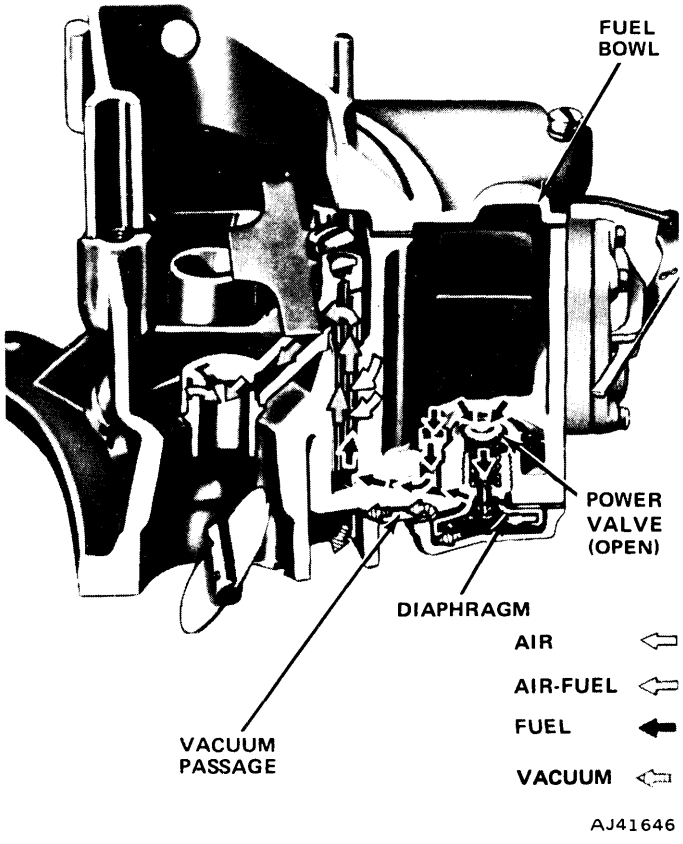


Fig. 4-68 Power Enrichment Circuit

Choke Circuit

The choke valve, located in the air horn assembly, provides a high vacuum above as well as below the

throttle valves when closed. During cranking, vacuum above the throttle valves causes fuel to flow from the main metering and idle circuits. This provides the richer fuel-air mixture required for cold engine starting.

The choke shaft is connected by linkage to a thermostatic coil which winds up when cold and unwinds when warm.

The position of the choke valve is controlled by the action of a two-stage vacuum modulator exerting force against the tension of the thermostatic coil (fig. 4-69).

When the engine is cold, tension of the thermostatic coil holds the choke valve closed. When the engine is started, manifold vacuum is channeled through an opening at the base of the carburetor through a passage of the bottom side of the modulator diaphragm assembly, moving the diaphragm downward against the stop screw.

At the same time, the modulator arm contacts a tang on the choke shaft. The downward movement of the diaphragm assembly compresses the piston spring and exerts a pulling force on the modulator arm, causing the choke valve to open slightly. This first stage of the vacuum modulator is known as initial choke valve clearance.

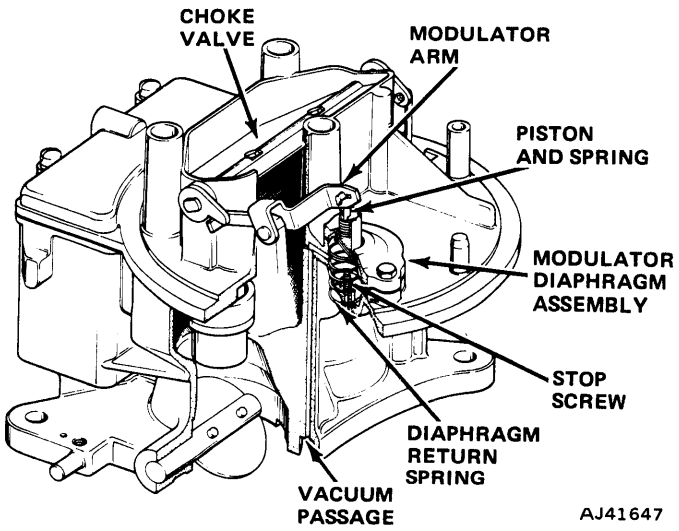


Fig. 4-69 Choke Circuit

As the engine begins to warm up, heated air from the exhaust crossover is routed through a heat tube to the choke housing. A thermostatic bypass valve, which is integral with the choke heat tube, helps prevent premature choke valve opening during the early part of the warmup period. The valve regulates the temperature of the hot airflow to the choke housing by allowing outside [illegible] the heat tube. A thermostatic disc

The tension of the compressed piston spring causes the modulator arm to push against the tang on the choke shaft and further increases the choke valve opening.

As the engine continues to warm up, the heated air rises in temperature. The coil gradually loses its tension and allows the choke valve to open. The heated air is exhausted into the intake manifold.

When the engine reaches operating temperature, the thermostatic coil continues unwinding and exerts pressure against the choke linkage, forcing the choke valve fully open. A continual flow of warm air passes through the choke housing. The thermostatic coil remains heated and the choke valve remains fully open until the engine is stopped and allowed to cool.

During the warmup period, a fast idle must be provided to prevent engine stalling. The fast idle cam, actuated by the choke rod, contacts the fast idle speed adjustment screw and increases engine speed in proportion to the choke valve opening. When the choke valve reaches the fully open position, the fast idle cam rotates free of the fast idle speed adjusting screw, allowing the throttle lever to return to curb idle.

If the engine is accelerated during the warmup period, the resulting drop in manifold vacuum allows the thermostatic coil to momentarily close the choke valve. This provides a richer mixture to prevent engine stalling.

Should the engine become flooded during the starting period, the unloader tang on the fast idle lever contacts the fast idle cam when the accelerator is fully depressed. The choke valve is partially opened by attaching linkage and permits unloading of a flooded engine.

CARBURETOR OVERHAUL

Disassembly

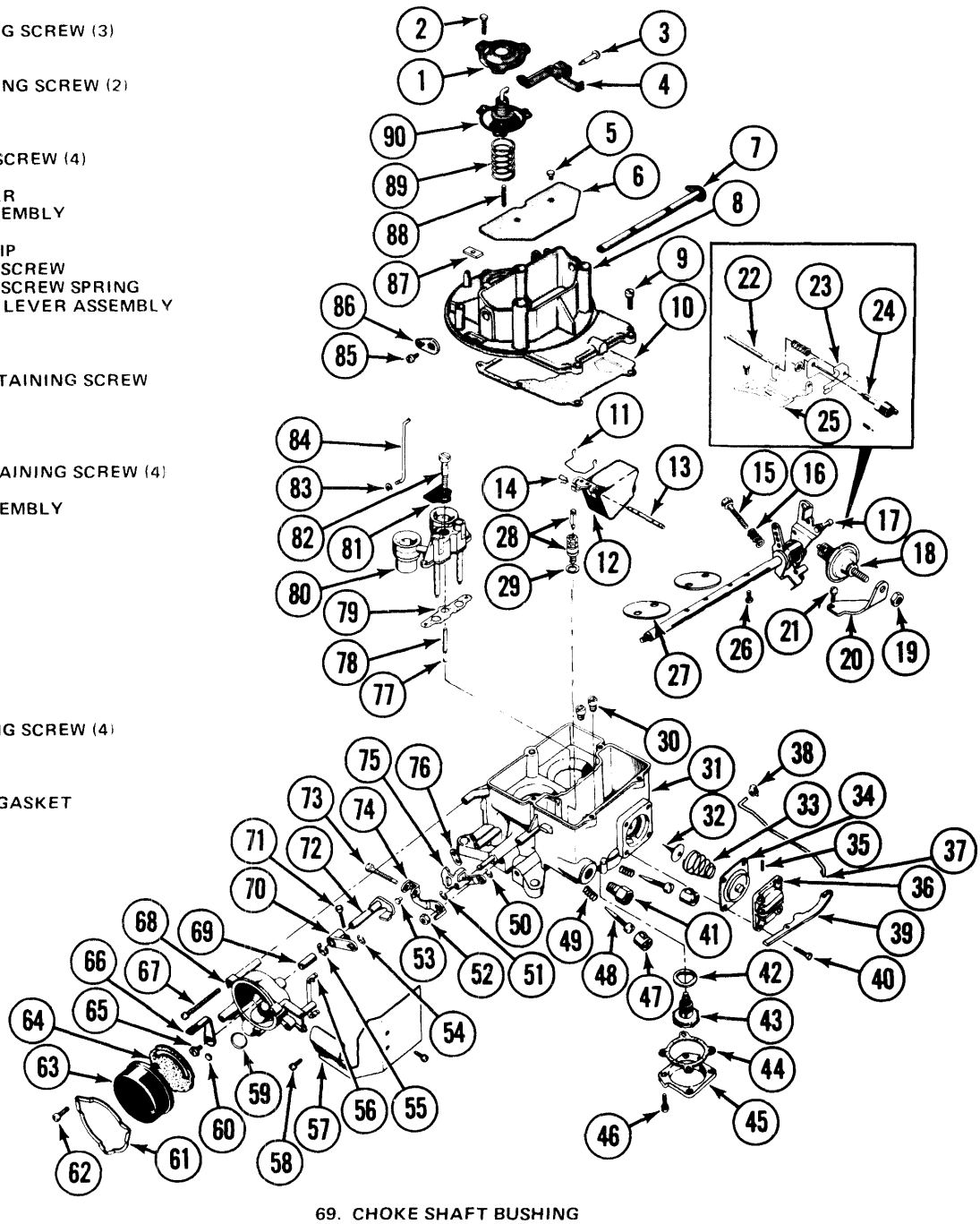
The following procedure applies to complete overhaul with the carburetor removed from the engine.

A complete disassembly is not necessary when performing adjustments. In most cases, service adjustments of individual systems may be completed without removing the carburetor from the engine (refer to Service Adjustment Procedures).

A complete carburetor overhaul includes disassembly, thorough cleaning, inspection and replacement of all gaskets and worn or damaged parts. Refer to figure 4-70 for parts identification.

NOTE: *When using an overhaul kit, use all parts included in kit.*

Removal



1. MODULATOR COVER
2. MODULATOR RETAINING SCREW (3)
3. PIVOT PIN
4. MODULATOR ARM
5. CHOKE VALVE RETAINING SCREW (2)
6. CHOKE VALVE
7. CHOKE SHAFT
8. AIR HORN
9. AIR HORN RETAINING SCREW (4)
10. AIR HORN GASKET
11. FLOAT SHAFT RETAINER
12. FLOAT AND LEVER ASSEMBLY
13. FLOAT SHAFT
14. NEEDLE RETAINING CLIP
15. CURB IDLE ADJUSTING SCREW
16. CURB IDLE ADJUSTING SCREW SPRING
17. THROTTLE SHAFT AND LEVER ASSEMBLY
18. DASHPOT
19. DASHPOT LOCKNUT
20. DASHPOT BRACKET
21. DASHPOT BRACKET RETAINING SCREW
22. ADJUSTING SCREW
23. CARRIAGE
24. ELECTRIC SOLENOID
25. MOUNTING BRACKET
26. THROTTLE VALVE RETAINING SCREW (4)
27. THROTTLE VALVE (2)
28. NEEDLE AND SEAT ASSEMBLY
29. NEEDLE SEAT GASKET
30. MAIN JET (2)
31. MAIN BODY
32. ELASTOMER VALVE
33. PUMP RETURN SPRING
34. PUMP DIAPHRAGM
35. PUMP LEVER PIN
36. PUMP COVER
37. PUMP ROD
38. PUMP ROD RETAINER
39. PUMP LEVER
40. PUMP COVER RETAINING SCREW (4)
41. FUEL INLET FITTING
42. POWER VALVE GASKET
43. POWER VALVE
44. POWER VALVE COVER GASKET
45. POWER VALVE COVER
46. POWER VALVE COVER RETAINING SCREW (4)
47. IDLE LIMITER CAP (2)
48. IDLE MIXTURE SCREW (2)
49. IDLE MIXTURE SCREW SPRING (2)
50. RETAINER
51. RETAINER
52. FAST IDLE LEVER RETAINING NUT
53. FAST IDLE LEVER PIN
54. RETAINER
55. RETAINER
56. FAST IDLE CAM ROD
57. CHOKE SHIELD
58. CHOKE SHIELD RETAINING SCREW (2)
59. PISTON PASSAGE PLUG
60. HEAT PASSAGE PLUG
61. CHOKE COVER RETAINING CLAMP
62. CHOKE COVER RETAINING SCREW (3)
63. CHOKE COVER
64. CHOKE COVER GASKET
65. THERMOSTAT LEVER RETAINING SCREW
66. THERMOSTAT LEVER
67. CHOKE HOUSING RETAINING SCREW (3)
68. CHOKE HOUSING
69. CHOKE SHAFT BUSHING
70. FAST IDLE CAM LEVER
71. FAST IDLE CAM LEVER ADJUSTING SCREW
72. THERMOSTATIC CHOKE SHAFT
73. FAST IDLE SPEED ADJUSTING SCREW
74. FAST IDLE LEVER
75. FAST IDLE CAM
76. CHOKE HOUSING GASKET
77. PUMP DISCHARGE CHECK BALL
78. PUMP DISCHARGE WEIGHT
79. BOOSTER VENTURI GASKET
80. BOOSTER VENTURI ASSEMBLY
81. AIR DISTRIBUTION PLATE
82. PUMP DISCHARGE SCREW
83. RETAINER
84. CHOKE ROD
85. CHOKE LEVER RETAINING SCREW
86. CHOKE PLATE LEVER
87. CHOKE ROD SEAL
88. STOP SCREW
89. MODULATOR RETURN SPRING
90. MODULATOR DIAPHRAGM ASSEMBLY

AJ41648

Fig. 4-70 Parts Identification Model 2100

the engine without removing the fuel from the bowl. The contents of the bowl then may be examined for contamination as the carburetor is disassembled.

(1) Remove air cleaner.

(2) Remove accelerator cable from accelerator lever and disconnect distributor vacuum hose, vacuum hoses, pullback spring, transmission throttle linkage (if equipped), choke clean air tube, solenoid wire (if equipped), PCV hose, in-line fuel filter, and choke heat tube at carburetor.

(3) Remove carburetor retaining nuts, then remove carburetor. Remove carburetor mounting gasket, spacer, and lower gasket from intake manifold.

Installation

(1) Clean gasket mounting surfaces of spacer and carburetor. Place spacer between two replacement gaskets and position spacer and gaskets on the intake manifold. Position carburetor on spacer and gasket and install nuts. To prevent leakage, distortion, or damage to the carburetor body flange, snug the nuts. Then alternately tighten each nut in a criss-cross pattern to 13 foot-pounds torque.

(2) Connect in-line fuel filter, throttle cable, choke heat tube, PCV hose, pullback spring, solenoid wire (if equipped), transmission throttle linkage (if equipped), choke clean air tube, vacuum hoses, and distributor vacuum line.

(3) Adjust engine idle speed, idle fuel mixture, and anti-stall dashpot if equipped (refer to Section 4A—Emission Controls—Exhaust Systems).

Disassembly

(1) Remove air cleaner anchor screw (fig. 4-70).

(2) Remove automatic choke rod retainer from thermostatic choke shaft lever.

(3) Remove air horn attaching screws, lockwashers, and carburetor identification tag. Remove air horn and air horn gasket.

(4) Remove choke rod by loosening screw that secures choke shaft lever to choke shaft. Remove rod from air horn. Slide plastic dust seal out of air horn.

(5) Remove choke modulator assembly (fig. 4-71).

(6) Remove fast idle cam retainer (fig. 4-72).

(7) Remove choke shield.

(8) Remove thermostatic choke spring housing retaining screws and clamp, housing, and gasket.

(9) Remove fast idle cam rod from fast idle cam lever.

(10) Remove choke housing assembly retaining screws, housing assembly, and gasket.

(11) Remove fast idle cam.

(12) Remove thermostat lever retaining screw and washer. Remove thermostatic choke shaft and fast idle cam lever from the choke housing.

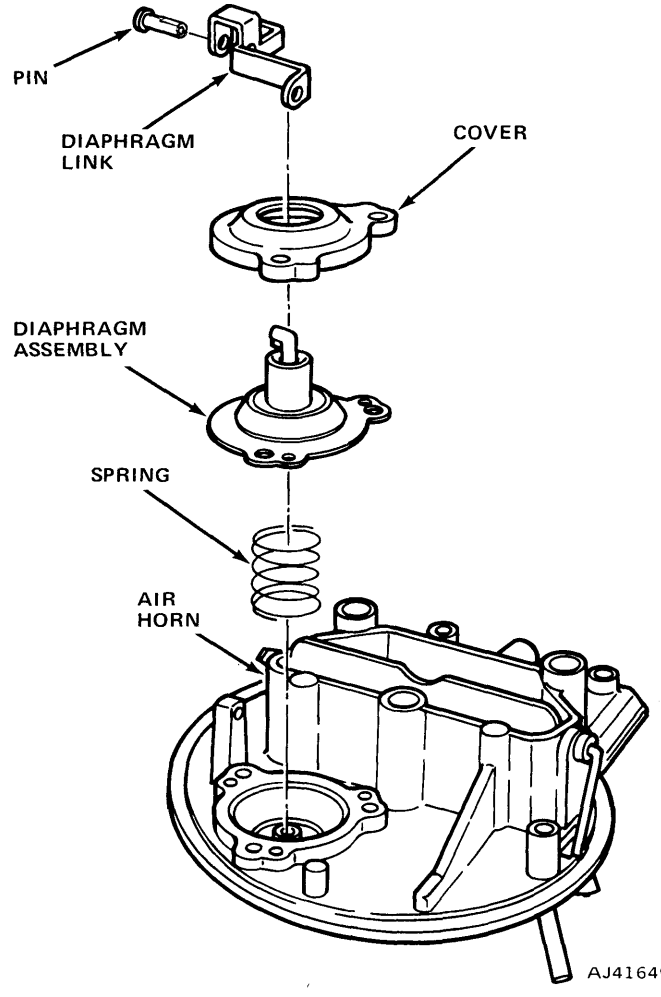


Fig. 4-71 Choke Modulator Assembly

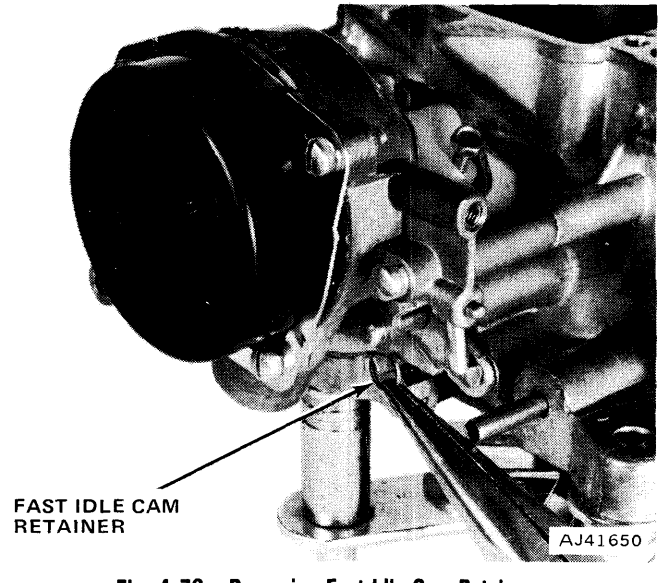


Fig. 4-72 Removing Fast Idle Cam Retainer

(13) Pry float shaft retainer from fuel inlet seat (fig. 4-73). Remove float, float shaft retainer, and fuel inlet needle assembly. Remove retainer and float shaft from float lever.

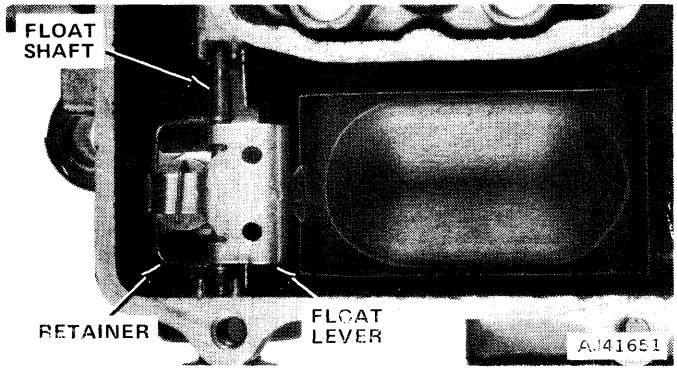


Fig. 4-73 Float Assembly

(14) Remove fuel inlet needle seat and gasket. Remove main jets with Main Metering Jet Wrench J-10174-01 (fig. 4-74).

(15) Remove accelerator pump discharge screw, air distribution plate, booster venturi and gasket (fig. 4-75). Invert main body and let accelerating pump discharge weight and ball fall into hand.

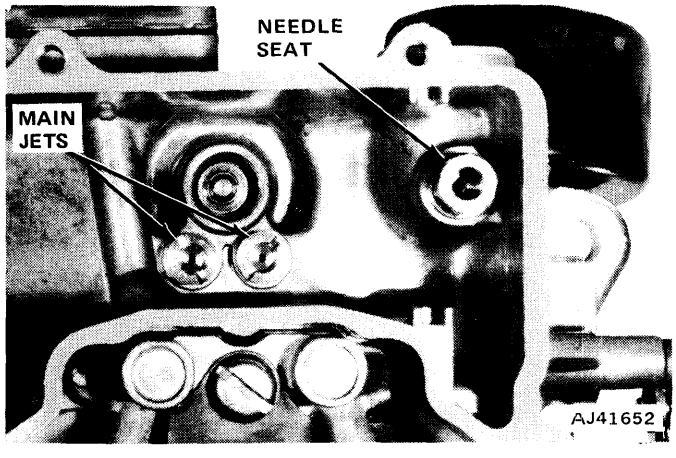


Fig. 4-74 Interior View of Fuel Bowl

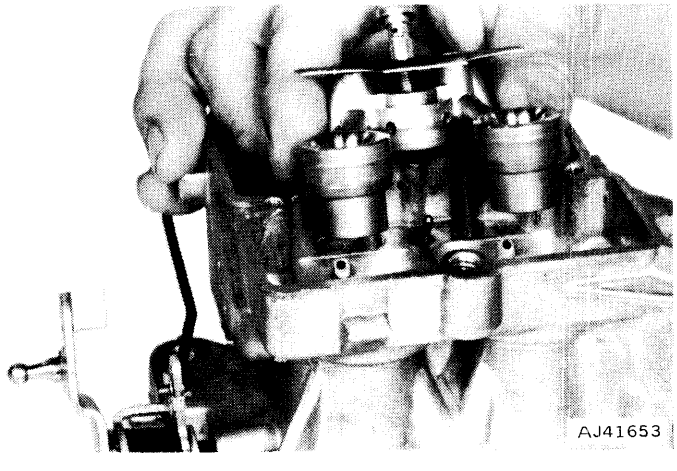


Fig. 4-75 Removing Booster Venturi Assembly

(16) Disconnect accelerator pump operating rod from overtravel lever. Remove rod and retainer.

(17) Remove accelerating pump cover attaching screws. Remove accelerating pump cover, diaphragm assembly, and spring (fig. 4-76).

(18) Remove Elastomer valve by grasping firmly and pulling out.

NOTE: *If the Elastomer valve tip broke off during removal, be sure to remove the tip from the fuel bowl. Elastomer valve must be replaced whenever it has been removed from the carburetor.*

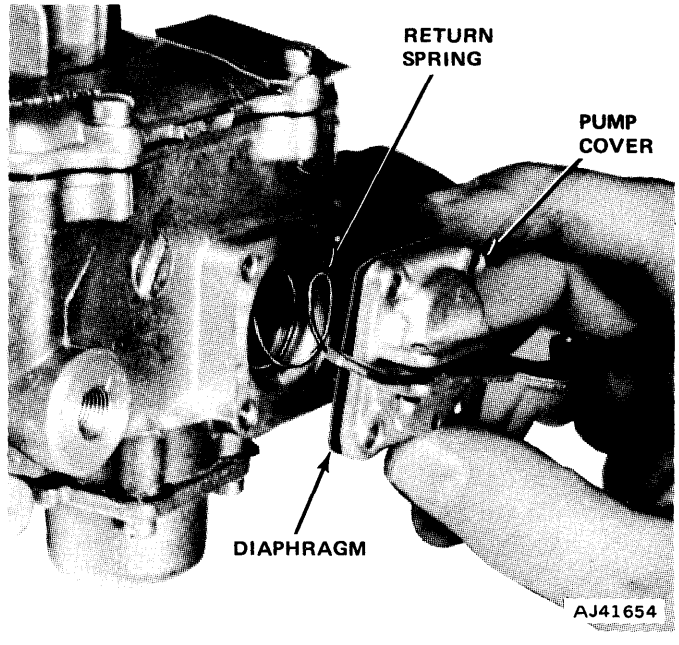


Fig. 4-76 Removing Accelerator Pump Assembly

(19) Invert main body and remove power valve cover, gasket and screws. Remove power valve with 1-inch socket (fig. 4-77). Remove and discard power valve gasket.

(20) Remove limiter caps from idle mixture adjusting screws using soldering gun to cut through limiter caps. Remove idle mixture adjusting screws and springs.

(21) Remove dashpot or electric solenoid, if equipped.

Cleaning and Inspection

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

The cleaning and inspection of only those parts not included in the carburetor overhaul repair kit are covered here. All gaskets and parts included in the repair kit should be installed when the carburetor is assembled and the old gaskets and parts should be discarded.

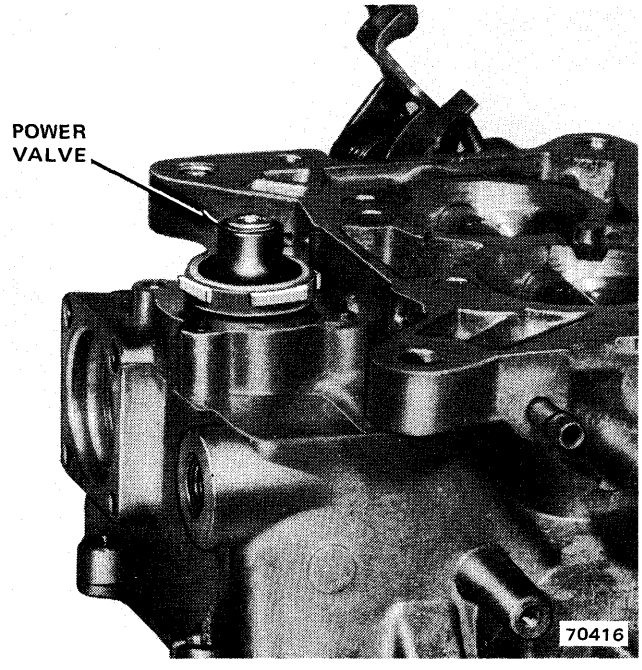


Fig. 4-77 Removing Power Valve

Wash all the carburetor parts except accelerating pump diaphragm, power valve, modulator diaphragm, and the dashpot assembly in clean commercial carburetor cleaning solvent. If a commercial solvent is not available, lacquer thinner or denatured alcohol may be used. If a commercial cleaner is used, rinse the parts in not water to remove all traces of the cleaning solvent, then dry them with compressed air. Wipe all parts that cannot be immersed in solvent with a clean, soft, dry cloth. Be sure all dirt, gum, carbon, and other foreign matter are removed from all parts.

Force compressed air through all passages of the carburetor.

CAUTION: *Do not use a wire brush to clean any parts or a drill or wire to clean out any openings or passages in the carburetor. A drill or wire may enlarge the hole or passage, changing the calibration of the carburetor.*

Check the choke shaft for grooves, wear, and excessive looseness or binding. Inspect the thermostatic choke shaft and polish with fine crocus cloth or steel weool. Inspect the choke plate for nicked edges and for ease of operation and free it if necessary. Be sure all carbon and foreign material has been removed from the automatic choke housing. Check the throttle shafts in the bores for excessive looseness or binding and check the throttle plates for burrs which prevent proper closure. Inspect the main body, air horn, booster venturi assemblies, choke housing and choke cover, power valve cover and accelerating pump cover for cracks. Replace the float if the arm needle contact surface is grooved. If the float is serviceable, polish the needle contact surface of the arm with crocus cloth or steel wool. Replace float shaft if worn. Replace all screws and nuts that have stripped threads. Replace all distorted or broken springs. Inspect all gasket mating surfaces for nicks and burrs. Repair or replace any parts that have a damaged gasket surface.

Assembly

Be sure all holes in the replacement gaskets have been properly punched and that no foreign material has adhered to the gaskets. Inspect accelerating pump diaphragm for tears or cuts.

(1) Install fast idle speed adjusting screw and spring on fast idle lever.

(2) Install dashpot or electric solenoid, if equipped.

(3) Place fast idle lever assembly on throttle shaft and install retaining washer and nut.

(4) Lubricate tip of replacement Elastomer valve and insert tip into accelerator pump cavity center hole.

(a) Using a pair of needlenose pliers, reach into fuel bowl and grasp valve tip.

(b) Pull valve in until it seats in pump cavity wall and cut off tip forward of retaining shoulder.

(c) Remove tip from bowl.

(5) Install accelerator pump diaphragm return spring on boss in chamber. Insert diaphragm assembly in cover, place cover and diaphragm assembly into position on main body and install cover screws.

(6) Insert accelerating pump operating rod into inboard hole of accelerating pump actuating lever.

(7) Position accelerating pump operating rod retainer over hole 3 (three) in the overtravel lever.

(8) Invert main body and install power valve and replacement gasket. Tighten valve securely.

(9) Install idle mixture adjusting screws and springs. Turn needles in gently with fingers until they just touch seat, then back them off two turns for preliminary idle fuel mixture adjustment.

NOTE: *Do not install idle mixture limiters at this time.*

(10) Install power valve cover and replacement gasket.

NOTE: *The power valve cover must be installed with the limiter stops on the cover in position to provide a positive stop for the tabs on the idle adjusting limiters.*

(11) Install main jets, fuel inlet seat, and replacement gasket.

NOTE: *Be sure the correct jets are installed.*

(12) Install fuel inlet needle assembly in fuel inlet seat.

NOTE: *Fuel inlet needles and seats are matched assemblies. Be sure the correct needle and seat are assembled together.*

(13) Slide float shaft into float lever. Position float shaft retainer on float shaft.

(14) Install float damper spring with short wire under float lever (fig. 4-78).

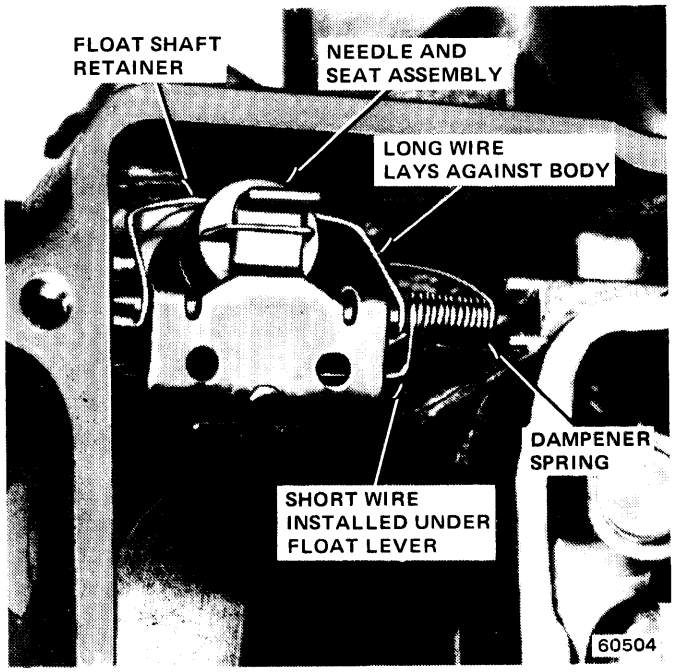


Fig. 4-78 Damper Spring Installation

(15) Insert float assembly into fuel bowl and hook float lever tab under fuel inlet needle assembly. Insert float shaft into its guides at sides of fuel bowl.

(16) Press float shaft retainer in groove on fuel inlet needle seat and check float setting. Refer to Service Adjustment Procedures.

(17) Drop accelerating pump discharge ball into passage in main body.

(18) Position replacement booster venturi gasket and booster venturi in main body.

(19) Drop accelerating pump discharge weight on top of ball.

(20) Install air distribution plate and accelerator pump discharge screw and tighten screw.

(21) Position fast idle cam lever on thermostatic choke shaft.

NOTE: *The bottom of the fast idle cam lever adjusting screw must rest against the tang on the choke shaft.*

(a) Insert choke shaft into the rear of choke housing.

(b) Position choke shaft so that choke hole in shaft is to left side of choke housing.

(22) Install fast idle cam rod on fast idle cam lever.

(23) Place choke housing vacuum pickup port-to-main body gasket on choke housing flange.

(24) Wipe choke shaft bushing clean (small piece of teflon material), and install in choke shaft bore in choke housing.

(25) Position choke housing on main body and install choke housing attaching screw.

(26) Install retainer to fast idle cam rod at fast idle cam.

(27) Install thermostat lever.

(28) Install choke cover, gasket, retainer and screws. Turn choke housing 1/14 turn rich and tighten one retaining screw.

(29) Install choke shield.

(30) Inset choke rod into choke valve lever. Lower end of rod must protrude through air horn.

(31) Install choke valve lever to choke shaft and tighten screw.

(32) Install plastic dust shield to choke rod.

(33) Position main body gasket on main body.

(34) Position air horn on main body and gasket so that choke plate rod fits through opening in main body. Be sure plastic seal is free to slide.

(35) Insert end of choke valve rod into choke valve lever.

(36) Install air horn attaching screws and carburetor identification tag, and tighten attaching screws.

(37) Attach choke valve rod and retainer to thermostatic choke shaft lever.

(38) Install air cleaner anchor screw. Tighten to 9 foot-pounds torque.

(39) Install modulator diaphragm return spring in recess of air horn. Position modulator cover over diaphragm assembly and engage piston rod with keyed slot of modulator arm. Place diaphragm and cover over return spring and install cover retaining screws.

(40) Adjust initial choke valve clearance. Refer to Service Adjustment Procedures.

(41) Adjust fast idle cam linkage. Refer to Service Adjustment Procedures.

(42) Adjust choke unloader clearance. Refer to Service adjustment Procedures.

(43) Loosen choke cover screw and set cover index. Refer to Specifications. Tighten all cover screws.

SERVICE ADJUSTMENT PROCEDURES

Float Level Adjustment—Dry

(1) Remove air horn assembly and gasket. Raise float by pressing down on float tab until fuel inlet needle is lightly seated.

(2) Using a T-scale, measure distance from the fuel bowl machined surface to the flat surface of either corner of the float, at the free end. Refer to Carburetor Service Specifications for the correct setting.

(3) Bend float tab to adjust. Hold fuel inlet needle off its seat while adjusting to prevent damage to the Viton tipped needle (fig. 4-79).

Float Level Adjustment—Wet

WARNING: *Exercise extreme caution when performing this procedure. Fuel vapor is present when carburetor air horn is removed. Extinguish cigarettes and other smoking materials.*

(1) With vehicle on a flat, level surface and engine at normal operating temperature, remove carburetor air cleaner assembly, and anchor screw.

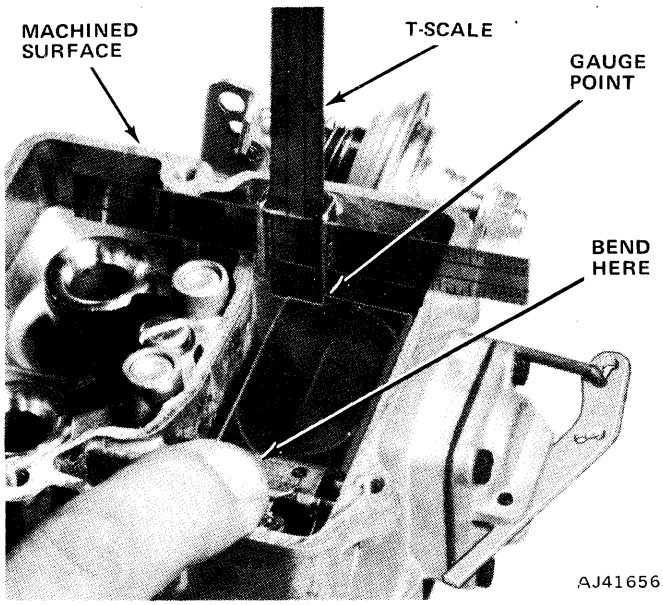


Fig. 4-79 Dry Float Adjustment

(2) Remove air horn attaching screws and carburetor identification tag. Temporarily place air horn and gasket in position on carburetor main body and start engine. Let engine idle for a few minutes, then rotate air horn out of way and remove air horn gasket to provide access to the float assembly.

(3) While engine is idling, use T-scale to measure vertical distance from top machined surface of carburetor main body to level of fuel in fuel bowl (fig. 4-80). The measurement should be made at least 1/4 inch away from any vertical surface to assure an accurate reading, because surface of fuel is concave (higher at the edges than in the center). Care must be exercised to measure fuel level at point where float contacts fuel, Refer to Carburetor Service Specifications for correct fuel level (wet) setting.

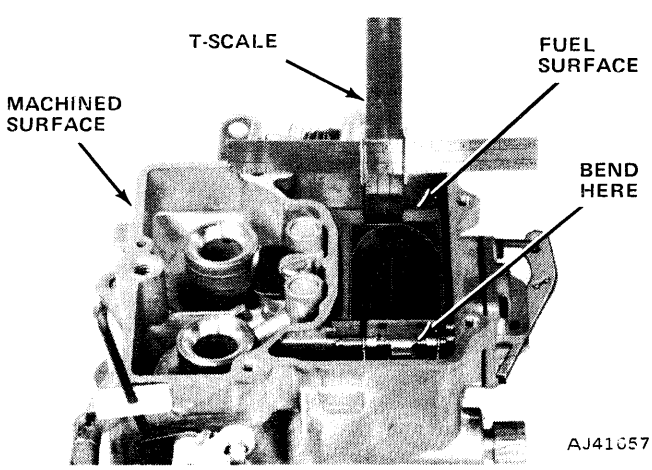


Fig. 4-80 Wet Float Level Adjustment

(4) If any adjustment is required, stop engine to minimize hazard of fire due to fuel spray when float setting is disturbed. To adjust the fuel level, bend float tab (contacting the fuel inlet valve) upward in relation to original position to raise fuel level, and downward to lower it. Each time an adjustment is made to float tab to alter fuel level, start engine amd permit to idle for a few minutes to stabilize fuel level. Check fuel level after each adjustment until specified level is obtained.

(5) Install replacement air horn gasket, air horn assembly, carburetor identification tag and attaching screws. Be sure plastic dust seal on choke operating rod is positioned correctly and does not cause rod to bind. Tighten screws. Install air cleaner anchor screw and tighten to 7 to 12 foot-pounds torque.

(6) Check idle fuel mixture, idle speed adjustments and the carburetor dashpot adjustment, if equipped. Adjust carburetor as required. Refer to Carburetor Service Specifications.

(7) Install air cleaner.

Initial Choke Valve Clearance Adjustment

(1) Loosen choke cover retaining screws to allow movement of cover. Rotate choke cover 1/4-turn counterclockwise (rich) from index and tighten retaining screws.

(2) Disconnect choke heat inlet tube. Align fast idle speed adjusting screw with second step (index) of fast idle cam.

(3) Start engine without moving accelerator linkage. Turn fast idle cam lever adjusting screw out (counterclockwise) three (3) full turns. Measure clearance between lower edge of choke valve and air horn wall. Refer to Carburetor Service Specifications for correct setting.

CAUTION: *Use extreme care while twisting the modulator arm to avoid damaging the nylon piston rod of the modulator assembly.*

(4) Adjust by grasping modulator arm securely with pair of pliers at point A and twisting arm at point B with second pair of pliers. Twist toward front of carburetor to increase clearance and toward the rear of carburetor to decrease clearance (fig. 4-81).

(5) After completing adjustment, stop engine and connect choke heat tube. Turn fast idle cam lever adjusting screw in (clockwise) three full turns. Do not reset choke cover until fast idle cam linkage adjustment has been performed.

Fast Idle Cam Linkage Adjustment

(1) Push down on fast idle cam lever until fast idle speed adjusting screw is in contact with second step (index) and against shoulder of high step.

(2) Measure clearance between lower edge of choke valve and air horn wall (fig. 4-82). Refer to Carburetor Service Specifications for the correct setting.

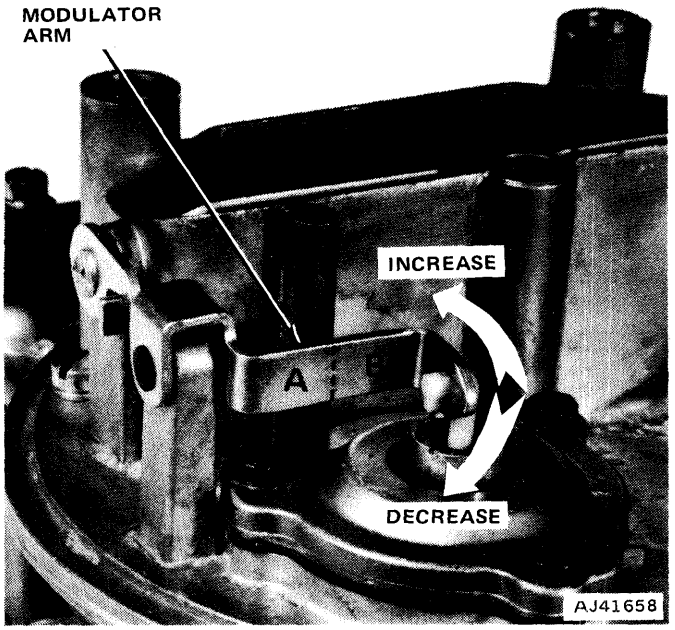


Fig. 4-81 Initial Choke Valve Clearance Adjustment

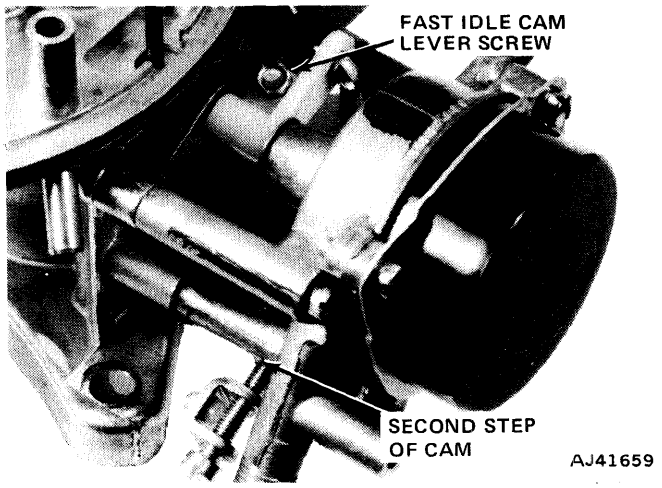


Fig. 4-82 Fast Idle Cam Linkage Adjustment

(3) Adjust by turning fast idle cam lever screw.

(4) Loosen choke cover retaining screws and adjust choke as outlined under Automatic Choke Adjustment.

(5) Install choke shield clamp and retaining screws.

Choke Unloader Adjustment

(1) Hold throttle fully open and apply pressure on choke valve toward closed position.

(2) Measure clearance between lower edge of choke valve and air horn wall. Refer to Carburetor Service Specifications for correct setting.

CAUTION: *Do not bend the unloader tang downward from a horizontal plane.*

(3) Adjust by bending unloader tang which contacts the fast idle cam as shown in figure 4-83. Bend toward the cam to increase clearance and away from the cam to decrease clearance.

(4) After making adjustment, open throttle until unloader tang is directly below fast idle cam pivot. There must be exactly 0.070-inch clearance between unloader tang and edge of fast idle cam (fig. 4-84).

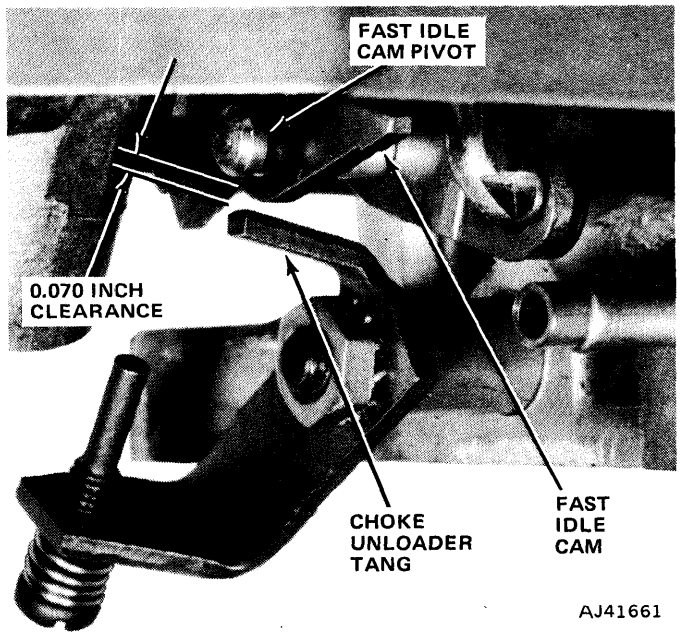


Fig. 4-83 Unloader Adjustment

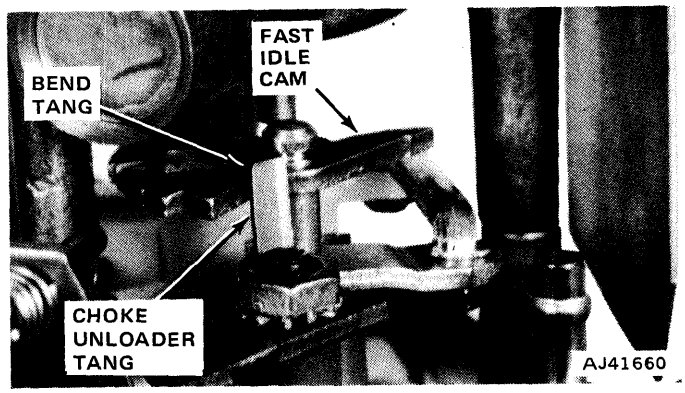


Fig. 4-84 Unloader-to-Fast Idle Cam Clearance

(5) Operate throttle and check unloader tang to make sure it does not bind, contact, or stick on any part of carburetor casting or linkage. After carburetor installation, check for full throttle opening when throttle is operated from inside the vehicle. If full throttle opening is not obtainable, it may be necessary to remove excess padding under floormat or reposition throttle cable bracket located on engine.

Automatic Choke Adjustment

Loosen choke cover retaining screws and rotate cover in the desired direction as indicated by an arrow on the

face of the cover. Refer to Carburetor Service Specifications for the correct setting. The specified setting will be satisfactory for most driving conditions. In the event that stumbles or stalls occur on acceleration during engine warmup, the choke may be set richer or leaner using the tolerance provided to meet individual engine requirements.

Accelerating Pump Stroke Adjustment

The accelerating pump stroke has been set to keep the exhaust emission level of the engine within the specified limits. The additional holes provided for pump stroke adjustment are for adjusting the stroke for specific engine and climate applications. The primary throttle shaft lever (overtravel lever) has four holes and the accelerating pump link has two holes to control the accelerating pump stroke (fig. 4-85).

For normal operating conditions, the accelerating pump operating rod should be in the third hole in the overtravel lever (for all carburetors except the 6DM2J which should be in the second hole) and the inboard hole (hole closest to the pump plunger) in the accelerating pump link. In extremely hot climate regions, the pump stroke may be shortened to provide smoother acceleration by placing the pump rod in the second hole of the overtravel lever. In extremely cold climates, the pump stroke may be increased to provide smoother acceleration by placing the pump rod in the fourth hole of the overtravel lever.

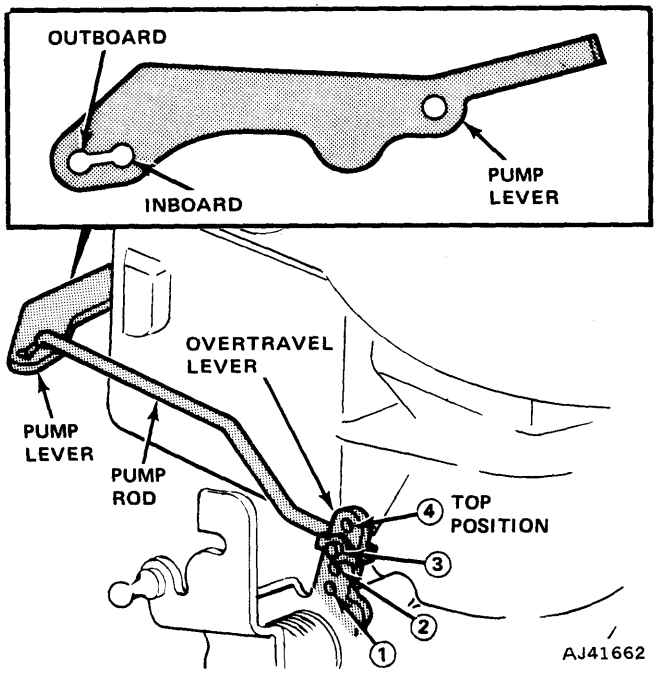


Fig. 4-85 Accelerating Pump Stroke Adjustment

The accelerating pump operating rod should be in the third hole in the overtravel lever and the inboard hole (hole closest to the pump plunger) in the accelerating pump link.

(1) Remove operating rod from retaining clip.

(2) Position clip over specified hole in overtravel lever. Insert operating rod through clip and overtravel lever. Snap release clip over rod.

Idle Speed and Mixture Adjustment

Refer to Engine Idle Setting Procedures in Emission Control section.

Dashpot Adjustment (On Vehicle)

With the throttle set at curb idle position, fully depress the dashpot stem and measure the clearance between the stem and the throttle lever (fig. 4-86).

Refer to Carburetor Service Specifications for correct setting. Adjust by loosening the locknut and turning the dashpot.

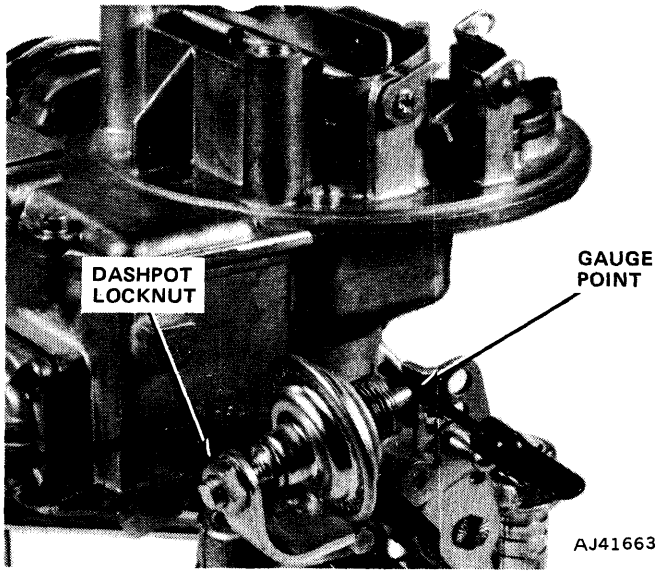


Fig. 4-86 Dashpot Adjustment

Fast Idle Speed Adjustment (On Vehicle)

Set the fast idle speed with the engine at operating temperature and the fast idle speed adjusting screw against the index mark (second step) of the fast idle cam. Refer to Carburetor Service Specifications for the

correct rpm setting. Adjust by turning the fast idle speed adjusting screw.

NOTE: *When adjusting fast idle speed, plug EGR port and spark port.*

CHOKE MECHANISM SERVICE

The choke mechanism may be serviced without removing the carburetor from the engine. If the choke binds, sticks, or does not operate smoothly, perform the following:

(1) Remove choke cover.

(2) Remove choke lever and screw.

(3) Remove choke lever housing. Slide off thermostatic choke shaft. Remove thin plastic bearing material.

(4) Polish shaft with crocus cloth. Wipe bearing material clean and insert into housing.

(5) Wipe fast idle cam clean.

(6) Install choke housing to thermostatic choke shaft and install housing screws.

(7) Install choke lever and screw.

(8) Install housing cover and set to specification.

Model 2100 Carburetor Calibrations

	6DM2J	6RHM2	6DA2J	6DM2	6RHA2
Throttle Bore Size	1.562	1.562	1.562	1.562	1.562
Main Venturi Size	1.080	1.080	1.080	1.080	1.080
Fuel Inlet Diameter	0.101	0.101	0.101	0.101	0.101
Low Speed Jet (Tube)	0.028	0.031	0.031	0.031	0.029
Economizer	0.046	0.055	0.046	0.046	0.055
Idle Air Bleed	0.106	0.110	0.101	0.106	0.110
Main Jet Number	49	47	48	47	47
High Speed Bleed	0.052	0.031	0.052	0.052	0.031
Power Valve Timing (Inches of Hg)					
First Stage	10.00	8.00	10.00	10.00	7.50
Second Stage	5.50	3.50	5.50	5.50	2.00
Accelerator Pump Jet	0.028	0.024	0.024	0.032	0.024
Vacuum Spark Port					
Height	0.050	0.050	0.050	0.050	0.050
Width	0.085	0.085	0.085	0.085	0.085
Choke Heat Bypass	0.114	0.114	0.114	0.114	0.114
Choke Heat Inlet Restriction	0.076	0.076	0.076	0.076	0.076
Choke Vacuum Restriction	0.082	0.082	0.089	0.082	0.082

60575

CARBURETOR MODEL 2150—2 VENTURI WITH ALTITUDE COMPENSATION

GENERAL

The Model 2150 carburetor with altitude compensation is installed on eight-cylinder engines in cars sold for use at elevations of 4000 feet or more.

This carburetor features a compensation circuit which mixes a metered amount of additional air into the fuel/air mixture to prevent an over-rich condition at higher altitudes. An automatic device (aneroid) senses atmospheric pressure and overrides the compensation feature at lower altitudes.

NOTE: *At extremely low barometric pressure levels, the aneroid may open the bleed valve at sea level. This is normal and does not indicate a faulty component.*

The Model 2150 carburetor is a two-venturi design which incorporates two lightweight aluminum assemblies, the air horn and the main body.

The air horn assembly serves as the main body cover and contains the choke assembly and fuel bowl vents.

The throttle shaft assembly and all units of the fuel metering systems are contained in the main body assembly. The automatic choke assembly, the solenoid and the altitude compensation assembly are attached to the main body (fig. 4-87).

Identification

The carburetor is identified by a code number and build date which is stamped on the identification tag.

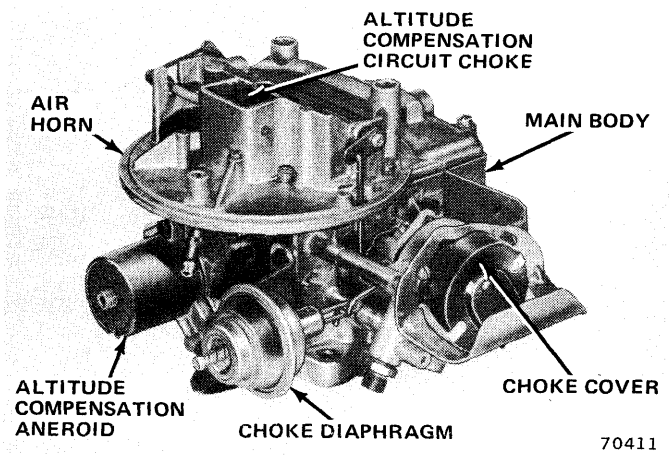


Fig. 4-87 Model 2150 Carburetor Assembly

Each carburetor build month is coded alphabetically beginning with the letter A in January and ending with the letter M in December (the letter I is not used). The tag is attached to the carburetor and must remain with the carburetor to assure proper identification (fig. 4-88).

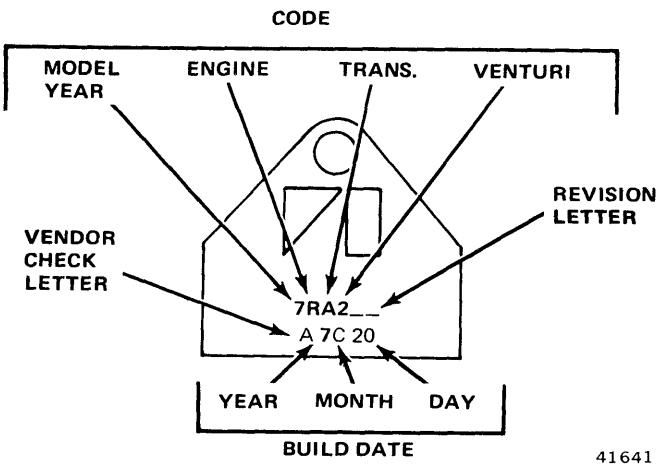


Fig. 4-88 Identification Tag

CARBURETOR CIRCUITS

The Model 2150 carburetor utilizes four basic fuel metering circuits: the idle (low speed) circuit provides a fuel-air mixture for idle and low speed performance. The main metering (high speed) circuit provides an economical mixture for normal cruising speeds. The pump circuit provides additional fuel during low speed acceleration. The power enrichment circuit provides a rich mixture when high power output is needed.

In addition to these four basic metering circuits, the carburetor contains a float (fuel inlet) circuit, a choke circuit and an altitude compensation circuit.

Float (Fuel Inlet) Circuit

Fuel under pressure enters the fuel bowl through the fuel inlet fitting in the main body.

The Viton tipped fuel inlet needle is controlled by the float and lever assembly which is hinged on the float shaft. A wire retainer is hooked over grooves on opposite ends of the float shaft and into a groove behind the fuel inlet needle seat. The retainer holds the float shaft firmly in the fuel bowl guides and also centers the float assembly in the fuel bowl.

An integral retaining clip is hooked over the end of the float lever and attached to the fuel inlet needle. This assures reaction of the fuel inlet needle during downward movement of the float (fig. 4-89).

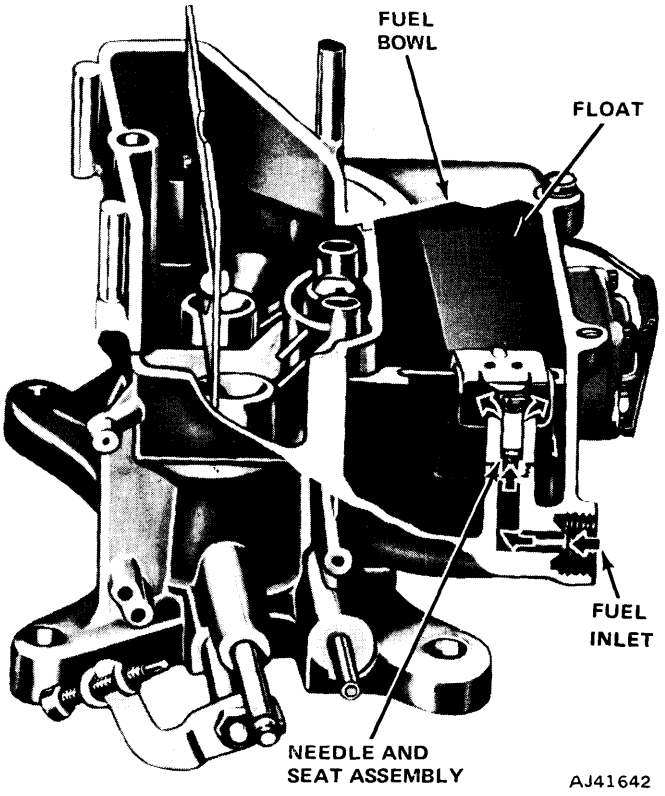


Fig. 4-89 Float Circuit

The float circuit maintains a specified fuel level in the bowl, enabling the basic fuel metering circuits to deliver the proper mixture to the engine. The amount of fuel entering the bowl is regulated by the distance the fuel inlet needle is raised off its seat. The float drops as the fuel level drops and raises the fuel inlet needle off its seat. This permits additional fuel to enter the bowl past the fuel inlet needle. When the fuel reaches a preset level, the fuel inlet needle is lowered to a position at which only enough fuel is admitted to replace that being used.

Idle (Low Speed) Circuit

Fuel for idle and low speed operation flows from the fuel bowl through the main jets into the main wells (fig. 4-90). From the main wells, the fuel is metered as it passes through calibrated restrictions at the lower end of the idle tubes. After flowing through the idle tubes, the fuel enters diagonal passages above the tubes. The fuel is metered again as it flows downward through restrictions at the lower end of the diagonal passages and then enters the idle passages in the main body.

Air enters the idle system through air bleeds which are located in the main body directly below the booster venturi. The air bleeds serve as anti-siphon vents during off-idle, high speed operation, and when the engine is stopped.

The fuel-air mixture moves down the idle passages past the idle transfer slots which serve as additional air bleeds during curb idle operation. The fuel-air mixture then moves past the idle mixture adjusting screw tips which control the amount of discharge. From the adjusting screw ports, the fuel-air mixture moves through short horizontal passages and is discharged below the throttle valves.

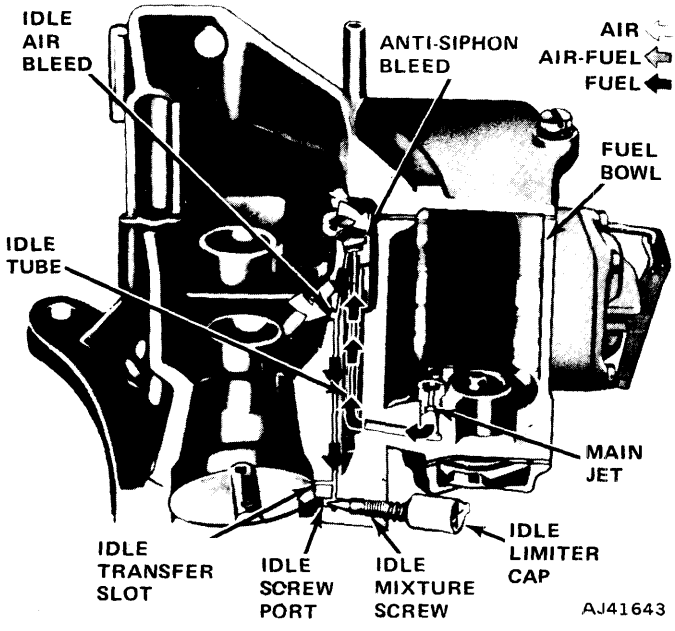


Fig. 4-90 Idle Circuit

At speeds slightly above idle, the idle transfer slots begin discharging the fuel-air mixture as the throttle valves expose them to manifold vacuum. As the throttle valves continue opening and engine speed increases, the airflow through the carburetor increases proportionately. This increased airflow creates a partial vacuum in the venturi and the main metering system begins discharging a fuel-air mixture. The discharge from the idle circuit tapers off as the main metering circuit begins discharging.

Main Metering (High Speed) Circuit

As engine speed increases, the air velocity through the booster venturi creates a partial vacuum (low pressure area). Fuel begins to flow through the main metering circuit due to atmospheric pressure in the fuel bowl and low pressure at the main discharge ports (fig. 4-91). Fuel flows from the fuel bowl, through the main jets, and into the main wells. The fuel then moves up the main well tubes where it is mixed with air. The air, supplied through the main air bleeds, mixes with the fuel through small holes in the sides of the main well tubes. The main air bleeds meter an increasing amount of air, whenever venturi vacuum increases, to maintain the proper fuel-air ratio. The mixture of fuel and air, being lighter than raw fuel, responds quickly to changes in venturi vacuum. It also atomizes more readily than raw fuel.

The fuel-air mixture moves from the main well tubes to the discharge ports and is discharged into the booster venturi.

Anti-siphon air bleeds, located near the top of the main well tubes, prevent siphoning of fuel from the main well when decelerating.

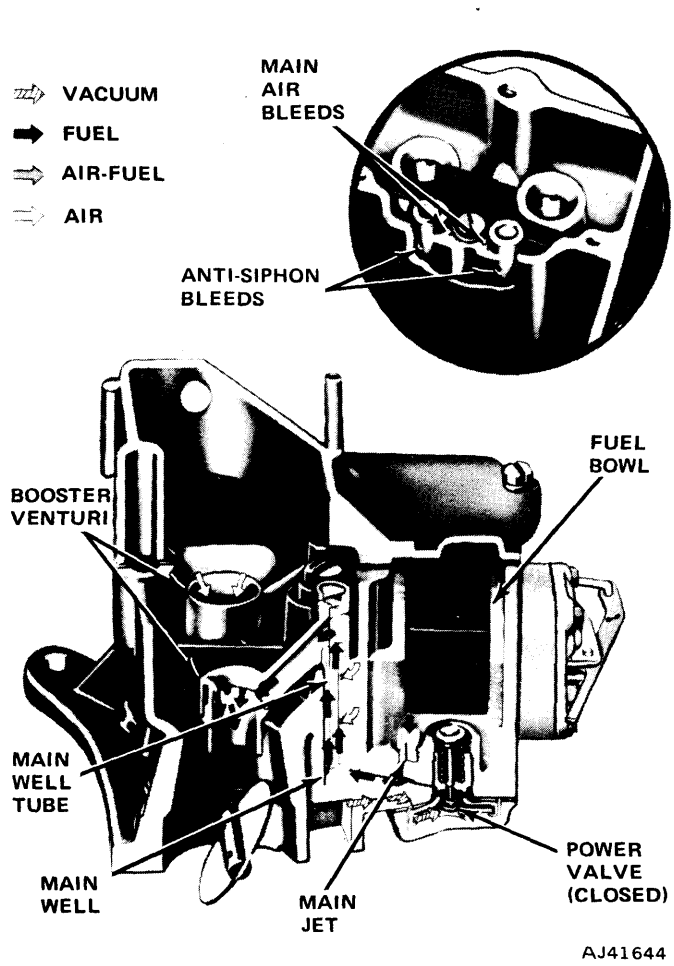


Fig. 4-91 Main Metering Circuit

Pump Circuit

When the throttle valves are opened quickly, the airflow through the carburetor responds almost immediately. Since the flowing fuel is heavier than air, there is a brief lag in time before the fuel flow can gain sufficient speed to maintain the proper fuel-air ratio. During this lag, the pump circuit supplies the required fuel until the proper fuel-air ratio can be maintained by the other metering circuits (fig. 4-92).

When the throttle valves are closed, the diaphragm return spring exerts force against the diaphragm and pushes it against the cover. Fuel is drawn through the inlet, past the Elastomer valve, and into the pump chamber. A discharge check ball and weight at the pump outlet prevent air from being drawn into the pump chamber.

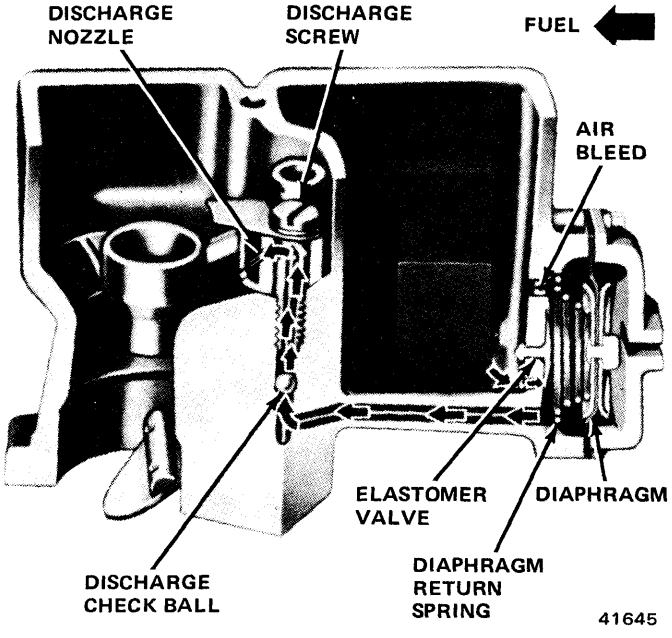


Fig. 4-92 Pump Circuit

When the throttle valves are opened, the diaphragm rod is pushed inward, forcing fuel from the pump chamber into the discharge passages. The Elastomer valve seals the inlet hole during pump operation, preventing fuel from returning to the fuel bowl. Fuel under pressure unseats the discharge check ball and weight and is forced through the pump discharge screw. The fuel is then sprayed into the main venturi through discharge ports.

An air bleed is provided in the pump chamber to prevent vapor accumulation and pressure buildup.

Power Enrichment Circuit

During heavy load conditions or high speed operation, the fuel-air ratio must be increased for higher engine output. The power enrichment circuit supplies extra fuel during this period and is controlled by intake manifold vacuum (fig. 4-93).

Manifold vacuum is applied to the power valve diaphragm from an opening in the base of the main body, through a passage in the main body and power valve chamber to the power valve diaphragm. During idle and normal driving conditions, manifold vacuum is high enough to overcome the power valve spring tension and hold the valve closed. When higher engine output is required, the increased load on the engine results in decreased manifold vacuum. The power valve spring opens the first stage of the power valve when manifold vacuum drops below a predetermined value and a small amount of fuel flows through the valve.

When manifold vacuum drops to a lower value, the power valve spring opens the second stage of the power valve and allows a greater amount of fuel to flow through the valve.

The fuel which flows through the power valve is added to the fuel in the main metering circuit to enrich the mixture. As engine load requirements decrease, manifold vacuum increases and overcomes the tension of the power valve spring, closing the power valve.

Choke Circuit

The choke valve, located in the air horn assembly, provides a high vacuum above as well as below the

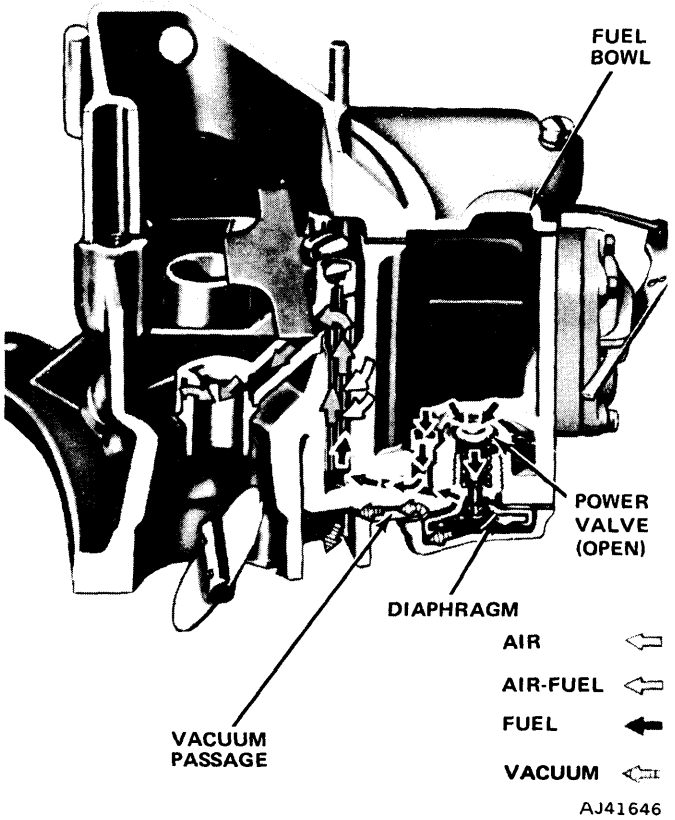


Fig. 4-93 Power Enrichment Circuit

throttle valves when closed. During cranking, vacuum above the throttle valves causes fuel to flow from the main metering and idle circuits. This provides the richer fuel-air mixture required for cold engine starting.

The choke shaft is connected by linkage to a thermostatic coil which winds up when cold and unwinds when warm.

The position of the choke valve is controlled by the action of the choke vacuum diaphragm exerting force against the tension of the thermostatic coil (fig. 4-94).

When the engine is cold, tension of the thermostatic coil holds the choke valve closed. When the engine is started, manifold vacuum is channeled through a rubber hose to the diaphragm assembly, moving the diaphragm against the stop screw. Movement of the diaphragm causes the choke valve to open slightly. This is known as initial choke valve clearance.

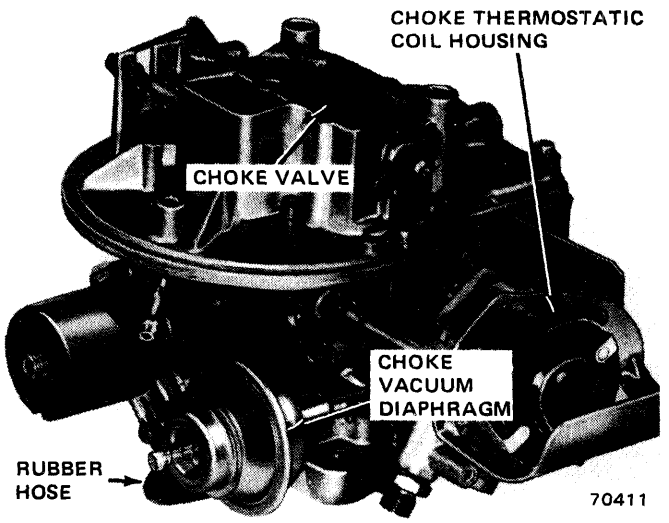


Fig. 4-94 Choke Circuit

As the engine begins to warm up, heated air from the exhaust crossover is routed through a heat tube to the choke housing. A thermostatic bypass valve, which is integral with the choke heat tube, helps prevent premature choke valve opening during the early part of the warmup period. The valve regulates the temperature of the hot airflow to the choke housing by allowing outside unheated air to enter the heat tube. A thermostatic disc is incorporated in the valve which is calibrated to close the valve at 75°F and open it at 55°F.

The heated air entering the choke housing causes the thermostatic coil to begin unwinding and decreases the closing force exerted against the choke valve. As the engine continues to warm up, the heated air rises in temperature. The coil gradually loses its tension and allows the choke valve to open. The heated air is exhausted into the intake manifold

When the engine reaches operating temperature, the thermostatic coil continues unwinding and exerts pressure against the choke linkage, forcing the choke valve fully open. A continual flow of warm air passes through the choke housing. The thermostatic coil remains heated and the choke valve remains fully open until the engine is stopped and allowed to cool.

During the warmup period, a fast idle must be provided to prevent engine stalling. The fast idle cam, actuated by the choke rod, contacts the fast idle speed adjustment screw and increases engine speed in proportion to the choke valve opening. When the choke valve reaches the fully open position, the fast idle cam rotates free of the fast idle speed adjusting screw, allowing the throttle lever to return to curb idle.

If the engine is accelerated during the warmup period, the resulting drop in manifold vacuum allows the thermostatic coil to momentarily close the choke valve. This provides a richer mixture to prevent engine stalling.

Should the engine become flooded during the starting period, the unloader tang on the fast idle lever contacts the fast idle cam when the accelerator is fully depressed. The choke valve is partially opened by attaching linkage and permits unloading of a flooded engine.

The compensation circuit is provided with a separate choke valve linked directly to the main choke valve (fig. 4-95). It is not adjustable.

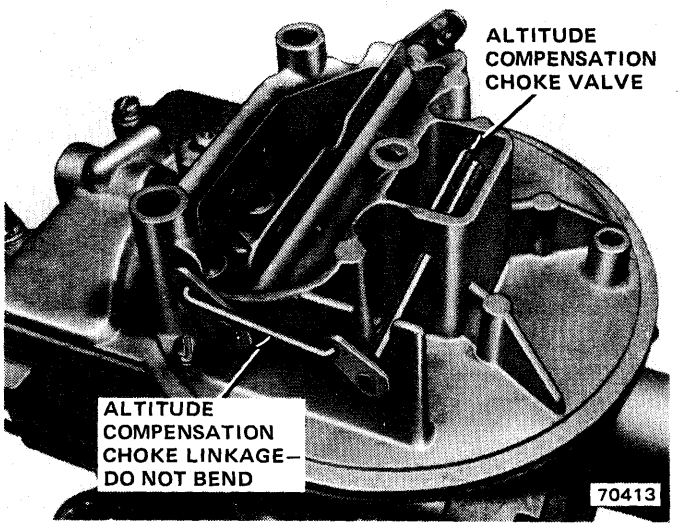


Fig. 4-95 Compensation Circuit Choke Valve

Altitude Compensation Circuit

The altitude compensation circuit supplies the extra air necessary to lean out the fuel/air mixture at high altitudes. The compensation circuit parallels the main carburetor intake circuit. At the top, a small choke valve controls the airflow when the main choke is closed. Air flows down through a passage in the main body into a plenum chamber located adjacent to the two main venturi bores. A spring-loaded valve regulates the amount

of air passed from the plenum into the compensator body. Air flows from the compensator body through two air passages bored into the main venturis (fig. 4-96).

The opening and closing of the valve in the compensator body is controlled by an aneroid which is sensitive to atmospheric pressure. At the lower atmospheric pressure of high altitudes, the aneroid pushes on the end of the compensator valve stem, opening the valve. At lower altitudes, the aneroid relaxes, automatically closing the valve.

The aneroid is factory calibrated and is not adjustable. Do not tamper with the hex-head plug on the aneroid.

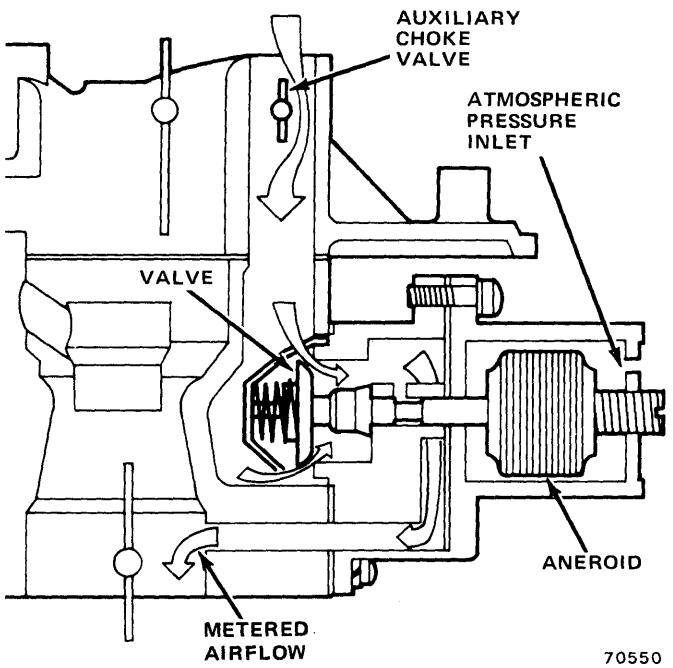


Fig. 4-96 Altitude Compensation Circuit

CARBURETOR REPLACEMENT

Removal

In many instances, flooding, stumble on acceleration, and other performance problems are caused by the presence of dirt, water, or other foreign matter in the carburetor. To aid in diagnosing the cause of the problem, carefully remove the carburetor from the engine without removing the fuel from the bowl. Examine the contents of the bowl for contamination as the carburetor is disassembled.

(1) Remove air cleaner.

(2) Remove accelerator cable from accelerator lever and disconnect distributor vacuum hose, vacuum hoses, pullback spring, transmission throttle linkage, choke clean air tube, solenoid wire (if equipped), PCV hose, in-line fuel filter and choke heat tube at carburetor.

(3) Remove carburetor retaining nuts. Remove carburetor. Remove carburetor mounting gasket, spacer and lower gasket from intake manifold.

Installation

(1) Clean gasket mounting surfaces of spacer and carburetor. Place spacer between two replacement gaskets and position spacer and gaskets on the intake manifold. Position carburetor on spacer and gasket and install nuts. To prevent leakage, distortion or damage to the carburetor body flange, snug the nuts. Then alternately tighten each nut in a criss-cross pattern to 13 foot-pounds torque.

(2) Connect in-line fuel filter, throttle cable, choke heat tube, PCV hose, pullback spring, solenoid wire (if equipped), transmission throttle linkage, choke clean air tube, vacuum hoses and distributor vacuum line.

(3) Adjust engine idle speed and idle fuel mixture. Refer to Chapter 4A.

NOTE: *Transmisson throttle linkage must be adjusted after completing carburetor installation.*

(4) Install air cleaner.

CARBURETOR OVERHAUL

A complete disassembly is not necessary when performing adjustments. In most cases, service adjustments of individual systems may be completed without removing the carburetor from the engine. Refer to Service Adjustment Procedures.

A complete carburetor overhaul includes disassembly, thorough cleaning, inspection and replacement of all gaskets and worn or damaged parts. Refer to figure 4-97 for parts identification.

NOTE: *When using an overhaul kit, use all parts included in kit.*

Disassembly

(1) Remove air cleaner anchor screw.

(2) Remove automatic choke rod retainer from thermostatic choke shaft lever.

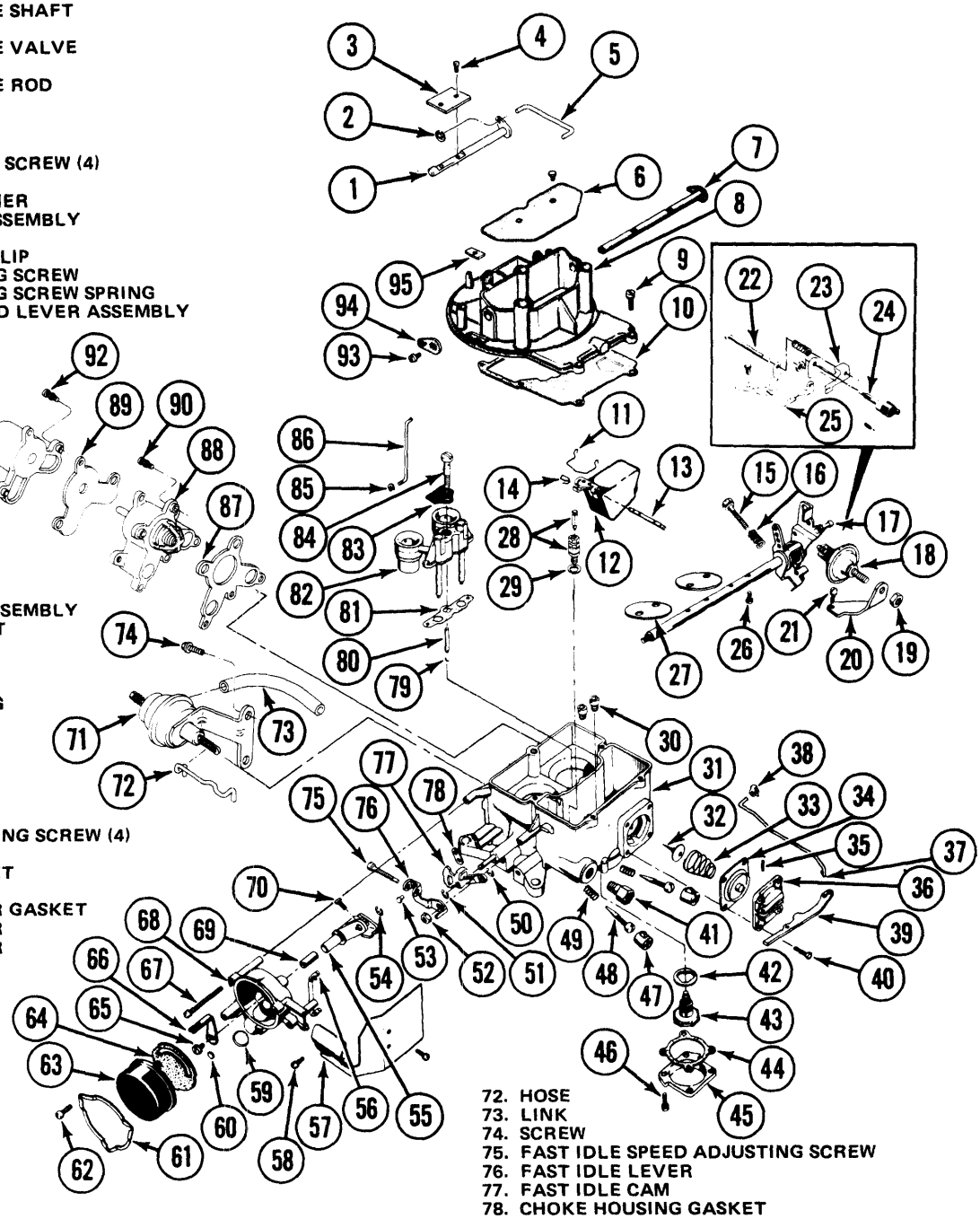
(3) Remove air horn attaching screws, lockwashers, and carburetor identification tag. Remove air horn and air horn gasket. Remove plastic dust seal from choke rod.

(4) Remove thermostatic choke spring housing retaining screws and clamp, housing, and gasket.

(5) Remove choke thermostat lever. Remove thin plastic bushing material from shaft bore in housing. **Do not damage or misplace.**

(6) Remove retainer from choke diaphragm link. Remove vacuum hose. Remove diaphragm assembly and attaching screws.

(7) Remove choke housing assembly retaining screws, housing assembly, and gasket. Slide thermostatic choke shaft assembly from housing.



1. COMPENSATOR CHOKE SHAFT
2. RETAINER
3. COMPENSATOR CHOKE VALVE
4. CHOKE VALVE SCREW
5. COMPENSATOR CHOKE ROD
6. CHOKE VALVE
7. CHOKE SHAFT
8. AIR HORN
9. AIR HORN RETAINING SCREW (4)
10. AIR HORN GASKET
11. FLOAT SHAFT RETAINER
12. FLOAT AND LEVER ASSEMBLY
13. FLOAT SHAFT
14. NEEDLE RETAINING CLIP
15. CURB IDLE ADJUSTING SCREW
16. CURB IDLE ADJUSTING SCREW SPRING
17. THROTTLE SHAFT AND LEVER ASSEMBLY
18. DASHPOT
19. DASHPOT LOCKNUT
20. DASHPOT BRACKET
21. DASHPOT BRACKET RETAINING SCREW
22. ADJUSTING SCREW
23. CARRIAGE
24. ELECTRIC SOLENOID
25. MOUNTING BRACKET
26. THROTTLE VALVE RETAINING SCREW (4)
27. THROTTLE VALVE (2)
28. NEEDLE AND SEAT ASSEMBLY
29. NEEDLE SEAT GASKET
30. MAIN JET (2)
31. MAIN BODY
32. ELASTOMER VALVE
33. PUMP RETURN SPRING
34. PUMP DIAPHRAGM
35. PUMP LEVER PIN
36. PUMP COVER
37. PUMP ROD
38. PUMP ROD RETAINER
39. PUMP LEVER
40. PUMP COVER RETAINING SCREW (4)
41. FUEL INLET FITTING
42. POWER VALVE GASKET
43. POWER VALVE
44. POWER VALVE COVER GASKET
45. POWER VALVE COVER
46. POWER VALVE COVER RETAINING SCREW (4)
47. IDLE LIMITER CAP (2)
48. IDLE MIXTURE SCREW (2)
49. IDLE MIXTURE SCREW SPRING (2)
50. RETAINER
51. RETAINER
52. FAST IDLE LEVER RETAINING NUT
53. FAST IDLE LEVER PIN
54. RETAINER
55. THERMOSTATIC CHOKE SHAFT
56. FAST IDLE CAM ROD
57. CHOKE SHIELD
58. CHOKE SHIELD RETAINING SCREW (2)
59. PISTON PASSAGE PLUG
60. HEAT PASSAGE PLUG
61. CHOKE COVER RETAINING CLAMP
62. CHOKE COVER RETAINING SCREW (3)
63. CHOKE COVER
64. CHOKE COVER GASKET
65. THERMOSTAT LEVER RETAINING SCREW
66. THERMOSTAT LEVER
67. CHOKE HOUSING RETAINING SCREW (3)
68. CHOKE HOUSING
69. CHOKE SHAFT BUSHING
70. FAST IDLE CAM LEVER ADJUSTING SCREW
71. CHOKE DIAPHRAGM
72. HOSE
73. LINK
74. SCREW
75. FAST IDLE SPEED ADJUSTING SCREW
76. FAST IDLE LEVER
77. FAST IDLE CAM
78. CHOKE HOUSING GASKET
79. PUMP DISCHARGE CHECK BALL
80. PUMP DISCHARGE WEIGHT
81. BOOSTER VENTURI GASKET
82. BOOSTER VENTURI ASSEMBLY
83. AIR DISTRIBUTION PLATE
84. PUMP DISCHARGE SCREW
85. RETAINER
86. CHOKE ROD
87. GASKET
88. COMPENSATION CHAMBER
89. GASKET
90. SCREW
91. ANEROID
92. SCREW
93. CHOKE LEVER RETAINING SCREW
94. CHOKE PLATE LEVER
95. CHOKE ROD SEAL

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Fig. 4-97 Parts Identification—Model 2150

(8) Remove diaphragm link from thermostatic choke shaft assembly.

(9) Remove fast idle cam retainer (fig. 4-98). Remove fast idle cam. Thermostatic choke shaft assembly is left attached to fast idle cam by connecting link.

NOTE: *Thermostatic choke shaft assembly is staked together at assembly. If plastic lever is defective, replace assembly.*

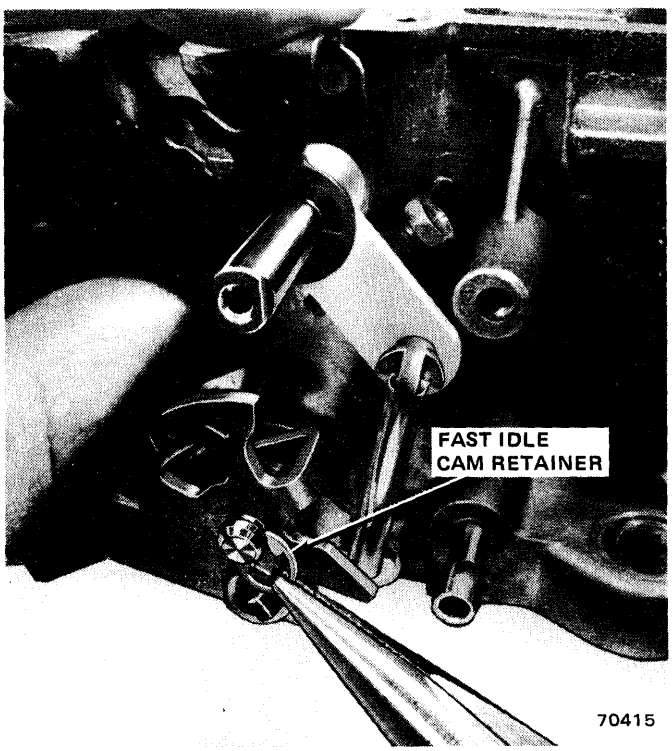

Fig. 4-98 Removing Fast Idle Cam Retainer

(10) Remove altitude compensator, gasket and attaching screws.

(11) Pry float shaft retainer from fuel inlet seat (fig. 4-99). Remove float, float shaft retainer, and fuel inlet needle assembly. Remove retainer and float shaft from float lever.

(12) Remove fuel inlet needle seat and gasket. Remove main jets with Main Metering Jet Wrench J-10174-01 (fig. 4-100).

(13) Remove accelerator pump discharge screw, air distribution plate, booster venturi and gasket (fig. 4-101). Do not attempt to remove tubes from venturi assembly. Invert main body and let accelerating pump discharge weight and ball fall into hand.

(14) Disconnect accelerator pump operating rod from overtravel lever. Remove rod and retainer.

(15) Remove accelerating pump cover attaching screws. Remove accelerating pump cover, diaphragm assembly, and spring (fig. 4-102).

(16) Remove Elastomer valve by grasping firmly and pulling out.

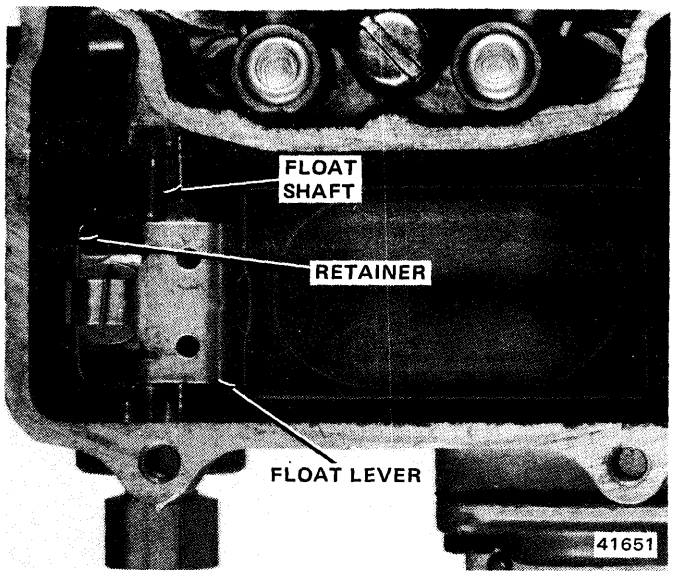

Fig. 4-99 Float Assembly

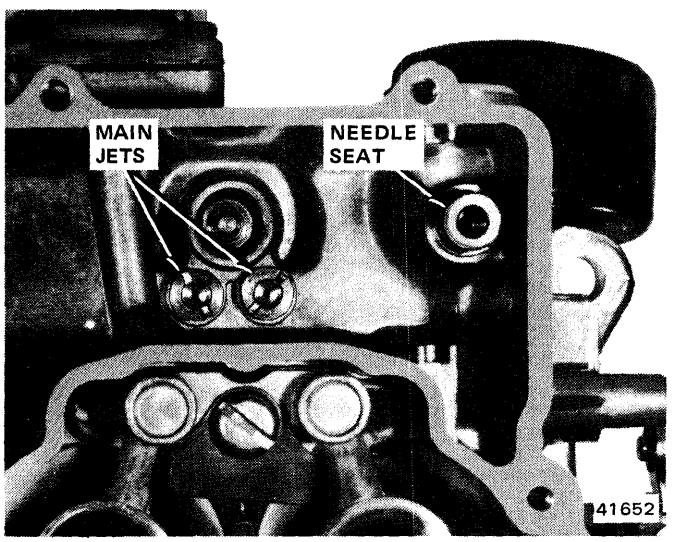

Fig. 4-100 Interior View of Fuel Bowl

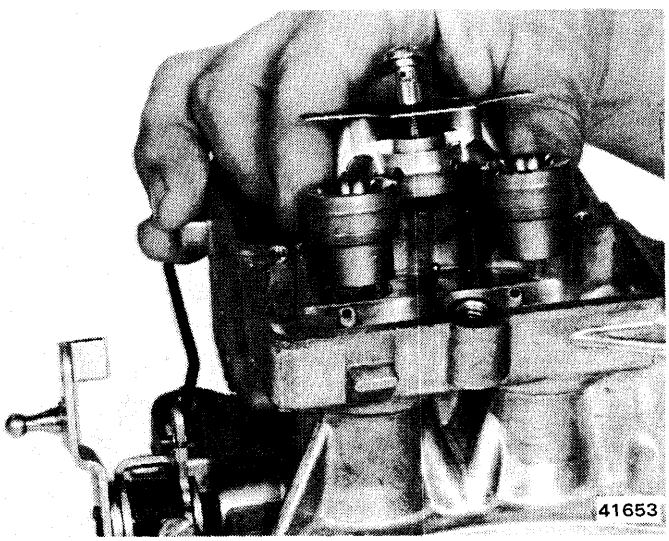

Fig. 4-101 Removing Booster Venturi Assembly

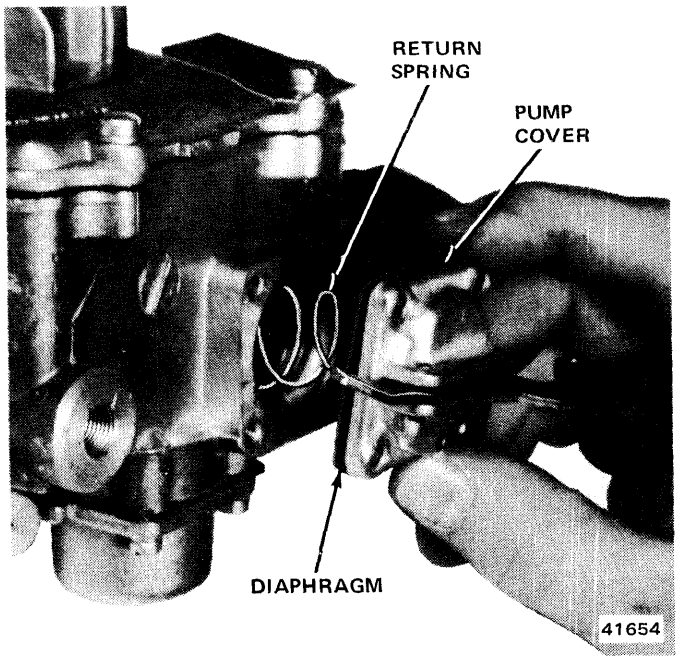

Fig. 4-102 Removing Accelerator Pump Assembly

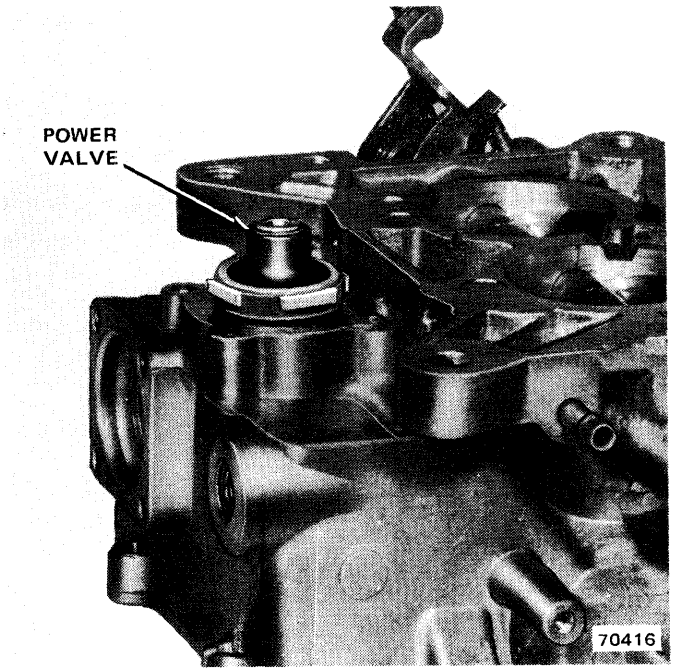

Fig. 4-103 Removing Power Valve

NOTE: *If the Elastomer valve tip breaks off during removal, be sure to remove the tip from the fuel bowl. Elastomer valve must be replaced whenever it has been removed from the carburetor.*

(17) Invert main body and remove power valve cover, gasket and screws. Remove power valve with 1-inch socket (fig. 4-103). Remove and discard power valve gasket.

(18) Remove limiter caps from idle mixture adjusting screws, using soldering gun to cut through limiter caps. Remove idle mixture adjusting screws and springs.

(19) Remove solenoid.

Cleaning and Inspection

Dirt, gum, water, or carbon contamination in the carburetor or the exterior moving parts of the carburetor are often responsible for unsatisfactory performance. Efficient carburetion depends upon careful cleaning and inspection.

The cleaning and inspection of only those parts not included in the carburetor overhaul repair kit are covered here. Use all gaskets and parts included in the repair kit when the carburetor is assembled. Discard original gaskets and parts.

Wash all the carburetor parts except accelerating pump diaphragm, power valve, choke diaphragm, altitude compensator components and solenoid in clean commercial carburetor cleaning solvent. If a commercial solvent is not available, mineral spirits, lacquer thinner or denatured alcohol may be used. If commerical cleaning solvent is used, rinse the parts in hot water then dry them with compressed air. Wipe all parts that cannot be immersed in solvent with a clean, soft, dry cloth. Be sure all dirt, gum, carbon and other foreign matter are removed from all parts.

Force compressed air through all passages of the carburetor.

CAUTION: *Do not use a wire brush to clean any parts or a drill or wire to clean out any openings or passages in the carburetor. A drill or wire may enlarge the hole or passage, changing the calibration of the carburetor.*

Check the choke shaft for grooves, wear, and excessive looseness or binding. Inspect the choke plate for nicked edges and for ease of operation and free it if necessary. Be sure all carbon and foreign material has been removed from the automatic choke housing. Check the throttle shaft for excessive looseness or binding and check the throttle plates for burrs which prevent proper closure. Inspect thermostatic choke shaft and polish with fine crocus cloth or steel wool. Inspect the main body, air horn, booster venturi assemblies, choke housing and choke cover, power valve cover and accelerating pump cover for cracks. Replace the float if the arm needle-contact surface is grooved. If the float is serviceable, polish the needle contact surface of the arm with crocus cloth or steel wool. Replace float shaft if worn. Replace all screws and nuts that have stripped threads. Replace all distorted or broken springs. Inspect all gasket mating surfaces for nicks and burrs. Repair or replace any parts that have a damaged gasket surface.

Remove the aneroid from the compensator body. With the aneroid removed, spring tension should push the valve shut. Spring must be properly seated in the spring retainer. Inspect the rubber seal on the valve stem.

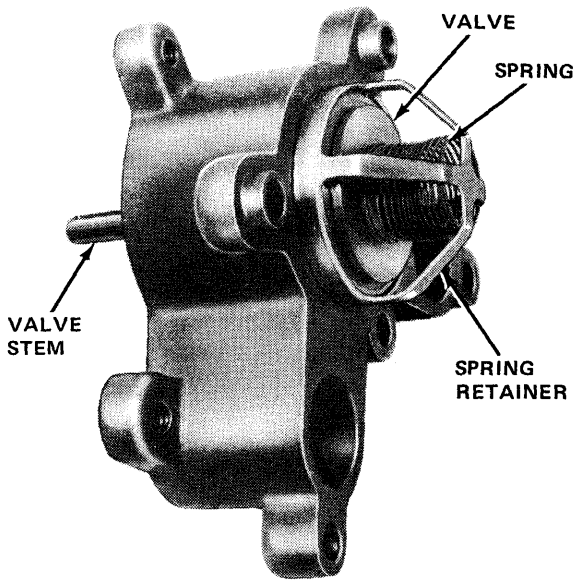

Fig. 4-104 Inspecting Compensator

Assembly

Be sure all holes in the replacement gaskets have been properly punched and that no foreign material has adhered to the gaskets. Inspect accelerating pump diaphragm for tears or cuts.

(1) Install solenoid, if equipped.

(2) Lubricate tip of replacement Elastomer valve and insert tip into accelerator pump cavity center hole.

(a) Using a pair of needlenose pliers, reach into fuel bowl and grasp valve tip.

(b) Pull valve in until it seats in pump cavity wall. Cut off tip forward of retaining shoulder.

(c) Remove tip from bowl.

(3) Install accelerator pump diaphragm return spring in depression in chamber. Insert the diaphragm assembly in cover, place cover and diaphragm assembly into position on main body and install cover screws.

(4) Insert accelerating pump operating rod into inboard hole of accelerating pump actuating lever.

(5) Position accelerating pump operating rod retainer in hole 3 (three) in the overtravel lever.

(6) Invert main body and install power valve and replacement gasket. Tighten valve securely.

(7) Install power valve cover and replacement gasket.

NOTE: *Install the power valve cover with the limiter stops on the cover in position to provide a positive stop for the tabs on the idle adjusting limiters.*

(8) Install idle mixture adjusting screws and springs. Turn screws in gently with fingers until they just touch seat, then back off two turns for preliminary idle fuel mixture adjustment.

NOTE: *Do not install idle mixture limiters at this time.*

(9) Install main jets. Be sure the correct jets are installed.

(10) Install fuel inlet seat, and replacement gasket. Install fuel inlet needle assembly in fuel inlet seat. Fuel inlet needles and seats are matched assemblies. Be sure the correct needle and seat are assembled together.

(11) Slide float shaft into float lever. Position float shaft retainer on float shaft.

(12) Insert float assembly into fuel bowl and hook float lever tab under fuel inlet needle assembly. Insert float shaft into its guides at sides of fuel bowl.

(13) Press float shaft retainer in groove on fuel inlet needle seat and check float setting. Refer to Service Adjustment Procedures.

(14) Drop accelerating pump discharge ball into passage in main body.

(15) Position replacement booster venturi gasket and booster venturi in main body.

(16) Drop weight into opening of booster onto discharge ball.

(17) Install air distribution plate and accelerator pump discharge screw and tighten screw.

(18) Install choke diaphragm, attaching screws and vacuum hose.

(19) Install fast idle cam and retainer.

(20) Install diaphragm link to thermostatic choke lever assembly.

(21) Insert thin plastic bushing material into bore in choke housing.

(22) Insert thermostatic choke lever assembly shaft into rear of choke housing.

(23) Place choke housing vacuum pickup port-to-main body gasket on choke housing flange.

(24) Position choke housing on main body and install choke housing attaching screws.

NOTE: *Be sure fast idle cam is positioned below cam stop boss on back of housing.*

(25) Install diaphragm link to diaphragm and install retainer.

(26) Install thermostat lever and screw.

(27) Install choke cover, gasket, retainer and screws. Turn choke housing 1/4-turn rich and tighten one retaining screw.

(28) Install altitude compensator, gasket and screws.

(29) Install plastic dust shield to choke rod.

(30) Position main body gasket on main body.

(31) Position air horn on main body and gasket so that choke plate rod fits through opening in main body. Be sure plastic seal is free to slide.

(32) Insert end of choke valve rod into choke valve lever.

(33) Install air horn attaching screws and carburetor identification tag, and tighten attaching screws.

(34) Attach choke plate rod and retainer to thermostatic choke shaft lever.

(35) Install air cleaner anchor screw. Tighten to 9 foot-pounds torque.

(36) Adjust initial choke valve clearance. Refer to Service Adjustment Procedures.

(37) Adjust fast idle cam linkage. Refer to Service Adjustment Procedures.

(38) Adjust choke unloader clearance. Refer to Service Adjustment Procedures.

(39) Loosen choke cover screw and set cover index to specification. Tighten all cover screws.

SERVICE ADJUSTMENT PROCEDURES

Float Level Adjustment—Dry

(1) Remove air horn assembly and gasket. Raise float by pressing down on float tab until fuel inlet needle is lightly seated.

(2) Using a T-scale, measure distance from the fuel bowl machined surface to the flat surface of either corner of the float at the free end. Refer to Carburetor Service Specifications for the correct setting.

(3) Bend float tab to adjust. Hold fuel inlet needle off its seat while adjusting to prevent damage to the Viton-tipped needle (fig. 4-105).

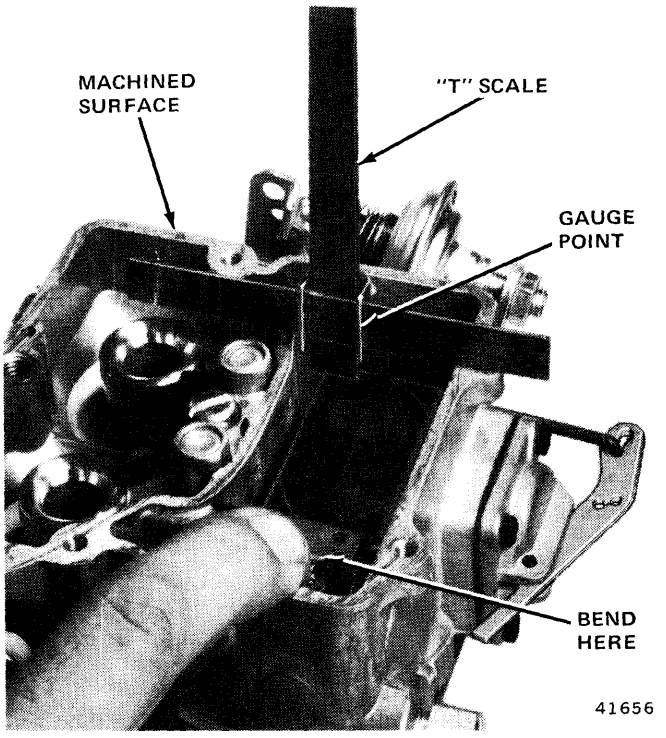

Fig. 4-105 Dry Float Level Adjustment

Float Level Adjustment—Wet

WARNING: *Exercise extreme caution when performing this procedure. Fuel vapor is present when carburetor air horn is removed. Extinguish cigarettes and other smoking materials.*

(1) With vehicle on a flat, level surface and engine at normal operating temperature, remove carburetor air cleaner assembly, and anchor screw.

(2) Remove air horn attaching screws and carburetor identification tag. Temporarily place air horn and gasket in position on carburetor main body and start engine. Let engine idle for a few minutes, then rotate air horn out of way and remove air horn gasket to provide access to the float assembly.

(3) While the engine is idling, use T-scale to measure vertical distance from top machined surface of carburetor main body to level of fuel in fuel bowl (fig. 4-106). Measurement should be made at least 1/4 inch away from any vertical surface to assure accurate reading, because surface of fuel is concave (higher at edges than in center). Care must be exercised to measure fuel level at point of contact between scale and fuel. Refer to Carburetor Service Specifications for correct fuel level (wet) setting.

(4) If any adjustment is required, stop engine to minimize hazard of fire due to fuel spray when float setting is disturbed. To adjust fuel level, bend float tab (contacting fuel inlet valve) upward in relation to original position to raise fuel level, and downward to lower it. Each time an adjustment is made to float tab to alter the fuel level, start engine and permit to idle for a few minutes to stabilize fuel level. Check fuel level after each adjustment until specified level is obtained.

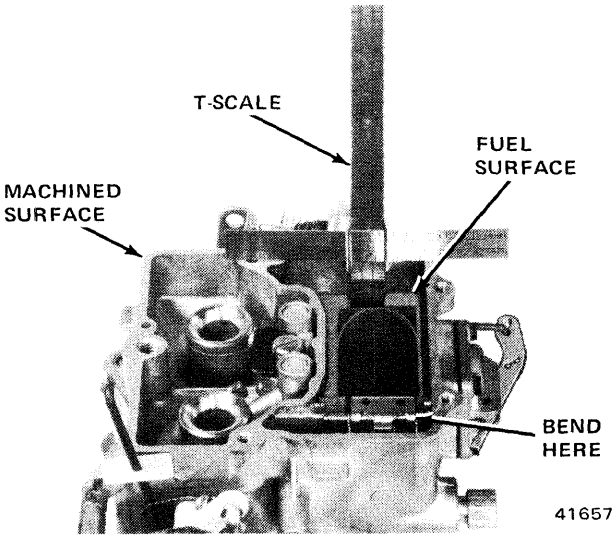

Fig. 4-106 Wet Float Level Adjustment

(5) Install replacement air horn gasket, air horn assembly, carburetor identification tag and attaching screws. Be sure plastic dust seal on choke operating rod is positioned correctly and does not cause rod to bind. Tighten screws. Install air cleaner anchor screw and tighten to 7 to 12 foot-pounds torque.

(6) Check idle fuel mixture and idle speed adjustments. Adjust carburetor as required. Refer to Carburetor Service Specifications.

(7) Install air cleaner.

Initial Choke Valve Clearance Adjustment

(1) Loosen choke cover screws.

(2) Open throttle and rotate choke cover until choke valve is held closed.

(3) Close throttle. Fast idle speed screw should be on top step of cam.

(4) Apply vacuum to hold choke diaphragm against setscrew. Do not press on links.

(5) Measure clearance between lower edge of choke valve and air horn (fig. 4-107).

(6) Adjust clearance by turning screw located at rear of diaphragm housing (fig. 4-107).

(7) Adjust fast idle cam linkage.

(8) Loosen choke cover screw and rotate cover to relieve tension on choke bimetallic coil. Set choke cover to specifications and tighten choke cover screws.

NOTE: *If vacuum is applied to the choke diaphragm with a hand pump, a vacuum leak may be noticed. This is normal.*

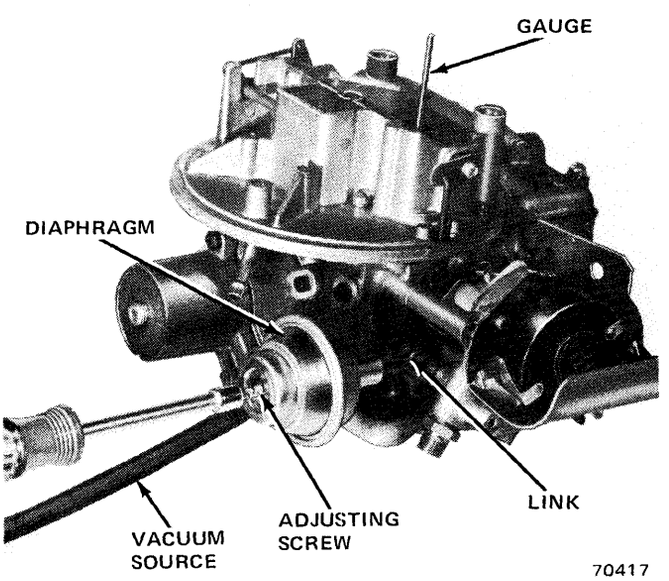

Fig. 4-107 Initial Choke Valve Clearance Adjustment

NOTE: *Do not reset the choke cover until fast idle cam linkage adjustment has been performed.*

Fast Idle Cam Linkage Adjustment

(1) Rotate choke cover 1/4-turn rich and tighten one retaining screw.

(2) Operate throttle valve to allow choke valve to close completely.

(3) Push down on fast idle cam counterweight until screw is in contact with second step (index) and against shoulder of high step (fig. 4-108).

(4) Measure clearance between lower edge of choke valve and air horn wall. Refer to Carburetor Service Specifications for correct setting.

(5) Adjust by turning fast idle cam adjusting screw.

(6) Loosen choke cover screw and adjust index to specification. Tighten all cover screws.

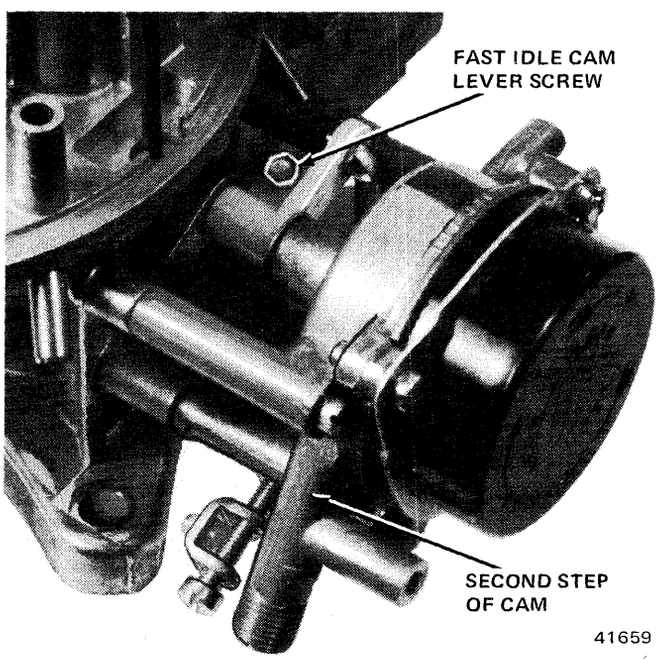

Fig. 4-108 Fast Idle Cam Linkage Adjustment

Choke Unloader Adjustment

(1) Hold throttle fully open and apply pressure on choke valve toward closed position.

(2) Measure clearance between lower edge of choke valve and air horn wall. Refer to Carburetor Service Specifications for correct setting.

CAUTION: *Do not bend the unloader tang downward from a horizontal plane.*

(3) Adjust by bending unloader tang which contacts fast idle cam as shown in figure 4-109. Bend toward cam to increase clearance and away from cam to decrease clearance.

(4) After making adjustment, open throttle until unloader tang is directly below fast idle cam pivot. There must be exactly 0.070-inch clearance between unloader tang and edge of fast idle cam (fig. 4-110).

(5) Operate throttle and check unloader tang to make sure it does not bind, contact or stick on any part of carburetor casting or linkage. After carburetor instal-

lation, check for full throttle opening when throttle is operated from inside vehicle. If full throttle opening is not obtainable, it may be necessary to remove excess padding under floormat or reposition throttle cable bracket located on engine.

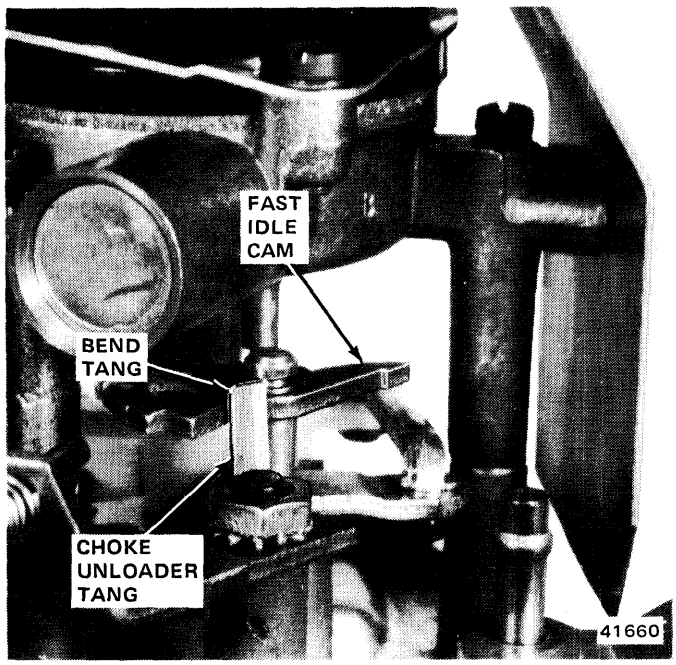

Fig. 4-109 Unloader Adjustment

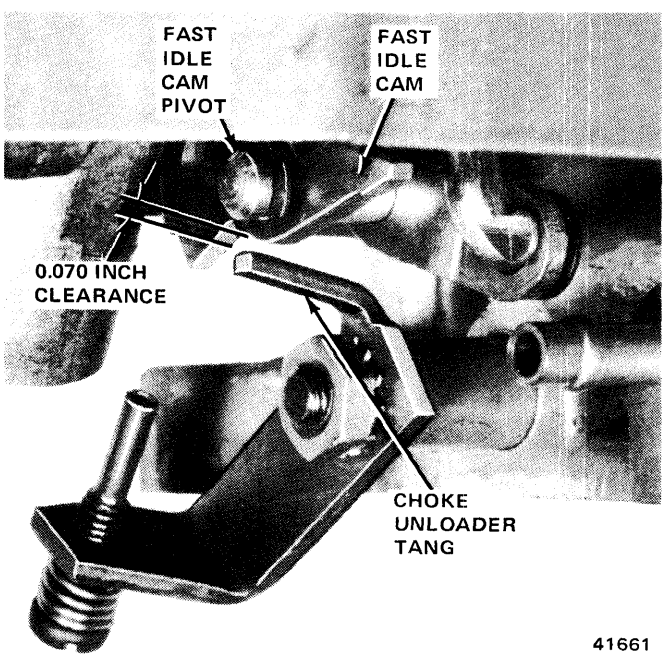

Fig. 4-110 Unloader to Fast Idle Cam Clearance

Automatic Choke Adjustment

Loosen choke cover retaining screws and rotate cover in the desired direction as indicated by the arrow on the face of the cover. Refer to Carburetor Service Specifications for the correct setting. The specified setting will be satisfactory for most driving conditions. In the event that stumbles or stalls occur on acceleration during engine warmup, the choke must be set richer or leaner using the tolerance provided to meet individual engine requirements.

Accelerating Pump Stroke Adjustment

The specified accelerating pump stroke has been selected to help keep the exhaust emission level of the engine within Federal limits. The unused adjustment holes permit adjusting the stroke for specific engine and climate applications. The primary throttle shaft lever (overtravel lever) has four holes and the accelerating pump link has two holes (fig. 4-111).

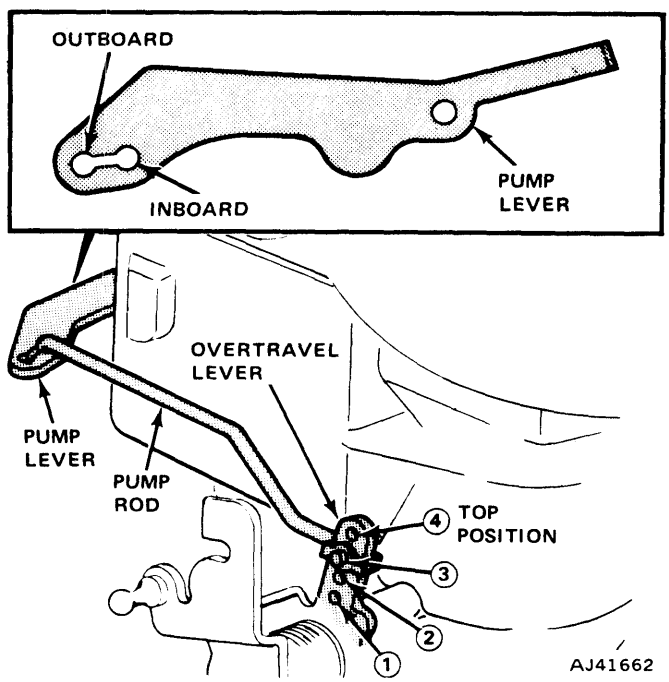

Fig. 4-111 Accelerating Pump Stroke Adjustment

For normal operating conditions, the accelerating pump operating rod should be in the third hole (away from the lever pivot) of the overtravel lever and the inboard hole (closest to the pump plunger) in the accelerating pump link. In extremely hot climate regions, the pump stroke may be shortened to provide smoother acceleration by placing the pump rod in the second hole of the overtravel lever. In extremely cold climate regions, the pump stroke may be increased to provide smoother acceleration by placing the pump rod in the fourth hole of the overtravel lever.

The accelerating pump operating rod should be in the third hole in the overtravel lever and the inboard hole in the accelerating pump link.

(1) Remove operating rod from retaining clip.

(2) Position clip over the specified hole in overtravel lever. Insert operating rod through clip and overtravel lever. Snap release clip over rod.

Idle Speed and Mixture Adjustment

Refer to Engine Idle Setting Procedures in Chapter 4A.

CHOKE MECHANISM SERVICE

The choke mechanism may be serviced without removing the carburetor from the engine. If the choke binds, sticks, or does not operate smoothly, perform the following.

(1) Remove choke cover.

(2) Remove choke lever and screw.

(3) Remove choke housing. Slide off thermostatic choke shaft. Remove thin plastic bearing material.

(4) Polish shaft with crocus cloth. Wipe bearing material clean and insert into housing.

(5) Wipe fast idle cam clean.

(6) Install choke housing to thermostatic choke shaft and install housing screws.

(7) Install choke lever and screw.

(8) Install housing cover and set to specification.

Model 2150 Carburetor Calibrations (Inches)

	7 DA 2A	7 DM 2A
Throttle Bore Size	1.562	1.562
Main Venturi Size	1.080	1.080
Fuel Inlet Diameter	0.101	0.101
Low Speed Jet (Tube)	0.029	0.029
Economizer	0.052	0.052
Idle Air Bleed	0.101	0.101
Main Jet Number	47	47
High Speed Bleed	0.052	0.052
Power Valve Timing (Inches of Hg)		
First Stage	7.50	7.50
Second Stage	2.00	2.00
Accelerator Pump Jet	0.024	0.024
Vacuum Spark Port		
Height	0.050	0.050
Width	0.085	0.085
Choke Heat Bypass	0.114	0.114
Choke Heat Inlet Restriction	0.076	0.076
Choke Vacuum Restriction	0.089	0.089

70555

CARBURETOR MODEL 4350—4 VENTURI

GENERAL

The Model 4350 carburetor consists of three main assemblies: air horn, main body, and throttle body (fig. 4-112).

The air horn assembly also serves as the fuel bowl cover and contains the choke valve and shaft, accelerator pump linkage, fuel inlet needle and seat, auxiliary fuel inlet valve, float and lever, secondary air valve, booster venturi, and internal fuel bowl vents.

The main body assembly contains fuel passages for the metering systems, main metering jets, accelerator pump, accelerator pump inlet, discharge check valves, and secondary air valve damper piston.

The throttle body assembly contains the primary and secondary throttle shaft and lever assemblies, curb idle solenoid, fast idle adjusting screw, idle mixture adjusting screws, and the automatic choke assembly.

Identification

The carburetor is identified by a code number and build date which is stamped on the identification tag. Each carburetor build month is coded alphabetically beginning with the letter A in January and ending with the letter M in December (the letter I is not used). The tag is attached to the carburetor and must remain with the carburetor to assure proper identification (fig. 4-113).

CARBURETOR CIRCUITS

The Model 4350 carburetor incorporates five basic fuel metering circuits: idle (low speed), primary main metering, secondary main metering, pump, and power enrichment circuit. In addition to the basic fuel metering circuits, the float (fuel inlet) and choke circuits are used.

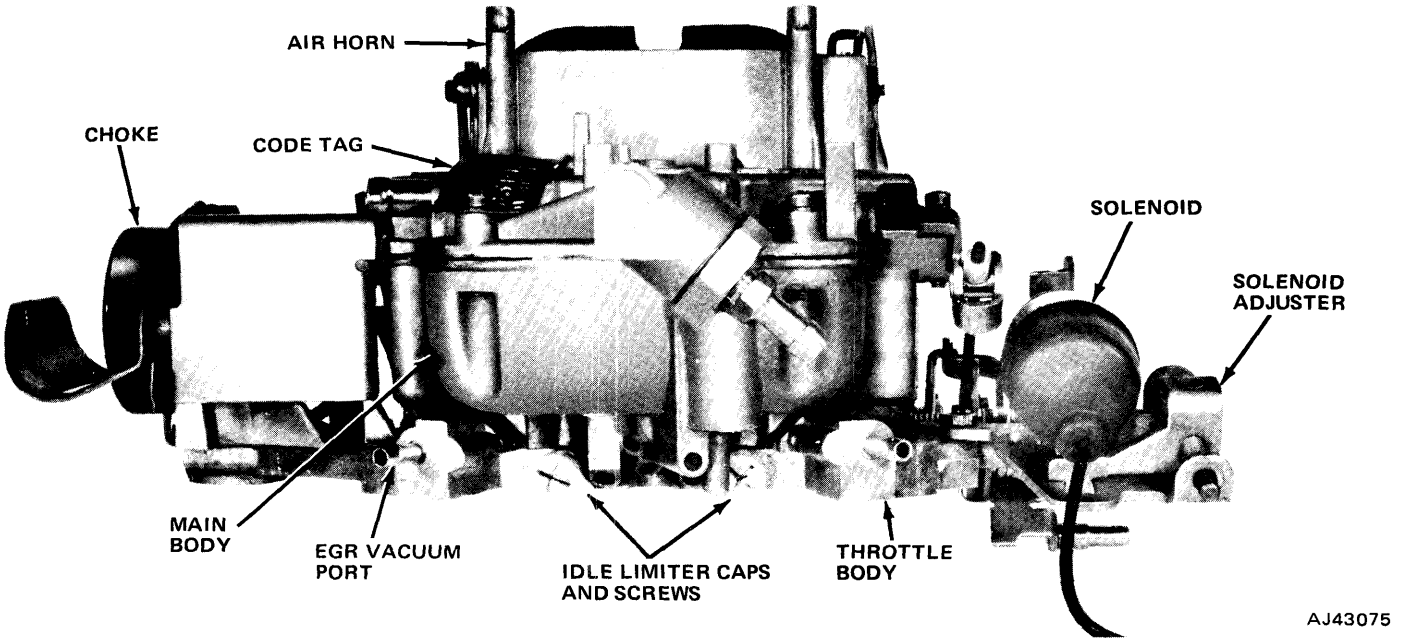

Fig. 4-112 Model 4350 Carburetor Assembly

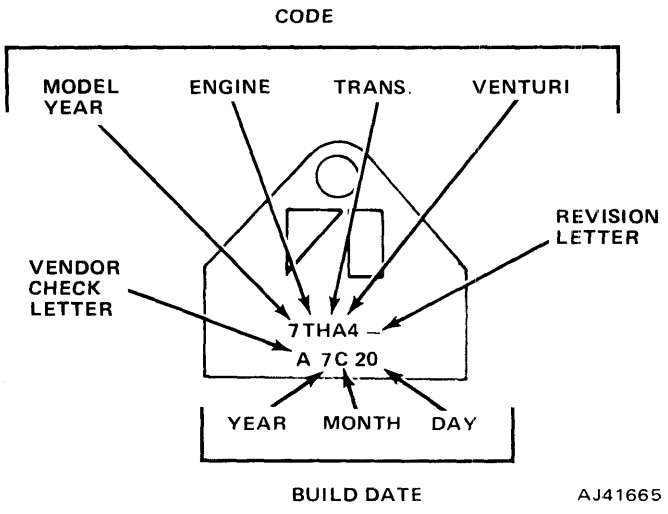

Fig. 4-113 Identification Tag

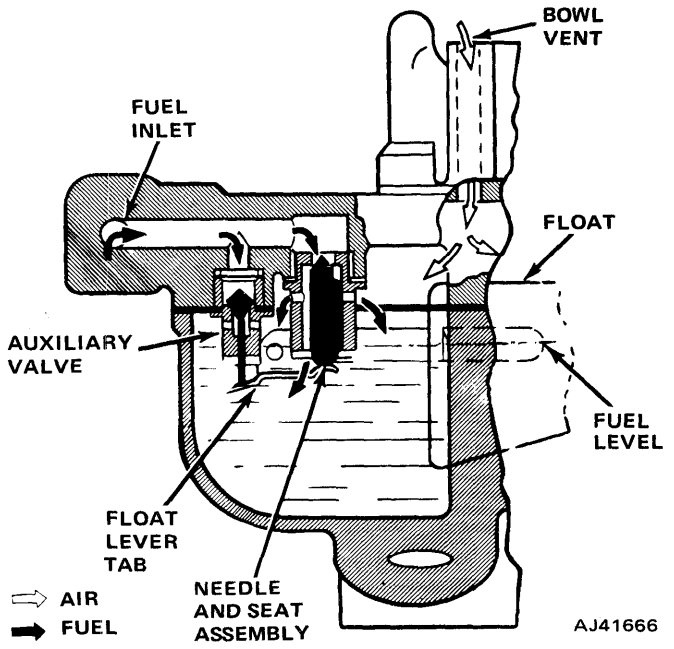

Fig. 4-114 Float Circuit

Float (Fuel Inlet) Circuit

Fuel under pressure enters the carburetor through the fuel inlet passage located in the air horn assembly. The amount of fuel entering the fuel bowl is regulated by the distance the fuel inlet needle is moved off its seat. A dual float and lever assembly controls the movement of the fuel inlet needle and reacts to any change in the fuel level. When the fuel level drops, the fuel inlet needle, which rests against the float lever, drops away from its seat and admits the proper amount of fuel to maintain the specified level (fig. 4-114).

An auxiliary fuel inlet valve is provided to supplement the normal fuel supply during heavy road load or high speed operation. When the float drops to a certain level, the float lever presses against the auxiliary valve plunger and opens the valve to provide an additional fuel supply to the bowl.

Idle (Low Speed) Circuit

Fuel for idle and low speed operation is supplied through the idle circuit. When the throttle valves are in the idle or early part-throttle position, manifold vacuum, or low pressure, is applied to the idle discharge ports and idle transfer slots. The pressure difference between atmospheric pressure in the fuel bowl and

manifold vacuum causes fuel to flow through the idle circuit.

Fuel is forced from the fuel bowl through the main jets into the main wells. From the main wells, the fuel passes through the idle tubes which are located inside of the main well tubes. The fuel is metered as it flows through restrictions at the lower end of the idle tubes. The fuel then flows upward through the idle tubes and is routed through short diagonal passages to the downward idle channels which terminate at the idle transfer slots and idle discharge ports (fig. 4-115).

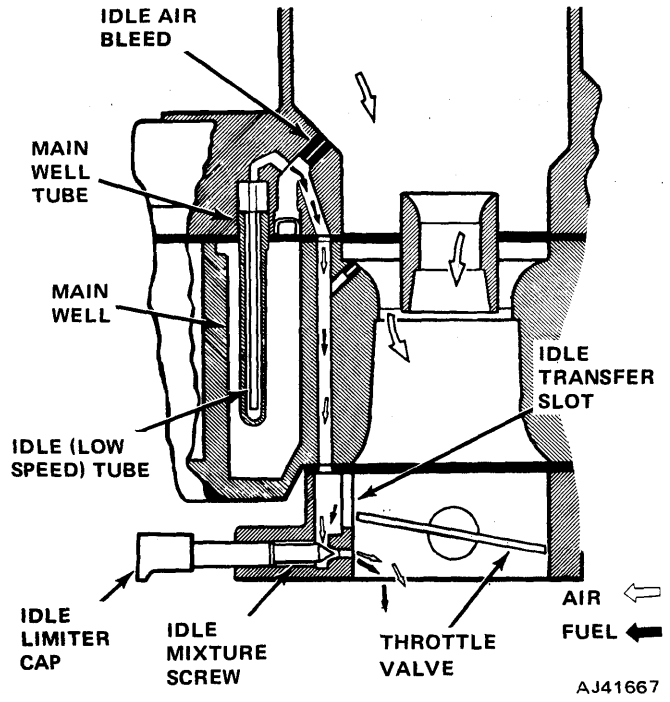

Fig. 4-115 Idle Circuit

Filtered air enters through calibrated idle air bleeds and mixes with the fuel as it flows downward through the idle channels. The idle air bleeds also prevent siphoning through the idle system during high speed operation or engine shutdown.

The fuel-air mixture is discharged through the idle discharge ports and the bottom of the idle transfer slots when the throttle valves are in the curb idle position. The top of the idle transfer slots serve as additional air bleeds at this time to further atomize the idle fuel-air mixture. As the throttle valves are opened slightly above the idle position, the entire idle transfer slots are exposed to the manifold vacuum. This provides a richer fuel-air mixture and prevents a flat spot during the transition from idle to primary main metering circuit.

Primary Main Metering Circuit

Fuel for part throttle or cruising speeds is provided by the primary main metering circuit in response to the primary throttle opening.

As the primary throttle opening is increased, manifold vacuum decreases at the idle discharge ports and transfer slots causing the idle circuit discharge to diminish. However, the increased throttle opening develops an airflow through the main and booster venturi and creates a vacuum or pressure drop at the main discharge nozzle openings, which are located within the booster venturi. Fuel flows through the main metering circuit due to pressure being higher in the fuel bowl than at the discharge nozzles. The pressure drop at the booster venturi is proportionately greater as the throttle opening is increased, resulting in an increased fuel flow for higher engine speeds.

Fuel is forced from the fuel bowl through the main metering jets and into the main wells. The fuel then flows through the main well tubes. As the fuel flows upward through the main well tubes, it is mixed with air supplied by the high speed air bleeds. The air enters through small holes in the sides of the main well tubes. The fuel-air mixture flows from the main well tubes to the main discharge nozzles and is discharged into the air stream within the booster venturi (fig. 4-116).

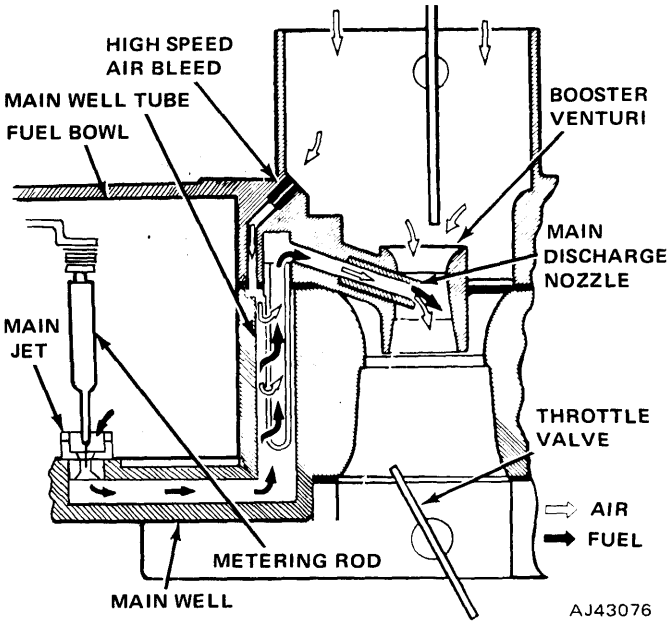

Fig. 4-116 Primary Main Metering Circuit

The high speed air bleeds meter an increasing amount of air as booster venturi vacuum (pressure drop) increases, thereby maintaining the proper fuel-air ratio. The high speed air bleeds serve as anti-siphon vents at reduced speeds and also act as vents for the main wells to help reduce percolation during a hot engine shutdown.

A vacuum throttle modulating system (VTM) is used on some models to reduce hydrocarbon emissions when the throttle is closed rapidly. As the throttle closes, the resulting increase in manifold vacuum causes a vacuum

diaphragm to retract linkage to open the primary throttle plate slightly. For a complete description, refer to Section 4A—Emission Controls.

Secondary Main Metering Circuit

When maximum power demands are made on the engine, an additional volume of fuel-air mixture is supplied by the secondary main metering circuit to supplement the primary main metering circuit discharge.

The secondary throttle is mechanically linked to the primary throttle and begins to open when the primary throttle is 3/4 open. Both throttles reach wide-open position at the same time. During the engine warmup period (choke on), the secondary throttles are prevented from opening by the secondary throttle lockout lever to avoid an excessive load on a cold engine.

A single air valve plate is located in the air horn above the secondary main discharge nozzles and is linked to a damper piston. A spring located on the damper piston is calibrated to hold the air valve closed until air velocity is sufficient to overcome the spring tension. The damper spring also counteracts sudden movements of the air valve to provide smoother engine operation.

When the secondary throttle valves are opened slightly, manifold vacuum is introduced into the secondary openings below the air valve.

Secondary main metering jets located just below the air valve plate sense the pressure drop and fuel begins to flow through the secondary fuel system. The air valve also reacts to the pressure drop and begins to open. The amount of opening is controlled by air flowing through the secondaries and the opposing force of the air valve piston damper spring. The amount of fuel flowing through the secondary metering system is controlled by the secondary metering jets and the secondary metering rods. The secondary metering rods are connected to the air valve so that the size of the main metering jets and the corresponding fuel flow is in direct proportion to the air valve opening and the volume of air required to produce the opening.

Fuel in the secondary main wells is maintained at the same level as the primary main wells by a small constant feed passage located at the rear of the fuel bowl (fig. 4-117). An anti-siphon bleed is located on top of the secondary feed passage. The anti-siphon bleed also acts as a vent for the secondary main wells during curb idle and hot engine shutdown to help reduce percolation. This same bleed becomes a cranking jet during cold weather start-up and helps richen the mixture for fast starts.

When the primary throttle plates began to close on deceleration the secondary throttle plates are closed mechanically. As airflow through the secondaries diminishes, the air valve plate is closed by the force of the damper piston spring. The secondary throttle shaft is made of two shafts coupled loosely in the center to permit some movement. This allows each secondary plate to seat independently of its own bore. There are two secondary return springs, one on each of the two secondary throttle shafts.

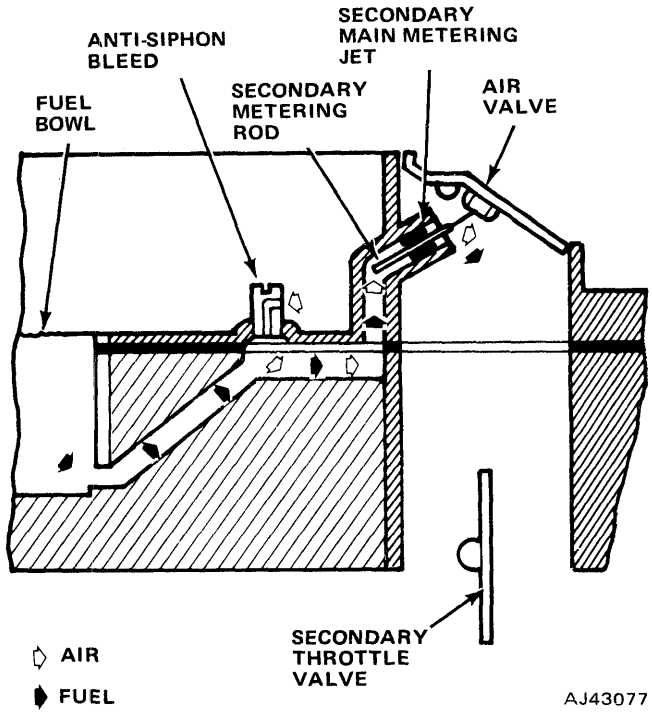

Fig. 4-117 Secondary Main Metering Circuit

Pump Circuit

When accelerating rapidly from low speeds, a momentary fuel lag occurs in the idle and primary main metering circuits. The increased air velocity resulting from the rapid opening of the throttle tends to lean out the fuel-air mixture. To compensate for this lean condition, the pump circuit delivers an additional quantity of fuel which is discharged into the air stream to maintain the proper fuel-air ratio.

When the throttle is closed, the accelerator pump plunger is pulled upward by the pump link and compresses the pump spring. Fuel is drawn from the fuel bowl past the inlet check valve and into the pump chamber. The pump discharge needle is seated at this time to prevent air from entering the pump chamber (fig. 4-118).

When the throttle is opened, the pump plunger is moved downward by spring action, causing the inlet check valve to seat, and forcing fuel into the discharge passage. The seating of the inlet check valve prevents fuel escaping back to the fuel bowl. The pressure of the fuel in the discharge passage lifts the discharge needle off its seat and sprays the fuel out the discharge nozzles. When the pump plunger has completed its travel downward, the discharge needle seats to prevent air entering the discharge passage, assuring a solid fuel supply for the next pump stroke.

At high speeds a vacuum develops at the pump discharge nozzles. The pump air bleed (check ball) provides a vent to the discharge nozzles and prevents siphoning of fuel from the discharge passage. The air bleed is sealed by fuel pressure during the discharge stroke.

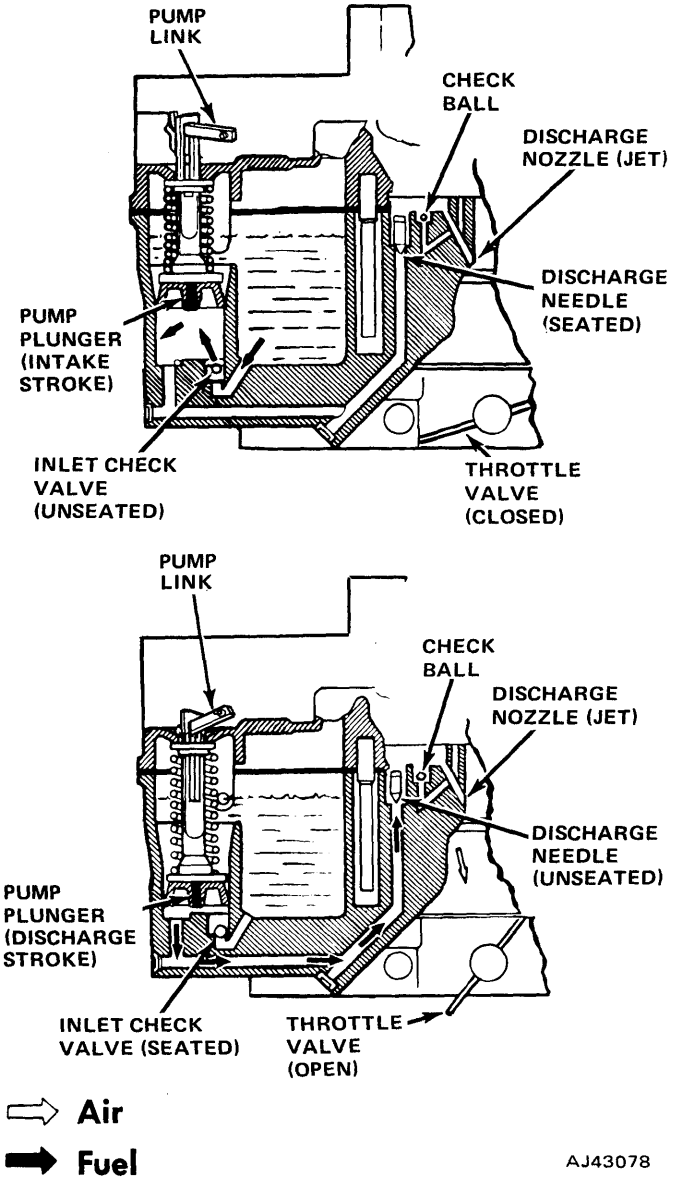

Fig. 4-118 Pump Circuit

Power Enrichment Circuit

During heavy road load or high speed operation, the fuel-air ratio must be richened to provide increased engine power.

Power enrichment is accomplished by means of two calibrated metering rods yoked to a single manifold vacuum actuated piston (fig. 4-119). The metering rod piston rides on a calibrated spring which attempts to keep the piston at the top of its cylinder. This allows the smallest diameter of the tapered metering rods to extend into the main metering jets and permits maximum fuel flow through the jets to the main well cavities.

At idle, part throttle, or cruise conditions when manifold vacuum is high, the piston will be drawn down into the vacuum cylinder, overcome calibrated spring tension, and the larger diameter of the metering rods will extend into the main metering jets, restricting the fuel flow to the main well cavities. An additional control is provided by the vacuum piston limiter lever which is linked to the throttle lever by the accelerator pump rod. This provides a direct relationship between metering rod position and throttle plate opening.

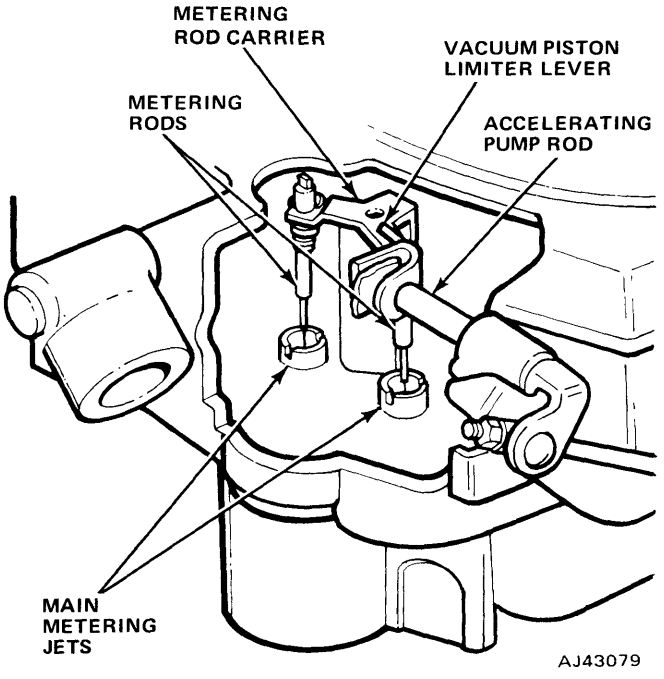

Fig. 4-119 Power Enrichment Circuit

Choke Circuit

A cold engine requires a richer fuel-air mixture for quick starting and satisfactory performance during the warmup period. The choke circuit automatically regulates the position of the choke valve in the air horn to provide the proper mixture throughout the entire cold engine operation.

When the engine is cold, the thermostatic coil in the choke cover exerts force against its lever and rotates the thermostatic choke shaft. This action causes the choke valve to close (fig. 4-120).

During cranking, manifold vacuum is applied to the primary openings below the choke valve and causes fuel to flow through the idle and primary main metering circuits to start the engine. In addition to the fuel flow from the main metering circuit, a cranking jet, located in the air horn assembly between the primary venturi,

provides additional fuel for cold engine starts (fig. 4-121). Fuel flows from the secondary feed passage, through the cranking jet, and into the primary throttle bores when the choke valve is closed.

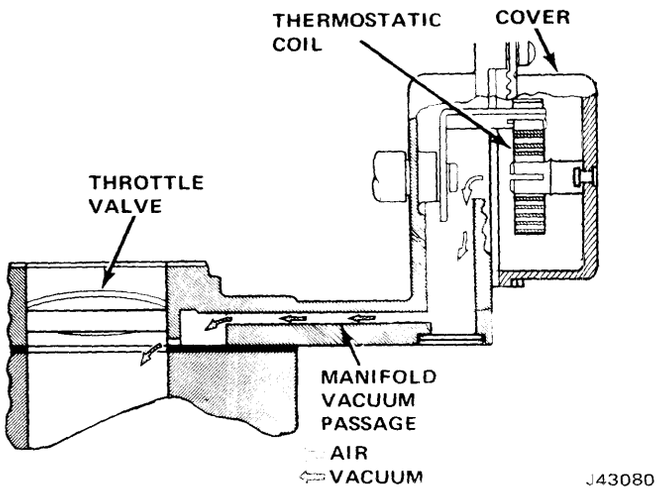

Fig. 4-120 Choke Circuit

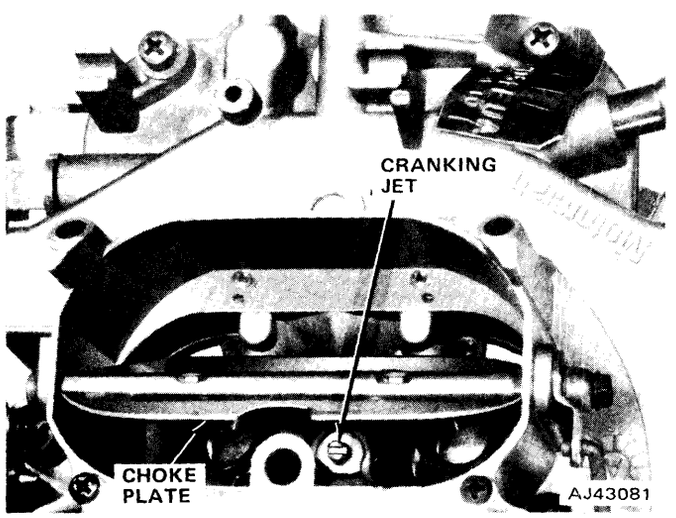

Fig. 4-121 Cranking Jet

When the engine starts, manifold vacuum is channeled to the choke vacuum diaphragm which is attached to the throttle body. As the diaphragm is pulled in, linkage opens the choke plate a specified distance. The action of the diaphragm, combined with atmospheric pressure against the offset choke valve, opposes the tension of the thermostatic coil and causes the choke valve to open slightly to prevent flooding of the engine. This opening of the choke valve is referred to as the initial choke valve clearance.

As the engine warms up, a chamber in the exhaust manifold crossover passage heats filtered air being drawn through the choke heat tube to the choke housing by manifold vacuum. A thermostatic bypass valve, which is integral with the choke heat tube, helps prevent premature choke valve opening during the early part of the warmup period. The valve regulates the temperature of the hot airflow to the choke housing by allowing outside unheated air to enter the heat tube. A thermostatic disc is incorporated in the valve which is calibrated to close the valve at 75°F and open it at 55°F.

The volume of air entering the choke housing is controlled by calibrated restrictions in the carburetor. The heated air entering the choke housing causes the thermostatic coil to gradually lose its tension and unwind.

During the warmup period, a fast idle must be provided to prevent engine stalling. The fast idle cam is rotated into position against the fast idle screw by the thermostatic choke shaft and lever assembly and results in increased engine speed in proportion to the choke valve opening. When the choke valve is fully open, the fast idle cam rotates free of the fast idle screw, allowing the engine to return to curb idle.

If the engine is accelerated during the warmup period, the resulting drop in manifold vacuum decreases the pull of the choke piston against the tension of the thermostatic coil and allows the choke valve to move toward the closed position. This provides the richer mixture required to prevent engine stalling.

Should the engine become flooded during the starting period, the choke can be mechanically opened a specified distance by depressing the accelerator pedal to the floor. A tang on the primary throttle lever will then contact the fast idle cam and partially open the choke valve through connecting linkage. This is referred to as the unloader.

To avoid overloading a cold engine, a secondary lockout lever engages a tang on the secondary throttle stop lever and prevents secondary throttle operation during the warmup period. The lockout lever releases the secondary throttle only after the choke is fully open.

CARBURETOR OVERHAUL

The following procedure applies to complete overhaul with the carburetor removed from the engine.

A complete disassembly is not necessary when performing adjustments. In most cases, service adjustments of individual systems may be completed without removing the carburetor from the engine (refer to Service Adjustment Procedures).

A complete carburetor overhaul includes disassembly, thorough cleaning, inspection and replacement of all gaskets and worn or damaged parts. Refer to figure 4-122 for parts identification.

NOTE: *When using an overhaul kit, use all parts included in kit.*

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 complaint, the carburetor should be carefully removed from the

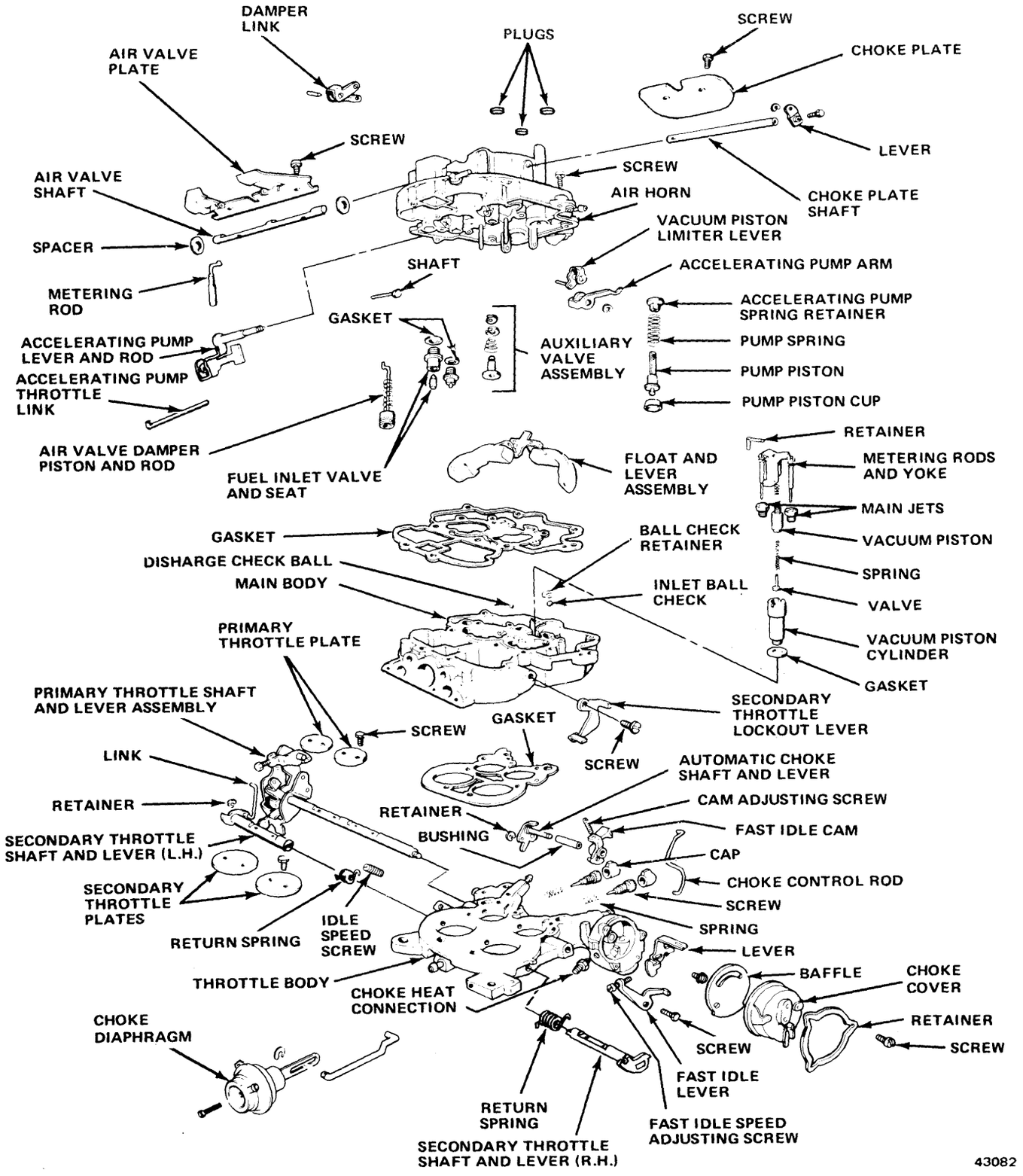

Fig. 4-122 Carburetor Model 4350—Exploded View

engine without removing the fuel from the bowl. The contents of the bowl then may be examined for contamination as the carburetor is disassembled.

Carburetor Removal

(1) Remove air cleaner.

(2) Remove throttle cable from throttle lever. Disconnect distributor vacuum line, PCV hose, EGR vacuum line, in-line fuel filter and the choke heat tube at the carburetor.

(3) Disconect choke clean air line from air horn.

(4) Remove carburetor retaining nuts and remove carburetor. Remove carburetor mounting gasket, spacer, and lower gasket from intake manifold.

Carburetor Installation

(1) Clean gasket mounting surfaces of spacer and carburetor. Place spacer between two new gaskets and position spacer and gaskets on intake manifold. Position carburetor on spacer and gasket and secure it with retaining nuts. To prevent leakage, distortion or damage to the carburetor body flange, snug the nuts, and then alternately tighten each nut in a criss-cross pattern to 13 foot-pounds torque.

(2) Connect in-line fuel filter throttle cable, choke heat tube, distributor vacuum line, EGR vacuum line, and PCV hose.

(3) Connect choke clean air line to the air horn.

(4) Adjust engine idle speed, idle fuel mixture, and antistall dashpot (if equipped). Install air cleaner.

Disassembly

(1) Remove fuel inlet line from fuel filter.

(2) Remove choke clean-air pickup connecting tube from air horn.

(3) Remove choke control rod retainer from automatic choke lever. Separate rod from lever.

(4) Remove accelerator pump throttle link retainer from throttle lever assembly. Separate link from lever assembly.

(5) Remove air cleaner anchor screw and remove air-horn-to-fuel-bowl attaching screws (fig. 4-123).

(6) Lift air horn off main body.

(7) Float pivot pin and remove float assembly.

(8) Remove auxiliary fuel inlet valve with Tool J-10185 and fuel inlet needle seat with a 1/2-12 point socket (fig. 4-124).

(9) Remove secondary air valve damper link pivot pin and remove rod from link.

(10) Remove air valve damper piston, rod, and spring.

(11) If it is necessary to remove secondary air valve plate or shaft, remove the air valve plate attaching screws. Remove plate, then slide shaft out of the air horn.

(12) Remove attaching screws if it is necessary to remove choke plate or choke shaft.

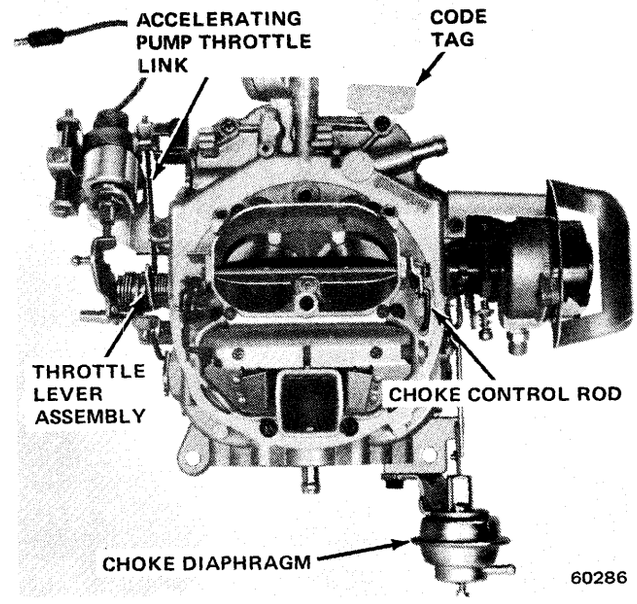

Fig. 3-123 Model 4350 Carburetor—Top View

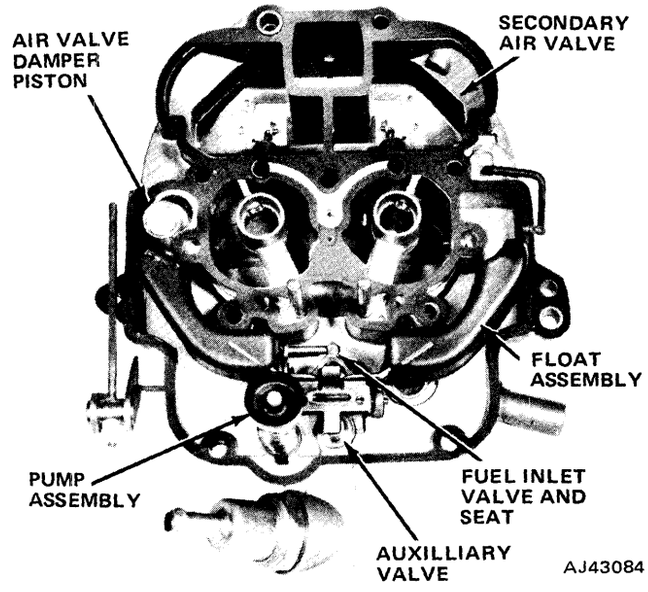

Fig. 4-124 Air Horn—Bottom View

(13) Remove choke plate, then slide choke shaft and lever out of air horn.

NOTE: *Choke lever is attached to shaft with a left-hand thread screw.*

(14) Remove accelerating pump arm retainer and slide accelerating pump lever and rod from air horn.

(15) Remove accelerating pump from pump arm.

(16) Turn main body upside down and catch accelerating pump discharge needle and check ball (fig. 4-125).

(17) Remove main metering jets.

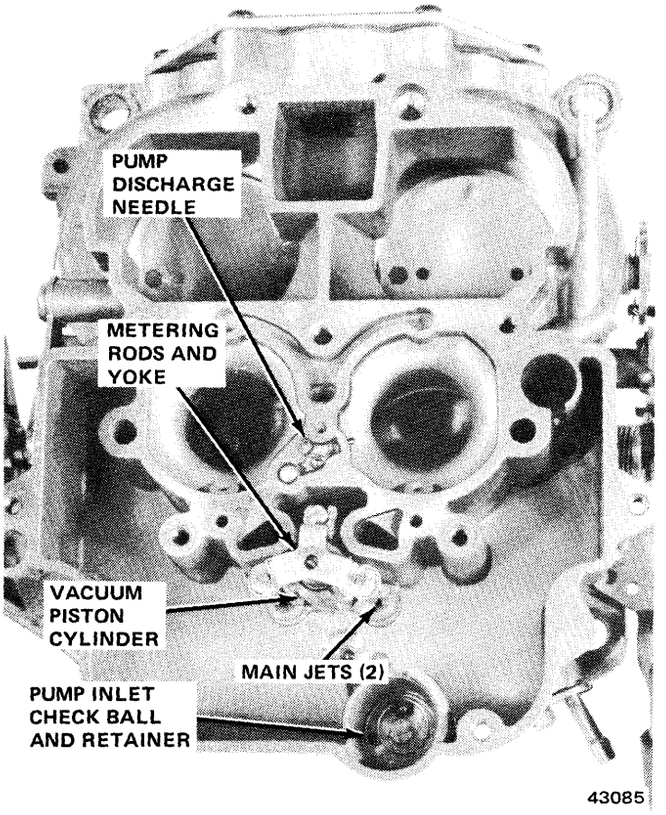

Fig. 4-125 Fuel Bowl Interior

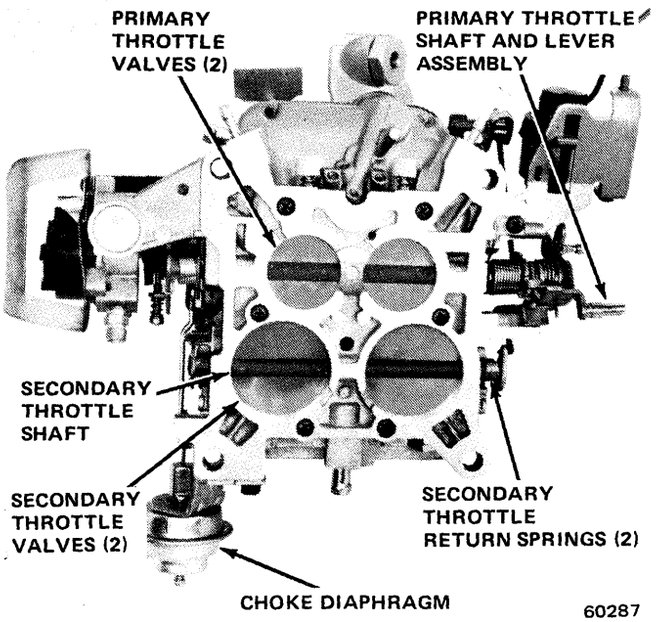

Fig. 4-126 Throttle Body—Bottom View

(18) Remove accelerating pump inlet check ball retainer, then turn main body over and catch ball from pump well.

(19) Remove throttle body to main body screws from bottom of throttle body (fig. 4-126) and separate the two castings.

(20) Remove choke housing cover screws, cover, gasket and thermostatic spring.

(21) Remove choke diaphragm assembly.

(22) Remove retainers from secondary throttle-lever-to-primary-throttle connecting link, remove link.

(23) Remove vacuum throttle modulator assembly.

(24) If it is necessary to remove throttle plates or shafts from throttle body, remove throttle plate attaching screws and plates.

(25) Slide secondary throttle shafts and return springs out of throttle body.

(26) Remove screw from primary throttle shaft and remove fast idle lever and adjusting screw. Slide throttle shaft and primary throttle shaft and lever assembly out of throttle plate.

(27) Remove primary throttle lever assembly retainer, then slide lever and springs off shaft.

(28) If it is necessary to remove fast idle cam or bushing, carefully press bushing out of choke housing and bushing column.

CAUTION: *The column may bend out of alignment or break without proper support to the column during bushing removal or installation.*

Cleaning and Inspection

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

The cleaning and inspection of only those parts not included in the carburetor overhaul kit are covered here. Install all gaskets and parts included in the repair kit when the carburetor is assembled. Discard original gaskets and parts.

Wash all carburetor parts (except accelerating pump piston and dashpot assembly) in clean commercial carburetor cleaning solvent. If a commerical solvent is not available, lacquer thinner or denatured alcohol may be used.

If commercial cleaner is used, rinse the parts in hot water to remove all traces of the cleaning solvent, then dry them with compressed air. Wipe all parts that cannot be immersed in solvent with a clean, soft, dry cloth. Be sure all dirt, gum, carbon, and other foreign matter are removed from all parts.

Force compressed air through all passages of the carburetor.

CAUTION: *Do not use a wire brush to clean any parts or a drill or wire to clean out any openings or passages in the carburetor. A drill or wire may enlarge the hole or passage, changing the calibration of the carburetor.*

Check the choke shaft for grooves, wear, and excessive looseness or binding. Inspect the choke plate for nicked edges and ease of operation and free it if necessary.

Make sure all carbon and foreign material have been removed from the automatic choke housing and the piston. Check the throttle shafts in the bores for excessive looseness or binding and check the throttle plates for burrs which prevent proper closure. Inspect the main body, throttle body, air horn, choke housing, and thermostatic spring housing for cracks. Replace the float if the arm needle contact surface is grooved. If the floats are serviceable, polish the needle contact surface of the arm with crocus cloth or steel wool. Replace float shafts if worn. Replace all screws and nuts that have stripped threads. Replace all distorted or broken springs. Inspect all gasket mating surfaces for nicks and burrs. Repair or replace any parts that have a damaged gasket surface.

Assembly

NOTE: *Make sure all holes in new gaskets have been properly punched and that no foreign material has adhered to gaskets. Gasket surfaces must be clean and flat and free of nicks or burrs.*

(1) If throttle plates and shafts are removed, slide primary throttle return spring (coiled clockwise) on primary throttle shaft (flat milled) and slide shaft into primary shaft holes (mixture needle side of body).

(2) Slide secondary throttle shafts and spring assemblies into secondary shaft holes.

(3) Position secondary throttle plates (larger diameter) in secondary bores with ground flat edges of plates facing up.

(4) Install plate attaching screws snug but not tight.

(5) Position primary throttle plates (smaller diameter) in primary bores with ground flat edge of plates facing up and toward the idle mixture needles. Install plate attaching screws snug but not tight.

(6) Rotate primary and secondary throttle shafts to closed position and tap throttle plates lightly, with screwdriver handle or similar tool, so that plates are properly and fully seated in throttle bores (when viewed with a light behind the plates, little or no light should be observed). Tighten throttle plate screws.

(7) Install secondary throttle lockout lever.

(8) Install fast idle speed lever and adjusting screw.

(9) If the fast idle cam and bushing were removed, insert automatic choke shaft bushing through choke housing. Position fast idle cam between choke housing and bushing column. Slide bushing through fast idle cam. Press bushing in choke housing and into column. Clean bushing with 1/4-inch reamer.

(10) Insert automatic choke shaft and lever in bushing.

(11) Install choke diaphragm assembly.

(12) Insert secondary throttle-to-primary throttle connecting rod into throttle lever and install retainers.

(13) Install vacuum throttle modulator assembly.

(14) Position main body on a working surface with fuel bowl down.

(15) Position main body to throttle body gasket on main body.

(16) Position throttle body on main body and install attaching screws.

(17) Invert main body and throttle body so fuel bowl is upward.

(18) Install main jets.

(19) Install vacuum piston cylinder and replacement gasket.

(20) Adjust metering rods. Refer to Metering Rod Adjustment.

(21) Install valve, spring, vacuum piston and metering rods and yoke assembly.

(22) Install choke-to-throttle lockout lever.

(23) Place accelerator pump check ball in pump inlet hole of pump chamber. Install check ball retaining ring.

(24) Place accelerator pump discharge needle into pump discharge cavity.

(25) Install auxiliary fuel inlet valve and gasket using Tool J-10185.

(26) Assemble accelerator pump and insert into air horn.

NOTE: *Accelerator pump diaphragm must be positioned on lower hole of pump plunger stem.*

(27) Compress pump plunger and insert accelerator pump arm into plunger stem.

(28) Place vacuum piston limiter lever over pump arm and install accelerating pump lever and rod assembly.

(29) Install accelerating pump arm retainer.

(30) If choke plate and shaft were removed, slide choke shaft through holes in air horn. Install choke shaft lever on end of shaft on automatic choke side.

NOTE: *The lever and shaft are tapered and the attaching screw has a left-hand thread. Insert choke plate into slot in choke shaft and install plate attaching screws snug but not tight.*

(31) Close choke plate and gently tap the plate to position plate in air horn. Tighten attaching screws.

(32) If air valve plate and shaft were removed, slide shaft through holes on secondary side of air horn

(33) Position air valve plate in air horn opening.

(34) Install plate attaching screws snug but not tight.

(35) Close air valve plate and tap lightly to properly position in air horn. Tighten attaching screws.

NOTE: *Be sure plate and shaft turn freely after assembly.*

(36) Insert fuel inlet needle into fuel inlet seat.

(37) Position float and lever assembly between hinge post and over fuel inlet valves. Insert float hinge pin through the post and float lever.

NOTE: *The pin must be inserted from the pump plunger side for self-retention.*

(38) Insert air valve damper piston, rod and spring assembly through air horn and attach rod end to damper link.

(39) Insert air valve damper rod into hole in air valve plate. Slide other end of rod into damper link.

(40) Position the air valve damper link on the air horn and install pivot pin.

(41) Set float level. Refer to Float Adjustment.

(42) Position main body to air horn gasket on main body.

(43) Carefully position air horn assembly over main body. Guide accelerator pump plunger and air valve damper piston into their chambers as air horn is gently lowered into position.

(44) Install other air horn attaching screws.

(45) Install accelerating pump throttle link in lower hole of primary throttle lever assembly. Install link retainer.

(46) Insert choke control rod end into automatic choke lever. With long nose pliers, install retaining clip.

(47) Check choke gasket cover clearance.

(48) Install choke gasket cover and retainer.

SERVICE ADJUSTMENT PROCEDURES

Float Adjustment

(1) Invert air horn assembly and remove gasket.

(2) Measure distance from float pontoons to air horn casting using a T-scale. Position horizontal scale over flat surface of both float pontoons at the free ends, parallel to air horn casting. Hold lower end of the vertical scale in full contact with the smooth area of air horn casting, located midway between the main discharge nozzles (fig. 4-127).

IMPORTANT: Do not allow the end of the vertical scale to come in contact with any gasket sealing ridge while measuring the float setting.

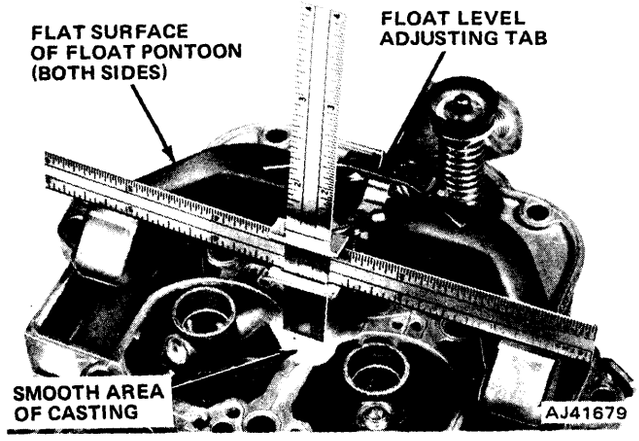

Fig. 4-127 Float Adjustment

(3) Refer to Carburetor Service Specifications for correct setting. The free end of each float pontoon should just touch the horizontal scale. If one pontoon is lower than the other, twist the float and lever assembly slightly to align.

(4) Adjust the float level by bending the tab which contacts the fuel inlet needle.

Auxiliary Inlet Valve Adjustment

(1) Turn air horn assembly upright, allowing the float to hang freely. Push up on the float until the primary fuel inlet needle lightly contacts its seat.

(2) While holding float in this position, measure clearance between float level auxiliary tab and auxiliary inlet valve plunger. Bend tab as required (fig. 4-128).

(3) Refer to Carburetor Service Specifications for correct setting.

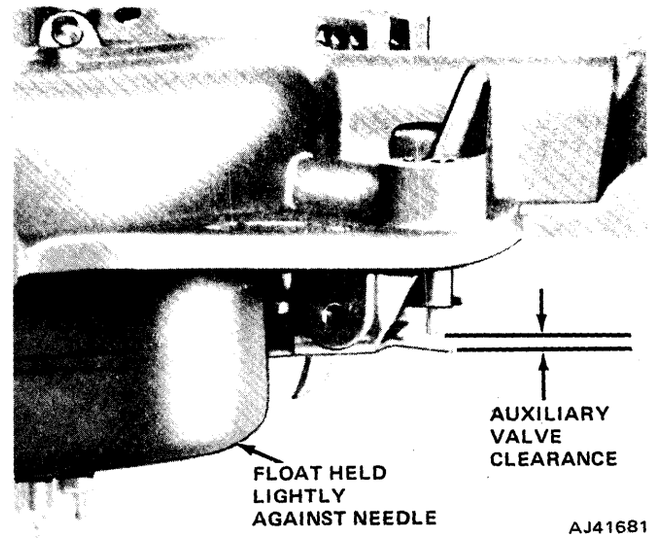

Fig. 4-128 Auxiliary Inlet Valve Adjustment

Metering Rod Carrier Stroke Adjustment

NOTE: *The metering rod carrier stroke is a precise adjustment affecting emissions and fuel economy. The nylon nut on the accelerator pump link controls the metering rod carrier stroke. THIS NYLON NUT SHOULD NOT BE TAMPERED WITH. IT IS SET AT THE FACTORY.*

If it is suspected that the nylon nut adjustment has been altered since the carburetor left the factory, the adjustment can be checked with this procedure.

(1) Check and adjust engine idle speed.

(a) Manual transmission vehicles should be set at specified idle speed.

(b) Automatic transmission vehicles should be set at 500 rpm (solenoid disconnected).

(2) Stop engine. Remove plug from metering rod gauge hole (fig. 4-129).

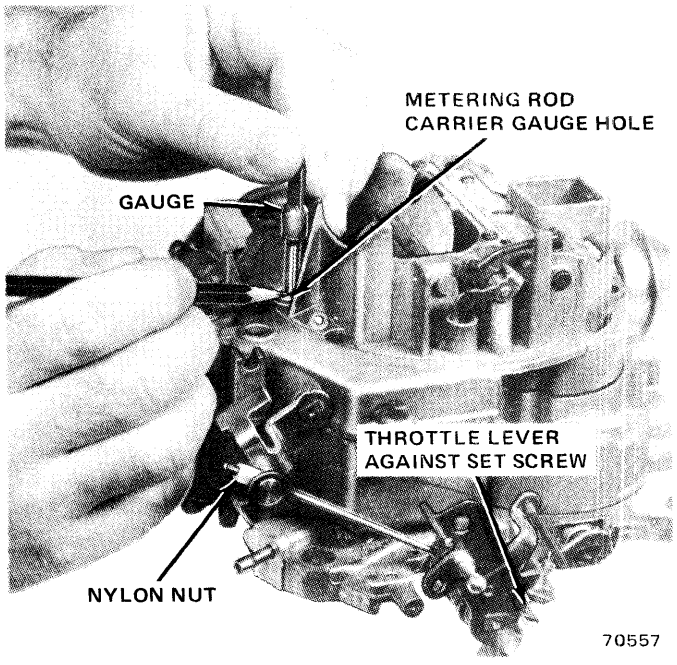

Fig. 4-129 Gauging Metering Rod Carrier Stroke

(3) With throttle at idle setting established previously, insert any suitable tool into gauge hole until it rests on vacuum piston adjusting screw.

(4) Scribe mark on gauge flush with top of gauge hole boss (fig. 4-129).

(5) Move throttle to wide-open position. Gauge will be pushed up by vacuum piston. Make second mark on gauge flush with top of gauge hole boss.

(6) Return throttle to idle position and remove gauge. Measure distance between scribe marks. Refer to Specification for correct metering rod carrier stroke.

(7) If scribe marks indicate incorrect stroke, adjust by turning nylon nut counterclockwise (away from carburetor) to increase stroke. Turn nylon nut clockwise (toward carburetor) to decrease stroke (fig. 4-130).

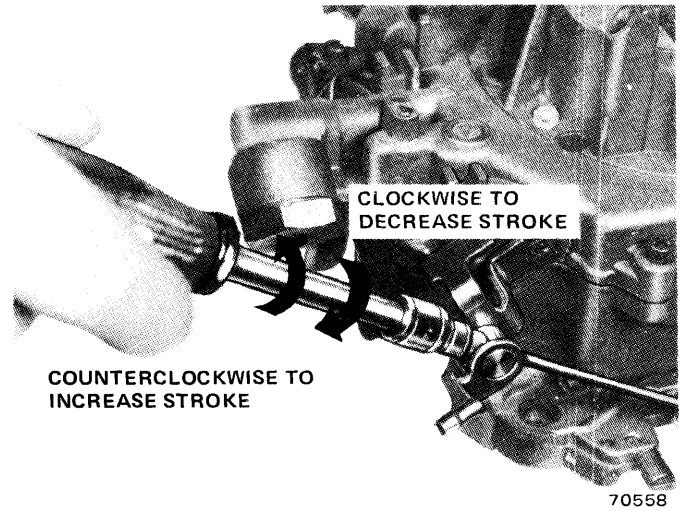

Fig. 4-130 Adjusting Metering Rod Carrier Stroke

(8) Install replacement plug in gauge hole with 1/4 inch aligning punch.

Metering Rod Adjustment

(1) Depress metering rod yoke. Using a small screwdriver, turn the vacuum piston adjusting screw counterclockwise until yoke is seated against the vacuum piston cylinder (fig. 4-131).

(2) Turn metering rod adjusting screws until large diameter of metering rods contact and seat in the main jets.

(3) Remove plastic yoke retainer.

(4) Remove metering rod and yoke assembly.

(5) Turn vacuum piston adjusting screw clockwise to move vacuum piston away from yoke to obtain clearance as listed in Specifications (fig. 4-132).

(6) Install metering rod and yoke assembly.

(7) Install plastic yoke retainer.

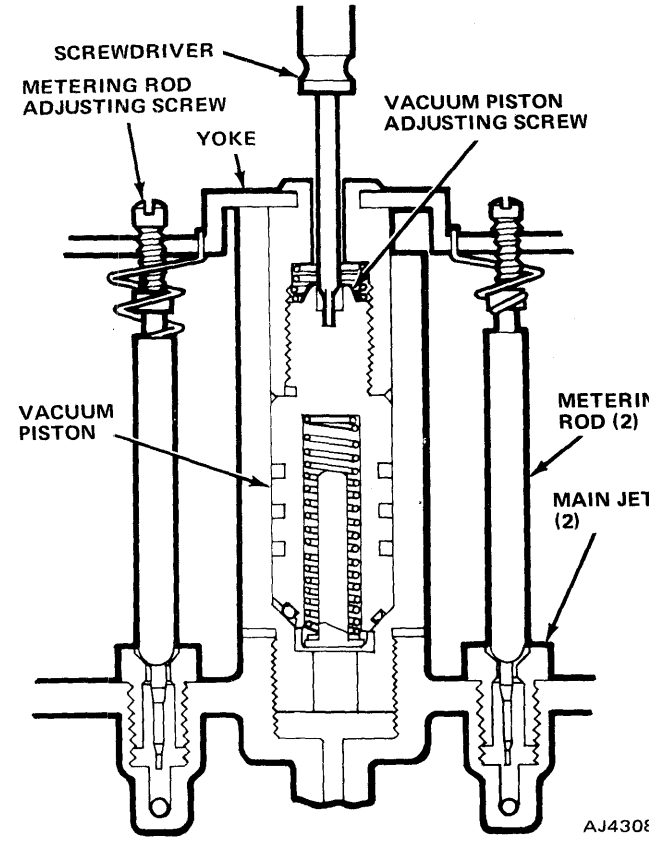

Fig. 4-131 Metering Rod Adjustment

Initial Choke Valve Clearance (On or Off Vehicle)

(1) Loosen choke cover screws.

(2) Open throttle and rotate choke cover until choke valve is held closed.

(3) Close throttle. Fast idle speed screw should be on top step of cam.

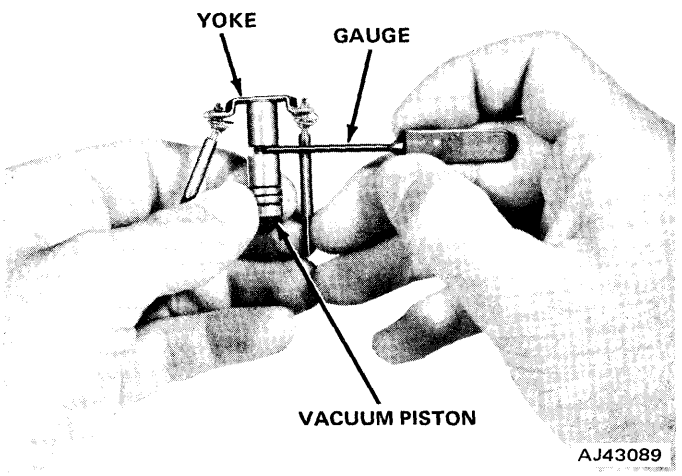

Fig. 4-132 Metering Rod Vacuum Piston Adjustment

(4) Bottom choke diaphragm against setscrew. Do not press on links.

(5) Measure clearance between lower edge of choke valve and air horn (fig. 4-133).

(6) Adjust clearance by turning screw located at rear of diaphragm housing (fig. 4-134).

(7) Adjust fast idle cam linkage.

(8) Loosen choke cover screw and rotate cover to relieve tension on choke bimetallic coil. Set choke cover to specifications and tighten choke cover screws.

NOTE: *If vacuum is applied to the choke diaphragm with a hand pump, a vacuum leak may be noticed. This is normal.*

Choke Plate Indexing

This procedure is only necessary if the choke plate lever attaching screw has been loosened or removed.

(1) Loosen choke lever attaching screw (turn clockwise). Pry lever off choke shaft far enough to allow choke valve to turn.

(2) Back out cam index adjusting screw until screw no longer touches automatic choke shaft lever (fig. 4-135).

(3) Loosen choke cover attaching screws and rotate cover 90 degrees counterclockwise so that automatic choke shaft lever touches fast idle cam. Tighten one choke cover attaching screw.

(4) Turn cam index screw until it just touches the automatic choke shaft lever and then turn an additional 6 to 7 turns.

(5) Manually close choke plate and tighten choke shaft lever attaching screw.

(6) Adjust initial choke valve clearance and fast idle cam linkage.

(7) Set choke cover to specified setting and tighten attaching screws.

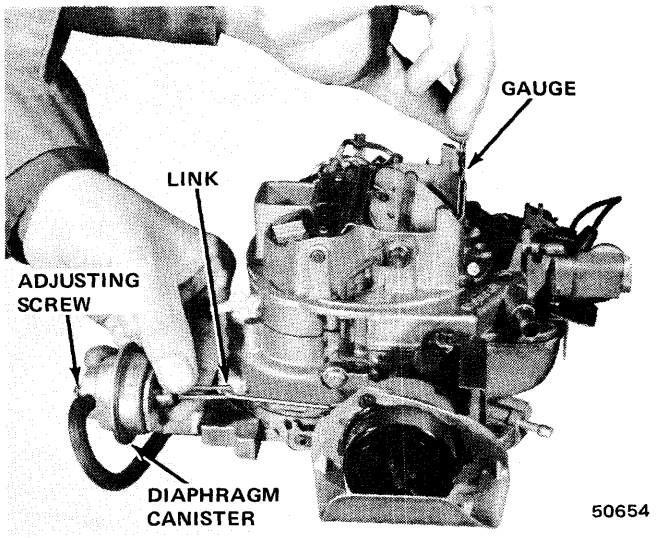

Fig. 4-133 Measuring Initial Choke Valeve Clearance

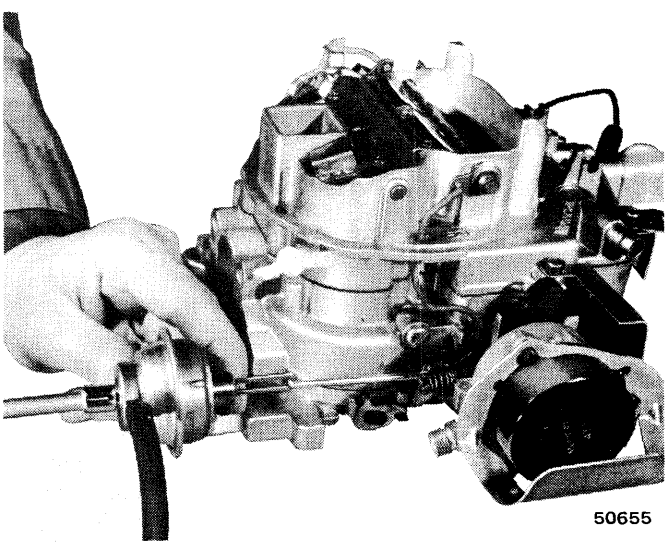

Fig. 4-134 Adjusting Initial Choke Valve Clearance

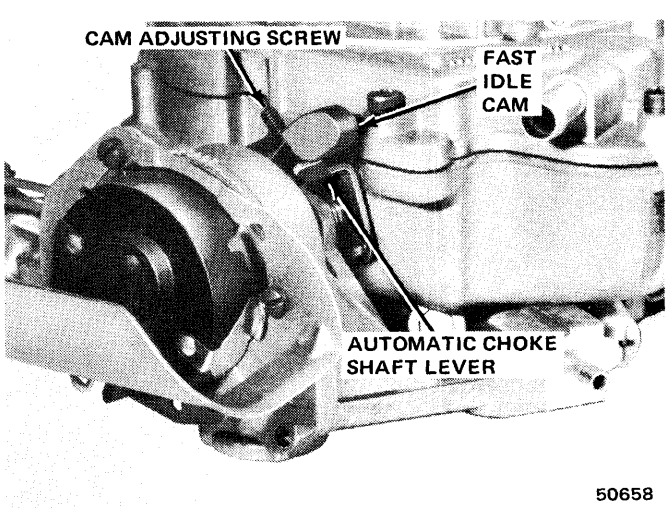

Fig. 4-135 Indexing Choke Plate

Fast Idle Cam Linkage Adjustment (On or Off Vehicle)

(1) Rotate choke cover 1/4-turn clockwise (rich) and tighten the retaining screws.

(2) Operate the throttle to allow the choke valve to close completely.

(3) Push down on the fast idle cam counterweight until screw is in contact with the second step (index) and against the shoulder of the high step.

(4) Measure the clearance between the lower edge ofthe choke valve and the air horn wall (fig. 4-136). Refer to Carburetor Service Specifications for the correct setting.

(5) Adjust by turning the fast idle cam adjusting screw.

(6) Loosen the choke cover retaining screws and adjust the choke as outlined under Automatic Choke Adjustment.

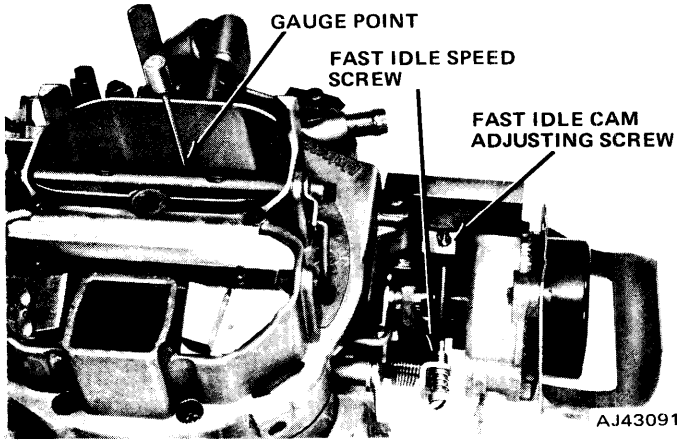

Fig. 4-136 Fast Idle Cam Linkage Adjustment

Choke Unloader Adjustment

(1) Hold throttle fully open and apply pressure on the choke valve toward the closed position.

(2) Measure the clearance between the lower edge of choke valve and air horn wall. Refer to Carburetor Service Specifications for correct setting.

CAUTION: *Do not bend the unloader tang downward from a horizontal plane.*

(3) Adjust by bending the unloader tang which contacts the fast idle cam as shown in figure 4-137. Bend toward the cam to increase the clearance and away from the cam to decrease the clearance. After making the adjustment, make certain the unloader tang has at least 0.070-inch clearance from the choke housing when the throttle is fully open (fig. 4-138).

(4) Operate throttle and check unloader tang to make sure it does not bind, contact, or stick on any part of carburetor casting or linkage. After carburetor installation, check for full throttle opening when the throttle is operated from inside the vehicle. If full throttle opening is not obtainable, it may be necessary to remove excess padding under the floormat or reposition the throttle cable bracket located on the engine.

Vacuum Throttle Modulator Adjustment

First complete Fast Idle Cam Linkage Adjustment.

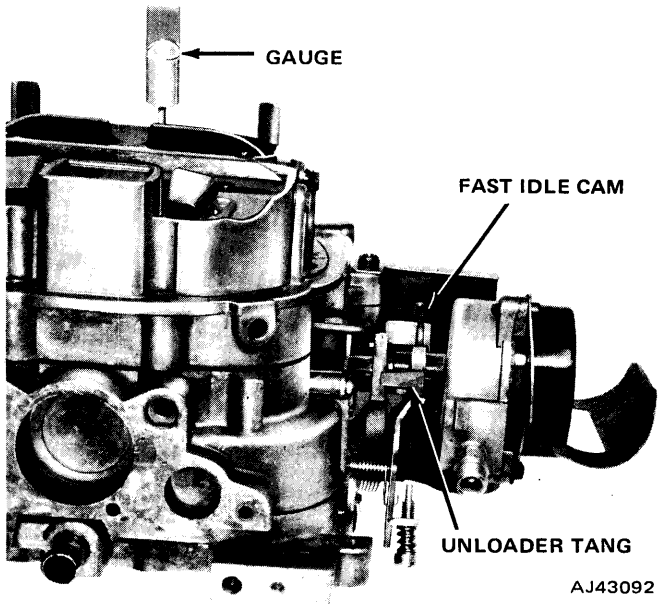

Fig. 4-137 Unloader Adjustment

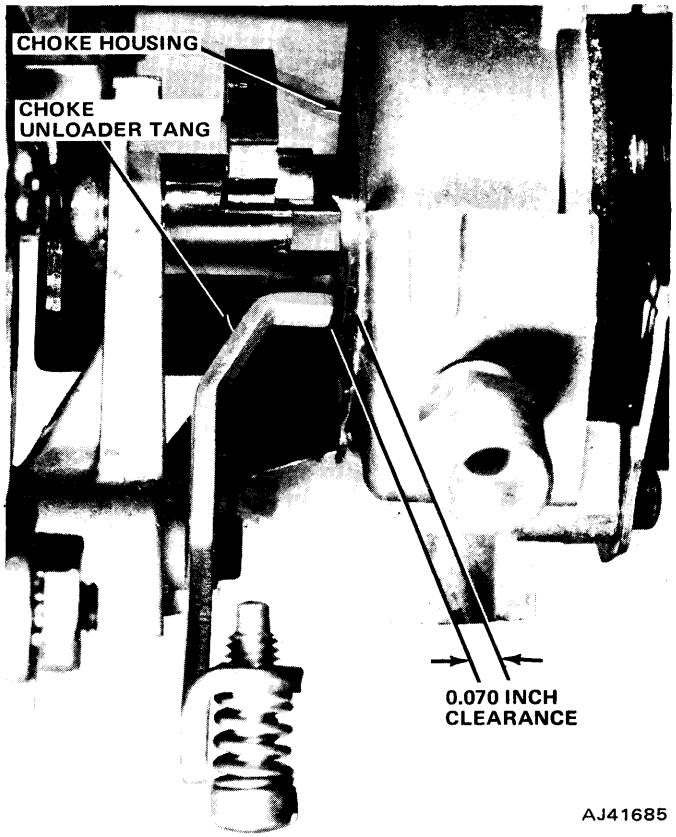

Fig. 4-138 Unloader-to-Choke Housing Clearance

(1) Push down on the fast idle cam counterweight until screw is in contact with the second (index) step and against the shoulder of the high step.

(2) With a minimum of 15 inches of vacuum applied to diaphragm, turn adjusting screw on diaphragm until high idle cam just falls free of the cam screw.

Automatic Choke Adjustment (On or Off Vehicle)

Loosen the choke cover retaining screws and rotate the cover in the desired direction as indicated by arrow on face of cover. Refer to Carburetor Service Specification for the correct setting. The specified setting will be satisfactory for most driving conditions. However, in the event that stumbles or stalls occur on acceleration during engine warmup period, the choke may be set richer or leaner using the tolerance provided to meet individual engine requirements.

Accelerator Pump Adjustment

NOTE: *The accelerating pump throttle link must be installed in the lower hole of the throttle shaft lever assembly.*

Accelerator Pump Adjustment

The accelerator pump has two adjustments. The pump piston-to-pump shaft adjustment is made when the carburetor is assembled. The piston pin must be placed in the middle hole on the pump shaft (fig. 4-139). This adjustment must not be changed.

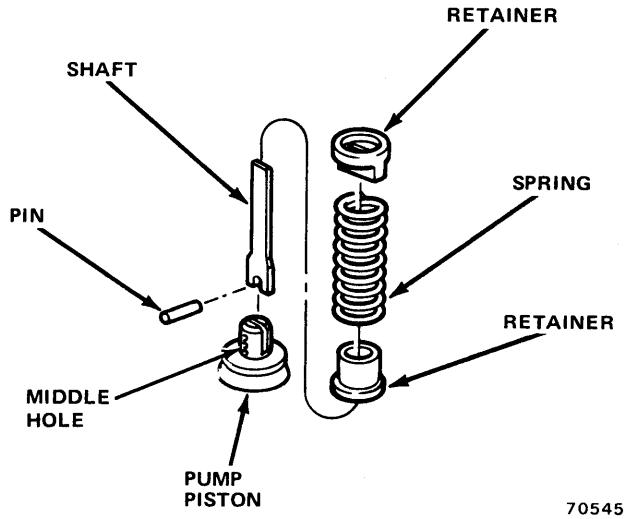

Fig. 4-139 Accelerator Pump Piston Adjustment

The accelerator pump stroke adjustment procedures is new for 1977. Prior to 1977, the accelerator pump stroke and metering rod carrier stroke were performed simultaneously by adjusting the nylon nut of the accelerator pump throttle link. For 1977, **do not tamper with this nut**. The nylon nut is used to establish metering rod carrier stroke only. Adjust the accelerator pump stroke as follows.

(1) Remove air cleaner.

(2) Check and adjust engine idle speed.

(a) Manual transmission vehicles should be set at specified idle speed.

(b) Automatic transmission vehicles should be set at 500 rpm (solenoid disconnected).

(3) Stop engine. Remove plug from accelerator pump gauge hole (fig. 4-140).

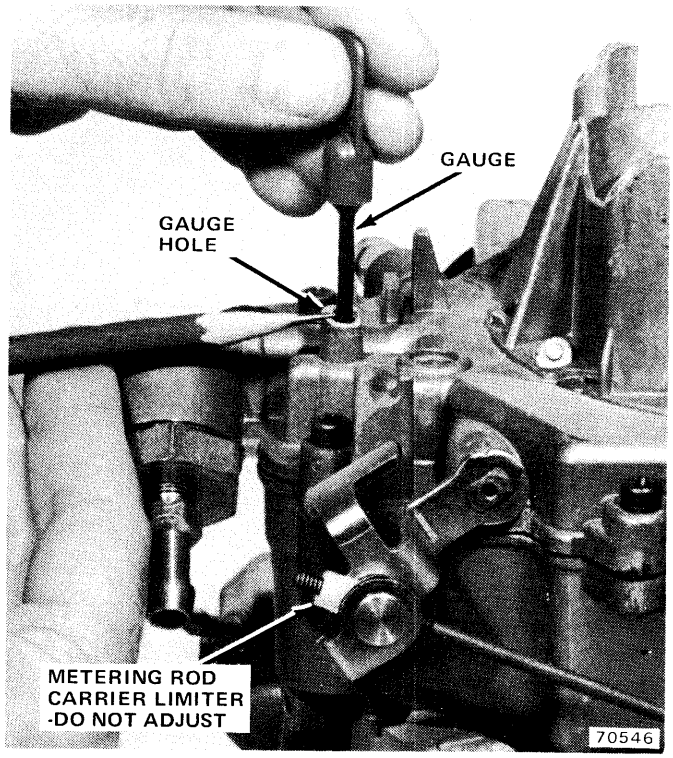

Fig. 4-140 Gauging Accelerator Pump Stroke

(4) With throttle at idle setting established previously, insert any suitable tool into gauge hole until it rests on pump lever.

(5) Scribe mark on gauge flush with top of gauge hole boss (fig. 4-140).

(6) Move throttle to wide-open position. Gauge will move down into gauge hole. Make second mark on gauge flush with top of gauge hole boss.

(7) Return throttle to idle position and remove gauge. measure distance between scribe marks. Correct distance is 0.310 inch.

(8) If pump stroke is incorrect, remove plug from adjustment hole (fig. 4-141).

(9) Using 5/64 inch Allen wrench, turn adjusting screw clockwise to increase stroke or counterclockwise to decrease stroke.

NOTE: *With pump stroke set correctly, the adjustment screw should never be turned more than one complete*

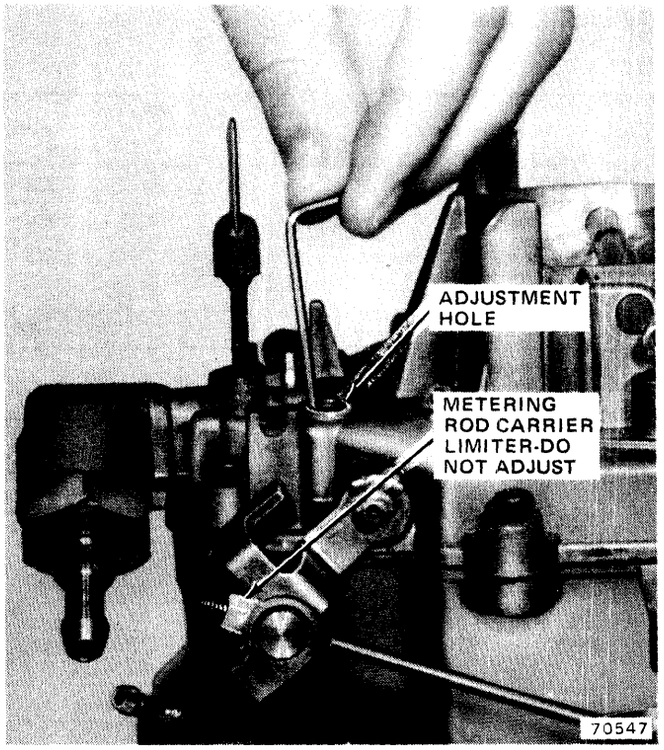

Fig. 4-141 Adjusting Accelerator Pump Stroke

turn in either direction. Adjusting the screw too far in will cause a lag in pump discharge, causing tip-in stumble. Adjusting the screw too far out will reduce pump capacity.

NOTE: *Install replacement plugs in adjusting ad gauge holes.*

NOTE: *Connect throttle stop solenoid and install air cleaner.*

Idle Speed and Mixture Adjustment (On Vehicle)

Refer to Engine Idle Setting Procedures in the Emission Control section.

Fast Idle Speed Adjustment (On Vehicle)

Set the fast idle speed with the engine at operating temperature and the fast idle screw against the first kickdown step (middle step) of the fast idle cam. Refer to Carburetor Service Specifications for the correct rpm setting. Adjust by turning the fast idle screw.

NOTE: *When adjusting fast idle speed, disconnect and plug vacuum hose at EGR valve and spark port.*

Model 4350 Carburetor Calibrations

	6THA4	6THM4	6THA4C
Primary Throttle Bore Size	1.440	1.440	1.440
Main Venturi Size	1.000	1.000	1.000
Secondary Throttle Bore Size	1.960	1.960	1.960
Fuel Inlet Diameter	0.098	0.098	0.098
Low Speed Jet	0.038	0.038	0.038
Idle Air Bleed (First)	0.049	0.049	0.049
Idle Air Bleed (Second)	0.029	0.029	0.029
Primary Metering Jet	No. 197	No. 202	No. 202
Secondary Metering Jet	0.144	0.144	0.144
Cranking Jet	0.040	0.040	0.040
High Speed Bleed	0.063	0.063	0.063
Power Valve Timing (Inches of Hg)	8 to 9	8 to 9	8 to 9
Accelerator Pump Jet	0.026	0.026	0.026
Vacuum Spark Port	0.052	0.052	0.052
Choke Heat Inlet Restriction	0.089	0.089	0.089
Choke Vacuum Restriction	0.076	0.076	0.076

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Carburetor Applications

Model	List Number	Choke Cover I.D.	Application
Carter YF	7154	AE	232/258 CJ-5/7 Manual Trans. (49-State and Calif.)
	7151	AA	258 CJ-7 Auto. Trans. (49-State)
	7153	AA	258 CJ-7 Auto. Trans. (Calif.)
Carter YF (Altitude)	7110	AJ	232/258 CJ-5/7 Manual Trans. (Altitude)
	7111	AJ	258 CJ-7 Auto. Trans. (Altitude)
Carter BBD	8107	T	258 Cke., Trk., Man. and Auto. Trans. (49-State)
Motorcraft 2100	6RHM2	TFA	360 Cke., Trk., Manual Trans. (49-State)
	6RHA2	TFA	360 Cke., Wag., and Trk. Auto. Trans. (49-State)
	6DM2	TFA	304 CJ-5/7 Manual Trans. (49-State)
	6DA2J	TFA	304 CJ-7 Auto. Trans. (49-State and Calif.)
	6DM2J	TFA	304 CJ-5/7 Manual Trans. (Calif.)
Motorcraft 2150 (Altitude)	7DM2A	EKL (Electric Assist)	304 CJ-5/7 Manual Trans. (Altitude)
	7DA2A		304 CJ-7 Auto. Trans. (Altitude)
Motorcraft 4350	6THA4	4TY	360/401 Cke., Wag., and Trk. Auto. Trans. (49-State)
	6THM4	4TY	360 Cke., Trk., Manual Trans. (49-State and Calif.)
	6THA4C	4TY	360/401 Cke., Wag., Trk., Auto. Trans. (Calif.)

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Carburetor Service Specifications

Model	Carter YF (1V)	
	Set To	OK Range
Float Level	0.476	0.444 – 0.508
Float Drop	1 3/8	–
Initial Choke Valve Clearance	0.215	0.195 – 0.235
Fast Idle Cam Setting	0.195	0.180 – 0.210
Automatic Choke Cover Setting 7154 and 7151 7153	 1 NR Index	 ½ – 1½ NR ½ NL – ½ NR
Choke Unloader	0.275 min	–
Fast Idle Speed①	1600 rpm	1550 – 1650

Model	Carter YF Altitude (1V)	
	Set To	OK Range
Float Level	0.476	0.444 – 0.508
Float Drop	1 3/8	–
Initial Choke Valve Clearance	0.221	0.200 – 0.240
Fast Idle Cam Setting	0.201	0.185 – 0.215
Automatic Choke Cover Setting	2 NR	1½ NR – 2½ NR
Choke Unloader	0.275 min	–
Fast Idle Speed① 7110	1600 rpm	1550 – 1650
7111	1800 rpm	1750 – 1850

Model	Motorcraft 2100 (2V)	
	Set To	OK Range
Float Level Wet	0.930	0.868 – 0.992
Float Level Dry	0.555	0.493 – 0.617
Initial Choke Valve Clearance 6RHM2, 6RHA2, 6DA2J 6DM2, 6DM2J	 0.136 0.132	 0.113 – 0.159 0.109 – 0.155
Fast Idle Cam Setting 6RHM2, 6RHA2 6DM2, 6DM2J 6DA2J	 0.115 0.120 0.126	 0.100 – 0.130 0.105 – 0.135 0.111 – 0.141
Automatic Choke Cover Setting 6RHM2, 6RHA2, 6DM2 6DA2J, 6DM2J	 2 NR 1 NR	 1½ NR – 2½ NR ½ NR – 1½ NR
Dashpot 6DM2, 6DM2J	 0.093	 0.061 – 0.125
Choke Unloader	0.250 min	–
Fast Idle Speed①	1600 rpm	1550 – 1650

Model	Carter BBD (2V)	
	Set To	OK Range
Float Level	0.250	0.218 – 0.282
Step-Up Piston Gap	0.040	0.025 – 0.055
Initial Choke Valve Clearance	0.128	0.113 – 0.133
Fast Idle Cam Setting	0.095	0.085 – 0.105
Automatic Choke Cover Setting	2 NR	1½ NR – 2½ NR
Choke Unloader	0.280 min	–
Fast Idle Speed①	1700 rpm	1650 – 1750

Model	Motorcraft 2150 (Altitude) (2V)	
	Set To	OK Range
Float Level Wet	0.930	0.868 – 0.992
Float Level Dry	0.555	0.493 – 0.617
Initial Choke Valve Clearance 7DM2A 7DA2A	 0.110 0.104	 0.087 – 0.143 0.081 – 0.127
Fast Idle Cam Setting	0.089	0.079 – 0.104
Automatic Choke Cover Setting 7DM2A 7DA2A	 2 NR 1NR	 1½ NR – 2½ NR ½ NR – 1½ NR
Choke Unloader	0.290 min	–
Fast Idle Speed①	1600 rpm	1550 – 1650

Model	Motorcraft 4350 (4V)	
	Set To	OK Range
Float Level	0.900	0.850 – 0.950
Auxiliary Inlet	0.050	–
Initial Choke Valve Clearance	0.135	0.109 – 0.161
Fast Idle Cam Setting	0.135	0.120 – 0.150
Automatic Choke Cover Setting	2 NR	1½ NR – 2½ NR
Choke Unloader	0.325 min	–
Metering Rod Vacuum Piston Gap 6THA4 6THM4 6THA4C	 0.117 0.108 0.112	 0.101 – 0.133② 0.092 – 0.124 0.096 – 0.128
Metering Rod Carrier Stroke	0.255	0.235 – 0.275
Accelerator Pump Stroke	0.310	1 Turn Counter-clockwise to 1 turn clockwise
Fast Idle Speed①	1600 rpm	1550 – 1650

① On 2nd step (hot with TCS solenoid and EGR disconnected)
② OK Range is based on ½ turn counterclockwise to ½ turn clockwise

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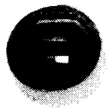
Special Tools

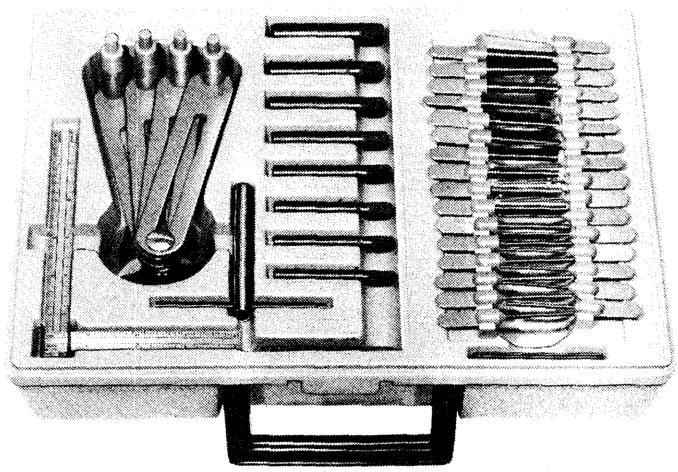
J-10174-01
MAIN JET REMOVER
AND INSTALLER



J-10175
POWER VALVE
SOCKET

J-10185
NEEDLE SEAT
REMOVER

J-1137
BENDING TOOL



J-9789-02
UNIVERSAL CARBURETOR
GAUGE KIT

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